

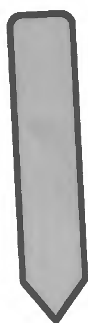
Library

Overseas Development Institute

0 4. JUL 96

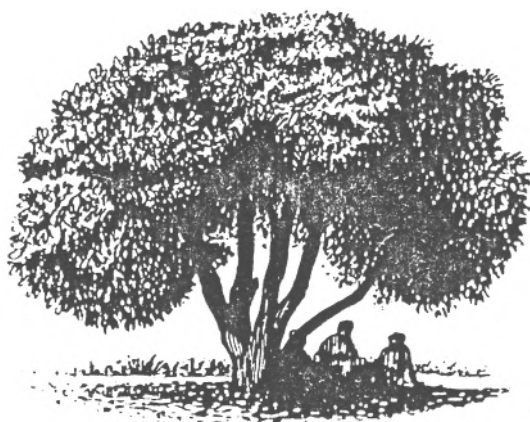
Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 0171 487 7413

FOR
REFERENCE
ONLY





SOCIAL FORESTRY NETWORK



Newsletter

**Agricultural Administration Unit,
Overseas Development Institute**

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these had between 600-900 members in 1985 and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

© Overseas Development Institute, London 1985.

Photocopies of any part of this publication may be made without permission.

The opinions represented are those of the authors and network members and do not necessarily reflect the policies of the Overseas Development Institute

CONTENTS

How the Networks Came into Being 4
ODIs Social Forestry Programme 5
Network Priorities 8
Mailing List 9
Lunchtime Meetings 10
Other Networks 12
News of Conferences 14
Books 20
Recent Acquisitions to the AAU Library	.. 21

NETWORK PAPERS IN THIS SERIES:

- 1a Gill Shepherd Social Forestry in 1985:
Lessons Learnt and Topics to be addressed
- 1b Gerald Foley and Geoffrey Barnard
Farm and Community Forestry

Biographical Note

Dr Gill Shepherd, the research officer running the network, is a Social Anthropologist by training. Her PhD fieldwork was conducted on the East African Coast.

She has taught Anthropology at the Universities of Sussex and London; and has done development work for IVS in the Indian Ocean (Comoro Islands), for OXFAM in the Sudan and Kenya, and for the ODA (British Government) in the Southern Sudan and Botswana.

Her interest in Social Forestry began in 1983 when she was employed to do a review of the literature for the ODA, and to help to run a seminar on the subject with the ODA's Forestry Advisors. In 1984 she worked in Botswana for several months as sociologist on a team employed to assess the country's rural energy resources and needs, and to draw up an energy plan.

She ran the GAPP Applied Anthropology newsletter from 1983-1985.

Credits

Newsletter and network papers edited by:
Gill Shepherd, Social Forestry Research Officer

Design, typing and layout by:
Jennifer Dudley, Administrative Secretary
Peter Gee, Publications and Press Officer

Welcome to the first edition of the Social Forestry network newsletter! This mailing is the tardily-issued Autumn 1985 edition, and you will be hearing from us from now on (if you complete and return the membership form) in April and October each year.

Your comments and suggestions for priority activities for the network are solicited elsewhere in the newsletter, and in the accompanying paper by Gill Shepherd the research officer running the network. We hope very much that you will find time to tell us what you think. And since our next edition is coming out in well under six months, we would like to hear from you as soon as you can manage it.

When ODI first started to run networks, it used to describe them as postal seminars, and though this proved a somewhat over-idealistic concept, they have continued to function as interactive research networks. We hope that, with your help, the Social Forestry network will prove as useful and stimulating to its members as the other networks have done to theirs.

Gill Shepherd
Social Forestry research Officer

How the Network came into being

The network is the result of the thinking of many people, but particularly that of the Ford Foundation in India. It was already clear, two or three years ago, that so much experimentation was going on with different types of social forestry projects, and so many different projects springing up, that it was time for some analysis and synthesis.

Various proposals were made for the location of the network, with India a strong candidate initially. But the Overseas Development Institute was finally chosen for two reasons. Firstly, it was felt that a Third World location for the network would lead to over-concentration on the preoccupations of the regions where it was based; secondly, an organisation with a good track record in networking was sought. The prior existence of three other highly successful networks at ODI helped to fix the choice.

The Overseas Development Institute and its Agricultural Administration Unit

The Overseas Development Institute (ODI) is an independent, non-profitmaking research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British aid programme. Its mandate is to widen the state of knowledge and the flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries has been achieved through the three Networks on Agricultural Administration, Irrigation Management, and Pastoral Development. Each of these had between 600-900 members in 1985 and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and Newsletters containing information on recent work, workshops and other relevant events.

ODI's SOCIAL FORESTRY PROGRAMME

The programme in Social Forestry based at the Overseas Development Institute, London, is supported by two generous grants from the Ford Foundation and Aga Khan Foundation. The expected total cost over the initial three years of the programme is \$240,000.

As is customary with other ODI networks, the Research Officer will spend about half her time on appropriate research and half establishing and running the network.

The international network of practitioners and researchers will involve foresters, as well as rural sociologists, agricultural economists and other professionals involved. The network will expand to well over 500 members, who will receive twice-yearly mailings: a Newsletter with information on forthcoming conferences, recent publications and short news items, together with several articles written by members about their experiences in planning or implementing social forestry projects. The network will also be used to disseminate the results of the Institute's own social forestry research. Ideally each mailing of the network will be devoted to a single topic.

Lunchtime meetings of the UK-based members of the Social Forestry network will be held at times, and overseas members who know they will be passing through London, and who would like to present a paper at such a meeting, are encouraged to communicate with the Research Officer who runs the network.

It is hoped that a workshop on problems in the Management of Social Forestry can be organised in 1987, and that, as a result, a useful collection of papers will be published.

Through network members, the Research Officer will hope to establish a growing data-base of project implementation case-histories. Other networks have established exchange relationships whereby in return for free network membership and mailings of papers, networkers send copies of reports, papers and so on to which they have made a contribution, or which they have written, for deposit in the AAU Library. A very valuable Social Forestry collection can be built in this way and it is

hoped very much that networkers will make their material available. The library is of course open to networkers passing through London, and new acquisitions to it are signalled in every newsletter.

In pursuing research in any area the AAU has tended to adopt a comparative approach by analysing experience across several countries with the object of formulating general principles and generating new ideas which can be translated into guidelines for executives, planners and teachers.

It is hoped that comparative Social Forestry data will gradually open up new insights, as gaps in current knowledge are highlighted. The research officer will organize her own research to address some of the problem areas, particularly those of most use to network members.

Definitions

The network is to be known as the Social Forestry network, for the reasons given here. It is recognised that many people are unhappy with the term, however, and has been fixed on only because it is more all-embracing than the alternatives.

'Social Forestry' seems to have been coined in India to denote tree-growing on private or public village land, rather than on State-owned land of various kinds. While villagers were to benefit from such schemes, the wood produced was destined for sale rather than subsistence use, and fast-growing exotics have, in consequence, been the most commonly used species. Wealthier farmers and areas have tended to be selected for programme participation. In India then, 'Social' forestry denotes that practised by the laity, the citizenry, rather than the State, and is fundamentally a land-tenure term.

Some, the World Bank included, have read 'Social Forestry' as Communal Forestry, logically excluding tree-planting by individuals. For them, Social Forestry also suggests that villagers may become more environmentally aware, or more 'community-minded' as a result of their participation in treeplanting projects.

Others again read 'Social Forestry' as implying forestry for village needs and village benefit. David Brokensha's definition of Social Forestry as, 'all local afforestation programmes that involve indigenous socio-economic institutions and values' is good of this kind.

For our purposes, the network needs to be able to address any of the following:

1. Household Forestry - treeplanting by a household around the homestead or on land it owns or uses, primarily for fuel, fodder, poles or fruit for its own benefit through consumption or sale.
2. Agroforestry - in ICRAF's definition: 'the interaction of crops and trees over space or time, with or without livestock'. A sub-category of 'household forestry' above.
3. Private Enterprise Forestry (sometimes known as farm forestry, which needlessly conflates 1 and 3) - treeplanting on private land as a cash-crop, for sale to industry or to towns for urban fuel supplies.
4. Community Forestry - communal planting: for the poor and landless; or because of the tenurial status of the land to be planted, such as wastelands, commons; of village woodlots; of strips and boundaries; for public works of local benefit such as the replanting of eroded slopes, the planting of windbreaks and dune-fixers.
5. Community Management - of larger forested areas, watersheds and uplands.
6. The Rights of Forest Dwellers - rights to tree use in particular circumstances.

The most commonly-used alternatives to the term Social Forestry are:

Community Forestry (which covers only 4 and 5 above), and

Farm and Village Forestry (which excludes some of 4 and all of 5 and 6)

The occasionally used Trees for People and People's Forestry have a cosy pseudo-socialist ring to them which takes us away from the reality of tree-planting in most situations.

So it seems we are left with Social Forestry. ODI's definition of this terms will henceforth be as follows:

Farm, Village or Community-Level Forestry, by or
for Small Farmers and the Landless

Its definition of forestry includes both treeplanting and tree-management.

Network Priorities

We are keen to hear your views on priority issues to which the network should address itself. The enclosed papers make some suggestions, but project holders and practitioners will have their own opinions. We are also seeking written contributions from networkers. The network will publish several full length papers per year. But it is also happy to publish shorter accounts, of particular experiences in the Newsletter. Accounts of unintended consequences, mistakes, disasters are almost more valuable than success stories: much of the learning that has gone on in Social Forestry has been learning from errors.

We would like to publish questions from networkers, in the hope that networking colleagues can send answers or comments. When our mailing

list is fully computerized, we shall be able to ask particular networkers for their comments as well.

Finally, it has been the custom in the other ODI networks, for networkers to send in comments, if wished, on papers published by the network. Lively debates have at times been engendered.

The unique character of ODI networks has always been that networkers have contributions to make and are not merely the passive recipients of newsletters and published material. Reports of work-in-progress are particularly desired by other networkers.

The Mailing List

We enclose a form which we hope you will complete and return, if you would like to join the Social Forestry network. If you have colleagues who have an interest in this subject or know of other people working in your country or region who might be able to contribute to the network, we would be grateful for their names and addresses.

You may wonder how we obtained your name and address. Some people were suggested to us by others. The Environmental Liaison Centre and ICRAF in Nairobi have kindly allowed us to search their own mailing lists for contacts, and participants at recent relevant conferences have been contacted. This first mailing is thus a trial mailing. Some people contacted will not wish to join the network; others whom we do not yet know of would be very interested to do so.

We shall assume you are not interested in future mailings unless we receive your completed application form, but we hope very much to hear from you.

In 1986, we shall publish a register of Social Forestry network members based on their completed forms. Networkers will then be in possession of basic details about 500 or more colleagues, among whom they can identify those with interests that match on their own, or seek out those whose experience they would like to draw on.

Lunchtime Meetings

A meeting was held on 4th September 1985 at which Ann Shrosbree and Bill Hamblett, of SOS Sahel International gave a talk entitled Puppets as an extension tool in village forestry work in the Northern Sudan, and demonstrated the marvellous mobile puppet show they have created. The following is a summary of their talk:

The Irrigated farming land of Nile Province, an important food producing area, is severely threatened by the spread of the desert. The British Committee of SOS Sahel International has undertaken to fund and manage a community forestry scheme covering some 48 Nileside villages. The project aims to establish village and backyard nurseries and to encourage farmers to grow windbreaks of productive trees (for fuel, fodder etc) to protect crops from desert winds.

As part of this project the Committee is funding a mobile puppet show for use in village extension work. The puppet show, using archetypes from Sudanese folklore, mixes education with entertainment in a way that reaches the whole community - men, women and children - rather than a few carefully chosen farmers. The centre piece is a play about man-made desertification and the environmental and economic benefits of tree-planting.

A Pastoral Development Network lunchtime meeting was held in July 1985 at ODI on the subject of common grazing land. The paper given - which was commissioned by ODI as part of its Common Property Resources Programme was subsequently published as Pastoral Development Network Paper No 20f: Roy Behnke. The Dynamics of Open Range Management and Property Rights in Pastoral Africa, August 1985. Copies may be obtained by writing to the Pastoral Development Network, ODI.

The following is a summary of his paper:

The privatization of communal grazing land is an increasingly common phenomenon in arid and semi-arid Africa. This paper discusses an economic theory of the evolution of property rights which in large measure explains both the structure of customary tenure systems and the way these systems change. The theory is examined using

ethnographic material on two different pastoral tenure and land use systems. Among the Bedouin of Eastern Libya, the degree to which a particular resource is privately or exclusively controlled is a direct reflection of the value of the resource relative to the difficulties of maintaining control over it. Among the Baggara agro-pastoralists of the Western Sudan, a contemporary range enclosure movement can be viewed as a response to the changing commercial value of the range and the problems of heavy stocking. In the main, both the customary tenure system of the Bedouin and current changes among the Baggara conform to prior theoretical expectations. Finally, there is a discussion of the implications of this theory for the design of future policy on livestock development and range management.

OTHER NETWORKS

In addition to the new Social Forestry Network, the Agricultural Administration Unit of ODI runs three other networks, on Agricultural Administration, Pastoral Development and Irrigation Management. All are concerned with providing improved guidelines for decision-makers in their field through the ingathering and synthesis of individual networkers' research and experience. The most recent publications of the Networks are:

Agricultural Administration Network

Discussion Paper No 14. Gershon Feder, Roger Slade and Anant Sundaram. 'The training and visit Extension System: An Analysis of operations and effects'. March 1985 (18pp)

Pastoral Development Network

Series 20, August 1985

Paper 20b Mohamed A Mohamed Salih. 'Pastoralists in Town: Some Recent Trends in Pastoralism in the North West of Omdurman District' (19pp)

Paper 20c Ann Waters-Bayer. 'Dairying by Settled Fulani Women in Central Nigeria and Some Implications for Dairy Development' (23pp)

Paper 20d Chimah Ezeomah. 'Land Tenure Constraints Associated with some Recent Experiments to Bring Formal Education to Nomadic Fulani in Nigeria' (18pp)

Paper 20e Michael Hubbard and J. Stephen Morrison. 'Current Issues in Cattle Pricing and Marketing in Botswana' (8pp)

Irrigation Management Network

Series 11, May 1985

Paper 11b David Seckler. 'The management of padi irrigation systems - A debate' (17pp)

Paper 11c Max Lowdermilk. 'Improved irrigation management: Why involve farmers?' (12pp)

Paper 11d Tushaar Shah. 'Transforming ground water markets into powerful instruments of small farmer development: Lessons from the Punjab, Uttar Pradesh and Gujarat' (14pp)

Paper 11e Mary Tiffen (ed) 'Cost recovery and water tariffs: A discussion' (11pp)

Briefing Papers

The ODI also publishes 4000 word Briefing Papers on development issues of general interest. Recent titles include:

'Fisheries and the Third World', 1984

'The World Bank: Rethinking its role', 1984

'Africa's food Crisis', 1985

'Protecting Workers in the Third World', 1985

'Industrialisation in Africa', 1985

The FAO Community Forestry Newsletter

We were informed some months ago that FAO is planning to start a Community Forestry Newsletter and had discussions with those concerned to clarify the likely relationship between the ODI Network and the FAO Newsletter. It seems that the FAO Newsletter will complement ODI's work well, since its target audience is primarily field staff and extension workers, while ODI's Network is concerned more with decision-makers, project officers and researchers.

Details of the FAO Newsletter can be obtained from:

Dr. Marilyn Hoskins, Community Forestry Officer, Policy and Planning Service, Forestry Department, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

NEWS OF PAST CONFERENCES

'People and Forests' a Ford Foundation meeting on Social Forestry and Agro-Forestry Naro Moru, Kenya, 20-22 March 1985

On March 20-22, 1985 the Foundation held a small internal meeting on social forestry and agro-forestry. For the purpose of the meeting, social forestry was understood to mean farm and village level forestry by and/or for small farmers and the landless, and agro-forestry a land use system in which trees, shrubs, and other woody perennials are grown on land used for the production of agricultural crops and/or animals.

The purpose of the meeting was to permit Foundation staff and colleagues active in this field to review accomplishments to date, exchange ideas and experience, examine ways in which collective experience might be used to increase program effectiveness, and exchange views on actions which offer particular opportunities for future Foundation support. During the summing-up session, four subjects were chosen for discussion:

- Activities of other funding organisations, and comparative advantage of the Ford Foundation;
- Economic analyses of social forestry and agro-forestry programs;
- Common property and range management issues; and
- Comparative cross-country studies.

Copies of the Workshop Report, People and Forests, are available from:

Rural Poverty and Resources Program, The Ford Foundation, 320 East 43rd Street, New York, N.Y. 10017, USA.

International Consultative Workshop on Tenure Issues in Agroforestry. Organised by ICRAF and the Land Tenure Center. Sponsored by the Ford Foundation. Nairobi, Duduville Centre, 27-31 May, 1985

Discussion Papers distributed prior to the meeting were:

James Riddell, 'Land Tenure and Agroforestry'

Louise Fortmann, 'Tree Tenure: An Analytical Framework for Agroforestry Projects'

John Raintree, 'Agroforestry, Tropical Land Use and Tenure'

J Bruce and R Noronha, 'Land Tenure Issues in the Forestry and Agroforestry Contexts'

The workshop's task was to formulate a priority agenda for research and development action, on the basis of the topics addressed. The most interesting points to emerge were as follows:

1. Both donor agencies and Government departments have paid too little attention to land tenure. They have worked with too simplified a model, or have assumed that tenure patterns can be easily changed to fit the needs of a particular project. Experience has shown that tenure constraints cannot be side stepped.

Tenurial data needs to be collected with care in the project areas before any specific project starts. The conference taught what a great diversity of types of tenure there was to be found, often even within a single country.

2. It became clear that that security of tenure was an absolute prerequisite for tree planting. Individual titles led to increased treeplanting in Kenya. Sharecroppers will plant trees if they have secure contracts.
3. We learned that, where relatively newly-instituted statutory law, and longstanding customary law exist side by side in a country, local-level court judgements are very often more shaped by the latter than the former; while outsiders attempting to institute treeplanting in the area may be working with the statutory legal models in their heads. Since customary law often has the greater moral force, it is vital to understand both systems and to try to fit tree-planting into them in such a way that neither set of laws are violated.

4. The conference threw up several examples of laws which had had to be repealed, or ought to be repealed. Forest dwellers in the Philippines had fought with success for stewardship rights in the forest instead of banishment from it; several country case-histories showed the difficulties inherent in systems where the State (parts of Asia) or the Military (Central America) arrogated rights over all forest (defined as all trees) to itself. Incentives for individuals to plant trees, even on their own land, in such situations, stood at zero. Where usufruct rights over the collecting of dead wood etc in State forests had been extinguished, environmental degradation in the area invariably proceeded apace, as other more desperate solutions were sought by people.
5. Tree tenure, as distinct from land tenure, was examined as a possible way forward. But it was clear that there were few prospects for the future here. The tree tenure arrangements found in Africa, traditionally, succeeded because land was so plentiful that it had essentially no value, except for that which it acquired through an endowment of trees.
6. The tenure problems of pastoralists, women, the landless and the near-landless, and forest dwellers including swidden farmers, were discussed, and were felt to be among the most important problems which future research and development must address. Again, usufruct rights need to be strengthened if possible.
7. It was felt that more research was needed into the best technical, social and tenurial situations for agro-forestry. Participants were worried that agro-forestry tended to be a solution in search of a problem.
8. There was a strong desire for better evaluation of projects from the point of view of their effects on local land tenure arrangements, as well as on ecology and farmers' livelihoods.

9. There was much discussion of the likeliest successful Institutional/ Ministerial framework for Social Forestry and Agroforestry. Many felt that forestry activities should be found in more than one Ministry, or that, as in East Africa, interministerial committees should become more common. It was strongly suggested that social scientists with land tenure experience should be employed in any Ministry involved with Forestry.

Environmental Crisis in Africa: ecology versus political economy, Department of Anthropology, University College, London, September 18th, 1985.

The symposium was attended by well over 100 people. Papers delivered included the following topics: problems of definition of drought and an assessment of its reputed causes; the cyclical incidence of concern about ecological degradation in developing countries; and the dynamics of ecological degradation and linkages to social, economic and political factors. The most important conclusion to emerge from the symposium was that a wealth of information is locked in the minds of villagers and researchers in both the hard and soft sciences. Hence it was crucial for people working in these fields to communicate with each other. A report of the proceedings would be extremely useful to anyone working in the development field and can be obtained from: Dr Paul Richards, Department of Anthropology, University College, London University, Gower Street, London WC1, UK.

Workshop on Third World Energy Policy Formulation and Implementation, Institute of Development Studies, University of Sussex, September 27th, 1985.

This workshop was the third in a planned series of four and attended by about 50 people. At this meeting papers given covered the results of village level surveys, national energy studies and the experience of the World Bank/UNDP energy projects. Discussion often centred on the importance of dialogue between economists and engineers, which in

practice was generally lacking. An additional element was the importance of taking into account a number of non-energy factors in energy policy work, eg energy institutions of developing countries and political as well as economic considerations since villages (or urban areas) do not comprise a 'community' where all have the same interests or problems. Details of the final meeting can be obtained from:

Dr. Peter Pearson or Dr. Paul Stevens, Surrey Energy Economics Centre, Department of Economics, University of Surrey, Guildford, Surrey GU2 5XH, UK.

FUTURE CONFERENCES AND EVENTS OF INTEREST TO THOSE INVOLVED IN SOCIAL FORESTRY

The Environment and Policy Institute of the East-West Center, Honolulu, Hawaii is to hold a workshop from March 17th-21st 1986, entitled Strategies for Improving the Effectiveness of Asia-Pacific Forestry Research for Sustainable Development

Those interested should contact Lawrence Hamilton, Napoleon Vergara or Allen Landgrew at:

The East West Centre, 1777 East West Road, Honolulu, HI 96848, USA.

as soon as possible.

Gill Shepherd, the Network Editor, would be grateful for notice of future conferences, workshops, etc for inclusion in future newsletters.

PUBLICATIONS

The World Bank has just published a book, edited by Michael Cernea entitled:

Putting People First: Sociological Variables in Rural Development,
Oxford:Oxford University Press, 1985.

In addition, to an introduction by Cernea, 'Sociological Knowledge for Development Projects' it contains the following articles:

E. Walter Coward Jr. 'Technical and Social Change in Currently Irrigated Regions: Rules, Roles, and Rehabilitation'

Benjamin U. Bagadion and Frances F. Korten. 'Developing Irrigators' Organisations: A learning Process Approach'

David M. Freeman and Max L. Lowdermilk. 'Middle-level Organizational Linkages in Irrigation Projects'

Thayer Scudder. 'A Sociological Framework for the Analysis of New Land Settlements'

Neville Dyson-Hudson. 'Pastoral Production Systems and Livestock Development Projects: An East African Perspective'

Richard B. Pollnac. 'Social and Cultural Characteristics in Small-scale Fishery Development'

Raymond Noronha and John S. Spears. 'Sociological Variables of Forestry Project Design'

Michael M. Cernea. 'Alternative Units of Social Organization Sustaining Afforestation Strategies'

Cynthia C. Cook. 'Social Analysis in Rural Road Projects'

Conrad Phillip Kottak. 'When People Don't Come First: Some Sociological Lessons from Completed Projects'

Norman Uphoff. 'Fitting Projects to People'

Robert Chambers. 'Shortcut Methods of Gathering Social Information for Rural Development Projects'

Recent Acquisitions to the AAU Library

This list excludes, articles available in international journals such as Unasylva, Agroforestry Systems, Managing International Development etc. However, we are happy to print an annotated bibliography of the key articles from such journals which deal with Social Forestry, if network members so request. Such a bibliography could go into the next newsletter.

The list here also excludes reports and manuscripts with restricted circulation. These are available for reading in the AAU library of the OOI, however.

SELECTED BIBLIOGRAPHY (1980-1985 only)

Advisory Committee on Technology: Innovations in Tropical Reforestation: Casuarinas: Nitrogen Fixing Trees for Adverse Sites, Washington:National Academy Press, 1984.

Agricultural Development Council: Asian Regional Program in Renewable Resource Management (revised proposal presented to the International Development Research Centre), 1984, 18pp, (typescript).

Appleton, Nathaniel S : Some considerations for Agro-Silviculture Development in the Shifting Cultivation areas of Liberia (paper presented), International Workshop on Shifting Cultivation, Nigeria, July 4-11, 1982, 23pp, (typescript).

Bajracharya, Deepak: Fuel, Food or Forest? Dilemmas in a Nepali Village, Honolulu:East West Centre, 1983. Resource Systems Institute Working Paper Series.

Bartolucci, Ivan Jorge and Lepape, Marie-Claire: Plan National D'Action pour Lutter Contre la Degradation du Milieu Naturel en Guinee-Bissau, Paris:UNESCO, 1984. UNSO Technical Report.

Baumer, Michael: 'Integration par l'agroforesterie de l'agriculture, de l'elevage et des forêts dans les regions arides et semi-arides', International Conference, Thessalonika, August 27-31, 1984, in Policy Analysis for Forestry Development Vol 1, ICAR, 1984:ICRAF, pp489-497.

Baumer, Michael: 'Les terres a pâturage en zone aride: reflexions pour un aménagement du milieu', in Foret Mediterranéen Vol 2, 1983, pp173-183.

Beets, Willem C : Aspects of Traditional Farming Systems in Relation to Integrated Pest Management, Nairobi:ICRAF, 1984. Working Paper No 21.

Belo, T B : 'Rural Fuelwood and Poles Research Project in Malawi'. Workshop on Planning Fuelwood Projects, Lilongwe, November 12-13, 1984.

- Ben Salem, B and Palmberg, C : Place and Role of Trees and Shrubs in Dry Areas (paper presented), Kew International Conference on Economic Plants for Arid Lands, 1984, 11pp, (typescript).
- Bentley, William R : Agroforestry: A Strategy for Research and Action in India (paper presented), Agricultural Development Council meeting, Srinagar, April 19-20, 1985. Delhi:Ford Foundation, Discussion Paper No 17.
- Bentley, William R : 'Comments on Bangladesh Forestry Sector Third Five-Year-Plan' (draft) 1984:Ford Foundation.
- Bentley, William R : 'Forestry research, education and extension in India' (report prepared for the Asia Society as part of a contract with the United States Agency for International Development on Forestry in Asia), 1982, 30pp, (typescript).
- Bentley, William R : Forestry Research to Serve the Rural Poor: Efficiency and Distributional Criteria in Design of Tree Crop Systems, Delhi:Ford Foundation, 1984, Discussion Paper No 13.
- Bentley, William R : Future Forest Design: Economic aspects, IUFRO Conference 'Attributes of Trees as Crop Plants' Scotland, July 16-21, 1984, 26pp + figs, (typescript).
- Bentley, William R : The Uncultivated Half of India: Problems and Possible Solutions, New Delhi:Ford Foundation, 1984, Discussion Paper No 12.
- Bentley, W R; Chambers, R C and Ghildyal, B P : 'Agroforestry: a complex system for resource-poor farmers', in Agroforestry Systems: A New Challenge, New Delhi:Ford Foundation, 1985, pp29-34.
- Bentley, W R; Singh, G B and Chatterjee, N : 'Tenure and Agroforestry Potentials in India', 1985, 9pp, (typescript).
- Boerboom, J H A and Wiersum, K F : 'Human impact on moist tropical forest vegetation', in Holzner et al (eds), Man's Impact on Vegetation, The Hague:W Junk, 1982.

- Bremmer, J et al : Fragile Lands: A Theme Paper on Problems, Issues and Approaches for Development of Humid Tropical Lowlands and Steep Slopes in the Latin-America Region, (prepared under contract for USAID) Washington:Development Alternatives Inc, 1984.
- Bromley, D W : Economic Issues in Forestry as a Development Program in Asia (paper presented), USAID and the Asia Society Conference on Forestry and Development in Asia, Bangalore, April 19-23, 1982, 20pp, (mimeo).
- Budowski, G : Applicability of Agroforestry Systems (proceedings), Workshop on Agroforestry, Ibadan, Nigeria. Tokyo:UNU 1982.
- Burch, William R : 'The Human factors affecting forestry/fuelwood projects: an agenda for research and development' (an interpretation of discussion at a workshop), 1984, 98pp, (typescript).
- Bureau of Applied Research in Anthropology : 'Agroforestry: seeing farmers through the trees', in Culture and Agriculture No.22, 1984.
- Byron, Neil : 'People's forestry: a novel perspective of forestry in Bangladesh', AZDAB News, March-April, 1984, pp28-35.
- Carlowitz, Peter G von : The Role of Multipurpose Trees in Farming Systems (paper prepared), FAO Workshop on Planning Fuelwood Projects, Lilongwe, November 12-30, 1984, 16pp, (typescript).
- Cernea, Michael M : Land Tenure Systems and Social Implications of Forestry Development Programs, Washington:World Bank, 1981, Staff Working Paper No 452.
- Chambers, Robert : To the Hands of the Poor: Water, Trees and Land, Institute of Economic Growth Silver Jubilee National Seminar Programme, New Delhi, April 27-30, 1984. Ford Foundation Discussion Paper No 14.
- Chowdhry, Kamla : Agroforestry: The Rural Poor and Institutional Structures (paper presented), Workshop on Agroforestry, Freiburg, May 31-June 5, 1982, 17pp, (typescript).

- Chowdhry, Kamla : 'The Greening of India', in The Indian Express, December 21, 1982.
- Chowdhry, Kamla : Schools as Partners in Social Forestry, New Delhi:Ford Foundation 1983, Discussion Paper No 11.
- Chowdhry, Kamla : Social Forestry and the Rural Poor, New Delhi:Ford Foundation 1983, Discussion Paper No 10.
- Christophersen, K A et al : 'Response of international donors to forestry problems in developing countries', in Journal of Forestry, April 1982, pp235-254.
- Commander, Simon : 'A monitoring and evaluation system for Projects INDIA 2683, 2684 and 2685: socio economic development through forestry activities in Bihar, Madhya Pradesh and Orissa', 1984:ODI, 100pp, (mimeo).
- De'Ath, Colin : The Throwaway People: Social Impact of the Gogol Timber Project, Madang Province, Papua New Guinea:Institute of Applied Social and Economic Research, 1980.
- Doran, J C et al : Handbook on seeds of dry-zone acacias: a guide for collecting, extracting, cleaning and storing the seed for treatment to promote germination of dry zone accacias, Rome:FAO 1983.
- Earl, D E : 'Rainforest conversion: when cheap may be costly', in World Wood, December 1982, pp22-23.
- El Hadji, Mbara Sene : La Participation des Populations au Developpment Forestier au Senegal, 1985:FAO, 25pp, (typescript).
- FAO: The Contribution of Small-Scale Forest-Based Processing Enterprises to Rural Non-Farm Employment and Income in Selected Developing Countries, Rome:FAO, 1985.
- FAO: Evaluation of a Gujerat Social Forestry Programme, Public Administration/Rural Development, Rome:FAO, 1984.
- FAO: Food and Fruit Bearing Forest Species, Examples from East Africa, Rome:FAO, 1983, Forestry Paper 44/1.

- FAO: Forest Administration for Development papers, FAO/SIDA Consultation on Forest Administration for Development, Rome, February 2-11, 1983.
- FAO: Forestry for Development, Rome:FAO, 1982.
- FAO: Forestry in China, Rome:FAO, 1982, Forestry Paper 35.
- FAO: Forestry Schools (in English, French and Spanish), Rome:FAO, 1981.
- FAO: Fruit-Bearing Forest Trees, Rome:FAO, 1982, Forestry Paper 34.
- FAO: Improved Production Systems as an Alternative to Shifting Cultivation, Rome:FAO 1984, Soils Bulletin No 53.
- FAO: Incentives for Community Involvement in Forestry and Conservation (programme report on the study tour 2-23 March, 1980), Rome:FAO, 1980.
- FAO: People in Forestry in Zambia (report of FAO Consultancy: Stuart A Marks and Richard D Robbins consultants), 1984, 88pp, (typescript).
- FAO Report: Seminar on Forestry in Rural Community Development, Chiang Mai, Thailand, December 3-15, 1979, Rome:FAO, 1980.
- FAO Report: Sixth Session of the Committee on Forestry Rome:FAO, 1985.
- FAO Report: FAO/SIDA Seminar on Forestry Extension, Semarang, Indonesia, January 18-30, 1982, Rome:FAO.
- FAO Report of an Expert Consultation on Education, Training and Extension for Shifting Cultivation in Developing Countries, (includes articles by Clare Oxby on research findings on socio-economic aspects of shifting cultivation in Africa), Rome:FAO, 1984.
- FAO Simple Technologies for Charcoal Making, Rome:FAO, Forestry Paper No 41, 1983.
- FAO: Tree Growing by Rural People: review draft prepared for the 7th FAO/SIDA expert consultation on Forestry for Local Community Development, Rome, March 18-20, 1985, 109pp + bib, (mimeo).

- FAO: Village Forestry Development in the Republic of Korea: A Case Study, Rome:FAO, 1982, SIDA/FAO Forestry for Local Community Development Programme.
- FAO: Wood for Energy, Rome:FAO, Forestry Topics Report No 1, 1985.
- FAO/SIDA: Forest Administration for Development (papers for FAO/SIDA Consultation on Forest Administration for Development, Rome, 2-11 February 1983).
- FAO/UNEP: Projet D'Evaluation Des Ressources Forestières Tropicales - Les Ressources Forestières De L'Afrique Tropicale, Rome:FAO, 1981.
- Ffolliot, P F and Thames, J L : Collecting, Handling, Storage and Pre-treatment of Prosopis Seeds in Latin America, Rome:FAO, 1983.
- Fleuret, A : Factors Affecting Fuelwood use in Taita, Kenya (paper presented), African Studies Association Meeting, Boston, December 1983, 10pp, (typescript).
- Fleury, Jean Marc : 'Trees take to the fields', IDRC Reports 14:1, 1985, pp18-19.
- Foley, Gerald : Social Forestry and the Fuelwood Crisis, USAID Officers Training Course, Brookhaven June 21, FAO/USAID, 1984, (typescript).
- Foley, G and Barnard, G : Farm and Community Forestry, IIED/Earthscan Energy Information Programme, Technical Report No 3, IIED/London, 1984.
- Foley, Gerald; Moss, Patricia and Timberlake, Lloyd : Stoves and Trees: How Much Wood Would a Woodstove Save if a Woodstove Could Save Wood? London:IIED, 1984.
- Ford Foundation : People and Forests (report), Ford Foundation Meeting on Social Forestry and Agroforestry, Naro Moru, March 20-22, 1985, New York:Ford Foundation.
- Fortmann, Louise; Riddell, James et al : 'Land tenure issues in agroforestry: introduction to an annotated bibliography', (draft), Land Tenure Centre, 1983.

Fortmann, Louise; Riddell, James et al : Trees and Tree Tenure: An Annotated Bibliography, USA:University of Wisconsin Nairobi:ICRAF, 1985.

Gielen, Hans : Report on an Agroforestry Survey in Three Villages of Northern Machakos, Kenya, Nairobi:ICRAF, Netherlands:Wageningen Agricultural University, 1982.

Gill, Jas : 'Fuelwood and stoves: lessons from Zimbabwe', Proc. Indian Acad. Sci (Eng Sci), Vol 6(1), 1983, pp79-94.

Gill, Jas : 'Fuelwood and stoves in Zimbabwe: a system in change' (paper presented), 2nd EC Conference 'Energy from Biomass', West Berlin, September 20-23, 1982, 5pp, (mimeo).

Gullick, A : 'Suggested approaches for CADA initiatives in fuelwood production', 1980, 30pp, (typescript).

Gupta, Anil K : Land Use Planning for the Tropics, Training Workshop, January 28-February 4, 1984, London:Commonwealth Secretariat.

Gwynne, M D; Torres, C B and Croze, H J : 'Tropical forest: extent and changes', Adv Space Res Vol 2 No 8, 1983, pp81-89.

Hall, D O and Coombs, J : 'Biomass production in agroforestry for fuels and wood', in Huxley (ed) Plant Research and Agroforestry, Nairobi:ICRAF, 1983, pp137-157.

Hall, D O and DaSilva, E J : 'Photosynthesis: a bio-solar tool for development', Nature and Resources Vol XIX No 2, 1983, pp2-9.

Hall, J B et al : Mafiga Experimental Programme 1983 Review, Dar Es Salaam University, Division of Forestry, 1983.

Herrera, R; Jordan, C F et al : 'How human activities disturb the nutrient cycles of a tropical rainforest in Amazonia', AMBIO, Vol X No 2-3, 1981, pp109-114.

Hoekstra, Dirk A : Choosing the Discount Rate for Analysing Agroforestry Systems/Technologies From a Farmer's Point of View, Nairobi:ICRAF, 1983, Working Paper No 9.

- Hoekstra, Dirk A and Gelder, A van : Annotated Bibliography of Economic Analysis of Agroforestry Systems/Technologies, Nairobi:ICRAF, 1983. ICRAF/Beijer Institute Working Paper No 10.
- Hoekstra, Dirk A et al : Agroforestry Systems for the Semi-Arid Areas of Machakos District, Kenya, Nairobi:ICRAF, 1984. Case Studies in Agroforestry Diagnosis and Design No 3.
- Hoskins, Marilyn : 'Rural women, forestry outposts and forestry projects', 1983, 27pp, (typescript).
- Horowitz, M and Badi, K : Sudan: Introduction of Forestry Grazing Systems, Rome:FAO, 1981. FAO/SIDA Forestry for Local Community Development Programme.
- Houerou, H N Le (ed) : Browse in Africa: The Current State of Knowledge (papers presented), International Symposium on Browse in Africa, Addis Ababa, April 8-12, 1980. Addis:ILCA, 1980.
- Hughes, Francine : 'Fuelwood needs on irrigation schemes: the case of the Bura Irrigation Settlement Project, Kenya', Downing College, Cambridge, 1983, (typescript).
- Huxley, P : The Tree Crop Interface: Simplifying the Biological/Environmental Study of Mixed Cropping Agroforestry Systems, ICRAF Working Paper No 13, 1983, 19pp, (mimeo).
- Huxley, Peter A : Systematic Designs for Field Experimentation With Multipurpose Trees', ICRAF Working Paper No 12, 1983, 5pp + app, (mimeo).
- Hyman, Eric L : 'Forestry administration and policies in the Philippines', Environmental Management Vol 7(6), 1983, pp511-523.
- Hyman, Eric L : The Monitoring and Evaluation of Social Forestry Projects: A Handbook, 1983, 100 pp, (typescript).
- Hyman E L and Ross-Sheriff, B : 'Improving professional and technical education in tropical forestry through development assistance', Managing International Development Vol 1(6), 1984, pp65-76.

ICRAF: Report of the joint ICAR/ICRAF diagnostic and design exercise at the Bhaintan Watershed in the Outer Himalaya of Uttar Pradesh, (draft), 1984, 78pp.

ICRAF: Resources for Agroforestry Diagnosis and Design: A Handbook of Useful Tools and Materials, (draft), ICRAF Working Paper No 7, 1983, 383pp. Diagnostic and Design Methodology Manual Series No 2.

IFAD: Special Programme for Sub-Saharan African Countries Affected By Drought and Desertification, (extracts from documents presented to IFAD Executive Board, April 1985, and Special Session of the Executive Board, May 1985), Rome:IFAD, 1985.

India: Choice of Tree Species for Wastelands of India (proceedings of a panel discussion), International Congress of Genetics, New Delhi, Society of Wastelands Development:1981, 38pp, (typescript).

Institute for Development Anthropology: A Reader for the Workshop on Planning Fuelwood Projects (prepared for FAO by the Institute for Development Anthropology, Binghampton:New York), Rome:FAO, 1984.

IVES, J D; Sabhasri, S and Voraurai, P : Conservation and Development in Northern Thailand, Programmatic Workshop on Agroforestry and Highland-Lowland Interactive Systems, Thailand November 13-17 1978, Tokyo:UNU.

Joshi, Deep; Seckler, David and Jain, B C : Social Forestry, Wood Gasifiers and Irrigation: a Synergistic Relationship, New Delhi:Ford Foundation, Discussion Paper No 3, 1983.

Kamara, James N : Energy for Rural Households and the Urban Poor: A Case from Sierra Leone (paper presented), Workshop on Energiebedarf für die Nahrungsmittelherzeugung in Entwicklungsländern, Witzenhausen, July 2-4, 1984, 33pp + app, (typescript).

Kamwet, David : Tree Planting in Africa South of the Sahara, Nairobi:Environmental Liaison Centre, 1982.

Khosla, P K : 'Role of agroforestry - A case history from Himachal Pradesh', 1984, 18pp, (typescript).

Kinong, Chen : 'Turning deserts into fertile fields', China Reconstructs Vol XXIX No 7, 1980, pp50-51.

Kundu, Manasendu and Hewlett, Barry : 'Fuelwood, Agroforestry, and natural resource management: the development significance of land tenure and other resource management/utilization systems', Institute for Development Anthropology, 1984, 55pp + biblio, (typescript).

Lanly, Jean-Paul : Tropical Forest Resources, Rome:FAO, 1982. Forestry Paper No 30.

Mahiti Project: 'Promoting social afforestation of wastelands in the Bhal: a proposal for promoting village demonstration plantations and field trials on saline wastelands in the Bhal Region of Dhanduka Taluka, Gujarat'. (submitted to the Society for the Promotion of Wastelands Development by the Mahiti Team), 1983, 26pp, (typescript).

Malawi, Ministry of Forestry & Natural Resources, Energy Studies Unit: Malawi Smallholder Tree-Planting Survey, Lilongwe:Energy Studies Unit, 1982.

Malawi Rural Energy Survey, Lilongwe:Energy Studies Unit, 1984.

Malawi Urban Energy Survey, Lilongwe:Energy Studies Unit, 1984.

Mascarenhas, O A : 'Community forestry management: Progress Report September 1981-June 1983: A Ford Foundation Project', Xavier Labour Relations Institute/Ford Foundation, 1983, 180pp, (typescript).

Mascarenhas, O A : Social Forestry Projects of Bihar: A Socio-Economic Analysis (preface and appendix C), 1982:Xavier Labour Relations Institute.

Mitchell, A J B : Land Evaluation and Land Use Planning in Tabora Region UK:ODA, Land Resources Study No 35, 1984.

Montalembert, M R de and Clement, J : Fuelwood Supplies in the Developing Countries, Rome, FAO Forestry Paper 42, 1983.

- Mpinga, James. 'Ask the villagers first when it comes to trees', Ecoforum Vol 8(1), 1983, p5.
- Murray, Gerald F : 'The wood tree as a peasant cash-crop: an anthropological strategy for the domestication of energy', Haiti Today and Tomorrow: An Interdisciplinary Study, University Press of America, 1984, pp141-160.
- Nair, P K : Soil Productivity Aspects of Agroforestry, Nairobi:ICRAF, 1984.
- Nepal: Forestry:Nepal, Kathmandu, Agricultural Documentation Centre, Occasional Bibliography No 11, 1982.
- Nestel, B. (ed) : Agricultural Research for Development: Potentials and Challenges in Asia, Report of the conference 'Agricultural Research for Development: Potentials and Challenges in Asia', Jakarta, October 24-29, 1982. The Hague:ISNAR, 1983.
- National Academy of Sciences: Firewood Crops: shrub and tree species for energy production, Washington DC:NAS Vol 1 1980, Vol 2 1983.
- National Research Council: Ecological and management Considerations for Forested Lands: Ecological Aspects of Development in the Humid Tropics, Washington:National Academy Press, 1982.
- Nshubenuki, L and Mugasha, A G : 'The modifications to traditional shifting cultivation brought about by the forest development project in the Hado Area - Kondoa Tanzania', 1983, 60pp + bib + app, (typescript).
- O'Keefe, Phil and Munslow, Barry : 'Women's power', New Statesman, August 1984.
- Orr, Blair : Refugee Forestry in Somalia: The Step Plan Generates Community Involvement, USA:University of Wisconsin-Madison, Staff Paper No 12, 1985.
- Oxby, Clare : 'Alternatives and modifications to shifting cultivation in the use of forest land in Africa, with particular reference to

forestry aspects and acceptability to farmers', 1984, 55p + app, (typescript).

Poore, Duncan : 'World forests and wood - what future?', Royal Society of Arts Journal Vol CXXXIII No 5342, 1985, pp136-149.

Raintree, J B : Bioeconomic Considerations in the Design of Agroforestry Intercropping Systems, Nairobi:ICRAF, 1981.

Raintree J B : 'Conservation farming with multipurpose tree legumes: an underdeveloped branch of tropical agroforestry research', in Buck (ed) Proceedings of Kenya National Seminar on Agroforestry, Kenya:ICRAF, 1980, pp107-121.

Raintree, J B : 'Designing agroforestry systems for rural development:ICRAF's D&D approach', July 1984, 20pp, (typescript).

Raintree, J B : A Diagnostic Approach to Agroforestry Design, International Symposium on Strategies and Designs for Afforestation, Reforestation and Tree Planting: 'Let There be Forest', Wageningen, September 19-23, 1983, 28pp, (typescript).

Raintree, J B : Readings for a Socially Relevant Agroforestry (draft of paper presented), International Workshop on Professional Education in Agroforestry, Nairobi, December 6-10, 1982, 26pp, (typescript).

Raintree, J B : Resources for Agroforestry Diagnosis and Design: a Handbook of Useful Tools and Materials, Nairobi:ICRAF, Working Paper No 7, 1983.

Raintree, J B : A Systems Approach to Agroforestry Diagnosis and Design: ICRAF's Experience with an Interdisciplinary Methodology (paper prepared for presentation), VI World Congress for Rural Sociology, Working Session No 27: Interdisciplinary collaboration in Rural Development - Dream or Reality? Manila, December, 1984.

Ray, D : Rainwater Harvesting Project: A Selection of Socio-Economic Case Atudies (Vol 2: India) London:Wye College, 1984.

Riddell, James and Fortmann, Louise with Frazer, A. and Garcia-Pardo: Land Tenure Issues in Agroforestry, Wisconsin:Land Tenure Centre, 1983.

- Robinson, P J : 'Trees as fodder crops' in (eds) Cannell, Jackson and Gordon, Attributes of Trees as Crop Plants, UK:Institute of Terrestrial Ecology, 1984.
- Rocheleau, Dianne : Criteria for Reappraisal and Redesign: Intra-Household and Between Household Aspects of FSRE in Three Kenyan Agroforestry Projects, Annual Farming Systems Research and Extension Symposium, Kansas State University, October 7-10, 1984, 62pp, (typescript).
- Rocheleau, Dianne : Women, Trees and Tenure: Implications for Agroforestry Research and Development (background paper), International Workshop on Tenure Issues in Agroforestry, Nairobi, May 26-30, 1985, 39pp + bib, (typescript).
- Rocheleau, Dianne and Hoek, Annet van den : The Application of Ecosystems and Landscape Analysis in Agroforestry Diagnosis and Design: a Case Study from Kathama Sub-Location, Machakos District, Kenya, Nairobi:ICRAF, 1984, Working Paper No 11, Case Studies in Agroforestry Diagnosis and Design No 4.
- Rodriguez, P M : Course in Extension for Foresters in the Peruvian Sierra, Lima:Ministry of Agriculture, 1985.
- Romm, Jeff : 'The uncultivated half of India' (parts I & II), The Indian Forester, Vol 107(1) ppl-21 and Vol 107(2) pp69-83, 1981.
- Ruf, Francois : 'Ma forêt est finie où planter l'igname?', 1982, 20pp, (typescript).
- Sanwal, Mukal : 'Design of hill development: lessons from the plans of Uttar Pradesh and Himachal Pradesh', Economic and Political Weekly, Vol XVIII No 7, 1982, pp220-228.
- Satyanarayana, T; Bisaria, A K and Peter, Y J : 'A cooperative approach to social forestry', Kurukshetra, September, 1984.
- Schramm, Gunter : 'Integrated river basin planning in a holistic universe', Natural Resources Journal, Vol 20, 1980, pp787-806.

Seckler, David : 'Management of Social Forestry Programs: a prospectus draft', 1981, 9pp, (typescript).

Seth, S K : India and Sri Lanka Agroforestry, Rome:FAO, 1981.

Shah, S A : 'Social forestry - A vital production system', Indian Forester, 1984, pp1073-1076.

Shepherd, Gill : Social Forestry (a review paper prepared for the ODA), 1984, 40pp, (typescript).

Shiva, Vandana; Sharatchandra, H C and Bandyopadhyay, J : 'Social forestry - no solution within the Market', The Ecologist, Vol 12(4), 1982, pp158-168.

Singh, M K : 'Community forestry: its nature, problems and prospects', Xavier Community Forestry Management Silver Jubilee Symposium of the International Society for Tropical Ecology, Bhopal 5-10 October, 1981, 16pp, (typescript).

Slade, R H et al : An Operational Guide to the Monitoring and Evaluation of Social Forestry in India, (draft), 1984, 245pp.

Srivanappan : Watershed Planning Pugalur Watershed: Subwatersheds I and II Lower Bhavani River Basin, Coimbatore:Tamil Nadu Agricultural University, 1980.

Stewart, P et al : Forestry and Rural Development, Rome:FAO Forestry Paper No 26, 1981.

Sukwong, Somsak: Agroforestry Research Status and Needs in Thailand, Regional Workshop on Agroforestry Research and Development for Southeast Asia, Laguna, October 18-22, 1982, 10pp, (typescript).

Tucker, R P and Richards, J F (eds) : Global Deforestation and the Nineteenth Century World Economy (introduction), Durham, NC:Duke Press Policy Studies, 1983, ppxi-xviii.

United Nations Conference on New and Renewable Sources of Energy: 'Fuelwood or food? why not have both', (background documents received from NGOs), Nairobi, August 10-21 1981, (typescript).

- Upton, C W : Ruminating in the Shade: Profits from Grazing Under Pine at Punte Gazon, Costa Rica, (May-September 1983 and June-July 1984, including material used in a dissertation submitted in partial fulfilment of the MSc in Agric Econ, Univ of Reading), 1984, 115pp, (mimeo).
- Veer, C P : 'Management of Agroforestry: A selective annotated bibliography for educational purposes', 1981, 15pp, (typescript).
- Vergara, Napoleon T : 'Agroforestry as a watershed land use', AN Watershed Project, Workshop on Integrated Watershed Management, Hawaii 1985, 31pp, (typescript).
- Vergara, Napoleon T : Integral Agroforestry: A Potential Strategy For Stabilizing Shifting Cultivation and Sustaining Productivity of The Natural Environment, Honolulu:Environment and Policy Institute, 1981.
- VIKSAT : The Role of Voluntary Agencies in Wasteland Development, Seminar at VIKSAT, Nehru Foundation for Development, Ahmedabad October 11-13, 1984.
- Vohra, B B : The Greening of India, 1984, 8pp, (typescript).
- Weinstock, Joseph A : 'Getting the right feel for soil', The Ecologist, 1984, pp146-149.
- Weinstock, Joseph A : 'Rattan: ecological balance in a Borneo rainforest', Economic Botany, Vol 37 No 1, 1983, pp58-68.
- Weinstock, Joseph A : Social Organization and Traditional Agroecosystems, Hawaii:East West Centre, 1984. Environment and Policy Institute Working Paper Series.
- Westoby, Jack C : 'Halting tropical deforestation: the role of technology', 1982, 46pp, (typescript).
- Westoby, Jack C : Keynote Address, Foresters of Australia, 10th Triennial Conference, August 20-September 2, 1983.
- Wiersum, K F : Developing Strategies for Social Forestry: a Conceptual Approach, Honolulu:East West Centre, Environment and Policy

Institute Working Paper series, 1984.

Williams, Paula J : The Social Organisation of Firewood Procurement and Use in Africa: A Case Study of the Division of Labour By Sex. (DPhil Dissertation), University of Washington, 1983.

'When the forests disappear we will also disappear', Economic and Political Weekly, November 27, 1982 (by a special correspondent of EPW), pp1901-1902.

World Bank: India: Uttar Pradesh Social Forestry (925-IN) (mid-term mission report), 1983, 130pp, (typescript).

Woods, Bernard : Altering the Present Paradigm: A Different Path to Sustainable Development in the Rural Sector, Washington:World Bank, 1983.

Young, Anthony : An Environmental Data Base for Agroforestry, Nairobi:ICRAF, Working Paper No 5, 1983.

Zambia: Industrial Plantations Project II-1424 1981/82: Annual Report, Ministry of Lands and Natural Resources:Forest Department, 1982.

Zimmermann, R C : Environmental Impact of Forestry: Guidelines For Its Assessment in Developing Countries, Rome:FAO, Conservation Guide No 7, 1982.



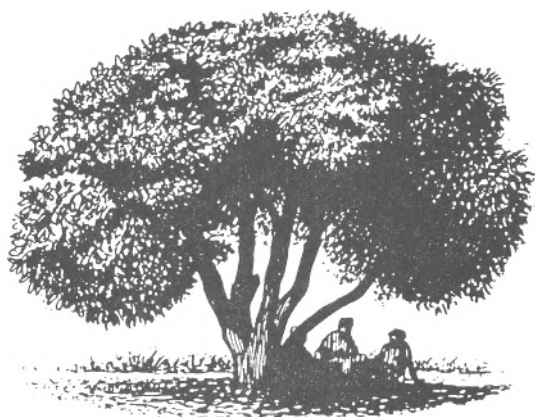
Agricultural Administration Unit

**Regent's College
Inner Circle
Regent's Park
London NW1 4NS**

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



SOCIAL FORESTRY IN 1985: LESSONS LEARNT AND TOPICS TO BE ADDRESSED

Gill Shepherd

Gill Shepherd is Social Forestry Research Officer, Agricultural
Administration Unit, Overseas Development Institute

SOCIAL FORESTRY IN 1985:
LESSONS LEARNED AND TOPICS TO BE ADDRESSED

Social forestry, as a term and as a type of project, has been with us now for about ten years. As a style of activity, on the other hand, it probably has a genealogy of two thousand years or more in some parts of the world. This over-view will confine itself to the first, more narrow definition of the subject, since it was only from this more recent flurry of activity that the Social Forestry network was born.

Social Forestry is proving more difficult to institute than was at first hoped. The desired marriage between willing foresters and willing villages for the growing of trees has been very difficult to arrange to the satisfaction of all parties.

Yet the reasons for dissatisfaction are becoming clearer as the same problems recur over and over in different geographical locations. Villagers' priorities and problems have not always been elicited; the village, and within that the household, have often not been sufficiently disaggregated, so that conflicting goals or exploitative relationships go unobserved. Foresters often lack the training for the human and social science skills which Social Forestry demands of them, since they have been taught to try to keep trees and people separate, and agriculture and trees separate. Villagers may be reluctant to grow trees, or to have trees planted on their behalf, for reasons which become obvious as they are teased out.

All in all, it is a good moment to look back at lessons learned, and forward to an investigation of the large number of knots still waiting to be untangled.

The paper will deal first with villagers, the givens of village life which must be understood before there is any hope of success in Social Forestry. It will then turn to foresters and the institutions they work for. Finally a section on suggested solutions will be put forward. Each section will set out a research agenda, and will try to indicate the topics on which there is now broad agreement.

VILLAGERS

Villages all over the Third World are experiencing changes of a similar kind. Wealth differentials within them are increasing; their old political and economic self-sufficiency has become a thing of the past, and they are increasingly dependent on authority structures, markets and employment opportunities over which they have little control, and whose loci of power are situated elsewhere.

The population growth rate is high in many places, so villages are going through other rapid social changes, too: increased pressure on local resources, increased out-migration perhaps. Such changes affect agriculture by intensifying production, or by withdrawing agricultural labour and making certain kinds of mechanisation more attractive.

It is into such changing social and physical landscapes that Social Forestry has to be fitted, if it is to succeed. But herein lies a central paradox: trees take five or ten years to mature yet who can say what the village will be like after such a period? What institutions will still endure? What commons, or pieces of wasteland, will still exist? It is only on the very strongest certainties that Social Forestry projects can be built.

This section examines the following as key village variables: land tenure; common property resources and wastelands; the sexual division of labour and the position of women; social stratification within the village; and the village level institutions which might be expected to handle tree-growing.

(i) Land tenure

The creation of tenure

Often first 'ownership' of land goes to those who first change its natural condition by clearing it (of bush or forest) or by planting trees on it (open savannah). The creation of some tenure rights through the investment of labour in land is reported in Africa, Asia and Latin America. The land ceases to be a common good, and passes into a secondary stage. In the Amazon it may now pass straight to private tenure, but the more common situation has been that it becomes part of the property of the group of which the individual clearer is a member. Valuable trees already on the land may be the prerogative of chief or king and the land itself reverts to the group when the individual dies or ceases to use it. Planting trees as 'tenure-markers' is widely practised, especially by shifting cultivators who plan to return to the land when its fertility has revived.

The formalizing of private tenure

Land tenure arrangements are progressively tightened everywhere as pressure upon the land increases. The pattern is as observable among Indian tribals as it is in the land adjudication and registration procedures which are now happening all over Africa.

At earlier points in the tenure process, the norm is for diverse use-rights of the same piece of land and no overall exclusive owner, though there is usually a major user. When land is registered, the major user takes all, and a plethora of secondary use-rights are extinguished, often to the detriment of the poorer members of society.

At the same time, the many types of tenure found under traditional systems often carry over to some extent into the post-adjudication period. Some tracts of land are designated tribal land or common land; local law-givers may continue to uphold some subsistence usufruct rights because of the moral force of customary law even when it no longer exists formally.

Security of tenure

As land itself becomes short, security of tenure becomes more important. No long-term activity - especially tree-planting - will be undertaken without it. Shadowy usufruct rights on others' land are too uncertain over the long term, so that tree tenure without land tenure gradually becomes an impossibility.

Areas where more understanding is needed

Many of the problems which have arisen over tree-planting have sprung from the difference between theoretical and actual land tenure arrangements in a particular site. Are these confusions the fault only of donors or government, or were villagers themselves unclear about the implications of tree planting, until it had happened? Are there cases of the successful maintenance or strengthening of usufruct rights, against the odds?

(ii) Common Property Resources

Some fruitful thinking has gone into the subject of Common Property Resources (CPRs) over the last year or so, particularly at the BOSTID conference held on the subject in Washington in Spring 1985. This section relies in part on papers written for that conference and reports by participants, and in part on ODI work on CPRs carried out this year (see the Newsletter for details). Since so many rural dwellers still depend, or expect to continue to depend, on CPRs, it is very important for planners to understand the peculiar fragility of these institutions. The outlook for their future is not promising.

The nature of CPRs

CPRs arise in areas of moderate demand for semi-available resources. Where resources are amply available, there is open access to a free good. Where they are very scarce, CPRs break down into private ownership. CPRs may be land, labour, water, wood, grazing etc.

CPRs should be understood as resources which only have meaning within a cultural group's particular management of them. The CPR draws its meaning from the nature of a relationship particular people have with one another. If this relationship has broken down, so has the CPR, even if the tract of land or water is still there.

CPRs are typically small in size. They might be particular areas of grazing in a desert environment, but not the whole desert itself. However, they are larger than the sort of resource a property-holding unit like an extended family might control.

The management of a CPR consists of regulation of the point where shared property such as water or wood becomes private property as it is taken for individual use. Ownership is often created by labor investments such as the chopping up of wood or the drawing of water from wells.

The reason for CPRs

Most societies choose to do certain activities - such as the growing of subsistence food, or the raising of children - as individual households. Why then regulate other resources in larger groups? What are the advantages?

In some cases, an economic activity, such as the herding of cattle or the provision of irrigation water, calls up social units larger than the household, who in turn manage communal resources needed for the activity. Even here, conflicts often occur and powerful mediators may be needed. But there are strong reasons to attempt resolution because vulnerability is greater alone than in a group. These are examples of highly complex CPR exploitation.

In other cases, the resource is actually exploited in a simpler, individual way. This tends to be true of the gathering of wood and bush or forest products including food, and of fishing. The CPR rules merely give permission for the members of particular groups to use the resource, and protect its sustainability with close seasons, bans on the cutting down of live trees, bans on particular fishing methods, etc. The rules are designed to ensure a resource in perpetuity, and to earmark it for a particular group. In this case, the agreement to share the resource gives everyone reasonable, though finite, amounts of products which would be far costlier in time or money to grow or buy.

The management of CPRs

A CPR must be managed by the people directly involved in using it. If it is not, then it effectively becomes something else. If CPRs become State land, for instance, as a protective measure, it is but a short step to government profiting from erstwhile CPRs itself.

Management systems for CPRs vary widely in detail, but probably all have in common the fact that powerful, senior individuals manage them on behalf of the broader community. Their incentive to do so justly, if it exists, grows out of the extent to which they need local goodwill to prosper.

Sanctions

It has to be assumed that individuals are tempted to break CPR rules whenever it is to their own advantage. Infringements test the effectiveness of the management system for the CPR and, if it is weak, destroy it. They also throw the nature of current CPR property rights into relief. Infringements may be noted disapprovingly by those whose rights are being imposed upon, but if they or their leaders are unable to impose sanctions on wrongdoers because they are weak and the wrongdoers are strong, then the rights are becoming a fiction, and the CPR is ceasing to exist.

Group use of a CPR - what a preceding section referred to as 'complex CPR exploitation' - is more difficult to organize, perhaps, but the incentives to succeed are high. CPRs which can be individually used, which invite 'simple CPR exploitation', would seem to be far more vulnerable.

CPRs should not, therefore, be lumped together: they vary in their nature and in their vulnerability according to the type of social organisation needed for their use.

Change and breakdown in CPRs

'The law pursues the man or woman
who steals the goose from off the common.
But lets the greater thief go loose
who steals the common from the goose'
(English folksong, 1820s, (about the enclosing of
common-lands)

CPRs function best where they are shared by individuals who are relatively socially undifferentiated. They also tend to endure in remote areas where District or State level power is weak, and truly local political power still flourishes.

But there are inexorable processes which tend to break down CPRs, and perhaps they should always be seen as a transitional stage between open access resources, and private property.

Firstly, when the value of the CPR rises, so does its vulnerability. Such a rise may be occasioned by population increases, increased land hunger, the creation of a market in CPR produce, or the introduction of technology (e.g. tractors) which makes it easy to cultivate more land.

Secondly, the greater the degree of wealth differentiation among members of a CPR-using group, the greater the likelihood that the CPR will change its nature.

Thirdly, the State tends increasingly to undermine the authority of local leaders in many countries. As the ability to enforce recognition of CPR rules fades, cheating and bad CPR use increases. Eventually wealthier individuals appropriate portions of the CPR unchecked.

Conclusions on CPRs

Many well-wishing outsiders would like to help CPRs to maintain or even improve upon their original function. They would like to see natural resources nurtured and sustained, or the poor given better rights through the use of CPRs.

This is an area in which much inventive thinking is required. If we define a CPR as "a resource held in balance by the equitable relationship with one another of its users", then plainly there is a problem. Natural resources are becoming degraded because the human balance has gone: the poor will only be allowed to keep control of a natural resource allotted to them until the altruistic development worker's back is turned. They will then be ousted from it as they were the first time. Their tenure is likely to be even more fleeting if the value of the resource has meanwhile been increased through tree planting.

Experience, comment and innovation is badly needed in this area. Can the poor be helped to defend CPRs against the rich, with the help of public concern, or not? Are their chances better under complex rather than simple CPR exploitation patterns? The ODI is continuing to pursue CPR issues within both its Pastoralism and its Social Forestry networks, and will report findings regularly. Contributions of any kind from this network would be of great value.

(iii) Wastelands

Wastelands are usually a category of CPR. They are mentioned separately here because they represent an important category of land in India at the present time.

Wastelands are hard for users to afforest for the usual CPR reason: weak rights only create a weak sense of duty. And any change which gets a wasteland planted with trees will also change its tenurial status. As the wastelands increase in value by virtue of the trees planted on them, wealthy villagers, or the State itself, will take a greater interest in them. Careful social engineering is required to make sure that such tree products pass to the poor.

Finally, some authors argue that Indian villagers want wastelands for grazing their cattle more than they want increased fuel supplies. Wasteland management which does not require an either/or choice might be the answer. Comments from those involved in wasteland development would be much valued.

(iv) Social stratification - the sexual division of labour

Women are doubly disadvantaged in many ways in the village situations we are examining. Firstly, they are almost always relatively poor. They have all the disadvantages that poor men experience - of weak land rights, a weak political voice, and poor access to benefits such as extension advice and credit. They may, as Kenyan women put it, be no more than "tenants on their husbands' land".

Secondly, the woman's economic sphere is distinct from the man's. In ideology, the two are complementary - agriculture for women and livestock for men, for instance; or gathering for women and hunting for men; or the subsistence economy and the cash economy. In practice there is tension between these overlapping but not congruous economies, for the male sphere always generates more wealth, more prestige, and more leisure. When external factors change the terms of trade between the two, the inequalities may become even more striking.

Women as poor people

Rural women work very long hours - 16-19 hours a day - on tasks which include a high degree of physical toil. They are occupied above all with the growing and harvesting of food crops and their transformation, with the help of fuelwood and water (which must also be collected) into sustenance for the family. Yet this fundamental task is rarely performed on land which women own. They may not have decision-making rights over land use - except that inside the compound - and they cannot use the land they farm as collateral for credit. They work as unpaid servants or poor relations.

While there are, of course, richer and poorer women, women as a category are overwhelmingly disadvantaged. For instance, at least a third of the world's households are headed by a woman, but these households tend to be clustered among the world's poorest households.

The women's economy

A persistent failure of donor agencies, and of Third World governments, has been their undervaluing of women's productive activities and their vagueness about what, and how much, women actually do. The assumption that their

time will be available for work on cashcrops their husbands are interested in, for instance, often betrays real ignorance about on- and off-farm subsistence activities and the amount of time they take up. On-farm activities usually proceed as a backdrop to cashcropping, and off-farm activities are likely to be completely invisible to husbands and extensionists alike. Yet often women's sole opportunities for income generation are to be found here. They may rely on forest products for basket and rope making; they may gather and sell woody products as fuel, medicine or food; they may collect roots in order to make and sell beer.

Any of these modest forms of economic independence come under threat as externals change. New technology or new demand for particular products may make men decide to farm more actively themselves, causing forest or bush areas to come under threat. A population increase may encourage men to register individual title to land, and if husbands and wives come into conflict about the crop to be grown on such land, or the destiny of trees growing upon it, the woman will find it hard to make her voice heard.

Alternatively, urban migration may become more common for men, and women may be unable to sustain subsistence agriculture because labour is unavailable for some key task such as terrace maintenance.

Conclusion

From the point of view of Social Forestry planners, the position of women, and the status of the women's economy, is important for three reasons. Women are the very category who have most to gain from tree-growing for subsistence purposes, and arguably for cash too. Yet it is they who are likely to lack the land and the labour to

allocate to the task. Secondly, it is often knowledge from inside the women's economy which foresters now need. It is they who are aware of the growing properties and the diverse uses of the trees they regularly gather from. It is only they who could explain what the losses will be in income and the abilities of households to sustain themselves, if bushland, commons, 'wastelands' or forest are turned over to the production of quick-growing, commercially valuable tree species. Thirdly, the fact that women cooperate for subsistence purposes with one another already, and tend to be far more permanent village residents than their husbands, means that they often constitute the very categories of villager that Social Forestry projects could most rely on.

Almost everybody needs successful case histories of how to overcome the difficulties of involving women, and how to enable them to get their commitment and energies to work on tree-growing.

(v) Social stratification: the poor, weak and landless

The poor access of society's least advantaged people to trees and tree products lies at the heart of many social and environmental problems, and needs much thought.

The poor, meaning poor and weak and landless, have few choices open to them. They cannot risk scarce land, or already overstretched labour, on risky innovations, so they watch what happens while richer farmers plant trees. Meanwhile, they must take wood where they can find it, or use poorer and poorer fuel sources, such as corncobs, or twigs. The preceding section, 'women as poor people', characterises their problems in a little more detail.

The safety valves which the poor had in the past usually function no more: commons pass into private hands or

remain common in name only, while they are commercially exploited by the rich. Structures for some redistribution of the surplus of the rich - the lineages of African pastoralists, or the Jajmani system in India - to clients, have been fading fast. Such distribution has certainly not been in evidence in Social Forestry projects where 'community schemes' have been dismal failures in many regions.

(vi) Village institutions suitable for tree-growing

A variety of institutions may, in particular circumstances, prove good vehicles for tree planting. Villagers have first, however, to want to plant trees.

Village attitudes to tree-growing

Though large farmers in India proved far more enthusiastic about tree-growing - when they saw how profitable it was in their particular situations - than donors and Forestry Departments had expected, a common finding has been the reluctance of villagers to grow trees.

Such lack of enthusiasm always needs investigation since it may derive from one of several very distinct causes.

Firstly, a woodfuel shortage may be perceived, but planting trees may be problematic. If the shortage has occurred on common land, no one user has a duty to replant. Decisions about the redesignation of common land for some other purpose are difficult, as every villager knows, and are likely to lead to lost usufruct rights for some. The most equitable solution may seem to be to do nothing.

Secondly, individuals are reluctant to spend their labour on tree-raising if they have doubts about their rights to the trees they grow. Such doubts are likely to stop tenants and squatters from planting, and volunteers from helping to plant-up village woodlots. In countries where, legally, all trees belong to the State and may not be cut without its permission, villagers will rationally refuse to plant trees until the law is repealed.

Thirdly, villagers may have no experience of deliberate tree-growing, as opposed to the use of pre-existing bush or forest; they may feel that tree-growing is the work of God, and that to imitate Him is to invite His wrath. Such attitudes are readily overcome when trees grown by foresters or other villagers are seen.

Fourthly, tree-growing may seem like too much trouble. Men may be reluctant to plant trees for their wives' subsistence use, and women may feel that tree-growing is more trouble than going further for wood, using wood more conservatively, or buying it. Villagers may or may not be right about the trouble of growing fuel, depending on local circumstances. It might be better to approach tree-growing through the notion of fruit, fodder or pole-growing, or land demarcation and hedging.

Finally, the fact that trees are a long-term investment means that villagers may be reluctant to tie up land for tree-growing. Delayed returns are especially unattractive to poor farmers.

The network editor would be very interested in case-studies on legal or tenurial obstacles to tree-growing, and in any other material which sheds light on the process by which villagers decide it is worth their while to grow trees.

Institutions

Part of the reason why villagers have not wanted to grow trees is that the idea was presented to them within institutional frameworks about which they rightly had their doubts. The failures of village woodlots and community schemes - sometimes very drastic failures in which seedlings were torn out of the ground by villagers, or fencing was allowed to collapse so that stock could get in to browse them - can in all cases be traced back to outsider misassessments of village corporateness. Where payment was made to labourers planting trees, they have evinced an enthusiasm (for the money) which foresters took for enthusiasm for the project. When the project moved on a stage, it became clear that there was no group commitment, and no group plan for the distribution of products.

Villagers need to discuss, and think about, the groups they could use for tree-planting, in the light of their own experience of similar activities. In some situations, no group larger than the household can probably manage tree-growing - and even within the household there may be conflict between the husband's and the wife's priorities. In some hill areas of India and Nepal, however, villagers have been able to unite for forest and watershed protection on quite a big scale. What are the variables? Investigators should look at villagers' other activities, first of all. If they are already cooperating to manage rice terraces or other irrigation schemes, it might be that trees could be grown by the same groupings as part of terrace or canal protection. Successful co-ops might take on tree-growing.

In many villages, groups intermediate in size between the household and the 'community' (i.e., the whole village) exist and are capable of taking on tree-rearing. Schools

have land, water, and continuity in time even though staff and pupils change slowly. Parent-teacher associations linked to schools are sometimes good tree-planters. Women's groups are proving very successful village institutions in many areas. In Kenya, for instance, women's church groups, each containing fifteen or so members, are proving enthusiastic raisers of seedlings in nurseries, tree-sellers and tree-planters.

In areas where there is great social differentiation inside villages, India's plains rather than India's hills, for instance, then planting on an individual basis may be the only answer.

It should be remembered that institutions are rarely static for long. Some that look capable of tree-management now are clearly going to be far weaker five or ten years' time.

FORESTERS

The issues which have faced foresters since the accent on Social Forestry began have been new and difficult ones. Forestry activities had hitherto taken place on tenurially neutral State Land; similarly, the ownership of the trees they raised or protected was conceptually simple. Furthermore, the labour on which they relied in their task was wage-earning, and had no relationship to the land or the trees.

Foresters involved in Social Forestry have to think about tree-planting, not in a vacuum, as it were, but in competition with other agricultural or pastoral uses of land, on land whose nature is changed by tree-planting. Not only must they deal with free agents rather than employees, they must become social actors themselves: it

is common for forester-instigated tree-planting in common land to be seen by villagers as a State land-claim.

In 1985, it can probably be said that, where Social Forestry projects have been tried for some years now, there is a much increased awareness among foresters of the social constraints which must be grappled with, even if the solutions are not all clear yet. But in countries where tree-planting by and for villagers is still a new idea, it would be fatally easy for the same set of false starts to be made.

(i) The Social Contract

In effect, the social factors which have to be taken into account are all facets of the same thing: the importance of giving villagers' needs at least the same weight as those of the State. Given the power of the State and the weakness of the individual, it is clear that staff working on Social Forestry projects are likely to be called on to explain village needs to higher authority - to take on an advocacy role. Only when there are positive forester-villager relations have Social Forestry projects borne fruit. Problem areas have tended to be the following:

Bad previous villager-forester relations

In areas where villagers have been repeatedly fined or taken to court by forestry officials as part of attempts at forest protection, forging a new relationship based on Social Forestry may be difficult for both sides.

Putting people first

It has been very difficult for foresters - who have been trained to put trees first, as it were - to accept that

the needs which drive villagers to over-cut forests for fuel must be sympathised with and satisfied.

Benefits

There is a tendency to view forestry projects in terms of national benefits - soil conservation, environmental considerations, the provision of poles, pulp or fuel-wood to towns. But where the short-term benefits to poor villagers involved in the projects are not properly worked out, they will not respond with enthusiasm, and any wood produced will be merely yet another rural-urban subsidy. Poor villagers need help with the real economic disadvantages of growing a crop which takes several years to mature.

Institutional innovations

It has been too lightly assumed that new ad hoc groupings can be formed for tree-growing. In fact there have been far more successes where existing realities are ascertained and worked with and the only innovation is tree-growing itself.

Project vagueness

The commonest reasons for project failure are where there has been inadequate thinking through, at the start, of land tenure issues, of who the trees planted belong to, and who is to benefit.

Land tenure realities must be ascertained with great investigative precision: there will almost certainly be some divergent views on the matter.

(ii) Methods

This review takes technical forester competence for granted, but looks at some topics which have proved unexpectedly complex in the context of Social Forestry.

Nurseries and seedlings

Several obstacles to the successful implementation of Social Forestry projects have occurred at the seedling-production stage. When Social Forestry is first begun in a country, the numbers of nurseries may well be low. Very quickly, demand for seedlings may outstrip supply if expansion has not been planned for. Villagers may also complain that nurseries are too far away for them to get seedlings in the numbers that they require.

The tendency has been for nurseries to decrease in size and increase in number, to the point where villagers (or even households) can manage their own small nurseries.

Alternatively, professional nurseries can try new management styles - such as the small root trainer system of seedling production - so that the logistical problem of getting large numbers of seedlings to villagers is solved by moving large numbers of seedlings around when they are small and light. Such seedlings, however, are more vulnerable because they are small.

The relative merits of the two possible systems are not yet clear in many situations and much more case-history material is needed. Can networkers help?

A third possibility, which villagers were already doing themselves in Malawi before any Social Forestry programme began, is to transplant self-seeded seedlings of indigenous trees, and to replant them where they are

needed in hedges or around compounds. Where such a system is possible, it should be looked at carefully. It has obvious benefits, but the costs to natural bushland might be high if large numbers of people began to do it.

The giving out of seedlings from nurseries free to the public has generated some abuses, and has also made some villagers suspicious. There are many instances of villagers preferring to pay for seedlings so that it is clear that ownership rests with them, not the government.

Tree species

Before their most recent involvement with Social Forestry, foresters' main concerns, in selecting trees to be grown, were with the commercial rates of return from particular species. Most forestry research has been done on commercially important trees, and it is for these that annual yields under particular conditions are best known. Fast-growing trees which grew straight trunks were generally the most saleable.

Villagers, on the other hand, know a lot about very different types of trees. They will have strong preferences, from among the trees locally available to them, for those that yield the best fuelwood, poles, fodder, fruit or nuts, and the products used in craftwork and small-scale village industries such as carpentry or tanning. Villagers will vary in their assessment of what is most useful to them, it being commonly found that women are most interested in useful fuel, fodder and fruit trees, while men are more interested in polewood, and wood suitable for agricultural implements. If there is a local market for wood, men may make this their primary interest, while women see the generation of cash as secondary to subsistence needs.

When villagers and foresters are to interact for the purpose of Social Forestry, the divergent skills and knowledge of the two groups can throw up serious problems when it comes to species selection.

Foresters need to be familiar with the trees they are offering villagers: germination methods, seedling raising, growth rates, water-requirements and so on. This information they are unlikely to have for most of the indigenous tree-species with which villagers are familiar. On the other hand, the trees about which they know most may fit poorly into village economies, which see the cash benefits from such trees as an imperfect substitute for the multiple products available from their preferred species.

There are two distinct problems here, and both require more attention than they have had so far. Firstly, more thought needs to be given to the tree species which are truly suitable for household forestry as well as for cash sale. Probably more trials need to be made of these species so that foresters can choose to use them with more confidence in the outcome. Much more familiarity with good agroforestry species is needed. Secondly, and for the first to be most effective, an analysis of the existing village situation needs to be made. Trees chosen for planting should, between them, have at least as many uses as those upon which villagers relied before. They should mix well with crops or livestock if that is required by villagers. They should enhance the soil or leave it as it was, but not have a deleterious effect.

To encourage villagers to plant trees, seedlings available at local nurseries should offer them not only the chance of growing trees as a cash crop, but also of choosing species suitable for living fencing, fruit, fodder, etc. Individuals can then choose the balance

between subsistence needs and investment most attractive to them.

Harvesting

Foresters in plantations, and villagers in bush or forest, harvest the wood they need in completely different ways. Failure to appreciate this superficially small fact has led to many wrong assumptions. Foresters use saws and fell whole trees (which may coppice again from the stool remaining). Villagers collect dead wood if they can, or cut branches with axes or slashers, from trees which have the capacity to grow back again. Their tools are not ideal for hacking through thick trunks or branches, and they tend to prefer trees with many thinner, bushy branches. Such wood can be further chopped for firewood without much difficulty. Villagers' methods are well suited to the tools they possess, and the trees they are keenest to exploit. 'Plantation' trees such as pine or eucalyptus present them with much more serious harvesting problems.

(iii) Institutional arrangements

The move into Social Forestry has thrown into relief various as-yet-unresolved problems about the way in which the activity may best be organised.

Which Ministry?

Social Forestry has logical links not only with Forestry, but also with Agriculture (agroforestry), Soil and Water Conservation, Land Use Planning, Energy and Local Government. Different countries are organising matters in different ways, and a network issue will be devoted to this topic. It is one on which networkers' experiences badly need collecting.

So far, it would seem that there is a need to set Social Forestry off from Industrial or Commercial Forestry, and this is variously done by placing it within a different Ministry, or creating a Social Forestry Unit in an existing Forestry Department. Some countries are encouraging various ministries to interest themselves in Social Forestry, and forming inter-ministerial committees for the exchange of ideas and experience.

The link with Agriculture is very important, since agricultural extensionists are often the front line in Social Forestry activities, and because of the importance in the future of agroforestry. The natural tensions which have in many countries existed between the Forestry service and the Ministry of Agriculture need addressing and resolving.

The local level

Whatever the national-level Ministry(ies) responsible for Social Forestry, the importance of co-operation at local level is great. The various extension agents should all be well-briefed in the topic, and there should be regular chances to meet for both governmental and non-governmental agencies involved in Social Forestry in the area for information exchange, and the chance to visit one another's projects. So far, such cooperation seems to be rare, for district-level forestry officers may not be closely attuned to new thinking in the higher levels of the forestry service.

Non-governmental organisations

The strength of NGOs is that they operate on a small scale and may be experimental and innovative in what they do. They tend to be in close touch with villagers' needs

and fears. They lack the funds to sustain a commitment over long years, however, and for the same reasons their ability to influence large areas is small. They may need technical assistance. In many areas they complement government services very well, perhaps by taking responsibility for a particular area.

Much of the Social Forestry work done with women's groups, and with forest and hill-dwellers, has been non-governmental. And stove-programmes are usually at their most successful when NGOs take them on.

The ICRAF Land Tenure conference, with participants from many countries, made it unexpectedly clear that government/NGO cooperation was improving all the time in Asia and Africa such that there was no need for artificial either/or choices. In Latin America, however, participants averred that only NGO activities were leading to the possibility for Social Forestry or Agroforestry.

Extension

The most successful arrangement for Social Forestry extension seems to have been that where forestry personnel (who are in short supply) train groups of agricultural extensionists several times a year, and then visit them informally in their villages while they teach village groups.

In this way, villagers are not receiving conflicting messages from different extension agents, and are encouraged to see trees as part of other agricultural activities.

Weaknesses which need addressing are those which tend to be there in all extension work: extensionists spend too much time with wealthier farmers and not enough with the

poor; they do not involve women sufficiently - a particularly damaging oversight in the case of Social Forestry; they should try to work with schools and other newer village groupings; they should listen to villagers' views and be alert to possible problems, rather than merely teaching what they have been taught.

Training

Training for work on Social Forestry programmes has hardly begun as yet. Gradually, there will be more social content in university-level forestry qualifications, and graduates with such training will begin to hold key posts. In the shorter run, the urgent need is for appropriate training for middle level personnel, and as much practical village-level instruction as possible. This last is an area where many networkers must have experience, yet where little has so far been published.

How can Social Forestry/Agroforestry knowhow be spread most quickly and easily? Do the best results occur where villagers are trained directly, or where extensionists are trained to work with villagers? How successful has the training of an 'animateur' for each village been?

Unless higher-level training leads to increased knowledge of and enthusiasm for tree-planting in villages, it must be deemed to have failed.

Monitoring and Evaluation (M and E)

There has been much good M and E of forestry projects and much good writing about the subject as well.

Most of those working in Social Forestry projects have been highly aware of the need for monitoring project outputs, seedling survival rates, and so on.

Perhaps what is needed now is more examples of the entire M and E cycle, from original goals and assumptions, villager participation and so on, through to the cropping stage several years later and beyond.

Evaluation when the project is over is particularly important. It is only at that point that the long-term effects on land tenure, farmers' incomes and the environment itself, can be assessed.

WORKING TOWARDS SOLUTIONS

This section tries to suggest fruitful lines of enquiry, and a few solutions to Social Forestry problems.

Networkers' comments on any topics - those appearing here or those which ought to have been included - will be exceedingly welcome. Brief indications of direct experience of particular problems would be particularly valued. The network editor can then write to particular networkers for more details as required.

Finally we need to prioritize. Suggestions for topics on which early network mailings should concentrate are solicited.

Land tenure

- How much do villagers understand land tenure changes, as they are occurring?
- Is there any way of legally maintaining usufruct rights?
- What are the best ways of tackling conflict between customary land law, and statutory law?
- In many areas, there are laws inhibiting tree planting which ought to be campaigned against and

repealed. State protection of forests ought to be distinguishable from freedom to plant and harvest trees on private land.

- Forest land laws need thought in many areas. Protection against forest dwellers - who are potentially forest guardians - is much less important than protection against commercial interests.

Common Property Resources

Exploitation of CPRs by the wealthy can be a problem. Systems need devising such that exploitation is costly to them and, perhaps, thereby made less attractive. Depending on local circumstances, it might be possible to institute penalties for the use of certain types of equipment or machinery; or fines for the sale rather than consumption of CPR resources.

Any comment on CPRs would be greatly welcomed, as would information from those involved in wasteland upgrading.

Social stratification: the division of labour

Women's interests and economic activities must be taken more into account if Social Forestry is to be successful. The following are key points:

- Land on which women rely for subsistence gathering should not be lightly converted to other purposes. Change should only be contemplated if benefits foregone will be outweighed by benefits received.
- Women must be involved at the planning stage of Social Forestry projects. Their economy will be much affected, and men are not sufficiently knowledgeable properly to represent their wives' interests.

- If women are to have a strong involvement with project implementation, their time budget needs close scrutiny, and they may need to have help with another task.
- Train women for participation in forestry, and as extensionists. Plan training sessions at the village or, if they must be at a centre, bring several women from each village.
- Schemes for strengthening or creating women's land rights are urgently needed. Bilateral land inheritance is the obvious solution, though it runs quite counter to received wisdom in many cultures.

Social stratification: the poor, weak and landless

India is experimenting with allotting tracts of government wasteland to poor families for tree plantation. The families will get all the usufruct, in return for establishing and managing the trees. Such a scheme can be environmentally as well as socially attractive. However, there remain queries. Is the land really available for this purpose? How will poor families survive while they wait for the trees to mature? Will they be allowed to grow food on the land as well? Must they grow trees which do not allow mixed land-use?

There is a great need for further case history material which addresses schemes and contracts for the landless. Schemes which give poor people employment on environmental protection and improvement schemes are better than nothing, but ideally they need some tenure rights too.

The destitute and the incapacitated are a category who need particular help. For many, it is no longer possible to beg fuelwood from the rich, or from relatives. State or charitable provision are possible solutions; Church,

mosque or temple woodlots for destitute parishioners perhaps even better ones. The efficiency schools display in tree planting could perhaps be harnessed for the benefit of the poor.

The legal and human rights dimensions of Social Forestry, including the rights of forest dwellers, can be tackled with network help.

Village institutions for tree growing

Many lessons have been learned in this area in the last few years. Strip planting is difficult and expensive; private investment forestry is exceedingly popular, especially with absentee landlords; village woodlots only work in rare circumstances, and have all the disadvantages of other Common Property Resources caught up in rapid social change.

If villagers are to have access to their own fuelwood in perpetuity (45 trees per person, or 300-400 for a household is the common estimate), not to mention other needs, other ways must be found of growing them. There is still a lot of room for new thinking here, for not all individuals have the land available for trees.

The Social Contract

The ways for foresters and villagers to work successfully together are increasingly well understood in academic and agency circles, and in the higher echelons of forestry services. The need is for socially appropriate technical solutions: the technical cannot work without social consent. Gradually, too, as foresters trust village competence more, they can devolve some activities such as nursery activities to them.

The main need in this area now is for newer working styles to percolate down to more lowly forest employees, or for the recruitment of a new cadre if the policing approach is too entrenched among older employees.

Methods

- Methods of collecting social information necessary to projects must be devised in such a way that junior forestry officials can carry them out.
- More research is needed, or more information gathered at least, on the most successful nursery systems for Social Forestry.
- Much more research and trial of villager preferred tree-species is required (see tree-species section). The network would be keen to publish accounts of the analysis of trees in social context.
- Linked to the previous point, we are interested in accounts of agroforestry practices devised by rural populations themselves. While we do not want to duplicate ICRAF's work, we can properly address social aspects of agroforestry systems. A particularly interesting topic, which has human rights implications as well as Social Forestry interest, is the transformation of shifting cultivators into agroforesters, with accompanying strengthened land tenure rights.
- For foresters to become involved in agroforestry, they will have to redefine the trees they are interested in, work with agricultural extensionists and keep in close touch with research initiatives in their country or elsewhere. Logically, it has the potential to become the most important Social Forestry activity.

Institutional arrangements

- How are inter-ministerial links best to be forged and maintained?
- Cooperation between government departments and NGOs at local level should be planned. Reports of such interaction already in existence would be very welcome.
- Where extension is not working properly, a review of extensionists' tasks needs to be carried out. Is there too much desk work? Is supervision poor? Are there transport problems and what is needed to overcome them? Until the existing system is streamlined, there is little future in adding forestry tasks to the extensionist's workload.

However, as soon as agriculture and forestry can be taught to villagers by the same cadre, or by cooperating parties, the better. Agroforestry will follow as villagers and extensionists address the problems.

- Staff retraining and reorientation for Social Forestry work is needed by forestry employees in most places.
- In order to facilitate this, and for consultation in the future, social scientists with land tenure and forestry expertise ought to be employed in forestry training institutions and ideally in ministries involved in Social Forestry.
- It would be useful to hear others' experiences of successful strategies for the rapid teaching of Social Forestry to villagers.
- Cases of monitoring and evaluation carried out throughout a project's duration and after, together with results, would be of great interest to many networkers.

CONCLUSION

It is hoped that most readers will find something of interest here. But it has been written with the intention of provoking response, and the writer hopes very much that a large and diverse mailbag will come her way as a result of it. The current Social Forestry literature is already out of date, for new experiments are being conducted all the time. You, we hope, can supply the lack.

Note:

This review is very long, and would have been longer if I had referenced every statement properly. In the interests of setting the ball rolling, and encouraging debate, I have left such statements to stand alone. Several networkers will see their ideas or research glimmering through here and there. To them, my grateful acknowledgements. I hope they will feel that their work is being aired in a good cause.



Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



FARM AND COMMUNITY FORESTRY

Gerald Foley and Geoffrey Barnard

Note: This article is based on Earthscan Technical Report No. 3: 'Farm and Community Forestry', by Gerald Foley and Geoffrey Barnard. For information on this, and other titles in the series, write to Earthscan, 3 Endsleigh Street, London WC1H 0DD, UK.

This article is based on research carried out for FAO and the Swedish International Development Authority. The opinions expressed, however, are those of the authors, and do not necessarily reflect those of FAO or SIDA.

The opinions represented are those of the authors and do not necessarily reflect the policies of the Overseas Development Institute

FARM AND COMMUNITY FORESTRY

Gerald Foley and Geoffrey Barnard

Over the past decade, farm and community forestry* has emerged as a major new area of development assistance. Programmes have been launched in over 50 developing countries and the total expenditure committed by international donor agencies is now well in excess of \$500 million. Encouraging people and communities to grow trees themselves - on their own farms and around their villages - is seen as an essential part of the strategy needed to combat the problems caused by the loss of trees and forest cover in the developing world.

A variety of programme approaches have been devised. Some have relied on the commercial incentive and have been based on encouraging farmers to grow trees for the market. Others have placed tree growing within a broader and more ambitious framework of social and environmental goals. In particular, community participation has been sought as a means of widening the range and distribution of benefits, and involving landless people and the poor.

Though many programmes are still at an early stage, a considerable body of practical experience has already been accumulated. This makes it possible to identify some of the most important prerequisites for successful programme design and implementation; it also provides lessons about the most common pitfalls.

*The expression 'farm and community forestry' is intended to encompass the full range of approaches that have been employed in involving rural people in tree growing. It includes schemes which have been variously labelled as 'social forestry' and 'forestry for local community development'.

1. Identifying Obstacles to Tree Growing

In approaching the design of tree growing programmes it has often been assumed that the reason people do not grow more trees is that they do not know how to, or are unaware of the benefits they bring. On more detailed examination, however, this assumption has rarely proved to be justified. Virtually everywhere there are traditions of settled agriculture, a certain amount of spontaneous tree growing does in fact take place.

Surveys in Senegal, Tanzania, Panama, and Nepal, for example, have shown that many people do plant trees - sometimes in considerable numbers (Kone and Jensen, 1982; Skutsch, 1983; Jones, 1982; Campbell and Bhattarai, 1983). Their exact reasons vary: some plant trees to provide wood, fruit, or animal fodder; others grow them for windbreaks, fences, shade, or other benefits. Even where people do not plant trees themselves, they often protect and manage certain naturally growing species for their fodder, fruit, or other products.

If people appreciate the benefits of trees, and know how to grow them, why do they need the help of outsiders to grow more? This is a crucial question for all farm and community forestry programme planners. An understanding of what is preventing people from growing the trees they need, or appear to need, is essential if a relevant set of measures to encourage and facilitate tree growing is to be devised.

Among the most commonly encountered constraints are those imposed by land tenure conditions; these constitute a virtually unsurmountable barrier to many people. Where people have no secure rights to land, and cannot be sure that they will derive the benefits from any trees they plant, it is quite pointless for them to make the long term investment of effort and resources required. This means that some of the neediest people, such as illegal squatters, tenant farmers, and landless labourers are effectively ruled out from individual tree growing, unless programmes can incorporate land reform measures which provide them with some security of tenure.

The traditional grazing rights, common in many parts of Africa, which allow people to graze their animals on neighbours' fields after the harvest can also make tree growing very difficult because of the problem of protecting seedlings. In such cases, changes in community attitudes to land holding and access rights may be required if tree growing is to be possible.

Even when farmers have full title to their land, the ownership of trees growing on it may be in question. In Honduras, the Dominican Republic, and a number of other countries, national laws dictate that all trees are the property of the government, whether they are on private or public land. Farmers have no right to cut trees - even if they plant them themselves - without going through the lengthy and sometimes expensive process of obtaining official cutting permits. Laws of this kind, though originally intended to protect forests, can actively discourage tree growing (Murray, 1981).

In other cases, the greatest barrier to tree growing is that it conflicts with other priorities. This is particularly the case in arid regions where the planting season for both crops and trees is very short. Farmers may be able to plant a few trees each year; but planting and protecting a large number makes very much greater demands on their time and resources. If tree growing directly interferes with food production or off-farm wage earning activities, such sacrifices may be too costly for people to make (Hoskins, 1982).

In practice, the obstacles to tree growing depend on the precise local circumstances. But it is only when they have been clearly identified that measures can be designed to remove or circumvent them. And if there are fundamental barriers to tree growing which cannot be altered within the context of the programme, this must be recognised. Otherwise programmes are likely to be a waste of effort and resources for all concerned.

2. Harnessing the Commercial Incentive

The commercial incentive is often the strongest stimulant to tree growing. Where there is a good market for wood or other tree pro-

ducts, trees can become a valuable cash crop. A number of programmes have been based on harnessing this profit motive, through encouraging farmers to grow trees on their own land for sale. Usually referred to as 'farm forestry', this approach has been described as 'turning peasants into entrepreneurs'.

By far the greatest progress with farm forestry has been made in India, with the programme in Gujarat being the earliest and best known. This was begun in 1972 and was based on the distribution of seedlings to farmers free of charge. The original intention was that farmers would plant trees on unused or marginal land with their farms. As the project evolved, however, it became clear that it was even more lucrative for them to grow trees on cropland.

Tree growing turned out to have several important advantages over conventional food or cash crops. To begin with it was more profitable; eucalyptus plantations showed a better rate of return than other crops because of the high demand for building poles in urban areas. It was also less labour intensive, with the labour needs being spread more evenly over the year, thus reducing the costs and problems of farm management.

The success of farm forestry in India has been dramatic. There are now substantial programmes underway in Gujarat, Tamil Nadu, Karnataka, Uttar Pradesh and a number of other states. In Gujarat alone, nearly 200 million seedlings were distributed during the 1983/84 planting season. In Uttar Pradesh, the total number of seedlings distributed to farmers up to the end of the 1982/83 season was 156 million, nearly 30 times the original target.

Farm forestry has also been introduced in the Philippines. There, the market has been a pulp mill run by the Paper Industries Corporation of the Philippines (PICOP). Under the scheme, PICOP provides seedlings of the special *Albizia Falcataria* at cost price as well as technical advice on cultivation and harvesting. Loans are given to farmers, and there is a guaranteed market for the wood at an annually reviewed price; by the end of 1982, some 12,500 hectares had been planted. (Hyman, 1983)

In Haiti, farm forestry has been successfully promoted through non-governmental organisations. Farmers are issued with free seedlings, up to a maximum of 1,500. The prospective market for the wood is for charcoal making to supply urban demands. One scheme, begun in 1982 under the auspices of the Pan American Development Foundation, distributed some 1.75 million seedlings in its first year. (Murray, 1983)

From the viewpoint of promoting agencies, farm forestry has obvious advantages. By relying on the profit motive to attract farmers into tree growing, and to sustain the process once it has begun, it is possible to simplify the design of programmes and reduce their running costs. And if tree growing is in fact economically viable, programmes tend to become self-sustaining. The need for demonstration plots, free seedlings, subsidised credit, or other promotional measures will diminish as the financial attractions of tree growing become obvious to other farmers.

In spite of its proven effectiveness in getting large numbers of trees grown, farm forestry has come under criticism, particularly in India (Shiva et al, 1981). One of the principal reasons is that the financial benefits tend to be concentrated amongst the richer farmers, as they are better able to devote land to tree growing and can more easily afford the inputs required. They also have fewer problems in waiting the five or more years before trees can be harvested.

Another criticism is that farm forestry does not greatly increase the supply of fuelwood and fodder needed by the rural poor. This is because farmers naturally choose to grow the kind of trees that give them the highest rate of return, and when they are cut they sell them to the highest bidder. Thus, in India, farmers are mainly growing eucalyptus for the urban pole market, or to supply pulp and rayon mills. The only firewood produced is from trimmings and thinnings, and even this is likely to be sold to towns rather than being made available to the rural poor.

Nevertheless, farm forestry is undoubtedly an effective means of encouraging the production of wood to meet market demands. It repre-

sents an important opportunity for stimulating decentralised economic activity in rural areas without creating a dependence on foreign markets, and the vagaries of international commodity prices.

But its intrinsic limitations must be recognised. Where broadbased rural development is the objective, farm forestry will almost always have to be supplemented by additional programmes explicitly directed towards meeting the needs of the poor.

3. Promoting Tree Growing Without Commercial Incentives

Where there is no commercial market for wood products, or where prices are too low to make tree growing profitable, there may still be considerable need and scope for programmes to encourage additional tree growing.

Experience in Niger, Kenya, Nepal, and Costa Rica, has shown that well-designed programmes can be successful in stimulating farmers to grow substantial numbers of additional trees. A key lesson, however, is that special care is required in matching programmes to local priorities and needs. People's preferences are usually very specific: they want particular types of trees for certain well-defined uses. It is only by identifying and respecting these local requirements that appropriate packages of tree species and technical advice can be devised.

The spread of the neem tree in the Sahel provides a striking historical example of what can happen when people are provided with a new tree specie which closely matches their requirements. Neem grows quickly, coppices freely, produces excellent quality firewood, timber, and poles, and provides good shade throughout the year. Since it was introduced by foresters in the early 1900s, neem has spread throughout the Sahel and is now one of the most common species found, particularly around inhabited areas. A similar process is now taking place with the grafted mango. Demand for these seedlings is so high that at times they are being supplied to dealers in Burkina Faso from Bamako in Mali, a distance of 550 km. (Taylor and Soumare, 1984)

A particularly important observation, however, is that fuelwood scarcities, by themselves, rarely seem to provide a sufficient incentive for people to grow trees. The fact that outside observers are able to calculate a shortfall in fuelwood supplies in a particular region does not mean that local people will be prepared to plant trees for fuel. There are numerous instances where attempts to promote fast-growing species for fuelwood in areas of apparent fuel scarcity have almost completely failed, but where promoting other species might well have been more successful. (Energy Studies Unit, 1981; Weber, 1981)

Where projects have worked, people generally cite other benefits as their primary motive for tree growing. The exact reasons vary: in some cases poles, fodder, fruit, or other products provide the main incentive; in others, people plant trees chiefly for shade, live fences, or windbreaks. As a rule, farmers seem to prefer species with multiple functions, with fuelwood being seen as a useful by-product of tree growing, rather than its principal justification.

4. Making Community Forestry Work

The theoretical attractions of community forestry schemes are considerable. They offer one of the few practical approaches to tackling the problem of degradation of communal and public land from excessive wood cutting and over-grazing. They also provide opportunities for landless people to take part in forestry activities and obtain benefits that would otherwise be reserved for landowners.

Though generally designed to meet community needs, programmes have involved very different levels of participation from local communities. In some cases, their involvement has been largely passive, with the responsibility for initiating the scheme and planting the trees being taken by the forestry service. The role of the community is restricted to providing hired labour for planting and agreeing to cooperate in protecting the plantation.

Other programmes have attempted to engage a much greater degree of community participation. Many have aimed at persuading communities to

establish village woodlots on land which is under direct community control. The responsibility for planting and looking after the trees is taken by the community itself, with the role of the forestry service being primarily a catalytic one.

With almost all community programmes, one of the most critical issues is that of land use rights. Land which to the outsider may appear derelict or unused often turns out to be essential to some people's livelihood. Even when land is officially state-owned, villagers often have formal or semi-formal rights to use it for grazing, fuel collecting, and other purposes.

Where this is the case, any potential conflicts must be resolved before the programme is launched. If access is restricted without local consent, the subsequent problems of protecting plantations are likely to be insuperable. There are numerous examples where attempts to force plantations on communities have ended with seedlings being deliberately pulled up, or animals allowed to destroy them.

The division of costs and benefits from community plantations is another difficult area. Much depends on the degree of confidence people have in local village institutions, and the trust they have in the promoting agency. Not unreasonably, few people will collaborate in programmes unless they have reliable guarantees that they will receive a fair portion of the ultimate benefits. Where local institutions are weak, or are dominated by certain powerful groups, such arrangements may be very difficult to achieve. (Skutsch, 1983)

Neither can it be taken for granted that just because programmes are community-run, they will automatically benefit the poor. It is quite possible for the poorest members of the community to be actively harmed if, for example, village grazing grounds are converted to plantations from which the revenues are monopolised by the village elite, or the products are too expensive for the poor to buy. Programmes which are designed to help the poor must be based on clear and enforceable contract arrangements which guarantee their rights to a share of the benefits.

Despite all these difficulties, community forestry has achieved some notable successes. In Korea, a ten-year National Forest Plan was launched in 1973 with a target of 1 million hectares of trees. The basic implementation of the Plan relied on the country's network of Village Forestry Associations which carried out projects under the direction of the government. By 1977, five years ahead of schedule, the overall planting goals had been reached.

In Gujarat, some 30,000 hectares of strip plantations have been established along roads, railways and canals. The work of planting has been carried out by the forest department. Villagers are allowed to cut fodder by hand from the plantations, and when the trees are harvested, the proceeds are split 50-50 with the local community. A similar scheme operates in Tamil Nadu where, as well as strip plantations, trees are also being grown on the foreshores of the state's numerous irrigation reservoirs, or 'tanks'. The total area covered now amounts to 176,000 hectares.

Progress with community forestry in many other countries has, however, been disappointingly slow. In the Sahel, despite enormous efforts and heavy investments, the results obtained in many village woodlot schemes have been extremely meagre. This has prompted some observers to suggest that communal projects have no future in the area (Hoskins, 1982). Major problems have also been encountered with community schemes in Tanzania; though individual tree planting initiatives have been welcomed in many areas. (Skutsch, 1983)

The main message from experience is that community programmes will always require a great deal of painstaking preparation, and cannot be expected to produce spectacular results overnight. It would be tragic if disillusionment with some past programmes resulted in the abandonment of community forestry efforts in areas where patience and better planning would enable projects to succeed.

5. Conclusion: The Need For Realism

Farm and community forestry is not an homogeneous entity; rather it encompasses a range of possible approaches, the scope of which vary

tremendously from country to country. It is therefore vital that future programmes are based on a clear understanding of the realities of local circumstances, and of the constraints they impose.

In particular, if farm and community forestry is to fulfill its potential, it needs to be protected from the burden of over-optimistic rhetoric and undue expectations. It is not a panacea for the ill effects of deforestation; neither is it a uniformly benign approach to rural development. It can do harm as well as good; a vagueness in planning and defining the objectives of programmes is an almost certain recipe for disappointment or even complete failure.

In some areas, it may have to be accepted that there are powerful constraints that make tree growing difficult, and sometimes impossible. However strong the need may appear from the outside, people will only take part in tree growing if it is both feasible and attractive from their own point of view. Planning must therefore be based on a realistic appraisal of people's own perceptions of their needs, priorities, and capabilities.

It is also important to bear in mind that farm and community forestry, in itself, cannot bring about social reform or radically alter the position of the landless and the poor. Where there are pronounced local inequalities in income, land ownership, and political or economic influence, tree growing programmes are unlikely to change these patterns. Unless specific measures are built into programmes to favour the poor, the tendency will always be for the more affluent and powerful members of the community to derive most of the benefits.

But these limitations should not be allowed to obscure the important potential of farm and community forestry. This is already well attested by the achievements of Korea in the 1970s and the hundreds of millions of trees now being planted under current schemes in India, the Philippines, and elsewhere.

Local tree growing brings undeniable and important benefits. It allows people to become more self-sufficient in wood and other tree

products, and less vulnerable to scarcities and rising prices. It can provide a source of income both to individuals and communities. It yields numerous intangible benefits in the form of shade, shelter, and enhancement of the landscape; and it can help in maintaining the stability and productivity of farming systems.

Together, these add up to a compelling argument in its favour. There is no question that farm and community forestry deserves to play an increasingly important role in the future. The challenge now is to build upon the successes which have been achieved, and proceed with new insight and vigour, making best possible use of the lessons that have been learnt so far.

REFERENCES

- Campbell, J.G. and Bhattarai, T.N. (1983), 'People and Forests in Hill Nepal: Preliminary Presentation of Community Forestry Household and Ward Leader Survey'. HMG/UNDP/FAO Community Forestry Development Project, Nepal.
- Energy Studies Unit (1981), 'Malawi Rural Energy Survey'. Energy Unit, Ministry of Agriculture, Lilongwe, Malawi.
- Hoskins, M.W. (1982), 'Benefits Foregone as a Major Issue for FLCD Success', Prepared for Community Forestry Workshop, Washington DC. USAID, Washington DC.
- Hyman, E.L. (1983), 'Pulpwood Treefarming in the Philippines from the Viewpoint of the Smallholder: An Ex Post Evaluation of the PICOP Project'. Agricultural Administration, Vol 14.
- Jones, J. (1982), 'Diagnostio Socio-Economico sobre el Consumo y Produccion de Lena en Fincas Pequenas de la Peninsula de Azuero, Panama'. In 'Short Course in Agroforestry in the Humid Tropics', CATIE, Turrialba, Costa Rica.

- Kone, D. and Jensen, A.M. (1982), 'Etude Sociologique sur la Motivation et les Actions des Populations a l'Egard de l'Arbre'. Projet de Reboisements Communautaires dans le Bassin Arachidier du Senegal, Rapport Technique, Nol, FAO, Rome.
- Murray, G.F. (1981), 'Mountain Peasants of Honduras: Guidelines for the Reordering of Smallholding Adaptation to the Pine Forest'. USAID, Tegucigalpa, Honduras.
- Murray, G.F. (1983), 'Reforestation in Haiti'. Paper presented at Earthscan Press Briefing Seminar on Caribbean Environment, Cartagena, Columbia.
- Shiva, V., et al (1981), 'Social, Economic and Ecological Impact of Social Forestry in Kolar'. Indian Institute of Management, Bangalore, India.
- Skutsch, M. (1983), 'Why People Don't Plant Trees: Village Case Studies, Tanzania'. Resources for the Future Washington D.C.
- Taylor, G.F. and Soumare, M. (1984), 'Strategies for Forestry Development in the Semi-Arid Tropics: Lessons from the Sahel'. In 'Strategies and Designs for Reforestation, Afforestation, and Tree Planting', ed. K.F. Wiersum, Pudoc Wageningen, Netherlands.
- Weber, F. (1981), 'Village Woodlot Firewood Production'. Joint Africare/AID/PC Evaluation, Africare, Senegal.
- Weber, F. (1982), 'Review of CILSS Forestry Sector Program Analysis Papers'. USAID Forestry Support Programme, USAID, Washington D.C.



Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



Newsletter

**Agricultural Administration Unit,
Overseas Development Institute**

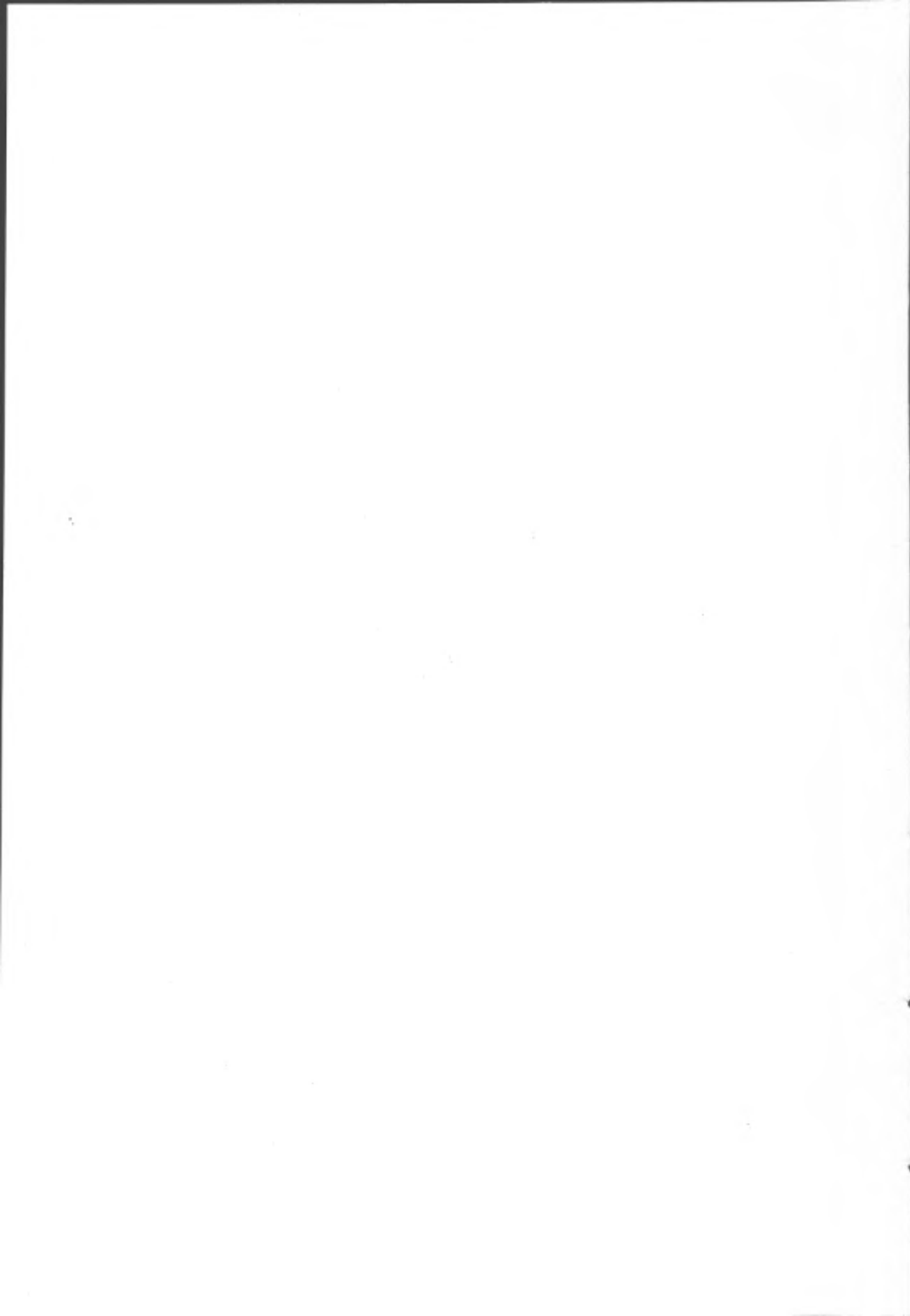
The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1000 members and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

© Overseas Development Institute, London 1986

Photocopies of any part of this publication may be made without permission.

The opinions represented are those of the authors and network members and do not necessarily reflect the policies of the Overseas Development Institute.





CONTENTS

Network papers accompanying this newsletter.....	2
News of the Social Forestry Network.....	4
News of the AAU's other Networks.....	10
Short Articles	
(i) 'The KENGO Travelling Workshop' P Karinge....	12
(ii) 'Containers for Tree Nurseries in Developing Countries' P J Wilson.....	16
(iii) 'Common Property Resources' Michael Lipton..	19
Network announcements.....	22
Lunchtime meetings held by the AAU.....	26
Reports of Conferences and Meetings.....	27
Recent Donor and Research Institute reports of relevance to those working in Social Forestry...	33
Recent additions to the ODI Social Forestry collection.....	36

NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER

There are five papers accompanying the newsletter this time. Two, set in Thailand and Java respectively, look at appropriate social enquiry as a prelude to Social Forestry work. Two are more reflective pieces - one on plantations in the Pacific islands of Vanuatu, and one on the rights of Indian Hill tribes. A fifth paper reviews recent journal articles for the network.

2a 'The success of Vanuatu's local supply plantation programme in meeting the needs of the nation and its communities' by Julian Gayfer. This paper is of particular interest because Gayfer worked in a situation where a community tree-planting project was already ten years old, and where much can be learned by comparing aims with outcomes. The implications of customary land tenure for the programme have slowly emerged, as it became clear that the inhabitants were more interested in making land-bids through the establishment of small plantations, than they were in the resulting timber. Furthermore, inhabitants have continued to prefer cost-free housing materials over the sawn timber the plantations were designed to produce, so that demand has not grown at the pace expected. The programme must take local needs and interests more closely into account in planning the next phase.

2b 'Social Forestry Research Issues: preliminary problem identification in North-East Thailand' by Napoleon Vergara, Charit Tingsabadh, Kersten Johnson, Varun Vidyarthi and Richard Bowen. This paper, in contrast to 2a, describes some very early stages of action in the Social Forestry field. Participatory action research by the authors is being undertaken in an attempt to understand the interests of and constraints on villagers from the very start. The political

and economic framework for village projects, and some examples of existing Social Forestry programmes, are also examined.

- 2c 'Aerial photographs and thematic maps for Social Forestry' by Jeff Fox. This interesting paper describes a field method for working with villagers and forestry officials and arriving at a consensus about actual land-use patterns in an area. A map is drawn collaboratively, and worked upon until it is ready to be used as the basis for a formal agreement about rights between parties previously in conflict
- 2d 'The Social Forestry policy design framework: the Hill areas of Uttar Pradesh' by Mukul Sanwal. This paper addresses itself to India's Hill areas, illustrating the different perspectives of national and local levels, and of the actors themselves: those who influence policy, and the poor. Since nearly three-quarters of land in Hill areas is under Government-owned forest, it is chiefly through forestry programmes that Hill tribes are offered participation in the Indian State. The paper points out how problems spring from the fact that the forests are treated by Government as sources of revenue rather than sources of livelihood.
- 2e 'A hundred recent journal articles on Social Forestry' edited by Asmeen Khan. These bibliographical summaries were compiled at the request of the networkers, many of whom do not have access to international journals publishing Social Forestry articles. The most interesting articles appearing over the past five years in thirteen well-known journals have been summarized.

NEWS OF THE SOCIAL FORESTRY NETWORK

We have had a very pleasant few months at ODI, as completed membership forms for the network have arrived here in their hundreds, along with many interesting publications sent in for our library by individuals and institutions. We are exceedingly grateful to everyone who has responded in this way, and are delighted that the newly launched network has had such a warm response. We shall aim to produce the first edition of our register of members this Autumn, to be mailed out with the Autumn network papers.

Networking

Many people sent brief letters in with their form, promising analysis, comments and examples in response to issues raised in the network papers. Some have already done so and some comments are reproduced here. We look forward to contributions from others too, and will print selections from them in the Autumn network mailing. Comments would be especially welcome on the following topics:

- usufruct rights (use rights) over trees or tree products on the land of other private individuals.
- how can the poor defend common property resources against the rich?
- what sorts of schemes are currently in operation for giving the landless poor prescribed rights over forest land or wasteland?
- how can tree-growers best obtain a short-term as well as a long-term benefit from the land they put under trees?
- successful organisation of social forestry at national level.
- successful organisation of social forestry at district level.
- how to organize forestry extension, and perhaps integrate it with agricultural extension. Extension problems.
- successful forestry staff retraining for social forestry. Methods and materials etc.

Networkers' comments

In addition, Anthony Bottrall, of Ford Foundation, Dhaka, suggested as an interesting topic the relationship between physical and social givens in a particular context and the options for development which these present. As he puts it, the givens of:-

'Physical and human environment (rainfall, soil, natural vegetation, pressure of population on agricultural and forest land, demand for fuel, fodder and other tree products); and

Existing management systems for tree production (State, community, private land tenure) and their consequences in practice (in terms of productivity, equity of access to benefits, etc.);

which allow

Potential new approaches, taking into account political commitment to change, local social structures, availability of productive new technologies, administrative capacity (government or NGO) to provide necessary support services, and so on'.

He feels strongly that it is only through such approaches that location - specific problems can be addressed. He, and several other people, have expressed an interest in more specific information about legislation or administrative procedures that have been introduced with the professed aim of enabling poor people to gain and maintain access to tree-bearing land; plus critiques of actual consequences.

Jeff Romm, Forestry Department, University of California, made the following suggestions:

'We want to work towards a situation where we know where Social Forestry will never work (and why), and where it can work..... We need descriptions of actual working systems,

such as the rich intensively managed household forestry of Bangladesh.We have have to approach Social Forestry as just one component in a village system in physical and political context. Government incentives, prices and taxes are as much a part of the environment as rainfall and altitude..... There are often conflicting views of land in contexts where it constitutes the local economic base and yet is also a possession of Government.'

Ramachandra Guha, then visiting lecturer at the School of Forestry, Yale, made two specific criticisms of paper Ia. Firstly that it was a-historical, which is true but probably inevitable in such a general, ground-clearing paper; secondly that it did not deal with the important complementary relationship between Social Forestry and Industrial Forestry. This is an exceedingly important issue, and one which should be looked at carefully in a future network issue. Does anybody feel like putting pen to paper on the subject?

S A Shah, (Indian Forest Service, retired, currently secretary of the International Tree crops Institute, India) is keen to see a greater standardisation of terms and expressions used in Social Forestry, which could be carried through into the classification of Social Forestry documentation. We shall correspond on this and report in the next newsletter.

Alistair Danter, (IVS forester, Swaziland) wrote at length about issues in paper Ia as they applied in that country. The following excerpts are of particular interest:

- land tenure

'Land in Swaziland is divided up into Title Deed land (35% - privately owned) and Swazi Nation Land (65% - owned by the Royal Family and administered by the chiefs). All my comments are addressed to Swazi Nation Land. People do seem prepared to plant trees around their homesteads - at least in the area that I live in - and this would suggest that they do expect to remain in the area for considerable length of time and also feel that they have some security. There is a problem however with the Wattle Jungles that occur on Swazi Nation Land. People are not prepared to carry out silvicultural operations to improve the productivity of these jungles, both for bark and timber production, as they claim that they are not certain that they will benefit from the final crop. Alternatively they may be told that they may harvest one crop of trees and no more'.

- women

'Women seem to get the message a lot faster than men do. They also end up doing most of the work. At the initial meeting for one planting project that we have done, all the talk was done by the men, but when it came to doing the work 95% of these who turned up were women. In a recent survey that I carried out, of Private Commercial Forestry Companies in Swaziland, managers all said that women were far better workers than men and that as far as nursery work was concerned, there was no comparison: virtually all the work was done by women'.

- school planting

'As far as school planting projects have been concerned, primary schools tend to get far better results than secondary. Survival rates seem to be much higher and also getting maintenance work, such as weeding, done is a lot easier. There

seem to be two possible reasons for this: firstly the age of the children; and secondly the fact that the majority of the teachers are women and seem, as I have already said, to be more receptive to work involving trees than men'.

- working with non-foresters

' I have found it useful to work through other extension officers who work within the RDA (Rural Development Administration) mainly agriculturalists and Home Economists. Once they have seen the possible benefits to their work of Social Forestry, they have been very helpful. A social forestry input into these professions' training could be invaluable.'

- appropriate tree species

'One of the main problems here at Mahlangatsha has been caused by the commercial woodlots. People are now aware that gum equals money and thus there is a large demand for Eucalyptus seedlings, often for totally unsuitable sites and with potentially disastrous results. This puts me in quite a dilemma as I do not want to stifle people's enthusiasm for planting trees.'

Vivid informal information of this kind, is much valued on the network.

Future Plans

We are trying to put together a set of papers for the October newsletter on Forestry Policy and its implications for Social Forestry in various parts of the world. We probably already have papers on the Indian sub-continent and on Francophone Sahelian Africa. We would be interested in hearing from potential authors in Latin America, South East Asia, East Asia, West Africa or the Pacific.

For Spring 1987, we are considering a district-level focus, looking at forestry extension, government/NGO cooperation, and forester/non-forester cooperation. However, if networkers would like to raise other priorities, there is plenty of time to do so for this issue.

Please write! The more contact we all have, the quicker the ball rolls along, and the quicker we all learn.

Gill Shepherd
Social Forestry Research Officer

NEWS OF THE AAU'S OTHER NETWORKS

The Agricultural Administration Network run by John Howell, has focussed its attention primarily in the last three years on approaches to agricultural extension. It will now embark upon a new phase in which it turns to the problems of disadvantaged farmers, including those working in areas of poor or fragile resources, and those living in remote areas with poorly developed marked structures, or in widely dispersed settlements.

A second Research Officer will be appointed to work with John and s/he is likely to continue the Unit's research in agricultural extension.

The Irrigation Management Network, run by Mary Tiffen, has recently negotiated a joint working arrangement with the International Irrigation Management Institute in Sri Lanka. It will considerably expand its membership, mail its members four times a year instead of twice and will gradually come to be based institutionally at IIMI. Camilla Toulmin has been appointed as an additional part-time Research Officer for the network.

The Pastoral Development Network was produced temporarily by Camilla Toulmin before she took up her post in irrigation, and a new Research Officer Jon Moris, has now been appointed to run the network. Jon has worked mainly in Africa, and has experience relevant to all the networks.

RECENT NETWORK PAPERS

Pastoral development network, February 1986

- 21b 'Comparative Ecology of Pastoral Livestock in Baringo, Kenya'
by K M Homewood and A V Hurst.
- 21c 'The Reluctant Spouse and the Illegitimate Slave: Marriage, Household Formation and Demographic Behaviour Amongst Malian Tamesheq from the Niger Delta and the Gourma' by Sara Randall and Mike Winter.

21d 'Limiting Livestock Pressure on Public Rangeland in Niger' by G K Perrier.

21e 'Notes on Implementation of a Small-Holder Cattle Fattening Co-operative Scheme in Northern Nigeria' by Simon White.

Agricultural administration network, March 1986

Discussion paper 15: 'Extension workers, small-scale farmers, and agricultural research: a case study in Kabwe Rural, Central Province, Zambia' by Alistair Sutherland.

Irrigation management network, April 1986

86/1b 'International Irrigation Management Institute: Program Concepts', by Robert Cowell.

86/1c 'Irrigations Pricing and Management' by Ian Curruthers.

86/1d 'Training Programmes for Irrigation Staff', by Martin Burton.

86/1e 'Training Programmes for Irrigation Farmers', by Ian Smout.

SHORT ARTICLES

(i) The KENGO travelling workshop by Peter Karinge

In November 1985, for the first time in Kenya, a group of 44 people from all over the country comprising scientist, educationists, community development workers, NGO project leaders, programme leaders and journalists left their places of work for two weeks to participate in a unique educational travelling workshop to see agro forestry, tree planting and woodfuel conservation projects.

The Travelling Workshop involved extensive travelling, visiting, evaluating and learning from over 20 development projects covering 12 districts in Kenya. Projects visited included Government and bilateral development projects, NGO projects, women's groups, community, school, college and individual development initiatives.

Objectives

The Workshop was organized with the following aims and objectives:

- To expose the participants to the diversity of environmental conservation and development. Programmes currently being implemented in Kenya through tree planting agroforestry and wood energy conservation projects.
- To expose the participants to the practical project activities being undertaken at the grassroot (community) level by these programmes.
- To provide an educational forum where research, development and aid agencies would have a close encounter with project implementors and appreciate the diverse field realities and challenges which projects face.

Projects

The Travelling Workshop took place over two weeks and visited, among many other the following projects: the Machakos Integrated Development Programme (MIDP), International Centre for Research in Agroforestry (ICRAF) in Machakos; Embu-Meru-Isiolo (EMI) Forestry Project; Integrated Project on Arid Lands (IPAL) in Marsabit; the Fuelwood/Afforestation Extension Project and the ill-fated Euphorbia Project in Baringo; Kenya Woodfuel Development Programme (KWDP) in Kakamega; the Homa Hills integrated Development Programme and Ndiwa Institute for Rural Development in South Nyanza; the Kenya Renewable Energy Development Project's Mtwapa Agroforestry Centre and the Baobab Farms at the Coast.

Evaluation

Many agroforestry and related projects have been established in Kenya during the last five years through government and other development agencies, as a result of the widespread realization that the practice enhances environmental conservation and increased resource productivity. It was only timely and logical that project officers of these isolated projects bring their varied experiences together through information sharing and visiting ongoing projects in a forum like the Travelling Workshop.

All too often the evaluation of development projects takes place only among donors and government officials. Meanwhile, project leaders, project workers and key community development workers have not been given a chance to analyse the causes of failures and factors contributing to successes of diverse development projects, so that they can apply this knowledge in implementing their own projects and contribute to the evaluation and formulation of existing and new projects.

The Travelling Workshop provided such an opportunity whereby participants were able to closely interact with project implementors and beneficiaries and to critically and objectively analyse project activities on site.

There were numerous criticisms levelled against projects and programmes visited. Among them participants cited poor demonstration work, lack of community involvement, poor planning, over-dependence on external support and inadequate technical and financial assistance as major constraints to successful project implementation. They also pointed at the serious lack of communication and co-ordination at the technical and ministerial levels, and went further to recommend the following salient desirable features in project management and implementation.

Recommendations

- The local community should be fully involved from the project's planning through to evaluation stages, being "part and parcel of the project".
- Projects should be managed to be self-sustaining after a given time period to avoid over-dependence and abandonment when donors pull out.
- Projects should be tailored to suit local conditions (not the other way round) in order to avoid clashing with people's cultural-economic and environmental set ups.

Conclusion

KENGO was greatly encouraged by the success of the Workshop. It was clearly an experience which should be extended to many more development workers and planners. It is almost pathetic that the majority of development workers in Kenya have minimal exposure to other development activities and perspectives, thereby limiting their

potential development horizons. If development planners, aid agencies, project implementors and politicians alike could appreciate the importance of such exposures and undertake to promote them, the district focus strategy would meet considerable success faster than expected.

Following the success of the workshop, KENGO plans to make it an annual event, and plans for the 1986 travelling workshop are already underway.

Peter Karinge can be contacted c/o KENGO, Box 48197, Nairobi, Kenya

(ii) Containers for Tree Nurseries in Developing Countries

by P. J. Wilson

In tree nurseries plants may be grown bare rooted or in containers. Both general methods are adaptable and are applied through the world, but in the hotter climates of many developing countries container nurseries are much more usual, and the common containers used in them are polythene pots and polythene sleeves. In parts of the developed world, on the other hand, very many other kinds of tree nursery containers have been developed over the last twenty years.

Two main kinds of containers have come to be most widely used in temperate nurseries. The first, the biodegradable pot, is relatively unattractive for tropical applications because roots can easily grow between pots kept together in the nursery, and the rate of degradation of pots can be difficult to predict. While degradation may be very rapid in the moist conditions of the nursery, after planting into a dry soil it may slow down to almost zero. This gives rise to the possibility that root growth through the container and into the soil may be impeded and, in addition, if any portion of the pot is left above ground in dry conditions it can act as a wick, drawing moisture from the soil in the vicinity of the newly planted tree.

The second kind of container consists of a tray, easily handled by one man, with 60-200 cavities per tray depending on cavity size. The cavities are filled with potting medium and each supports the growth of one tree. Before planting, the trees are removed from the cavities and at this stage the root plugs should cohere so well that little or no physical damage to the roots is sustained during handling, transport and planting. This kind of container is potentially useful in tree nurseries in developing countries, especially where there is a need to increase nursery productivity.

The traditional containers, polythene pots and open ended polythene sleeves, and their local equivalents like bamboo sections and milk cartons, are not very efficient because a large root volume per tree is required. This means that they are relatively easy to manage but

have a high requirement for various nursery resources - labour, transport, water, medium, land, supervision etc. Local soil is the usual medium for polythene pots/sleeves and after sowing or pricking out the containers are generally placed directly onto the ground. Before planting, precautions must be taken to avoid the adverse effects of root coiling, which occurs as the roots are deflected and continue to grow after reaching the inside of the container. Root coiling is a common problem in plants grown in smooth sided round section containers and once planted the root development of such plants is poor, leading to slow growth, poor drought tolerance, lack of wind firmness, stem breakage etc. Coiled roots should be severed at planting, although this is estimated to sever about half of the root mass.

Multiple cavity trays (M.C.Ts.), which are usually made of expanded polystyrene, need a lot of storage space when not in use and would be expensive to import if they could not be made locally. Although they can be re-used several times (whereas polythene pots/sleeves are usually discarded at the planting site) they do deteriorate and would need to be replaced periodically. Compared to a conventional polythene pot of about 300cm³ the 128 cavity tray (the conventional size used in tree nurseries in southern Africa) has a cavity volume of 36cm³, nearly 8 times less. Small containers need to be watered and fertilized more frequently than large ones, and are less forgiving if watering is uneven or irregular. The smaller the container the more important it is, too, to use a medium which retains moisture well and is favourable to plant growth. Soil alone would not be satisfactory. The work required to develop a suitable medium from local materials could be substantial, and composting and mixing media demand quite good planning and quality control.

On the other hand, the advantages of M.C.Ts. are considerable. The trays are light and can be elevated off the ground easily. This prevents roots from growing into the soil of the nursery bed and being broken when the containers are lifted. For example 330 bricks could support 200 trays in two adjacent rows, containing about 25,000 plants (assuming 128 cavities per tray). The daily water requirement of

M.C.T. plants is about three times less than for potted plants and, since they grow about twice as quickly in the nursery, their total water requirement is yet less again. In principle excess water dripping from elevated beds could also be collected and re-used, or intercepted by other plants placed beneath the beds.

Despite the smaller root volume M.C.T. plants have been shown to be at least as robust as potted plants even in the relatively harsh conditions of Lesotho. Root growth after planting is much more rapid, up to 1cm per day, compared to 0.2cm per day for sleeve plants, suggesting a potential advantage in conditions where soil moisture can be ephemeral, for example in arid or summer rainfall regions. The compensatory advantage of the large volume polythene pots/sleeves is that, when wetted before planting, the medium contains a substantial reserve of water for the tree to draw on if necessary.

Overall, multiple cavity tray plants are six times cheaper to produce than polythene sleeve plants in Lesotho and there is no reason why this extraordinary increase in productivity could not be achieved in practice elsewhere. Apart from the direct cost benefit, M.C.T. plants grow much quicker than polythene container plants, allowing supply to be matched better to demand, and their total requirement for water is much less. The investments required to achieve these benefits would be expenditure on containers, simple structures to elevate the containers off the ground, development work to optimise the nursery regime in relation to local factors, the re-training of nursery staff and the provision of good supervision. While it may be unrealistic to propose a change in practice in some circumstances, wherever nursery productivity is a limiting factor the investments may be worthwhile.

P.J. Wilson can be contacted at 'Elite Trees' Thimbleby Nurseries, Horncastle, Lincolnshire. LN9 5LZ

(iii) Common Property Resources by Michael Lipton

Michael Lipton, in the latest Pastoral Network newsletter, offered the following comment on Roy Behnke's paper, The dynamics of Open Range Management and Property Rights in Pastoral Africa (paper 20f, Pastoral Network, August 1985). Lipton's thinking on the subject of CPRs will be of interest to this network, whether or not they have read Behnke's paper and it is for that reason reprinted here.

What is it that enables some private individuals (but not others) to enclose what was formerly common land? What is it, in other circumstances, that enables a community to get together and - notwithstanding the undoubted inequalities within it - to administer the commons in a common way? In other words, the emergence of privately enclosed rights in grazing land cannot be explained solely by the increasing scarcity (and privatised value, therefore) of that land-for, in the absence of information about power relations, that increasing scarcity would lead to equal and opposite factors and pressures tending to strengthen the community's control over its earlier rights in land.

There are several possible answers. One, at which Behnke himself hints, is the existence of economies of scale to fencing, and more generally to enclosing - so that the powerful or wealthy individual finds the cost-per-beast (and cost-per-hectare) of appropriating land rights relatively small. But that would not suffice to explain why the poorer and weaker individuals, with fewer private animals each, rarely combine to take advantage of economies of scale as a group. Another possible explanation rests in the nature of population growth, which increases, much more than in proportion, the number of transactions and 'trusting relationships' into which an individual might enter, in order either to enforce or believe in the maintenance of common rights. For example, if the number of people with two animals each upon the common rises from 50 to 100, the number of transac-

tions required for all individuals, if each is to assure himself or herself that all other individuals are respecting the commons and not over grazing them (or alternatively the cost of policing), rises appromiately as (50!) to (100!).

A third and exogenous explanation is the existence of 'transition of trust' in many of these grazing societies. The old authority - that of the leader of a clan, or colonial enforcement power, or exceptionally a democratic clan authority - used to enforce culling, and/or cattle taxation, effectively and at fairly regular intervals in many societies until about the 1940s or 1950s. These authorities have been almost everywhere deliberately weakened in order to make way for the modern State. However, the modern State has neither the weapons nor the command over popular confidence and trust to enforce its control over the numerous commons in the way that traditional authorities used to do. Hence each individual feels much more dubious about trusting neighbours not to over-graze - and therefore feels less prone to accept the 'moral economy' type sanctions against over-grazing himself or herself.

In other words there needs to be a clear analysis of how various groups acquire, or lose, the power to change the balance of advantage - and the balance of decision - as between (a) uncontrolled common grazing, (b) common grazing controlled by culling or tax, (c) a group or common enclosure, and (d) private enclosure. That is the sort of information we need, in order to provide the improved policy guidance on livestock projects that Behnke rightly demands. At present livestock projects in sub-Saharan Africa - particularly those concerned with the enclosure of rangeland - are a near-disaster, and are obtaining such low (or often negative) economic rates of return - and such frequently damaging equity results for the poorest - that donor authorities would be well advised to abandon such projects in their African portfolios, until 'further and better particulars' on these issues are available. Behnke's paper is a valuable contribution

towards obtaining those particulars, but needs supplementation from the point of view that analyses the sources of political power and legitimacy in the changing grazing communities.

Michael Lipton can be contacted at the Institute of Development Studies, Brighton, BN1 9RE England

NETWORK ANNOUNCEMENTS

The first network mailing

Various people have send in application forms to join the network who were not on our initial mailing list. We have tried to send them the first set of papers when we received their forms, but some individuals have certainly been missed. If you know you sent in a completed form, but have not received this first set of papers, please write to ask for them.

The Social Forestry library

Many people are already finding our growing Social Forestry collection, and other ODI materials, useful when they come to visit ODI. If you wish to use the library, please note that we prefer visitors to come on Tuesdays, Wednesdays and Thursdays, leaving us two days a week for uninterrupted library work ourselves. There is an excellent photostat machine in the library. A map of ODI's new whereabouts has been included in this issue of the newsletter.

Problems with *Leucaena leucocephala*

Dr Romulo A del Castillo, one of our networkers, writes from the Philippines:

'As you know ipil-ipil (*Leucaena leucocephala*) is popular in this country because of it many uses. It is used by government in reforestation and road side planting projects, and by small farmers for slope stabilization and as source of organic fertilizer, fodder and fuelwood. The leaves are used in the local livestock industry, for forage and for leaf meal in feed formulation, and in agriculture, as a source of organic fertilizer. Due to relatively high rate of growth and high calorific value, the wood is commonly used as a source of energy in dendrothermal power plants and in the kitchen in rural areas.

Lately however, most of the ipil-ipil plantations and those trees planted in agroforestry farms all over the country have been observed to be dying in epidemic proportions. Local plant scientists have initially identified the pest as jumping plant lice (*Psylla* sp.). The pest reportedly sucks

the sap of young leaves and twigs. Initial observation indicates that the pest has toxic saliva. Heavily infested ipil-ipil trees are first totally defoliated then the stems dry up. The spread of destruction is rapid because the pest multiplies fast and is extremely prolific.

So far, few effective control measures have been found. The commercial insecticides are prohibitively expensive and most farmers cannot afford. The emergency control measure that has been suggested calls for the cutting and burning of infected plant parts. But this type of control measure is very inefficient and the epidemic continues to threaten the local wood energy production as well as the animal feed industry. Breeding of resistant varieties has been recommended but this does not offer a solution to the immediate problem of arresting the spread of the infestation.'

We are aware of the following publication: NFTA. 1986. 'Leucaena psyllids - The Problem and Proposed Solution'. NFTA Highlights NFTA 86-04. Nitrogen Fixing Tree Association, Waimanalo, Hawaii. 2pp

But if, in addition, any networkers can help with experiences from elsewhere, where inexpensive but effective measures are being taken, please contact Dr del Castillo direct (with perhaps a copy to us here on the network) at UPLB College of Forestry, College Laguna, Laguna 3720, Philippines.

Multispecies agro-ecosystems

Dr Norman Siegel writes from Mexico:

'We are in the process of establishing a center for the investigation of permanent agriculture systems for the tropics on the West coast of Mexico in the state of Nayarit. We are interested in working with artificial multi-species agro-ecosystems producing a great number of economic products including food, spices, medicinals, building materials etc. We are now in the process of collecting germ plasm and establishing a botanical garden of species already collected.

I was wondering if in your "social forestry" network, there might be some persons or groups working with agroforestry or sustainable agricultural systems along the lines of the Javanese home gardens. It would be nice to establish a network for the exchange of germplasm of possible economic species for inclusion in these systems based on the matching of reported ecological parameters.

If networkers are aware of information on the design of this sort of agrosystem or of anyone who would be, we would be interested to hear from them. As soon as we begin to have data available, we would be happy to share it with anyone working in the field.'

Dr Norman Siegel can be contacted at Santa Cruz via El Lano, Nayarit, Mexico

'The pocket directory of trees and seeds in Kenya' by Wayne Teel, Nairobi 1984

KENGO has published a guidebook on trees and seeds in Kenya, which has proved to be a useful reference and resource book for tree planters and researchers in agroforestry, both in Kenya and other countries with similar ecological conditions. Helpful tree-by-tree details are given of requirements, and seed collection and germination techniques. The book is illustrated with excellent line drawings - one of which KENGO has kindly allowed us to use as the Network's logo.

The price is as follows: Africa US\$5 or Stg. £3.50; Europe, Asia, North and South America - US\$6 or Stg.£4. Further enquiries to KENGO, (Kenya Energy Non-Governmental Organisations), Box 48197, Nairobi, Kenya.

Vacancies for Foresters/Social Scientists in the Sudan

Green Deserts, a small development agency working in the Hasaniya Region of Northern Sudan have vacancies for a women or a couple to conduct a Social Survey among people forced by drought and animal losses to abandon their nomadic life and to settle near the Nile. Experience/qualifications required: ideally, community agroforestry in arid areas, anthropological experience of work with nomads, and a knowledge of Arabic. The ability to operate well under extremely tough conditions is essential. Durations of survey about twelve weeks. The post could be filled by a suitably qualified woman.

Green Deserts are also seeking a Forester for a 2 year contract in Northern Sudan. The successful applicant will have a BSc in Forestry and suitable experience in arid areas as well as a keen commitment to community Agroforestry. Knowledge of Arabic useful. This post would suit a couple, the woman able to initiate a project with local women. The work would include setting up and running tree nurseries, extension work, rehabilitating existing nurseries, and creating an arboretum and seed bank.

Those interested should write, with a CV to Green Deserts Ltd, Rougham, Bury St Edmunds, Suffolk IP30 9LY UK

IVS forester for Swaziland

Alistair Danter (see News of the Network) is leaving his job in November this year. Foresters interested in the job, which is offered on volunteer terms, should contact IVS, Ceresole House, Regent's Road, Leicester, UK. Tel: 0533-541862

Asean Watershed Newsletter

Some networkers may be glad to know of the existence of the following publication.

The Asean Watershed Newsletter is published quarterly by the ASEAN-US Watershed Project. The Newsletter aims for communication for development of ASEAN watershed communities based on national and regional perspectives. Contributions in the form of comments, suggestions, news reviews and feature articles are welcome. Semi-technical papers, symposia manuscripts and lectures are also acceptable. For any correspondence, please use the following business address: ASEAN-US Watershed Project, College Laguna, Philippines 3720 (Tel. 2657 and 3348).

LUNCHTIME MEETINGS HELD BY THE AAU

Social Forestry Network

- 6th February 1986 The Success of Vanuatu's supply plantations in meeting the needs of the nation and its communities
 Julian Gayfer, Assistant Forest Management Officer Vanuatu Forest Service.
 (Published as a network paper with this newsletter)

Irrigation Management Network

- 28th February 1986 Irrigation System recurrent costs: a donor perspective
 Mark Svendsen, Senior Water Management Specialist, Bureau for Asia and Near East, USAID.

Agricultural Administration Network

- 26th March 1986 Innovation adoption and farmer diversification behaviour in a mountain farming system
 Tariq Hussain, Economist, Aga Khan Rural Support Programme, Gilgit, Pakistan.
- 1st May 1986 Employment and the choice of technology in Egyptian agriculture: the role of Government policy
 Simon Commander, Research Officer, ODI

REPORTS OF CONFERENCES AND MEETINGS

Recent conferences and meetings

IUFRO Research Planning Workshop for Africa, January 1986

The seven papers given at the workshop provided a basis for the coordinated development of some future activities in Africa, and in particular a blueprint for useful work to be undertaken in countries like Botswana and Somalia which are just beginning forestry research. Attention was focussed on agroforestry research and development, with particular attention to food, fuel and browse, and to increasing the productivity of windbreaks. Progress was reported on methods for the silvo-pastoral management of existing forest resources, particularly semi-arid woodlands. There were exciting proposals for work on the selection and genetic improvement of indigenous and exotic multi purpose tree species. Flagged for future research, too, were appropriate nursery practices and techniques for the establishment and management of fuelwood plantations, including water harvesting and distribution. Finally, it was suggested that work was needed to develop a site-characterisation method enabling workers to choose the correct species for planting, and to predict yield. Copies of these papers are being obtained for the ODI Social Forestry library.

Strategies for improving the effectiveness of Asia-Pacific Forestry Research for sustainable development a workshop held for forestry research heads and international agencies on 17th-21 March 1986 at the East West Center Environment and Policy Institute, Honolulu, Hawaii.

A wide range of professionals, donors and representatives from smaller agencies such as Ford Foundation and the ODI met at this interesting and productive workshop. An initial rather wide gap between the priorities of the regional forest research station heads, and the

interests and commitments of the larger donors was apparent in the early stages of the workshop. But as the sub-regional small group sessions got under way, and shared problems were aired in plenaries, a great deal of common ground was found.

The most important areas of consensus which emerged from the conference were as follows:

(i) forestry research It was agreed that a lack of urgency in the face of major problems tended to characterize forestry research in the area. There was a need for research of high and immediate applicability, which was quickly made available to end users. There was also a need for interactive research with villagers and forest users of all kinds. On-station and 'action' research needed good linkage and a problem-solving approach.

(ii) the low status of forestry It was felt that forestry was often seen as irrelevant to national needs, and that this inhibited the cash available to forestry nationally. The need here was for better PR, and far better interdisciplinary linkages with agriculture and animal husbandry, energy, irrigation and the social sciences. National coordinating bodies were needed to help establish a broader role for forestry.

(iii) training Participants agreed that training could be usefully improved. University level research needed to be more tightly focussed on the country's problems, university courses needed to deal more directly with local forestry conditions, and all those trained (whatever the level) need much more in-country and regional field-experience.

(iv) information sharing All research heads noted the need for more regional sharing of knowledge and experience, through the devices of country-twinning, networking, library-coordination, IUFRO regional meetings and so on.

(v) a South Pacific research body The most exciting outcome of the workshop was the decision arrived at by the group of tiny South Pacific states which attended. Their lack of research resources was so great by comparison with an area like South East Asia, that they decided to seek funding for a regional research body to stimulate and coordinate research and experience throughout the area. Donors at the conference responded warmly to the proposal.

Drought in the Sahel and Northern Nigeria, a one-day symposium, was held on 26th April 1986 by the Nigerian Field Society at University College London.

A knowledgeable audience heard papers on the difficulties of drought monitoring; long-term trends in the Sahel; the ways in which droughts trigger increases in locust populations; and the breakdown of traditional pastoral resource-management systems and the linkages between such breakdown and famine. Some solutions were offered by speakers who gave papers about agro-forestry, ways to strengthen social institutions which can mitigate the effects of drought and ways of protecting the purchasing power of peoples in marginal lands. Those interested in more information should contact Dr Paul Richards, Anthropology Department, University College, London WC1, UK.

Notices of other recent conferences of interest

- FAO workshops and meetings of relevance to Social Forestry

3-15 Feb	Ouagadougou	Session d'etude sur la plani	(Hoskins/
1986	(Burkina	fication des projets d'auto-	de Montalembert)
	Faso)	assistance en matiere de bois	
		de feu.	

- | | | | |
|-----------------|----------------------------|---|--------------|
| 3-16 March 1986 | Nouakchott
(Mauritania) | Cours de formation sur la fixation des dunes et le reboisement en zones seches dans les pay francophones d'Afrique. | (Ben Salem) |
| 7-18 April 1986 | Maseru
(Lesotho) | FAO/Finland Sub-regional Workshop on Watershed Management in Arid and Semi-Arid Zones of SADCC countries. | (Michaelsen) |

Those interested in further information should address the FAO officer indicated in brackets, c/o The Forestry Department, FAO, Via delle Terme di Caracalla, Rome 00100 Italy.

- International Symposium to Assess the Natural Management of Tropical Moist Forests for Wood Products, March 7-8 1986. Tropical Resources Institute Yale University, Connecticut, USA. Theme: 'When is natural management appropriate, and can it be made effective and feasible?'. Further information from: Tropical Symposium Committee, Yale University, School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, CT 06511, USA.

- The Ninth Annual Meeting of the Association for Arid Lands Studies (AALS) in Reno, Nevada, 23-26 April 1986

The AALS is an interdisciplinary organisation of scholars interested in arid and semi-arid land research. Further information from Charles R Britton. AALS Program Chairman, Department of Economics, University of Arkansas, Fayetteville, Arkansas 72701, USA.

Forthcoming conferences and meetings

Forthcoming FAO meetings this year include:

- | | | | |
|-----------|--------------|------------------------------|-----------|
| 2-5 Sept | Ljubljana | FAO Advisory Committee on | (Hilmi) |
| 1986 | (Yugoslavia) | Forestry Education | |
| | | (14th Session) | |
| 27-31 Oct | Rome | Expert Consultation on Rural | (Chipeta) |
| 1986 | | Employment in Forestry Based | |
| | | Processing Enterprises. | |

Further information about these may be available from the FAO officer indicated in brackets c/o The Forestry Department, FAO Via delle Terme di Caracalla, 00100 Rome Italy.

- XVIIIth IUFRO World Congress 'Forestry Science serving society'
September 7-21, 1986, Ljubljana, Yugoslavia.

Approximately 2000 researchers from all over the world will meet to exchange ideas, research results and experience. The Congress sessions will be held at Cankarjev dom Congress and Cultural Centre in Ljubljana. After the Congress nineteen scientific excursions will be organized all over Yugoslavia.

Among issues of especial interest to the Social Forestry network at the conferences, will be sessions on: Forestry and Energy; Small-scale economic reasoning; Social Aspects of Forestry Development; Forest Policy and Integrated Land Use.

Contact address: IUFRO Organisation Committee, Cankarjev Dom Congress and Cultural Centre, Kadricev Park 1, 61000 Ljubljana Yugoslavia

We shall hope to publish reports on the conference in the October newsletter.

Desert development systems: Technologies for desert agriculture, energy, and communities.

The Second International Conference on Desert Development to be held in Egypt will take place in Cairo 25-31 January, 1987.

Papers are requested concerning (i) integrated desert development (ii) desert agriculture and forestry (iii) energy (iv) political/social/cultural aspects including land tenure (v) implementation (vi) diffusion of information.

Those wishing to present papers at the conference should send 500 word abstracts, by the end of June 1986 if possible, to: Dr Adli Bishay, Director, Development Center, American University in Cairo, P.O. Box 2511, Cairo, Egypt. Telex No: 92224 AUCAI UN

RECENT DONOR AND RESEARCH INSTITUTE REPORTS OF RELEVANCE TO THOSE WORKING IN SOCIAL FORESTRY

Agroforestry/Social Forestry

FAO. 1985. 'Understanding Tree Use in Farming Systems'. Based on the workshop on Planning fuelwood projects with participation of rural people Lilongwe, Malawi, November 12-30, 1984: FAO Rome. 82pp

Kang, B., G.F. Wilson and T.C.Lawson. 1984. Alley Cropping: A Stable Alternative to Shifting Cultivation. 22pp. Available from IITA, PMB 5320, Ibadan, Oyo State, Nigeria.

Majisu, L. and Labelle, R. A Selected Bibliography of Agroforestry. 1983. ICRAF, Box No. 30677, Nairobi Kenya. 60pp.

Arid Land Forestry

Armitage, F.B. 1985. Irrigated Forestry in Arid and Semi-Arid Lands: A Synthesis. IDRC-234e. International Development Research Centre, Box 8500, Ottawa, Canada K1G 3H9.

FAO. 1985. 'Sand dune stabilization, shelterbelts and afforestation in dry zones. FAO conservation Guide 10. Proceedings of a FAO/DANIDA training course held 3 to 30 March, 1980 in India. 232 pp.

Spooner, B. and Mann H.S. (Eds). 1982. 'Desertification and Development': Dryland Ecology in Social Perspective. Academic Press, Inc., 111 Fifth Ave., New York, N.Y. 10003 USA. 408pp Cost US \$52.

Tapp C. 1984. Literature Review of Forestry in the Sudan. Ag. Research Council/USAID Khartoum Sudan. Oct 1984 105pp

World Bank. 1985. Desertification in the Sahelian and Sudanian Zones of West Africa. The World Bank, Washington D.C. 60pp.

Wormald, T.J. 1984. The Management of the Natural Forests in the Arid and Semi-Arid Zones of East and Southern Africa. A report to the UK Overseas Development Corporation. 92pp.

Energy

Evans, Margaret I. 1984. Firewood versus Alternatives: Domestic Fuel in Mexico. University of Oxford, Dept. of Forestry, Commonwealth Forestry Institute. 66pp.

Gorse, Jean. 1985. Fuelwood and Domestic Energy: The Fuelwood 'Crisis' in Tropical West Africa. The World Bank - West Africa-Agriculture Projects Dept. Revised Issue paper No2. Oct. 1985. 17pp. Mimeo.

Morgan W B & P A Moss. 1985 Biomass Energy and Urbanisation: Commercial Factors in the Production and Use of Biomass Fuels in Tropical Africa. Biomass 6: 285-300.

Robinson, A. P. and A. E. Smith. The Charcoal Industry in Somalia: A Techno-Economic Appraisal. Technical Development and Research Institute, 127 Clerkenwell Rd., London EC1r 5DB. 83pp.

World Bank. 1986. Deforestation, Fuelwood Consumption, and Forest Conservation in Africa: An Action Program for FY 86-88. Intl. Bank for Reconstruction and Development Sec. M86-114. January 27, 1986. Restricted Distribution. 28pp.

Braatz, Sue. 1985. The Role of Development Assistance in Forestry: the Forestry Policies and Programs of the World Bank, the US Agency for International Development, and the Canadian International Development Agency. International Institute for Environment and Development. Washington D.C. 137pp.

UN. 1985. NGOs in the Forestry Sector: A Case Study. 84pp. Available in English and French from NGLS United Nations, DC2-Room 1103, New York, NY 10017 USA.

RECENT ADDITIONS TO THE ODI SOCIAL FORESTRY COLLECTION

- Alter, Stephen., 'Sage: a new participant value method for environmental assessment'. Paper prepared for the Workshop on Social Forestry and Voluntary Agencies, Badkal Lake, April 1983.
- Argawal, Anil. 'Beyond Pretty Trees and Tigers: The Role of Ecological Destruction in the Emerging Patterns of Poverty and People's Protests'. ICSSR Newsletter, Vol XV(1): 1984 pp1-27.
- Argawal, Bina., 'Diffusion of Rural Innovations: some analytical issues and the case of wood burning stoves'. World Development, 11(4): 1983 pp359-376.
- ASTRA, Rural Energy Consumption Patterns: A Field Study. Bangalore: Centre for the Application of Science and Technology to Rural Areas. (mimeo) 85pp.
- Awory, Achoka (ed), Afforestation in Rural Development in Eastern Africa. Proceedings of the seminar held in Nairobi, 1982. Nairobi:Environment Liaison Centre, 1982.
- Barnes, D. et al., Social Forestry in Developing Nations. Washington DC:Energy Policy Research Centre, 1982 (mimeo) 50pp. Energy in Developing Countries Series Discussion Paper D-73F.
- Bentley, William R., Indian Forest Productivity and Growth Goals. Ford Foundation Discussion Paper No 18. Delhi, 1985.
- Bentley, William R., Rural Poverty and Resources: essential concepts and skills for forestry curricula in India. Ford Foundation Discussion Paper No 19. Delhi, 1985.
- Blair, Harry. 'Social Soundness Analysis for the Maharashtra Social Forestry Project', 1983 (typescript) 54pp.

RECENT ADDITIONS TO THE ODI SOCIAL FORESTRY COLLECTION

- Alter, Stephen., 'Sage: a new participant value method for environmental assessment'. Paper prepared for the Workshop on Social Forestry and Voluntary Agencies, Badkal Lake, April 1983.
- Argawal, Anil. 'Beyond Pretty Trees and Tigers: The Role of Ecological Destruction in the Emerging Patterns of Poverty and People's Protests'. ICSSR Newsletter, Vol XV(1): 1984 pp1-27.
- Argawal, Bina., 'Diffusion of Rural Innovations: some analytical issues and the case of wood burning stoves'. World Development, 11(4): 1983 pp359-376.
- ASTRA, Rural Energy Consumption Patterns: A Field Study. Bangalore: Centre for the Application of Science and Technology to Rural Areas. (mimeo) 85pp.
- Awory, Achoka (ed), Afforestation in Rural Development in Eastern Africa. Proceedings of the seminar held in Nairobi, 1982. Nairobi:Environment Liaison Centre, 1982.
- Barnes, D. et al., Social Forestry in Developing Nations. Washington DC:Energy Policy Research Centre, 1982 (mimeo) 50pp. Energy in Developing Countries Series Discussion Paper D-73F.
- Bentley, William R., Indian Forest Productivity and Growth Goals. Ford Foundation Discussion Paper No 18. Delhi, 1985.
- Bentley, William R., Rural Poverty and Resources: essential concepts and skills for forestry curricula in India. Ford Foundation Discussion Paper No 19. Delhi, 1985.
- Blair, Harry. 'Social Soundness Analysis for the Maharashtra Social Forestry Project', 1983 (typescript) 54pp.

- Blair, Harry and Olpadwala, Porus., Rural Institutions for Development of Appropriate Forestry Enterprises. USA: Cornell University, 1982.
- Branney, Peter., Community Forestry Development in Jajarkot District (Dailekh Division) 1983-1985. Miscellaneous Document No. 33. Nepal:HMG/UNDP/FAO Community Development Project, 1985.
- Brewbaker, James L., 'Fodder and Fuelwood Nitrogen Fixing Trees for Nepal', 1983 (typescript) 18pp.
- Burbridge, P. Dixon, J.A, Soewardi, B., 'Forestry and Agriculture: Options for Resource Allocation in Choosing Lands for Transmigration Development'. Applied Geography, Vol 1: 1981 pp237-258. East-West Environment and Policy Institute Reprint No 26.
- Burch, William R., 'Harnessing the Green Machine for Rural Development', 1982 (typescript) 14pp.
- Burley, J. et al., Issues of Biological Resources and Environmental Management in China : Report on a visit to China by the Oxford Environmentalist Delegation, September 1985. (mimeo) 54pp.
- Burley, J. and Stewart, J.L. (eds), Increasing Productivity of Multipurpose Species. Vienna:International Union of Forestry Research Organizations, 1985.
- Byron, R.N., Policies and Options for the Forestry Sector of South Pacific Island Economies Islands/Australia Working Paper No 86/4. Australian National University, 1986. (mimeo) 35pp.
- Chambers, Robert., 'Community Forestry: Notes and Questions from a field visit in South Bihar, June 1981', (typescript) 19pp.
- Chavangi, N. et al., Culture as the Basis for Implementing Self-Sustaining Woodfuel Development Programmes. A paper prepared for the Kenya Woodfuel Development Programme. Nairobi:The Beijer Institute, 1985. (mimeo) 23pp.

- China., A Brief Account of China's Forestry. People's Republic of China:Ministry of Forestry, 1984. 20pp.
- China., China's Forestry and its Role in Social Development. People's Republic of China:Ministry of Forestry, 1984, 43pp.
- China., Green China. People's Republic of China:Office of Central Afforestation Committee, 1984.
- Chipko., 'The Dasholi Gram Swarajaya Sangh: activities of the group to be founded in the Chipko Movement', 1983 (typescript) 17pp.
- Chowdhry, Kamla., 'Afforestation One Crore Tree, One Year, One Agency', 1982 (typescript) 6pp.
- Chowdhry, Kamla., 'Schools Trees and Afforestation', 1982 (typescript) 4pp.
- Coldham, Simon. 'A Comparative Study of Land Tenure Legislation in Africa'. Acta Juridica, 1985 pp189-212.
- Colfer, C.J.P., 'Women, Men and Time in the Forests of East Kalimantan' Borneo Research Bulletin, Vol 13(2): 1981 pp75-85. East-West Environment and Policy Institute Reprint No 25.
- Cultural Survival Inc. 'Deforestation:The Human Costs' Quarterly Journal, Vol 6(2): 1982 pp3-27.
- Dargavel, John and Simpson, Gary (eds), Forestry: success or failure in developing countries?. CRES Working Paper 1985/20. Australian National University, 1985. (mimeo) 95pp.
- Davidson, J., 'Species and Sites: what to plant and where to plant'. Field Document No 5 prepared for the UNDP/FAO project Assistance to the Forestry Sector in Bangladesh. Rome:FAO, 1985. 50pp.
- Davidson, J., 'Setting Aside the Idea that Eucalypts are Always Bad'. Working Paper No 10 prepared for the UNDP/FAO project Assistance to the Forestry Sector in Bangladesh. Rome:FAO, 1985. 22pp.

- Dubey, S.P. and Chakravarti, R. 'Forestry for Rural Energy Production', 1981 (typescript) 34pp.
- Easter, K. William., Integrated Watershed Management Research for Developing Countries. Honolulu:East-West Environment and Policy Institute, 1985.
- FAO, Institutional Aspects of Shifting Cultivation in Africa. Rome:FAO, 1984.
- FAO, 'Understanding Tree Use in Farming Systems'. Based on the workshop on Planning Fuelwood Projects with Participation of Rural People, Lilongwe, 12-20 November, 1984. Rome:FAO, 1985.
- FAO, Papers presented by participants at the Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984 (includes papers on Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Sudan, Tanzania, Uganda, Zambia, Zimbabwe).
- Feeny, David., Agricultural Expansion and Forest Depletion in Thailand, 1900-1975. Economic Growth Centre Discussion Paper No. 458. Yale University, 1984. (mimeo) 65pp.
- Fleuret, Patrick C. and Fleuret, Anne K., 'Fuelwood Use in a Peasant Community: A Tanzanian Case Study'. The Journal of Developing Areas, Vol 12: 1978 pp315-322.
- Foley, Gerald., Charcoal Making in Developing Countries. Energy Information Programme Technical Report No 5. London:IIED, 1985.
- Gadgil, Madhav. et al., 'Forest Management and Forest Policy in India: A Critical Review'. Social Action, Vol 33: 1983.
- Gadgil, Madhav. et al., 'Land Trees and People', 1983 (typescript) 21pp.
- Gamser, Mathew S., 'The Forest Resource and Rural Energy Development'. World Development, Vol 8: 1980 pp769-780.

- Gamser, M.S. et al., 'Implementation of New Energy Technologies in Developing Nations: Problems and Policies in the Introduction of Charcoal in Papua New Guinea'. GeoJournal, Vol 17(1): 1983 pp35-40.
- Gill, Jas., 'The Political Economy of Deforestation in Zimbabwe'. Paper presented at the symposium on Environmental Crisis in Africa: Ecology Versus Political Economy, London, 18 September, 1985.
- Gill, Jas., 'Stoves and Deforestation in Developing Countries'. Paper presented at the UK-IES conference Energy for Development - What are the Solutions?, Reading University, UK, 13 December, 1985.
- Gomes, A.G., Ecological Adaptation and Population Change: Semang Foragers and Temuan Horticulturists in West Malaysia. East West Environment and Policy Institute Research Report No. 12. Honolulu, 1982. (mimeo) 42pp.
- Guess, George M., 'Technical and Financial Policy Options for Development Forestry'. Natural Resources Journal, Vol 21: 1981.
- Guha, Ramachandra., 'Eco-Development Debate: A Critical Review'. South Asian Anthropologist, Vol 6(1): 1985 pp15-24.
- Guha, Ramachandra., 'Forestry in British and Post British India'. Economic and Political Weekly, October 1983 pp1882-1896.
- Guha, Ramachandra., 'Forestry and Social Protest in British Kumaun, c.1983-1921' in Guha, Ranajit (ed), Subaltern Studies IV. New Delhi:Oxford University Press, 1985 pp54-100.
- Hall, D.O. 'Food Versus Fuel: A World Problem?', 1983 (typescript) 74pp.

- Hall, D.O., 'Regional Development Assisted Through Local Renewable Energy Resources' in Campus-Lopez and Anderson (eds), Natural Resources & Development. Boulder, USA:Westview Press, 1983 pp165-180.
- Hall, D.O., Moss, P., 'Biomass for Energy in Developing Countries'. GeoJournal, Vol 7(1): 1983 pp5-13.
- Hamilton L.S. et al., Handbook for Mangrove Area Management. Paris:UNESCO, 1984.
- Hamilton, L.S., 'A Perspective on Forestry in Asia and the Pacific'. Wallancea, 1984. East-West Environment and Policy Institute Reprint No 67.
- Hamilton L.S. et al., The Protective Role of Tropical Forests a State of Knowledge Review. East-West Environment and Policy Institute Working Paper. Honolulu. (mimeo) 33pp.
- Hamilton, L.S. and King, P.N., 'Watersheds and Rural Development Planning' in Hanks, J. (ed), Traditional Lifestyles, Conservation and Rural Development. East-West Environment and Policy Institute Reprint No 70. Honolulu, 1984 pp80-86.
- Hamilton, L.S. and Pearce, A. J., 'What are the Soil and Water Benefits of Planting Trees in Developing Country Watersheds?'. Paper prepared for an international symposium on Sustainable Development of Natural Resources in the Third World, Ohio State University, September 1985. East-West Environment and Policy Institute Working Paper. Honolulu, 1985. (mimeo) 26pp.
- Howes, Michael., Rural Energy Surveys in the Third World: a critical review of issues and methods. Ottawa:IDRC, 1985.

Hyman, Eric L., 'Demand for Woodfuels by Households in the Province of Ilocos Norte, Philippines'. Energy Policy, December 1985 pp581-591.

Hyman, Eric L., 'Forestry Administration and Policies in the Philippines'. Environmental Management, Vol7(6):1983 pp511-524. East-West Environment and Policy Institute Reprint No 57.

Hyman, Eric L., 'Opportunities and Constraints for Organizations to Help Sustain Tropical Forest Resources'. Environmental Management, Vol 10(1): 1986 pp11-20.

Hyman, Eric L., 'The Strategy of Decentralized Production and Distribution of Improved Charcoal Stoves in Kenya'. World Development, (forthcoming) 24pp.

Howe, B.J., 'Financing Forestry'. Commonwealth Forestry Review, Vol 64(4): 1985 pp345-348.

India., Report of Committee on Forest and Tribals in India. Ministry of Home Affairs, 1982.

International Development Research Council., Sahel Regional Aid Planning and Coordination: End of Contract Statement. Washington DC:National Academy Press, 1983.

Iputu, S.A., 'Forestry Research in the Solomon Islands'. Paper prepared for the Forest Research Workshop, Honolulu, 17-21 March, 1986. (mimeo) 8pp.

Jeanrenaud, J-P., 'Propagation and Silviculture of Lokta (Daphne) in Nepal'. Paper prepared for the ODA Forestry Research Project. Kathmandu:Forest Survey and Research Office, 1985. (mimeo) 7pp.

Johnson, James., 'Management and the Need for Monitoring in the Planning and Implementation of Farm Community Forestry Projects in Developing Countries', 1985 (manuscript) 33pp.

- Jones, R.J., Megarrity, R.G., Lowry, J.B., Hegarty, M.P. and Bogor.
Papers on 'The value of *leucaena leucocephala* as a feed for ruminants in the tropics (with rumen bacterial modifications). 1979, 1983 and 1984.
- Kendrick, Anita., Challenging the Assumptions: An Analysis of the Role of Evaluation in the Ford Foundation's Work in Forestry. New York:Ford Foundation, 1985. (mimeo) 65pp.
- King, K.F.S. 'Some Principles of Agroforestry'. Keynote address in Proceedings of the Agroforestry Seminar, Imphal, 16-18 May, 1979. New Delhi:Indian Council of Agricultural Research pp17-26.
- Kulkarni, Sharad., 'Towards a Social Forest Policy'. Economic and Political Weekly, 1983 pp191-196.
- Lachenmann, G. et al., 'Interdependence between environmental deterioration and daily activities of man in the lacustrine zone of Mali' (in french). Institut Allemand de Developpement series Ecologie et Developpement Socio-Economic. Berlin, 1985.
- Lai, Chun Kai., 'Toward Social Forestry: Understanding and Integrating Land and Tree Tenure, Social Organization, and Institutional Constraints' term paper FES745a/Seminar in Society and Renewable Energy Systems, 1983. (mimeo) 20pp.
- Leblond, Bernard and Guerin, Laurent., Soil Conservation: Project Design and Implementation Using Labour Techniques. Geneva:ILO, 1983.
- Lowe, R.G., Farm Forestry in Nigeria. Ibadan:Federal Department of Forest Research, (typescript) 12pp.
- Maathai, Wangari., 'Kenya: the Green Belt Movement'. IFDA Dossier, No 49: 1985 pp3-12.

Mahiti Project., 'Field Guide to Social Afforestation', 1983.
(typescript) 21pp.

Mahiti Project., 'Focussing on the Real Issues some Glimpses from
Dhandhuka Taluka', 1982 (typescript) 21pp.

Mahiti Project., Promoting Social Afforestation of Wastelands in the
Bhal. Ahmedabad:Mahiti Project.

Mahiti Project., 'Planned Activity Note: Field Guide to Social
Afforestation', (typescript) 22pp.

Mgeni, A.S.M., 'Fuelwood Crisis in Tanzania is Women's Burden'.
Quarterly Journal of Forestry, Vol LXXVIII(4): 1984 pp247-249.

Mgeni, A.S.M., 'Soil Conservation in Kondoa District, Tanzania'. Land
Use Policy, Vol 2(3): 1985 pp205-209.

Monga, P.K., 'Bhutan Tashigang and Mongar Area Development Project:
Social Forestry Component'. A report prepared for IFAD/FAO
Project Preparation Mission. (mimeo) 29pp + tables.

Nair, P.K.R., Fruit Trees in Tropical Agroforestry Systems.
East West Environment and Policy Institute Working Paper.
Honolulu, 1984. (mimeo) 81pp.

Noronha, Raymond., 'Seeing People for the Trees: Social Issues in
Forestry' paper prepared for the Conference on Forestry and
Development in Asia, 19-23 April, 1982. (mimeo) 35pp.

Nwoboshi, Louis C. 'The Soil Productivity Aspects of Agri-Silviculture
in the West African Tropical Moist Forest Zone', (typescript)
19pp.

O'Loughlin, Colin L., The Effects of Forest Land Use on Erosion and
Slope Stability. Honolulu:East-West Environment and Policy
Institute, 1985.

- Opio-Odongo J.M.A., 'Women's Contribution to Food Production and Rural Development: The Relevance of a Structural Ecological Frame of Reference'. Aprotech, Vol 5(2&3): 1982 pp30-35.
- Pant, M.M., 'The Impact of Social Forestry on the National Economy of India'. International Tree Crops Journal, Vol 1: 1980 pp69-92.
- Pelnick, E., Nepal: Interim Project Results and Recommendations 1980-1984. Nepal:HMG/UNDP/FAO Community Forestry Development Project, 1985.
- Persson, Reidar., 'World Forest Resources and Trends'. Development Digest, Vol XVII(4): 1979 pp3-10.
- Plumptre, R.A., 'Integrated Wood-Use Centres for Small Industry Development'. Commonwealth Forestry Review, Vol 64(4): 1985 pp375-382.
- Poschen, Peter and Eiche, Gabriel., 'The Need for Fuel and Wood in Rural Areas of Eastern Highlands of Ethiopia: findings of a detailed household survey', 1985 (typescript) 12pp.
- Rathindra, Roy., 'Socialising the Forest'. Aside, Vol 4(3): 1980 pp47-49.
- Rambo, Terry A., 'Fire and the Energy Efficiency of Swidden Agriculture'. Asian Perspectives, Vol 23(2): 1980 pp309-316.
- Romm, Jeff., 'Models of Resource Management in Asia: The Entry of Demographic Thought'. Paper presented at the Ford Foundation International Seminar on Population and Development, Sri Lanka, 11-15 December, 1978.
- Sathe, M. D., 'Tree Pasture Programme - A Theme in Social Forestry', 1980 (typescript) 10pp.

- Seckler, David., 'Gasifiers, Woodlots and Pumps: An Idea', 1981 (typescript) 9pp.
- Shingi, P.M. and Wadwalkar, S., People's Participation in Social Forestry - Some Propositions. Indian Institute of Management Working Paper No. 364. Ahmedabad, 1981.
- Sholto Douglas, James., 'Forest Farming: an ecological approach to increase nature's food productivity'. Impact of Science on Society, Vol XXIII(2): 1973 pp117-131.
- Singh, M.K. and Mascarenhas, O.A.J., 'Ecological Analysis of a Forest-Based Tribal Village in Singhbhum (Bihar) for a follow-up land resource management action', 1980 (typescript) 37pp.
- Snyder, Monteze M., 'Institutional Analysis and Contributions to a Forestry Sector Project Identification Document'. A report to USAID/Bamako, 1984 (typescript) 56pp.
- Spears, John., 'Deforestation Issues in Developing Countries: The case for an accelerated investment programme'. Commonwealth Forestry Review, Vol 64(4): 1985 pp313-343.
- Spears, John., 'World Bank Financed Forestry/Agricultural Projects: Examples of various strategies that are being used to relieve pressure on tropical rainforests'. Discussion note prepared for the Smithsonian Institution Conference on Tropical Conservation, Washington DC, 4-6 December, 1985.
- Srivastava, B.P. and Pant, M.M., 'Social Forestry on a Cost-Benefit Analysis Framework'. Indian Forester, January 1979 pp2-20.
- Surin, V. and Bhaduri, T., 'Forest Produce and Forest Dwellers'. Paper presented at the FAO/GI seminar on Forest and Women, Dehradun, December 1980. (typescript) 14pp.

- Taylor, Robert., 'Afforestation and Fuelwood in China'. Development Digest, Vol XVII(4): 1979 pp31-35.
- Tietema, Tabe., 'Firewood for Botswana: Towards a Sustained Harvest of Firewood' paper presented at the UNESCO (MAB) Zimbabwe regional Workshop on Woodlands and Water Resources, Harare, 22-27 October, 1984. (typescript) 9pp.
- du Toit, R.F. et al., Wood Usage and Tree Planting in Zimbabwe's Communal Lands. Harare:Forestry Commission of Zimbabwe and The World Bank, 1984.
- USAID. 'Draft Environmental Report on Nepal' prepared by the Science and Technology Division, Library of Congress, Washington, July 1979. (mimeo) 51pp.
- US Interagency Task Force on Tropical Forests. The World's Tropical Forests: A Policy, Strategy and Program for the United States. Department of State Publication 917. Washington DC:US Government Printing Office, 1980.
- Vergara, Napoleon T., 'Agroforestry Systems: A Primer'. Unasylva, Vol 37(147): 1985 pp22-28. East-West Environment and Policy Institute Reprint No 79.
- Vergara, Napoleon T., Integral Agroforestry: A Potential Strategy for Stabilizing Shifting Cultivation and Sustaining Productivity of the Natural Environment. East West Environment and Policy Institute, Working Paper. Honolulu, 1981. (mimeo) 30pp.
- Vergara, Napoleon T. (ed), New Directions in Agroforestry: The Potential of Tropical Legume Trees. Honolulu:East West Environment and Policy Institute, 1982.
- Vergara, N.T. and Nair P.K.R., 'Agroforestry in the South Pacific Region - an overview'. Agroforestry Systems, Vol 3: 1985 pp363-379.

Verma, B.L., 'Draft Social Forestry Project in Rajasthan: A Review'.
The Barbed Wire Culture, 1982 pp29-32.

Webb, Richard., Community Forestry in Sudan. Dublin:An Foras
Forbartha Teoranta, 1985. (mimeo) 44pp.

Webb, Richard., Options for Forestry Projects in the Sudan: proposals
on bilateral aid. A report to the Department of Foreign
Affairs. Dublin:An Foras Forbartha, 1986. (mimeo) 86pp.

Weinstock, Joseph A., Tenure and Forest Lands in the Pacific.
Environment and Policy Institute Working Paper. Honolulu, 1984.
(mimeo) 30pp.

Wiersum, K.F., Developing Strategies for Social Forestry: A Conceptual
Approach. East-West environment and Policy Institute Working
Paper. Honolulu, 1984. (mimeo) 21pp.

Wiersum, K.F., Forestry Aspects of Stabilizing Shifting Cultivation in
Africa. Holland:Wageningen Agricultural University, 1985.

Wiersum, K.F.. 'Significance of Social Organization and Cultural
Attitudes for Agroforestry Development'. Paper presented at a
seminar on Advances in Agroforestry, Turrialba, 1-11 September
1985. (mimeo) 11pp.

Wiersum, K.F., 'Trees in Agricultural and Livestock Development'.
Netherlands Journal of Agricultural Science, Vol 33: 1985
pp105-114.

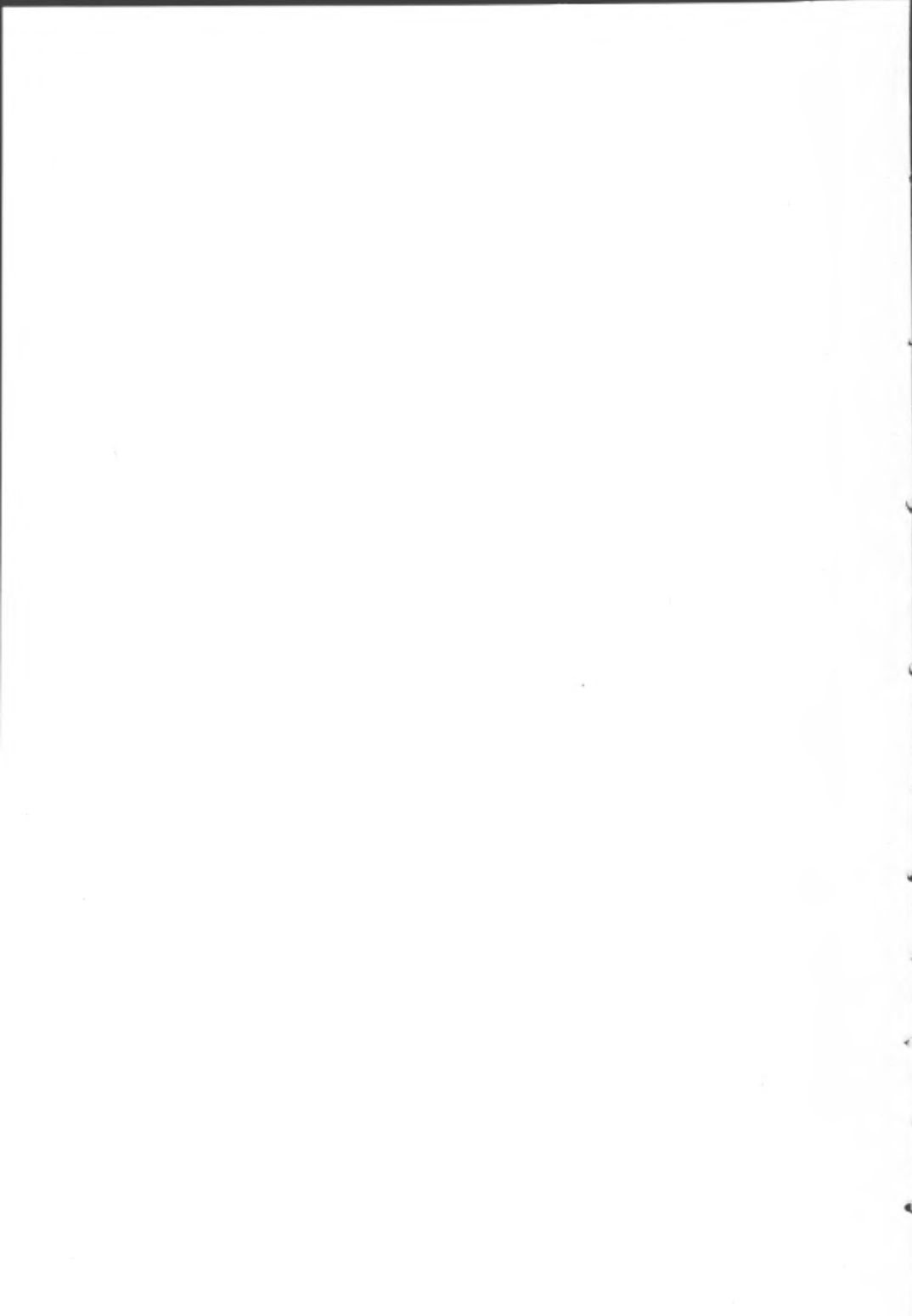
Williams, Paula J., 'Women's Participation in Forestry Activities in
Burkina Faso (formerly Upper Volta)', 1985 (typescript) 13pp.

Workshop on Energy Policy - Problems of Formulation and

Implementation, Institute of Development Studies, 27 September, 1985. Summary papers by Julian Bharier: 'The Energy Assessment Approach to Energy Policy in Developing Countries' (5pp). Tom Berrie: 'Practical Assessment of Energy Sectors' (3pp). Phil O'Keefe and Paul Susman: 'Reflections on Energy Problems in Developing Countries' (4pp). Mick Howes: 'Rural Fuel Shortages in Bangladesh: the evidence from four villages' (2pp).

World Bank., 'Report of a Mid-Term Review Mission' Gujarat Community Forestry Project (CR 961-IN) 1983.

World Bank. Jamu & Kashmir and Haryana Social Forestry Project.
Staff Appraisal Report No 3840-IN, 1982. (typescript) 117pp.





**Overseas Development Institute
Regent's College**

Nearest underground station: Baker Street (Bakerloo, Jubilee, Metropolitan and Circle lines). Nearest bus stops in Gloucester Place (going North) Baker Street (going South), and Marylebone Road (East or West). ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the Main Entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

Credits

Newsletter and network papers edited by:
Gill Shepherd, Social Forestry Research Officer

Design, typing and layout by:
Jennifer Dudley, Administrative Secretary
Carole Buckingham, Network Secretary
Peter Gee, Publications and Press Officer



Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



THE SUCCESS OF VANUATU'S LOCAL SUPPLY PLANTATION PROGRAMME IN MEETING THE NEEDS OF THE NATION AND ITS COMMUNITIES

Julian Gayfer

Julian Gayfer recently returned from two years' work as a VSO Assistant Forest Management Officer with the Vanuatu Forest Service. He is about to take up a forestry post in Ghana.

THE SUCCESS OF VANUATU'S LOCAL SUPPLY PLANTATION PROGRAMME IN MEETING THE NEEDS OF THE NATION AND ITS COMMUNITIES

Julian Gayfer

1. INTRODUCTION

Implicit within the title of this paper is the question 'is Vanuatu's Local Supply Plantation (LSP) programme proving successful in fulfilling its original objective of developing a local supply of sawn timber to the domestic market, in a manner appropriate to the needs of the nation and its communities?'.

To address this question one must consider:-

- (i) The physical, social, economic and political environment in which the programme takes place.
- (ii) The objectives of the LSP programme and policies pursued by the National Forest Service.
- (iii) The needs of the nation and its communities: areas of overlap and exclusiveness.

Vanuatu (formerly the New Hebrides) is a nation of small Pacific Islands lying between 13°-20° south of the equator, 1800km north-east of Brisbane, Australia. There are over 80 islands, aligned north-south, comprising a total land area of approximately 15,000km². Of the current population, estimated in 1983 at 130,000, over 80% are rurally-based and largely dependant on subsistence agriculture. Only Port Vila (14,000) and Luganville (5,000) are urban centres of any significance. Land area per capita was estimated in 1980 at 13.5ha of which arable land constituted 0.87ha.

The relatively low population density coupled with the favourable physical characteristics of the islands presents few constraints to

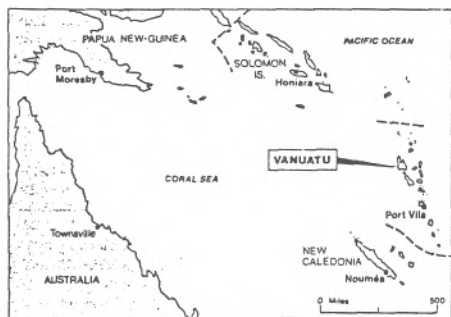


VANUATU

- Local Supply Plantations

1cm. represents 30km.

Port
Vila



agricultural development. However there are important local variations in population density both between and within islands. These have been influenced by a variety of forces: depopulation resulting from European contact in the nineteenth century, migration from island interiors to coastal settlements, and yet a relatively strong attachment by individuals to the customary territory of their group. Consequently settlement patterns vary between islands, from those with dominant coastal settlements and uninhabited interiors, to those where villages are scattered throughout the island on ancestral lands.

2. LAND ISSUES

Central to an appreciation of life in Vanuatu is an understanding of the primary importance Melanesian society attaches to land. (Alatua et al., 1984).

2.1 Customary Law

Land is seen as linking past, present and future generations. However customary rights are not set once and for all but are differently expressed in different islands at different times. In theory this inherent flexibility provides traditional land tenure systems and social structures with the capacity to respond to changes originating from European colonisation and entry to a modern world. However the present situation is a confused one, and in particular the relationship between land, the individual and the community remains uncertain.

2.2. Inheritance rules

In Vanuatu, the nature of landholding groups, the size of their territories, and the rules governing land rights vary slightly from island to island. Individual usufruct rights exist but depend on the individual's position within the group, the location of the land and the group's connection with the land. Land rights are traditionally traced back to a common ancestor, his or her descendants having inalienable rights to use of the land, but never possession of it. 'Big

Men' and Chiefs act as custodians of the land and are responsible for the practical application of the principles governing its allocation within the social group.

2.3. External influences

With the arrival of the first settlers from France and England in 1854 land immediately became a marketable commodity and assumed an economic value alien to traditional custom. Land alienation by expatriates continued through the late nineteenth/early twentieth century and achieved legal support under the authority of the condominium government. Subsequently land reform became the rallying cry of New Hebrideans in their quest for independence, finally achieved in 1980, (Beasant, 1984). The new constitution transferred all alienated land to Ni-Vanuatu declaring ownership and use of land and that only indigenous citizens should have perpetual ownership. Whilst the government had authority to acquire land in the public interest, to date it has been reluctant to do so. The Government of Vanuatu regards 'custom' and the traditional ways as a positive force for rural development, and its policies reflect this.

2.4. Rural Development

The land is Vanuatu's greatest resource and its development is the key to national and regional economic growth. With an economy based largely on copra, cocoa and beef exports from the plantation sector and still dependent on regular inputs of foreign aid, the objective is to develop and diversify the agricultural base of the country. Efforts are being made to achieve this in two ways. The first is the development of the role of those practising subsistence agriculture (predominately shifting cultivation) through the encouragement of a mix of subsistence and cash cropping. The second concerns the promotion of large scale commercial agricultural projects (eg. cocoa, coffee and beef) as joint ventures involving the government, customary land-owners and private investors. Man's relationship to the land has shaped the political, social and economic development of the nation and will continue to do so. Now more recent phenomena - a population

growth rate of 3.2% and growing concern over urban drift trends - highlight the importance of finding solutions to land development, reconciling the traditional values of Melanesian culture with social justice, and adaptation to a new era. It is within this context that the success of the LSP programme needs to be assessed.

3. ESTABLISHMENT OF THE LSP PROGRAMME

Vanuatu's natural forest is generally poor in valuable timber trees and largely unexploitable. The resource is scattered (10-20m³/ha), comprised of 10-20 different species with varying qualities, and involves a predominance of large logs, (60-100cm³ diameter) which are often crooked, overmature and inaccessible. The condominium government recognised the limitations of the native resource in meeting existing and future demands for sawn timber, and in 1970 established a national forest service under the direction of a UK appointed forester to both control logging practices and develop a plantation resource. From a series of early species trials Cordia alliodora emerged as the most promising species for the wetter sites. Whilst Pinus caribaea var. hondurensis proved to be well suited to the drier southern sites. (Neil, 1983).

In 1974 a "Forestry Plantation Scheme for the New Hebrides" (Bennett, 1974) was proposed involving the establishment of a series of privately owned forest plantations (Local Supply Plantations) scattered throughout the islands in order to meet a predicted national demand for sawn timber by the year 2000 of 15,000m³. This represented a per capita demand for sawnwood of 0.088m³, based on a population growth rate of 2.4% and demand increasing in line with general rises in the standard of living.

3.1. Planting programme

The scheme entailed the establishment of 5618ha of predominantly C. alliodora. Individual island or island group requirements were assessed by multiplying the general sawn timber consumption per capita figure by the predicted population of the island in the year 2000,

thereby establishing an estimated future 'local' market for sawn timber, having made an allowance for loss of volume through cyclone damage and other natural phenomena. Having estimated island requirements this was broken down to plantation units of between 100-200ha, involving annual planting rates of 5-10ha.

Whilst it was acknowledged that the bulk of the demand for sawn timber would come from the urban centres of Vila and Luganville (as is currently the case) the benefits of diverse plantation locations in respect to cyclone risks and the pursuit of balanced regional growth, were thought to off-set any potential disadvantages associated with the distance to markets and increased management costs.

3.2. Project Management

A standard silvicultural prescription was proposed for the LSPs involving the cutting of 10m through the natural bush and the poisoning, frillgirding, burning or felling of the remaining unwanted trees to gradually open the canopy. Stumps of C. alliodora were then planted at 2.5m intervals in each line, which were regularly to be weeded (Hudson, 1984). Based on preliminary trial work and Solomons and Fiji growth rates, a mean annual increment of 10m³/ha was predicted over a 15 year rotation. It was assumed that thinning to a final crop spacing of 200 stems/ha would produce small volumes of sawn timber and fence posts for sale. The Forest Service undertook to provide direct technical assistance through the appointment of Forest Guards responsible for site management, utilising casual labour employed locally.

3.3. Project Financing

To finance LSP direct costs (casual labour) a Forest Fund was established, fed by government revenue accruing from a reforestation tax levied on existing logging operations. This money was then made available to landowners in the form of interest free loans repayable only through future timber revenues arising from the plantation, any

profits remaining with the landowner. Through taxation on LSP produce at harvesting the Fund would eventually become self supporting, thus providing for future planting. Material costs involved in the establishment phase have to date been provided through direct grant aid. The overhead costs of the Forest Service (staff salaries, travel and subsistence, and general administration costs associated with the LSPs), are met by the Vanuatu Government's recurrent budget contribution.

3.4. Project Profitability

A financial appraisal of the programme in 1978 predicted an internal rate of return of 12% (Forest service, 1978). This assumed a direct cost associated with a standard man-day per hectare specification for establishment of C. alliodora of 60 man-days over a three year period¹, and an overhead cost for the Vanuatu government apportioned to prevalent establishment rates. Material costs were not accounted for. Initial efforts to involve landowners in cutting lines and plantin voluntarily, with the Government loaning 'wages' for maintenance only, proved unreliable. Consequently this arrangement was replaced after only one season by the Government undertaking to provide a loan covering wage payments for all establishment operations.

Revenues from final harvest were assessed using a final crop yield figure of 150m³/ha sold standing. It was assumed that thinning would be carried out at a small profit through a unit under the control of the Forest Service. No variation in royalty rates was considered for different island/project situations, implying that all timber would be sold locally and harvesting costs would be uniform. The financial analysis predicted projects would run at a profit during the second rotation thus providing for repayment of the government loan.

3.5. Legal Arrangements

The programme commenced in 1975 with planting on 3 sites. At that time it was only possible to reach a verbal 'Gentlemen's agreement' with Landowners in the absence of supporting legislation. The Forestry Act of 1982 legally ratified the principal conditions of an agreement. However, to date, no LSP Management Agreements have been signed: a delay largely due to the need to amend the Act to make it compatible with recent land legislation.

Consequently the situation has arisen where, at the end of 1985, 1063ha have been planted on 32 privately owned sites, at a direct cost to the government of 40 million vatu (approximately £300,000). At any time the landowner could fell all the trees planted and the government would have no recourse to law.

4. CUSTOM AND THE LAW: IDENTIFYING THE LEGAL RIGHT TO PLANT

The Forestry Act of 1982 states that the government shall only enter into Forest Plantation Agreements when 'satisfied' that the Landowner signing an agreement is the duly recognised owner of the land.

Prior to independence, ownership could be formally registered under a provision of the condominium government but few Melanesians took advantage of this. They tended to associate the system with land alienation by expatriots, and registration required an expensive ground survey.

Following independence and the dismantling of the old system of land registration, a new procedure for the declaration of customary land ownership has been established under the guardianship of the Department of Lands. This entails a mix of traditional and modern values, using village and area committees composed of Chiefs and Big Men to identify ownership, and the legal system to endorse their decisions and to provide a mechanism for appeal. Whilst this procedure has been successful in some areas, it is very dependent on the support it receives locally, and is vulnerable to the intricacies of local

politics. Furthermore the population movements of the late 19th/early 20th century and the subsequent settlement patterns which arose, complicate the situation as strict adherence to 'custom', (the oral definition of boundaries and land rights) is difficult when groups have become more intermingled residentially.

Starting the LSP programme therefore demanded an extension effort at two levels. Firstly to attract the interest of villagers in establishing forest plantations, and secondly to determine whether their claims to land were valid using any available support from local institutions, legal records and discussions with villagers². In retrospect the extension effort has not been wholly successful. Whilst the objectives of the programme were clear at a national level there were few guidelines directing efforts at village level. The dedication of land occurred rather haphazardly, and although the Forest Service considered basic physical site factors in assessing projects it is suggested that too little attention was paid to examining the social and economic environment of those proposed. Consequently planting on certain islands proceeded at a rate disproportionate to the anticipated future demand.

It is now apparent that people became interested in forestry for a variety of motives: to reinforce their claim to land; for fear of land alienation unless they themselves were party to its development; for employment opportunities within the plantation. It is fair to say that the majority did not gain their interest in forestry because of the attraction of a financial return on the trees themselves.

5. FACTORS AFFECTING THE PERFORMANCE OF LSPs 1975-85

5.1. Project management

A 100% survey of C. Alliodora plantations in 1983 revealed that LSPs were characterised by poor stocking and tree form, indicating that in the vast majority of cases a target of 200 final crop trees, suitable for saw logs, would not be achieved unless extensive crop rehabilitation work was carried out and maintenance standards dramatically

improved. A re-survey in 1985, based on a 20% sample, clearly showed that improvements have not been forthcoming although a number of sites continue to demonstrate the obvious potential of C. alliodora grown on fertile sites under good management.

In the early days of the programme staff shortages, lack of vehicles and poor communications were reported as being the major handicaps to attaining high standards of site management, (Bennett, personal communication) in particular in ensuring that weeding was carried out regularly and successfully. More recently, investigations by the author showed that labour requirements for the establishment of C. alliodora were highly site specific, and uneven management performance of staff and a general failure to acknowledge the inappropriateness of standard silvicultural prescriptions for varied site conditions³ were also factors. However, in a broad sense the author attributes continued poor performance to an overall failure to develop the skills and commitment of workers, or responsible attitudes among land-owners.

5.2. Rising Project Costs

On average man-days per hectare required to establish C. alliodora in LSPs has exceeded the original specification of 60 man-days by over fifty percent. In addition, weeding is continuing way beyond the third year, a reflection of the absence of any successful integration of cattle into plantations, and of poor management.

Whilst LSP material costs are still covered through grant aid, overhead costs met by the Vanuatu Government have increased disproportionately to any increase in log values or to the scale of LSP the programme⁴ itself.

5.3. Utilisation and marketing of LSPs

In 1984-85 the first LSPs were thinned. This initial experience has demonstrated that, despite earlier optimism, thinning is unlikely to be a commercial proposition for the following reasons:

- (i) High cost of transporting equipment between sites .
- (ii) Poor quality of material removed.
- (iii) High cost of conversion in relation of the scale of operation
- (iv) In-accessibility to markets, and the costs involved producing treated posts and poles.
- (v) Limited demand for both sawn timber and purchased fence posts.

Furthermore tests have shown that whilst Cordia's heartwood is fairly resistant to fungal and termite attack, sapwood, (which constitutes the bulk of younger stems removed in thinning) has a much lower resistance, (Anon., 1983). Consequently the potential for marketing Cordia thinnings as untreated posts and poles is very limited. Although various treatment techniques do produce durable building poles, the operation cannot be carried out economically on sites of the size of a typical LSP. A report by Asian Development Bank consultants (Silviconsult, 1984) suggests that, at final harvest under current management practices, only sawn timber will give a return.

5.4. Uncertainties over the demand for timber

The scale of the LSP programme was originally based on the assumption that demand for sawn timber would rise steadily⁵, reaching a per capita figure of 0.088m³ by the year 2000. This assumption suggested that a per capita demand of 0.052m³ would be reached by 1983. The actual figure in that year was estimated at only 0.026m³ (Forestry Service, 1984) exactly half that predicted. All indications are that demand for sawn timber continues to be heavily concentrated on Vila and Luganville. However, even in these urban areas, locally produced sawn timber faces stiff competition from alternative construction materials including graded timber imports.

In the rural areas the emphasis is still very much on traditional style housing utilising locally gathered leaf material and unprocessed roundwood. This practice is expected to continue, given that these materials remain available to the rural population.

An 'improved' standard of traditional housing can be achieved relatively cheaply by combining a concrete base with traditional walling (utilising roundwood) and iron roofing. Such a design (and its variants), requires little sawn timber, and is cheaper and more popular than 'modern' style timber framed houses⁶. In addition to promoting community self reliance in utilising locally available material, such designs avoid the expense of transporting large quantities of timber and machinery within or between islands. Furthermore, where income levels permit, and modern style housing is being constructed in rural areas, concrete blocks appear to be preferred to a timber frame construction.

5.5 Development of the Industrial Forest Plantation Programme

In response to the excellent growing conditions of Vanuatu and favourable results from trials and LSPs, the potential of a timber industry exporting high value products to the Asia/Pacific region, was recognised during the late 1970s. Subsequently in 1982 the Industrial Forest Plantation (IFP) Programme began, with annual planting rates of up to rates 200ha on one site. For these projects, of which there are currently two (at Aneityum and Erromango)⁷ the relationship of the landowners to the projects is fixed through a leasing arrangement whereby the landowners lease the land to a Development Company, who in theory own and run the project. Within the company structure there is provision for the Government, landowners and outside investors to hold shares.

Inevitably the promotion and administration of the IFP Programme, particularly at a senior management level within the Forest Service, has served to detract attention away from LSPs. Whilst IFPs are primarily designed to supply an export market it is considered likely that a proportion of their production, perhaps consisting of lower quality timber, will also supply the domestic market.

In light of the above observations the financial viability of LSPs based on revised expectations and 1985 costs, appears in doubt.

However, financial return is only one of the potential benefits of such plantations and it is necessary to look at the broader picture. This requires an assessment of the needs of the nation and its communities.

6. NATIONAL AND COMMUNITY NEEDS

Inevitably there is a degree of overlap between national and community needs. It is the declared policy of the Vanuatu Government to aim for balanced regional growth, providing the basis for sustainable social development particularly in the rural areas

Forestry's role in contributing to national wellbeing is seen by Roche (1977) as being twofold:

- at an industrial level: Large scale heavily capitalised industrial forest projects, largely divorced from agriculture, geographically restricted and with a narrowly based economic objective ie. to maximise the production of wood and wood products at a minimum cost.
- at the community level: Forestry as an instrument for integrated rural development, sustaining and supporting agricultural production through systems designed to yield wood products that can be directly consumed, or easily harvested and marketed by the local community.

As Roche concludes these two approaches are wholly complementary.

It is recognised that at a national level Vanuatu needs to develop a future local supply of sawn timber to meet a growing domestic demand, concentrated in the urban areas. This must be achieved in a cost-effective manner to compete with imports.

Concurrently community needs revolve around the provision of building poles, simple items of furniture and possibly even fuelwood as population pressure increases in certain areas. Some growth in the modest demand for sawn timber in rural areas will also provide limited opportunities for local commercial production.

Irrespective of actual community demands there is a need to promote local self reliance, offering a variety of socio-economic benefits to local communities by bringing forestry to the level of the village. This will require a closer integration of forestry with local smallholder agricultural systems. In the past LSPs have generally been perceived by landowners as government projects, and this is unlikely to change even under formal agreements as the scale and nature of projects are regarded as alien to traditional farming systems.

The Local Supply Planation programme in its present form in fact fails to meet either national or community needs successfully. With respect to both the scale of the plantations and the nature and level of state support it receives, it falls uncomfortably between an industrial project and that of a community forestry programme, justified neither by its financial viability nor by any significant wider social or environment benefits. Its principal defects can be summarised as follows:

- (i) Doubts over future demand for sawn timber especially on the more isolated islands.
- (ii) Poor location of many LSPs relative to potential markets and existing communities.
- (iii) Low standards of crop maintenance and worker productivity.
- (iv) Failure to integrate LSPs into the social and economic life of land owners and communities
- (v) The uncertain financial return to landowners.

An undisputed benefit of LSPs has been the generation of wage employment in rural areas where few alternative opportunities exist, but this should not be overstated. Moreover Vanuatu must reassess the benefits of employing its limited financial and technical resources in fostering rural development through such forestry programmes.

7. RATIONALIZATION OF THE LSP PROGRAMME

Rather than terminate support for LSPs it has been recommended that the programme be severely cut back, restricting further expansion to

just eight existing sites, on three of which planting would finish by 1990 (Gayfer, 1985). A further fourteen sites would be confined to care and maintenance regimes whilst an additional four sites would be abandoned⁸. In both 1982 and 1983 the Forest Service reduced LSP planting targets in response to concern over funding and maintenance standards respectively. However current proposals are more radical suggesting that in both the short and long term the development of the programme should be restricted. (Irrespective of available finance or subsequent improvements in plantation management). The reasons for maintaining an interest in particular LSPs are varied. Obviously there are political considerations, but these are overshadowed by a belief that each project should be considered on its own merits as it is felt that in certain instances, by maintaining support but developing the capabilities of the landowner/community, a successful project can ensue.

Consequently a number of criteria have been used to assess individual projects, namely:-

- (i) The Marketing potential of timber, either processed or un-processed.
- (ii) The performance of C. alliodora.
- (iii) Land availability for further planting.
- (iv) Level of landowner or community commitment to the project.

The significance of these criteria varied from island to island as projects also had to be set in the context of what other opportunities, if any, existed for rural development.

8. THE SIGNIFICANCE OF LAND TENURE IN DETERMINING THE SUCCESS OF LSPs

It is suggested that the nature of land ownership is an important influence in determining the success of LSP projects.

In situations where groups occupy traditional territory and group ties remain strong, projects benefit from the mutual support of indivi-

duals. This is based on the idea that although their names may not be on a project agreement, strong ties within the group effectively secure their involvement in determining the project's future, and an ultimate share in its financial rewards. This is reflected in higher maintenance standards and a continuity of labour supply.

Conversely, where population movements have led to the growth of settlements comprised of several social groups, traditional ties are often weak and an atmosphere of suspicion may exist among settlers, particularly with respect to land matters. If the government is seen apparently to support the land claim of one group over the others by establishing an LSP, it aggravates an already difficult and confused situation, and the project will receive little local support.

The problem springs from a misperception of the concept of community in Vanuatu. Whilst land may be referred to locally as belonging to the community or communities, invariably this means land ownership is uncertain and various individuals/groups have designs on the land. Rather than confront a dispute head-on there will be an informal consensus to use the land for gardening, hunting, etc provided that no permanent claims are staked through the planting of perennial crops such as coconut palms and forest plantations.

Custom and English law are not always comfortable partners. A declaration of land ownership only declares the right of an individual to act on behalf of his/her dependents in customary law. The LSP Management Agreement is in accord with this, detailing the understanding between Government and a social group (whether this be a community, kin group, or household unit) represented by certain individuals, without legally defining the benefactors within the group. Consequently all power effectively becomes vested in the group's representatives. In many cases it is felt that the traditional mechanisms by which the benefits of a plantation would be divided between the group may not be as impervious to mistrust and abuse as initially assumed. Furthermore recourse to complicated and expensive

legal arrangements (companies, trusts, partnerships) to guarantee the rights of individuals is incongruous given the small scale of LSPs. Whilst there are no easy answers it is important to observe that as the size of the plantation unit increases so does the likelihood of uncertainty and dissatisfaction within the landowning group. And in an atmosphere of suspicion the success of a project, even under an agreement, cannot be assumed. Where such suspicion and resultant lack of commitment exist, prospects for lasting improvements in project management are poor and advantage cannot be taken of technical advances (improved planting, stock etc).

9. DEVELOPMENT OF A FARM AND COMMUNITY FORESTRY EXTENSION EFFORT

It is argued that both to complete the new LSP programme and for the continued development of IFPs, a new forestry extension effort is required, to provide a technical and financial framework around which communities and individuals could respond in ways appropriate to their needs.

Initially this would demand a survey by the Forest Service of the needs and aspirations of communities/island concerning wood products, an assessment of resources available on a local and regional basis in respect to both the natural forest and established plantations and a greater understanding of the social and cultural factors influencing the design of forestry programmes. The role of forestry in supporting agriculture would be also investigated suggesting a future closer association with the agricultural extension service. Whilst some preliminary research has been carried out by the Forest Service on the integration of C. alliodora with traditional subsistence gardens and cash crops (Neil and Jacovelli, 1985), this occurred in a relatively isolated location thus limiting its demonstration value. There is a need to expand this work on sites closer to villages in areas where population pressure is relatively high and increasing. Even more urgently needed is further research into silvi-pastoral systems mixing trees and cattle in proportions of benefit to both.

General principles around which a farm and community forestry extension programme could be based are as follows:

Where market opportunities for sawn timber are limited

- (i) Efforts should concentrate on the greater utilisation of individual/household land rights (except where group ties are strong), through the integration of tree planting (and/or management of the native resource) with subsistence and cash crop agriculture, either spatially or temporally⁹.
- (ii) Short rotation crops producing building poles and other small dimension products for personal use and local markets (where appropriate), would be encouraged. The non-permanent (between generations) nature of individual land rights is considered complementary to this approach.
- (iii) Government support would centre on technical advice and the provision of planting material at cost price or a subsidised rate, from centralised nurseries. This would be in line with other nursery material currently made available through the agricultural extension service.
- (iv) The individual or group would be responsible for providing and paying any plantation labour required. However in the majority of cases this would not be necessary as planting would be on a scale and of a nature which individuals (family groups) could manage themselves.
- (v) No legal agreement would be required for tree planting to proceed.

Where a large demand for sawn timber and other wood products exist

- (i) On islands or parts of islands where there is an existing (or projected) strong future demand for sawn timber (or other wood products) and communications facilitate easy marketing, the government would encourage both individuals and groups (where appropriate), to consider treee planting on privately owned land as a commercial venture.
- (ii) This would be a long term enterprise of moderate scale which may be integrated with agriculture. In order to promote a future domestic supply of timber in this manner, financial incentives will probably be necessary to encourage tree planting at the expense of known and trusted plantation crops such as coconuts. It is important however that such a subsidy be designed and implemented so as to encourage full landowner participation rather than lead to dependance on the state.
- (iii) Government financial support could include the provision of planting material (at cost or subsidised) and possibly buy-back schemes, involving staggered payments throughout a rotation for well maintained plantations based on an apportioned value of the final crop. Investment from local sawmilling companies might be encouraged, particularly in respect to planting cut-over areas in association with land owners. Other opportunities may arise through the development on certain islands of processing facilities associated with IFPs.
- (iv) Decisions on where to plant and on what scale should be left to landowners, with technical advice from the forestry service and agricultural extension service.

Thus the scale of a plantation would adjust naturally to a size compatible with the prevalent land ownership structure, and tree-planting would take place as appropriate at household, kin-group or community level. This would also promote a closer integration of forestry and agriculture, particularly in the opportunities for grazing animals within plantations.

- (v) The onus would be on the landowner to secure a legal right to plant and manage plantations. This approach would favour groups whose traditional ties to the land and each other remain strong whilst encouraging more heterogeneous communities to investigate ways of using their resources of land and labour for common benefit.
- (vi) Legal support required for such a planting programme could operate within the framework of existing forestry legislation, avoiding many of the complexities of the current LSP management agreement.

10. LESSONS LEARNT

An analysis of the first 10 years of the LSP programme has revealed its limitations and identified the opportunities that exist for developing a new role for forestry in integrated rural development. What is now needed is a programme which meets the demands of a growing nation and yet is more closely attuned to local needs - integrating tree planting into community life at a scale commensurate with those communities' peculiar resources, aspirations and needs.

To guide such a development two valuable lessons can be learnt from the LSP experience, the importance of which may concern community forestry projects in general. Firstly the need to create a framework in which people consider the maintenance of planted trees (with or without financial incentive) along with their obvious commitment for

agricultural subsistence and cash crops. Secondly the importance of determining who the forest plantation is for and through which management ownership level this can be best achieved.

Vanuatu's reassessment of its LSP programme is not a unique experience. Recently many countries with community forestry programmes directed towards critical social and economic concerns, have been prompted to re-design their small scale afforestation strategies (Foley and Barnard, 1984) in response to subsequent project evaluation.

It is important the Vanuatu's favourable environmental conditions do not engender an attitude of complacency. Now is the time to recognise the true values of LSPs, through digesting the past and acting positively in order to realise the potential of forestry to contribute to national well-being.

ACKNOWLEDGEMENT

The author wishes to acknowledge gratefully the assistance of Mr M. Bennett (Principal Forestry Officer, Vanuatu Forest Service, 1970-1983) in providing valuable background information for the paper and Mr. J. Hudson (Forestry Adviser to the Vanuatu Government and acting Head of the Forest Service 1983-1984) in helping to refine the basic argument. The opinions expressed are those of the author and do not necessarily reflect those of the Vanuatu Government nor persons acknowledged.

FOOTNOTES

1. Of the 1063 ha, 66ha have been subsequently abandoned and 207 ha established using LSP funding absorbed by the Industrial Forest Plantation (IFP) programme.
2. The Forest Service allowed project proposals from land claimants to "marinate" for at least a year in order to allow disputes to be aired. However new claimants continued to come forward, up to five years after planting.

3. Whilst line planting (10 x 2.5m) is suitable for areas of natural high forest with a high proportion of large trees, establishment in secondary or disturbed forest demand a closer spacing to limit invasion by convolvulaceous climbers.
4. Between 1975-1981 the annual planting rate for the LSP programme was forecast at 140 ha though actual rates only averaged 68 ha. In 1982, Vanuatu's first national Development Plan called for the Programme's planting rate to be increased to 200 ha. To date an average of 124 ha has been achieved.
5. Predicted population annual growth rate 2.4%. Actual rate 3.2%.
6. A recent experience on the island of Vanua Lava appears to support this. Construction on an LSP project of a timber framed house for the Forest Guard produced little reaction from local people. However the building of an adjoining office/storeroom using the traditional "improved" design, attracted considerable interest and comment.
7. A proposed 6,000 ha IFP on Espiritu Santo is scheduled to commence during 1986/87 and further sites are currently under consideration.
8. Six projects from an original 32 referred to earlier, had already been abandoned before 1985 due to a variety of factors including crop failure and land ownership disputes.
9. See Vergara and Nair (1985) for support within the South Pacific region for this approach.

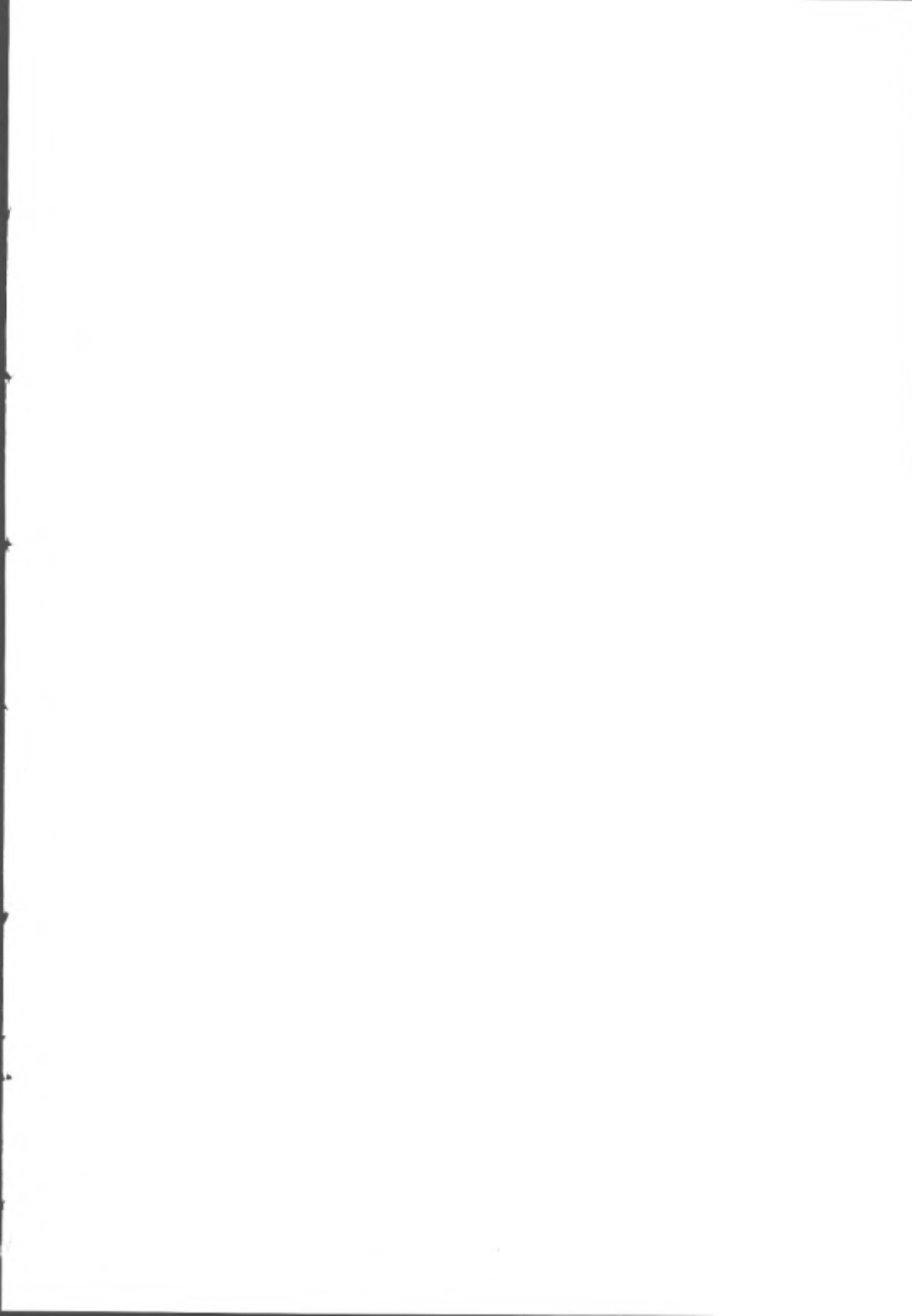
BIBLIOGRAPHY

- Alatoa, et al. (1984), 'Land tenure in Vanuatu' in P. Larmour (ed), Land Tenure in Vanuatu University of the South Pacific.
- Anon, (1983), 'Report on some timber properties of Cordia alliodora from Vanuatu' Job No. P 820 599, Building Research Advisory Service.
- Beasant, J. (1984), The Santo rebellion. University of Hawaii Press.
- Bennett, M. (1974), 'A forest plantation scheme for the New Hebrides'. Vanatu Forestry Service, PO Box 129, Port Vila Vanuatu.
- Foley, G. and Barnard, G. (1984), Farm and Community Forestry. Earthscan Technical Report No. 3. IIED:London.
- Forest Service. (1978), Forest Service Files, Vanuatu Forest Service, P.O. Box 129, Port Vila, Vanuatu.
- Forest Service. (1984), Annual Report - 1983. Vanuatu Forest Service, P.O. Box 129 Port Vila, Vanuatu.
- Gayfer, J. (1985), "Review of the Local Supply Plantation programme 1975-1985." Forest Management Report. Vanuatu Forest Service, P.O. Box 120 Port Vila, Vanuatu.
- Hudson, J. (1984), 'A note on Cordia alliodora in Vanuatu'. Commonwealth Forestry Review, 63(3) pp181-183.
- Neil, P. (1983), Results of forest tree species trials in Vanuatu from 1971-1983 and recommendations for future work . Forest Research Report 1/83. Vanuatu Forest Service, P.O. Box 129, Port Vila, Vanuatu.
- Neil P. and Jacovelli P. (1985), 'Agroforestry as an aid to rational rural development in Vanuatu'. Commonwealth Forestry Review, 64(3) pp259-266.

Roche, L. (1977) 'Forestry and the Community'. Commonwealth Forestry Review, 56(4) pp299-315.

Silviconsult Ltd. (1984), 'Vanuatu Forestry Development Project - Consultants Report'. S-237 00 Bjarred, Sweden.

Vergara, N. and Nair, P. (1985), 'Agroforestry in the South Pacific region - an overview'. Agroforestry Systems, 3(4), pp363-379.





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



SOCIAL FORESTRY RESEARCH ISSUES: Preliminary Problem Identification in Sisaket Province, Northeast Thailand

*Napoleon Vergara
Charit Tingsabadh
Kersten Johnson
Varun Vidyarthi
Richard Bowen*

The researchers and authors of this paper represent the East-West Center Resource Systems Institute (RSI) and Environment and Policy Institute (EAPI), the Chulalongkorn University Social Research Institute (CUSRI), the Kasetsart University Faculty of Forestry, and the Appropriate Technology Development Association (ATDA). The study is assisted by a grant from the United States Agency for International Development (USAID) on "Participatory Evaluation of Fuelwood Programs".

I INTRODUCTION

Assessments and choices made by farm families and other residents in countless villages determine whether public policies and programmes for forestry and fuelwood development succeed or fail. Choices on whether to allocate land and labour to tree planting and maintenance, on allocation of wood products to household use or market sale, on wood end uses and species selection, and on organisation to sustain forest growth and distribute the benefits from forestry programmes must essentially be made by the local residents concerned.

In order to gain understanding of factors that influence such local assessments and decisions, case studies are being conducted through participatory action research (PAR) methods in selected regions of India and Thailand. Research teams have taken up residence in the selected villages to engage in dialogue and action programmes to obtain the assessments of farmers, forest research and extension staff, and other relevant participants on the viability of existing fuelwood and forestry programmes, and to plan and initiate new plantings. The present paper is not a report on their work, since the teams as of April, 1986 have been located in the selected sites only one to three months. Rather the paper reports issues identified by the authors in a problem identification visit that resulted in site selection in an area of Northeast Thailand in July 1985.

The team, in their visit to Sisaket province in Northeast Thailand, was briefed by a variety of forest officers and visited a resettlement village inside a forest reserve, two village woodlots supported by USAID, two forest villages assisted by the Forest Industries Organisation (FIO) and a farm forestry village where private plantings and intercropping have occurred.

We hope that this preliminary delineation of research issues will stimulate comments and discussions by foresters, village project organisers, policymakers, and planners both on the

substance of the issues and on further research approaches. Our research focusses, at this stage, on lessons to be obtained from intensive, two-way interactions with residents in a limited number of community settings.

II SOCIAL FORESTRY IN SOUTHERN ASIA: AN OVERVIEW

Social forestry in Asia is a small-scale, people-oriented, forest-based production system often planned and implemented with substantial farmer participation. Its primary goals are to meet the needs of local communities for food and forest products (fuelwood, farm construction timber, fodder, green manure, and others) and to provide local ecological services (slope stabilization, erosion control, nutrient cycling, shading, and aesthetic benefits).

Local participation in social forestry projects extends beyond carrying out productive tasks such as planting and harvesting. Participation of farm family and other community members includes significant roles in planning and decision making with regard to the types of crops to raise; the pattern of crop integration; the timing and methods of planting and harvesting; the disposal of products; and the sharing of income and other benefits. To further increase farmers' involvement, governments sometimes afford local inhabitants access to, and control over, public lands as project sites either through outright transfer of ownership or long term user rights arrangements.

Implemented properly, social forestry can help improve productive capacity, promote sustainability, and enhance the socio-economic welfare of rural populations. These beneficial impacts make social forestry highly attractive to Third World countries which are in search of effective but inexpensive strategies for reforestation, rural community development, and environmental protection. Thailand, India, Indonesia, and the Philippines are among countries that have initiated social forestry programmes.

While social forestry projects in various countries share common goals of maintaining the natural environment and improving the resource base and welfare of the rural poor, they vary widely in the methods for achieving those goals. One of the most significant sources of variation is in the degree of participation by the local people. On one extreme, social forestry projects are planned and implemented by governments in a 'top-down' fashion: local residents are reduced to minimal roles as hired workers who perform only specifically assigned tasks. Most, if not all, government reforestation projects in Indonesia, Philippines, and Thailand fall under this category. Such projects are noted for their frequent inability to reach set goals.

On the other extreme are examples of social forestry projects which are 'privatized' in the sense that the land and the project activities such as planning, implementation, management, and distribution of benefits, are under the complete control of farmers. The role of government is limited to providing initial incentives, making available land resources, and formulating supportive policies. It has been observed that projects of this type are relatively more successful, possibly because the farmers, with greater decision-making roles, are more highly motivated.

Most social forestry projects that are now being established will be a cross between these two extremes and will involve joint participation by government and individuals or households. In some regions, most lands in need of rehabilitation and reallocation to more productive uses belong to the state. Here, government will take the lead in preparing initial plans, setting up incentives to attract farmer participation, arranging more favourable land tenure systems ensuring more equitable distribution of benefits, and other measures. The farmers, on the other hand, will take part in reformulating initial plans to suit their needs, in implementing and managing the projects, and in actual distribution of benefits

among the various parties involved. It is expected that this farmer-government partnership will lead to social forestry projects that are better than the 'top-down' ones.

In Thailand, the major social forestry projects visited by the team are dominated by government. Land is under government ownership, and even where usufruct arrangements have transferred some control to households, there are stringent governmental restrictions on species selection, timing and intensity of harvest, the type of product to be extracted, and other important management decisions. Despite the observed inequity in the sharing of responsibilities and benefits, some of the projects are surprisingly going on according to plan and are achieving some of their targets. But, as might be expected, others have encountered problems. These mixed results have implications for research for project modification and improvement.

III REFORESTATION: SOCIAL FORESTRY ACTIVITIES IN SISAKET

Historical Overview

Awareness of the need for reforestation in Thailand began almost with the establishment of the Royal Forestry Department (RFD). As early as the late 1880s a forestry report stated that the timber removals exceeded the natural generative capacity by almost three times, but until the Second World War planting took place on only a very limited scale.

In the post-war period, a target of 40% land to be under forest was set, which remains unchanged. Nevertheless with population growth and the favourable commodity trade, much forest land has been lost. By 1976, the forest area stood at 39% of the total land area, and the total area under reforestation was 418km sq under teak, and 305km sq under mixed tropical forest. During the Fourth Development Plan (1977-1982), reforestation efforts increased; by 1982, the total land reforested was 1793km sq. Since 1983, the need for reforestation has been recognised in the government policy, but budget limitations

continue to plague public reforestation efforts.

The private sector's role in large-scale reforestation has been limited to planting in fulfilment of logging concession terms, and only recently has there been an interest in private tree farms, mainly Casuarinas, to supply the demand for construction poles. These tree farms are located around Bangkok where the demand is centered on the construction industry.

Government approaches to reforestation

From the early days of government reforestation two main approaches were used, namely the Taungya system and direct hire. The first approach uses villagers in forest areas for planting, while allowing them to settle on part of the forest land in what are called forest villages. The second method uses direct hiring of labour for planting. In both cases funding came from central government budget allocated annually for the purpose.

A recurring problem of the government reforestation effort is the conflict with occupants of the land to be reforested. Since forest land was cleared for agricultural use and continues to be agriculturally productive, the establishment of forest villages often meets the resistance of the farmers. Where resistance has been overcome, the limited budget allows for only a gradual expansion of reforested area.

A New Trend in Approach Towards Reforestation

In recent years, with the awareness of the importance of energy problems and to meet the growing demand for fuelwood and charcoal for domestic and industrial purposes, the government has adopted a new attitude towards reforestation. It now seeks to encourage private planting for community uses. Also, where specific industrial consumers have been identified, dedicated planting has been encouraged. Furthermore, the shift of policy has been to favour the distribution of fast

growing species like Leucaena and Eucalyptus in official forest land close to settlements to help arrest encroachment on the remaining forest.

Background of Sisaket province

Sisaket is a province in Northeast Thailand, about 600km from Bangkok. It has an area of 8,800km sq, and a population in 1984 of 1.17 million. Only 1.6% of the population resides in urban areas. The rest are mostly engaged in rice farming under rainfed conditions. Value added in Sisaket in 1983 was 6909 million baht ¹, of which 3022 million came from agriculture. Rice contributed 35% of provincial output and 81% of agricultural production. The remaining agricultural output came from livestock (463 million baht) fisheries (96 million baht) and forestry (one million baht). Average income was 5,900 baht per capita.

Land Utilisation in Sisaket. 1978

126,777 farm households	
3.06 million rai* of farmland	
Paddy	2.61
Upland Crop	0.29
Tree Crop	.03
Idle	.04

Area under irrigation by 1979, 54,430 rai

*rai = 0.16ha

The forests in Sisaket have been rapidly depleted in recent years. In 1978, Landsat imagery indicated forest cover on only 13% of the province and by 1982 cover had declined to only 1.5%. As such, the province is regarded as a representative case of severe deforestation in a low-income agricultural setting.

Reforestation activities in Sisaket

Forest Department Sponsored. In recent years there has been a spate of activity in reforestation in the province. In 1974, the FIO began its Reforestation Programme at Khun Harn District as part of obligatory planting by holders of logging concessions. The Royal Forest Department (RFD) has established three National Parks and one Wildlife Preserve, and also an Arboretum in the province. The largest of the National Parks covers 480-800ha. In 1982, two village woodlots were established through a programme sponsored by the United States Agency for International Development (USAID), covering a total of 32ha. In 1983, more woodlots were planted in districts and school plots covering a combined area of 55ha.

Community Planting. Under the inspiration of the Central government, there has been 'community planting' organised or facilitated by the local administrations since 1977. These schemes involve planting on small plots of public land using voluntary labour and free seedlings from the RFD. Total area covered by 1984 was 18.5km sq.

Farm Forestry. Perhaps the more significant effort in reforestation is the distribution of seedlings to villagers for planting on farm land. In 1981, 190,108 seedlings were distributed: in 1982, 520,966; 1983 467,908; and 456,171 in 1984. Recipients were from various villages in the province.

IV TENURE ARRANGEMENTS INFLUENCING USES OF FOREST LANDS

Northeast Thailand is a frontier area which has rapidly been converting from forest to cultivation because of population pressure. Although ownership of public lands is vested with the national government, de facto local control over these lands is shared by a number of individuals and organisations. The primary local actors face some basic conflicts in goals and motivations. These local actors include: land tenants,

the Forestry Department, local government authorities, commercial firms, and indigenous community organisations.

The Forestry Department is motivated to protect forest lands. Its primary goals are to halt further encroachment on the national forests, to expand the area under forest, and to increase the productivity of the forest lands. The training of forestry officials is predominantly that of managing forests but the rapid encroachment of people on to national forest lands has forced foresters to try to manage people as well as trees.

The Forestry Department must rely on the cooperation of the local police authorities in enforcing the rules and regulations. On the other hand the local police authorities are not always co-operative and many times side with the illegal occupants. The forest village programmes have had a history of inability to enlist the support of the occupants of the land. Bribery may also be an important influence since there are large economic gains associated with the illegal harvesting of teak and the subsequent control over the harvested lands.

The occupants of the forest and cultivated lands, both legal and illegal, are motivated by a desire for economic security. They often find it more economically attractive to grow crops than trees. They prefer the long term security and flexibility of being land owners rather than the restrictions and the uncertainty arising from being 'permitted' forest tenants.

The commercial firms involved in logging and milling are another force to consider. They purchase concession rights to harvest forest areas, and the terms of the concession may require them to reforest the logged areas. Yet the owner of a mill in Sisaket province indicated that he had no intention of milling the Eucalyptus trees that the Forest Department has exclusively prescribed for replanting. He

regards the tree as an inferior species for milling and construction and his logging concessions contain teak and other hardwoods that are adequate for the foreseeable future.

In frontier areas where government institutions are weak, indigenous organisations may be formed to allocate and manage the forest resources according to long-observed social customs. Farvar (1985) opines that such indigenous institutions are often set up to manage some important scarce resource such as irrigation water. In Northeast Thailand there are indigenous labour-pooling organisations designed to share labour during critical labour shortage periods, such as rice transplanting.

Indigenous institutions for managing resources, if they existed prior to the influx of new migrants, may have been weakened or replaced by the immigrants' own institutions: in Northeast Thailand, refugees from bordering Cambodia and Laos compete with Thai cultural groups for use of the land.

The other factor that may weaken or prevent the formation of indigenous organisations for managing the forest lands is the expanding role of the central government. The Forestry Department has promulgated rules and regulations in support of this management function, which have re-defined an individual's rights and duties with respect to the forest. Bromley (1985) has observed that in developing countries this evolution of resource management by proclamation has created perverse incentives at the local level and has discouraged villagers from innovating local-level institutional arrangements that might result in improved resource use practices. Reserve degradation might even increase where government does not have the resources to enforce its proclamations. In Sisaket province, the role of indigenous organisations in managing public forest lands is difficult to determine, and requires further study.

The social forestry projects visited by the team constitute a wide variation in approaches by which the Forestry Department relates to local communities. These variations are examined in the next section.

V IMPLICATIONS OF SISAKET SOCIAL FORESTRY SCHEMES:

MOTIVATIONS AND BENEFICIARIES

Factors Affecting Project Structure and Success

There are many different factors that determine the success of social forestry programmes. Nonetheless, there are a few critical points that have a great deal to do with the ultimate popularity, sustainability, and distributive aspects of any given programme. Among these are:

- o Land tenure. The ultimate legal owner as well as the 'de facto' controller of the land involved.
- o Tree tenure. The legal owner, traditional user, and de facto controller of various parts of the trees planted (fruits, fallen twigs and branches, dead branches, cut branches, stemwood, and other bark, minor tree products).
- o Ultimate use of the planted trees. The expected (assumed or agreed-upon) disposal of the trees has a strong influence on the enthusiasm with which planting is taken up and plantations are protected. Whether planting is for the market, for local wood use, fuel use, fruit, or other tree products can have a strong impact on the nature and success of the projects.

Contrasting Designs, Motivations, Actors, and Outcomes of Various Sisaket Social Forestry Schemes

Table 1 summarises some of the key structural aspects of each of the main social forestry schemes in Sisaket Province,

as illustrated by the several case examples visited by the study team. The implications of the differing structures of these projects are discussed in the following paragraphs.

Forest Villages. Although there are some differences in the organisation of 'forest villages' by the FIO and RFD (Royal Forest Department), the essential premises and outcomes are similar. These programmes are conducted on land owned by the forest department, with the tree species solely selected and the tree produce ultimately disposed of by and for the forestry organisation (FIO or RFD) itself. The extent of the villagers' involvement is to provide labour and protection for the plantation. The scheme has its own benefits but essentially limits the effort to a 'rural welfare' programme, providing a (much needed) source of rural income in the form of wages, but with highly limited access to tree resources. Fuelwood, timber, and other products from such plantations are available to local village residents mostly through the market.

An additional factor with forest villages is that they are often organised to re-convert encroached, degraded Forest Department land into productive forests. This requires that existing farmers either be ousted or brought into the Forest Village project. In practice, few of the local farmers have been interested in joining the Forest Village schemes, most likely due to relatively low returns compared to farming. These farmers have therefore created many problems for the Forest Department officials and the project participants alike, and armed conflicts over land have not been uncommon.

Table 1

INITIATORS, CONTROLLERS, MOTIVES, AND MAJOR BENEFITS AND COSTS
OF VARIOUS TYPES OF SOCIAL FORESTRY IN SISAKET

<u>Structural and Motivational Factors</u>	<u>Forest Village</u>	<u>Externally Sponsored Community Woodlot</u>	<u>Project Type and Project</u>	<u>Locally Sponsored Private and Community Tree Planting</u>	<u>Farm Forestry (local Eucalyptus on bunds)</u>
		<u>Ban Pohng</u>	<u>Ban Jang Krahdan</u>	<u>Ban Kwow</u>	<u>Ban Non Lung</u>
<u>Initiator</u>	Forest Industry Organization (FIO) or Royal Forest Department (RFD)	District Officer/Tambun Council/RFD (sponsored by USAID)	Same as Ban Pohng plus head monk of local wat	Visiting government biologist consultant	Individuals (after group discussion, over 30 years ago)
<u>Primary Controlling Party</u>	As above	Tambun Council (District body)	Head monk/District Officer/villagers (through monk)	Village committee and individuals (on private land)	Individual farmers
<u>Legal Owner Land</u>	As above	As above	Tambun Council	Community (wat grounds) and individuals (farm boundary plantings)	As above
<u>Trees</u>	As above	As above	As above	As above	As above
<u>Main Controller Land</u>	As above	As above	Head monk and villagers	As above	As above
<u>Trees</u>	As above	As above	As above	As above	As above
<u>Primary Motives for Participation Initiator(s)</u>	1) Increase forest cover. 2) Provide employment. 3) Increase wood and fuel supplies.	1) Increase wood and fuel supplies. 2) Increase forest cover. 3) Increase wood and fuel supplies.	Head monk interested in community development.	Idea suggested by technical consultant to encourage local resource development.	Support (free seedlings, technical advice) given in recent years by Forest and Agricultural agencies.
<u>Villagers</u>	Assured income and long-term employment.	1) Comply with Tambun Council. 2) Provide wood and fuel.	Villagers compelled to cooperate with monk.	Villagers interested in planting for construction wood and cash from wood sale.	1) Increased sturdiness of farm bunds during heavy rains. 2) Fuelwood and construction poles for personal use.

Table 1 (cont.)

<u>Forest Village</u>	<u>Externally Sponsored Community Woodlot</u>	<u>Locally Sponsored Private and Community Tree Planting</u>	<u>Farm Forestry (local Eucalyptus on farm bunds)</u>
	<u>Ban Pohng</u>	<u>Ban Jang Krahdan</u>	<u>Ban Non Lung</u>
<u>Primary Perceived Benefits and Party Benefiting</u>	<p>1) Increased forest cover yields regional environmental benefits.</p> <p>2) Wood and fuelwood increase local resources.</p> <p>3) Employment eases plight of regional poor and landless.</p>	<p>Same as Ban Pohng</p> <p>Expect wood to be usable for construction in village.</p>	<p>Same as primary motives.</p>
<u>Primary Risks or Costs and Party Bearing Risk or Cost</u>	<p>1) Use of encroached land eliminates benefit for previous farmers.</p> <p>2) Land use disputes with former land users lead to destruction of planted trees, physical risk to participants, and high costs to FIO.</p>	<p>1) Land used for cash-cropping (encroached) taken over for project; both wealthy and poor villagers lost land.</p> <p>2) All villagers required to help protect part of plantation; benefits may not equal efforts.</p> <p>3) Eucalyptus problem as in Ban Pohng, Ban Kwo.</p>	<p>1) Use of untreated Eucalyptus for construction is often problematic; may also restrict market sales.</p> <p>2) Benefit distribution from trees on wat land not yet worked out; may cause conflicts and/or equity problem.</p> <p>Some crop loss occurs near the shrubs or trees. Loss borne by farmer who plants.</p>

If a primary motive is to involve local farmers in tree planting in order to secure greater support for such projects, the results of these schemes do not well support their intent. Furthermore, the trouble and expense of fighting local opposition makes the creation and maintenance of Forest Villages in some areas a very costly proposition. On both counts - effectiveness of local involvement and returns to Forest agency investment - Forest Village schemes may require some revamping to gain a better match between objectives and results.

Community Woodlots. In Sisaket, the 'sponsored' community woodlots observed by the team were physically located in the villages involved, but situated on land formally controlled by the District government. Planting was undertaken under the orders of the Tambun council, with the collaboration of the village headman. Produce from the woodlots (except for fallen deadwood) is ultimately to be disposed of by sale, with the proceeds going to fund local community development projects (schools, water storage, and the like).

Since the land and tree produce are officially and in practice controlled by the local governing body, the villagers interviewed questioned what physical benefits they might reap from the projects. Nonetheless, the villagers we interviewed were generally supportive of the woodlots, citing benefits such as shade, aesthetics, and other 'public goods' they enjoyed from the project.

Nevertheless, the woodlots are, once more providing primary benefits other than wood or fuelwood for general village use - which was the ostensible goal. Also, heavy reliance is placed on having a market available when the produce (Eucalyptus) matures, and faith is required that the officials who preside over the disposal of the wood will ensure that the proceeds do, indeed, go to the village concerned.

Since this type of project relies on external decisions regarding government land, the motives within the village for cooperation with such schemes will tend to rest on coercion (by higher authorities) or altruism. Since neither of these driving forces promotes sustainable, village-centered activities, outcomes should be carefully considered before the whole-scale reproduction of such projects is encouraged.

An exception to externally-initiated community plantings was found in Ban Kwow, in which planting on land surrounding the wat has been undertaken by the villagers themselves, at the suggestion of a visiting technician. Although the villagers in this case may have more direct control over the disposal of the produce, the lack of agreement regarding the distribution of benefits from the planting may in fact lead to disputes in the future. The issue needs to be tackled from the first, another time.

Farm Forestry. The government encourages farmers to plant trees on their own land through free distribution of seedlings. An individual farmer can obtain 1-20 seedlings, through formal channels or by visiting the research station where they are grown. The forestry department reportedly cannot keep up with the demand. One response to the shortage has been to allow their employees to grow seedlings privately, for which they receive 1.23 Baht per seedling.

The primary advantage of farm forestry generally lies in the clear match between the party undertaking and the party benefiting from the efforts. This tends to create a higher success rate in plantings undertaken as farm forestry, and the long-standing success of the farm bund planting efforts in Ban Non Lung is an excellent example of this. Limitations of farm forestry lie in the omission of landless farmers from such programmes, and the problems occasionally arising when agricultural land is converted wholesale to tree farming

(as has been documented in India in some instances). Neither of these problems appear to be major factors in Ban Non Lung, though the potential replicability of these efforts in other regions of Thailand must be studied further.

VI VILLAGE PROGRAMME ORGANISATION

There are a number of organisational issues that need to be discussed within the village for enlisting the participation of villagers in a forestry programme. Broadly, these are issues of matching goals with outcomes, the needs with beneficiaries. These include the process of selection of land and species of trees to be planted, organisation of planting and maintenance, end-user of the products and their distribution among villagers. While these issues are of concern to both the Forest Department and the villagers, it is important to realise that villagers may not have a uniform opinion with respect to these issues. There are differences in opinion among different interest groups that may affect the programme effectiveness. In this section, we examine the identity of different groups, possible sources of differences between them, issues of distribution and alternative organisational approaches to deal with them, in the light of observations made during the trip.

Identity of Groups and Differences Between Them

Here we are talking of groups that due to differences in perceived needs or other factors might prefer to take a different stand with respect to a village forestry programme. Identifying the characteristics and needs of such groups can provide a useful understanding of programme alternatives that attract their participation. It has been found helpful to consider differences arising out of the following groups of factors.

Economic Groups. The income and resource base of a family can significantly affect its needs and priorities. In a village situation, these could be distributed quite inequitably and could easily lead to differences in opinion with respect to organisation of a project. For example, a poor group of villagers may be more interested in the commercial dimension of a forestry project for raising their income as compared to the richer ones who may like to raise plantations for their own consumption requirements (Vidyarthi, 1985). This could lead to differences associated with the selection of species. Labour availability and other conditions determining access to benefits could also affect the participation potential.

Social Groups. Differences may also occur due to ethnic or occupational heterogeneity. For example, herdsman may have special preferences relating to the use of land or in the selection of tree species. It is often helpful to discuss such preferences and arrive at alternatives agreeable to all groups.

Social groupings need not necessarily be linked to ethnic or occupational differences and may be conditioned by historical circumstances. Such differences may not be easily distinguishable, but could surface in individual or group discussions at the village. It is advisable to include representation of all such groups in the formation of committees for local decision-making to ensure their participation.

Gender. Women are a subjugated group in many societies, so that their problems and priorities may remain undiscussed in a male group. The opinion of women must actively be sought, and is especially desirable on a subject like fuelwood which is directly related to their daily chores. Adequate representation of women in decision making committees or research teams is therefore considered essential for balanced programmed development.

Distribution of Benefits

It is often difficult to achieve an equitable distribution of benefits in a community project due to local power politics that tend to favour the elite. Hidden constraints in the form of social or economic obligations often prevent under-privileged sections from sharing project benefits on an equal basis. Knowing this, such groups may have little motivation to participate in a project which is ostensibly designed to benefit everyone in the community. Organisational systems to ensure proper distribution are, therefore, important components of a community programme.

Organisational Alternatives

Some organisational alternatives to deal with the above issues, in the context of forestry in Sisaket, are suggested here. These do not exhaust the possibilities that may be presented by the different situations and are only indicative of opportunities used successfully elsewhere.

Special programme for the under-privileged. None of the forestry programmes discussed earlier have components specially designed for the benefit of the under-privileged. Under-privileged sections often have unequal access to benefits due to hidden constraints. Special programmes for the economically weaker groups are a common feature in countries like India which are now introducing them in the forestry sector. Such a programme would involve prior leasing of land to selected beneficiaries for raising plantation under the guidance of the Forest Department. The FIO or the RFD does not make a distinction in the selection of members of the forest village, as long as they agree to abide by its rules. A preference for the economically disadvantaged might lead to fewer local conflicts, ensuring greater homogeneity of the participants and greater social justice.

Village organisation. Local decisions relating to a village project are generally entrusted to local committees constituting officials of the local administration, the Forest Department, the village head and other elected representatives. The decision taken by such a committee may not, however, represent the view of different interest groups in the village especially the under-privileged groups. This may, therefore, lead to resentment or lack of interest in the programme. A participatory approach, on the other hand implies detailed discussions with all sections of the village population and formation of a local committee or organisation well represented by the different interest groups. Such an approach, though relatively more time-consuming, ensures that decisions are arrived at after due consideration of peoples' needs and aspirations.

Role of Monastery. In Thailand, it has been observed that the monastery and its monks are held in considerable respect by all sections of the village population. The influence of this institution has been used successfully by agencies like the National Energy Administration in organising community projects. Active participation of such respected institutions could lead to reduction of local conflicts while ensuring the continued local monitoring essential for a long term project like forestry.

VII IMPLICATIONS FOR RECOMMENDED RESEARCH

Based on the observations and discussions reflected in the preceding sections, some of the important areas and questions for research in social forestry in Thailand are as follows.

1. Land tenure and land use decisions

Evidence from other projects elsewhere has demonstrated a strong correlation between security of tenure over land and farmers' motivation to utilize land wisely to ensure

sustainability of production. Yet the Forest Village projects visited by the team were invariably sited on government-controlled land. The research questions, therefore, are:

What is the optimal use of the land? Much of the land in the Northeast is relatively flat and suitable for cultivation. Rice cultivation is the preferred activity of farmers. However, Thailand is the world's largest exporter of rice and is currently experiencing increasing international competition, which has driven down the world price of rice. The agricultural future may be one of managing food surpluses rather than food shortages.

Who should make the decisions on optimal uses of the land? At one extreme is privatization, under which individuals would be allocated land and allowed to make the decisions on land use. At the other extreme, government would make the decisions (at least on public lands) with no regard to the preference of the tenants. What are the resource and legal limitations of these alternatives? What other institutional arrangements are possible whereby tenants are given greater rights and responsibilities?

What changes in land tenure are desired? What changes will government allow? If outright ownership is neither allowed nor possible, what alternative strategies may be adopted to overcome the present negative impacts of current tenure systems? Is long term contracting between government and local organisations feasible? Are there existing indigenous institutions that can be studied to provide guidance for institutional reform in the management of public forestry lands?

2. Decisions on choice of tree species

The seemingly simple matter of selecting tree species for social forestry projects is in fact quite complicated. The species to be chosen must satisfy different and sometimes

conflicting requirements, such as: suitability to local ecological conditions: compatibility with integrated crops: and suitability to local end uses and markets. The relevant research questions that may arise are:

How are the various criteria set up and applied to arrive at the most appropriate species for a given project? Who should properly formulate and apply the criteria for the selection of species: the people, the local leaders, or the government? Why? How do rural people resolve conflicts in the criteria for species selection? To what extent can the introduction of multiple-use species be carried out so that unstable monoculture plantations will not arise?

3. Silvicultural techniques

Like any other production system, social forestry needs to maximize net returns per unit of the most limiting factor of production.

For the selected tree species, what spatial and temporal arrangements will most enhance the yield of the trees and the agricultural intercrops? How frequent should biomass harvest be to maximize yields without unduly depleting the nutrient budget of the site? How intensive should intercropping be to maximize the use of land without causing extreme competition among the integrated crops? What cultural regimes, such as pruning and thinning, are required to enhance the outputs of both crop and tree components? For a given species, what reproduction system is most appropriate: seeding, coppicing or cutting? What systems of tree placement are best for soil and nutrient conservation under certain topographic conditions?

4. Social organisation, beneficiaries, and project agreements

Expected project benefits serve as one of the major incentives that motivate farmers to undertake social forestry

projects. It is often not enough simply to have benefits accruing from the project however. It is also important that such benefits be distributed among the actors in a manner that is equitable and just in order that community enthusiasm and participation will not be dampened.

Are different interests in fuelwood and other forest products voiced by different groups in the community? What interests are related to the production side? For example, to the situation of farmers, herdsmen, landless, or other residents with respect to types, amounts, and location of land? What interests are paramount on the consumption side, including women's interests? Interests related to other social groups? Can organisational agreements be fostered that will give adequate representation to such different interests?

What system of sharing and distribution of benefits would best favour farmers and other residents without jeopardising government interests? How might such a system of sharing be arrived at? What end products or mix of products should be aimed at in these social forestry projects to maximize the benefits to farmers and others? How do farmers prioritise the twin objectives of economic gain and environmental maintenance? To what extent are they willing to forego short-term high productivity for lower-level sustainable production? How could such preferences be translated to production management techniques?

5. Long-term species research and development

Tree species may be fully adapted to certain ecosystems but may not meet some of the requirement of a social forestry project, such as the need for rapid growth or nitrogen-fixing capability. Conversely, some species may have all the desired characteristics to satisfy given end uses but may not be suited to local site conditions. In these and other types of problems

relating to fit between species and needs, long term species research and development may be necessary. There is a range of possible thrusts. For example, through sophisticated hybridization or bioengineering approaches, new varieties or species that possess desired characteristics could be developed. On the other hand, a simple but long-term series of species trials can be carried out to identify species which are adapted to certain ecological conditions and can fill certain needs. Some of the research questions that need to be answered are:

How cost effective is the strategy of developing new species or varieties of trees to satisfy certain requirements of a social forestry project? How stable, disease-resistant and site-adaptable are new varieties? What advantages may be derived from extensive species testing to identify locally-adopted ones? What techniques in species testing may be adopted to reduce the time lag between research and result applications? Which research approach could better meet the need for obtaining species suited to social forestry?

Footnotes

1. As of 1983, 1 baht = approximately US\$ 0.045.

REFERENCES

Bromley, Daniel W. (1985) 'Natural Resources and Agricultural Development in the Tropics: Is Conflict Inevitable?', paper presented at the International Conference of Agricultural Economists, Malaga, Spain.

Farvar, M. Taghi (1985) Basing Developmental Research on Indigenous Community Structures. CUSRI/RSI Dialogue.

Vidyarthi, Varun. (1985) Renewable Energy Development Alternatives: Case Study of a Gangetic Plains Village Chulalongkorn University Social Research Institute and East-West Center Resource Systems Institute.





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



AERIAL PHOTOGRAPHS AND THEMATIC MAPS FOR SOCIAL FORESTRY

Jeff Fox

Jeff Fox is a Research Fellow at the Environment and Policy Institute, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848.

AERIAL PHOTOGRAPHS AND THEMATIC MAPS FOR SOCIAL FORESTRY

Jeff Fox

I. INTRODUCTION

Farmers struggling to provide food, fuel and housing for themselves and their families annually destroy and degrade large areas of tropical forests. Successful forest management consequently requires that subsistence needs of local people be taken into consideration. In most tropical countries, however, forest policies and legislation still emphasize forest protection and the collection of forest revenue. As a FAO (1985) report states: "professional foresters perform the role of protector of the gazetted forest reserves and of collector of fees and revenues". In order to protect remaining forests and to rehabilitate degraded lands, there is an urgent need to develop a new understanding of the role of forestry in modern societies. Forest management practices need to be developed that are based on a thorough understanding of present land use systems and that are responsive to the subsistence and development needs of local people.

Aerial photographs and thematic maps are two well known methods of studying land use practices. Aerial photographs are used to inventory these practices

and thematic maps are used to disseminate this information. Neither aerial photographs nor thematic maps, however, have been used to collect information from villagers and farmers who are actively involved in using forest lands. The major objective of this project was to explore the use of aerial photographs and thematic maps as interviewing tools for collecting information on land use practices in Java.

II. SKETCH MAP EXERCISE

The Ford Foundation and the Indonesian State Forest Corporation (Perhum Perhutani) are sponsoring a social forestry programme on Java. Villages throughout the island have been selected as pilot areas for this programme. Community organizers (COs) have been trained and stationed in these pilot villages. The COs are expected to acquire an understanding of land use practices (forest, village lands and private lands) in these villages and to help identify forest lands that could be managed by the community for meeting their forest product needs.

In order to achieve these objectives the COs need to understand present forest use practices. The COs also need to be able to identify competition between neighbouring villages for forest lands and to be able to locate forest plots that could serve as a basis

for a formal agreement between Perhum Perhutani and the villagers. This sketch map exercise was conducted in order to develop a methodology by which COs could make sketch maps of the pilot villages. These maps are to serve as a tool for acquiring an understanding of spatial relationships in the village. Hopefully, the maps can also be used for identifying forest lands for communal management.

BACKGROUND

Indonesia possesses recent (1981) medium scale (1:30,000) colour infra-red aerial photographs of most of Java. These photographs provide an excellent basis for mapping land cover in rural Java. The first objective of this study was to examine the ability of villagers to understand these photographs and to determine if aerial photographs could be used as an interviewing tool for acquiring a spatial understanding of land use practices and for mapping these practices.

Unfortunately, before the 1981 aerial photographs can be purchased permission to acquire them must be obtained from military authorities. This is a very time consuming and frustrating process. In the absence of aerial photographs, existing thematic maps (< 1:25,000) might be useful for understanding village land use practices. The second objective

of this exercise was to examine the ability of villagers to understand these maps and to assess the usefulness of these maps as an interviewing tool for learning about present land use practices.

AERIAL PHOTOGRAPHS

The study began in Sukathani, a village in the Puncak area of West Java for which aerial photographs were acquired. The author and Ir. Pohan, a forester working for Perhum Perhutani who had participated in a recent social forestry study, spent 3 days in Sukathani using the aerial photographs to conduct interviews with a number of farmers met in chance encounters as well as with farmers identified by an assistant to the Pak Lurah (village headman).

An interview began by trying to place the farmer at ease. This was done by explaining who we were and that our objective was to improve communication between the farmer and the forest department about forest practices and forest management. We then proceeded to explain the photographs to the farmer. This was done by locating well known objects on the photographs and by eventually asking the farmer to locate other identifiable objects himself. Once the farmer was familiar with the photographs the interviewer proceeded to inquire about the use of privately-owned lands: where villagers owned rice lands; where other villages owned rice lands; where

villagers owned garden lands; the location of tea plantations; the location of village-owned wood lots; privately-owned woodlots; etc. This information was recorded directly on sheets of clear plastic overlaying the aerial photographs. Pens, colour-coded for different types of land use, were used to record the information in a readable format.

Eventually, the interviewer attempted to acquire information about forest use practices. In Sukathani this was difficult as the villagers have experienced a great deal of pressure (including gun-carrying foresters) to refrain from using forest lands. With gentle prodding, however, it was possible to learn a little of the history of these forests, the places in the forest where most people go to collect firewood, why villagers did not use other forest lands, what lands were used by other villages, etc.

Because the study was intended to be a rapid appraisal of land use practices, only about 12 heads of households were interviewed. Respondents were selected on the basis of chance encounters and from people introduced by the village headman. Consequently, statistically valid statements cannot be made about the population. However, an effort was made to include poor as well as wealthy respondents.

The study succeeded in documenting major forest practices and in identifying a logical piece of land for communal management. The interviews also demonstrated that most villagers could understand aerial photographs of their own village. Unfortunately since women were not included in the sample no conclusions can be made about the ability of women to understand the photographs. Among men, old men seemed to have more difficulty understanding aerial photographs than young men.

THEMATIC MAPS

The second village visited by the interview teams was Ciramaeuwah Girang located northwest of Cianjur in West Java. The team did not have aerial photographs of Girang but was able to obtain a 1:10,000 map (peta kerja) from Perhum Perhutani showing the boundaries of the state owned forest. The team also obtained from the headman of Girang a 1:25,000 map of the village (peta kecamatan) showing the boundaries of the village as well as of the state forest lands. The team used the forest department's map to correct the boundaries of the forest lands on the village map (there was significant omission of forest land on the village map). Copies of the village map were then made showing the boundaries of the village and the state-owned forest lands (Map 1).

A few interviews were conducted with village informants to locate the relative positions of well known physical

objects on this map. These objects included the location of kampungs (housing settlements) as well as the location of rivers, roads, and major hills. After compiling the data from several interviews onto a single map the team field checked the map by hiking around the village. Photocopies of the corrected map (Map 2) were then made.

The corrected maps were used in interviews with villagers about land use practices in a procedure similar to that outlined for aerial photographs. This proved to be a very useful method for mapping hiking trails, schools, mosques, etc. (Map 3); for understanding the spatial distribution of privately-owned lands (Map 4); and for identifying the ways in which villagers use forest lands (Map 5). Interviews with forestry officials were useful for mapping the trees planted in the forest as well as the areas the department considers difficult to control (Map 6).

III. DISCUSSION

Both aerial photographs and thematic maps are useful interviewing tools for acquiring information on land use practices in a spatial context. Aerial photographs are generally more useful than maps because they are more accurate and detailed and do not have to be extensively field checked. Aerial photographs may also be useful for delineating the boundaries of forest lands to be used in community forestry projects whereas maps cannot be used

for this purpose without surveying. The village thematic maps, however, are easier to obtain than aerial photographs (at least in Indonesia) and are sufficiently accurate to facilitate an understanding of land use practices.

Aerial photographs and thematic maps are tools to help the interviewer place information into a spatial context. The final results of an interview, however, are dependent primarily on the interviewer's ability to conduct a good interview. Aerial photographs and thematic maps will not be useful if the interviewer fails to make sure the farmer understands the aerial photographs/map, if the interviewer asks questions that are too broad or too sensitive to be answered, if the interviewer fails to show sufficient respect to the farmer, etc.

The final activity of this study was to write a brief text in Bahasa Indonesia on how to make sketch maps. This method was taught to community organizers trained to work in the Ford and Perhutani social forestry project. Future plans call for using sketch maps in other social forestry projects in Indonesia and Thailand.

The ultimate objective of the social forestry programme in Java is to establish village forestry committees that can assume responsibility from Perhum Perhutani for managing pieces of forest land near the village.

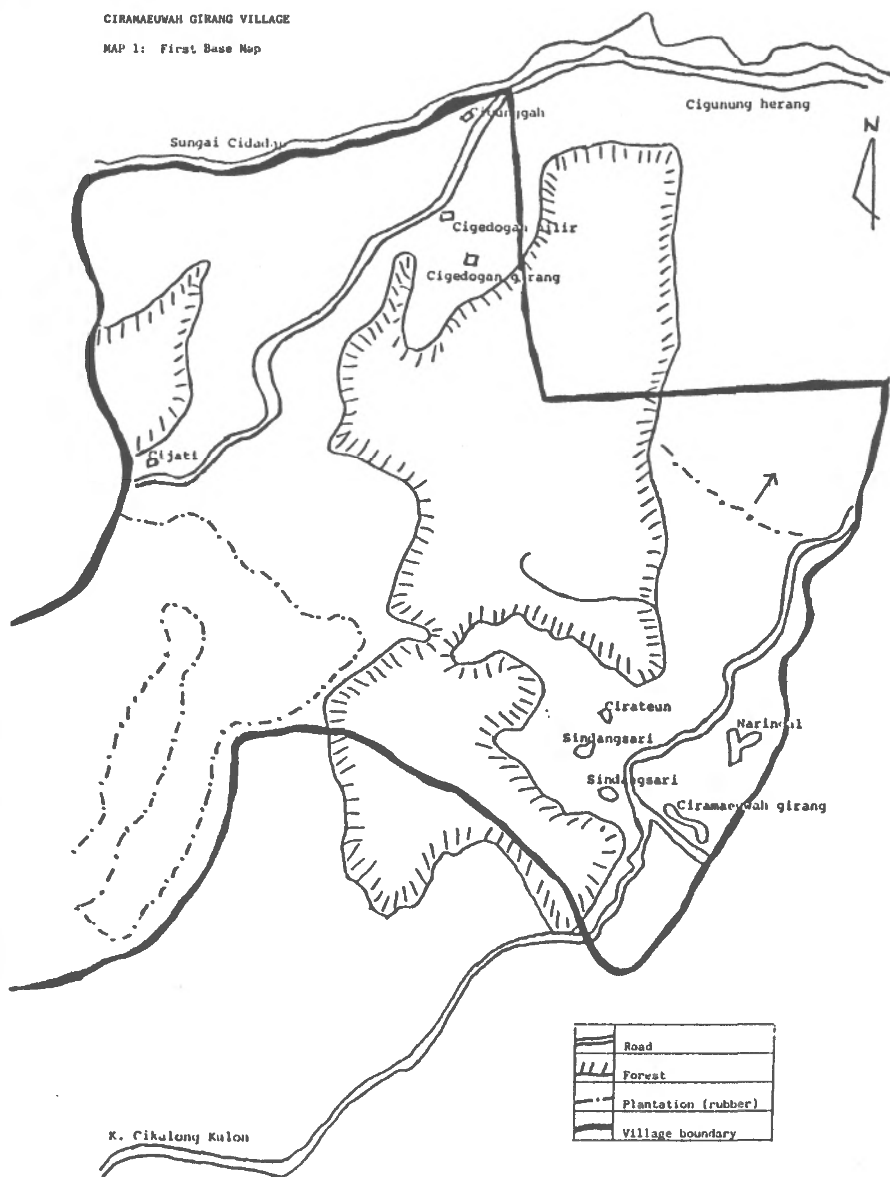
Hopefully, sketch maps can be used as tools for understanding current land use practices and for identifying pieces of land to be managed by the community to meet their needs for forest products.

References

FAO, 1985. Tropical Forestry Action Plan, Committee on Forest Development in the Tropics, Rome.

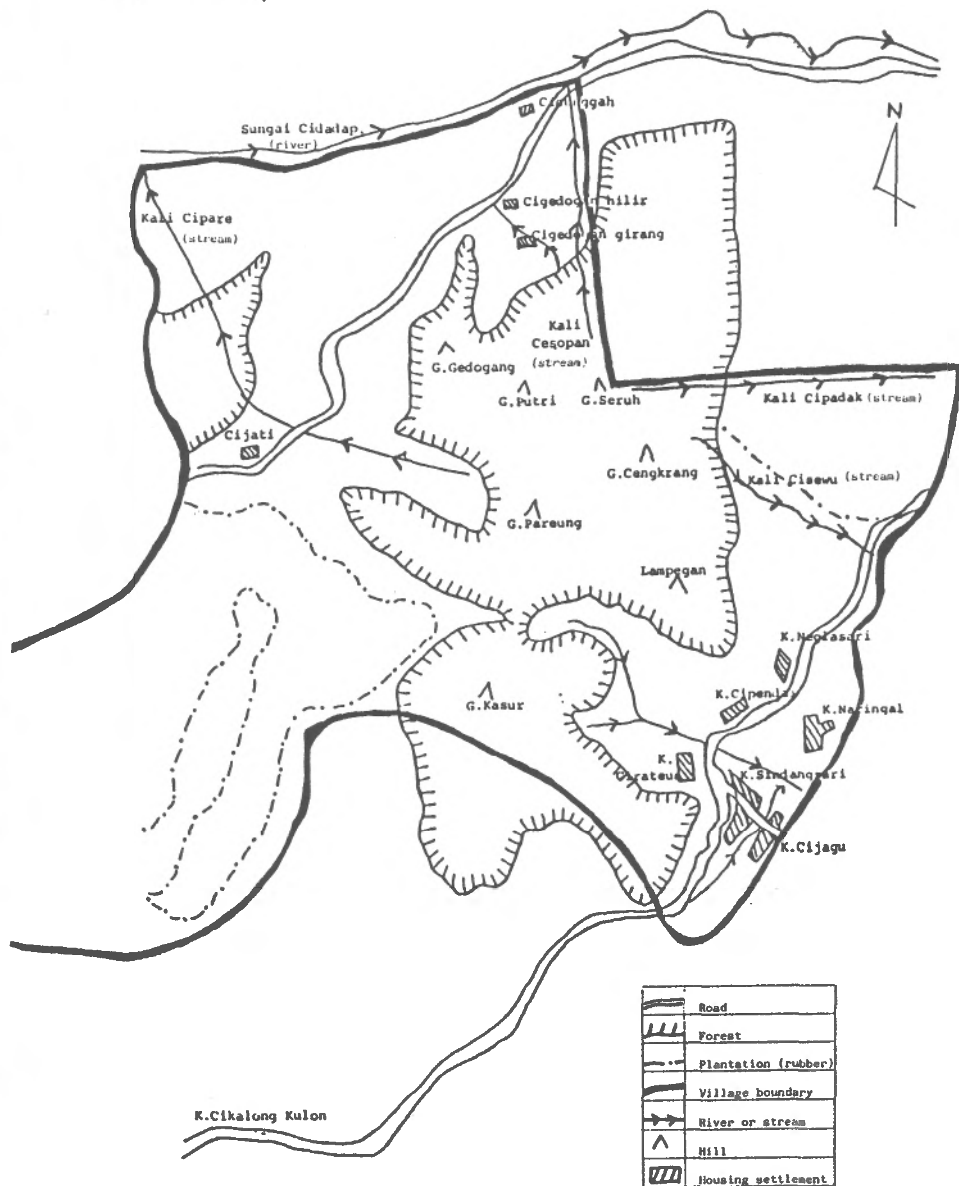
CIRAMAEUWAH GIRANG VILLAGE

MAP 1: First Base Map



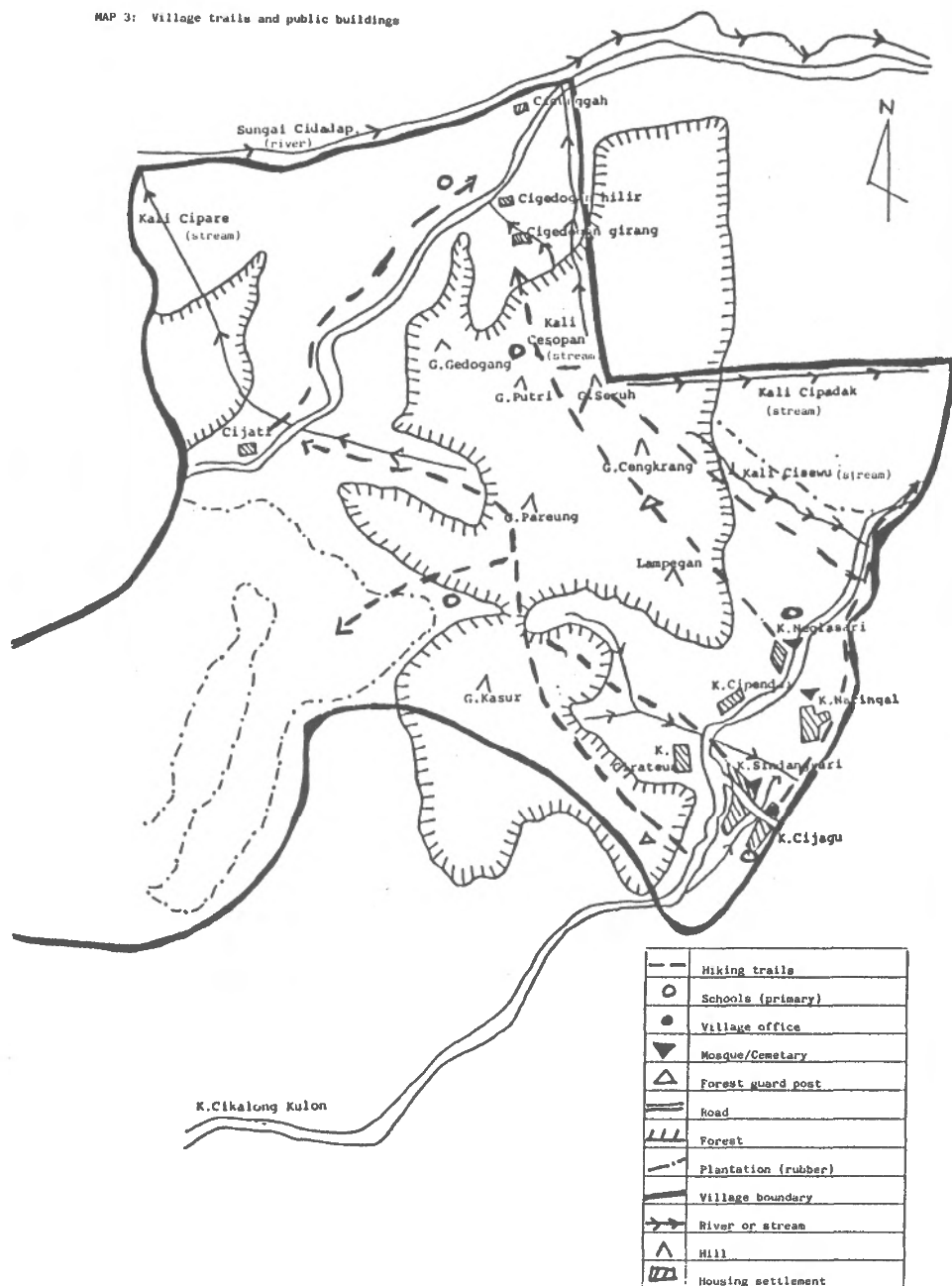
CIRANAEUNAH GIRANG VILLAGE

MAP 2: Second base map



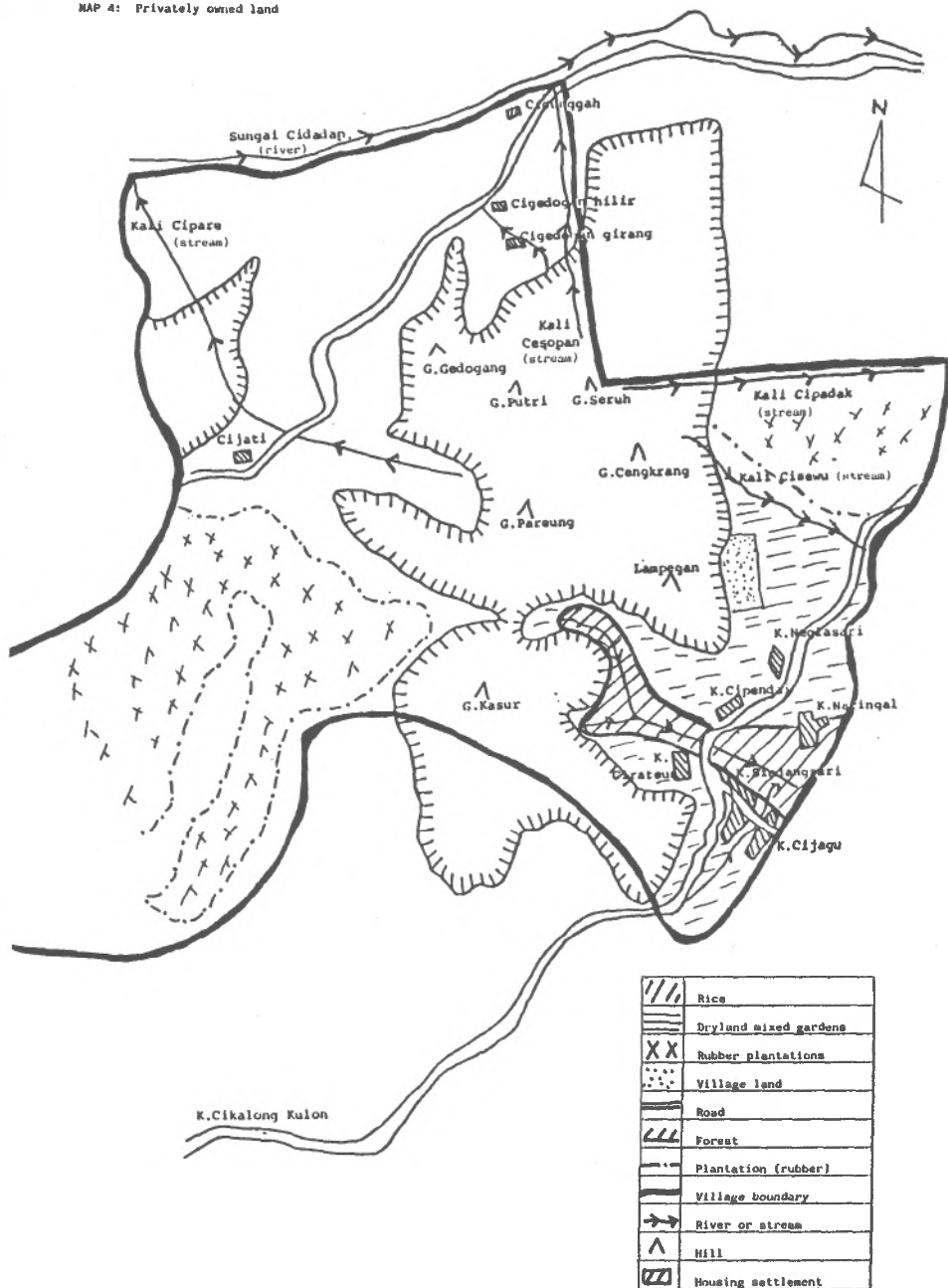
CIRAMAEUMAH GIRANG VILLAGE

MAP 3: Village trails and public buildings



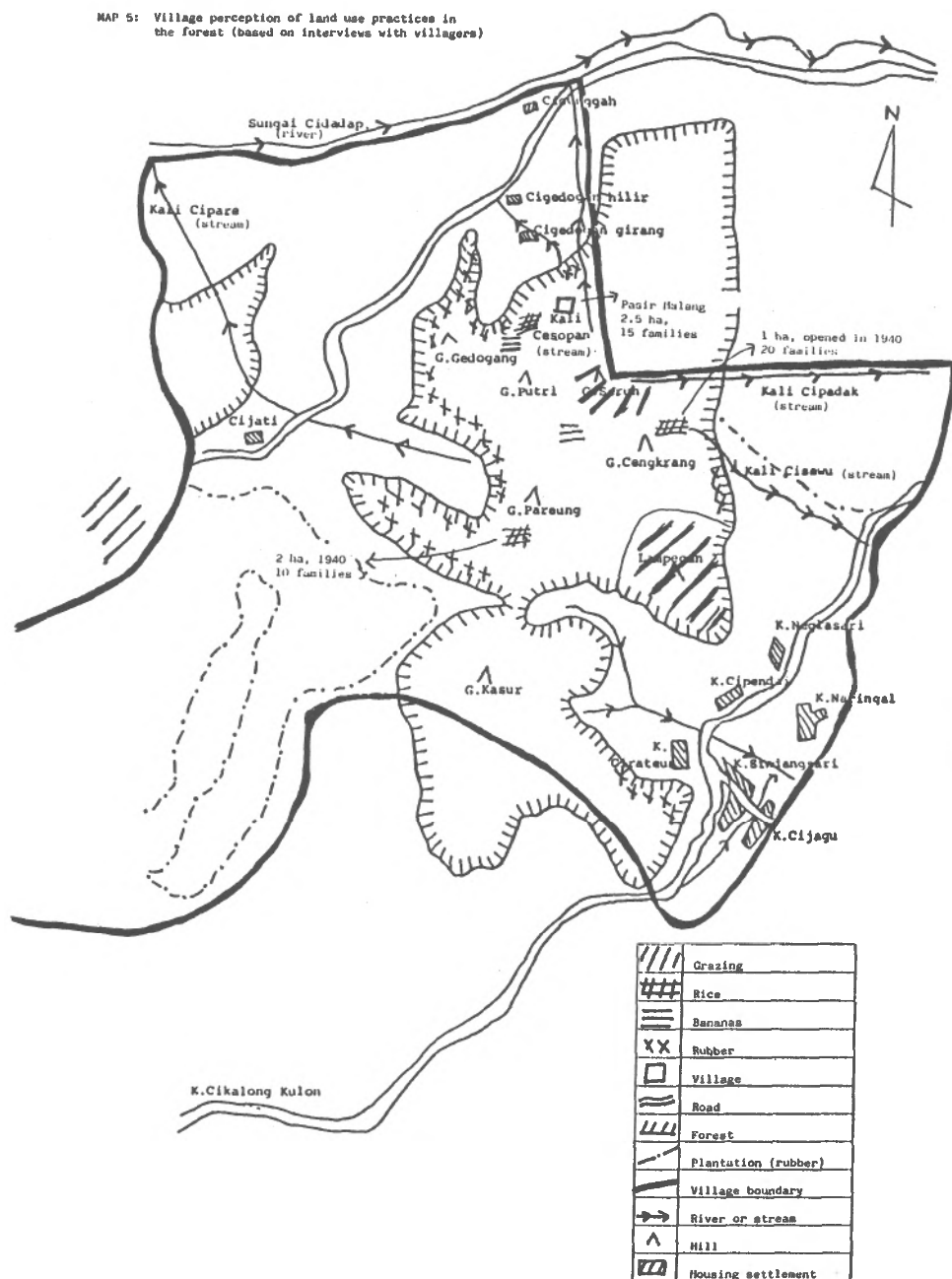
CIRANAEUWAH GIRANG VILLAGE

MAP 4: Privately owned land

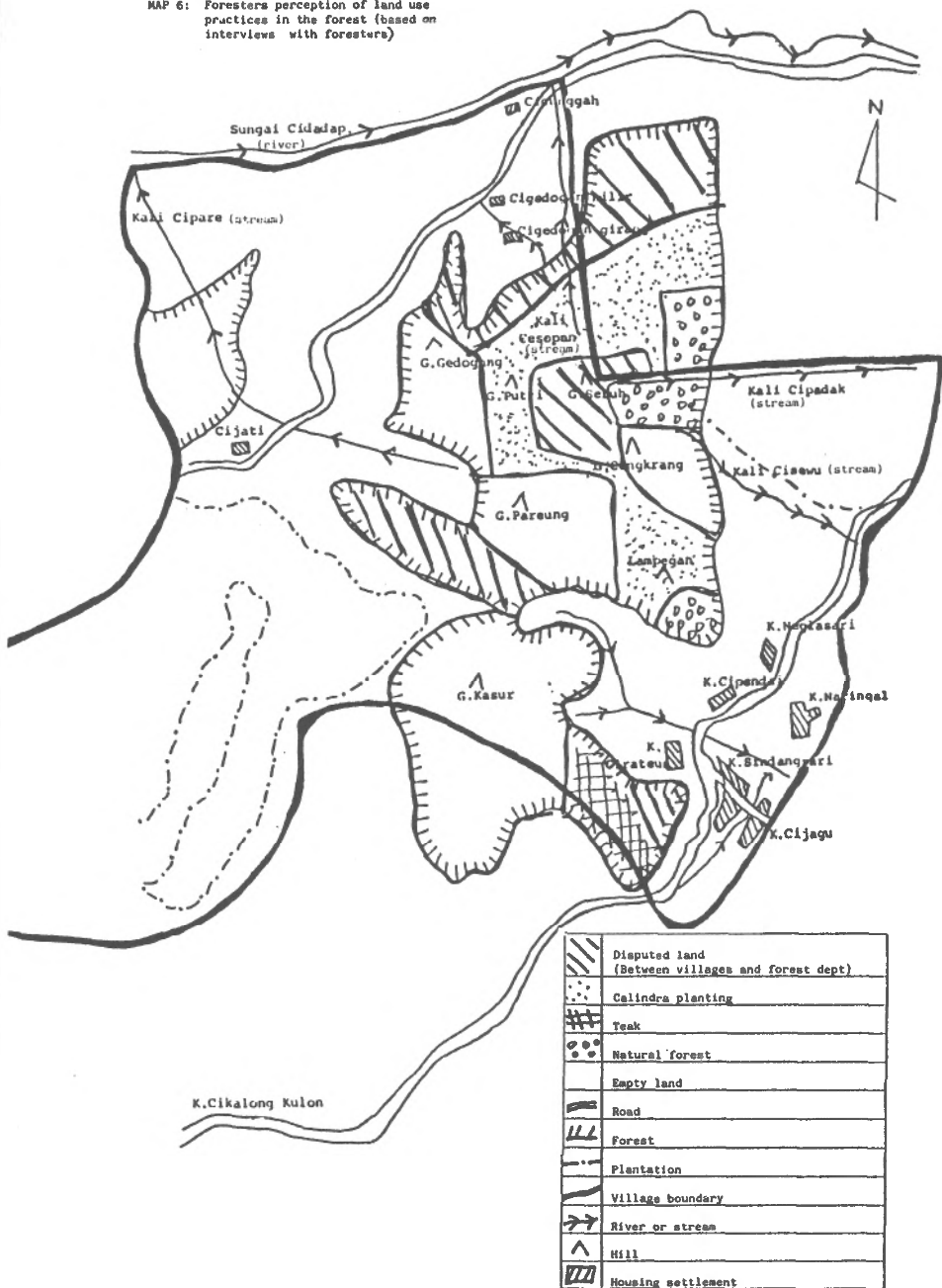


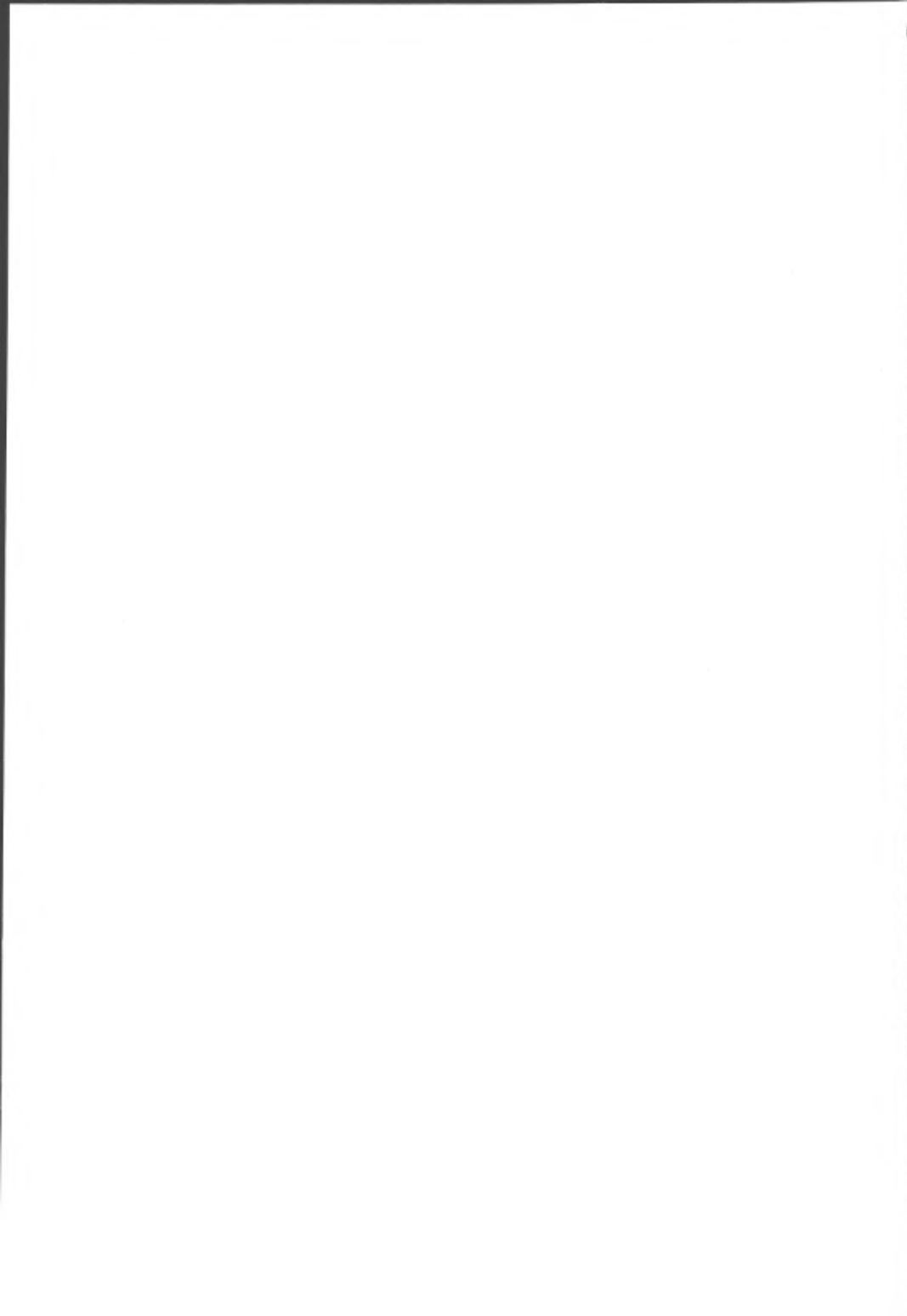
CIRANAEUNAH GIRANG VILLAGE

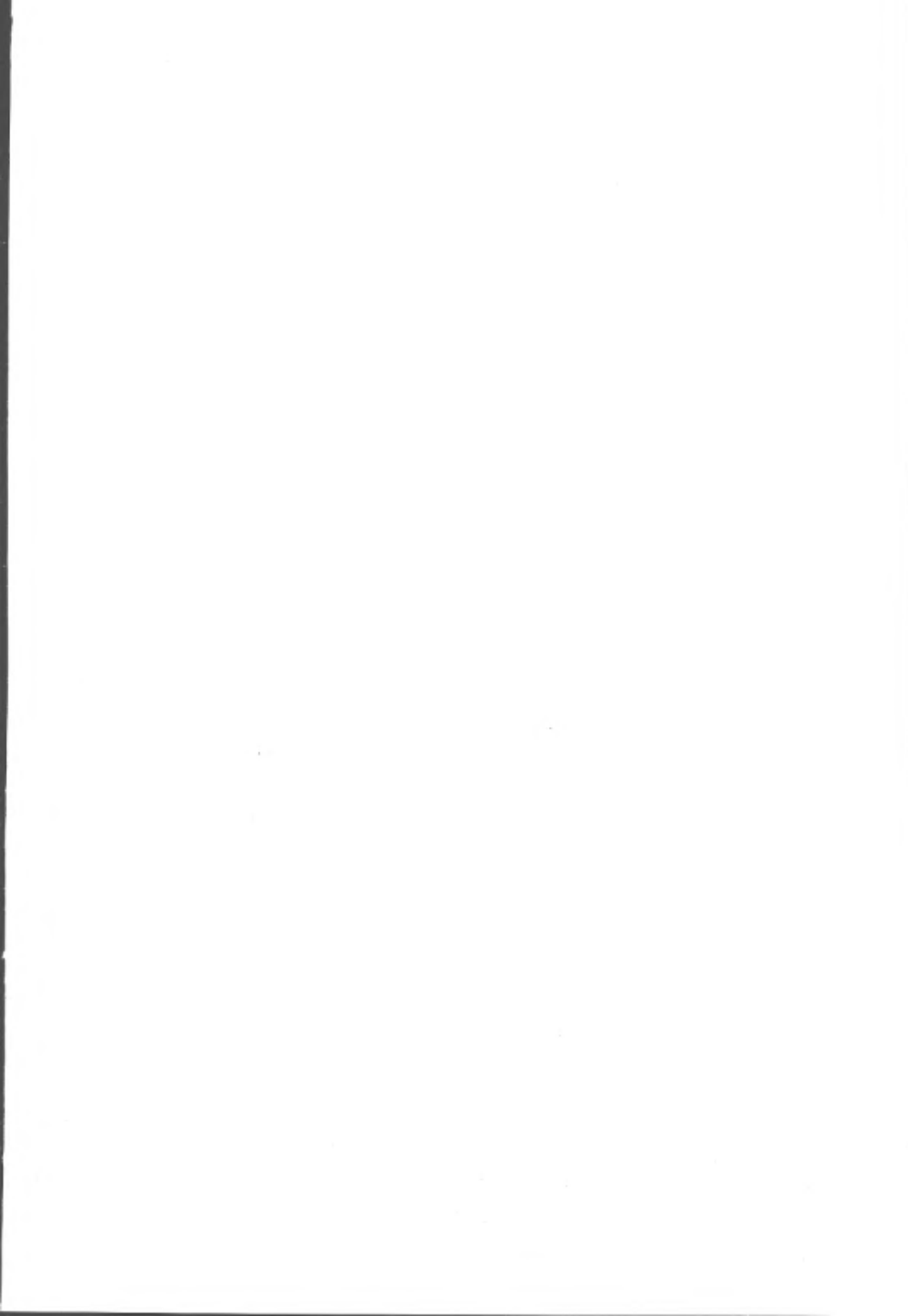
MAP 5: Village perception of land use practices in the forest (based on interviews with villagers)



MAP 6: Foresters perception of land use practices in the forest (based on interviews with foresters)









Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



THE SOCIAL FORESTRY DESIGN FRAMEWORK: THE HILL AREAS OF UTTAR PRADESH

Mukul Sanwal

Mukul Sanwal is Director of the Administrative Training
Institute, Naini Tal, Uttar Pradesh, India

The Social Forestry Design Framework: The Hill Areas of Uttar Pradesh

Mukul Sanwal

INTRODUCTION

Development is a political activity. For local planning the required allocation of resources represents a substantial re-adjustment in government policies and investment, as well as continuing political support and administrative commitment.

Goals to be achieved should not be 'protection of a watershed' as an end in itself, but rather be the means to achieve food, fuel and fodder for the villagers, increase soil fertility, water quality etc.

Since Forestry has a long term perspective, consistency with the physical, cultural, political, legal and socio-economic environment is needed in order to change some aspects, but also to be workable within those constraints which cannot be controlled or changed.

The real problem is that the 'development expert' view of a society's needs may be very different from an assessment made by that society itself. Terms such as development and area development, as well as small farmers and the poor are often used interchangeably as if they refer to a single homogenous group of people whose problems can be resolved by the same strategy of development. Focussing attention on the poorest within the poor in a region emphasises the causal relationship between poverty and area, and helps in the search for solutions to the causes rather than the symptoms of poverty.

This paper is about the victims of development. Development studies have generally concentrated on those who have been left out by development, the 'untouchables' of development. The plight of those actually impoverished by development is worse. In such a situation the development strategy will need to be modified to ensure that the resources meet the needs of the poorest in the local areas, rather than provide for their efficient management for the nation.

In this paper the problems of the Hill people of Uttar Pradesh in the Central Himalayas in India, will be analysed to illustrate this dimension of the problem of resource use and of poverty in developing countries -

- How do 'our' perspectives and policies affect 'them'?
- Who are the 'poor' and what are their needs?
- How can 'we' help 'them' to help themselves?

An alternative development strategy stressing social mobilization rather than technical aspects will be suggested. The validity of the development strategy suggested in this paper is not limited to Hill areas and has wider implications for rural development.

This paper is in four parts. In the first part Backward Area Development alternatives are discussed with respect to the Hill areas of India. In the second part, the complete socio-political-economic causes of the crisis in the lives of the Hill people in Uttar Pradesh are analysed. In the third part, the institutional arrangements for an alternative strategy - social forestry - are described. In the fourth part, general lessons for development policy are drawn.

I BACKWARD AREA DEVELOPMENT ALTERNATIVES

A major unresolved issue in development is how to encourage interdependence within a modern exchange system without at the same time destroying prosperity in the smaller and more isolated units entering the system. The magnitude of the problems faced by all the newly independent countries led them to concentrate on groups, sectors and regions which would respond most quickly to the process of structural transformation. It was also believed that rapid transformation required to be centrally initiated and planned. It was realised only later that centralisation led to an over-exploitation, or underutilisation, of resources in the national peripheries and economic and social decline in these areas. Consequently, regional inequalities are increasing and adding to the problems of poverty. The key issue is whether these inequalities can be reduced by greater functional

integration with the national or international economy, or whether internal spatial integration will be more effective. This difference is reflected in whether the mode of analysis is from above or below. The top-down model starts with disciplinary specialisation and uses its tools to examine rural conditions of poor people and their problems.

The top down policies being pursued are derived from neoclassical economic theory, and assume that development will, in an induced way, trickle down. The hypothesis is that development is driven by external demand and innovation impulses, and will radiate from a few dynamic geographical clusters. But these growth centres also withdraw resources from the hinterland without providing employment for the excess rural population. Decentralisation of decision-making is not enough because the essential activity remains that of mediating between social tensions rather than taking allocative decisions.

Bottom up policies reflect changing ideas of the meaning of development.¹ The basic hypothesis is that policies must be targetted on the poorest, must be motivated and controlled from the bottom and must seek to maximize each area's human resources. Such strategies are endogenously motivated, small-scale, labour-intensive and rural-centered. These would require, for stable results, changes in national economic priorities, political support, new institutions, communal decision-making and indigenous administrative capacity.

There is no consistent theory for an 'alternative' development strategy as approaches differ between the few countries who are implementing them, and local initiatives often go unnoticed. The poor begin to invest once they cross the threshold of purely fighting for survival and provided they feel certain that the benefits of such investment will accrue to them, and they are provided with the necessary knowhow. Such an agriculture-based, employment-oriented development policy has also been suggested for India.²

The process of Development in the Hill areas of India, illustrates the different perspectives, of the various levels, national and local, as well as of the actors, those who influence policy and the poor. The

National Committee on the Development of Backward Areas in its Report on Development of Backward Hill Areas (March 1981) concludes that 'the strategy for development of these areas should be dictated by considerations of:

- (i) benefitting the people as a whole rather than the high status groups;
- (ii) developing local resources and utilising local talents so that the need for out-migration of adult males is no more necessary, or at least is considerably reduced;
- (iii) transforming a consumption-oriented economy to an investment oriented one;
- (iv) regulating inter-regional terms of trade in a manner that they cease to be exploitative for the backward regions;
- (v) the States filling up the gaps in the marketing mechanism to give the backward areas fair return for labourers, and
- (vi) maintaining the ecological balance.'

Since nearly three-quarters of the land in Hill areas is under forest or pasture and belongs to Government not only is development guided by Government policy manipulation but also forestry forms the major set of recommendations of the Report. The three main recommendations are:

1. 'Social forestry on scientific lines is necessary to check soil erosion, maintain ecological balance and produce industrial raw materials. Conservation, extension and productive exploitation of forests have to go hand in hand to meet the industrial requirements and general needs of the people. (para 3.14)
2. The continual over-exploitation of trees and shrubs for fuel will go on unless a successful policy of first halting the trend and then reversing the process can be thought of and implemented.

This is the most important aspect of the forest in the Hill areas.
(para 5.35)

3. The Committee advise that an immediate examination should be made of all such areas in the backward Hill areas which should legitimately be brought within the classification of protected forests and steps taken to declare them as protected forests. Then a systematic programme should be taken up to see that the forest cover is brought back in all these protection forests within a reasonable time frame utilizing the finances for social forestry. This, in the view of the Committee is of priority in the Himalayan hill ranges.' (para 5.38)

These recommendations are contradictory to the development strategy suggested in the Report, on three counts:

- 'Production Forestry' is used interchangeably with 'Social Forestry', and the divergence of interests between commercial-industrial use of timber and the needs of the local people for fuel, fodder and food is ignored.
- Since community interests are not served, social forestry which depends on community participation is not likely to be successful.
- With increasing depletion of the natural resources the problems for the local people will increase; industry has the capacity to develop alternative sources of raw material.

The policy seeks to protect the forests from the people rather than for them.

The process of change in the Hill areas has not been adequately studied and the conditions and constraints of the poor have been ignored. First, the focus has generally been on economic change ignoring the social and political changes. Second, the studies have been concerned with changes at the macro-level. Third, the concern has been with the factors internal to the Hill areas rather than external interventions. Consequently, the natural resource mismanage-

ment caused by the socio-political imbalances of society have been ignored. Having reduced the forest lands to less than is needed for local survival systems, the local people are blamed for the environmental degradation.

The National Commission has appreciated the national-level concerns that protection of the productive capacity of forests is not a limited independent subject largely concerned with wildlife, and that ecological factors are not impediments to development to be considered on a project by project basis, but as a matter of policy. A narrow interpretation of conservation has three important consequences. First, the ecological effects of development policies are seldom anticipated and timely adjustment is not made to avoid expensive mistakes or gain valuable advantages. Evidence from the Indo-German Dhauladhar Project in the Central Himalayas in India shows that sustainable agriculture depends on the integration with forestry of tree crops for fertility, fodder, fuel and erosion control.³ Recent studies in Africa confirm that a mixture of tree-crops and annual food crops provides more food output, employment and greater conservation of soil.

Second, the forestry sector tends to concentrate on production at the expense of maintenance, with the result that otherwise renewable resources are dissipated and the resource base of future utilisation is undermined. This is in sharp contrast to policy in developed countries where expenditure on maintaining forests far exceeds the revenue derived from forest working.⁴

Thirdly, because of the previous lack of conservation, the policies of other sectors may be undermined. The energy sector's forecast of the life of a hydro-electric power plant for example, may be completely falsified by poor watershed management. The rate of siltation is over four times the estimated rate in the Ramganga reservoir, in Uttar Pradesh.⁵

The National Commission has ignored the fact that people on the margin of survival are compelled by their poverty to exploit the resources available to them. But at the same time the pattern and level of use of the resources is changing. Being peripheral areas and lacking the

necessary political power, the Hill areas see their resources siphoned-off to the benefit of an external economy, with deleterious effects on the development of the local area and impoverishment of the local people.

The case of the Hill people of Uttar Pradesh will be used as a case study to describe how this was brought about, its effects and what can be done to improve the conditions of the poor.

II THE UTTAR PRADESH HILL PEOPLES IN CRISIS

Uttar Pradesh with nearly 110m inhabitants is a poor and populous state. The per capita income of about US\$115 is one of the lowest in India. The proportion of the population living below the absolute level of poverty has remained around 50% since the late fifties.⁶

The eight Hill Districts of Uttar Pradesh have an area of 52,000 sq km and a population of five million people. Within the State, the Hill areas are the poorest: per capita incomes are half that of the State average.⁷ Eighty-eight percent of the holdings are less than 2ha and 68% are less than 1ha. There are very few agricultural labourers,⁸ and less than 20% of this area can be irrigated.⁹ The density of population per unit of cultivated land is four times that of the Plains.¹⁰ A study of a typical village found that on average the income of all the villagers is at the subsistence level: most cash incomes come from off-farm activities and livestock, with crop production coming third.¹¹ About 23% of the active age group of the Hill population work as wage paid workers, as many as 80% of them as migrants to areas outside the region.¹² Families depend on remittances from their sons, who migrate to the Plains for jobs as domestic servants and in the armed forces: as much as 60% of the family income is through remittances.¹³ This distress migration drains the Hills of its active population and leadership, affecting development potential in terms of resources and skills.

Historically, agriculture in the Hill areas of Uttar Pradesh has been characterised by a farming system which promoted a great degree of

self-sufficiency. The average hill village is situated on a spur jutting out from the hillside in the middle of a slope, with its forests, grazing areas and water sources above, and the cultivated fields below in the warmer valleys. Terracing techniques were applied to prevent soil erosion. Through group action, indigenous irrigation systems and trekking roads were built. Most farmers also keep livestock to supplement their income, and for manure. Feed and fodder are obtained not only from the annual crop residue and pasture around the village but also from fodder trees in nearby forests. Thus, the farming system is characterised by a close integration of crop cultivation, animal husbandry and forestry.

Dependence on the forests was originally institutionalised through social mechanisms. Village communities determined farming, grazing and other activities.

The forest department was created in 1864 for the 'consolidation of the forest estate', and the extraction of timber for export outside the Hills has since progressively increased.

The policy of treating the forest as a source of revenue rather than as a source of livelihood for the local people remained unchanged after Independence. The National Forest Policy of 1952 seeks to ensure that 'the country as a whole is not deprived of a national asset by the mere accident of a village being situated close to a Forest'. With the growth of forest based industries a more 'dynamic' approach by the forest department has been favoured. An FAO expert suggested that an expanding economy requires 'the highest tonnage of production of organic raw material within the shortest possible period and at the lowest possible cost.'¹⁴ The National Commission on Agriculture also agreed that the first element in the forest management strategy would have to be production forestry for industrial wood production.¹⁵ To facilitate and extend this extraction the building of roads became necessary. In the UP Himalayas a Rs 56 million World Bank Project was started in 1976 for the construction of 1330 km of roads.

The Hill areas and local communities benefit very little from these activities; in fact they suffer. The harmful effects of annual

control burnings in resin-tapping areas have exposed the soils in many areas, and the tapping of very young trees has increased windfalls and uprooting.¹⁶ Two thirds of the resin turpentine extracted from the pine trees goes to industries outside the Hills while local units work at 50% capacity.¹⁷ The outturn of important species of the region has increased over five times between 1931 and 1981, while the outturn of forest produce given to the villagers has merely doubled since 1931. In 1981-82 the timber and fuel wood exported to the plains was ten times and two times respectively the quantity given to right holders in local villages.¹⁸

Of greater consequence for the local people is the diminishing forest stock. A recent study by the Forest Department recognises that the sustained yield principle is not materialising and there is unsatisfactory regeneration in areas of commercial fellings.¹⁹ The altitudinal distribution of areas is in the higher ranges which are inaccessible for commercial exploitation, and have few villages. Thus, the burden of timber extraction falls disproportionately on the forests in the middle Himalayas and that is where most of the villagers also live, and the denudation is most visible.²⁰

This process has had two important consequences. Firstly, over the years the villagers lost control over 60% of their best forests, and since less than one-third of their requirement is met by the Government from the reserve forests, and available pasture land is half of the requirement, the pressure on community forests immediately surrounding the villages has increased, hastening their destruction. This forms the basis of the forester's view that the main cause of environmental degradation is the excessive human and cattle population.

The second consequence of the Forest Policy is that the loss of community ownership has tended to break the link between man and forest. So great is the dependence of the Hill people on the forests that they have agitated against reservation and have tried to enforce some control over their local forests, showing their consciousness of the long term economic and ecological consequences of deforestation. The

reservation of 1917 was followed by widespread protest, and on the recommendations of the Kumaon Forest Grievances Committee (1921)²¹ the forests reserved since 1893 were reclassified. Forest Panchayats were formed in forests close to villages.* Class I forests which were not commercially important were put under the Land Revenue Department, and Class II forests which were commercially important were put under the control of the Forests Department.²² The Government of Uttar Pradesh's decision in 1976 to put these Forest Panchayats under the control of the Forest Department has again provoked widespread agitation - the 'Chipko Movement' - and Government has been forced to stop fellings above 1000 metres and on slopes above 30 degrees gradient, and has appointed a committee of experts to examine the issue of conservation of natural resources.²³ The Hill people blame the forest contractor for the deforestation and charge the Forest Department of being in league.²⁴ Changes in the working of the Forest Department have been suggested from time to time.

* Forest Panchayats were set up in the Hills of Uttar Pradesh in 1931. The demarcation of 1917 declared the good forests around the villages as Reserved Forests. This caused great resentment among the hill people. There were protest meetings, forest fires and incendiarism. To look into the grievances of the people a committee called the Kumaon Forest Grievances Committee was set up in 1921. The Committee was chaired by the Commissioner of Kumaon, Mr Wyndham, and included two local non-officials. The committee recommended reclassification of forests. In areas where local demand was heavy, it was recommended that Forest ('Van') Panchayats be formed to manage them.

The Panchayat Forest Rules were enacted in 1931, and later revised in 1976. Two-thirds of all the inhabitants of a village can resolve to form a Forest Panchayat. The Panchayat is responsible for internal management - grazing, collection of fuel and timber and protection. Panchayat Presidents have the authority to levy fines, and report serious cases to the Deputy Commissioner. Most also keep a watchman paid by contributions, usually in kind, from the members. The watchman's main duties are to prevent 'theft' by neighbouring villages rather than from members of the Panchayat - social pressure is a more effective sanction for the members. Commercial exploitation has to be approved by the Forest Department. The Forest Panchayats are subject to inspections by the Deputy Commissioner and Forest Officers. There is no interference as long as the forests are well managed, which is usually the case.

There were Forest Panchayats covering an area of 2,000 hectares in 1982.

Actually, these are not problems of institutional failure but of policy, where the interests of the local inhabitants suffer because they lack political power. There is sufficient evidence to show that the Hill people are the victims and not the cause of this crisis. As long as these forests were the property of the local communities they were well managed. Commercial extraction for use of industry has created the ecological crisis. Many of the Panchayat forests are in better condition than the reserved forests in the area, and forest officers acknowledge this.²⁵ The problem is the divergence between what is stated and what is actually done.

The increase in commercial exploitation and reservation of forests limiting the access of villagers has led to increasing hardships. First, there is a social crisis. The study of Chausali village found that, on average, women are already working 12 to 16 hours a day, collecting and fetching fuel and fodder; most of the fracture cases in hospital are women who have broken bones as a result of a fall while collecting fodder on steep slopes. This used to take about four hours every day in the three winter months, now it takes six hours and goes on for six months in the year.²⁶ Second, there is a biotic crisis. The carrying capacity of the pasture land is already over-reached.²⁷ At the present rate of exploitation around the first quarter of the next century the carrying capacity of the forests is expected to be over-reached, and an irreversible process will start.²⁸ Third, there is an ecological crisis. As forest cover goes, soil erosion increases and the water-table declines.

III SOCIAL FORESTRY - AN ALTERNATIVE STRATEGY

Development experience over the past three decades indicates that in the Hill areas of Uttar Pradesh, greater attention must be paid to the socio-economic technological and institutional constraints in designing programmes, rather than applying universal principles and treating Hill Development merely as an extension of plains development.

The proposed solutions for ameliorating the conditions of the Hill farmers have been the provision of new technology through introducing new crops, improved strains of milch cattle, better farming systems, and provision of improved financial, transportation and marketing services. This has unforeseen and unwelcome side effects. Except for ploughing all farm operations are carried out by women. A study²⁹ shows that when the Japanese method of line sowing was introduced nearly every farmer adopted it in the first year. But by the fourth year they had all reverted to the traditional practice because more labour was needed which the men were reluctant to supply. Even the simplest technology is too expensive for the average hill farmer.

The Hill people are dependent on goods produced outside, including food, and their cash incomes have not kept pace with inflation. Off-farm employment has focussed on growth centres which are expected to be poles of development. These development projects have made a subsidy oriented base without creating conditions for a self generating economy. They have provided very little employment. Rural non-agricultural enterprises depend on agricultural growth for their markets; their growth potential is limited by the limited potential for agricultural growth.

In the hills of Uttar Pradesh income from employment is more important than land, but the development strategies being implemented do not take this into account. The thrust for increasing output growth with equitable distribution of incomes should be in the development of opportunities for employment within the Hill areas.

As development economists point out, the most productive investments in less developed areas are those that open up the abundant natural resources. The goal of raising income levels should be met by a planning policy in which the basic thrust is the fullest use of natural resources for the promotion of productive employment and for raising productivity. The most important social resources are the forests, and forests will continue to occupy the most important place in the land use pattern in future. The Hill terrain consists of steep hills and narrow valleys, the major part of which is economically and

ecologically suited to a forestry or a pasture development programme. Forests offer opportunities for local employment and income through tree plantation; cash crops such as herbs, walnuts, bamboo and industrial pulp-wood; raw material for local craftsmen and small-scale enterprises, and are a source of fodder for livestock.³⁰ Investing resources, including labour, in afforestation will be a better use than in agriculture or in industry.

National planning should acknowledge the social function and local value of forests and their products, and the interdependent nature of forestry, animal husbandry and agriculture - which, in fact, forms the basis of the Hill economy and way of life. What is needed is a new forest policy stressing social rather than purely commercial aspects. A new management system with appropriate legislation will also be needed.

Guidelines will be needed for the new forestry or resource management policy. The problem is how to coordinate individual users in order to attain the optimum rate of consumption and production for the community. Table I provides an overview of the various policies that could be considered. There is an optimal level at which the forest should be exploited, a level that is clearly now being exceeded. Only a strictly enforced quota or raising the costs of exploitation through royalties or other charges will have much effect: a possibility that is not administratively workable. A subsidy to encourage use of biogas would be limited socially - few families have enough animals to maintain a plant, and cold winter temperatures inhibit gas production. Subsidies could be used to provide improved stoves, but the problem would be in persuading villagers to use them. The traditional stove is inefficient for cooking but heats houses in winter, dries out roofs in the monsoon, the smoke acts as a mosquito repellent and cures the wood to keep away termites. People will not change their habits until they see major advantages in doing so.

Supply side policies are more important than demand side policies in a community forest policy. Investment subsidies and direct government investment can improve welfare significantly. These policies are distributive and so will not be politically unpopular.

TABLE I

Common Property resource managementFOREST POLICY OPTIONS

Policies	Social Desir- ability	Administrative Feasibility	Political Accept- ability	Economic Efficiency
DEMAND SIDE				
Regulate use				
through quotas	no	no	no	yes
through tax	no	no	no	yes
Subsidise				
bio-gas	no	yes	yes	yes
improved stoves	yes/no	yes	yes	yes
SUPPLY SIDE				
Subsidy to				
private planting	no	yes	yes	yes
Govt. afforestation	yes	yes	yes	yes
Management System				
Govt. control	no	no	yes/no	no
Community control	yes	yes	yes	yes
Private control	no	no	no	yes

If community forestry is subsidised it will not overstretch administrative capacity. Communities can be offered effective ownership in exchange for managing the forests within certain guidelines, where Government will provide the resources but the villagers will be responsible for maintaining the forests. Traditionally communities have done this very effectively in the Hills of Uttar Pradesh.³¹

Social or community forestry is not a technology, as is usually assumed, but a process that requires the acceptance and participation of the entire community, in decision making and the sharing of benefits.

First, ownership of forest resources should be with the rural communities. The choice of species - broad leaved fodder trees are preferred - should be determined by the people according to their needs. Research will be needed on species which are quick growing, coppicing and location specific, as well as on optimal spacing, growth and recycling periods. Second, success will depend on at least two thirds of the efforts going towards tending and protection. Improvement of the natural pastures should also be an objective;³² reintroducing forests on lands where they once existed will be more difficult than making existing forests productive. Third, the time scale of forestry conflicts with the priorities of the poor, who naturally focus on meeting their daily needs; the challenge is to link forestry development to these attitudes - the planting schedule should provide a gap of about three years after enclosure to give sufficient time for regeneration of grasses, and increased yields, which insure the villagers against loss due to enclosures; enclosures should be limited to one-tenth of the grazing lands. Fourth, encouragement should be given to multiple product forestry. Minor forest products like medicinal plants and honey increase the yield of commodities other than timber and benefit local communities who have not profited from commercial logging operations. Fifth, Forest Panchayats will need to be extended, for equitable distribution of benefits and management. In the existing Panchayats indigenous methods of distribution of grass are quite effective - one common and fairly successful method is to allow one sickle to each family everyday during the grass-cutting

season.³³ The development of fuel, food and fodder resources will improve local production and raise income levels of the poorest in a more effective manner than drawing the rural communities into alien commercial networks. Such initiatives by the rural poor themselves rather than by elite-determined and elite-controlled programmes are a surer way to mobilise rural resources for the satisfaction of the basic needs of the rural population as they perceive them.³⁴

The programme of afforestation will be more than a complementary public works programme,³⁵ as it is proposed as the major component of the development strategy. Estimates are that social forestry gives a higher return than dry-farming. It will be carried out primarily on Government land in a phased manner, and these measures will have to be sustained over a long period of time. Political education and increasing of skills at all levels has to play a major role in this. Visible benefits to the community as a whole will help to develop local capacity for sustained management of natural resources.

The approach suggested has its limitations. Certain resource management decisions are technical in nature eg. the carrying capacity of grazing lands and sustained yield in timber extraction, and could conflict with local community decisions. Intervention of the central power may also be necessary for equity and for wider national goals, such as management of water-catchments. There is also the fear of privatisation of community rights to the detriment of the poor. Above all, political will and administrative decentralisation will be needed to initiate the process. Recognition of these very real constraints does not detract from the need to analyse and articulate the causes of the crisis in the lives of the Hill people and to suggest an alternative strategy.

IV CONCLUSIONS

Certain general conclusions for development policy can be drawn. There is a relationship between employment and basic needs policies on the one hand and growth and investment on the other. The rate of invest-

ment or distribution of output between consumption and investment is therefore an important concern of development plans. Significant allocations to basic needs do not contribute directly to public savings. Similarly, investment in infrastructure and other construction means too little is left for consumption and the poor have to wait a long time before their immediate and essential needs are met. Inter-regional trade is rarely beneficial to the periphery. Development strategy has to come to grips with the problems of unemployment and poverty. Generation of employment has to take place in the appropriate sectors. Second, a multi-pronged strategy is involved in which employment and poverty considerations are reconciled with other mutually supporting objectives. Third, ecological and socio-cultural dimensions of the task cannot be ignored, particularly where efforts and reward are concerned.

This paper has pointed towards certain essential features of the development process which are usually overlooked:

1. Development includes complex elements of social change; the theory and practice must have people in mind. The creation of employment within the local area, through social forestry for example, needs to be given primacy in the development strategy. Such activities can be quantitatively significant, more labour-intensive than similar activities in urban centres and more efficient due to their high capital-labour ratio and their better integration into the rural economy by producing more appropriate products.
2. Particularly in marginal areas where common property resources are available, the impact of exogenous influences need to be studied for the legislative impediments they create to the exercise of traditional rights.
3. In the implementation of development programmes and projects, the critical element in institutional design is community decision-making at village level for locational and allocational decisions. Local initiatives outside government, bureaucracy and the political parties need to be recognised, supported and given legitimacy.

As anthropologists broaden the scope of their studies from the village to the regional level, the process of change will perhaps become less unidirectional and unidimensional than at present. On the lines of an old Chinese poem;

'Go to the People
Live Among Them
Learn from them
Love them
Start with what they know
Build on what they have'

FOOTNOTES

1. Stohr, W. and Taylor, D.R.F. Development from Above or Below: The Dialectics of Regional Planning in Development Countries. New York:Wiley, 1981.
2. Seth, D.L. 'Grass Roots Initiatives in India', Economic and Political Weekly, Vol 19:6 1984.
3. Report of the Dhavladhar Project (mimeo)
4. Uttar Pradesh Statistics 1978-1979
5. Central Soil and Water Conservation and Training Institute, Dehradun, has made this investigation.

See also, Wesherd et al., 'Cases of Flood in River Kosi of UP Himalayas' paper presented at the annual conference of the National Association of Geographers held at Candigarh, 1980; Joshi et al., Restoration of the Himalayas Delhi:Ford Foundation, 1980
6. World Bank. Rural Poverty and Agricultural Growth in India
7. Census of India. Government of India, 1981
8. For the State as a whole , 70% land holdings are over 5ha. ibid
9. Bandyopadyyay, J. and Shiva, S. 'Agricultural Economy of Kumaon Hills', Economic and Political Weekly, Vol 14:41 1979.
10. All India Report on Census 1970-71. Government of India, 1975
11. Pant, G.B. 'Agricultural Development in the Naurar Catchment: An Experiment in Intergrated Area Development Approach in Kumaon Hills'. University of Agriculture and Technology, 1974.
12. Swaminathan, M.S. 'Agricultural System in the Himalayas' in National Seminar on Resources Development and Environment in the Himalayan Region. New Delhi, 1981.
13. ICAR. Social-Economic Survey of Village Chausali-Almora 1979
14. Von Monroy, J.A. Report to the GoI on the Integration of Forests and Forest Industries. FAO, 1960.
15. Report of the National Commission of Agriculture Part IX, Government of India, 1976.
16. 'Integrated Watershed Rehabilitation and Development Project: UP Himalayas and Siwaliks.' UP Forest Department, 1981 (mimeo).

17. NCAER. Growth Centres and Their Industrial Potential: Chamoli District, Delhi, 1975.
18. Forest statistics, Uttar Pradesh 1983, Lucknow. For the year 1981-82, the outturn of timber was 400,000m³, of fuel 1,400,000m³, while the produce given to villagers was only 37,000m³ and 700,000m³ respectively.
19. 'Integrated Watershed Rehabilitation and Development Project: UP Himalayas and Siwaliks.' UP Forest Department, 1981 (mimeo).
20. Seth, S.K. 'Forests and Forestry in the Himalayan Region' in proceedings of the National Seminar on Resources Development and Environment in the Himalayan Region. New Delhi, 1981.
21. Pant, M.M. 'Wood to alleviate Indian energy crisis', Indian Forester, 1981.

Bowonder, B. 'Deforestation in India', International Journal of Environmental Studies, Vol 18:2 1982.
22. Wyndham (Commissioner of Kumaon) Kumaon Forest Grievances Committee Report, Allahabad, 1921.
23. This massive conciliation has been described as the 'greatest policy defeat the Forest Department has ever suffered in that region' see Richard Tucker, 'British Colonialism and Forest Utilization in the Indian Himalayas', University of Michigan, 1980. (mimeo).
24. Shobita, Jain. 'Women and People's Ecological Movement: A case study of women's role in the Chipko Movement in Uttar Pradesh', Economic and Political Weekly, Vol 19:41 1984.
25. Kulkarni, Sharad. 'Encroachment on Forests: Government Versus People', Economic and Political Weekly, Vol 17:3 1982.

Gadgil, Madhav. 'Towards an Indian Conservation Strategy'. Paper presented at the workshop on New Forest, Pol-Delhi, 1982.
26. Working Plan for Garhwal Forest Division, 1940-41 to 1954-55, Allahabad, 1956.
27. ICAR, op.cit.
28. Joshi, P.R. et al., Restoration of the Himalayas. Delhi:Ford Foundation, 1980.
29. Shah, S.L. Presidential Address at the Forty-first All India Agricultural Economics Conference, 1981.
30. One mature tree can provide supplementary fodder for one buffalo. See, Forestry for Local Community Development. Rome:FAO, 1978.

31. Wallace, Michael B. 'Managing Resources that are Common Property: From Kathmandu to Capital Hill', Journal of Policy Analysis and Management, Vol 2:2 1983.
32. Studies show that the present level of production of grass lands is a quarter of their possible potential in quantum. See, B.D. Patel and P.S. Pathak, 'Grassland Development in the Himalayas', National Seminar on Resource Development and Environment in the Himalayan Region, Delhi, 1978.
33. Based on the author's experience as District Officer, Almora District in the Uttar Pradesh Hills when large scale afforestation was initiated.
34. Such a programme was initiated in Almora District, Uttar Pradesh, in 1976-77 covering 2,000ha, see pamphlet 'Trimukhi Van Kheti in Almora'. A Study for the Indian Council of Agricultural Research, 'Socio-economic Technological Organisational and Institutional Constraints in the Afforestation of Civil, Soyam, Usar and Wastelands for resolving the fuelwood crisis in the Hill District of Uttar Pradesh' found that half the projects in the Forest Panchayats studied have been successful.
35. Public Works have largely benefitted the landless and provided them with additional incomes of up to 20%, see 'Evaluation of the Food for Work Program', PEO Planning Commission, 1978.



Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644

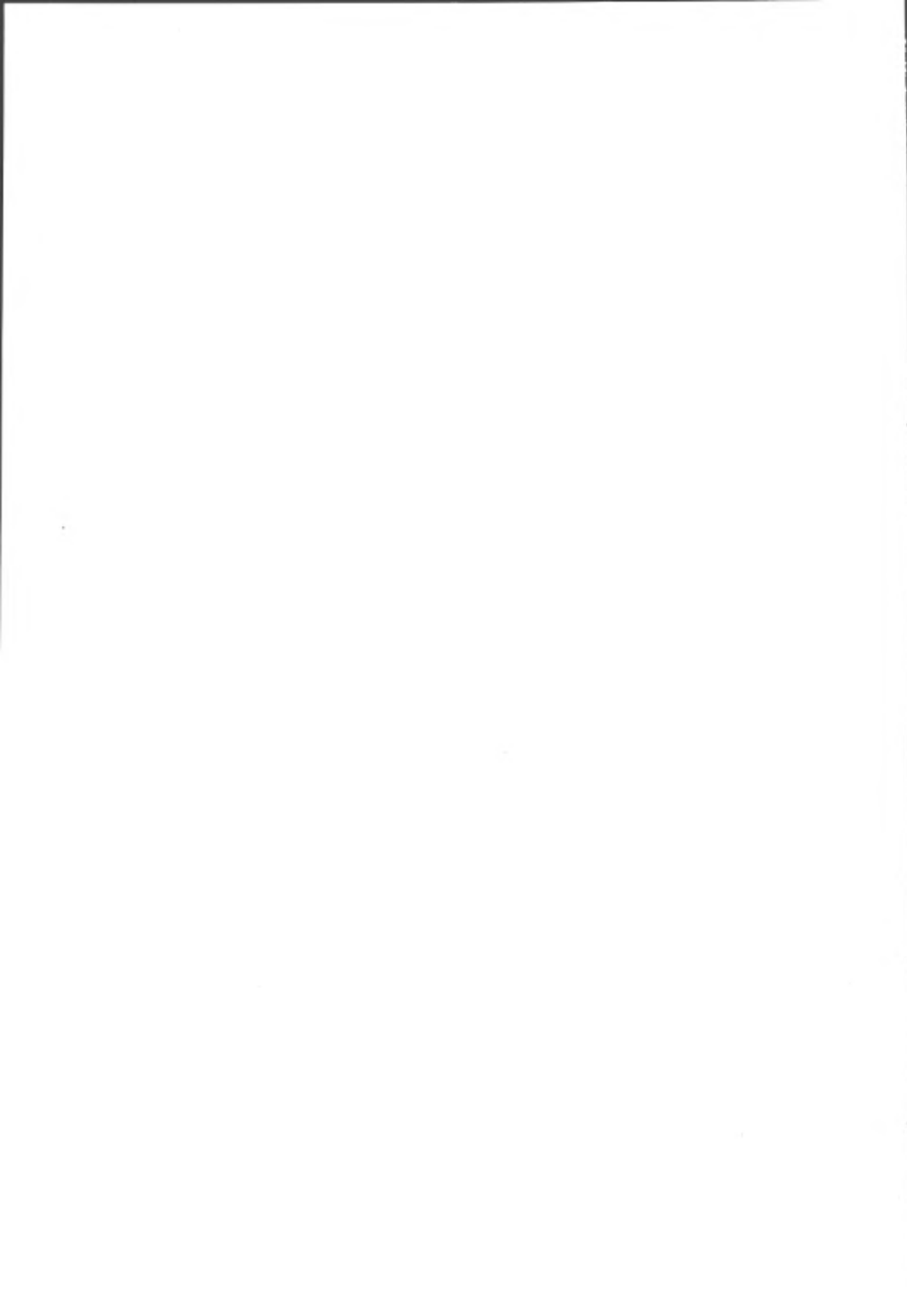


SOCIAL FORESTRY NETWORK



A HUNDRED RECENT JOURNAL ARTICLES ON SOCIAL FORESTRY

Edited by Asmeen Khan



A HUNDRED RECENT JOURNAL ARTICLES ON SOCIAL FORESTRY

edited by: Asmeen Khan

These bibliographical summaries were compiled at the request of networkers, many of whom do not have access to international journals and periodicals containing social forestry articles.

The following journals were searched for relevant articles: Agricultural Administration; Agroforestry Systems; Ceres; Commonwealth Forestry Review; Development Digest; Ecologist; Economic and Political Weekly; Indian Forester; The Journal of Developing Areas; The Journal of the Inter-American Foundation; Population and Development Review; Unasylva; World Development.

Since the literature in this field is now considerable, only articles published after 1980 were generally considered. Articles were selected on the grounds of clarity, the presentation of original and interesting data or because they offered helpful overviews or guidelines. An attempt was made to ensure the representation of most geographical regions. The summaries are intended to be of use without reference, necessarily to the articles they summarise. Length is an indication of the articles' interest.

1. 'Economic principles to appraise Agroforestry projects', P.A. Harou, Agricultural Administration, Vol 12 No 3, 1983, pp127-141.

Agroforestry has existed as a form of indigenous land use for a long time. Current interest has focussed on agroforestry as a means to preserve tropical and arid ecosystems and ensure food self-sufficiency. The important economic principle in a multiple cropping system is to increase input to any one crop so that the marginal value product of this input is equal in each alternative use. Agroforestry project appraisals should consider impact on individual participants, marginal return of the forestry component and risk diversification in the proper cultural context.

2. 'Pulpwood treefarming in the Philippines from the viewpoint of the smallholder: An ex-poste evaluation of the PICOP project', Eric L. Hyman, Agricultural Administration, Vol 14 No 1, 1983, pp23-49.

Evaluation of the PICOP project showed that assured markets, price guarantees, technical assistance, species suitability, and infrastructure were critical in smallholders adopting tree planting practices. Disincentives, particularly for poor farmers were: inflation outpacing loan size; exclusion of harvesting costs; lack of agroforestry integration; and Government price control of millgate prices.

3. 'Monitoring and Evaluation of forestry projects for Local Community Development', Eric L. Hyman, Agricultural Administration, Vol 19 No 3, 1985, pp139-161.

Monitoring and evaluation of FLCD projects are essential to improve the operation of the project and its impact.

4. 'Forest villages: an agroforestry approach to rehabilitating forest land degraded by shifting cultivation in Thailand', S.A. Boonkird, E.C.M. Fernandes, and P.K.R. Nair, Agroforestry Systems, Vol 2 No 2, 1984, pp87-103.

Forest villages have been established in Northern Thailand to encourage shifting cultivators and the landless to settle. Settlers are provided with 1.6ha on a yearly basis to grow tree plantation and food crops and land for a house and

homegarden. Social facilities plus monetary incentives for seedling survival are provided. Adoption has been slow due to low yield from food crops and land availability in the area.

5. 'Women and Agroforestry: four myths and three case studies', Louise Fortmann and Dianne Rocheleau, Agroforestry Systems, Vol 2, 1985 pp253-272.

Authors state that women are ignored in the implementation of forestry development programmes due to prevailing myths held by donors and local ministries about women's role in agricultural production, and decision making. Figures shown by authors demonstrate that women are actively involved in decision making and are often household heads. If agroforestry projects are to be implemented successfully women must be included as they grow crops, keep livestock and are the primary consumers of forest products. Three case studies from the Dominican Republic, India and Kenya illustrate the importance of women's participation in Agroforestry projects. Concludes by stating that participation benefits are not the same for men and women. Priorities differ, there is a differential access to resources and social class plays an important role in participation.

6. 'The Chagga homegardens: a multistoried agroforestry Cropping system on Mt. Kilimanjaro (Northern Tanzania)', E.C.M. Fernandes, A. Oktingati and J. Maghembe, Agroforestry Systems, Vol 2, 1984, pp73-86.

The Chagga homegardens in the foothills of Mt. Kilimanjaro have been well-documented. These systems incorporate production of food crops, cash crops such as coffee and fuel and fodder trees for animals. Recently these homegardens have come under pressure owing to population increase, migration of labour and depression of world coffee prices. This system could be improved by introduction of more productive tree species and improved animal husbandry.

7. 'Farmers participation and Socio-Economic effects of a Watershed management programme in central Java (Solo river basin, Wuoko Watershed)', Rumpoko Dewo Daru and Walter E.J. Tips, Agroforestry System, Vol 3, 1985, pp159-180.

A self-help watershed management project in densely populated central Java is discussed in terms of its achievements in combining physical, social and economic activities. Tree planting was one of the components used to induce farmers to participate. Statistical analysis of farmers in project with control subjects show that farmers in the project area use their land more intensely by intensification of intercropping systems and homegardening. Participation is linked to education and size of landholding. Large farmers are more willing to participate as increased intensification does not immediately result in increased net income.

8. 'Traditional agroforestry, parcel management, and Social Forestry Development in a pioneer agricultural community: the Case of Jala-Jala, Rizal Philippines', Harold Olofson, Agroforestry Systems, Vol 3, 1985, pp317-337.

Case study of traditional agroforestry systems found in a community of migrant Filipino farmers. The University of the Philippines Social Forestry Department is carrying out a social forestry programme with migrant farmers who have settled on erosion-prone upland sites. A survey carried out on the upland parcels has identified that most farmers are utilising traditional agroforestry systems that fall into 6 basic types. Agroforestry is used to enhance soil fertility, provide erosion control, produce charcoal, fodder, support for yams and to lessen agricultural input. These existing technologies should be incorporated and improved by the Social Forestry programme.

9. 'Integration of animals in rubber plantations', Ismail Tajuddin, Agroforestry Systems, Vol 4 No 1, 1986, pp55-66.

Malaysia is the biggest producer of rubber in the world, ^{yet} over 76% of the area under rubber is in smallholdings of less than 40ha. Intercrops with bananas and pineapple are common till canopy closure of the rubber trees. Weeds are a problem once closure occurs and need to be controlled by expensive

herbicides. Recently animal production of sheep and poultry has been introduced to utilize the space and diversify productivity. Sheep feed on the palatable weed species producing a 22% saving on weed control. They provide a cheap source of protein and reduce surface erosion caused by the herbicide. The economic returns from sheep and boiler poultry production are high and help utilize the available surplus labour in the smallholdings. Apiculture has also been introduced with production of over 3 kg of honey per hive per year being recorded.

10. 'Multipurpose trees and shrubs on farmlands in Tamil Nadu state (India)', R. Jambulingam and E.C.M. Fernandes, Agroforestry Systems, Vol 4 No 1, 1986, pp17-32.

Tamil Nadu in South India has a diversity of ecozones with matching traditional agroforestry systems, using crops and livestock. Agroforestry is popular due to accessible markets, and a stable demand for tree crops unlike other perennials which require high labour and other inputs. The Government is also encouraging agroforestry by providing credit.

11. 'Making Social Forestry Work', Marie-Christine Comte, Ceres 74 Vol 13 No 2, 1980, pp41-44.

The problems inherent in a sylvo-pastoral and community development project in Morocco are discussed. The project's long term goal was to conserve and increase development of livestock reared in the forest. However, distrust between pastoralists and the forest service needed to be overcome. Animals apart from providing food and clothing, represent power and prestige in this transhumant society. Fodder and grazing rights in forest lands are vital for herd survival in the dry months. However user rights are complex being based on traditional relationships. Current forage production cannot meet demand. The author hopes livestock numbers will be reduced through herd improvement and quotas, so grazing grounds will be replenished. The responsibility of these grazing grounds will be in the hands of communal councils who will establish a dialogue between Forest service and users.

12. 'The Peasant view of conservation', Ann Thrupp, Ceres 82 Vol 14 No 4, 1981, pp31-34.

Costa Rican peasant farmers are well aware that deforestation causes land degradation and trees should be conserved, however they lack the means and incentives to carry it out. Tax incentives are available but only for wealthy landowners. Increased cattle ranching by large farmers who clear cut forests to provide new pastures has been the main cause of deforestation.

13. 'Fuelwood: the private energy crisis of the Poor', E.M. Mnzava, Ceres 82 Vol 14 No 4, 1981, pp35-39.

The existing fuelwood situation in Tanzania has led to a widening deficit between demand and supply. Over 250 man days per annum are expended by an average family in collecting fuelwood which represents a lost income potential of 430 shillings. Governments need to develop policies with fuelwood production being the primary objective.

14. 'Better Criteria for Forestry Investment', M.K. Muthoo, Ceres 82 Vol 14 No 4, 1981, pp40-44.

Policy planners often take a narrow view of forestry's role. The forestry sector provides a plethora of products apart from timber such as fuelwood, tannins, gums, medicinal plants and plays a vital role in maintaining agricultural productivity and soil fertility. The returns from such benefits are not taken into account in investment appraisals by Government policy makers, hence the lack of funds directed to this sector.

15. 'Selling agroforestry', John H. Casey, Ceres 96 Vol 16 No 6, pp41-44.

Description of an agroforestry project in Malawi where Leucaena leucocephala and Acacia alba were introduced into farmers' fields to increase soil fertility.

16. 'Protecting the Small-scale dairyman. Gujarat's Campaign for fodder reserves', Kirin N. Shelat, Ceres 102 Vol 17 No 6, 1984, pp43-45.

Poor rural families in Gujarat are encouraged by the state to raise cattle and buffalo as a source of income. The milk is marketed through a co-operative union. These poor families have little or no land and are particularly vulnerable when drought reduces fodder supplies. The state has introduced a comprehensive programme to develop fodder research on four main categories of land; private holdings, communal grazing areas, grasslands under the Forest department and government wasteland under the revenue department. As part of the social forestry programme in Gujarat the Forest department is promoting fuel and fodder plantations on community land.

17. 'The dubious Case for state control', P.J. Stewart, Ceres 104 Vol 18 No 2, 1985, pp14-19.

The majority of forest land is state owned. The author states that countries with a history of communism or colonialism tend to have state forests. However proprietary rights between the state and the private sector are shared in many ways. The arguments for state ownership are the following: the time-scale involved in forestry, the environmental issue, and the large areas with low value per unit area. However, the bulk of deforestation has occurred in state-owned forests. The author argues that afforestation by the state on state-owned land is not the only solution, private planting can be encouraged by grants, loans and tax incentives. Farmers living next to state forests should be involved, to reduce the confrontation between forest guards and forest users.

18. 'The Complexities of Community Forestry', Aaron Mgeni, Ceres 104 Vol 18 No 2, 1985, pp19-24.

A general overview on the complexities of community forestry, as communities are very heterogenous. A series of community forestry models from the PICOP project in the Philippines to the role of women in the Chipko movement is discussed.

19. 'Trees on Cropland: preserving an African heritage', Gunnar Poulsen, Ceres 104 Vol 18 No 2, 1985, pp24-28.

Trees form an integral part of the agricultural landscape in Africa. Certain tree species such as Acacia albida, shea-butter trees and Parkia biglobosa are carefully managed and preserved in fields. Many of these trees have disappeared from the landscape due to population pressure, fuelwood cutting, overgrazing, leading to water and wind erosion and nutrient loss. A number of development projects have reintroduced trees into farmer's fields through windbreaks. These windbreaks can dramatically decrease wind erosion, but there are drawbacks as they reduce crop yield by competing for water and nutrients, and through micro-climatic heating effects.

20. 'In praise of shrubs', Noel Vietmeyer, Ceres 104 Vol 18 No 2, 1985, pp28-32.

The author illustrates the multipurpose use of shrubby plants, in providing food, fodder, wood, medicine and industrial materials. Cites some well known examples such as Calliandra callothyrs and Leucaena leucocephala.

21. 'Rice is more than a dietary staple: a study of its non-food uses', Frank Denton, Ceres 105 Vol 18 No 3, 1985, pp39-42.

The author cites exclusively from two articles, the first by Briscoe who carried out a detailed study on biomass consumption in a Bangladesh village. He found that rice, apart from providing food, produced fuel, and animal feed for livestock and in terms of biomass percentage 30% was used for fuel whereas only 13% was used for food. The introduction of high yielding rice varieties instead of the traditional floating rice, reduces the amount of biomass available for fuel.

22. 'The prosperity approach to forest community development in Java', Soekiman Atmosoedaryo and S.G. Banyard, Commonwealth Forestry Review, Vol 57 No 2, 1978, pp89-96.

The Indonesian state forestry corporation is involving forest dwellers in forestry through a community development approach. Forest communities are employed in taungya activities, by setting up base camps with social facilities. Multipurpose tree species are provided for garden plots.

23. 'Forestry for Local Community development: Manpower, training and education requirements', L. Roche and R. Cooper, Commonwealth Forestry Review, Vol 59 No 2, 1980, pp163-179.

Agroforestry and community forestry have little or no lasting effect in the absence of a government commitment to forestry as an instrument for rural development and in the absence of an appropriately trained indigenous manpower. Taking into account FAO guidelines in forestry for local community development, manpower requirements are estimated and projected for seven east and north-east African countries. The prevailing situation in each country in regard to training and education in forestry is discussed and examples of existing curricula are given. Though there is a shortfall in professional foresters and technicians, the region has the potential to fulfill both requirements, with external support and curriculum revision.

24. 'The forestry/agriculture interface: some lessons from Indian forest policy', G.F. Taylor, Commonwealth Forestry Review, Vol 60 No 1, 1981, pp45-52.

Agricultural production and industrial development are key priorities in developing nations. However the potential contribution of forestry to agricultural development until recently has been ignored. The forestry/agriculture interface is distinguished by the protective role forests play, the provision of a wide variety of products to agricultural communities, and the competition for land between forestry and agriculture. A historical account of the oscillations in Indian forestry policy is given to illustrate this point. The forest department was established in 1865 to provide industrial products for the British, and preserve forest reserves. In 1894 a revision was made giving agriculture priority on forest lands but this was retracted in 1952 by the Indian National forest policy. This oscillating policy has led to a number of problems such as cowdung being substituted for fuelwood and the short supply of forest products to communities in intensive agriculture areas. It is thus critical for foresters to take a broader perspective and design forest policy that encompasses all facets of forest use.

25. 'The implications of Community Forestry Projects Gujarat, India', Simon Bonvoisin, Commonwealth Forestry Review, Vol 61 No 2, 1982.

The key features for a successful community forestry project are: settled village lifestyle, demonstration, extension, strong community organisation and a monetized economy where a cost is associated with fuelwood and its collection.

26. 'Replenishing the World's Forests: the future of the World's tropical forests', Louis Huguet, Commonwealth Forestry Review, Vol 62 No 3, 1983, pp195-200.

The author states that there are two patterns of forest destruction: permanent destruction through changing land use and temporary destruction caused by shifting cultivation. The rate of destruction varies from 0.58-0.38% per year. Only 1ha is replaced for every 10ha lost.

27. 'Replenishing the World's Forests: Tropical reforestation: an achievable goal?', John Spears, Commonwealth Forestry Review, Vol 62 No 3, 1983, pp201-217.

Tropical forests are rapidly declining. The emphasis needs to be shifted from conservation to development by focussing on improving the quality of rural farmers' lives. The root of deforestation is poverty and the shift of land use to more productive agriculture. Four World Bank-funded projects are looked at in terms of stabilising rural communities and arresting shifting cultivation: Malaysia - Jengka Triangle project; Kenya - industrial afforestation; Indonesia-transmigration; and Philippines smallholder tree farming. Past failures by both national government and the international community in forestry development projects have had high economic and social costs. Well designed forestry investment programmes help accelerated grass roots management to contain the negative effects of deforestation. Examples of successful agroforestry projects from Gujarat, Philippines, Costa Rica, Ethiopia show that projects need to be broadly based and provide farmers in those areas with an alternative to forest and rangeland destruction. In the majority of developing countries supplies of forest products are insufficient to meet future demands. Investment will be required in fast growing plantations. Over \$8 billion will be

required over the next five years for projects to contain deforestation in 58 priority countries.

28. 'Community Forestry Development in Nepal', Janet Stewart, Commonwealth Forestry Review, Vol 63 No 2, 1984, pp121-127.

Community forestry was initiated in Nepal in 1980 to halt deforestation in the middle hill area. Forest land, nationalised in 1956 was handed back to the panchayat in 1978. The project aims to supply fuelwood and fodder trees through village nurseries. Women need to be involved, as they are the main collectors of fodder and fuel.

29. 'Wood as a source of fuel in upper Shaba (Zaire)',

F. Malaisse and K. Binzangi, Commonwealth Forestry Review, Vol 64 No 3, 1985, pp227-239.

The bulk of energy requirements in African countries are met by non-commercial sources of energy such as firewood and charcoal. Deforested zones surrounding large African towns and cities are growing. The author provides a table of major African cities, towns, radius of deforestation and firewood and charcoal use. In Zaire 76% of energy consumed is derived from wood. The author looked at deforestation in the Lubumbashi quadrangle in upper Shaba province of Zaire. Comparison of present wood resources with those at the beginning of the century show a decrease of 18.8%. If the population of the largest towns in the region grow at 2% wood supplies will be depleted by the year 2050. Present needs of Lubumbashi could be met by a reforestation programme with a rotation period of 20-25 years covering 20% of the territory.

30. 'Agroforestry as an aid to rational rural development in Vanuatu', P.E. Neil and P.A. Jacovelli, Commonwealth Forestry Review, Vol 64 No 3, 1985, pp259-266.

Forestry plantations for local supply and industrial purposes have been established in Vanuatu, a Pacific island. Local land tenure, where clans rather than individuals own land, is a major constraint to tree planting. Agroforestry demonstration plots using Cordia alliodora intercropped with subsistence crops are being used to encourage participation.

31. 'Deforestation issues in developing countries. The Case for an Accelerated Investment programme', J. Spears, Commonwealth Forestry Review, Vol 64 No 4, 1985, pp313-343.

Deforestation and its associated problems can be contained by supporting the tree planting initiatives of NGOs. The World Resources Institute task force report states that \$8 billion over the next five years is required in 58 priority countries to halt deforestation.

32. 'Biogas production in China', Vaclov Smil, Development Digest, Vol XVII No3, 1979, pp25-28.

Biogas digesters are used to provide fuel and fertilizer in 70% of households in the Szechuan province of China.

33. 'Community Forestry: the South Korean Experience', Erik Eckholm, Development Digest, Vol XVII No 4, 1979, pp11-20.

Community forestry will not materialise on the needed scale without major changes in the way foresters conduct business. Experiences from countries such as China and South Korea which have carried out successful community reforestation schemes, shows that large scale policy change and the setting up of new institutions is essential for community forestry. The South Korean Community Forestry Scheme was helped by a major programme started in 1971 in which villages were mobilized to carry out community development work. The new Forestry campaign was launched by setting up village forestry Associations, to act as the link between the Government and the Community. These VFA's planted, tended and harvested the woodlots on communal lands and distributed fuelwood amongst households. Thus the creation of intermediary associations and policy reform, plus the social factors which encourage participation, are necessary for successful community forestry programmes.

34. 'Forestry projects and Development', Graham Donaldson, Development Digest, Vol XVII No 4, 1979, pp21-31.

Forestry has long been ignored as a rural economic development strategy due to the long payback period associated with it. This can be offset by using fast growing species and multiple cropping strategies.

35. 'Afforestation and Fuelwood in China', Robert Taylor, Development Digest, Vol XVII No 4, 1979, pp31-35.

China's mass afforestation programme in the 1960s had set backs because of poor seedling survival rates, due to lack of expertise. Renewed afforestation since the cultural revolution places greater emphasis on aftercare of trees and fuelwood production for local communities.

36. 'Biogas Systems in India: Is the technology appropriate', Jonathan B. Tucker, Development Digest, Vol XXI No 1, 1983, pp41-47.

Biogas generators, even though they produce a fuel and fertilizer have not been readily adopted in India. The socio-economic constraints limiting adoption are: small farmers not having the required capital, labour or animals to invest in such digestors; and social taboos involved in cooking with gas generated from wastes.

37. 'The World Bank vs. the people of Bastar', Bharat Dogra, Ecologist, Vol 15 No 1/2, 1985, pp44-48.

In recent years, India's massive reafforestation programme has caused controversy. The official policy appears to be to replace natural forests with commercial species such as Eucalyptus, which reduce food availability and employment for the poor. Current forestry projects funded by the World Bank, such as the Madhya Pradesh Forestry technical assistance project in Bastar district, appear to accelerate the process of forest destruction. Forest villagers derive various benefits from natural forests which cannot be expressed in monetary terms. Villagers use the Sal forests for collecting food, fuel, fodder, medicines and a variety of products. Children and old people play a major role in collecting this produce, and once the forests are replaced their labour is lost. The natural forests also meet many social needs of villagers, as well as providing an important supplement to their agricultural income.

38. 'Why India's forests have been cut down', B.B. Vohra, Ecologist, Vol 15 No 1/2, 1985, pp50-51.

The depletion of Indian forests is due to a number of reasons. Increasing pressure on forest lands by human and cattle populations, encroachment, resettlement, irrigation and industrial projects and the increased demand for forest products. Spiralling prices of forest products and new roads through previously inaccessible forest areas have led to unauthorised felling of large tracts, by forest contractors aided and abetted by corrupt politicians. This illegal felling has been difficult to detect owing to collusion from the forest department, as well as the current system used to classify forest areas. Under the present system denuded wasteland can be counted as forest. This has helped to hide the truth from the Government and the public so that there has been little increase in Government money being allocated to the forestry sector, and low rates of afforestation.

39. 'Encroachment on Forests: Government versus people', Sharad Kulkarni, Economic and Political Weekly, Vol XVII No 3, 1982, pp55-59.

The current Indian Forest Bill is an 'encroachment over people's rights on forests'. The bill will deprive forest dwellers of usufruct rights in protected forests for minor forest products of social value and give forest officers wide powers to arrest people and seize property.

40. 'Rural Energy Scarcity and Nutrition. A New Perspective', Srilatha Batliwala, Economic and Political Weekly, Vol XVII No 9, 1982, pp329-333.

Rural women work harder than men in terms of calorific expenditure. Much of this is expended in fuel and fodder collecting and cooking. Appropriate technology would help reduce this deficit.

41. 'Towards a Social Forest Policy', Sharad Kulkarni, Economic and Political Weekly, Vol XVIII No 6, 1983, pp191-196.

A synopsis of Indian forest policy from 1878 to the draft Forest Bill of 1980. Indian forestry policy has progressively stressed the management of state forests for the larger public interest at the expense of local forest dwellers. Current forestry policy classifies forests into production, protection and social forests. Under present forest department policy, social forests are given the lowest

priority and rights of forest dwellers are ignored by a policy slanted towards forest-based industries and urban populations.

42. 'Eucalyptus: Why?', Mahasveta Devi, Economic and Political Weekly, Vol XVIII No 32, 1983, ppl379-1381.
Indigenous species-diverse Indian forests are being replaced by commercial monocultures of Eucalyptus for the rich.
43. 'Meeting basic needs through Micro-Planning: Central role of essential Forestry', Vinod K. Huria, K. T. Achaya, Economic and Political Weekly, Vol XVIII No 34, 1983, ppl476-1491.
Planning for local community needs through the integration of Forestry, agriculture and livestock is essential for dealing with the constraints of land, fertiliser and food shortage. Local needs for fuelwood, fodder, food and timber can be met using a wide variety of multi-purpose species adapted to a variety of ecological zones. This article illustrates some of the species that could be used, conditions for growth and socio-economic benefits obtained.
44. 'Energy in a Stratified Society Case Study of firewood in Bangalore', A.K.N. Reddy and B.S. Reddy, Economic and Political Weekly, Vol XVIII No 41, 1983, ppl757-1770.
A systematic approach to answering the question of how much fuelwood is consumed by an urban population in a developing country. This study looked at the entire fuel cycle of generation and production of fuelwood to its transport, distribution, utilisation and consumption and the implications this has for the environment and future energy costs. The study found that 50% of total fuelwood comes from private forests 120-150km away from Bangalore and 35% from private lands 30-40km away. Some fuelwood is supplied by the Government Forest Department, but most by private contractors through co-operative societies, and via retail depots. The bulk, 85% of the fuelwood, enters Bangalore on trucks run on subsidised diesel which has a high foreign exchange cost for the government. Over 78% of fuelwood is used by poor households for cooking and heating water. There is a high correlation of fuelwood consumption with per capita income. The demand is projected to increase rapidly, and unless measures are taken to replace the biomass which is being removed in a non-renewable way, and to introduce energy efficient cookstoves and water heaters, widespread environmental degradation will occur.

45. 'Forestry in British and Post-British India: A Historical Analysis', Ramchandra Guha, Economic and Political Weekly, Vol XVIII No 45, 1983, pp1940-1945.

A historical background to the genesis of the Indian Forest Act and the current debate on government forest policy. The new Indian Forest Act seeks to further extend the already extensive powers enjoyed by the bureaucracy to control extraction and transmission of forest produce. The government views increasing population pressure and livestock of forest dwellers as the primary cause of deforestation rather than the conspiracy between timber contractors and mid-level forest department employees. The use rights of forest dwellers were historically determined by colonial forest officers who decided what the forest dwellers' customary rights were. This system led to widely differing forest user rights for tribal peoples in different areas, with the State retaining effective control and ownership of forest land. Flexible user rights were granted depending on the socio-economic situation.

46. 'Women and Cooking Energy', Srilatha Batliwala, Economic and Political Weekly, Vol XVIII, Nos. 52 & 53, 1983, pp2227-2230.

In India, women's access to cooking energy resources are determined by the family's socio-economic status. Those with little or no land use agricultural residue rather than fuelwood. Geographic location also determines fuel use. Traditional cookstoves are energy inefficient and smoke produced is hazardous to health. Cooking energy also increasingly determines women's nutritional level and that of the family. Fuel scarcity leads to reduction of cooking time or fewer meals, leading to nutritional deficiency or ill health. Women's calorific intake decreases even though energy expenditure is higher than men's on certain activities. Traditional nutritional cereals are being replaced by faster cooking ones. Improved cook stove technology is often socially unacceptable and calls for the involvement of female researchers, who understand better than men the problems associated with cooking.

47. 'Women and People's Ecological Movement: A Case Study of Women's Rule in the Chipko Movement in Uttar Pradesh', Shobita Jain, Economic and Political Weekly, Vol XIX No 41, 1984, pp1788-1794.

The Chipko movement began in 1973 in the sub-Himalayan region of India, to preserve forests and traditional mountain ecosystems. Women have played an important part in the movement because of their role in agriculture and collecting fuel and fodder. Men do not perceive these problems as they tend to be migrant labourers. Involvement in the movement has increased women's power and status.

48. 'Eucalyptus in Rainfed Farm Forestry: Prescription for desertification', J. Bandyopadhyay and Vandana Shiva, Economic and Political Weekly, Vol XX No 40, 1985, pp1687-1688.

Eucalyptus plantations introduced as 'social forestry' on the drylands of India will lead to desertification. Eucalyptus has a high water and nutrient demand, prevents undergrowth or intercropping and produces less biomass than other multipurpose species. It is suitable only as an industrial species for pulp and poles.

49. 'Environmental Conflicts and Public interest science', V. Shiva, J. Bandyopadhyay, Economic and Political Weekly, Vol XXI No 2, 1986, pp84-91.

The upsurge of people's ecology movements have been in response to the threat of their survival base. The dwindling forest resources in India has pushed the paper industries to locate new sources of supply, stimulating the transfer of agricultural lands to social forests. The scientific argument based on increasing economic productivity of these areas has been used to legitimise such commercial enterprises. Organisations such as Chipko have used an ecological argument to counter such development.

50. 'Coming tragedy of the Commons', V. Shiva, Economic and Political Weekly, Vol XXI No 15, 1986, pp613-614.

The current wasteland development programme in India is simply a means to privatise common land. Only a few marginal and landless farmers will gain at the cost of the majority who derive a wealth of benefit from these lands.

51. 'Agri-silviculture - A System holding great promise for Social forestry in Bihar', J. Mishra, Indian Forester, Vol 105 No 9, 1979, pp638-643.

Agrisilviculture has been introduced in Bihar as a means to rehabilitate degraded lands. Villagers are reluctant to grow trees alone, but intercropping with cash crops would remedy this.

52. 'Social Forestry in Tamil Nadu', J. Wilson, The Indian Forester, Vol 105 No 10, 1979, pp700-706.

Afforestation of government lands outside the reserved forests was taken up by the state of Tamil Nadu from 1960 onwards, under a farm forestry programme. The areas chosen are mainly the sides of the numerous tanks in the state and barren hillsides. The scheme has been successful and extensive areas have been planted. The revenue raised by sale of forest products is shared by the Government and participants involved on a fifty:fifty basis.

53. 'Towards a research agenda for social forestry', Jeff Romm, The Indian Forester, Vol 106 No 3, 1980, pp164-189.

Research in Forest cropping systems, economies of production and Government delivery systems are essential for promotion of social forestry.

54. 'Assessing the benefits and costs of social forestry projects', Jeff Romm, The Indian Forester, Vol 106 No 7, 1980, pp445-456.

Intangible benefits from social forestry projects, are not as easy to quantify as direct benefits, but often outweigh them. A structural assessment is suggested for the benefit-cost analyses of social forestry projects to be undertaken at three levels (a) the project as a whole (b) the project from separate village and departmental perspectives and (c) the project from the separate perspectives of village groups that may significantly affect and be affected by project outcomes. At all levels, analysis requires three kinds of information about project caused changes: (i) the direct benefits and costs of the plantation (ii) the benefits and costs of plantation-caused changes in land and labour use, (iii) the effects on the above of long-term trends in population, relative prices, wages, substitutes for forest products,

social forestry technology, irrigation road development and changes in scale and efficiency of agency operations.

55. 'The Uncultivated Half of India (Part I)', Jeff Romm, The Indian Forester, Vol 107 No 1, 1981, pp1-24.

Half of India's land is uncultivated and publicly used. The potential contribution of this resource towards economic growth has been ignored. A policy framework needs to be formulated to promote development of these lands. Current land use, administrative and market structures are examined with those that would provide growth.

56. 'The Uncultivated half of India (Part II)', Jeff Romm, The Indian Forester, Vol 107 No 2, 1981, pp69-85.

This second and concluding part discusses features of administrative and market systems that affect uses of uncultivated lands and considers how they might be modified to increase investment in these lands. Aspects of policy that presently constrain or might stimulate investment in the uncultivated half, are considered. Present policy does not appear to be governed by the aim of increasing land productivity but by considerations which have become inconsistent with that aim.

57. 'Pilot Survey of fuel consumption in rural area II', S.R. Sagar, L.P. Chandula, M.Y. Ansari, The Indian Forester, Vol 107 No 8, 1981, pp477-486.

Fuel consumption survey carried out in North East India, showed that though total fuel consumption per capita is similar, the firewood component varies with socio-economic status and accessibility to forest.

58. 'Agro-Forestry practices and prospects as a combined land use system', P.C. Goswami, The Indian Forester, Vol 108 No 6, 1982, p. 385.

Agroforestry is a new name for an old practice. Taungya systems previously integrated trees with crop cultivation, though these systems did not meet the basic needs of the people involved.

59. 'New dimensions of social forestry in Forest Development Corporation Areas with special reference to Nasik Project Division', D.A. Marballi, The Indian Forester, Vol 109 No 8, 1983, pp531-540.

The forest development corporation of Maharashtra state in India is trying to involve the local tribal people in forestry activities to prevent deforestation and damage of valuable timber plantations. A number of social measures such as buffer plantations of fuelwood species, education, and improved woodstoves are being used to 'win over' the local adivasi community.

60. 'Importance of Socio-Economic Factors and the role of incentives in controlling shifting cultivation in North-East India', P.C. Goswami, The Indian Forester, Vol 111 No 1, 1985, pp1-2.

Shifting cultivation in India is a major land use problem. Increasing population has led to shorter fallow periods and lower agricultural yields. Government soil and water conservation projects and afforestation with commercial tree crops have failed due to the lack of socio-economic surveys determining peoples' attitudes and incentives required for success.

61. 'Socio-Economic factors associated with the use of wood in an Arid District of Western Rajasthan', S.P. Malhotra and H.S. Trivedi, The Indian Forester, Vol 111 No 2, 1985, pp110-118.

Wood fuel consumption in Rajasthan is correlated with household size, settlement pattern and religious group.

62. 'Fuelwood use in a peasant community: a Tanzanian case study', Patrick C. Fleuret and Anne K. Fleuret, The Journal of Developing Areas, 1978, Vol 12 No 3, pp315-322.

Fuelwood is a vital energy source for African households. Wood consumption in African countries is increasing exponentially with population increase. Forestry planning is difficult to implement due to the lack of data on fuelwood consumption in peasant households. The authors helped address the issue by measuring fuel use in a village in N.E. Tanzania, where villagers had free access to wood from a forest reserve so consumption rates were not depressed. The results show that average family size was five members and their daily consumption was 22.4kg. of wood, which required

twelve hours/week to collect. Women, who are the main collectors of wood, do not collect it daily especially during the rainy season. This means that the average weight collected is nearly 33kg. If less time and effort were spent in firewood more could be devoted to subsistence agriculture. Charcoal was also used intermittently but was expensive compared to fuelwood.

63. 'The historical context of Social Forestry in the Kumaon Himalayas', Richard P. Tucker, The Journal of Developing Areas, 1984, Vol 18 No 2, pp341-356.
'Social forestry' in the Kumaon hills arose as a response to exploitation of this region by the Forest Department. Increased legislation, restricting local people's rights to forest products in favour of timber contractors led to political insurrection. In 1922 legislation was introduced handing revenue board forests back to the panchayats.
64. 'Providing public lands for smallholder agroforestry in the Province of Ilocos Norte, Philippines', Eric L. Hyman, The Journal of Developing Areas, Vol 18 No 2, 1984, pp177-181.
The article describes the communal tree farm programme started in the Ilocos Norte area of Philippines in 1979. The objective of this project was to uplift the socio-economic condition of small marginal farmers, accelerate the rehabilitation of denuded forest areas, through agroforestry, and increase fuelwood production. Low income farmers received small parcels of land 0.25-1ha in size on a 25 year renewable lease. Highest priority was given to shifting cultivators, forest occupants and villagers near cooperative sites. Technical expertise and free seedlings were provided by the Forest Department. Farmers had to devote 80% of the land to tree crops. Cost benefit analyses of the project using different scenarios showed that benefits were susceptible to the discount rate used and shadow pricing for labour. The project has been faced with difficulties; the majority of farmers are not landless; tree farming is carried out as a part-time activity, more land is devoted to rice and mangos, rather than leucaena due to the greater return from agriculture; constraints on land and labour, difficulty in obtaining seedlings, and arson due to jealousy have also hindered the project. However, participants are willing to participate in similar projects in the future, particularly if given free land and inputs.

65. 'Deforestation in Parts of Western Ghats region (Kerala) India', Sri Kumar Chattopadhyay, Journal of Environmental Management, Vol 20, 1985, pp219-230.

Deforestation in the Western Ghats is caused by the establishment of commercial crop plantations initially, followed by large scale developmental activities.

66. 'The Ayoreode-Zapaco Communal Sawmill: A Social forestry project in Eastern Bolivia', Shelton H. Davis, Grass Roots Development: Journal of Inter-American Foundation, Vol. 9 No 2, 1985, pp2-10.

The Ayoreode Indians of Eastern Bolivia have set up their own sawmill project through external funding and help. Previously the forests in this area were exploited by external contractors with no benefits going to the community. Through this project employment is generated for the community as well as the Indians gaining technical skills for managing and utilising their forests.

67. 'Energy Use and Social structure in a Bangladesh village', John Briscoe, Population and Development Review, Vol 5 No 4, 1979, pp615-643.

Distribution of natural resources in a Bangladeshi village is related to the control of these resources and the structure of the social institutions present. The production and distribution of food, fodder, fuel and fertilizer was investigated in a sample size of 50% of the village population. The findings showed that traditional patron-client relationships, through which poor and landless members of the village used to gain access to fuels such as crop residues from rich landowners' fields, have broken down. Under the present system distribution of land and other resources takes place within people of the same class. The poor people, particularly the Hindu minority, are constrained by lack of storage and drying spaces. Driftwood is either collected from the riverbank or bought in the marketplace. The bulk of income of such families is spent on food, if the amount spent in fuel increased this would result in the reduction of calorific intake below 1,200 kilocalories daily. The introduction of energy-saving technologies would be ineffectual due to the control of resources and power by the richer members of the community.

68. 'Can farming and forestry Coexist in the tropics?'
John S. Spears, Unasylva, Vol 32 No 128, 1980, pp2-13.

Forestry can play an important part in supporting agriculture and alleviating rural poverty provided people's basic needs are met.

69. 'Community Forestry depends on Women', Marilyn W. Hoskins,
Unasylva, Vol 32 No 130, 1980, pp27-32.

Women are dependent on forests for food, fodder and medicine as well as fuelwood. In Africa women use wood for commercial purposes such as smoking food and cooking snacks to sell in markets as well as for domestic consumption. The role of women in forestry is often ignored leading to project failure.

70. 'Fuelwood production in traditional farming systems',
B. Ben Salem and Tran Van Nao, Unasylva, Vol 33 No 131, 1981,
pp13-20.

Traditional farming systems in Africa and Asia show a high degree of integration of foodcrops with trees for fuelwood production and maintenance of soil fertility. An example of such systems are the occurrence of Acacia albidia trees in farmers' fields in Africa.

71. 'Why is it so difficult to grow fuelwood?', Raymond Noronha,
Unasylva, Vol 33 No 131, 1981, pp4-13.

The success or failure of community wood-lot projects are due to social and political rather than technological reasons.

72. 'An African city runs out of fuelwood', Henry Chauvin,
Unasylva, Vol 133 No 133, 1981, pp11-22.

A study of the fuelwood supply and demand in Ougadougou.

73. 'Women and the energy crisis in the Sahel',
Jacqueline Ki-Zerbo, Unasylva, Vol 33 No 133, 1982, pp5-11.

Women in the Sahel are the primary collectors of fuel, in rural areas. A variety of materials from fuelwood, to dung and millet stalks are used as fuel. The 1973 petrol crisis compounded with the drought has meant that women have to walk further to collect fuel. In urban areas fuelwood costs up to 40% of household income. Improved stoves have not been successful as they are sociologically incompatible with women's cooking techniques.

74. 'Orienting Forestry toward the needs of people', L. Worou and Tran Van Nao, Unasyuva, vol. 34 No 136, pp8-11.

Fuelwood shortage in Benin has led to increasing use of agricultural residues as fuel, causing loss of soil fertility and crop yield. Multipurpose, nitrogen fixing tree species are being introduced to remedy this problem.

75. 'The Non-wood products of African forests', Gunnar Poulsen, Unasyuva, Vol 34 No 137, 1982, pp15-22.

African dependence on forests for the needs of everyday life tend to be ignored by many land use planners and development officials. Apart from providing wood products and commercially important products such as gum arabic, african forest, provide a wealth of foods in the form of leaves, oil rich nuts, fruits and animal products, as well as medicinal plants and fibres. The economic and social benefits of these products are difficult to quantify, but they are an integral part of African life.

76. 'Smallholder tree farming in the Philippines', E.L. Hyman, Unasyuva, Vol 35 No 139, 1983, pp25-32.

The PICOP smallholder project, where farmers are provided with credit to grow pulpwood for paper industry corporation, was replicated in Ilocos Norte also in the Philippines. Here participation has been less successful, even though fuelwood and fodder components were introduced, due to the strong cultural attitude towards incurring debt.

77. 'Why Stoves are resisted?', Bina Agarwal, Unasyuva, Vol 35 No 140, 1983, pp22-28.

The success of a wood stove depends on how much wood it saves and whether it is acceptable to rural users, especially women from poor households.

78. 'Using farm trees for fuelwood', Gunnar Poulsen, Unasyuva, Vol 35 No 141, 1983, pp26-29.

Pruning and pollarding of trees on farms can provide an important source of fuelwood to the rural economy.

79. 'Forestry extension: Community development in Nepal', E. Pelinck, P.K. Manandhar and R.H. Gecolea, Unasyuva, Vol 36 No 143, 1984, pp2-13.

Community forestry extension in Nepal poses special problems not found in agricultural extension, such as the time lag before benefits are accrued from tree planting and the problems associated with communal decision-making. Since 1978 state forests have reverted to communal ownership and management. A separate wing of the Forest Department has been established to provide extension to implement community forestry.

80. 'Honduras: Women make a start in agroforestry', Mercedes Wiff, Unasyuva, Vol 36 No 146, 1984, pp21-27.

Socio-cultural constraints in Honduras prevent women from participating in terracing and reforestation schemes. Women are seen primarily as housewives and child-bearers, and men lose face if their wives are seen to work. This barrier has been partially overcome in a project run by the Forest Department Corporation where older women are involved. Access to credit and education is critical for women's involvement.

81. 'What does fuelwood really cost?', P. Wardle and M. Palmieri, Unasyuva, Vol. 33 No 131, 1981, pp20-24.

The market price of fuelwood in developing countries does not represent the cost of collecting fuelwood or of replacing the forest. The price may be so low in some countries that it provides no incentive to economise on fuel consumption.

82. 'Village industries vs. Savanna forests', E.M. Mnzava, Unasyuva, Vol 33 No 131, 1981, pp. 24-30.

The shortage of wood for village industries is often overlooked. Village industries such as tobacco curing, tea drying, fish smoking, brick burning, pottery, local brewing consume considerable amounts of wood charcoal. The use of wood could be substituted by coal, oil, kerosene, hydropower and biogas if incentives are provided.

83. 'Agroforestry systems: a primer', N.T. Vergara, Unasylya, Vol 37 No 147, 1985, pp22-29.

The use of the term agroforestry by researchers in different regions has led to confusion due to the variation that exists in agroforestry systems. Agroforestry may be defined through the arrangements of component crops either temporally or spatially. Crop rotation systems include taungya or shifting cultivation. Intercropping systems include: border tree planting; alley or row cropping; and random mix which occurs in home gardens.

84. 'Women, Wood and Work: in Kenya and beyond', Lori-Ann Thrupp, Unasylya, Vol 36 No 146, 1984, pp36-46.

Fuelwood projects will not solve the forest problem as they have failed to involve women who are the ones directly affected. Kenya provides an interesting case study where a large number of local women's organisations are involved in promoting tree planting. However, these projects often do not confront deeper socio-economic or political problems. Local needs and past experience should be incorporated in project formulations.

85. 'Community forestry and building success through people's participation', Y.S. Rao, Unasylya, Vol 37 No 147, 1985, pp29-36.

The prerequisites for successful community forestry are political commitment, assessment of rural needs with appropriate technical solutions, extension, suitable rural institutions and research support. The constraints are insecurity of land tenure, bureaucracy, lack of coordination and managed forestry tradition. Reorientation is necessary if forestry is to help the rural poor.

86. 'The Social dimensions of forest utilization agreements', Richard D. Pardo, Unasylya, Vol 37 No 147, 1985, pp36-44.

Logging companies in the past have mined forest areas with little regard for forest dwellers. Legislation is currently being implemented to protect people's rights. Forest utilisation agreements should protect customary rights, allow involvement in timber utilisation and provide infrastructure.

87. 'Forest farmers: the transformation of land use and society in Eastern Madagascar', Clare Oxby, Unasylya, Vol 37 No 148, 1985, pp42-52.

Deforestation of the tropical rain forest in Eastern Madagascar is caused by traditional hill farmers who practice slash and burn agriculture to grow upland rice. The alternative to this is irrigated wet rice production which appears to be more profitable. However, there are many social and cultural economic constraints to adopting this new method of cultivation. The constraints are lack of suitable land, autonomy and freedom as hill rice farmers have to work for richer farmers, who own most of the suitable land for irrigated rice.

88. 'Non-governmental organisations: Increasing NGO involvement in Forestry: Some implications from Senegal', Jill Carr-Harris, Unasylya, Vol 37 No 149, 1985, pp26-32.

During the international year of the forest, 1985, FAO is making a special effort to encourage the participation of non-governmental organizations at the international, regional, national and local levels. NGOs can provide a bridge between forest departments and local populations. To test the potential of NGOs a pilot programme was developed in Senegal in February 1985 in which 38 NGO representatives from Senegal and representatives of NGOs from other Sahelian countries, and Kenya met for a week of meetings on reforestation activities which included workshops and site visits. Some of the technical issues raised were: the advantages of eucalypts versus indigenous species; problems of seed and water availability, improvement of agroforestry techniques, lack of literacy in an area where technical assistance was being given, absence of training in local languages, and failure of forestry projects to respond to traditional agroforestry systems of pastoralists.

89. 'Desertification in the Sahelian and Sudanian zones of West Africa', Jean Gorse, Unasyuva, Vol 37 No 150, 1985, pp2-19.

'Drought alone does not in the short run produce resource degradation of the sort now found in the Sudanian-Sahelian zone'. Desertification is a complex process caused by interactions between drought and human abuse of the environment, a common indicator of desertification being a reduction in the amount and diversity of plant and animal species. The challenge is effectively to manage resources south of the desert, the problem of desertification being a conflict between public long term resource use and private short term resource abuse. Trees play an important role in countering desertification and an integral role in the traditional agro-silvo-pastoral land-use systems, by protecting and regenerating soils, producing fodder in the dry season, wood and other forest products. Resource management strategies should be based on the relationship between rural population and carrying capacity by zone. The need for a permanent regional centre focussing on identifying and improving Sudanian and Sahelian tree and shrub species is indicated.

90. 'Trees food production and the struggle against desertification', El Hadji Sene, Unasyuva, Vol 37 No 150, 1985, pp19-27.

The interrelationship existing between cereal crops and the contribution of woody species to the human diet in the Sudanian/Sahelian zone has long been known but ignored. Tree species provide an invaluable food buffer primarily during the critical dry season. This resource is rapidly declining due to several factors; reduction of tree populations, competition from urban consumption, and lack of a proper place for these resources in forest management and rural regulations.

91. 'Tanzanian tree-planting: a voice from the villagers', E.M. Mnzava, Unasyuva, Vol 37 No 150, 1985, pp33-41.

Village and urban communities in Tanzania are dependent on biomass energy for their household activities. Government-run village nurseries and woodlot establishment projects to meet this demand have often not been successful, as a top down

bureaucratic approach has been used to deal with villagers. Their preference in choice of species or time availability to plant tree seedlings is often not taken into account. Nurseries are often located in regional centres, reducing the availability of seedlings to people in rural villages. A number of recommendations are made to overcome these policies.

92. 'Rural organisations in forestry', C. Chandrasekharan, Unasyilva, Vol 37 No 150, 1985, pp2-11.

To achieve the goals of forestry or rural development public sector bureacuracy, private sector institutions and local organisations need to work together. The article covers the roles various agencies play such as Forest departments, parastatals, private sector organisations and local organisations using a bottom-up approach in achieving this goal.

93. 'Mobilizing Rural Communities', Marilyn Hoskins, Unasyilva, Vol 37 No 150, 1985, pp12-13.

Glimpses of reforestation strategies used by three different countries, Nepal, Haiti and Senegal, working with local communities through village/community councils or local NGOs.

94. 'The evolution of forestry legislation for the development of rural communities', Christian du Saussay, Unasyilva, Vol 37 No 150, 1985, pp14-23.

Forestry legislation in Africa has been primarily concerned with the extraction of timber. Traditional usufruct rights of rural communities have never been legally defined.

95. 'The forest resource and rural energy development', Matthew S. Gamser, World Development, Vol 8, 1980, pp769-780.

Current data on forest energy production fails to understand rural energy-use patterns. Forest fuels and fuelwood consumption are region-specific, but often those consumption patterns are overlooked by planners. Land tenure, institutional limitations, the time-scale involved with trees, and the difficulty in getting communities to work together are some of the common constraints associated with rural energy development projects.

96. 'Indicators of Rural Inequality', Alfonso Peter Castro, N. Thomas Hakansson, David Brokensha, World Development, Vol 9 No 5, 1981, pp401-427.

A comprehensive list of indicators that can be used to measure wealth differences between households in the same community are provided. The most important indicator is control of land, followed by capital, equipment, consumer durables, income, livestock. Non-productive indicators include housing, consumer goods, fuel, ceremonial expenditure and diet. Methodological issues such as seasonality, local perceptions, informant ranking and bias are discussed. Case studies from India, Gambia, Tanzania, Nigeria and Mexico are used to illustrate effective and specific use of indicators.

97. 'Traditional fuel usage and the rural poor in Bangladesh', J.J. Douglas, World Development, Vol 10 No 8, 1982, pp669-676.

The choice of material used as fuel such as fuelwood, leaves, twigs, agricultural residues are linked to individual land holding an indicator of socio-economic status. Most of this material comes from homestead forests which are being felled at a rate of 10% of standing volume per year. Since over 50% are composed of slow-growing species like mango and jackfruit, existing traditional fuel energy supply cannot be maintained. Community based projects are difficult to implement in the face of extensive landlessness and powerful village elites.

98. 'Diffusion of rural innovations: Some analytical issues and the case of Wood-burning stoves', Bina Agarwal, World Development, Vol 11 No 4, 1983, pp359-376.

The diffusion of rural innovations is likely to be conditioned by the technical, economic and social characteristics of the innovation. Those innovations which require financial inputs for a marginal return, and which are aimed at socially disadvantaged people are unlikely to be accepted, as has been illustrated by improved cookstoves.

99. 'Fuel, Food or Forest? Dilemmas in a Nepali Village', Deepak Bajaracharya, World Development, Vol 11 No 12, 1983, pp1057-1074.

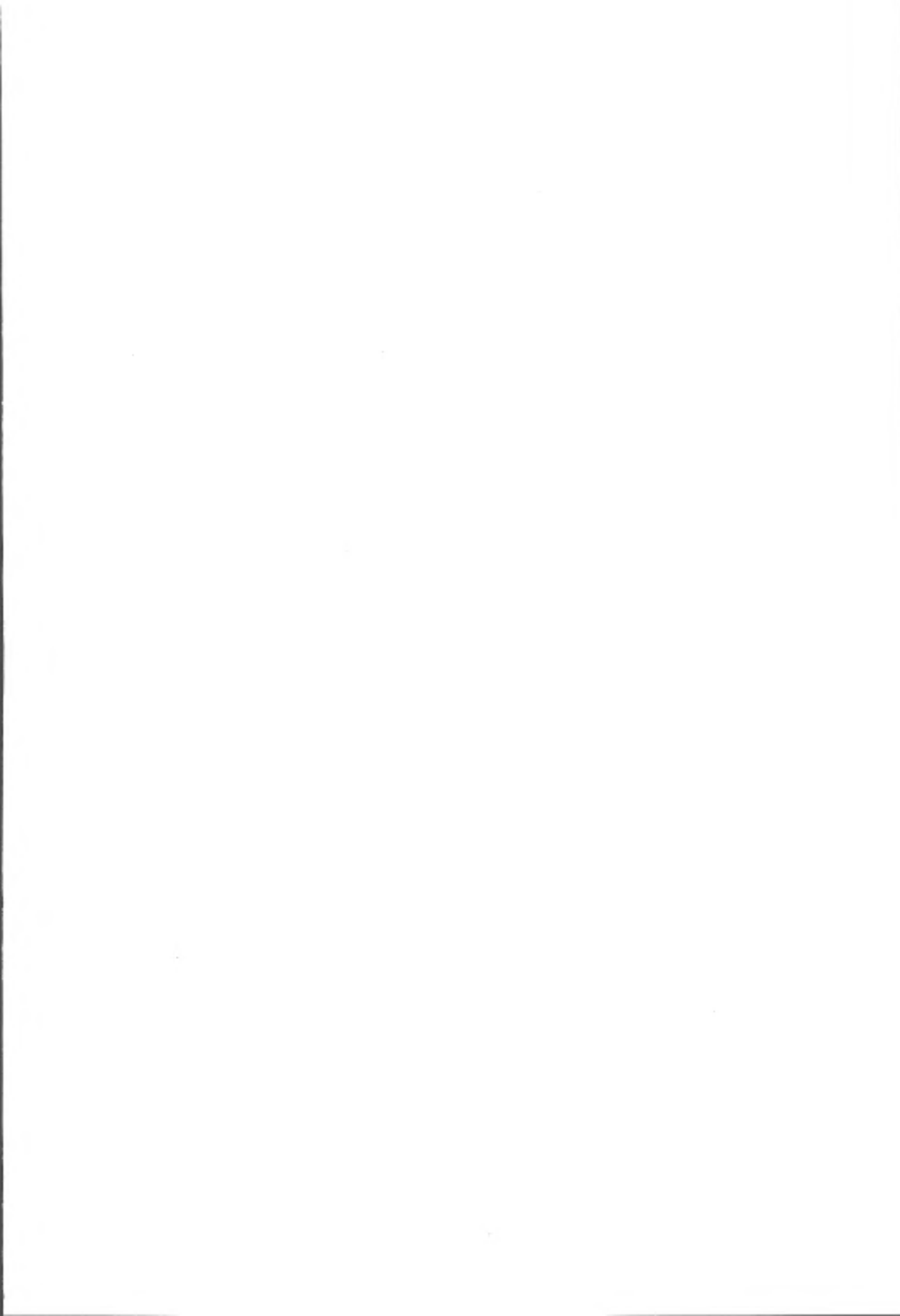
The primary cause of deforestation in the Nepalese hill region is the need to increase food supply rather than fuelwood cutting. This microanalysis assessing demand and

supply for food and fuel demonstrates that policy reform in food production and distribution is needed to control deforestation. Over 86% of the fuelwood is collected by lopping trees and collecting deadwood rather than felling, the rest coming from agricultural residues and from around the homestead. Food shortfalls can be very localised due to low agricultural inputs. New farming land is mainly acquired through forest clearance using shifting cultivation, and is difficult to control because of undefined forest boundaries. Currently, fuelwood consumption exceeds supply in some villages in this particular study, but with increased deforestation the situation will deteriorate. Local people need to be involved in formulating projects to ease the situation.

100. 'Energy and the Poor in an Indian Village', Varun Vidyarthi, World Development, Vol 12 No 8, 1984, pp821-836.

The history of the current energy distribution patterns amongst villagers in a North Indian village were investigated. Traditionally under the zamindari system patron-client relationships between the rich landowners and marginal and landless villagers ensured a supply of firewood and agricultural residues and dung for cooking purposes. After land reform, these relationships broke down, and poorer landless farmers lost access to traditional agricultural residues. This was also due to the rich landowners investing in irrigation for new cash crops with less residue compared to the traditional rainfed crops of pigeon pea and spiked millet, which seasonally supply residues for up to 73% of fuel consumption. This has led to landless and marginal farmers using toxic spring plants as a fuel source. These poor farmers are not interested in investing in fuel-saving devices or community forestry in village lands as they would rather invest in income-generating schemes to improve economic and social position.

Authors	Article Nos.	Authors	Article Nos.
Achaya, K.T.	43	Maghembe, J.	6
Agarwal, B.	77, 98	Malaisse, F.	29
Ansari, M.Y.	57	Malhotra, S.P.	61
Atmosoedaryo, S.	22	Manandhar, P.K.	79
Bajaracharya, D.	99	Marballi, D.A.	59
Bandyopadhyay, J.	48, 49	Mgeni, A.	18
Banyard, S.G.	22	Mishra, J.	51
Batliwala, S.	40, 46	Mnzava, E.M.	13, 82, 91
Binzangi, K.	29	Muthoo, M.K.	14
Bonvoisin, S.	25	Nair, P.K.R.	4
Boonkird, S.A.	4	Neil, P.E.	30
Briscoe, J.	67	Noronha, R.	71
Brokensha, D.	96	Oktingati, A.	6
Carr-Harris, J.	88	Olofoson, H.	8
Casey, J.H.	15	Oxby, C.	87
Castro, A.P.	96	Palmieri, M.	81
Chandrasekharan, C.	92	Pardo, R.D.	86
Chandula, L.P.	57	Pelincek, E.	79
Chattopadhyay, S.	65	Poulsen, G.	19, 75, 78
Chauvin, H.	72	Rao, Y.S.	85
Comte, M.C.	11	Reddy, A.K.N.	44
Cooper, R.	23	Reddy, B.S.	44
Daru, R.D.	7	Roche, L.	23
Davis, S.H.	66	Rocheleau, D.	5
Denton, F.	21	Romm, J.	53, 54, 55, 56
Devi, M.	42	Sagar, S.R.	57
Dogra, B.	37	Salem, B.B.	70
Donaldson, G.	34	Sene, E.H.	90
Douglas, J.J.	97	Shelat, K.N.	16
Du Saussay, C.	94	Shiva, V.	48, 49, 50
Eckholm, E.	33	Smil, V.	32
Fernandes, E.C.M.	4, 6, 10	Spears, J.S.	27, 31, 68
Fleuret, A.K.	62	Stewart, J.	28
Fleuret, P.C.	62	Stewart, P.J.	17
Fortmann, L.	5	Tajuddin, I.	9
Gamser, M.S.	95	Taylor, G.F.	24
Gecolea, R.H.	79	Taylor, R.	35
Gorse, J.	89	Thrupp, L.A.	12, 84
Goswami, P.C.	58, 60	Tips, W.E.J.	7
Guha, R.	45	Trivedi, H.S.	61
Hakansson, N.T.	96	Tucker, J.B.	36
Harou, P.A.	1	Tucker, R.P.	63
Hoskins, M.W.	69, 93	Van Nao, T.	70, 74
Huguet, L.	26	Vergara, N.T.	83
Huria, V.K.	43	Vidyarthi, V.	100
Hyman, E.L.	2, 3, 64, 76	Vietmeyer, N.	20
Jacovelli, P.A.	30	Vohra, B.B.	38
Jain, S.	47	Wardle, P.	81
Jambulingam, R.	10	Wiff, M.	80
Ki-Zerbo, J.	73	Wilson, J.	52
Kulkarni, S.	39, 41	Worou, L.	74





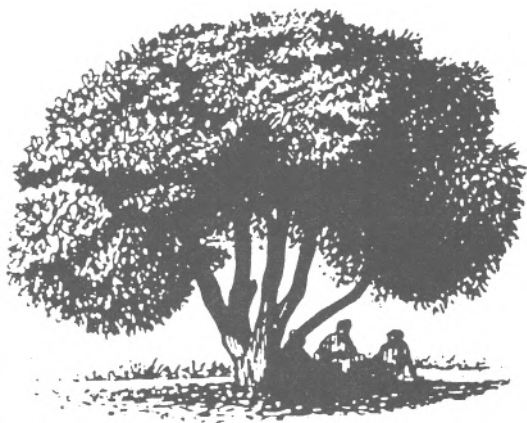
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



Newsletter

Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1000 members and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

© Overseas Development Institute, London 1986

Photocopies of any part of this publication may be made without permission.

The opinions represented are those of the authors and network members and do not necessarily reflect the policies of the Overseas Development Institute.

CONTENTS

Network papers accompanying this newsletter.....	2
News of the Social Forestry Network.....	3
News of the library.....	8
Network announcements.....	9
News of the AAU's other networks.....	13
Lunchtime meetings.....	14
Shorter articles on forest policy.....	15
Forthcoming conferences and meetings.....	40

NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER

The theme of the Autumn mailing is Forest Policy, and its implications for the environment and for Social Forestry. An overview article by the network editor is accompanied by papers which consider the situation in India, Zimbabwe, the Dominican Republic and Mali. Shorter complementary contributions here in the newsletter look at Indonesia, Nepal and Ethiopia.

- 3a 'Forest Policy and Forest Politics' by Gill Shepherd.
- 3b 'Managing Indian Forests: a case for the reform of property rights' by Simon Commander.
- 3c 'Forestry for Rural Development in Zimbabwe' by John Casey and Kay Muir.
- 3d 'Land Tenure and Agroforestry in the Dominican Republic' by Isabel de Ceara.
- 3e 'Mali as a case study of forest policy in the Sahel: institutional constraints on Social Forestry' by Chun Lai and Asmeen Khan.

NEWS OF THE SOCIAL FORESTRY NETWORK

We have had a variety of interesting letters and papers from network members, and shall continue to publish some in each newsletter. D.A. Nihero writes from Malawi:

My contribution from this part of the world is as follows.

1. Social Forestry Research: Ask Villagers to allocate land for Tree Research to find out which species are suitable. Establish trials. We have been getting whatever has been offered. The person who donates land for such trials is assured to have it free at the end i.e. when the area is abandoned after getting all the necessary information.

2. On-going Wood Energy Project:

2(i) The retail Nursery Component:- The establishment of tree seedling nurseries commenced in 1980 all over Malawi in selected Districts in order to make available various species of trees (with emphasis on coppicing species) for the general public to buy at relatively low cost e.g. one tambala for Villagers and eight tambala for estates. Five years later proposals to increase the price of one tambala to five tambala met with strong opposition from the general public who were automatically reluctant to buy seedlings. Government was then forced to retain the one tambala price. In general the cost recovery concept has got to be carefully reviewed. The raising of various tree species in each nursery (fruit trees inclusive) should go hand in hand with small demonstration plots both at the nursery site and wherever possible on a site close to public roads where people can see.

2(ii) National Tree Planting Programme: This was inaugurated in 1976 when His Excellency the Life President planted a Khaya nyasica tree at his Palace in Blantyre. Since that year selected schools and colleges have been planting trees. Each year officiation ceremonies are held when Party leaders, Traditional Chiefs, Councillors, Government Ministers, parents, pupils and teachers participate in tree planting. Such ceremonies are supported by traditional dances followed by speeches on Forestry. The difficulty over the years has been to evaluate how many trees have been planted and how many are surviving to date. It has been difficult for the Forestry staff to visit all schools in the country because of increased transport costs. December 1985 Government report of 15 million trees to have been planted to date cannot be supported since when one travels across the country one wonders where all the trees are.

3. Lack of Foresight:- has been minimized by the rapid depletion of natural trees through clearing for agriculture. There has been a general awakening by the public because of the fast disappearance of the natural woodland.
4. Inflation:- the rise in cost of paraffin and most other essential domestic commodities has affected most pockets. Money is going out faster than it can be obtained. The rural people now realize that growing trees for domestic use around their dwelling units is cheaper in the long run than buying. Even in the short term the fast growing gums have sparked people's enthusiasm to replace the disappearing natural trees.
5. Lack of know-how:- Where demonstration plots have been provided people have vividly seen how fast Bluegums can grow and how quickly the coppice. Over the past four years or so the response of going to buy tree seedlings from the retail nurseries has been tremendously good. When the Wood Energy Project was in its infancy (1979-1980) village people in the Southern Region in particular were asking where could they plant trees since land was limited. Population pressure in the Southern Region is great and land is limited. This is not the case in the Northern part of the country where population is scanty and land is still available. Initially people did not see that even planting coppicing species around their homesteads could result in a substantial amount of domestic fuelwood. In November 1980 the writer planted up to 600 Bluegums, namely, Eucalyptus camaldulensis, E. tereticornis, E. grandis, E. maidenii, on sandy loams around his house at an altitude of 1750 feet above sea level and with an average annual rainfall of 35 inches. Emphasis was on early planting around end November when first rains are received and to ensure that the trees maximise the available rain water up until end March the end of the rainy season in Malawi. The writer's house is very close to a public road and people could see what was going on. By November of the following year (1981) the trees were exactly one year old. The height growth of E. camaldulensis and E. tereticornis was quite remarkable and proved to be dry zone species. By 1982 surrounding villages started to follow this example and the method of planting around dwelling units and along garden boundaries is now becoming widespread.
6. Locality of power located elsewhere:- this definitely poses a big problem. People's initiative and self-motivation very often becomes eroded. They often wait to hear authoritative instruction which may or may not come at all. If it comes it is often at a wrong time. It was once said 'Bottom - Top' planning was essential in the planning process, but you do not see villagers participating in pre-project planning.

We have also had an interesting and helpful clarification of the implications of forestry terms in the Indian context from Mukul Sanwal:

I must congratulate you on the excellent network paper 'Social Forestry in 1985'. The distinction between Farm Forestry and Community Forestry has been well brought out. In India, the term connotes activities by the Forest Department outside the 'reserve forest' boundaries; plantations are raised by them on Government lands (roadsides, canal banks and along railway lines) as well as on community lands. If we are to concern ourselves with the landless and the small farmers, as ODI rightly chooses to, some issues need to be more sharply focused.

In the Development process some terms are often used interchangeably as if they refer to the same thing. The reality may be very different and this explains the difficulties in the implementation of social forestry. See Table 1. The critical factors here are - community involvement, which depends on choice of species (who benefits?); choice of location and area covered (the costs of foregone grazing etc.); and institutional arrangements for protection (Chinese success shows that two-thirds of the efforts must go toward maintenance). Traditional institutions need to be modified rather than bringing in alien western models which remain formal and legalistic.

Yours sincerely

Mukul Sanwal
Director
Administrative Training
Institute U.P.
Nainital 263001
India

TABLE 1

	Farm Forestry	Social Forestry in India)	Community Forestry
1. Activity-Species planted	Commercial sale, quick growing	Commercial value monoculture	Broad leaves for local use, Fuel, Fodder, Food; mixed
2. Objectives-whose needs are met	Large Farmers	State	Community, including poor
3. Actors-who takes the initiative & how	Hired labour	Departmental	User groups, self help
4. Land used	Private property	Government land	Community/government land with local rights of user
5. Level of participation	Not needed	Involvement in choice of location and for protection	Local Nurseries protection, & sharing of benefits
6. Role of Forest Service	Technical advice	Control through regulatory laws	Catalytic, facilitator
7. Role of Trees	Improve benefits from industrial use	Maintain Ecological balance	Increase supply for local consumption

Social Forestry Research at ODI

Gill Shepherd has begun work on a joint ODI/University of California Forestry Department research project concerning the effect on household land and labour allocation of the introduction of tree-planting or tree management. Effects in both the subsistence and cash sectors are to be identified.

Phase I of the project involves literature searches and is already well under way. The ethnographic literature is being searched both for baseline material and with the intention of building a picture of the direction of change over time in particular situation. More recent project-material carries the state of knowledge forward to the present.

Phase 2 of the project, which will begin in 1987, will involve comparative fieldwork in two or three areas, and will test hypotheses formulated as a result of the literature search stage. It is hoped to involve a third institution in the project soon.

Other plans for 1987 include an evaluation of about a dozen social Forestry projects in Africa from the standpoint of social acceptability to the people they are intended to serve. (More details in the next newsletter).

Gill Shepherd has also been invited by IUFRO to prepare a document on socio-economic research needs in Forestry, for the IUFRO Research Planning Workshop for Tropical Latin America to be held in Peru in June.

Consultancies

Gill Shepherd spent three weeks in May working on aspects of the Kenyan Family Planning programme for SIDA. In October she goes to Karnataka, South India, to provide some inputs to the ODA's Social Forestry Programme. Her particular brief will be work on the participation and responses of poorer villagers.

NEWS OF THE LIBRARY

The Social Forestry grey-literature collection is continuing to grow, thanks to your many contributions.

Meanwhile, the main ODI library has acquired an IBM PC/AT and has begun to transfer all its file-card information onto it, using the bibliographic software IN-MAGIC. So that we can produce unified listings of Social Forestry grey literature, together with Social Forestry material such as books and journal articles available in the main ODI library, we are transferring our Social Forestry files at the moment.

For this reason, we shall hold over news of accession until the next network edition, and then present a consolidated list. Visitors to the library will not be inconvenienced by the switch-over process, since we are keeping current printouts available for consultation.

NETWORK ANNOUNCEMENTS

Apology

In paper 2e in the last mailing, 'A hundred recent journal articles on Social Forestry', edited by Asmeen Khan, we inadvertently omitted Ms Khan's personal details from the inside cover. We reproduce them here.

Asmeen Khan has forestry degrees from the Oxford Forestry Institute and Yale, and worked on the Social Forestry Network for three months as a bibliographic research assistant, funded by the Aga Khan Foundation.

She spent part of her time doing the research for paper 2e, and part acquiring new materials for the library. A further aspect of research she undertook has been incorporated into paper 3e in the current set of network papers.

The next network issue

The May 1987 issue of the network will concern itself with forestry extension techniques and with field-level issues. If you feel that the situation in which you work offers insights to others, we would be very happy to hear from you. Letter-length, network-paper-length or 1000-1,500 word-length contributions will all be welcomed.

Register of Members

We had hoped to produce our register of members with this mailing. However, we feel the moment is still not ripe: membership forms are still arriving by every post, together with several letters complaining that the mail-out firm we employ did not send them a network form with the last mailing. Accordingly, we are including a network form in this newsletter, and mailing all those names we know of, who have still not returned a completed form to us. Please return these forms as quickly as possible so that we can produce a register for Spring 1987.

New members

For the moment, and while supplies last, we continue to send new network members all back numbers. Eventually these will run out, however: so if you lack any back numbers ask for them sooner rather than later.

ICFRE

The International Union of Forestry Research Organizations (IUFRO) has proposed the creation of an International Council for Forestry and Extension (ICFRE) to foster co-ordination among national forestry research and extension programs in developing countries and among the bilateral and multilateral donor agencies that support them. The proposal builds on the tropical deforestation studies completed by the World Resources Institute, FAO, and the IUFRO. It also draws on the successes of the international centres in agricultural research. As a non-governmental organization, ICFRE would emphasize those activities that existing institutions and donors are unable to achieve by themselves.

Objectives of the ICFRE include the strengthening of national forestry research and extension capabilities, development of forestry extension services, identification of opportunities for donor funding of needed research and extension, development of regional networks to focus on major forestry research problems, and fostering of "twinning" arrangements between developed and developing country institutions. ICFRE would encourage networking among laboratories and institutions through sponsorship of workshops, symposia, publications, and training and extension activities. The similarity of objectives to the F/FRED project provide numerous opportunities for complementary programs.

An estimated budget of \$8 million for an initial five year funding period is proposed, with start-up efforts limited to Asia, followed by similar activities in Africa and Latin America. The IUFRO is currently seeking funding support for the ICFRE from various foundations, donor agencies, and the private sector.

Call for action

The World Resources Institute (WRI), a private policy research organization based in Washington D.C., has devised a plan designed to help poor tropical countries meet desperate energy needs, increase food production to feed the hungry, and slow the rapid elimination of plant and animal species.

The plan estimates that 27 million acres of tropical forest are being destroyed each year. At the current rate, 556 million acres of rain-forest would be lost by the year 2000. With it, an estimated 10-20 percent of the earth's animal species would disappear.

Tropical Forests: A Call for Action, a report sponsored by the WRI, the World Bank, and the United Nations Development Programme, proposes concrete, country-by-country strategies for the 56 nations most severely affected by tropical deforestation and envisions a reforestation programme that would cost \$8 billion over the next five years. Half of that amount would come from international lending institutions while the other half would come from private corporations and the nations most directly affected.

The program is organized around the following five issues: fuelwood and agroforest; watershed protection; forest management for industrial uses; ecosystem conservation and institutional strengthening for research, training and extension.

Tropical Forests: A Call for Action is available from Agribookstore, Rosslyn Plaza, 1611 N. Kent St., Arlington, VA 22298, USA.

Farm Forestry News

Farm Forestry News is sponsored by the Forestry/Fuelwood Research and Development Project (F/FRED), which is funded by the U.S. Agency for International Development. The F/FRED Project is concerned with meeting the basic needs of developing countries for fuelwood and other tree products; for improved land, water, and human resource management; and for increased employment and income. The newsletter is published quarterly by the Winrock International Institute for Agricultural Development, the prime contractor for the F/FRED Project.

Winrock International is an autonomous, nonprofit institution that provides technical assistance and professional expertise to design and implement agricultural research, training, and development programmes. Its objective is to improve agriculture for the benefit of people through development of human capital; improvement of animal agriculture, farming systems, and agroforestry; agricultural research system development and management; use of renewable resources; and food policy analysis and strategies.

Readers are invited to submit typed articles or announcements and to send photographs that may be of interest to persons working in the field of farm forestry. Submissions may be sent to Newsletter Editor, Winrock International Institute for Agricultural Development, Rosslyn Plaza, 1611 N. Kent St., Arlington, VA 22209 USA; telephone (703) 525-9430; telex 248589 WIDC.

NEWS OF THE AAU'S OTHER NETWORKS

The Agricultural Administration Network, run by John Howell, is about to publish two discussion papers:

'On-farm research and agricultural research and extension institutions'. Milke Collinson, CIMMYT, Nairobi.

'The determinants of agricultural technology: generation and diffusion'. Stephen Biggs, University of East Anglia.

The Irrigation Management Network, run by Mary Tiffen and Camilla Toulmin published, in its August mailing:

86/2b 'Meeting Irrigation System Recurrent Cost Obligations,' by Mark Svendsen.

86/2c 'Computers in Irrigation Management: A. An Application of Lotus 1-2-3 Software to Irrigation Data Management by Tom Sheng; B. The role of Simulation Exercises in Training Irrigation Managers' by Laurence Smith.

86/2d Performance Measurement in Canal Water Management: A Discussion, by Charles Abernethy.

The Pastoral Development Network, run by Jon Moris, published the following papers in its September mailing. N.S. Jodha's paper, 22c, is perhaps of especial interest to members of the Social Forestry Network.

22a 'Directions in Contemporary Pastoral Development,' by J. Moris.

22b 'A Comparison of Two Survey Methods on Pastoral Turkana Migration Patterns and the Implications for Development Planning,' by P.H. Fry and J.T. McCabe.

22c 'The Decline of Common Property Resources in Rajasthan, India,' by N.S. Jodha.

LUNCHTIME MEETINGS

Pastoral Development Network

19th June 1986 Some Research and Development Implications of Dairy Production in Africa
Carol Kerven, Freelance Anthropologist

Irrigation Management Network

26th June 1986 Farmer Participation in Irrigation Systems: Positive Identification of a Social Constraint
Robert C. Hunt, Department of Anthropology,
Brandeis University, Waltham, MA 02254, USA

Social Forestry Network

3rd July 1986 Community Forestry in Nepal
Janet Stewart, Oxford Forestry Institute

29th September 1986 Social Forestry in Sudan: The Importance of Institutional Factors
Matthew S. Gamser, Science Policy Research Unit,
University of Sussex

SHORTER ARTICLES ON FOREST POLICY

(i) Forest Policy in Nepal: Implications for Social Forestry

by Janet Stewart

As the deforestation of the slopes of the Himalayas continues, the resulting environmental degradation is directly affecting most of the rural population of Nepal. The cycle is well known not only to the farmers themselves but to foresters, planners and policy makers. Increasing demand for fuelwood, fodder, timber, leaf litter (for animal bedding and compost) and grazing land directly depletes the growing stock as well as removing nutrients from the forest and reducing its capacity to regenerate. As well as this gradual deterioration due to chronic overuse, forest is cleared from ever steeper and more marginal land to make room for agriculture as pressure on the land increases. The wealth of products collected from forest areas make them an indispensable part of the agricultural system as a whole.

In the 1950s, the importance of Nepal's forests was recognised by the Government, and a Forest Department was set up with a structure similar to the Indian Forest Service. The dangers of over-cutting in mountainous areas were recognised, and the role of the Forest Department in the Hills (the broad band of mountainous land, 60 m to 3000 m in altitude, immediately to the south of the Himalayas) was essentially to conserve the forests, which were already seen as threatened. To give the Government direct control over cutting, all forest land, which had previously been under private or customary communal ownership, was nationalised in 1956. Traditional rights to forest land and products were suddenly superseded by a national forest policy, according to which a permit had to be obtained from the Forest Department for any cutting, whether of fuelwood or timber. Forest guards were employed to ensure that permits were obtained and also that revenue was received by the Forest Department for all forest products.

Whilst the role of the Forest Department in the Hills was largely conservative, the situation in the Terai, the belt of flat, low-lying

land bordering India to the south, was quite different. Malaria was endemic in this region; until the large-scale eradication campaigns of the 1950s and 1960s, the indigenous population was very small and most of the area was heavily forested with the valuable timber species Shorea robusta (sal). From the early 1960s, emphasis was given to exploitation of the sal forest, including significant exports to India. In this case the nationalisation of the forests provided the Government with a major source of income.

In the Hills, by contrast, it became increasingly clear throughout the 1960s that not only did the forests provide relatively little revenue, but the policing of forest land by guards was failing to prevent illicit cutting, and deforestation was in fact accelerating. This was due not only to growing pressure as the population increased, but also to the ill-will generated by the nationalisation. It was widely felt that the Government was taking the forest away from its rightful owners. Immediately before the nationalisation came into effect, villagers cleared forest land and brought it hastily under cultivation so as to retain their tenure.

Another major detrimental effect was the breakdown of traditional communal systems of forest protection. Vestiges of these can still be found in some parts of the country but it is certain that they were previously much more widespread. An example is the 'pathi-pathi' system, by which a watcher was employed by the village to prevent cutting in a protected forest. Each household donates one pathi (4 kg) of grain per year towards payment of the watcher. In some areas rules also still exist concerning rights to collect particular products from the forest, and the times of year at which this may be done. By and large, however, these traditional systems broke down following nationalisation. The districts in which they have survived are often those in which a cadastral survey has not yet been carried out, and so the forest is effectively considered to be privately owned; in these areas, such as Solukhumbu in eastern Nepal, permission to cut will often be sought from the landlord rather than the Forest Department.

In recognition of the problems associated with State control of forest land, the Government in 1976 introduced innovative and far-sighted legislation whereby the Forest Department could hand over forest land to the panchayat (the local administrative unit, usually comprising several villages with a total population of 4000-5000). A completely new level of land tenure was thus introduced, aimed at encouraging public participation in forestry activities by giving ownership of the resource, as well as responsibility for its management, to local communities. Under the new Forest Act, two types of land are recognised: Panchayat Forest (PF) which is usually bare land ready to be planted (in 1961, the nationalisation had been extended to all uncultivated land, whether or not it had trees on it); and Panchayat Protected Forest (PPF), which is existing forest, usually degraded, which is to be brought under active local management.

There are now several forestry projects working within the framework of this legislation. The first to be successful in involving local communities was the Nepal-Australia Forestry Project based at Chautara, to the north-east of Kathmandu. In 1979 a much larger project, the Community Forestry Development Project, was started with World Bank funding and FAO technical assistance. This project now covers thirty districts throughout the Hills. A sister project has been started to extend community forestry to the Terai, which is also now experiencing shortages of forest products, following the widespread resettlement of hill farmers in this previously densely-forested area. A Community Forestry and Afforestation Division (CFAD) has been set up within the Forest Department to administer the activities of these projects.

The introduction of the concepts of PF and PPF was undoubtedly an extremely progressive move which has made community forestry a realistic possibility for Nepal. In the decade since legislation, however, problems with community participation have unavoidably arisen and these can to some extent be traced back to the earlier forest policies. Firstly, as in so many countries, distrust exists between villagers and foresters. For twenty years forest rangers and officers were seen as police, and it is hard to reverse this attitude. An

attempt has been made to do so by creating a new post, the Community Forestry Assistant (CFA), who works in only five panchayats and whose role is largely that of extension agent; but in practice villagers often confuse CFAs with traditional rangers.

The sweeping nature of the land tenure change itself generates further distrust. Villagers fear a re-nationalisation at some future date, after they have sacrificed grazing land to plant trees; they are often also dubious about the possible tenure implications of planting trees privately on their own land.

It has proved relatively easy to establish new plantations on PF land (though protection is often a problem in areas of high livestock pressure). It is now becoming clear, however, that development of systems of communal management, whether of cutting in existing mature forest or distribution of benefits from plantations, is much more problematic. The management of common property resources is always highly complex, and it is rarely possible for outsiders to impose systems. Panchayats with community forestry activities form forest committees to manage PFs and PPFs, but these are often inactive, and rarely represent the disadvantaged sectors of the community. The committees are encouraged to produce simple management plans, in consultation with the CFA, but in practice these are very rarely implemented. Social forestry will only succeed in Nepal in the long term if it takes on sufficient momentum to continue after outside project support is withdrawn. For this to happen, the present progressive forest policy must be seen to be consistent, so that local communities become convinced of the benefits to themselves of planting and protecting trees.

Janet Stewart is a Research Officer in the Oxford Forestry Institute, Oxford OX1 3RB.

(ii) Planning Indonesia's Forest Policy by Julian Evans

The International Forestry Programme of the International Institute for Environment and Development (IIED) has as its main objective to help tropical countries establish sound and realistic forest policies. It concentrates on a critical link in the chain: national forestry departments.

The staff of IIED's Forestry Programme help governments to carry out an in-depth review of their forest policies and to identify and rationalize conflicting policies. Such a review is not done just in a couple of weeks to produce a report which will disappear in the drawers of government policy makers. The methods used by IIED are new and unconventional. Its staff comes in only to act as a catalyst, as a policy broker, among all the different national actors who hold an interest in the management of forest lands, and who have a say in forest policy development. This consultative process usually takes some twelve months and will create amongst the participants a thorough awareness of the acute needs and implications of forest policy development and implementation.

In a recently completed forest policy review in Indonesia, IIED worked in close collaboration with three Ministries and the overall consultative process involved key representatives from nearly every other government ministry, the private sector and the development aid community. It was the first time ever that forest policies were discussed in an open unbiassed and integrated manner which involved all interested parties. The report, published in November 1985 gives a profound insight into the different policy options which Indonesia has if it wants to avoid laying its forest lands waste. This has already resulted in complete redrafting of the country's five year forestry plan. Other policy changes are still under consideration, but it is obvious that IIED's approach has had a deep impact.

A similar review has been started by the IIED Forestry Programme in Cameroon, and a review of forest policies in Zaire is expected to start in June 1987.

Many other countries have indicated their interest in having IIED help them to carry out similar work. All recognize that a strictly long-term activity such as forestry, which involves so many opposed interests, can only be discussed in a constructive manner with the help of an independent and impartial outsider.

This issue of the ODI Newsletter features the text of the executive summary of IIED's Indonesia report.

FOREST POLICIES IN INDONESIA; the sustainable development of forest lands. A review of the government of Indonesia and the International Institute for Environment and Development.

This Review, carried out by the International Institute for Environment and Development and the Government of Indonesia, is concerned with the development, sustainable use and conservation of the forest lands of Indonesia. It

- examines present policies and their implementation;
- discusses the ways in which these interact to affect forest lands, and
- proposes alternative strategies for the future.

The Review is intended to provide a basis for restructuring Indonesian Government policies in ways which will make better lasting use of the forest resources of the country for the greater benefit of the Indonesian people. The strategies it proposes should lead to the more effective investment of domestic resources of manpower, land and money, and new better defined targets for assistance from overseas.

The report is in four parts:

- a preliminary Discussion Document, intended to stimulate debate. This raises 29 important issues and suggests alternative approaches to them (Volume I);
- an extended discussion of these issues (Volume II);
- a detailed account of the forestry sector in Indonesia (Volume

III), and

- proposals for alternative Government strategies (Volume IV).

The Importance of Forest Resources

Indonesia's forests are a resource of the greatest importance to the nation. They contain a reserve of virgin soils which may, if necessary, be brought into cultivation: they protect water catchment areas and ensure the continuing supply of water on which a prosperous agriculture, a thriving industry and a healthy population depend; they provide the basis for the sustainable production of timber for domestic consumption and for export; and they protect the genetic variety of plants and animals which may be needed to ensure the future supply of natural raw materials for agriculture, forestry, medicine and other uses.

A Rapidly Wasting Asset

Indonesia is very fortunate in still possessing large areas of forest. This gives it a flexibility in economic planning and in land use that many tropical countries have lost and would give much to recover. Such an asset should not be wasted.

But it is being wasted by

- land degradation and erosion associated with high population pressure;
- land degradation caused by badly planned land settlement;
- injudicious forest exploitation which strips forest from catchment areas that should be protected and damages the productivity of forests which should be devoted to sustained timber production; and
- disruption of agriculture, river navigation and coastal fisheries by erosion from river catchments.

Unless these trends are reversed large areas of tropical forest will, within a generation, come to resemble the African savannas; and many mountain landscapes will become as bare and sterile as those of the Middle East.

A Central Pillar of Government Policy

The wise use of Indonesia's forests is not a matter for the Ministry of Forestry alone, though that Ministry has the most important role to play. Policies for population, for energy, agriculture and transmigration, industrialization, employment, trade, public works - indeed policies in almost every sphere of Government - have significant effects on the future use of forests and forest lands. Yet these effects are rarely taken into account when the policies are designed and adopted.

Because the sustainable use of forest resources is so vital to the future health of the Indonesian economy, there must be close coordination of all Government policies which affect these resources.

It is the principal contention of this Review that the sustainable use of forest lands should be a central pillar of Government policy and that this should be one of the main criteria for evaluating the policies and performance of other sectors.

The Better use of Land

If the predicted requirements for land of all the various Ministries and users are added together they amount to twice the total land area of Indonesia. So, there must be a change - either in the demands or in the land available. There are three ways of helping to balance this vital equation:

- by better allocation of land to the various uses for which it is intended;
- by more efficient use; and
- by reducing the pressure to destroy.

All of these are essential.

Land for Protection

Continuing high food production depends absolutely on the proper management of water catchments; and the conservation of genetic

SOCIAL FORESTRY NETWORK

PLEASE FILL IN AS CLEARLY AS POSSIBLE and return to:

Overseas Development Institute,
Regent's College,
Inner Circle, Regent's Park,
London NW1 4NS

Telephone: 01-935-1644

01 Name

.....
(Dr, Mr, Ms, etc) (Initials)

02 Present
Position

03 Organisation

04 Department

05 Mailing
Address

06 Country

07 Telephone Telex.....

08 Country of residence if different from mail address
.....

09 Type of Employment (please tick only one)

- | | |
|--|--------------------------|
| 01 International or National Aid Agency
(eg WHO, UNDP, USAID, SIDA etc) | <input type="checkbox"/> |
| 02 Government Civil Service, Parastatal | <input type="checkbox"/> |
| 03 Non-Governmental Organisation (NGOs,
PVOs, Foundations etc) | <input type="checkbox"/> |
| 04 University, College,
Research Institution etc | <input type="checkbox"/> |
| 05 Library, Documentation Centre,
Editing, Publishing | <input type="checkbox"/> |
| 06 Business - including independent
consultancy | <input type="checkbox"/> |

10 Main Disciplines (not interests)

Please indicate your main disciplines (up to 4)

- | | | |
|---|---|--|
| 01 Agriculture/
Agronomy <input type="checkbox"/> | 07 Farming Systems <input type="checkbox"/> | 13 Management <input type="checkbox"/> |
| 02 Agricultural
Economics <input type="checkbox"/> | 08 Forestry/
Silviculture <input type="checkbox"/> | 14 Natural Sciences <input type="checkbox"/> |
| 03 Economics <input type="checkbox"/> | 09 Geography <input type="checkbox"/> | 15 Regional
Planning <input type="checkbox"/> |
| 04 Education,
Training &
Extension <input type="checkbox"/> | 10 Horticulture <input type="checkbox"/> | 16 Social Sciences
(not Economics) <input type="checkbox"/> |
| 05 Engineering <input type="checkbox"/> | 11 Journalism <input type="checkbox"/> | 17 Soil Sciences <input type="checkbox"/> |
| 06 Environmental
Sciences <input type="checkbox"/> | 12 Librarianship <input type="checkbox"/> | |

14 Interests by Country

Please list the countries in which you are most interested/knowledgeable
(up to 7 in descending order of importance)

- | | |
|----------|---------|
| 01 | 05..... |
| 02 | 06..... |
| 03 | 07..... |
| 04 | |

Other ODI Networks in which you are interested (please tick as appropriate)

- | | already a
member | please send
information |
|--------------------------------|--------------------------|----------------------------|
| 21 Agricultural Administration | <input type="checkbox"/> | <input type="checkbox"/> |
| 22 Irrigation Management | <input type="checkbox"/> | <input type="checkbox"/> |
| 23 Pastoral Development | <input type="checkbox"/> | <input type="checkbox"/> |
| 24 Social Forestry | <input type="checkbox"/> | <input type="checkbox"/> |

- 25 Interests by Subject within Social Forestry (max 6)
Please indicate your main areas of knowledge and interest
(This is to help assess the strengths of the Network: you will
receive network papers on all subjects)

- | | |
|--|---|
| 01 Agroforestry <input type="checkbox"/> | 08 Institutional Management <input type="checkbox"/> |
| 02 Anti-desertification <input type="checkbox"/> | 09 Production Aspects: fuelwood, food, fodder etc. <input type="checkbox"/> |
| 03 Community Forestry Schemes <input type="checkbox"/> | 10 Project Management <input type="checkbox"/> |
| 04 Conservation Measures <input type="checkbox"/> | 11 Rights of Forest Dwellers <input type="checkbox"/> |
| 05 Energy Issues <input type="checkbox"/> | 12 Rights for the poor, landless <input type="checkbox"/> |
| 06 Farm Forestry <input type="checkbox"/> | 13 Women and Forestry <input type="checkbox"/> |
| 07 Forestry Extension <input type="checkbox"/> | |

- 31 Last two main professional responsibilities

It is often helpful for Network members seeking to consult others to know your recent professional responsibilities. If your job title does not give much indication of your duties, please give them here, with similar brief information on your last post. This information will be published in the Register of Members.

.....

.....

.....

.....

.....

.....

Todays date YEAR MONTH DAY

I have completed the registration form and would like to be a networker

Signature _____

If you wish to provide any further details on your career or interests please do so on a separate sheet. This information will not appear in the Register of Members but would be kept on file for reference when considering possible co-operative research programmes.

resources is essential as an insurance to provide reliably for the future productivity of food and forest crops. The protection of land that requires protection must, therefore, take priority over the conversion of this land to any other use.

There is another very good reason for this. The cost of prevention is a fraction of the cost of cure. The very great current expenditure on critical catchments would not now be necessary if adequate protective measures had been taken in the past. Of course, some catchments are already in a critical state through past mismanagement and these must be rehabilitated; but this must be in addition to, not instead of, proper protection.

The Production of Wood

Indonesia has been able to take off economically because of its timber exports; before the coming of oil, revenue from timber was the main source of foreign exchange. Wood and other forest products will continue to be very important items for the Indonesian economy. The country is in a very favourable position compared with many others. This is because its natural forests can provide an assured supply of timber and there is no compulsion to invest in new plantations. But this depends upon good management of these forests now.

If areas of production forest are selected carefully that are sufficient to meet the likely future needs of the country and if these forests are managed well, there should be an assured supply of timber with relatively low investment. The measures needed are:

- the immediate selection of a suitably large area of permanent Production Forest. If this is done immediately, there is still plenty of forest available for this and other purposes.
- the resumption of management of Production Forests by the Department of Forestry as the present concession agreements come up for review.

The reasons which led Indonesia to adopt the concession system made sense in the 1960s. They no longer make sense. The Forest Department

has, or could very quickly acquire, the full competence to manage its own forest estate. This is accepted practice in almost all other countries. It is unrealistic to expect concessionaries to apply the same long-term care in management as a national agency will do.

Massive investment in timber estates is not the answer. The sums of money required are very large; adequate trials have not been conducted; and plantations elsewhere in tropical rain forest areas (in contrast with those in areas with a marked dry season) have not a good record of success. But trials should start now, so that plantations can be introduced gradually in the future as and when need dictates, carefully linked to the forest industries they are intended to supply.

Reduction of Pressure on the Land

This should be brought about in a number of ways:

- intensification of land use both in agriculture and in forestry;
- providing more rural employment other than the growing of food;
- the planned movement of people to medium-sized settlements away from the large cities;
- the rehabilitation and productive use of degraded lands such as alang-alang grasslands.

An invariable feature of successful development is the reduction of employment in farming and movement of people from rural areas. Indonesia should anticipate this trend and should design measures which provide a bridge to the future. A feature of this should be an increase of employment in other rural occupations than the growing of food, labour intensive forestry conducted by the community and the development of 'intermediate' settlements.

The management of forests has in the past been the prerogative of the few concessionaries and the Government. The combination of this with a population of settlers who are predominantly occupied in the production of foods leads inevitably to the destruction of the forest. The solution should lie in integrating agricultural settlements with forestry by giving settlers a vested interest in looking after the

forests. Forest management by the community is recommended as an answer.

Large areas of new land are being degraded while little is being done to rehabilitate the existing waste lands. Productive use of these would greatly reduce pressure on new land. Ways are now known of reclaiming these areas successfully. The long-term cost would be much less than that incurred by the present devastation of new areas.

The Need for Combined Planning for Production of Food and Wood, and For Protection

Much damage is caused by the lack of common planning between forestry and transmigration (agriculture). In addition to its obvious responsibility for forest production, the Department of Forestry has a national responsibility for protection. This includes not only the scheduling and management of Protection and Conservation Forests, but also a responsibility to ensure that forest land is only released for other purposes when there is convincing evidence that the proposed future use is sustainable and will not lead to degradation of the resource.

A Strategy for Action

The following are issues that must be addressed. These depend upon each other; together they amount to a Strategy for Sustainable Development.

Department of Forestry

- Prevent further degradation of forest lands
 - Introduce a management system for Protection Forests
 - Revise forest classification with data from all available sources; this should include identifying the most productive Production Forests
 - Reach intersectoral agreement on land use, Province by Province
 - Identify areas of grassland and secondary forest for transmigration site selection

- Rehabilitate degraded lands
 - With priority given to areas with important downstream agriculture ie. critical watersheds
 - Identify areas designed to be converted to perennial crops, including farm forestry
- Enhance productivity of forest lands
 - Increase monitoring and supervision of HPH (concessionaire) activities
 - Resume silvicultural management in Production Forests
 - prepare plan for phased approach
 - revise HPH agreements
 - institute crash programme to identify quality of Production Forests
 - map areas of forest in HPT, HPB and HK (see glossary at end)
 - prepare framework for future decisions on land ie. decide on areas suitable for allocation to agriculture
 - Prepare management plans for all functional forest types to identify ways in which to increase market and non-market forest products
 - Prepare guidelines and programmes for increased community participation in all types of forest management
- Promote opportunities for employment
- Develop supporting activities - research, public relations, urban forestry, dissemination of information

These activities should include boundary marking, enhance supervision and control, and preparation of long-term management plans, and should in every case incorporate increased involvement of local communities.

Department of Public Works

- Revise the definition of those land areas required for watershed protection in Java; this is a very high priority
- Revise land use plan in cooperation with the Department of Forestry and the Department of the Interior
- Review the present concessionaire road system in relation to Provincial spatial development plans and recommend possible closure of some roads

Department of Transmigration

- Revise farm models to discourage the use of marginal lands, using economic analysis of the various proposed methods of settlement development
- Revise the Terms of Reference for site selection to include, as a priority, the investigation of grasslands and secondary forests
- Alter the method of land clearing to manual (or semi-mechanical) and, to promote employment, involve local people and the transmigrants themselves in land clearing.

Department of the Interior

- Convene a multi-sectoral conference on land use planning to achieve a consensus on a national land use plan
- Prepare new land use maps in cooperation with the Department of Forestry, Department of Public Works and other relevant agencies, using all available information
- Promote cooperation to increase the involvement of local communities in small-scale industries for timber and minor forest products

Ministry of Information

- Promote a national information campaign to save forests

Ministry of Institutional Reform

- With Agraria, reinvestigate the role of Adat Law, especially with regard to land not used but claimed under Law

Ministry of Trade

- Renew efforts to promote domestic trade in forest products
- Renew efforts for the export and marketing of plywood
- Discourage any new incentives to increase large-scale forest industries

Ministry of Industry

- Review industrial plans for forest industries and prevent any further establishment of plymills and large sawmills on the Outer Islands
- Promote the development of medium-sized rural settlements

Ministry of Communication

- Promote the development of the PLM to transport forest products cheaply from the Outer Islands to Java

Ministry for Population, Environment and Development

- Continue to promote a population policy which will stabilise population as soon as possible
- Stimulate and monitor any environmental aspects of all the above activities
- Encourage the movement of population from critical watersheds or otherwise sensitive lands to medium-sized settlements to provide opportunities for industrial employment

Glossary with Indonesian forest policy paper

HK = Hutan Konversi (Conversion Forest)

HPB = Hutan Produksi Biasa (Definitive Production Forest)

HPH = Hak Pengusahaan Hutan (Forest Utilization Rights; used also to refer to forest concessionaires)

HPT = Hutan Produksi Terbatas (Limited Production Forest)

More information from:

Dr Julian Evans

International Forestry Programme

IIED

3 Endsleigh Street

London WC1H 0DD

The report 'Forest Policies in Indonesia; the sustainable development of forest lands' (4 Vols. some 500 p.) is available for £25 (incl p&p) from the above address.

(iii) Community Forestry and Forest Policy in Ethiopia: Some Preliminary Thoughts

by Martin E Adams

Introduction

This paper emerges from a brief desk study prior to a three-month assignment in Ethiopia in order to appraise a rural development programme with a large soil conservation and social forestry component. A number of general papers on Social Forestry (SF) were reviewed, including those of the ODI network. In addition, relevant World Bank, FAO and SIDA reports were skimmed. The outcome of the desk study is a checklist for appraising SF programmes and a brief review of Ethiopian forest policy emerging from the official documents. The paper inevitably raises more questions than it answers.

Background

It is estimated that Ethiopia's closed canopy forest cover has fallen from 40% to 3% of the land area since the beginning of this century. In no other country in Africa is the impact of deforestation more severe. Over 90% of its annual energy supply comes from biomass, but only one third (about 9 million tonnes) from fuelwood and charcoal. Annual demand for wood is estimated at about twice this quantity. Prices of wood fuel in the Capital are probably the highest in Africa, approaching US\$40/m³, a third of average per capita GNP. In the highlands, where 90% of Ethiopia's population live, minimum temperatures are 3-5°C and frost is common in the winter at altitudes above 2,600m. As fuelwood becomes more scarce, animal dung and crop residues necessarily make up an increasing proportion of energy, with devastating effects on the organic matter content of cultivated soils (decreased water-holding capacity and nutrient status and increased erodibility). Reliance on dung and crop residues for fuel increases the vulnerability of the poor in drought years.

Deforestation in Ethiopia has been recognised as a major problem for decades. One hundred years ago the now ubiquitous eucalypts were

introduced under Menelik II. Prior to the Revolution (1974/75), the majority of plantations were established on private land in the vicinity of towns for commercial exploitation. In total, these covered about 200,000 ha, an area approximately equivalent to the annual incursion into the remaining natural forest, of which only about 3 million hectares remain. Immediately prior to the Revolution, the State Forest Development Authority had yet to make any significant impact. Little more than 100,000 ha had been reserved and the authority was having an uphill struggle preventing the expansion of private land into the reserved area. Under Haile Selassie, the provincial governors were personally appointed and forest exploitation was in their gift.

The literature makes no mention of tree planting by peasants. Under the feudal land tenure pattern, widespread treeplanting by sharecroppers was unlikely. Tenants had no protection from arbitrary eviction and received no compensation for improvements made. Peasants were no doubt aware of the benefits of treeplanting. This was evident from the clusters of trees around scattered homesteads in Arssi Region in 1985, although villagisation will probably have removed both houses and timber by now.

On the face of it the dramatic changes introduced by Ethiopia's new leaders in 1975 bode well for community forestry, in particular the establishment of participative, local-level, peasant and urban dweller associations (PAs and UDAs) with responsibility for political and economic affairs. The 1975 land reform abolished without further compensation all land ownership, from the largest to the smallest holding, making all land the collective property of the Ethiopian people. In addition, the law stated that no compensation would be paid for any forest or tree crop on such land.

In order to overcome the lack of an administrative presence in the countryside, the revolutionary authorities required the formation of PAs on the basis of 800 ha units (200 to 400 families). Each PA was charged with administering the expropriation and redistribution of land in their jurisdiction. This included the preservation of forest

property. To some extent the proclamation merely legalized events which had already taken place as peasants seized land and forests from landlords.

After the Revolution, the ambiguous position of the State Forests Authority (then called the Forest and Wildlife Conservation and Development Authority - FaWCDA) continued in the countryside. The proclamation by which PAs and UDAs were established did not give the necessary authority to the FaWCDA to control the forests which were nominally in its care. An order instructing the authority to take over all forest areas larger than 80 ha was not recognised by the new regional administrations or the PAs because it was not issued as a legal regulation. Although in theory no one was allowed to cut or remove a tree without permission, forests remained a free good to be used and abused as individual PAs thought fit. This situation was addressed by the Forestry Proclamation of 1980, under which the Natural Resources Department of the Ministry of Agriculture was made responsible for ensuring proper protection, rational utilisation and management of forest and wildlife resources. Each PA and UDA is now required to develop and conserve its own forests and to plant trees within its locality in areas designated as forest reserve. However, effective control remains with the 20,000 or more PAs and UDAs and the destruction of the forest and plantations is reported to be continuing.

Government Policy and Institutions

Ethiopia's Development Plan sets a target of 2.9 million ha of plantation (66 ha per daylight hour!) over the 10 year plan period. Investments would represent about 5% of the total planned outlays. The targets require a six-fold increase in current performance (46,000 ha planted in 1984). The strategy for forestry development is simply stated, the establishment of peri-urban woodfuel plantations for the towns and the development of woodlots and agro-forestry practices on a massive scale in the rural areas. Priority is to be given to planting land threatened by erosion. Thus there is a dual objective - fuelwood production and soil and water conservation.

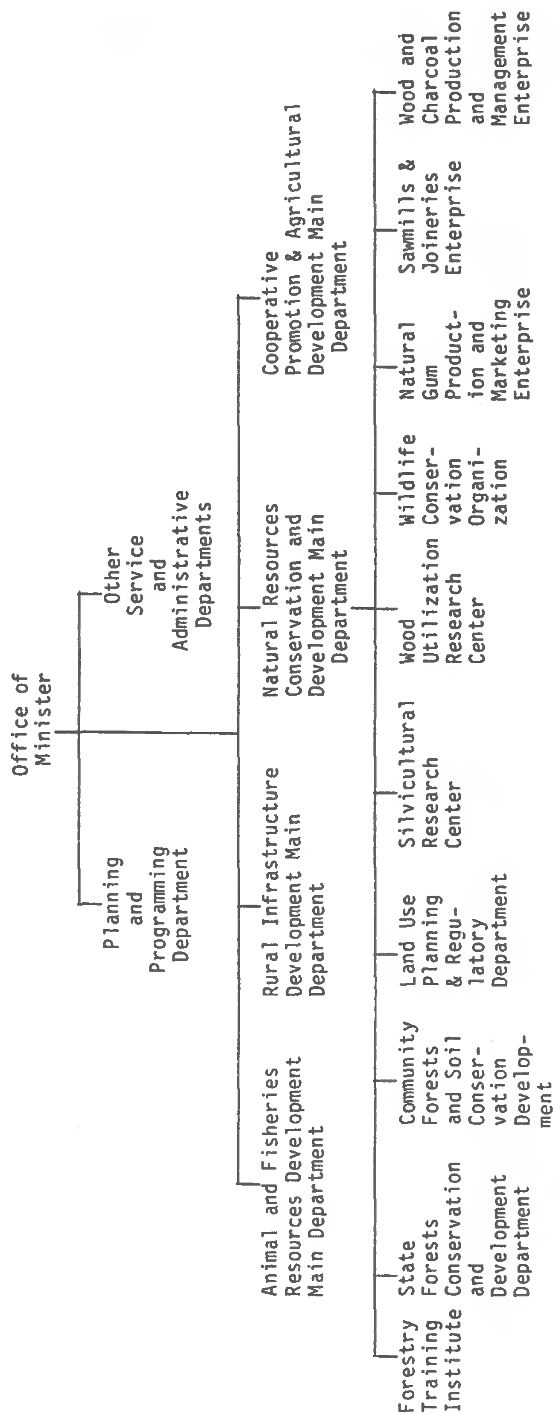
The planning perspective of government and donors (but not, as yet, the peasants) has been influenced by the FAO Ethiopian Highlands Reclamation Study (1983-85), which defined a "conservation-based development strategy". This recognised the futility of conservation measures in isolation. Tree planting and terrace and bund construction on steep slopes would be of lasting benefit only if they were accompanied by improved agricultural practices (so-called biological or vegetative measures) and population control. Further, planners realised that people on the brink of starvation could not be expected to subordinate their acute short-term needs for the possibility of long-term benefits. Hence the need for food security (basically food-for-work) and involvement of the peasants in planning. For once there appears to have been a genuine effort to make this more than a cliché. An initiative by OXFAM in late 1984 to develop a participative method focussed on service cooperatives has caught the imagination of some major donors. (On average four PAs comprise a service cooperative, the main vehicle for extension, input supply and retailing in Socialist Ethiopia.)

In 1984, the Ministry of Agriculture (MOA) divided the country into eight agro-ecological zones for the purpose of launching a comprehensive agricultural development effort, codenamed PADEP (peasant agricultural development programme).

The administration in each zone is headed by a general manager and contains representatives for all four main departments of the central ministry (see Figure), which retains responsibility for policy, approval of work plans and budgets and planning. The Natural Resources Main Department (NRMD) is responsible for forestry and soil conservation. It is divided into five departments (each represented at zonal level), three semi-autonomous agencies and a number of service units. Currently there are about 160 graduate foresters and 400 diplomates. The NRMD has inherited thousands of forest guards and other field workers, many of whom live off the forest which they are employed to protect.

Staff of the State Forest Conservation and Development Department (SFD) (formerly FaWCDA) are responsible for demarcating, conserving

**MINISTRY OF AGRICULTURE
PRESENT ORGANIZATION**



and managing designated state forests. As the parent organisation for forestry in the country, SFD foresters have been increasingly directed by local political authorities to provide advice and material for numerous local tree-planting initiatives, many of which are unplanned and therefore unbudgeted. This work is in addition to their routine responsibilities for state forests. The personnel in the new department of Community Forestry and Soil Conservation have been drawn from the former Soil and Water Conservation Department (SWCD) of the Ministry of Agriculture and as such they tend to emphasise conservation rather than fuelwood production. The significance of this difference in emphasis can be illustrated by experience obtained on a pilot project in the Borkana Catchment, Wello Region.

One of the major activities of this rehabilitation project (1982-85) was to provide ground cover on the steep mountain slopes and thereby reduce erosion. Reforestation and hillside closure were the means to achieve this objective. In addition it was planned that these areas would supply fuelwood, poles and forage. Both the SWCD and FaWCDA have been involved in reforesting extensive mountain areas formerly used for communal grazing. While the SECD passed the responsibility for the maintenance of the area to the PAs, the FaWCDA maintained that all areas afforested with food-for-work labour belonged to Government. In other instances it intended to control trees until they were mature so as to avoid indiscriminate felling.

The Borkana experience also reminded foresters that Eucalyptus is often unsuitable for rehabilitating mountain slopes. The conditions in the catchment range from cool, wet highland to hot, dry lowland and careful choice of species is important. However, either due to lack of planting material or imagination, the same species was planted over an altitudinal range of 1200 meters using the same silvicultural techniques. Not surprisingly, survival rates of trees beyond three years at the lower altitudes were very disappointing. Terracing and reforestation required an average of 350 person days of food per hectare. SWCD staff turned to hillside closure as an alternative means of encouraging regeneration (based on consent rather than fencing). After two years, the revegetation was very impressive, but

peasants were not enthusiastic in the absence of an acceptable group plan to manage the resource thus created. They saw enclosure as a threat to their grazing rights. In one instance, grass was cut and carried by compulsory work parties and distributed by the PA executive to their favourites.

Issues to be Resolved

In the absence of information about successful models of participative planning and implementation of community forestry projects, it is necessary to be cautious about predicting the outcome of the spate of donor assisted tree planting projects. So far uncertainty as to who benefits from soil conservation, reforestation and hillside closure has stifled popular involvement. The World Bank, which is in the process of negotiating a US\$43.0 loan to the NRMD, a major portion of which is for community forestry, recognises the difficulty. It observes that since community forestry is basically untested, several models should be tried with the intention of concentrating on the most successful model during later years of the project. The results of the experiments with cooperative-level planning are awaited with interest. It is vital for Ethiopia that some solutions are worked out and a great deal of thought must be given to devising and testing alternative methods. Running through the checklist, it is possible to highlight likely issues. One thing is reasonably clear and that is the prospect for agro-forestry on peasant farms. Households have users rights to the plots they occupy but may be moved if the PA redistributes the land to accommodate more members or a producer cooperative. While families are reasonably secure in the knowledge that they will be allocated some farm land by their PA, there is considerable uncertainty about how long they will be allowed to stay. In the circumstances perennial species are unlikely to feature in the farming system.

This points to another over-riding issue, the need to be more careful in defining the purpose for which trees are to be planted. Multiple objectives might be difficult to achieve. The community is expected to participate in four types of tree planting: conservation forestry

on eroded slopes; community woodlots for firewood, poles and browse; agro-forestry on individual farms and producer cooperatives; and peri-urban forestry for fuel and poles. Species, silviculture, site selection, labour for planting and maintenance and tenurial arrangements probably need to be carefully specified in each case.

Checklist for Appraising Social Forestry Programmes

A. Village Resources

1. Land

Availability of cultivable, cultivated and non-cultivable land; irrigation sources and supply potential; local nomenclature for different types of land and plant associations; length of fallow on different land types; grazing and browsing resources; type and number of animals; seasonal occupancy of pastures.

2. Energy Supply and Demand

a. Local Resources: reserves of firewood; preferred and available plant species; use of lower grade fuels (straw, crop stalks, animal dung); access to and availability of different fuel types (seasonality, distances travelled); trees planted and/or protected for special purposes; major factors limiting the supply of these species.

b. Local Demand: fuel consumption of different income groups for heating, cooking, lighting; efficiency of local heating and cooking technology; inequalities of fuel-related work, access, etc. within the household and the village; use of fuel by local crafts (eg. brickmaking, ceramics, etc.).

c. Local Trade: type and quantity of fuel traded; costs and returns; organisation of the trade and type and number employed; imported and exported fuel and timber resources by type and value.

3. Construction

Local supply and demand for building material; timber for poles, furniture, tools, etc; preferred species; prices.

B. Socio-Political Structure and Functioning

1. Village Level Institutions

Authority structures; relative weight of local and state power; are socio-political conditions stable? Assess the potential of local institutions (local government, field ministries, schools, church groups, women's groups, clubs, etc.) for participation in tree planting.

2. Land Rights

Are rights to cultivate, to gather, to graze, etc. relatively secure and clearly defined? In the event of changes in primary rights, have secondary use-rights survived? What are the implications for tree planting? What rights are retained by those who plant trees? Are people clear about their rights? How important are CPRs (traditional or recently established by government decree)? What are the rules and how well do they operate? Does state sponsorship of local politicians undermine or threaten group use of CPRs?

3. Government Institutions

Where does responsibility for social forestry lie (State Forests/Forestry Dept, Agriculture, Social Services, Local Government)? Extension system: extension methods, links between forestry and agricultural field staff, arrangements for training or retraining foresters and field personnel; planning, monitoring and evaluation; budgetary resources; links with NGOs.

C. Evaluation of Current Programme/Pilot Projects

Objectives; Means of Achieving Objectives; Results.

Assessment:

Did the community participate in programme design? How? Were women actively involved in the process and how did this influence the design adopted?

What was the purpose of the tree planting (fuel, poles, slope protection, etc.). Did the people want to plant trees? Were they coerced? What part did food-for-work play in motivating workers? What was the people's understanding of their future rights to the trees? Was there a group plan for distribution of the produce?

Was the planting on common land? How did the plantation impinge on land use by existing right holders? Was tree-planting at the expense of other forms of land use?

What is the history of relations with forestry staff: before the project, during the project, now? Were foresters specially trained for the working with villagers? What extension methods were used?

Were arrangements made for protection and maintenance? How did they work out?

Did labour requirements for tree planting conflict with agricultural work?

What did people think of the silvicultural methods? What improvements do they propose (species selection, nursery techniques, quantity and quality of seedlings, etc.)?

Arrangements for monitoring and evaluation, follow up, etc.

Martin Adams is an independent consultant. He may be contacted at:

2 Gifford's Close
Girton, Cambridge CB3 0PF
UK.

FORTHCOMING CONFERENCES, MEETINGS AND COURSES

Meetings

October 1986 Tanzania Inter-disciplinary Seminar on Land Use.
Arusha, Tanzania.

Contact: The Secretary,
CASLE, 12
Great Georges Street
London
SW1P 3AD, UK

3/11/86-14/11/86 HONDURAS. Siguatepeque. Tropical Humid Forest
Management in Central America. (ESNACIFOR).
Ref: T. Wood, SEMBOTH, CONDEFOR, Apartado Postal
1378, Tegucigalpa, D.C. Honduras, C.A.

10/12/86-13/12/86 INDIA. Mysore. Seminar on Silviculture and
Management of Tropical Rain Forests.
Ref: Dr. S. N. Raj, Dept of Forests and Wild Life.
Sandal Research Centre. Malleswaram,
Bangalore-560003, India.

13-24 April 1987, Nigeria, Ibadan. Alley Cropping and Alley Farming.
A training course for Agriculturists and Foresters
working in tropical regions. The International
Institute of Tropical Agriculture and the
International Livestock Centre for Africa jointly
announce a 2-week training course designed specifi-
cally for agriculturists and foresters working in
the tropics interested in the areas of alley
cropping, alley farming and agroforestry.

Objective

The primary objective of the course is to train
agriculturists and foresters in an integrated
farming system with benefits to soil, crop and

livestock components. Improved soil and crop management techniques for development of improved, sustainable and ecologically stable farming systems as alternatives for the shifting and bush fallow systems. Emphasis will be placed on inclusion of woody species into crop production systems, simultaneously providing supplementary feed for livestock

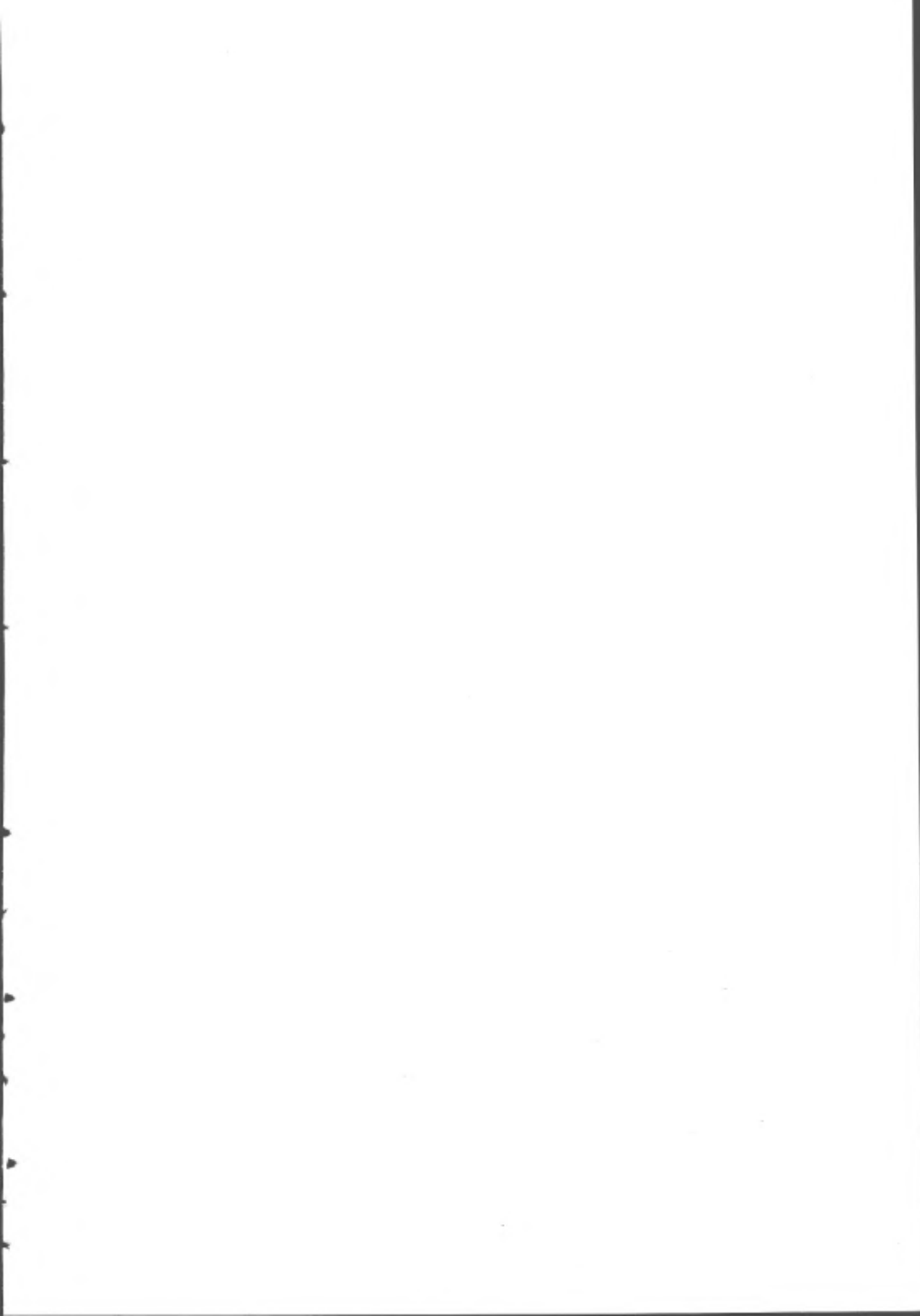
The course will be in English and French. Final date for accepting applications is 16 January 1987. Request for further information may be address to:

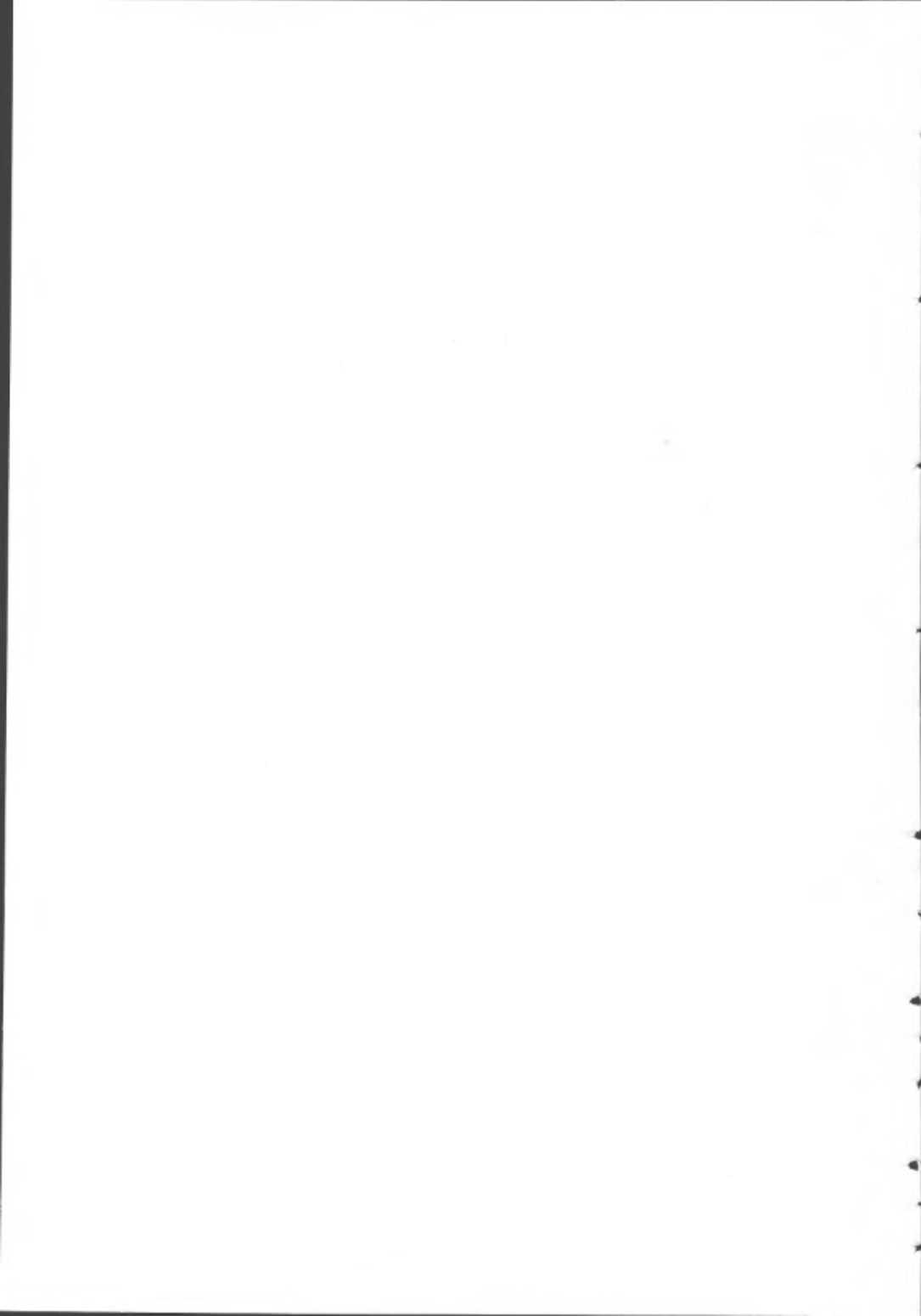
Principal Training Officer
International Cooperation and Training Program
IITA, Oyo Road
Private Mailbag 5320
Ibadan, Nigeria

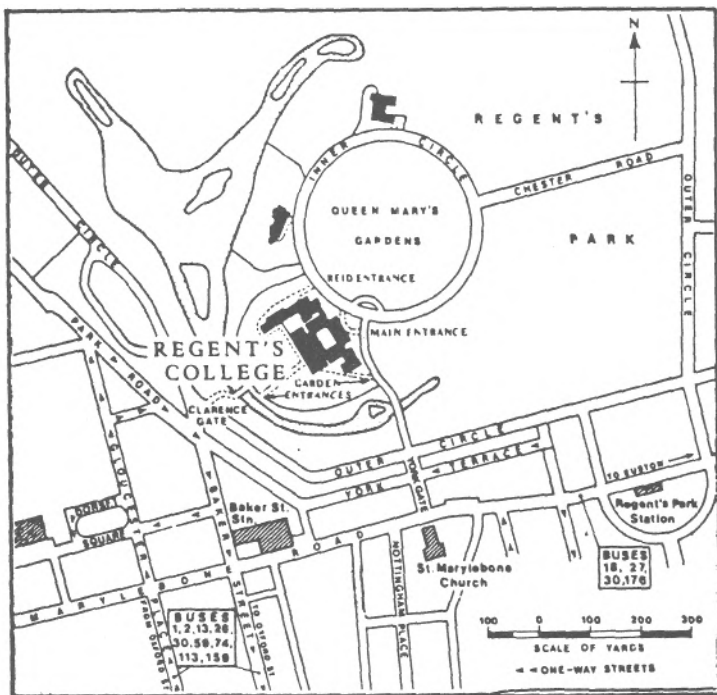
Team Leader
Livestock Centre for Africa
Oyo Road
Private Mail Bag 5320
Ibadan, Nigeria

August 20-30 1987 Korea. XVI Pacific Science Congress. Seoul, Korea. The main theme will be "New Dimension of Science, Manpower and Resources in the Pacific". There will be sections on Forestry, Botany, Entomology and Science Communication and Education. Contact:

Organising Committee
XVI Pacific Science Congress
Seoul 110
KPO 1008
Seoul 110
Korea







Overseas Development Institute
Regent's College

Nearest underground station: Baker Street (Bakerloo, Jubilee, Metropolitan and Circle lines). Nearest bus stops in Gloucester Place (going North) Baker Street (going South), and Marylebone Road (East or West). ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the Main Entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

Credits

Newsletter and network papers edited by:
Gill Shepherd, Social Forestry Research Officer

Design, typing and layout by:
Jennifer Dudley, Administrative Secretary
Carole Buckingham, Network Secretary
Peter Gee, Publications and Press Officer

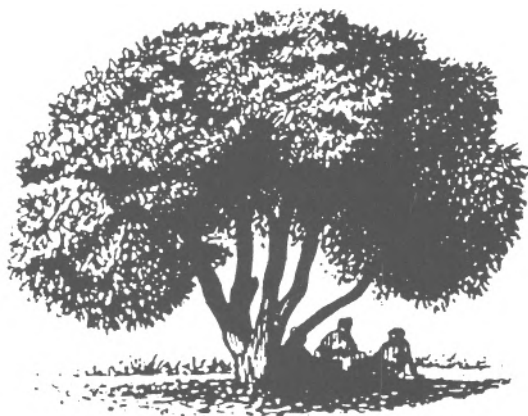


Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



FOREST POLICIES, FOREST POLITICS

Gill Shepherd

Gill Shepherd is Social Forestry Research Officer,
Agricultural Administration Unit, Overseas Development
Institute

FOREST POLICIES, FOREST POLITICS

Gill Shepherd

	page
I INTRODUCTION	2
II THE INTERNATIONAL DIMENSION	3
III ISSUES AT NATIONAL LEVEL	4
Deforestation	4
Conservation	5
Commercial Forestry	6
The Forest Department and other Sectors	7
Conclusion	9
IV THE LOCAL LEVEL: CONFLICTS BETWEEN THE LOCALLY-BORN AND OTHERS	9
State ownership of forests, other forms of public ownership, or private ownership?	9
Commercial interests and subsistence forestry	11
Conflicts over rural and urban priorities for land-use	13
Customary tenure and legal tenure	14
Forester-villager relations	18
V CONCLUSION: FOREST POLICY AND FOREST POLITICS	21
Forest Policy and Forest Politics: the local level	21
Forest Policy and Forest Politics: the national level	23
Conclusion	25
NOTE	27
REFERENCES	28

I INTRODUCTION

Forest Policy was chosen for this set of network papers because Social Forestry projects are held in tension between - on the one hand - the achievement of villager/forester cooperation in rural areas and - on the other - the political, economic and above all legal environment created by the nation state. A good deal of attention has been given to local-level issues in Social Forestry: it is also time to consider ways in which national-level institutions help or hinder such projects.

A subsidiary theme is perhaps more implicit than explicit in the papers. It is this: as soon as the national level gives to which Social Forestry projects try to adapt are brought under critical scrutiny, onlookers are forced to broaden their frame of reference. Territorial and Commercial Forestry have to be considered at the same time, and so do much wider land-use issues.

Attempts to formulate a country's forest policy must of course face the fact that trees and the land on which they grow are being competed for by several non-congruent sets of opposed interests. Even establishing the criteria for adjudicating between them has proved difficult in the past, and commercial interests have tended to carry the day. Yet it has become increasingly clear as tree-cover dwindles in many parts of the world that until environmental sustainability is more frequently privileged in land-use planning, we should be pessimistic about the future of forest, woodland and scrub. The outlook is currently even more gloomy for many people who depend upon trees for subsistence needs.

Thirty years ago, it was assumed, relatively unquestioningly, that wealth created through industrialisation would trickle down through society to bring benefits to all. Forest industry made quick profits and the State saw forest revenue as its legitimate right. The outflow of forest benefits from rural to urban areas was often believed to benefit the rural poor in some indirect way: through the provision of state services, for instance. Those who faced the fact that forest benefits might never accrue to compensate rural people were probably of the opinion that benefits to the majority (the State or the Nation) justified costs to the minority.

Time has proved the proponents of this theory wrong. Jack Westoby, the FAO forestry expert who first advocated forest industry as a creator of wealth for all, has recanted, observing how rural people actually became worse off as a result (Dargavel et al 1985: 14-15). And a host of other writers, taking their starting point from Lipton's notion of 'urban bias' (Lipton 1977), have shown

the same thing. The rights of forest peoples already making extensive use of the forest had to be curtailed to make way for industrial activities. Their own modest commercial activities were outlawed and so were many of their subsistence activities. As a result, the rural majority was impoverished for the benefit of the urban minority, their ability to support themselves undermined. 'Trickle-down' theory has had an overlong innings among foresters, and is in urgent need of decommissioning.

The need for change in Forest Policy is now being felt in some countries, partly as a result of the Jakarta Eighth World Forestry Congress in 1978, whose final declaration explicitly linked the welfare of rural people with the survival of forests (Westoby 1985: 107); partly through the campaigning efforts of voluntary organisations who work with the poor; but above all through attempts to implement Social Forestry projects in anachronistic policy environments.

This paper attempts to tease out some of the issues which forest policy makers must address, using the material available in the newsletter articles and network papers which it accompanies, together with other sources. Because international, national and local-level issues all intertwine here, there is heuristic value in addressing each in turn, examining the particular problems thrown up at each level.

II THE INTERNATIONAL DIMENSION

Trees for the nation or cash from exports?

The export of tropical hardwoods has, in the past, provided an income for many developing countries. There are now very few countries with the forest resources to continue to do so, Indonesia being one of the few (Evans 1986), and none which should do so without including in the sale price the cost of renewal and replacement.

Foreign timber buyers naturally have no commitment to the forest stock of others: Japan for instance has preserved and even enhanced its own forests while contributing to deforestation in S E Asia and South America, and will continue to do so while the price differential remains great (Westoby 1983: 3).

Third World governments, in considering whether or not they can afford to raise revenues by felling natural forest, either for export or to make space for commercial agriculture, need to consider more than the forestry

sector. It may well be that profit from one source is greatly outweighed by increased expenditure because of flood damage, silted dams, decreased perennial water supplies, reduced rural self-sufficiency and higher rural-urban migration rates (Vohra 1986). But the mechanism is lacking in many countries for bringing out the relationship between such profits and losses, and a stouter defence of the nation's resources by its representatives is badly needed.

The international body of donors, researchers and campaigners can assist here by helping to devise appropriate methods of calculation, and by pushing for a recognition that international timber prices must include a stumpage rate.

III ISSUES AT NATIONAL LEVEL

There are various types of problem for Forestry decision-making at national level. On the one hand, decisions most commonly left to the Forestry Department itself concern the balance between conservation and commercial forestry claims upon the forest resource. On the other, there are conflicts over deforestation and alternative land-uses which are likely to involve several bodies. Both sets of problems occur in most places in a context of more or less rapid loss of forest cover.

Deforestation

Dramatic deforestation is occurring in most of the places these papers address. India aimed, in 1952, to keep 33% of its territory under forest but is now down to 12% (Gadgil et al 1983). In Dominica forest cover has fallen from 60% in 1947 to 26% today (de Ceara 1986). Sahelian deforestation was first noticed forty years ago, and depressingly correct predictions made then of the ecological and social collapse to come (Lai and Khan 1986: 3). And, worst of all, Ethiopia's forests, which covered 40% of the country in 1900, now extend across only 3% of it (Adams 1986). Wherever it occurs, deforestation leads to deteriorating incomes for the rural and urban poor.

Deforestation occurs when population densities go up, fallows shorten and agricultural intensification leads to the faster clearing of wooded terrain and perhaps the removal of tree crops (Boserup 1965; Byron 1985). But it is important to realise that demographic increase in a particular area is as frequently the result of squeezing a politically weak people out of good land into more marginal land or into a smaller area than before, as it is the result of a population explosion (Gill 1985). Such

evictions are frequently associated with the expansion of commercial agriculture or commercial forestry, driving the poor up hills, towards deserts or into forests, where tree-felling for agricultural plots is highly detrimental environmentally (Blaikie 1985; Roche 1986: 103).

Before attempting to solve the deforestation problem, foresters and other decision-makers need to look for the dynamic behind it and accept that its causes, political, social, economic, are part of that problem. Responsibility must be taken for the deforesters, as well as the trees: simply trying to move the people along passes the problem on to somebody else and, it has been shown countless times, does not stop the deforestation [1].

Foresters have not had this task in the past. They were able to talk of managing or protecting forest, and to treat people who got in the way of these processes as an impediment. But 'natural' resources are always exploited on behalf of one interest group or another, and clearer recognition has been needed of the fact that the well-being of forests, and the people heavily dependent upon them, are closely intertwined. As de Ceara puts it (1986):

'the only means of stabilising the ecosystem is to stabilise the social system; to solve the reforestation problem one must solve the poverty problem.'

Neither conservation forestry nor commercial forestry can practically be considered today without some thought along these lines; and the whole issue of a just Forest Policy turns upon the balancing of the fate of forest-dependent people, with the fate of the trees themselves. Once there is pressure upon the remaining forest resources of a country, it is impossible to avoid asking what forests are for, what use their preservation might be, or by whom they should be used.

Conservation

On the one hand, there are clearly some situations in which forests must be held inviolable for the good of hundreds or thousands of people, and for future generations. Trees are needed on watersheds; tropical rain-forests contain scarcely-tapped genetic riches; highly vulnerable dry open forest (two-fifths of the world's forest) protects soil and livelihoods in savanna and semi-arid areas (Westoby 1983: 3). In such situations, the preservation of trees in situ must take priority over any other use.

Such planning needs much stronger national-level support than it yet gets in most places. It is easy to calculate revenue foregone if such a path is chosen, and difficult to put a precise value on benefits: it behoves the international forestry community to learn to do these calculations, and to make a strong case for them.

At the same time, strict conservation is likely to limit the freedom of rural people living on the fringes of the forests or living in them, and their compliance must be won with well-thought-out compensation. They, after all, bear the chief costs of generalised benefits to others.

For instance, the FAO Ethiopian Highlands Reclamation Study referred to in Adams' article (1986) recognised the futility of conservation measures in a vacuum, and recommended concomitant agricultural intensification techniques and food security while terraces and bunds were constructed and additional trees planted. Conservation of particular patches of forest seems to have been part of the traditional strategy of some groups, and where movements for conservation spring up outside or below the State system they should be encouraged. Movements such as Chipko came into being because hill-dwellers were more concerned by the dangers of over-cutting hill-slope forest than contractors were.

There is a need, too, to preserve what is left without precluding future tree-planting. For instance in Honduras, de Ceara notes that a 1967 law closed saw-mills and prohibited tree-cutting. While the first part of the law was very necessary, the second constituted 'an obstacle to the rational use and establishment of forest species'.

Commercial Forestry

On the other hand, there is a far less socially acceptable sort of 'conservation' which places all kinds of limitations on the use of forest resources by local dwellers, yet allows contractors or concessionaires into the forest to cut timber for commercial purposes. Understandably, such conservation is seen as highly unjust by local dwellers, and their compliance must be obtained by force.

In the case of India, for example, although the 1952 National Forest Policy put ecological and societal forest functions ahead of commerce, revenue and industry, the country actually industrialised with all speed, and the forests were profoundly caught up in the process. Today, nearly half of Indian industry is biomass-based (Agarwal 1984: 10), and nearly all forest currently under Forest

Department control is worked for production. The dramatic loss of forest cover over the last thirty years shows that the 'sustainable yield' calculations which guided cutting rates were not only over-optimistic, but failed to take into account over-cutting by contractors, and the hardship caused to local people (Gadgil et al 1983: 23-27; Fernandes 1983: 14-22).

In fact, Forestry Departments in such situations should be radically revising their management strategies to respond to very rapidly dwindling supply. Some land should now be taken right out of production; some should perhaps be guarded once more by local people - as has proved so successful in Nepal (J. Stewart 1986: 17); commercial extraction should be limited to specific areas.

If foresters really want to preserve forest from a scramble to the death between all interest groups, then they will need to find a way of standing up to contractors, those politicians who support them, and all who hope to exploit the forest and pass on the costs of doing so to society. They will certainly need allies in the shape of other government departments, donors concerned with forests, and in-country voluntary organisations if these are appropriate. But the strongest potential allies of all, if the right relationship can be established, are those who themselves live in or near forests.

The Forest Department and other Sectors

Nationally, the Forestry Department needs to ally itself with such government departments as those concerned with Environment, Soil and Water Conservation, Land-Use Planning, Rural Welfare or Rural Development. Unfortunately, though, many of these departments are weak for exactly the same reasons as those relating to the Forestry Department: they are not big money spinners.

The pressure for short-run commercial land use

The reality is that resource development decisions often go against forestry. There is intense competition for land in most countries. Even in Indonesia (Evans 1986: 22) the total demand for land from all ministries amounts to double the nation's entire land-surface, for instance. In such situations, the richest, most powerful would-be land-users tend to sweep the board, though their proposals are unlikely to be the best land-use options. One might instance the felling of Amazonian forest to ranch beef for export to North America, or the felling of Sahelian tree-savanna (fundamental to the welfare of pastoralists) to grow ground-nuts for the European market in West Africa,

or for mechanized wheat-farming in the Sudan. In each case, consideration of the needs of local inhabitants and of environmental consequences are set aside in favour of export earnings.

The forest as support system for the viability of other economic activities

For forests to be accorded higher national priority, more understanding must eliminate what B. B. Vohra, the Chairman of India's Advisory Board on Energy, calls the 'resource illiteracy of ruling elites' (1986: 7).

Firstly, while only the narrow cash-based benefits of forests are considered, there will be every incentive to go on cutting them, and none to preserving and enhancing them. The Forestry sector is undervalued in the reckoning-up of a country's assets usually, because only the 'quantified and monitored industrial sector' appears in the GDP figures, while the direct and indirect economic contribution of forests to the livelihoods of rural people, and to the ecological protection of water resources and agriculture, is scarcely noted, let alone measured (Roche 1986: 104-107).

Secondly, the costs of keeping a forest in place and thus backstopping the conservation of soil and water are rarely contrasted with the costs of rehabilitating silted dams or making good flood damage. The activities occur in different locations and are paid for by different ministries. In countries with an irrigation sector, far greater financial resources are made available to that sector than to either tree-planting or the management of surface water. And yet, as Vohra points out:

'The management of our water resources is impossible of achievement except through the proper management of our land and biotic resources. The sooner this basic fact of life is appreciated, the better it will be for everyone' (1986: 6).

Integrating forestry into rural development

Casey and Muir's paper (1986) argues particularly well foresters' poor links with professionals in related ministries. They are thinking not so much of conflict over the preservation or destruction of forest, as of the need for integration in the context of farm forestry. They blame foresters for failing to see that trees are simply one more crop for the farmer, while at the same time blaming those working in agricultural projects for forgetting to include tree-planting as a component. For

them, better national-level linkages between agriculture, livestock management, energy and forestry will grow out of local-level integration.

Conclusion

In sum, the fate of forests is ultimately decided at national level. Here, policies will be enunciated, laws passed or repealed, budgets planned. Nevertheless, as Casey and Muir have suggested, and as the following sections illustrate, much that is decided at national level is actually the result of conflicts and their attempted resolution at local level. Issues about how the forest estate is used, whether it is managed as forest (and to what end) or whether it is lost to some other land-use, are in fact much more passionately debated at sub-national level. The State is after all an absentee landlord whose well-being is only very indirectly dependent upon the continued existence of the forest. It is because more local issues ultimately shape national policy that these are now turned to in detail.

IV THE LOCAL LEVEL: CONFLICTS BETWEEN THE LOCALLY-BORN AND OTHERS

Most local-level issues, where forests are concerned, relate to the conflict engendered between the locally-born and officialdom, acting on behalf of a distant state with a need for forest products elsewhere. Others represent a struggle between the locally-born and town-dwellers and/or the poor and the rich. These issues are treated here as a set of oppositions, and are dealt with one by one, although they all run into one another in reality.

State Ownership of Forests, other forms of public ownership, or private ownership?

Systems for forest ownership and management in the world are very diverse. In Europe, public ownership (by region or district rather than the state) characterises Germany and Switzerland, while farmers are the major forest owners in Scandinavia, Britain, Austria and the Mediterranean countries. Fifty per cent of Latin America's forests are in private hands, as are the bulk of forests in Japan and Korea. Both the USA and China have swung towards and then away from public forest ownership. However, most Third World countries which were once British or French colonies have kept the State reservation system which was created during the colonial period, and private forest ownership is rare (P. Stewart 1985).

What is the case for and against State ownership of forests? Firstly, it depends on the use to be made of the forest. Various authors otherwise critical of aspects of state ownership agree that it often makes the best sense where the plan is to conserve the forest for some purpose rather than working it industrially. Game reserves, forests kept in place to protect watersheds or river banks are obvious examples (Thomson 1985: 4; Casey and Muir 1986: 9). If forests were in future to be set aside as gene-banks or for species diversity, State ownership might well be best for them too.

But the setting-aside of such tracts as a State responsibility (together with the lists of protected tree-species which have been put in the care of the State in some countries) assumes a capable State mechanism for the protection of forest. There are plainly gross differences between a country like Mali (Lai and Khan 1986) where the national total of all forestry staff comes to only around 650 individuals, charged with protection of natural resources and afforestation throughout the entire country, and India where, in Karnataka State alone, there are over 10,000 forestry staff. In the former case, it would be absurd to expect effective protection at present.

The level of forest use is also a factor. Forest management in Europe is rendered relatively conflict-free because fuel-wood is not the chief energy source, hardwoods are imported from elsewhere, and the number of rural people dependent upon the forest is small. In India, Commander argues that the state has already demonstrated its inability to assert its monopoly against forest dwellers, contractors and its own employees (1986). Where the need of so many for forest products is so high, must we resign ourselves to the idea that no system of deterrence can succeed?

The state tends to be an inefficient custodian in such circumstances because its locus of power is far away and it depends upon poorly paid forest guards who are often tempted to live off the resource they are supposed to be guarding, either by the collection of bribes, permit fees, and fines or by direct theft. Furthermore, there is more likely to be friction than cooperation with local inhabitants because their relationship to the forest differs. The forest guard will move on to a new post in time: the villagers are there for life.

What, then, are the alternatives? There is the possibility of private ownership, the problems of which are well rehearsed by Commander (1986), or there is the option of public ownership by a more local body than the state.

Unfortunately, the factors which govern whether or not a local community will manage its local forest resources sustainably are as yet imperfectly understood. J. Stewart (1986) shows that panchayats in Nepal have managed forests more effectively than the state, and there seem to be many examples of hill peoples managing their forests with care (e.g. Cornista 1985; Guha 1985). But equally, forest has been speedily cleared in more accessible lowland areas where, no doubt, local and non-local would-be users can get at it more easily. The self-restraint involved in sustainable local management goes very quickly when local guardians can see that what they have 'saved', others have felled and removed. Greater access to markets, higher land-values and the increased social differentiation within the village that these inevitably produce, mean that the villagers' ability to manage adjacent forest may be irretrievably weakened in such situations. Behnke's work on common grazing areas in the Western Sudan would suggest that this is likely to be so (Behnke 1985).

What perhaps needs trying is some arrangement which gives villages adjacent to forest strong but not ultimate rights - a form of leasehold renewed in return for good stewardship. Forest guards or rangers would work with, and at the direction of, villagers, and some at least would be drawn from among their number. If villagers' rights were thus raised above those of outsiders, and village agricultural land and forest land were managed by the same people, the old forester/farmer antagonism would evaporate. If villages were 'paying' for their strengthened forest rights through time committed to guardianship, and self-restraint, no other payments should be imposed. If not, a paying system such as that suggested by Casey and Muir (1986: 10) might be appropriate.

Such a system brings control - and responsibility - right down to village level. Until now, the pre-eminence of industrial forestry has meant that foresters' primary loyalties lay far beyond the village in many cases. But as the emphasis swings towards conservation and the satisfaction of subsistence needs, plans for the rights of villagers become a good deal less utopian.

Commercial interests and subsistence forestry

One of the fundamental roles of forest policy, in relation to commercial and subsistence forestry, has been, and must be, to adjudicate between them in particular circumstances. Conflicts in this arena, and their resolution, are strongly indicative of the ways in which particular countries regard their rural populace and the emphasis they place upon tree cover.

Arguments as to whether a finite forest resource should be used mainly for the benefit of rural people living nearby, or mainly for commercial purposes, of course only arise when forest cover has become too low to satisfy both ends. Even in Indonesia, where forest cover is still many times what it is in most other places, and where it is still possible to propose setting areas aside for permanent production forestry, the government is still being advised to avoid new large-scale forest industries (Evans 1986: 23-25).

Once local areas of forest do begin to be in short supply, the priority, from both the moral and the practical point of view, must be to satisfy subsistence biomass needs. Morally, because rural people's subsistence needs are in general a great deal more modest than those of town dwellers and practically because those struggling to live will, if need be, go to any lengths to do so. The poor are stuck where they are in most cases: industries on the other hand are constantly substituting one resource for another, one area for another.

In India, however, industry has been helped most and the subsistence user least. The costly task of reafforesting degraded land, which ought to have been that of the industrial sector, was dealt to villagers with immediate biomass needs, while industry was not only given access to standing productive forest, but in many cases given enormous subsidies as well (Kulkarni 1983: 98; Shiva and Bandyopadhyay 1986: 84).

An argument adduced at times for restricting subsistence use of forests suggests that indigenous people use forests 'badly' and must be restrained so that it can be protected. 'Badly' is of course a value-laden term. There is plenty of evidence that subsistence and commercial use may be good or bad dependent upon context. Often, the charge that the forest is being used badly comes from those whose desire for commercial use is frustrated by subsistence practices which compete with it.

On the contrary, a just forest policy must face up to rural needs, and the short time horizons of the poor rather than concerning itself too narrowly only with commercial production. Instead, only too often we see, as Agarwal puts it, a move away 'from a nature that has traditionally come to support household and community needs, and towards a nature that is geared to meet urban and industrial needs, a nature that is essentially cash-generating' (1984: 10-11).

When the forest can no longer satisfy all claims upon it, all would-be users have to plant a proportion of the trees they need, or go elsewhere. Scanty tree-cover ought to

bring in the governmental body charged with environmental concerns, and in many cases commercial activities should be much curtailed or should cease. Very often, though, political pressures will produce a judgement which grants commerce continued use and attempts (necessarily unsuccessfully) to ban subsistence users.

The more courageous path, however, is to embark upon tree-planting programmes with the two categories of growers who have consistently proved most successful: individual farmers and commercial concerns. Neither state plantations nor community woodlots are as efficient in this respect (Joshi 1983: 39). Commercial concerns can afford to wait for trees to grow. It is villagers who may need incentives such as cash, food-for-work, or stronger land-rights to offset the handicaps of finite availability of family labour, the slow growth of trees and the space they take up on small agricultural plots.

In all these situations, if subsistence needs can be taken as seriously as commercial activities by those who formulate and implement forest policy, many environmental problems become more tractable.

Conflicts over rural and urban priorities for land-use

There is often a silent conflict between rural and urban users over forest resources, which policymakers must not shut their eyes to. In India, one could cite the flooding of forested valleys and eviction of local inhabitants to create more hydro-electric power for urban industry, or the exploitation almost to extinction of bamboo for paper-mills at the expense of rural castes whose trade is to make and sell bamboo baskets and furniture. In Africa, pastoralists and trees give way before townsmen investing in capital-intensive agriculture, and lorries of fuelwood and charcoal travel in their tens of thousands from denuded rural areas into towns.

All these cases are examples of the relevant authorities failing to plan, or planning for the benefit of urban people rather than rural people and the environment. Can Indian cities afford more factories at the expense of more loss of forest, and more landless rural people? According to Vohra (1986) no-one is really doing the calculations to find out. The rate at which bamboos were lost to industry in states such as Karnataka shocked many onlookers, and yet no move has been made to stop the same exploitation, which is taking place all over again in Assam (Agarwal 1984: 8). It is politically difficult to stand up to Sudanese or Kenyan tractor-kings, politically easy to harry pastoralists. Most countries have some awareness of the environmental devastation caused by the endless

extraction of urban fuelwood from rural areas; they may even fine some of the lorry drivers who bring it to town, or some of the rural collectors. Yet almost none have followed Ethiopia's example and planted peri-urban fuelwood plantations, or even set aside money to subsidize alternative urban fuels or woodstoves.

The thread running through these examples is that urban areas are still too prone to see rural produce as ripe for the plucking, and cheap if not free. And too many policymakers focus their attention - and their punishments - on rural dwellers, rather than on bigger-scale analyses of urban impacts on rural areas - and on bigger, but politically slipperier fish. The truth is still that rural poverty in most parts of the world is more profound than urban poverty, and that, nevertheless, the majority of people in Third World countries live in rural areas. Yet economic growth is created for the minority out of an exploitation of natural resources which continually undermines the material basis of life for the majority (Shiva and Bandyopadhyay 1986: 84).

Customary tenure and legal tenure

Many of the difficulties which arise over trees and forest derive from the State's modification of locally-evolved tenure systems. Customary tenure is always somewhat flexible; it is administered legally by local leaders whose legitimacy is accepted, and who have important discretionary rights. When the State steps in, local political authority is usually undermined, and land rights are simplified to fit national norms or are fixed in amber at one moment in time. Either way, rights of dispute settlement pass from the local level to a more remote body whose decisions will be made with less understanding and more inflexibility.

When forest or woodland management shifts from community to State the resource may well undergo rapid depletion (Fernandes 1983: 9). This is because face-to-face communities can police each other better than outsiders can, if they have property of their own to watch and guard.

Local tenurial arrangements continue to be of interest, even after they have been formally abolished, for two reasons. Firstly, local people in much of the Third World continue to behave as if the traditional system still operated, alongside or interwoven with the official system, and it is helpful for government agents and donors to understand this. Secondly, there is currently a swing back towards the recognition that assets such as grazing and forest may well be more effectively managed and protected by those who live nearby.

Customary tenure and trees

Many of the rules about customary tenure and trees are reported in similar terms from all over the world.

Firstly, those who live near important natural resources have stronger rights to them than 'outsiders'.

Secondly, self-sown trees are regarded as common property for those who live near, the ordinary subsistence trees among them especially so (Fortmann 1985: 6-7; Shepherd et al 1985). More valuable trees, in Africa and Asia at least, have commonly been reserved for or by chiefs or rulers.

Thirdly, labour investment creates tenure, so that tree-felling where trees are plentiful, or tree-planting where they are scarce, strengthens tenurial claims to land. The planting of exotics, even where trees are abundant, may have the same effect (Gayfer 1986).

Fourthly, because trees planted are regarded as the property of the planter, trees are likely to strengthen or lengthen the claims of tenants. For this reason, tenants and sharecroppers are usually forbidden to plant trees (Fortmann 1985: 9; Sajise 1985: 6). It is worth noting in this context too that in South Asian wasteland afforestation schemes it would seem that the State (without necessarily intending to) has strengthened its claims to certain pieces of land by tree-planting on them. Byron reports this in the case of road and canal-side planting in Bangladesh (1985: 64) and it has proved a problem in Social Forestry programmes on village common-land in India.

Problems about communal rights and individual rights

Customary tenure systems are very widely reported to classify land into three types, especially where there are livestock. Firstly, there is individually owned agricultural land (allocated for a period, for life, or for ever); secondly there is communally owned grazing, woodland and forest, contiguous to agricultural land; thirdly there is more remote 'open-access' land which may occasionally be used but over which there are no felt ownership rights. These tenurial categories correlate with heavy labour investment, lighter labour investment and virtually no labour investment, respectively. In the case of forests and woodlands of wide extent, that portion within easy walking distance - three to five miles of village settlement - will fall into the second category and the rest into the third. If human settlements are scarce, there may be large tracts of effectively unowned woodland or forest; but if they are scattered regularly

throughout, one village's interest will take over where the last leaves off, each 'communal' area having a finite number of legitimate users (see for instance Shepherd et al 1985).

However, many colonial and post-colonial governments took no note of the tripartite customary tenure paradigm. Authors point out that individual land rights but not group land rights were recognised (e.g. Guha 1985), categories two and three were merged as public land or crown land and, if covered with good quality forest, were reserved. In India, strong group rights were attenuated over time to weak individual privileges, and even they were eventually resented by the Forestry Department (Tiwari 1985: 907). Degraded forest was at times left for villagers, but there was no reward for them in its careful restoration: if it improved in quality, it too might be reserved.

Because only individually owned agricultural land could be retained with some certainty in India, the impetus has continued to be towards tree-felling rather than tree-preservation. In Nepal, when the imminent nationalisation of forests was promulgated, villagers immediately cleared much tree-cover as a way of retaining the land - and have been suspicious of the tenurial implications of Social Forestry on grazing land (J. Stewart 1986: 16-18).

Finally, the critical position of forest dwellers in India, and in South-East Asia as well, is explicable in terms of the gap between customary and state-codified tenure systems. Where forest dwellers use trees rather than planting them or clearing them for agriculture, they have had communal not individual land rights. Because the State has endorsed the individual rights of agriculturalists, but effectively made over communally-owned resources to itself, it has turned such forest dwellers into propertyless squatters. A similar disenfranchisement has befallen many of those other communal land rightholders, African pastoralists.

Innovatory tenure arrangements

Can elements of customary tenure be usefully incorporated into present-day systems despite the changes in internal structure of most rural communities?

In the case of communal tenure of woodland or forest, traditional practice is unlikely to offer a complete blueprint for action. Management often consisted of a mixture of permanent non-use of trees on hilltops, watersheds and around water-points by treating them as sacred; temporary non-use (close seasons); rotational use as in shifting cultivation/tree-fallow systems; or

permanent light use, by a finite number of people, of grazing and fuelwood resources.

When population density goes up, sustainable limited use becomes much more difficult. Where a forester might calculate annual increment, and thence the volume of wood which could be cut each year, individual villagers need a rule of thumb to guide them as they make individual sorties into the resource. Both traditional and recently invented systems have tried to provide this by specifying permitted species, permitted branch diameters, or permitted implements.

It is likely too that customary rights may have to be set in a more modern idiom which can be understood and respected by outsiders. Thus 'group ranches' for East African pastoralists register land communally and prevent individual agricultural encroachment (Coldham 1985: 18-19). Similarly, upland forest dwellers in the Philippines have been helped to strengthen their land rights by planting trees and crops (Sajise 1985: 2-5).

The other sine qua non is the re-allocation to the community (where it has been appropriated) of some of the legislative and political authority with which it used to administer its natural resources (Thomson 1985: 4). While ultimate ownership of the land may be vested in the State, all year-by-year planning of communal resources such as grazing or forest would fall to the communities living directly beside the resource.

However, these are necessary but not sufficient conditions. If a village has become too socially stratified or too faction-ridden to manage community resources, poorer villagers will prefer the involvement of a fair-minded outsider to oversee resource-management, by arranging rotational use of blocks, or a permissible coupe to be distributed among them. There is no reason why junior forest officers should not play this role, if there are enough of them and if they have been trained to work sympathetically with villagers: but these are, for the moment, big 'ifs'. Problems have arisen in acute form in India's Social Forestry programmes on village commons and wastelands, where villagers have proved most reluctant to manage trees planted as a corporate resource. Some tenurial innovation is required such that all villagers own a few trees each on the land, or access is limited to the landless and almost-landless.

Innovatory individual tenure arrangements are less complex. Traditional usufruct may be replaced by leases held from the government, systems of limited individual tenure which mimic share-cropping or tenancy arrangements, but make the State a hopefully more equitable landlord

than the private equivalent, and one encouraging - rather than preventing - tree planting.

In the Philippines, for instance (Cornista 1985: 1-5), the Integrated Social Forestry Programme is trying to consolidate the customary rights of forest dwellers, as individuals, through agroforestry and twenty-five year renewable stewardship agreements.

Such projects have recognised a key fact, absent as yet in Indian 'tree-patta' (tree tenure) schemes: that small farmers do need to be able to grow short cycle crops, as well as to invest in trees. The relative security of tenure offered by such schemes is not complemented by secure subsistence, unless food can also be grown.

To conclude, it would be wrong to try to revive communal tenure where it has already died and where no other community-wide cooperation is to be found. Equally, though, where tenurial traditions exist which prioritize access to a resource, or which attach tenurial meaning to tree-planting, it is foolish to ignore them: conflict will recur until some accommodation with local views has been made.

Forester-Villager relations

Out of all the potential areas of conflict discussed in preceding sections - and of course adding to them - come relationships between foresters and villagers. Foresters find themselves in the often uncomfortable position of having to work at the flash-point between two world views: that of villagers, and that of the governments which usually employ them.

Reasons for poor forester-village relations

Normally, the creation of a Forest Department accompanies the assertion, by the State, of its superior claims to forest resources over prior tribal or local ownership, and heralds different subsequent forest use - reservation or commercial exploitation. In the process, the ability of the previous owners to manage the resource well must almost inevitably be denigrated, as part of the justification for the move. Firstly, then, foresters have often been the harbingers of the unwelcome news that local resources are not exclusively for local people.

Secondly, the introduction of the fines and permits which almost inevitably accompany State reservation, turns foresters into policemen or soldiers and villagers into notional thieves. In a short time responsible local attitudes towards protection and management evaporate,

hostility is engendered and the lookout for local tree-cover rapidly deteriorates (Lai and Khan 1986: 10-16).

Foresters, paid by the government and given the task of imposing a tenure change by force majeure, are hardly likely to question their role or to put themselves in the place of villagers. And in a period when industrial forestry was preeminent, it is not surprising that they saw no injustice in keeping forest dwellers or villagers out of the forest but allowing contractors in. Too many writers about the relationship between foresters and villagers see in all this some particular malignity in foresters. In the past - and of course today as well in many places - the State's claims on forest and woodland, and the laws enacted by the State to facilitate these claims, have been personified for many rural people by foresters. Yet in the past foresters have not been asked, by the State, to enhance (or even consider) rural welfare, to think about rural fuelwood or grazing needs, or to understand village social structure. It would be extraordinary if they had done so. The important questions are: Under what conditions can forester-villager relations now change, and how?

The transition to better forester-village relations

The shift which brings forester-villager relations into sharp focus for foresters is the transition to tree-planting or conservation with villagers. The quality of the relationship can be gauged by the level of cooperation obtained, by the survival rates of trees planted, and by villager enthusiasm.

(i) Forestry extension: local problems

Villagers find it difficult to work with those who have hitherto only policed them, and several countries have tried to avoid problems by creating a separate cadre of forest-extensionists who work and dress differently. There have nevertheless been difficulties. Some foresters, for their part, see working with villagers as less prestigious than high forest management (which may also offer more personal advantage). Villagers, who have to deal with both forestry wings, confuse or conflate them, and allow their negative feelings about territorial foresters to colour dealings with social foresters.

The problem arises because the split is perpetuated which retains standing timber as a government prerogative, while expecting villagers to plant their own. Success is far more likely if villagers and foresters cooperate not only for village tree-planting, but also for the guarding of existing forest. Shared control with villagers or forest

dwellers must be arranged, perhaps through the medium of signed contractual agreements.

In forestry extension work with villagers, foresters need to take a greater interest in the agricultural and livestock requirements of their clients and how trees may complement these, and it will probably be essential to establish good working relationships with local agricultural extensionists.

Finally, because of the insights and good relations gained through working in this way with farmers, it would be a great pity if there was not regular rotation of staff between those working in farm-forestry extension and those working with villagers in forest protection. Regular rotation would also iron out prestige differences in the two tasks.

(ii) Supra-local factors

Satisfactory personal working relationships between foresters and villagers take time to develop. But they cannot develop at all unless certain policy options are open. National-level action will ultimately have to be taken if state forest land may not legally be managed by villagers; or if laws throw up obstacles to tree-planting or tree protection. Lai and Khan for instance note for Mali 'the incompatibility of existing forest legislation with current attempts to engender greater local participation in resource protection and management' (1986: 15).

As such obstacles become apparent to villagers, foresters, or intermediaries such as voluntary organisations or donors, discussion will have to take place until consensus is reached about the action required. Until villagers and forestry officials can agree on the changes needed, it will be difficult to argue for them at higher decision-making levels.

Conclusion

There is no mystery to the eminently-possible transformation of forester-as-ogre to forester-as-facilitator: it simply requires a change of job description. While there was every incentive not to develop good village relations in the past, Social Forestry now demands it, and potentially opens the way to better environmental protection than was ever achieved before. For foresters who can respond, the personal rewards of good relations with villagers - and hence successful forestry projects - are great. As extension staff in Agricultural Train and Visit programmes have found, much satisfaction can come from being relied upon and awaited eagerly.

V CONCLUSION: FOREST POLICY AND FOREST POLITICS

Forest Policy and Forest Politics: the local level

From the point of view of local people, any forest policy evolved should seem just in their eyes. It should recognise their fuelwood, fodder and small timber needs by making sure that resources for these ends are not made over to others. It should recognise the narrow margins within which they operate. Whether activities in a given area mainly concern management of an existing forest resource, or mainly concern tree-planting, the needs and interests of industry or government revenue should not outweigh local needs. For instance, it should not automatically be the case that standing timber is reserved for industry while villagers are asked to go to the trouble of planting trees for their needs.

Such policies may well be unpopular with the commercial sector, and they can only be established once Forest Departments have built up good extension and cooperative relationships with villagers. Foresters, in turn, need to be assured that career prospects are tied to successful forest extension work, before they can show as much commitment to it as to industrial forestry.

Better forest policy, as it is tested in, and emerges from the local context, develops as we have seen from evolving forester/villager relations. More precisely, careful thought and planning will have been necessary for each of the following topics.

Tenure

Farmers need a policy which gives them secure private tenure, rights over the trees they have planted and the right to harvest them when they want to.

Where communal tenure rights exist or are being created, the rights need to be clear-cut, agreed with and written down for local people, and giving rights which secure the resource against outsiders.

Forest management

For forest management in areas where there are people living nearby, a method of management needs to be discussed and drawn up with them with which they can cooperate.

Forest officials concerned with management should be appointed in part from among local residents in order to create 'a democratisation of management' (Gadgil and Guha 1984).

In the case of that portion of forest being managed through the labour and goodwill of local people, any profits from the sale of timber or minor forest products should go to them. A distinction should be made, in consultation with villagers, between forest land sited sufficiently near their village for management to be their prime responsibility, and more remote forest which they may prefer the Forest Department to manage exclusively.

Extension and training

Since so much turns on improved interaction between foresters and villagers, forestry extension, and training foresters for successful extension, become important precursors of good workable forest policy.

Foresters need to acquire the insight into villagers' daily lives which enables them to see how forest and people are intertwined, and how local farming systems work. Since voluntary organisations in many countries are currently ahead of forestry departments in their understanding of village life and how villagers' needs may conflict with current forest laws, the best short-run training for foresters is probably secondment to a non-governmental organisation for a while in a career structure which rewards those who do so.

Villagers need to learn new tree technologies, and possibly (in the case of their management of natural forest) new management styles and a formalisation of responsibility. They will fail to respond if, meanwhile, others on their doorstep are being allowed to get away with different behaviour.

Urban fuelwood needs

Where urban fuelwood needs will have an important effect upon specific rural areas, supplies must be thought through, and villagers involved in any plans for the growing or marketing of alternative supplies.

Tree-planting on degraded lands

Where (as in parts of South and South-East Asia) there are plans to encourage villagers in the planting of degraded or eroded forest-land, short-term incentives for doing so require careful planning.

Conclusion: sending policy proposals up the system

It seems to be empirically the case that once foresters do embark upon an extension, advisory role with villagers - however reluctantly or clumsily to begin with - the opinion of each for the other begins to rise and they

begin to exchange information. With good mutual understanding at the bottom, such need as there may be for legal or structural change begins to emerge, and the Forestry Department's own hierarchies offer the possibility for the passing of messages higher up the system, which villagers are unlikely to be able to do alone.

Forest Policy and Forest Politics: the national level

In a context where good mechanisms exist for inputs to forest policy from below, there will still of course be a national level framework bringing its own weight to bear upon policy formulation.

The politics of the environment

There is now slow progress, in some countries, towards the realisation that the environment is a social, not a natural resource in all but the remotest uninhabited regions; and that, this being so, its management cannot be discussed a-politically or a-socially but only in the context of competing human interests (Westoby 1985: 114).

Several of the contributors to this set of papers make it clear that the welfare of both the environment and rural people are interdependent, so that there is a pragmatic, as well as a moral argument for involving local people in resource management.

Since politicians, with their short time-horizons, are likely to continue to value natural resources in cash terms rather than for their protective role or their ability to support rural welfare, food production and food security, it falls to Forestry Departments to argue the more sophisticated and abstract case. They cannot do so until they believe in the argument themselves and this will come about, it has been suggested, as a result of new working relationships with villagers. When they do, they may need to pick their allies at national level carefully. Gadgil and Guha (1984) explain for instance how much further the Department of the Environment in India has gone in its thinking about forests than has the Ministry of Agriculture.

In countries where there is considerable bias against devolution of responsibility to rural people - and the ability to prevent it - the outlook for the environment is very poor.

Legal obstacles

The most likely legal obstacles to the formulation of a satisfactory forest policy will concern land tenure. Forest land reserved in the name of the Forestry Department or the State may need some redesignation, or to be complemented by the creation of leasehold arrangements. Particular problems are likely to arise where all land is designated as State land, as in Ethiopia.

Economic considerations

Many countries have too small a forestry budget for elaborate interventions and the forest policy they formulate should reflect this. Depending on circumstances, it may make good sense to pass the management of forests largely to local bodies, and to deploy scarce foresters as trainers of village-level forestry extension workers. It would certainly be foolish to draw up a grandiose forest policy which everyone knows can only be honoured in the breach.

Opening out forest policy discussions

As forestry activities change, from the protection and exploitation of forest by professionals to tree-growing and tree-protection by villagers, the point of formulating a forest policy at all changes. Policies drawn up in terms of the reserving of forest from villagers and of punishments for infractions, run counter to the taking of responsibility and the active involvement now hoped for from villagers.

Social forestry, as this report has suggested elsewhere, creates a relationship between foresters and villagers which calls in question the relationship engendered previously by commercial and territorial forestry. To that extent, it also makes previous formulations for forest policy outdated. But Social Forestry, and in particular Farm Forestry, have a further effect. Since farmers take to Farm Forestry as an aspect of agricultural practice, forcing foresters to see trees in that context, and probably to work in time with agricultural extensionists, the long-called-for better interaction between Forestry and Agriculture at Ministerial level can take its cue from what is already happening at the local level. In future, Forest Policy cannot only deal with forests.

Once policy discussions have broadened to consider agriculture together with trees and forests, one last vital step can be taken: to the consideration of Forest Policy within the framework of a complete land-use policy in which planning happens across several ministries and

the old competitive approach is to some extent left on one side. Evans (1986) outlines such a process for Indonesia.

Politically, such a broadening will be difficult, and there are bound to be checks and failures. But that is certainly the direction in which Forest Policy discussions should be moving, and in countries with an active Social Forestry programme, pressure for such a policy will come from below, from the local level, as well as from above, from the donors.

Conclusion

Forest policies, as originally formulated, usually depend upon historical chance. Several writers have traced the way in which European forest management styles (complete with revenue-generating forestry department and forest policies to support it) were applied to India in the nineteenth century, and thence copied throughout the British Empire and the colonies of other European countries (Guha 1983; Dargavel et al 1985: 7-8).

In fact, management principles developed for privately owned, largely uninhabited forests were bound to create hardship when applied to inhabited, communally vital forests. In a colonial context, the somewhat rigid application of an imported model is not perhaps surprising. Nor is it particularly surprising that, as one-time colonies have become nation-states, there has been a considerable time-lag before any questioning of forest policies inherited from the colonial era has taken place. Not only did more urgent tasks call, forestry world-wide continued throughout the fifties, sixties and early seventies to prioritise industrial forestry - which was no more than an intensification of the revenue forestry that had gone before.

Now, however, and only as a result of the last five or six years in forestry, the moment is ripe to re-examine colonial models. If, as Casey and Muir suggest, a reformulation of forest policy takes place through a 'widespread and democratic process of consultation' (1986: 4), a learning process will take place even as diverse viewpoints are laid bare and slowly reconciled.

Many would argue that donor participation can be helpful in strengthening the case of more democratic, villager-oriented voices against the old guard, though there is little point in trying to push a policy through for which there is little enthusiasm. The aim should probably be to discover what there can be political support for, and to build on that.

As we have seen, Social Forestry has shifted the limelight - for the first time for over 130 years - onto the needs of the small farmer and his or her spouse, onto the needs and rights of forest dwellers, onto village commons and woodlands. It has highlighted anachronistic laws which discourage private individuals from planting trees, and which will eventually have to be rethought. It is forcing a thinking-through of the costs and benefits of trees to the poor, and is creating, however slowly, the basis for a new productive relationship between villagers and foresters where before there was only conflict.

Other newer issues are beginning to be influential as well. The environmental and ecological functions of tree-cover have become better understood; and the trend towards a new respect for the accumulated knowledge of the indigenous farmer - currently receiving much attention among agriculturalists - is filtering through, too, to the forester.

Social Forestry locates the main thrust of forestry activities at village level, gives subsistence needs new weight, and ushers in a new relationship between foresters, forest users, and forest. It leads, inconspicuously but inevitably, to a complete reformulation of Forest Policy.

NOTE

1. Historically, increasing population density has often been productive of beneficial technical change (Boserup 1965) and Europe would seem to offer archaeological examples of the intensification of land-use over a millennium in which villagers moved from being dwellers in forest clearings to farmers with trees 'captured' in small woods, copses and hedgerows (Rackham 1976).

It would seem that population increases in forests today, especially where increasing densities are the result mainly of immigrants to an area, or where forest resources have to serve not only a growing local population but also fuel and timber needs, are happening too quickly for this kind of adaptation to take place.

Foresters who advocate population control as a means of saving forests should be aware that these strands must all be disentangled. If pressure on resources is from far-away urban dwellers as well as local people, or is due to waves of landless individuals arriving from elsewhere, birth control is not the answer.

Indeed they should be thankful that it is not, since several of these issues are a great deal easier to address than birth control. Prerequisites for a fall in the birth-rate are, firstly, increased education and economic independence for women; secondly a decline in the value of child labour; and only then access to modern means of contraception (Safilios-Rothschild 1985; WRI 1986). These conditions are far from being met in many countries with rapidly declining forest resources.

REFERENCES

- Adams, M. 1976. Community forestry and forest policy in Ethiopia: some preliminary thoughts. Social Forestry Network Newsletter No. 3, ODI, October, 30-39.
- Agarwal, A. 1984. Beyond pretty trees and tigers: the role of ecological destruction in the emerging patterns of poverty and people's protests. 5th Vikram Sarabhai Memorial Lecture, delivered in New Delhi, 13 August, under the auspices of the Indian Council of Social Science Research.
- Behnke, R. 1985. The Dynamics of Open-range Management and Property Rights in Pastoral Africa, ODI, mimeo.
- Blaikie, P. 1985. The Political Economy of Soil Erosion in Developing Countries. London: Longman.
- Boserup, E. 1965. The Conditions of Agricultural Growth: the Economics of Agrarian Change under Population Pressure. London: Allen and Unwin.
- Byron, N. 1985. Rural versus State Forestry in Bangladesh, in Dargavel and Simpson (eds.), 50-72.
- Casey, J. and Muir, K. 1986. Forestry for Rural Development in Zimbabwe. Social Forestry Network Paper 3c, ODI, October.
- de Ceara, I. 1986. Land tenure and agroforestry in the Dominican Republic. Social Forestry Network Paper 3d, ODI, October.
- Coldham, S. 1985. A comparative study of Land Tenure Legislation in Africa, Acta Juridica, 189-212.
- Commander, S. 1986. Managing Indian Forests: a case for the reform of property rights. Social Forestry Network Paper 3b, ODI, October.
- Cornista, L. 1985. Land Tenure System in the Philippine uplands: its implications for agroforestry. Unpublished paper presented at the ICRAF Workshop Land, Trees and Tenure, Nairobi, May 26-30.
- Dargavel, J., Hobley, M. and Kengen, S. 1985. Forestry of underdevelopment and underdevelopment of forestry, in: Dargavel and Simpson (eds.), 2-23.

- Dargavel, J. and Simpson, G. (eds.) 1985. Forestry: Success or Failure in Developing Countries? CRES Working Paper no. 20. Centre for Resource and Environmental Studies, Australian National University, Canberra.
- Evans, J. 1986. Planning Indonesia's Forest Policy, Social Forestry Network Newsletter No. 3, ODI, October, 19-29.
- Fernandes, W. 1983. Introduction in Fernandes and Kulkarni (eds.), 1-22.
- Fernandes, W. and Kulkarni, S. (eds.). 1983. Toward a New Forest Policy: People's Rights and Environmental Needs, Indian Social Institute, New Delhi.
- Fortmann, L. 1985. Tree tenure: an analytical framework for agroforestry projects. Unpublished paper presented at the ICRAF Workshop Land, Trees and Tenure, Nairobi, May 26-30.
- Gadgil, M. and Guha, R. 1984. Two options in Forest Policy. Times of India (Delhi and Bangalore), 12 and 13 Sept.
- Gadgil, M., Prasad, S. N. and Ali, R. 1983. Forest management and forest policy in India: a critical review. Social Action (New Delhi), vol. 33, 12-40.
- Gayfer, J. 1986. The success of Vanuatu's local supply plantation programme in meeting the needs of the nation and its communities, Social Forestry Network Paper 2a, May.
- Gill, J. 1985. The political economy of deforestation in Zimbabwe. Unpublished paper presented to the symposium Environmental Crisis in Africa: Ecology vs. Political Economy, held at the Department of Anthropology, University College, London, September.
- Guha, R. 1983. Forestry in British and post-British India: a historical analysis. Economic and Political Weekly, vol. XVIII, nos. 44-46, 1882-1896 and 1940-1946.
- Guha, R. 1985. Scientific Forestry and Social Change in Uttarakhand. Economic and Political Weekly, vol. XX, nos. 45, 46, 47, November.
- Joshi, G. 1983. Forest policy and tribal development: problems of implementation, ecology and exploitation, in Fernandes and Kulkarni (eds.), 25-47.

- Kulkarni, S. 1983. The forest policy and the forest bill: a critique and suggestions for change, in Fernandes and Kulkarni (eds.), 84-101.
- Lai, C. and Khan, A. 1986. Mali as a case study of forest policy in the Sahel: institutional constraints on social forestry, Social Forestry Network Paper 3e, ODI, October.
- Lipton, M. 1977. Why Poor People Stay Poor: Urban Bias in World Development, London: Temple Smith.
- Rackham, O. 1976. Trees and Woodland in the British Landscape, Archaeology in the Field Series, London: J. M. Dent & Sons.
- Roche, L. 1986. Forestry and famine: arguments against growth without development. Commonwealth Forestry Review, 65(2), 99-107.
- Safilios-Rothschild, C. 1985. The status of women and fertility in the Third World in the 1970-80 decade. Working Paper 118, Centre for Policy Studies, Population Council. New York, November.
- Sajise, P. 1985. Agroforestry and land tenure: issues in the Philippines. Unpublished paper presented at the ICRAF Workshop Land, Trees and Tenure, Nairobi, May 26-30.
- Shepherd, G. et al. 1985. A Study of Energy Utilisation and Requirements in the Rural Sector of Botswana, prepared for the Overseas Development Administration, UK and Ministry of Mineral Resources & Water Affairs, Botswana, by ERL Energy Resources Limited in association with International Forest Science Consultancy.
- Shiva, V. and Bandyopadhyay, J. 1986. Environmental conflicts and public interest science, Economic and Political Weekly, vol. XXI, January.
- Stewart, J. 1986. Forest Policy in Nepal: implications for Social Forestry, Social Forestry Network Newsletter No. 3, ODI, October, 15-18.
- Stewart, P. 1985. The dubious case for state control. Ceres, 18/2, 14-19.
- Thomson, J. 1985. Land and tree tenure issues in three francophone sahelian countries: Niger, Mali and Bourkina Faso. Unpublished paper presented at the ICRAF Workshop Land, Trees and Tenure, Nairobi, May 26-30.

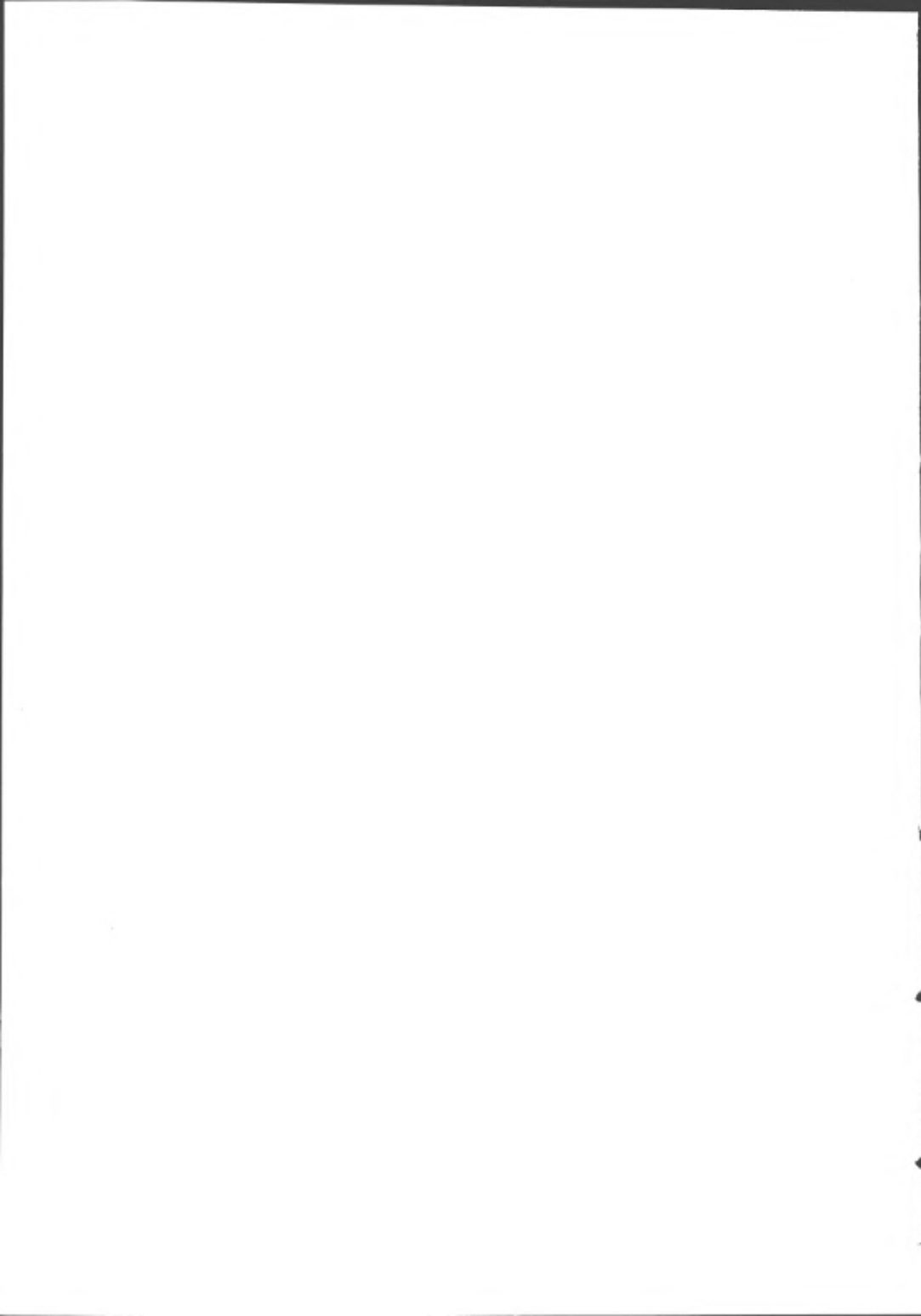
Tiwari, K. M. 1985. Influence of policy and law on forest resource management in India. The Indian Forester, vol. 11, no. 11, November, 899-918.

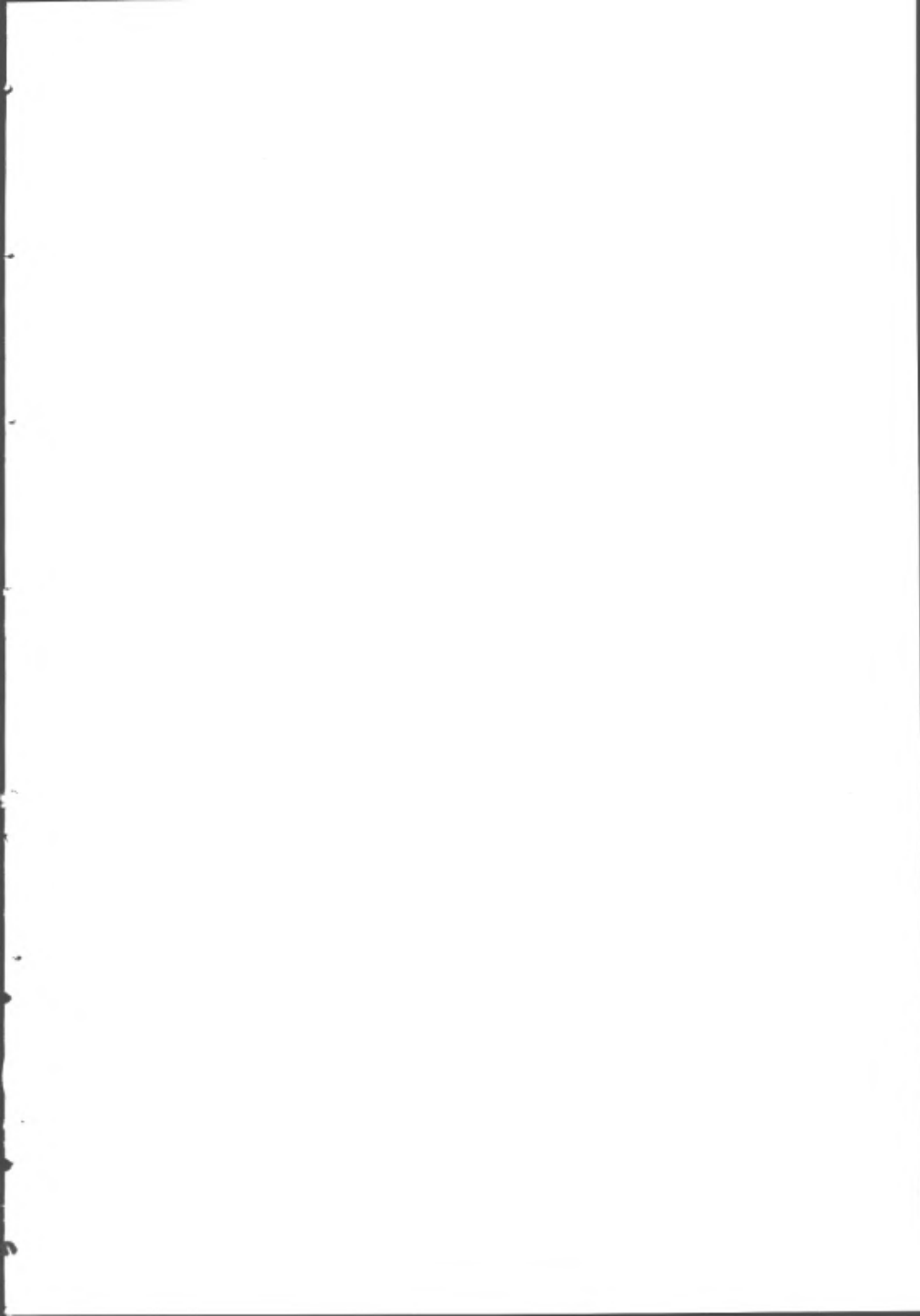
Vohra, B. B. 1986. Management of Natural Resources: urgent need for fresh thinking. Unpublished paper written in the author's capacity as Chairman, Advisory Board on Energy, India. August.

Westoby, J. 1983. Keynote address, Institute of Foresters of Australia 10th Triennial Conference, August-September.

Westoby, J. 1985. Foresters and politics. Commonwealth Forestry Review 64(2).

World Resources Institute and International Institute for Environment and Development. 1986. Population, in World Resources 1986. An Assessment of the Resource Base that Supports the Global Economy. New York: Basic Books, 9-26.





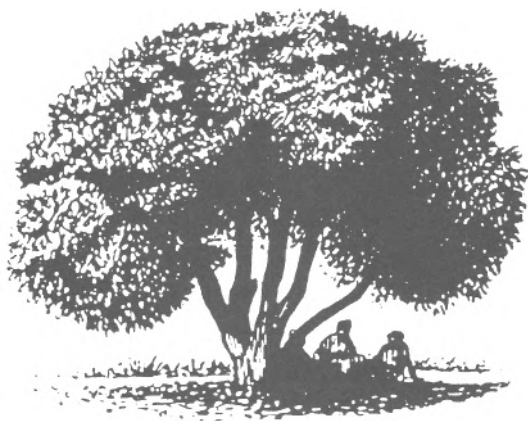


Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



MANAGING INDIAN FORESTS: A CASE FOR THE REFORM OF PROPERTY RIGHTS

Simon Commander

Simon Commander is a Research Officer in the Agricultural Administration Unit, ODI.

Introduction

Of the changes wrought on the landscape of the Indian sub-continent, none are more striking than the massive and continuing depletion of its forest stock. Barely a century ago over 40% of the land area of British India was covered by forests. Recent official estimates place this proportion at under 22% of a total land area much reduced since Partition. Moreover, it seems likely that the actual area is far lower. Satellite mappings suggest that between 10-12% of the land area is now covered by forests and some have argued that the proportion may soon be as low as 7% or some 23 million hectares.¹ An indication of the scale of recent depletion of forest stock can be gauged from the fact that between 1951 and 1972 the annual loss of forest exceeded 380,000 acres.² Furthermore, these figures take no account of the density of cover or the ecological variety of such remaining forest areas. In short, there can be little doubt that the degradation and intertemporal misallocation of national forest resources has been a feature of the last hundred years.

The consistently increasing pressure on the timber resources of the country can, for the most part, be explained by readily comprehensible factors. Foremost among these has been the sharp growth in population. In the last century, the population of India has increased by over three and a quarter times with obvious implications both for demand for wood and, in addition, the demand for arable land. At the same time, the end-uses of timber have broadened considerably. If the demand for railway sleepers was the original commercializing factor, general trends in the economy have resulted in a wide diversification in the structure of demand for wood. Thus, although fuelwood demand remains the dominant market force, the construction sector, as well as paper factories and other manufacturing units, have played an important role in stimulating the demand for wood. In the absence of a coherent conservation programme and relative stagnation in the production of substitute materials, the demand function for wood has remained characterized by a high consumption propensity across all expenditure classes. By 1973, available data suggest that non-commercial energy accounted for nearly 70% of total primary energy consumption. Firewood alone accounted for around 35% of total non-commercial energy and 25% of energy consumption as a whole.³ Thus, given current technology and relative prices, the demand schedule for forest output is

unlikely to be shifted inwards in the near future. This, however, assumes that present stocks of timber can be maintained at current levels. All available evidence suggests that such an assumption would not be warranted. Instead, unless radical change in the effective control of forest resources comes about, the demand for wood will remain buoyant, even with the substantial price increments that are bound to occur as a function of the level of scarcity. Within this context the area under forest cover will continue to decline precipitately. Although it can be expected that the series of farm level forestry programmes that have recently been initiated will, to some extent, provide a share of the demand for wood currently supplied from forest areas, it would be unduly optimistic to suppose that these social forestry programmes will in the foreseeable future weaken the demand for forest derived timber.⁴ In general, it seems likely that social forestry will register the most significant gains and response in areas where traditional forest cover has been all but destroyed.

At the outset of the paper, it may be useful to lay out two basic premises. Firstly, it is assumed that there is both economic and ecological sense in maintaining the forest stock that exists. Indeed, there may be very good reasons for arguing that this stock ought to be enhanced. However, the conservation of forest resources cannot be de-linked from their management, both in relation to controls over the rate of depletion as also with regard to actual husbandry practices. In this context, the main focus will fall on the first feature of management, controlling the rate of depletion. No attempt will be made to quantify the optimal level of stocking for the economy,⁵ rather it will be assumed that, in a strictly second-best sense, the medium-term optimal outcome would be the stabilization of the current area under forest. It is argued that the means for achieving such stabilization are also likely to be the means for achieving a higher level of re-stocking and afforestation. However, it is assumed throughout that the achievement of either of these goals would be based on a continuing commercial exploitation of timber with, where feasible, the establishment or maintenance of non-felling forest areas, such as wildlife sanctuaries. While there may be a strong case for extending the area under the latter category, it is assumed that this is unlikely to

provide the basis for a general policy, whatever the criteria for that policy.

Secondly, the resource that is being discussed in this paper is not the summation of the entire tree cover but, far more specifically, the remaining forest areas, where the density of cover is complemented by species diversity. To this extent, the paper is concerned with the management of what, in official parlance, is termed Reserve forest.

Reserve forests fall within the administrative competence of the Forestry Department and are subject to State monopoly exploitation rules. These tracts of forest land are now, for the most part, concentrated in Central and Eastern India, as well as in the hill areas of Uttar and Himachal Pradesh. (See Table 1)

Over the last century, the area under reserved forest as a proportion of the total forest area has increased markedly. In 1915, for example, reserve forest accounted for under 40% of the total forest area; by the mid-1970s this share had risen to between 51-55%.⁶ Although it is clear that the effective area under protected or unclassified forest has declined sharply, even the area under reserved forest has been depleted with an increasing area characterized by low stocking levels.

Table 1

FOREST AREA AND TRIBAL POPULATION BY STATE: 1980

State	Forest Area (000 has)	Forest Area as Proportion of Total Area	Adivasi Population (000s)	Adivasi Population as Proportion Total Population
Andhra Pradesh	6409	23.2	2226	4.2
Assam	3071	39.1	1607	8.1
Bihar	2923	16.8	4933	7.1
Gujarat	1952	10.0	3757	11.1
Haryana	164	3.7	---	---
Himachal Pradesh	2119	38.1	142	3.4
Jammu & Kashmir	2189	9.9	n.a.	n.a.
Karnataka	3787	19.8	262	0.7
Kerala	1112	28.6	193	0.8
Madhya Pradesh	15389	34.8	9815	18.8
Maharashtra	6408	20.8	3841	6.1
Manipur	1515	67.8	334	23.3
Meghalaya	855	38.0	814	61.3
Nagaland	288	17.4	n.a.	n.a.
Orissa	6767	43.4	5057	19.3
Punjab	243	4.8	---	---
Rajasthan	3491	10.2	3135	7.3
Sikkim	260	35.6	-	---
Tamil Nadu	2179	16.8	450	0.9
Tripura	593	56.6	451	21.9
Uttar Pradesh	5139	17.5	199	0.2
West Bengal	1184	13.5	2603	4.8
Andaman & Nicobar	714	86.1	18	9.6
Arunachal Pradesh	5154	61.7	n.a.	n.a.
Others	838	31.0	---	---
Total	74,743	22.7	39855*	5.8*

*excludes tribal population of Nagaland and Kashmir

The Current Policy Framework and its Historical Background

While the scale of deforestation has in the recent period emerged as a matter of widespread national concern, the substantive measures that have been initiated for reversing this trend have been limited in scope and efficacy. This has derived from the fact that those who are responsible for formulating state policy with regard to the forestry sector have seen the problem in rather narrow terms, as a question of regulation within existing structures of control.

This has, in part, been a function of the prior diagnosis of the problem. Here, two main strands can be isolated. In the first case, it is widely held that the excessive depletion of forest reserves is attributable to the continuing spoliation by communities residing within the forests or at their perimeter. By and large, these offending communities are adivasi, although in some parts of the country - as in Chandrapur Division of Maharashtra - land colonization and the demand for arable cultivation by settled agriculturists from the neighbouring region remains the key issue. In the second case, it is also widely believed that, under the stimulus of accelerating timber prices, denudation of forests by timber contractors and corrupt officials has emerged as a crucial barrier to the conservation of the resource. While certain administrative measures have been initiated for dealing with this problem - such as the establishment of Forest Development Corporations - many would argue that illegal felling and widespread complicity between contractors and Forest Department officials has remained largely untouched by these measures.

In the case of both diagnoses of the problem of deforestation, both Government and other commentators assume that the demand-side pressures on the resource are unlikely to be mitigated in the foreseeable future. In this context, the primary emphasis has been placed on tightening and rationalizing the existing means and institutions for controlling the exploitation of the forest stock. This is based on the assumption that existing systems of ownership and management are, at root, both suitable and potentially efficient. The problem arises, in this perspective, on account of the substantial leakages that occur in the system. The policy response has thus been to

attempt to block or patch up the holes in the fabric of the vessel, rather than replace the vessel itself. The available data on the area under forests suggests that this approach has not to date been efficacious and, as will become clear, there are substantive reasons for supposing that this will remain the case.

The high profile of the State in the forestry sector and, in particular, its control over reserved forests dates back to the colonial period. The Indian Forest Act of 1865 was the first attempt at establishing monopoly holding rights by the State and these were formalized and made explicit in the subsequent Act of 1878.⁷ Under this piece of legislation the State was allowed to demarcate valuable tracts of forest for its exclusive exploitation.

The inhabitants of these areas - mostly adivasi communities - were deemed to derive their customary usage of the forest and its products not from a right of ownership but from a limited and contingent privilege.⁸ The State, in this framework, was thus able to assert its rights to absolute ownership, and this was done through the reservation of certain forest areas. The enabling legislation for this process was both relatively late and, in substance, ran against the grain of legislation on land rights that had evolved through the nineteenth century. Indeed, forest land rights legislation echoed some of the ideas originally proposed by James Mill but subsequently discarded for the major land settlements in the arable areas of British India.⁹

The arrogation of the rights of eminent domain by the State can best be traced to commercial imperatives, although conservation of stock levels was also commonly adduced as a reason for public ownership.¹⁰ The railway boom from the 1860s onwards alone generated a substantial demand for timber and it appears that revenue factors were predominant in defining the new tenurial framework. Between 1870 and 1900 forest revenues trebled from Rs6 to Rs18 million.¹¹ At the present time, the forestry sector generates an annual revenue of between Rs450-500 crores. Most of this revenue has accrued from five states (M.P., Maharashtra, Orissa, Karnataka and Kerala) and Madhya Pradesh alone accounts for around 30% of national forest revenues.¹² Such revenues are composed not only of the proceeds from the sale of timber by the

Forest Departments or the Forest Development Corporations, but increasingly from the growing importance of sales of minor forest produce - sal seeds, kendu leaves and so on. Minor Forest Produce now accounts for nearly two-fifths of total Forest Department revenues and around three-quarters of net export earnings from forest produce. Such produce is principally collected in the Central Indian states and comprises a major source of household income for adivasi labourers. However, the major beneficiaries are the private contractors who are given leases by the respective Forest Departments.

The rights of eminent domain have not been seriously questioned in Government circles, although other writers have commonly argued that it has run against natural justice and the rights of forest dwellers.¹³ This lack of questioning of the system of property rights and forest management cannot simply be attributed to revenue-raising imperatives. Indeed, by 1981 forests contributed only around 3% of total Government revenues. Rather, the rationale for State control of forests has shifted from commercial reasons to those relating to the conservation of forest stock, as well as the optimal management of that stock along scientific lines.

The right to exclusive exploitation of the resource has thus been posited as a basic condition for rational and restricted harvesting and replanting of forest tracts. This is the clear framework underpinning the most recent proposed foray into legislation - the Forest Act of 1980. Although the proposed Bill has not as yet come before Parliament, the thinking behind it provides a logical extension to earlier, established practices and managerial rules.¹⁴ Apart from strengthening the status of reserved forests and making their jurisdiction effectively a Central Government matter, the Act also widens the powers of the State to acquire forest land and strengthens the enforcing powers at the disposal of the Forestry Department. In other words, a more effective forest policy has been seen to require a higher level of State control associated, furthermore, with a greater degree of centralization. It is thus implicitly assumed that monopoly rights are a suitable property form and that such rights are feasibly enforceable.

The concept of eminent domain and sole control over forest products can be justified on a number of grounds. If forests are seen as an essential national resource then management by public agency could be a desirable structure. Conversely, arguments against public ownership would tend to be swept away on other standard economic and ideological principles. At the same time, there is the further and particular argument that the colonial origin of eminent domain implied a highly specific and discrepant application of property rules. This involved sweeping away any fixed rights for the indigenous inhabitants of forest lands, a practice that was in marked contrast to the framework of property rules that was implanted in areas of settled agriculture. By this argument, denial of all but usufructuary rights to the predominantly adivasi communities in the forest areas violates basic principles of natural justice. This would imply that a just policy would necessarily involve the restoration of such usurped rights. Demands of this nature have increasingly surfaced in the affected regions themselves and movements, such as Jharkhand, have placed the right to forest lands and products as a major plank in their programmes. Indeed, the discrepancy in the perception of rights to land and wood that exists between the Forest Department, on the one hand, and the indigenous population, on the other, remains a major feature hindering the application of a more successful policy for the forest regions. In some tracts - as in much of the Chotanagpur region of Bihar - relations between the Forest Department and the adivasi population have deteriorated to quasi-insurrectional proportions.

If, for the moment, the question of legal consistency and natural justice was placed on one side, the issue of forest management would boil down to the standard contrast between the planned exploitation of a scarce resource and a more fragmented and diffuse pattern of exploitation derived from a proliferation of holding rights to forest assets. Experience from other countries - particularly in Europe - suggests that fragmented, private ownership of forests need not be an impediment to their retention.¹⁵ However, in most European and developed economies, forests have been severely reduced in size and tree cover has mostly taken the form of limited concentrations settled on or alongside farm land. Nevertheless, there is no inherent reason why

private ownership should be any less efficient a means for maintaining and exploiting a natural resource.

The case for public ownership or, at least, public management of forests is hinged on a number of factors. Firstly, forest management is associated with a wide range of externalities that impinge on the economy not just of proximate producers but also of the economy as a whole, as with the relationship between forest cover and climate. In general, it can be said that forests provide, if maintained, external benefits to the rest of the eco-system. Any loss in the value of the benefit - a function of the rate of depletion - would therefore tend to exceed, often substantially, the loss in intertemporal benefits experienced by the person or institution controlling the actual forest resource. Secondly, it can be argued that the management of forests requires a level of professional training and scientific competence that lies outside the capacities of potential private owners. Thirdly, the time horizons for forest management and the spatial requirements for an efficient, conjoint exploitation of the resource through harvesting and replanting favour public ownership and investment. Private rights would either be too fragmented and hence inefficient or else would need to be too large, thereby running counter to the general policy regarding land ceilings. Fourthly, the ecological variety of Indian forests is only likely to be preserved in a context of public management. Private entrepreneurs would tend to replace diverse stock by fast-growing varieties. Fifthly, public ownership allows for major economies of scale and a longer-term planning framework. Lastly, public ownership ultimately allows for a wider and more just distribution of revenues derived from forest products through the overall structure of Government spending. Although this effect could be achieved through the taxation of private returns, this would imply major revision of the bases of public finance in the country, let alone a more satisfactory control over 'leakages'.

Although each of these arguments contain attractive features and, in summation, would appear to offer a strong case for public ownership, that case remains strongly dependent on the degree to which these attributes can be fulfilled and sustained. After all, State ownership is largely argued for as a more efficient outcome, rather than in

terms of any supposedly ethical superiority to private ownership. In this regard, all available evidence points unequivocally to the fact that public ownership has been unable to sustain the basis of India's forest resources. While some would argue that this has been because of the weakness in the construct of public ownership, consolidation of the public monopoly would appear to run into difficult, probably insoluble, problems.

To that extent, the very same issue that necessarily predominates in any discussion of the demand for timber by forest dwellers and proximate inhabitants, comes to the fore in the general discussion of the relative virtues of public ownership. For although it could be argued that both in terms of research and actual management practice, the Forest Department's monopoly has yielded poor and very limited results,¹⁶ the nub of the question of public ownership remains the degree to which the necessary conditions for an efficient utilization of exclusive rights can be consistently met. In other words, to judge the efficacy of public ownership requires knowing about the extent to which such ownership and rights are a true monopoly.

The recent proposed Forest Act, let alone other available empirical evidence, all concur in isolating as a key problem for an effective public management of forests the nature and scale of infractions of that monopoly right. Yet, there are few reasons for seriously supposing that the formal extension of the State's rights will achieve the degree of control that has until now been effectively lacking. On the one hand, without very radical and politically highly charged displacement of populations, control over felling by forest dwellers remains beyond the capacities of the Forest Departments. This is particularly true given the relatively recent politicization of this issue in the affected areas. Secondly, even a substantial restructuring of salary and wage levels in the Forest Department (which in turn would tend to imply a more general revision of public sector wage levels) would be unlikely to undermine the fertile basis for contractor-Department cooperation. This corrupt nexus, fueled by the very substantial profits that can be sustained through timber felling and bamboo cutting, would undoubtedly resist any relatively minor adjustments to the Forest Department staff's wages. Few would further argue

that training or better supervision could lead to a substantial reduction in the amount of corruption in the Department, at least in the short and medium-term.

In other words, all prescriptions for action should be based on the recognition that, firstly, the predominantly adivasi forest population will not surrender their perceived rights to forest produce. Moreover, abuse of permitted levels of wood collection (head-loads in most districts, cart-loads in some districts, such as Bastar) will continue under the impetus of a strong urban demand for timber and fuel wood and the growing antagonism between forest inhabitants and the Forest Department. Secondly, the latter cannot expect in the foreseeable future to make a major impact on the foundations and substance of the largely corrupt practices that link the Department to private timber contractors and speculators. Institutional weaknesses and rigidities, let alone the sheer weight of market pressures, will ensure that limited progress can be made on this front.

If neither of these basic enforcement conditions can be satisfied, the case for public management of the resource is gravely weakened, if only on expedient grounds. This then requires that the entire problem be looked at from a different angle. Instead of concentrating on plugging apparent weaknesses in the administrative structure, Government would be better advised to re-consider the very basis of its 'exclusive' right in areas of reserved forest. In short, the management of Indian forests has to be examined in relation to the enabling property right itself. To that degree, the problem has to be seen as a structural one, hence requiring a level of response qualitatively different from that which has characterized recent policy initiatives.

Property Rights and Resource Management

If property is defined less in terms of the rights of possession than as the set of rules governing the use of those rights,¹⁷ then the system of eminent domain possesses a number of highly particular characteristics. Firstly, although the organized exploitation of the resource - theoretically on the basis of the Working Plan system -

remains the exclusive, albeit delegatable, right of the Forest Department, it is also the case that subsidiary usufructuary rights have been contingently granted to the forest communities. This right has implicitly been defined in relation to the satisfaction of household needs, rather than in terms of a share of marketable output. At present, it appears increasingly that this limited definition of rights to wood are subject to abuse, the scale of which has been greatly compounded by illegal felling done by timber contractors.

Thus, weaknesses in the enforcement of public property rules have led to forest areas being exploited as a degraded common property resource where access is relatively general and consequently rather inefficient. Moreover, the fact of de jure State monopoly rights in reserved forest land itself ensures that the failure to enforce such rules necessarily results in a classical Prisoner's Dilemma. Here, exploitation of forest resources by those with restricted, but abused, access rights as well as those with, theoretically, no rights is determined purely by motives of short-run self interest. So long as the product price remains positive in relation to the private felling and marketing cost, the 'rules' framework actually encourages the rapid depletion of forest resources. This it does for two allied reasons. In the first case, tree felling by adivasi communities reflects the lack of energy choice for such poor resource endowed households.¹⁸ Accordingly, their time-preference remains consistently short. The chronic levels of under-employment that obtain in most forest areas likewise ensure that at the margin, returns to tree felling and marketing remain high. In the second case, the unconstrained denudation of forest cover by contractors and speculators is clearly a function of the private rate of return in such activity, as also in terms of the time-horizons that necessarily accompany such extra-legal use of resource. Thus, the absence of any enforceable property right ensures that, firstly, all time-horizons are low and that, concomitantly, all basic decisions are guided in terms of current income flows rather than the extended capture of returns from the resource. By this means, Indian forests have continued to dwindle through the absence of sufficient, feasible and private economic interests in their organized replenishment. Accordingly, the gulf between the

social and private rate of return, suitably discounted, has grown wider.

The growing asymmetry between the felling and afforestation components of overall forestry practice in India cannot simply be explained by the 'innately short' time-horizons of Indian entrepreneurs and peasants. Even if poverty is necessarily associated with a high time-preference, this is only exaggerated by the current set of property and usufructuary rules. Exclusive but unenforceable rights ensure that under no conditions can any set of contracts be negotiated that could maximize benefits to all participants and at the same time optimize the management of the resource. Accordingly, neither Coasian contracts nor rules for determining payments for externalities can be satisfactorily arrived at.¹⁹ Indeed, neither binding mutual agreements nor side-payments could emerge under the current juridical order of things. There are no possible mechanisms by which externalities might be internalized. Indeed, there are many reasons for why the current situation inherently sponsors the development of negative externalities. While it might normally be assumed that the trend in wood prices and the structure of relative prices (wood/food: wood/other substitutable energy sources, e.g. kerosene) would define a long-run profit horizon that would involve complementary reforestation and a transition in practice away from conditions which favoured an 'over-depletion' of current stock and current flows relative to future stocks, the 'freezing' of the market in such rights, through monopoly rules, has ensured that no such adaptation can come about. Consequently, there remains no strong link between the value of the commodity and the rewards from controlling its depletion (and replenishment). In other words, none of the expected benefits of monopoly rights can be derived and if current returns from Forest Department activity are discounted at a suitable rate then the societal rate of return would be negative. This speaks strongly against any lingering attachment to the idea of state control over the resource.

Forest Communities and Tenurial Rights

If State control over forests has proven to be an inefficient means for their management, let alone retention, attention needs to be given

to the processes by which a set of different economic signals get transmitted to potential exploiters of the resource. This requires above all a radical approach to the system of property rights itself. As the aim of any reform must be to harmonize to the greatest extent possible the social and private rates of return from forestry activity where time-preferences are the key issue, this implies a more graded and subtle use of controls and contingent rights. One argument would be to say that private property rights and a market in land and trees would be the most simple and efficient outcome. There is plentiful evidence from Europe and elsewhere that forests can be maintained in a private ownership context and that the privatization of rewards ensures the satisfactory enforcement of rights. The State, precisely because of its amorphous and disparate nature is inherently a weak vessel for the physical, let alone psychological, enforcement of exclusive controls.

This argument runs into a number of problems in the Indian context. Firstly, private management of trees has customarily been associated with plantation or specialized husbandry. Secondly, given the political difficulties of establishing properties outside the usual land reform parameters, there are problems associated with the parcelization of rights. Forestry management clearly has considerable potential for scale economies and, given the ecologies of most remaining Indian forests, the area required for satisfactory working is relatively large. Thirdly, there remains the problem of the forest communities. They lack, in general, both capital and expertise and, in some cases, the tenurial basis to sustain an outright programme of forest privatization. Even if forest land was sold or leased to outside agencies, this would still raise the problem of what to do with the forest communities. Both practical and ethical considerations strongly suggest that the latter must be actively included in any reform of the current system.

Consider the characteristic resource endowments of most adivasi forest-based households. Each household (the discussion here largely relates to conditions in Central India) commands on average between 2-10 acres. Although such holdings are large by Indian standards, the soil quality is often low and the terrain hostile to successful hus-

bandry. In some areas, such as in Orissa, shifting cultivation remains the norm (podu), although with continuously decreasing fallow periods. In almost all cases, the cultivated land is rainfed and the intensity of land use low. Most commonly, a single monsoon crop of paddy (dhan) is raised and this generates an intense demand for household labour in the months of June/July and September/October. For the remaining nine months of the year household labour is normally employed on Forest Department work, in the collection of minor forest produce (particularly kendu leaf collection) and work for other Government Departments, especially the P.W.D. Much of this non-farm work is also seasonal and the result is that under-employment levels remain high. With the exception of a limited amount of mining sector employment or else work in the urban industrial centres - such as Rourkela, Jamshedpur or Dhanbad - job opportunities in the proximity of the forest areas remain limited. In some tracts - such as in much of Chotanagpur - this disequilibrium has become so profound that out-migration has for long become a major recourse for household members of these adivasi communities.

Income from wage employment - largely from the Forest Department - can thus be complemented by a combination of remittances and other transactions. These latter are mostly through the sale of wood, either to urban traders/dealers or else at the periodic hats (markets). Despite a long history of indebtedness to local sahukars (money-lenders), low household income levels and high rates of under-employment, the tribal economies have generally been marked by the relative affluence of basic requirements - principally fuel and food - than by the chronic income constrained conditions of many poor rural and urban households outside of the forest areas. Yet, the denudation of the forest cover gravely undermines this condition of 'primitive plenty'. Loss of fuel wood and tree cover are accompanied by a parallel loss of employment, either in Forest Department work or through the collection of minor forest produce. The Prisoner's Dilemma of the forests is as much the dilemma of the forest inhabitants themselves as it is of the society as a whole.

If any longer-run solution to the problem of deforestation requires the cooperation and participation of the forest dwellers themselves,

this requires logically that a framework be established that enables them, firstly, to avoid the Prisoner's Dilemma of depletion and, conjointly, allows them to organize and participate in any system that restructures rewards from forest activity so as to establish a longer set of time preferences. This implies the development of enforceable contracts and incentives which eliminate the excessive bias towards immediate demand and profit fulfillment.

To achieve these ends will require the abnegation of monopoly rights by the State. In one respect this will be a de jure recognition of the current state of affairs. Accompanying this abnegation, there will be a need to develop a set of tenurial rights that tap to maximum benefit the gains of private economic rationality, while at the same time achieving the societal end of conserving the forest stock. Rather than set up a series of full private rights in land and product, the existing concept of direct State management needs to be replaced by a broader function - akin to trusteeship - under which a more complex set of property and access rights would be granted. Communities, rather than individuals, would need to be made the focus of this diversification of rights. By this means, scale economies, coherence of forestry practice and, crucially, enforcement capacities would be achieved. At the same time, current assets - particularly the technical and organizational capacities of the Forest Department - could be harnessed to provide a more limited but more efficient service.

In order to achieve the two critical functions of adequacy in the 'policing' of the asset and a vested interest in its reproduction, it would be necessary to grant long, conditional leases. These would in effect ensure that the communities to whom forest tracts were leased had an adequate, inter-generational time-horizon while at the same time allowing for certain safeguards. Common conditions for the granting of leases would include stipulations regarding the type of forest cover to be maintained, the density of planting and the felling cycle. Exploitation of the resource would be on a quasi-profit sharing basis. The State would provide technical back-up and suitable extension services. The Forest Development Corporations could be re-incorporated as marketing outlets with primary claim on the product.

It would need, however, to be stipulated that the margins chargeable by these state-level corporations would be within certain, relatively narrow bands.

In this framework, leaseholds would be granted to either one or a number of village communities, depending on the density of settlement. The leases would cover the minimum area in which, firstly, enforcement could be maintained and secondly, where the ratio between annual flows and stocks was sufficient to guarantee a relatively restricted fluctuation in the volume of income across years.²⁰ Communities to whom lease titles had been granted by the State would, within the constraint of stipulated, contractually enforceable rules regarding the maximum and minimum levels of felling and afforestation activity, be obliged to provide the labour for planting, harvesting and other basic forestry tasks. In return, such community leaseholders would be entitled to the revenues from product and minor forest produce sales.

The transformation of the communities into the recognized management framework for the exploitation of forest resources would further require the development of community institutions suitable for such revised functions. Although the experience with panchayats in India has been very mixed, the lessons from the cooperative system established in Gujerat for sugar producers suggests that suitable managerial structures can be evolved for producers involved in common activity. Likewise, the van panchayat forest system established in Garhwal has registered significant gains in the preservation of village forests, suggesting that devolution of control over these resources is positively associated with their better maintenance.²¹

With forest communities providing the principal labour and operational inputs under a revised system of tenurial rules, the function of public agencies would correspondingly need to be scaled down. The Forest Department would provide technical assistance and nursery facilities. At the same time, public institutions - such as the Forest Research Institute in Dehra Dun - would remain entrusted with the principal research effort. This would suggest that the Forest Department would need to retain a strong extension profile.

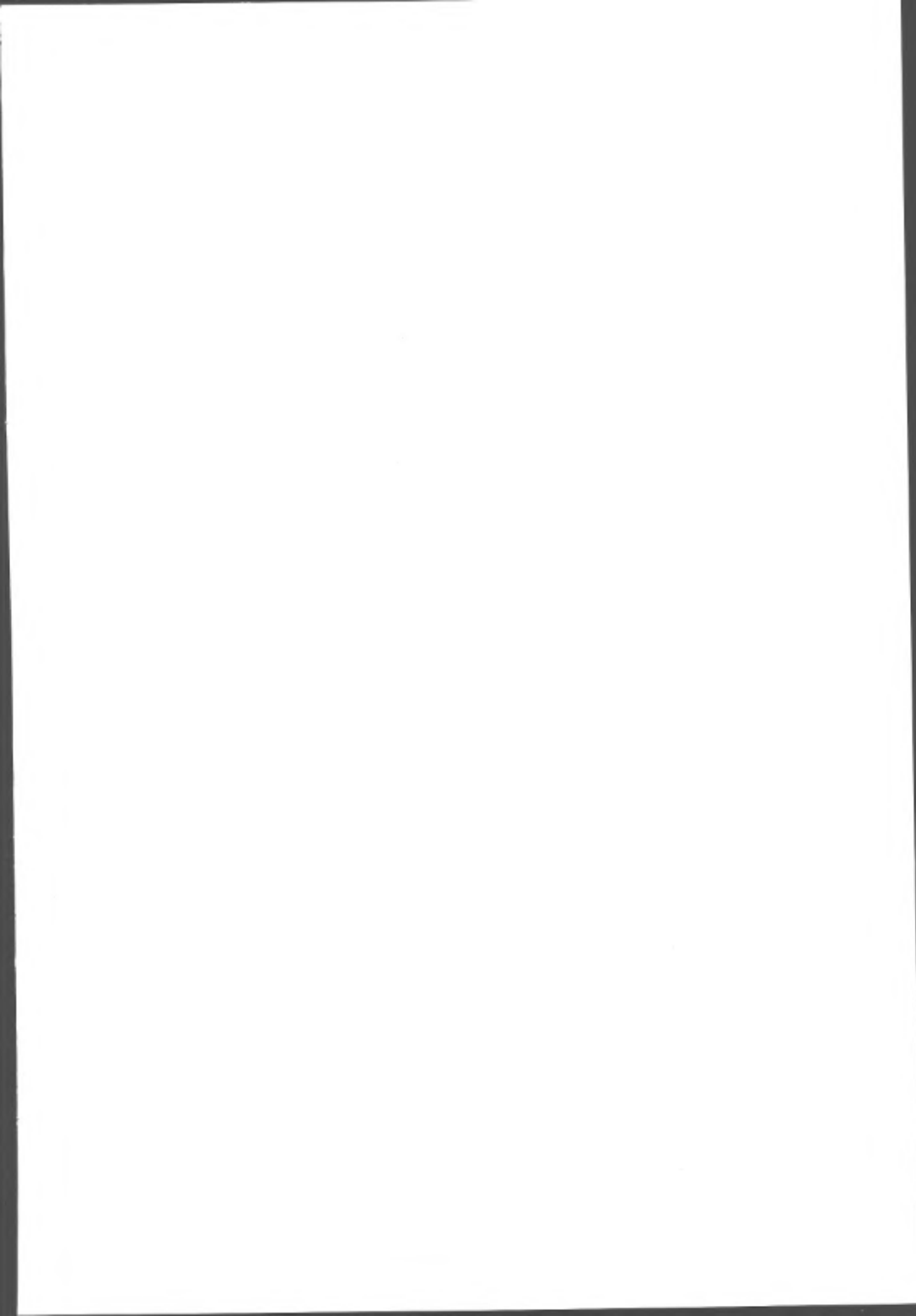
Conclusion

The devolution of effective control over forest resources if structured along the lines developed above, would not only result in a more equitable treatment of the forest population but would, as importantly, take important steps towards rationalizing the economic signals and controls that need to be developed for the effective retention and consolidation of India's forests. By drawing on resident skills and personnel and by providing the incentive framework that could allow for longer-term time-horizons to govern the exploitation of the resource these proposals would require a retreat from the overall approach to the problem that has characterized Indian Government policy over the last century. When linked to a parallel and supportive set of measures that would involve the direct translation of limited areas of forest into wildlife sanctuaries, and hence inviolate, such a new strategy has a far higher chance of success than attempts to shore up the leaky vessel of public monopoly that exists at present. As a consequence, the Forest Department would be entrusted with the provision of basic, national functions - research and extension - as well as the administration of the wildlife areas. Apart from associating a reduced scale of activity with a higher level of feasibility for those tasks, such a scheme would have the advantage of providing the basis for a massive programme of income and employment improvement in those areas of India that have traditionally been neglected. By acting as the trustee of a resource that, correctly, is seen to be a national asset, the State would have, at the same time, set itself a task that was more genuinely manageable.

FOOTNOTES

1. S P Das Gupta, Atlas of Forest Resources of India, National Atlas Organization, Calcutta, 1976; William Bentley, The Uncultivated Half of India: Problems and Possible Solutions, Ford Foundation, Delhi, 1984, p.12.
2. Centre for Science and Environment, The State of India's Environment 1982. A Citizens' Report, New Delhi, 1982, p.33.
3. A V Desai, 'The effects of the rise in oil prices on South Asian counties', in International Labour Review, 120, 2, 1981, p.130.
4. P M Shingi, M S Patel and S Wadwalker, The Development of Social Forestry in India. I.I.M., Ahmedabad, 1984.
5. Some of the methodological issues for such an exercise are rehearsed in P O Johanssen and K G Löfgren, The Economics of Forestry and Natural Resources. Oxford, 1986.
6. R S Troup, The Work of the Forest Department in India, Calcutta, 1917; FAO, Forest Resources in Asia and Far East Region. Rome, 1976.
7. R Guha, 'Forestry in British and Post-British India: An Historical Analysis' Economic and Political Weekly, 18, 44-46, 1983, pp.1882-1896 and pp.1940-1946.
8. E P Stebbing, The Forests of India, revised, Oxford 1962; Government of India, The Work of the Forest Department, Calcutta, 1920.
9. E T Stokes, The English Utilitarians and India, Oxford, 1959.
10. J A Voelcker, Report on the Improvement of Indian Agriculture. London 1893.
11. A Heston, 'National Income' in, D Kumar (ed), The Cambridge Economic History of India, Cambridge, 1982, pp.451/2; R P Tucker, 'The British Colonial System and the Forests of the Western Himalayas, 1815-1914', in, R P Tucker and J F Richards (eds), Global Deforestation and the Nineteenth Century World Economy, Durham, 1983.
12. State of India's Environment, p.35.
13. For example, Chhatrapati Singh, Management of Forests and the Rights of the Forest Dwellers, Indian Law Institute, New Delhi, 1985.
14. W Fernandes (ed), Towards a New Forest Policy, New Delhi, 1983.
15. P J Stewart, 'The dubious case for state control'. CERES, 18, 2, 1985, pp.14-19.

16. William Bentley, Forestry Resources, Education and Extension in India, Delhi, 1982
17. For a general review of the literature on property rights, see, E Furabotn and S Pejovich, 'Property rights and economic theory: a survey of recent literature', Journal of Economic Literature, 10, 1972, pp.1137-62
18. For the presentation of detailed, survey-derived data on energy use patterns, see; A Reddy, 'Energy in a Stratified Society. Case Study of Firewood in Bangalore'. Economic and Political Weekly, Bombay, 18, 41, 8 October, 1983, pp.1757-1770
19. R Coase, 'The problem of social cost'. Journal of Law and Economics, 3, 1960, pp.1-45: For a general summary of some of the issues raised in the subsequent literature, see Partha Dasgupta, The Control of Resources, Oxford, 1982. There is a very crisp discussion of the issues, with particular reference to grazing rights, in R Behnke, The Dynamics of Open-Range Management and Property Rights in Pastoral Africa. London, mimeo, 1985
20. Formalization of these issues involved in optimizing the stock/flow level can be found in Johanssen and Löfgren, op cit and Dasgupta, op cit.
21. Guha, op cit, p.1891





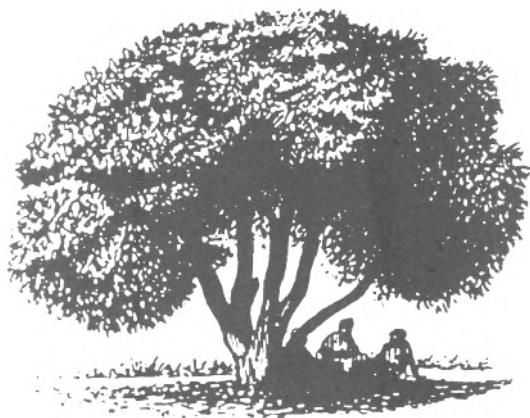
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



FORESTRY FOR RURAL DEVELOPMENT IN ZIMBABWE

John Casey and Kay Muir

John Casey is working on the Rural Afforestation Project in the Department of Forestry. Kay Muir is a lecturer in the Department of Land Management, University of Zimbabwe

Note: The views expressed herein are those of the authors and should not be attributed to the Forestry Commission.

FORESTRY FOR RURAL DEVELOPMENT
IN ZIMBABWE

John Casey and Kay Muir

I THE CRISIS

Africa's forests have been reduced by half in this century due to a combination of population pressure, agricultural encroachment, fuelwood gathering, excessive livestock numbers and commercial logging. The natural forest resources of countries such as Ethiopia, Rwanda and Burundi have been almost totally depleted.

A recent World Bank report states that:

"deforestation adversely affects the quality of life both rural and urban poor. It can lead to a 15-20 per cent reduction in crop and livestock yields. About 50 million people (in Africa) face acute fuelwood scarcity and 5 million hectares of Africa's upland watersheds are deforested and in urgent need of rehabilitation. Soil erosion and disruption of stream flow are shortening the life of reservoirs. Deforestation is a contributory cause of the desertification process that is affecting the countries of the Sahelian/Sudanian Zone".

The level of environmental destruction in Zimbabwe is lower than that found in many other African countries, but signs of degradation were evident 50 years ago. Colonial officers responsible for administration during the 1930s and 1940s in the peasant farming areas of the upper Sabi catchment area reported population 'congestion', overstocking, gully erosion, shortage of thatching grass and difficulties experienced by people in obtaining water.

Recent studies within Zimbabwe, have attempted to quantify the extent of the deforestation and accompanying degradation of communal land areas and draw both the Government's and the public's attention towards these serious issues and the large scale catastrophic consequences they herald.

One such exercise, the 'Rural Afforestation Study' conducted by the Whitsun Foundation, states:

"While there is at present a national surplus of yield over demand of 1,054 million cubic metres, 27 of the 52 districts can be considered as critically short of wood on the basis of average deficit of over 4 cubic metres per family per annum. These deficit districts cover a land area of 5.08 million hectares (32% of all communal lands) and 2.5 million people (58.3% of communal land population) live there."

The fuelwood crisis facing the country has again been clearly documented in the Zimbabwe Energy Accounting Project (Beijer Institute, 1985) which states the equivalent of 600,000 hectares of plantation will need to be planted nationwide from 1985 until the end of the century in order to keep pace with the growing population and subsequent increase in fuelwood demand.

Such studies conclude that fuelwood supply has reached critical proportions in many of Zimbabwe's communal areas whilst some areas are on the brink of a crisis. However, the problem does not rest there, for deforestation ultimately leads to environmental degradation through soil erosion and soil loss, the siltation of rivers and reservoirs and the increased use of valuable agricultural residues for cooking and heating. The end result being not only a greatly reduced fuelwood supply, but an environment which yields less by the year of life's basic essentials (food, wood and water) for an ever increasing and essentially trapped population whose living standards steadily deteriorate.

The Sabi Catchment Area serves to illustrate one of the worst examples of deforestation and environmental degradation in Zimbabwe. Elwell and Stocking (1984) calculated the economic life of the soil in the upper Sabi catchment to be only 9.5 years until maize cropping became impossible and 28.5 years until sorghum cropping became impossible. They also calculated a value for soil loss of 80 tonnes per hectare per year. The future for such areas is extremely bleak and if remedial action is not quickly taken, it is just a matter of time before

the Sabi Catchment and similar areas are characterised by desertification and starvation.

II TACKLING THE PROBLEM

The problem is a difficult one to solve for several reasons. Population growth, the need for additional agricultural land and increased livestock numbers defy simple short term solutions. But early attempts in Africa at devising programmes to encourage and support solutions to fuelwood shortages through community forestry tended to be based on the assumption that the fuelwood shortage itself would be sufficient to stimulate tree planting by communities and individuals. Overall however, deteriorating fuelwood supplies have provided little incentive to those involved to do something about them. It has been demonstrated throughout Africa that as fuelwood gets scarcer people who gather it carry loads of firewood over longer and longer distances and with the growing scarcity, crop residues (which should be turned back into the soil) are diverted for fuel use.

Consequently, many social forestry programmes have stumbled along and eventually faded away. The downfall of these programmes is partially a result of the isolation or non-integration of social forestry projects within the field of rural development and partially a result of implementers who did not seek the active participation and involvement of the local people. It is worth noting too that many agricultural and rural development projects have paid scant attention to forestry or failed to implement forestry components.

Recent attitudinal surveys in parts of Malawi and Nepal (where severe fuelwood shortages exist) have disclosed that people seldom isolate their fuelwood problem and often rank it behind many other pressing issues. The surveys too have revealed that trees fulfil a variety of community needs and fuelwood is often not the most important. The Nepal survey showed that the overriding concern was with tree fodder for cattle because it was more difficult to obtain than fuelwood.

Current survey information and evaluations of failed social forestry projects are now instrumental in developing a new approach, for the problems of environmental degradation, desertification and fuelwood supply, cannot be solved by reforestation alone. What is required is a holistic approach to agriculture, livestock, land settlement, forestry and energy policies, and as Arnold puts it:

"People are (therefore) more likely to respond to projects that enhance this broader set of values than to projects that try and address fuelwood alone."

Tree planting projects therefore should not be regarded as ends in themselves, with success being measured solely by the numerical targets achieved. Increasing the number of trees in an area may have little beneficial effect unless it is more closely related to the needs and priorities of the people living there. Thus, the integration of trees into the farming system should arise not from an objective to grow trees but from the objective of improving the farm families' welfare which may involve, among other things, the introduction of some form of woody vegetation.

III THE RURAL AFFORESTATION PROJECT

The Whitsun Foundation's report 'Rural Afforestation Study' proposed a project as the First Stage in a national programme to deal with the shortage of wood in communal areas. The project had various components which included the establishment of nurseries to supply seedlings for sale to farmers, villages and schools, and the planting of woodlots at nursery sites to provide fuelwood and poles for sale. Another major component was the provision of specialist extension services within Devag (Agritex) to encourage and advise farmers on planting, maintenance and cropping of trees.

It was further proposed that a Rural Wood Energy and Pole Division within the Forestry Commission be established to plan and manage all but the extension aspects of the project.

In accord with the objective of developing the communal lands of Zimbabwe, the Government recognised the need for such a project and the above proposals, with a few minor modifications, were accepted and provided the planning framework for the four year pilot rural Afforestation Project which, with World Bank assistance, officially began in June, 1983. The Project, which is implemented by the Forestry Commission, has been designed as a modest first stage, characterised by selectivity in choice of target areas and populations within a relatively small scale of operations, and flexibility to experiment, learn and change course. Therefore, the main objectives of the current project are to:

"test a number of approaches to rural afforestation and evaluate the people's responses to these, carry out socio-economic studies campaign to increase public awareness of the fuelwood problem, closely monitor and evaluate all field activities and emphasise improvement of the institutional framework in Government to implement rural afforestation. In this manner, Project activities should provide a sound basis for undertaking a future broader afforestation programme." (Staff Appraisal Report, 1983)

The Forestry Commission is responsible for recruiting field staff, implementing a nursery programme and establishing rural and urban fuelwood plantations. The second half of the Project is the development of Forestry extension, which in collaboration with the Forestry Commission was largely the responsibility of Agritex (the national agricultural extension agency). Forestry extension has not been effective because the Forestry Commission, being essentially a commercial concern, has very little to offer on forestry extension. Furthermore, Agritex has been unable to fulfil its role in developing forestry extension because of a lack of resources. Thus, forestry extension in Zimbabwe is still inadequate although the key to successful rural afforestation is a strong forestry extension service. This message was a major finding of the Baseline Survey and of a subsequent survey undertaken by the Monitoring and Evaluation Unit in the Rural Afforestation Project.

IV A STRATEGY FOR FUTURE DEVELOPMENT

The Final Declaration of the Seventh World Forestry Congress (Buenos Aires, 1972) centred its attention on the responsibilities of government. It said:

"Recognising that in many countries, declared forest policies are not in accord with new knowledge, new preoccupations and new aspirations, the Congress considers it is now urgent to redefine forest policies in view of these new circumstances."

Westoby notes that few countries have responded to this call to define or review their forest policies, and also argues that a commitment to rural development on the part of the foresters will be of no avail unless there is a first commitment on the part of governments. Westoby states too that a policy should serve as a guide, not only to the forest services but to all agencies and departments, national, regional or local, having a measure of responsibility for implementing the policy.

The scope of the national forest policy should not be unnecessarily restrictive, and where appropriate, the policy should accord special emphasis to the role of forests, woodlands and trees in:

- i) providing support services to agriculture
- ii) contributing to appropriate agroforestry systems
- iii) specifically promoting the welfare of the rural poor
- iv) contributing to the fuel and energy needs of both rural and urban people
- v) and rehabilitating marginal lands.

The forest policy should be arrived at through a widespread and democratic process of consultation and therefore much of the value of preparing a policy statement is in the dialogue that is demanded by the preparation of it.

Thus, a prerequisite for a social forestry programme is a sound national forest policy backed by political support and a firm commitment on the part of the government to provide adequate resources on a sustained basis to meet the broad objectives set out in the policy statement.

V FUELWOOD STRATEGY

In developing a fuelwood strategy the overall objective has to be two-fold, first to increase supply and second to reduce consumption.

a) Wood Supply

On the question of supply, broadly speaking there are three major options, first to establish urban energy plantations, second to get farmers to plant trees, and third, to manage and utilise existing resources. Invariably, past programmes have attempted to implement the first and second options and ignored the third.

Government sponsored urban energy plantations¹ have proved costly to establish and, coupled with the fact that growth rates have not met expectations in many areas, fuelwood prices have had to be heavily subsidised. Even then, it is only the more affluent urban dweller who can afford and has access to this type of fuelwood, and in order to supply a total city's needs, thousands of hectares of land must be freely available.

Fuelwood plantations may still have a role to supply urban energy needs, but governments should consider alternative and more cost-effective ways of producing the wood by offloading the responsibility of growing the trees to farmers and councils around urban centres. This approach leads to the second option of encouraging farmers to grow trees.

Problems of 'rural' tree planting have already been described, but since the ultimate answer to deforestation problems lies with farmers, the major component of a supply strategy must be the mobilisation of this target group to plant trees. There should be three major thrusts to this component. First, the development of a forestry extension

service; second, the implementation of an appropriate research effort; and third, increased land allocation.

Looking at forestry extension, the planting of trees on farms is not fundamentally a forestry issue, it is a farm system and social issue and therefore there is a need for an extension approach which treats trees as one of many potential productive activities that must be incorporated into the farm system. It is difficult to conceive of this working through a separately operated extension service focusing only on trees, and in doing so raises important institutional and organisational issues. In Malawi, where a social forestry programme has been implemented over the past five years, it has been agreed and accepted that, for the future development of forestry extension, forestry subject matter specialists will be fully integrated into the agricultural extension system.

The integration and development of forestry extension within the agricultural service is now gaining wider acceptance and support. Forestry extension staff will not generally be in contact with farmers but operate with and through agricultural extension staff. This intermediary role therefore calls for quality rather than quantity of forestry staff and emphasises the need for suitably qualified foresters in the disciplines of agriculture, soil conservation, land management, farm systems and extension methodology. Thus, the design of appropriate courses and where these should be located are issues of prime importance to be tackled in the development of a social forestry programme.

One of the major problems in social forestry is the rather limited availability of appropriate technology and therefore the implementation of a research component, the second thrust, is of vital importance.

Malawi, recognising the need for more packages of appropriate technology, has recently established an agroforestry research unit within the Department of Agriculture Research. This development has also included the post of research/extension co-ordinator in agroforestry extension which should ensure a smooth functioning of the research/extension link.

Thus, to launch a programme whereby farmers are to be encouraged to grow trees, necessitates the design and implementation of both an extension service and a research programme. The third element of this approach is the sensitive issue of land allocation. Where the land is all privately owned, the farmer must be convinced of the financial returns to tree planting. If he is able to obtain wood supplies more cheaply from other sources it would be irrational to allocate land, labour and capital to raising trees. Poor control of state tree resources and subsidised wood, are strong disincentives. Where the land is communally owned it becomes necessary to consider the management and allocation of the trees planted after the community has been persuaded to allocate land. If the heaviest user obtains maximum benefit with no costs, the exercise will be futile.²

The third option of the fuelwood supply strategy is the management and utilisation of existing resources, and until recently only a few forestry programmes have investigated the potential of both indigenous woodlands and existing exotic plantations. In Zimbabwe, initial attention should perhaps focus upon the considerable amounts of wood residues generated by the commercial forestry operations. One entrepreneur is already considering the conversion of wattle stems, originally grown for bark tannin, to charcoal for sale in the major urban markets of Zimbabwe.

The remaining indigenous woodlands and forests in Zimbabwe can generally be placed in one of four groups. Firstly, there are the relatively large tracts of protected forest reserve controlled by the Forestry Commission; second, the indigenous woodlands found in the commercial farming areas; third, the woodlands of the communal areas; and fourth, the indigenous woodlands controlled by the Department of National Parks and Wildlife. Woodland in all four groups, through correct management on a sustained yield basis, could play a significant role in both an urban and rural fuelwood supply programme as well as fulfilling an equally important conservation function.

Exploration of the possibilities of controlled utilisation of indigenous woodlands raises the issue of fuelwood pricing, especially when a commodity such as indigenous wood has been collected free of charge for generations.

Where resources are a common property there is a tendency towards overexploitation. In an optimal regime for renewable resources, price equals marginal extraction cost plus royalty; in an unrestricted common-property regime price equals average cost.³ If overexploitation is to be avoided a management scheme that involves a clearer definition of ownership or control is necessary. In this situation Project Campfire, which recommends the formation of a land and asset management association, could be implemented. Every member of the community would be a member of the association. The association would then lay down rules for the management of each resource, charging individuals for the right to use the resource and sharing the proceeds equally between all members of the association. Thus a royalty would be placed on resource allocation and the tendency to overexploitation would be diminished.

b) Wood Demand

Looking at the demand side of the strategy, research into improved stove designs over the years has only achieved very modest savings in fuelwood consumption.

Most of the fuelwood consumed in the communal areas of Zimbabwe is used for cooking and approximately 50% of the households (Baseline Survey) now use a metal grate. However, significant amounts of wood are used in beer brewing, brick making and in bread ovens. Hancock and Hancock (1985) state in their recent study of domestic fuel use in Masvingo Province, that minor modifications to the cooking grate can greatly improve its efficiency. The authors determined that under laboratory conditions, the unimproved grate had an efficiency of 9.1% while an improved grate achieved an efficiency of 21.7%. Reducing these figures by 20% to compensate for field conditions, Hancock and Hancock calculated that if 40% of the households in Masvingo Province adopted the improved stoves the annual saving of wood in the Province would be in the region of 300,000m³.

Thus, investigations into improved stove technology and overcoming the problems of field acceptance of new or improved cooking devices should obviously continue but fuel-saving projects should be an integral feature of an overall Social Forestry Programme:

"Fuel-saving efforts must be closely linked with those of reforestation. It is imperative that the two are connected in people's minds."

(Hancock & Hancock)

VI FORESTRY FOR RURAL DEVELOPMENT

The major objective of the current rural afforestation project is not simply to establish nurseries and plantations but to develop a national afforestation programme. Designing an effective forestry extension service, training staff, and implementing research are some of the major components that should be investigated and developed in such a programme. In fact the very term "Rural Afforestation" simply implies tree planting whereas a programme of this nature should be very much more comprehensive. It should encompass such issues as soil conservation and soil improvement, agroforestry, fruit tree production and management of indigenous woodland. Afforestation should not be restricted to growing trees for fuel and poles, but for a multitude of end products that would support rural industries. Trees also have an essential role in the national food security programmes. The programme therefore could be more appropriately termed 'Forestry for Rural Development' (FRD) which encompasses the complex and challenging role of rural afforestation and forestry extension.

The complexity of issues which social forestry presents is well illustrated in the relatively small (75km²) communal land of Denhere, situated in Masvingo Province, which has been recorded as the most severely deforested communal land in the country. Denhere also carries one of the highest population densities, 52 people per km² in 1983, yet the people of Denhere do not "really have any problems meeting their woodland resource needs", (Hancock & Hancock, 1985). The answer to this apparent anomaly lies in the fact that the communal land is bounded on almost all sides by well wooded commercial farms and

resettlement areas. It is in these areas that Denhere's inhabitants collect their woodland resource needs and no part of Denhere is further than five kilometres from the nearest supply point.

Over 88% of Denhere is cultivated and therefore very little land could be made available for growing fuelwood. It is also extremely unlikely that Denhere's inhabitants would plant trees for fuelwood when there is an abundant supply close by. A eucalyptus nursery in Zimbabwe's worst deforested communal land is not going to be a success.

The problem of a sustained fuelwood supply for Denhere will have to be tackled and met through developments such as the management of indigenous woodland and the establishment of plantations in the neighbouring commercial and resettlement areas.

The development of a FRD programme within the communal land should focus its attention on such issues as soil conservation, soil improvement, fruit production and the provision of tree fodder, and therefore a nursery producing fruit trees, shade trees, hedging and agroforestry trees is more likely to succeed.

This overall approach to Denhere's wood resource needs and environmental issues, demonstrates the need for research to provide the appropriate technology and for skilled extension staff to cope with anything from managing indigenous woodland to advising on fruit tree growing.

To establish a truly effective forestry extension system, 'forestry' must be fully integrated within the existing rural development network, and this can be achieved principally in two ways. First, everyone involved in rural development work, be they extension workers, agronomists, or teachers, should have a basic input of 'forestry' during their training. Second, to back up and provide the necessary inputs throughout a rural development programme, forestry extension specialists should be integrated at all levels into the national extension system.

It is only when these two objectives are being met that forestry extension has a chance to succeed and in the long run, rural development in general will benefit enormously through the provision of this service. In a rural development context, trees should be viewed as another crop.

The most logical, cost-effective and practical place for developing a forestry extension system in Zimbabwe is within Agritex. The infrastructure and necessary support facilities are already in place and it would be a relatively simple operation of integrating the forestry extension specialists into the existing network.

It is imperative that the project launches a research component to investigate the problems associated with social forestry in Zimbabwe. In addition an FRD programme should consider developing research, especially agro-forestry research, in association with the Ministry of Agriculture.

The Rural Afforestation Project began and still exists on a narrow technical base of essentially three eucalyptus species. In the higher rainfall areas and on the better soils, there appear to be few problems but the main thrust of the project's activities are in the drier, semi-arid areas with correspondingly poorer and exhausted soils. Observations and of late measurements undertaken by the project's Monitoring and Evaluation Unit in these areas have suggested that the eucalyptus trees are not performing as expected and growth on many sites could be very low.

A nursery component is an essential feature of any social forestry programme to provide plants for farmers, schools and councils and to stimulate tree planting in general in the rural areas. However, such components are expensive to operate and inevitably involve heavy subsidies and only touch a small fraction of the rural community. More efficient and more effective ways of increasing tree planting must be investigated. Many farmers are requesting seed, plastic pots and advice on how to grow their own seedlings. Last season 89 schools in Masvingo Province produced 85,000 seedlings and this was achieved at a tenth of the cost of seedling production in the Project's nurseries.

A recent field tour in Manicaland by the M & E Unit revealed that schools which had received assistance from the project in the form of fencing, pots and seed (Support Fund) were quite capable of producing 10,000 seedlings each. Encouraging farmers, schools, councils, village clubs, etc., to grow their own seedlings should be the main thrust of a national FRD Programme and will involve a combined approach of promotional measures, incentives and education. This will not signal the end of the Project's nurseries, but it will mean that their roles will change from units of production and selling, to centres where demonstrations and field days are held, advice and information are freely available and where the local community can obtain such inputs as seed and plastic pots.

VII CONCLUSION

The incorporation of fuel supply in the farming system is new to traditional agricultural extension officers but is an important task for peasant farm households. The importance of woody vegetation to soil conservation, water supplies, rainfall and thus, food supply, are widely recognised. It is essential for Zimbabwe to take positive and effective steps to ensure sustainability of agriculture, particularly in marginal areas. It is therefore imperative that trees and social forestry developments are no longer isolated and treated as a separate rural development issue but are fully integrated into all aspects of agricultural development.

Zimbabwe needs to establish rural nurseries, but more importantly it needs a multidisciplinary team to investigate and establish the basis for a National Forestry programme. This would involve foresters, agriculturalists, and other rural development specialists meeting and discussing the major issues of forestry extension development, social forestry research and staff training and development.

Footnotes

1. See Appendix I.
2. Project Campfire (Communal Area Management Programme for Indigenous Resources) is one method of managing forests, grazing areas and other communally-owned resources being tried in Zimbabwe. The author can supply further details
3. The necessary conditions for the extinction of a common-property resource are briefly covered in Fisher and more rigorously derived by Berck.

APPENDIX ONE

Plantations in Zimbabwe

The current Rural Afforestation Project has a small programme of rural and urban exotic plantations to supply fuelwood and poles. These plantations have proved to be expensive to establish and inevitably their end products will be relatively expensive too. The role of the rural plantations has always been in doubt.

Operations have been suspended and utilisation of remaining resources to develop an 'extension' programme in the communal areas adjacent to the plantation sites is now being considered.

The role of the urban plantations must be questioned too. A study of Gweru's fuelwood supply (Forestry Commission) illustrates some of the problems associated with urban fuel-wood supply.

The study determined that the annual consumption of fuelwood in Gweru is in the region of $90,000\text{m}^3$ (solid) and that most of this wood is cut from surrounding indigenous woodland. The Project over the past five years has established 100ha of plantations which, if harvested annually in 20ha blocks, will provide less than 3 per cent of the current fuelwood demand of Gweru. Therefore, leaving aside economics, population growth, and the marketability of eucalyptus fuelwood, the current plantations will have a very small impact indeed.

To supply Gweru with its present demand means that approximately 3,000 hectares of indigenous woodland are cleared every year. A glance at a satellite imagery 'map' of Gweru's surrounding countryside will reveal the amount of environmental destruction yet the current programme makes no attempt to address this problem.

A more cost-effective way of tackling the fuelwood demand would be to encourage communal farmers, small scale farmers and councils to establish plantations and manage the remaining indigenous woodland. This approach would be far more environmentally acceptable and would involve developing the extension service around Gweru.

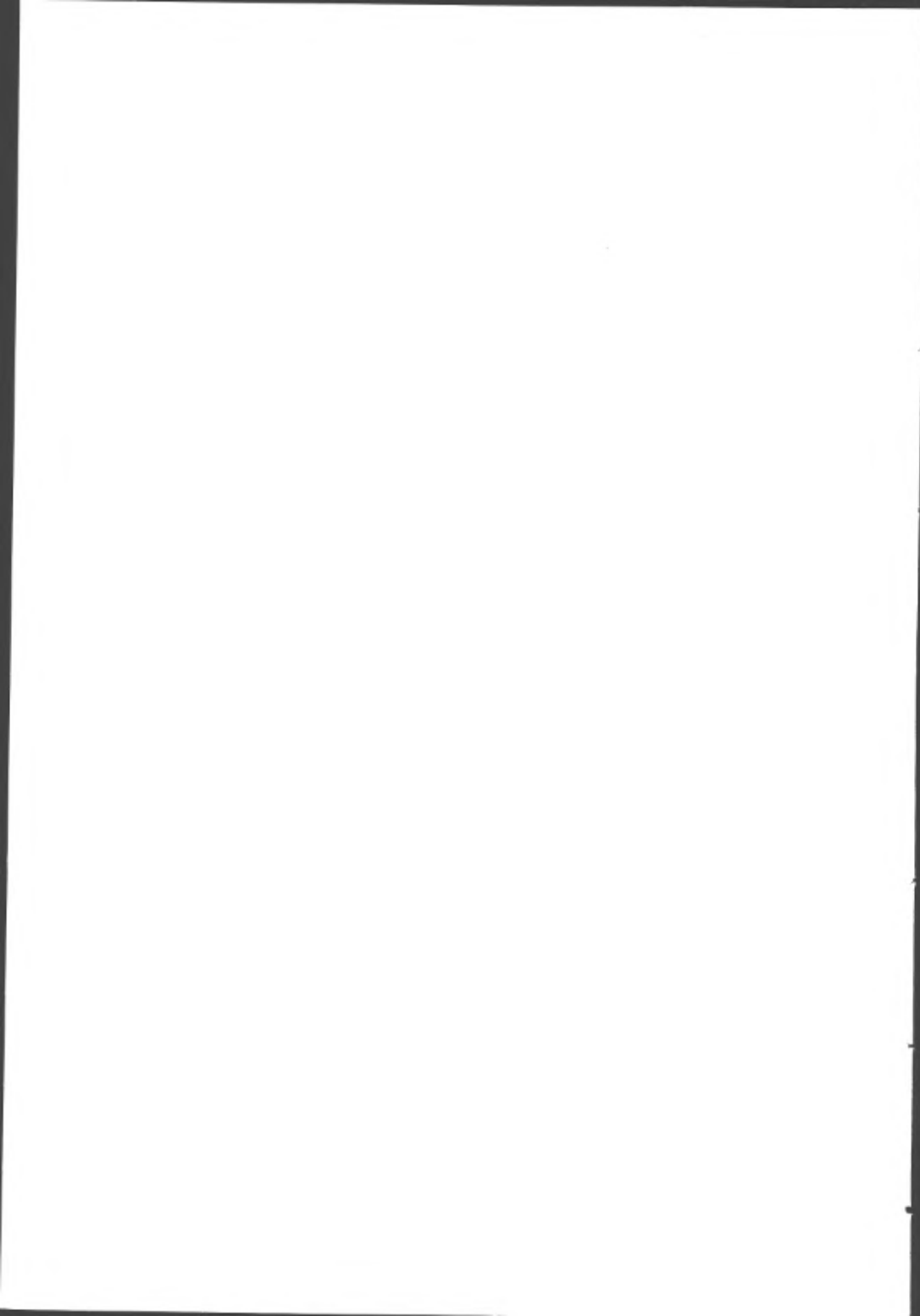
Urban plantations can still play a part if establishment costs can be reduced and growth rates increased, but urban fuelwood supplies must be tackled in future on a much broader front with a much more aggressive policy for supplying alternative energy sources.

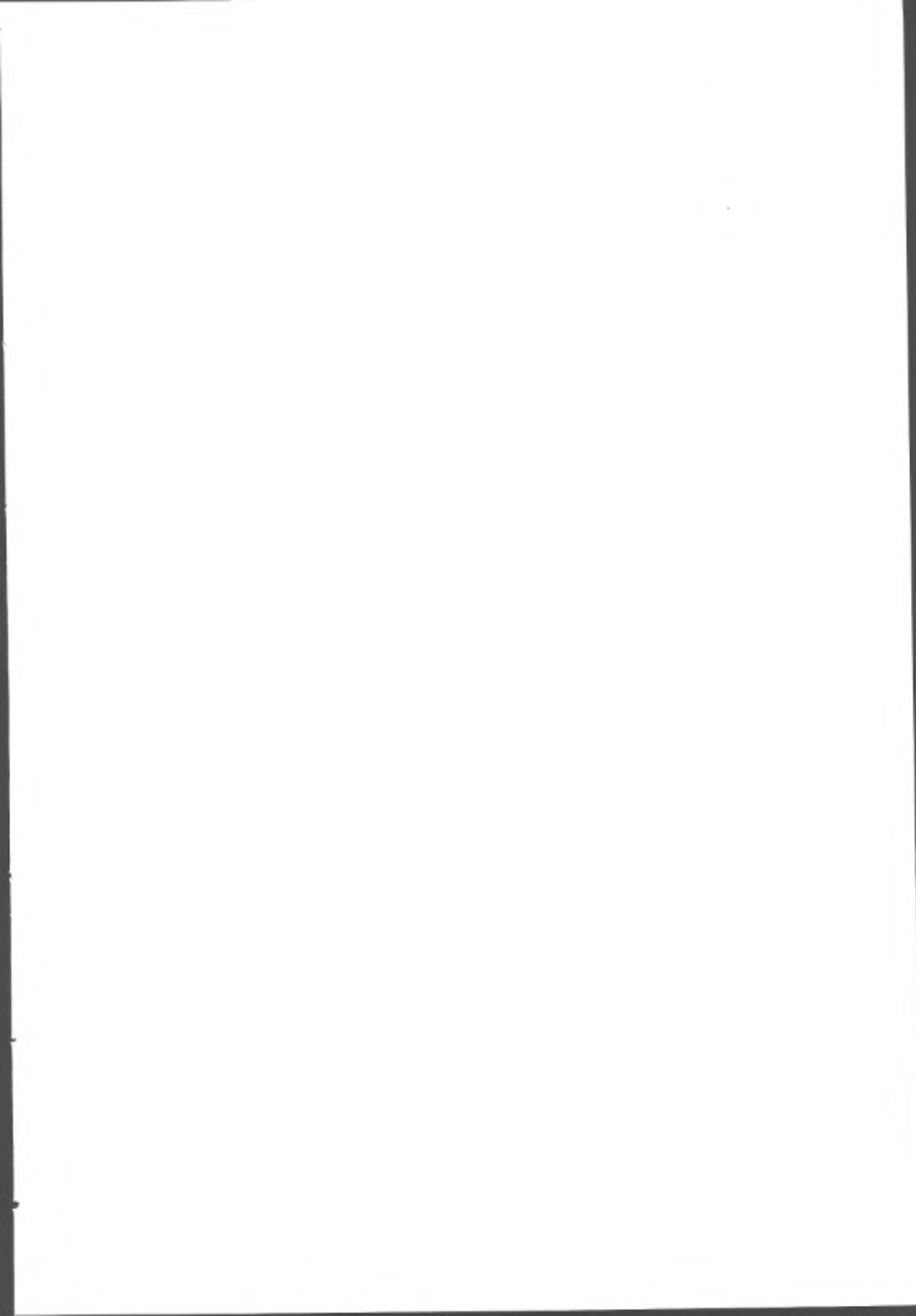
REFERENCES

- Arnold, J.E.M., 1983, 'Community Forestry and Meeting Fuel Needs' Commonwealth Forestry Review, Vol 62 (3) No 193 September 1983.
- Berck, P., 1979, 'Open Access & Extinctions' Econometrics Vol 47: 877-82
- Beijer Institute, 1985, Policy Options for Energy and Development in Zimbabwe, Zimbabwe Energy Accounting Project, Sweden.
- Du Toit, R.J., Campbell, B.M., 1984, Wood Usage and Tree Planting in Zimbabwe's Communal lands: A Baseline survey of Knowledge, Attitudes and Practices, Forestry Commission of Zimbabwe and the World Bank.
- Du Toit R.F., 1985, 'Soil Loss, Hydrological Changes and Conservation Attitudes in the Sabi Catchment of Zimbabwe', Environmental Conservation, Vol 12 No 2 Summer 1985.
- Elwell H.A. & Stocking M.A., 1984 'Estimating soil life-span for conservation planning', Tropical Agriculture, 61pp 148-50.
- Fisher, A.C., 1981, Resources and Environmental Economics, Cambridge University Press.
- Foley G. & Barnard G., 1984, Farm and Community Forestry, Earthscan Technical Report No 3, Earthscan, London.
- Hancock D & Hancock G., 1985, Cooking Patterns and Domestic Fuel use in Masvingo Province. An analysis and possible options for decreasing Fuel Consumption. G.A.R.T. Box 151, Masvingo, Zimbabwe
- M & E Unit, 1986, An economic analysis of urban Fuelwood Plantations based on Gweru Plantation Data, M & E Unit, Forestry Commission
- Westoby, J.C., 1985, 'Foresters and Politics', Comm. For. Review Vol 64(2) No 199 - June, 1985
- Whitsun Foundation, 1981, Rural Afforestation Study, Project 3.22 January 1981, The Whitsun Foundation, Harare.

World Bank, 1984, Malawi Forestry Sub-Sector Study.

World Bank, 1983, Staff appraisal Report, Zimbabwe Rural Afforestation Project.







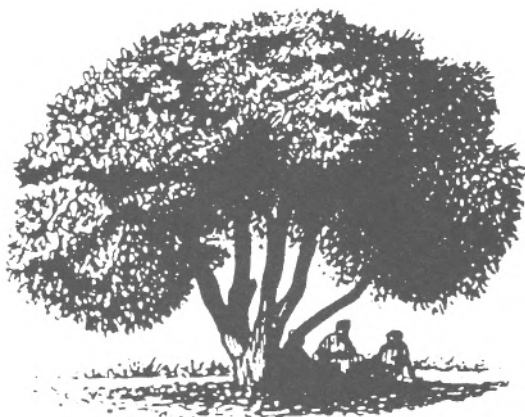
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



LAND TENURE AND AGROFORESTRY IN THE DOMINICAN REPUBLIC

Isabel A. de Ceara

Isabel A. de Ceara works at the Instituto Superior de Agricultura, La Herradura, Santiago, República Dominicana.

NOTE: this paper was originally given at the International Consultative Workshop on Tenure Issues in Agroforestry, 27-31 May, 1985, Nairobi, Kenya. The workshop was organised by the Land Tenure Centre, Wisconsin USA and ICRAF, Nairobi.

I. INTRODUCTION

In this paper I propose to outline the land tenure systems in the Dominican Republic, the agroforestry and silvopastoral systems and how the latter are related to the former. In addition I will present the experiences that rural development and natural resource management programs have had in establishing agroforestry systems. Finally, the paper will point out what the key factors are that ought to be taken into account when designing agroforestry programs in Caribbean and Central American countries.

Caribbean and Central American countries are facing the urgent need to improve their production systems in order to guarantee food, fibre and energy for their growing populations. The increasing pressures these countries face to produce export goods, often using costly imported technology, have displaced the small farmer to more ecologically fragile zones. These zones require a more rational exploitation from an ecological and economic point of view.

To group Central American and Caribbean peasants by land tenure systems would be an extremely complex task. Nevertheless we can point to several common characteristics among these systems:

- The greatest number of private agricultural holdings have an average size of one hectare. The greatest amount of land is in the hands of a few large landowners.
- There is a considerable number of peasants who do not own land. Thus when we talk of land tenure we must consider not just owners, but occupants, usufructuaries and sharecroppers.
- Agroforestry systems are a priority for the smallholders. This is not the case for large landowners who are in a position to dedicate their holdings exclusively to commercial forestry exploitation since they do not have the same urgent need to generate income in the short term as the smallholders.

- The concept of agroforestry, although not a formally or systematically understood concept, is utilized in the majority of smallholdings. The producer and his family intuitively recognize the benefits generated by this system: short cycle or permanent crops for food, animal production, trees for timber and firewood and medicinal or curative plants.
- It is essential to study the systems utilized by the farmers themselves so as to be able to design and introduce improvements through the use of new or improved species.

This paper will discuss the main issues on land tenure and agroforestry in the Dominican Republic to illustrate the situation in Central America and the Caribbean.

II LAND TENURE PATTERNS IN THE DOMINICAN REPUBLIC

A. The Distribution of Land

The Dominican Republic has 6.2 million inhabitants living in an area of 48,297 km² of which 55 per cent or 2.66 million hectares is comprised of farms or holdings. These 2.66 million hectares are divided into 385,000 properties. Eighty-five per cent of these properties have less than 5 hectares occupying 12 per cent of agricultural lands: the minifundium or smallholding. In addition, 16 per cent of the farmers, work in holdings with less than 0.5 hectares. Eighteen per cent of the producers own 88 per cent of the lands forming in this way the well known bimodal land distribution pattern of "minifunium-latifundium" so typical of the Central American and Caribbean region.

Between 1971 and 1981 the number of holdings with less than 5 hectares has increased, which indicates a tendency towards greater fragmentation of property. This phenomenon has not been as marked in holdings between 5 and 1,000 hectares.

In 1971, 71 per cent of the holdings was legally farmed while one per cent of the land was rented and 10 per cent illegally farmed (8).

The largest groups of non-owned small farms fall in the categories of "occupants or free beneficiaries" and "occupants under concession", most of whom are squatters on government land or private holdings. They do not have to pay any kind of rent or tribute. Sharecropping is the next most prevalent form of tenancy, followed by rented land (1).

Short cycle crops are planted mostly in small farms. Those with more land dedicate it to planting sugar cane, forestry or grazing. The smallholdings are producers of rice, cacao, coffee, tobacco and roots and tubers.

The control of the irrigated lands is also in the hands of large landowners. Nine per cent of the large holdings had, in 1971, 64 per cent of the irrigated land while 91 per cent of the smaller farmers controlled only 36 per cent of the irrigated land (1).

The land is used more intensively in the smaller holdings. The amount of land per worker increases from 0.27 hectares in the small units to 1.54 hectares in the family size units to 13.2 hectares in the multi-family large holdings.

The distribution of the land influences the type of crop planted more than the form of tenancy. Though there are no detailed studies of cattle lands, it is known that the great majority of large landowners dedicate their holdings to raising cattle, and in some instances goats, without applying any type of controlled management practices.

Sixty-one per cent of the cattle properties have herds comprising less than 6 head of cattle; and 14.7 per cent of these farmers, of which 85 per cent have holdings of less than 5 hectares, have only one head of cattle. The majority of herds consisting of 2 to 5 head of cattle also belong to producers with less than 5 hectares.

The large landowners specialize in raising bovine cattle. For example, 69 per cent of the farmers owning 200 to 500 hectares possess bovine herds and only 18 per cent of those farmers with less than 5 hectares raise cows (9).

This concentration of land and resources in the hands of a few producers and the growing need to answer the claims for increased social justice put forth by the peasants themselves has led to land distribution and redistribution schemes, or agrarian reform, in almost all Central American and Caribbean countries.

The reforms of the land tenure systems have as their prime objective to provide, for the peasant and his family, access to the main means of production, land.

The forms and strategies used in land reforms differ according to the political systems and social movements prevalent in each country.

B. Agrarian Reform: The Case of the Dominican Republic

In the majority of Latin American countries the modern history of agrarian reform movements had its origins in the international pressures brought about by the Alliance for Progress programs pushed by the United States government beginning in 1961. Nevertheless, in the Dominican Republic the elimination of 30 years of tyranny had more to do with the rise of the agrarian reform process than international demands (5).

Dominican agrarian reform has sought to achieve four basic objectives:

1. To protect the frontier from the growing encroachment of Haitian nationals in border lands. This programme was one of colonization and the beneficiaries of these colonization schemes along the frontier were called "colonos" or colonizers. The economic and social impact of these programmes was minimal.
2. To act as a mechanism for creating a political support base. In order to institutionalize this process after the fall of the dictator the Dominican Agrarian Institute (IAD) was created in 1962.

3. To act as a mechanism to arrest the increasing social unrest in the countryside due to the large number of landless peasants.
4. To act as a mechanism to assure self-sufficiency in rice without increasing the price of this grain.

Until 1972, all agrarian reform settlements were comprised of individual holdings. The state distributed on average properties between 3.13 and 4.69 hectares. The beneficiary was only granted a provisional title and had the right to the usufruct of this property, but could not sell or transfer the property rights.

After 1972 we see a new form of agrarian reform settlement, the collective. These settlements were under the direct control of IAD and the beneficiaries working in them were to divide the net income generated in equal parts. In the collective, the beneficiary's family can inherit the right to the usufruct in case of his abandonment of the plot or his death. In the beginning, this type of settlement only applied to rice lands. After 1979, all land distributed by the IAD was in the form of collectives.

At the moment, we see a third model for agrarian reform settlements emerging, the associative. This model permits the beneficiary the right to manage his own parcel in association with other reform beneficiaries in the settlement. The farmers form an association which has the legal right to obtain credit, contract machinery, and obtain other inputs from independent providers. In general, each beneficiary works only his own land. His family may help him and the benefits derived correspond to the production of his parcel. This reform model shows the great capacity for organizing that exists among the peasants.

The associative model has emerged in two forms, depending on whether they were formerly individual or collective agrarian reform settlements. Congress has yet to approve the law which would give IAD the right legally to adjudicate land to associations.

C. The Forestry Situation in the Dominican Republic

Ten to fifteen per cent of the forest land in this country is privately owned and extensive areas of deforested land exist under no legal ownership status. These lands are used for migrant agriculture and extensive dairy or beef production. The increasing rate of the deforestation process in the country has been of such magnitude that, while in 1947 it was estimated that 60 per cent of the national territory was covered by forest, at this time only 26 per cent is covered by forest, including species in dry forests (areas with an annual rainfall below 1,000 mm.). Much of the forest has been destroyed in the process of producing timber, firewood and charcoal. The consequence of this process has been that almost 300 native species are threatened with extinction. The main river basins are in poor state due to the constant destruction of forest vegetation. The number of dry rivers has increased and there are grave problems with soil erosion.

The production of timber as fuel is about 2,000,000m³/year of which 65 percent is consumed as firewood and 35 per cent as charcoal (12).

Ninety per cent of the firewood consumption takes place in rural areas which generally exist outside the market economy. Of the total timber that is processed, some 80 per cent goes to urban homes.

The wood that exists today has an average yearly production of 10m³/ha. This implies that 200,000 hectares are exploited annually to satisfy the demand. In the last 14 years, however, only 3,157 hectares of forest have been established.

The low per capita income in the Dominican Republic (RD\$450 to RD\$600) lends itself to migrant agriculture because people tend to provide themselves with charcoal, firewood, and other raw materials from the forest. Charcoal-making had been a sporadic economic activity, but with an increase in rural demand, it is becoming a full-time activity for some farmers. Of all migrant agricultural practices, charcoal-making generates the principal income and agricultural products are mainly for household consumption.

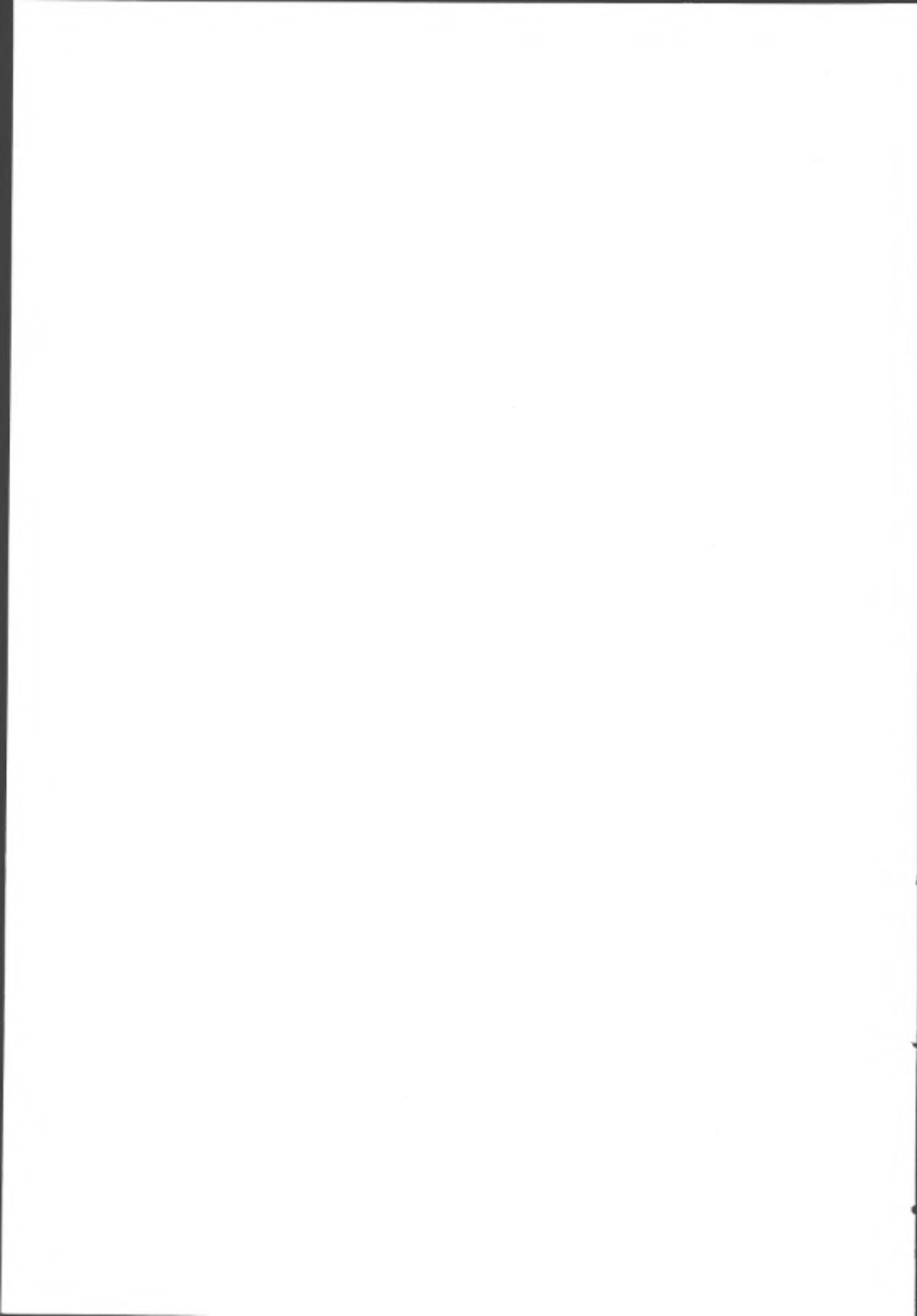
The lack of professional advice, technology, land ownership patterns and low income per capita are factors that lead the small farmers to practice migrant agriculture. Migrant agriculture is being practiced here in one of its variant forms, recurrent agriculture, rotating the land periodically but living permanently in the same area. There is a rotation of forest followed by rotation of agricultural production. The cycle includes tree cutting, charcoal and fuelwood production, crops, grass planting, abandonment and forest regrowth. The crops grown are plantains, beans, potatoes, and pigeon peas. Low land broad-leaved forest trees have been deforested by slash and burn agriculturalists and charcoal-makers.

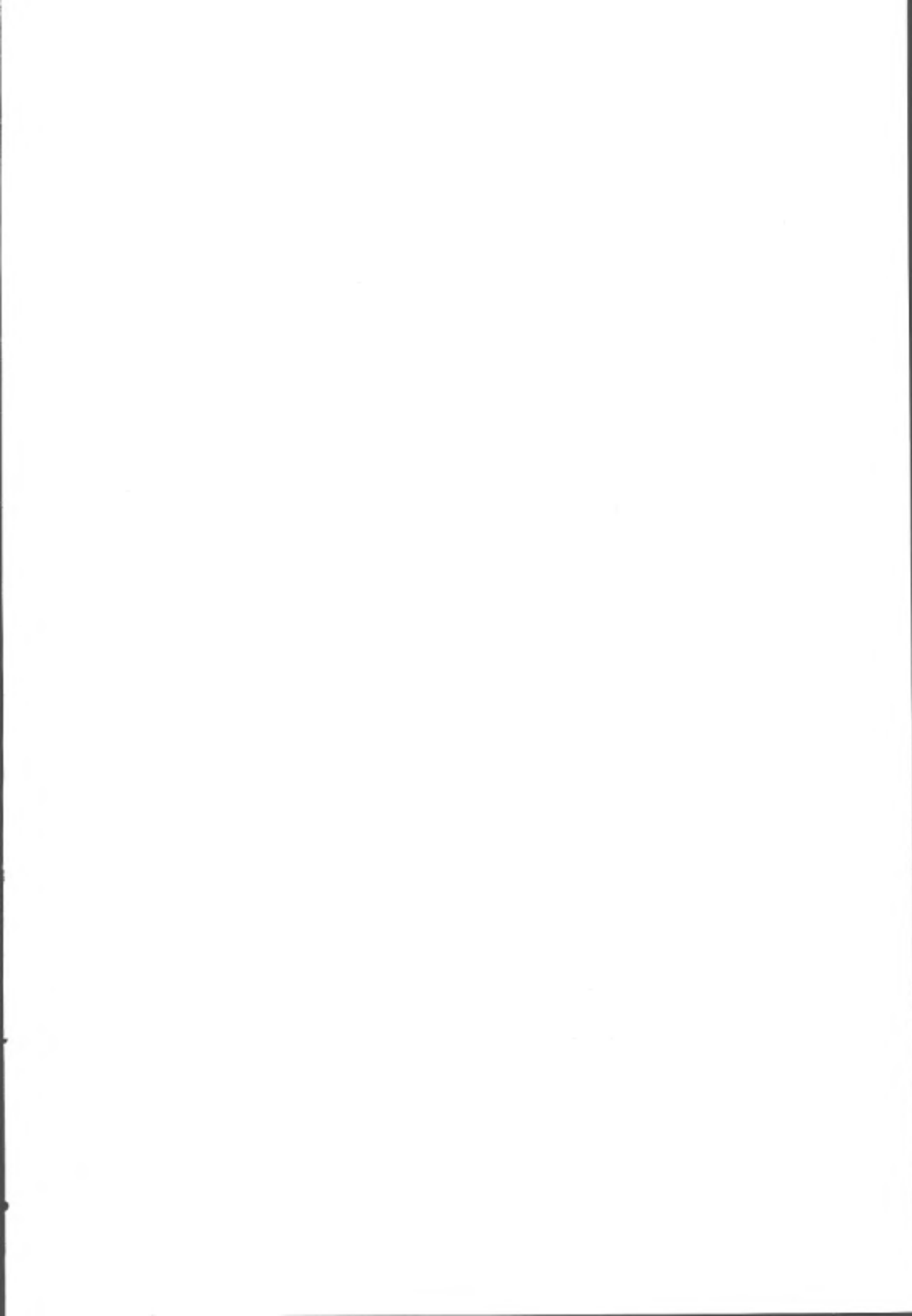
The national forest service, FORESTA, has the responsibility to enforce the 1967 law which closed saw-mills and prohibited the cutting of trees (7).

This forestry law and the 1983 law on utilization of wood produced locally, constitute an obstacle to the rational use and establishment of forest species.

The forestry policy of the country should be oriented towards providing:

1. Security that what is planted may be harvested;
2. Credit incentives;
3. The establishment of agrarian reform agroforestry settlements in those lands apt for forestry;
4. Rational exploitation of the natural forests and plantations;
5. The establishment of farms that produce firewood and charcoal given the fact that a rural family needs 0.33 hectares per year to produce its firewood. It is estimated that a peasant family can manage adequately 10 hectares of Leucaena leucocephala and could generate from it some US\$3,000 per year from firewood production (12).





c) Lack of Agricultural Culture

Another obstacle facing forestry activities is the lack of an agricultural culture that fits the environment. Historical reasons in many countries have forced the immigration of inhabitants of flatlands onto the hillsides. Since one cannot hope to relocate all hillside inhabitants in the flatlands we will have to create a generation of forest agriculturalists through schooling and technology transfer.

d) Policies and Political Aspects

The political aspects in our country are also very influential. Given the fact that democracies are far from institutionalized in the Third World, to sustain them is a constant struggle. Governments fight for their own survival and thus their activities (including investments and expenditures) are directed towards maintaining themselves and the system in power. Long term investments whose benefits will not be forthcoming during their term of office are unlikely to receive top priority.

In addition, credit and technical assistance policies tend to favour the establishment of single crop systems of short cycle.

Agroforestry is not just a technical or a logistical problem. Reforesting is above all a problem of lack of adequate survival and exploitation techniques for hillside inhabitants. It is a problem of subjective low income yielding possibilities given time lapse and uncertainty factors. Finally, it is also a problem of accepting that it is impossible to stop the deforestation process without solving at the same time the problem of the inhabitants of these areas.

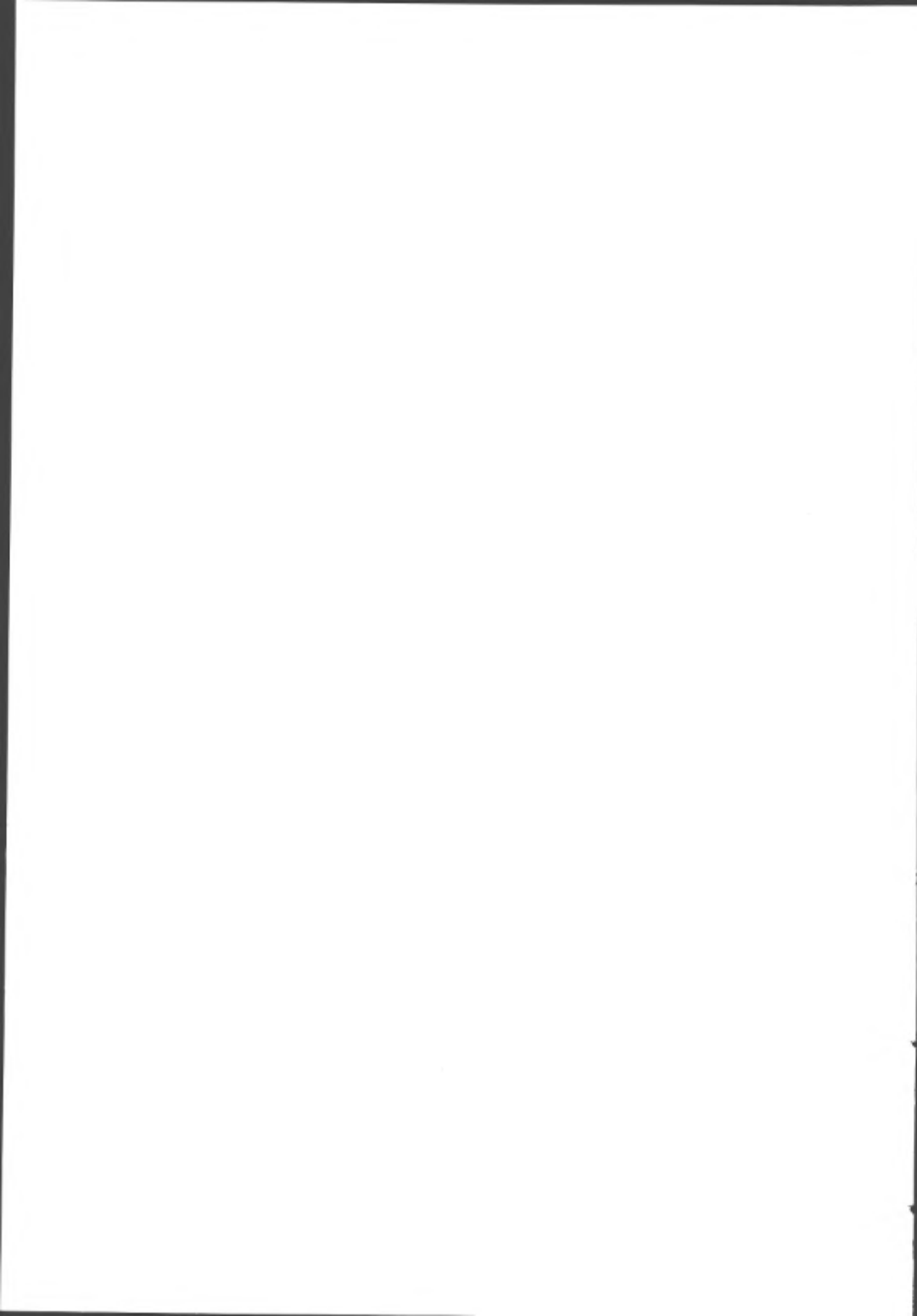
Various forms of agroforestry exploitation exist in the Dominican Republic. However, these have neither been systematically established nor have their efficiency and profitability been thoroughly verified.

A study conducted by Mercedes (6) indicates that hills with slopes of up to 75 per cent could support fruit crops such as Anacardium occidentale (cashew), Annona spp, and Mangifera indica (mango). According to the author's scheme, shrubs and herbaceous species would be part of the second canopy and used for grazing. Hills whose slopes fall between 24 and 74 per cent can be used for producing forest crops to supply poles, firewood and charcoal. Herbaceous species and shrubs are used to protect the soil against erosion and provide forage. Agricultural crops can be established between the rows (corn, beans, pigeon peas, pineapple, tomatoes and eggplants).

Farmers who own land or who have occupied state lands without title utilize this system (consisting of planting fruit trees, coffee, cacao, and citrus). Some agrarian reform settlements consisting of individual holders also use this system. Nevertheless, the occupant of private lands will hardly dedicate his time to this type of exploitation which requires permanency and security. Farmers and peasants with small holdings cannot use the system at all given that it conflicts with their prime need to assure their survival in the short run.

The systems of coniferous trees with pasture and pasture with Gliricidia are commonly used by medium to large holders who do not face the same urgent need to plant short cycle crops. The grazing lands in the flatlands are surrounded by Gliricidia sepium as a live fence.

There exists as well a type of agroforestry system specific to sharecroppers. In the majority of cases sharecroppers must share their harvest with the owner. Yet in some parts of the country, one finds instances where the sharecropper only has the responsibility to clear the forest, cultivate it for his own benefit and at the end of the contract return the land to the owner planted with pasture. In these cases, it is very difficult for the sharecropper to establish an agroforestry system since in the long run he will not be able to benefit from this effort and his contract demands that he return a one crop plot (pasture).



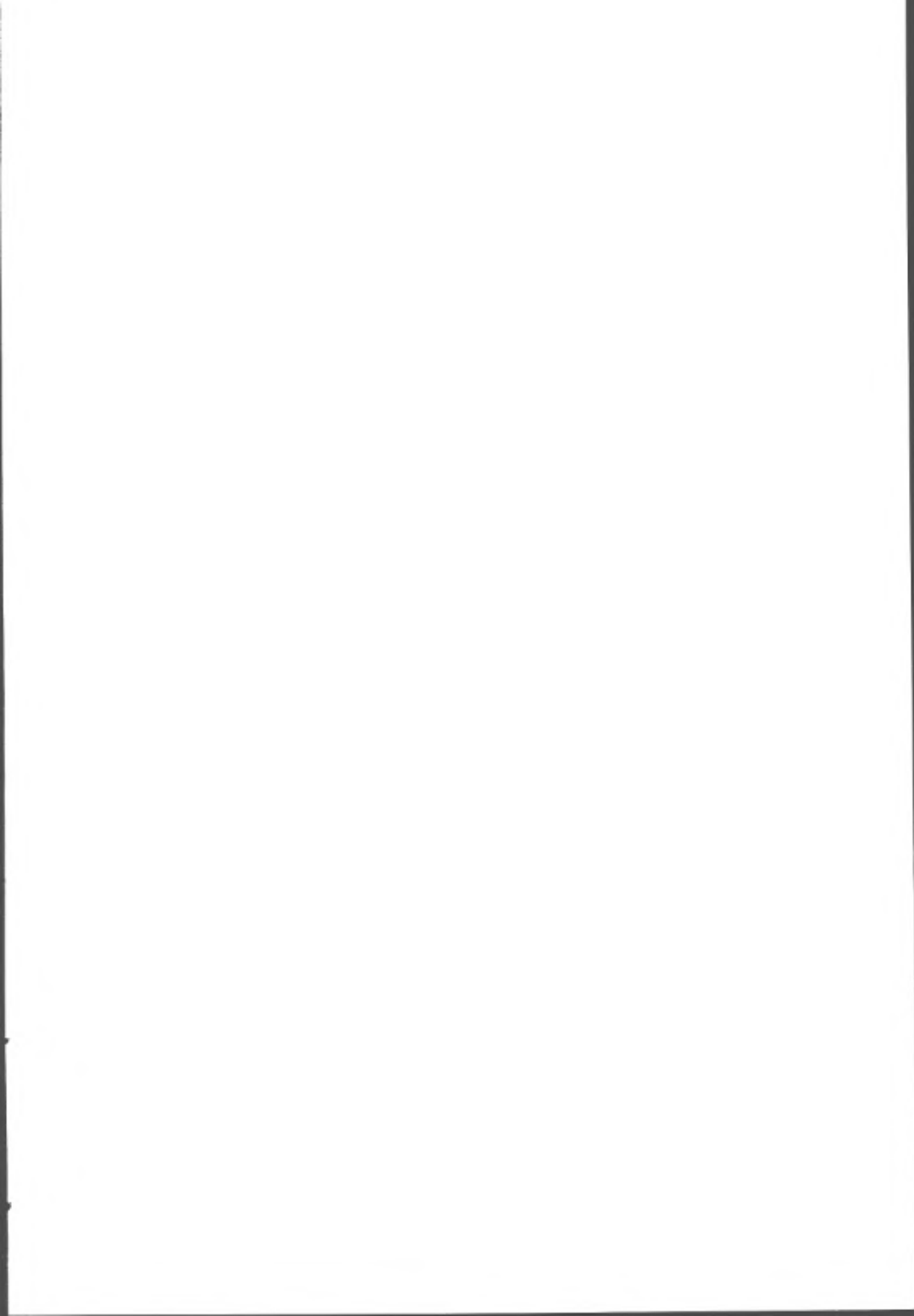


Figure 1: Models of Forestry Production According to the System and Distribution of Land. Plan Sierra, Dominican Republic, 1984.

A. Models which Affect the Tenancy and the Distribution of Land

A. 1. For each family of 6 members with 3 hectares of land (50,000 hectares)

- a) 0.062 ha for orchard
- b) 0.625 ha for food for self-consumption and grain to feed 10-15 chickens
- c) 1.75 ha for permanent crop (i.e. coffee)
- d) 0.25 ha for forage to sustain one cow
- e) 0.31 ha for forest to obtain firewood

A. 2. Organization of Forestry Enterprises (112,500 hectares)

These enterprises will be state owned and would utilize peasant labour. Models A1 and A2 are complementary.

B. Models which Affect Neither Land Distribution nor Land Tenancy

- B. 1. Each family according to the extent of its land will be given assistance to establish a model A1 farm. If the family has more than 3 ha. the objective will be to motivate it to plant wood producing species.
- B. 2. Contract families to reforest 19-25 ha. in return for a salary and for helping it establish model B1.
- B. 3. Reforestation of lands given by the owners with paid labour with the legal requirement of reimbursing Plan Sierra the costs once the trees have been harvested and sold.
- B. 4. Nurseries in schools in order to establish school-run forests and create a forestry culture.

institutional strengthening. It counts on the technical and financial support of the U.S. Agency for International Development (USAID).

One of the most important areas of influence of the MARENA project is the Ocoa River basin which cover some 500 km² and includes about 5,000 producers, most of whom are untitled and have one hectare farms. The project's activities in this area concentrate basically on conservation, basin protection, investigation of agricultural systems appropriate for hillside farming and credit incentives (including loans for soil conservation and reforestation) and improvement of the quality of the water and soil.

The investigation of hillside agricultural systems includes the establishment of live barriers using different species: limoncillo, supermerker, alfafa, sorghum and guatemala (Tripsicum lasum) all of which may be used as medicinal plants and forage and which at the same time improve the soil. In addition, conservation or forage strips consisting of one or 2 rows of Leucaena leucocephala are being established to impede erosion and as a source of firewood.

The project has programmed a census to categorize the agroforestry systems in the area, but this has yet to be started. At this time the project is busy studying the profitability of plots where fruit trees are planted in combination with short cycle crops (figs and beans).

One common type of agroforestry system in the area is the cultivation of potatoes (Solanum tuberosum) in Pinus occidentalis farms. This system has not been studied. In the majority of cases it is practiced in lands of very pronounced slopes (over 35 percent) strictly apt for forestry. Though this system is widely practiced it should not be tolerated or encouraged since the region's topography requires permanent crops and not crops which like the potato cause the soil to be overturned during harvest time.

MARENA is also considering establishing species in farmer's lands which can be used to fill energy needs.

C. Wood as Fuel

The Wood as Fuel Programme is a component of the Project for the Utilization of Energy Resources presently being directed by the National Commission for Energy Policy with USAID financing. The programme is being implemented by the Instituto Superior de Agricultura (ISA) since 1983 in a 1,000 hectares dry wood forest in Mao.

The Wood for Fuel Programme's main objective is to study the native dry forest species (where the annual rainfall falls below 1,000 mm) which have good energy use qualities. The programme also investigates the plantation management systems and searches for the best methods to convert firewood into charcoal.

One of the Programme's interests is to initiate agroforestry investigation. In particular, it hopes to determine which dry forest species are apt for use in goat raising and as firewood. Goat raising in private or state owned land is a common practice by small producers whose plots are not large enough. Grazing in this irrational manner consumes the species apt for use as firewood and accelerates the impoverishment of the soil.

The programme wishes to determine the best species for grazing and firewood, the optimum number of animals grazing per hectare and the optimum rotation period.

The planned or installed experiments in agroforestry to be undertaken by the Wood as Fuel Programme include:

1. Plantations of Azadirachta indica and Leucaena Leucocephala with interplantings of beans and corn. There is another plot plantation in Santiago; with Eucalyptus citriodora and beans in the first year, it saved considerable money.

2. Silvo pastoral experiments at ISA pasture land:

- (a) Forage tree species for grazing and cutting
 - (b) Grazing under control beneath plantations of different spacings
3. Grazing trials as a means of control of weeds and competition in native dry forests (to start in 1986)
4. Enclosures to determine impacts of goats on heavily grazed dry forest at ISA.

Growth rates of the dry forest are not known, due to the heavy grazing and harvesting pressure in virtually all of its extent. One of the values of the large forest research property that ISA maintains in Mao is that the area contains about 500 hectares that are to be preserved in natural condition, with some included silvicultural plots, without the presence of livestock.

The state and privately owned lands consisting of dry forest are utilized by communities to extract firewood and graze goats and bovine cattle. As the means to manage old plantations and new plantations are established their access to these forests will be limited, forcing farmers to buy firewood or to produce it in their plots.

The scarcity of firewood for domestic use or for making casabe (a bread made out of Manihot esculentum) represents an additional burden which must be borne by thousands of peasant families. Rural women, more than any other member of the family, will suffer from the lack of fuel. At this time a peasant roams through about 2.2 kms daily in order to obtain firewood to prepare his meals (2). The distance roamed has increased which indicates that the sources of firewood near the home are being exhausted (4).

Rural communities which do not have firewood at their disposal must buy it. Charcoal represents a major cost for these families since gas as fuel is used mainly by urban families. I estimate that 13 per cent of a farmer's basic income is used in buying energy to cook his meals.

Some women's associations have asked for the establishment of communal forests as a source of firewood for domestic use and for making casabe. Agroforestry systems represent a unique alternative for providing firewood and food, in particular if forage species can serve as firewood.

Communal forests represent an option. Nevertheless, the State, though it may donate land for this purpose would have to regulate access to production. These types of arrangements could be established in collective and/or associative land reform settlements for the use of the beneficiaries.

V FINAL OBSERVATIONS

Though land tenure systems in Central America and the Caribbean are characterized by private property, a great number of peasants are still landless. Landless farmers go on to become occupants of private holdings or state lands, sharecroppers (sharing their benefits with the owners) or leasing lands when their income allows it. Landless peasants represent a constant pressure for social and agrarian reforms. The tenancy structure established by these reforms is characterized by granting the farmer the usufruct to the land for agriculture use, but not allowing the beneficiary the right to tax or sell his plot.

Even if an efficient agrarian reform system existed there would not exist enough land to give to all farmers a sufficiently large plot that would allow him to satisfy his basic needs and generate a surplus. Thus the survival of those who live in the countryside and that of the natural resources themselves for continuity of production to be assured, will require that special attention be paid to the system of property rights, the distribution of this property and the geographical location of the same.

Agroforestry systems in conditions of extreme fragmentation of the property are exceedingly difficult to establish and sustain. In these cases the establishment of communal forests is required.

The experience of rural development programmes in the Dominican Republic shows that the distribution of the land plays a more important role than property rights in establishing agroforestry systems. The small farmers or peasants who only have a small plot with which to provide for their families cannot dedicate their lands to plant long cycle crops, except in the borders, as fences. The medium-sized producers are more susceptible to the introduction of conservation practices. Finally, large landowners, generally absentee landlords, have neither the financing nor the time to care for short cycle crop plantations and prefer to apply extensive farming practices which generally require low capital investment.

The strategies devised to establish agroforestry systems must be designed according to the size of the holding worked by each farmer.

1. Barraclough, Solon. Memorandum, 1970, April 7, s.l. a John Robinson, Dominican Republic. 39 pages.
2. Bueno, Santiago y H. Checo. Análisis del Consumo energético de familias pobres en una comunidad rural. Tesis Ingeniero Agrónomo. Universidad Católica Madre y Maestra, Santiago, República Dominicana. 1985.
3. Fajardo R., Rafael. Descripción de algunos sistemas agrosilvo-pastoriles en la República Dominicana. Recursos Naturales. Vol. 1 32-38. 1985.
4. Hoskins, Marilyn W. La silvicultura comunitaria y las mujeres. Unasyuva. Vol. 32 (130): 27-32. 1980.
5. Instituto Superior de Agricultura. Centro de Administración del Desarrollo Rural. Nota Técnica la Reforma Agraria Dominicana. Santiago, República Dominicana, 1983, 12 p., anexos, (27-27-05-83-001).
6. Mercedes, José. Estudio para el diseño de un sistema de manejo integrado en áreas de bosque seco en República Dominicana. Tesis Ingeniero Agrónomo. Universidad Católica Madre y Maestra, Santiago, República Dominicana. 1980.
7. Olivo Veras, Julio G. Índice cronológico de la legislación sobre asuntos forestales en la República Dominicana. In Universidad Católica Madre y Maestra, Plan Sierra e Instituto Superior de Agricultura. Foresta: alternativa de desarrollo. Santiago, República Dominicana: UCMM, 1984. pp 79-87 (Colección "Estudios").

8. República Dominicana. Oficina Nacional de Estadística. VI censo nacional agropecuario 1971. Santo Domingo, 1971.
9. República Dominicana. Oficina Nacional de Estadística. VII censo nacional agropecuario 1981: cifras preliminares Santo Domingo, 1982. 4 pages.
10. República Dominicana. Secretaría de Estado de Agricultura. Resumen de los primeros 45 meses de ejecución de Plan Sierra: informe provisional. Santo Domingo, 1983. 39 pages
11. Santos, Blas. Foresta: un problema social. In Universidad Católica Madre y Maestra, Plan Sierra e Instituto Superior de Agricultura. Foresta: alternativa de desarrollo. Stgo., República Dominicana: UCMM, 1984. pp 37-46 (Colección "Estudios")
12. Tejada, Romero. El potencial económico de las fincas energéticas. In Universidad Católica Madre y Maestra, Plan Sierra e Instituto Superior de Agricultura. Foresta: alternativa de desarrollo. Santiago, República Dominicana: UCMM, 1984. pp. 49-55. (Colección "Estudios").



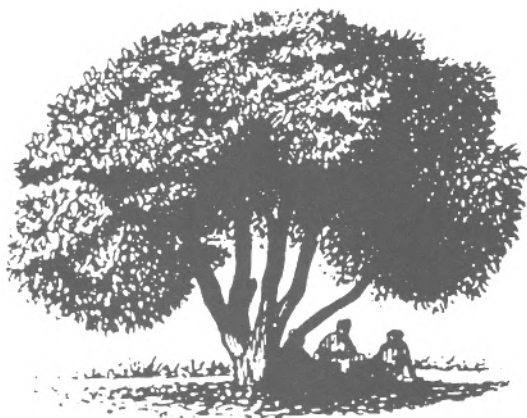
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



MALI AS A CASE STUDY OF FOREST POLICY IN THE SAHEL: INSTITUTIONAL CONSTRAINTS ON SOCIAL FORESTRY

by
Chun K. Lai
and Asmeen Khan

Chun K Lai is Forestry Adviser to USAID in Mali.

Asmeen Khan did research on Forest Policy in Francophone Africa while working temporarily at ODI. She now works for Oxfam.

MALI AS A CASE STUDY OF FOREST POLICY IN THE SAHEL:

INSTITUTIONAL CONSTRAINTS ON SOCIAL FORESTRY

by

Chun K. Lai
and Asmeen Khan

I INTRODUCTION

The current environmental crisis in the Sahel and other arid and semi-arid regions of Africa has been described as largely a man-made phenomenon: the process of desertification. The problem has many causes: over-exploitation of the natural resource base; increases in the human and the livestock population: agricultural expansion into former pastoral areas; and urbanisation (NAS 1983a). Drought has intensified and accelerated this process. These factors have led to "islands of desertification" appearing and spreading throughout the Sahel (Gorse et al. 1985). The roots of the problem, however, are even more complex and are related to policy and institutional constraints, which are prevalent in the forestry sector and impede the development of social forestry.

II FOREST POLICY IN THE SAHEL: BACKGROUND

The Sahel may be defined as a region receiving between 200 to 600 mm of annual rainfall, stretching in a broad band just south of the Sahara and transecting most of francophone West Africa. The eight member countries of CILSS (Permanent Interstate Committee for Drought Control in the Sahel) - Cape Verde, Mauritania, Senegal, Gambia, Mali, Burkina-Faso, Niger and Chad - are normally considered as Sahelian countries. Extreme variability of rainfall is characteristic of this region, with cycles of recurrent drought a prominent feature. The spatial and temporal irregularity of rainfall patterns, in combination with frequent variations in soils, topography, vegetation and land use, create a heterogenous physical environment (NAS 1983b, Taylor and Soumaré 1983).

Traditional production systems: the role of trees and forests

Trees and forests play a vital role in traditional production systems, providing a range of products such as fuelwood, wood for construction and artisanal purposes, fodder, fibre, foods, gum and other secondary products. An equally important role is that of maintaining soil fertility and stability. Throughout the Sahel, the anthropogenic retention of certain species, such as Acacia albida, lends a "farmed parkland" look to the landscape (Taylor and Soumaré 1983, Weber and Hoskins 1983).

Production systems are generally linked to the ecological gradient within the Sahel and can be classified into three broad categories:

(i) Silvopastoralism is practised in the arid north, where different ethnic groups maintain herds of varying composition and occupy specific niches. The majority are transhumant pastoralists, moving between wet and dry season pasture. Fodder from trees is critical during the long dry season and provides up to one-third of the total dietary requirements of livestock during the year.

(ii) Agrosilvopastoralism generally occurs in the less arid zones of the Sahel, where sedentary mixed farming systems have evolved, integrating crops, trees and livestock components. Here, in addition to fodder production, trees are valued for their soil enhancement qualities. The Acacia albida is extremely important in these systems and constitutes an integral element of the oldest sedentary agriculture in the region (e.g. that practised by the Serères in Senegal).

(iii) Agrosilviculture is usually found in the more humid southern portion of the Sahel, where rainfed agriculture is practised. Production is based on cereal crops, notably millet and sorghum; cash crops, such as cotton and groundnuts are also produced. Once again, trees play a vital role in maintaining soil fertility in these systems and produce a range of secondary products (Gorse et al. 1985).

Historical perspective: genesis of a forest policy

In precolonial times, traditional rulers and institutions (e.g. village chiefs and councils) established and enforced regulations governing the use of common resources such as pastures and trees. Often, laws were enacted prescribing severe punishment for the illegal cutting of certain trees; such as was the case with Acacia albida in the kingdom of Segou (Mali) and in the Sultanate of Zinder (Niger), where the offenders were punished by lopping their hands. Trees were also protected for religious reasons, as in sacred groves or burial grounds, or for more practical benefits, such as shade and fencing (CILSS 1982a, 1982b).

In Mali, the karité (Butyrospermum parkii), néré (Parkia biglobosa) and baobab (Adansonia digitata) were valued and protected because they provide food substances, which are consumed on almost a daily basis.

With the advent of French colonial conquest, greater exploitation of forest resources occurred through land clearing for the expansion of cash cropping and the creation of railroads. Prior to colonialisation, agricultural production was concentrated on the subsistence food crops. Allocation of land use rights was held in trust by the elders and passed down to individuals and families through lineages. Some argue that by imposing head taxes and cash cropping, the French caused some men to migrate to neighbouring English colonies and also prompted greater individualisation of land tenure (Thomson 1983).

The problems of deforestation in the Sahel were noted as early as the 1930s and 1940s. Aubreville commented in 1947 that the disappearance of the dry forests would have a disastrous effect on soil fertility and influence the climate in years to come (Aubreville 1985).

This perception of over-exploitation of forest resources led to an evolution of forest policies and regulations. The first step toward the development of forest policy in francophone West Africa was the creation of the droit forestier in 1932, which enabled the colonial administration to create state forests (forêts domaniales de l'état) in an attempt to control exploitation and protect the forest resource. The reserves were established in forests and on other lands deemed to

be "vacant without ownership", often ignoring the existence of customary rights. The trees on this land included commercial timber species as well as species yielding fuelwood, tannin, fibre, gum and other important products. In the process, a large amount of silvo-pastoral and bush fallow land was annexed by the State, causing much resentment amongst the local populations who depended on this land (Gallais and Boudet 1980).

As Bochet (1983) concluded, these policies were primarily directed towards conservation as a means of preventing misuse of the forest and have been developed in terms of litigation. The consequence of this emphasis on punitive and deterrent aspects of forest law became an obstacle to development..."The legacy of this forest policy imposed by the French colonial administration is quite prevalent today throughout the Sahel". It is one of the strongest constraints to current social forestry efforts. The following section attempts to analyse, using Mali as a case study, the status of forest policy, how it is implemented, why it is viewed as an institutional constraint, and what policy reforms may be instituted in order to create incentives for local participation in social forestry.

II MALI: A CASE STUDY

Mali is a large (1,240,000 square kilometres), landlocked and agriculturally dependent country, located in the heart of the Sahel. The top priority for the government and the people is, inarguably, food self-sufficiency, a goal that is becoming more and more elusive as drought and desertification continue. In the face of declining agricultural production and productivity, it has become increasingly clear that trees and forests are intimately linked with, and can enhance, crop and livestock production.

There is tremendous ecological diversity in Mali; vegetation varies from the relatively dense Sudano-Guinean forest formation in the south to the barren Sahara desert in the north. In addition to its critical role in cropping and livestock systems, forest vegetation is essential to the Malian way of life and vital to the Malian economy. Forest products are used by virtually all Malians in their daily activities.

According to a CILSS (1982b) assessment, fuelwood accounts for 93% of the national energy demand. Products such as sheanut butter (karité), fruit and gum arabic are important not only in the household and domestic market place, but also in the national economy. As an export commodity group and foreign-exchange earner for Mali, forest products rank behind only cotton and livestock.

Given the importance of the forestry sector and, simultaneously, the decimation of the resource base through drought and desertification, the government of Mali has responded by according high priority to forestry development and environmental protection in its Five-Year National Plan for Economic and Social Development. As in other Sahelian countries, the Forest Service is charged with this enormous mandate. The fulfilment of this mandate is severely handicapped by two factors: 1) the meagre financial, human and material resources at the disposal of the forest service and 2) the incompatibility of existing forest legislation with current attempts to engender greater local participation in resource protection and management.

The Malian Forest Service: a historical perspective

The present day Forest Service in Mali has its origins in 1935, when the territory was known as the French Soudan. The decree of 4 July, 1935 created the Forest Service to enforce the newly enacted Forestry Code. Trained foresters were virtually non-existent, with the exception of a few colonial officers, and for a long period the service recruited most of its personnel from the ranks of former military men. Thus the paramilitary structure and nature of the service was born, with its approach to resource management based on strict conservation (Thomson and Sylla 1985).

The Forestry Code was essentially restrictive and punitive and the accompanying system of permits and fines became the normative structure within which foresters worked. Antagonism rapidly developed between foresters and villagers due to the expropriation of wood fallow land (considered vacant and without ownership) to create state forests and due to the emergence of abusive and randomized fining practices. This traditional role of the forester and the negative consequences on

forester-villager relationships is a key constraint which must be overcome if the forester is to become an effective catalyst in social forestry development. The current version of the Forestry Code, law No. 68-8 AN-RM, went into effect in 1968, but retains essentially the same elements as the Code laid down during the French colonial era. This will be examined in detail in a later section.

Structure Function and Means

The Forest Service is one of the four national administrations within the Ministry of Natural Resources and Livestock. The National Directorate (DNEF) is headed up by a Director-General and comprises seven technical divisions, which are responsible for providing policy direction and technical supervision to staff and projects in the field. The DNEF divisions are:

- projects and programmes
- environment
- soil and water conservation
- forest management and reforestation
- personnel and equipment
- fishing and fisheries
- hunting and national parks

Presently, many of these divisions are operating at partial capacity at best and most sections are underemployed; each division has a head, who supervises three or four sections. The Division of Projects and Programmes (DPP) is charged with the principal responsibility for policy formulation and implementation. In theory, this division is empowered to coordinate with the Ministry of Planning on issues of sectorial policy and planning. In practice, the DPP is understaffed and underequipped and therefore unable to adequately collect, interpret and analyse data or develop appropriate national-level policies. Furthermore, within the actual political arena, the DNEF lacks the administrative clout to pursue and develop policy on the broader inter-agency level.

Most of the current operational forestry projects (in other words, externally funded) are "supervised" at the national level by three divisions, these being: Projects and Programmes; Soil and Water Conservation; and Forest Management and Reforestation. Many of these projects are implemented through the Regional Directorates (DREF). In Mali, the Forest Service structure is parallel to that of the State Administration; hence there are seven Regional Directorates, one in each administrative region, subdivided into 46 forest cantons, one in each administrative circle.

The Forest Service has a dual mandate:

- 1) the protection and management of renewable natural resources, including forests, soils, surface, water, silvopastoral areas, wildlife and forestries; and
- 2) the implementation of desertification control measures to stabilise the degrading environment, including reforestation, soil and water conservation and public education.

Compounding this enormous mandate is the overwhelming range of the "natural forestry domaine", which embraces 91% of the Malian territory. This includes virtually all rangeland and non-cultivated lands as well as some 4.4 million hectares of administratively classified lands: 1.1 million in forest reserves, 0.4 in national parks, and 2.9 million in partial fauna reserves.

The means for attempting to meet this mandate are severely limited. In 1984, Forest Service personnel included 161 professional foresters, 352 paraprofessionals and 155 technicians. However, its budget totalled only 500 million FCFA (about £1 million) and was derived from three sources: the National Budget (201 million FCFA); the Regional Budgets (101 million) and the National Forestry Fund (212 million) (République du Mali 1985). Of the National and Regional budget allocations, over 90% went directly for salaries and personnel costs. This means that, donor financing aside, the Forestry Fund is the sole source of the operating costs of production activities.

The Forestry Fund is a special Treasury account comprising receipts of all exploitation permit fees and 75% of fining transactions (the other 25% are redistributed as commissions). It is clear why the traditional function and emphasis of the Forest Service has been protection of existing resources through the levy of repressive fines for violation of the Forestry Code. On the one hand, fining feeds the Forestry Fund, which can be used to finance equipment and transportation; on the other, commissions supplement the rather low and irregularly paid salaries of foresters and their supervisors. However, the unfortunate result is the antagonism it has bred between the Forest Service and the population, which acts as a disincentive to local participation in resource management.

The Forestry Code

The restrictive and punitive nature of the Malian Forestry Code is manifest in the systems of permits and fines, respectively.

In theory, the requirement for obtaining permits to exploit fuelwood as wood for construction or artisanal activities allows for control and regulation of where, and how much, cutting takes place. For fuelwood and for certain species such as Acacia alibda, only deadwood is to be harvested. However, owing the meagre means of the Forest Service to apply this in practice, there is little effective control of wood cutting and commercialisation.

Article 36 of the Code (République du Mali 1968) describes 10 "forest species" considered as "protected species". These include A. alibda, néré and karité, three of the most important and prevalent anthropogenic agroforestry species found throughout farmers' fields in Mali. All protected species can be legally exploited only with a permit obtained from the Forest Service, which ranges in cost from 1000 FCFA (£2) per tree for kapok (Bombay costatum) to 6000 FCFA (£12) for each cailcadrat (Khaya senegalensis) (CILSS 1982b). Aside from the large monetary burden this represents to an artisan or other user of these trees, there is the additional burden of time and transport involved in seeking a permit from a Forest Service post. For a poor peasant, these costs can be prohibitive.

In the case of fuelwood gathering and harvesting, it is generally recognised that the exploitation of deadwood for domestic consumption requires no permit. For commercial purposes, the permit price for a stère (one cubic metre of stacked wood) has been 100 FCFA (£0.20); this is soon to increase to 200 FCFA as the result of a World Bank imposed condition to double the permit and fining tariffs in an effort to generate more revenues for the Forestry Fund. This small sum should be considered a wood tax as opposed to a stumpage fee, because it represents an insignificant, almost negligible, portion of the replacement cost of fuelwood. Because a permit is valid for a period of one month from date of issue and control is so inadequate, frequently more wood is harvested than authorised by the permit.

Presently, very little commercialised fuelwood is effectively taxed. A recent study estimated that only about three percent of the fuelwood consumed in Mali is accounted for by the amount authorised via reported permit sales. Part of this is obviously due to the aforementioned limited resources of the Forest Service. However, given that most commercialised wood is transported by trucks via roads leading into Bamako, by far the largest centre of wood consumption in Mali, and that the main arteries are supposedly manned by Forest Service agents, one can only conclude that the "political will" is lacking to push effective control of wood taxation, at least for the Bamako market and its network of wood transporters.

In the case of trees in fields, the Code is ambiguous. While recognising customary tenure - that is, the tree belongs to the person who tends it - the Code still requires that the farmer obtain a "free" permit in order to exploit a tree in his field. The costs associated with obtaining a permit (even a free one) often exceed a farmer's capabilities (Thomson and Sylla 1985). The difficulties of transport, sometimes including that of assuring the transport of the forestry agent for a site inspection before permit issue, have often resulted in farmers evading this process, thus producing the classical scenario where a farmer could be potentially fined for cutting a tree that he tended in his own field.

From the preceding discussion, it is evident that both the spirit and the letter of the Code act as disincentives to farmers and villagers vis-à-vis resource protection and management. Interpretation (and misinterpretation) of the Code is usually at the sole discretion of the forestry agent in his dealings with illiterate peasants. Such a system lays wide open the opportunities for abusive and randomized fining practices.

The punitive aspect of the Forestry Code is, of course, embodied in the levying of repressive fines, which can be extremely severe. In Mali offenders can be fined up to 300,000 FCFA (£600) and/or imprisoned for up to five years, as defined in the Code (République du Mali 1968). In Niger, fines range from 1,000 - 100,000 FCFA (£2 - £200) for illegal felling of a protected species and 10,000 - 500,000 FCFA (£20 - £100) for illicit bush fires (CILSS 1981).

There is a great vested interest in maintaining the fining system for augmenting both national Forestry Fund revenues and individuals' commissions. Of all levied fines, 75% is deposited in the Forestry Fund account and 25% redistributed as commission. Recently, the division of this 25% was revised as follows:

- 10% to the indicateur (reporter of the infraction);
- 5% shared amongst all agents of the forestry canton;
- 3% shared amongst all agents at the Region Directorate;
- 4% to agents at the National Directorate (other than the D-G and his Assistant);
- 1% to the Director-General and Assistant D-G;
- 2% to the Forest Service Fonds Commun (Common Fund).

One basic rationale for the use of commissions is to discourage the incidence of "unreported fines". In practice, however, it must be conceded that unreported fines, bribes and other abuses occur (Thomson 1977), although the extent, frequency and magnitude of these practices are impossible to know accurately. Undoubtedly, this aspect of forest policy implementation has created the most antagonism between the villager and the forestry agent.

The Forestry Fund

In theory, the National Forestry Fund in Mali can be an important investment fund for production and conservation activities. It is a special Treasury Account into which 100% of permit fees (only 50% prior to 1981) and 75% of levied fines are deposited. From this account, certain operating costs for nurseries, transport of agents, etc., are provided as well as some infrastructure and equipment. In 1984, of the total non-donor financial resources available to the Forest Service, about two-fifths came from the Forestry Fund. One unhealthy trend has been the increasing proportion of fining revenues as opposed to permit revenues. This is illustrated by the selected data below.

FORESTRY FUND REVENUES IN MILLION FCFA FROM:

<u>Year</u>	<u>Fines</u>	<u>As % of Total</u>	<u>Permits</u>	<u>As % of Total</u>	<u>Total</u>
1969	7	24	22	76	29
1971	13	30	31	70	44
1976	37	34	72	66	109
1981	161	65	86	35	247
1984	90	49	93	51	183

Source: République du Mali 1985

Clearly this trend needs to be reversed so that increased receipts from permits, as a function of more effective control of wood exploitation and commercialisation, become once again the lion's share of Forestry Fund revenues.

TOWARDS SOCIAL FORESTRY: THE CASE FOR POLICY REFORM

The so-called first-generation Sahelian forestry projects met with little success. Many over-ambitious projects, geared toward the establishment of large-scale plantations of exotic fuelwood species, were instigated as a response to the severe drought of the late 1960s and early 1970s. Over 160 million dollars US were expended by donors as Sahelian forestry aid between 1975 and 1982 (Weber 1982).

Many important lessons have been learned. In some cases, technical or environmental factors caused project failure. In almost all cases, social and institutional constraints were not adequately addressed and were the major obstacles to forestry development. "Local participation in resource management" is now a long standing cliché, yet it remains the key and largely unachieved element in social forestry promotion. The rigid paramilitary orientation of the Forest Service, with its restrictive and primitive approach, has been a major factor in the breakdown of traditional resource management mechanisms. (Thomson and Sylla 1985). Local communities have become divorced from the management of common property resources. With the current permit and fining systems, many villagers feel that once a permit is bought or a fine paid, they are entitled to unlimited access to the wood resource. In sum, there are no incentives for preserving or growing trees under the existing policy and legislative framework (Thomson 1983b).

Perhaps, then, the most important lesson is that a favourable forest policy environment has to emerge if "local participation" is to pass from rhetoric to reality. The burning question is: how?

Evolution of Forest policy in Mali

The Malian Government and Forest Service recognise the inherent deficiencies of an approach that emphasises repressive police functions. This recognition, with encouragement from the forestry sector donors, has spurred the articulation of a new politique forestière. At the National Forestry Round Table, held in November 1983, constructive dialogue took place on key institutional issues and constraints. Recommendations were formulated to underscore the pressing need for better training and research as well as certain policy reforms.

Among the priority areas indicated for policy revision were:

- the transition from repression to extension as the major role of the forestry agents;
- the revision of forestry legislation including the definition of the "forestry domaine";
- the necessity of involving local populations in natural

- resource management;
- the need to integrate forestry interventions with agricultural and livestock activities; and
- the importance of greater flexibility in the application of forestry regulations to reflect the diverse eco-climatic zones.

Since the landmark meeting, some - but in the opinion of many, not enough - progress has been evident. In terms of social forestry, the pivotal reform concerns the role of transition of agents in the field. There is much rhetoric and some action to suggest that agents are being guided toward assuming an extension role. However, given the animosity developed in past relationships between foresters and villagers and the strong, vested interests prompted by the fining system and commissions, this transition will be very slow unless more draconian policy reform measures are taken. Even with the most qualified, motivated and well-intentioned agents, the nature of dual roles - providing both repressive and extension functions - is often conflicting and impossible to fulfill.

Owing to very low levels of national funding, the Forest Service is dependent upon donor financial assistance for most of its programme and project development. Thus, donors have potentially great leverage in policy dialogue and reform. For that to occur, a unified donor position regarding the major reform issues would be required. At present, and by no means by accident, the major donor groups (World Bank, France, Switzerland, Holland, Germany and the United States) are each working in separate regions. This geographic dispersal renders difficult the important matter of donor coordination. While informal interchange between donors improves information sharing, formal links have not been forged either by the Government or by the assistance agencies themselves.

Strategies ahead

What, then, are the options to be pursued to create a more propitious policy environment in Mali? And how can these options be implemented in the face of certain vested interests and the desire to maintain the status quo? There certainly are no clear-cut solutions. One scenario would involve the development and experimentation of rather bold policy measures aimed at creating an effective forestry extension capability. For this to succeed, donors must assume a strong supportive position on policy reform and an effective feedback mechanism must be established to monitor experimental policy initiatives and their impact on local populations as well as forestry agents.

Bold strokes

Among potential options to be considered and tested are:

- (i) creation of two forestry divisions. The formal separation of the police and the extension functions are seen by many as the only short-term solution to the "duality" problem. This has been recently instituted in Senegal. It is envisaged that the protection division would be charged with environmental protection and the control of resource exploitation, and move from the current pattern of randomized fining to a more programmed function with specific agents responsible for specific areas, assigned on the basis of protection needs. The protection would assume an education role with the local populace and work in concert with them. The reforestation division would be mandated with the extension function and agents assigned to this division would work exclusively on social forestry and conservation activities.
- (ii) creation of a Regional Forestry Fund. Regional accounts would supplant the National Forestry Fund with the view of increasing efficiency in the deposition and mobilisation of revenues (and avoiding the "annexation" of the Fund at the national level). This would encourage more self-reliance at the regional level. Of course, adjustments would have

to be made for regional disparities in resources and generated revenues.

- (iii) suspension of commission from levied fines. This would be the most radical move but also the most essential in eliminating the vested interests associated with the fining system. In this scenario, all revenues from fines levied would be deposited into the Regional Forestry Fund; no commissions would be redistributed. Instead, a personnel evaluation system would be developed to assess the effectiveness of a given agent in carrying out his assigned protection or extension duties and the award of performance bonuses given or not given on that basis. One argument against this is that the level of unreported fines would skyrocket. But risks must be taken if meaningful policy reform is to be embarked upon.
- (iv) transfer of some resource protection and management function to local levels. The local participation component of the social forestry equation can only come to fruition when some local-level controls are restored. In view of the limited resources of the Forest Service and the problematic situation concerning recurrent costs and sustainability, much more responsibility must be shouldered by local population. The modalities for engendering greater local involvement are not well-defined. Nonetheless, a range of options appears worth trying. Contractual arrangements may be appropriate in some cases between villagers and the Forest service, as in the case of controlled farming or grazing access in forest reserves or villager participation in exploitation activities within reserves. Some villagers have expressed the desire to form "village forest police brigades", which would be responsible for enforcing regulations surrounding natural resource usage. Successful application of these types of initiatives could result in the Forest Service and village working in partnership.

Donor leverage

Resistance to change is particularly strong where vested interests are involved. For this reason, the reforms suggested above would probably only be tried if steady, unified and insistent leverage is applied by donors in the sector. This presents another problem: how to effectively promote donor coordination? Although most donor representatives are supportive of this action, no practical forum has yet emerged. Ideally, an international or multi-lateral aid agency would assume the lead (e.g. UNDP/FAO or the World Bank) with the active participation of bilateral and non-governmental organisations. The creation of a regular forum for Government-donor consultations (e.g. an annual round-table on forestry sector issues) would facilitate dialogue and coordination.

Concerted donor pressure, in combination with support of policy studies and formulation of realistic policy options, could lead to dramatic improvement in the policy environment.

Feedback mechanisms

The testing of policy reforms on an experimental basis would require careful monitoring of how these reforms affect villagers, forestry agents and social forestry interventions. Feedback from all levels is essential for proper evaluation and revision of policy initiatives. It is clear that for policy reform to proceed, a gradual, iterative and flexible process must be fostered.

V PROSPECTS AND OUTLOOK

The road ahead, like the trail behind, for forest policy in the Sahel promises to be rocky and fraught with pitfalls. Policy evolution, and to a certain degree, policy revolution, must be pursued with one eye on the types of policy reform that are sorely needed and the other trained on the political realities at hand (la politique actuelle as Sahelians are fond of saying). And somehow the political will to support these reforms must be tapped.

As suggested, donors in the sector have a vital role to play in this process. They must be able and willing to surmount past preoccupations with turf battles and scrambling over each other for projects. Like anything else, good policy is dependent on good information, which, in view of its current short supply must be encouraged or partially supplied by the donors. Levering is a delicate business.

Finally, a more realistic view of policy reform needs to be presented. The forest police function must be viewed as an essential one, which needs to be improved and made more effective, not eliminated. Correctly structured, the police function will complement and support forestry extension efforts. Policy reform, like social forestry, is a gradual, long-term process. Only through sustained and long-term commitment from Governments and the donor community can this process work.

REFERENCES

- Aubreville, A.M. 1985. The disappearance of the tropical forests of Africa. Unasylva, Vol. 37, No. 148, pp 18-28.
- Bochet, J.J. 1983, Management of upland watersheds: participation of the mountain communities. FAO conservation guide No. 8, FAO, Rome.
- CILSS/Club du Sahel. 1981, Analyse du secteur forestier et propositions: Le Niger. CILSS/Club du Sahel, Ougadougou/Paris. Sahel D(81)132. 3 Vols. 1(138p), 11(178p), 111(102p).
- CILSS/Club du Sahel. 1982a, Politiques forestier au Sahel. CILSS/Club du Sahel, Ougadougou/Paris. Sahel D(82)185.
- CILSS/Club du Sahel. 1982b, Analyse du secteur forestier et propositions: Le Mali. CILSS/Club du Sahel, Ougadougou/Paris. Sahel D(82)165. 2 Vols. Rapport(165p) and Annexe(76p).
- Gallais, J and Boudet, G. 1980, Projet de code pastoral concernant plus specialement la region du delta central du Niger au Mali. Institute d'elevage de medecine veterinaire des pays tropicaux. France.
- Gorse, J. et al. 1985, 'Desertification in the Sahelian and Sudanian zones of West Africa'. Unasylva, Vol. 37, No. 150, pp19-27.
- NAS. 1983a, Environmental change in West African Sahel. National Academy Press Washington, D.C.

NAS. 1983b, Agroforestry in the West African Sahel. National Academy Press, Washington, D.C.

République du Mali. 1968, Textes forestiers. Editions-Imprimeries du Mali. 51p.

République du Mali. 1985, Rapport annuel: 1984, Direction Nationale des Eaux et Forêts, Ministère des Ressources Naturelles et Élevage, Bamako, Mali.

Taylor, G.F. and Soumare, M. 1983, 'Strategies for forestry development in the semi-arid tropics: Lessons from the Sahel'. In, Strategies and designs for afforestation, reforestation, and tree planting. Proceedings of an International symposium, Wageningen 19-23 Sept., pp 137-168.

Thomson, J.T. 1977, 'Ecological deterioration: Local level rule making and enforcement problems in Niger'. In M.H. Glantz ed.: Desertification: environmental degradation in and around arid lands. Westview Press, Boulder Colorado. pp57-79.

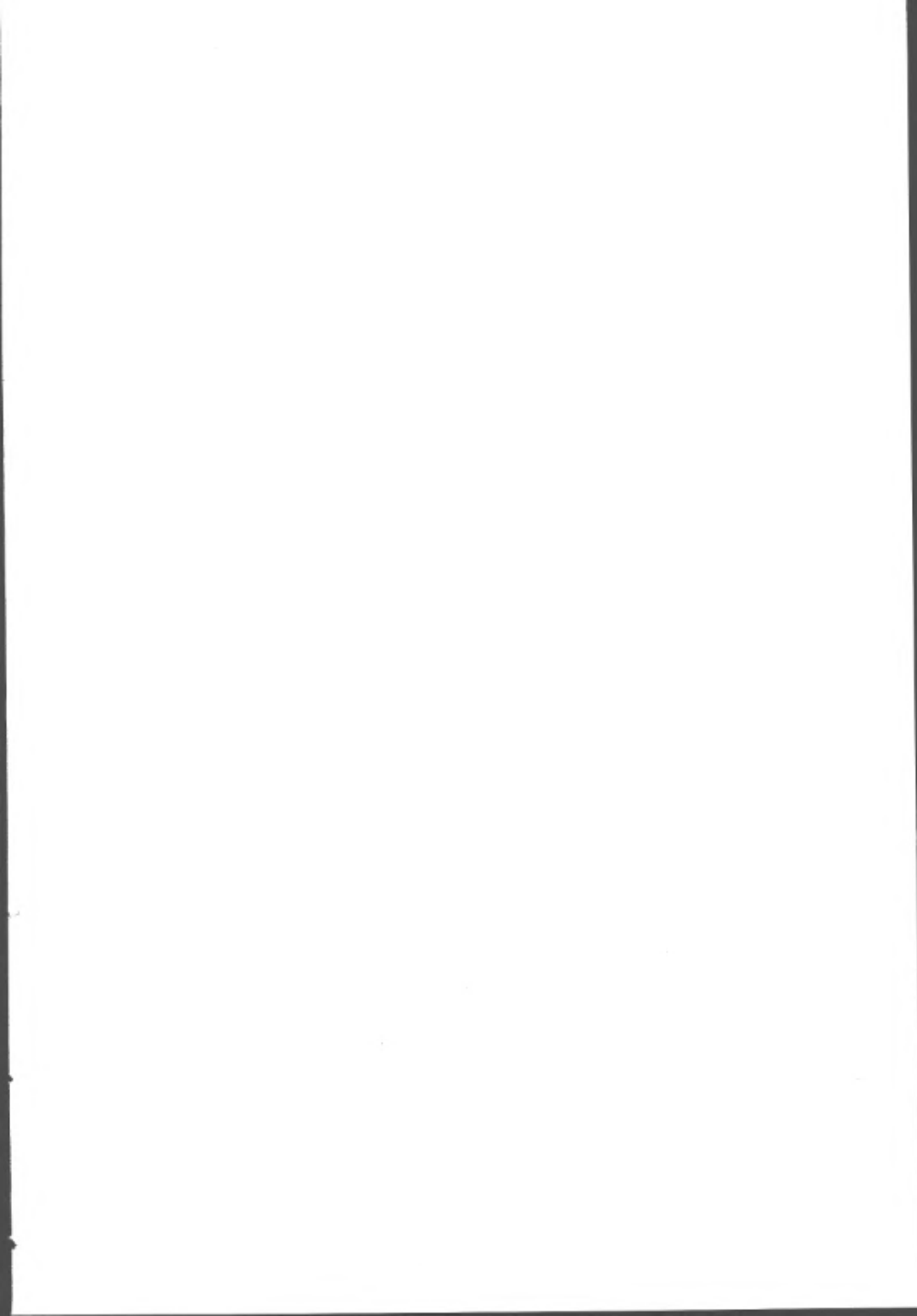
Thomson, J.T. 1983a, Deforestation and desertification in twentieth century arid sahelian Africa. Paper prepared for a conference "The World Economy and World Forests in the Twentieth Century" held at Research Triangle Park, NC, April 14-16, pp38.

Thomson, J.T. 1983b, Participation, local organization, land and tree tenure: future directions for sahelian forestry. CILSS/Club du Sahel, Ougadougou/Paris. Sahel D(83) 190.

Thomson, J.T. and Sylla, D. 1985, Local environmental management practices and orientations for rural forestry in Mali's fifth region. USAID/Bamako, Mali.

Weber, F. 1982, Review of CILSS forestry sector program analysis papers. Prepared for Forestry Support Program (AID/USDA-FS), Washington, D.C. 62p.

Weber, F. and Hoskins, M.W. 1983, Agroforestry in the Sahel. Dept. of Sociology, Virginia Polytechnic.





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



Newsletter

**Agricultural Administration Unit,
Overseas Development Institute**

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1000 members and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

© Overseas Development Institute, London 1986

Photocopies of any part of this publication may be made without permission.

The opinions represented are those of the authors and network members and do not necessarily reflect the policies of the Overseas Development Institute.

CONTENTS

Network Papers accompanying this newsletter.....	2
News of the Social Forestry Network.....	3

The library
The register
'Wastelands' workshop
Staff

News of the AAU's other networks.....	4
Short Article: 'Agricultural Extension in Africa'.....	6
Reports of Conferences and Workshops.....	8
Forthcoming Conferences.....	10
Employment Opportunities.....	12

NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER

The theme of this particular mailing is Forestry Extension. A useful overview article by Julia Falconer (Social Forestry Network Assistant from January to May 1987) accompanies examples of field methodologies from the Sudan and Karnataka; a paper on the training courses for forest extension workers offered in Somalia; and one on current obstacles to popular participation in India.

A shorter contribution, reviewing the recently published report, 'Extension Alternatives in Tropical African Development', is to be found in the newsletter itself.

The authors and the network editor greatly welcome comment on aspects of any of the papers.

- 4a: Letting the Piper Call the Tune : Experimenting With Different Forestry Extension Methods in the Northern Sudan by Matthew S Gamser.
- 4b : Forestry Extension Training in Somalia by Des Mahony.
- 4c : Microplanning for Social Forestry: A Description of the System Designed for Karnataka Social Forestry Project, India by P D Hardcastle.
- 4d : The Management of People's Participation in Community Forestry : Some Issues by D Sen and P K Das.
- 4e : Forestry Extension : A Review of Key Issues by Julia Falconer.

NEWS OF THE SOCIAL FORESTRY NETWORK

THE LIBRARY

Our collection of Social Forestry documents has topped the 800 mark, with the bulk of the documents now input onto the ODI library's IBM using IN-MAGIC software. Inputting documents and sorting out earlier records has been a huge task, and has only been possible because of the efforts, in particular, of Julia Falcolner and Mary Hobley. In our next mailing we will be able to send network members a printout of our accessions for the last fifteen months and a bibliography.

THE REGISTER

The Register, with information about the qualifications and interests of networkers, has now been compiled, and will be sent to you in October.

WORKSHOP

A Social Forestry Network/IDS University of Sussex workshop entitled 'Commons, Wastelands, Trees and the Poor: finding the right fit' was held in June 1987. An account of it appears in 'Reports of Conferences', and papers from it will be published in the October mailing of the network.

STAFF

The Social Forestry Network is flourishing in the capable hands of two new staff members, Ingrid Norton the Network Secretary, and Mary Hobley, our part-time Network Assistant. Mary, who was trained in the forestry departments of Bangor, North Wales and the ANU, Canberra, has recently returned from doctoral field research in Nepal.

NEWS OF THE AAU'S OTHER NETWORKS

The Agricultural Administration Network, run by John Howell has published the following papers in 1987:

Discussion Paper No.19

'Farmer Participatory Research: A Review of Concepts and Practices'. John Farrington and Adrienne Martin.

Discussion paper No.20

'The Organisation and Management of Agricultural Research: Current Research Issues'. John Farrington and John Howell.

Network Paper No.22

'Abstracts of Recent Field Experience with Farmer Participatory Research'. Adrienne Martin and John Farrington.

The Irrigation Management Network, run by Mary Tiffen and Camilla Toulmin published in its April mailing:

- 87/1b 'The Dominance of the Internal Rate of Return as a Planning Criterion and the Treatment of O & M Costs in Feasibility Studies', by M Tiffen.
- 87/1c 'Irrigation Service Fees in Asia', by M Svendsen.
- 87/1d 'Computerised Control of Irrigation Water Distribution', by J Verdier.
- 87/1e 'Groundwater Management: Equity, Feasibility and Efficiency', by C Toulmin and M Tiffen.

The Pastoral Development Network, run by Jon Moris published the following papers in its March mailing:

- 87/23a 'An Overview of Drought Strategies and Land Use in African Pastoral Systems', by Gufa Oba and Walter Lusigi.
- 87/23b 'The Communal Grazing Cell Experience in Botswana', by R J Sweet.
- 87/23c 'Livestock in the Gezira Scheme - 1986', by Roger Blench.

- 87/23 'Andean Pastoralism and Development in Bolivia and Peru', by David Browman.
- 87/23e 'The Impact of the 1984 Drought on Olkarhar Group Ranch, Kajiado, Kenya', by B E Grandin and P Lembuya.

AGRICULTURAL EXTENSION IN AFRICA

Jon Moris, who runs ODI's Pastoral Development Network, has written the following summary for the newsletter of this paper. The full paper is an AAU Occasional Paper No.7, 'Extension Alternatives in Tropical African Development'. It is available from the Publications Officer at ODI, price £3.95 (or £4.95 for OP8) plus postage and packing (£1 seamail and £4 airmail).

Extension Alternatives in Tropical African Development reviews the options facing African governments which wish to reform their agricultural extension services. The classic approach to agricultural extension through assigning Ministry of Agriculture staff to work in rural communities is no longer cost-effective nor adequate to current needs. It was heavily oriented towards the promotion of a few export crops, for which technological packages had been prepared. It left out many other areas of equivalent importance: food crops, nutrition, livestock development, irrigation, and agro-forestry. Since the programmes were sector-based, they had particular weaknesses in dealing with kinds of extension that required cooperation between different ministries (as, for example, between agriculture and natural resources). Programmes were also very expensive, if one considers the transaction costs they incur in reaching rural households with given items of information.

These days most African governments are encountering declining external earnings and a squeeze on their own government budgets. A larger and larger proportion of government funds are absorbed simply to pay the salaries of field staff, leaving very little for the operation of field services. Achieving an expanded outreach either in territorial coverage or in a wider range of topics will require adoption of more efficient methods and less expensive organisational structures.

The report reviews the different types of agency which can become involved in extension outreach: ministries, crop parastatals, training institutes, enclave projects, farmer associations, and commercial firms. Each has its particular strengths and weaknesses, and all are subject to special constraints when dealing with low-resource smallholders. These constraints explain the relatively low

productivity of mass extension in Africa, and the diverse approaches which have been tried to date in different countries.

The underlying idea which accounts for the stress upon 'alternatives' is that cost constraints require a rethinking of African extension strategies. The low morale of field cadres and the high transaction costs evidenced at present greatly diminish the output from ministries of agriculture as presently organised. The report looks at different extension reforms which have been proposed. A major concern is to improve extension performance related to intersectoral development in spheres like social forestry, fisheries, livestock development, and irrigation. For such purposes, the usual ministry approach is not effective. Instead, organisational frameworks which facilitate communication between technical specialties are required. Greater use should be made of new technologies for communicating with farmers and with field staff. Because there are already many programmes vying for funds and national support, we should expect that reform may be controversial and difficult. Nevertheless, the message of this report is that for new topics like social forestry it is vital that new and more effective approaches to extension are found.

REPORTS OF CONFERENCES

Development Alternatives: The Challenge for NGOs

A symposium was held in London from 11-13 March, 1987 organised by World Development, Washington and the Overseas Development Institute, London. The conference papers will be published in a special issue of World Development, September/October 1987.

Discussion between the participants who were from a wide variety of backgrounds, including northern and southern NGOs, bilateral and multilateral agencies, evolved around the development agenda of the NGO community in the face of the growing debt and trade problems of the Third World. The focus of the symposium was on the relations between northern and southern NGOs. The need to share information and data, for greater openness and accountability by both donors and recipients. For micro-level experiences to be linked to macro-level policy. The growing dependence of NGOs on government resources and its consequences on their integrity, autonomy and advocacy role. The need to strengthen development education by northern NGOs and to address the contradictions between fund raising and development education.

Summary Report of the Workshop: Commons, Wastelands Trees and the Poor: Finding the Right Fit

The workshop was held at the Institute of Development Studies, University of Sussex, 8-9 June 1987. It was attended by 26 participants from a variety of backgrounds, including, northern and southern NGOs, bilateral aid agencies and independent researchers. This is a brief summation of some of the major points arising from the workshop. A full workshop report will be published in the October Network mailing.

The purpose of the workshop was to take a closer look at some of the ways in which attempts have been made to generate benefits for the poor from public lands in India and Nepal using tree planting schemes.

The eight papers given at the workshop provided a basis for the discussion of means by which the poor could become involved in social forestry projects. Useful insights were given by those people who

were actively involved in social forestry projects and had been implementing tree-planting and tree management schemes. Particular attention was focussed on the tenurial difficulties associated with the use of forest land, particularly with respect to assuring access of the poor to the land and also to ownership of the trees.

The general experience was that before the poor can actively participate in the benefits flowing from these projects, there need to be some fundamental changes in the laws governing forestry in the Indian subcontinent. The tenurial status of the land being put under social forestry should also be clearly stated and understood. The local people concerned should be more aware of the ownership of the trees and their associated rights.

One of the major problems that was discussed was the order of magnitude involved in the whole process of reafforestation and handing over of forest management to local people. At the moment the links between NGOs and the forest department and indeed between NGOs are tenuous. If there is to be any spread of successful local initiatives to involve the poor in the management of local resources, it is links such as these which must be strengthened.

The training and education of the forest department, as extension workers was another area of discussion. If there is to be increased local participation to be facilitated by the forest department, then the staff has to be trained to be facilitators. There were suggestions that forest department staff and NGO staff could be seconded to each other's organisation, so that each could learn and understand the methods and working of the other.

Problems of the long time span of social forestry projects in producing a flow of benefits was discussed. The poor cannot afford to wait for the maturation of a tree crop. Suggestions to overcome this problem included looking at different agroforestry systems, staggered planting of trees and the harvesting and sale of grasses grown between widely spaced trees.

In view of the problems beginning to be faced in Gujarat for the sale of wood products produced by farmers, a major area of discussion was

marketing. How to stabilise prices and avoid a crash? It was decided that research was needed in this whole area of how to organise the marketing of wood products to ensure that the poor farmer gets a fair price for his wood products. It was suggested that the forestry extension system should also take on the advisory role for marketing. At higher levels of policy determination there should be monitoring of trends and forward planning.

The workshop ended with the recommendation that the next such workshop should be held in India, but it was generally agreed that it had been appropriate to hold this initial workshop at IDS in an easy and relaxed environment. This first workshop was a useful and interesting beginning to what must be a long dialogue.

FORTHCOMING CONFERENCES

- | | |
|------------------------|--|
| October 18-28 1987 | <p>IUFRO Symposium on Forestry in Mountainous Regions in Developing Countries.
Peshawar, Pakistan.
Contact: Dr H Löffler
 Universität München
 Federal Republic of Germany</p> |
| October 18-21 1987 | <p>7th Annual Farming Systems Research and Extension Symposium: sub-themes include communications and information systems; macro systems; agroforestry systems; crop/livestock systems; and crop.
University of Arkansas,
Fayetteville, Arkansas
Contact: FSR Symposium
 P O Box 2100
 University of Arkansas
 Fayetteville, AK 72701
 USA</p> |
| November/December 1987 | <p>International workshop on agroforestry
Solan, India.</p> |

Contact: P K Khosta
Dept of Forestry
HPKVV
Nauni - 173 230
Solan (HP), India

November 1988

Forestry Congress/International Symposium on
Agroforestry
Havana, Cuba
Contact: Committee Organizador
1 Confreso Forestal de Cuba
Placio de las Convenciones
Apartado 16046
La Habana, Cuba
TLX: 511609 PALCOCUBA

EMPLOYMENT OPPORTUNITIES

1. EUROACTION ACORD are seeking a forester or agriculturalist to act as Programme Coordinator for their Biharamulo Development Programme in the far west of TANZANIA. The programme seeks to assist in the development of appropriate natural resource management and land use systems. The appointment will be for a minimum of two years, starting as soon as possible.

Qualifications: At least three years' field experience; higher degree in agriculture, forestry or livestock; community forestry experience; experience of liaison with government; ability to learn a foreign language; drivers' licence.

Salary: £13,500-£15,500.

Write to: The Tanzania Programme Officer, Euroaction ACORD, Francis House, Francis Street, London SW1P 1DQ, UK.

2. SOS SAHEL INTERNATIONAL-UK are seeking a Project Manager for a new community Reafforestation Project in Ed Debbe, Northern Province, SUDAN. This project, designed at the request of the Government of the Sudan and IFAD, aims to provide tree nurseries, shelterbelts and windbreaks for some of the riverine and nomadic communities in the far north of the Sudan whose land and houses are being lost to advancing sand-dunes. The appointment will be for two years in the first instance. Applications are invited from foresters with appropriate experience for appointment at project manager level. Write to: The Project Planning Unit, SOS Sahel International-UK, 22 Baron Street, London N1 9ES, UK.



Overseas Development Institute
Regent's College

Nearest underground station: Baker Street (Bakerloo, Jubilee, Metropolitan and Circle lines). Nearest bus stops in Gloucester Place (going North) Baker Street (going South), and Marylebone Road (East or West). ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the Main Entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

Credits

Newsletter and network papers edited by:
Gill Shepherd, Social Forestry Research Officer
Mary Hobley, Network Assistant

Design, typing and layout by:
Patsy de Souza, ODI Secretary
Gill Shepherd and Mary Hobley
Peter Gee, Publications and Press Officer

The Social Forestry Network is funded by the Ford Foundation and by the Aga Khan Foundation.



Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



LETTING THE PIPER CALL THE TUNE: EXPERIMENTING WITH DIFFERENT FORESTRY EXTENSION METHODS IN THE NORTHERN SUDAN

Matthew S. Gamser

Matthew Gamser is currently working for the Intermediate Technology
Development Group in Rugby, UK.

LETTING THE PIPER CALL THE TUNE: EXPERIMENTING WITH DIFFERENT FORESTRY EXTENSION METHODS IN THE NORTHERN SUDAN

Matthew S Gamser

Introduction

This paper presents examples of the outcome of some of the grants made by the Energy Council (ERC) and, within it, the Government of Sudan/USAID sponsored Sudan Renewable Energy Project (SREP), examining the impact of institutional innovations upon social forestry development. The examples date from the period 1982 to 1985, while the writer was working with SREP.¹ The Sudan experience demonstrates that people's participation in the design and administration of forestry projects is an important component of project success. Moreover, the most remote, poorest communities tend to have the greatest resources of organisation and enthusiasm to bring to forestry, and produce the best results when given maximum responsibility for project development and management. This is contrary to the way in which most social forestry is performed, in which poorer people have less direct access to and control over project planning and facilities.

Village and community forestry

The ERC had been encouraged to support community forestry by its advisory committee, which also had pointed out that village-level forestry work was already underway in Sudan. In order to avoid duplication of effort and of error, the ERC reviewed some of the major work in this area before developing its grant programmes. Its review focused on community forestry work in northern Kordofan Region, and, in particular, on the United Nations-supported "Restocking the Gum Belt for Desertification Control" project.

¹This paper is excerpted from a doctoral thesis entitled Innovation, User Participation and Forest Energy Development, completed at the Science Policy Research Unit, University of Sussex in December 1986. The views expressed are the sole responsibility of the author, and do not necessarily reflect those of the Government of the Sudan, or USAID.

Gum Belt community forestry

The cultivation of Acacia senegal, the tree producing gum arabic, was a traditional agroforestry practice in this region. The trees, as well as providing an important trading (later international market) product for farmers and herders, also improved local agricultural conditions through nitrogen fixation and wind and water erosion control. They were grown on approximately a 20 year rotation, with tapping occurring after 5 years, and with food intercropping customary during the first few years of tree growth. The farmers' "gum gardens", scattered throughout the area of Sudan between 10 and 14 degrees north latitude, were models of agriculture-forestry integration that dated back to pre-historic times. Recent drought and declining real prices for gum arabic had resulted in declining production and cutting of trees for fuelwood. The United Nations project sought to restore tree cover and revitalize the gum trade.²

The ERC foresters toured the northern Kordofan area from 6 to 13 February 1984, visiting UN project operations in the Al Ghabsha, Um Ruwaba, Er Rahad, El Obeid, and Bara areas.³ They did not examine all UN project installations, but subsequent conversations with CARE foresters, who had greater experience in this region, confirmed the ERC's basic findings.

The most surprising finding of the tour was the low establishment rate of the Acacia seedlings. The ERC party did not visit one farm that showed more than a 20 per cent survival rate. This may have been due in part to adverse rainfall conditions, but the sites showed clear

²A more detailed description of the project can be found in Charles Tapp, Review of Forestry Projects in Sudan, Khartoum: Agricultural Research Council/USAID, 1984, p.24. Tapp points out that the UN project did not establish a sound monitoring apparatus to confirm whether its seedlings distributed to farmers survived or perished. This point is important in light of the observations of the project's problems to follow in the text.

³See Lester Bradford et al, "Trip Report: Northern Kordofan Forestry Study, 6-13 February 1984", Khartoum: February 1984.

evidence of other, less intractable problems, such as animal browsing, improper or late planting, and complete seedling abandonment. Some gum gardens had seedlings planted with their polythene tube casings still attached, which had prevented growth in the dry conditions. Others showed stacks of unplanted seedlings lying dried out in piles in the corners of fields. One farmer who had requested and diligently planted seedlings was quite disturbed when the ERC foresters informed him that he had received Acacia mellifera, not Acacia senegal, and this species would not produce a marketable gum. Tree seedlings were being raised in large quantities in the UN-supported Forestry Administration nurseries, but few of them were successfully making it into the ground, and few of those that made it that far seemed likely to grow unprotected for the 5-6 years needed for initial gum production.

Discussions with local farmers and foresters revealed several organizational and institutional problems. Despite the presence of new Land Rovers and lorries, furnished through UN support, seedlings were not being delivered to farmers at the proper time for planting, immediately after the seasonal rains. Also, farmers received a sufficient number of seedlings to plant their entire landholding in a 4-by-4 meter spacing. While this was a correct calculation for their eventual seedling needs, planting an entire farm in one season often was impractical, particularly as other agricultural needs were pressing and the planting season was short.

Overall communication between foresters and farmers in the programme was sporadic and ineffective. The foresters spent the bulk of their time in and around their central nurseries, caring for seedlings, while the farmers spent most of their time in their villages. Brief interaction occurred during village and farm selection, and seedling delivery, but only limited field visits occurred both before and, more importantly, after tree planting had begun.

The central problem was that, in spite of its reputation, this was not a "community" forestry project. It was largely a tree propagation endeavour carried out within centralized forestry facilities, bringing

in farmers only at a very late stage of project development, at which point little could be changed to adapt to local human or environmental conditions. As such, it failed effectively to channel the considerable material resources provided by the United Nations and local skills and knowledge of forestry, into the formulation of a practical and productive programme.

The ERC foresters resolved to seek a more villager-interactive forestry development strategy in the formulation of its community forestry projects. Involvement would be fostered by investing the basic responsibility for project design and implementation in the communities themselves, using the grants programme.

A new approach: the Um Inderaba village project

The ERC foresters initiated this approach at the conclusion of their northern Kordofan mission, when they visited the village of Um Inderaba, a site recommended by the advisory committee for community forestry project development.⁴

Um Inderaba village was located at roughly 15 degrees north latitude, north of the gum-growing area, with an annual rainfall of 150-200 millimeters only per year. The villagers depended on their large wadi (depression, seasonally filled with water, with underground reserves), with numerous shallow wells, and its one working government diesel borehole well for drinking water. The recent drought had virtually emptied the former water source, and the latter was afflicted with periodic mechanical failures and delays in service due to the remoteness of the village from Kordofan government offices.

Um Inderaba lay along the major livestock route between western Sudan and the markets of Khartoum, and herders and their stock would often break their journeys there. The villagers generated much of their

⁴M O El Sammani *et al*, "Village Forestry Project (Integrated Village Development)", study and proposal submitted to Advisory Committee on Forestry/Fuelwood Production, Khartoum: September 1983, pp.43-44.

income through selling water, food, and retail goods to passing nomads (the food and goods were usually obtained from Khartoum). The drought had severely depressed this trade, and also brought weak and ill herders to the borehole, as other watering sources were exhausted. This congregation of humans and animals further depleted dwindling local fuelwood and fodder resources.

The villagers felt that their environment was decaying, and they were particularly troubled by damage caused to houses and fences by windblown sands from the north. They had discussed the idea of a community forestry project with members of the advisory committee who had visited Um Inderaba in September 1983.

The ERC representatives proposed that the village committee consider what sort of forestry it would undertake if the ERC provided it with a SREP grant of approximately LS 10,000. This offer caused initial confusion, first because it was unusual for foresters to ask villagers what they wished to do, and second because the villagers, familiar with the UN programme, had expected a far more capital-intensive type of project. The ERC foresters, with some difficulty, explained that theirs was to be a different type of project, in which the villagers would take the lead in designing and implementing their own forestry programme.

The ERC party stayed in the village for 2 days, discussing the grant project idea further, and the villagers, led by their sheikh (religious leader), after some acrimony, eventually decided that some assistance was better than nothing, and began to prepare a proposal to submit to the ERC. The villagers eventually sent 2 proposals to the ERC for consideration, one for a LS 10,000 project, and another for a LS 25,000 one that consisted of the former plan plus additional funds to rehabilitate one of their 2 village borewells. The ERC Technical Committee, which had been briefed by the touring party, approved the smaller proposal, although it later added the borewell funds in a supplementary grant, after the village demonstrated its commitment to and success in meeting the smaller project's goals. The funds were disbursed to the village sheikh, and ERC foresters arranged for periodic consultations and field visits to assess project progress.

Institutional innovation and the Um Inderaba accomplishments

Um Inderaba had almost no physical resources to draw upon. Normal conditions there were harsh, and during the 1982-1985 drought there was no precipitation in the area. At the same time, its population declined, due to death, disease, and out-migration, from 2,000 to roughly 600 families. The local Forestry Administration representative, although based in Um Inderaba, spent little time there, and was of little help to the villagers' project. The ERC foresters could visit this remote site only every 2-3 months, and greater gaps between visits occasionally occurred.

Despite these formidable obstacles, by the end of its first grant period, the village had accomplished all its objectives, and still had funds in hand to continue its forestry work. It had established a nursery and raised 2 stocks of seedlings. It had planted and protected a 3 feddan windbreak with close to 100 per cent survival among Prosopis species, and had fenced off 1 feddan in its wadi (depression) to examine natural forest regeneration in the absence of animal browsing.⁵

The village had finished its work under its budget estimations because, being responsible for its own materials procurement, it had managed, through shopping around and lobbying the regional government, to obtain substantial concessions on sand, cement, wire, and other basic supplies for its project. The ERC, had it tried to implement the work itself, could not have performed it so economically.

The village had kept its trees alive in spite of the complete lack of rain, and in the presence of large animal herds, by hand watering each tree with donkey cart-transported water, and by establishing a village guard rota to protect the plantings (including a village-devised compensation scheme for the guards). Tree survival spoke well of the drought tolerance of Prosopis species, but it spoke even better of

⁵See Hamza Homoudi and Matthew Gamser, "Trip Report: Um Inderaba Visit, 24 February 1985", Khartoum: February 1985.

the capacities of the villagers themselves.

The village used its nursery to raise good windbreak species, like Prosopis, and other species for other purposes, such as neem (Azadirachta indica) for shade, and Acacia and Zizyphus species for fuel and fodder. People built brick shelters to protect shade plantings around their homes from animal damage. The village committee, noting the limited supplies from the nursery, introduced a penalty system for any shade trees that died, adding new incentives to protection efforts.

The success of this project lay in the community's control over its resources and direction. Neither Forestry Administration authorities nor ERC staff could make project decisions, because the funds were all held by the village committee. ERC foresters made themselves, and, to the maximum extent possible, other regional and Central Forestry Administration foresters available for advice and consultation, but the final authority rested with the committee. The relationship between forestry and agriculture (the villagers being agriculturalists, primarily) was transformed by the grant process, placing foresters in service to a larger agricultural cause. In essence, the grants programme allowed local people to take control of forestry development efforts. It provided a small financial incentive to inspire them to exercise their own capabilities in the forestry area, and to supplement these with outside forestry expertise where they deemed it necessary. The Um Inderaba villagers demonstrated ample skills both as cultivators and as project managers in establishing their nursery and small windbreak in the face of enormous environmental and economic hardships.

The existing plantings, by themselves, did not represent a substantial contribution to the welfare of the village or its people. A 3 feddan windbreak, even at maturity, would provide negligible control over sand encroachment for the village as a whole, with a strip of at least 10 times its present length needed to have a significant impact on local environmental conditions. However, the village had established a means and a method to move incrementally towards these greater tech-

nical changes to its environment, and, provided that it receives the borewell improvements promised by the National Water Administration (NAW), in response to SREP grant funds paid the NAW by the village, there is every reason to expect that it will, in time, achieve these more profound innovations. There is also hope that other villages will be inspired by the Um Inderaba example to undertake similar community-organized projects, a hope that has been strengthened by the ERC's continuing receipt and granting of new village forestry grants.

Other ERC community forestry projects : Um Tureibat and El Khwei

The ERC began several other community forestry projects between June 1984 and September 1985. Ironically, in the two projects believed to have the greatest potential, progress to date has been disappointing, despite the ERC's provision of greater technical support to these efforts than it had furnished to the Um Inderaba project. In retrospect, it appears that this performance disparity can be related to the fact that there was no attempt to establish new working relationships between forestry and community authorities, in these two projects.

The projects took place in Um Tureibat village in the Gezira scheme, and in El Khwei village in the gum-growing area of western Kordofan Region. Both villages had far greater rainfall than Um Inderaba (approximately 400-800 millimeters per year, versus 100-200 millimeters, on average), and Um Tureibat had the additional resource of Gezira scheme irrigation supplies. With more water, the villages could support a wider variety of tree species, and, in theory, could achieve higher growth rates with no requirement for supplemental hand irrigation, as was necessary in Um Inderaba. Moreover, irrigated agroforestry in Um Tureibat could improve crop yields through providing shelter and reducing evaporative losses, while gum obtained from Acacia senegal raised in El Khwei forestry would provide a valuable income, in addition to fuel, for local farmers.

The ERC observed the potential of these two sites, and made special arrangements, upon approving grants to the villages, to provide extra

support to their forestry efforts. A US Peace Corps volunteer forester was stationed in Um Tureibat to help with nursery establishment and forestry extension, and a Sudanese forester stationed in El Khwei was paid an incentive to assist the villagers in building and operating their nursery. The assumption made was that this greater support would accelerate project progress and facilitate its replication in nearby villages.⁶

In practice, neither of these things occurred. The nursery in Um Tureibat was completed, and 20,000 seedlings raised, but the volunteer noted that it was difficult to get the villagers involved in its operation.⁷ In addition, he had to obtain an ERC vehicle to carry seedlings to neighbouring villages in order to get the prepared seedlings planted, as few farmers were coming to the nursery (although most had access to adequate transport and finances to obtain seedlings in this far wealthier area than Um Inderaba).

In El Khwei the forester and the schoolmaster, who headed the village project, successfully constructed a nursery and raised some 17,000 Acacia senegal seedlings by July 1985. Good rains came for the first time in years, and the surrounding fields were planted with millet and sesame, presenting an ideal situation for Acacia senegal planting. However, when the author, a CARE forester, and the ERC forestry advisor visited the area in August 1985, they discovered that no seedlings had been taken to the fields for planting.⁸ The planting season was almost over, so promoting seedling sales was not practical. The ERC staff called a farmers' meeting, and offered to deliver seedlings free the next morning to any farmers that came to the nursery to direct the

⁶See Lester Bradford, SREP: Report on Fuelwood Production, December 1983 - September 1984 (Khartoum: Energy Research Council, September 1984), pp.7-9.

⁷Jim Adams, "Um Tureibat Monthly Renewable Energy Report", Khartoum: March 31 1985.

⁸Issam Haj El Tahir (CARE-Sudan), "Trip Report: Nahud, Turba Hamra, El Khoue (sic), 31 August - 2 September 1985", Khartoum: September 1985.

ERC vehicle to their land holdings. Several farmers stated at this meeting that they had not known that seedlings were available before this time. Some 2,000 seedlings were delivered the next day, and the ERC staff had to move on to other villages. It is assumed that little additional planting occurred using the remaining seedlings. Here, as in Um Tureibat, the project had not attracted a true community involvement, and as a result was doing poorly in spite of highly favourable environmental and economic conditions.

Although physical, social, and economic conditions were very different in all three villages examined, making any attempt to compare project progress between them tentative at best, it bears examination that the two villages which received the greatest continual forester presence and attention did less well than the one that had the least forester assistance. While the foresters themselves did their technical assignments well and acted in good faith to advance the project, their constant presence discouraged the communities from taking greater responsibility for and control of their grant projects. Although the communities, like Um Inderaba, held the funds required for nursery establishment and planting assistance, they, unlike Um Inderaba, had to acknowledge the presence of a forester paid and supported by another institution. The foresters, by their presence, brought an external authority into the project picture. Because they knew how things should be done, and were eager to help, the villagers tended to leave them to get on with the projects, and declined to get involved themselves.

In retrospect, it may have seemed, to the villagers, as if the ERC had included the foresters in the two village projects in order to keep the projects in line with its expectations. This perception may have provided a strong disincentive for local participation. The traditional relationship between forester and villager in Sudan, as in many other nations, was more that of policeman and potential criminal than that of benevolent "change agent" and his client. The foresters, trained not as teachers, but as technicians, saw their assignment as to ensure that the project was carried out according to plan; so, if

villagers didn't arrive to carry out necessary operations, they went ahead and did them themselves - thus unconsciously reinforcing the villagers' impression that they did not have to pitch in and help themselves, since the work was beyond their control. The Um Inderaba villagers, who had no such support, similarly had no such impressions, organising themselves to accomplish their goals and calling on distant foresters for services as required.

Neither the Um Tureibat nor the El Khwei project was a disaster, and both are ongoing at this time. However, considering the enormous physical and economic advantages the villages had over Um Inderaba, and the greater technical support they received from resident foresters, it is paradoxical that their achievements are less than those of the latter. Paradoxical, that is, from a physical standpoint. From the standpoint of this paper, the limited progress of the two projects can be traced to the limited involvement of their intended beneficiaries in project design and development, as opposed to the considerable participation seen in Um Inderaba.

Individual farm forestry

By October 1985 the ERC, through SREP grants, supported 18 individual farm forestry projects. While these projects represented the largest number of grants in the overall forestry sector, and were estimated to occupy, at that point, some 40 per cent of ERC staff forestry time, their results were not as encouraging as those of work in the village forestry areas.⁹

The ERC's methods and goals in its individual farm forestry work were straightforward. Much irrigated land in central Sudan was devoted to small (less than 20 feddan) farms, including the individual smallholder plots in the Gezira and other major irrigation schemes. Most of these small farmer holdings could, but did not, support some form of tree planting, ranging from border rows to small woodlots.

⁹Georgia Institute of Technology, Sudan Renewable Energy Project: Third Annual Report, p.5.

The ERC felt that, if it could get some farmers to initiate tree planting by providing partial financial assistance through its SREP grants, their example would inspire neighbouring farmers to do the same.

Soliciting farmer interest through grants

On 21 September 1983 the ERC placed an advertisement in the Khartoum press, offering to provide financial assistance for tree planting on small private farms. The ERC's grants would help pay for seedlings and, in cases where the farmers were devoting extensive land to planting or constructing nurseries, would provide additional partial capital assistance for tree propagation. The initial response to the advertisement was strong, with 9 farmers placing grant applications within the 15 day period specified. Afterwards, the ERC's offices continued to receive a small, but steady stream of new farmer applications, which was maintained until the author's departure in October 1985.

Poor initial results

While the advertisement succeeded in establishing farmer interest in the ERC grants programme, the resulting grants were less successful in establishing and replicating small farmer forestry activities. At a meeting of 21 August 1984, after the disbursement of 10 grants, with 15 applications pending, the ERC foresters reported that only 4 farms had begun tree planting. Farmers were keen to receive financial assistance, but they were not showing equal enthusiasm for project implementation. Drought conditions were partly to blame, as low river levels had left many farms without sufficient irrigation water for any form of agriculture. However, one year later, after greater rains had remedied this problem, the tree planting situation on these farms had not improved substantially.

During the August meeting, the ERC Director noted that, if the goal of this grants programme was to set an example for other farmers to follow, then, rather than giving out more grants, the ERC should

freeze new applications until more progress was made on the initial projects. He queried whether further financial assistance in the Khartoum area for such projects would be useful, since the ERC was also supporting local nurseries (see next section), and providing free seedlings to farmers through grants might discourage others from going to the nurseries to purchase seedlings. Indeed, the continuing influx of new applications seemed to indicate the farmers' enthusiasm for a free handout of any sort, rather than a desire to support farm forestry, if the subsequent slow planting-out rate was anything to go by. The ERC suspended the consideration of further small farmer grants in the Khartoum area, although it continued to support a small number of new small farm forestry projects in other regions.

Grants the wrong mechanism for encouraging innovation

A major problem with the small farmer programme appeared to be that, in this case, the grants device provided the wrong message to farmers. It had been assumed that a small financial input would remove whatever reluctance had retarded farmers' inclusion of trees in their agri-cultural systems. Instead, the farmers, feeling that they had been awarded a prize, tended to sit back and wait for the ERC foresters to deliver it to them. The ERC foresters noted that farmers were difficult to contact, and did little work on their projects when the foresters were not present. This was in sharp contrast to the attitude of the Um Inderaba people, who would travel for hours over rough roads to come to Khartoum to obtain new funds, or to ask questions about technical problems.

In a sense, forestry, as promoted through this system, was external to, and not interactive with the farmers' own practices. It was a gift from outside, something the ERC foresters would arrange for the grantees - and not an invitation to participate in the development of a new agroforestry technology. The farm forestry projects that showed the best results, on the other hand, were those in which the farmers, in their grant applications, made a commitment to undertake more than just tree planting activities - in particular, those farmers that asked for help to start their own tree nurseries. SREP farmer nursery

projects in Khartoum province and in the Blue Nile province counted among the few successes in the 18 farm forestry grants.

Government nursery assistance: most funds, poorest results

Some 50 per cent of all SREP forestry grant funds disbursed by October 1985, approximately LS 115,000, supported large, centralized nursery development, with over LS 80,000 of this involved in the expansion and rehabilitation of two nurseries in the Khartoum area. The ERC forestry advisory committee had noted, quite logically, that, in order to encourage local farm forestry activities, the farmers needed an available and reliable supply of seedlings. The two Khartoum area nurseries, Moghran, controlled by the provincial government, and Soba, controlled by the Central Forestry Administration and Forestry Research Centre, contained ample land and staff, but provided few seedlings for the public due to shortages in water, nursery materials, and transport. ERC grants were awarded both nurseries on 15 December 1983.

Neither nursery succeeded in increasing both seedling production and seedling sales and distribution to area farmers. The Soba nursery did not even begin work on renovating its facilities until April 1985, after the ERC threatened to withdraw its grant funds. The Moghran nursery expanded annual seedling production from 40,000 to over 150,000 seedlings in its first year, but it did not manage to transfer many of these to farmers. Most were issued free to local youth groups in a single, bulk transfer that took place in order to rid the seedling beds of overmature seedlings and make room for new plantings. ERC foresters could not find any evidence of the successful planting of any significant amount of the youth groups' seedlings, and it was assumed that most had died.¹⁰ The ERC grant enabled the Moghran nursery to repair one of its small lorries to assist in forestry promotion and seedling sales, and to produce large road signs and other

¹⁰Personal communications, Hamza Homoudi, Khalafalla Sid Ahmed, and Jim Adams (ERC foresters).

promotional materials to further farmer and public education in the benefits of forestry. However, ERC staff noted that the repaired vehicle was seldom used for the proposed activities, and the signs, completed in 1984, still lean against the nursery building, awaiting movement to nearby roads.¹¹

Grant progress hampered by larger institutional problems

The ERC had encountered a problem far larger than physical and financial difficulties in its work with the government nurseries. Their position and role within the Central Forestry Administration itself discouraged the sort of public interaction that the ERC sought to achieve. The nurseries had been established to provide seedlings for local Forestry Administration and government needs, and their work was still devoted to this internal service function. Working with local farmers might be a good idea, but it was not the job of the nursery foresters.

The nurseries were decaying because declining financial support from forestry budgets did not enable them to maintain facilities and irrigation systems. The ERC tried to provide a financial incentive to make them focus upon community seedling sales by asking senior Khartoum government and Forestry Administration officials to allow the nurseries to put seedling sales proceeds into a revolving fund, so that greater sales would provide better finances for coming years. However, although informal agreements to do so were obtained, this seemed to have little effect on grant performance. Considering the political instability of Sudan between 1983 and 1985, during which time the Nimeri government fell and all central and provincial government ministers and senior officials were replaced, the nursery managers may not have had much faith in the power of such agreements, in any case.

¹¹Personal communication, Brad Tyndal and Mary Clarkin of the Dissemination Unit, July 1985, and subsequent personal communication from Jim Adams, 6 March 1986.

In order for the nurseries to make a greater contribution towards the expansion of forestry on agricultural holdings, a fundamental change in the Forestry Administration's policy regarding their roles would be needed: to attract and support farmer involvement in forestry, the nurseries should adopt a more outward-looking, service-oriented attitude.

ERC Dissemination Unit support for fuelwood/forestry activities

The ERC involved the Dissemination Unit in assisting its fuelwood/forestry activities from the unit's formation in January 1984. Initially its work consisted of the publication of studies of forestry issues in the Northern and Kordofan regions by advisory committee members, and of two information brochures on tree planting and shelter-belt design.¹² These publications helped increase public awareness of the ERC forestry programme.

As the programme itself progressed and it became evident that the most promising work was occurring in the agricultural scheme forestry and village forestry sectors, the Dissemination Unit concentrated its efforts on informing and encouraging project participants in these areas. The Unit used publications to demonstrate to farmers and villagers that they could play a major role in shaping forestry work in their areas, and that raising trees and planting shelterbelts and woodlots were tasks they could take a lead role in designing and implementing. Workshops and seminars provided more intensive and 'hands-on' introductions to these same topics, and helped in improving contacts between forestry professionals and local farmers and community organizations. These three types of activities are described in more detail below.

¹²Abdel Aziz Bayoumi, Kamal Osman Khalifa, and Ali Ahmed Saleem, Study for the Establishment of Forestry Plantations, Shelterbelts, and Canal Plantations in the Northern Region (Khartoum: Energy Research Council, February 1984); B A El Hassan, M O El Sammani, and M Suliman, Village Biomass Needs (Khartoum: Energy Research Council, July 1984); ERC Dissemination Unit, "How to Plant Trees" and "How to Construct Shelterbelts", pamphlets, Khartoum: June 1984 (periodically updated and re-issued).

New publications

The Dissemination Unit's reports on forestry during 1985 centered around the theme of agriculture-forestry integration. Two studies looked at the potential for forestry inclusion in irrigated agriculture, the first for the Khartoum area, and the second for the irrigated sector as a whole. A third study, by Derek Earl, looked at potential agriculture-forestry interaction on the rainfed schemes of the mechanized farming sector. All reports were circulated to both Forestry Administration and agricultural scheme offices throughout the regions where potential projects could be formulated.

The Unit also prepared articles for local Arabic and English language newspapers and magazines on ERC forestry activities. These described the novelty of its measures such as initiating village-run nurseries, and agricultural scheme-operated forestry projects.

Workshops

The Dissemination Unit was also able to run two workshops at which information coming from the Project's field experiences could be spread more widely. The first of these, the Nursery Workshop, held in February 1985 offered training in nursery construction, seedling raising and seed collection at the Forestry Administration's Moghran nursery in Khartoum. Participants ranged from individuals in current village and farm forestry projects to party members from the Sudan Socialist Union (then the country's sole political organisation). While knowledge transfer at the workshop itself remained difficult to assess, the existence of the workshop stimulated a lot of wider interest in the Northern Sudan in village and farm forestry.

Later the same year, in August 1985, a second more high-level meeting was organised, the Agriculture-Forestry Integration Seminar, (AFTAH). Fifty leading agriculture, forestry and irrigation experts from the Sudan met to discuss the removal of obstacles to the greater integration of their specialities. While AFTAH highlighted several areas of institutional friction, it also opened the way to better future

cooperation. The ERC director stressed that he did not wish to receive applications for funds from forestry authorities, but from the agricultural schemes themselves who would in turn enlist the services of local foresters as required. This would ensure that the agriculturalists would play an active role in the new technology development, and it would encourage the movement of forestry personnel into a more interactive and service-oriented role with them.

AFTAH results: significant new project interest

Since the end of the AFTAH seminar, seven large agricultural schemes have applied for and received SREP grants to initiate or expand forestry activities on their lands. The ERC has brought 2 new foresters onto its staff to assist in the support and monitoring of its rapidly expanding work in this area. The Central Forestry Administration acting director pledged his full support in providing foresters from his staff to support the schemes in their new grant projects.

Conclusion: the role of institutional innovation in increasing villager participation

What, has been the key to social forestry success in the ERC fuelwood/forestry programme? Neither the species nor the methods it employed were new to forestry science or to the Sudan. However, the most successful projects it supported through SREP grants all involved an innovation in the relationship between forestry and agricultural authorities, whether on the large schemes or at village level - innovation that put farmers into a more prominent role in project development activities.

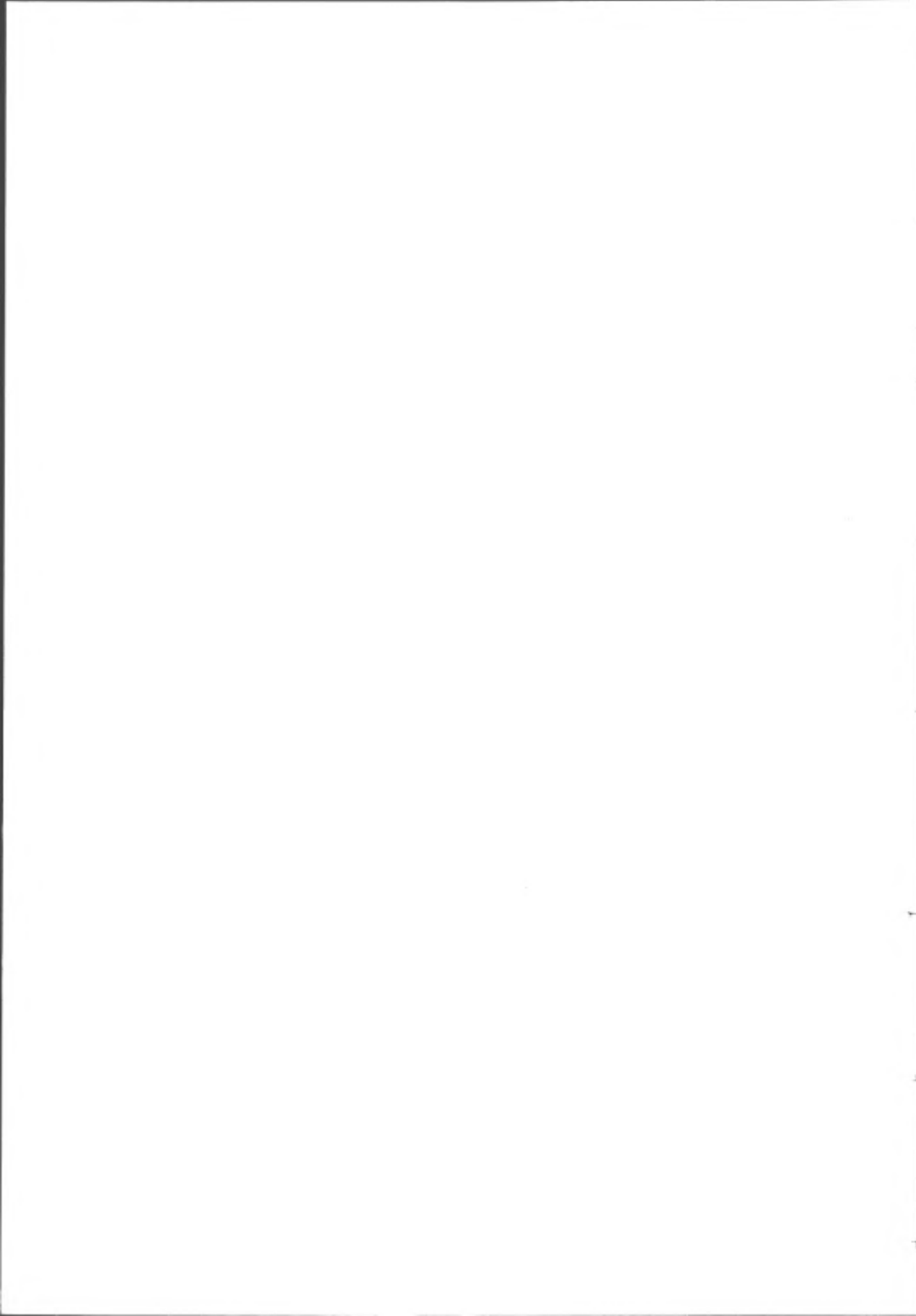
In the village forestry area, SREP grants, through putting funds directly into the hands of village authorities, gave those authorities a new control over forestry measures that inspired them to devise (with technical assistance from ERC foresters) and advance afforestation measures even under the most adverse physical circumstances. Even in the generally poorer-performing grant project areas of farm

forestry and government nursery support, those individual projects in which farmers acquired the greatest responsibility for seedling production and plantation design, and in which foresters adopted a less-dominating, more advisory role, made the greatest progress. In the ERC's work with large, irrigated agricultural schemes, SREP grant-based projects put foresters directly under the authority and direction of agricultural managers, as opposed to previous work that segregated lands and authority into agricultural and forestry spheres.

The more innovation there was in the relationship between foresters and local project participants the more innovation occurred in project implementation. When participants were allowed to determine the types of forestry practices they wished to implement, and the location and manner in which these practices would be implemented, they responded with a greater participation in and commitment to the successful implementation of their projects.

The forestry work the ERC has initiated has significant potential for forest resource development in Sudan, if it can be replicated on a larger scale. The incorporation of forestry programmes into irrigated agriculture scheme design holds particular promise. It has been estimated that, by planting trees on canal banks, marginal lands, and 5 per cent of present agricultural lands (in the form of shelterbelts and border plantings) within the irrigated sector, over 30 per cent of urban fuelwood demand and over 10 per cent of total fuelwood demand in central Sudan could be provided on a sustained yield basis. At the same time, the positive environmental changes that accompany afforestation, shelter from hot, drying winds and increased moisture retention, could lead to improved crop performance. The Egyptian experience with shelterbelt plantings has demonstrated such beneficial effects.

The main obstacle to achieving such goals is not technical capability; it is institutional isolation and rigidity. Sudanese forestry authorities need to re-integrate their work into general agricultural development efforts, and seek to get local people more involved in designing and implementing their own forestry projects.







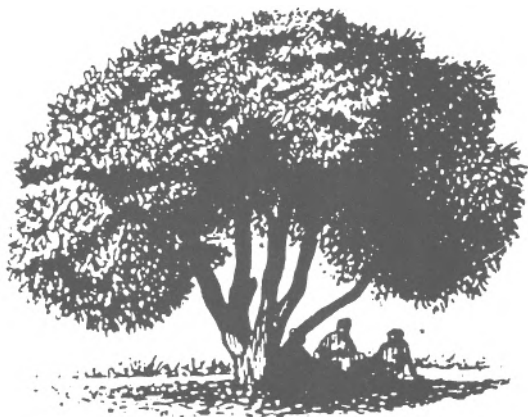
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



FORESTRY EXTENSION TRAINING IN SOMALIA

Des Mahony

Des Mahony worked in Somalia in 1985 and 1986 as a CIIR volunteer employed to develop a social and community forestry curriculum for extension trainees. More recently, he has been funded by Oxfam UK to produce a tree and seed manual for Somalia.

FOREST EXTENSION TRAINING IN SOMALIA

Des Mahony

1. INTRODUCTION

Third world populations have traditionally perceived forests as a gift from nature and have not seen it as necessary to plant and manage them. Accordingly professional foresters in the tropics have, until recently, had limited contact with the public.

Wiersum (1984) points out that because the public have always participated in agriculture and because agricultural scientists have helped them in their endeavours, there is no call for 'social agriculturalists'. Today in areas where demand for forest products exceeds supply trees, like food, are gaining an economic value. People now want to grow trees and require foresters to work with them in tree planting programmes. Shortages of poles, firewood and fodder have thrown up a need for 'social foresters'.

In tropical and subtropical countries, deteriorating economic and ecological conditions have given rise to the need for public participation in afforestation, which in turn has led to a greater need for extension foresters to work in social forestry programmes.

2. THE EXTENSION CONTEXT : SOMALIA'S FOREST SITUATION AND THE AFGOI TRAINING CENTRE

In this paper forest extension is defined as the process of involving the public in the voluntary planting and managing of trees.

Somalia is a poor non-industrialised nation with its development hindered because skilled workers leave to earn high salaries in the Gulf States. The climate is hot and arid and trees require attentive aftercare for successful establishment; about 14 percent of land area has some form of tree cover, though no natural forests are being managed.

Less than 50 per cent of the population now lead a nomadic life, and the increasing number of settled people are experiencing shortages of tree products.

Overseas funded forestry projects are finding that extension to householders and farmers is a more successful afforestation strategy than plantations. In Somalia, extension forestry training is now taking place at the Afgoi Forestry and Wildlife Training Centre (AFWTC) which is funded by various donors including the United Kingdom ODA.

The Centre runs a two year course, at certificate level, to an annual intake of about twenty male students of between seventeen and nineteen years of age. A total of forty three students graduated in the three years from 1983 to 1985. Students coming to the Centre are selected by the Ministry of Education and have had eight years of formal education.

The subjects covered in the curriculum and a breakdown of the proportion of time allocated per subject are shown in Table I. Fifty per cent of all teaching time is allocated to practical work, field attachments and field trips. A fair degree of physical labour is required of students, as it is considered that unless an individual has experienced, for instance, the tedium of digging holes, he will have no idea how to supervise others in later years. It has been found that by building an exam assessment into practical work, students have become motivated to carry it out to an acceptable standard. For instance, during 1985 students did practical work on a nursery and outplanting project, for which they were individually assessed on both their approach and final results.

If an AFWTC graduate takes a forest extension job, the practical experience gained during the AFWTC course will help him demonstrate silvicultural skills; as opposed to simply talk about them. The fifty percent of the curriculum which is practical work is therefore an important and necessary training for an extension forester.

Table I. A breakdown of the Afgoi Forestry and Wildlife Training Centre two year timetable into subjects, and time allocated for each

There are 88 weeks of term time in the two years, and 30 hours teaching time per week (6 mornings of 5 hours), giving a total of 2 640 hours.

Time allocated to practical and field work

Practical work	800
Field attachments at forestry projects	330
Field trips	200
	<hr/>
	1 330

Time allocated to lectures

Botany	150
Silviculture	150
English	100
Mathematics	100
Survey	100
Range management	100
Wildlife management	100
Forest management	50
Forest engineering	50
Forest extension	50
Mensuration	50
Livestock production	30
Meteorology	30
Forest utilisation	30
Supervisory techniques and workstudy	30
Agroforestry	20
Soil science	20
Soil conservation	20
General ecology	20
Forest protection	20
Public speaking	20
General science	20
General knowledge	20
Forest tools and safety	20
Forest law	10
	<hr/>
	1 310

3. THE IMPORTANCE OF FOREST EXTENSION WITHIN THE CURRICULUM

Forest extension is important within the curriculum because it emphasises the connection between the forestry skills the students are learning, and the needs of the Somali people who live around them. If taught successfully the subject ought to pull their minds away from the theory of books and blackboard to the practical observation of all the ways people use tree products in their daily lives. Because of the nature of forest extension work the training must emphasise communication skills, self motivation and an attitude of respect for the public.

4. APPROPRIATE EXTENSION TRAINING

Public participation, in the form of voluntary community management of trees on public lands, requires time consuming and complex management planning. Given the limited personnel available to the forestry department these forms of public participation should, at the present, be considered beyond the scope of forest extension. Natural forest protection, sand dune fixation, community woodlots and community shelterbelts are therefore forest extension activities for which Somalia is not yet ready.

The general aridity of the country dictates that labour intensive aftercare of outplanted seedlings is necessary. The most receptive target groups to undertake this are farmers and householders. Therefore the types of forestry outplanting towards which forest extension should be directed are the same as those which were found successful in the West African Sahel:

- strip planting of windbreaks, shelterbelts and hedges around farmland
- various forms of tree planting within farmland
- shade and fruit tree establishment around houses.

Table 2 The activities of an extension forester compared with those of a traditional forester

<u>Extension forestry</u>	<u>Traditional forestry</u>
Stimulating, offering guidance and suggestions, importing techniques and carrying out training for the general public	Supervising a work force
Private ownership of trees	Government ownership of forests
Planting strips and individual trees on a small scale	Plantation and natural forest management on a large scale
The multipurpose production of fruit, fodder, shade wind protection, fuelwood and poles	Timber production and the calculation of annual increment per hectare
A varied and unpredictable work programme	A planned and structured work programme
Much contact with the public for which good communication skills are required	Limited contact with the public
The integration of trees into cities, settlements and farmland	The management of forests where no cities, settlements or farmland exist
Bringing trees to the people	Keeping people out of the forests

In developing the teaching curriculum for forest extension the marked differences between the activities of a traditional forester and his extension equivalent must be taken into account. Table 2 lists the activities an extension forester is likely to be involved in, as compared to those of a traditional forester.

In order to fulfil the activities outlined in Table 2 the extension forester must have a different set of values and attributes to those of a traditional forester. Because the work of an extension forester is flexible and varied, in terms of time and location, it is largely work that cannot be closely supervised. This means it is necessary to cultivate a sense of purpose and 'missionary zeal' in an extension forester, to ensure there is self motivation. To inspire a sense of duty in the minds of AFWTC students (to assist the public in tree growing activities) is probably the most important function of the forest extension curriculum.¹ Bearing all these factors in mind, a Forest Extension Curriculum was devised, which is presented here. It is followed, in the paper's final section, by a curriculum appraisal which comments on successes and problems with the curriculum as students in 1985 responded to it.

¹An extension forester must have knowledge of the following silvicultural subjects:

- tree nursery production
- outplanting techniques
- pruning and harvesting
- forest utilisation
- silviculture of important tree species

At the AFWTC these subjects are not included in the forest extension curriculum because they are covered in other parts of the two year certificate course.

5. TEACHING MATERIALS FOR THE FOREST EXTENSION CURRICULUM

PHASE 1 : BACKGROUND KNOWLEDGE

5.1.1 INTRODUCTION TO FOREST EXTENSION

What is Forest Extension?

Forest extension is helping the public grow and manage trees for themselves. This is an important job because trees and their products are needed by all the people of Somalia.

Why do people need trees?

Trees have many uses such as: shade, fodder, charcoal, firewood, shelterbelts, windbreaks, construction timber, construction poles, tools, furniture, fruits, livefencing, deadfencing, sand dune fixation, soil improvement, gums, tannin, string, mats, medicines and amenity.

Why plant trees?

The products of trees do not have to be imported from abroad at high cost, they can be produced here in Somalia. As the nomadic way of life declines and the settled way of life is adopted by the majority of the population, so their need for trees increases. Settled people require more from trees than nomadic people, because their houses are more permanent and they need more furniture and tools. Also they do not move but stay in the same place and so need their daily wood needs brought to them. This is why it is a good idea to plant trees in and around the villages, towns, cities, refugee camps and settlements of Somalia to help meet the future needs of the settled people.

Also the population of Somalia is rapidly increasing (it will double in 26 years) whereas the economy may not increase at the same pace. Trees can help the land produce more fuel, fodder, construction material and fruits, along with protecting the soils from erosion. In the future, with more people and less money, greater demands will be

placed on the soil. The consequences of not planting and/or managing, trees for the future will be very serious. Desertification of the soil, fuelwood shortages, health problems and famine will face the people of Somalia if they do not plant and manage trees.

Why is it necessary for the public to be involved in forestry?

The Government has not got enough staff or money to plant and manage all the trees that will be needed by the 5.2 million people living in Somalia. But it might have enough staff and money to help the people plant and manage their own trees. One good forest extensionist might teach 10 people forestry, who in turn (if what they learn is seen to be useful) can teach a further 100 people, and so on (the multiplier effect).

To grow or manage trees it is necessary to protect the land where the trees are. Even a well paid armed guard has problems protecting trees from people and their animals, unless the people living nearby want the trees to be protected. Usually people are most interested in protecting trees when they themselves receive some benefits from them. This is why it is a good idea to involve the public in forestry and this is the main job of a forest extensionist.

What are the jobs of a forest extensionist?

- 1) Finding out and listening to what the people want from trees.
- 2) Discussing with them the ways they can get these things.
- 3) Helping people grow and manage trees for themselves.

What activities might a forest extensionist do?

- 1) Distributing shade and fruit trees for people to plant around their houses.
- 2) Collecting tree seeds to distribute to the public.
- 3) Helping farmers establish windbreaks and hedges on the edge of their fields and along irrigation canals.

- 4) Helping women grow fuelwood close to their homes.
- 5) Teaching schoolchildren how to raise tree seedlings.
- 6) Establishing demonstration plantations of trees to produce fruit, poles, shelter or fodder.
- 7) Lending the public tools and equipment to enable them to carry out forestry activities.

Do the public get paid for planting trees?

Sometimes this is done so that people can afford to leave their normal work in order to plant and look after trees. Sometimes a forest extensionist will not give money but will donate or lend tools and equipment such as crowbars, shovels, wheelbarrows, water pumps, plastic pots and hand saws to make sure people can do forest work. Sometimes nothing is given at all; an example is Merri-merri (Azadirachta indica) which is so popular that people plant and look after it with no help from foresters.

How is an extension forester different from a forestry supervisor?

The job of a forestry supervisor is to make sure the labour force carry out the work decided by the managers. The job of an extension forester is to help the public manage their own work, giving advice, training and equipment when needed.

A good forestry supervisor makes sure work gets done and should be strict to ensure the labour force works hard.

A good extension forester needs to be able to listen and understand the forest needs of all the different types of people they meet. They should be able to discuss with farmers, women, children, nomads and schoolteachers and be able to understand their points of view. They should work flexible hours, be able to work alone, be enthusiastic about forestry and the benefits it can bring to the people.

The major difference is that the forestry supervisor relates with authority to the workforce, while the extension forester relates as an equal to the public.

5.1.2 SOME DIFFERENT TYPES OF FOREST EXTENSION

(i) Farm shelterbelts:

- of benefit to agriculture because they raise productivity by sheltering crops from the velocity and drying effects of winds.
- ideally should be orientated at right angles to the monsoon winds which come from the N.N.E. and S.S.W.
- ideally should be low branching and three or more rows deep.
- typical 'low' dry farming genera are Prosopis, Parkinsonia, Acacia, Commiphora, Ziziphus.

(ii) Distribution of shade and fruit trees:

- giving, or selling at low cost, trees to be planted in household compounds.
- typical genera, where water is available, are Azadirachta, Cassia, and Papaya. In dryer zones Acacia tortilis and Acacia nilotica are appropriate.

(iii) Small bush tree nurseries

- due to the problem of distributing seedlings at the start of the 'Gu' rains it is probably better to have many small nurseries rather than a few large ones.
- can be temporary nurseries designed to hold seedlings for a few weeks till the rains start.
- require water supply, protection fence, hand pump, someone responsible to weed and water.
- require technical advice and guidance from extension forester.

(iv) Tree nursery projects in schools

- potential for school children to learn about trees and teach their parents.
- typical genera would be Azadirachta, Papaya and Cassia.
- requires cooperation of teachers.
- requires protected area, water supply, pots, soil, tree seed and school time allocated to project.
- requires extension forester to supervise students.
- students can take seedlings home and plant in their compounds.
- a problem is the watering of seedlings during vacation periods.

(v) Village shelterbelts

- purpose is to shelter village from predominant monsoon winds; therefore should be planted at right angles to them.
- in Central Region they plant 5 staggered rows of trees at 4 metre intervals with Commiphora fence around the outside of the plantation.
- small shrubby species planted on the outside rows with larger species planted in the centre make a more effective shelter from the wind.

(vi) Forestry projects for rural women

- women and children collect fuelwood for cooking.
- when wood is in short supply this job can take many hours, for which no payment is made.
- these hours are then lost to caring for children.
- to improve the health and quality of life of rural women and children, it is necessary to help them get fuelwood easily.

- fuelwood production (fuelwood plantations) or conservation (distributing wood burning stoves) is intended to improve the lives of rural women.
- obviously female forest extensionists are better for this job than male ones.
- forest extensionists could work with representatives from women's organisations such as Family Life Centre, or structures in rural areas which include women.

(vii) Fodder banks for pastoralists

- Somalia's most valuable export is meat and the economy of the nation depends on livestock production.
- there are shortages of fodder at the end of the dry season.
- trees producing fodder can contribute to pastoral production, especially at the end of the dry season.
- pastoralists should cooperate with protection of fodder trees.
- trees planted in strips at right angles to the predominant monsoon winds will have the dual purpose of making shelter and producing fodder.
- likely plant genera are Opuntia, Atriplex, Acacia, Prosopis, Parkinsonia.

(viii) Agroforestry

- deliberately planting or managing trees on land used by pastoralists or farmers.
- Acacia albida is a good species as it provides fodder at the end of the dry season and fertiliser for crops during the rains.
- alley cropping, intercropping, tree legumes, fruit, fodder, mulch production, controlled shade are all relevant to agroforestry.
- extension foresters would need to discuss and assist farmers and pastoralists. Also they would

need to have contact with agricultural and forestry research centres.

5.1.3 PARTICIPATION OF THE COMMUNITY IN FORESTRY

Although it is easier to work with individual farmers or households, such an approach does not always reach the poorest people such as the landless, women and children. In an attempt to help these people and especially the fuel needs of women, community forestry projects take place, which require the community to participate.

Community participation is a process (over a period of time) by which the extension forester encourages people to realise that they themselves have the abilities, energies and some of the resources, to take initiatives to improve their lives.

Community participation is not:

- getting people to go along with and agree with a project which has already been designed for them.
- villagers contributing their labour.
- enthusiastic support of a few leaders.

Community forestry projects will fail unless

- the project responds to the peoples felt needs.
- the people think and feel it is their project.
- the people have participated and agreed on the project design.
- the people have clear long term legal rights of treeownership.

Tools, equipment and materials are usually loaned or donated to the community from a donor agency.

Technical advice, backup and training is required by the community from the extension forester.

PHASE 2 : COMMUNICATION SKILLS
(10 Hours)

5.2.1 THE GROUP PRACTICAL DEMONSTRATION

It is difficult to give a practical demonstration to more than 10 people at any one time, so try and keep your audience to less than 10. Before giving the demonstration make sure you are prepared and have tools and materials ready.

- 1) Ask if everyone can see.
- 2) Describe the task you are going to do and ask if anyone in your audience has done it before.
- 3) Demonstrate the task breaking it down into logical steps.
- 4) Restrict your demonstration to less than 10 minutes.
- 5) On completion summarise the steps carried out.
- 6) Ask a volunteer to repeat the task. Ask the audience to point out the rights and wrongs of the way the volunteer performs the task.

When explaining something to someone else remember the old Chinese proverb:

"Hear and Forget
See and Remember,
Do and Understand".

5.2.2 PRESENTING AN ILLUSTRATED TALK

Research and make notes on the subject. Think about how you would like to hear a talk, if someone else was giving it. Think of ways of explaining clearly the information you have found out.

- A formal talk is structured in the same way as a report:

- 1) Introducing - to arouse interest and explain the relevance of the subject.

- 2) Facts - main content of the talk best divided into stages.
- 3) Visual aids - this is visual material such as maps, posters, demonstrations, pictures on the blackboard, films to capture the attention of the audience and increase their understanding. Visual aids can be used at any stage during the talk.
- 4) Conclusions and questions - summarise the main points of your talk and then ask the audience if there are any questions.

- Points to remember are:

- 1) Look at the audience and keep your eyes moving around the group.
- 2) Try to be relaxed and natural in your style.
- 3) Keep some short notes with you in case you forget your place, but try not to look at them too much.
- 4) Only answer questions you feel confident you know the answer to, otherwise be honest and say you do not know.
- 5) It is a good idea to ask the audience questions to get them involved, keep them listening, and for you to find out how much they know about the subject.
- 6) Some pictures or a demonstration make a talk much easier to understand.

5.2.3 AN EXAMPLE OF AN ILLUSTRATED TALK ON PLANTING A TREE SEEDLING (Should be accompanied by visual aids)

1) Introduction

It is very important to know how to plant a tree. A tree seedling should be planted either in the late afternoon or the early morning, not in the middle of the day. The important thing to remember is to be careful not to damage the roots of the seedling, and especially not to let the roots get dry.

2) Facts

Step 1 - Dig a large hole, the deeper and wider the better and if possible put some manure or plant material in the bottom of it to act as fertiliser. The best time to dig the hole is in March at the end of 'Jilaa'. Make a depression in the ground around the hole, about 1 metre in diameter, to act as a microcatchment for the rainfall.

Step 2 - With a knife or razor blade cut off the bottom centimetre of the plastic pot containing the seedling's rootball.

Step 3 - Cut the plastic pot length wise, but do not yet remove it from the rootball.

Step 4 - Place the seedling, still with its plastic pot, in the centre of the hole.

Step 5 - With good topsoil, and some manure if possible, carefully back fill soil around the seedling until it is supported. Then carefully remove the plastic.

Step 6 - With your heel, firm in the soil all around the tree seedling and ensure the soil is level with the rootcollar.

Step 7 - Water and mulch around the base of the seedling. Do not water directly on the leaves as they might get burnt by the sun.

Step 8 - Protect the seedling from livestock, weed the microcatchment and place uprooted weeds as a mulch around the base of the seedling. Water the seedling during the dry season.

5.2.4 DISCUSSION OF BEST WAYS TO COMMUNICATE INFORMATION

The objective of the seminar is to practice group discussions.

- 1) Students sit in a circle to encourage discussion.
- 2) Silently each student should write down the way they consider information is best communicated.
- 3) Teacher asks each person in turn to state their reasons and then records the answers on the blackboard.
- 4) Group discussion when all ideas are listed.
- 5) Individual voting on priority ideas with the group decision being mathematically derived through rank rating.

5.2.5 TAKING NOTES

- notes can be taken from a book, a teacher, a member of the public, a film or in the field.
- more is remembered later if notes are taken.
- a good extensionist takes notes when listening to the public, or out in the field observing.
- notes should be short, for your own use and only include the important points.

PHASE 3 : PRACTICE OF SKILLS
(10 hours)

5.3.1 RESEARCH PROJECT ON TREE USE IN AFGOI

One morning is allocated for students to research different aspects of wood use in Afgoi town. Students will work in pairs and collect information to be written up into a presentation plan, to act as notes, in order to give an illustrated talk to the rest of the group. Effort should be made to ensure that information collected and presented is accurate. A pencil and notebook are needed by the students to take notes on the subjects allocated for research.

When asking people questions remember the following:

- 1) Greet the person and introduce yourself.
- 2) Explain you are a forestry student trying to find out about the use of trees in Afgoi.
- 3) Be polite and relaxed. Note down what you see and hear, not what you guess:

Your talk should describe where you went, to whom you talked and what you found out. Ask all the questions you can think of which are relevant to your subject. Take special note of the things you think will interest the other students.

Subjects to be researched

Group 1 The sale of fuelwood and charcoal

Group 2 The sale of poles and timber

Group 3 Wood used in house construction and fences

Group 4 Household fuel survey

Group 5 Household trees in compound survey

Group 6 National Range Agency nursery

Group 7 Two private nurseries

Group 8 The Mango farm and Banana plantation shelterbelt

Group 9 Household domestic items survey

Group 10 The street trees of Afgoi

Each pair of students should jointly write up a presentation plan and decide which of the two will present a 10 minute illustrated talk to the student group. Each pair should prepare some form of visual aids to accompany their talk. A vote will be taken at the end of the session to decide the best talk. The presentation will be assessed.

Precise details of what questions each group should ask, and how they locate their target subject, will need to be explained to each group before they spend the morning in Afgoi.

PHASE 4 : ATTITUDES

(8 hours)

5.4.1 SEMINAR - ROLE PLAY OF A VILLAGE SITUATION

The objective is for students to learn an attitude of respect towards rural people.

- 1) Move chairs into a semicircle.
- 2) Ask for two volunteers to play the roles of village elders and to come and sit down in front of the group. Give them the following cue card to silently read; tell them to keep what is written on the cue card a secret:

"You are proud village elders and think slowly and carefully before taking decisions that affect the lives of the villagers you represent. You

already know the villagers want shade trees to be planted around the village well. You are suspicious and unfriendly of young men from the city, like forest extensionists:

Unless they do the following.....

First: Politely greet you

Second: Explain clearly who they are and why they have come.

Third: Ask you to tell them what the village needs.

Fourth: Discuss with you how to achieve this.

...you will be rude to them, ask them for money, . tell them to respect their elders and tell them to go away".

- 3) Once the volunteers understand their role ask for another volunteer from the student audience to play the role of a extension forester. Tell him to go out of the class and come back in, acting as if he has just come to a village to meet the elders.
- 4) The elders will be rude and uncooperative until, or unless, the extension forester approaches them in the correct sequence.
- 5) More volunteers will be asked for until the correct sequence is discovered.
- 6) Group discussion concerning the role play.

5.4.2 POINTS TO REMEMBER WHEN DOING FOREST EXTENSION IN VILLAGES

Approach

Never pretend to know something you do not know.

Never offer people things you may not be able to give.

Do not hurry, do not worry.

Relax and enjoy yourself.

Discuss rather than lecture.

Ask questions and listen.

Step 1 - Introduction

Take a notebook and pencil with you.

Tell people who you are, who sent you and what you can offer them.

Be polite. Do not be shy. Do not be arrogant.

Step 2 - Felt needs

Discuss with villagers their felt needs.

Ask questions and listen.

Questions you might ask them are:

Do you need fruit trees, shade trees, windbreaks, hedges, fodder trees, building poles, fuelwood or tree seed?

Do you need a village tree nursery?

Do your farms need shelterbelts?

Ask if they object to you writing in your notebook.

Some ideas may be silly, some may be good.

Listen and then offer your opinion.

Listen to their answers to your opinion.

If in a group try to ensure everyone can offer their opinion including women, children and yourself.

Step 3 - Planning

Record in a notebook the forestry activities in which they are interested.

Give your opinion on the difficulties likely to be involved.

Remind them that most of the work of forestry is not in planting but in aftercare.

Plan so that holes are dug, fences constructed, tree seedlings close by, and people prepared for planting at the beginning of the rains.

Who will do the work?

Will there be payment?

Who will own the trees after they are planted?

Who has the tools for the work?

Step 4 - Agreement

Decide together what the best answer seems to be and when you shall next meet.

Step 5 - Future plans

Decide what should happen next and who should do it.

Be clear who will do what.

Record decisions and plans in your notebook.

Be realistic about problems, do not agree things which will be difficult to achieve.

5.4.3 THE JOBS OF THE EXTENSION FORESTER

The extension forester must:

- 1) Be concerned to plant, protect and manage trees to prevent soil erosion and desertification.
- 2) Be sympathetic to the needs of all the people and appreciate the hardships they face.
- 3) Be willing to work in rural areas.
- 4) Have a sense of humour and enjoy working with, and talking to, many different types of people.

- 5) Remember the most difficult job is to care for and manage trees, and that the job starts when trees are planted.
- 6) Keep contact with research organisation and act as an information resource for the people.

PHASE 5 : FIELD PRACTICE AND VISITS

(10 hours)

5.5.1 FIELD PRACTICE AND VISITS

If time, vehicles, and the fuel are available; students can practice their knowledge, skills and attitudes:

- giving illustrated talks about forestry to primary schools.
- visiting villages and distributing tree seedlings.
- visiting fruit farms in Afgoi.

6. AN APPRAISAL OF THE CURRICULUM

Phase 1 : Background knowledge

The original intention was to give much of the material to students as handouts. Unfortunately the complexity of the English text was found to be inappropriate for the students. Therefore the intention during the next course is to use the material as a resource to be drawn upon, as and when needed. Because the students tend to learn written material by rote, without full comprehension, question raising is to be tried. By teaching background knowledge through question raising, it cuts down the knowledge proportion of the course, in relation to the other areas of skills and attitudes. Simplified shortened notes will be given to the students, ideally as handouts, so dictating notes will not take up teaching time.

Phase 2 : Communication skills

Communication is an essential component of an extension forester's job. The objective of this phase is to teach the techniques of communication and give different examples of methods of communication. It is necessary to stress the two-way nature of communication and that listening to the public is an important part of an extension forester's job. The opportunity to use tree planting as the subject matter of the exercise, is taken as an appropriate topic.

In 1985 students understood that demonstrations and pictures are more easy to understand than words. However they seem to consider that pictures are for children and that real, serious information comes from heavy textbooks. They responded well to seminar discussions, enjoying the fact that their ideas were taken seriously by the teacher.

Phase 3 : Practice of skills

In 1985 the research project in Afgoi proved to be a great success because it stimulated the interest of the students in how the public used trees in their daily lives and it introduced them to contact with the public. Because it was assessed, all the students put effort into the project, and hence actively participated in the learning process. They enjoyed being given the responsibility to research, prepare and present their own piece of work.

It was noted that students put a lot of effort into their own presentations, but placed little value on those of their classmates. For the next course it is intended that student listeners shall give their own assessment for each student presentation, and hence participate in assessing the technique of presenting an illustrated talk.

Phase 4 : Attitudes

Abbatt (1980) writes "Attitudes are important even though they are difficult to define, test or teach". Through the role playing exercise it is hoped students will appreciate the necessity to respect the opinions of rural people. The general attitude of the students is that illiterate persons are inferior. For instance students invariably consider nomadic pastoralists are responsible for desertification, due to their ignorance. Yet pastoralists are the most productive sector of the Somali economy and hence effectively their labour subsidises the education system. Although it is recognised as inadequate, it is felt that there is no alternative to changing attitudes other than to appeal to the Islamic conscience of the students. In Islamic culture giving alms to the poor is praised and being seen to be generous is highly regarded in Somali society.

Therefore the need Somali people have for trees is stressed. It is then pointed out to the students that if they become extension foresters they will be in the pleasant position of being paid a salary to generously give tree seedlings and technical advice to the poor. Hence they will be able to fulfil their Muslim duties. In order to do this they should be thorough, polite, relaxed and motivated. They need to be willing to demonstrate forestry skills, but also stand back and let members of the public practise them.

Phase 5 : Field visits and practice

In 1985 this was a succesful phase of the curriculum, probably for the same reasons as the student project phase. That is, it took the students into the field where they were doing forest extension and not simply listening to lectures about it. It was logistically difficult to involve all the students in a practical learning experience at the same time, but the effort was worthwhile. It became apparent during 1985 that the students with the most questioning attitude performed best at this stage. Through their questioning they had come to an understanding, in their own minds, that forest extension was worthwhile and were therefore motivated to do the work.

7. CONCLUSION : HOW COULD THE CURRICULUM BE FURTHER IMPROVED?

If time allowed it would be better to convert large portions of the background knowledge and communication skills content of the course into picture form, with written text translated into Somali. This should be regarded as a long term objective towards which refinement of the curriculum is aimed. In keeping with this objective a Somali counterpart is present during the teaching of the course, and he will eventually teach the course in the local language.

Student participation in the form of projects, seminars and field visits proved to be successful in 1985 in stimulating interest and comprehension. Extension is work that is field orientated and aims to delegate knowledge and responsibility to others, therefore the teaching of the subject should reflect this. The practice and project work component of the course is undoubtedly the most successful way of teaching forest extension. But the students must first acquire the necessary background knowledge and skills.

In 1985 students made contact with villages and helped to distribute tree seedlings to them. This was a good learning experience for the students, but possibly not fair on the villagers because students were only learning and sometimes made mistakes at the expense of the villagers.

Continual assessment is recommended as an incentive to keep the attention of the students throughout the course.

The programme outlined here requires considerable effort on the part of the teacher and will cause some confusion to the students as it represents a departure from traditional teaching. However this departure from tradition is considered necessary to ensure students comprehend the subject and can relate it to the world around them.

In a wider context, it would be possible to bring in interested members of the public for short practical courses, run by Somali staff, on forestry and especially nursery techniques.

In the long-term it may be self-defeating to try and train socially mobile young men, with ambitions to get jobs in the Gulf States. The most effective extension foresters are likely to be householders (especially women) and farmers. Therefore representatives from these groups should be the students of forestry in the future.

Forest extension could be taught through the media of radio and the institutions of schools, mosques, village committees and town councils. However before this can happen there needs to be more research into appropriate tree species and silvicultural techniques. There is also an urgent need to establish a tree seed collection, storage and distribution system.

There is no problem in persuading the public to plant trees. Almost every village and town in Somalia has trees growing which have been carefully planted and cared for by members of the public. The constraint is in supplying an adequate number of seedlings of the desired species at the start of the rains. A network of small tree nurseries across the country, producing tree seedlings of species the public perceive they need, is what is required. If this can be achieved through sound logistical planning and with adequate financial investment, the objective of helping the public grow and manage their own trees is also attainable.

The Afgoi curriculum represents an important first step down the road towards these more ambitious goals.

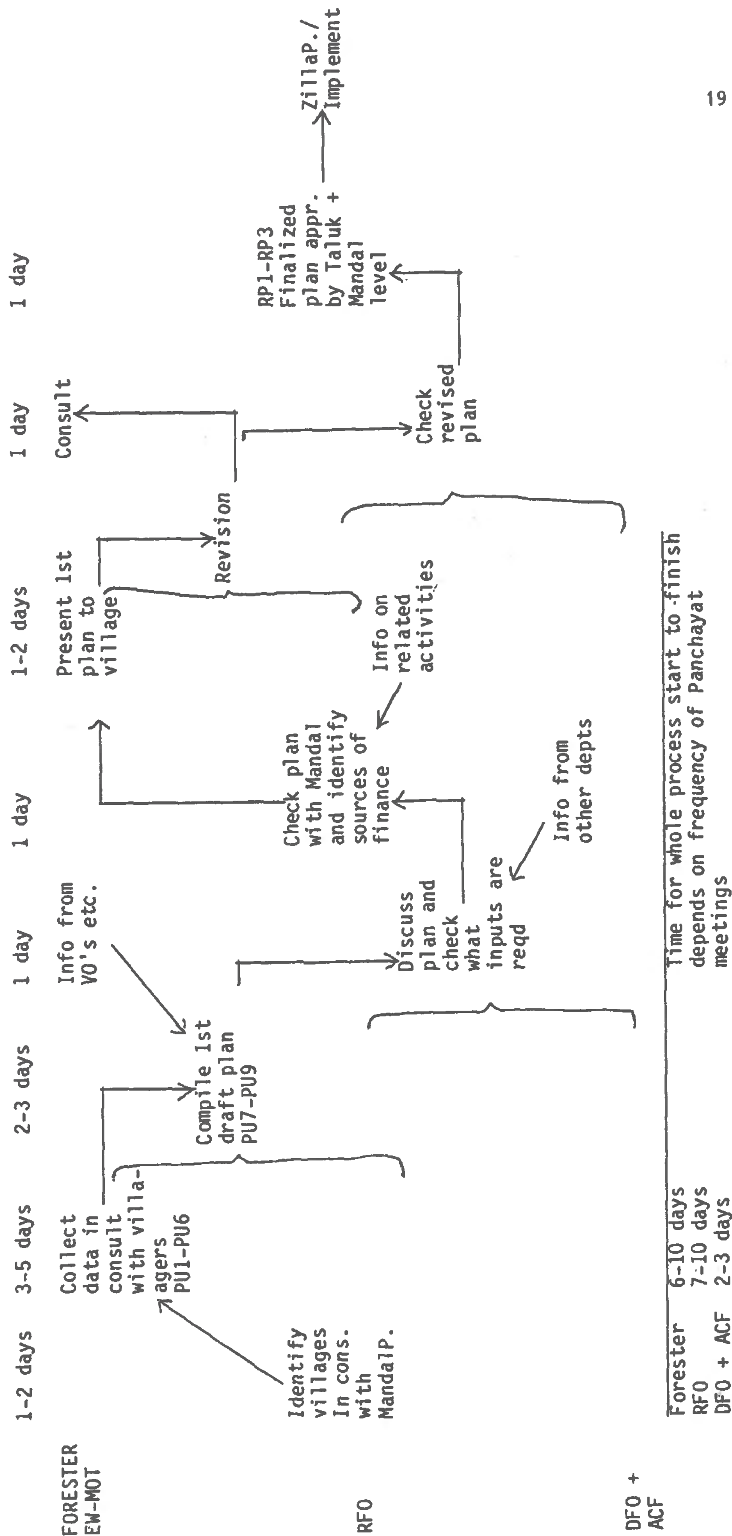
References

- Abbatt, F R 1980. *Teaching for better learning*. A guide to teachers of primary health care. World Health Organisation, Geneva.
Printed by TALC (Teaching aids at low cost). London.
- Wiersum, K F 1984. *Developing strategies for social forestry: a conceptual approach*. Department of forestry, Agricultural University, Wageningen, Netherlands.

This paper forms part of a dissertation, Forest Extension Training in Somalia, submitted in February 1986 for an MSc in Environmental Forestry at the Department of Forestry and Wood Science, University College of North Wales, Bangor.

Figure 2

HOW MUCH TIME WILL MICROPLANNING TAKE?



References

- Chambers (1983). Rural development: putting the last first. Longman, UK.
- FAO (1978). Forestry for local community development. FAO, Rome.
- Hopf, M A (1942). Office management; its development and future. H A Hopf and Co USA.
- Hussey, D (1982). Corporate Planning, theory and practice (2 ed). Pergamon Pergamon, UK.
- KFD 1986a. Project Implementation Manual. Social Forestry Wing, Karnataka Forest Department, Bangalore, India.
- KFD 1986b. Mid term review report, social forestry project. Social Forestry Wing, Karnataka Forest Department, Bangalore, India.
- Klose, F (1985). A brief history of the German forest - achievements and mistakes down the ages. GTZ, Eschborn, FRG.
- Nyasaland (1926-1963). Annual reports of the Department of Forestry, Nyasaland (now Malawi) Government Printer, Zomba, Malawi.

APPENDIX**CHECKLIST FOR INTERVIEWERS****CHECKLIST FOR COMMUNITY BASED PLOT****LIST OF STANDARD FORMS FOR MICROPLANNING**

Checklist for Interviewers

1. Does the villager get his minimum daily requirement of i) fuel, ii) fodder, iii) green manure, iv) small timber etc?
2. Ascertain from where and how the villager meets his requirements of i) fuel, ii) fodder, iii) green manure, iv) bamboo, v) small timber, vi) poles etc.
3. Does the villager grow any trees in his farm land, either on barren lands or with his agricultural crops?
4. Does the villager benefit at present from community land eg Gomal, tank foreshore, etc?
5. Ascertain the primary and secondary needs of the villager.
6. Is the villager interested in developing both the community land and his own land to meet his requirements of fuel, fodder etc? If not, why not?

Checklist for community based plot

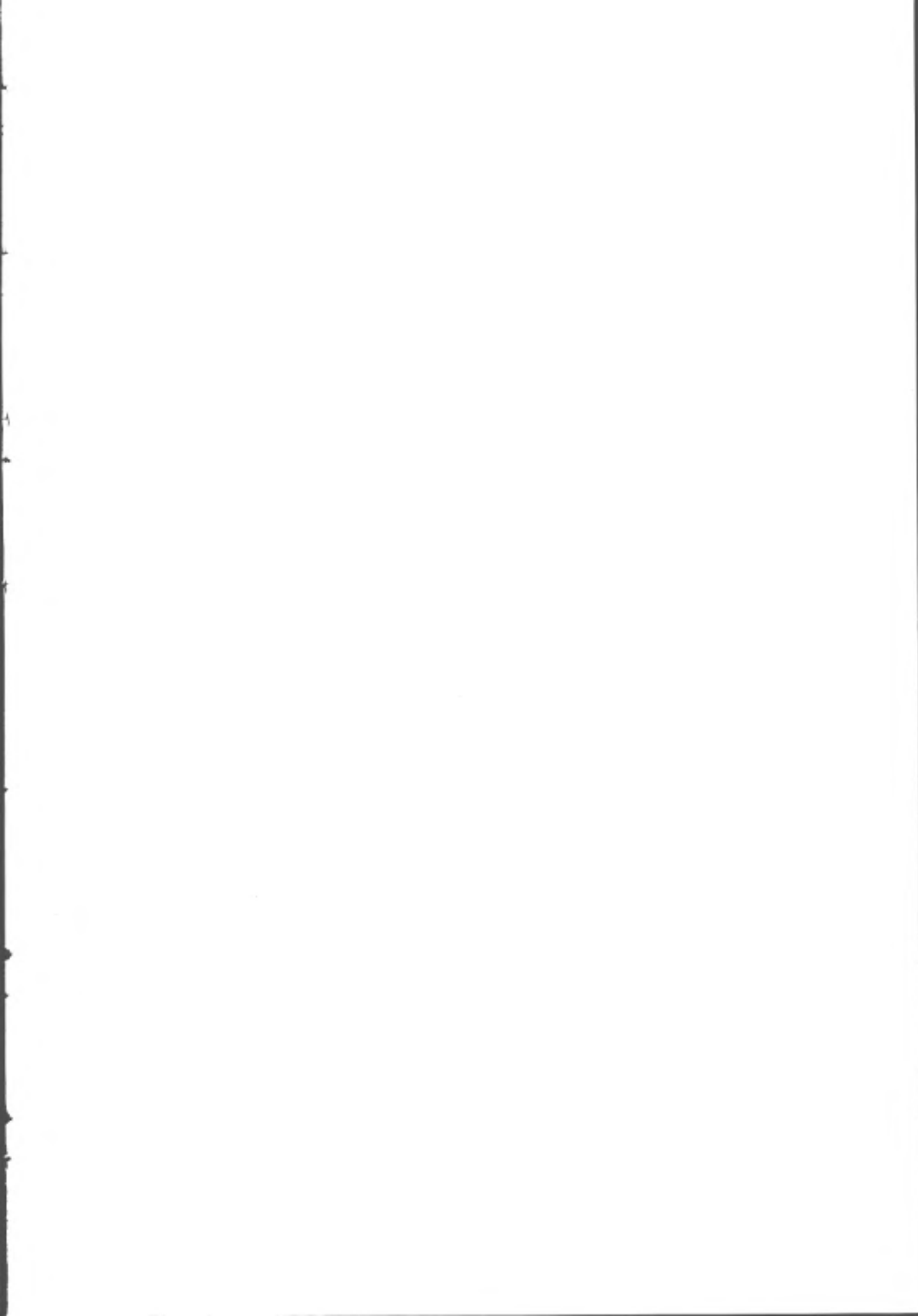
1. How do the objectives of this plot meet the project objectives?
2. What is the level of community agreement?
3. What could be the impact of non-agreement? Is the non-agreement specific to social, political, geographical groups. What adverse agencies could affect the plot (eg grazing, fire, vandalism); what assurances have been made against these; is there any similar scheme, how effective has it been?
4. Which individuals/social groups have to give up what? Which individuals/social groups will gain what? Tabular statement of potential losses and gains.
5. If there is a discrepancy, which way is the transfer of benefits, what is the benefit profile across the social groups?
6. How will the benefits be allocated, is the system already proven in this community?
7. What safeguards have been built in to prevent abuse?
8. Does the community understand precisely what inputs it must make, what it will lose, what it will gain and how long it will be before the benefits accrue?
9. Are there any opportunities for earlier returns? Could the system give direct benefits to people who have incurred personal opportunity costs?
10. Is the technical prescription proven, is there significant risk of failure, if so has this been explained?
11. Is the target sensible, should it be reduced/phased over several years?

This checklist to be retained in the PU register.

List of standard forms for microplanning

- PU1 Map and location of village
- PU2 Community profile
- PU3 Worksheet for recording interview data (multiple)
- PU4 Worksheet for quantification of demand for forest products
- PU5 Worksheet for quantification of demand for employment
- PU6 Supply and demand summary sheet
- PU7 Assessment of interest in social forestry programmes
- PU8 Summary sheet - needs, programme; extension work
- PU9 Anticipated production from community woodlots
- PU10 Kissan nursery farmers
- PU11- Planning unit register; physical information, area statement
- PU13 History sheets

- RP1 Model summary format
- RP2 Kissan nurseries
- RP3 Summary of activities for community.





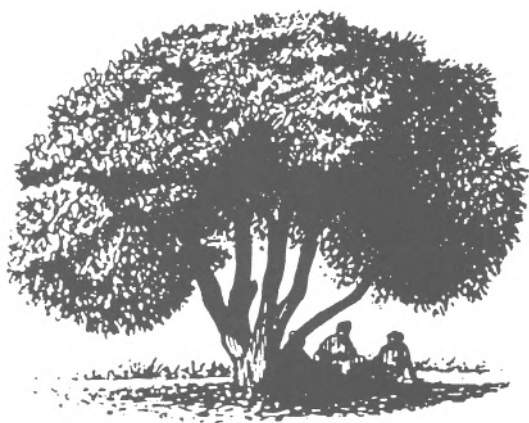
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



THE MANAGEMENT OF PEOPLE'S PARTICIPATION IN COMMUNITY FORESTRY: SOME ISSUES

D. Sen and P.K. Das

Dr D Sen is Deputy Director and P K Das is Research Associate, in the Extension and Transfer of Technology Department, National Institute of Rural Development, Rajendranagar, Hyderabad - 500 030. India.

THE MANAGEMENT OF PEOPLE'S PARTICIPATION IN COMMUNITY FORESTRY : SOME ISSUES

D Sen and P K Das

The Social Forestry programme has now attained a new significance in the overall effort to promote rural development in India. At present planned social forestry programmes involving Government investment of about Rs5,141 million are in progress in twelve states in India. They aim to establish about 1.2 million hectares of plantations in private, communal or government waste lands in the rural areas. Unlike traditional production or protection forestry, the responsibilities of raising, protecting and maintaining social forestry lie with the people, with technical and institutional support from the forest department.

The Social Forestry programme is being implemented through the establishment of plantations under various schemes ranging from roadside plantation, canal bank plantations, and afforestation on degraded forest lands, mostly under government initiative; plantations on community or government waste lands with community participation; and farm forestry in individual farmers' fields.

People's Participation - A Vital Component

The success of social forestry programmes, irrespective of the models, depends largely on effective people's participation at various stages of their implementation. Above all, of course, the question of people's participation is most vital in community forestry and farm forestry. In these two cases the people's direct involvement in the programme is necessary right from the project formulation stage where decisions are taken regarding selection of site and species, mechanism of protection and maintenance, distribution of benefits and marketing of forest produce.

The forest department should play a catalytic role in motivating the village community so that they themselves can manage their plantations. In consonance to this requirement, the states have already initiated a process of creating a separate social forestry wing either within the forest department or as an independent organisation.

As everyone knows, farm forestry turned out to be of great interest and benefit to big farmers and industrial houses. Contrary to expec-

tations, the interests of the weaker sections of the rural population were not especially addressed by the programmes. Indeed, the commonest charge levelled against the farm forestry programme is that it has been cash-crop oriented, rather than aiming to supply subsistence fuel, fodder and timber.

Community forestry on the other hand in most of the states has by and large failed to muster the participation of villagers in the implementation of the programme. The general pattern of planting and implementation of the programme across the country has been the acquisition of panchayat¹ land or government waste land by social forestry departments and raising, maintaining and protecting the plantations for a few years at the cost of the department and handing them over to the respective panchayats after the expiry of the period for further management of such plantations, including deciding on the distribution of benefits among the villagers. As a matter of fact, our experience shows very little involvement of people in the various activities of establishment, and management of the plantations during the initial period when they remain under the custody of forest department. Thus they never view the plantations as their own, rather they consider them merely as a forest department activity wherein they find some scope of employment as wage labourers. Lack of extension effort comes in the way of creating a sense of tree-consciousness among the people.

Individual Incentive - A Missing Link in Community Forestry

Thus the basic difference between the two models, farm forestry and community forestry, lies in the element of individual profit motive. The promise of individual profit has encouraged participation, one result of which can be seen in the large scale tree plantations in private agricultural fields in states like Gujarat, Haryana, Punjab or UP. The common allegation is that only the big farmers are benefiting from farm forestry programmes. But when we see marginal far-

¹The panchayat, the village committee, constitutes the lowest level of each State's administrative framework.

mers and landless tribal beneficiaries of the laterite tract of West Bengal allotted absolutely marginal land on lease, yet actively contributing their labour for planting and maintenance operations in the evening even after a day of hard work, the conviction grows that the social forestry programme can be a means for economic upliftment. The 'Tree-Patta' scheme of Andhra Pradesh is also an attempt in the same direction, wherein the beneficiary is given ownership right of trees on lease for a period of 20 years. On maturity, the harvest is fully utilised by the beneficiary who also has usufruct rights during the intermediate period.

Community forestry on the other hand does not promise any direct individual benefit, other than uncertain access to fuel, fodder and timber, the extent of requirement and existing method of procurement of which vary widely among the differing sections of the rural populace. Moreover the methods of distribution of such commodities being not very clear, the common man is not sure about his share from such a communal asset. There is an argument that people would realise the importance of community forestry and participate increasingly, when they would start getting the benefits out of such plantations. But even then, under the present mechanism, with panchayats as custodians of community plantations, it is quite unclear how these bodies propose to serve the interests of the various segments of the rural population, specially the weaker sections. At present, it has been observed in many cases that there is lot of confusion regarding the mechanism of distribution. Thus, in some States grass growing in the community plantations is seen being auctioned and sent out of the village, while the money thus obtained is used to purchase some panchayat assets. This in no way can be thought to be serving the individual interest. Such kinds of factors might have been contributing to the growing feeling among people that the community plantations should be subdivided either individually among the villagers or among the economic or caste categories of the village. All such factors lead us once again to the individual incentives motive. So long as community forestry cannot offer each individual incentives either in the form of cheaper way of procuring forest products (especially fuel) than the presently adopted method, or hold

a promise of direct economic benefit or both, the chance of securing people's participation in the programme will continue to be low. Till then the farm forestry programme will continue to have an edge over community forestry.

Thus the sustenance of people's participation in social forestry programmes which establish plantations under farm forestry or community forestry, largely depends on their economic interest in them. While the question of distribution of produce is vital for community forestry, the mechanism of marketing of produce is more relevant for plantations raised under farm forestry.

Problems of Management of Community Forestry

1. Creation of participative environment

One of the most vital problems being faced by the community forestry programme is lack of people's participation. The very mechanism of raising, maintaining and protecting the community plantation during the initial few years should be examined carefully while dealing with this problem.

The basic step for any participatory development programme is to build up awareness about the programme and its utility for meeting various needs of the community. This is so with the community forest programme also. Awareness-building around the issues confronting the villagers in their day-to-day life, an overall understanding of the responsibility of the villagers in the matter of planning, creation, maintenance and protection of the plantation and subsequent benefit to the community are vital pre-requisites for the success of any community forestry. But mere attempts to arouse awareness about the programme do not pay unless simultaneous steps are taken to elicit the 'felt needs' of the people.

It is our common experience that the process of motivation in development programmes becomes easier once the villagers are made to realise their needs which the programme aims to satisfy.

The present practice of planning and management of community forestry in the states hardly attempts to fulfil the above conditions of par-

ticipatory programmes. Villagers are rarely consulted at the preplanting stage, and the preparation of a feasibility report, and selection of site and species is generally done by the local forest officials. The village panchayat or similar agencies offer the land (often with no or half information to their members) for plantation activities by the forest department. During the initial years till its hand-over to the panchayat, the villagers do not have any responsibility but to remain as passive watchers. Generally, protection against poaching and browsing by cattle is only taken care of by the villagers after the plantation is handed over to the village panchayat.

The situation, thus, leads to the basic questions: what kind of participation is expected from the people and what will be the role of Government departments in creating a participative environment? Two possible alternatives for management of community forestry with people's participation emerge from the concept of social forestry.

One way is to look at the major operating tasks in community forestry and see at what stage people can participate in it. The operating tasks are (a) nursery raising, (b) land preparation (digging of pits), (c) watering, (d) weeding, (e) fertilisation, (f) protection, and (g) exploitation. The people's participation in these task dimensions is only in the form of wage labour with no scope of involvement in the decision making process relating to the management of the plantation. The forest department contributes the decision making and management of such plantations, while people's contribution is restricted only to diversion of their communal land and labour against wages.

Another way of looking at the creation of a participatory environment is to involve people in all the major management functions of community forestry right from the planning stage. These are (a) selection of land, (b) planning and deciding what to raise, (c) organising planting operations, (d) managing (maintenance and protection) the plantation, (e) distributing the produce after exploitation, and (f) marketing of surplus, if any. These functions have to be carried out by the people themselves with forest department's contribution mainly in the form of technical assistance.

While these two forms of participation lie at two extremes of the decision-making process, the present mechanism of management of community forestry being practised envisages a match between them. During the first few years, establishment of the plantations under the custody of the forest department is done with very insignificant involvement of people. They are then handed over to the panchayat with complete freedom of decision making regarding maintenance, protection and exploitation of the established plantation. But since, in the early stages, the people are not provided with the opportunity of joint responsibility with the forest department in the process of establishment of plantations, they view the programme activities as merely a method of wage-earning like numerous other government welfare measures. Thus, they fail to develop a sense of belongingness to the plantations and do not perceive them as their own assets designed to solve some of their felt needs. As a result, it is seen in many cases that either the panchayats are hesitant to take up the responsibility of their subsequent management, or the established plantations are destroyed after hand-over due to unsystematic exploitation by the villagers.

In view of such problems, it is necessary to devise a mechanism by which the forest department should play a catalytic role in educating people and in initiating establishment and management of plantations by the people. This should enable people gradually to take complete charge of decision-making regarding management of plantations with only technical assistance from the forest department.

2. Fulfilment of villagers need for fuel, fodder and timber from Community Forestry

The basic assumption underlying community forestry is that there is a crisis of fuel, fodder and timber in the countryside and the people will participate in the programme as it promises to fulfil those basic needs (specially fuel); and that this will generate additional employment particularly among the rural poor in various plantation activities. However the validity of such assumptions remains to be examined in the light of various reports related to the consumption

pattern of such items.²

It has been observed that although people have their requirements for such commodities, they invest very little cash expenditure on them. While the richer section fulfil their requirement mainly from their own fields, the poor in the forest fringe areas manage to utilise the forest and adjoining areas for such purposes and those who are in non-forest areas look for such items from the village common lands, agricultural fields etc. Their utilisation of such commodities particularly fuel, is actually extremely limited. In case of fodder, most of the villagers are dependent again either on forest and village grazing lands or on the crop residues produced in their fields. Since most of the cattle population in the countryside are low-grade, there is also no immediate need for high quality fodder. Moreover, the class of people who really need firewood, small-timber and leaf or grass fodder are the people who own little or no land, but even they do not look upon providing voluntary labour on a community plantation as a profitable proposition as they are not sure if ultimately they will be allowed to reap the harvest. Thus there is little motivation for the villagers to come forward and put in joint labour on a venture which does not promise to give them anything worthwhile or that they cannot do without.

It is also reported that the community plantations by way of occupying community/government waste lands create conflicts of interest in various segments of rural society. The Shepherds who generally utilise such lands for grazing their cattle, are against such plantation programmes as it will reduce their earnings from tending village cattle. Even in the case of coastal shelter belt plantations, where land was otherwise used by the fishermen for drying their nets and other accessories, attempts to destroy the plantations are very common.

²Sen, D; Das, P K and Purandare, A P: Case studies on successful implementation of social forestry, unpublished report, NIRD, Hyderabad, and Bhatia, C L and Mishra, D N "Social Forestry in States - Uttar Pradesh", Rural Social Forestry, Papers and Proceedings of the National Workshop, NIRD, Hyderabad. 1982.

There is thus a need for strengthening the extension effort on the one hand and projecting the programme as a means for economic gain on the other. Experience drawn from other rural development programmes suggests that tangible immediate gains to individuals, particularly the rural poor, are the motivating factor for participation. Under such circumstances, there is a need to decide on issues like devising appropriate species mix with a promise of both economic as well as usufructuary benefits to the rural people and then drawing of extension strategy to popularise them in their situation.

3. Credibility of Panchayat vis-a-vis interest of weaker-sections

As the current mechanism employed in implementation of the community forestry programme the panchayat, as the formal social organisation, has a central role to play in managing the established plantations, after their hand-over, by mustering people's participation. But till now people's participation is the weakest link in programme implementation. It might be argued that people would realise the importance of community forestry and participate increasingly, when they started getting the benefits out of such plantations. But even there, there remains an important question which relates to the power structure in the countryside. The panchayats tend to concentrate power in the hands of rural elites and it is anybody's guess what opportunities they provide to the poor to make demands or air grievances. Although there are exceptions, the general observations regarding Panchayats are that the benefits are manipulated in favour of the elites, affecting the interests of down-trodden people. The example cited earlier of auctioning grass outside the village shows the way in which the interest of common villagers, specially the rural poor, is neglected. This leads to the basic question, how to ensure the flow of benefits of community forestry to the rural poor? Will the delegation of legislative control to the forest department, be able to restrict such manipulation effectively? The experiences of IRD programmes, where inspite of all checks and corrective measures the benefits do not always flow to the deserving beneficiaries, pose serious doubts even over such measures. Under such circumstances many people think in terms of abandoning the idea of handing over the

plantations to panchayats, and keeping them under the control of forest department. But then it becomes one among numerous government programmes without people's involvement, and also the feasibility of controlling such huge numbers of plantations needs to be analysed. However, the question relating to the credibility of the panchayat in the creation of community forestry plantations, and the distribution of benefits with social justice, still remains unanswered.

Another possibility lies in making community forestry programmes weaker-section-oriented. In such cases beneficiary-level organisations may be put in charge of the management of the plantations. This question merits proper attention as social forestry is conceived as one possible form of intervention in the amelioration of rural poverty. In view of this it will not be out of context if the target group of community forestry is specified as the rural poor, as in other rural development programmes. In the existing strategy for community forestry involving all sectors of village population, it has by now been clear that the undemocratic power structure in the countryside, and the diverse interests of different sections of people are the major impediments in the successful operation of community forestry. If distributive justice is to be achieved under such circumstances, the need for projecting community forestry as a means of economic development of the rural poor cannot but be over-emphasised. In the light of this it might be necessary to organise the beneficiary-oriented group action around the community plantations.

4. Mechanism of distribution of benefits

The success of a programme like community forestry is directly correlated with the efficiency with which it can ensure the benefits to various sectors of rural population. The perception regarding the extent of benefits flowing from such plantations will influence the people to participate increasingly in the programme. In view of this, the question of distribution of forest produce is very vital, the mechanism for which should be decided without any further delay.

Benefits in the form of forest produce from community plantations may be conceived primarily as fuelwood which is obtained from the main

tree as well as twigs and branches through periodic lopping etc. Besides, there may be some other products like fodder, fruits and other minor forest produce. It is commonly observed that there is no clearcut procedure for the distribution of such produce from the community plantations. Neither the social forestry personnel, nor the panchayat has any definite idea about the probable mechanism to be followed. It is commonly argued that the product out of a community plantation, specially fuelwood, should be equitably distributed according to the requirement of the villagers in general. In such cases the economically weaker sections may not be able to procure them by paying the price. As a solution to such a problem it has been recommended that the weaker section should get their requirement at concessional rate. As discussed earlier, the villagers, specially the weaker section generally procure their fuelwood from forests, agricultural fields, village common lands etc free of cost. Even if concessional rates are offered to them, whether they would be ready to incur cash expenditure for such commodities needs to be assessed.

Besides, there is also no guideline for the utilisation of the sale proceeds from the plantation. Assuming that the panchayat would be in charge of such funds, and utilise them for their developmental activities, the question remaining to be answered is how this is going to provide the much needed tangible incentive to the people whose participation largely depends upon it. Moreover, it is also necessary to recycle a portion of the fund in developing and maintaining the plantation, whose mechanism however has not yet been decided.

In order to enforce the appropriate distribution mechanism, many feel that there is an imperative need on the part of forest department to exercise some kind of control over the panchayat. The question which remains to be answered is whether under the existing legal framework the forest department can exercise such control. If yes, what is the extent of such control and how they can be executed? A realistic assessment should also be made regarding the possibility of providing the needed manpower on the part of the forest department to exercise such control on numerous community plantations likely to come up in the near future and also the costs involved in it.

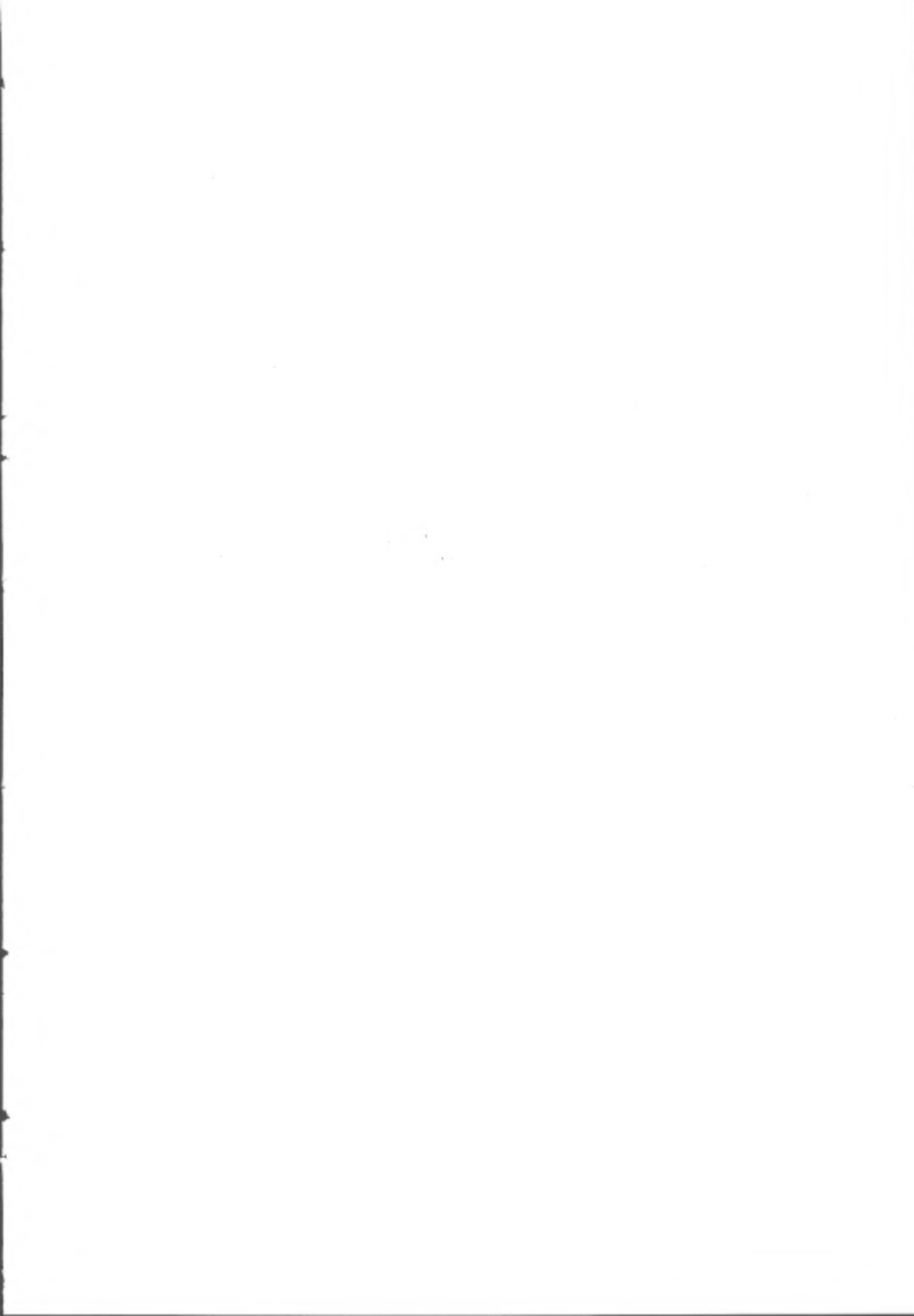
A possible alternative in the light of establishment of community plantations exclusively around economically weaker sections also warrants serious consideration. In such cases the community plantation would be economic ventures for the benefit of the rural poor. This will necessarily introduce a profit motive and the beneficiary group would decide how to meet local demand for the forest products. However, in such cases also there should be very close supervision on the part of forest department in deciding on ways forward.

Some Emerging Issues in the Implementation Process of Community Forestry Programme

In view of such critical analysis of the problems of implementation of community forestry programme at the field level, certain basic issues emerge, which require immediate attention. Unless they are taken into consideration while formulating future strategy for social forestry programmes, the large majority of community plantations established so far will continue to be departmental activities or will be extinct, in the absence of people's active involvement in their maintenance and protection. Thus the future policy for the implementation of community forestry programme in the country should aim at resolving the following basic questions in an effort to make it a people's programme.

- a. Whether the present practice of raising plantations by the forest department, and transferring them to Panchayats is desirable in the programme, where people's participation is sought on a sustained basis? If not, what should be the mode of departmental intervention in the process of decision-making and executing the plantation operations?
- b. Whether community forestry should exclusively be viewed as a source of usufruct or should it also be projected as a means of economic upliftment for drawing people's participation? If so, what should be the mechanism?
- c. Whether the present panchayatiraj institution is capable of managing the community plantations and sustaining the interest

- of various categories of villagers? If not, what is the validity of making community forestry a target-group-oriented rural development programme and what should be the modalities with respect to organisation, management and distribution of benefits in such an endeavour?
- d. What should be the appropriate mechanism for the distribution of benefits from the community plantations so as to satisfy the requirements of various segments of the rural population?





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



FORESTRY EXTENSION: A REVIEW OF THE KEY ISSUES

Julia Falconer

Julia Falconer worked as the Social Forestry Network Assistant from January to May 1987. She is now undertaking research in the Forestry Department, FAO, via delle Terme di Caracalla, 00100 Rome, Italy.

(1) Introduction: the need for forestry extension and people's participation

The era of social forestry projects and programmes has brought with it a need for extension services. Traditionally, interactions between foresters and rural populations have been limited to protection, policing, and revenue collection. Thus, the art of encouraging people's participation in forestry activities is new to foresters. Until recently, social forestry projects have focused on fuelwood scarcity issues. As a result, forestry extension efforts have primarily entailed distribution of seedlings, establishment of nurseries and village woodlots, and the introduction of improved wood stoves. These efforts have been directed toward individuals (ie farm forestry) and toward communities (ie community forestry).

Farm forestry efforts have had some success, especially in areas with ready wood markets (primarily poles and pulpwood). The most famous example is in Gujarat, India, where seedlings are distributed free to farmers. The annual distribution of seedlings rose from 6.1 million seedlings in 1971 to 95 million in 1982 and to an estimated 200 million in 1983 (Foley, 1984). Community forestry, in contrast, has had few successes. In some instances, schemes have been actively opposed. In Niger, villagers pulled down trees planted under a World Bank project and allowed their cattle to graze on them (Hoskins in Agarwal, 1986). In Tamil Nadu, India, 5,000 eucalyptus saplings planted by the government were uprooted by villagers (Subramaniam in Agarwal, 1986). In Jumla, Nepal, trees planted along irrigation channels were destroyed within two days of planting (Reaside, 1985). The failures of community forestry projects are due in part to poorly-conceived and-managed extension systems.

Community support or participation is a central concern of all social forestry projects, for without local participation, sustainable resource management cannot be assured. Forestry extension systems provide the means for encouraging or inducing local participation. Increased local participation is thus a key objective of extension systems (Chambers, 1987, Kramer, 1987, Reij, 1987, Butcher, 1987). Yet participation is a vague concept, which, though figuring in all project plans, is rarely defined. Participation in the narrowest

sense means employment of local people as wage-labour. In the broadest sense it implies involvement of local people (the entire community or freely-elected representatives) in project instigation, planning, implementation, and maintenance. Hoskins (1983) relates that in one West African fuelwood project, field implementors interpreted participation to mean the hiring of local men to plant project trees. The planners, in contrast, had envisaged local interest in trees, local concern about their maintenance, and local confidence that benefits would belong to participants. Thus, in the design of extension systems it is essential to distinguish between who is to participate, what they are to do, and how they are motivated to participate.

Lessons drawn from recent social forestry efforts have shown that their shortcomings are due at least in part to inadequate or inappropriate extension efforts. While information can be transmitted in many ways, the perceived value of that information and how it is used depends on the form of the extension system (its institutional design) and on the communication process associated with it (NAS, 1983). Thus, how forestry development is done is at least as important as what is done (Taylor and Soumare, 1984).

(2) The objectives of forestry extension

In the broadest sense, extension is an education process. Extension systems inform, convince, and link people, they facilitate flows of information between farmers and other resource users, researchers, administrators, managers and leaders. The objectives of extension efforts vary greatly. Objectives of forestry extension programmes are dictated by the programme's or project's objectives. Establishing tree nurseries, managing block plantations, promoting agroforestry techniques, and changing livestock management practices (i.e. stall versus free range feeding) are all examples of project-specific goals. Overall objectives of extension systems, however, can be characterised as: disseminating information, providing technical forestry skills, encouraging local participation, and meeting a projects' physical

targets. However, these objectives are often ill-defined. Bentley (1982) asserts that poorly-defined goals have contributed to the failures of the Indian and the US forestry extension systems.

Extension agents often serve a dual function of promoter (e.g. demonstrating planting techniques) as well as implementor (e.g. managing block plantations). In many cases, the result has been that information, education, and local participation are viewed as a means of achieving physical targets of a project, rather than as goals in and of themselves. This has meant that the success of social forestry projects is often measured in terms of physical target completion. For example, in Gujarat, India, 14,750 km of roadsides and canal banks had been planted by 1981, 200 million seedlings were distributed in 1982, and 2,000 villages participated in the village woodlot schemes (Karamchandani, 1983).

Physical inputs do not provide a good gauge of participation in a forestry project, since it is not possible to distinguish between those responding only to incentives (e.g. cash) and those responding to a felt need (e.g. fuelwood shortage). Emphasis should be placed on measuring the end-products, for example: the time saved in fuelwood collecting, as opposed to the number of improved stoves introduced; farm productivity and increased income generation versus number of seedlings distributed; and knowledge of resource management and conservation issues versus numbers employed ("participating") in project work. The focus on inputs (ie seedlings planted) rather than outputs (i.e. added income from fodder sales) means that extension efforts are directed primarily to fulfilling the role of implementation rather than promotion and facilitation.

The emphasis on physical targets is a result of project planners' and funders' need for visible, recordable (from annual one week evaluation missions, for example) and short-term results. In addition, since foresters and forestry services are most familiar with physical tree components, their evaluation systems and means for measuring success are geared to physical targets.

(3) Forestry Extension Approaches

The objectives of an extension programme, as well as the availability of resources largely dictate the extension approach and methods used. While there are many approaches and numerous methods of extension, (eg group discussions, films and field trials) they can broadly be categorised as "top-down" (dictated from the outside) versus "bottom-up" (planned and managed by local people).

(3.1) The "top-down" approach

The top-down approach is simply a one-way information delivery system (from extension agent to rural resource user). It is based on the assumption that productivity and income of the rural people are low because they lack improved technology. For example, they lack access to eucalypts seedlings and thus cannot profit from their fast and lucrative returns; trees are not raised with crops or in village woodlots because they lack technology or knowledge of these practices. Thus, the role of extension is to "spread the word" and teach rural people what they need to know (Clark, 1982). This system takes the need for an innovation and its attributes as a given and focuses on communication. The focus is thus on selling a technical package or improved practices, changing attitudes and overcoming scepticism.

Facts and ideas are served in packages, bulletins, demonstrations, etc to recipient clients. In 1972 in Gujarat, India, for example, the forest service launched a month-long publicity campaign with talks, radio shows, discussions on planting techniques, pamphlets, posters, and films shown in schools and public cinemas. The effect was an increase in seedling distribution from 6.1 million in 1971 to 16.9 million in 1972 (Karamchandani, 1982). This programme benefitted the richer farmers (with greater land holdings and resources and a better ability to profit from incentive schemes) and encouraged planting on individual rather than communal lands. The main tree species planted were eucalypts and other fast-growing species, grown for distant pulp and timber markets rather than for local needs.

(3.1.1) Shortcomings of the top-down approach

While this approach has been successful in some cases, it has serious drawbacks. The one-way flow of information reinforces the hierarchical relationship between the extension agent and the client. It also fosters and encourages superior attitudes on the part of extension agents. de Vries (1980) summarises this in examining the assumptions underlying the traditional top-down extension approach:

- extension agent teaches, farmers are taught
- extension agent knows everything, farmers know nothing
- the agent thinks, the farmers are thought about
- the agent is active, the farmers are passive
- the agent confuses authority of knowledge with his own professional knowledge
- the agent chooses programme content
- the agent assumes teaching leads to learning.

In contrast, using the dialogue (or bottom-up) approach, both farmers and agents are active, both are involved in learning, and farmers participate in the selection of the programme content.

Ratnarajah (1981), while describing the Sri Lankan forestry extension programme, reflects the superior attitude which has caused problems for so many community forestry programmes. The underlined phrases highlight this system's one-way information flow, its assumption of needs (eg fuelwood), and assumption of the wisdom of its solution (e.g. leuceana).

"The public should be made fully aware of the facts and made to understand the benefits that would accrue to them...growing leuceana in

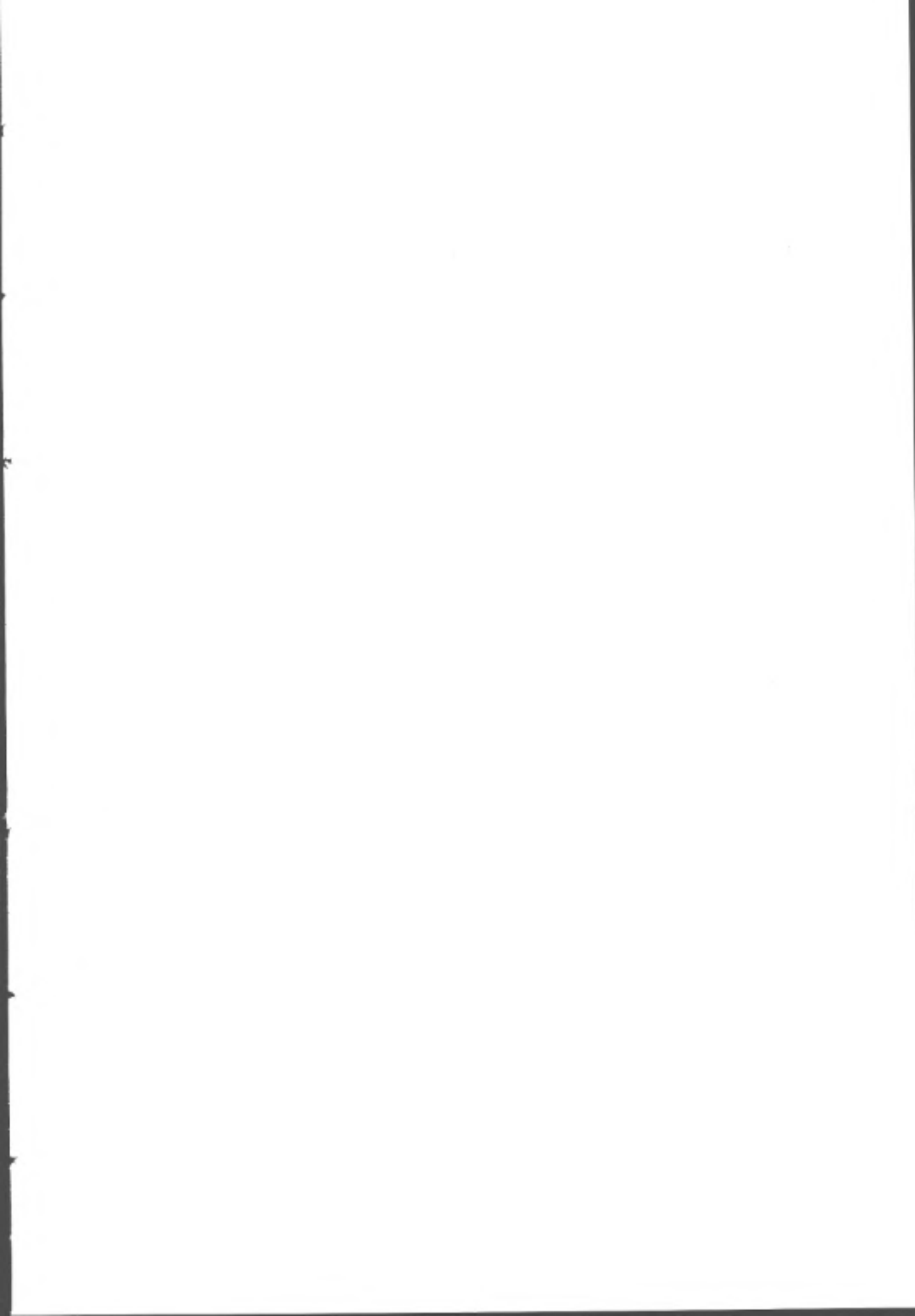
homesteads of this area (Mahaweli) is the only answer (to fuelwood shortage)...few people have any conception of how long it takes to grow trees...for this reason, continuing educational programme by the extension service is required so that the planted trees are tended, protected against fire, disease, and browsing". (p17-18)

'Education' in this sense is merely well-intentioned propaganda in that its aim is to facilitate leuceana production. Education should, however, provide people with the ability to obtain and use information (and technologies) to their best advantage.

(3.1.2) The attitudes fostered by the top-down approach

The superior attitudes generated and dependencies created have a negative impact on engendering sustainable local participation. In addition, appropriate research topics and priorities are often assumed by bureaucracies with little input of local needs and constraints. The failings of social forestry projects in the Sahel region over the last two decades are largely due to inappropriate projects or extension systems. In upland Philippines, Aguilar (in Agarwal, 1986) found that the top-down approach was the main constraint to the success of the four study projects. There was minimal involvement of people in project formulation and implementation. The result was that (1) the choice of species was wrong - they wanted fruit trees, not leuceana, (2) the project lacked credibility in their eyes, (3) they resented being excluded from decision-making, and (4) their basic subsistence needs were not met.

The attitudes of project planners and extension agents towards their rural clientele are of central importance. In Tanzania, Skutsch (1983) found that the positive attitude of forestry extension officers had a positive effect on tree planting activities. An independent study of the Maharashtra Social Forestry Project (CENDIT) concluded that the extension system's failure to reach the poor was due to the mentality and orientation of the Forestry Department, from which most social forestry staff were recruited. The mid-term evaluation (Anonymous, 1985) of this project found that the attitudes of forestry extension officers towards rural people had greatly improved. At the





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



MICROPLANNING FOR SOCIAL FORESTRY: A DESCRIPTION OF THE SYSTEM DESIGNED FOR KARNATAKA SOCIAL FORESTRY PROJECT, INDIA

P.D. Hardcastle

P D Hardcastle lectures at the Oxford Forestry Institute, UK. The microplanning system described in this article was developed by the author whilst working for ODA/World Bank in Karnataka, India in response to an initiative by Mr R H Kemp of ODA, London. The work relied heavily on collaboration of colleagues in both development organizations and the Karnataka Forest Department. Special acknowledgement is due to Dr A K Banerjee of the World Bank Office, New Delhi, who also conducted field evaluation of the system. Microplanning has been incorporated into the Project Implementation Manual published by the Karnataka Forest Department and subsequently adopted by many other states in India. Members of the Network may obtain copies of the Microplanning draft, including the data collection and analysis forms, from the author. The views and opinions in this article are those of the author and do not necessarily represent those of OFI or ODI.

MICROPLANNING FOR SOCIAL FORESTRY: A DESCRIPTION OF THE SYSTEM
DESIGNED FOR KARNATAKA SOCIAL FORESTRY PROJECT, INDIA

by

P D Hardcastle

Introduction

Social forestry as a concept is not new. It has been well established for centuries in many countries in continental Europe (Klose, 1985) and in the first half of this century many countries under colonial rule had a forest service whose main functions were establishment of protection forests and the creation of "village forest areas" or "urban fuelwood areas". (Nyasaland, 1926-1963). In the last thirty years, ideas of development through industrialization led to a change in the activities of forest services resulting in concentration on industrial plantations. No resources were made available for "community" forestry either by aid agencies or even by most national governments.

The World Forestry Congress in 1978 focussed attention on the impending crisis resulting from this change of focus and in the same year FAO published a paper on Forestry in Rural Development (FAO 1978) in which Community Forestry was defined as:

"...any situation which intimately involves local people in a forestry activity. It embraces a spectrum of situations ranging from woodlots in areas which are short of wood and other forest products for local needs, through the growing of trees at the farm level to provide cash crops and the processing of forest products at the household, artisan or small industry level to generate income, to the activities of forest dwelling communities. It excludes large-scale industrial forestry and any other form of forestry which contributes to community development solely through employment and wages, but it does include activities of forest industry enterprises and public forest services which encourage and assist forestry activities at the community level".

In the last decade, considerable resources have been made available for social forestry largely through bilateral and international agencies and the greatest concentration of these have been in India. There have been many initiatives by NGOs but although these are numerous they are nearly always very localised. The resources needed for social forestry worldwide are massive and the only source of resources on the scale needed is the major donors. Politically, donors work through governments and governments work through bureaucracies. Whether it is the forest department or a new social forestry department is irrelevant, the department's function is to utilize the resources available to meet the needs of the rural people for social forestry. The implementing department thus has a classic management task;

"...the direction of an enterprise, through planning, organizing, coordinating and controlling of its human and material resources, towards the achievement of a predetermined objective". (Hopf, 1942)

However, in social forestry, some of the principal resources eg land and frequently labour are held by individuals and not by the implementing departments. Furthermore the objectives of the implementing department may not be those of the communities at which the work is aimed.

Many proponents of Social Forestry believe in a "bottom-up" planning process. This approach starts from the level of the community and ensures that the plans meet the needs and perceptions of the community. It is an approach used by many NGOs and on a small scale has much to recommend it. Unfortunately, when dealing with Social Forestry needs at state level where huge resources are required, the "bottom-up" approach becomes unworkable and the resulting plan will bear little resemblance to the strategy set by the political process (Hussey 1982).

On the other side of this coin, state bureaucracies often believe in a "top down" planning process. Targets are set from the centre and the

plans at each level are derived from the level above, thus keeping the enterprise (hopefully) moving along the lines laid down by policy makers. Unless the information available to planners about operating conditions and constraints is accurate and up-to-date, the plans can quickly degenerate into little more than arbitrary targets.

This type of approach creates problems for the implementers, dissatisfaction amongst the recipients, and very often abysmal inefficiency in the use of resources. Theoretically, the large organization with economy of scale can establish an individual tree for perhaps one quarter of the cost of the NGO. But if three out of four trees are the wrong species, or in the wrong place, that gain is wasted (cost figures are based on examples from NGO and international agency reports).

However, by putting increased information gathered at field level into plans which are set from the top down the "gap" between people's needs and projects' actions can be narrowed or even obviated. One technique for doing this is that of microplanning.

It is an unfortunate fact of life that resources are limited. It is thus never possible to meet all the social forestry needs of all communities immediately. The purpose of microplanning is to identify the demand of the specific communities, for various products of social forestry; to determine the supply of those various products and hence the shortfall for the various social groups in the community; to ascertain the willingness and the capacity of the individuals and the community to engage in social forestry; to feed all this information upwards to the social forestry planners and finally to produce and implement a social forestry plan, acceptable to the community within the resource constraints of the implementing agency. Microplanning is based on the needs of the rural population being the driving force for social forestry and the role of the implementer being to enable those needs to be met as efficiently and as effectively as possible.

The Microplanning Process

1. Identify target village.
2. Prepare community profile covering:

Location and physical factors; population by social groups; livestock; community land resources; existing social forestry activities; other development work.

3. Conduct individual interviews to determine the priority needs, and attitudes towards social forestry activities. Major products to be covered are:

fuel	employment	timber, poles and bamboo
fodder	green manure.	

4. Compile needs summary sheet:

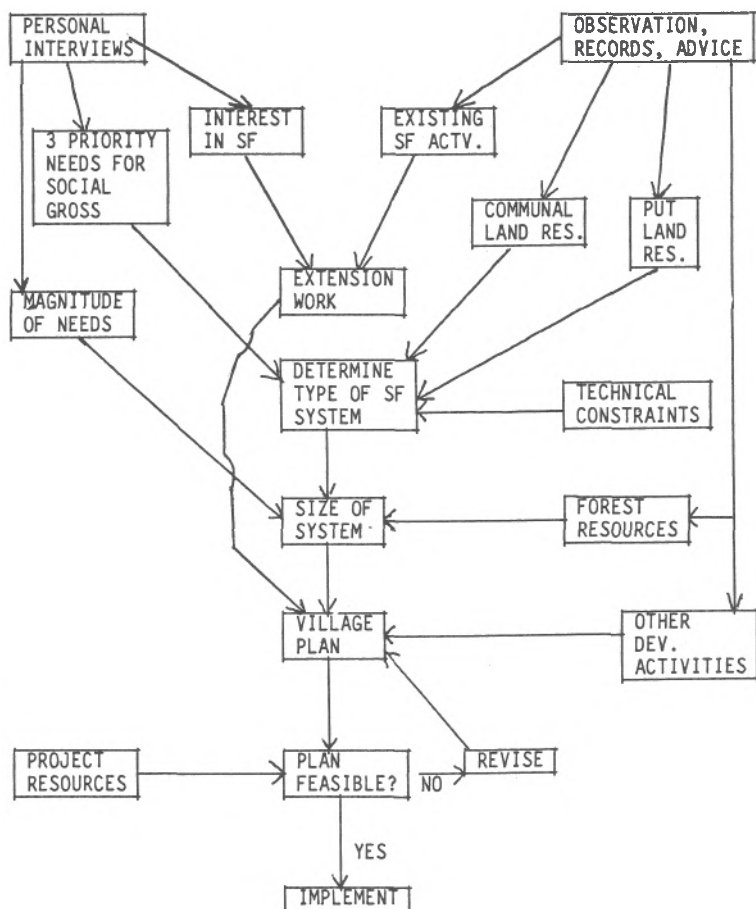
Identifies most critical needs for the various social groups.

5. Prepare summary of level of interest in social forestry.

Identifies target groups for extension and provides information on likely success of different social forestry systems.

6. Identify appropriate system using table of efficiency and effectiveness for the products required and the target groups (see Table 1 page 14).
7. Formulate programme of activities including extension work.
8. Using technical manual, determine appropriate technical system for each segment of the programme.
9. Check amalgamated programme at range level and at district level in terms of broad target and resources.
10. Adjust and revise where necessary.
11. Finalize programme in terms of areas, numbers and locations.
12. Implement, monitor and report.

MICROPLANNING



Selection of target communities

There is no magic formula for selecting target villages. As the whole basis of the project is the interest of individuals and communities, this should form the selection criterion. Information on the level of interest should be available to the Range Forest Officer through his own knowledge, as well as from field extension workers, motivators and from people in other government departments and voluntary agencies.

The most appropriate administrative unit is the village which has its own committee and on average, some 500-2,000 members. Above the village committee is the mandal pachayat. A mandal normally encompasses some 20-25 villages. The selected village should be agreed by the mandal panchayat to ensure cooperation. Initially one or two villages per mandal should be selected, with a programme for encompassing the other villages at a later date. The reason for working with villages rather than mandals, to allow microplanning to be performed, needs explaining to the mandal panchayat. Ultimately all the village microplans will be linked into a mandal forestry plan, but this could take 5-10 years. Unless cooperation with the mandal panchayat is achieved, there is no point in continuing.

Data collection through observation and personal interviews

With any village community, there is a range of social groups. The prescribed categories are:-

- a) Marginal, small and large farmers, classified according to their land holding.

Classification of farmers according to land holding size (ha)

<u>Category</u>	<u>Area of dryland</u>	<u>Area of irrigated land</u>
Marginal	<2.4 ha	>0.8 ha
Small	2.4-6.1 ha	0.8-2.0 ha
Large	>6.1 ha	<2.0 ha

- b) Poor landless who have no cultivable land but who may collect grass, fuel and minor forest products for local sale. Their activities are very fragile and can easily be destroyed.

- c) Rural artisans such as carpenters or basket weavers.
- d) Nomadic or semi-nomadic people who use grazing areas for part of the year.
- e) Traders in wood, fodder or other forest products, either trading locally or trading outside the area of the village.

In addition, there are cross groupings such as religious groups who may have sacred areas. Even if the group is a minority, its interest in eg burial areas, must be respected.

Other groups in addition to the formal panchayat council, could be farmers' associations, youth clubs, women's groups, and voluntary organisations.

Community profile

The community profile records physical and demographic information, available from census records, as well as information on other development activities. The success of community projects in a village is a good guide to the likely success of community forestry activities. The community profile also records any existing community forestry, details when it was established, whether it is under community management etc, and gives information on private (farm) forestry in the community. The profile also includes an estimate of land resources, both individual and community. In India, detailed maps and a land holding register are available for each community. Where this information is not so readily available, alternative methodology such as sketch maps or air photographs would have to be employed. The information on private land holdings can be obtained by multiplying up the findings from the individual interviews with members of each social group.

The consultation process

Before visiting the village, the interviewer should determine what information can be obtained on population, green card holders (scheduled castes and tribals), livestock numbers, etc. Other departments and agencies should be consulted whenever possible.

The style of approach to the village is of great importance. It is essential to remember that social forestry is an enabling process and not a directing one. A low key approach, open minded attitude and willingness to listen are essential ingredients of this.

On visiting the village, the basic structure should be determined through discussion with the village chairman and the administrative clerks. This should provide information on the proportion of people in each social group, the land holding size and the religious and secular organizations. The village officials should have information on community land. It is essential to check that the boundaries are not disputed by adjacent villages.

The clear definition of community land is essential. It is unlikely that villagers will understand cadastral maps, and a sketch plan with identifiable, recognised land marks, eg rock out-crops, streams, large trees etc will have to be prepared. This can be traced from the base maps and annotated. By using overlays, alternative schemes can be discussed, and eventually an on-site village meeting should be held before the plan is implemented. At this meeting, staff can be stationed around the area so that everyone clearly sees the impact of the proposal.

The selection of interviewees is a difficult task. It is important not to meet only people recommended by officials; a range of opinion is required. It is not really feasible at this stage to use a formal social survey sampling technique. Guidance on selecting representative interviewees should be sought from the motivator or extension worker who knows the locality as well as from the officials.

During the process of consultation, the interviewer must talk to between two and four members of each of the social groups. The aim should be to talk to 15-20 people altogether with representatives from each group in the proportion that each group bears to the total population. Efforts should be made also to talk to representatives of each of the religious and secular groups. The sample must include both men and women in equal numbers in each category.

Interviewers should converse with interviewees, not run through a questionnaire, and should focus the conversation onto forest products, needs and supplies. It is important to determine attitudes and avoid leading questions. For example, everyone will agree that communal woodlots would be good providing they do not have to give up anything. The questions should be phrased to take account of this by making reference to specific areas used by the interviewee.

A check list for interviewers to work from is in the appendix. The interview is written up on a standard form which gives details of the interviewee, their land holding and its usage. It also records information on the major sources of forest products and the interviewee's perception of the supply situation. A most important section is that which records the interviewees desire for employment and seasonal availability.

Following the interview, the interviewer then notes on the record form the three top priority products for the interviewee and, subjectively, the interviewee's attitude towards social forestry, interest in community, group or individual activities and the level of understanding of the inputs needed.

Following the completion of the interviews, the information is summarised as described in the next two sections.

Compilation of the supply and demand situation for major groups of forest products by social groups

The first step is to determine the major products which are going to be required eg fuel, fodder and employment. An attempt should be made to quantify the demand for each category of product using the information from the interviews.

The quantified demand is compared with the subjectively assessed supply situation to determine priorities and the size of programme needed. The aim should be to meet at least 10-15% of the total requirement for at least one product.

The interview details should also make clear which groups use which communal areas and hence need to be considered in any plans for the

area.

Assessment of interest in social forestry programmes

If Social Forestry is to be introduced into a community it is, of course, essential that there is agreement and consensus for any communal project and that people understand the costs and the benefits. The key is extension, the level and intensity of which must be geared towards the needs of the community. For example, the T and V system is for a back-up service to those already involved in forestry, whilst the use of films, puppet shows and meetings is to generate interest. It is likely that different social groups in the community will have differing priorities and for this reason, a separate record must be kept for each group.

The results of the interest survey should be compared with the results of the observational survey on the supply situation. Where there is a mismatch, ie, limited supply but little interest, then the extension programme should be focussed on this. By determining which groups in the community are reluctant, the extension programme can be targeted on to these particular groups. Where interest is already adequate, extension should concentrate on technical support and advice. By maintaining strong contact with the T and V section of the agricultural extension service, it may well be possible to reinforce the message of forestry extension and to provide support for those already engaged in social forestry.

Preparation of the village summary

Using the information on needs and on interest in social forestry programmes an appropriate system can be selected by referring to Table 1, 'summary of efficiency and effectiveness of social forestry systems' and the key given below.

Which forest products are needed?

If it is	Fuel	then Go to 1
If it is	Fodder	then Go to 2
If it is	Shade/Shelter	then Go to 3

If it is	MFP	then Go to 4
If it is	Timber and poles	then Go to 5

1. Shortage felt by all social groups?

or

Shortage felt mainly by landless/small farmers?

Investigate community woodlots on Gomal/C&D or Foreshore areas. If feasible, check inputs required. Include fuelwood species in FF nursery stock. Go to 6.

Investigate rehabilitation, group farm forestry supplemented by homestead trees and tree tenure systems. Go to 6.

2. Shortage felt by all social groups?

or

Shortage felt mainly for landless/small farmers?

Investigate communal woodlots on Gomal/C&D land and foreshores. If communal woodlots are planned for fuel, include fodder species and consider grass/fodder plants as inter-row crops with wider spacing of main crop. Include agroforestry and homestead tree species in nursery stock. Go to 6.

Investigate provision of homestead/agroforestry trees. If land is available for tree tenure or group farm forestry use it. Investigate small community lots (see above) and possibility of using secular groups. Go to 6

3. Shortage felt by all social groups?

Investigate road/track canal side plantings (consider tree

or

tenure which has additional benefits) and homestead/agroforestry trees. Go to 6.

Shortage felt mainly by
landless/small farmers?

Investigate supply of trees for
homestead/agroforestry planting.
Go to 6.

4. Shortage felt by social
groups?

Investigate agroforestry/
homestead trees and possibilities
of rehabilitation.

or

Include appropriate species in
mixtures on any communal
project. Go to 6.

Shortage felt mainly by
landless/small farmers

Investigate agroforestry
homestead trees and tree tenure,
possibly combined with rehabilitation.
Go to 6.

5. Shortage felt by all social
groups?

Include timber/pole species in
woodlot either on Gomal/C&D or
foreshore areas. Go to 6.

or

Shortage felt mainly by
landless/small farmers?

Include timber/pole species in
distribution of homestead tree
or roadside planting or, if land
is available, tree tenure.
Investigate small scale
community woodlots, possibly
involving secular groups. Go to
6.

6. Having decided on the most appropriate technical systems, it is essential to determine their acceptability. The following points need to be considered for the various groups of systems and these are amplified in a series of checklists.

Community based systems

Does community agreement exist? If it does, then no further action is needed and the system can be implemented. If it does not then determine whether a response is likely from intensive extension. Pursue this course then implement the system. Otherwise keep up lower level extension work and recheck in one year. Group or individually based systems may give motivation through example and are useful when community-wide agreement proves impossible.

Group based systems

Are land resources available for the group from state land? If not, then does community agreement exist to allocate land to the groups? If not then pursue extension and alternative schemes such as pasture improvement of communal grazing in return for the land given up.

Does the group have the interest and knowledge to pursue the scheme, if appropriate with aid from extension workers and voluntary workers? If not then this must be provided. If this is not possible, delay implementation until it is available.

Individual based systems

Do the individuals have the interest and knowledge to implement the proposals? If not can this be achieved quickly by extension input. If it cannot, then maintain contact and reassess in one year.

If social forestry is to succeed, then its products must be identifiable.

Table 1
SUMMARY OF EFFICIENCY AND EFFECTIVENESS OF SOCIAL FORESTRY SYSTEMS

SYSTEM	EFFICIENCY FOR PRODUCTION OF							EFFECTIVENESS FOR TARGET GROUPS						COMMENTS
	FUEL	FOOD	POLES	SHADE/ SHELTER	MINOR F.P.	TIMBER	PULP- WOOD	LAND- LESS	SMALL	FARMERS MARGINAL	LARGE	URBAN/ RURAL	INDUS- TRIAL	
A. INDIVIDUAL/GROUP SYSTEMS														
1. INDIVIDUAL FARM FORESTRY	2	2	2	1	1	2	2	1	1	2	3	1	2	Require unused land to be effective, can be very remunerative, bringing in a cash crop. Creates some employment initially. Reduces grazing land and land bank. May need technological and marketing help.
2. GROUP FARM FORESTRY	2	2	2	1	1	2	2	3	2	1	0	1	1	Requires unused public land, creates employment and allows benefits to accrue directly to the poorest. Requires high level of extension input.
3. TREE TENURE	2	3	2	1	2	1	0	3	2	1	0	0	0	Can be used in most systems, especially useful in strip planting or rehabilitation, a small scale version.
4. HOMESTEAD TREES	2	3	1	2	2	1	0	3	2	1	1	0	0	Most effective if correct species selected. Creates produce at point of use. Does not usually cause decline in crop yields.
5. AGROFORESTRY	2	2	1	3	3	1	0	0	3	2	1	0	0	Most effective for small quantities of produce of different types. Need not reduce crop yields significantly. Does not require idle land.
6. KISSAN* NURSERIES								2	3	3	2	0	1	Can be efficient creator of employment. Requires high level of extension input and organisation for landless group. Gives concentrated production, requires some produce movement. Can generate employment. Produces residues. Requires community agreement. Removes grazing/collection area initially. Long-term fertility? Water?
B. COMMUNITY BASED SYSTEMS														
7. COMMUNITY WOODLOT- GOVTL & C AND D	3	2	3	0	1	3	0	1	2	1	1	2	0	Gives fairly concentrated production, requires some produce movement. Requires community consent. Removes some grazing, especially initially. Restricted species choice. Water? Provides tangible results quickly. Requires individual tree protection. Usually requires community consent. Creates residual employment. Provides verge and bank stability.
8. COMMUNITY WOODLOT- TANK FORESHORES	2	2	1	0	1	0	0	1	2	2	1	0	0	Requires some residual components of a defined forest. Must have community agreement. Usually slow, can provide wide diversity of products. Valuable in soil/ water conservation areas. Can be linked to tree tenure.
9. STRIP PLANTING	1	1	1	2	1	0	0	1	1	1	1	1	0	Gives concentrated production, requires transport to users, produces useful residues. May generate some employment. Requires substantial blocks of land. Removes grazing/collection area. Long term fertility? Water? Only of indirect benefit.
10. REHABILITATION OF FOREST/PLANTATIONS	3	2	3	1	2	3	1	3	2	1	1	1	1	
C. LARGE SCALE SYSTEMS														
11. EXTENSIVE PLANTATION	3	1	3	0	1	3	3	1	0	0	0	3	3	

* Private individuals growing nursery stock under contract. 3 = Highly efficient → 3 = Highly effective →
0 = Inefficient/Inappropriate 0 = Ineffective/Inappropriate

For this reason, systems which give early returns are essential. Examples are the introduction of grazing either between the trees in a woodlot or in a compensatory area of improved grazing to make up for land surrendered to trees. Cash for community projects and employment are useful indirect benefits.

Early returns become more important the poorer people are. Very frequently, the provision of these early returns may mean that the final crop returns are somewhat reduced. However, this can be well justified if it helps the community or the individual to accept social forestry proposals. The early returns can be achieved either from the system itself, early cutting or interplanting for example, or by creating separate areas of, for example, improved pasture as part of the whole development.

The inclusion of such ideas often means moving away from traditional forestry practice. This is perfectly acceptable and the question to be considered must always be 'what do the beneficiaries need and when do they need it?' It is important to remember that social forestry is usually concerned with a range of products and the creation of flexible production systems which need not be completely 'tree-based'. People will only invest their land and labour in a system which in their view will yield returns which are more valuable than that investment. Very poor people need to have some return in one or two years.

In community projects the benefits must be large enough for those involved to see the results. A 5 ha fuelwood lot in a village of 3,000 people would give everyone a small handful of fuel after 8 years. However, if a cash crop were used, it would yield sufficient to pay for a school roof or some similar communal need. This type of approach may be an effective way of starting communal projects. The benefits do not have to be in forest produce used in the community. Obviously, the project should not be used to establish large scale cash crops on communal lands but equally communal projects which do not provide at least 10% of the community's needs are probably too small to be of value.

Once the consultation process has been completed and preliminary plans formulated, a village meeting must be held to discuss the plan and identify the level of support. This village meeting is essential as it provides an opportunity for people to ask questions and to have their fears discussed. There is no point in trying to force social forestry on unwilling people, they have to be persuaded of its benefits. It may be necessary to conduct several meetings to answer all the points.

The final stage of the process is completed by estimating production from the schemes proposed. The plans for the various communities are then drawn together at range level and submitted to district level. The recursive process of comparing available resources, human, technical and financial with needs is completed to give a defined rolling programme. This is shown schematically on figure 1. The Karnataka Project Implementation Manual (KFD, 1986a) includes a series of standard formats for amalgamating and summarising the programme at range level or district level.

How long does microplanning take?

At first sight, microplanning appears to be a very time consuming task. However, Dr A K Banerjee submitted to the Project Implementation Manual discussion meeting in Bangalore in May 1986, copies of microplans for one village in Karnataka and one in West Bengal. On the basis of the time taken by the team to collect the information, the meeting prepared the timetable shown in figure 2.

Concluding remarks

The system of microplanning described in this article was developed under particular circumstances and parts of it are specific to that area (Karnataka, India). However, two main themes in the process are repeatable anywhere. The first emphasised by Chambers (1983) in respect of Rapid Rural Appraisal is to make maximum use of existing information, in this case principally information on landholdings and demographic structure. The second is to make maximum use of the staff who have most contact with the target population, in this case field

motivators and extension workers, to provide information on people's perceptions. In the case of Karnataka, the project includes provision for 3,000 motivators, 400 extension workers and almost 600 foresters (technical certificate holders) allocated to 156 range forest officers (diploma holders) (KFD, 1986b).

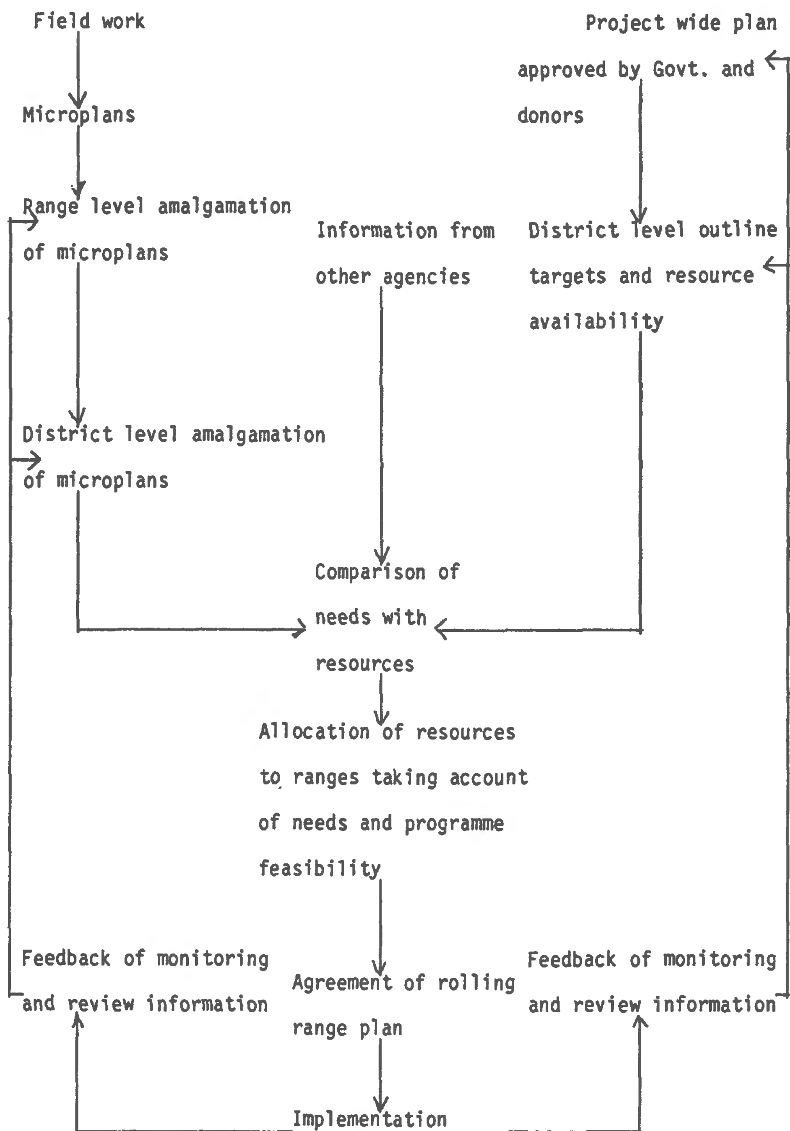
This staff is spread across 14 districts encompassing about 7,000 villages, giving an average load to the staff as follows.

<u>Grade</u>	<u>No</u>	<u>No of village/staff member</u>
RFO	156	48
Forester	580	13
Extension worker	394	7.5
Motivator	3,000	2.5

The availability of these field staff is an important component of the microplanning concept. However, as the bulk of the staff involved in the process will have had only limited training opportunities, the process has been designed to work on a series of standard forms supported by checklists and a detailed guide. An example of a checklist is given in the appendix together with a list of standard forms.

There is no reason why with appropriate modifications, the microplanning system described here cannot be used to aid planning of any social forestry project. Copies of the standard forms and the instructions for their completion are available on request from the author.

Figure 1



Note*

This chart is based on a 3 tier administrative structure Range → District → State

beginning of the project, most foresters believed farmers incapable of planting and caring for trees. After three years, many recognised villagers as shrewd managers who understood the technology of tree management. Nonetheless, the language used by some (again, in Maharashtra), such as "indoctrinate", and "we tell people what to do" reflects the pervasive attitude of the top-down approach.

(3.2) The "bottom-up" extension approach

In contrast to conventional extension (top-down), the bottom-up approach is characterised by:

- participation of local users in early stages of planning and development
- extension agent role is as facilitator rather than teacher.
- a two way information flow

Using this approach, projects begin by examining the needs of rural people and the constraints placed on them by their physical and social environments. The development of an agroforestry system, for example, would be based on farmers' knowledge of their own micro-environments as well as the expert's knowledge of genetic engineering, soil conditions, and successful techniques used elsewhere. The function of the extension system is therefore to facilitate a two-way flow of information from farmers to researchers or administrators and vice-versa. If the extension system functions properly, it will help farmers and resource users to tailor solutions in light of what they know about the limiting factors of their environment.

(3.2.1) Planning flexibility: incorporating local users into the planning process

In Burkina Faso, an Oxfam supported agroforestry project provides a good example of a flexible project based on farmers' needs and constraints (Reij, 1987). The project began in 1979 by encouraging

farmers to grow trees in micro-catchments (a water harvesting technique designed to increase water availability to seedlings and increase survival). Farmers found they could not adequately protect trees from overgrazing; in addition, they were more interested in the effects of microcatchments on crop production.

The focus of the project evolved to developing and studying simple "water harvesting" techniques for fields. Over several years of trials and of farmers' experiences, they found the construction of rock bunds to be the most effective and popular method. These bunds are short rows of rocks placed along contour lines. They act to slow runoff and allow more rainfall to percolate into the soil. Previous rock bund construction depended on government agents with transits to determine levels for contour lines. To overcome this constraint, the project devised a simple and cheap device (based on the garden hose) for levelling. By 1986 2,500 ha had been treated, resulting in 40 to 180 percent increases in crop yields. The construction of earth bunds had been promoted earlier in this area by the Rural Development Fund, but they proved unsuccessful and unpopular because they were easily damaged by runoff and required considerable regular maintenance. The Oxfam project was successful largely because it was flexible (it adapted from tree-planting to field soil conservation), was developed with farmers accounting for their needs and location-specific constraints, was developed from pre-existing traditional practices, and produced visible results.

The bottom-up approach incorporates the final users in the planning as process. In Meiji, Japan, for example traditional farming methods were the starting point for agricultural research and extension (Johnson in Agarwal, 1986). The promotion of close ties between peasants and R & D was also founded on the idea that traditional farming practices embody a store of knowledge and skills which should be used and developed. The advantages of incorporating end-users and target groups into project planning or technology development process are that they:

- (1) build on and preserve indigenous skills and knowledge, rather than causing their extinction;

- (2) give people a greater control over, and involvement in, the process of change in their lives;
- (3) give people a better understanding of the technology or management practices;
- (4) ensure that the innovation or programme is appropriate and meets people's needs.

(3.2.2) Dialogue approach facilitating a two-way information flow

There are several interesting extension methods designed to generate two-way flows of information. A two-way model used in India and the US is based on problem identification. The role of extension in this case is to facilitate discussions within a group and between clientele and sources of needed information, and to focus on problem identification and problem ownership (identify who has control of the variables leading to problem solution and who receives the net benefits from solutions). The group and one-to-one problem identification exercise increases the probability that the right problem is being addressed by both extension and research, and defines the clients' interests in problem solution which in turn gives the client a vested interest in helping to find a solution and then putting it into practice (Bentley, 1982). Bentley (1982) found that investment in participatory process led to rapid and widespread implementation of new ideas and technologies.

Gaun Sallah, village dialogue, is a method used for local planning in Nepal (Messerschmidt, 1983). It provides another example of a bottom-up approach where participants are involved early in the planning process and a two-way information flow is established. The methodology essentially includes: structured discussions and study tours, involvement of participants early in the project (at the data collection stage, where they are involved in constructing a village profile); and creation of a planning team made up of local leaders and outside planners. The purpose of Gaun Sallah is to prepare panchayat-level

resource management plans. Its goals are to encourage the commitment of village organisations and groups in the implementation and long range management of project field activities, and to promote institutional development.

The essential difference between the bottom-up and top-down approach is that the needs and social and environmental constraints of a rural population are not assumed by planners from the outside, and thus extension serves to educate planners and facilitate local participation in planning and management.

(4) Extension methods

Forestry extension efforts are implemented in many different ways, depending on the approach, objectives and resource limitations of the system. Broadly, they can be classified as:

(4.1) -- Mass media are generally used to broadcast information and to publicise issues. It might include radio broadcasts, distribution of pamphlets, books, posters, etc. Though this medium may have little impact on sustainable participation (or an understanding of the issues involved), it can influence people (and thus encourage some participation), in that it provides them with access to information and services (eg government nursery programmes) which would otherwise have been unavailable. In 1981, in Tanzania, a publicity campaign was launched, based on the slogan "Forests are Wealth". It succeeded in generating an interest in forestry department activities, over 800 letters were received from villagers by the Forest Department enquiring about tree growing, and seedling distribution increased (FAO 1985). The greatest advantage of this method is that it reaches a large audience.

4.2 -- Group media include many innovative methods of extension such as plays, films, puppet shows, mime, as well as more traditional demonstrations (eg planting techniques). Kenya Fuelwood Development Programme (Skutsch, 1986) has developed an interesting drama programme based on extension experiences in Mexico and India. Using locally known comedians, and popular language, the play presents a parody of

local situations (eg fuelwood use and shortages), but leaves the solutions open, in order to encourage discussion rather than to preach answers. These methods have proved popular and effective. They are best suited to introducing or convincing people of the relevance of a particular subject. They can raise location-specific issues and thus are more relevant.

4.3 -- Group discussions include meetings held at village levels (eg Panchayat), with small functional or pre-existing groups (women's organisation), and with farmers (eg training and visit system). The Gaun Sallah system discussed earlier provides a good example of the potential of group meetings: it encourages participation and cooperation; local needs and problems are identified, and local resources (knowledge, labour, etc) are integrated with outside resources. This method is of central importance to community-oriented projects. However, the success of group discussions depends on the use of well-trained facilitators who are aware of local power structures and group dynamics. Group discussions can be dominated by one powerful interest group at the expense of the majority. The needs of the 'silent majority' can be subsumed by the 'needs' of the vocal and powerful minority.

(4.4) -- Individual meetings between extension agents and local resource users is the most direct way of understanding the problems and needs of individuals, and is also effective at influencing individual resource management practices. It is also the most effective way of demonstrating new or modified techniques. This method is, however, costly. FAO, (1986a) estimates one extension agent can work effectively with 38 household a year (assuming 8 visits a year). Often, extension agents skip visits because of time constraints and the hassles (e.g. transport) involved with them.

(4.5) -- Training and field trips: many extension programmes (eg Nepal Community Forestry Development Programme) include field trips to other "successful" or demonstration areas. Where these trips are designed to convince village leaders about adopting new woodlots, for example, the effectiveness of such trips as extension tools may not be great

(FAO, 1986a). However, where the visit is part of a training programme, it may be of great use for individuals to talk to others who have successfully adopted new practices.

Generally, a combination of methods are used. In Nepal, the Community Forestry Development Programme combines mass media (weekly radio programmes, posters, stickers, signboards), group media (films, school presentations), group meeting and discussions (at the district, village, and committee levels), and individual contact with villagers (Pelinck, 1984).

(5) Factors affecting choice of extension method

The choice of extension method is dependent on the human and financial resources of a programme or project as well as its goals. Decisions about the use of different extension methods should be made during the early planning stages, as human, institutional, and financial resources will largely dictate the extension method possible. These resources vary from region to region, and thus methodologies are area specific. What is appropriate to India might be impossible to replicate in Kenya. Manpower (i.e. trained foresters and extensionists) and support systems (i.e. institutions and transportation) are greater in India than Kenya, thereby facilitating a more widespread intensive extension system. Extension methods should build upon pre-existing local decision-making and educational institutions. Thus, the approach may be replicable (eg Oxfam's 'bottom-up' approach), but the specific extension methods used should be tailored to specific local institutions.

The costs in terms of human as well as financial resources are highest for more intensive (individual) contact systems; generally they are the most effective systems for working with individual farmers. However, fostering cooperative group action is best promoted by working with small groups rather than individuals or entire communities.

The effectiveness of many of these extension techniques could be greatly improved by identifying and addressing specific problems and

by directing efforts to the correct audience. Hoskins found that a number of village woodlot projects in West Africa had failed even though they were planned with local villagers (men). The trees died, she explains, because the women who are the traditional tree managers were not involved by the extension programme (Hoskins in Agarwal, 1986).

The extension methods used may inadvertently exclude certain population groups (as was the case with women in West Africa). The poor and landless people are often excluded from media campaigns and extension efforts because they do not have access to radios, printed material (if illiterate), and village group meetings. In a review of community forestry in Maharashtra, India, Sen (1986) found that in one project village none of the landless people knew about the objectives of the social forestry programme while the majority of the medium (83%) and large (67%) land-owning farmers and 25% of the small farmers knew about the objectives of the communal woodlot in their village. Another study in Maharashtra (CENDIT) found that poor (or those belonging to socially inferior groups) were being excluded from extension efforts because the meetings were generally held at homes of wealthier village members who could afford to "host" (eg provide food and drink) them. Finally, while formal promotion techniques of extension services provide varying degrees of success, the best extension methods are successful projects and "word of mouth".

(6) Why the top-down approach still prevails

For many years, people have criticised the top-down hierarchical approach of forestry and other extension systems. Nonetheless it is still the most common form of extension. Have these critiques simply fallen on deaf ears? There are certainly historic and cultural factors which encourage the use of the top-down approach. However, its prevalence is largely due to resource constraints of the existing extension systems, as well as the nature of programme and project planning institutions. The most important limiting factors for forestry extension services are lack of financial and human resources. "Bottom-up" approaches are more costly in terms of trained extension

staff as well as their support systems (e.g. transport).

In many third-world countries there is a chronic shortage of foresters. Therefore, the people-intensive demands of extension systems are rarely met. In Mali, for example, there are 600 foresters for a total population of 6 million (Taylor, 1984). In 1979, only 80 professionals and 240 forest technicians were working in 8 Sahelian countries (Schmitzhusen, 1983). These data represent total numbers of foresters, extension services employ only a fraction of them. Thus, with several exceptions (notably India and China), extension efforts are primarily limited by the numbers of trained extension foresters. In addition to their limited numbers, forest extension agents often work with poor support (eg transportation, wages, incentives) systems. In a study in the Kordofan region of the Sudan, Hammer (1982) reports that 84% of the farmers interviewed said they would listen to advice from agriculture and forest officials if approached, but due to lack of physical resources and logistic support, the extension agents had reached only 8 percent of the farmers. In Tanzania, Skutsch (1983) found that poor support services for forestry extension agents negatively affected their ability to visit farmers. One agent had to manage a nursery at one end of a 100 km 'beat' and work with sixty villages scattered along small roads all without any form of transportation. The lack of adequate education and training for forest department extension agents is one of the major problems to be overcome before effective extension services can be created. Unless an extension agent is capable of being a good communicator and listener, it is unlikely that the real needs of the farmer will be identified and acted upon.

(6.1) Established hierarchies favour the top-down approach

There are also in-built hierarchies associated with induced development (promoted from the outside) which also favour the top-down approach. Among them:

- The need of funding and planning agencies to control their financial resources (ie assure positive results to assure future funding).

- Extension agents are generally 'outsiders' (not from the local area); thus language and communication styles create barriers to a two-way information flow.
- The historic role of forest services as "resource cops", in addition to superior attitudes engendered by professional training.
- The motivations within extension agencies generally emphasise inputs (e.g. numbers of farmers contacted) rather than outputs (e.g. clients' income generated from fuelwood sales).

(6.2) Diversifying the forestry extension effort

The constraints of extension systems can best be addressed through diversifying the forestry extension effort. Several authors have noted that forestry extension can be joined with agriculture extension efforts (Clark, 1983, Pelinck, 1982, FAO, 1986), thereby building on and benefitting from a large experienced network.

Gregerson (1986) notes, however, that agriculture networks may be inappropriate when they are based on the training and visit system which is geared to the diffusion of new technologies. Social forestry extension is often more concerned with social structures and interactions within a village and less involved with the regular introduction of the latest technologies. In addition, many agriculture extension agents are already over-burdened. Hudson (1987) reports that in Kenya most soil conservation extension work is carried out during the dry season, as agents are too busy with other agricultural issues at other times. The system is geared to simple and quickly-transmitted practices. As a result, attention is focused primarily on the mechanical aspects of terracing rather than on the real message of integrating soil conservation into the farming system.

Ideally, agroforestry extension should be integrated with agricultural extension. Certainly, where two separate extension systems exist, they should be coordinated in order to avoid conflicting messages.

However, where time constraints, professional biases, and focus mean that the tree component is a low priority, other extension solutions should be adopted.

Local organisations (such as women's clubs, youth clubs, church groups, etc), NGOs, and schools provide good alternatives to forestry and agriculture extension systems. They generally have better contacts with rural people and especially the poor, they include and encourage their participation in decision-making, and they take a process rather than an outcome approach to projects. Anand Niketan Ashram is an Indian voluntary organisation with a long history of work in village development. In 1981, they launched a tree growing programme and within a year 1.25 million trees had been planted along bands and on waste lands with a survival rate of 90%; tree grower cooperatives have also been organised and nurseries have been established (FAO, 1985). Also in India, the Ranchi Consortium played an important intermediary role between local people and the forest department. They convinced the department to dismiss all pending cases of forestry violations in the area. NGOs can facilitate discussions and mediate between rural people and administrations.

Finally, several social forestry programmes in Haiti, Korea, India, and Nepal have developed systems whereby local people are trained as 'motivators' and extension agents. In Haiti, CARE (an international NGO) hires animateurs from the local community of farmers to undertake tree planting extension efforts (FAO, 1986b). In Nepal, local villagers are trained (2 week course) and hired to manage nurseries and protect plantations as well as to communicate with and involve other villagers. A two week training course is hardly sufficient to cover technical and social issues required by extension "agents". However, it is a step in the right direction. Ideally, the advantages of using local people as extension agents is that they are not viewed as outsiders, they understand the local needs and problems, their language and style of communication do not create barriers and thus, they will encourage greater local participation. On the other hand, if the selected villager comes from a minority (eg economically powerful) position, he/she might be unable or unwilling to communicate with

other (poorer) residents. Clark (1982) notes that farmers tend to communicate best with farmers who are from similar social and economic backgrounds, and thus, special extension efforts may be needed for each different socio-economic group within a community.

The discussion so far has addressed general forestry extension issues. It is clear that the objectives and approach of an extension system affects and is affected by the planning, implementation and outcome of a social forestry programme. What follows is a discussion of extension efforts as they relate to the specific problems of community-based projects.

(7) Extension for community forestry

Community forestry projects have certainly proved more difficult to implement than farm forestry projects. There are many inherent difficulties with the management of common property resources and yet extension efforts have rarely been geared to address specific constraints of community forestry. While some factors are common to extension efforts for farm and community forestry, others such as social and administrative institutions are more critical constraints for community forestry. The distribution of seedlings and demonstration of planting techniques, common elements of many extension programmes, may provide appropriate incentives for individual farmers and other land owners. However, they are less relevant to village leaders attempting to establish a village forestry committee.

The most important difference between farm and community forestry is that community forestry requires the participation of the entire community. Ideally, participation, here, implies the involvement of people from different sectors of a society in planning, planting, management, maintenance, and distribution of forest products. At minimum, it requires the tacit approval of all groups within a society for the management of an area as a "common" resource.

There are many constraints to local participation in community forestry programmes, among them are:

- participants do not feel a pressing need for a communal woodlot;
- land availability - land may be limited by competing uses for agriculture and grazing. In addition, land tenure as well as the physical site conditions may also limit the available area;
- differing incentives for and perceived limitations of the communal forest area. Participating incentives for landless and land-poor farmers might include increased (or more accessible) forest products (eg fuelwood and fodder). The incentives for richer farmer and village leader participation could be cash-income generation (for themselves or for the community) or political recognition. The landless might be concerned with the accessibility and utility of the products from community forests, whereas leaders will be more concerned with their ability (eg guard salary) to protect the area. Community forestry schemes often do not provide the poor access to forest products. In Maharashtra, for example, village panchayats auction off fodder supplied from the communal area, thus benefitting the richer villagers who can afford to bid for it (CENDIT).
- institutional security over the rights of access to tree products -- many third world countries have had forest laws where all the products were the property of the state. In Nepal, new forestry legislation was introduced in conjunction with the community forestry programme which hands over state forest land to communities who participate in the programme.

- a history of negative legislation and rapport with forest services -- often the forest service is viewed as exploitative (both of the local forests and population). In Pakistan, for example, when the community forestry programme began, over 50,000 cases of forest offences were still pending, which meant that one out of six households were involved in disputes with the forest service (Cernea in FAO, 1986b).
- inequalities within the local social structure or mistrust of local government -- often, local governments do not represent the community as a whole, but are interested in (or perceived to be interested in) furthering their own gains. Thus, there is no cooperative foundation for communal action. Skutsch (1983) found that mistrust of village leadership negatively affected participation in Tanzanian village woodlot schemes.
- the benefits accruing from forest plantations are long term benefits and environmental benefits.
- labour availability -- it is often assumed that labour is available in the off-peak agriculture season. Reaside (1985) notes that many farmers in Jumla, Nepal, depend on off-farm employment to tide them through this lean period; thus voluntary labour is hard to find.

(7.1) Resource management and community forestry

These limiting factors all indicate that problems associated with the management of a common property resource rather than tree planting technologies or knowledge of forest ecology are the central constraints to sustainable community forestry developments. Issues related to management and communal participation have not been adequately addressed by social forestry extension systems.

The attitude of most forestry departments is to plan for rather than to plan with local communities. As a result, communities are not included in the decision making processes and thus are not managing their communal resources. The Maharashtra Social Forestry Project provides a good example of "top-down" planning (it is by no means atypical of other community forestry projects). Village plantations are planned and planted by the forest department and then turned over to the village after five years. Planning involves: the collection of basic data about sites, selection of species to be planted from a list specified by the department, information on soil type, and irrigation facilities, needs of local people.

Determining the needs of local people and encouraging their participation entails:

- keeping people informed at various stages of planning;
- extension officers are to visit the villages frequently, establish rapport, explain to them various details of the social forestry project (area to be covered, tree species to be planted, people's roles and responsibilities, and probable benefits from tree plantation);
- the management plan for six years was prepared for each village extension agents, it was then submitted to the forest department for approval;
- land for the plantation was handed over to the panchayats.

While the villages were theoretically to be involved in the development of the management plan by (attending village meetings), in practice, this was rarely the case. Sen (1986) reports that in two of three villages studied people did not even know the plan existed, let alone participate in its development (this is also the case for villages examined by CENDIT; Sen, 1986, CENDIT, Anonymous, 1985).

The underlined phrases above indicate that the decisions over planning and management of the village forests are made by the forest service. The CENDIT report echoes this fact, concluding that the village planning process simply entailed the adoption of "mass-produced cyclostyled management plans" by selected panchayats. Decision-making forms the basis of management. Thus, as long as outside agencies are making the decisions for local villages, "village-managed" development will not occur. Kramer (1987), in his review of successful sustainable development projects notes that "many development efforts have failed because they have not allowed the community to...take charge of the management of the productive resources at their disposal". Wangura Maathai (Kengo in Goslinga, 1986) asserts that "development which is imposed from the outside takes away from the people their power to guide their own destinies".

(7.2) Participatory planning: a vital ingredient for community forestry

Participatory planning is necessary for successful community projects. It requires the development of extension methods such as Gaun Sallah (discussed earlier) or other discussion-oriented techniques. Simply "informing" people does not incite participation. People must be actively involved in planning and managing as well as having a stake in the benefits if they are to be encouraged to participate. In Nepal, the Community Forestry Development Programme found that widespread public discussions about the panchayat-forest programme did not generate enthusiasm for the programme. However, when the actual provisions of specific management plans spelling out group rules for protection, harvest and benefit sharing were brought under group discussion, the value of establishing community forests was quickly recognised (Arnold, and Campbell, 1985).

As a result of the 'outside' planning and control of resources, the Maharashtra project, on the whole, is not sustainable. The mid-term evaluation noted that many panchayats were reluctant to take over the management of the forests after the five year term. Panchayat leaders were concerned about the responsibility of protection (ie costs) and

felt they did not have the capacity to manage these areas. Essentially, immediate income-generation was necessary before many panchayats were willing to take on management responsibilities. As the establishment and management was done primarily by the Forest Service, many villagers viewed it as the government's project and felt it was the government's responsibility to manage it. In addition, in some instances, the forest service "extension" agents were reluctant to turn over these areas. It was, after all, the extension agents rather than the villagers who had invested their time and effort in the management of the area. However, this is not an appropriate role for an extension agent interested in fostering sustainable resource management. Many panchayats were uncertain how the benefits from the forest would be distributed. Many indicated that products would be sold - in other words, forest areas are viewed as commercial ventures. Several village panchayats viewed woodlot harvest as a one-time commercial venture and plans for sustained management (ie beyond first rotation) were not being made (Anonymous, 1985).

In Maharashtra (as is the case with many other forestry projects), discussions about the distribution of 'benefits' (or products) is not included in the initial project plans. Participation in communal forest endeavours will not occur if participants are uncertain of the benefits and how they will or might be distributed. The Maharashtra evaluation called for the development of prototype benefit-sharing plans (Anonymous, 1985). This will not enhance the sustainability of these village forests, as it is another example of outsiders planning for local people. In village discussions held in Nepal, it was precisely the discussions of benefit sharing and the definition of user groups which incited interest in the project as a whole (Arnold and Cambell, 1985).

(7.3) Pitfalls associated with the top-down extension approach to community forestry

The top-down approach used in most community-based projects has meant that the needs of the people and the community have not been adequately identified. The focus of community forestry projects has been on the

establishment of village fuelwood plantations and village tree nurseries. Thus, planners have assumed that the most pressing community need is energy and thus fuelwood. Having isolated the (singular) problem, the answer is simple: fast-growing fuelwood species. It is, therefore, assumed that the major constraints to establishing a village fuelwood lot are lack of knowledge about fast-growing tree species and their potential benefits, lack of understanding of the ecological importance of tree cover, and inability to cope with the "free rider" syndrome of common property resources. Thus, extension efforts focus on incentives to minimise risks of the new technology (eg free seedlings), education (propaganda) about basic ecological relationships, and employment of woodlot guards.

(7.4) Communal resources serve multiple purpose, community projects should be geared to similar multiple uses

Collectively, a community (whether unified or simply a loosely-knit group of settlements) uses common resource areas for a variety of purposes, including: grazing and fodder collection, mulch and animal bedding collection, fuelwood, foods (fruits, leaves, mushrooms, wild animals), medicines, building and equipment supplies, and as a source of raw materials for local industries. The use of common resources may be unrestricted or controlled by local custom or government regulation. Thus, the communal forestry area should be managed for as many different uses and thus users as possible. By focusing on a single product (e.g. commercial fuelwood), project planners immediately exclude a range of users and thus participants. User groups should be identified and organised in the planning stages. A small area of communal land cannot meet all the needs of a community, but organising users and facilitating the negotiation of a management plan will help to ensure multiple uses and users of the area.

(7.5) The traditional management of common property resources: the starting point for project design

Community-based projects, especially those planned from top-down, do not build on (or even recognise) traditional common resource management systems. Arnold and Campbell (1985) note, however, that com-

munities often have (or had) the means of managing common property resources (though perhaps conservatively).

Control systems in traditional forest management have been enacted through several different forms of collective action:

- harvesting only selected trees, or forest products.
- harvesting according to the condition of product, determined by its size or shape, its stage of growth or the season.
- limiting the amount of product removed by time, quantity or payment.
- using social means for protecting the forest area through employment of a watcher or voluntary group action (Arnold and Campell 1985).

An understanding of the causes of the breakdown of traditional communal management systems is needed before any attempts are made to introduce a community-based project. The reasons for their disintegration are numerous including increased population, commercialisation, labour migration, introduced 'outside' legislation (eg turning all forest lands over to government control), and changed social structures and institutions.

(7.6) Community resource problems are "multi-disciplinary"

Community-based problems can rarely be confined to the bounds of professional disciplines (e.g. forestry). Initial obstacles to common property resource management are generally organisational and require skills in social analysis, negotiation, and institution building (e.g. cooperatives). Community-based projects appear to have more success when they address a series of community needs. The NGO, Mahiti, in coastal Gujarat, India combined water conservation and the provision of drinking water with the development of natural plantations of the oil seed tree, Salvadora persica (Shah and Weir, 1987).

NGOs and other local organisations are often successful because they can provide a range of services and are more apt to identify a community's most pressing needs.

(8) The management of existing resources: addressing the constraints of community forestry projects

The technological solution to the perceived fuelwood crisis was village plantation or woodlots of fast growing species. Generally the costs have been high (an estimated \$160 million spent in 10 years in the Sahelian region), they have failed to meet local consumption needs (successful community forestry projects in India do not meet basic needs, they occur where people can meet their basic needs through access to Forest Department land (Saxena, 1987)), and often failed to encourage sustainable participation. Focusing on the improved management of existing resources (e.g. natural forest management) would address some of the constraints placed on community forestry projects.

- Land availability might prove less difficult as efforts would be focused on communal areas already being used (thus practically communal if not legally so). In Nepal, legislation was passed in conjunction with the Community Forestry Development Programme which transfers the rights of government forest land to village, panchayats participating in the programme (Pelinck, 1984).
- Benefits accruing from the forest would be immediate as well as long term. There are fewer risks (for the participants) associated with enhancing a pre-existing resource base rather than establishing a novel resource (exotic fast-growing species). In the former, the products are known and their value recognised.
- User groups can be more easily identified and thus the negotiation of the management plan would

be more directly relevant (thus encouraging participation) for identified users.

- Distribution mechanisms for forest products are more likely to be in force, again facilitating the participation of users in the management plan negotiating process. For example, in coastal Gujarat, villagers have traditional rights to the seeds from large tracts of naturally occurring Salvadora persica. Mahiti, a local NGO, has organised women's collector groups and put them in contact with oil-seed processors who pay higher prices than local traders (this has substantially increased incomes). In addition, they have encouraged the afforestation of large tracts of saline wasteland with this tree (it was found that 'sweet' water was needed for regeneration, thus a nursery was established near the villagers' water tank) (Shah and Weir, 1987). As the benefits are more immediate and known from these areas, people may be more willing to invest their time (labour) in the project.

(8.2) Tailoring community forestry efforts to social and political constraints

Extension efforts geared to community forestry need initially to focus on community and social aspects. Silvicultural systems should be designed with an understanding of community constraints (eg corrupt social elite) and needs in mind. The Kenya Wood Fuel Development Programme provides an interesting example of tailoring forest management to social constraints (Skutsch, 1986). Women in the project area are forbidden by local custom to plant trees, and yet they are the ones who suffer from the fuelwood shortages. Men grow trees for the pole and timber market, not for fuelwood. An exotic "shrubby" species was introduced for fuelwood production, which is not considered a tree, thus women are free to plant it.

In cases where village or local leadership proves to be an inappropriate vehicle (because of the power structure) for community forestry, alternative community-based institutions should be sought or formed (ie women's groups, small industry-based groups (eg oil-seeds, rattan), or cooperatives). NGOs and other local organisations can be instrumental in community-based projects, especially as facilitators for a negatively viewed forest service, as instigators of local institution building, and as a source of information on changing laws, regulations, and rights.

Finally, community-based forestry is expensive in terms of human resources. It requires more "people contact", negotiation, and mediation than farm forestry endeavours. Resources should therefore be directed to fewer communities (10-50 rather than hundreds or thousands), and to communities who already have identified a need for a community-based forestry project. A successful community-based project will readily demonstrate a project's or programme's advantages.

ANNEX

Natural forest management

There are few examples of community forestry projects designed to enhance pre-existing resources. Generally, projects clear natural 'waste' and establish plantations at great cost, promising high returns. In many areas, plantations have failed. In Bandia, Senegal, for example, the costs of establishing a eucalypts plantation was \$800/ha. Its productivity is an average $1.5\text{m}^3/\text{ha}/\text{yr}$. In the same area, the native 'scrub', Acacia seyal produces an average of $1\text{--}1.5\text{m}^3/\text{ha}/\text{yr}$ with no management (range $0.8\text{--}3.2\text{m}^3/\text{ha}/\text{yr}$) and of course with no establishments costs (Taylor, 1984).

In 1980, USAID and the Nigerian Forest Department began an innovative project designed to manage 5,000 ha of reserve forest (Guesselbodi) using what it termed "participatory" management (ie involving local residents) (Heermans, 1987). The project has many components including research, soil conservation, agroforestry, establishing a forest cooperative, and grazing management. Two years of preparatory field work (ie discussions with residents as well as soil and vegetation mapping) were conducted before a management plan was adopted. Information was collected on (1) past and present uses of the forest, (2) changes which have occurred over the past 30 years, (3) priorities and preferences for its ongoing use, (4) local customs regarding forest use. The forest was found to be severely degraded (40-60% of forest cover had been lost during the past 30 years), and suffered severe soil erosion.

The management plan divides the area into 10 parcels to be managed on a ten year rotation (based on coppice cycle of Combretum sp, the dominant species), each parcel will be cyclically protected from grazing on a three year basis). During the restricted period residents are permitted to enter restricted areas for forest products such as gum, food, medicine, and cut hay. A forestry cooperative made up of nine villages close to the forest was established. The project hired a "cooperative agent" (from the Cooperative League of the USA) for a year to help establish the cooperative. Each village elected

five cooperative officers who together make up its operating committee. After 2 years' negotiating, a contract was signed with the government which accords the cooperative the right to exploit the forest as long as it abides by the policies set out in the management plan. The cooperative has the responsibility of firewood cutting and grazing permits. Proceeds pay for the recurrent costs of forest management. The Forest Service directs the ongoing conservation and restoration programme. All wood cut in the forest (at present 70 cutters) is obligatorally sold to the cooperative.

The important features of this project are that local people were involved from the early planning stages, their interests were respected (eg access to forest products during restricted grazing periods), and their participation sought for the management of the forest areas. Thus, local residents have been given the responsibility (ie cooperative) of managing their local forest resource, while still receiving the support (restoration and conservation) of the forest service. As the forest researchers knew little about the ecology of the forest area, they relied heavily on knowledge of local foresters and people. Thus, the initial constraint, lack of knowledge about the ecological processes of the area needed for the management plan, fostered a two-way information flow between researchers, planners, and local forest users.

BIBLIOGRAPHY

- Agarwal, B, 1986. Cold Hearths and Barren Slopes: The Woodfuel Crisis in the Third World. Zed Books, Inc., London.
- Anonymous, 1985. Maharashtra Social Forestry Project. Midterm Evaluation Report.
- Arnold, J E M, 1984. Forestation for local community development. In: Strategies and Designs for Afforestation, Reforestation, and Tree Planting. Proceedings of an International Symposium. K F Wiersum (ed) Pudoc Wageningen.
- Arnold, J E M and J C Campbell, 1985. Collective Management of Hill Forests in Nepal: The Community Forestry Development Project. National Academy of Sciences, 1985.
- Basu, N G, 1984. Community forestry and the local community. In: Strategies and Designs for Afforestation, Reforestation, and Tree Planting. Proceedings of an International Symposium. K F Wiersum (ed) Pudoc Wageningen.
- Belloncle, G, 1979. Quel Developpement Rurale? Les Nouvelles Editions Africaines, Dakar.
- Bentley, W R, 1982. Forestry Research, Education and Extension in India. Paper prepared for the Asia Society.
- van Blitterswijk, J D, 1985. Non Governmental Organisations and Social Forestry in India. Wageningen Agricultural University, Department of Forest Management, The Netherlands.
- Brokensha, David, and P Castro, 1984. Fuelwood, Agroforestry, and Natural Resource Management: The development significance of land tenure and other resource management utilisation systems. Institute of Development Anthropology, Binghamton, NY.
- Bruszt, G and Forest Department, Tamil Nadu, 1981. Social Forestry Project in Tamil Nadu India: Appraised Project Document.
- Butcher, D, 1987. Human and Institutional Development Overview Paper. Paper presented at the IIED conference on Sustainable Development, London, April.
- CENDIT. The Maharashtra Social Forestry Project in Bhandara District: Case studies of three Gram Panchayats. Centre for Development of Instructional Technology.
- Chambers, R, 1987. Sustainable Rural Livelihoods. A key strategy for people, environment and development. Paper presented at IIED Conference on Sustainable Development, London, April.
- Clark, G C, 1980. Appropriate Extension and Communication Systems for Promoting and Sustaining Forestry in Rural Community

Development. Prepared for Report of the FAO/SIDA Seminar on Forestry in Rural Community Development, FAO, Rome.

Clark, G C, 1982. Policies, Design and Organisation of Forestry Extension Programmes. In: Report of the FAO/SIDA Seminar on Forestry Extension, FAO, Rome.

Compaore, A et al, 1984. Les actions Bois de Villages en Haute-Volta. In: Strategies and Designs for Afforestation, Reforestation, and Tree Planting. Proceedings of an International Symposium. K F Wiersum (ed) Pudoc Wageningen.

Dani, A A and J G Campbell, 1986. Sustaining Upland Resources: People's Participation in Watershed Management. International Centre for Integrated Mountain Development. Occasional Paper No.3, Kathmandu, Nepal.

FAO, 1980. Report of the FAO/SIDA Seminar on Forestry in Rural Community Development, Chiang Mai, Thailand, 1979.

FAO, 1982. Report of the FAO/SIDA Seminar on Forestry Extension, FAO, Rome.

FAO, 1983. Report of the FAO/SIDA Consultation on Forest Administration for Development, Rome.

FAO, 1985. Tree Growing by Rural People. FAO Forestry Paper No.64, Rome.

FAO, 1986a. Forestry Extension Organisation. FAO Forestry Paper No.66, Rome.

FAO, 1986b. A Forester's Guide for Community Involvement in Upland Conservation. Rome.

Foley, G and G Barnard, 1984. Farm and Community Forestry, Earthscan, London.

Goslinga, G, 1986. Kenya's Women of the Trees. Development Forum, October.

Gregerson, H, Draper and D Elz, 1986. People and Trees: Social Forestry Contributions to Development. Review Draft. November, 1986. EDI World Bank.

Hammer, T, 1982. Reforestation and Community Development in the Sudan. Discussion Paper, Resources of the Future, Washington, DC.

Heermans, J G, 1987. The Guesslbodi Experiment: Bushland Management in Niger. Paper presented at IIED Conference on Sustainable Development, London, April.

Hoskins, M W, 1980. Community Participation in African Fuelwood Production, Transformation and Utilisation. In: D French and P Larson, (Eds). Energy for Africa. Washington, DC.

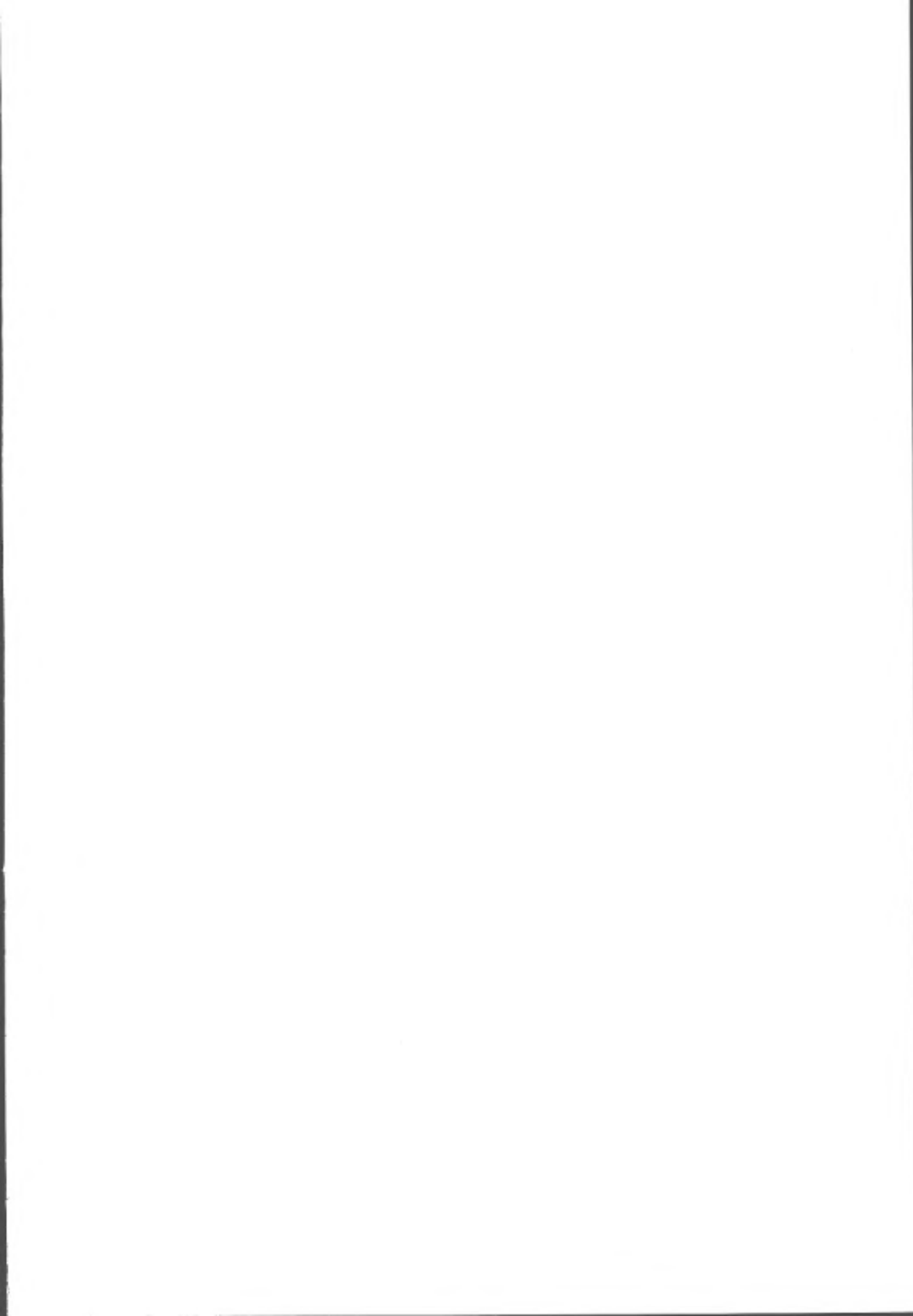
- Hoskins, M W, 1982. Social Forestry in West Africa: Myths and Realities, American Association for the Advancement of Science.
- Hoskins, M W, 1983. Participation in Forestry for Local Development Enabling Mechanisms. In FAO/SIDA Report of Consultation on Forest Administration for Development, Rome.
- Hudson, N, 1987. Soil Conservation in Kenya. Paper presented at the IIED Conference on Sustainable Development, London, April.
- Institute for Development Anthropology, 1984. Workshop on Planning Fuelwood Projects: Reader; FAO, November.
- Karamchandani, K P, 1982. Extension Components of Social Forestry Programmes in Gujarat, India. In: Report of the FAO/SIDA Seminar on Forestry Extension, FAO, Rome.
- Kramer, J M, 1987. Sustainable Resource Management. Paper presented to the IIED Conference on Sustainable Development, London, April.
- Magno, V C, 1982. Extension Components of Small-holder Tree Farming in the Philippines. In: Report of the FAO/SIDA Seminar on Forestry Extension, FAO, Rome.
- Messerschmidt, 1983. Guan Sallah: The village dialogue method for local planning in Nepal. South Eastern Consortium of Universities for International Development.
- NAS, 1983. Agroforestry in the West African Sahel, Washington, DC.
- Norman, D W et al, 1982. Farming Systems in the Nigerian Savanna; Research Strategies for Development. Westview Press, Colorado.
- O M Consultants Ltd, 1986. SIDA Aided Tamil Nadu Social Forestry Project. Management Study Summary Report, Bangalore, India.
- Palin, D, 1980. Institutional Arrangements to Foster Rural Self-Reliance. In: Report of the FAO/SIDA Seminar on Forestry in Rural Community Development, Chiang Mai, Thailand, 1979.
- Pelinck, E, P Manandhar and R H Gecolea, Forestry Extension: Community Development in Nepal. Unasylya 2-12.
- Pelinck, E, P K, Manandhar and R H Gecolea, 1984. Training and Extension for Community Forestry. In: Strategies and Designs for Afforestation, Reforestation, and Tree Planting. Proceedings of an International Symposium. K F Wiersum (ed) Pudoc Wageningen.
- Pelinck, E et al, 1984. Training and Extension for Community Forestry in Nepal. Field Document No.7, Community Forestry Development Project, Nepal.

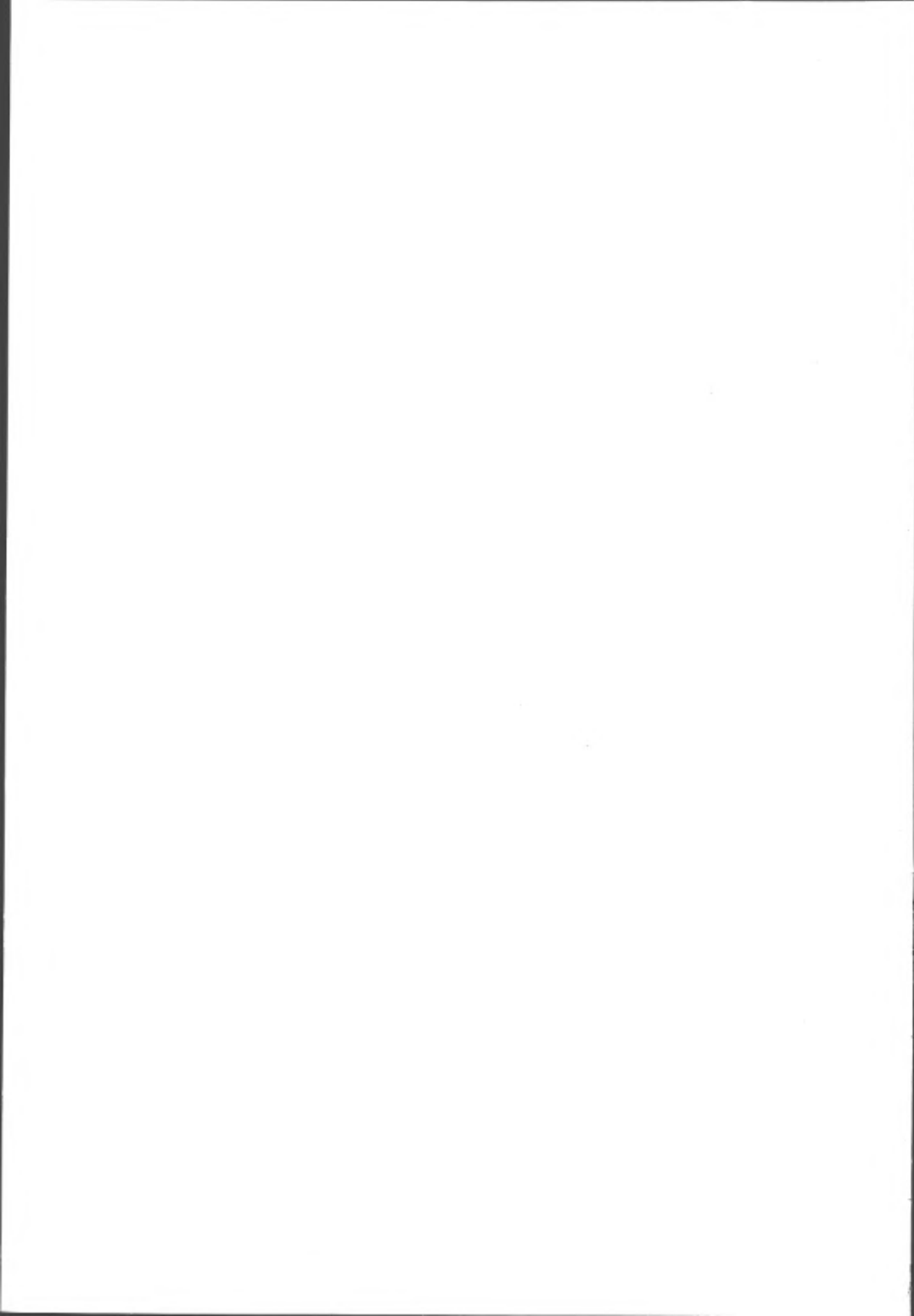
- Ratnarajah, A D R, 1981. Forestry Extension Programme in Sri Lanka. The Sri Lanka Forester 15 (1): 17-20.
- Reij, C, 1987. The Agroforestry project in Burkina Faso: an analysis of popular participation in soil and water conservation. Presented at the IIED Conference on Sustainable Development, London.
- Reaside, N, 1985. Forestry in the Jumla District, Nepal. August (VSO).
- Saxena, N C, 1987. Commons, Trees and the Poor in the Uttar Pradesh Hills. Paper presented at the IDS/ODI Workshop: Commons, Wastelands, Trees and the Poor: Finding The Right Fit. University of Sussex, June.
- SIDA and FAWCDA, 1982. Report from the International Seminar on Community Forestry, Ethiopia.
- SIDA, 1984. Collected Working Papers: Midterm Review of the Tamil Nadu Social Forestry Project.
- Schmitzhusen, F, 1983. Human Resources Formation: the Missing Link in Forestry Development. In: Report of the FAO/SIDA consultation on forest administration for development, Rome.
- Sen, D, A P Purandare, and P K Das, 1986. People's Participation in Community Forestry: A Case study in Maharashtra. Journal of Rural Development Vol.5 (2) March.
- Shah, P and A Weir, 1987. Approaches to Social Forestry in Western India: Some aspects of NGO Experience. Paper presented at the IDS/ODI Workshop on Commons, Wastelands, Trees and the Poor: Finding the Right Fit. University of Sussex, June.
- Skutsch, M M, 1983. Why People Don't Plant Trees: The Socioeconomic Impacts of Existing Woodfuel Program. Village Case Studies, Tanzania. Resources for the Future, Washington DC.
- Skutsch, M M et al, 1986. Kenya Woodfuel Development Programme Mid Term Review. Ministry of Foreign Affairs, Kenya, March.
- Taylor, G F and M Soumare, 1984. Strategies for Forestry Development in the Semi-arid Tropics: Lessons from the Sahel. In: Strategies and Designs for Afforestation, Reforestation and Tree Planting. Proceedings of an International Symposium. K F Wiersum (ed) Pudoc Wageningen.
- Tewari, R N, 1982. The Role and Training of a Forest Extensionist as Related to the Introduction and Implementation of FLCD Activities. In: Report of the FAO/SIDA Seminar on Forestry Extension, FAO, Rome.
- Thomson, J T, 1983. Participation, Local Organisation, Land and Tree Tenure: Future Directions for Sahelian Forestry. Club du Sahel CILSS.

USAID, 1980. The Socio-Economic Context of Fuelwood Use in Small Rural Communities. AID Evaluation, August, Washington, DC.

de Vries, J, 1980. "Extension or Dialogue", Journal of Adult Education, Tanzania, 2, August.

World Bank, 1983. Indian Forestry Education, Training, Research, and Extension Sub-Sector Review. Report No.4750-IN.









Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



Newsletter

October 1987

21 MAR 1988

12 MAR 1988 21 MAR 1988

28 MAR 88

**Agricultural Administration Unit,
Overseas Development Institute**

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1000 members and is drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

© Overseas Development Institute, London 1986

Photocopies of any part of this publication may be made without permission.

The opinions represented are those of the authors and network members and do not necessarily reflect the policies of the Overseas Development Institute.

CONTENTS

	Page
Documents accompanying this newsletter.....	2
News of the Social Forestry Network.....	3
Characteristics of the Network's Membership	
Future Plans	
Network Announcements.....	7
News of the ODI and of the other AAU networks.....	10
Forthcoming conferences and meetings.....	13
Conference Report.....	14

ACCOMPANYING THIS NEWSLETTER

Our mailing is a bulky one this time. Firstly, there are the NETWORK PAPERS. Numbers 5b to 5g inclusive are versions of the papers given at the June ODI-IDS workshop 'Commons Wastelands, Trees and the Poor: Finding the Right Fit'. Number 5a is a paper written separately by two workshop participants, which is so closely related to them thematically that it has also been included here.

- 5a : Trees to Meet Contingencies : Savings and Security for the Rural Poor by Robert Chambers and Melissa Leach.
- 5b : Approaches to Social Forestry in Western India: Some Aspects of NGO Experience by Parmesh Shah and Andrew Weir.
- 5c : Involving the Poor in Forest Management: Can it be Done? The Nepal-Australia Project Experience by Mary Hobley.
- 5d : Household Food Security, Tree Planting and the Poor : The Case of Gujarat by Richard Longhurst.
- 5e : Gains from Social Forestry : Lessons from West Bengal by Tushaar Shah.
- 5f : Commons, Trees and the Poor in the Uttar Pradesh Hills by N C Saxena
- 5g : Workshop Synthesis: discussion and outcome by Gill Shepherd

Secondly, we enclose the NETWORK MEMBERS' REGISTER, and our latest social forestry collection ACCESSIONS LIST. We hope you will find both useful. Further information about network members is available in the next section of this newsletter.

NEWS OF THE NETWORK: CHARACTERISTICS OF THE SOCIAL FORESTRY NETWORK'S MEMBERSHIP

We have recently, by using networkers' application forms and as part of the process of production of a register, done a breakdown of network members

- (a) by country of residence;
- (b) by Third World or First World Membership;
- (c) by disciplinary qualifications;
- (d) by type of employment;
- (e) by main interests within Social Forestry.

RESULTS

The results are appended here for interest. They show that over two-thirds of networkers are working in the Third World and that almost two-thirds are concerned with the implementation of Social Forestry projects. The current balance of 45% Third World members and 55% First World members, while creditable in terms of the memberships of other similar networks, will continue to be redressed during the second grant period.

The breakdown will allow us to look for new members in under-represented countries, particularly government and non-governmental field-staff, and to undertake more interactive networking now that we have a clearer sense of our audience and its main interests.

Most of the interests which have high scores with members are already network priorities. However, it was useful to know that institutional aspects of Social Forestry and Energy issues interested less than a quarter of the membership, and somewhat depressing to find out that around three-quarters had no special interest in the needs of the poor and of forest dwellers. Perhaps the word 'rights' made networkers nervous!

(a) BREAKDOWN OF THE NETWORK BY COUNTRY AND REGION OF RESIDENCE

NORTH AFRICA		MIDDLE EAST		CENT. AND LATIN AMERICA	
Morocco	1	Egypt	2	Argentina	2
Tunisia	1	Israel	2	Belize	1
	<u>2</u>	Oman	3	Bolivia	2
		Syria	2	Brazil	4
		Yemen A R	2	Chile	3
		Yemen P D R	1	Colombia	2
WEST AFRICA				Costa Rica	18
Burkina Faso	1			Dominican	
Chad	3		<u>12</u>	Republic	1
Cote d'Ivoire	4	SOUTH ASIA		Ecuador	3
Gambia	3	Bangladesh	27	Guatemala	2
Ghana	14	Bhutan	1	Haiti	5
Liberia	5	India	105	Honduras	2
Mali	2	Nepal	23	Jamaica	1
Niger	6	Pakistan	11	Mexico	5
Nigeria	12	Sri Lanka	5	Nicaragua	2
Senegal	11			Peru	4
Sierra Leone	5			Puerto Rico	2
Togo	1		<u>172</u>	St Lucia	1
	<u>67</u>	S.E. AND E. ASIA		Trinidad	2
		China	5		<u>62</u>
NORTH-EAST AFRICA		Indonesia	16		
Ethiopia	10	Japan	1		
Somalia	1	Malaysia	10	CENTRAL AND LATIN	
Sudan	13	Philippines	26	AMERICA TOTAL	62
	<u>24</u>	Singapore	1		
		Taiwan	1		
		Thailand	21		
EAST AND CENT. AFRICA					
Burundi	2		<u>81</u>	NORTH AMERICA	
Cameroon	1	PACIFIC		Canada	6
Kenya	61	Australia	7	USA	93
Malawi	8	Cook Islands	1		<u>99</u>
Rwanda	6	Fiji	3		
Tanzania	19	Micronesia	2	EUROPE	
Uganda	7	New Zealand	2	Austria	1
Zaire	1	PNG	3	Belgium	2
Zambia	13	Solomon Islands	5	Denmark	2
Zimbabwe	14	Vanuatu	1	Eire	1
	<u>132</u>	Western Samoa	1	Finland	1
			<u>25</u>	France	2
				Germany F R	3
SOUTHERN AFRICA				Italy	4
Botswana	9			Netherlands	7
Comoros	2			Spain	1
Lesotho	4			Sweden	11
Madagascar	3			Switzerland	3
Mozambique	2			UK	120
South Africa	7				<u>158</u>
	<u>27</u>				
		ASIA AND PACIFIC		EUROPE AND NORTH	
AFRICA TOTAL	252	TOTAL	290	AMERICA TOTAL	257

(b) BREAKDOWN OF THE NETWORK BY FIRST WORLD AND THIRD WORLD MEMBERSHIP

Because membership counts by country do not indicate the nationality of the network members in each country, we have attempted a check of First World members and Third World members in First World and Third World countries. We have not, unfortunately, been able to indicate in this breakdown the relatively large number of Third World members working in Third World countries other than their own.

	1st Worlders		3rd Worlders		Total	
	nos	%	nos	%	nos	%
In First World countries	257	31	7	1	264	32%
In Third World countries	203	24	369	44	572	68%
Totals	460	55%	376	45%	836	100%

(c) BREAKDOWN OF NETWORK MEMBERSHIP BY DISCIPLINE

		Nos	% **
08	Forestry/Silviculture	489	57%
04	Education, training, extension	258	30%
07	Farming Systems	231	27
06	Environmental Sciences	224	26
13	Management	215	25
16	Social Sciences (not Econ)	185	21
01	Agriculture/Agronomy	158	18%
02	Ag. Economics	124	14
03	Economics	114	13
14	Natural Sciences	102	12
15	Regional Planning	86	10
17	Soil Sciences	71	8%
09	Geography	45	5
10	Horticulture	43	5
05	Engineering	31	4
11	Journalism	25	3
12	Librarianship	19	2

** Note: These are percentages of the membership total. Since many members are qualified in more than one discipline, percentages in this column do not total 100%.

(d) BREAKDOWN OF NETWORK MEMBERSHIP BY TYPE OF EMPLOYMENT

	Type of employment	Nos.	%
01	International or bilateral aid agency	155	17.9
02	Government employees	148	17.1
03	Non-Governmental organisations	176	20.4
04	Universities and Research Institutions	289	33.4**
05	Libraries, Documentation Centres	39	4.5
06	Business, independent consultants	58	6.7
		865	100.0

** Note 1: Government employees working in Research Institutions have been counted under category 04 rather than category 02.

Note 2: Those involved in field-level planning and implementation of Social Forestry projects (categories 01, 02, 03, 06), total 62.1% of the network's membership.

(e) NETWORK MEMBERS' MAIN INTERESTS AS INDICATED ON THE NETWORK FORM

Members were asked to tick up to six interests in the field of Social Forestry, without ranking them. A straight count produced the results shown here.

01	Agroforestry	654	77%*
03	Community schemes	573	67
09	Production aspects of fuel, fodder, etc	406	48
06	Farm Forestry	373	44*
07	Forestry extension	365	43
04	Conservation	306	36
10	Project Management	293	34
13	Women and Forestry	263	31
02	Anti-desertification	249	29
12	Rights for the poor	229	27
05	Energy issues	203	24
08	Instit. Management	195	23
11	Rights of forest dwellers	134	16%

* Note: Farm Forestry and Agroforestry overlap to some extent. In the first edition of the Social Forestry newsletter it was made clear, however, that the network sees Farm Forestry primarily as cash-crop forestry, while Agroforestry is far broader. It is taken to mean not only the interaction of crops and trees, but also a much fuller incorporation of trees into farms and gardens so that they meet a wide variety of householder needs, cash-sales being only one.

Future plans

Much of this Autumn has been spent in making plans for the next three years' activity of the Social Forestry network and securing funding for them. The network's future for this further period is now assured, and proposed plans will be announced in the next newsletter.

NETWORK ANNOUNCEMENTS

1. Change of 'phone number

Please note that from 21st December 1987, ODI's telephone number will change. The new number is to be 01-487 7413. The change is in response to our need for more lines, and it should mean that those of you who have had difficulty in getting through to us will find us more accessible.

2. The Nitrogen Fixing Tree Association

The NFTA was formed in 1981 as a publicly supported, non-profit 501C3 international organization, is dedicated to stimulate the use of nitrogen fixing trees through publications, research and development. NFTA serves to promote the tremendous potential of nitrogen fixing trees to improve land-use systems in developing countries. The benefits that can be realized from nitrogen fixing trees are of particular importance to small-scale farmers. By growing tree products on farms the demands on local forests will decrease, thus deforestation and desertification pressures will subsequently decrease. It is through such efforts that species diversity can be maintained. NFTA also understands that introduced trees not compatible with the ecosystem can do great harm to the welfare of the community. By working with research staff and development workers NFTA strives to introduce trees that are beneficial to the farmer and the ecosystem.

Publications: The "NFT Highlights" are two page briefs produced, on request, by prominent scientists. The "Highlights" are published about six times annually and are designed to spark interest in new nitrogen fixing trees and alternative uses. They receive wide spread distribution among the associates and are available upon request from

The Nitrogen Fixing Tree Association
P O Box 680
Waimanalo, Hawaii
96795, USA.

3. The Centre for Forestry in Rural Development

We have received the following details about a new forestry centre.

The CFRD has been recently established in the Australian National University to foster interdisciplinary collaboration in forestry as a component of rural development; to stimulate additional research and teaching in this area; to attract funding and skills to enrich existing programs and to meet a perceived international and national need.

Programs to integrate trees and forestry into rural development and agricultural systems present many new technical challenges to conventional forestry and the management of modern, large-scale industrial and state forestry are often inappropriate. The technical problems however are often less significant than the social, cultural or economic questions to be addressed. Many countries do not have appropriate institutional, administrative or personnel resources to develop and manage forestry programs for rural development. Staff need training in agro-forestry techniques and the ability to use local knowledge of species and ecosystems and the skills that rural people frequently possess.

The role of the Centre for Forestry in Rural Development will provide three major services: consultancy advice to national and international agencies, especially in preparation, appraisal and evaluation of projects; short-term courses in Australia and in less developed countries to supplement Master degree and Graduate diploma courses already offered by the University; and multi-disciplinary research on all aspects of forestry and tree husbandry in rural development.

For further information contact:

Dr Neil Byron
Department of Forestry
Australian National University
Canberra ACT 2601
Phone (062) 492579

or

Dr Bryant Allen
Department of Human Geography
Research School of Pacific Studies
Australian National University
Canberra ACT 2601
Phone (062) 494347

NEWS OF THE ODI AND OF THE OTHER AAU NETWORKS

New Director

From the 1st November 1987, Dr John Howell became the new Director of ODI, following the resignation of Tony Killick. An extensive international recruitment process was gone through, and we in the Agricultural Administration Unit are particularly delighted that John, who for many years ran the Agricultural Administration network, was the successful candidate. John has various plans for a higher profile for ODI, and we will keep you informed about these.

NEWS OF THE AAU'S OTHER NETWORKS

The Pastoral Development Network, run by Jon Moris has published the following papers in its August mailing:

- 24a 'Stall Feeding of Cattle in the Mandara Mountains of Northern Cameroon' by John S Holtzman.
- 24b 'Fodder Bank Testing among Fulani Agropastoralists in Central Nigeria: Feeding Decisions in the Use of Improved Forages' by Ellen Taylor-Powell.
- 24c 'A Para-Vet Programme in South Sudan' by Melvyn Almond.
- 24d 'Highlights from Sociological (CRSP) Research on Small Ruminants' by Constance M McCorkle, Michael F Nolan, Keith Jamtgaard and Jere L Gilles.
- 24e 'Is Holistic Resource Management the Answer for African Rangelands?' by Wolfgang Bayer, Maryam Niamir and Ann Waters-Bayer.
- 24f 'Livestock Market Data as an Early Warning Indicator of Stress in the Pastoral Economy' by Ced Hesse.

The Irrigation Management Network, run by Mary Tiffen and Camilla Toulmin, published the following papers in its August mailing, with the overall theme of Water User Associations - their activities, problems and financial requirements.

- 2b 'Learning from Rehabilitation Projects: The Case of the Tank Irrigation Modernisation Project (TIMP) of Sri Lanka', by D Hammond Murray-Rust & P S Rao.
- 2c 'Irrigation Groups in Bangladesh', by R W Palmer-Jones & M A S Mandal.
- 2d 'Economics of Farmer Participation in Irrigation Management' by R K Patil.

LUNCH TIME MEETINGS

Pastoral Development Network

28 July 1987 'Drought and the Future of African Pastoralism' by Jon Moris, ODI.

Irrigation Management Network

3 June 1987 'A New Philosophy for Irrigation in Brazil' by Professor Salassier Bernardo.

24 June 1987 'Irrigation Water Management in Bangladesh: the Market Takes Over - Imperfectly?' by Dr Richard Palmer-Jones and Dr M A S Mandal.

10 July 1987 'Financing Irrigation Investments' by Dr Ian Carruthers and Dr Leslie Small.

4 November 1987 'Deriving Lessons from Experiences of Project Management' by Mr G L Ackers.

11 December 1987 'Dambos and Micro-Scale Irrigation: Technical and Social Aspects in Zimbabwe' by Pat Hotchkiss and Bobby Lambert.

Agricultural Administration Network

'The Role of Land Reform in Attacking Rural Poverty' by Dr Riad El-Ghoney.

'Innovative Agricultural Researchers in Poverty-Oriented Research and Development' by Stephen Biggs.

FORTHCOMING CONFERENCES

January 18-29 1988 Land Conservation for Future Generations

Bangkok, Thailand.

Contact: Mr Sanarn Rimwanich

Director General, Department of Land Development

Bangkhen, Bangkok 10900

Thailand

January 26-29 1988 Alternatives to Deforestation: Steps Toward
Sustainable Utilisation of Amazonian Forests.

Belem, Brazil

Contact: Anthony Anderson

Museu Goeldi

Caixa Postal 399, 66.000

Belem-PA-Brazil

March 25-28 1988 Poverty, Development and Collective Survival
19th World Conference, Society for International
Development

New Delhi, India

Contact: S P Ahuja or B Murali

Flat 16

No.10 Hailey Road

New Delhi 110001

India

April 25-1 May 1988 International Forestry Conference for the
Australian Bi-Centenary 1988

Albury, Australia

Theme: Review of the contribution of Australian
native trees to Australia and other countries.

Papers will be presented on history, future
directions of ecology, silviculture and uses of
eucalypts, acacias, casuarinas. Aspects of
industrial forestry, urban forestry, trees on
farms and trees for fuelwood.

Contact: R L Newman
AFDI
P O Box 515
Launceston
Tasmania
Australia 7250

CONFERENCE REPORT

Incidentally, we would remind networkers that we would very much like to publish conference reports from your part of the world. Any sort of mention, from a paragraph to about 500 words will be published, so long as it has some bearing on topics related to Social Forestry.

RENEWABLE ENERGY AND SUSTAINABLE DEVELOPMENT

This meeting was held at the Institution of Civil Engineers (ICE), Westminster, London on 30th September 1987. It was jointly organised by the Appropriate Development Panel (ICE) and the Tropical Agricultural Association. Dr Charles Werebo-Brobby, of the Commonwealth Secretariat, was in the chair.

The meeting was addressed by four speakers:

1. Professor David Hall (King's College, London) who gave a paper : "Biomass for food and fuel - the cornerstone for sustainable development". He provided a comprehensive background to the subject area, pointing out the importance of biomass fuels in developing countries where 43% of energy is derived from biomass sources. He identified a major challenge : how to achieve both food and biomass fuel production locally on a sustainable basis. He concluded his paper by emphasising the major role that biomass will continue to play in the future.

2. Mr J D L Harrison (Overseas Development Administration) presented a paper entitled "What role for renewables?". He stated that, at present, affordable and reliable technologies exists for microhydro, photovoltaics, solar water heating, wind-electric, wind pumping and charcoal/wood gasifiers. He also discussed the contribution that renewables may be expected to make in the short and long-term future. He gave a useful five-point checklist by which the appropriateness of a technology can be appraised before installation in a developing country:

- i) does the user want to accomplish the task which the technology is supposed to enable?
- ii) is the technology proposed cheaper than the alternatives?
- iii) can the user afford the cost of the technology (both financially and in terms of opportunity cost)?
- iv) is the technology adequately reliable?
- v) is the technology understandable, repairable and maintainable within the circumstances of the user?

3. Mr Peter Fraenkel (IT Power Ltd) standing in lieu of Mr B McNelis - then gave a paper on "Renewable energy technology for developing countries - results from the field". He concentrated on solar water pumping, solar refrigerators and wind pumps. He concluded that PV pumps are sufficiently proven for them to be applied on a wide scale - although their financing would remain the key requirement. 100

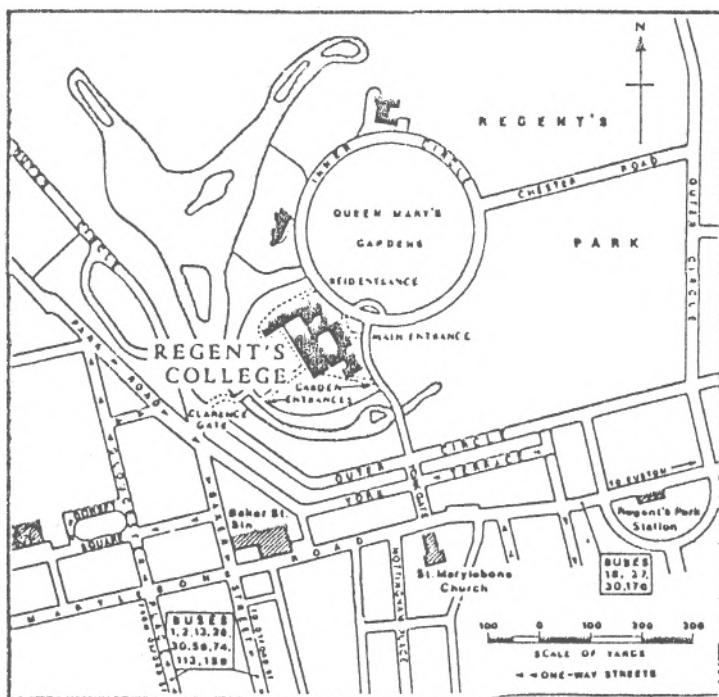
PV refrigerators are being installed in Zaire.
150 kijito wind pumps - developed in Kenya - have
been built and sold.

4. Mr John McClintock (Centre for Agricultural Strategy, University of Reading) then presented a paper entitled: "Farm forestry to supply energy for cooking", which summarised his recent research on fuelwood scarcity in Africa. He argued that farmers in Africa would not be able to switch out of fuelwood into fossil fuels, PVs, biogas or electricity. The use of dung and crop residues for cooking purposes was not desirable ecologically. Thus fuelwood would remain the fuel for the future for most African households. The question was then: how best to grow more fuelwood? He discussed the pros and cons of the four methods of growing fuelwood:

- (i) improved management of natural woodlands;
- (ii) government and commercial block plantations;
- (iii) community woodlots;
- (iv) farm forestry.

He concluded that more emphasis should be paid in the future to enable farmers to adopt farm forestry - ie to grow trees on an individual basis on land controlled by them.

The meeting was opened to the floor, with members of the audience making short contributions of their own. The debate which followed was both broad in coverage and lively in content.



Overseas Development Institute
Regent's College

Nearest underground station: Baker Street (Bakerloo, Jubilee, Metropolitan and Circle lines). Nearest bus stops in Gloucester Place (going North) Baker Street (going South), and Marylebone Road (East or West). ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the Main Entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

Credits

Newsletter and network papers edited by:
Gill Shepherd, Social Forestry Research Officer
Mary Hobley, Network Assistant

Design, typing and layout by:
Patsy de Souza, ODI Secretary
Gill Shepherd and Mary Hobley
Peter Gee, Publication and Press Officer
Ingrid Norton, Register and Network Database



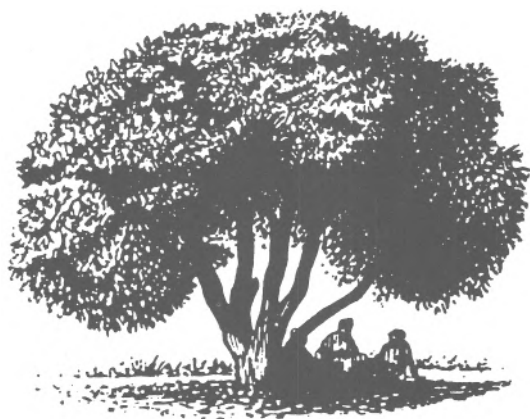
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



**ACCESSIONS TO ODI'S SOCIAL FORESTRY DOCUMENT COLLECTION
MAY 1986-AUGUST 1987**

October 1987



ACCESSIONS TO ODI'S SOCIAL FORESTRY DOCUMENT COLLECTION

MAY 1986 - AUGUST 1987

(this list follows on from those published in newsletters 1 and 2)

We are publishing this list, both as a service to networkers, and to make you aware of gaps with which you may be able to help us. Good documentation on particular countries reflects staff field-visits in part, but also the zeal with which networkers send us material. If you are aware of material we lack - either your own work, or good work which has taken place in your area - please make us aware of it too, and suggest ways in which we might obtain it if you cannot supply it.

There is a list of useful addresses for documentation at the back of the accessions list, from page 62 onwards.



PLEASE NOTE: Items without a location mark are shelved in the general ODI Periodicals section. A location mark consisting of numbers only or numbers preceded by an F are shelved in the AAU forestry collection.

- 2 Bururi forest programme no. 695-0105. End of project review by AID/WS and T Forestry Support Program REDSO/ESA Agricultural Division, USAID and the National Institute for Nature Conservation, Burundi 1987. 30p. {location: F 217}
- 3 Campaign to save Indonesian rain forests from catastrophe. Friends of the Earth International Newspaper 1986. April, various articles, 4p.
- 4 Changes in the pattern of use of grazing lands in western Maharashtra. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, January 19-20 1984. 4p. {Location: F 244}
- 5 Deforestation: The human cost. Cultural Survival Quarterly 1982. 6(2):2-26. {Location: 2327}
- 6 Farm forestry on private wastelands by Anand Niketan Ashram (ANA) in Baroda, Gujarat: Bi-Annual report from 1.1.1986 to 31.7.1986. Aga Khan Foundation, 1986. 30p. {Location: F 51}
- 7 Forests for survival. Ecoforum 1985. Whole issue, 10(6).
- 8 In the shade of trees [in Indonesia] International Agricultural Development 1986. 6(6):8-12.
- 9 Kaya: An ethnobotanical perspective [in Kenya]. Oxford: Oxford Ethnobotanical Expedition, 1981. 125p. {Location: F 151}
- 10 Kengo agroforestry training project profile for CRS Shinyanga programs. Project report, NO. TZ-6D-005, from KENGO for the Catholic Relief Services, Tanzania. 1986. 7p. {Location: F 218}
- 11 Leucaena's promising future. Spore 1986. No 8:4-6.
- 12 Natural resource utilisation and the agrarian economy. Economic and Political Weekly 1985. 20(45-47):1909-1974.
- 13 Rainforests: Targeted for destruction. Asian-Pacific Environment 1986. 4(2):4p.
- 14 The state of forestry in the region [in Mali] Bamako, Mali: Forests Commission for Africa. Typescript 1986. 17p. {Location: 2427}
- 15 Status position and recommendations of the seminar on social forestry. Seminar held at Nagpur, India, February, 1982. 10p. {Location: 2473}
- 16 Summary of major findings of CPR research done at IRMA. Report prepared for the workshop on Common Property Resources held at Sariska Palace, Rajasthan 9-11 May 1987. 8p. {Location: F 225}
- 17 Tropical forests: A call for action. The Courier 1986. No. 95:92-94.
- 18 When the forests disappear, we will also disappear. Economic and Political Weekly 1982. 17(48):1901-1902. {Location: F 185}

- 19 The woodfuel crisis: Towards a new understanding. The Courier 1986. No. 95:64-91.
- 20 ABU SIN, M. E.; El SAMMANI, M. O. Socio-economic aspects of integrated resource management, with special reference to the forest resources of Kassala Province: The case of Rawashda and Wad Kubu forests. Khartoum, Sudan: Government of Sudan; Netherlands Government; FAO, 1986. 109p. {Location: 2485}
- 21 ACTION FOR FOOD PRODUCTION. Silent valley Kerala. Typescript. 1985. {Location: 2302}
- 22 ADJOUS, A. P. Development from below: Sodepalm and its efforts to improve the living conditions of small-scale village planters. Washington: Development from Below, 1973. {Location: 0384}
- 23 ADVISORY COMMITTEE ON THE SAHEL; NATIONAL RESEARCH COUNCIL. Sahel regional planning aid planning and coordination end of contract statement. Washington, DC: National Academy Press, 1983. 101p. {Location: F 85}
- 24 AGARWAL, B. Under the cooking pot: The political economy of the domestic fuel crisis in rural South Asia. IDS Bulletin 1987. 18(1):11-22. {Location: F 111}
- 25 AGARWAL, V. P. Choice of tree species for wastelands of India: Proceedings of a panel discussion. New Delhi, India: Society for Promotion of Wastelands Development, 1984. 14p. {Location: F 90}
- 26 AGARWALA, V. P. Social forestry, wastelands and voluntary agencies. Paper prepared for a seminar on Social forestry and Voluntary Agencies held at Bhadkal Lake, April, 1983. {Location: 2475}
- 27 AGRICULTURAL DOCUMENTATION CENTRE. Forestry: Nepal. Kathmandu: Agricultural Documentation Centre, 1982. 20p. {Location: 9540}
- 28 AHMED, S. The socio-political economy of deforestation in India: An analysis of conflicts concerning the use of forest resources between local communities in the Utterkhand and the state of Uttar Pradesh. University of East Anglia: School of Development Studies, 1985. 82p. {Location: F 29}
- 29 AIKEN, S. R.; LEIGH, C. H. Land use conflicts and rain forest conservation in Malaysia and Australia: The Endau-Rompin and Gordon-Franklin controversies. Land Use Policy 1986. 3(3):161-179.
- 30 AKACHUKU, A. E. Cost-benefit analysis of wood and food components of agri-silviculture in Nigerian forest zone. Agroforestry Systems 1985. 3(4):307-316.
- 31 ALI, R.; DOBIAS, R. Tree planting as a profitable ecological strategy. Nat. Hist. Bull. Siam Soc. 1985. 33(1):39-45. {Location: F 25}
- 32 ALLEN, J. C. Soil properties and fast-growing tree species in Tanzania. Forest Ecology and Management 1986. 16:127-147. {Location: F 237}

- 33 ALLEN J. C. Wood energy and preservation of woodlands in semi-arid developing countries: The case of Dodoma region, Tanzania. Journal of Development Economics 1985. 9(1/2):59-84.
- 34 ALVIM, R.; NAIR, P. K. R. Combination of cacao with other plantation crops: An agroforestry system in Southeast Bahia, Brazil. Agroforestry Systems 1986. 4(1):3-17.
- 35 ANDERSON, D.; FISHWICK, R. Fuelwood consumption and deforestation in African countries. Washington: IBRD, 1984. 52p. {Location: R-IBRD 704}
- 36 ANDERSON, D. M. W. Gums and resins, and factors influencing their economic development. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 343-356). London: George Allen & Unwin. 1985. {Location: F 275}
- 37 ANGEL, J. J. Agroforestry: An appropriate farming system for Latin America. University of London: Unpublished M.A. dissertation for Institute of Latin American Studies, University of London. 1986. 52p. {Location: F 2}
- 38 APPLETON, N. S.; FAO. Some considerations for agro-silviculture development in the shifting cultivation areas of Liberia. Paper prepared for International Workshop on Shifting cultivation, Nigeria, July 4-11. 1982. 23p. {Location: 2251}
- 39 ARDAYFIO, E. The rural energy crisis in Ghana: It's implications for women's work and household survival. Geneva: ILO, 1986. 104p. {Location: 2482}
- 40 ARIF, F. E. Women's involvement in community forestry. Report prepared for FAO, Ministry of Agriculture and Forestry, Bangladesh. 32p. 1985. {Location: F 47}
- 41 ARMITAGE, F. B. Irrigated forestry in arid and semi-arid lands: A synthesis. Ottawa: IDRC, 1985. 160p. {Location: ABB}
- 42 ARNOLD, J. E. M.; CAMPBELL, J. G. Collective management of hill forests in Nepal: The community forestry development project. Background paper from workshop on Common Property Resources held at Sariska Palace, Rajasthan, 9-11 May 1987. 28p. {Location: F 221}
- 43 ARNOLD, J. E. M. Economic constraints and incentives in agroforestry. Paper prepared for the United Nations University Workshop on Agroforestry, Freiburg 31 May - 5 June 1982. 11p. {Location: F 201}
- 44 ARNOLD, J. E. M. Replenishing the world's forests: Community forestry and meeting fuelwood needs. Commonwealth Forestry Review 1983. 62(3):183-189. {Location: 2245}
- 45 ARNOLD, T. H.; WELLS, M. J.; WEHMEYER, A. S. Khoisan food plants: Taxa with potential for future economic exploitation. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 69-86). London: George Allen & Unwin. 1985. {Location: F 256}
- 46 ARNTZEN, J. W. Firewood collection in Mosomane, Kgatleng. Gabarone, Botswana: National Institute of Development Research and Documentation, 1983. 27p. {Location: F 60}

- 47 ARONSON, J. Economic halophytes: A global review. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew 23-27 July 1984 (pp. 177-188). London: George Allen & Unwin. 1985. {Location: F 263}
- 48 ASADUZZAMAN, M. Regional cooperation in development of energy in South Asia: A Bangladesh perspective. Dhaka, Bangladesh: Bangladesh Institute of Development Studies, 1986. 42p. {Location: P-BBbang RR 44}
- 49 ASEAN. ASEAN cooperation in food, agriculture and forestry. Asian Information Series 1986. No. 3:12.
- 50 ASHISH, M. Agricultural economy of the Kumaon Hills: Threat of ecological disaster. Economic and Political Weekly 1979. June 23:1058-1064. {Location: F 180}
- 51 BAJRACHARYA, D. Deforestation and the food/fuel context: Historico-political perspectives from Nepal. Paper for future publication in : Mountain Research and Development, 57p. 1983. {Location: F 156}
- 52 BAJRACHARYA, D.; RESOURCE SYSTEMS INSTITUTE. Fuel, food or forest? Dilemmas in a Nepali village. Honolulu, Hawaii: East West Centre, 1983. {Location: 2261}
- 53 BALASUBRAMANIAN, V.; EGLI, A. The role of agroforestry in the farming systems in Rwanda with special reference to the Bugesera-Gisaka-Migongo (BGM) region. Agroforestry Systems 1986. 4(4):271-290.
- 54 BALLABH, V.; SINGH, K. People's participation in management of natural forests - the experiences and lessons from van panchayats of Uttar Pradesh hills. Discussion paper (draft) presented at the workshop on Common Property Resources held at Sariska Palace, Rajasthan, May 9-11 1987. 20p. {Location: F 228}
- 55 BANDYOPADHYAY, J.; JAYAL, N. D.; SCHOETLI, U.; SINGH, CHHATRAPATI. India's environment: Crises and responses. New Delhi, India: Natraj, 1985. 309p. {Location: BBIndia}
- 56 BARLOW, C.; JAYASURIJA, S. K. Stages of development in smallholder tree crop agriculture. Development and Change 1986. 17(4):635-658.
- 57 BARNES, D. F.; ALLEN, J. C.; RANSAY, W. Social forestry in developing nations. Washington: Resources for the Future, 1982. 60p. {Location: 2429}
- 58 BEHMEI; NEUMANN; GERMAN AGENCY FOR TECHNICAL COOPERATION. An example of agroforestry in tropical mountain areas. Nyabisindu, Rwanda: German Agency for Technical Cooperation, 1980. 29p. {Location: F 74}
- 59 BEN SALEM, B.; PALMBERG, C. Place and role of trees and shrubs in dry areas. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 91-102). London: George Allen & Unwin. 1985. {Location: F 258}
- 60 BENTLEY, W. R. Forestry research, education and extension in India. A report prepared for the Asia Society as part of a contract with the United States Agency for International Development on Forestry in Asia. 1982. 30p. {Location: 2260}

- 61 BENTLEY, W. R. Agroforestry: A strategy for research and action in India. New Delhi, India: Ford Foundation, 1985. 10p. {Location: 2404}
- 62 BENTLEY, W. R. Essential concepts and skills for forestry curricula in India. New Delhi, India: Ford Foundation, 1985. 32p. {Location: 2406}
- 63 BENTLEY, W. R.; FORD FOUNDATION. Future forest design: Economic aspects. 1984. 26p. {Location: 2264}
- 64 BENTLEY, W. R. Indian forest productivity. New Dehli, India: Ford Foundation, 1985. 14p. {Location: 2365}
- 65 BENTLEY, W. R.; FORD FOUNDATION. Rural poverty and resources: Essential concepts and skills for forestry curricula in India. New Delhi, India: Ford Foundation, 1985. {Location: 2311}
- 66 BERENSCHOT, L. M. An agroforestry system with *Acacia mearnsii* in its socio-economic context. Jakarta, Indonesia: Fakultas Kehutanan Universitas Gadjah Mada, 1986. 89p. {Location: 2457}
- 67 BHAGAVAN, M. R.; GIRIAPPA, S. Class character of rural energy crisis: Case of Karnataka. Economic and Political Weekly 1987. 22(26):A57-A69. {Location: F 288}
- 68 BHARIER, J.; BERRIE, T.; SUSMAN, P.; O'KEEFE, P.; HOWES, M. Workshop on energy policy - problems of formulation and implementation. Sussex: Institute of Development Studies, 1985. 15p. {Location: 2393}
- 69 BHATTARAI, T. N.; CAMPBELL, J. G. Monitoring and evaluation of the community forestry project in Nepal. Photocopy, source unknown. ND. {Location: F 289}
- 70 BHATTY, Z.; O'DELL, M. Social soundness analysis. In: Design team report, MP social forestry project, annex 3, 70p. ND. {Location: F 157}
- 71 BICKMORE, C. J.; HALL, T. H. R. Computerisation of tree inventories. Berkhamsted: A B Academic Publ, 1983. 70p.
- 72 BIRCH, N.; SOUTHGATE, B. J.; FELLOWS, L. E. Wild and semi-cultivated legumes as potential sources of resistance to bruchid beetles for crop breeder: A study of *Vigna/Phaseolus*. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 303-320). London: George Allen & Unwin. 1985. {Location: F 272}
- 73 BISBY, F. A. Plant information services for economic plants of arid lands. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 413-425). London: George Allen & Unwin. 1985. {Location: F 280}
- 74 BLAICKIE, P. M.; HARRISS, J. C.; PAIN, A. N. Public policy and the erosion of common property resources in Tamil Nadu, India. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, 19-20 January 1984. 20p. {Location: F 250}

- 75 BLAIR, H. W.; OLPADWALA, P. Planning for appropriate forestry enterprises: Lessons from rural development experience. Dept. Political Science, Bucknell University, Rural Development Committee, Cornell University. 1986. 39p. {Location: F 89}
- 76 BLAIR, H. W.; OLPADWALA, P. Rural institutions for development of appropriate forestry enterprises. Issues Paper prepared for FAO, Forestry Department, Center for International Studies, Cornell University. 1984. 109p. {Location: F 77}
- 77 BLAIR, H. W. Social soundness analysis for the Maharashtra social forestry project. Typescript 55p. 1982. {Location: 2423}
- 78 BLAIR, H. W. Social forestry in India: Participatory planning and program change. Draft paper to be published in Economic and Political Weekly. 1986. 25p. {Location: F 290}
- 79 BLAIR, H. W. Social forestry: Time to modify goals? Economic and Political Weekly 1986. 21(30):1317-1321. {Location: 2114}
- 80 BLANDON, P. Agroforestry and portfolio theory. Agroforestry Systems 1985. 3(3):239-250.
- 81 BLITTERSWIJK, J.D. VAN Non governmental organisations and social forestry in India. Wageningen, Holland: Wageningen Agricultural University, 1987. 78p. {Location: 2360}
- 81a BOARD ON SCIENCE AND TECHNOLOGY FOR INTERNATIONAL DEVELOPMENT; NATIONAL RESEARCH COUNCIL. Diffusion of biomass energy technologies in developing countries. Washington, DC: National Academy Press, 1984. 120p. {Location: F 76}
- 82 BOEHNERT, J. Agroforestry in agricultural education with a focus on the practical implementation. Reading University: Dissertation prepared for the Diploma in Agricultural Education, Agriculture Extension and Rural Development Centre, Reading University. 1986. 182p. {Location: F 1}
- 83 BOGAHAWATTE, C. Erosion of common property resources: Evidence from villages in the dry zone districts of Sri Lanka. Agricultural Administration 1986. 23(4):191-200.
- 84 BOOTH, T. H. A new method for assisting species selection. Commonwealth Forestry Review 1985. 64(3):241-250.
- 85 BOWONDER, B.; PRASAD, S. S. R.; UNNI, N. V. M. Afforestation in India: Policy and strategy reforms. Land Use Policy 1987. 4(2):133-146.
- 86 BRAND, J. C.; CHERIKOFF, V. The nutritional composition of Australian Aboriginal food plants of the desert regions. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew 23-27 July 1984 (pp. 51-68). London: George Allen & Unwin. 1985. {Location: F 255}
- 87 BRANNEY, P. Community forestry development in Jajarkot district (Dailekh division) 1983 - 1985. Kathmandu, Nepal: HMG, Nepal; FAO & UNDP; World Bank, 1985. 58p. {Location: 2335}

- 88 BRARA, R. Perspective on development (for common property resources). Paper given at the workshop on Common Property Resources held at Sariska Palace, Rajasthan, May 9-11 1987. 15p. {Location: F 227}
- 89 BRARA, R. Shifting sands: Who keeps small and big animals on grazing lands. Research proposal presented at workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, 19-20 January 1984. 18p. {Location: F 240}
- 90 BREMMER, J.; BABB, T. Fragile Lands: A theme paper on problems issues and approaches for development of humid tropical lowlands and steep slopes in the Latin-American region. Washington: Development Alternatives Inc, 1984. {Location: 1419}
- 91 BREWBAKER, J. L. Fodder and fuelwood nitrogen-fixing trees for Nepal: A report for the Integrated Cereal Project Department of Agriculture Ministry of Food and Agriculture, Nepal. 1983. 18p. {Location: 2272}
- 92 BROKENSHA, D.; CASTRO, A. P. Fuelwood, agroforestry and natural resource management: The development significance of land tenure and other resource management/utilization systems. Paper prepared for U.S. AID contract No. OTR-0000-0-00-3441-00. Institute of Development Anthropology, Binghampton, N.Y. 64p. 1984. {Location: F 43}
- 93 BROMLEY, D. W. Economic issues in forestry as a development program in Asia. Madison, Wisconsin: School of Natural Resources, University of Wisconsin, 1982. 21p. {Location: F 48}
- 94 BROMLEY, D. W.; CHAPAGAIN, D. P. The village against the center: Resource depletion in South Asia. Unpublished typescript from Professor D.W. Bromley, Department of Agricultural Economics, University of Wisconsin, Madison. ND. 15p. {Location: F 176}
- 95 BROOKMAN-AMISSAH, J. Agri-silviculture for production of wood and food crops in Ghana. In Proceedings of the 8th World Forestry Conference, (pp. 808-813) Jakarta. 1978. {Location: 2250}
- 96 BROOKMAN-AMISSAH, J. Forestry and socio-economic aspects of modification of traditional shifting cultivation through taungya system in Subrti area. 1983. 46p typescript. {Location: 2235}
- 97 BROWN, L.; CHANDLER, W. U. State of the world 1986: Report on progress toward a sustainable society. Washington: Worldwatch Institute, 1986. 263p. {Location: AA}
- 98 BROWN, L. C. The land resources and agro-forestral development of St. Helena. Surbiton: Land Resources Development Centre, 1981. 2 vols + maps. {Location: 1014}
- 99 BRUENING, E. The tropical rainforest as ecosystem. Plant Research and Development: A Biannual Collection of Recent German Contributions Concerning Development Through Plant Research 1986. 24:15-30.
- 100 BRUSZT, G. Social forestry project in Tamil Nadu, India. Stockholm, Sweden: SIDA, 1981. 82p. {Location: F 75}
- 101 BUCK, M. G. Concepts of resource sharing in agroforestry systems. Agroforestry Systems 1986. 4(3):191-204.

- 102 BUNYARD, P. World climate and tropical forest destruction. The Ecologist 1985. 15(3):125-136. {Location: P-ABB}
- 103 BURBRIDGE, P.; DIXON, J. A.; SOEWARDI, B. Forestry and Agriculture: Options for resource allocation in choosing lands for transmigration development. Honolulu, Hawaii: East-West Center, 1981. 21p. {Location: 2378}
- 104 BURCH, W. R. Forests as if forests mattered - some futures in New England. New Haven, Connecticut, USA: Yale University, 1985. 12p. {Location: 2388}
- 105 BURCH, W. R. Harnessing the green machine for rural development. Typescript 14p. ND. {Location: 2432}
- 106 BURCH, W. R. An interpretation of discussion at a workshop on : The human factors affecting forestry/fuelwood projects: An agenda for research and development. Tropical Resources Institute, Yale School of Forestry and Environmental Studies, 205 Prospect Street, New Haven, Connecticut 06511, 1984. 98p. {Location: F 154}
- 107 BUREAU FOR AFRICA, AGENCY FOR INTERNATIONAL DEVELOPMENT. Proceedings on energy, forestry and environment. U.S. A.I.D., 1982. 3 Volumes: Vol. 1 104p, Vol. 2 324p, Vol. 3 135p. {Location: F 64}
- 108 BURLEY, F. W.; HAZLEWOOD, P. Plans and precedents for saving tropical forests. World Resources Institute Journal '86 1986. p64-72.
- 109 BURLEY, J.; STEWART, J. L. Increasing productivity of multipurpose species. Vienna: International Union of Forestry Research Organizations, 1985. 560p. {Location: 2341}
- 110 BURLEY, J.; ELSOM, D. M.; MAYON-WHITE, R. T.; COE, M. J.; HAIGH, M.; REYNOLDS, V. Issues of biological resources and environmental management in southern China. Report on a visit to China by the Oxford environmentalist delegation, October, 1985. 54p. {Location: 2479}
- 111 BURLEY, J.; CARLOWITZ, P. VON. Multipurpose tree germplasm: Proceedings, recommendations and documents of a planning workshop to discuss international cooperation held at the National Academy of Sciences, Washington DC, USA, June 1983. Nairobi: International Council for Research in Agroforestry, 1984. 298p. {Location: ABB}
- 112 BURNS, D. Runway and treadmill deforestation. London: IIED; IUCN, 1986. 20p. {Location: 2442}
- 113 BUTTOUD, G.; HAMADOU, M. Trade in forest products among developing countries. Unasylva 1986. 38(153):20-28.
- 114 BYRON, R. N. People's forestry: A novel perspective of forestry in Bangladesh. ADAB News 1984. March-April:28-35,42. {Location: F 123}
- 115 BYRON, R. N. Policies and options for the forestry sector of South Pacific island economies. Australia: Australian National University, 1986. 38p. {Location: 2342}
- 116 CARL BRO INTERNATIONAL; DANIDA, A. S. Preliminary investigations of agro industrial projects in the Southern Sudan. Phase I. 1979. 105p. {Location: 0451}

- 117 CARLOWITZ, P. G. VON. Some considerations regarding principles and practice of information collection on multipurpose trees. Agroforestry Systems 1985. 3(2):181-196.
- 118 CARLSON, L. W.; SHEA, K. R. Increasing productivity of multipurpose lands. IUFRO, Workshop on Research Planning for Africa Sahelian and North Sudanian Zones, January, 1986. 333p. {Location: 2478}
- 119 CARR-HARRIS, J. Increasing NGO involvement in forestry: Some implications from Senegal. Unasylva 1985. 37(149):26-31.
- 120 CARTER, J. Organisations concerned with forestry in Nepal. Forestry Research and Information Centre, Forest Survey and Research Office, Department of Forests, Babar Mahal, Kathmandu. 1987. 167p. {Location: F 198}
- 121 CECELSKI, E. Energy and rural women's work: Crisis, response and policy alternatives. International Labour Review 1987. 126(1):41-64. {Location: F 199}
- 122 CECELSKI, E. The rural energy crisis, women's work and family welfare: Perspectives and approaches to action. Geneva, Switzerland: ILO, 1984. 111p. {Location: 2480}
- 123 CENDIT. The Maharashtra social forestry project in Bhandara District: Case Studies of three gram panchayats. Center for Development and Instructional Technology. 77p. ND. {Location: 2455}
- 124 CENTRE FOR APPLICATION OF SCIENCE AND TECHNOLOGY TO RURAL AREAS. Rural energy consumption patterns: A field study. Bangalore, India: Centre for Application of Science and Technology to Rural Areas, 1980. 83p. {Location: 2374}
- 125 CENTRE FOR SCIENCE AND ENVIRONMENT, INDIA. The state of India's environment 1984-85: The Second Citizens' Report. New Delhi, India: Centre for Science and Environment, 1986. 395p. {Location: BBind}
- 126 CENTRE FOR TRIBAL CONSCIENTIZATION. Annual Report 1985. Pune, India: Centre for Tribal Conscientization, 1985. 12p. {Location: 2401}
- 127 CERNEA, M. M. Putting people first: Sociological variables in rural development. Oxford: Oxford University Press for World Bank, 1985. 430p. {Location: ACO}
- 128 CHAMBERS, R. Community Forestry: Notes and Questions from a field visit in South Bihar, June 1981. 19p. {Location: 2307}
- 129 CHAMBERS, R. Rural poverty-oriented monitoring and evaluation. Falmer, Sussex: Institute of Development Studies, 1978. 23p. {Location: 2386}
- 130 CHAMBERS, R. Sustainable livelihoods: An opportunity for the World Commission on environment and development. Falmer, Sussex: Institute of Development Studies, 1986. 16p. {Location: 2389}
- 131 CHAMBERS, R.; LONGHURST, R. Trees seasons and the poor. IDS Bulletin 1986. 17(3):44-50. {Location: F 131}
- 133 CHAMBERS, R.; LEACH, M. Trees to meet contingencies: A strategy for the rural poor? Falmer, Sussex: Institute of Development Studies, 1986. 23p. {Location: 2399}

- 134 CHAMBERS, R.; LEACH, M. Trees to meet contingencies: Savings and security for the rural poor. Brighton, England: Institute of Development Studies, University of Sussex, 1986. 22p. {Location: R-IDS DP 228}
- 135 CHANDRASEKHARAN, C. Rural participation in forestry activities. Paper prepared for the 9th World Forestry Congress, Mexico City. 1985. 31p. {Location: F 45}
- 136 CHANDRASHEKHAR, D. M.; MURTI, B. V. K.; RAMASWAMY, S. R. Social forestry in Karnataka: An impact analysis. Economic and Political Weekly 1987. 22(24):935-941.
- 137 CHAVINGI, N. A.; ENGELHARD, R. J.; JONES, V. Culture as the basis for implementing self-sustaining woodfuel development programmes. Paper prepared for the Beijer Institute, and the Kenya Ministry of Energy. 1985. 24p. {Location: F 102}
- 138 CHERRY, M. The needs of the people. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 1-8). London: George Allen & Unwin. 1985. {Location: F 251}
- 139 CHILD, R. D.; HEADY, H. F.; HICKEY, W. C.; PETERSON, R. A.; PIEPER, R. D. Arid and semi-arid lands: Sustainable use and management in developing countries. Prepared for: AID/NPS Natural Resources Expanded Information Base Project, Division of International Affairs, National Parks Service, Washington, D.C. 1984. 205p. {Location: F 215}
- 140 CHIPKO. The Dasholi Gram Swarajaya Sangh. 1983. 17p. {Location: 2308}
- 141 CHOUDHURY, G. Q. Importance of plantations in South Asia with particular reference to Bangladesh. Thesis submitted to the University of Wales, Bangor for the partial fulfillment of the MS degree. 1983. 101p. {Location: F 100}
- 142 CHOWDHURY, K. Afforestation: One crore trees, one year, one agency. 1982. 6p. {Location: 2310}
- 143 CHOWDHURY, K. Schools, trees and afforestation. 1982. 4p. {Location: 2284}
- 144 CHRISTY, L.; WILKINSON, G. K.; FAO. Review of agricultural legislation in Sudan. Rome: FAO, 1983. 32p. {Location: F 79}
- 145 CLAUSEN, R.; HENNEMEYER, C. Rumonge agroforestry project. Project appraisal report, No. BI-5D-014, Catholic Relief Services, Burundi. 1987. 28p. {Location: F 216}
- 146 CLAYTON, E. S. Monitoring and evaluation of participatory forestry projects. Paper for future publication by FAO. Agrarian Development Unit, Wye College, University of London. ND. 31p. {Location: F 28}
- 147 CLINE-COLE, R. A. Fuelwood consumption, exploitation and environmental degradation in two contrasting environments: Kano and Freetown. Kano, Nigeria: University of Bayero, 1986. 19p. {Location: 2407}

- 148 COLEMAN-ADEBAYO, M. Proceedings of the international symposium on drought and desertification. United Nations Sudano-Sahelian Office, 1986. 165p. {Location: F 62}
- 149 COMMANDER, S. Managing Indian forests: The case for the reform of property right. Development Policy Review 1986. 4(4):325-344.
- 150 COMMITTEE ON FORESTRY PROGRAMMES FOR ALLEVIATION OF POVERTY. Report of the committee on forestry programmes for alleviation of poverty. New Delhi: Government of India, 1984. 255p. {Location: 2453}
- 151 COMMONWEALTH SCIENCE COUNCIL. Agriculture Programme: Agroforestry Project: Proceedings and recommendations of a planning workshop on amelioration of soils by trees. London: Commonwealth Science Council, Marlborough House, Pall Mall, 1986. 74p. {Location: F 143}
- 152 CONLIN, S. Report on a visit to the Karnataka social forestry project India: What is 'social' in social forestry and why? Unpublished typescript written after visit to Karnataka, 12-26 January 1985, ODA, London, UK. 1985. {Location: F 169}
- 153 CONSERVATION FOR DEVELOPMENT CENTRE. Sustainable forestry development in the Aga Khan rural support programme northern areas, Pakistan: A proposal. Draft proposal from Conservation for Development Centre, International Union for Conservation of Nature and Natural Resources, World Conservation Centre, Gland, Switzerland. 1987. {Location: F 287}
- 154 COPAC. Cooperatives and forestry: Selected bibliography. Rome: FAO COPAC, 1986. 3p. {Location: P-EB/AAM}
- 155 COPPER, E. C. Four cases of forestry organization at village level. 1981. 13p. {Location: 2273}
- 156 CRANE, E. Bees and honey in the exploitation of arid land resources. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 164-175). London: George Allen & Unwin. 1985. {Location: F 262}
- 157 CZECH, H. J. The truco concept: A concept for the development of mountain regions in the Himalayas through involvement of social organizations and by integration of traditional elements of socio-cultural village structures. Bamberg, Germany: GTZ German Agency for Technical Cooperation, 1986. 120p. {Location: 2489}
- 158 DANIEL, J. G.; KULASINGAM, A. Problems arising from large scale jungle clearing for agricultural use - the Malaysian experience. Presented at the Fifth International Symposium on Energy Resources and the Environment, Penang 21-23 February. 1975. 12p. {Location: 0271}
- 159 DARGAVEL, J.; SIMPSON, G. (Eds.) Forestry: Success or failure in developing countries. Australia: The Australian National University, Centre for Resource and Environmental Studies, 1985. 95p. {Location: 2343}
- 160 DAU, R. D.; TIPS, W. E. J. Farmers' participation and socio-economic effects of a watershed management programme in Central Java (Solo river basin, Wiroko watershed) Agroforestry Systems 1985. 3(2):159-180.

- 161 DAS, P. K.; PURANDARE, A. P. People's participation in farm forestry: A case study in West Bengal. Journal of Rural Development 1985. 4(4):441-482. {Location: F 34}
- 162 DASGUPTA, S.; MAITI, A. K. The rural energy crisis, poverty and women's roles in five Indian villages. Geneva: ILO, 1986. 70p. {Location: 2483}
- 163 DATTA, S.; KHETAN, N. Customary rights of tribals on forest land: A case study of Chotta Udepur division of Vadodara. In: National Workshop on Landless People and Wastelands Development 3-4 April 1986, sponsored by the Society for the Promotion of Wasteland Development, New Delhi. 1986. 72p. {Location: F 140}
- 164 DAVIDSON, J. Setting aside the idea that euclypts are always bad. Rome: FAO, 1985. 26p. {Location: 2330}
- 165 DEGNI, J. A look at arid zone agroforestry today. Kidma 1987. 9(2/3):24-30.
- 166 DIXON, J. A. Economic analysis of the environmental impacts of development projects. Manila, Philippines: Asian Development Bank, 1986. 100 p. {Location: R-ADB ESP 31}
- 167 DOUGLAS, J. J. A re-appraisal of forestry development in developing countries. The Hague: Martinus Nijhoff, 1983. 178p. {Location: ABB}
- 168 DOUGLAS, J. S. Forest farming: An ecological approach to increase nature's food productivity. Impact of Science on Society 1973. 23(2):117-132. {Location: 2371}
- 169 DOUGLAS, J. S.; HART, R. A. DE Forest farming: Towards a solution to problems of world hunger and conservation. London: Intermediate Technology Publications, 1984. 208p. {Location: ABB}
- 170 DOUROJEANNI, M. J. How good is forestry education today? Unasy/va 1986. No 154:22-31.
- 171 DOVE, M. R. Forest preference in swidden agriculture. Tropical Ecology 1983. 24(1):122-142. {Location: F 106}
- 172 DOVE, M. R. Theories of swidden agriculture, and the political economy of ignorance. Agroforestry Systems 1983. No. 1:85-99. {Location: F 101}
- 173 DUBE, V. N. Firewood cropping, food cultivation and conservation planting a three-dimensional strategy for displaced rural communities: The case of the Atzera hills, Lae, Papua New Guinea. Mountain Research and Development 1983. 3(4):422-428. {Location: F 146}
- 174 DUBEY, S. P.; CHAKRAVARTI, R. Forestry for rural energy production. Economic and Social Commission for Asia and the Pacific ESCAP/FAO/UNEP, Expert group meeting on fuelwood and charcoal, Bangkok 5-11 May 1981. 34p. {Location: 2279}
- 175 DUNSMORE, J. R. Khardep: Rural development in the hills of Nepal. Surbiton: LRDC, 1987. 152p. {Location: BBnepal}
- 176 DURGAPRASAD, D.; SHINGI, P. M. Social forestry in Pratapgarrh. Unpublished typescript, Indian Institute of Management, Ahmedabad, India. 1979. 5p. {Location: F 179}

- 176a DU TOIT, R. F.; CAMPBELL, B. M.; HANEY, R. A.; DORE, D. Wood usage and tree planting in Zimbabwe's communal lands. Harare: Forestry Commission of Zimbabwe, report produced for Forestry Commission of Zimbabwe & World Bank. 1984. 187p. {Location: 2296}
- 177 EARL, D. E. Forest energy and economic development. Oxford: Clarendon Press, 1975. 128p. {Location: ABB}
- 178 ELLEN, R. F. What Black Elk left unsaid: On the illusory images of Green primitivism. Anthropology Today 1986. 2(6):8-12. {Location: F 107}
- 179 ELLENBERG, H. The effect of environmental factors and use alternatives upon the species diversity and regeneration of tropical rain forests. Applied Geography and Development 1986. Vol. 28:19-36.
- 180 ENDA. What future for the forest people?: Three different scenarios. African Environment 1986. 5(1/2/3) nos 17/18/19.
- 181 ENGBERG-PEDERSEN, P. World Bank management of structural crises in Africa: The energy sector. Copenhagen: Centre for Development Research, 1986. 149p. {Location: BA}
- 182 EPILA, J. S. O. The case for insect pest management in agroforestry research. Agricultural Systems 1986. 19:37-54. {Location: F 128}
- 183 EVANS, J. Plantation forestry in the Tropics. Oxford: Clarendon Press, 1986. 472p. {Location: ABB}
- 184 EVANS, J. A time to plant- the complementary need to expand intensive forestry programmes in developed and developing countries. Journal of World Forest Resource Management 1985. Vol. 1:151-161. {Location: F 21}
- 185 EVANS, M. I. Stove programmes in the framework of improved cooking practices: A change in focus with special reference to Latin America. Geneva: International Labour Organisation, 1987. 56p. {Location: F 200}
- 186 EVANS, M. I. Change in domestic fuel consumption in central Mexico and its relation to employment and nutrition. Geneva, Switzerland: International Labour Office, 1986. 28p. {Location: 2199}
- 187 EVANS, M. I. Firewood versus alternatives: Domestic fuel in Mexico. Oxford University: Commonwealth Forestry Institute, University of Oxford, 1984. 68p. {Location: F 52}
- 188 FALCONER, J. The traditional uses of Acacia senegal. Paper prepared for graduate course at Yale University, School of Forestry and Environmental Studies, 1986. 19p. {Location: F 92}
- 189 FAMORIYO, S. Administration of land allocation in Nigeria. Land Use and Policy 1984. July:217-224. {Location: F 110}
- 190 FAO. African agriculture: The next twenty-five years: Annex 2: The land resource base. Rome: FAO, 1986. 138p. {Location: BA}
- 191 FAO. Botswana rural afforestation programme. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2063}

- 192 FAO. The changing face of forest industry. Yojana 1986. 38(153):2-40.
- 193 FAO. Establishment of fuelwood plantations for the towns of Debre, Berhan and Nazret. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2066}
- 194 FAO; SIDA. Extension in forestry for local community development. Rome: FAO, ND. 10p. {Location: 2255}
- 195 FAO; SIDA. Forest administration for development. Papers from FAO/SIDA Consultation on Forest Administration for Development, Rome 2-11 February, 1983. {Location: 2238}
- 196 FAO. Forest resources 1980. Rome: FAO, 1985. {Location: ABB}
- 197 FAO; UNEP; TROPICAL FOREST RESOURCES ASSESSMENT PROJECT. Forest resources of tropical Africa: Part 1 regional synthesis: Part 2 country briefs. Rome: FAO, 1981. 2 vols, 108p, 586p. {Location: BA}
- 198 FAO. Fuelwood plantations projects in Mozambique. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2064}
- 199 FAO. Institutional aspects of shifting cultivation in Africa. Rome: FAO, 1984. 171p. {Location: 2295}
- 200 FAO. Kilimanjaro region five year afforestation plan (1985-1990) From Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2057}
- 201 FAO. The labour aspects of shifting cultivation in African agriculture. Rome: FAO, 1984. 78p. {Location: 2363}
- 202 FAO. Lesotho Government's views of policies on rural energy. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2060}
- 203 FAO. The national tree planting programme in Malawi. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2059}
- 204 FAO. The outlook for pulp and paper to 1995: Executive summary. Rome: FAO, 1986. 20p. {Location: P-ABGpaper}
- 205 FAO. Planning of woodfuel and energy projects. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2065}
- 206 FAO. Proposed projects for establishing pole and fuelwood plantation on the shores of Lake Kyoga. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2062}
- 207 FAO. Rural afforestation in Kenya. Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November, 1984. {Location: 2061}
- 208 FAO. Selected indicators of food and agricultural development in Asia-Pacific Region 1974-84. Bangkok: FAO Regional Office for Asia and the Pacific, 1985. 130p. {Location: BBasia-ref}

- 209 FAO. Sudan case studies. Papers from the Regional Workshop on Planning Fuelwood Projects, Lilongwe, 12-30 November 1984. {Location: 2058}
- 210 FAO. Tree planting practices in African savannas. Rome: Food and Agricultural Organisation of the United Nations, 1974. {Location: 2247}
- 211 FAO. Tropical forestry action plan. Rome: FAO, 1985. 159p. {Location: 2358}
- 212 FAO. Wood for energy. Rome: FAO, ND. 40p. {Location: F 50}
- 213 FAO. Yearbook of forest products 1974-1985. Rome: FAO, 1986. 348p. {Location: ED/ABB}
- 214 FAO FORESTRY DEPARTMENT. FAO's tropical forestry action plan. Unasylva 1986. 38(152):37-65.
- 215 FAO FORESTRY DEPARTMENT. Forestry and food security. Unasylva 1985. 37(149):4-13.
- 216 FAO REGIONAL OFFICE FOR ASIA AND THE PACIFIC; ENVIRONMENT AND POLICY INSTITUTE, EAST-WEST CENTER. Community forestry: Socio-economic aspects. Bangkok, Thailand: FAO Regional Office for Asia and the Pacific, 1984. 420p. {Location: 2355}
- 217 FEARNSIDE, P. M. How much are Amazon rainforests worth? IDOC Internazionale 1986. 86(6):15-18.
- 218 FEENY, D. Agricultural expansion and forest depletion in Thailand 1900-1975. New Haven, Connecticut: Yale University Economic Growth Center, 1984. 65p. {Location: 2394}
- 219 FERNANDES, W.; KULKARNI, S. Towards a new forest policy: People's rights and environment needs. New Delhi, India: Indian Social Institute, 1983. 155p. {Location: BBIndia}
- 220 FISHER, H.; CYLKE, O. Maharashtra social forestry project: Mid term evaluation report. Mid term evaluation report for USAID, India. 1985. 58p. {Location: 2454}
- 221 FISSEHA, Y.; MILIMO, J. T. Rural small-scale forest-based processing enterprises in Zambia: Report of a 1985 pilot study. Rome: FAO, 1986. 90p. {Location: 2030}
- 222 FLEURET, P. C.; FLEURET, A. K. Fuelwood use in a peasant community: A Tanzanian case study. Journal of Developing Areas 1978. 12:315-322. {Location: 2324}
- 223 FLEURET, P. C.; FLEURET, A. K. Nutritional implications of staple food crop successions in Usambara, Tanzania. Human Ecology 1980. 8(4):311-327. {Location: F 206}
- 224 FOLEY, G.; BARNARD, G. Farm and community forestry. 1985. SFNP 1b 12p. {Location: P-ABB(AAU)}
- 225 FONTAINE, R. G. Management of humid tropical rainforests. Unasylva 1986. 38(154):16-21.
- 226 FOOD AND AGRICULTURE ORGANISATION. POLICY AND PLANNING SERVICE. Forestry planning newsletter. Policy and Planning Service, Forestry Department, FAO, Rome. Newsletter, No. 9. 1985. 96p. {Location: F 214}

- 227 FORBARTHA, A. F. Options for forestry projects in the Sudan. Dublin: National Institute of Physical Planning and Construction Research, 1986. 41p. {Location: 2351}
- 228 FOREST DEPARTMENT [BIHAR]. Social forestry project, Bihar. A brief background note on the agenda items for the second joint review meeting at Stockholm, Sweden, from May 10-24 1987. 40p. {Location: F 166}
- 229 FORESTRY DEPARTMENT OF GHANA. Progress Report 1980-84. Intensive multiple use of forest management in the tropics. 1985. {Location: 2333}
- 230 FOUNDATION TO AID INDUSTRIAL RECOVERY. Kadiri landless people resettlement project: A case study of Andhra Pradesh. In: National Workshop on Landless People and Wastelands Development 3-4 April 1986, sponsored by the Society for the Promotion of Wasteland Development, New Delhi. 1986. 47p. {Location: F 141}
- 231 FRASER, A. I. The use of wood by the tobacco industry and the ecological implications. Edinburgh, U.K.: International Forest Science Consultancy, 1986. 38p. {Location: F 281}
- 232 GADGIL, M.; PRASAD, S. N.; ALI, R. Forest management and forest policy in India: A critical review. Social Action New Delhi: 1983. Vol 33:10-44. {Location: 2384}
- 233 GADGIL, M.; HEGDE, M. S.; PRASAD, N. Land, trees and people. incomplete photocopy. 1983. 21p. {Location: 2281}
- 234 GAMSER, M. The forest resource and rural energy development. World Development 1980. Vol.8:769-780. {Location: 2420}
- 235 GAMSER, M. Implementation of new energy technologies in developing nations: problems and policies in the introduction of charcoal in Papua New Guinea. Geo Journal 1983. 7(1):35-40. {Location: 2314}
- 236 GAMSER, M. Innovation, user participation, and forest energy development. Thesis submitted for the PhD in Science and Technology Policy Studies, University of Sussex. 1986. 2 Volumes 332p. {Location: F 40}
- 237 GAONKAR, P. D.; RAJAN, B. K. C.; PRABHU, G. S. Social forestry project implementation manual. Karnataka forest department, Aranya Bhavan, Malleswaram, Bangalore 560003. 1986. {Location: F 194}
- 238 GATHERI, G. Useful trees and shrubs of Kilifi District, Kenya. Paper for Kenya Agricultural Research Institute. 30p. {Location: F 30}
- 239 GHOSH, A. The greening of Rajasthan: Sans water. Economic and Political Weekly 1986. 21(42):1831-1834. {Location: F 96}
- 240 GIBBS, C.; BROMLEY, D. W. Institutional arrangements for sustainable management of rural resources: Common property regimes and conservation. Paper prepared for the Conference on Conservation and Development: Implementing the World Conservation Strategy, Ottawa, Canada May 31-June 5 1986. 9p. {Location: F 202}
- 241 GIBSON, D. Gituza forestry project brief. Prepared for Care International's East Africa Region Agroforestry Training and Planning Workshop. Kisumu, Kenya. 1986. 15p. {Location: F 56}

- 242 GILL, J. The political economy of deforestation in Zimbabwe. Presented at the Symposium on Environmental Crisis in Africa: Ecology Versus Political Economy, London, 18 September 1985. 6p. {Location: 2278}
- 243 GILL, J. Stoves and deforestation in developing countries. Paper presented at UK-ISES Conference. 1985. {Location: 2313}
- 244 GOLD COAST LANDS DEPARTMENT; POPUCKI, R. J. II. Rights in trees. In: Gold Coast land tenure, vol.1, (pp38-40), published by Government Printers Accra, Gold Coast. 1955. {Location: F 189}
- 245 GOLD, M. A.; HANOVER, J. W. Agroforestry systems for the temperate zone. Agroforestry Systems 1987. 5(2):109-122.
- 246 GOMES, A. G. Ecological adaptation and population change: Semang foragers and Temuan horticulturalists in West Malaysia. Hawaii, USA: East West Center, 1982. 51p. {Location: F 68}
- 247 GOPPERS, K.; BERGSTROM, S. B.; PERSSON, R. Elephants don't rust: An evaluation of SIDA-supported Forestry development & forestry industry in Laos. Stockholm: SIDA, 1986. 72p. {Location: BBlaos}
- 248 GOSHI, G. India: Men vs women in battle for forests. Ecodevelopment News 1987. 31(9):37-38.
- 249 GOVERNMENT OF INDIA. Report of Committee on Forest and Tribals in India. New Delhi,: Govt. of India, Ministry of Home Affairs, 1982. 119p. {Location: 2286}
- 250 GOVERNMENT OF INDIA. MINISTRY OF LAW, JUSTICE AND COMPANY AFFAIRS. The Indian forest act, 1927. New Delhi, India: Government of India. Ministry of Law, Justice and Company Affairs, 1980. 21p. {Location: F 170}
- 251 GRANDSTAFF, S. W.; GRANDSTAFF, T. B.; RATHAKETHE, P.; THOMAS, D. E.; THOMAS, J. K. Trees in paddy fields in Northeast Thailand. Ford Foundation project paper on socioeconomic studies, Khon Kaen University, 1984. 27p. {Location: F 88}
- 252 GROEN, B. C.; HUIZENZA, C. R. Have planners understood the poor people's energy problem? Socio-economic aspects of energy technologies: A literature review. Technology and Development Group, University of Twente, P.O.Box 217 7500 Enschede, The Netherlands. 1987. {Location: F 155}
- 253 GROVE, A. T. The arid environment. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 9-18). London: George Allen & Unwin. 1985. {Location: F 252}
- 254 GRUT, M. Guidelines for identifying and preparing forestry projects. Washington, D.C.: IBRD, 1986. 23p. {Location: F 59}
- 255 GUESS, G. M. Technical and financial policy options for development forestry. Natural Resources Journal 1981. 21:37-55. {Location: 2326}
- 256 GUHA, H. Eco-development debate: A critical review. South Asian Anthropologist 1985. 6(1):15-24. {Location: 2315}

- 257 GUHA, R.; PRASAD, S. N.; GADGIL, M. Deforestation and degradation of natural plant resources in India. Paper prepared for the ICSSR-SAREC Symposium, New Delhi, November 1984. 26p. {Location: F 6}
- 258 GUHA, R. Forestry and social protest in British Kumaon 1893-1921. In Ranjit Guha (Ed.) Subaltern Studies IV (pp. 54-100). Delhi: Oxford University Press. 1985. {Location: 2426}
- 259 GUHA, R. Forestry in British and Post British India. Economic and Political Weekly 1983. October:1882-1896. {Location: 2300}
- 260 GUHA, R. How 'social' is social forestry? Economic and Political Weekly 1985. 20 (14):587-588. {Location: 2476}
- 261 GUILLET, D. Agro-pastoral land use and the tragedy of the commons in the Central Andes. Photocopy, source unknown. ND. {Location: F 284}
- 262 GULICK, A. Suggested approaches for CADA initiatives in fuelwood production. 1980. typescript 30p. {Location: 2237}
- 263 GUPTA, A. K. Socio-ecology of grazing land management. In P.J.Ross, P.W.Lynch and O.B.Williams (Eds.), Rangelands: A resource under siege, Proceedings of the Second International Rangeland Congress held at the Australian Academy of Science, Canberra 1986. 4p. {Location: F 232}
- 264 GUPTA, T. Land and forest resource management for economic betterment of the poor in rural India. Indian Economic Almanac 1982. September:76-81. {Location: 2472}
- 265 GWYNNE, M. D.; TORRES, C. B.; CROZE, H. J. Tropical forest extent and changes. Advanced Space Research 1983. 2(8):81-89. {Location: 1237}
- 266 HAGLER, BAILLY AND COMPANY. Innovative approaches to financing energy conservation investments in developing countries. Report prepared for U.S. Agency for International Development, by Hagler, Bailly and Company, Washington D.C., HBC Reference No. RA-158-3. 1984. {Location: F 211}
- 267 HALE, M.; PERCY, S. Reafforestation in India: Up a gum tree. Inside Asia 1986. No. 9:36-38. {Location: 2463}
- 268 HALL, D. O.; MOSS, P. Biomass for energy in developing countries. Geojournal 1983. 7(1):5-13. {Location: 2293}
- 269 HALL, D. O. Biomass: Fuel versus food, a world problem? In: M.S. Margaris (Ed.), Economics of Ecosystem Management. W. Junk Publishers, Netherlands, 1984. 34p. {Location: F 86}
- 270 HALL, D. O. Food versus fuel: a world problem ? 1983. 74p. {Location: 2292}
- 271 HALL, D. O. Plant hydrocarbon resources in arid and semi-arid lands. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 369-384). London: George Allen & Unwin. 1985. {Location: F 277}

- 272 HALL, D. O. Regional development assisted through local renewable energy resources. In E. Campus Lopez, R. J. Anderson, Eds., Natural Resources and Development, (ppl65-180). Boulder, Westview Press. 1983. {Location: 2287}
- 273 HALLSWORTH, R. G. Socio-economic effects and constraints in tropical forest management. Chichester, UK: John Wiley, 1982. 233p. {Location: ABB}
- 274 HAMAND, J. Fodder trees and family planning in Nepal. People 1987. 14(3):2.
- 275 HAMILTON, C. The returns to social forestry: A cost-benefit analysis of the Nepal -Australia Forestry Project, phase 3. Canberra, Australia: Australian National University, National Centre for Development Studies, 1985. 31p. {Location: R-Australia NCDS WP85/6}
- 276 HAMILTON, L. S.; BONNELL, M.; MERCER, D. E. Country papers on status of watershed forest influence research in Asia and the Pacific. Honolulu, Hawaii: East-West Center, 1982. 315p. {Location: 2362}
- 277 HAMILTON, L. S.; SNEDAKER, S. C. Handbook for mangrove area, management. Paris: UNESCO, 1984. 123p. {Location: 2283}
- 278 HAMILTON, L. S. A perspective on forestry in Asia and the Pacific. Wallaceana 1984. No. 36:3-7. {Location: 2316}
- 279 HAMILTON, L. S.; BONNELL, M.; CASSELS, D. S.; GILMOUR, D. A. The protective role of tropical forests: A state of knowledge review. Honolulu, Hawaii: East-West Center, 1985. 33p. {Location: 2349}
- 280 HAMILTON, L. S.; KING, P. N. Tropical forested watersheds: Hydrologic and soils response to major uses or conversions. USA: Westview Replica Editions, ND. 168p. {Location: 2356}
- 281 HAMILTON, L. S.; KING, P. N. Watersheds and rural development planning. Environmentalist 1984. Vol. 4, Supp. 7:81-86. {Location: F 70}
- 282 HAMILTON, L. S.; PEARCE, A. J. What are the soil and water benefits of planting trees in developing watersheds. Honolulu, Hawaii: East-West Center, 1985. 32p. {Location: 2379}
- 283 HAMMER, T. Reforestation and community development in the Sudan. Washington, DC, USA: Resources for the Future, 1982. 41p. {Location: F 18}
- 284 HANAGARTH, W. Floodplains in the Peruvian region of the Amazon as a source of the fauna found in agricultural areas. Plant Research & Development 1985. Vol 21:27-44.
- 285 HAQUE, F. Urban forestry: Thirteen city profiles. Unasylya 1987. 39(155):14-25.
- 286 HAROU, P.; PATTERSON, W. A.; FALCONI, J. The role of forestry in dry Africa. Journal of Forestry 1985. 83(3):142-147. {Location: P-ABB}
- 287 HEGDE, N. G. Role of agroforestry in rural development: Introduction of *Leucaena (kubabul)* BAIF, Pune 411016. ND. 7p. {Location: F 46}

- 288 HEGDE, N. G.; ABHYANKAR, P. D. The greening of wastelands: Proceedings of the National Workshop on Utilization of Wastelands for Bio-energy, Pune. Pune, India: Bharatiya Agro Industries Foundation, 1986. 204p. {Location: F 73}
- 289 HERRERA, R.; JORDAN, C. F.; MEDINA, E.; KLINGE, H. How human activities disturb the nutrient cycles of a tropical rainforest in Amazonia. Ambio 1981. 10(2/3):109-114. {Location: 3095}
- 290 HEUCH, J. H. R. Fodder for foresters - an introduction to tree fodder use in Nepal. Lumle Agricultural Centre Technical Paper 86/13, a revised version of "Fodder Trees for the Mid Hills of Nepal", a paper presented at the IRRI sponsored Crop-Livestock Systems Workshop, Khon Kaen, Thailand July 7-11 1986. 1986. 17p. {Location: F 213}
- 291 HIRALAL, M. H. Wasteland development unemployment guarantee scheme and afforestation programme. In: National Workshop on Landless People and Wastelands Development 3-4 April 1986, sponsored by the Society for the Promotion of Wastelands Development, New Delhi. 1986. 14p. {Location: F 138}
- 292 HOAGLAND, S. H. Organizational learning in development assistance: A comparative analysis of six tree-planting projects in Kenya. Working Paper for the Institute of Development Studies (Nairobi). 1986. 32p. {Location: 2323}
- 293 HOPKINS, N. C. G. Nepal: Fodder trees. World Animal Review 1985. No. 56:18-23.
- 294 HOROWITZ, M.; BADI, K. Sudan, introduction of forestry in grazing systems. Rome: Food and Agriculture Organization of the United Nations, 1981. {Location: 5820}
- 295 HOSKINS, M. W. Social forestry in West Africa: Myths and realities. Paper presented at the annual meeting of: American Association for the Advancement of Science, Washington, D.C., January 8, 1982. 19p. {Location: F 203}
- 296 HOSKINS, M. W. Women in forestry for local community development. Office of Women in Development, Agency for International Development, Washington D.C. 20523. 1979. {Location: F 126}
- 298 HOWE, B. I. Financing forestry. Commonwealth Forestry Review 1985. 64(4):345-349. {Location: 2419}
- 299 HOWES, M. Rural energy surveys in the third world: A critical review of issues and methods. Canada: International Development Research Center, 1985. 170p. {Location: 2382}
- 300 HOWES, M.; JABBAR, M. A. Rural fuel shortages in Bangladesh: The evidence from four villages. Falmer, Sussex: Institute for Development Studies, 1986. 44p. {Location: 2403}
- 301 HOWES, M.; JABBAR, M. A. Training workshop on rural research and rural policy. 1985. 34p. {Location: 2415}
- 302 HUGHES, C. E.; STYLES, B. T. Exploration and seed collection of multiple purpose dry zone trees in Central America. The International Tree Crops Journal 1984. No. 3:1-31. {Location: 2425}

- 303 HUGUET, L. Replenishing the world's forests: The future of the world's tropical forests. Commonwealth Forestry Review 1983. 62(3):195-217. {Location: 2244}
- 304 HURIA, V. K.; ACHAYA, K. T. Meeting basic needs through micro-planning: Central role of essential forestry (Part 2) Economic and Political Weekly 1983. August 27:1527-1538. {Location: 2197}
- 305 HURNI, H.; NUNTAPONG, S. Agroforestry improvements for shifting cultivation systems soil conservation research in Northern Thailand. Mountain Research and Development 1983. 3(4):338-345. {Location: F 119}
- 306 HUXLEY, P. A. Experimental agroforestry - progress through perception and collaboration? Agroforestry Systems 1985. 3(2):129-138.
- 307 HUXLEY, P. A. Systematic designs for field experimentation with multipurpose trees. Agroforestry Systems 1985. 3(2):197-208.
- 308 HYMAN, E. L. The comparative merits of ferrocement as a substitute for wood in fishing boats. Materials and Society 1987. 11(2):239-254. {Location: F 292}
- 309 HYMAN, E. L. Demand for woodfuels by households in the province of Ilocos Norte, Philippines. Energy Policy 1985. December:581-591. {Location: 2312}
- 310 HYMAN, E. L. The economics of improved charcoal stoves in Kenya. 1985. 26p. {Location: 2368}
- 311 HYMAN, E. L. Forestry administration and policies. Honolulu, Hawaii: East West Center, 1983. 12p. {Location: 2376}
- 312 HYMAN, E. L.; ROSS-SHERIFF, B. Improving professional and technical education in tropical forestry through development assistance. Managing International Development 1984. 1(6):65-76. {Location: 2290}
- 313 HYMAN, E. L. Land use planning to help sustain tropical forest resources. World Development 1984. 12(8):837-847. {Location: 2289}
- 314 HYMAN, E. L. A linear programming model for analyzing economic, social and environmental impacts of woodfuel policy alternatives in the Philippines. TIMS Studies in the Management Sciences 1986. No. 21:325-334. {Location: F 35}
- 315 HYMAN, E. L. Opportunities and constraints for organizations to help sustain tropical forest resources. Environmental Management 1986. 10(1):11-20. {Location: F 32}
- 316 HYMAN, E. L. The strategy of decentralized production and distribution of improved charcoal stoves in Kenya. 1985. 34p. {Location: 2367}
- 317 HYMAN, E. L. Tropical forests: Applied research and effective technology transfer vital. Mazingira 1985. 8(5):16-20.
- 318 IBRD. STAFF APPRAISAL REPORT. India: Jammu & Kashmir & Haryana social forestry project. USA: IBRD, 1982. 110p. {Location: 2352}

- 318a ICRAF. A Selected bibliography of agroforestry. Nairobi: International Council for Research in Agroforestry, 1982. 60p. {Location: 9580}
- 319 ICRISAT. Agroforestry research in semi-arid tropics: A report on the working group meeting held at ICRISAT centre, India, 5-6 August 1985. Patancheru, India: International Crops Research Institute for the Semi-Arid Tropics, 1986. 56p. {Location: P-ABB}
- 320 ICRISAT; IARC; CGIAR. Proceedings of the workshop on farming systems research. Patancheru, India: ICRISAT, 1987. 153p. {Location: ABA}
- 321 INDONESIAN RURAL WOMEN'S WORK AND ENERGY PROJECT TEAM. Rural women and social structures in change: A case study of women's work and energy in West Java, Indonesia. Geneva: ILO, 1986. 230p. {Location: 2481}
- 322 INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT; GOVERNMENT OF INDONESIA. Forest Policies in Indonesia. Jakarta: Government of Indonesia, 1985. 5 volumes. {Location: F 31}
- 323 INTERNATIONAL TREE PROJECT CLEARINGHOUSE; MELAMED-GONZALEZ, R.; GIASSEN, L. A directory of NGOs in the forestry sector. New York, N.Y.: ITPC, 1987. 256p. {Location: EBA/ABB}
- 324 IPUTU, S. A. Forestry research in the Solomon Islands. Solomon Islands 1986. 8p. {Location: 2337}
- 325 IVES, J. D.; SABHASRI, S.; VORAURAI, P. Conservation and development in Northern Thailand. Tokyo: United Nations University, Programmatic Workshop on Agroforestry and Highland-Lowland Interactive Systems, Thailand 13-17 November 1978. {Location: 0315}
- 326 IYENGAR, S. Common property land resources in Gujarat - an inquiry into their size, status and potential. Research proposal presented at workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, 19-20 January 1984. 12p. {Location: F 239}
- 327 IYENGAR, S. Size, status and use of common property land resources in Gujarat: A micro-view. Abstract presented at the workshop on Common Property Resources at Sariska Palace, Rajasthan May 9-11 1987. 4p. {Location: F 238}
- 328 IYENGAR, S. Size, status and use of common property land resources in Gujarat: An overview of case studies. Draft paper presented at workshop on Common Property Resources held at Sariska Palace, Rajasthan, 9-11 May 1987. 22p. {Location: F 222}
- 329 JACKSON, M. G. Grassland and livestock resources management. In Integrated Natural and Human Resources Planning and Management in the Hills of U.P (pp.305-364), G.B. Pant University, Pantnagar, September 1982. {Location: F 168}
- 330 JACOVELLI, P. A.; NEIL, P. E. A first look at agroforestry in Vanuatu. Alafua Agric. Bull. 10(3):43-59. {Location: 2408}
- 331 JAFARSIDIK, Y. Hardwood forest tree plantations in Sumatra. Indonesian Agricultural Research and Development Journal 1986. 8(1):7-11.

- 332 JAHN, S. A. A.; MUSNAD, H. A.; BURGSTALLER, H. The tree that purifies water: Cultivating multipurpose Moringaceae in the Sudan. Unasyilva 1986. 152(38):23-28. {Location: F 20}
- 333 JALEES, K. Loss of productive soil in India. International Journal Environmental Studies 1985. 24:245-250. {Location: F 147}
- 334 JAMBULINGAM, R.; FERNANDES, E. C. M. Multipurpose trees and shrubs on farmlands in Tamil Nadu state, India. Agroforestry Systems 1986. 4(1):17-32.
- 335 JEANRENAUD, J. P. Propagation and silviculture of Lokta (Daphne) in Nepal. Kathmandu: Department of Forestry, 1985. 8p. {Location: 2338}
- 336 JELENIC, N. E.; VAN VEGTEN, J. A. A pain in the neck: The firewood situation in south-western Kgatleng, Botswana. Gabarone, Botswana: University of Botswana, 1981. 47p. {Location: 2322}
- 337 JIZHOU, REN; ZIZHI, HU; YIKUN, FU. The ecological role of plant resources in the arid regions of China. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 277-287). London: George Allen & Unwin. 1985. {Location: F 270}
- 338 JODHA, N. S. Market forces and erosion of common property resources. Paper presented at the International Workshop on Agricultural Markets in the South Asian Tropics, ICRISAT Center, Patancheru, Andhra Pradesh 502 324 India, 24-28 October 1983. 26p. {Location: F 192}
- 339 JODHA, N. S. A note on contribution of CPRs to PPR-based farming systems in dry tropical regions of India. Draft Paper presented at the workshop on Common Property Resources held at Sariska Palace, Rajasthan May 9-11 1987. 32p. {Location: F 234}
- 340 JODHA, N. S. Proposal for grant from the Ford Foundation for research on common property resources. Research proposal presented at workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, 19-20 January 1984. 13p. {Location: F 242}
- 341 JOHNSON, D. V. Present and potential usages of palms in arid and semi-arid areas. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew 23-27 July 1984 (pp. 189-202). London: George Allen & Unwin. 1985. {Location: F 264}
- 342 JOHNSON, J. Management and the need for monitoring in the planning and implementation of farm and community forestry projects in developing countries. Wye College, ND. 33p. {Location: L2345}
- 343 JONES, J. V. S. Resources and industry in Tanzania: Use, misuse and abuse. Dar Es Salaam: Tanzania Publishing House, 1983. 243p. {Location: BATanzania}
- 344 JONES, W. I.; EGLI, R. Farming systems in Africa: The Great Lakes Highlands of Zaire, Rwanda and Burundi. Washington: IBRD, 1984. 107p. {Location: BA}
- 345 KAFUMBA, C. R.; MNTHAMBAIA, L. C. Wood energy and aspects of data collection: Design and use of fuel-efficient mudstoves for use in rural areas of Malawi. Paper presented to the FAO-Malawi workshop on planning fuelwood projects, Lilongwe, November 1984. 17p. {Location: F 1}

- 346 KAMARA, J. N. Firewood energy in Sierra Leone - production, marketing, and household use patterns. Hamburg, Germany: Verlag Weltarchiv, 1986. 227p. {Location: F 66}
- 347 KAMWETI, D. M. Fuelwood in East Africa: Present situation and prospects. Rome: FAO, 1984. 107p. {Location: F 12}
- 348 KAMWETI, D. M. Tree planting in Africa south of the Sahara. Nairobi: Environmental Liaison Centre, 1982. 75p. {Location: 2258}
- 349 KANG, B. T.; GRIMME, H.; LAWSON, T. L. Alley cropping sequentially cropped maize and cowpea with *Leucaena* on a sandy soil in Southern Nigeria. Plant and Soil 1985. 85:267-277. {Location: F 104}
- 350 KAPOOR, R. P. Excessive grazing, threat to environment. Yojana 1986. June:16-18. {Location: 2198}
- 351 KAUL, M. Common property resources: 1880-1986 in the Bisagama cluster, Delhi. Paper presented at the workshop on Common Property Resources held at Sariska Palace, Rajasthan May 9-11 1987. 11p. {Location: F 233}
- 352 KAUL, M. A development perspective for CPRs. Paper presented at the workshop on Common Property Resources held at Sariska Palace, Rajasthan, 9-11 May 1987. 6p. {Location: F 220}
- 353 KENDRICK, A. Challenging the assumptions: An analysis of the role of evaluation in the Ford Foundation's work in forestry. New York: Ford Foundation, 1985. 66p. {Location: 2336}
- 354 KGATHI, D. L. Aspects of firewood trade between rural Kweneng and urban Gabarone: A socioeconomic perspective. Gabarone, Botswana: National Institute of Development Research and Documentation, 1984. 51p. {Location: 2318}
- 355 KHOSHOO, T. N.; SUBRAHMANYAM, G. V. Ecodevelopment of arid lands in India with non-agricultural economic plants-a holistic approach. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), *Proceedings of the Kew International Conference on Economic Plants for Arid Lands*, Royal Botanic Gardens, Kew 23 -27 July 1984 (pp. 243-265). London: George Allen & Unwin. 1985. {Location: F 268}
- 356 KIR, A. Technical support to forestry development and forest industries production, Mozambique: Forest sector review and development guidelines. Rome: FAO, 1984. 54p. {Location: 2444}
- 357 KLEINERT, C. Settlement pressure and the destruction of the forests in Rwanda. Applied Geography and Development 1987. Vol 29:93-106
- 358 KONDAS, S. Social forestry in India. The Indian Forester 1985 11(11):887-898. {Location: F 23}
- 359 KOWERO, G. S.; TEMU, A. B. Some observations on implementing village forestry programmes in Tanzania. International Tree Crops Journal 1985. 3:135-145. {Location: P-BATanz}
- 360 KRISHNAMURTHY, K.; JEYASCELAN PRINCE, M. J. Human's impacts on the Pichavaram mangrove ecosystem: A case study from southern India. From *Proceedings of the Asian Symposium on Mangrove Environment- Research and Management*. 1984. 624-632. {Location: F 158}

- 361 KULKARNI, S. A study of people's rights over forest lands, forest produce and village grazing grounds. Research proposal presented at workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, January 19-20 1984. 6p. {Location: F 243}
- 362 KULKARNI, S. Towards a social forest policy. Economic and Political Weekly 1983. Feb:191-196. {Location: 2304}
- 363 KUMAR, N. Role and potential of NGOs in social forestry. Paper prepared for the mission of the government of the Netherlands on the identification of the scope for forestry development cooperation in India, 's Gravenhage. 1986. {Location: F 113}
- 364 LANLY, J. P. Tropical forest resources. Rome: Food and Agricultural Organization of the United Nations, 1982. {Location: 2239}
- 365 LAWTON, R. M. Some indigenous economic plants of the Sultanate of Oman. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 269-275). London: George Allen & Unwin. 1985. {Location: F 269}
- 366 LE HOUEROU, H. N. Forage and fuel plants in the arid zone of North Africa, the Near and Middle East. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 117-141). London: George Allen & Unwin. 1985. {Location: F 260}
- 366a LE HOUEROU, H. N. Browse in Africa: The current state of knowledge. Addis Ababa: International Livestock Centre for Africa, 1980. {Location: 5865}
- 367 LEACH, G. Energy and the urban poor. IDS Bulletin 1987. 18(1):31-38. {Location: F 129}
- 368 LEACH, M. Responding to fuelwood scarcity: Outside intervention and the household view in two Maasai villages in Tanzania. Newnham College, Cambridge. 1985. 88p. {Location: F 36}
- 369 LEE, C. K. J. The use of trees in Chinese land husbandry. Commonwealth Forestry Review 1986. 65(1):23-31. {Location: 2416}
- 370 LESLIE, A. J. A second look at the economics of natural management systems in tropical mixed forests. Unasylva 1987. No 155:46-58.
- 371 LEUSCHNER, W. A.; KHALEQUE, K. Homestead agroforestry in Bangladesh. Agroforestry Systems 1987. 5(2):109-122.
- 372 LEVINE, G.; BENTLEY, W. R.; BROCKBAND, B.; GHILDYAL, B. P. Rural poverty and resources: Problems and solutions: Lessons from experience with rural resource development projects. Delhi, India: Ford Foundation, 1986. 13p. {Location: F 83}
- 373 LINTU, L. Marketing in the forestry sector. Unasylva 1986. 38(153):10-20.
- 374 LOEWE, R. G. Farm forestry in Nigeria. Ibadan: Federal Department of Forest Research, ND. 12p. {Location: 2391}

- 375 LUNDGREN, A. L. A resume of forestry research priorities in the Asia/Pacific region. Honolulu, Hawaii: East-West Center, 1986. 33p. {Location: 2361}
- 376 LUNDGREN, A. L.; HAMILTON, L. S.; VERGARA, N. T. Strategies for improving the effectiveness of Asia-Pacific forestry research for sustainable development. Hawaii, USA: East-West Center, 1986. 56p. {Location: F 72}
- 377 LUNDGREN, B. Global deforestation, its causes and suggested remedies. Agroforestry Systems 1985. 3(2):91-96.
- 378 MABBETT, T. Lifting the smokescreen on wood use by tobacco growers. Agriculture Administration 1987. 39(3):79-80.
- 379 MACONOCHIE, J. R. Plants of the Australian arid zone: An undeveloped potential. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 289-301). London: George Allen & Unwin. 1985. {Location: F 271}
- 380 MAHAJAN, V.; LOBO, V. Wastelands and the landless: A case study of the lessons from the Bhodan and Gramdan movements. In: National Workshop on Landless People and Wastelands Development, 3-4 April 1986, sponsored by the Society for the Promotion of Wastelands Development, New Delhi. 1986. 77p. {Location: F 142}
- 382 MAHITI PROJECT. Planned activity note: Field guide to social afforestation. Mahiti Project, opposite S.T. Bus Stand, above Jain Sweet Mart, Dhandhuka, Gujarat, 382 460. ND. 21p. {Location: F 183}
- 383 MAHITI PROJECT. Promoting social afforestation of wastelands in the Bhal: A proposal for promoting village demonstration plantations and field trials on saline wastelands in the Bhal Region of Dhanduka Taluka, Gujarat. Submitted to the Society for the Promotion of Wastelands Development by the Mahiti Team. 1983. 26p. {Location: 2266}
- 384 MAHITI TEAM. Focussing on the real issue: Some glimpses from Dhandhuka taluka. Paper presented at the Regional Workshop on Block Level Planning, October 4-6 1982, South Gujarat University, Surat, by the Mahiti Team, opposite S.T. Bus Stop, above Jain Sweet Mart Dhandhuka 382460, Gujarat. 1982. 22p. {Location: F 182}
- 385 MAHITI TEAM. Why is social forestry not social? Prepared for the Ford Foundation workshop on Social Forestry and Voluntary Agencies, 13-15 April 1983, Badkhal Lake, Haryana, by Mahiti Team: Opposite S.T. Bus stop, above Jain Sweet Mart, Dhandhuka 382460, Gujarat, India. 1983. {Location: F181}
- 386 MAHONY, D. W. H. Forest extension training in Somalia. Unpublished Ph.D. thesis, University College of North Wales, Bangor Department of Forestry and Wood Science. 1986. {Location: F 152}
- 387 MALAISSE, F.; BINZANGI, K. Wood as a source of fuel in Upper Shaba, Zaire. Commonwealth Forestry Review 1985. 64(3):227-240.
- 388 MALHOTRA, K. C.; BASAK, J. A note on the cultural ecology of husbanded plants. Unpublished typescript to be published in South Asian Anthropologist. 1984. 9p. {Location: F 184}

- 389 MANN, R. D. Agricultural projects and drought in Ghana. A report for the Methodist church and the churches committee on participation in development. 1987. 21p. {Location: F 193}
- 390 MANN, R. D. The Gambia: The need for ecological reconstruction: A reflection of the sahelian tragedy. Report prepared for MCODE, London, ICCO, Netherlands, WCC, Upper Volta and DSR, London. 1980. 5p. {Location: 2449}
- 391 MANN, R. D. Land utilisation with respect to land capability: Mazabuka District-Southern Province, Zambia. Report on preliminary evaluation of the I.T.D.G. Farm machinery survey, extract from GRZ/ITDG Project Magoye. 1973. 5p. {Location: 2450}
- 392 MANN, R. D. Tree planting: Illustrated sheets for teaching: How to start fruit tree nurseries and methods of transplanting trees. Prepared for Methodist Mission, Agricultural Programme, Brikima, Gambia. 1986. 12p. {Location: 2448}
- 393 MARTIN, R. B. Communal areas management programme for indigenous resources (CAMPFIRE) Harare, Zimbabwe: Branch of Terrestrial Ecology, Department of National Parks and Wildlife Management, 1986. 110p. {Location: F 53}
- 394 MARY, F.; MICHON, G. When agroforests drive back natural forests: A socio-economic analysis of a rice-agroforest system in Sumatra. Agroforestry Systems 1987. 5(1):27-56.
- 395 MASCARENHAS, A.; ODERO-OGWEL, L. A.; MASAKHALIA, Y. F. O.; BISWAS, A. K. Land use policies and farming systems: Kenya, Tanzania and Mozambique. Land Use Policy 1986. 3(4):286-303.
- 396 MASCARENHAS, A.; KIKULA, I.; NILSSON, P. Support to village afforestation in Tanzania. Dar es Salaam: Institute of Resource Assessment, University of Dar es Salaam, 1983. 112p. {Location: F 38}
- 397 MASCARENHAS, O. A.; XAVIER LABOUR RELATIONS INSTITUTE. Community forestry management: Progress report September 1981-June 1983: A Ford Foundation Project. Ford Foundation, 1983. 180p. {Location: 2268}
- 398 MASCARENHAS, O. A.; XAVIER LABOUR RELATIONS INSTITUTE. Social forestry project of Bihar: A socio-economic analysis. 1982. preface and appendix C. {Location: 2267}
- 399 MASKEY, J. L.; SHRESTHA, V. B. Nepal: On the road to reforestation. Unasylva 1986. 38(152):65-69.
- 400 MASLEKAR, A. R. Management of man-made forests in India. The Indian Forester 1985. 11(11):927-934. {Location: F 22}
- 401 MATHU, W. A directory of organisations working on tree planting and woodfuel conservation in Kenya. Nairobi, Kenya: Energy/Development International (E/DI), 1985. 99p. {Location: F 285}
- 402 MATHUR, R. S.; SAGAR, S. R.; MAHENDRA, A. K. Price trends of fuelwood in Haryana. Indian Forester 1984. 1984:973-981. {Location: 2468}
- 403 MAY, P. H. Babassu palm in the agroforestry systems in Brazil's mid-north region. Agroforestry Systems 1985. 3(3):275-296.

- 404 MAYDELL, H. J. VON. The contribution of agroforestry to world forestry development. Agroforestry Systems 1985. 3(2):83-90.
- 405 MAYDELL, H. J. VON; SPATZ, G.; INSTITUTE FOR WORLD FORESTRY. Effects of goat husbandry on the development of the landscape. Applied Geography and Development 1979. 18:30-44. {Location: 5687}
- 406 MAYDELL, H. J. VON. Forestry in areas with marginal site problems. Applied Geography and Development 1985. Vol 26:57-70.
- 408 MCGAHUEY, M. Impact of forestry initiatives in the Sahel. Chemonics International, 2000 M St., N.W. Washington D.C. 20036. ND. {Location: F 153}
- 409 MEHRER-HOMJI, V. M. Do forests control climate? Science Today 1982. January:37-42. {Location: F 175}
- 410 MELAMED-GONZALEZ, R.; GIASSON, L. A directory NGOs in the forestry sector: 2nd African edition. New York: International Tree Project Clearinghouse, 1987. 256p. {Location: F 133}
- 411 MERTIA, R. S. Shelterbelt studies in India's Thar desert. Dissertation submitted to the University of Wales in partial fulfillment of the MS degree. 1986. 82p. {Location: F 99}
- 412 MESSERSCHMIDT, D. A. Conservation and society in Nepal: Traditional forest management and innovative development. Paper prepared for workshop: Lands at risk in the third world: Local level perspective. Institute for Development Anthropology, Binghamton, NY. 1985. 46p. {Location: F 19}
- 413 MGENI, A. S. M. Fuelwood crisis in Tanzania is women's burden. Quarterly Journal of Forestry 1984. 73(4):247-249. {Location: 2348}
- 414 MGENI, A. S. M. Soil conservation in Kondoa District, Tanzania. Land Use Policy 1985. 2(3):205-209. {Location: F 109}
- 415 MICHON, G.; MARY, F.; BOMPARD, J. Multistoried agroforestry garden system in West Sumatra, Indonesia. Agroforestry Systems 1986. 4(4):315-338.
- 416 MICUTA, W. Modern stoves for all. London: Intermediate Technology Publications, 1985. 87p. {Location: F 98}
- 417 MIEHE, S. Acacia albida & other multipurpose trees on the Fur farmlands in the Jebel Marra highlands, Western Darfur, Sudan. Agroforestry Systems 1986. 4(2):89-120.
- 418 MILIMO, J. T.; FISSEHA, Y. Rural small scale enterprises in Zambia: Results of a 1985 country wide survey. East Lansing, Michigan: Department of Agricultural Economics, Michigan State University, 1986. 75p. {Location: R-MSU IDP WP28}
- 419 MINISTRY OF FORESTRY, PEOPLE'S REPUBLIC OF CHINA. China's forestry and its role in social development. China: Ministry of Forestry, ND. 43p. {Location: 2395}
- 420 MISRA, D. N. Current management concepts in forestry. In E. G. Hallsworth (ed). Socio-economic effects and constraints in tropical forest management. John Wiley and Sons. pp 191-201. 1982. {Location: 2471}

- 421 MISRA, D. N. Forest management - need for a new perspective. Paper presented at the Second Forestry Conference held at Dehra Dun, January 16-19, 1980, paper contributed from, Indian Institute of Forest Management/Indian Institute of Management, Ahmedabad. 1980. {Location: F 171}
- 422 MOENCH, M. "Turf" and forest management in a Garhwal hill village. Hawaii, USA: East-West Center, 1986. 32p. {Location: F 81}
- 423 MONGA, P. K. Bhutan: Tashigang and Mongar area development project. Pradesh: IFAD/FAO, 1984. 60p. {Location: 2385}
- 424 MORGAN, W. B. Development and the fuelwood situation in Nigeria. Geo Journal 1978. 2(5):437-442. {Location: F 49}
- 425 MORRIS, B. Deforestation in India and the fate of the forest tribes. The Ecologist 1986. 16(6):253-257. {Location: F 95}
- 426 MORTIMORE, M. Shifting sands and human sorrow: Social response to drought and desertification. University of Durham, 1985. 31p. {Location: F 69}
- 427 MORTON, H. L. Plants for conservation of soil and water in arid ecosystems. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens Kew 23 -27 July 1984 (pp. 203-214). London: George Allen & Unwin. 1985. {Location: F 265}
- 428 MOTT, J. J.; REID, R. Forage and browse: The northern Australian experience. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 143-161). London: George Allen & Unwin. 1985. {Location: F 261}
- 429 MUKHOTI, B. Forestry projects and landless farmers: A view of issues from within a donor agency. Culture and Agriculture 1986. No. 30:7-12.
- 430 MULDER, R. P. Social forestry in Honduras. BOS Nieuwsletter 1986. No.13:19-26. {Location: 2412}
- 431 MURRAY, G. F. Seeing the forest while planting the trees: An anthropological approach to agroforestry in rural Haiti. IN D. W. Brinkerhoff and J. C. Garcia Zamor (Eds.), Politics, projects and people: Institutional development in Haiti. Praeger. 1986. pp193-226. {Location: 2465}
- 432 MURRAY, G. F. The wood tree as a peasant cash crop: An anthropological strategy for the domestication of energy. In Haiti-Today and tomorrow: An interdisciplinary study, Foster, C. and Waldman, A. University Press of America. 1984. pp141 -160. {Location: 2464}
- 433 MYERS, N. The primary source: Tropical forests and our future. New York; London: W W Norton, 1984. 399p. {Location: ABB}
- 434 NABHAN, G. P.; FELGER, R. S. Wild desert relatives of crops: Their direct uses as food. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 19-33). London: George Allen & Unwin. 1985. {Location: F 253}

- 435 NABIL EL HADIDI, M. Food plants of prehistoric and predynastic Egypt. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), *Proceedings of the Kew International Conference on Economic Plants for Arid Lands*, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 87-92). London: George Allen & Unwin. 1985. {Location: F 257}
- 436 NAGABRAHMAM. Development perspective: CPR approach. Note prepared for discussion at the Workshop on Common Property Resources held at Sariska Palace, Rajasthan, 9-11 May 1987. 1987. 4p. {Location: F 224}
- 437 NAIR, M. A. Agroforestry farming systems in the homesteads of Kerala, southern India. Agroforestry Systems 1986. 4(4):339-364.
- 438 NAIR, P. K. R. Classification of agroforestry systems. Agroforestry Systems 1985. 3(2):97-128.
- 439 NAIR, P. K. R. Fruit trees in tropical agroforestry systems. Honolulu, Hawaii: East-West Center, 1984. 89p. {Location: 2372}
- 440 NARASIMHANNA, M. N. A new concept of Tasar culture for tribal uplift. From Dr.M.N.Narasimhan, Director, Central Tasar Research Station, Ranchi, Bihar, India. ND. 7p. {Location: F 188}
- 441 NARAYAN, S. Social forestry: A case study of tribal region. Scandinavian Journal of Development Alternatives 1985. 4(3/4):166-172.
- 442 NATIONAL INSTITUTE OF RURAL DEVELOPMENT. Workshop on rural and social forestry. Workshop held by the National Institute of Rural Development, Rajendernagar, Hyderabad, August, 1982. 20p. {Location: 2470}
- 443 NATIONAL RESEARCH COUNCIL. Calliandra a versatile small tree for the humid tropics: Report of an ad hoc panel of the Advisory Committee on Technology Innovation Board on Science and Technology for International Development. Washington DC: Office of International Affairs, National Research Council, 1983. 4lp. {Location: 2288}
- 444 NEIL, P. E.; JACOVELLI, P. A. Agroforestry as an aid to rational rural development in Vanuatu. Commonwealth Forestry Review. 1985. {Location: 2397}
- 445 NESTEL, B. Agricultural research for development: Potentials and challenges in Asia. The Hague: International Service for Agricultural Research, 1983. {Location: 1392}
- 446 NEUNHAUSER, P.; HAUSER, E.; AEHLING, D.; DROSTE, R.; GRAEFEN, C.; KAYA, H.; SCHMIDT, R.; STAMM, H.; WAGNER, K. Demand for major fruit tree seedlings including coconut by village farms and farmers in the lowland areas of the Tanga region. Berlin: Center for Advanced Training in Agricultural Development, Technical University of Berlin, 1986. 215p. {Location: F 54}
- 447 NEWMAN, J. L. Recent change. In: The ecological basis for subsistence change among the Sandawe of Tanzania (pp.57-65, 102-107, 143-148, 159-162). National Academy of Sciences, Washington D.C. 1970. {Location: F 208}

- 448 NEWTON, R. J.; GOODIN, J. R. Unconventional arid land plants as biomass feedstocks for energy. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), *Proceedings of the Kew International Conference on Economic Plants for Arid Lands*, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 385-397). London: George Allen & Unwin. 1985. {Location: F 278}
- 449 NOORANI, A. G. Rights of forest dwellers. Economic and Political Weekly 1987. 22(7):260-261.
- 450 NORONHA, R. Seeing people for the trees: Social issues in forestry. Draft paper prepared for the Conference on Forestry and Development in Asia, The Asia Society, April 19. 1982. 38p. {Location: 2383}
- 451 NSHUBEMUKI, L.; MUGASHA, A. G.; FAO. The modifications to traditional shifting cultivation brought about by the forest development project in the Nado Area - Kondoa, Tanzania. 1983. 60p + bib + appendices. {Location: 2246}
- 452 NYIRENDA, R. W. S. The economics of wood energy production for tobacco processing in Malawi: A case study. Unpublished MSc thesis, University College of North Wales, Department of Forestry and Wood Science. 1983. {Location: F 209}
- 453 O'LOUGHLIN, C. L. The effects of forest land use on erosion and slope stability. Honolulu, Hawaii: East-West Center, 1985. 26p. {Location: 2350}
- 454 O'REILLY, F. D.; PATRICK, NNENDA. Rural energy in Northern Nigeria. The Epoch 1985. 13(3/4):12-15.
- 455 OBOHO, E. G. Shelterbelts: Their establishment and effects, with particular reference to northern Nigeria. Unpublished MSc thesis, University College of North Wales, Department of Forestry and Wood Science. 1983. 150p. {Location: F 195}
- 456 ODOUL, P. A. The Shamba system: An indigenous system of food production from forest areas in Kenya. Agroforestry Systems 1986. 4(4):365-374.
- 457 OLOFSON, H. An anthropological approach to social forestry: The study of indigenous agroforestry systems. Presented at the Monthly Forum in Social Forestry of the Bureau of Forest Development, Asian Institute of Tourism, Philippines. 1982. {Location: F 14}
- 458 OLOFSON, H. Traditional agroforestry, parcel management and social forestry development in a pioneer agricultural community: The case of Jala-jala, Rizal, Philippines. Agroforestry Systems 1985. 3(4):317-338.
- 459 OLSSON, K. Fuelwood demand and supply in the Umm Ruwaba/Er Rahad region in North Kordofan, Sudan: A study based on field data and landsat MSS information. Lund, Sweden: Lunds Universitets, 1985. 74p. {Location: F 37}
- 460 OLUWASANMI, H. A.; DEMA, I. S.; UBOMA. A socio economic and nutritional survey of a rural community in Eastern Nigeria. Geographical Publications, 1966. 116p. {Location: 9229}
- 461 OM CONSULTANTS (INDIA) SIDA aided Tamil Nadu social forestry project: Management study. Bangalore, India: OM Consultants, 1986. 48p. {Location: F 65}

- 462 ORR, B. Refugee forestry in Somalia. Madison, WI: University of Wisconsin Dept. of Forestry, 1985. 9p. {Location: 2431}
- 463 OSTROM, E. How inexorable is the tragedy of the commons?: Institutional arrangements for changing the structure of social dilemmas. Distinguished faculty research lecture given at Indiana University, Office of the Vice President, Bloomington, Office of Research and Graduate Development. 1986. 35p. {Location: F 231}
- 464 OXBY, C. Alternatives and improvements to shifting cultivation on the East Coast of Madagascar: Socio-economic aspects. 1983. 34p draft. {Location: 1239}
- 465 PANT, M. M. The impact of social forestry on the national economy of India. International Tree Crops Journal 1980. 1:69-91. {Location: L 2328}
- 466 PARKER, K. J.; BURCH, W. R. Forestry for rural development: Interrelating the social and biological sciences. ND. 13p. {Location: F 15}
- 467 PELINCK, E. Community forestry development project Nepal: Interim project results and recommendations 1980-1984. Kathmandu Nepal: IMG; FAO & UNDP; World Bank, 1985. 87p. {Location: 2334}
- 468 PERERA, W. R. H. Some thoughts on social agro-forestry in Sri Lanka. Marga Quarterly Journal 1985. 8(1):40-49.
- 469 PERRY, J. A.; DIXON, R. K. An interdisciplinary approach to community resource management: Preliminary field test in Thailand. Journal of Developing Areas 1986. 21(1):31-48.
- 470 PERSSON, J. Trees, plants and a rural community in the southern Sudan. Unasylya 1986. No 154:32-43.
- 471 PERSSON, R. World forest resources and trends. Development Digest 1979. 17(4):3-10. {Location: 2418}
- 472 PIEARCE, G. D. How to save the Zambezi teak forests. Unasylya 1986. 38(152):29-36.
- 473 PIERCE COLFER, C. J. Women, men, and time in the forests of East Kalimantan. Honolulu, Hawaii: East-West Center, 1981. 10p. {Location: 2375}
- 474 PILLAI, P. P. Shortage of wood fuel for Kerala home fires. State and Society 1983. 4(4):68-73.
- 475 POEL, P. VAN DER; SCHINKEL, R. F. An appraisal of farming systems in 6 villages on Lombok and Sumbawa. Jakarta: Fakultas Kehutanan Universitas Gadjah Mada, 1985. 92p. {Location: 2459}
- 475a POEL, P. VAN DER; DIJK, H. VAN. Household economy and tree growing in upland central Java. Agroforestry Systems 1987. 5(2):169-184.
- 476 POSCHEN, P.; EICHE, G. The need for fuel and wood in rural areas of the Eastern highlands. 1985. Typescript 13p. {Location: 2422}
- 477 POSCHEN, P. An evaluation of the Acacia albida-based agroforestry practices in the Hararghe highlands of eastern Ethiopia. Agroforestry Systems 1986. 4(2): 129-144.

- 478 POSEY, D. A. Indigenous management of tropical forest ecosystems: The case of the Kayapo Indians of the Brazilian Amazon. Agroforestry Systems 1985. 3(2):139-158.
- 479 POUTANEN, M. Agroforestry in tropical land use with special reference to the Peruvian Amazon. Helsinki: University of Helsinki, 1985. 111p. {Location: ABB}
- 480 PRASAD, N. S. The productivity of Eucalyptus plantations in Karnataka. In Eucalyptus in India: Past, Present and Future, pp.188-193. 1986. {Location: F 8}
- 481 PRASAD, N. S. Impact of agroforestry practices on environment. In, C.J. Saldanha (Ed.), Karnataka - State of environment 1983-1984 (pp.1-58). Centre for Taxonomic Studies, Bangalore 560001. 1984. {Location: F 210}
- 482 PURANDARE, A. P.; DAS, P. K. People's participation in community forestry: A case study in Maharashtra. Journal of Rural Development 1986. 5(2):129-174. {Location: F 33}
- 483 RAINTREE, J. B.; WARNER, K. Agroforestry pathways for the intensification of shifting cultivation. Agroforestry Systems 1986. 4(1):39-54.
- 484 RAINTREE, J. B. Agroforestry pathways: Land tenure, shifting cultivation and sustainable agriculture. Unasylva 1986. No 154:2-15.
- 485 RAINTREE, J. B. Conservation farming with multipurpose tree legumes: An underdeveloped branch of tropical agroforestry research. In Proceedings of Kenyan National Seminar on Agroforestry L. Buck (Ed.). pp107-121. Kenya. International Council For Research in Agroforestry. 1980. {Location: 2249}
- 486 RAINTREE, J. B. Preliminary diagnosis of land use problems and agroforestry potentials in Northern Mberere, Embu District, Kenya. Nairobi, Kenya: ICRAF, 1983. 15p. {Location: F 10}
- 487 RAMBO, A. T. Fire and the energy efficiency of swidden agriculture. Honolulu, Hawaii: East-West Center, 1980. 55:309-316. {Location: 2346}
- 488 RANCHI CONSORTIUM FOR COMMUNITY FORESTRY. Annual reports 1980 and 1981/2. 1981; 1982. {Location: 2265}
- 489 RANCHI CONSORTIUM FOR COMMUNITY FORESTRY. Consensus of the seminar: Forest-tribals and forest policy. From seminar on Forest-Tribals and Forest Policy, July 16-18 1982, Ranchi, Ranchi Consortium for Community Forestry, Post Box-7 Purulia Road, Ranchi 834001, India. 1982. 3p. {Location: F 187}
- 490 RAY, A. Delivery systems for rural development in India: A field view of institutional linkages. Public Administration 1985. 5(4):353-362. {Location: F 145}
- 491 REBUGIO, L. L. Social forestry as a development program. Los Banos, Philippines: University of the Philippines, 1985. 35p. {Location: 2413}
- 492 REBUGIO, L. L. Social forestry as a resource system. Los Banos, Philippines: University of the Philippines, 1985. 16p. {Location: 2414}

- 493 REDDY, G. P. Identification of forest resources and evaluation of their critical nature in the subsistence pattern of the tribal communities in Andhra Pradesh. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, 19-20 January 1984. 16p. {Location: F 245}
- 494 REDDY, S. T. S. Who prefers Eucalyptus and why. Social Action 1985. 35:366-378. {Location: F 26}
- 495 REMENYI, J. V. Agricultural Systems: Research for developing countries. Canberra, Australia: ACIAR, 1985. 189p. {Location: 2353}
- 496 REPETTO, R.; WORLD RESOURCES INSTITUTE. The global possible: Resources, development and the new century. New Haven, USA: Yale University Press; World Resources Institute, 1986. 538p. {Location: ARF}
- 497 REPETTO, R. An investigation of the resolution of common resource problems in developing countries. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, 19-20 January 1984. 1983. 7p. {Location: F 249}
- 498 REYNOLDS, V.; NAUTIYAL, B. P. Grazing fodder collection in Garhwal. Forthcoming in the International Journal of Environmental Studies, 1986. Typescript 13p. {Location: 2410}
- 499 RICHARDS, P. W. The tropical rain forest: An ecological study. Cambridge: Cambridge University Press, 1979. 450p. {Location: ABB}
- 500 RICHARDSON, K. F.; PERKINS, R. W. Lesotho woodlot project, *Pinus radiata* - nursery nutrition experiment. Commonwealth Forestry Review 1985. 64(3):267-280.
- 501 ROBINSON, P. J. Fodder tree research in Nepal: A brief review of past work and future needs. Paper prepared for 1st Farming Systems Working Group Meeting on "Review of Farming Systems Work and Results in Nepal", Pokhara August 11-13, 1986. 14p. {Location: F 212}
- 502 ROBINSON, P. J.; CANNELL; JACKSON; GORDON; COMMONWEALTH FORESTRY INSTITUTE. Trees as fodder crops: Attributes of trees as crop plants. UK: Institute of Terrestrial Ecology, 1984. {Location: 5909}
- 503 RODRIGUEZ, E. Rubber and phytochemical specialities from desert plants of North America. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 399-412). London: George Allen & Unwin. 1985. {Location: F 279}
- 504 ROUNDY, R. W. Environmental productivity in pre-revolutionary Ethiopia: Perennial vegetation resources. Montreal, Canada: Centre for Developing Area Studies, McGill University, 1985. 20p. {Location: F 91}
- 505 ROY BURMAN, B. K. Impact of survey and settlement operations and development and administrative measurements on communal land resources in tribal areas in the central belt of India. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, Andhra Pradesh, January 19-20 1984. 8p. {Location: F 241}
- 506 ROY BURMAN, B. K. Towards a national forest policy. Professor of Anthropology, Visva Bharati, Shanti Niketan, India. 1982. 5p. {Location: 2469}

- 507 ROY, R. Socialising the forest. Aside 1980. 4(3):47-49.
{Location: 2276}
- 508 SANA, C. Shiyanga Forestry Project: Evaluation Report. OXFAM, Shinyanga, 1984. 34p. {Location: F 16}
- 509 SARIN, M. Chulha album. New Delhi, India: Ford Foundation, 1981. 39p.
{Location: 2402}
- 510 SARIN, M. Improved chulha programme: Boon or disaster? Economic and Political Weekly 1986. 21(38 & 39):1709-1717.
- 511 SATHE, M. D. Common property resources of land in Maharashtra: A few specific problems. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, 19-20 January 1984. 1983. 8p. {Location: F 247}
- 512 SATHE, M. D. Tree pasture programme - a theme in social forestry. 1980. 10p. {Location: 2271}
- 513 SCHENK-SANDBERGEN, L. People, trees and forests in India: Anthropological and sociological dimensions. Paper prepared for the mission of the government of Netherlands on the identification of the scope for forestry development cooperation in India, 's Gravenhage. 1986. {Location: F 116}
- 514 SCHMIDT, R. Tropical rain forest management: A status report. Unasylva 1987. 39(156):2-17.
- 515 SCHMIDT-VOGT, H. Silviculture in the sandy deserts of Inner Mongolia, China. Plant Research and Development 1987. Vol 25:85-91.
- 516 SCHIRMER, A. The role of agroforestry in the Pacific. Bonn: DSE, 1986. 104p. {Location: BB}
- 517 SECRETT, C. Plants and people. VSO Orbit 1986. No. 20:13-15.
{Location: F 41}
- 518 SEDJO, R. A. The comparative economics of plantation forestry: A global assessment. Washington: Resources for the Future, 1983. 161p.
{Location: ABB}
- 519 SEIF EL DIN, A. G. Integrated land use in forest reserves in Eastern region: Global diagnosis and the involvement of the people. Khartoum, Sudan: Government of Sudan; Government of Netherlands; FAO, 1986. 27p. {Location: 2486}
- 520 SEN, B. Land reforms and forestry programmes: The case of West Bengal. In: National Workshop on Landless People and Wastelands Development, 3-4 April 1986, sponsored by the Society for the Promotion of Wasteland Development, New Delhi. 1986. 16p. {Location: F 137}
- 521 SHABA, M. W. M. Deforestation and land use in Malawi with special reference to the southern region. Unpublished MSc thesis, University College of North Wales, Department of Forestry and Wood Science. 1984. {Location: F 197}
- 522 SHAH, ANIL C. Our fate will be the same as of others. Paper presented at the workshop on Common Property resources held at the Sariska Palace, Rajasthan, May 9-11 1987. 5p. {Location: F 235}

- 523 SHAH, S. A. Approaches to wasteland developmant. Ahmedabad, India: Vikram Sarabhai Centre for Development Interaction, 1986. 27p. {Location: F 120}
- 524 SHAH, S. A. Concept and philosophy of social forestry. Indian Forester 1985. 3(10):769-773. {Location: F 61}
- 525 SHAH, S. A. Different dimensions of social forest training. Indian Forester 1987. 113(1):42-43.
- 526 SHAH, S. A. Social forestry: A vital production system. The Indian Forester 1984. November, 4p. {Location: P-ABB}
- 527 SHAH, S. A. Visit to village reconstruction organisation. Consultancy report for Ford Foundation, New Delhi, India. 1982. 7p. {Location: F 191}
- 528 SHAH, S. L. Socio-economic, technological, organisational and institutional constraints in the afforestation of civil, soyam, usar and wetlands for resolving the fuelwood crisis in the hill districts of Utttar Pradesh. Amora, Uttar Pradesh, India: Vivekananda Laboratory for Hill Agriculture, 1982. 28p. {Location: F 172}
- 529 SHAH, TUSHAAR. Gains from social forestry: Lessons from West Bengal. Paper presented at workshop on Common Property Resources, Sariska Palace, Rajasthan, 9-11 May 1987, India. 16p. {Location: F 219}
- 530 SHANKARNARAYAN, K. A.; HARSH, L. N.; KATHJU, S. Agroforestry in the arid zones of India. Agroforestry Systems 1987. 5(1):69-88
- 531 SHARMA, A. K.; GNANAM, A.; RAMA DAS, V. S.; KHOSHOO, T. N.; GHOSH, R. C.; KAUL, O. N.; KRISHNASWAMY, S.; VIMAL, O. P.; SARABHAI, A. Production and availability of biomass: A state of the art report. New Delhi: Department of Science and Technology, Government of India, 1980. 27p. {Location: 2466}
- 532 SHARMA, R.; BHATIA, R. India: Meeting basic needs of the poor. New Delhi: UNDP; ILO, 1986. 181p. {Location: F 63}
- 533 SHEPHERD, G. Social forestry in 1985: Lessons learnt and topics to be addressed. 1985. SFNP no. 1a 31p. {Location: P-ABB (AAU)}
- 534 SHINGI, P. M.; PATEL, M. S.; WADWALKER, S. Development of social forestry in India. Ahmedabad, India: Indian Institute of Management, 1984. 266p. {Location: F 39}
- 535 SHINGI, P. M.; WADWALKER, S. Peoples participation in social forestry - some propositions. Ahmedabad: Indian Institute of Management, 1981. {Location: 2277}
- 536 SHIVA, V.; BANDYOPADHYAY, J.; JAYAL, N.D. Afforestation in India. Ambio 1985. 14(6):329-333. {Location: F 293}
- 537 SHIVA, V.; BANDYOPADHYAY, J. Chipko: Rekindling India's forest culture. The Ecologist 1987. 17(1):26-34
- 538 SHIVA, V. Ecological movements: Genesis and future concerns. Paper prepared for the mission of the government of the Netherlands on the identification of the scope for forestry development cooperation in India, 's Gravenhage. 1986. {Location: F 117}

programmes try to reduce vulnerability directly by enabling poor people to gain disposable assets which they can realise at will to meet contingencies. In many countries relief work programmes, often Food for Work, allow poor people to earn food or money when they need it, and so help them to meet the contingency of seasonal deprivation; but this is through food or wages for work rather than through disposable assets. India's large-scale Integrated Rural Development Programme (IRDP) does provide poor people with economic assets, but these are intended to generate income which will raise them above the poverty line, not give them lump sums to meet contingencies. Whether the assets are milch buffaloes, or goats, or sewing machines, they are precisely not meant to be sold or disposed of. But the priorities of the poor are not necessarily those of the planners. In a survey in Gujarat, Indira Hirway (1985: 140) found people not in the IRDP who wanted the scheme for its cheap subsidised asset, seeing it as a desirable acquisition because of good resale value. 'The asset therefore can be used to meet any type of emergency like social functions (marriage, death, birth etc), illness in the family, or consumption needs'.

This priority of the poor themselves can be understood in terms of changes which have been taking place in many agrarian societies. In two ways, the needs of poor people for such assets have generally become more acute. First, in many rural areas the costs of meeting contingencies have risen as have dowry prices in India, and health treatment in much of sub-Saharan Africa and elsewhere. Second, mutual help through 'primitive' sharing and patron-client relations has eroded or disappeared. Earlier, patrons often provided security by advancing loans to help their dependent clients meet large or sudden needs. With labour now more on an employer-employee cash basis and with weaker mutual social obligations, poor people face a new defencelessness. To meet contingencies, they need a substitute for their former patrons' support, but in government programmes this need is normally overlooked.

Nor have scholars and practical analysts often treated contingencies and asset disposal as central concerns. Some ethnographic studies

have, however, described contingencies and how they are met. Among these are F G Bailey's (1957) account of sales of land and jewellery in a village in Orissa, David Parkin's (1972) study of sales of land and palm trees in Kilifi District, Kenya, and Mead Cain's (1981) study of reasons for sale of land in three villages in India and one village in Bangladesh. Careful and useful though these are, they are limited in their geographical and cultural context and in the range of assets which are considered.

Nor, to our knowledge, has there as yet been any comparative analysis across cultures of types of contingencies and assets to indicate the relative value to poor people of different types of assets; or of how poor people use assets, and in what sequences, to deal with contingencies and to prevent or mitigate impoverishment. Yet assets can take many forms - land, crops, large and small domestic animals, rights of usufruct, huts, cooking pots, furniture, clothing, bicycles, carts, tools, weapons, cash, bank accounts, gold and silver and other ornaments, jewellery, future labour and so on; and the mortgaging, forfeiture, or sale of assets is so widespread as to be almost universal.

A further oversight in this context has been trees. In an earlier discussion of assets, vulnerability and poverty ratchet effects (Chambers 1983: 114-31) the only trees mentioned were Parkin's (1972) palms. A subsequent literature search for evidence of trees acting as buffers against contingencies conducted along several apparently promising tracks, has reaped little fruit. The literature dealing with small farmer production systems focuses almost exclusively on the crop and livestock combinations which provide the family's main means of economic support. Trees grown on farmland or in kitchen gardens are mentioned only peripherally if at all, and never paid enough attention to indicate their importance as assets. Some social anthropologists have considered farmland trees in detail, but more often in relation to cultural traditions surrounding them than to their place in a poor household's domestic economy (Srinivas 1976: 136, Malhotra and Basak 1984). Even where trees are an integral part of cropping or livestock systems their role in buffering contingencies seems to be ignored.

Studies of traditional agroforestry systems, for example the home gardens of South East Asia (Wiersum 1982), emphasise the reduced seasonal vulnerability provided by a continuous flow of products throughout the year. The role played by the tree component as a savings bank against other crises has received little attention.

A search of available literature which can be broadly grouped under the term 'social forestry', particularly that dealing with India, has revealed a disappointing lack of information about how the trees planted under farm and community forestry projects are actually used. In part this reflects the relative newness of most schemes, but it also reflects a real gap in research. The prevailing view among most State Governments and their sponsoring agencies has been that planting trees is an end in itself; hence 'official' project evaluation documents have stressed seedling adoption rates and target acreages of planting achieved (World Bank 1983a, 1983b). The spate of critical literature which argues that social forestry is failing to reach, and to meet the real needs of the poor (CSE 1985, Mahiti Project 1983, Shiva et al 1981) has started a fierce debate about who participates in social forestry projects. In its midst, the question of why the poor might want to participate has largely been ignored. Few studies have explored small farmers' motivations in undertaking farm and community forestry and none, to our knowledge, has examined in detail how those trees which have been planted contribute to the domestic economy. Hence evidence of their actual or planned use as savings banks has not come to light. Some researchers have been stimulated by the social forestry debate to look at the traditional uses of spontaneously planted farmland trees (Brokensha et al 1983, Campbell and Bhattarai 1983, Poulsen 1983). However, like the agroforestry literature, these studies emphasise flows (of fuel, fruit, fodder and other products) rather than the meeting of contingency crises. The few authors who mention the potential of trees as savings banks do so more in passing (Mascarenhas 1983: 57; Shah 1984: 65; Murray 1986) than as a central theme or focus.

These gaps in knowledge and analysis have many explanations. Professionals usually neglect the things that matter to the poor. As

already noted, normal professional analysis of deprivation defines poverty as lack of flows of food and income rather than lack of assets. Nor have professions been organised to notice trees in villages or on farmland; agricultural scientists have been concerned with crops, veterinarians and animal husbandry specialists with domestic animals, and foresters with trees in forests and plantations, rather than on private land. Foresters and others have also been influenced by rich country and temperate climate experience, where slow tree growth limits the value of trees as assets, with growth rates of the order of only one-tenth of those in the tropics (Douglas et al 1982: 195). For their part social anthropologists tended until recently to concentrate much of their attention to people, often either in remote locations where trees and tree products were abundant and therefore had little value for meeting contingencies, or in pastoral areas where trees were not a good source of money. A further factor has been the time lag in recognising the implications of the rapid rise in value of timber, fuelwood, charcoal and other tree products. Trees which had little capital value before the penetration of the market and the fuelwood shortages of the energy crisis, have now become prized capital assets, but policy has been slow to adjust to the change. Finally, tree tenure has recently been better recognised as a comparative subject, (Fortmann and Riddell 1985), emphasising that rights to trees are often separate from land tenure, sparking new ideas about tree reform.

Thus, in many rural areas of the Third World, costs of meeting contingencies have risen at the same time as traditional means of meeting them have weakened. Simultaneously, the market for trees and tree products has expanded and their value has risen. Together, these trends raise and sharpen questions about the past use and future potential of trees as savings banks of the rural poor to help them meet contingencies.

The Use of Trees to Meet Contingencies

There is much scattered evidence to show that trees and tree products are used to cope with contingencies. This evidence could be categorised according to type of contingency, the scale of need, whether the need is sudden or of slow onset, or whether it is unforeseen or foreseen. A more useful classification for our purposes is between direct use of trees or tree products, and their sale or mortgage for cash. This distinguishes subsistence and consumption (direct use) from market relations (sale or mortgage). Direct use tends to involve small quantities, while sale or mortgage can involve both small and large quantities. Moreover, it seems likely that with economic and social change, direct use has and will become relatively less significant and sale for cash more so.

(1) Direct use

Direct use of trees and tree products to meet contingencies takes two forms.

The first is where trees provide resources to deal with seasonal shortages (Chambers and Longhurst 1986: 45-7). Trees can be sources or recurrent flows of food, fodder and other useful material. When these flows are counterseasonal they help households get through the slack or lean months. For human food, examples include mangoes at the beginning of the rains; uvilla (Pourouma cecropiaefolia), a small tree of Brazil, Coloumbia and Peru which produces a small fruit over three months of the wet season; ber (Zizyphus spp) in North India in the late dry season; and the locust bean (Parkia spp) maturing in the dry season in West African savannah. For animal nutrition, some tree fodders similarly become available for livestock in the late dry seasons, for example Acacia albida which drops its pods when other fodder is scarce. Trees and tree products which help people and livestock to survive the worst times of the year reduce vulnerability at that time and diminish the dangers of impoverishment through sale of assets to buy food or through loss of livestock.

The second form of direct use is where a contingency entails a one-off need for trees or tree products. Examples are firewood for funeral

pyres or feasts, poles and timber for hut and house-building after fire, flood or house collapse, and replacing a lost boat or canoe. In these cases, ownership, of or access to suitable trees can meet the need, while lack of ownership or access can mean impoverishment through the need to dispose of other assets or to take debts.

The penultimate contingency for which people make provision is old age. In Benin, Marilyn Hoskins (pers comm 1986) found members of a cooperative rented land to plant trees as savings for their old age when they would not be able to do heavy fieldwork. The trees were to be harvested as need arose. With declining obligations to the aged accepted by the young, and in the absence of State social security schemes, this use for trees may become more common.

The ultimate contingency is death, with costs of a funeral and wood for a funeral pyre. In India it is reported to be quite common for trees to be reserved for funeral purposes. One old lady agreed to sell her land only when the purchaser agreed to leave in her possession three Acacia arabica trees for her funeral pyre (pers comm P K Aliyasami).

(ii) As a source of cash

Contingencies requiring cash are of two main types: those where a large sum is required, often suddenly; and those where only a small sum is needed but people are poor or desperate. Trees are found playing a part with both.

A large sum can be needed urgently for medical treatment, a funeral, rebuilding a house or hut or replacing lost or damaged capital equipment (draught oxen or buffalo, a fishing boat or net, etc). Large sums may be borrowed but often the debt cripples.

Examples of trees being used to meet contingencies are provided by David Parkin's (1972) study of palm trees in Kilifi District in Kenya. Transactions could be for palms and land together, or for palms on their own. Parkin noted that the greatest and most common contingent expenditure causing poorer men to dispose of their land and palms was

marriage and bridewealth. Others were expenses for a funeral or sacrifice; the costs of having a traditional doctor during a long illness of a family member; and money for food after a poor harvest or for other similar contingencies. Of these he found that costs of bridewealth and funerary expenditure had risen greatly. In addition:

'Natural or man-made misfortunes, of which the greatest is sickness, strike into the lives of men and their families with a suddenness which defies resistance or delay. Cures must be sought, sometimes at great expense, from a range of traditional doctors, whose various techniques are applied until success, or death, ensues. A poor harvest - a frequent occurrence after a drought or untimely heavy rains - causes people to turn to the shops or their more enterprising neighbours for purchases of maize. Adultery with another man's wife or seduction of a man's unmarried daughter is liable in the government court to compensation. Taxes, though a recurrent form of expenditure, may be due during what happens to be a lean period in the life of a family. Other needs may be minor but frequent, and debts accumulate. All these needs must be met in cash. Whatever the 'last straw' contingency is, the sale or pledging of palms and land is the surest way to raise cash quickly' (*ibid* 59-60).

The best documented type of crisis is need for cash to buy food. This can follow some natural disaster such as drought and floods or may result from a series of other contingencies and of needs for money. Patricia Ann Caplan's (1975) study of a Swahili community on the East African Coast was conducted during very dry years when one reason for the sale of trees was 'sheer lack of cash; several people sold a few (coconut) trees here and there to make ends meet' (1975: 42). Distress sale of trees because of drought is reported from Tamil Nadu, indicating 'that the villagers resort to short term exploitation of fuel resources in drought periods when their incomes fall drastically, unmindful of the long term consequences or their act' (Neelakantan *et al* 1983, cited in Foley and Barnard 1984: 56). The widespread cutting and selling of trees to combat disaster can also be inferred from Bangladesh where a strong correlation is reported between

the areas mapped as liable to famine and those mapped as having few trees. For Mbeere in Kenya, Brokensha and Riley (1980: 127) found that for many families burning and selling charcoal was the only way of raising money 'to meet expenses such as school-fees or even for the purchase of food when the rains fail'.

A tragic example of the cutting and sale of trees to buy food has been vividly recounted by Hartmann and Boyce in their book

A Quiet Violence, (1983: 160-167) about a Bangladesh village. A landless family - Abu, Sharifa and their six children - had suffered a long impoverishing sequence, selling land in a famine, doing badly in land inheritance divided between four brothers, and mortgaging and selling their wooden bed, cow, plough and land bit by bit to meet a succession of needs including medicine for Abu's sick mother and for Abu himself when he had paratyphoid. Sharifa's earrings and gold nose pin followed. Out of food, in debt, with creditors pressing for repayment at a time of year when cash and food were short, and needing money to buy seed to plant on sharecropped land, Abu cut down first the young mango tree, and then the young jackfruit tree on their small plot to sell the wood and roots for firewood. In the words of the book:

'Abu chops off another root, and continues, "There is no rice in my household and I have six children to feed. In June I cut down my mango tree and now I am chopping up my jackfruit tree. My children will never eat fruit - how can I afford to buy it in the Bazaar? Rich people in this country don't understand how my stomach burns".

Yesterday I went to Mahmud Haji's house and asked him to advance me some mustard seed. The ground is ready for planting, but I have no cash to buy seed. He told me, "Buy it yourself. My sharecroppers have to provide their own seed". He has bags of mustard seed in his house. How can a man be so mean?"

Abu arranges the cut roots into a neat pile. "I'll sell the roots as firewood too", he says, "Tomorrow I'll carry the wood to town".

(ibid: 167)

The case is cruel. The loss of the trees was a loss not just of appreciating capital, but also of future benefits from fruit. But the practical point is that where there is a local market for firewood, trees on homestead plots are assets which can be cut and sold at short notice to meet urgent needs.

The Use of Trees as Savings

It is not just that poor people in practice use trees to meet contingencies. They also plan to do so. Trees are often planted or retained as part of deliberate long-term strategies for savings and security. With the increased privatisation of land, and fewer trees on common property, the incentives and opportunities for using trees in this way have increased.

Examples are reported from many parts of the world. In Costa Rica and Ecuador it is common for farmers to plant a few trees around their dwellings in their fields, and cut and sell them for timber when money is needed for a wedding or a major cash outlay (Foley and Barnard 1980: 40). In Garhi village in Uttar Pradesh, Varun Vidyarthi (1984: 829) found that though most trees belonged to the large landholders, others did own a few trees and that they were planted in their courtyards or on bad patches of land. The wood from such trees was used only on special occasions or emergencies, such as a marriage feast or burning of the dead. In Kerala, although land holdings are often very small, large numbers of trees are grown. Though the principal species are coconuts and cocoa, farmers often include a few timber trees as well, and slow maturing species such as teak and mahogany are sometimes grown as long-term investments (Foley and Barnard 1980: 40-1). In Kakamega District in Kenya, exotic trees are planted as crops, or as a form of investment, to pay school fees, etc (Chavangi et al 1985: 11).

Dowry and wedding expenses can be provided for by trees. In Turkey, it is reported (Foley and Barnard 1980: 40) to be traditional to plant trees on the birth of a female child, as a kind of 'down payment' on her wedding. The same occurs in South India. Casuarina trees (Casuarina equisetifolia) were introduced into South India by

R H Elliot, a coffee planter in Mysore, in 1859 and spread rapidly among the wealthier farmers (Hill 1982: 165). In his classical study Some South Indian Villages (1918) Gilbert Slater, after noting the several benefits of the tree, concluded

'Hence a plot of barren land planted with casuarina is a splendid savings bank for a ryot who can foresee a period of heavy expense in six or seven years' time: as, the marriage of a daughter, or the education of a son at the University' (Slater 1918: 5).

In 1974, a large clump of casuarina beside the Cheyyar river in Tamil Nadu was pointed out as a matter of no exceptional interest as the dowry for a farmer's daughter. The planting of casuarina in parts of South India as the source of dowry or money for children's education may well be widespread.

The value of trees in strategies for savings and security is enhanced by their use to obtain credit and liquidate debt.

Concerning credit, tree pledging or leasing is practised in Nepal, Nigeria, Sierra Leone and Ghana (Fortmann 1985: 232). In Kenya, Parkin (1972: 60) noted the pledging of palms as a sure and fast way to raise cash to meet contingencies. In India a case is reported where an enterprising bank manager gave a consumption loan with trees as security (pers comm Aloysius Fernandez). From her field research in Karnataka, Polly Hill reports that

the possibility of letting out small plots for wood planting provides impoverished men with a reliable type of credit, since the lump sum granted them at the outset is automatically liquidated by the landowner's share of the net value of the wood when it is sold, which is usually agreed as one half (Hill 1982: 159).

Concerning liquidating debt, only one example is known to us. This is a farmer, Kalji Chatra of Thala village in Panchmahals District,

Gujarat, who pledged an acre of land to raise Rs3,000 to marry his son. Since the pledgee had the right to cultivate, there was no interest payable, which makes this a favourable case for redemption. The farmer planted 200 Eucalyptus on a small plot of land, and cut and sold them after only three years for Rs5,000 with which he redeemed the acre and invested in a better pair of bullocks (interview, February 1986).

Both the Karnataka practices of leasing out small plots of land, and the Panchmahals example of redeeming a debt by growing trees on a small plot, indicate the potential of tree-growing for avoiding or escaping from damaging debt. In the Karnataka practice, not only is credit obtained and indebtedness avoided, but at the end of the lease the lessor receives half of the net value of the wood as a further lump sum; nor is there any interest on the credit to be paid in the interval. In the Panchmahals example, it is noteworthy that it did not take long to repay. In good growing conditions, the appreciation in value of trees is like a very high interest rate in a savings bank, suggesting that poor people with suitable small plots of land may be able to accumulate wealth in trees fast enough to pay off debts even when interest rates are high.

Trees as Poor People's Assets

As savings and security against contingencies for poor people, trees can be compared with other assets. Whatever comparisons there will be local exceptions. The ratings in Table 1 are based on a priori reasoning as well as on empirical evidence. The ratings for trees assume an environment in which trees will grow, and that poor people can plant and protect them. Without these conditions, trees as banks and buffers are either valueless or liabilities.

The criteria in Table 1 are supposedly those of the poor themselves. They need empirical checking and should be investigated for each group of poor people and each set of conditions. As more is learnt about vulnerability and the priorities of the poor, the criteria will be modified. Accepting them provisionally, however, it is instructive to look more closely at how trees compare with the other assets - jewellery, large stock, small stock, land and bank deposits.

Disadvantages

The most marked comparative disadvantages of trees concern rights, cashability, marketing, and safety.

(i) land rights

Although tree tenure is separable from land tenure, many obstacles prevent poor people without land from planting or owning trees. Many of the 'landless' in Asia have small household plots but often these give little scope for growing trees. Proposals to permit landless and poor people to grow trees on public and wastelands, like roadsides, canal banks, and other common or government land face bureaucratic and departmental problems. A proposal for tree rights for the landless on such land in Bangladesh was taken over by the Forest Department. In India, however, tree patta programmes, designed to give the poor and landless rights to raise and use trees on such land, have been adopted in several States including Bihar, Uttar Pradesh, West Bengal and Maharashtra (pers comm N C Saxena). It remains to be seen how well these programmes can overcome the land access problem.

(ii) tree rights and cashability

Rights to jewellery, livestock, land and bank deposits are usually clear (though they can be complicated with large stock), and rights of owners to lease, mortgage, pledge or sell such assets are usually undisputed and unimpeded by law or bureaucratic regulation. But quite often rights and cashability are restricted with trees. With much social forestry, for example, rights are at best ambiguous. The poor are meant to benefit from the trees planted, but often do not own them or have rights to harvest them. Even where trees are on their own land, they are often prohibited by law, and impeded by bureaucracy, from cutting them down when they want to. An Earthscan publication (Eckholm et al 1984: 56-57) reports several examples. In parts of the Sahel farmers are unwilling to grow certain valuable trees because they are on the Forest Department's list of protected species. To harvest them, farmers have to prove that they planted them and then go through the laborious process of getting a permit to cut. Haitian

peasants who planted trees on their land as part of a programme were told they belonged to the government and that they would be punished if they were cut down. In the Dominican Republic, Honduras, and some other countries, ownership of all trees is vested in the government, and there are penalties for cutting any trees without permission, even those standing on a peasant's own land. The Philippines also has laws to control the cutting of trees and the process of getting a cutting permit is slow and cumbersome; as a result, some small farmers who have invested in tree growing find it difficult to harvest and sell their own trees. In Uttar Pradesh in India, tree cutting has similarly been prohibited on private land. Obtaining a permit is liable to be protracted and to involve costs in bribes, and cutting without a permit exposes the owner to prosecution or bureaucratic blackmail.

(iii) marketing

Marketing also presents problems. Wood (though not most other tree products) has a high weight to value ratio. Cash from the sale of the small amounts which can be headloaded will meet only small needs. Poor people often do not have draught animals and carts, or camels, donkeys, mules or horses, for transport. To hire these itself requires outlays or indebtedness. The alternative of selling standing trees or wood on site puts the vendor at a disadvantage. Reports are heard of much lower prices being paid for small lots of wood than for large, and big commercial buyers like Indian pulp factories may not be interested in buying small lots. A small farmer may not be able to attract competitive bidding for his trees, as recorded by F H Panthaky (1982) for Haryana in India.

(iv) risk of loss

Risk of loss of trees as assets is a less clearcut disadvantage. The vulnerability of trees varies. In the early stages of growth, and especially if they are planted on common land, fodder trees require protection from grazing animals or they will not survive. In dense stands in dry conditions fire is a hazard. Theft and malicious damage are dangers. In Ancient Greece, cutting one's defeated opponents

olive trees was a severe infliction of economic damage. On the outskirts of Pune in India recently, the three-year old agroforestry trees of the Centre for Development Studies and Activities were cut down and palms were cut up so that they could not be replanted; this was a reprisal and attempted intimidation because the Centre was tracking and exposing a land racket (pers comm Anita and Christopher Benninger, 1986). In other conditions, trees can be very safe, as reported by Pliny in the first century. A.D.

The whole wood or forest (of incense trees in the South Arabian coast) is divided into certain portions, and every man knoweth his own part: nay, there is not one of them will offer wrong unto another, and encroach upon his neighbours. They need not set any keepers for to look unto those trees that be cut for no man will rob from his fellow if he might, so just and true they be in Arabia.

(Pliny: 1964 edition)

Advantages

In some other respects trees have clear advantages over other types of assets. The most marked of these concern biology and economics:

(1) cheap establishment

Tree seedlings rarely cost much and have a trivial starting cost compared with jewellery, livestock, land, or bank deposits. Often seeds can be gathered and planted, or saplings can be found and transplanted, with little or no cost except labour, and labour is often the resource poor people have most accessible. Even where seedlings are purchased, they are usually cheap. Costs of watering and protection, however, vary considerably and can be high.

TABLE 1: SOME ASSETS OF THE POOR: COSTS, RISKS AND BENEFITS COMPARED

		Jewell- ery	Large Stock (cattle buffaloes, camels etc)	Small Stock (sheep, goats, hens etc)	Land	Bank Deposits	Trees
POSITIVE VALUES							
LOW COSTS	Low unit starting costs	-	-	0	+/-	0	+
	Low maintenance costs - herding, protection etc	+	-	-	-	++	+/-
LOW RISKS	Low disease vulner- ability to accident damage drought	++	-	-	+	++	+/-
	theft	0	-	-	+	++	+/-
RIGHTS SECURE	Property rights and cashability assured	++	+	++	+	++	(1) +/-0
HIGH BENEFITS	Rises fast in value (appreciates, breeds etc)	0	+	+	+/-0	(2) -	(3) ++/0
	Stores well	++	-	-	+	++	++
	Easy to pledge, mortgage or use as security for loan	++	+	0	+	()	+
	Provides flows of income food etc	-	+	+	+	0	+
	Easy to transport	++	+	+	()	++	-
	Divisible/small units for sale	+/-	-	+	+/-	++	+
	Good price for small amount	0	()	+	0	++	+/-
	Steady price	+	0	+	+	(++)	+
	Avoids obvious distress sale	+	-	0	-	++	+
	Regenerates after disposal	-	-	-	-	-	+/-

++ = strongly positive (good) - = usually negative (bad)
 + = usually positive (good) = = strongly negative (bad)
 0 = more or less neutral +/- = sometimes positive sometimes negative

NOTES

- (1) This is highly variable, but complete freedom to cut and sell appears to be exceptional where government regulation or programmes are involved.
- (2) It has been common in recent years for inflation to exceed the interest rates for savings bank accounts.
- (3) In good conditions. There are major differences between high rates of growth in much of the humid and semi-humid tropics, and slower rates in temperate climates and in the semi arid and arid tropics.

(ii) rate of appreciation

In tropical conditions where rainfall is adequate trees usually grow very fast, Leucaena leucocephala being outstanding. In good conditions, small stock, especially goats, can also breed fast. Trees in good conditions have here a dramatic advantage over bank deposits. Low rates of interest combined with inflation often mean that savings deposits earn negative interest in real terms, whereas most trees not only maintain or improve their value in inflation, but also appreciate in value rapidly from low starting investment costs.

(iii) divisibility

If trees are sold as firewood they are divisible into small units to fit needs closely. Part of a tree can be cut, or if trees are small, whole trees are like small units of currency. Small stock and low value jewellery are similar, but trees for firewood are as good or better.

(iv) regeneration

Many trees grow back after pollarding or coppice after cutting. The nearest equivalent to coppicing among other assets is with livestock dependent on limited private supplies of fodder, where the sale of sterile dry females or surplus males improves milk productivity and per unit breeding potential. With other assets there is no equivalent: jewellery, bank deposits, and land do not coppice when cashed.

Implications for Research

The evidence and analysis presented have implications for research. More empirical studies are needed of the potential and use of trees as savings banks and buffers, especially by poorer people.

Important topics include:

- security of rights and freedom to sell, including relations with bureaucracy.

- marketing arrangements in practice, including cooperative marketing (as with tree growers' cooperatives in Gujarat), small-holder grower schemes for pulp factories, arrangements for transport, and prices under different conditions.
- comparative analysis of the costs and benefits to poor people of different types of assets in different conditions, including trees of different types.
- studies of small farmer behaviour where complete freedom to cut and sell is vested in the farmer, and fully credible.
- studies of programmes or conditions in which landless people have or acquire disposable rights to trees without necessarily acquiring rights to the land on which the trees grow or stand.

Implications for Policy

Policy implications are linked with a shift in thinking to place more emphasis on enabling poor people to acquire and accumulate assets to meet contingencies. The livelihoods which poor people want and need can be defined as a level of wealth and of stocks and flows of food and cash which provide for physical and social wellbeing and security against becoming poorer. Almost all people who are defined as coming below poverty lines in terms of flows of income and consumption (food, goods in kind, and cash) already have strategies for piecing together a living, sometimes with a wide repertoire varying by season and location. A normal professional approach is to try to assure them employment, a job, or an asset which will provide for all or almost all their needs. An alternative is to reinforce their existing strategies and back them up, by adding to their assets, security and repertoire. Thus a household which is below some notional livelihood line, may be able to move above it through the addition, not of a

complete new livelihood, but of a significant component. If this is an appreciating asset to meet contingencies, the benefits can be strong: less anxiety, greater security, and more ability to think and plan ahead; less need for the goodwill of the powerful and rich, and so a weakening of dependent relationships which exploit the poor; less danger of becoming permanently poorer, for example by having to sell land and become landless, or by running into debt; and the direct benefits of being able to deal better with sickness, accidents, education costs, and the like.

Thus, trees as assets for the poor promise benefits in health, education and social relations, as well as more obvious long-term economic benefits.

Many of the policy implications will be specific to places and people, but four can be generalised. Of these the first is the most important and most misunderstood.

(i) ownership and rights (See Fortmann and Riddell 1985)

For trees to be good banks and buffers, ownership and rights must be unequivocal. If rights to cut and sell are not clear, or cannot be exercised immediately when needs arise, much of the value of trees to the poor is lost. Unfortunately, Forest Departments and other government officials do not think like bankers, nor are they subject to the same laws. Bankers are required by law to permit depositors to withdraw money at times chosen by the depositors. To restrict cutting and selling trees is like prohibiting people from withdrawing money deposited in a bank, unless perhaps by bribing the bank manager or his staff.

The policy issue here is of immense importance because of the common and deeply held belief among foresters, administrators and other professionals that poor people cannot be, and should not be, trusted with rights to do what they wish with trees. The belief, sincerely held, is that poor people so badly need to fulfill their requirements for daily subsistence, and are so unable and unwilling to take a long view, that given the rights and the option, they will not care for

their trees as a medium or long-term investment, but cut them down quickly. The ecological and economic benefits from trees will then be lost. The policy conclusion is a need, in the interests of the environment, to prohibit the cutting or harvesting of trees without permission.

This view appears to be mistaken. Conditions differ, and overgeneralising is a danger. But it is probably widely true that, paradoxically, restrictions on cutting create the very conditions which seem to justify them. Poor people who are not sure of their rights, or whether trees are theirs, will either cash them quickly, or neglect them. Such behaviour then seems to justify not trusting the poor.

On the other hand, when poor people have full ownership they try, often with great tenacity, to retain their assets. The more valuable trees are, or are likely to become, and the more they are appreciating in value, the more they may struggle to hang on to them. Abu and Sharifa disposed of other assets before they finally and painfully cut down and sold their trees. Even Sharifa's nose ring went before the trees. A sense of savings, investment and the future is also reflected in the attitude of farmers in Northeast Thailand. Where large trees remain in their paddy fields, as in many places near Khon Kaen, 'they are preserved "for the children" even though they may be in the middle of the paddy and require heavy pruning' (Grandstaff et al c. 1985). Another example is the Agroforestry Project launched in Haiti in 1982. This demonstrates a tenacious reluctance to part with trees when ownership and rights are clear. The Project was designed and implemented with a social anthropological input (Murray 1984, 1986). Rural Haiti was being devastated by tree cutting, as rural agrarian groups opened up new land, lumber firms extracted timber, and poor people cut trees to make and sell charcoal. In contrast with earlier approaches which restricted rights to cut, the Agroforestry Project treated trees as a cash crop for peasants, and from the start made it clear that

'You Will Be the Owners of Any Trees Planted'

and

'As far As We're Concerned, You Can Cut the Trees When You Want' (Murray 1984: 53). On this basis the Project was outstandingly successful, exceeding its targets many times. A social anthropologist who was involved has summarised the experience as follows:

Peasants originally plant the trees with a view to income generation, but may end up preserving the trees as insurance against emergencies. This meant that, though the tree planting went much faster than we ever dreamed possible because of the cash-generating focus, the tree harvesting is going much slower because of the risk calculus of the peasant owners. Skeptics had predicted just the opposite; the stubborn traditional peasants would of course refuse to plant trees or do so slowly; and once having planted the greedy impatient would vie with each other in rapidly cutting them down.

(Gerald Murray, pers comm 1986)

Poor peasants, it seems, will defer gratification from 'cashing' trees when they can; and trees have the great advantage over other crops that harvesting wood can not only be deferred, but is the equivalent of reinvestment which leads to higher returns later.

Another deeply held view is that trees should to the extent possible be held in common. Privatising is seen as retrograde. Allocating standing trees, or rights to plant trees, to households in ways which benefit the rich and exclude the poor is obviously to be guarded against. But allocating trees on common land to households can be done fairly and can reduce overexploitation, as in Gangpur village in Valsad District in Gujarat, where the village tackled and solved a 'tragedy of the commons' problem by allocating mahua trees to individual households, who then had an incentive for good husbandry. Moreover, trees held in common cannot so easily be used, if they can be at all, to deal with contingencies. Insisting on communal tenure for trees may be to deny poor households potential savings accounts.

The ultimate test is what poor people themselves want. The findings of the Mid-Term Review of the Madhya Pradesh Social Forestry Project

may be typical. Sessions were held with poor people to ask them their preferences for how wood from social forestry should be distributed. Four options were presented. It was difficult to get participants even to discuss the first three. These were involving the panchayat; organised cutting and then distribution; and subsidised purchase by the poor. The poor 'overwhelmingly' favoured the plan which divided up trees on the plantation equally, with each family allowed to gather wood from designated trees.

Poor people, like those who are not poor, are thus deeply concerned with rights and ownership. For trees to be good banks and buffers for them, they must own them and be allowed to harvest them at will.

(ii) marketing and prices

Ease of marketing and good prices are critical and complicated by the gestation of several years for most trees. Tree marketing cooperatives and special arrangements for bulking up and purchase of small lots are indicated where the purchaser is a pulp or other factory. Outgrower schemes for small farmers, comparable to those in East Africa for tea, deserve investigation. Where a new tree product is to be marketed, adequate numbers of trees and levels of production are needed for viability. In new settlements in Sri Lanka, this is sought with improved mangoes through subsidised planting in household clusters (pers comm Moore).

(iii) land reform

In India, land reform has faced many problems. Some can be mitigated by trees, especially now that they are worth more. The very small plots issued to landless households in the Kerala land reform were valuable for the scope they gave for growing a few trees. Similarly, poor quality land which is released under ceiling legislation in India has, through trees, a higher potential now than it would have done a decade or two ago. Even a limited land reform which allocates only small lots of low grade land to landless households, deserves scrutiny for potential gains to the poor through planting trees as banks and buffers.

(iv) tree reform

The separability of tree tenure from land tenure (Fortmann and Riddell 1985) opens up scope for rights for the landless to trees on common land or public land including forests. This can be through allocations of trees already growing, or through new planting. A positive lesson from the tragic case of Abu and Sharifa is the big difference that trees can make to a poor family, even on a small plot of land. Tree reform which allocated trees and rights to plant trees on the fringes of blocks of forest land, for example, could make a major impact on the deprivation of the landless and poor who live nearby.

Conclusion

Trees for the poor are not a panacea, but the evidence suggests that they have more potential for reducing deprivation than has been recognised. Seen from the point of view of the poor themselves, they are like bank deposits with low initial deposits and high rates of appreciation. Professionals have been slow to see that the value of trees to the poor is greater than it used to be. A number of promising pilot projects and programmes, such as social security forestry in Gujarat, and the social forestry programme in West Bengal, have given landless and poor people rights in trees. The question now is what lessons can be gained from the experience in India and elsewhere so far; and whether official policies can be turned around and bureaucratic attitudes and reflexes reversed to enable and allow many more poor people to own and use trees as savings.

References

- Bailey, F G, 1957, Caste and the Economic Frontier: a Village in Highland Orissa, Manchester University Press.
- Brokensha, David and Bernard W Riley, 1980, 'Mbeere Knowledge of Their Vegetation and Its Relevance for Development: a Case-Study from Kenya' in David Brokensha, D M Warren and Oswald Werner (eds), Indigenous Knowledge Systems and Development, University Press of America, Lanham (MD) pp113-29.
- Brokensha, D; B W Riley and A P Castro, 1983, 'Fuelwood Use in Rural Kenya: Impacts of Deforestation', revised draft report, Institute for Development Anthropology, New York.
- Cain, Mead, 1981, 'Risk and Insurance: Perspectives on Fertility and Agrarian Change in India and Bangladesh', Population and Development Review 7,3, September.
- Campbell, J G and T N Bhattarai, 1983, 'People and Forests in Hill Nepal: Preliminary Presentation of Community Forestry Household and Ward Leader Survey' (Draft).
- Caplan, Ann Patricia, 1975, Choice and Constraint in a Swahili Community: Property, Hierarchy, and Cognatic Descent on the East African Coast, Oxford University Press.
- Chambers, Robert, 1983, Rural Development: Putting the Last First, Longman, Harlow.
- Chambers, Robert and Richard Longhurst, 1986, 'Trees, Seasons and the Poor', in Richard Longhurst (ed), 'Seasonality and Poverty', IDS Bulletin Vol.17 No.3, July, pp.44-50.
- Chavangi, Noel A; Rutger J Engelhard, and Valerie Jones, 1985, 'Culture as the Basis for Implementing Self-Sustaining Woodfuel Development Programmes', The Beijer Institute, P O Box 56212, Nairobi (mimeo).
- CSE, 1985, The State of India's Environment 1984-85, The Second Citizens' Report, Centre for Science and Environment, New Delhi.
- Douglas, J, Robert A Sholto, J Hart and G Shankar Ranganathan, 1982, Forest Farming: Prosperity for India, Natraj Publishers, Dehra Dun.
- Eckolm, Erik, Gerald Foley, Geoffrey Barnard and Lloyd Timberlake, 1984, Fuelwood: the Energy Crisis that Won't Go Away, Earthscan/International Institute for Environment and Development, London.
- Foley, Gerald, and Geoffrey Barnard, 1984, Farm and Community Forestry, Earthscan Technical Report No.3, International Institute for Environment and Development, London.

- Fortmann, Louise and James Riddell, 1985, Trees and Tenure: an Annotated Bibliography for Agroforesters and Others, Land Tenure Center, University of Wisconsin, Madison, Wisconsin, and International Council for Research in Agroforestry, Nairobi, January.
- Fortmann, Louise, 1985, 'The Tree Tenure Factor in Agroforestry with Particular Reference to Africa', Agroforestry Systems, 2: 229-51.
- Grandstaff, Somluckrat, Terry Grandstaff, Pagarat Rathakette, David Thomas and Jureerat Thomas, c. 1985, 'Trees in Paddy Fields in Northeast Thailand', forthcoming in Gerald C Marten (ed) Traditional Agriculture in Southeast Asia: a Human Ecology Perspective, Westview Press, Boulder (Co.)
- Hartmann, Betsy and James K Boyce, 1983, A Quiet Violence: View from a Bangladesh Village, Zed Press, London.
- Hill, Polly, 1982, Dry Grain Farming Families: Hausaland (Nigeria) and Karnataka (India) Compared, Cambridge University Press.
- Hirway, Indira, 1986, Abolition of Poverty in India, with Special Reference to Target Groups Approach in Gujarat, Vikas Publishing House, New Delhi.
- Mahiti Project, 1983, 'A Question: Why is Social Forestry Not social?' Prepared for the Ford Foundation workshop on Social Forestry and Voluntary Agencies, 13-15 April, Badkhal Lake, Haryana.
- Malhotra, K C and J Basak, 1984, 'A Note on the Cultural Ecology of Husbanded Plants', Draft submitted to South Asian Anthropologist.
- Mascarenhas, O A (ed), 1983, Community Forestry Management, Progress Report (September 1981 - June 1983), Xavier Labour Relations Institute, Jamshedpur, June.
- Murray, Gerald F, 1984 'The Wood Tree as a Peasant Cash-Crop: An Anthropological Strategy for the Domestication of Energy' in Charles Foster and Albert Valdman (eds), Haiti - Today and Tomorrow: An Interdisciplinary Study, University Press of America, Lanham (MD).
- _____, 1986, 'Seeing the Forest While Planting the Trees: an Anthropological Approach to Agroforestry in Rural Haiti', in D W Brinkerhoff and J C Garcia Zamor (eds), Politics, Projects and People: Institutional Development in Haiti, Praeger.
- Neelakantan et al, 1982, Social Forestry Project in Tamil Nadu, Survey Report, Department of Economics, Bharathidasan University, Tiruchirapalli.

- Panthaky, F M, 1982, 'Farmland Plantations Including Agroforestry', paper published for Haryana 1982 All India Social Forestry Workshop.
- Parkin, David J, 1972, Palms, Wine and Witnesses: Public Spirit and Private Gain in an African Farming Community, Intertext Books, London.
- Pliny, 1964, Natural History, McGraw Hill.
- Poulsen, G, 1983, 'Using Farm Trees for Fuelwood', Unasyiva Vol.35 No.141.
- Shah, Anil, 1984, 'NREP and IRDP Assistance - Guidelines to Voluntary Agencies' in The Role of Voluntary Agencies in Wasteland Development, Seminar at VIKSAT, Nehru Foundation for Development, Ahmedabad, 11, 13 october.
- Shiva, V, H C Sharatchandra and J Bandyopadhyay, 1981, 'Social Economic and Ecological Impact of Social Forestry in Kolar', Indian Institute of Management, Bangalore.
- Slater, Gilbert, 1918, Economic Studies, Volume I: Some South Indian Villages, Humphrey Milford, Oxford University Press.
- Srinivas, M N, 1976, The Remembered Village, Oxford University Press.
- Vidyarathi, Varun, 1984, 'Energy and the Poor in an Indian Village' World Development, Vol.12 No.8, August, pp.821-36.
- Wiersum, K F, 1982, 'Tree Gardening and Taungya on Java: Examples of Agroforestry Techniques in the Humid Tropics' Agroforestry Systems 1, 53-70.
- World Bank, 1983a, Gujarat Community Forestry Project Mid-Term Review Mission Report Washington DC.
- _____, 1983b, Uttar Pradesh Social Forestry Project Mid-Term Review Mission Report Washington DC.



Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



APPROACHES TO SOCIAL FORESTRY IN WESTERN INDIA: SOME ASPECTS OF NGO EXPERIENCE

Parmesh Shah and Andrew Weir

Parmesh Shah and Andrew Weir are Programme Officers with the Aga Khan Foundation in New Delhi and Geneva respectively.

Approaches to Social Forestry in Western India: Some aspects of NGO experience

This somewhat eclectic paper outlines some approaches to social forestry in India by briefly reviewing examples of projects supported by the Aga Khan Foundation (AKF) and concludes with the identification of major themes, based on the experience of the last three years. The paper is not a detailed review of the projects; but is intended to highlight activities relating to trees and the poor and to stimulate discussion of the issues raised.

A. INTRODUCTION

1. The Problem

Deforestation in India is taking place at an alarming rate. In the three states which are of primary interest to AKF (Rajasthan, Maharashtra, and Gujarat) the National Remote Sensing Agency has estimated that between 1972 and 1982 forest cover fell by 47%, 25% and 46% respectively. In addition, by 1982, only 17%, 47% and 26% of the land controlled by the Forest Department in these three states was actually afforested (CSE: 1985). This situation has serious implications for the poor (and particularly tribals) who have traditionally relied on forests for much of their livelihood.

Furthermore, increasing pressure from commercial interests and human and livestock populations has led to encroachment on and increasing degradation of the common lands from which the poor in these states have traditionally derived a significant proportion of their income and employment (Jodha: 1986).

2. The Context

Socio-economic: The vast majority of Indian villages are socially and economically heterogeneous with serious distortions in the ownership of resources. Traditional systems for ensuring that the poor have access to productive common property resources (CPRs), including wastelands, are breaking down and the economically powerful are gaining control. It is only where common lands are truly 'wastelands' that access by the poor is not in some way curtailed.

Technical: Technical solutions to the problems faced by villagers attempting to develop and invest in trees in arid and semi-arid areas of the country are commonly not available to those who could benefit from them. In addition to the weak links between research centres, the extension services and farmers, few NGOs have the expertise to adequately address the technical issues of species selection, husbandry, and soil and water conservation and marketing.

Legal: One aim of Indian forest laws is to separate trees from villagers and, in that, they have largely succeeded. Traditional rights on the use of forest products have been eroded and legal and bureaucratic obstacles are affecting attempts by the poor to gain access to forest land. Similar difficulties attend efforts to develop village wastelands for the benefit of the poor.

External Support: Until recently, reforestation/wasteland development activities have started with nursery raising and ended with planting. Little (if any) attention was given to maintenance and protection of the seedlings: nor to the involvement of villagers in conceptualisation and planning. Furthermore, benefits tended to flow disproportionately to the more powerful groups since the poor were not sufficiently organised to gain access or to maintain the benefits from such programmes. Despite the establishment of the National Wastelands Development Board (NWDB), there has been little change of government emphasis towards post planting care. Some technical innovations, including soil and water conservation, proposed by NGOs require additional sources of finance and access to technical and managerial support.

3. AKF Strategy

The main thrust of AKF's social forestry strategy in India is to work with local NGOs to:

- assist the poor and landless to gain access to common village property and Forest Department land on which they can grow appropriate trees and grasses for additional income generation.
- select cost-effective technical solutions appropriate to a particular ecological zone and establish links with sources of technical innovation; to initiate relevant field-based experimentation.
- organise local communities to undertake development work effectively, efficiently and equitably and assist them to increase the effectiveness of government services and to ensure a more equitable access to those services.

B. EXAMPLES

The following four examples, based on the work of local NGOs in Rajasthan, Maharashtra and Gujarat, illustrate various approaches to addressing the crucial issues facing the rural poor through social forestry.

1. Rajasthan: South Aravallis Mountains

The South Aravallis mountain range is severely denuded and epitomises the general state of the western Rajasthan environment, the exploitation of which has led to four distinct trends (SPWD: 1985):

- More than 50% of the area is now classified as degraded wastelands: and the degradation is continuing.
- A critical shortage of fuelwood is accelerating the destruction of the remaining forest resources of the state and increasing the burden on women.
- The shortage of fodder is skewing the livestock population in favour of goats which can survive

in the arid and semi-arid environments although they are less productive than the cattle they are replacing.

- inappropriate arable farming is accelerating the destruction of the already impoverished soil.

Against this background, a consortium of five local NGOs has been working, since 1985, on a major social forestry programme aimed at arresting environmental degradation and supplementing the fodder, fuel and income sources of the local villagers. Technical and managerial support is provided by the Society for Promotion of Wastelands Development (SPWD), a Delhi-based national NGO.

The managerial approach adopted by the NGOs is to persuade the local villagers to develop their wastelands on a catchment basis. The formation of a village organisation to decide on the local management issues of the supply of labour, regulation of grazing, and the equitable distribution of benefits is a prerequisite for external support. The villagers response to this initiative has been very enthusiastic because the visible destruction of their livelihoods has been sudden and dramatic and they are in desperate need of income. Therefore the employment generated in digging pits for tree planting, building water conservation structures, establishing and operating nurseries, and protecting the planting sites is an important and effective incentive.

Most of the available wasteland is undulating community land which currently provides only limited grazing for goats. Water conservation is critical to the survival and growth of trees in the area and conservation works including gully plugs, small check dams and on-field water harvesting structures are an integral part of the NGOs' development model. The sites are physically protected from grazing by the construction of traditional dry stone walls along the catchment boundaries.

An interesting village initiative is the establishment of seed banks using tree seeds of local species collected by village women, children

- 539 SHIVA, V.; BANDYOPADHYAY, J. Environmental conflicts and public interest science. Economic and Political Weekly 1986. 21(2):84-90. {Location: 2122}
- 540 SHIVA, V.; SHARATCHANDRA, H. C.; BANDYOPADHYAY, J. Social economic and ecological impact of social forestry in Kolar. Bangalore, India: Indian Institute of Management, 1981. 83p. {Location: F 150}
- 541 SHIVA, V.; SHARATCHANDRA, H. C.; BANDYOPADHYAY, J. Social forestry: No solution within the market. The Ecologist 1982. 12(4):158-168 {Location: F 124}
- 542 SIDA; GOVERNMENT OF INDIA. The Bihar social forestry project for the Chotanagpur and Santhal Parganas. Stockholm, Sweden: SIDA, 1984. 47p. {Location: F 82}
- 543 SIMON, J. L. Disappearing species, deforestation and data. New Scientist 1986. 15 May:60-63. {Location: F 108}
- 544 SIMONIS, U. E. Environmental crises: The missing dimension in the North-South dialogue. Economics 1984. Vol 30:48-64.
- 545 SINGH, CHHATRAPATI; PAUL, T.; THAKUR, A. A policy for wasteland development. In: National Workshop on Landless People and Wastelands Development, 3-4 April 1986, sponsored by the Society for Promotion of Wasteland Development, New Delhi. 1986. 142p. {Location: F 136}
- 546 SINGH, CHHATRAPATI. Forestry and the law. Abstract of 6 volume report on amending the forest laws, submitted to the National Wasteland Development Board, Ministry of Environment, Government of India, by the Indian law Institute, given at the workshop on Common Property Resources held at Sariska Palace, Rajasthan, 9-11 May 1987. 20p. {Location: F 223}
- 547 SINGH, CHHATRAPATI. Fundamental principles of legislating for rural development. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, 19-20 January 1984. 8p. {Location: F 248}
- 548 SINGH, CHHATRAPATI. Common property & common poverty: India's forests, forest dwellers & the law. Delhi: Oxford University Press, 1986. 76p. {Location: BH/ABB}
- 549 SINGH, K. A CPR-focussed development perspective. A note prepared for discussion at the workshop on Common Property resources, held at Sariska Palace, May 9-11 1987. 5p. {Location: F 230}
- 550 SINGH, M. K. Community forestry: Its nature, problems and prospects. 1981. 16p. {Location: 2259}
- 551 SINGH, M. K.; MASCARENHAS, O. A. Ecological analysis of a forest-based tribal village in Singhbhum (Bihar) for a follow-up land resource management action. Bihar, India: Xavier Institute, 1980. 38p. {Location: 2280}
- 552 SITARAM RAO, M. Introduction to social forestry. New Delhi: Oxford and IBH Publishing Company, ND. 77p. {Location: 2460}
- 553 SIVANANDAN, P. Land hunger and deforestation. Economic and Political Weekly 1986. 21(13): 546-550.

- 554 SIWATIBAU, S. Rural energy in Fiji: A survey of domestic energy use and potential. Ottawa, Canada: International Development Research Center, 1981. 132p. {Location: F 97}
- 555 SJOHOLM, H. An approach to community forestry training and extension - the case of Ethiopia. 1985. 9p. {Location: 2417}
- 556 SKUTSCH, M. M. Forestry by the people for the people: Some major problems in Tanzania's village afforestation programme. International Tree Crops Journal 1985. No 3:147-170. {Location: P-Batanz}
- 557 SKUTSCH, M.M. Participation of women in social forestry programmes. BOS Newsletter 1986. 13,5(1):9-18. {Location: 2411}
- 557a SKUTSCH, M. M.; WIERSUM, K. F.; WUITE, J. Kenya woodfuel development programme mid-term review. Final report for the Directorate General for International Cooperation, Ministry of Foreign Affairs, Kenya. 1986. 42p. {Location: F 291}
- 558 SKUTSCH, M. M. The not-so social forestry in Gujarat, India. In: Revised version of VDK working paper no.29, Technology and Development Group, University of Twente, the Netherlands. 1987. {Location: F 122}
- 559 SKUTSCH, M. M. The success of mixed motives: Stove and forestry programmes in Gujarat. Technology and Development group, Enschede. 1986. 14p. {Location: F 24}
- 560 SKUTSCH, M. M. Why people don't grow trees. Washington, D.C.: Resources for the Future, 1983. 100p. {Location: F 27}
- 561 SMIL, V.; KNOWLAND, W. E. Energy in the developing world: The real energy crisis. Oxford: Oxford University Press, 1980. 386p. {Location: ABF}
- 562 SMITH, R. D. Seed banks: A useful tool in conservative plant evaluation and exploitation. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 321-331). London: George Allen & Unwin. 1985. {Location: F 273}
- 563 SOCIAL FORESTRY MONITORING ADVISORY BOARD. Social forestry project in Tamil Nadu. Report on preliminary surveys (2nd round), from Social Forestry Monitoring Advisory Board, Madras. 1982. 42p. {Location: F 161}
- 564 SOCIAL FORESTRY MONITORING ADVISORY BOARD. Social forestry project in Tamil Nadu. Summary report-third phase, first round, Social Forestry Monitoring Advisory Board, Department of Agricultural Economics, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore. 1983. 37p. {Location: F 162}
- 565 SOCIAL FORESTRY MONITORING ADVISORY BOARD. Social forestry project in Tamil Nadu. Summary report, third phase, second round, Department of Agricultural Economics, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore. 1984. 31p. {Location: F 163}
- 566 SOHANI, G. G. Integrated tribal rehabilitation programme, VANSDA: A background note. In: National Workshop on Landless People and Wastelands Development, 3-4 April 1986, sponsored by the Society for the Promotion of Wasteland Development, New Delhi. 1986. 7p. {Location: F 139}

- 567 SOLLART, K. The javanese mixed home garden as a plant genetic resource. Jakarta, Indonesia: Fakultas Kehetanan Universitas Gadjah Mada, 1986. 52p. {Location: 2458}
- 568 SPEARS, J. Deforestation issues in developing countries the case for an accelerated investment programme. Commonwealth Forestry Review 1985. 64(4):313-343. {Location: 2424}
- 569 SPRENT, J. I. Nitrogen fixation in arid environments. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew 23-27 July 1984 (pp. 216-229). London: George Allen & Unwin. 1985. {Location: F 266}
- 570 SRIVASTAVA, B. P.; PANT, M. M. Social forestry on a cost benefit analysis framework. The Indian Forester 1979. January:2-20. {Location: F 132}
- 571 SRIVASTAVA, H. C. CPR-based anarcho-syndicalism: Utopia and reality. Paper presented at the workshop on Common Property Resources held at Sariska Palace, Rajasthan, May 9-11 1987. 5p. {Location: F 229}
- 572 SRIVASTAVA, H. C. A study of common property resources and the nature of dependency of rural and tribal poor. Research proposal presented at a workshop on Common Property Resources held at ICRISAT Center, January 19-20, 1984. 14p. {Location: F 246}
- 574 STBERG, W. The Kondoa transformation: Coming to terms with soil erosion in Central Tanzania. Uppsala: Scandinavian Institute of African Studies, 1986. 99p. {Location: BATanz/ABO}
- 575 STEWART, J. Community forestry development in Nepal. Commonwealth Forestry Review 1984. December:121-128. {Location: F 186}
- 576 STIENEN, H. Prosopsis tamarugo in the Chilean Atacama: Ecophysiological and reforestation aspects. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 103-116). London: George Allen & Unwin. 1985. {Location: F 259}
- 577 STOCKING, M. Development projects for the small farmer: Lessons from eastern and central Africa in adapting conservation. Photocopy, source unknown. ND. {Location: F 282}
- 578 SUKLWONG, S. Agroforestry research status and needs in Thailand. 1982. 10p. {Location: 2248}
- 579 SUNOTT, T. J. A report on the status, importance and protection of the montane forests: Impact of human activities and land use practices on grazing lands: UNEP-MAB integrated project in arid lands. 1979. {Location: 5454}
- 580 SURIN, V.; BHADURI, T. Forest produce and forest dwellers. FAO/GI seminar "Forest and Women", Dehradun, December 1980. 14p. {Location: 2285}
- 581 SWAMINATHAN, S. Environment: Trees versus man. 1982. Typescript. {Location: 2299}

- 582 TAKOETA, T. P. Forestry and landuse improvement in northern Cameroon. Unpublished MSc thesis, University College of North Wales, Department of Forestry and Wood Science. 1986. 94p. {Location: F 196}
- 583 TAMIL NADU AGRICULTURAL UNIVERSITY. DEPARTMENT OF AGRICULTURAL ECONOMICS. Report of the study on social forestry in Dharmapuri and North Arcot districts. Coimbatore, India: Department of Agricultural Economics, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, 1983. 103p. {Location: F 135}
- 584 TAMIL NADU AGRICULTURAL UNIVERSITY. DEPARTMENT OF AGRICULTURAL ECONOMICS. Social forestry project in Tamil Nadu. Summary report, Department of Agricultural Economics, Centre for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore, India. 1982. 38p. {Location: F 160}
- 585 TAYLOR, F. W. The potential for the commercial utilisation of indigenous plants in Botswana. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew 23-27 July 1984 (pp. 231-252). London: George Allen & Unwin. 1985. {Location: F 267}
- 586 TAYLOR, R. Afforestation and fuelwood in China. Development Digest 1979. Vol 17:31-35. {Location: 2421}
- 587 TEMBO, D. N.; CHANDRASEKHARAN, C.; FAO. Understanding tree use in farming systems: Workshop on planning fuelwood projects with participation of rural people. Rome: FAO, 1984. 82p. {Location: F 78}
- 588 TEWARI, D. N.; SUSAPETA, E. Formulation and economic assessment of an intensive forestry project for the Bastar region of Madhya Pradesh. Interim report, Ford Foundation, New Delhi. 1973. {Location: F 159}
- 589 TEWARI, R. N. Effective policies and management perspectives for stimulating growth in the forest based economy - Chotanagpur plateau case study. Book to be published by Sussex University. A Collection of papers on Programme on Community Forestry Management and Xavier Labour Relations Insititute, Jamshedpur, India. ND. {Location: 2456}
- 590 TEWARI, R. N.; MASCARENHAS, O.A. Village Khakripara: Its community forestry experiment. Jamshedpur, India: Public Systems Management Centre, Xavier Labour Relations Institute, 1982. 144p. {Location: F 134}
- 591 THAMAN, R. R. Urban agroforestry: The Pacific islands and beyond. Unasylva 1987. No 155:2-13.
- 592 THOMPSON, M.; WARBURTON, M.; HATLEY, T. Uncertainty on a Himalayan scale: An institutional theory of environmental perception and a strategic framework for the sustainable development of the Himalaya. London: Milton Ash Editions; Ethnographica, 1986. 162p. {Location: ABJ}
- 593 THOMSON, J. T. Deforestation and desertification in twentieth century arid Sahelian Africa. USA: 1983. 38p. {Location: 2332}
- 594 THOMSON, J. T. Local environmental management practices and orientations for rural forestry in Mali's fifth region. Mali: Report prepared for USAID/BAMAKO 7 March 85. 1985. 33p. {Location: 2433}

- 595 THOMSON, J. T. Peasant perceptions of problems and possibilities for local level management of trees in Niger and Upper Volta. Paper presented to the 23rd Annual meeting of the African Studies Association, Philadelphia, PA, October 1980. 22p. {Location: F 9}
- 596 THUNBERG, J. Village nurseries for forest trees - how to set them up and how to run them. Stockholm, Sweden: SIDA, 1984. 38p. {Location: 2462}
- 597 TIETEMA, T. Firewood for Botswana: Towards a sustained harvest of firewood. Harare, Zimbabwe: Unesco (MAB) Zimbabwe, 1984. 10p. {Location: 2381}
- 598 TIMBERLAKE, L. The Sahel: Permanent disaster area. Earthlife News 1986. No 5:43-48.
- 599 TIMMERMANN, B. N.; HOFFMANN, J. J. Resins from Grindelia: A model for renewable resources in arid environments. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 357-368). London: George Allen & Unwin. 1985. {Location: F 276}
- 600 TIWARI, K. M. Influence of policy and law on the forest resources management in India. The Indian Forester 1985. 11(11):899-918. {Location: F 130}
- 601 TIWARI, K. M. Role of social forestry in village economy. Dehra Dun, India: Forest Research Institute and Colleges, 1983. 25p. {Location: 2467}
- 603 TSCHINKEL, T. Tree planting by small farmers in upland watersheds: Experience in Central America. Invited paper prepared for IXth World Forestry Congress. 1984. 14p. {Location: F 205}
- 604 TURNBULL, J. W. Multipurpose Australian trees and shrubs. Canberra, Australia: Australian Centre for International Agricultural Research, 1986. 316p. {Location: 2452}
- 605 UNDP/CONGAD CONSULTATION ON REFORESTATION. New approaches [Senegal]. Senegal: UNDP/Congad, 1985. 72p. {Location: 2387}
- 606 UNECA. Survey of economic and social conditions in Africa 1985-1986. Addis Ababa: UNECA, 1987. 250p. {Location: BA}
- 607 UNEP. The state of the environment 1986: Environment and health. Nairobi, Kenya: UNEP, 1986. 83p. {Location: ABJ}
- 608 UNITED NATIONS DEVELOPMENT PROGRAMME; ENVIRONMENT AND POLICY INSTITUTE EAST-WEST CENTER; REGIONAL OFFICE FOR ASIA AND THE PACIFIC OF THE FAO. Community forestry: Some aspects. Bangkok, Thailand: Regional Forestry Economist, FAO Regional Office, 1984. 149p. {Location: 2354}
- 609 US INTERAGENCY TASK FORCE ON TROPICAL FORESTS. The world's tropical forests: A policy, strategy and program for the United States. Washington: US Government Printing Officer, 1980. 53p. {Location: 2339}
- 610 VAINIO-MATTILA, A. Bura fuelwood project: Domestic fuel economy. Helsinki: University of Helsinki Institute of Development Studies, 1987. 164p. {Location: ABB}

- 613 VEER, C. P. Management of agroforestry: A selective annotated bibliography for educational purposes. 1981. 15p. {Location: 2099}
- 614 VERGARA, N. T. Integral agro-forestry: A potential strategy for stabilizing shifting cultivation and sustaining productivity of the natural environment. Honolulu, Hawaii: East-West Center, 1981. 33p. {Location: 2369}
- 615 VERGARA, N. T.; NAIR, P. K. Agroforestry in the South Pacific region: An overview. Agroforestry Systems 1985. 3:363-379. {Location: 2319}
- 616 VERGARA, N. T. Agroforestry systems: A primer. Honolulu, Hawaii: East-West Center, 1985. 28p. {Location: 2373}
- 617 VERGARA, N. T. New directions in agroforestry: The potential of tropical legume trees: Improving agroforestry in the Asia-Pacific tropics. Honolulu: Environment and Policy Institute, East West Center, 1982. 52p. {Location: 2317a}
- 618 VERGARA, N. T. New directions in agroforestry: The potential of tropical legume trees: Initial tasks in agroforestry projects. Honolulu: Environment and Policy Institute, East West Center, 1982. 9p. {Location: 2317e}
- 619 VERGARA, N. T. New directions in agroforestry: The potential of tropical legume trees: Selection of legume trees for agroforestry. Honolulu: Environment and Policy Institute, East West Center, 1982. 26p. {Location: 2317b}
- 620 VERGARA, N. T. New directions in agroforestry: The potential of tropical legume trees: Economic evaluation of agroforestry projects. Honolulu: Environment and Policy Institute, East West Center, 1982. 22p. {Location: 2317c}
- 621 VERGARA, N. T. New directions in agroforestry: The potential of tropical legume trees: Sustained outputs from legume-tree based agroforestry systems. Honolulu: Environment and Policy Institute, East West Center, 1982. 36p. {Location: 2317d}
- 622 VERMA, B. L. Draft social forestry project in Rajasthan: A review. The Barbed Wire Culture 1982. pp29-32 May. {Location: 2274}
- 623 VERMA, B. L. Gang rape in Kerala. Action for Food Production, C-17 Community Centre Safdarjung Development Area, New Delhi, India. ND. 12p. {Location: F 177}
- 624 VERMA, B. L. Vanishing forests of Maharashtra. Action for Food Production, C-17 Community Centre, Safdarjung Development Area, New Delhi, India. ND. 5p. {Location: F 178}
- 625 VIDYARTHI, V. Renewable energy development alternatives: Village experiences and indicators for policy. Economic and Political Weekly 1985. 20(45-47):1953-1960. {Location: F 207}
- 626 VIKSAT. The role of voluntary agencies in wasteland development. Report and recommendations of seminar held at VIKSAT, Nehru Foundation for Development, Ahmedabad 11-13 October 1984. 70p. {Location: F 173}

- 627 VINK, A. T. Proceedings of the consultative seminar on integrated forest management, Eastern Region, Sudan. Rome: FAO; Government of the Republic of Sudan; Netherlands Government, 1986. 51p. {Location: F 80}
- 628 VOHRA, B. B. The greening of India. The BAIF Journal 1985. 5(2&3):23-30. {Location: F 121}
- 629 VOHRA, B. B. Management of natural resources: Urgent need for fresh thinking. Address to the Conference of State irrigation ministers. Advisor for Board of Energy, India. 1986. 12p. {Location: F 94}
- 630 VOHRA, B. B. National committee of environmental planning's recommendations regarding the national forest policy. Chairman (Vohra) of the National Committee on Environmental Planning, Department of Environment, New Delhi. 1983. 19p. {Location: 2474}
- 631 WAHLGUST, H. Midterm review mission to the Tamil Nadu social forestry project 19.11-10.12. Delhi/Madras, India: SIDA (Sweden), 1984. 193p. {Location: 2487}
- 632 WEBB, R. Community forestry in Sudan. Dublin, Ireland: National Institute for Physical Planning and Construction Research, 1985. 46p. {Location: 2441}
- 633 WEIDELT, H. Silvicultural opportunities in the tropical moist forest. Plant Research & Development: A Biannual Collection of Recent German Contributions Concerning Development Through Plant Research 1986. Vol 24:93-108.
- 634 WEINSTEIN, A. Supplementary data on tree introductions in the Negev region of Israel. Bet Dagan, Israel: Volcani Center; Agricultural Research Organization, Department of Forestry, Ilanot, 1985. 37p. {Location: F 84}
- 635 WEINSTOCK, J. A. Alternate cycle agroforestry. Agroforestry Systems 1985. 3(4):387-398.
- 636 WEINSTOCK, J. A.; VERGARA, N. T. The land or the plants: Agricultural tenure in agroforestry systems. Unpublished typescript to be published in Agroforestry Systems, March 1984. 7p. {Location: F 190}
- 637 WEINSTOCK, J. A. Tenure and forest lands in the Pacific. Hawaii: Environment and Policy Institute, East West Center, 1984. 32p. {Location: 2320}
- 638 WESTOBY, J. C. Forest industries for socio-economic development. Paper presented at Eighth World Forestry Congress, Jakarta. 1978. {Location: 2236}
- 639 WESTOBY, J. C. Forest development in Mozambique: A report on progress. Paper prepared for FAO consultancy, follow on documents to FO:MOZ/76/013 (AAU 2443) and FO:MOZ/76/007 (AAU 2113). 33p. 1980. {Location: 2445}
- 640 WESTOBY, J. C. Foresters and politics. Commonwealth Forestry Review 1985. 64(2):105-116. {Location: 2325}

- 641 WESTOBY, J. C. Forestry and underdevelopment revisited. Public lecture given by tape at the University of California, Berkeley, December 1985. {Location: F 55}
- 642 WESTOBY, J. C. Perspectives for forestry development in Mozambique: A preliminary appraisal. Rome: FAO, 1978. 23p. {Location: 2443}
- 643 WESTOBY, J. C. Perspectives for forestry development in Mozambique: A further appraisal. Rome: FAO, 1979. 29p. {Location: 2113}
- 644 WHITMORE, J. L.; BURWELL, B. Industry and agroforestry. Unasylva 1986. No 153:28-34.
- 645 WICKENS, G. E. The use of the Baobab in Africa. In: Kunkel, G. (Ed.), Taxonomic aspects of African economic botany, proceedings of the IXth plenary meeting of AETFAT, Las Palmas de Gran Canaria. 1978. 7p. {Location: F 144}
- 646 WIDDERBURN, R. J.; ERRINGTON, M. Forest development in relation to the Northern region irrigation rehabilitation project in the Nile province of Sudan. Land Resources Development Centre, Overseas Development Administration, Surbiton, Surrey, England. 1985. 82p. {Location: 2115}
- 647 WIERSUM, K. F. Developing strategies for social forestry: A conceptual approach. Honolulu, Hawaii: East-West Center, 1984. 24p. {Location: 2380}
- 648 WIERSUM, K. F. Social forestry and agroforestry in India. Reprinted for Department of Forest Management, Wageningen, Report No. 456, from the report of the Mission of the Government of the Netherlands on the identification of the scope for forestry development cooperation in India. 1986. {Location: F 118}
- 649 WIERSUM, K. F. Forestry aspects of stabilizing shifting cultivation in Africa. Wageningen Agricultural University, 1985. 196p. {Location: 2282}
- 650 WIERSUM, K. F. Significance of social organization and cultural attitudes for agroforestry development. Paper presented at Seminar on Advances in Agroforestry, CATIE, Turrialba, Sept. 1-11, 1985, 13p. {Location: 2428}
- 651 WIERSUM, K. F. Strategies and designs for afforestation, reforestation and tree planting: Proceedings of an international symposium on the occasion of 100 years of forestry education and research in the Netherlands: Wageningen 19-23 Sept 1983. Wageningen: PUDOC, 1984. 432p. {Location: ABB}
- 652 WIERSUM, K. F. Trees in agricultural and livestock development. Netherlands Journal of Agricultural Science 1985. No. 33:105-114. {Location: F 42}
- 653 WIGGINS, S. Forestry development in Embu, Meru and Isiolo - phase 1. Project proposal, final draft, Ministry of Environment and Natural Resources, Forestry Department, EMI/81/PROD/8. 1981. 39p. {Location: F 204}
- 654 WILLIAMS, J.; HAMILTON L. S. Watershed forest influences in the tropics and subtropics. Honolulu, Hawaii: East-West Center, 1982. 217p. {Location: 2357}

- 655 WILLIAMS, P. J. Women and forestry. Invited special paper, Ninth World Forestry Congress, Mexico City, Theme III.6.1. 1985. 17p. {Location: F 44}
- 656 WILLIAMS, P. J. Women's participation in forestry activities in Burkina Faso. Institute of Current World Affairs, 1985. 16p. {Location: 2392}
- 657 WILSON, G. F.; KANG, B. T.; MULONGOY, K. Alley cropping: Trees as sources of green-manure and mulch in the tropics. Biological Agriculture and Horticulture 1986. 3:251-267. {Location: F 103}
- 658 WILSON, J. M.; WITCOMBE, J. R. Crops for arid lands. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew 23-27 July 1984 (pp. 35-52). London: George Allen & Unwin. 1985. {Location: F 254}
- 659 WISNER, B. Rural energy and poverty in Kenya and Lesotho: All roads lead to ruin. IDS Bulletin 1987. 18(1):23-29. {Location: F 112}
- 660 WOLFSON, D. J.; GHAI, D. The rural energy crisis, women's work and basic needs. Geneva, Switzerland: International Labour Office, Proceedings of a Workshop sponsored by the ILO and the Institute of Social Studies, The Hague, April, 1986. 78p. {Location: 2461}
- 661 WOLLENBERG, E. Site risk and agricultural decision making among upland farmers. Thesis for MS in Wildland Resource Science, University of California, Berkeley. 1986. 131p. {Location: F 58}
- 662 WOODS, A. The potential for the in vitro propagation of a number of economically important plants for arid areas. In G. E. Wickens, J. R. Goodin & D. V. Field (Eds.), Proceedings of the Kew International Conference on Economic Plants for Arid Lands, Royal Botanic Gardens, Kew, 23-27 July 1984 (pp. 333-342). London: George Allen & Unwin. 1985. {Location: F 274}
- 663 WORLD BANK. Gujarat community forestry project (Cr 961-IN): Report of mid-term review mission. 1983. 33p. {Location: 2309}
- 664 WORLD BANK. India: Uttar Pradesh social forestry (925-IN) mid-term review mission report. 1983. 30p. {Location: 2269}
- 665 WORLD BANK. India, West Bengal social forestry. World bank. Education and Agricultural Institutions Division, South Asia Projects Department, report No 3434-IN. 1981. 66p. {Location: F 164}
- 666 WORLD BANK. India, West Bengal social forestry project, project file. World Bank. Education and Agricultural Institutions Divisions, South Asia Projects Department, report NO 3434-IN. 1981. 35p. {Location: F 165}
- 667 WORLD BANK; EAST AND SOUTHERN AFRICA REGION OFFICE. Sudan forestry sector review. Washington, DC USA: World Bank, 1986. 111p+ Annexes 183p. {Location: F 17}
- 668 WORLD BANK. OPERATIONS EVALUATION DEPARTMENT. Pakistan Aga Khan rural support program interim evaluation. From: Operations Evaluation Department, report no 6562-PAK, World Bank, Washington D.C. 1986. {Location: F 127}

- 669 WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT [BRUNDTLAND COMMISSION] Food 2000: Global policies for sustainable agriculture. London, UK: Zed Books, 1987. 131p. {Location: ACIA}
- 670 WORLD RESOURCES INSTITUTE; INTERNATIONAL INSTITUTE FOR ENVIRONMENT & DEVELOPMENT. World Resources 1986. New York: Basic Books, 1986. 353p. {Location: EA/AB}
- 671 WOROU, I.; VAN NAO, T. Orienting forestry toward the needs of people. Unasylya 1982. 34(136):8-10. {Location: 2257}
- 672 WUNSCH, J. S. Renewable resources management, decentralization and localization in the Sahel: The case of afforestation. Paper presented at the 23rd annual meeting of the African Studies Association, Philadelphia, PA. October 1980. 32p. {Location: F 5}
- 673 YOUNG, A. Evaluation of agroforestry potential in sloping areas. Photocopy, source unknown. ND. {Location: F 283}
- 674 ZIMMERMAN, T. Agroforestry: A last hope for Haiti? Agroforestry Systems 1986. 4(3):255-268.
- 675 ZUMER-LINDER, M. Sahel case study on forestry for community development. 1973. 9p. {Location: 2256}
-

AUTHOR INDEX

The numbers cited refer to the number of the entry in the text

Abhyankar, P. D. - 288
 Abu Sin, M. E. - 20
 Achaya, K. T. - 304
 Action for Food Production - 21
 Adjous, A. P. - 22
 Advisory Committee on the Sahel - 23
 Aehling, D. - 446
 Agarwal, B. - 24
 Agarwal, V. P. - 25
 Agarwala, V. P. - 26
 Agricultural Documentation Centre - 27
 Ahmed, S. - 28
 Aiken, S. R. - 29
 Akachuku, A. E. - 30
 Ali, R. - 31, - 232
 Allen, J. C. - 32, - 33, - 57
 Alvim, R. - 34
 Anderson, D. - 35
 Anderson, D. M. W. - 36
 Angel, J. J. - 37
 Appleton, N. S. - 38
 Ardayfio, E. - 39
 Arif, F. E. - 40
 Armitage, F. B. - 41
 Arnold, J. E. M. - 42, - 43, - 44
 Arnold, T. H. - 45
 Arntzen, J. W. - 46
 Aronson, J. - 47
 Asaduzzaman, M. - 48
 ASEAN - 49
 Ashish, M. - 50
 Babb, T. - 90
 Badi, K. - 294
 Bajracharya, D. - 51, - 52
 Balasubramanian, V. - 53
 Ballabh, V. - 54
 Bandyopadhyay, J. - 55, - 536, - 537, - 539, - 540, - 541
 Barlow, C. - 56
 Barnard, G. - 224
 Barnes, D. F. - 57
 Basak, J. - 388
 Behmel - 58
 Ben Salem, B. - 59
 Bentley, W. R. - 60, - 61, - 62, - 63, - 64, - 65, - 372
 Berenschot, L. M. - 66
 Bergstrom, S. B. - 247
 Berrie, T. - 68
 Bhaduri, T. - 580
 Bhagavan, M. R. - 67
 Bharier, J. - 68
 Bhatia, R. - 532
 Bhuttarai, T. N. - 69
 Bhatt, Z. - 70
 Bickmore, C. J. - 71
 Binzangi, K. - 387
 Birch, N. - 72
 Bisby, F. A. - 73
 Biswas, A. K. - 395
 Blaikie, P. M. - 74
 Blair, H. W. - 75, - 76, - 77, - 78, - 79

Blandon, P. - 80
 Blitterswijk, J. D. van - 81
 Board on Science and Technology for International Development - 81a
 Boehnert, J. - 82
 Bogahawatte, C. - 83
 Bompard, J. - 415
 Bonnell, M. - 276, - 279
 Booth, T. H. - 84
 Bowonder, B. - 85
 Brand, J. C. - 86
 Branney, P. - 87
 Brara, R. - 88, - 89
 Bremmer, J. - 90
 Brewbaker, J. L. - 91
 Brockband, B. - 372
 Brokensha, D. - 92
 Bromley, D. W. - 93, - 94, - 240
 Brookman-Amisshah, J. - 95, - 96
 Brown, L. - 97
 Brown, L. C. - 98
 Bruening, E. - 99
 Bruszt, G. - 100
 Buck, M. G. - 101
 Bunyard, P. - 102
 Burbridge, P. - 103
 Burch, W. R. - 104, - 105, - 106, - 466
 Bureau for Africa, Agency for International Development - 107
 Burgstaller, H. - 332
 Burley, F. W. - 108
 Burley, J. - 109, - 110, - 111
 Burns, D. - 112
 Burwell, B. - 644
 Buttoud, G. - 113
 Byron, R. N. - 114, - 115
 Campbell, B. M. - 176a
 Campbell, J. G. - 42, - 69
 Cannell - 502
 Carl Bro International - 116
 Carlowitz, P. G. von - 111, - 117
 Carlson, L. W. - 118
 Carr-Harris, J. - 119
 Carter, J. - 120
 Cassels, D. S. - 279
 Castro, A. P. - 92
 Cecelski, E. - 121, - 122
 CENDIT - 123
 Centre for Application of Science and Technology to Rural Areas - 124
 Centre for Science and Environment, India - 125
 Centre for Tribal Conscientization - 126
 Cernea, M. M. - 127
 CGIAR - 320
 Chakravarti, R. - 174
 Chambers, R. - 128, - 129, - 130, - 131, - 133, - 134
 Chandler, W. U. - 97
 Chandrasekharan, C. - 135, - 587
 Chandrashekhar, D. M. - 136
 Chapagain, D. P. - 94
 Chavingi, N. A. - 137
 Cherikoff, V. - 86
 Cherry, M. - 138
 Child, R. D. - 139
 CHIPKO - 140

Choudhury, G. O. - 141
Chowdhry, K. - 142, - 143
Christy, L. - 144
Clausen, R. - 145
Clayton, E. S. - 146
Cline-Cole, R. A. - 147
Coe, M. J. - 110
Coleman-Adebayo, M. - 148
Commander, S. - 149
Committee on Forestry Programmes for Alleviation of Poverty - 150
Commonwealth Forestry Institute - 502
Commonwealth Science Council - 151
Conlin, S. - 152
Conservation for Development Centre - 153
COPAC - 154
Coppee, E. C. - 155
Crane, E. - 156
Croze, H. J. - 265
Cylke, O. - 220
Czech, H. J. - 157
Danida, A. S. - 116
Daniel, J. G. - 158
Dargavel, J. - 159
Daru, R. D. - 160
Das, P. K. - 161, - 482
Dasgupta, S. - 162
Datta, S. - 163
Davidson, J. - 164
De Hart, R. A. - 169
Degni, J. - 165
Dema, I. S. - 460
Dijk, H. van - 475
Dixon, J. A. - 103, - 166
Dixon, R. K. - 469
Dobias, R. - 31
Dore, D. - 176a
Douglas, J. J. - 167
Douglas, J. S. - 168, - 169
Dourojeanni, M. J. - 170
Dove, M. R. - 171, - 172
Droste, R. - 446
Dube, V. N. - 173
Dubey, S. P. - 174
Dunsmore, J. R. - 175
Durgaprasad, D. - 176
Du Toit, R. F. - 176a
Earl, D. E. - 177
East and Southern Africa Region Office - 667
Egli, A. - 53
Egli, R. - 344
Eiche, G. - 476
El Sammani, M. O. - 20
Ellen, R. F. - 178
Ellenberg, H. - 179
Elsom, D. M. - 110
ENDA - 180
Engberg-Pedersen, P. - 181
Engelhard, R. J. - 137
Environment and Policy Institute, East-West Center - 216, - 608
Epila, J. S. O. - 182
Errington, M. - 646
Evans, J. - 183, - 184

Evans, M. I. -185, - 186, - 187
 Falconer, J. - 188
 Falconi, J. - 286
 Famoriyo, S. - 189
 FAO - 38, - 144, - 190, - 191, - 192, - 193, - 194, - 195, - 196,
 - 197, - 198, - 199, - 200, - 201, - 202, - 203, - 204, - 205, - 206,
 - 207, - 208, - 209, - 210, - 211, - 212, - 213, - 451, - 587
 FAO Forestry Department - 214, - 215
 FAO Regional Office for Asia and the Pacific - 216
 Fearnside, P. M. - 217
 Feeny, D. - 218
 Felger, R. S. - 434
 Fellows, L. E. - 72
 Fernandes, E. C. M. - 334
 Fernandes, W. - 219
 Fisher, H. - 220
 Fishwick, R. - 35
 Fisseha, Y. - 221, - 418
 Fleuret, A. K. - 222, - 223
 Fleuret, P. C. - 222, - 223
 Foley, G. - 224
 Fontaine, R. G. - 225
 Food and Agriculture Organisation. Policy and Planning Service - 226
 Forbartha, A. F. - 227
 Ford Foundation - 63, - 65
 Forest Department [Bihar] - 228
 Forestry Department of Ghana - 229
 Foundation to Aid Industrial Recovery - 230
 Fraser, A. I. - 231
 Gadgil, M. - 232, - 233, - 257
 Gamser, M. - 234, - 235, - 236
 Gaonkar, P.D. - 237
 Gatheri, G. - 238
 German Agency for Technical Cooperation - 58
 Ghai, D. - 660
 Gildyal, B. P. - 372
 Ghosh, A. - 239
 Ghosh, R. C. - 531
 Giasson, L. - 323, - 410
 Gibbs, C. - 240
 Gibson, D. - 241
 Gill, J. - 242, - 243
 Gilmour, D. A. - 279
 Giriappa, S. - 67
 Gnanam, A. - 531
 Gold Coast Lands Department - 244
 Gold, M. A. - 245
 Gomes, A. G. - 246
 Goodin, J. R. - 448
 Goppers, K. - 247
 Gordon - 502
 Goshi, G. - 248
 Government of India - 249, - 542
 Government of India. Ministry of Law, Justice and Company Affairs - 250
 Government of Indonesia - 322
 Graefen, C. - 446
 Grandstaff, S. W. - 251
 Grandstaff, T. B. - 251
 Grunne, H. - 349
 Groen, B. C. - 252
 Grove, A. T. - 253
 Grut, M. - 254

Grut, M. - 254
 Guess, G. M. - 255
 Guha, H. - 256
 Guha, R. - 257, - 258, - 259, - 260
 Guillet, D. - 261
 Gulick, A. - 262
 Gupta, A. K. - 263
 Gupta, T. - 264
 Gwynne, M. D. - 265
 Hagler, Bailly and Company - 266
 Haigh, M. - 110
 Hale, M. - 267
 Hall, D. O. - 268, - 269, - 270, - 271, - 272
 Hall, T. H. R. - 71
 Hallsworth, E. G. - 273
 Hamadou, M. - 113
 Hamand, J. - 274
 Hamilton, C. - 275
 Hamilton, L. S. - 276, - 277, - 278, - 279, - 280, - 281, - 282, - 376,
 - 654
 Hammer, T. - 283
 Hanagarth, W. - 284
 Haney, R. A. - 176a
 Hanover, J. W. - 245
 Haque, F. - 285
 Harou, P. - 286
 Harriss, J. C. - 74
 Harsh, L. N. - 530
 Hatley, T. - 592
 Hauser, E. - 446
 Hazlewood, P. - 108
 Heady, H. F. - 139
 Hegde, M. S. - 233
 Hegde, N. G. - 287, - 288
 Hennemeyer, C. - 145
 Herrera, R. - 289
 Heuch, J. H. R. - 290
 Hickey, W. C. - 139
 Hiralal, M. H. - 291
 Hoagland, S. H. - 292
 Hoffmann, J. J. - 599
 Hopkins, N. C. G. - 293
 Horowitz, M. - 294
 Hoskins, M. W. - 295, - 296
 Howe, B. I. - 298
 Howes, M. - 68, - 299, - 300, - 301
 Hughes, C. E. - 302
 Huguet, L. - 303
 Huizenza, C. R. - 252
 Huria, V. K. - 304
 Hurni, H. - 305
 Huxley, P. A. - 306, - 307
 Hyman, E. I. - 308, - 309, - 310, - 311, - 312, - 313, - 314, - 315,
 - 316, - 317
 IARC - 320
 IBRD. STAFF APPRAISAL REPORT - 318
 ICRAF - 318a
 ICRISAT - 319, - 320
 Indonesian Rural Women's Work and Energy Project Team - 321
 Institute for World Forestry - 405
 International Institute for Environment and Development 322, - 670
 International Tree Project Clearinghouse - 323

Iputu, S. A. - 324
Ives, J. D. - 325
Iyengar, S. - 326, - 327, - 328
Jabbur, M. A. - 300, - 301
Jackson - 502
Jackson, M. G. - 329
Jacovelli, P. A. - 330, - 444
Jafarsidik, Y. - 331
Jahn, S. A. A. - 332
Jalces, K. - 333
Jambulingam, R. - 334
Jayal, N. D. - 55, - 536
Jayasuriya, S. K. - 56
Jeanrenaud, J. P. - 335
Jelenic, N. E. - 336
Jeyascelan Prince, M. J. - 360
Jizhou, Ren - 337
Jodhu, N. S. - 338, - 339, - 340
Johnson, D. V. - 341
Johnson, J. - 342
Jones, J. V. S. - 343
Jones, V. - 137
Jones, W. I. - 344
Jordan, C. F. - 289
Kafumba, C. R. - 345
Kamara, J. N. - 346
Kamweti, D. M. - 347, - 348
Kang, B. T. - 349, - 657
Kapoor, R. P. - 350
Kathju, S. - 530
Kaul, M. - 351, - 352
Kaul, O. N. - 531
Kaya, H. - 446
Kendrick, A. - 353
Kgathi, D. L. - 354
Khaleque, K. - 371
Khetan, N. - 163
Khoshoo, T. N. - 355, - 531
Kikula, I. - 396
King, P. N. - 280, - 281
Kir, A. - 356
Kleinert, C. - 357
Klinge, H. - 289
Knowland, W. E. - 561
Kondas, S. - 358
Kowero, G. S. - 359
Krishnamurthy, K. - 360
Krishnaswamy, S. - 531
Kulasingham, A. - 158
Kulkarni, S. - 219, - 361, - 362
Kumar, N. - 363
Lanly, J. P. - 364
Lawson, T. L. - 349
Lawton, R. M. - 365
Le Houerou, H. N. - 366, - 366a
Leach, G. - 367
Leach, M. - 133, - 134, - 368
Lee, C. K. J. - 369
Leigh, C. H. - 29
Leslie, A. J. - 370
Leuschner, W. A. - 371
Levine, G. - 372

- Lintu, L. - 373
 Lobo, V. - 380
 Loewe, R. G. - 374
 Longhurst, R. - 131,
 Lundgren, A. L. - 375, - 376
 Lundgren, B. - 377
 Mabbett, T. - 378
 Maconochie, J. R. - 379
 Mahajan, V. - 380
 Mahendra, A. K. - 402
 Mahiti Project - 382, - 383
 Mahiti Team - 384, - 385
 Mahony, D. W. H. - 386
 Maiti, A. K. - 162
 Malaisse, F. - 387
 Malhotra, K. C. - 388
 Mann, R. D. - 389, - 390, - 391, - 392
 Martin, R. B. - 393
 Mary, F. - 394, - 415
 Masakhalia, Y. F. O. - 395
 Mascarenhas, A. - 395, - 396
 Mascarenhas, O. A. - 397, - 398, - 551, - 590
 Maskoy, J. L. - 399
 Maslekar, A. R. - 400
 Mathu, W. - 401
 Mathur, R. S. - 402
 May, P. H. - 403
 Maydell, H. J. von - 404, - 405, - 406
 Mayon-White, R. T. - 110
 McGahuey, M. - 408
 Medina, E. - 289
 Mehrer-Honji, V. M. - 409
 Melamed-Gonzalez, R. - 323, - 410
 Mercer, D. E. - 276
 Mertia, R. S. - 411
 Messerschmidt, D. A. - 412
 Mgeni, A. S. M. - 413, - 414
 Michon, G. - 394, - 415
 Micuta, W. - 416
 Miede, S. - 417
 Milimo, J. T. - 221, - 418
 Ministry of Forestry, People's Republic of China - 419
 Misra, D. N. - 420, - 421
 Mnthambala, L. C. - 345
 Moench, M. - 422
 Monga, P. K. - 423
 Morgan, W. B. - 424
 Morris, B. - 425
 Mortimore, M. - 426
 Morton, H. L. - 427
 Moss, P. - 268
 Mott, J. J. - 428
 Mugasha, A. G. - 451
 Mukhoti, B. - 429
 Mulder, R. P. - 430
 Mulongoy, K. - 657
 Murray, G. F. - 431, - 432
 Murti, B. V. K. - 136
 Musnad, H. A. - 332
 Myers, N. - 433
 Nabhan, G. P. - 434
 Nabil El Hadidi, M. - 435

Nagabrahmam - 436
Nair, M. A. - 437
Nair, P. K. - 615
Nair, P. K. R. - 34, - 438, - 439
Narasimhanna, M. N. - 440
Narayan, S. - 441
National Institute of Rural Development - 442
National Research Council - 23, - 81, - 443
Nautiyal, B. P. - 498
Neil, P. E. - 330, - 444
Nestel, B. - 445
Neumann - 58
Neunhauser, P. - 446
Newman, J. L. - 447
Newton, R. J. - 448
Nilsson, P. - 396
Noorani, A. G. - 449
Noronha, R. - 450
Nshubemuki, L. - 451
Nuntapong, S. - 305
Nyirenda, R. W. S. - 452
O'Dell, M. - 70
O'Keefe, P. - 68
O'Loughlin, C. L. - 453
O'Reilly, F. D. - 454
Oboho, E.G. - 455
Odero-Ogwel, L. A. - 395
Odoul, P. A. - 456
Olofson, H. - 457, - 458
Olpadwala, P. - 75, - 76
Olsson, K. - 459
Oluwasanmi, H. A. - 460
OM Consultants (India) - 461
Orr, R. - 462
Ostrom, E. - 463
Oxby, C. - 464
Pain, A. N. - 74
Palmborg, C. - 59
Pant, M. M. - 465, - 570
Parker, K. J. - 466
Patel, M. S. - 534
Patrick, Nnenda - 454
Patterson, W. A. - 286
Paul, T. - 545
Pearce, A. J. - 282
Pelinck, E. - 467
Percy, S. - 267
Perera, W. R. H. - 468
Perkins, R. W. - 500
Perry, J. A. - 469
Persson, J. - 470
Persson, R. - 247, - 471
Peterson, R. A. - 139
Pierce, G. D. - 472
Pieper, R. D. - 139
Pierce Colfer, C. J. - 473
Pillai, P. P. - 474
Poel, P. van der - 475
Popucki, R. J. H. - 244
Poschen, P. - 476, - 477
Posey, D. A. - 478
Poutanen, M. - 479

Prabhu, G. S. - 237
Prasad, N. - 233
Prasad, N. S. - 480 - 481
Prasad, S. N. - 232, - 257
Prasad, S. S. R. - 85
Purandare, A. P. - 161, - 482
Raintree, J. B. - 483, - 484, - 485, - 486
Rajan, B. K. C. - 237
Rama Das, V. S. - 531
Ramaswamy, S. R. - 136
Rambo, A. T. - 487
Ranchi Consortium for Community Forestry - 488, - 489
Ransay, W. - 57
Rathakette, P. - 251
Ray, A. - 490
Rebugio, L. L. - 491, - 492
Reddy, G. P. - 493
Reddy, S. T. S. - 494
Regional Office for Asia and the Pacific of the FAO - 608
Reid, R. - 428
Remenyi, J. V. - 495
Repetto, R. - 496, - 497
Resource Systems Institute - 52
Reynolds, V. - 110, - 498
Richards, P. W. - 499
Richardson, K. F. - 500
Robinson, P. J. - 501, - 502
Rodriguez, E. - 503
Ross-Sheriff, B. - 312
Roundy, R. W. - 504
Roy Burman, B. K. - 505, - 506
Roy, R. - 507
Sabhasri, S. - 325
Sagar, S. R. - 402
Sana, C. - 508
Sarabhai, A. - 531
Sarin, M. - 509, - 510
Sathe, M.D. - 511, - 512
Schenk-Sandbergen, L. - 513
Schinkel, R. F. - 475
Schmidt, R. - 446, - 514
Schmidt-Vogt, H. - 515
Schoetli, U. - 55
Schrimmer, A. - 516
Secrett, C. - 517
Sedjo, R. A. - 518
Seif El Din, A. G. - 519
Sen, B. - 520
Shaba, M. W. M. - 521
Shah, Anil C. - 522
Shah, S. A. - 523, - 524, - 525, - 526, - 527
Shah, S. L. - 528
Shah, Tushaar - 529
Shankarnarayan, K. A. - 530
Sharatchandra, H. C. - 540, - 541
Sharma, A. K. - 531
Sharma, R. - 532
Shea, K. R. - 118
Shepherd, G. - 533
Shingi, P. M. - 176, - 534, - 535
Shiva, V. - 536, - 537, - 538, - 539, - 540, - 541
Shrestha, V. B. - 399

SIDA - 194, - 195, - 542
Simon, J. L. - 543
Simonis, U. E. - 544
Simpson, G. - 159
Singh, Chhatrapati - 55, - 545, - 546, - 547, - 548
Singh, K. - 54, - 549
Singh, M. K. - 550, - 551
Sitaram Rao, M. - 552
Sivanandan, P. - 553
Siwatibau, S. - 554
Sjoholm, H. - 555
Skutsch, M. M. - 556, - 557, - 557a, - 558, - 559, - 560
Smil, V. - 561
Smith, R. D. - 562
Snedaker, S. C. - 277
Social Forestry Monitoring Advisory Board - 563, - 564, - 565
Soewardi, B. - 103
Sohani, G. G. - 566
Sollart, K. - 567
Southgate, B. J. - 72
Spatz, G. - 405
Spears, J. - 568
Sprent, J. I. - 569
Srivastava, B. P. - 570
Srivastava, H. C. - 571, - 572
Stamm, H. - 446
Stberg, W. - 574
Stewart, J. - 575
Stewart, J. L. - 109
Stienen, H. - 576
Stocking, M. - 577
Styles, B. T. - 302
Subrahmanyam, G. V. - 355
Suklwong, S. - 578
Sunott, T. J. - 579
Surin, V. - 580
Susaeta, E. - 588
Susman, P. - 68
Swaminathan, S. - 581
Takoeta, T. P. - 582
Tamil Nadu Agricultural University. Dept. of Agric. Economics - 583, - 584
Taylor, F. W. - 585
Taylor, R. - 586
Tembo, D. N. - 587
Temu, A. B. - 359
Tewari, D. N. - 588
Tewari, R. N. - 589, - 590
Thakur, A. - 545
Thaman, R. R. - 591
Thomas, D. E. - 251
Thomas, J. K. - 251
Thompson, M. - 592
Thomson, J. T. - 593, - 594, - 595
Thunberg, J. - 596
Tietema, T. - 597
Timberlake, L. - 598
Timmermann, B. N. - 599
Tips, W. E. J. - 160
Tiwari, K. M. - 600, - 601
Torres, C. B. - 265
Tropical Forest Resources Assessment Project - 197
Tschinkel, T. - 603

Turnbull, J. W. - 604
Uboma - 460
UNDP/Congad Consultation on Reforestation - 605
UNECA - 606
UNEP - 197, - 607
United Nations Development Programme - 608
Unni, N. V. M. - 85
US Interagency Task Force on Tropical Forests - 609
Vainio-Mattila, A. - 610
Van Nao, T. - 671
Vegten, J. A. van, - 336
Veer, C. P. - 613
Vergara, N. T. - 376, - 614, - 615, - 616, - 617, - 618, - 619, - 620,
- 621, - 636
Verma, B. L. - 622, - 623, - 624
Vidyarthi, V. - 625
VIKSAT - 626
Vimal, O. P. - 531
Vink, A. T. - 627
Vohra, B. B. - 628, - 629, - 630
Voraaurai, P. - 325
Wadwalker, S. - 534, - 535
Wagner, K. - 446
Wahlguist, H. - 631
Warburton, M. - 592
Warner, K. - 483
Webb, R. - 632
Wehmeyer, A. S. - 45
Weidelt, H. - 633
Weinstein, A. - 634
Weinstock, J. A. - 635, - 636, - 637
Wells, M. J. - 45
Westoby, J. C. - 638, - 639, - 640, - 641, - 642, - 643
Whitmore, J. L. - 644
Wickens, G. E. - 645
Widderburn, R. J. - 646
Wiersum, K. F. - 557, - 647, - 648, - 649, - 650, - 651, - 652
Wiggins, S. - 653
Wilkinson, G. K. - 144
Williams, J. - 654
Williams, P. J. - 655, - 656
Wilson, G. F. - 657
Wilson, J. M. - 658
Wisner, B. - 659
Witcombe, J. R. - 658
Wolfson, D. J. - 660
Wollenberg, E. - 661
Woods, A. - 662
World Bank - 663, - 664, - 665, - 666, - 667
World Bank. Operations Evaluation Department - 668
World Commission on Environment and Development [Brundtland Commission] - 669
World Resources Institute - 496, - 670
Worou, L. - 671
Wuite, J. - 557
Wunsch, J. S. - 672
Xavier Labour Relations Institute - 397, - 398
Yikun, Fu - 337
Young, A. - 673
Zimmerman, T. - 674
Zizhi, Hu - 337
Zumer-Linder, M. - 675

SUBJECT INDEX FORESTRY AND:

Adjustment	- 181
Administration	- 75 - 76 - 144 - 264 - 311 - 315 - 384 - 672
Agriculture	- 12 - 34 - 139 - 169 - 190 - 208 - 284 - 320 - 341 - 365
- 379 - 435	- 448 - 483 - 562 - 662 - 669
Agriculture: Commodities	- 36
Agriculture: Commodities: Fruit	- 446
Agriculture: Commodities: Rubber	- 271 - 503
Agriculture: Commodities: Tobacco	- 231 - 452
Agriculture: Crops	- 73 - 86 - 344 - 366 - 434 - 658
Agriculture: Farming	- 37 - 43 - 47 - 50 - 58 - 59 - 67 - 83
- 88 - 91 - 95 - 114 - 131 - 153 - 158 - 171 - 172 - 182 - 199 - 223	
- 244 - 251 - 261 - 290 - 304 - 305 - 320 - 327 - 329	
- 338 - 339 - 340 - 344 - 349 - 355 - 388 - 389 - 395 - 440	
- 446 - 447 - 451 - 463 - 464 - 481 - 501 - 521 - 522 - 529	
- 536 - 549 - 576 - 577 - 582 - 584 - 603 - 636 - 645	
- 649 - 657 - 665 - 668 - 673	
Agriculture: Fertilizers	- 408
Agriculture: Labour	- 661
Agriculture: Pesticides	- 72
Aid	- 23 - 247 - 508
Anthropology	- 9 - 137 - 171 - 178 - 223 - 457 - 513 - 592
Appropriate technology	- 81 - 185 - 236 - 308 - 416 - 625
Basic needs	- 132 - 486
Bibliographies	- 73 - 106 - 139 - 252 - 318a
Commodities: Paper	- 204
Commodities: Petroleum	- 271 - 599
Computers	- 71
Cooperation	- 120 - 401 - 410
Cooperatives	- 154
Desertification	- 25 - 45 - 47 - 59 - 86 - 148 - 156 - 165
- 226 - 253 - 337 - 341 - 365 - 366 - 379 - 389 - 390 - 414	
- 426 - 427 - 428 - 434 - 455 - 504 - 569 - 576 - 658	
Development	- 97 - 180 - 496
Ecology	- 102
Ecology/Environment	- 9 - 26 - 50 - 55 - 72 - 92 - 99 - 106
- 110 - 125 - 130 - 166 - 178 - 179 - 190 - 217 - 231 - 246	
- 257 - 267 - 284 - 288 - 317 - 333 - 337 - 355 - 379 - 409	
- 411 - 425 - 427 - 433 - 447 - 478 - 481 - 496 - 517 - 540	
- 541 - 543 - 544 - 569 - 574 - 577 - 592 - 607 - 670	
Economics	- 112 - 187 - 346 - 402 - 601
Education	- 60 - 62 - 82 - 110 - 226
Energy	- 24 - 39 - 40 - 46 - 47 - 48 - 51 - 52 - 67 - 69 - 81 - 91
- 107 - 121 - 122 - 137 - 162 - 181 - 185 - 186 - 187	
- 191 - 193 - 198 - 203 - 205 - 206 - 207 - 212 - 226 - 231	
- 234 - 235 - 236 - 241 - 252 - 254 - 266 - 269 - 271 - 272	
- 288 - 295 - 304 - 309 - 310 - 314 - 321 - 336 - 345 - 346	
- 347 - 354 - 360 - 366 - 367 - 368 - 401 - 402 - 416 - 424	
- 432 - 448 - 450 - 452 - 459 - 510 - 528 - 531 - 532 - 554	
- 557 - 561 - 563 - 564 - 565 - 597 - 599 - 604 - 610 - 625	
- 659 - 660 - 665 - 670	
Extension	- 60 - 170 - 194 - 220 - 386
Finance	- 266
Finance: Investments	- 192
Fishery	- 190 - 360 - 496
Food	- 156 - 215 - 223 - 271 - 669 - 670
Food aid	- 148
Health	- 39 - 122 - 336 - 670
Industry	- 356
Irrigation	- 12 - 41 - 175 - 253 - 629
Labour	- 39 - 67 - 122 - 162 - 230 - 321 - 450

GEOGRAPHICAL INDEX

Angola - 45
 Argentina - 231
 Asia and the Pacific - 93 - 376 - 450 - 276 - 278 - 375 - 617 - 618 - 619
 - 620 - 621
 Australia - 29 - 86 - 379 - 428 - 604
 Bangladesh - 40 - 48 - 114 - 141 - 164 - 300 - 371 - 429 - 651
 Benin - 671
 Bhutan - 423 - 106
 Bolivia - 261 - 289
 Botswana - 45 - 46 - 107 - 191 - 336 - 354 - 585 - 597
 Brazil - 5 - 34 - 37 - 217 - 231 - 273 - 289 - 403 - 561 - 651
 Burkina Faso [Upper Volta] - 107 - 593 - 595 - 651 - 656
 Burundi - 2 - 107 - 145 - 344
 Cameroon - 107 - 582
 Caribbean - 273
 Central Africa - 577
 Central America - 5 - 302
 Chile - 37 - 576
 China - 110 - 337 - 369 - 419 - 515 - 561 - 586
 Colombia - 289 - 271
 Cook Islands - 516
 Cote d'Ivoire - 22 - 59 - 496
 East Africa - 577
 Ecuador - 289 - 320
 Egypt - 435
 Ethiopia - 118 - 193 - 347 - 476 - 477 - 504 - 555
 Fiji - 115 - 516 - 554 - 591 - 637 - 156 - 271 - 36 - 271
 Gambia - 107 - 390 - 392
 Germany FR - 178
 Ghana - 39 - 95 - 96 - 229 - 244 - 389 - 660
 Guam - 516
 Guinea - 107
 Haiti - 431 - 432 - 674
 Honduras - 430
 India - 4 - 6 - 12 - 15 - 16 - 18 - 21 - 25 - 26 - 28 - 31 - 50 - 54
 - 55 - 60 - 61 - 62 - 64 - 65 - 67 - 70 - 74 - 77 - 78 - 79 - 81
 - 85 - 88 - 89 - 100 - 123 - 124 - 125 - 126 - 128 - 135 - 136 - 140
 - 141 - 142 - 149 - 150 - 152 - 155 - 157 - 161 - 162 - 163 - 176 - 188
 - 219 - 220 - 228 - 230 - 231 - 232 - 237 - 239 - 248 - 249 - 250 - 257
 - 258 - 259 - 260 - 263 - 264 - 267 - 273 - 287 - 288 - 291 - 304 - 318
 - 319 - 320 - 326 - 327 - 328 - 329 - 333 - 334 - 338 - 339 - 340 - 350
 - 351 - 352 - 355 - 358 - 360 - 361 - 362 - 363 - 372 - 380 - 382 - 383
 - 384 - 385 - 388 - 397 - 400 - 402 - 411 - 420 - 421 - 422 - 425 - 429
 - 436 - 437 - 440 - 442 - 449 - 461 - 465 - 474 - 480 - 481 - 482 - 489
 - 490 - 493 - 494 - 498 - 505 - 506 - 507 - 509 - 510 - 511 - 512 - 513
 - 520 - 522 - 523 - 524 - 526 - 527 - 528 - 529 - 530 - 531 - 532 - 534
 - 535 - 536 - 537 - 538 - 539 - 540 - 541 - 542 - 545 - 546 - 547 - 548
 - 549 - 550 - 551 - 552 - 553 - 558 - 559 - 561 - 563 - 564 - 565 - 566
 - 570 - 571 - 572 - 581 - 583 - 584 - 588 - 589 - 590 - 600 - 601
 - 622 - 623 - 624 - 625 - 626 - 628 - 629 - 630 - 631 - 648 - 663 - 664
 - 665 - 666
 Indonesia - 3 - 8 - 66 - 103 - 160 - 171 - 172 - 273 - 320 - 321 - 322
 - 331 - 394 - 415 - 457 - 475 - 561 - 567 - 636 - 660
 Israel - 634
 Kenya - 9 - 107 - 118 - 137 - 207 - 231 - 238 - 273 - 292 - 310 - 316
 - 347 - 395 - 401 - 456 - 486 - 557a - 579 - 610 - 653 - 659
 Kiribati - 516
 Laos - 247
 Latin America - 90 - 289
 Lesotho - 107 - 202 - 500 - 659

Liberia - 38 - 107
Madagascar - 464 - 208
Malawi - 203 - 231 - 308 - 345 - 347 - 452 - 521 - 587
Malaysia - 5 - 29 - 56 - 158 - 246 - 457 - 473
Mali - 107 - 593 - 594
Mauritania - 107
Mexico - 5 - 185 - 186 - 187 - 561 - 599
Mozambique - 198 - 356 - 395 - 639 - 642 - 643
Namibia - 45
Nauru - 516
Nepal - 5 - 42 - 51 - 52 - 69 - 87 - 91 - 94 - 120 - 175 - 212 - 274
- 275 - 290 - 293 - 335 - 399 - 412 - 467 - 501 - 575 - 592
Niger - 107 - 593 - 595
Nigeria - 30 - 147 - 189 - 349 - 374 - 424 - 426 - 455 - 460 - 561 - 657
- 658
Oman - 365
Pacific - 615
Pakistan - 153 - 352 - 429 - 668 - 208
Papua New Guinea - 173 - 235 - 516 - 591 - 636 - 637
Paraguay - 37
Peru - 37 - 185 - 261 - 284 - 289 - 479 - 660
Philippines - 309 - 311 - 314 - 457 - 458 - 661 - 36
Rwanda - 53 - 58 - 107 - 241 - 344 - 357
Sahel - 23 - 118 - 148 - 188 - 426 - 593 - 598 - 651 - 672
Senegal - 107 - 119
Sierra Leone - 107 - 147 - 346 - 271
Solomon Islands - 115 - 324 - 516 - 591
Somalia - 107 - 118 - 347 - 386 - 462
South Africa - 188
South Asia - 24
Sri Lanka - 83 - 468
Sudan - 20 - 107 - 116 - 118 - 144 - 209 - 227 - 236 - 283 - 294 - 332
- 417 - 459 - 470 - 519 - 627 - 632 - 646 - 667 - 208
Swaziland - 107
Tanzania - 10 - 32 - 33 - 107 - 118 - 200 - 222 - 223 - 273 - 343 - 347
- 359 - 368 - 395 - 396 - 413 - 414 - 446 - 447 - 451 - 508 - 556 - 560
- 561 - 574
Thailand - 31 - 218 - 231 - 251 - 273 - 305 - 469 - 578 - 651
Tonga - 516 - 637
Turkey - 561
Tuvalu - 516
Uganda - 206
UK - 178
Upper Volta [see Burkina Faso]
USA - 104 - 503 - 599
Vanuatu - 330 - 444 - 516
Venezuela - 37 - 273
Western Samoa - 516
Zaire - 5 - 107 - 344 - 387 - 561
Zambia - 107 - 201 - 221 - 347 - 391 - 418 - 472 - 561
Zimbabwe - 205 - 231 - 242 - 393

ADDRESSES FROM WHICH PUBLICATIONS CAN BE OBTAINED.

Please note that it is difficult for us to send photostats to network members: we simply do not have spare staffing capacity to deal with the demand which would occur if we offered this service. In the case of journal articles, a request to the author c/o the journal will usually be dealt with sympathetically if the writer lives in a location far from library services. Where a publication is authored by an aid agency, NGO or research body, direct requests to them are best. We do help Third World networkers in exceptional circumstances, however, with small numbers of hard-to-obtain items.

Agricultural Administration

Applied Science Publications Ltd
Ripple Road
Barking
Essex
UK

Agroforestry Systems

Martinus Nijhoff/Dr W Junk Publications
PO Box 566
2501 CN The Hague
The Netherlands

Ambio

Pergamon Press Inc
Journals Division
Maxwell House
Fairview Park
Elmsford NY 10523
USA

Applied Geography and Development

Institut für Wissenschaftliche Zusammenarbeit
Landhausstrasse 18
D-7400 Tübingen
Federal Republic of Germany

Bois et Forêts des Tropiques

Centre Technique Forestier Tropical
45bis, Avenue de la Belle Gabrielle
94130 Nogent-sur-Marne
France.

Bos Nieuwsletter

De Dorschkamp
PO Box 23
67000 AA Wageningen
The Netherlands

Commonwealth Forestry Review

Commonwealth Forestry Review
c/o Oxford Forestry Institute
South Parks Road
Oxford OX1 3RB
UK

Development and Change

Sage Publications Ltd
28 Banner Street
London EC1Y 8QE
UK

Development Digest

Bureau for Program and Policy Co-ordination
Agency for International Development
Washington DC 20523
USA

Development Forum

United Nations
Division of Economic and Social Information
Palais des Nations
CH-1211
Switzerland

Ecoforum

Environment Liaison Centre
PO Box 72461
Nairobi
Kenya

The Ecologist

Ecosystems Ltd
Worthyvale Manor Farm
Camelford
Cornwall PL32 9TT
UK

Economic Botany

Society for Economic Botany
New York Botanical Garden
Bronx NY 10458
USA

Economic and Political Weekly

Skylark
284 Shahid Bhagasingh Road
Bombay 400 038
India

Environmental Management

Springer-Verlag
175, Fifth Avenue
New York
NY 10010
USA

Far Eastern Economic Review

CPO Box 160
Hong Kong

Forest Ecology and Management

Elsevier Scientific Publishing Co
Box 211
1000 AE Amsterdam
The Netherlands

Geo

Harry Meyers, Publications
600 Madison Avenue
New York
NY 10022
USA

GeoJournal

D Reidel Publishing Co
PO Box 17
3300 AA Dordrecht
The Netherlands

Geographical Journal

Royal Geographical Society
1 Kensington Gore
London SW7 2AR
UK

Grassroots Development

Grassroots Development
Inter-American Foundation
1515 Wilson Boulevard
Rosslyn
Virginia 22209
USA

IDS bulletin

University of Sussex
Institute of Development Studies
Brighton
Sussex BN1 9RE
UK

Impact of Science on Society

UNESCO
79 Place de Fontenoy
75700 Paris
France

Indian Forester

Forest Research Institute and Colleges
P O New Forest
Dehra Dun
India

International Agricultural Development

Pharos Publishing Services
5-11 Lavington Street
London SE1 0NZ
UK

International Tree Crops Journal

AB Academic Publishers
Box 97
Berkhamsted
Herts HP4 2PX
UK

ISTF News

International Society of Tropical Foresters
5400 Grosvenor Lane
Bethesda
MD 20814
USA

Journal of Developing Areas

Western Illinois University
900 West Adams Street
Macomb
Illinois 61455
USA

Journal of Development Economics

Elsevier Science Publishers BV
PO Box 211
1000 AE Amsterdam
The Netherlands

Journal of Forestry

Society of American Foresters
5400 Grosvenor Lane
Bethesda
MD 20814
USA

Journal of Rural Development

National Institute of Rural Development
Rajendra Nagar
Hyderabad 500 030
India

Journal of World Forest Resource Management

AB Academic Publishers
Box 97
Berkhamsted
Herts HP4 2PX

Kurukshetra

Business Manager
Publications Division
Patiala House
New Delhi 110 001
India

Land Use Policy

Quadrant Subscription Services Limited
Oakfield House
Perrymount Road
Haywards Heath
Sussex RH16 3DH
UK

Manushi

Manushi Trust
C1/202 Lajpat Negar
New Delhi 110024
India

Mazingira

Tycody International Publishing Ltd
6 Charlemont Terrace
Dun Laoghaire
Co Dublin
Ireland

Mountain Research and Development

International Mountain Society
Box 3128
Boulder Co 80307
USA

Natural Resources Journal

University of New Mexico
School of Law
1117 Stanford NE
Albuquerque
NH 87131
Mexico

Netherlands Journal of Agricultural Science

Royal Netherlands Society for Agricultural Science
Postbus 79
6700 AB Wageningen
The Netherlands

Public Administration

Basil Blackwell Ltd
108 Cowley Road
Oxford OX4 1JF
UK

Social Action

Indian Social Institute
Lodi Road
New Delhi 110 003
India

Unasylyva

Distribution and Sales Section
FAO
Via delle Terme di Caracalla
00100 Rome
Italy

World Development

Pergamon Journals Ltd
Headington Hill Hall
Oxford OX3 0BW
UK

Yojana

Business Manager
Publications Division
Patiala House
New Delhi 110 001
India

ADDRESSES FROM WHICH INFORMATION/DOCUMENTATION ABOUT PROJECTS CAN BE OBTAINED:

Action Aid

208 Upper Street
London N1 1RZ
UK

African Development Bank

01 BP 1387
Abidjan 01
Ivory Coast

Australian Development Assistance Bureau

PO Box 887
Canberra City
ACT 2601
Australia

Canadian International Development Agency

Place du Centre
200 Promenade du Postage
Hull
Quebec K1A 0G4
Canada

CARE

Cooperative for American Relief Everywhere
660 First Avenue
New York
NY 10016
USA

Community Aid Abroad

156, George Street
Fitzroy
Victoria 3036
Australia

DANIDA

Asiatisk Plads 2
1448 Copenhagen K
Denmark

The East-West Center

1777 East-West Road
Honolulu
Hawaii 96848
USA

Food and Agriculture Organisation (FAO)

- a) Development Department
Freedom from Hunger Campaign/Action for Development
Via delle Terme di Caracalla
00100 Rome
Italy.
- b) Department of General Affairs and Information
International Information System for the Agricultural Sciences and
Technology
Via delle Terme di Caracalla
00100 Rome
Italy.
- c) Current Agricultural Research Information System
Via delle Terme di Caracalla
00100 Rome
Italy

The Ford Foundation

320 East 43rd Street
New York
New York 10017
USA

GTZ German Agency for Technical Co-operation

Deutsche Gesellschaft technische Zusammenarbeit
Dag-Hammarskjold Weg 1
D-6236 Eschborn
Germany

Government of the Federal Republic of Germany

Der Bundesminister für wirtschaftliche Zusammenarbeit
Karl-Marx-Strasse 4-6
53 Bonn 12
Federal Republic of Germany

Government of the Netherlands

Development Co-operatives Department
Ministry of Foreign Affairs
Plein 23
The Hague
The Netherlands

Government of New Zealand

External Aid Division
Ministry of Foreign Affairs
Private Bag
Wellington
New Zealand

International Development Research Centre (IDRC)

Box 8500
Ottawa K1G 3H9
Canada

International Labour Organisation (ILO)

CH-1211 Geneva 22
Switzerland

International Union for Conservation of Nature and Natural Resources
(IUCN)

Avenue du Mont Blanc
1196 Gland
Switzerland

Japan International Co-operation Agency (JICA)

Shinjuku Mitsui Building
2-1, Nishi-Shinjuku
Shinju-ku
Tokyo

Lutheran World Relief

360 Park Avenue South
New York
NY 10010
USA

National Institute of Rural Development

Rajendra Nagar
Hyderabad 500 030
India

NORAD

Boks 8142
Oslo Dep
Oslo 1
Norway

Overseas Development Administration (ODA)

Eland House
Stag Place
London SW1E 5DH
UK

Oxfam

274 Banbury Road
Oxford OX2 7DZ
UK

Save the Children Fund

Jebb House
157 Clapham Road
London SW9 0PT
UK

Swedish Development Authority (SIDA)

S-105 25 Stockholm
Birger Jarisgatan 61
Sweden

UNEP

Office of the Environment Programme
PO Box 30552
Nairobi
Kenya

United Nations University

Academic Services
Toho Seimei Building
15-1 Shibuya 2-Chome
Shibuya-ku
150 Tokyo
Japan

United States Agency for International Development (USAID)

International Development Co-operation Agency
Washington DC 20523
USA

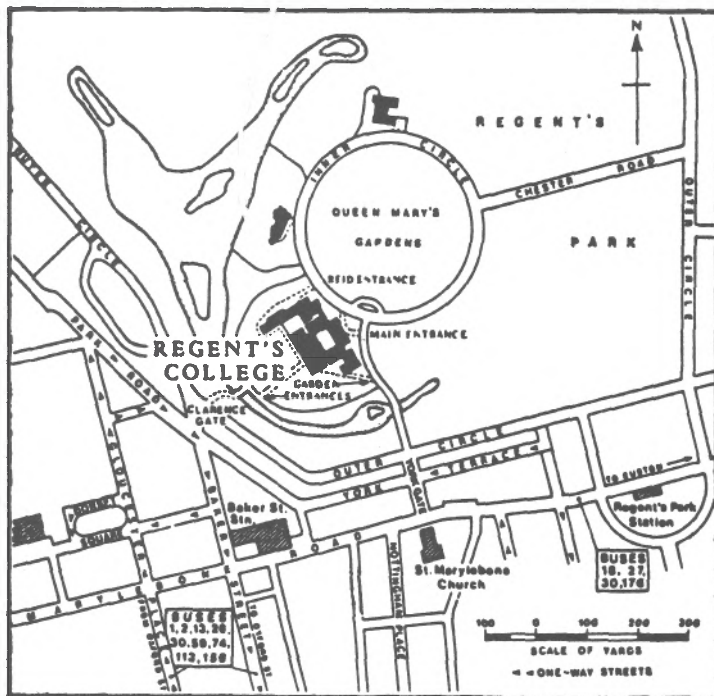
World Bank

Administrative Services Department
1818 H Street NW
Washington DC 20433
USA

World Vision International

Asia Regional Office
PO Box 5184
Makati Post Office
Makati
Metro Manila
Philippines





Overseas Development Institute
Regent's College

Nearest underground station: Baker Street (Bakerloo, Jubilee, Metropolitan and Circle lines). Nearest bus stops in Gloucester Place (going North) Baker Street (going South), and Marylebone Road (East or West). ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the Main Entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

Credits

Newsletter and network papers edited by:
Gill Shepherd, Social Forestry Research Officer
Mary Hobley, Network Assistant

Design, typing and layout by:
Patsy de Souza, ODI Secretary
Gill Shepherd and Mary Hobley
Peter Gee, Publications and Press Officer

The Social Forestry Network is funded by the Ford Foundation and by the Aga Khan Foundation.

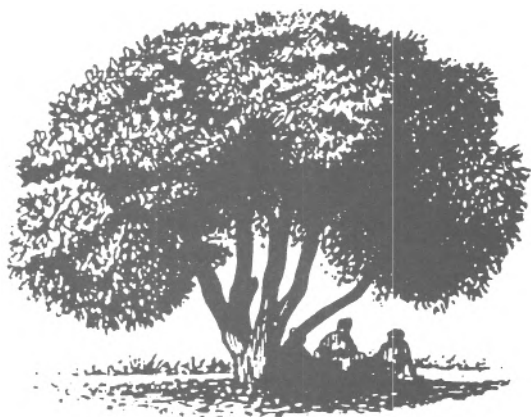


Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



TREES TO MEET CONTINGENCIES: SAVINGS AND SECURITY FOR THE RURAL POOR

Robert Chambers and Melissa Leach

Robert Chambers is a Senior Research Fellow at IDS, University of
Sussex.

Melissa Leach is working for her doctorate in the Anthropology
Department, School of Oriental and African Studies, London University.

<u>Contents</u>	<u>Page</u>
Poverty and Vulnerability	3
The Neglect of Contingencies and Assets	4
The Use of Trees to Meet Contingencies	9
direct use	9
as a source of cash	10
The Use of Trees as Savings	13
Trees as Poor People's Assets	15
disadvantages	16
- land rights	16
- tree rights and cashability	16
- marketing	17
- risk of loss	17
advantages	18
- cheap establishment	18
- rate of appreciation	20
- divisibility	20
- regeneration	20
Implications for Research	20
Implications for Policy	21
ownership and rights	22
marketing and prices	25
land reform	25
tree reform	26
Conclusion	26
References	27

Acknowledgements

We wish to thank all those who have contributed ideas and information to this paper, including P K Aiyasami, Sean Conlin, Aloysius Fernandez, Marilyn Hoskins, Sudarshan Iyengar, Harnath Jagawat, Mick Moore, Gerald Murray, Kartikeya Sarabhai, N C Saxena, Anil Shah, Girish Sohani, Bill Stewart and Jeremy Swift. While we have benefitted from information and advice from them and others, responsibility for the views expressed rests with us alone.

TREES TO MEET CONTINGENCIES: SAVINGS AND SECURITY FOR THE RURAL POOR

Poverty and Vulnerability

In normal professional usage, 'poverty' is a synonym for deprivation. Reflecting the urban and industrial origins of poverty studies, poverty is defined in terms of low incomes or outlays. In late Victorian England Charles Booth in London and Seeborn Rowntree in York measured 'earnings', and established poverty lines based on estimates of a minimum necessary income. Contemporary poverty line measurements in India and elsewhere are similar in assessing poverty in terms of flows, whether of income or consumption. They do not take account of stocks or assets.

Poverty defined in this way encompasses only one dimension of deprivation. Others include physical weakness, isolation, powerlessness and vulnerability. Of these, it is understandable that vulnerability is frequently overlooked. Professionals who define 'poverty' are usually not themselves vulnerable. In contrast with the poor, they are cushioned in various ways against contingencies. If they live in rich countries, they have a safety net in social security, and in cases of sickness or accident, medical services are likely to be free or heavily subsidised. If they live in poor countries, they are likely to be relatively well-off and to have some means to meet sudden or large needs. Not themselves vulnerable, it is then easy for members of professional elites to underestimate the importance to the poor of vulnerability to contingencies.

Contingencies can take many forms. They may be sudden and unexpected; they may be slow in onset; or they may be large needs which can be foreseen. Classified in a commonsense manner, five categories can be identified:

social conventions	such as dowry, bridewealth, weddings, and funerals and other ceremonial and social needs
disaster	such as theft of assets, loss by fire, death of animals, floods, droughts,

	epidemics of plant or animal diseases, civil disturbance and war, and food shortages and famines
physical incapacity	including disablement; sickness; the child-bearing sequence of pregnancy, childbirth and the post-natal period; old age; and accidents
unproductive expenditure	such as failures in small enterprises, litigation or gambling; and fees for schooling or apprenticeship which do not pay off
exploitation	including excessive demands and illegitimate acts by the powerful, such as demands of exorbitant interest by moneylenders, expropriation of property, intimidation, and blackmail

For a poor household, any of these can lead to further impoverishment, in which assets have to be mortgaged or sold, or damaging obligations accepted. This often has a ratchet effect, being difficult or impossible to reverse. Contingencies are especially harmful when they entail a loss of food or income. This can result from the contingency itself - the death of an animal, the wrecking of a fishing boat, a physical injury or sickness - or from the asset disposal used to meet the contingency, such as the sale of ploughing oxen, tools, or land. When a productive asset is thus lost, it is even harder to get back to the previous position.

The Neglect of Contingencies and Assets

Reducing vulnerability to contingencies is, however, rarely a direct objective of government anti-poverty rural development programmes. If anti-poverty programmes are successful, they may reduce vulnerability through flows of food and income which meet consumption needs at bad times of the year, or which allow savings and investment. But few

and the poor who are paid by the village organisations. These species, supplemented by appropriate exotic trees, are raised in village-run nurseries before being distributed to the planting sites prior to the monsoon.

In view of the persistent fodder shortages and the need to generate resources rapidly, the NGOs are attempting to increase grass production from these common lands to help meet village fodder requirements and thus reduce the risk of livestock being allowed to graze/browse the newly planted catchments. Increased and assured availability of grasses effectively reduces the risk of damage to the plantations by providing an immediate benefit which can be equitably distributed through village organisations.

2. Maharashtra: The Western Ghats

The people of the western ghats of Maharashtra traditionally derive their livelihood from the forested foothills. The forest is severely depleted by increased human and livestock populations and by indiscriminate tree felling to meet an insatiable commercial demand for timber. In consequence the delicate ecological balance has been disrupted and rapid run-off is causing erosion and seasonal water shortages. The decreased availability of timber, fruits and other forest products is destroying the traditional local economy in an area with limited alternative income sources. Also, the most productive land is being taken over by Brahmins and other outsiders, thus further depleting the resource base of the indigenous tribals.

A small NGO, the Academy of Development Sciences (ADS), which recognises the paramount need to make land more productive if tribal societies are to survive, has been working since 1984 to restructure the local economy through soil and water conservation, social forestry, and the development of small scale processing industries for fruits and herbal plants. Herbal and medicinal plants are processed to provide medicines based on Ayurvedic principles and local practices. ADS runs a small clinic and is training local people as paramedical staff. The eventual aim of this part of the project is to create an entirely self-financing primary health care system.

ADS's approach favours establishing a wide spectrum of fuel, fruit, fodder and timber trees and herbal shrubs designed to provide a livelihood for the local tribal population. ADS has addressed the issue of motivating the people to conserve and develop village common lands by first concentrating on processing and marketing linkages for fruit produce, including jamun, jonla and mangoes that is already widely available from the forests. At present, forest fruits are largely consumed or sold locally but a substantial proportion of output remains unharvested because of a lack of local demand. A small unit has been established to process fruits into juices, pickles and jams. The processing of forest fruits is highly successful and has established a premium market in Pune and Bombay. The value added accrues to the villagers who are now motivated to grow fruit and fuelwood trees on common lands and private wastelands. Since there is a chronic fuelwood shortage in the area, creation of local fuelwood sources will help the communities preserve and develop existing natural forest to provide income and subsistence resources over the long term. The increase in the productivity of the existing CPRs has provided the necessary financial incentives as well as helped the tribals to understand the potential benefits from a conservation-orientated development strategy.

Immediate income generation through downstream linkages and the equitable distribution of benefits from an existing resource can motivate a community to protect existing resources and invest in longer term income generating assets.

3. Gujarat: Coastal Saline Wastelands

The project area, on the west coast of the Gulf of Khambhat is locally known as the 'Bhal', or forehead: an area where nothing will grow. Mean annual rainfall is less than 800mm and there is no underground sweet water. Although over 50% of the land area is officially termed non-cultivable waste, this figure rises to 90% in some villages. The area of wasteland is increasing because of periodic sea ingress and salinisation of the barren soil surface through capillary action and evaporation. In the absence of significant off-farm employment in the

area, large scale seasonal migration takes place. The power of local moneylenders and traders, belonging to the Darbar community, who exploit the weakness of the poorer villagers (Koli Patels) is firmly entrenched. However, the Bhal area has five major assets: an erratic monsoon; livestock; natural plantations of an oilseed tree, *Salvadora pesica*; abundant unutilised land; and a resourceful population which has resisted the apparently irresistible and not permanently migrated from the area.

In 1984, an NGO, Mahiti, started work in seven villages by establishing a dialogue with the villagers over a prolonged period to determine their needs; mobilise their labour resources; and organise their activities. Because of the orientation of the NGO and since most men migrate seasonally in search of work, women played an unusually prominent role in the initial dialogues and in establishing development activities.

The first approach of the NGO was to seek ways to increase income from existing resources in order to have an immediate impact.

The villagers have traditional rights to the seeds from large tracts of naturally-occurring salt-tolerant *Salvadora trees*. These seeds which yield 15-20% of an oil used in the manufacture of soap and varnish are sold at very low rates to the local traders. Mahiti has encouraged the womens' organisations to collect the seeds more systematically to increase offtake and has put the villagers directly in contact with oil seed processors who may pay higher prices than the local traders. Seed harvesting takes place in April and May when there are few alternative employment opportunities in the area.

Once the immediate need for increased income was addressed, Mahiti undertook to work with the villagers to improve their water supply for domestic and livestock use. Monsoon run-off was traditionally stored in earthen tanks, the contents of which gradually became saline through groundwater ingress and evaporation. Mahiti has been able to:

- organise the villagers to provide labour
- obtain government finance to pay the labour for digging the tanks
- obtain donor support for lining the tanks with bricks
- obtain private sector support to provide plastic sheeting to line the tanks to eliminate seepage and the ingress of saline groundwater. The use of an anti-evaporant was tried and rejected because it polluted the water.

The resulting improved water supply for livestock and domestic use is meeting a major felt need and has provided local income. Under a social forestry programme, these water sources are being used to irrigate community tree nurseries, which were suffering from water shortages.

The womens' organisation distributes the income from the sales of *Salvadora* seeds equally among the members; keeping 5% for overheads to pay a watchman for the 250 ha. of *Salvadora* plantation to be established on public wasteland, allotted to the organisation by the district administration. The next stage is to plant more *Salvadora* on public and private wasteland and to establish a local crushing unit to extract the oil so that the value added from the oil and the cattle cake accrues to the villagers. Mahiti has established a link with the Village Industries Commission which will pay the villagers Rs14/kg of oil (a 200% increase on the present unprocessed price for seed alone). In addition the villagers will retain the oil cake for cattle feed.

Nurseries for *Prosopis juliflora* for planting on both private and public wasteland have been established by the womens' organisations. These hardy trees will provide both livestock fodder and fuel.

Mahiti's approach has shown that organising communities to increase the effective use of an existing resource can be used as a motivation for further developing that resource and utilising the benefits

equitably. There are other such indigenous natural resources in India as well as similar wastelands with low opportunity cost in the arid and semi-arid areas.

4. Gujarat: The Tribal Belt and Saurashtra

The aims of the Aga Khan Rural Support Programme in India, hereafter called AKRSP), a private non-profit Indian company which started operations in 1985 include:

- assisting local communities to manage their own resources.
- establishing village access to government land.
- obtaining government funds for social forestry using its own resources to finance technical and managerial innovation.

The organisation is currently working with village communities to develop various categories of waste and common lands in two distinct areas of Gujarat:

- The tribal belt in the south east of the state which is characterised by degraded forest and revenue wasteland with erratic rainfall.
- The drought prone arid and semi-arid areas of Saurashtra where increasing grazing pressure, from a predominantly livestock-based economy, is rapidly degrading the already seriously denuded wastelands.

AKRSP's approach to the development of these resources and the equitable distribution of benefits is summarised below for each agroecological zone.

The Tribal Belt in Eastern Gujarat

There is serious underemployment in the tribal areas and the majority of male villagers migrate seasonally to the plains in search of work. In this context wastelands development is initially perceived as a source of short-term employment. The villagers have little idea of the potential productivity of these public wastelands which are used primarily for livestock grazing.

AKRSP's initial approach is to establish a village organisation which acts as a forum in which the employment potential of the wastelands is discussed and ideas developed to maximise employment and encourage the equitable spread of potential employment benefits. Since the villages are socio-economically homogeneous, relative to communities elsewhere in Gujarat, and every family has an interest in employment there is a powerful internal dynamic to ensure that access is spread equitably. In consequence, at least one member of every family is able to work during at the peak periods for pit digging and tree planting. However, during the tree planting period, families with arable land need their labour resources for their own crop planting and so landless families and those with small land holdings who have excess labour capacity are able to take advantage of employment at the tree planting sites.

In an effort to build up the capital base of the poor and establish access to credit, AKRSP has introduced a personal savings scheme for those working on the wasteland development sites. AKRSP pays the minimum government wage which is considerably higher than the market wage for labour in the area and has been able to persuade the villagers to save Rs1/day from their daily wage (this represents about 20% of the difference between the government wage and the local wage rate). These savings have enabled some villagers to redeem assets mortgaged to local moneylenders while others have used their savings as collateral for small production loans. Not surprisingly villagers were at first reluctant to consent to the savings scheme and AKRSP had to exercise its considerable powers of persuasion to introduce the innovation which is now widely accepted.

The management of tree nurseries provides a further opportunity for the landless to benefit from wastelands development. For example, in the 1986 planting season, seven nurseries, each of 50,000 seedlings were established in one village on the basis of access to water, with little attention being paid to the socio-economic status of the nursery growers, because of the urgent need to generate sufficient seedlings for the first season. Two out of the seven nurseries were operated by landless farmers and their success (they earned a net Rs4,000) encouraged other landless members of the village organisation to press for their inclusion in the 1987 nursery programme. As a result, for the 1987 season, 20 landless families (out of a village of 110 families) are each operating nurseries of 15,000 seedling and will earn about Rs1,500. The presence of community water sources from which the landless could water their nurseries was a critical factor in their involvement in this income-generating activity.

One problem with the establishment of tree nurseries for wasteland development is that they are necessarily short-term as the demand for seedlings will fall once the wastelands in the area have been afforested. In order to introduce the possibility of long-term viability and to increase the immediate financial benefits from tree nursery management, the nursery operator is responsible for finding a market for 20% of the seedlings raised and is entitled to keep the proceeds. With increasing local forestry activity, there are possibilities to develop a considerable private demand for commercially important seedlings such as teak and the establishment of such a market would enable the nursery operator to use his or her newly acquired skills to generate income over the longer term.

The protection of the wastelands planted in 1986 has resulted in a considerable regeneration of grasses which are being harvested for fodder prior to the 1987 monsoon. The village organisations, by employing watchmen (paid by AKRSP until the trees mature), control access and have allocated particular days when grass can be harvested by hand by individual farmers.

Although villagers are rightly sceptical about the long term productivity of the wastelands, they are concerned with the equitable

distribution of potential benefits. At present, they view the trees as an asset to be eventually felled, with the cash realised from the sale of the timber distributed equally among the villagers and a proportion being retained by the village organisation to replant the wastelands. Their initial selection of species reflected this perception. The trees being planted on public wasteland are not yet seen as an asset to be managed over time to produce a stream of benefits. This seems to reflect the villagers' doubts about productivity as well as fears that they may not, in the end, be able to enjoy the benefits from the trees they have planted. Although AKRSP has taken the initial steps to establish the villagers' legal rights to the trees and develop equity-conscious village organisations, the programme has a continuing role to advise, discuss with and persuade the villagers to consider tree species and management systems to provide long term benefits.

Drought Prone Areas of Saurashtra

As the wastelands in this area are seriously degraded and yield little benefit, the government and many panchayats are willing to grant leases to village organisations for the planting of trees. Access to land is therefore not a serious constraint. However, perennial water shortage aggravated by three successive years of drought limits the choice of tree species for rainfed planting. Because of the harshness of the climate the gestation period before income accrues from the trees will be at least seven years. The people are traditionally dependent on livestock in these areas and recurrent fodder shortages are eroding the quality of their livestock and increasing seasonal migration in search of fodder. Concurrently, fuelwood is becoming scarcer and dung is being increasingly used for fuel. The primary felt need of the 90% of the population which owns livestock is to improve the supply of fodder which will have an immediate impact on productivity. The 10% of the population who do not own livestock has a primary requirement for short term income generation. In this context, AKRSP is emphasising fodder development, with trees, at this stage, being included as a complementary income-generating activity.

AKRSP has taken two approaches, depending on the availability of groundwater.

With Groundwater: Some village common lands have access to groundwater and village dairy cooperative societies are keen to develop this resource to provide irrigated green fodder to decrease their dependence on purchased fodder and reduce the need for seasonal migration. In one village (of 120 households) where a 8 hectare irrigated fodder farm has been started, 24 families (20%) are landless and 30 families (25%) own less than two acres of land. 39 of these poor families (70%) own cattle and the dairy cooperative, of which they are members, sells them fodder at cost price whereas other members have to pay an 8% premium over cost price, and non-members pay a 25% premium. As a result of the improved fodder supply the milk yields from the cattle of these poor families have increased by 60% and the fat content by 20%. In addition migration has been reduced as, by the end of December 1986, 25 families who normally migrate had remained in the village, although some of these families had migrated by March 1987.

The increased milk production and the reduced migration has led to an increase in the total milk procurement by the village cooperative society and has thus increased the capital base and raised enthusiasm for further development of wastelands to augment the fodder supply. The limited groundwater acts as an incentive. Large-scale wasteland development can only be achieved on a rainfed basis. The villagers are using *Prosopis juliflora* for fodder and fuel and protecting and seeding the afforested area to increase the supply of short duration grasses to meet immediate fodder needs. Furthermore, fodder trees are being introduced on the fodder farms and seedlings will be available to society members for planting on their own land.

This approach clearly has limitations as it requires a water source and the existence of a dairy cooperative, although both could be developed over time in many areas. The benefits can reach the poor immediately if they have cattle and are members of the society; a not uncommon situation in Saurashtra.

In another village in the area where an existing borehole with excess water is adjacent to village common land, the village organisation has protected an area from grazing and planted both *Eucalyptus* and *Leucaena* which have received occasional protective irrigation. The *Eucalyptus* has not done well but the *Leucaena* and grasses are well established and will provide an excellent fodder supplement.

Without Groundwater: When wastelands are severely degraded in arid and semi-arid areas, employment through tree planting is an important incentive to encourage people to consider wastelands as a potentially productive asset. Cash incentives for tree survival make social and physical (commonly trenches and/or cactus/sisal hedges in Saurashtra) protection a possibility. Productivity enhancement through grass reseeding can increase fodder supply and therefore reduce the need for extensive grazing lands. In principle, a gradual approach to protecting and developing common wastelands can lead to major productivity increases for livestock owners. The generation of employment opportunities for those without livestock increases the possibility of them purchasing cattle which can be stall fed on fodder produced from the newly developed wastelands.

In areas where water sources are not available, and the accessible revenue wastelands are degraded, AKRSP is using three models which are adapted to meet local requirements in consultation with village organisations.

- Use the land for tree planting and ensure adequate protection. This leads to a natural regeneration of grass (which can be supplemented by reseeding). Up to 55 metric tonnes of grass fodder have been obtained by rainfed natural regeneration from a ten hectare plot.
- In areas of particularly poor soil and low rainfall where rainfed tree survival is extremely low, protecting part of the common wastelands from grazing during and after the monsoon allows grass to regenerate to provide a fodder

supplement prior to the next monsoon. In addition, supplementary reseedling accelerates grass production.

- The productivity of the above two models can be enhanced by simple watershed management techniques involving gully plugging, small checkdams and on-field water harvesting structures. Such systems can be managed by village organisations supported by minor external interventions. Improved water retention allows increasingly productive fodder and fruit trees to be included in the model, along the lines of the systems developed at Sukhomajri in Haryana.

The inclusion of grass in the models meets an immediate need and gives a village organisation an asset through which the village wastelands can be managed and developed for the benefit of the community. Protection of the wastelands to provide fast growing grasses allows slow growing trees to mature. In addition, water conservation techniques, both on and off farm help reduce the gestation period for both trees and fodder.

The following summary from the records of a village organisation meeting defines their ideas of future directions:

"The stored grass will be supplied to the cattle owners at the beginning of the next rainy season. This will restrain the cattle from going to the public grazing land where they eat a small amount of grass but through trampling prevent all further growth. Stored grass will enable the village organisation to protect other areas in future years until grazing stops of public grazing land and stall feeding becomes the accepted practice. With reseedling of improved grasses, fodder will improve in quality and quantity".

C. CONCLUSIONS AND OBSERVATIONS

Promoting the more efficient use of an existing resource and establishing downstream linkages can act as a communal incentive to promote wastelands development through social forestry and encourage the equitable distribution of benefits.

Improved use of existing CPRs can be an effective incentive to villagers to protect CPRs and invest in increasing productivity.

There is a need to broaden the scope of wasteland development to encompass income-generating tree products other than fuel and fodder, where the main emphasis currently lies. The development of processing and marketing linkages can establish the importance of seed and fruit products as substantial sources of income for the poor and landless in certain agro-ecological zones.

The introduction of equity considerations at the employment and the nursery stages of afforestation can establish a leverage for landless labourers and the poor. Evolving mechanisms for utilisation which strike a balance between the fulfillment of basic needs and the generation of short-term financial returns can allow a proportion of the benefits to accrue to the village as a whole. This approach develops skills at the local level which can be utilised during the tree gestation period.

The development of systems by which fodder production from wastelands can be increased both quantitatively and qualitatively can encourage complementary tree planting in arid and semi-arid areas. The equitable distribution of fodder from wastelands can substantially increase the income of the poor and landless.

There are chronic fodder shortages on the arid and semi-arid areas where livestock rearing is the primary economic activity. Trees are slow-growing in these areas and grasses were the major product from the CPRs. In these circumstances, primary emphasis should be on the development of grasses to meet immediate fodder requirements. Trees are more easily introduced to complement fodder production from grasses.

In the arid and semi-arid areas, water conservation and harvesting structure have an immediate impact on the natural regeneration of grasses and increase the survival rate of trees. Such structures shorten the gestation period before income accrues to the community, increase employment and wage income at the outset, reduce the risk involved in plantation and conserve local water resources. It appears that planting trees in isolation is an unproductive investment in these areas.

The strategy of giving usufruct rights to the poor on public grazing lands in arid and semi-arid areas in the absence of other initiatives can be counterproductive, for two reasons. First, there is a considerable risk that the trees will not survive in these conditions and therefore there will be no long-term benefits to the poor. Second, planting trees alone will destroy a community grazing resource in areas of chronic fodder shortages. Community management for grass as the primary product with the establishment of trees as a secondary consideration may be a more effective approach.

Short-term employment generation is an important component of the development models.

The area of wastelands available near a village is an important factor in determining the effectiveness of a development programme. Large contiguous areas reduce the problems of supervision and management and the absolute benefits from employment and regenerated resources accruing to the villagers are sufficient to maintain their interest and allow equity considerations to be introduced.

The NGOs are acting as facilitators and motivators: putting the poor in touch with resources which, up to now, they have been denied. This is a long term process and, if they are to have lasting impact NGOs need to work in an area for a considerable period. In order to do this they require access to both external financial assistance, (be it from the government or other donors) and sources of technical innovation.

NGO initiatives are generally at a very small scale, involving a few villages or, at best, a few talukas. NGOs commonly have a local

perspective and rarely have the inclination and certainly not the resources to countenance major expansions of their activities. While these initiatives are important incremental learning models, major social forestry developments are unlikely to take place without the support of the Forest Department with its massive management, land and financial resources. NGOs are developing links with government agencies such as NWDB but, few effective links between NGOs and the Forest Department have yet been forged.

Although details of costs and benefits are hard to come by NGO wasteland development work costs between Rs1,000 and Rs2,500 per hectare. In consequence, massive resources would be required at the state and national level if such activities were to be scaled up.

It is often difficult to gain access to wastelands. AKRSP is working with villages which are adjacent to substantial areas of unencumbered wasteland. Approaches to the state governments for access to revenue wasteland are extremely time consuming and, although access has been granted to some land after delays of up to 12 months, many applications by AKRSP are still pending. Access to denuded forest land is still more problematic and time consuming. Applications are channelled through Delhi and AKRSP has not yet had any applications approved. In the case of the more productive wasteland, widespread encroachment is effectively preventing any community development of the resource and, certainly in Gujarat, attempts to remove encroachers seem to be officially discouraged.

The key issue being addressed by these NGOs is the isolation of the poor. The villagers, and particularly the poor, are isolated from land; from sources of finance; from sources of technical information; from markets; and from management support. This location is perpetuated by an insensitive government bureaucracy and exploitation by richer members of their communities.

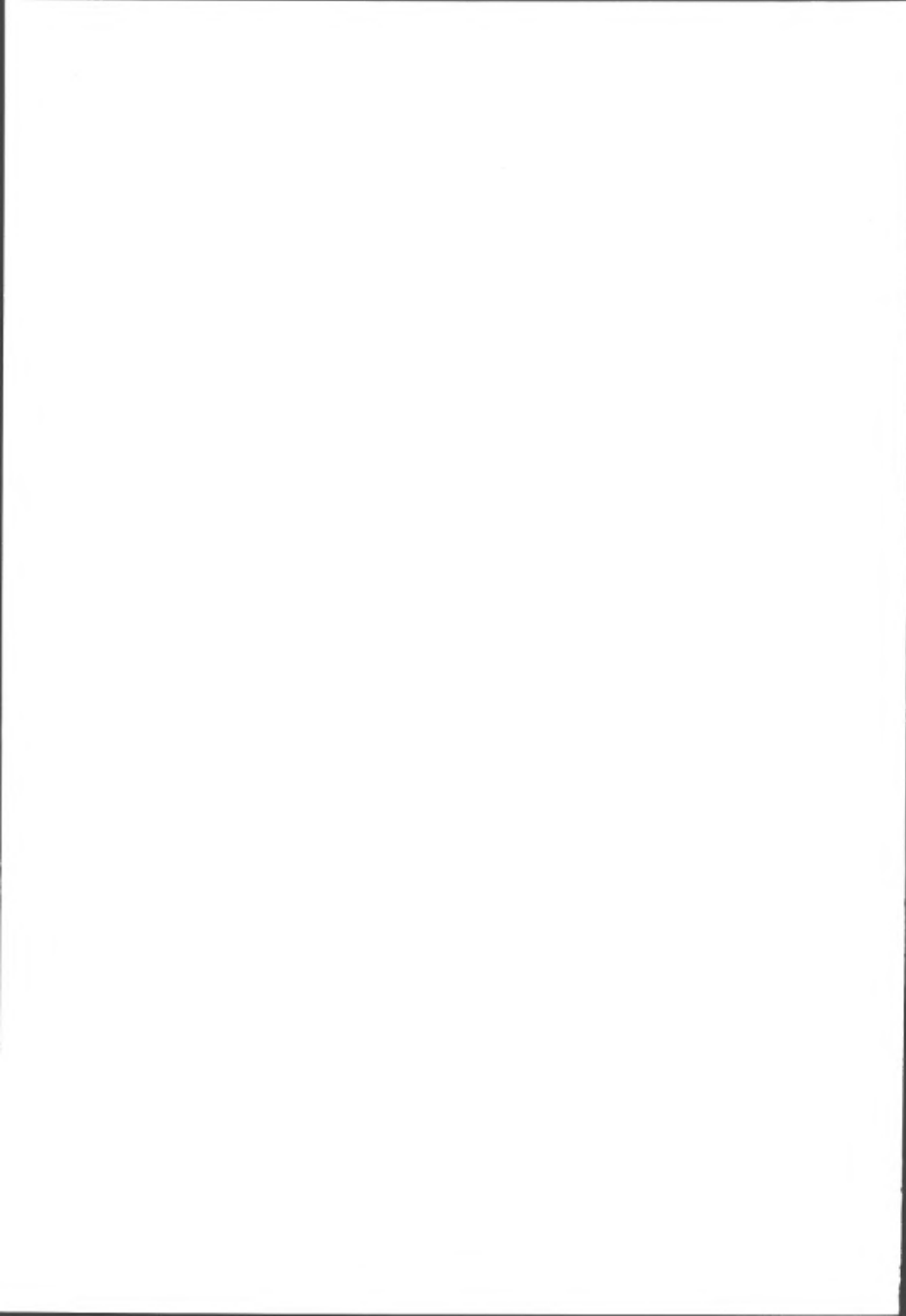
Progress to date is fragile. Experience is short term and interventions are disrupting well-entrenched social structures. The more severe the exploitation, the more fragile the innovation. In the Mahiti example, traders and moneylenders are losing their financial

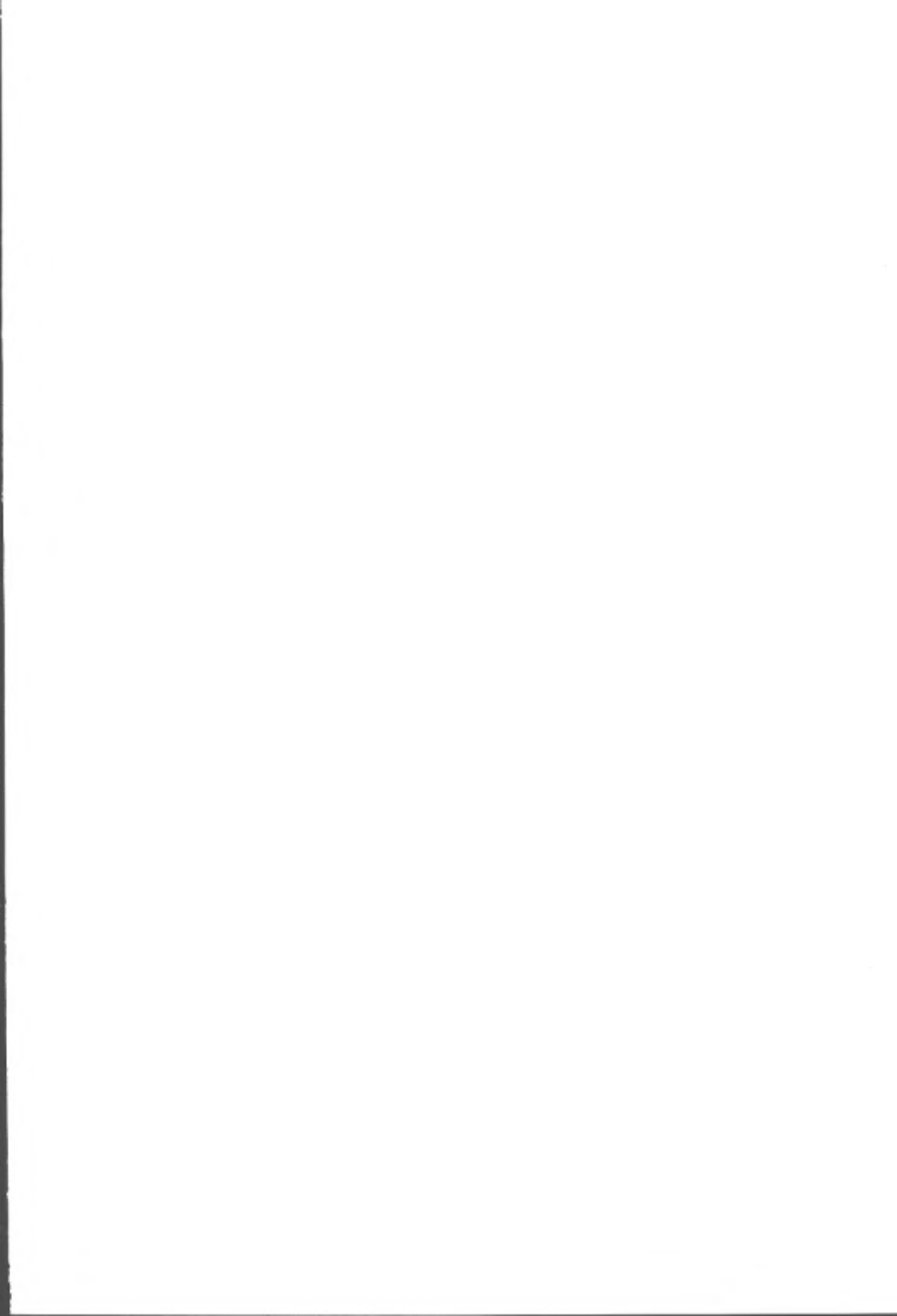
stranglehold on the villagers and are undoubtedly awaiting an opportunity to re-establish their power. The long term problems of ensuring equity remain unresolved. Short-term gains for the poor are clearly possible, particularly when there are underutilised resources (such as land and labour). However, unless the total pie is increased, redistributing the slices risks social upheaval.

Although newly established village organisations are increasing the power of poorer villagers, such organisations are still at risk from vested village interests. Equity cannot be forced and conflicts are bound to arise. NGOs can only attempt to establish sensitive and democratic village institutions and advise and encourage their development. However, in many cases, the NGO, by taking a target population approach (eg the poor) alienates the population affected by their intervention. In these situations the NGO cannot act as an impartial arbitrator of village conflicts. Who can? In an ideal world, the District Administration is well placed to fulfil this role; but, in practice, a consortium of local NGOs and/or umbrella village groupings may be better placed to meet an evident need. It takes considerable time to sensitise villagers; to win the confidence of the poor; to elicit their ideas; convince the richer villagers that, by working with the poor, they themselves can benefit from social forestry programmes; and to establish an organisation. Evidently there must be benefits to all groups for this to work. Such accommodation may not be possible in cases like Mahiti where the oppressors are losing from the programme; but in the AKRSP and Rajasthan examples, whole villages can benefit from commons improvement.

References:

- CSE (1985): *The State of India's Environment 1984-85. The Second Citizen's Report.* Centre for Science and Environment. New Delhi.
- N S Jodha (1986): *Common Property Resources and Rural Poor in Dry Regions of India.* Economic and Political Weekly No 27. New Delhi.
- SPWD (1985): *Wastelands of Rajasthan and Peoples' Problems.* Society for Promotion of Wastelands Development. New Delhi.







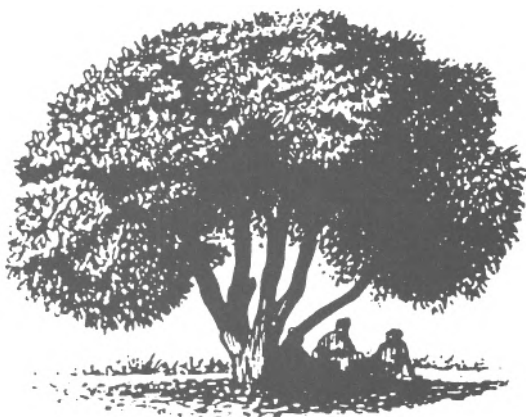
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



INVOLVING THE POOR IN FOREST MANAGEMENT: CAN IT BE DONE? THE NEPAL-AUSTRALIA PROJECT EXPERIENCE

Mary Hobley

Mary Hobley is currently working part-time at Overseas Development Institute as the Social Forestry Network Assistant. She is also completing her doctorate following fieldwork in Nepal on which this paper is based.

INVOLVING THE SILENT MAJORITY IN FOREST MANAGEMENT:

CAN IT BE DONE?

This paper will examine, in some detail, the working of the Nepal-Australia forestry, bilateral aid project, which has been operating, within Nepal for the past 10 years. The foremost question that will be addressed is does the form of community forestry that is implemented by this project, lead to an increase in poverty within the villages, or does it increase access to and control over forest resources, to those within the village who use and depend on the public forest resource, the silent majority of poor?

To examine this thesis, the social reality within the villages will be analysed. How is the natural environment articulated with individuals to produce the reality of forest usage and control?

Although many articles have been written on the physical attributes of community and social forestry, little has been written about the political and social implications of using these terms. There are several levels at which these terms are used, ranging from the international through to the local. From multilateral aid agencies to small, locally operating, non-government groups. In India, what constitutes 'social' in social forestry, is questioned by many groups. To the extent that some non-government groups will not practice 'social forestry', as they state that there can be no social benefits associated with social forestry. They, themselves use the term community forestry, imbuing the word with ideologies of empowerment of the poor and women and their complete and active participation in the local decision-making, required for enacting a community forestry scheme. Such that a communally owned area of forest, either natural or planted, is managed by those people within the area who use and depend on it for the sustenance of their basic needs. Giving voice to the 'silent majority', who otherwise remain outside the development offered through social forestry.

The research detailed here forms a part of a PhD study and is based on nine months of field work in the project area.

To examine the structured depth of social reality, the generation of ideas by aid agencies will be examined. These agencies operate within the capitalist world system. A particular form of community forestry is born from this system. As a notion, it has not emerged from the village level, where the resource conflict occurs. It ignores the reality of this conflict and talks about 'forestry for local community development'. A community of whom? A community of ruling classes? A community of need? It is not that aid agencies, operating as part of the ruling class, "intentionally and conspiratorially aims to dominate ideologically, rather that the structure of social relationships systematically generates ideological distortions which serve the class interests of the dominant class (Keat and Urry, 1982). Statements generated by the international aid agencies arise out of the capitalist mode of production, with the agencies and banks only reproducing those parts of the notion which will continue to sustain capitalism. The use of the term 'community' in community forestry gives rise to the notion of an undifferentiated group of beneficiaries. All within the village will benefit from community forestry. It is implied that local communities are an homogeneous entity, united for common action by their need for firewood and fodder. Ignoring the differential access to both natural and political resources, within the village, dependent upon, in the cases of India and Nepal, caste, class and gender.

Community forestry should not be defined by scale or by end product but by where the decision-making power about the resource lies. As Hyman (1985) states community forestry projects must give:

"...a high priority on socio-economic objectivesfor example, changes in the distribution of income, employment, the social well-being of women and the landless poor...the ability of individuals and institutions to participate in development".

In this context, 'management' of the forest resource does not just refer to the narrow understanding attributed, by foresters, to the

word management, that of utilisation, harvesting but goes beyond this to include the full participation and control by local people over all aspects of the establishment, sustenance, access to and distribution of the forest resource. The key concepts are power, authority, control and responsibility. Transfer of power and authority from those who have traditionally held it, to groups who previously had no access to power. As Oakley and Marsden (1984) have stated,

"....it is difficult to disassociate 'participation' from its relationship with power. For participation to be meaningful, it must involve some direct access to decision-making and some active involvement in the determining of problems and practices".

What are the implications of developing such forms of community forestry, of encouraging the full participation of those who use and depend on the forest, in the decision-making process? How is such participation to be achieved since power will not be readily relinquished by the ruling elite? Will the rural poor, the silent majority of nearly landless farmers, low castes and women, in all these groups, share in the control and authority for the forest resource? Can such actions be supported or encouraged by a bilateral aid project? Can true participation be fostered, or is it that the action catalysed will not be sustainable because it does not and cannot strengthen the poor and access and control of the resource remains firmly with the ruling elite.

Thus, if we do associate the concept of participation with some idea of power, radically different concepts of project practice must be conceived. The dominant paradigm of experts generating proposals and the rural poor passively acquiescing in one way or another must be broken down and replaced by entirely different actors. The priorities become the building up and the strengthening of the people, an approach which requires radically different project agents, as opposed to the too familiar emphasis upon tangible activities (Oakley and Marsden, 1984).

For community forestry projects to achieve a degree of success, they should in the words of Harari and Garcia Bouza (1982) be:

"....neither exclusively 'top-down' nor exclusively 'bottom-up', it must be based on the active intervention of the underprivileged sectors concurrently with decisive support on the part of the state and of many other groups, strata and political actors...."

The project, over the last few years, has moved away from seeing its prime objective, to achieve community forestry, as being one of resource creation, one of finding technical solutions to technical problems, to one of management of existing forest resources, through local participation. Requiring a whole new set of skills and understanding. At each level, there is challenge and conflict in this movement away from resource creation to resource management for those who need and use the resource. The project has moved into an area, where the superficial appearance belies the reality. The struggle between the holders and non-holders of power is being acted out in the use of each resource. The public forest resource is no exception and exemplifies the problems inherent in encouraging the formalisation of management of a resource. With the entrance of a government official, foreign project staff, a written plan, comes the elevation of the forest, from a local resource of local interest to one of deep political significance. Where power bases established through usury and land ownership can be further consolidated through formalised control over the forest resources.

To examine the working of the project, two panchayats will be considered. Tukucha, close to Kathmandu, where the project has expended a large amount of time in trying to establish a management system and Banskharka, where the project has been excluded by the pradhan pancha, the local leader, from playing a direct role, and their intervention has been restricted to financial assistance. In both panchayats, forests and their use have become a political issue and have been used by factions, within the panchayats, as a political tool.

Forest ownership is divided into several categories:

1. Government forest, owned and controlled by the state, through the forest department. Local people have limited rights in these forests, for the collection of leaves and dead wood.
2. Panchayat protected forest, former government owned natural forest, which has been handed over to the panchayat, to control and ultimately to manage.
3. Panchayat forest, which is newly established, plantation forest, either on government or panchayat owned land. This forest is also under the control of the panchayat. Although, the costs for establishment and protection of these forests are met, in this area, by the project.

The latter two categories of forest land, in the working area of the project, comprise a very small proportion of the total forest area, with the major part of the forest area remaining under government control, but with local use rights firmly but illegally established.

The categories into which government and projects divide the forest land is of little relevance to the villager who has always considered the forest to be the property of the village. In both the panchayats, government owned natural forests were considered to be the common property of particular villages, use regulated by the village and a watcher employed by the village to exclude outsiders from stealing from the forest. However, plantations recently established on panchayat land but watched by government or project paid watchers are considered to be government-owned forests. The local people say that they have no authority and the responsibility for the forest is held by the government. Local controls which regulate the use of the natural forests are not enforced for plantations.

Forest use in Tukucha panchayat is officially demarcated by the boundaries of the panchayat and in some areas by the ward boundaries. The ward being the lowest level of administrative control, within the panchayat. However, as has already been stated, the official and actual use rights differ, where use by local people is derived from locally established and controlled access rights, in existence prior to the establishment of the panchayat system, 25 years ago.

In both panchayats, there are areas of forest which have been protected by one settlement, with access regulated by the village elders, by payment of forest watchers from the village and by peer pressure. The surrounding villages know of the stated ownership by the one village, which is respected, until their own resources become limited, at which time the neighbouring forests would be cut for firewood and fodder. However, sanctions imposed by the villagers on outsiders stealing, have effectively reduced the rate of degradation of the forest. The boundaries of each forest are clearly defined and known by each village and usually follow natural boundaries, regardless of the political boundaries imposed on natural resource use.

Control over natural resources can be viewed in two ways. There is the right established through use, which in these two panchayats, is the right exercised by women in using the forest and the right legitimated through the formal, political sphere which is associated with the authority to enforce or withhold the user right. This right is exercised by the power-holding men. It is not always a clear dichotomy between the female user right and the male control right, rather that those who were in a position of power within the village could decide who did or who did not have the right to use the government owned forest. Although, women's participation in decisions made about the resource that they used was subordinated to all men, some men's participation was also subordinated to other men. The ability to exercise the right of use was controlled by the individual's class, caste and gender.

The pre-existing conflict emerged into the political arena, when the project decided that an area of natural forest, surrounding three

villages, should come under management and a management plan be written, following principles that the project considered would lead to 'sound' management. All the initial decisions, regarding the need for formalised management to be instituted, were made outside the panchayat, by the project and forest department staff.

There are three villages and a small settlement of low caste Kamis and Sarkis, using the forest. There are also three distinct areas of forest, in terms of the physical condition of the resource which were linked, through use rights to each of the three villages. The large area of well protected forest, was claimed by the Pandays of Pandaygaon to be theirs, since they had protected it for the last 25 years. A watcher had been appointed, by the village, who was paid in kind by each household, according to the number of family members and what they could afford. For this same period of time, the village has also held local power, with the leader of the ward, living in this village. However, both the Thapas and the Rais disputed the Pandays exclusive rights to this area of well protected forest and claimed that they too had rights of access to this forest. These rights would have to be written into the formal and 'legal' management plan.

It was initially assumed, by the project that use and control over the forest was a non-contentious issue, mainly because the forest was legally government owned and controlled. Secondly, because all the initial meetings to discuss management of the forest were held in Pandaygaon, to which mainly members of Pandaygaon attended with a few villagers from Raigaon. The opinions of the other villages were not heard. Thapagaon was outside the Tukucha panchayat boundary and thus was considered not to have any rights over the forest in the adjoining panchayat.

The leaders of the Panday village who were also members of the forest committee established at one of the initial meetings, were part of the local ruling elite. The period during which these meetings were being held, was just prior to the local elections. It was politically a very difficult time to be holding discussions about handing over control for the forest. Each village had to be seen to be fighting

for its rights, there could be no compromise. An apparent resolution was made, the forest should be divided between the three villages, with the Pandays conceding the rights of access to a small part of their forest, to the Thapas and Rais. However, when the forest was to be demarcated, no agreement could be made, as to where the boundary should be placed. Although, the authority for the forest had been handed over, by the forest department, to the two committees, formed by Pandaygaon and Thapa and Raigaon, these committees could not function.

The actual caste and gender composition of these two committees, is of significance, when considering the balance of power and for whom the decisions will ultimately be made.

Pandaygaon	Caste	Male	Female
Panday	Brahman/Chetri	17	5
Duja	"	0	3
Khadka	"	1	0
Kami	Low caste	1	1
		9	9

The actual power-holders are obvious, their numerical and sexual dominance ensure that the representation of both women and low castes is ineffective. The committee composition is representative of the population as a whole but does not adequately represent those who depend on the forest for sustenance of their basic needs.

Thapa/Raigaon	Caste	Male	Female
Thapa	Chetri	13	10
Rai	"	3	0
Khadka	"	1	0
Budhathoki	"	1	0
Duja	Brahman/Chetri	1	0
Kami	Low caste	1	1
Sarki	"	0	2
		20	13

The control of this committee is held by Thapagaon over Raigaon, where the size of the village and its wealth is much greater than that of Raigaon. Through this association, Thapagaon has secured rights of

access over the forest formerly controlled by Raigaon, giving Thapagaon a supply of forest products that it previously could obtain, only through stealing.

The decisions made by these committees were representative of the views of a small part of the population. In the words of a low caste blacksmith when he was asked where he thought that the authority for the forest should be held, he said:

"If the villagers own the forest they may protect it or they may destroy it. If the watcher is from the village, he may allow only the rich people to use the forest and not allow the poor people to. If there is a government watcher, he may treat everyone equally"

He then went on to say that authority for the forest should be held by the government and not by the local people. His fear being that local control would prevent him from gaining access to the forest.

The women of Thapagaon, when talking about authority for the forest, said that the authority should be vested in the women. They are the ones who use the forest and should, they say, make the decisions about the forest.

Women's participation on forest committees was seen, by the project, to be a way in which women could have some control over the decision-making process. Women were elected as vice-chairman and members of the committee but when decisions were made about access rights, these women were actively discouraged from attending the meetings. As one woman said, "we are only invited to meetings when foreigners will be present, otherwise we are completely excluded". Although women are present at the meetings, their authority is minimal. Change, if it is to occur must be slow and should be catalysed from within, with support from outside.

The poor in the village with little of their own land and no private trees, are totally dependent on the public forest resource, for firewood and bedding for their animals. Firewood has entered the

circuit of capital as a saleable commodity. Firewood was formally monetised and ascribed a cash value at one of the early meetings held by the project and the forest department, to establish a committee. The rationale for monetising fuelwood was given that since funding of the Australian project would end in three years, the forests should become self-sustaining and produce a revenue to support the forest watchers who had been employed and paid for by the project. In this ward, a price of Rs4 was fixed for 30kg of firewood, which would be equivalent to one load of firewood. Although, Rs4 may not appear to be expensive, the actual costs in terms of both money and labour are much greater. The proposal made at the meeting, was to organise firewood cutting through the use of a depot system, to be controlled by the Pandays. Thus, centralising the control of the resource and collection of the money into the hands of a few people. A few people would be nominated to cut the firewood and paid for doing the work. The monetisation of the forest resource, elevated a previously subsistence non-monetary resource, with only a labour value attached to it, to the level of a cash crop. Moving the forest resource from those who are heavily dependent on it, moving it outside the subsistence economy, to a sphere which belongs to the wealthy, a monetised, exploitative sphere.

Using this argument of self-sustenance, ultimately, it is the poor, who most heavily use the forest who will bear the burden of its cost. For a poor person Rs4 for a load of firewood is many times more expensive than for a wealthy farmer who has no need to take firewood from the forest to supply basic needs because there is sufficient available on his private land; Rs4 is a small amount to pay for a resource that he does not need to use. For the poor person, firewood has become an even higher valued commodity, not only does it have the pre-existing labour value but has an additional monetary value. The poor farmer would not have the surplus cash and would need to labour for others to supply basic needs of food.

When the wealthy of Pandaygaon were asked how the poor would be able to pay for the firewood, they suggested that they would have to labour for a day in the forest. However, a day spent labouring in the

forest means a day less labouring in the fields or in Kathmandu for wages. He would have lost a day's labouring income to pay for a previously free good.

Those who expend the greatest amount of labour in collecting forest products, are women. Those who have the least dependence on the forest resource and expend the least amount of labour in collecting forest products, are the major decision-makers and controllers of access to the forest resource.

Actions of the project, although pushing for women's participation and the involvement of the poor, have in effect, strengthened and legitimised the position of the ruling elite, who appease the project by allowing token women and low caste to be on committees, but themselves retain the power and authority.

The second panchayat, Banskarka, is a day's walk north of Kathmandu. It is composed predominantly of a Buddhist, ethnic group, the Tamangs. The form that intervention has taken in this panchayat is very different from that of Tukucha, due to the presence of an authoritarian pradhan pancha, who permits little interference in the way in which he rules the panchayat. He has been actively conserving the forests, in the panchayat, for the past 25 years, for the duration of which he has been the panchayat leader. Through his forestry work, he has achieved regional and national recognition and uses forestry as a means by which to consolidate his power base, both within the panchayat and within the region.

He has established his own ward-level committees, composed of his supporters. In one meeting, where a faction, politically opposed to the pradhan pancha, were not present, he denounced them for their attitude towards the forest and politics:

Arjun of Kanaltol was asking for some trees to build a resting-place down there....I asked him not to cut any trees here but he did not listen to me. The next day I found Kanals cutting down trees. By chance the guard was coming that way and he saw them cutting the trees. He blew his

whistle and went to the spot, so they could not cut the trees. They opposed this action, they claimed they should be allowed to cut whenever they need timber for some useful work. All the Khanalis supported this and they had one voice. They are anti-government people, they are against the system. They want a multi-party system of government, so they have not come to the meeting.

Although the forests of Banskharka have been protected over the past 25 years through the actions of one man, how much has poor people's access to forest been increased? Since the effective closure of the forests, the proportion of private trees grown on individual's land has increased, with villagers saying that 15 years ago, there were few trees on private land and crop production was greater. However, for those lower castes and poorer Tamangs, with little land, there continues to be an absolute dependence on forest within the panchayat which the protected forests will not sustain.

The forestry project working within this panchayat, is unable to work beneath the level of the pradhan pancha. There is no formation of strong committees, and thus no assurance that those who use and depend on the forest are fully represented. Whilst those who do not need the forest but are using it as a political tool, continue to be free to cut the forest. There can be no challenge to the existing power structure, either at the village or panchayat level.

This is well demonstrated in one settlement, in Banskharka. It is a high elevation settlement of Sherpas, where the productivity of land is low and the outmigration of both men and women, but predominantly men, to India is high. Frequently, there is only one adult left in the house, usually a woman. Out of the eight households that compose the settlement, five are headed by women, two are male headed and the eighth house is empty.

This predominance of female headed households has not led to an increase over their access to and control over resources. Women continue to be excluded from the political decision-making sphere, which is dominated, in this settlement by the two closely related, male households. These two households are wealthy with large land

holdings, worked by tenant farmers. There is no need for this family to send all its male members to India for work. They have maintained a continual male presence within the settlement for as long as can be remembered. Thus, retaining control over the formal decision-making sphere and control over the communally managed forest resource.

The forest had been bought 40 years ago, each household had contributed Rs25 with the aim of allowing the degraded oak forest to regenerate for the use of the village. Each household had the right to collect dry firewood and leaves for bedding material.

The two dominant households use the strong belief in witchcraft, as a weapon against one household of women, to restrict their access to and participation in village activities. One of the male headed households whose head is the village leader, claims that the women are witches and has said that they were responsible for the death of his son-in-law. Using the claim of witchcraft, the women are excluded from access to the village water supply and falsely accused of cutting green firewood, from the protected forest. On several occasions, the leader has beaten the older of the two women, for allegedly cutting green firewood. The women say that they are powerless to react against these acts of aggression because the leader is the most powerful man in the area and has the political support of the pradhan pancha. The women say that they are powerless because "the rich people dominate those who are poor". Other women in the settlement, although they disagree with the charges of witchcraft, say that they too cannot change the situation because they have no men within the household, to act on their behalf, in the formal, political and legal arena.

The two households have further consolidated their control by seizing, through the bribery of members of the cadastral survey, an area of common grazing land and forest, which was previously considered by other households, to be common property.

In such a situation, a forest committee formed for the ward in which this settlement is in, could not, with the existing power structure represent these women or other such families. The project cannot

catalyse action which would disturb this existing power structure. Community forestry, where those people who depend on the public forest resource have an active role in its control will be difficult to achieve.

In conclusion, the problems facing the project, for the implementation of community forestry are not 'simply' how to involve the poor farmer, the superficial appearance of the interaction between the deeper social relations of class, caste and gender. But how to understand these existing relations and the power that individuals exert for the control of a natural resource.

Inadequate understanding, leading to many misperceptions, resulted in the problems experienced in Tukucha. However, how does a project with limited financial and physical resources, working within the constraints of a bilateral aid programme, actually ensure that the 'silent majority' are actively participating and that through their actions, the conditions of women and the poor are improving and not worsening?

The project has begun to follow a two-level approach. One through the education of the forest department, at all levels, but with particular focus on the forest rangers. The ranger level, is the village contact level of the forest department, which works very badly, with the relationship between ranger and villager characterised by mutual mistrust. These rangers will eventually become the contact people between the villager and the forest department. They will be the motivators, who will be able to establish an effective rapport with forest users and local leaders. The training programme for this part of the project has already commenced, with intensive workshops on the art of communicating and more importantly, listening. It is a whole process of re-education, playing a role that is very different from the existing role of the ranger. Involving extensive periods of time in the village, communicating with people, who previously would not have been noticed by the ranger. It is hoped, by the project that strengthening and training this level of the forest department will, in part, help to promote community forestry.

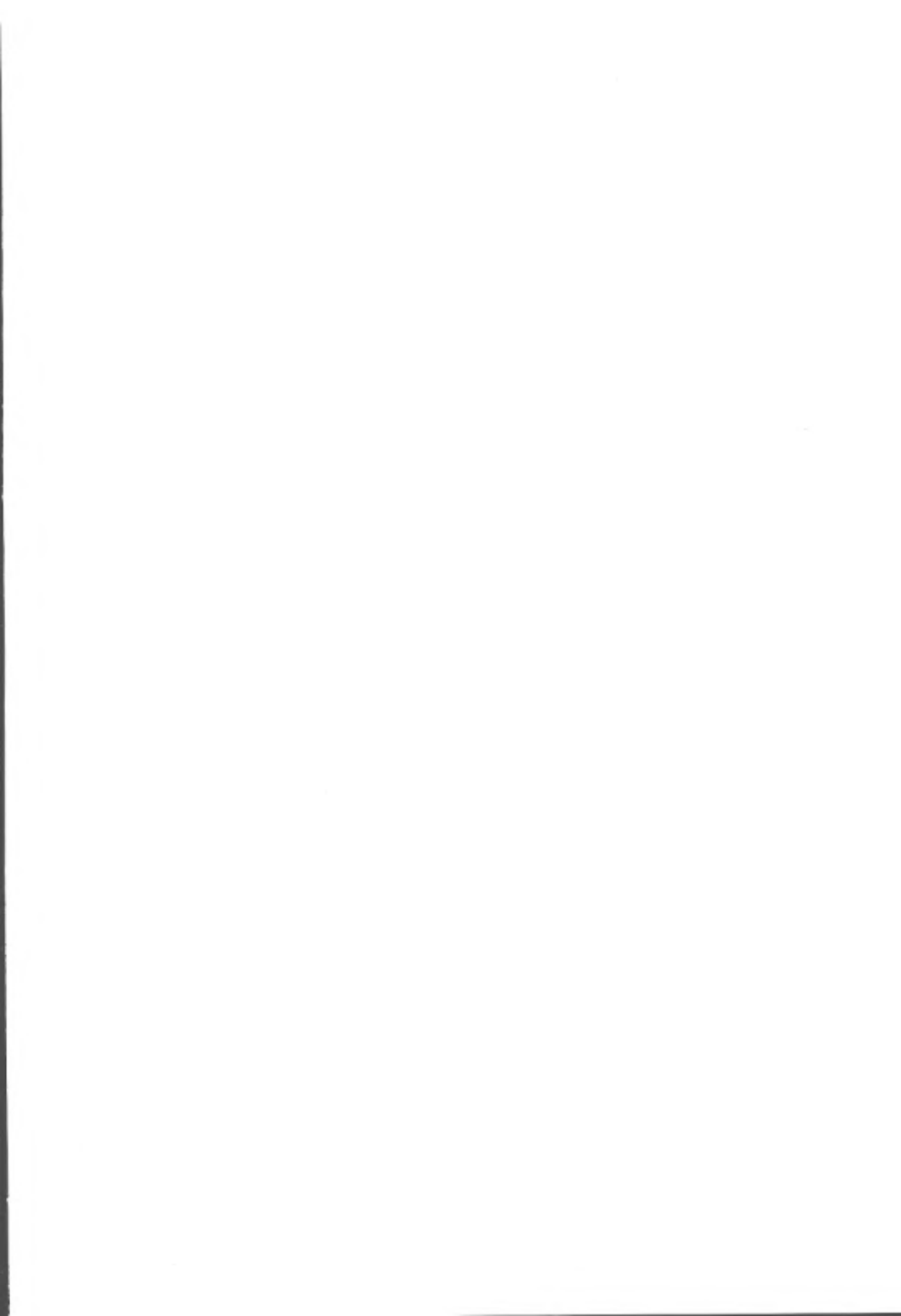
The second level of the approach continues in parallel with the first and will eventually become contiguous. This is the process of consciousness raising within the panchayat, itself. This is carried out on a small scale because staff are limited. Using forest rangers who have been through the training. Time is spent in the village identifying the forest users and forming them into groups, with the eventual aim that they will form a committee. However, the project continues to espouse these ideals but as was seen in Tukucha, the lack of understanding of the power structures led to a strengthening of the elite and not to a strengthening of the poor. Given the political constraints under which the project acts, the overt support which would be needed to ensure that the poor are not alienated from the resource, would not be tolerated at any level of the political power structure.

What then does the project face? Is it a future where statements are made saying that bilateral projects can never reach nor support the poor. All they can do is to improve the condition of the majority and thus, using an implicit trickle down approach, vainly hope that the poor will benefit.

Community forestry, forestry for those who use and need the forest resource, is unlikely to be obtained without invoking deep social change. A process which this project will follow, only as far as it is permitted, by national governments but perhaps more importantly by the local power structures that support the elite control over resources.

References

- Harari, D and Garcia-Bouza, J (1982) Social conflict and development: basic needs and survival strategies in four national settings. Organisation for Economic Cooperation and Development, Paris.
- Hyman, E L (1985) Monitoring and evaluation of forestry projects for local community development. Agricultural Administration Vol 19, 139-60.
- Keat, R and Urry, J (1975) Social theory as science, Routledge and Kegan Paul, London.
- Oakley, P and Marsden, D (1984) Approaches to participation in rural development, International Labour Office, Geneva.





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



HOUSEHOLD FOOD SECURITY, TREE PLANTING AND THE POOR: THE CASE OF GUJARAT

Richard Longhurst

Richard Longhurst is a Senior Research Fellow at IDS, University of Sussex. He is currently on secondment working as a Program Officer for Ford Foundation in their Khartoum office.

HOUSEHOLD FOOD SECURITY, TREE PLANTING AND THE POOR: THE CASE OF GUJARAT

I. Introduction

This paper is addressed to two questions:

- a) In what ways does tree planting influence the food needs of poor households and nutrition of vulnerable groups?
- b) What are the institutional and organisation issues involved in ensuring that any special contribution can be enhanced? The focus in particular is on the integration of food consumption and nutrition considerations into tree planting projects rather than their complementarity to supplementary food and nutrition projects that run "alongside" forestry projects.

The observations in this paper are confined to Gujarat.

II. Forestry and Household Food Security

There is a growing recognition that the forestry sector and social forestry programmes in particular can have a considerable impact on food security at national, regional and household levels. The structure has been elaborated by FAO, for example, in terms of its "standard" analytical form of the contribution of a sector to food security supplies through adequacy, stability and access (FAO 1985) and in more detail as follows:

- adequacy of supplies directly through supplementary sources of food found in the forest and indirectly through provision of grazing, fodder and shelter to livestock;

- stability of supplies through maintaining soil fertility, hydrological balance and agricultural productivity and through its overall protection role;
- access to supplies through generation of rural employment and income and of foreign exchange earnings.

This analysis remains more useful at national rather than household level though additional contributions of forestry products at household level are included such as supply of fuelwood for cooking, food preparation and presentation and the provision of many inputs for agricultural production.

Provision of firewood is of particular importance for the food consumption and nutrition of vulnerable groups such as pre-school children in view of its impact on women's time allocation, now recognised as a key factor in child care. Generally women have a far more influential role in the management of time and income and food from their products than is recognised (Fortmann and Rocheleau, 1985). Tree products have an important influence on seasonal food consumption and malnutrition as many products are available at the end of the dry season when other food resources are running low (Chambers and Longhurst, 1986). The range of uses of trees and ways in which food and income can be derived from them is enormous.² Trees can be used as assets to raise money to deal with contingencies and even be mortgaged and used to secure loans from banks (Chambers and Leach, 1986). These are some of the means whereby trees can contribute significantly to household food security and are shown in a simple flow diagram in figure 1.

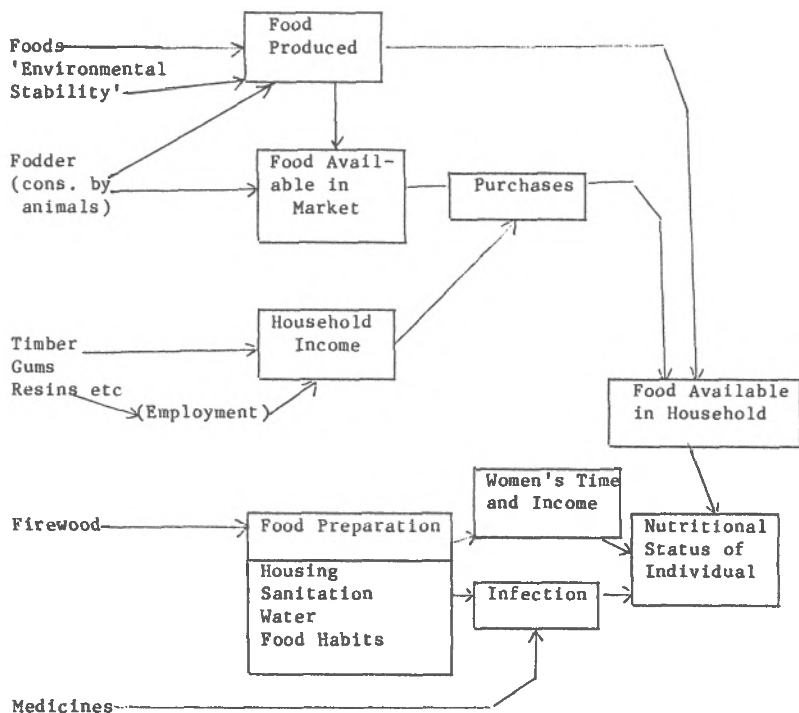
The choice of tree species is crucial in determining the products available; the extent to which the poor and malnourished have access to these food and income products will be directly related to their degree of control over trees. The nature of this control can be determined by the form of project policy: the way in which trees are selected, owned, planted, maintained, harvested and marketed. Trees

do provide food and the wealth of research in India on the nutrition of tribals shows that such groups are very dependent on trees. (In Gujarat the research of Gopaladas et al is typical of this). However, this research has usually gone only as far as looking at the nutrient composition of tree foods. We really have to look at trees and their impact on food consumption and nutrition as cash crops. On the face of it, trees have many of the negative aspects of cash crops that have been raised albeit rather superficially in the literature ie taking more than one cropping season to mature, research, extension and marketing services concentrated on male farmers, concentrated marketing outlets, transfer of land area from food crops with net loss of employment and, in the case of some species, only one marketable product.

On the other hand, careful species choice can reduce some of these aspects leading to a range of products that can be used, by all family members, a flexibility in harvesting time so spreading incomes throughout the year and a complementarity with existing staple food crops. Finally the return per hectare or per man day of labour for some tree species may be so much higher than other crops in some locations that these revenue disparities override any negative effects.

In turning to the Gujarat Social Forestry Project (GSFP) we have in mind how this project could have been organised so that household food security for the malnourished was improved within mainstream project activities and what compensatory nutrition intervention might still be needed.

Figure 1: Tree Products and Household Food Security

Tree Products

Based on: Mason, J B, Minimum Data Needs for Assessing the Nutritional Effects of Agricultural and Rural Development Projects, Nutrition in Agriculture No 4, FAO, Rome, 1983.

III. The Gujarat Social Forestry Project and Food Problems in the State

The GSFP has been in progress since 1969 with a considerable development since 1980 with the introduction of World Bank funding. It has recently been evaluated under FAO auspices with funding from SIDA (FAO/SIDA, 1985). The GSFP has the following components: strip plantations along roadsides, canal banks and railway lines managed by the Forestry Department (FD); village woodlots (4 ha in size) both FD-managed and self-help; distribution of seedlings for farm forestry; reforestation of degraded forest land by farm families and construction of improved stoves (chulas) and crematoria. The total area covered by the farm forestry is at most 100,000 hectares (Longhurst 1987) with the other components covering nearly 150,000 hectares. Most trees in farm forestry have been planted in blocks or around edges of fields compared to mixed in with crops. Eucalyptus has been the most popular species, being planted by 68% of farmers and comprising about 50% of the other components (FAO/SIDA 1985). The FD has maintained strong control over all their components to the extent that little control of strip plantations is in the hands of local people. The predominant mode of agroforestry has been block planting of Eucalyptus by richer farmers to supply the local pole market. This has been so popular that the price of poles has fallen. Farmers with irrigation facilities have benefitted considerably. Therefore poor local people have received few benefits from the project, although the FAO/SIDA evaluation has shown that smaller farmers are now planting trees in increasing numbers.

How can the GSFP be related to the consumption of food by poor, malnourished people? Figure 1 suggests some of the linkages. Our understanding of these linkages is still rather weak, as is the case generally in production - consumption linkages research. Also what research has been done in the case of tree products has focussed on tribals living in forest communities, especially true in Gujarat;³ and not strictly part of the GSFP. Food consumption in Gujarat is based on a staple such as bajra, jowar, rice or wheat consumed as chapattis with a gruel, and dahl. Compared to the other nine states surveyed by

the National Nutrition Monitoring Bureau, Gujarat generally finds itself in the middle with regard to adequacy of nutritional standards. Food consumption data shows a below average intake of cereals, average intake of pulses, negligible consumption of leafy vegetables, but above average for milk, fats and oils, sugar and jaggery. Energy intake was 2,327 kcal/consumption unit/day compared with the 10 state average of 2,366 kcal and a requirement of 2,400 kcal. Protein intake was more satisfactory being 67g compared to 62.4g (average) and 55g (requirement); 15.2% of households were deficient in both calorie and protein intakes. The incidence of nutritional problems for children is quite serious with 44% of under-fives being below 75% of the median weight for age.

As important as the levels of food intake and nutritional status are the causes, or associations, as related to socio economic status. The landless had far lower calorie intakes than the landed, over and above land ownership per se, those who raised some crops had higher intake than those who did not. As expected, occupation of the head of the household was also significant. Families where the head was a cultivator had higher intakes than those where the head was a labourer. However, unlike most of the other states, the scheduled tribes were found to consume lower amounts of protein and calories as compared to Harijan families. Possession of cattle was also associated with higher consumption of calories and protein. Data relating income levels of tribal families with malnutrition show no clear trend within the range of 30-100 rupee per capita monthly income. However, a study carried out at the Tribhuvandras Foundation in Anand found that the nutritional status in labourers families was worse than that of non-labourers (Wijga et al 1983).

Clearly if a project is to have an impact on food security at the household level and nutritional status of vulnerable groups, then it must bring income and time benefits (both in terms of quantity and flow), to these poor families (landless in particular) and to women within these families.

The extent to which the impact of the GSFP has been favourable in this regard has to be based on rather partial data. Improved food

consumption of the poor may not have been one of its original explicit objectives but the view should be taken that all types of rural development project should at best improve the welfare of poor groups and at worst not harm them.

In terms of food supply, some land previously cultivated to food crops has been converted to trees, although this is probably no more than 30,000 hectares and unlikely to exert upward pressure on food prices. Because of the predominant choice of species and form of control the project has had little impact on firewood supplies which, so the argument goes, has meant little replacement of cow dung for burning, which would otherwise have been applied to fields. On the other hand, the managed plantations have probably increased fodder availability which have had a positive impact on milk yield. However, the impact on vulnerable groups may have been negative if managed plantations were developed on previously common wastelands and the fodder distribution has now come under the control of a village panchayat. One evaluation carried out by the FD suggested that fodder distribution was reasonably equitable (Verma, 1986). More recent species diversification on the GSFP has introduced more nitrogen fixing trees and provision of fruit through the success of ber.

Remarkably the amount of genuine agroforestry - the mixing of annual crops and tree crops - in the GSFP is small. This will be due to several reasons: the suitability of Eucalyptus, the target population of rich farmers encouraged by the FD, the lack of cooperation between FD and Agriculture Department and the absence of suitable advice on appropriate crop mixtures, and incentives both from farmers and within professional structures to provide these.

The GSFP has not been successful in involving the landless or poor directly. There are several reasons for this but one of the most obvious - if not the most important - is its relentless need to meet high planting targets. This means that there has been little effort to involve such groups as the institutional forms needed require patience and care. The time involved for example in setting up a self-help woodlot of 4 hectares run by 30 landless labourers can be

used to distribute seedlings to several hundred farmers or plant up large areas of road and railway sides. Similarly the GSFP has had relatively little impact on women and therefore of improving their control over incomes. This is out of all proportion to their involvement in the collection, processing and marketing of tree products and the amount of technical knowledge they have on trees. The economic status of women in rural Gujarat society is weak and dependent on male members. The State has a low proportion of women working as main workers (18%) compared to other states.

The difficulty of male extension workers approaching rural women is well recognised, but equally GSFP has made little progress in its aim that initially would have had greatest benefit for women: provision of more firewood. The best firewood species: Acacia nilotica, A. tortilis and Prosopis juliflora make up less than 10% of seedlings distributed to the public. One assumes this would have been much higher if women had been more involved by the Project in agroforestry. The major effort to draw women into the GSFP has been by the Self Employed Women's Association (SEWA) based in Ahmedabad. This has established one village woodlot controlled by women in the village of Ganoshpura, 30 km north of Ahmedabad. Also of benefit to women, smokeless stoves have been introduced via extension agents of SEWA and the FD. According to FD records nearly 48,000 have been introduced.

In rural Gujarati households, women do not have de facto control over assets and resources such that they could significantly influence the welfare of family members. Ownership of trees could be a major means of empowering women.

IV. Conclusions and Policy Implications

The major problem in utilising tree crops to enhance household food security in Gujarat as elsewhere is the delay in income flows while the crop comes to harvest; this period is a minimum of 3-4 years. If tree crops have replaced annual crops (or even grazing land) and use any other scarce resource previously devoted to annual crop production such as labour, fertiliser and irrigation water, then there is a net loss to the farmer in this period. Income flows become lumpy and

there is a transition period for which other means of household food security have to be found.

On the other hand, once harvested, returns to tree crops can be high. This represents a major potential for helping the poor. Calculations by the FAO/SIDA evaluation suggest that the rate of return can vary from 19% (Leucaena leucocephala) through 26% (Acacia nilotica) to 37% for Eucalyptus. Estimated returns to village woodlots average at 25%. Precise data on rates of return to annual crops are not available at the current time, but are probably one third to half of them.

Of course agroforestry does have employment benefits although the calculations have not been done to see if these are net benefits compared to previous land uses. Generally it is believed that Eucalyptus leads to a net loss of per hectare labour use. In Gujarat employment in tree care occurs at times when other employment is scarce, especially harvesting in the months of February-March. Some tree species appear to generate more employment than others, although there are no firm quantitative estimates. The trend towards bamboo species (Bambusa and Dendro-calamus) in the GSFP should lead to more "downstream" benefits so generating employment incomes.

Choice of tree species in Gujarat can influence seasonal benefits. Fruits of some species are available in the hungry season (March-June). Bidi leaves for small cigarettes are also available at this period and provide small but crucial amounts of income for local people; oil is collected from Madhuka in April-June.

These observations lead to a first conclusion, or discussion point. What can be achieved in terms of providing benefits for the poor in terms of species choice? The poor may well prefer species with several products; logically they will need species that yield rapidly (such as Eucalyptus!). Related to this point is how the preference for species choice is fed into the decision-making process. Visitors to GSFP are told that farmers keep demanding Eucalyptus despite FD's desire to diversify in response to criticism. But which farmers are these: those with sufficient resources to visit nurseries and transport large quantities of seedlings? A social organisation of a

tree planting project is required that enables the poorer section of the community to influence the species planted and to have control over the product.

The second point or conclusion on integrating food consumption consideration into such a project as GSFP is to ask what supporting activities such as research, extension, input use and target group identification and organisation will maximise the benefits distributed to the poor in such a way as their pressing food "characteristics" (spending 80% of income on food, seasonal shortages etc) are recognised. The poor need to be identified by food and nutrition

problems and cause and the question asked: how can tree planting help solve these problems. It may mean providing a range of "non-forestry" inputs such as well digging and irrigation.

The third discussion point in the use of tree technology to improve food security is how to overcome the period of food insecurity while the trees are generating costs but no benefits. Here compensatory programmes are discussed. Several schemes exist in Gujarat to encourage the poor to grow trees in a manner that they receive some interim resources before harvest. The RDFL (Reforestation of Degraded Forest Lands) scheme pays an annual allowance to families of Rs250 per hectare in lieu of income foregone; farmers are encouraged to intercrop trees with food crops so that 2-3 years of food is obtained.

Other project components that might be introduced for this period of food insecurity include:

- the use of food aid both to pay for planting, maintenance and inputs and to replace food lost by tree planting. This approach underlies WFP (World Food Programme) project India 2783 which intends to support forestry development in tribal districts in Gujarat.
- extension and marketing efforts (and coordination with Agriculture Departments) to maximise the benefits from early forestry products such as pasture grass and fruit grafts.

- stipends to provide training in future tree management and establishment of tree product processing facilities.
- direct grants for tree maintenance.
- loans from banks using trees as future assets for collateral.

Finally, the fourth discussion point relates to the way in which ownership and control of the product of their labours can be ensured for the poor. Income flows to poor people who spend 80% of their incomes on food will lead to food consumption benefits. Trees provide means of smoothing seasonal flows caused by annual crops. Tree tenure for the poor, especially on wastelands will be a major area of discussion at this workshop. For food and nutrition benefits to be maximised for vulnerable groups, women must be included in these ownership groups.

Footnotes

1. This paper is based on a consultancy carried out for FAO in conjunction with the FAO/SIDA Forestry for Local Community Development Programme, and focussing on the Gujarat Social Forestry Programme. Grateful acknowledgement is given to all those in Rome, New Delhi and Gujarat who helped the authors.
2. Being timber, firewood, poles, fruits, berries, nuts, fodders, gums, resins, dyes, tannins, medicines, wax, honey, insects, saps, soaps, poisons, fibres, bamboos and canes to mention but a few.
3. Surveys have been carried out by Gopaldas among the forest-dwelling Rathwakoli ribe. Protein intakes were adequate but intakes of energy, iron and in particular retinol were deficient. (Gopaldas et al, 1983).

Bibliography

- FAO, 1985, The Role of Forestry in Food Security, Committee on World Food Security, CFS 85/4, Rome.
- Chambers, R and R Longhurst, 1986, Trees, Seasons and the Poor, IDS Bulletin, 17, 3, 44-50.
- Fortmann, L and D Rocheleau, 1985, Women and Agroforestry: Four myths and three case studies, Agroforestry Systems, 2:253-272.
- Chambers, R and M Leach, 1986, Trees to meet contingencies: savings and insurance for the rural poor, IDS Discussion Paper.
- FAO/SIDA, 1985, Evaluation of the Gujarat Social Forestry Programme, Rome.
- Longhurst, R, 1987, The Gujarat Social Forestry Project, Food Security and Nutrition, Report to Food Policy and Nutrition Division, FAO, Rome.
- Gopaldas, T, K Saxena and A Gupta, 1983, Intrafamilial distribution of nutrients in a deep forest-dwelling tribe of Gujarat, India, Ecology of Food and Nutrition, 13, 69-73.
- Wijga, A, U Vyas, V Sharma, N Pandya and D Nabarro, 1983, Feeding, Illness and Nutritional Status of Yong Children in Rural Gujarat, Human Nutrition: Clinical Nutrition, 37C, 255-69.
- Verma, D P S, 1986, Who Benefits? A Case Study regarding benefits from Dhanori Village Woodlots, Baroda, mimeo.
- WFP, 1986, Project India 2783: Forestry Development in tribal districts of Gujarat, WFP/CFA 22/8, Rome.





Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



GAINS FROM SOCIAL FORESTRY: LESSONS FROM WEST BENGAL

Tushaar Shah

Professor Tushaar Shah works at the Institute of Rural Management
Anand 388001, India.

Gains from social forestry: Lessons from West Bengal¹

1. Physical and social setting

What are the income flows from social forestry plantations and who enjoys these income flows are the questions that have interested researchers and policy makers ever since social forestry grew into a movement of sorts in early 1970s. Field level studies of gains from social forestry have already begun to become available, for example, from Gujarat.² They raise important questions about distributional implications of different institutional models evolved under social forestry programmes. In this paper, we have attempted a similar analysis of gains to the poor people from West Bengal's group farm forestry programme. This analysis is based on the experience of the first group of 71 families in 10 villages in Arabari forest range (Midnapur district) who harvested and sold trees during the past 12 months. Limited though the experience is, we believe that it has lessons to offer.

With its relatively small land mass, West Bengal has amongst the worst land: man ratios in the country with just about a third of an acre of farm land per caput.³ This limited farm land (net sown area: 13.6m acres) is also distributed in a very unequal manner. In 1970-71, for example, nearly 80% of rural families owned either none or less than 1 ha of land; and, on the other hand, less than 10% of rural families with holdings larger than 5 ha owned half of the states' farm lands.

The state has four distinct soil zones: southern parts of 24 Paraganas and Midnapur districts near the Bay of Bengal constituting the somewhat saline coastal zone; all of Hawrah, Hoogly, Nadia, Malda, West Dinajpur districts form the alluvial zone where land productivity and population pressure are high; all of western districts of Purulia, Bankura and Birbhum and the western part of Midnapur district have laterite soils less suited for intensive agriculture; and the northern districts of Jalpaiguri, Cooch Behar and Darjeeling form the densely wooded hilly zone with high rainfall.

Much of the present West Bengal was under Permanent Settlement during the British rule and the bulk of the farm land was cultivated by

'bargadars' (tenants) whose rights were neither defined nor secure. In early decades before Independence, the Zamindari system, along with a chain of intermediaries between the state and the tiller assumed the worst form of exploitation and repression of West Bengal's rural poor; in addition, they acted as a major hurdle to rapid agricultural growth. In the post-Independence era, the government of West Bengal sought to drastically alter the traditional land relations through the enactment of a series of laws aiming at the abolition of Zamindars, regulation of the terms of tenancy and increasing the tenant's share in the output to 75%; imposing a ceiling on land holdings and distributing the surplus vested land to the landless and marginal farmer families. Contrary to popular misconception, the West Bengal government's performance in the implementation of land reforms was not superior to that of most other state governments; however, three features of West Bengal's land reform programme distinguished it from similar programmes implemented by other states of India.⁴ First, the leftist parties of the state helped to build a politically conscious peasantry and local self-governing institutions. Second, 'operation Barga' launched by the CPI (M) led leftist government which came into power in 1977 helped to develop a register of bargadars who formed the target group for the antipoverty programmes. Third, West Bengal's performance in the distribution of surplus vested land (most acquired through abolition of Zamindari) was superior in qualitative as well as quantitative terms. The process of identification of bargadars and of distribution of vested land used village level self-governing institutions and group meetings which made manipulation by large farmers difficult. All these three features had an important bearing with the evolution and success of West Bengal's social forestry programme.

2. Evolution of West Bengal's social forestry programme

Started somewhat hesitantly in 1981, West Bengal's social forestry programme, as in other states, was meant to be a response to the crisis of rapid erosion of tree cover. While 13.5% of the state's geographical area is officially under tree cover, actually no more than 5% is under productive forests.⁵ The programme had four major

components: strip plantations, village wood lots, farm forestry and reforestation of degraded forests.

Table: 1 which compares the programme performance with targets shows that while farm forestry exceeded the targets, village wood lots fared poorly. Because of heavy pressure on land and because West Bengal was under the zamindari system, most villages have no common lands on which village wood lots can be raised.⁶ Most of the wood lots raised so far are in small plots of land owned by schools, panchayats, hospitals and such other public institutions. Such lands are becoming increasingly difficult to find and, as such, the village wood lot programme is being phased out.

Table: 1

Targets and achievements of West Bengal's social forestry programme

	Targets	Performance by 1983	Performance by 1986
1. Strip plantations (ha)	20,000	5,700	18,158
2. Village wood lots (ha)	6,000	1,149	2,395
3. Farm Forestry (ha)	52,000	14,780	62,024
4. Reforestation of degraded forests (ha)	15,000	4,500	17,756
5. Total (ha)	93,000	26,129	100,333

(Information from Forestry Department, Government of West Bengal. "Progress Report on Social Forestry", Social Forestry Wing, Calcutta, 1986).

The success of the farm forestry plantations is explained largely by West Bengal's impressive record in distribution of surplus vested land. Over 61% of the total area planted under the social forestry programme and 59% of the area planted under the farm forestry component are concentrated in four western laterite districts of Bankura, Birbhum, Purulia and Midnapur which have a relatively greater proportion of

wastelands. These four districts account for 56% of surplus vested land and 38% of total land distributed in the state. They have enough undistributed vested land to benefit some additional 2.2 million poor families and therefore provide great scope for farm forestry as a source of livelihood.

An interim evaluation of the programme by the department itself indicated that strip plantations and village wood lots in West Bengal faced much the same problems as they do in other states. Survival rates range between 40-60% and local people are generally indifferent, at times even hostile, to the plantations.⁷ In a recent wise move, the present government handed over all wood lots and strip plantations to village panchayats who will now take the responsibility of nurturing, protecting, harvesting and replanting the trees and will keep the entire revenue from such plantations. There was general agreement among the forest department officials we met that while work on new strip plantations and reforestation of degraded forests will continue in times to come, nevertheless, in view of the unique opportunities offered by West Bengal's vested land distribution programme, group farm forestry will become increasingly important especially after the encouraging results obtained in the Arabari range of East Midnapur Division, where the first group of families involved in farm forestry have sold their tree crops for tidy sums and reinvested the cash in productive assets.

3. The Nepura group farm forestry complex in Arabari range

The first ever group farm forestry plantation in West Bengal was established in 1981 on a contiguous block of about 43 ha of mostly "patta" land owned by 144 poor families from 10 villages surrounding Nepura village in Arabari forest range. The soil in this area, as in much of Midnapur, is laterite and mildly undulating. The surplus land distributed as "patta" land is usually upland with a hard surface and little moisture retaining capacity. Most of the "rayat land" (owned land) is low lying and fertile and is capable of sustaining three crops a year with irrigation.

While a few "pattas" were issued as early as in 1972, by far the majority were issued in 1978 and thereafter. Some recipients of

"pattas" had tried to take a kharif paddy crop on these lands but failed to get their seeds back. As a result, all "patta land" remained unused until the farm forestry programme started in 1981. Visits to a few other parts of Midnapur district confirmed the forest department's view point that tree cultivation was the only productive use of patta lands in laterite areas.

The villages are populated by some caste Hindus (usually Brahmins) but mostly by scheduled caste families and by Santhals (tribals). Most "rayat lands" are owned by caste Hindus and Santhals, as a rule, do not own "rayat lands" except those recently purchased. The main source of livelihood for scheduled caste and Santhal families has traditionally been forest and farm labour; and, the issuance of "pattas" did not help to change this pattern. That the "patta" lands could not be put to productive agricultural use emerged as an important facilitating factor for the farm forestry programme.

This programme involved motivating clusters of farm families to plant trees on a contiguous plot of 20 ha or more land. The forest department would provide free seedlings, and one dozen each of fertiliser and pesticides. In the initial years, the department also offered incentives at Rs0.10 and Rs0.14 per surviving plant at the end of the 1st and 2nd years respectively. However, digging of pits, planting, fertiliser application, replacement of dead trees, etc were the responsibility of participating families and no remuneration was paid for these tasks as is done in states like Gujarat. Even so, as Table: 2 shows, farm forestry caught on in Arabari as in other parts of Midnapur, and, indeed, in other laterite districts such as Bankura and Purulia.

The number of participating families in Table: 2 at best indicates the number of parcels of land brought under farm forestry, for many families planted trees over several years in different parcels. While the department has been recommending a density of 1,500 trees/ha, on an average 2,100 seedlings have been lifted per hectare brought under the plantation. Most families planted eucalyptus only while a few planted a small number of Akashmoni (Acacia auriculiformis) or

cashew trees along with a large number of eucalyptus. This trend was in conformity with the farm forestry programme elsewhere in West Bengal except that 'Jhau' (Casuarina equisetifolia) popular in some other districts were not planted here.

Table: 2
Progress of farm forestry in Nepura complex

Year of Plantation	No. of Seedlings	Area (acres)		Beneficiaries			
		Patta	Rayat	SC	ST	Gen.	Total
1981	131,700	5.0	8.0	40	52	52	144
1982	215,000	97.5	9.5	65	205	136	336
1983	336,000	154.5	13.5	166	208	150	528
1984	185,200	85.1	7.5	72	161	86	319
1985	123,000	56.0	5.0	41	89	48	178
1986	75,000	33.0	4.5	37	40	65	142
Total	1,065,900	461.1	48.0				

In a survey of 59 tree growing families that we conducted, it emerged that the bulk of the effort was made at the planting stage. Most families indicated having done soil working and fertiliser application twice; only a few generally progressive tree growers did 3 or 4 mulchings and fertilizer applications as per the recommendations. A great advantage of planting on a contiguous plot was that problems of protecting the plantation were minimised since most members of the community had a stake in the plantation. The participating families thus went about their work much as if the plantation had not existed at all and the effort required to protect trees from free grazing animals or poachers was minimal. Many families had planted trees in homestead plots and in backyards. None of the families we interviewed irrigated the trees or undertook thinning, pruning etc except when need for firewood necessitated lopping of branches.

The real costs, to the participant families, of establishing the plantation was indeed very low: the land planted with trees had no alternative use; pits were dug in summer months when farm work was difficult to come by; basic inputs were provided by the department free of cost; protection did not pose much of a problem. In alluvial tracts of West Bengal, farm forestry did not - and, is unlikely to - make as much progress as in the laterite districts if only because land as well as labour there have considerable opportunity costs.

4. Returns from farm forestry

In the last few years, Nepura and surrounding villages have experienced a major economic boom initiated at the outset of the 80s by the introduction of irrigated potato crops in rabi. The region has abundant ground water potential at 40'-50' exploited to an insignificant extent through a man-operated bamboo device to lift water in buckets. In 1983, the first "shallow" (local parlance for a shallow tubewell mounted with a pumpset and a diesel engine) was installed by Ashok Hazra, a young, affluent farmer. Hazra started selling water to neighbouring owners of good "rayat" land to grow potato in rabi and 'boro' rice or til in summer. Yields of 4-5,000 kg of potato per acre of 'rayat' and some irrigable 'patta' land became common and even at a low price of Rs0.70-1.00, with just about 10 hours/acre of purchased water, potatoes offered lucrative cash returns. Most farmers close to Hazra's 'shallow' also began to grow summer til but yields were low (2-300 kg/acre). Boro rice with its high water requirement remained the privilege of the rich. Hazra began to sell water to some 100 marginal farmers around his 'shallow' to irrigate 60-70 acres at Rs14/hour.

The land buying spree in Nepura complex villages began in 1984 with the cash inflow from potatoes. However, it really gathered momentum only in late 1985 when many families with 5 year old 'potas' (the name tribals gave to eucalyptus) plantations began to be harvested. The beginning was made by Sadan Chandra Pan, a high caste primary school teacher with 1 acre of rayat land plantation and 0.75 acres of patta land plantation. Pan took good care of the 3,000 'potas' trees that

he planted and created a sensation in the area by selling his 2,200 surviving trees to a trader from Chandrakona Road, the nearest business town, for a neat sum of Rs56,000 in December 1985. He invested Rs46,000 in buying up 9 bighas (3.8 acres) of prime paddy land 200 yards from his house from an ex-absentee landlord. The remaining Rs10,000, he promptly spent on installing a 'shallow' right in the middle of his newly acquired paddy land on which he harvested 7,800 kg of kharif paddy, 15,000 kg of potato, 300 kg of mustard and 1,000 kg of til (sesamum). To top it all, he earned Rs3,000 net by selling water to over 50 buyers on 60 bighas of land. Following Pan, Hazra also sold his 160 'potas' trees planted in 1980 on 0.2 acres of 'rayat' land at Rs6,000. His 1981 plantation on 2 acres of 'rayat' land is expected to fetch him Rs70,000 when he harvests it in coming months.

Hazra's and Pan's early moves had an electrifying influence on tree growers in Nepura and surrounding villages. 'Potas' trees as a source of large amounts of cash became significant on a scale unheard of earlier. Tree planting became more vigorous and widespread and raising and nurturing trees suddenly became much more worthwhile. But it is also led to large scale selling of 'potas' plantations - mature as well as not yet mature - on a contract basis. The most widely used contract was lops, tops, stem and all to be sold to a party for a fixed sum which varied enormously across families. A less widely used contract left firewood behind for use by the family and the buyer took away only poles. In both these contracts, harvesting was the buyer's responsibility. In either case, substantial quantities of bark was left behind for use as fire wood.

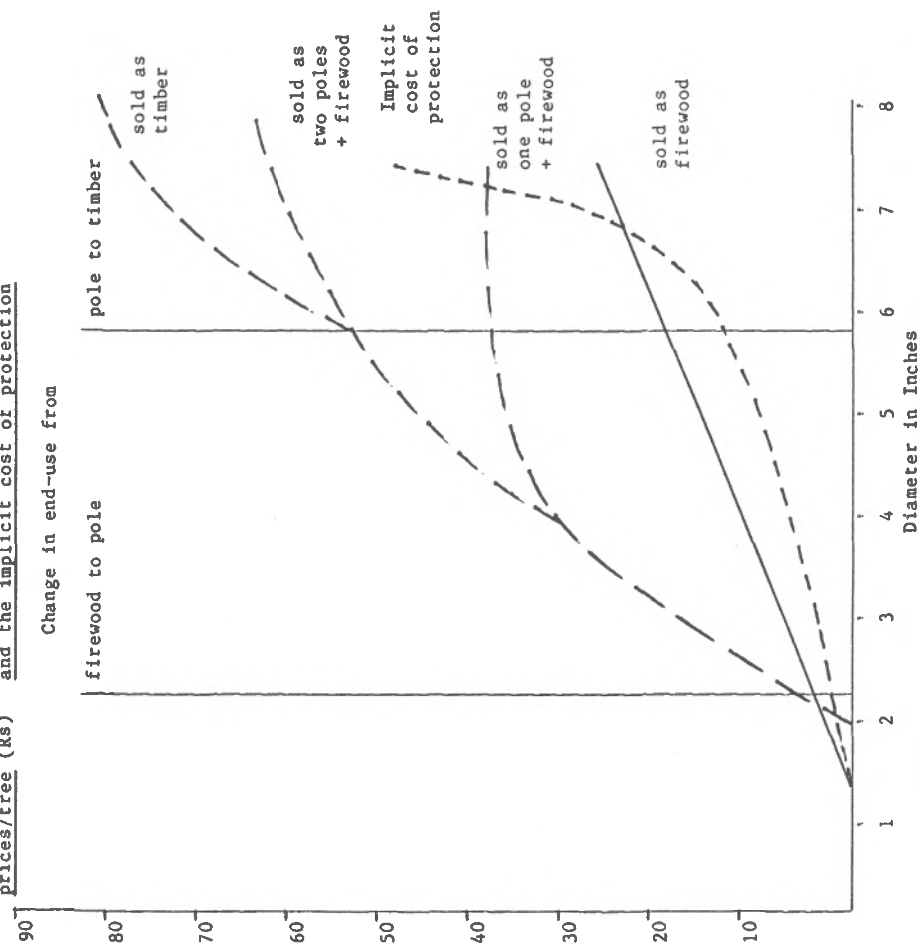
While most subsequent sellers got what they felt were 'handsome' amounts for their plantations (because, perhaps, they had never earned such large amounts at one time), few got as good a bargain as Hazra and Pan did. Hazra got Rs37.5 per 5 year old tree and Pan got Rs25; but most later sellers got much lower prices, usually a third or less. Our survey of 59 tree seller families indicated that a good number of families, especially from scheduled castes and Santhal communities earned less than Rs5 per tree. Table: 3 presents a frequency

distribution of prices and some other indicators. These averages conceal the much wider differences that exist in price/tree and gross income per acre earned by individual families but highlight the fact that those who selected mature trees for sale got much better average prices than those who sold the block; those who sold trees along with firewood got more than those who sold only poles. They also show that upper caste tree growers got better deals than the Santhals; and scheduled caste tree growers got the worst prices for the trees. The local forest officials' view was that price differences were commensurate with the thickness of poles. It is, however, difficult to accept that quality differences alone can explain a 7-800% difference in prices received by different families especially since differences in land quality, age profile of plantations, and management practices were at best marginal. Market imperfections appear to us to be a very important explanatory factor (to which, we return, at a later point); however, some of the families themselves explained the price difference in terms of the somewhat strange economics of 'potas' cultivation and marketing in that area.

5. Production economics of eucalyptus cultivation from the tree growers' view point

Eucalyptus trees in Arabari range are sold mainly for poles. The demand for poles to be used as props in nearby collieries and for construction is particularly good. The price that a tree commands, depends much on its girth or diameter; trees with less than 2.5" diameter are used as firewood; those with 2.5" - 6" diameter are used as poles and those thicker than 6" diameter may command timber value. At critical stages thus, increase in the value of a tree due to change in the use to which it may be put is much greater than increase in income due to growth in volume or weight as Figure: 2 shows. In other words, if as Chambers argues,⁸ we treat a 'potas' tree as a savings deposit, the effective rate of interest accruing in different years to its holder may vary widely. A 4 year old 2.5" diameter tree may command Rs4-5 as firewood; but sold after 6-8 months, it may pass for a pole at Rs12-15; likewise a 4" diameter tree may yield 1x16' pole and a good amount of low value firewood with a total value of Rs22-27; if allowed to grow to 5" diameter, it may yield 2 poles each of 16' (valued at Rs40-45) and much the same amount of firewood.

Figure 2
Income yield of eucalyptus tree
and the implicit cost of protection



The value growth curve of the eucalyptus tree thus has several kinks; and those who sold select trees which were ready for use as poles were smart enough to realise the implications of these kinks and will sell the rest of the trees over the coming months as they qualify for pole use. The forest department extension effort, however, emphasized selling the entire lot together on the reasoning that coppice growth from stools will be vigorous and will generate at least twice the yield over 5 years in the second rotation. We could not however, see how the coppicing principle reduces the value of selecting mature trees for sale, especially since change in end-use changes the tree value so drastically. Further, almost all families reported that diameter of trees planted at the same time in the same plot varied between 2"-5"; in good plantations, 4" diameter trees were in greater number; in bad plantations, 2"-2.5" diameter trees were in majority.

As we mentioned earlier, cost of establishing plantations and the opportunity cost of planted land were neither substantial nor of much consequence to growers. In deciding the timing of harvesting, two factors appeared important to them: a) potential rise in 'paddy' land prices due to the buying pressure b) the rapidly increasing probability of theft of standard trees, especially on peripheral plantations, as they become more valuable. While the second factor was not very important in Arabari, it was in Bhagwantpur where recently a theft of a few trees were reported. We met a family of three brothers outside Bhagwantpur with a 3 acre 1984 irrigated eucalyptus plantation with an average diameter of 4". The brothers expect to get Rs100/tree (although according to the DFO, Rs70 would be a more accurate figure) in 1988 and have to keep a 24 hour watch on the plantation. The forest department itself of course encounters many poachers, often armed, on their 8-9 year old eucalyptus plantations where each tree may be worth Rs2-300.

6. Use of cash income from sale of trees

Most families we interviewed were happy and excited about the one time cash inflow from their plantation; the majority were unaware of how much more they could have earned by finalising the sale transaction a

bit more thoughtfully or by waiting a year or so more. Some distress sales too were reported; Tinkari Dolai sold 400 trees for Rs1,100 to get his eyes treated; Sanyasi Mallik needed Rs800 to get his 1 bigha of mortgaged land released and therefore sold 500 trees for Rs1,800; Madhar Singh sold a 1.25 acre two year old plantation for Rs400 to get his daughter married. But such cases were few and far between; also, most families who got low prices agreed that they could have got a better deal.

Table: 3

Frequency distribution of eucalyptus sale prices

Price Rs/tree	No. of families	No. of families selling select trees	No. of families from		
			Gen	SC	ST
Rs20 +	4	3	3	1	-
Rs15-20	6	3	3	2	1
Rs10-15	4	2	3	1	0
Rs5-10	30	-	7	15	8
Rs0-5	13	-	1	10	2
	57	8	17	29	11

SC = Scheduled Castes

ST = Scheduled Tribes

The cash inflow from tree sale caused a spurt in the land buying spree begun by the rabi potato and, the judicious investments of these flows

Table: 4

Income from sale of trees: Survey of 59 tree sellers from Nepura,
Baliaganj and Mangaibandhi villages

	No. of families	Area planted		Number of trees		Amount received (Rs)	Gross income per	
		Rayat acres	Patta acres	Planted	Harvested		Acre planted (Rs)	Tree harvested (Rs)
General	17	8.97	10.92	23,400	12,972 ¹	156,900	7,888	12.1
		2.6		(1,176)	(652)			
Scheduled Castes	29	2.6	23.67	35,100	21,607	128,350	4,886	5.94
				(1,336)	(822)			
Scheduled Tribes	11	0.0	11.05	15,600	7,212	49,000	4,434	6.80
				(1,412)	(653)			
All	57	11.57	45.64	74,100	41,791	334,250	5,842	8.00

Notes: ¹ In General category 5 and in SC category 3 families sold selected mature trees and got unusually high prices per tree ranging from Rs15-30. In SC category, this serves to push up an otherwise low average price and income/acre.

² Figures in brackets are average per family.

made by some families and their potential implications for their livelihood are among the most profound impacts of the Arabari farm forestry programme. The cash found its way into four important uses: a) purchase of paddy land and investment in 'shallows' b) marriage of daughters c) house building and repair and d) meeting pressing family commitments or tiding over contingencies. Table: 5 presents the information available on use of cash from the 59 family survey. We have presented the average landholding data just to highlight the general asset poverty of the families and the value of the large cash inflow to them. Only half of the 59 families had any 'rayat' land, the rest being landless. Most owners of 'rayat' land were upper caste families and all but 4 had less than 1 acre of rayat land. All the families interviewed except 5 had been allotted 'pattas' and were dependent on labour as the main source of livelihood. Significantly, while upper caste families spent the money on various purposes, Santhal families, as a rule, invested their money in buying small plots of 'paddy' land and most scheduled caste families spent their money in marriages and repairing their houses. Investments in paddy land proved lucrative in most cases especially with the possibility of purchasing water from "shallows". Most families who purchased paddy land took three crops, obtained an average of 800 kg of kharif paddy, 2-3,000 kg of rabi potato and 150-200 kg of summer til per 'bigha' (0.42 acre) using about 15 hours of purchased irrigation. Some had the facility of lifting water from a nearby river using a hired diesel engine at Rs12/hour. Almost all families who purchased land also used purchased irrigation. With the rising pressure of land purchase, price of paddy land has shot up from Rs3,000 per bigha in 1981 to over Rs8,000-12,000 per bigha depending upon land quality and location. The sellers of 'paddy' land are mostly ex-landlords who are hit by the ceiling laws. One major seller, for example, had holdings in several villages which he is in a hurry to sell off in order to settle in a village in which he has the largest and best chunk of land. Such land may be available for two or three more years; however, 'potas' plantation is perceived to be so much more lucrative, that every stretch of 'patta' land is now planted. When we asked people if land would continue to be available the standard answer was: "paddy land yes: 'patta' land, No".

Table: 5

Use of cash from sale of trees: 59 family survey in Arabari

	No. of families	Land owned in 1980		Area (land number) of trees harvested	Cash earnings from sale of trees	Investment in land		Expenditure on marriages		Expenditure on house		Expenditure on contingencies		Other productive investment
		Rayat	Patta (acres)			No. of families	Amount Invested (Rs)	No. of families	Amount spent (Rs)	No. of families	Amount spent (Rs)	No. of families	Amount spent (Rs)	
General	17	30.38	10.55	19.97 (12972)	156900	4	58500	4	24300	3	34000	1	400	6. 39600
	-	1.79	0.62	1.17 (763)	9227	-	14625	-	6075	-	11300	-	400	6600
Scheduled Castes	29	14.96	35.16	26.67 (21607)	128350	6	28500	12	50700	4	9700	10	12200	4 22500
	-	0.52	1.21	0.92 (745)	4425	-	3526	-	4225	-	2425	-	1220	5625
Santhal	11	0.78	12.95	11.05 (7212)	49000	9	39800	-	-	1	4500	-	-	4 7000
	-	0.07	1.18	1.0 (656)	4455	-	4422	-	-	-	4500	-	-	1750
All	57	45.82	58.66	57.69 (41791)	334250	21	126800	16	95000	8	48200	11	12600	14 69100
	-	0.8	1.029	1.012 (733)	5864	-	6038	-	5938	-	6025	-	1145	5

Notes: a) averages in case of investments are presented only for families involved and not for all b) average investment by "general" category is pushed up by the extraordinary case of Sadan Pan.

Following the example set by Ashok Hazra and Sadan Pan in establishing a lucrative and mutually gainful ground water business, two wise scheduled caste families from neighbouring Baliaganj and Mangalbandhi promptly invested their money in sinking the first ever "shallows" in their respective villages. While they will, no doubt, earn substantial sums from sale of water, nevertheless, to the extent that water purchase possibilities help a rabi potato revolution in those villages, they will also help other small farmers to raise their cash incomes. Power supply is expected in these villages in the next year or so. This should further stimulate the development of ground water irrigation and help to reduce the prices at which water is sold for irrigation.

7. The emerging structure of the market for 'potas' in Nepura complex

The sale value of trees already harvested on 56 acres in Nepura complex, even at the low average sale prices, was about Rs3.3 lakh; in the coming five years over 1,000 more acres of first rotation crops will become ready for sale and after that a larger second rotation crop will begin to mature. The annual turnover of tree business in Nepura complex itself will be around Rs18-80 lakhs and Midnapur district already has eucalyptus farm forests on 10,000 ha. Surely, the tree trade has the makings of big business.

While interviewing the 30th household in our 59 family survey, we found, by accident, that the family had sold their plantation to Ashok Hazra. From then on, we discovered that two out of every three remaining families we interviewed had sold their trees to Ashok Hazra; that Ashok Hazra and Sadan Pan, the school teacher, had formed a partnership and entered the tree trade in a big way. We found that all distress sale cases involved Hazra and Pan; that those who had got relatively good prices had taken the trouble to go to Chandrakona Road to strike a deal and that Hazra and Pan were very reticent to talk about their tree trade. In fact, out of 29 families, 18 had sold their trees to Hazra and Pan at an average price of Rs6.10 per tree; the average price received by the remaining 11 families who had sold to traders in Chandrakona Road and from nearby villages was Rs11.6 per

tree. At least two families we met hinted that the supply of water to potatoes was linked to the sale of trees to Hazra and Pan. Hazra and Pan had moved swiftly to establish a foothold in two most important emerging businesses: ground water and trees!

8. Lessons from Arabari

What lessons does Arabari offer for West Bengal as well as for other states? Clearly, Arabari signifies a unique opportunity to use wasteland afforestation as a means to improve the livelihoods of poor people. It is also clear that the vested land distribution programme of West Bengal government would not help poor people greatly except through farm forestry since most vested land, especially in laterite districts, is unfit for productive agriculture use. On the other hand, the 99 year land 'patta' has helped to instil in 'patta' holders a confidence and a feeling of ownership that has encouraged them to invest effort in improving the productivity of their land. Whether the shorter term 7-10 year 'tree' pattas that some other state governments are contemplating will be able to produce the same sense of security and ownership is an open question; but the answer most likely is negative.

We might stress here that the farm forestry success in West Bengal has little to do with that state's overall performance in land reform implementation which is average; it is linked with the distribution of land pattas. Many other states have more vested and other revenue lands under government ownership than West Bengal has and, therefore, the West Bengal farm forestry success is easily replicable in other states provided they are willing to distribute the land 'patta' to landless families.

The stake that the patta holders have in raising trees has made West Bengal's farm forestry programmes easy to implement on a large scale and one of the most cost effective ways of afforesting wastelands. Unlike in some other states where NREP wages are paid to tree growers for working on their own fields and cash subsistence allowances are offered during the gestation period,⁹ in West Bengal, all that the forest department has offered so far are free seedlings, incentives

and some free inputs. Even these have been gradually phased out. Incentives have already been discontinued; nursery raising is expected to be completely decentralised to Kisan nurseries which will sell seedlings to tree growers from the 1987 planting season.

In spite of these, the area under farm forestry in West Bengal has been increasing at a rapid pace and the business in fast growing trees, as a consequence, is expected to grow by leaps and bounds. If we project on the basis of the Arabari experience, the 62,000 ha of mostly patta land already brought under farm forestry would imply a six yearly cash flow of some Rs100 crores which, unlike many other development programmes, is sure to reach poor people.

Table 6
Prices received and market value of Eucalyptus trees

Dia in inches	Prices received by Arabari seller (Rs/tree)	Prices they could have received (Rs/tree)
2" (firewood)	2.5-3.0	12
2.5" (firewood)	4-5	15-17
3" (pole + firewood)	7-8	20-22
4" (pole + firewood)	11-12	30-35
5" (2 poles each of 16' length + firewood)	16-22	55-65
6" (3 poles each of 16' length + firewood)	-	90-100

The large emerging business is sure to bring in its wake a multitude of second generation problems to which West Bengal's forest department will soon have to address itself. Although the Hazra and Pan type monopoly phenomenon may be a freak case, nevertheless, the Arabari experience highlights the need to organise this business on modern and professional lines. That doing so could enormously increase benefits

to "patta" holding tree growers was clear from what we learnt in informal discussions about the huge differences between market prices of eucalyptus trees of different girths in Midnapur district and prices actually received by Arabari tree sellers (Table: 6). It is true that the prices received by Arabari sellers were net of harvesting costs which were borne by the buyers but even then the difference is too great.¹⁰ We tried to compile a clear picture by examining transit passes issued by the range office for any one wanting to move out forest produce. While we could not obtain a sufficient number of observations, even the few that we saw confirmed our belief that money received by tree sellers was far less than commensurate with the output of poles and firewood. An effective marketing intervention would therefore have powerful and salutary effects on returns to tree growers and incentives in farm forestry. Already, in the nearby Bhagwantpur complex, each of the 21 villages involved have formed marketing committees to streamline tree marketing; some have also pooled individual member contributions to form a fund. This fund is used to provide credit for tiding over contingencies and to prevent distress sales.

A unique aspect of the Arabari farm forestry complex is that almost all tree growers derived no value from land before it was planted with trees and had therefore learnt to subsist through other means. Income from trees is thus an additional bonus to them. In a few other areas where patta land was used for some purpose, howsoever, unremunerative, tree growers have been clamouring for credit to subsist through the gestation period. How exactly the future inflow from tree sales will be linked to present subsistence needs is another major question that West Bengal farm forestry experience raises.

Notes

1. In conducting this study, the author received valuable assistance from Shri U Banerjee, CCF; Shri S Roy, CF (SF); Shri D N Shukla, DFO (Midnapur), Shri P G Bhattacharji, ADFO (Midnapur) and Shri K B Ghosh, Range Officer, Arabari. The author gratefully acknowledges their help and contribution.
2. See, for example, D P S Verma, "Who benefits? A case study regarding flow of benefits from Dhanori village woodlots" mimeograph, Forest Department, Government of Gujarat, Baroda, 1986.
3. National Sample Survey, Reports No.144 and 215 21, State; West Bengal.
4. See, N Bandyopadhyaya and associates, "Evaluation of land reform measures in West Bengal : A report", mimeo, Centre for Studies in Social Sciences, Calcutta. Also see, Bishwajeet Sen, "Land reforms and forestry programmes: The case of West Bengal", paper presented in National Workshop on Landless People and Wastelands Development, 3-6 April 1986, New Delhi.
5. West Bengal Forest Department, "Social Forestry gaining ground" Social Forestry Wing, Calcutta, 1986.
6. So acute is the scarcity of common lands in rural West Bengal that in many parts there is no common space to bury the dead. It is usual for rural people in some parts to bury the dead on canal or river banks or pondshores or even on road sides.
7. Forest Department, Government of West Bengal, "Evaluation: An interim report - West Bengal Social Forestry Project", Monitoring and Evaluation Cell, Social Forestry Wing, Forest Directorate, Calcutta, 1983. Also see, Forest Department, Government of West Bengal, "Field testing of an Operational Guide to the Monitoring and Evaluation of Social Forestry in India", M & E Cell, Social Forestry Wing, Forest Directorate, Calcutta, 1985.
8. Robert Chambers and Melissa Leach, "Trees to meet contingencies", IDS Discussion Paper, 1986.
9. For Gujarat example, see for instance, Rohit Shukla and M K Dalvi, "Evaluation of Gujarat Social Forestry Programme", Sadar Patel Institute of Economic and Social Research, Ahmedabad, 1985.
10. We also compared market prices in Midnapur with those prevailing in other states. See, A N Chaturvedi, "Eucalyptus for farming", UP Forest Bulletin No.48, 1983.



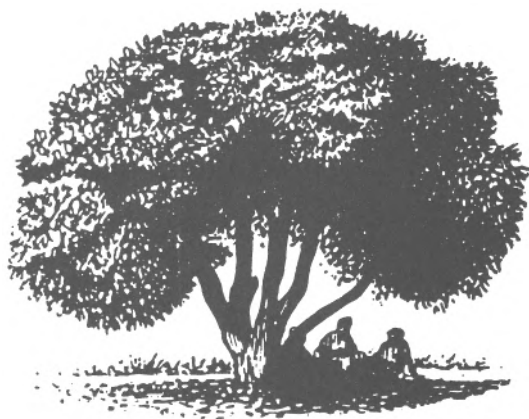


Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



COMMONS, TREES AND THE POOR IN THE UTTAR PRADESH HILLS

N. C. Saxena

Dr N C Saxena is Joint Secretary, National Wastelands Development Board, Ministry of Environment and Forests, New Delhi, India.

COMMONS, TREES AND THE POOR IN THE UTTAR PRADESH HILLS

Forests are said to constitute the lungs of a nation: in the case of the hills they represent the very soul of the people living there. They fulfill people's energy needs and provide fodder for the livestock which produce manure for agriculture. Each hectare of cultivated land requires a sufficient uncultivated vegetated area for these needs. The people depend on forests for water supply, slates and stones for houses, and minor forest produce like bamboos and medicinal herbs. Water, land, livestock and people are highly integrated in the farming system of the hills. Forests also absorb excess water during the rainy season and release it in the post monsoon period. Thus they perform the great economic function of reallocating water over time.

Deforestation, apart from creating the immediate shortages of fuelwood and fodder, has directly affected the quality of life of people. The Government of Uttar Pradesh has responded to the problem of increasing deforestation creating several new divisions to afforest the common lands (called civil and soyam lands in the hills).

Have we been able to reverse the tide of deforestation? Is the increased target really being achieved? What about survival rates? Is the priority given to civil lands as opposed to reserved, panchayat or private lands justified by the experience gained in the last 15 years? Are people receiving the benefits of higher investment through increased supplies of forest produce? What correctives in policy and strategy need to be applied now? The present paper addresses itself to these issues.

The eight hill districts of Uttar Pradesh cover 17% of the area and 4% of population of the State. Literacy is higher than the state average, and so is the per capita income. As income distribution is less skewed in the hills, owing to lack of industries and an equitable land holding pattern, an average marginal farmer in the hills earns at least twice as much as his counterpart in the plains of Uttar Pradesh. Thus the hill people are neither illiterate nor backward, as is commonly assumed.

The pattern of social stratification is different in the hills. Land distribution is more equitable here, as landlessness is low and large farmers (owning more than 4 ha) are few in number. As opposed to multi-caste villages in the plains with no single caste controlling more than 20 percent of the population, Thakurs in the hills are in an absolute majority, single-caste villages are not uncommon, and most of the villages consist of just 3 or 4 castes like Thakurs, Brahmins, Vaishyas and the scheduled castes. The institution of the Panchayat has been stronger in the hills too; these deal with social disputes, arrangements for festivals etc with every adult member having a voice in its affairs. (Guha, 1985, p.61). The diluted caste system, absence of sharp class divisions, and strong community solidarity has made the hill society an exception to the pattern of social hierarchy elsewhere in India.

The UP Himalayas share too an important historical characteristic with other Himalayan societies: they have always abhorred rule and control by the centre. In geopolitical terms the Himalaya is not a power vacuum - for that would imply that it could readily be filled - but, rather a sort of plateau where the power of the plains finally becomes so attenuated that it can no longer sway events one way or the other. (Thompson and Warburton, 1985, pp.203-220).

Forest Cover

Landsat imagery of actual tree cover for the years 1980-82 shows that of the total 34,042 sq km of land declared as forest, good tree cover exists only on 6.6% of forest land, another 22.5% and 13.8% can be classified as medium and poor forests respectively, whereas on the rest 57.1% of land there are no trees at all. The implication of this data, is not accepted by the forest department. According to them, the forest area in Garhwal covers snow bound lands, boulders and very steep slopes where no forest cover is possible. The forest department, states that only 9.2% of the total area is the balance left for plantation. As regards the density of forest under the control of various agencies, Sri Harikant CCF (Hills) UP (pers comm) mentioned that the civil and soyam forest lands, including those under

the forest department's management, would have a tree density of only 10% of their potential, whereas for Panchayat and reserved forest lands this percentage would be approximately 50 and 70 respectively.

Biotic Interference?

Why did deforestation take place in this area? Although vast tracts of forest lands were cleared in the Tarai to make more land available for agriculture, this has not happened in the hilly region of the districts. There has been hardly any substantial net increase in the total area under agriculture in the last thirty years. True, common and government lands have often been encroached upon or allotted (till 1980 under the Nayabad Act) for agriculture, but equivalent (or perhaps even more) private lands have been abandoned for cultivation either because of migration or soil erosion.

The conventional view about depletion of forest cover is that it is due to the large human and livestock population now living in Himalayas. Two points need to be made here. First, although population has increased by 92% during 1951-81, per capita availability of cultivated land in hills is 0.28 ha which is marginally higher than 0.27 for the entire state, which does not indicate extreme pressure on resources. Per capita availability of forest area in the hills is 0.71 hectares as opposed to the UP average of 0.06 ha (Joshi 1984). Population pressure by itself is not the only factor or even the main factor in causing environmental stress. In a study of forty sites (Pitt, 1985 p.20a) in different parts of Nepal it was shown that population pressure does not necessarily result in watershed deterioration. 7 out of 9 excellent watersheds were located in high population pressure zones. Second, there has been only marginal increase in the cattle population, except that of buffaloes and goats.

It would require 6,313 km² of fuel forest with a yield of 7.5 m³/ha/yr to provide firewood for 43.25 lakh population using 1.5 kg firewood per person per day (M Ashish pers comm). Similarly the requirement of fodder of 41.34 lakh tons per annum can be met from 3,062 km² plantations of fodder forest which would yield 12 tons/ha/yr dry leaf

fodder and 1.5 tons/ha/yr grass. Thus the total requirement of land would be $6,313 + 3,062 = 9,375 \text{ km}^2$ which is close to the area under civil, soyam and panchayati forests, and is only 28% of the total available land under forests.

It would thus appear that if the present forest lands were to work with optimum productivity there would be enough to fulfill the needs of the people. Thus supply constraints rather than biotic pressure should be the primary focus for study, if one is to fathom the dynamics of deforestation.

It will be argued in this paper that disappearance of tree cover from civil and soyam lands was because of such lands being treated as open access lands, which were not managed or protected by either the government or the community. On the other hand, both reserved and Panchayati forests could be saved from total denudation because of clarity on "who owned the trees". Thus, Hobley's distinction (1985) between common property in which rights are regulated by the community through formal or informal institutions, and those resources that are open to unregulated access by individuals seems to be valid in the context of UP hills. Whereas civil forests neatly fit in the category of open access resources and hence got denuded, the panchayati forests were saved from over-exploitation, because of their nature as common property. Thus giving up control over forests by the government and turning them over to the "people" is a double edged weapon. Where users have independent rights to the use of the forest resource, no user can control the activities of other users, total demand exceeds the supply, and there is no organisation to enforce discipline, unrestricted exploitation is bound to result in degradation of the resource. However, in the same scenario, introduce an organisation which helps the users in evolving conservation norms, has some credibility to enforce such norms and has access to funds which can regenerate depleted areas, the resource is likely to remain intact. Thus, withdrawal of government control may not always result in self-regulatory forces which prevent the destruction of forest and grazing lands. Human systems are not self-regulating, they need to be managed through consensus and discipline. The conflict between short

term and long term interest of the individuals as well as between the individual and the group cannot be resolved by the individual alone, as there are other individuals on whose behaviour he has little control. The local Panchayats could perform this function, provided they are strengthened and trusted with funds.

It will also be suggested in this paper that the present strategy of giving the entire responsibility of afforestation to the forest department on lands like civil/soyam and panchayat on which it has little de jure control needs to be reviewed. It would seem more advantageous if the Panchayats and farmers are also directly involved in plantation. They along with the forest department should concentrate on wastelands on which they have best control. After all the key to understanding the issue of exploitation of uncultivated land in the hills lies in analysing tenurial relations, as almost 80 percent of the land is in non-private institutional hands. Rights and obligations of people and government in various categories of land are described in Table No.1.

Table No.1

Rights and obligations of people and government in various categories of land

LAND

Private	Civil/Soyam	Forest	Panchayat
<p>Full rights as regards grazing and tree cutting rights in practice. Harvesting of trees on private lands is not permitted, which discourages use of degraded land for tree plantations. Quality of land is generally deteriorating resulting in stagnant/declining agriculture production. Land operations are performed by women.</p>	<p>Unrestricted grazing and tree cutting rights in practice. Encroachments are encouraged, tolerated or regularised. These lands are highly degraded. Productivity is very low. People do not identify with these lands.</p>	<p>Except in closed areas, grazing and collection of dry fallen wood is permitted, although frowned upon by local foresters. Traditional benefits regarding supply of timber generally do not benefit the poor as these are routed by the forest department through the Village Pradhan. People are hostile to forest department and do not identify with forest lands.</p>	<p>Although Panchayat forests are maintained, ordinary people do not actively participate in its management. Only 8 to 15% of their requirements are met from Panchayat forests. People's dis-illusionment with Panchayat forests is of late on the increase, yet they identify with these lands and are aware of management practices.</p>

<p>Because of traditional functions of maintenance of land records, collection of taxes and Police the village Patwari continues to be extremely powerful in</p>	<p>In actual practice very few people have been convicted for felling trees or encroaching upon such lands. Because of other</p>	<p>Negligible. Sometimes Law & Order situations are created because of hostility between people and foresters, which require intervention by the</p>	<p>Gaon Sabhas Forest Panchayats are under the administrative control of the revenue department which has a status-quo perspective.</p>
--	--	--	---

Revenue ---> the village. Department	pressing responsibilities Revenue Departments role in regulation of such lands or in their development has been almost nil.	revenue authorities. Forest staff is often used for helping in national campaigns of family planning, mobilisation of savings etc.	Has not felt responsible for development of new forests or for providing greater satisfaction to the right holders. Inter and intra village disputes are arbitrated by the Revenue Department
Forest ---> Department	Unlike in the plains, forest department's programme of farm forestry is negligible in the hills. Inter-action with people is limited to granting of permission for felling trees which is time consuming. In soil conservation Divisions private lands have been taken up, but engineering treatment increases problems of soil erosion. The programme is neither popular nor increases productivity.	Has little regulatory control over such lands - 15% of these have been transferred to the forest department for afforestation. Survival of trees is about 25 to 30%, may be even lower in Garhwal. It appears that the Government is in no hurry to transfer afforested lands to Panchayats even after 5 years. Forests in small pockets may not survive after transfer to Panchayats unless adequate precautions are taken.	Has full rights. The powers are derived from Indian Forest Act. New plantation in such areas has suffered from lack of funds. Although soil texture is better as compared to civil/soyam lands, broad leaved species are not given preference. Banning of felling over 1,000m is also not been likely to improve tree density in the coming years. Last priority is given to such lands by the department, resulting in loss of income to the Panchayat.

Plays little role on private lands, except in the case of very active Panchayats where people are encouraged to plant fruit trees on private lands.

Gaon Sabha/
Panchayat -->

Gaon Sabhas exercise little control, except in some villages. Not keen to take over afforested lands for want of adequate financial support from Government for protection.

Almost nil except in case of very active Panchayats (CHIPKO) or remote areas of Chakrata and Jaunsar Bawar where Panchayats take interest in distribution from Forest lands. This is likely to improve in future.

Regulated by Van Panchayat's Rules, which give little freedom of action to the Panchayats. Panchayat income is not readily available for re-investment. Yet Management can be made viable

Tragedy of the Commons?

If land is left undisturbed natural forest would reappear in most of the hills through a succession of vegetation types. The natural species for lower hills and the Tarai is sal and other deciduous broad leaved trees, for higher altitudes are conifers interspersed with oak, wherever soil and moisture conditions are better. If grazing pressure and biotic interference increases the reverse process sets in. Ultimately either bare ground will result, or plants alien to the area, which are neither eaten by animals nor useful to men, will appear. Most of the steep slopes in Garhwal and Kumaon are already invaded by such useless plants, like lantana, cacti.

The number of animals which an individual would keep and the manner in which he would utilise the commons is obviously determined by the preception of costs and benefits. If grazing lands are commonly held, which permit open and unrestricted access to all the villagers on a defined or undefined area, each villager would perceive short term benefits by increasing his herd, or increasing intensity of grazing whereas costs from the deterioration of the commons because of over grazing are delayed. This is what Hardin called, 'The Tragedy of the Commons'. In a theoretical examination of the psychology of herdsmen regarding rangelands Hardin observed.

"Therein lies the tragedy. Each man is locked into a system that compels him to increase his herd without limit - in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons".

As an individual he may be aware that overgrazing is suicidal, but he cannot reduce the number of his animals, as this will worsen his condition and others would benefit at his cost; unless everyone agrees to a certain code of conduct.

It may be noted here that there has been almost no increase in the number of cows and bullocks in the hills. Therefore sentiment of cow

worship or dietary habit is not the reason for the problem that is confronting us. Secondly, "too many animals" is a relative concept, dependent upon the present productivity of land. There is potential for increasing the productivity of non-private lands, and hence, at least in theory, the system can cope with the present population. Thirdly, the action on the part of the farmers to keep non-descript cattle has been generally viewed by the policy-makers as against "national" interest, and therefore irrational. Failure to appreciate rationality of the farmers behaviour has led to a belief within the government that "excessive" cattle in the hills is the cause of deforestation, and that it has nothing to do with the prevailing man-land relationships. As it is perceived to be autonomous and independent of other factors, it is sought to be changed either through legislation, or education or administrative controls, difficult questions of tenure are not gone into. As repeatedly stressed in this paper, people's rights and obligations in land, and the way in which it is used and the products distributed determines the nature of exploitation of the land. Since these rights and obligations were quite different on revenue lands as compared with Panchayat lands, the degree of deforestation also significantly varied in the two cases. A chart comparing different forms of forest management is given as Table No.2

Table No.2

CHART COMPARING DIFFERENT FORMS OF FOREST MANAGEMENT

Institutional Framework	Civil Forests under Revenue Management	Civil Forests under Forest Management	Reserve Forests under Forest Management	Forests under Panchayat Management
Characteristics				
1. Present condition	Highly degraded	Chirpine has been planted in the last ten years covering about 10-15% of the area.	Tree density is between 40 to 50%. It is better at higher altitudes. As compared to Garhwal, Kumaon is better wooded.	60 to 70% of the area is under trees, although there is a great deal of variation from Panchayat to Panchayat
2. Encroachments	High	Encroached land is not transferred to the Forest department.	Few, except in the Tarai.	Negligible.
3. Grazing practice	Open throughout	Grass can be cut anytime of the year. Grazing is controlled in closed areas because of the choice of species, boundary wall and a watchman.	Open throughout the year except such areas which are closed.	Rational grazing is practised in some panchayats. Area is generally closed during the rainy season, grass can be cut after obtaining a pass once or twice in a year. Grazing in other months is discouraged if fodder trees have been planted in the area. As this is effective only in some places, Panchayats also prefer to plant non-browsable species.

4. Exploitation	Uncontrolled	Trees are less than 10 years in age. Lopping is discouraged, although such instructions are often ineffective.	Felling of trees above 1,000m is banned since 1979, in lower reaches mostly industrial and commercial species like sal, poplar, eucalyptus and pine have been planted.	Trees are sold to the villagers on a subsidized basis. Often there are allegations of bias in allotment of trees. The poorest were ignored in the Panchayats which were studied.
5. Effectiveness	No action is taken except when encroachments are reported. These cases are tried under the Public Premises Act, take a lot of time, and result in few convictions.	Indian Forest Act is not applicable, hence deterrent action is not possible.	Action, both administrative and judicial, is generally prompt and effective.	Consensus and social sanctions are more effective than judicial action. Fines are imposed by the Panchayat, although legal, are often paid by the offenders.
6. Management Input from people	Nil	After passing a resolution to transfer such lands to the forest department there is little involvement of the people.	Is not sought under the present scheme of things.	Requires intensive supervision from Sarpanch. People's involvement varies from passive support to Sarpanch, to active involvement in protection and distribution of produce.
7. Input from	Nil, except as under (5).	Separate divisions have been created with adequate funds. Annual expenditure on afforestation of these lands may be around Rs.20 crores.	Territorial divisions have been in existence since a long time. These also undertake new plantation to improve density of the existing stock. The emphasis is on upkeep of real estate rather than on new plantations.	So far negligible. The input is mostly regulatory rather than developmental.

8. Benefit to villagers
- Small quantities of grass after the rains.
- Pradhan gets a contract for civil works. People will start getting fallen twigs after a few years.
- Rights of the people are recorded. Grazing and fuelwood collection is permitted, except in areas which are under closure. There were complaints regarding distribution of grant trees, as they are given to the pradhans and often do not reach the people.
- The benefit depends on the total area of the forests and its management. They get grass and sometimes fuelwood at a subsidized rate. On the whole this meets hardly 2 months requirements.
9. Benefit to Government
- Nil
- Ecological benefits are not fully established through plantation of pine, although area has started looking green.
- Conventional benefits, although revenue has started declining because of ban on commercial felling of green trees above 1,000m.
- Income from sale of resin is used for all kinds of purposes, like fulfilment of target under small savings, and petty development works.
10. Plantation of new trees
- There is no scheme.
- Is being tried on a massive scale, although survival is between 20 to 30%.
- Does not get the same priority as afforestation of civil and soya lands.
- Not on a significant scale as Government help is unplanned and sporadic.

The Government of India had appointed a Task Force in 1984 to study all aspects of grazing and fodder and to evolve a National Grazing Policy. The report, in a number of places, strongly recommended measures to reduce the number of animals. No where did the report discuss the impact of grazing on common lands, including forest lands.

The problem on revenue and forest lands is certainly a social one. It has several interrelated elements. First, the hill farmers tend to ignore social costs. Second, they, being largely poor, disregard the future effects of their actions. Their world-view is limited and benefits which are likely to accrue to them in distant future do not mean much to them. Third, they do not identify with public property like government forests. And fourth, which is perhaps the most important, lack of collective organization puts a limit to individual rationality and it challenges a "fundamental faith that rational human beings can achieve rational results".

Two solutions have been theoretically suggested in order to avoid the tragedy of the commons. Hardin, in a later article, suggested either privatisation of the resource or coercive government control. The logic is that as the tragedy of commons is unavoidable, we should either get rid of the commons through privatisation or we must change human nature through coercive authority. When the resource is held in common the market fails as an instrument for signalling demand (Bowonder 1983). Consumption is not restricted to those who pay a market price and market forces do not operate to restore the imbalance between supply and demand. But if the resource is privatised market forces start operating and overuse is stopped. Similarly, introducing effective control by the Government may enhance efficiency if theft from free riders is kept under check. We shall discuss the feasibility of these two solutions in the context of UP hills.

Privatisation of Common Lands

There are several problems in privatising rangelands, whether located within the legal category of civil/soyam lands or forest lands. First, as will be discussed later, there is substantial private land available in the hills which could be afforested or brought under

grass, provided sufficient attention is given to such lands. Thus further privatisation could wait and is not called for in the immediate future. Second, creating rights in favour of some on resources on which the entire village is dependent would not appear fair and may lead to social tensions, even within the category of the poor. Third, the quality of common land varies from point to point, even within a five hectare plot, and its equitable division would be beset with problems. Fourth, civil lands are generally removed from the village and cannot be regenerated or conserved without adequate protection. Privatisation would certainly increase the cost, as against one watchman for the entire plot each family would have to engage a separate watchman. Fifth, hill societies have been less heterogenous and more integrated than in the plains and cooperation is easier to achieve. Divisive forces of class, caste, and access to markets which the villagers have to contend with in the plains are less pronounced in the hills. Sixth, privatisation encourages intensive landuse especially for agriculture, whereas both from the point of view of ecological considerations and social needs, what is required is vegetative cover through grasses and trees. Seventh, several watershed areas are a part of such lands, which require comprehensive integrated planning as regards land use. Creating private rights may delay the implementation of such a plan, as securing willingness of landowners is time consuming. Eighth, the Tree Patta Scheme, as has been formulated by the Government of India distinguishes between tree tenure and land tenure; that is, the beneficiaries have no rights on land, their rights are confined to the usufruct of trees. Such a distinction is totally alien to the Indian culture. People are not used to this concept, as according to the land systems in India trees are considered as "fixtures", permanently affixed to land and hence belong to the owner of the land. The new concept therefore acts as a psychological barrier and inhibits people's participation on Patta lands.

What kind of objective conditions and market forces promote privatisation of resources? It has generally been observed that land requiring intensive inputs of labour and cash would be difficult to sustain as a common resource. Traditionally economic activity in the

Indian villages was always family-based, whether agriculture, cattle rearing or cottage industries, whereas commons provided low value consumption goods, which required negligible investment. Thus wherever agriculture was possible, land has been either encroached upon, or allotted by government or encroachments have been regularised. The remaining common land is likely to remain uncultivated unless technological advancement brings irrigation to new areas. Similarly, efforts to retain the cooperative character of agricultural production farms is not likely to succeed, as individuals prefer family based production units (Tushar Shah & Ballabh, p.8-10). Thus wherever the productivity of commons is likely to increase substantially, it is better to allot it to the poor, rather than work against market forces to retain its character as commons. In a situation of increasing productivity of land over time, commons are a transitory phase between open access lands and private lands; when it produces too little it is open to all, when it starts generating cash incomes, it gets into private hands. At the latter stage it is best to create private tenure in favour of the poor. There is no prospect of this happening to lands outside direct government control in the near future in the UP hills. If present trends are any indication, productivity of both private and common lands is on the decline. To sum up, privatisation of degraded lands on a large scale is not the solution, but afforestation of civil/soyam lands should either be handed to Panchayat after 10 years, or private tenure could be created after afforestation. A situation where common lands have become productive because of government investment and private lands are losing productivity because of soil erosion is not a stable one. This would encourage encroachments, and hence well defined tenure must be created. However, a great deal of empirical data would be required before large scale tenurial changes can be suggested.

Government Programme

The other option of bringing common degraded lands under government control has been tried in UP. Of the total funds meant for afforestation in the hills, about 70% is spent on civil and soyam lands. The following comments may be made about this programme:

1. The main objective is plantation of trees, a laissez faire attitude is adopted towards grass. Thus only non-browsable species are planted. However, people's immediate requirement is fodder and not timber.
2. In order to "secure" the willingness of the Pradhan he is offered the contract of building the protection wall. This along with several other development works entrusted to him has turned almost all Pradhans into Government contractors.
3. The resolution of the Gram Sabha to transfer civil lands is generally not taken in an open meeting of the village. The resolution is sent by the Pradhan and sanction of other members is taken later.
4. Plantation is undertaken as a departmental undertaking. The people regard it as a Government project and do not identify themselves with it.
5. A wall erected is to prevent intrusion by animals. The quality of construction is generally poor and it fails to check the entry of animals. Where stones are not readily available, trenches have been dug. These are not along the contour lines and add to the erosion hazards.
6. It is difficult to get civil lands in large chunks. It increases supervision problems. In Pauri, for instance, in 1986-87 1,100 hectares of targetted land was made available in 200-250 patches.
7. The number of nurseries is inadequate, especially in Garhwal hills. Plants have to be transported

from the nursery to the plantation sites on the onset of monsoons. It takes several days which increases mortality. The slopes are steeper in Garhwal, where survival rate is not more than 20% (conversation with DFO Pauri-Garhwal).

8. The watchman is effective only for one site. However, he has up to 10-15 sites under his supervision. This increases theft and over-grazing by animals.
9. Forest department has little legal powers in such lands; even if the watchman is able to report against offenders, no action is forthcoming.
10. Transfer arrangements of land and forests to local bodies have not been worked out. It is unrealistic to think that a resource, which was identified by the people as Government property for 5 to 10 years, would be properly managed by such organisations unless steps are taken to improve the capability of such organisations and to make them identify with growing trees during the interim period.
11. The principal purpose of Social Forestry was to build the institutional capacity of communities, Panchayats and individuals so that they could undertake fuelwood and fodder plantations through self-help schemes. This has not happened.
12. It was also observed that availability of funds for afforestation for the blocks was ad hoc and uncertain.

Choice of species

In Almora district it was noted that 71% of the area was put under conifers, mainly Chirpine (S L Shah, pers comm). The people wanted Oak and other broad leaved fodder trees. According to them, pine trees deplete the soil, absorb soil moisture and leave the land dry making it impossible for other broad leaved species to grow. On the other hand the forest department explained the dominance of Chir as due to highly eroded and poor soils where nothing else would grow. The tradition of unrestricted grazing and indiscriminate lopping in civil/soyam lands by the people also forces them to prefer a tree which is non-browsable. Other trees would require better protection arrangements, more intensive management, besides richer soils and willing cooperation from the people. As the legal control of the forest department on civil/soyam lands is tenuous, it hesitates to try other species, where survival would be poor.

In 1981 the Government of UP had appointed a high powered committee with the Chief Conservator of Forests as its member-secretary and several other retired foresters as members to look into the policy regarding exploitation of forests and protection of trees and to bring improvement in the maintenance of environmental balance in the Himalayan region of UP. The fourth term of reference read as follows:

"The Committee should give its opinion, after reviewing the choice of species for plantations, especially in the civil and soyam forests, whether the department has given enough emphasis to the commercial aspect rather than to improvement of environment and needs of villagers for fodder and firewood. It is often complained that the department has encouraged planting of Chir instead of broad leaved fodder and fuelwood species. The plantation of Oak will be beneficial to the environment and for meeting the needs of villagers".

The Committee questioned a large number of the public and foresters, and also visited several sites. In its findings, however, it did not fully support the viewpoint of the people. It recommended that fuel

and fodder species should be given priority in Panchayat, civil, soyam lands and khat forests and also in the reserved forest areas close to villages. The recommendation was accepted and orders were issued to the forest department.

Reserved forest lands with better soils, effective closures for regeneration and prompt punitive action would be better utilised for the plantation of broad leaf species. Since felling of green trees above 1,000 meters has been banned, and since distinction of categories like Reserves, Civil etc need to be blurred, it stands to reason that the entire reserved forest area and not only such area close to villages, should be primarily utilised for raising fodder trees preferred by the people. If necessary, the norm regarding cost of plantation may be changed so as to provide for stronger protection walls, better management and more intensive supervision in reserved areas.

Two points need to be emphasized here. First, the much talked about slogan of involving people in social forestry would not become a reality unless foresters are trained in extension and are kept free from routine administrative tasks. Second, Social Forestry seems to have over emphasised plantation of trees. Grasses, legumes and fodder have been relegated to the back seat. Simple closure of areas and plantation of grasses would not only be cheaper but of greater social relevance in the hills. This requires understanding and consensus on grazing which would result when foresters start devoting time from routine administration to people's issues.

Non-Solutions

The crisis of deforestation has invited two kinds of solutions. First, advocated by administrators and foresters, may be termed as tougher top-down approach. Overpopulation of humans and animals is perceived as the problem, the solution therefore lies in military style controls and forced migration. The second could be termed as bottom-up approach. It encourages self-reliance and grassroot activities, notably those involving women and young people. (CSE, New Delhi has been advocating this approach for the last several years).

The logic is that such a decentralised development is likely to fit better with people's real needs and aspirations, "likely to be intersectoral and to produce as well an ecologically sound and sustainable process". (Pitt, 1985 p.151). The problem with this approach is that it assumes communities to be monolithic, to be representing the true interests of the people and the poor, and to be autonomous of market and political forces. Empirical evidence would seem to contradict this.

Realising that many Panchayats are dens of vested interest or favour income approach through commercial species ignoring the consumption needs of the poor, some have suggested bypassing the democratically elected and established Panchayats and depending heavily on NGOs and informal, unregistered organisations of the people, like Yuvak Mangal Dals, Mahila Mandals etc. They would even like government or International funds to be channelised through them.

There are problems with this approach too. First, this view that non-elected organisations like NGOs and women's groups are above class interest, whereas the elected ones are dominated by a few, does not seem to have empirical foundation. It stems from an elitist and paternalistic attitude that the urban educated have towards rural societies, parallel to the white man's burden theory during the colonial period. Second, it makes the task of policy makers of discovering input-output relationships in forestry, that is, what kind of policy interventions would lead to what kind of results, an impossible one, as no policy packet can produce a Chipko movement! Third, as will be discussed in the context of Van Panchayats, consensus among the community needs to be backed by power to punish those who break the consensus, otherwise infringements would become the rule, rather than the exception. Non-statutory organizations would therefore not be able to sustain a durable optimal rational behaviour on the part of its members. Legal and administrative structures should not be at variance with each other. Fourth, the number of good voluntary organisations is limited, and therefore despite fund support from government these may not be able to perform more than five percent of the tasks. At best they can develop models for replication in other places.

The prevalent thesis that the tragedy is inherent to the commons and that, human nature being what it is, the tragedy is therefore unavoidable, itself needs to be questioned. Several micro level studies have demonstrated that given appropriate institutional support, people themselves realise the dichotomy between individual and group rationality, and start observing certain rules to ensure a resource in perpetuity. (Chowdry 1986, Ostrom 1986, Thompson and Warburton 1985, McKean 1985 and Morse 1987). In societies, like the UP hills, which are socially less differentiated, and are remote from state control and markets, commons have a better chance of survival (Shepherd, 1985), especially when they are to be used for low input and low output crops like grasses, fuelwood and fodder trees, and small timber. This would be best done by strengthening local management of commons, through forest councils. Fortunately, in the Kumaon hills and British Garhwal a tradition of Van Panchayats already exists. They control about 7% of the total forest area, this could be increased to about 20% in phases in the next ten years. Beyond this, the Panchayats may lose the advantages that they possess today.

Van Panchayats

The Panchayat Forest Rules, 1976 have been formed under section 28 (2) of the Indian Forest Act. The state objective is to protect and develop the forests and to distribute its produce among the right holders in an equitable manner. However, the rules, while making the Panchayats responsible for proper management of the forests, deny to it necessary authority which seems to be vested with the revenue and forest officials. Thus, section 17 requires that previous approval of the Deputy Commissioner (DC) is necessary before a watchman or any other paid staff is kept by the Panchayat. In actual practice, the Deputy Commissioner's approval is taken whenever salary is paid to the watchman. An offence involving a sum of more than fifty rupees can be compounded only with the previous approval of the Deputy Commissioner. Similar permission is required if the seized property (stolen timber etc) is proposed to be sold. The Panchayat, on its own, cannot make local sale of surplus forest produce from the area to the right holders for their bona fide domestic use without obtaining prior

approval of the Divisional Forest Officer (DFO). If there are trees for commercial sale in the area, the permission of both DC and DFO is required. Thereupon action to mark and sell the trees shall be taken by the DFO. The Panchayat can only sell fallen fuel and grass for the bona fide domestic use of the villagers, provided such a sale does not violate provisions of the Working Plan of the Panchayat, which is to be prepared by the forest department. This would also require framing of bye-laws which have to be approved by the Commissioner.

The forest department deducts, from the sale proceeds of resin and other forest produce, its actual cost of extraction of resin plus overheads. From what remains twenty percent would go to the Zila Parishad (district council), forty percent to the forest department for development and maintenance of Panchayati Forests, (in actual practice this is never done, as the forest department does not have the responsibility for upkeep of Panchayat Forests) and the remaining forty percent is available to the Panchayat for carrying out projects of local public utility, if such projects are approved by the Block Development Council (Kshetra Samiti) and the Deputy Commissioner. The entire proceeds are deposited in a separate account in the Post Office, so that the local administration can fulfil its target for mobilising savings, and is not easily available to the Panchayats. In fact, they do not even know how much money has been credited in favour of their Panchayat. In Almora district alone the total capital account of the Panchayats is Rs.1.2 crores, their contribution was Rs.6.3 lakhs in 1986-87, but they were permitted a withdrawal of Rs2.4 lakhs in the same year. The individual contribution of each Panchayat to the fund is a closely guarded secret so that the Panchayat does not start clamouring for its expenditure within the village.

Thus the administrative control over the Panchayats is with the Deputy Commissioner, whereas the technical control has been given to the forest department. Despite such centralisation there is hardly any staff available within the revenue or forest department to dispose of requests from the Panchayats. The administrative support is very poor, which inhibits the enthusiasm of the Panchayats in delivering

results. The Rules and lack of infrastructure seems to inhibit rather than encourage democratic functioning of the Panchayats.

It should be pointed out here that the Government of UP had appointed a Committee of non-officials and officials in 1981 to suggest changes in the present Rules. The Committee submitted its recommendations in September 1983 suggesting, inter alia, a separate Forest organisation under the Collectors to deal with the Panchayats. It, however, retained most of the earlier provisions concerning powers and control of the District magistrates. Almost four years have lapsed but the new Rules are yet to be put into effect.

The Evaluation unit of the State Planning department studied 11 panchayats in which the total forest area was 1,090.50 hectares, established between 1932 and 1964. In one panchayat, the Sarpanch belonged to the Scheduled castes, in the rest they were Brahmins or Rajputs. 8 out of 11 panchayats had controlled encroachments, protected existing forests and had utilised forest produce scientifically. In one Panchayat of Pithoragarh 7 locals had encroached upon 4 hectares of common land. The case is subjudice. 10 out of 11 panchayats have appointed a watchman but as the area is quite big, the watchman has been able to protect only the easily accessible areas. Only 2 out of 11 panchayats totally closed a certain percentage (16% and 38%) of the area against grazing. The remainder closed the forests only during the rainy season, but allowed unrestricted grazing in the entire area during the rest of the year. The income from cutting of grass is generally not formally credited to the account of the Panchayat, as it is used to pay the watchman. 5 out of 11 panchayats earned 50-400 rupees annually by selling firewood to the right holders. Two panchayats earned royalty from resin tappings. 8 panchayats planted 160 hectares but only 27% of the seedlings survived. In addition the forest department planted 64 hectares out of which only 23% survived. On the whole, since the formation of the panchayats, forest wealth has increased by 40 to 50% in the area. Out of 94 right holder families, 170 of the poorest families complained that the Sarpanch were biased against them. But 12 admitted that they had illegally satisfied their demand. The Sarpanch explained that

they were not the original inhabitants of the village and hence, according to rules, were not entitled to the benefits. 88 out of 94 families sent their cattle for grazing. 3 complained that the Sarpanch did not permit their cattle grazing because of prejudice. 3 found the area too remote from the village.

Factors which help satisfactory functioning of the Panchayat can be summarised as follows:-

1. Leadership quality of the Sarpanch. Time given by him for supervision. His ability to evolve consensus within the village. His equation with bureaucracy.
2. Funds earned out of the resin tapping. Such panchayats which have a good bank balance find it easier to employ a watchman for protection.
3. Proximity of the village to reserved forests, which satisfy a substantial part of the village needs. Distance from road so that the produce cannot be marketed.
4. Total area and quality of land of the panchayat forests.
5. Single village panchayats do much better than multi-village Panchayats. In the latter, smaller hamlets often feel discriminated and therefore do not cooperate. Similarly, monocaste villages do better. The Panchayats in the UP hills have generally done better than the Panchayats in the plains because the size of the user group in the hills is generally fifty to hundred families only.
6. Chances of pilferage by the neighbouring villages are reduced if they too have access to a well-stocked forest.

The area under Panchayat forests at present is 2,448 sq kms. It is estimated that up to 1980, 600 sq km of civil/soyam forests has been afforested by the forest department which is now to be transferred to the Panchayats. Thereafter each year 250 to 400 sq km of afforested civil/soyam area is likely to be transferred to the Panchayats from the control of the Forest department. The Panchayats in the present set up are suited for conservation and distribution of existing stock, but not for development of new forests. If Panchayats are given adequate financial and administrative support, as is suggested in this paper, they could independently take the responsibility of regenerating depleted civil and soyam lands and thus the total area under their control would further increase. One could therefore expect that by the turn of the century the area under the control of the Panchayats would become 6,000 sq kms, that is half of the present 7,090 sq km of civil/soyam lands would come under their control. As the total exploitable area under reserve forests in the hills (minus area under permanent snow, alpine pastures etc) is about 1,800 sq kms, the financial support for upkeep, maintenance and development of Panchayati forests should be about one-third of what is sanctioned for the reserved areas. It may be again stressed here that bureaucratic control over panchayats is not being suggested. On the contrary, the Panchayats are to function as semi-autonomous units with sufficient authority vested in them which would enable them to protect forests, distribute produce, take action against offenders, generate income and utilise funds for further enrichment of the area under their control. This would require:-

- a) Significant changes in the proposed Forest Panchayat Rules, 1983 with effective delegation to the Panchayats, as suggested in Table 3.
- b) Creation of an organisation under the Hill Development department or the Chief Conservator of Forest (Hills), UP with responsibilities of extension, dissemination of technical knowledge, training and other development (as opposed to regulatory) functions to help and guide the

Panchayats. The organisation would be locally under the administrative control of the District Magistrates through the Block Development Officers.

- c) Adequate funds for the enrichment of the existing stock, especially through broad leaf species which require greater investment in protection and care.
- d) Gradual transfer of civil/soyam lands to the Panchayats both for maintenance and afforestation.
- e) The present system of managing through an elected committee of five to nine members should be abolished. All important decisions concerning village forests should be taken in an open house meeting of the village. This will increase participation and reduce scope for bungling.

Table No.3

Changes in Forest Panchayat Rules of 1931, 1976 and 1983

Item	1931	1976	1983	Suggested
1. Punitive Action				
Panchayat had powers to fine up to Rs.5.	Panchayat cannot impose fine. It can compound an offence up to Rs.50 with the agreement of the offender.	Same as in 1986. Except the compounding fee has been increased to Rs.100.	The Panchayat should have power to impose fines up to Rs.100 which, if not paid by the offender, should be recovered as arrears of land revenue.	
2. Management of Panchayat funds	The entire income of the Panchayat was at its disposal.	Only 40% of the resin income is theoretically available to the Panchayat. Of the rest, 20% is to go to the Zila Parishads and 40% is to be spent by Forest Department for maintenance and development of Panchayati forests. In practice, even the 40% part is not readily given to the Panchayat - it has been deposited in long term accounts.	Out of the total income, only up to Rs.600 per annum is available to the Panchayat, at least 50% of this is to be spent on development of forests in the area.	The Rules should lay down general principles for expenditure on approved items. The District Magistrates should be authorised to decide the financial norms. Subject to these, the Panchayats should be free to spend up to 5% of their annual income without obtaining sanction from above. They should send quarterly expenditure details which should be monitored at the Block Development Office.
3. Distribution among right holders.	The Panchayat was free to make its own rules to ensure equitable distribution.	The Panchayat can sell fallen fuel and grass to the right holders. If it wishes to sell more than one standing tree for the bona fide domestic use of right holders permission of the DFO is required.	Fallen fuel and grass can be given to the right holders. The Panchayat can allot one tree to a family for domestic use keeping in view the overall position. If the right holder's house is damaged, he can be given two additional trees free of cost.	The Panchayat should have full powers to distribute and sell fallen fuel and grass to the right holders. As regards sale of standing trees to the right holders the number of such surplus annual forest produce should be determined once in three years by the Panchayati Forest Development Officer, but the actual disposal should be done by the Panchayat.

4. Commercial sale	No restriction	In actual practice all commercial sale is done by the Forest Corporation after a written reference from the DM and the DFO. It often results in deterioration of timber.	It would require the approval of Divisional Commissioner after the recommendation of the Forest Panchayat Development Officer.	The Panchayat should be free to conduct auction of fallen trees in the presence of the entire village up to a value of Rs.5,000 in a year. However, commercial sale to outside parties should generally be discouraged.
5. Tapping of resin	The forest department tapped resin for the Panchayat.	Although Rules permit tapping of Resin by the Panchayat in accordance with the rules of the Forest department, in actual practice this work is done by the contractors appointed by the Forest department. The Panchayat is not consulted, nor is it aware of the amount of royalty deposited by the contractor.	The Panchayat is empowered to tap and sell resin under the supervision of Panchayat Forest Development Officer, provided actual tapping is done by trained staff.	Same as in 1983, with the proviso that outside contractors should be banned from tapping resin. Either it is to be done by Panchayat or a local villager or by the department. Short training courses can be organised to equip the local Panchayat with the necessary techniques. Marking of trees should be done with the full knowledge of the Panchayat. Conditions should be created which enable the Panchayat to increase its income and satisfy the right holders.
6. Right to slates and stones.	No restriction	The Panchayat can make local sale of slates and stones for the bona fide domestic use of the villagers.	No specific rights are with the Panchayat, although restrictions exist in some districts.	Same as in 1976.
7. Organisational structure	Same as in 1976	The Sub-Divisional Magistrates have been given the powers of Panchayat Forest Officers within their jurisdiction. They exercise administrative control over the Panchayats. Their inspection notes read more like auditor's report, and lack developmental perspective.	Role of the SNMs has been restricted to the initial constitution of the Panchayat. Rest of the powers have been given to a District Forest Panchayat Officer who would be a Forester.	Same as in 1983, but the Forest Panchayat Inspectors or the ADO (forests) should be posted at each block and they should render assistance in extension and technical knowledge to the Panchayats. The role of the government should be developmental rather than regulatory. The Blocks, which control NREP and RLEDP funds, should have greater say in developing and maintaining Forest Panchayats. The powers to suspend Panchayats and take punitive action against the Sarpanch etc should be with the SNMs.

Afforestation on Private Lands

It is a well-established fact that of the various legal and institutional models of forestry in India farm forestry on private lands has shown the best results. This is true of UP as a whole, although so far it is largely confined to relatively big land owners in agriculturally prosperous areas. (Gupta, 1986). Their orientation toward cash income is higher, their capacity to respond to new enterprises is better, and tree crops offer the advantages of ease in labour management to them. Of the total number of seedlings produced in the state roughly 60 to 70 percent are being lifted by farmers and private planters, and the rest are used in government plantations on degraded forest lands, roadsides etc.

Per capita availability of land in the UP hills is comparable with that of states like Kerala and West Bengal, which too have a substantial farm forestry component. Net sown area per person in the UP hills in 76-77 was 0.18 hectares which is only marginally lower than the UP average of 0.20 hectares. Intensity of cropping being higher in the hills, per capita gross cropped area is higher in the hills than the state average. Yet, little effort seems to have been made to promote forestry on private lands. To some extent, the lack of effort exhibits pro-large farmer bias, because there are very few big farmers in the hills. It is somehow assumed that marginal farmers will not spare land for tree cultivation, and that people regard wood as an abundant free material to be collected at will from the forests, an attitude which makes them indifferent to growing trees on their own land. It is also assumed that every inch of privately owned land is under cultivation, and the pressure to produce more grain forces the hill farmers to encroach upon Government lands as well.

Facts are otherwise. The total private land in Almora is 2,720 sq kms, out of which only 1,430 sq kms is under cultivation. (Data obtained from collectorate Almora). Thus roughly 40% of private land is not under plough. It would be safe to assume that at least half of it is fit for fodder, grasses and trees. A survey done in Almora showed that roughly 32,000 hectares (320 sq kms) of land, which was

under agriculture stands abandoned now because of loss of fertility, poor terracing or migration (personal communication from District Development Officer). Although data from other districts is not readily available, it is common knowledge that a sizeable part of land described as unculturable, culturable waste etc is private land.

A survey done in Almora district revealed that on an average each family owned sixteen trees (Personal communication from Fodder Extension Officer Almora). There are similar examples from other land scarce countries too. In Bangladesh it was found in 1983 that on an average each household had planted or naturally regenerated 68 trees (Byron 1985). In Panama, fruit trees are planted on almost every small farm. A survey in the hill area of Nepal showed that on an average each household owned 28 trees (Campbell and Bhattarai 1983). Thus, farm forestry could become a very viable programme despite small holdings.

In a study of Dwarahat Block of Almora district (Jackson, 1981 p.37) it was noted that cultivated land amounted to 15% of the total land on the block. Other private, but ungrazed land amounts to another 5%. The area of private but grazed land was not given. As is well known, part of uncultivated private land is used for growing grasses. Thus the uncultivated private land would be more than 25% of the total private land. With better technology and extension the production of green forage can be increased. During my field trips I noticed a great deal of interest on the part of farmers in utilising their fallow lands for trees provided they could be assured of reasonable harvesting rights. There is an impression in the hills, as also in the plain districts, that there is a complete ban on cutting of trees from private lands, even if it is for bona fide domestic use, and not for sale. The District Officers in the hills were under an erroneous impression that the ban has been imposed by the Government of India through the Forest Conservation Act.

The Act however applies only to government forest lands and it restricts the powers of the state governments in making an order which would dereserve forest areas or permit utilisation of forest area for a

purpose other than afforestation. The governments could do so only with the Centre's concurrence. Thus the Act has nothing to do with private lands or to the rights of private individuals. Their rights are constrained by an Act of the State Government, called "The Uttar Pradesh Protection of Trees in Rural and Hill Areas Act, 1976". This Act too does not impose a blanket ban on the felling of trees on private lands. First, it does not apply to trees situated in urban areas (sec.2 (c)). Second, no permission is required for the felling of any tree with a view to appropriating the wood or leaves for bona fide use for purposes of fuel, fodder, agricultural implements or other domestic use (sec.5). Third, 27 species have been exempted from the purview of this Act by various notifications issued under sec.21 of the Act. These include popular species like Eucalyptus prosopis as also hill trees like Sesbania, Bakain, Robinia, Bhimal and Willow. However, sec.23 of the Act imposes a complete ban till 1991 on the felling of specified trees which includes Akhrot, Chamkharik, Oak, Sal, Pipal and Bargad.

During my field visits I was dismayed to discover complete lack of knowledge of these exemptions and clauses. Permission was being sought and given for use of private trees for domestic purposes. For instance, a retired major of the Army in village Khairda, Almora wanted to use 4 Tun trees standing on his private land for use in construction of his house. His application passed through several revenue and forest officials located in far away places and ultimately he got permission for only 2. As already stated, no permission was required for using Tun trees for domestic purpose. Many people prefer to bribe the patwari and not apply for any permission in order to avoid harassment.

It therefore follows that, to begin with, immediate action needs to be taken to make copies of this Act available to each revenue and forest official, to each Gram Sabha and Panchayat and publicise its provisions and exemptions through meetings, pamphlets etc. Whether any Act is necessary and whether it serves a positive purpose will be discussed now.

There are in general two types of restrictions imposed on private tree holders. First, under the Indian Forest Act, Transit Rules have been framed which prohibit an individual from transporting timber without valid permit from the forest authorities. Second, there are restrictions on harvesting of trees which have been imposed generally by enacting a separate law. Such a law was first introduced in UP in 1949 when there were reports that large scale felling of trees from private land had taken place because of escalation of demand during the second world war period, and also because the zamindars anticipated the abolition of zamindari uncultivated lands which were to be taken away from them and vested with the government/community. The Private Forest Act, however, banned felling of trees only from the lands entered in the revenue records as grove lands. It did not affect trees on other categories of land. Therefore even after the passing of this Act large scale felling of trees continued for several years from zamindari and talukdari areas.

The UP Tree Protection Act 1976 is wider in its scope. It covers all categories of private lands and subject to exemptions discussed above covers all categories of farmers too.

Establishing plantations has been traditionally a departmental activity till a decade back few trees were being planted by the people, except fruit trees. The restrictions imposed on harvesting of private trees and transportation of timber therefore helped the government in controlling illegal felling of trees from forest areas. In addition, the tradition of planting trees only on government lands led to a belief that people's interest in trees is only in felling trees for consumption and sale, and therefore they need to be restrained from doing so.

Similar provisions exist in many states of India. For instance, in Himachal Pradesh there are Forest Produce Transit Rules framed under the Indian Forest Act which makes it mandatory for every private individual wanting to sell his trees to get them affixed by the forests department. He also requires a transit pass without which railway authorities would not accept his produce. In addition, there

is the Land Prohibition Act according to which if the owner of trees wishes to harvest them, he should first get permission from revenue authorities, then get his trees marked by the forest officer and then obtain a transit permit from the Divisional Forest Officer. In between his application would be obviously routed through several subordinate officials. If the timber is covered under the Timber Trade Monopoly Act then the owner has to sell his timber to the forest department only.

In Madhya Pradesh, the villages which are situated in the vicinity of government forest boundaries are notified u/s 241 of the Land Revenue code. No land holder can fell trees from such an area without obtaining prior permission from the district collector. This requires prior inspection by a Forest Officer. The main purpose of the provision is to prevent illegal fellings in adjoining government forests under the garb of felling of trees from private land.

It may be mentioned here that a number of Committees, for instance the Khanna Committee in MP and the Ranjit Singh Committee which set up the NWDB, have recommended drastic liberalisation of such rules. The recommendations have, however, not been accepted by the State Governments because they fear initial large scale felling which is bound to be criticised in the assembly and in the press. Withdrawing restrictions would amount to admitting the fact that the Government was not able to implement its laws, and has legalised large scale deforestation.

How does one summarise arguments for and against the Tree Protection Act and other similar provisions of law? Two points need to be made. Firstly, such laws should not have been enacted at all and they have inhibited farmers from taking to tree farming. Secondly, wholesale revocation of such laws would certainly cause large scale deforestation in the initial stages. Government's credibility among the people being low, it would be difficult to convince them that restrictive laws would never be imposed again and therefore the contractors, middlemen and aware farmers would take advantage of the situation and make 'a fast buck'. This would be adversely commented

upon in the legislature and the press which may scare the Government into reimposing the ban. Therefore, practical wisdom demands that the switchover to total relaxation should be gradual. To begin with, more species could be added in the exempted categories of trees and Transit Rules may be relaxed in districts which have a low percentage of area under the management of the forest department. In the hills, inter and intra district movement of timber may be permitted but greater vigilance should be exercised in the Tarai to ensure that timber is not smuggled out of the hills. One step which could be taken immediately is to remove all restrictions in the border districts of Uttarkashi, Chamoli and Pithoragarh, as there is hardly any urban market in these districts. Such a strategy is not likely to invite the hostility from the critics and "environmentalists" who consider tree cutting to be sinful.

There is yet another problem in the hills which inhibits tree growing by farmers. Unlike the plains, consolidation of holdings has not been tried in the hills. The holdings of a farmer are situated in several places, sometimes even 10 to 15, which affects not only agricultural operations but also makes him dis-inclined to plant trees. If his parcels could be consolidated and given to him at one place he would be more favourably disposed to using a part of his land for tree plantation.

The opinion as regards desirability of consolidation in the hills is divided. Many villagers living at high altitudes where potatoes are a cash crop were opposed to consolidation as they fear losing such parcels where potatoes could be grown. In the lower hills and in the Tarai people were in general enthusiastic about consolidation. In village Bhatta, close to Mussoorie in Dehradun district, it was noticed that people had informally exchanged plots with one another so as to make their holdings more compact. They had subsequently applied to the revenue authorities for regularisation which is awaited.

Hills in All-India Perspective

The social forestry projects in India are now more than a decade old. It is now increasingly being realised that some objectives of the projects are in contradiction with each other, or are not realisable. For instance, private forestry was pushed so as to solve the fuelwood and fodder problem, but why should a farmer having irrigated holdings be concerned with the fuelwood requirements of the poor? What is wrong if his objective is income generation? Community forestry programmes were designed to build the capacity of the local bodies to undertake plantations. In actual practice, these have meant departmental afforestation on small isolated patches, which neither fulfill the consumption needs of the villagers, nor can be adequately protected. The department as well as the local body seems unwilling to take the responsibility of the protection. Total tree wealth in India has certainly increased, but have the trees been planted where they are needed ecologically, in the hills, eroded terrains and in tribal belts? As in the case of the green revolution, well-off farmers and regions have benefitted, rather than poor people and degraded soils.

The confusion about the objectives of the plantation and possible strategies to achieve these still continues. However, three different strands of thought can be discerned. First, there are many who would like to bring forestry as close to agriculture as possible. Just as farmers grow crops partly for consumption and partly for sale they would like forestry too to be domesticated and become a family occupation. Tree planting should be seen as an economic activity, rather than an ideological activity to be undertaken in a collectivised and altruistic spirit. The role of the government would be confined to research, extension, providing inputs and marketing. Those who advocate large scale leasing of forest and revenue lands to industry, people and cooperatives belong to this school of thought.

Several administrators and foresters are opposed to this. They point out that of the three important functions of forests - protective, welfare needs of the poor and production of timber - the first two

will be totally ignored by the industry and farmers, whereas the third one would be only partially met through quick growing exotics like eucalyptus to the neglect of long gestation species like teak, sal etc. India's wastelands whether with the forest or revenue department, are not always fit for commercial exploitation for timber, they should be utilised for thin vegetative cover with moisture retention and soil conservation as the primary aim. Secondly, meeting fuelwood and fodder needs of the tribals and the poor, is not an economic activity which can be undertaken with private or bank funds. These basic needs require government support just as construction of schools and hospitals does. Therefore both from the ecological and welfare point of view government forestry must continue as the dominant form of all afforestation programmes.

Then there are the academicians, environmentalists and activists who are opposed to both private and government forestry. According to them, privatisation is inequitous, and state ownership and development of wastelands is ineffective or industry oriented. (Shah, and Ballabh, 1987. Notwithstanding legal labels of ownership, India's wastelands including private uncultivated lands, have always been treated by the community as common lands (even private cultivated lands are used for common grazing once the crop is harvested). The challenge is therefore to evolve a suitable institutional framework which will increase rural communities stake in restoring the productivity of common lands, including forest lands, most of which in the hills and tribal areas is in the nature of a community resource. Community involvement has several advantages. First, governments have limited reach in the rural areas. Second, governments lack capacity for sustained local action over the long term. Third, centrally designed programmes are not suited to all types of local conditions and have little flexibility. Fourth, these create dependence on local bureaucracies for saplings, funds and timber, rather than building the confidence and capacity of local institutions. (Gibbs and Romm, Institutional Aspects of Forestry Development in Asia, 1982). We have already discussed elsewhere the problems in assigning individual property rights, either on land or trees, on common lands. There is therefore no escape from building up the capacities of Panchayats,

cooperatives and other small organisations of users for regeneration of India's so called 'wastelands' which are in reality common lands. Community involvement is not just an ideological rhetoric, it is a practical necessity if rural needs are to be met.

The prevailing confusion over policy would have been easier to sort out if the three positions mentioned above were clearly articulated and debated. It will perhaps take a few more years before the policy-makers and others interested in social forestry realise the implication of what exactly they are recommending. Till then, it is not uncommon to hear people advocating privatisation in the name of fuelwood and fodder shortages, which amounts to saying that as the government has failed to eradicate poverty, the task should be given to organised industry and multinationals! Equating wasteland development with tree farming on irrigated lands exhibits similar ambiguity in thinking.

An easy escape from the impasse and perhaps a 'middle-of-the-road' position will be not to see the three policy options as 'either-or' solutions. Why not have a combination of the three - private, government and community forestry? Is this not happening already?

Herein lies the rub. Government forestry is being tried not on forest lands, but on common lands. Artificial distinctions exist between social forestry and production forestry as if the latter need not be social. Private forestry is being pursued as a model for forest and revenue wastelands by advocating tree patta schemes and leasing for industries. Community ownership is being demanded on forest lands, because the colonial government illegally usurped these lands from the village communities in the 19th century. In other words, tenure and landownership is sought to be changed, without first fully establishing the superiority of one form of tenure to the exclusion of the other through empirical research. It is tempting to look for one single "ideal" solution, which may be non-existent today.

It is better sometimes to realise one's limitations. Very little authentic knowledge exists today about how and why the programme of social forestry affects rural people. Key factors which determine the

outcome of such programmes are yet to be identified, predicted and manipulated. Till then policy decisions are likely to be taken on the basis of hunches and untested assumptions. However, the scale and importance of social forestry would demand scientific knowledge beyond personal impressions. Till such knowledge is generated forestry should be pursued without attempting a radical change in tenure. That is, the policy should be to promote farm forestry on private lands, government forestry on forest lands and community forestry (through community efforts and management, but with government funds) on common lands. Tenures are creation of historical forces they reflect existing social and political realities and therefore it may be counterproductive to change them through administrative mechanisms.

Nowhere else is the policy of working within the framework of existing tenures as vital as it is in the hills of UP. As we have already noted, the four types of land - private, civil/soyam, panchayat and forest - are owned by four different groups, individuals, revenue department, Van Panchayats and the forest department. Although rights and obligations of the groups extend far beyond the legal boundaries as explained in Table No.1 - these are creations of custom and also of public policy - yet better results would be forthcoming if the panchayats, forest department and farmers are given the required support to afforest such lands where their authority and interest is the strongest, that is on Panchayat (including civil/soyam), reserve forests and private lands respectively. This will demand a substantial shift in the present funding pattern as also in the organisation structure.

1. The total non-private wastelands which needs to be put under green cover is 14,225 sq kms. Of this, 8,896, 4,671 and 658 sq kms is under the control of forest department, revenue department, and Panchayats respectively. If 300 sq km is taken as the total annual afforestation effort in the hills, it is at present distributed in the ratio of 25%, 70% and 5% over forest, revenue and Panchayat lands. Thus it may be seen that though

the bulk of the wasteland is with the forest (8,896 against total of 14,225), only 25% of the current programme is on such lands. It is recommended that it may be increased to 40% in a period of 5 years, including enrichment plantations.

2. The afforestation of revenue lands by the forest department is beset with problems, which have been discussed in this paper. Therefore this should reduce to 25% from the present level of 70%. The Blocks could share the forest departments work load on revenue lands.
3. Van Panchayats capability may be enhanced through legislation and administrative measures, so that they not only develop their lands, but also the revenue wastelands close to their boundaries. Gradually these lands can be merged with the Panchayat lands so that in about 15 years time the total area held by the Panchayats increases from 2,500 to 7,500 sq kms. Despite the three fold increase their share would still be only 15% of the total land mass.
4. Roughly 4,000 sq kms would be the area of private wastelands. These have remained totally neglected. High priority needs to be given to bring them under vegetative cover. This would require removing the legal restrictions regarding ownership and harvesting of trees, and providing positive initiatives by way of subsidies, extension and training so that family effort in regenerating wastelands of the hills is fully tapped.
5. Privatisation of revenue lands through the Tree Patta Scheme should be tried on a pilot scale,

in Jaunsar Bawar Chakra and Jaunpur blocks, where the people seem to be receptive to the idea. Its applicability as a major policy initiative in the hills could wait till most of the private wasteland already available has been afforested.

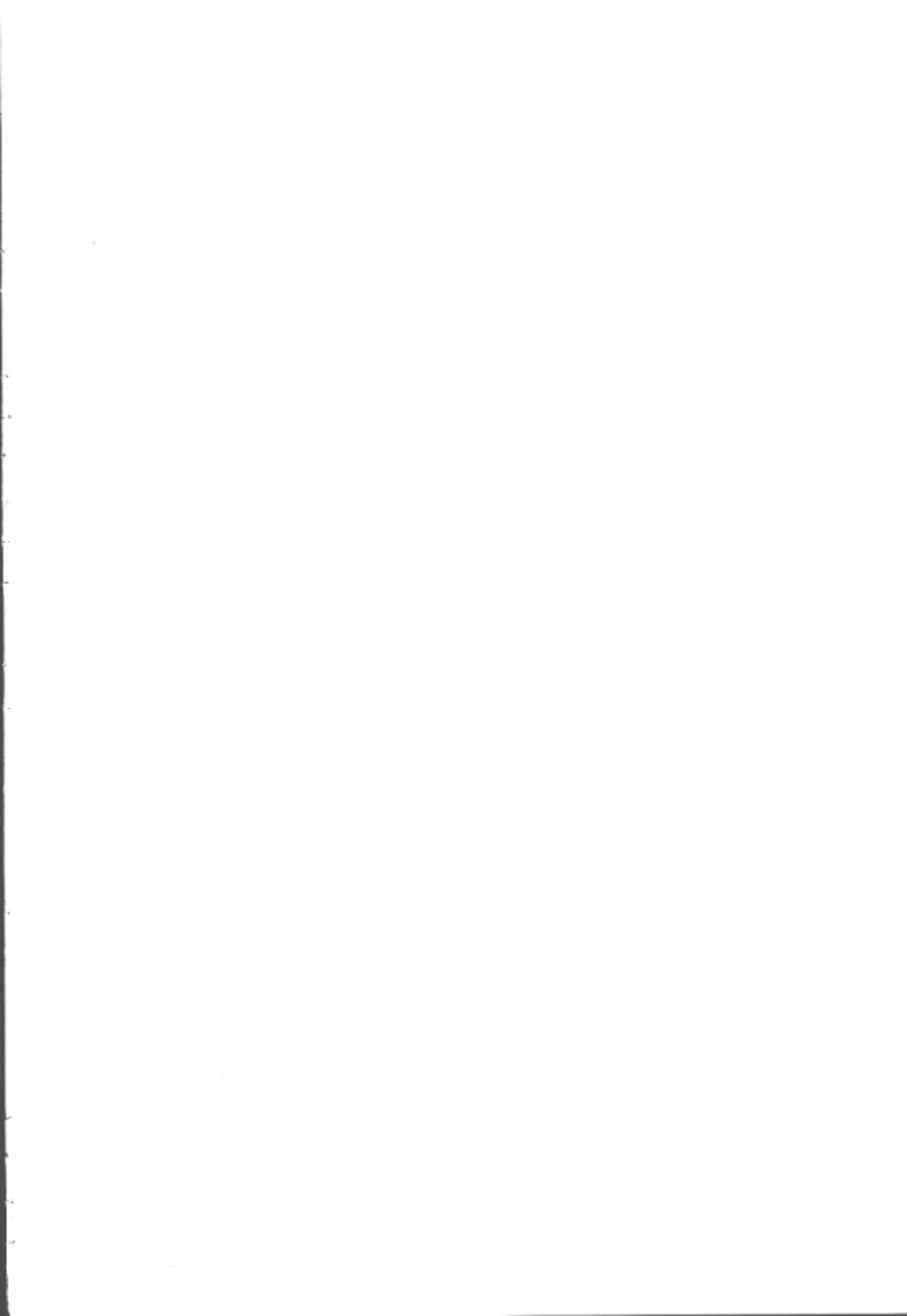
To sum up, there is ample scope for trying all three models forestry - government, community and private - in the hills, but the three agencies should work on their own respective lands, rather than attempt a radical change in land ownership or management, as is being tried or advocated today.

BIBLIOGRAPHY

- Ashish, Madhav 1986 The Economic Feasibility of Social Forestry Plantations in the UP Hills, Sufficient to Supply All Fuel and Fodder Requirements for the Present Population, (mimeo), Mirtola Ashram, Almora.
- Bowonder, B 1983 Management of Forest Resources in India, Public Administration and Development, Vol.3.
- Buzdar, Nek M 1986 The Role of Institutions in the Management of Commonly Owned Rangelands in Baluchistan (mimeo).
- Byron, R N 1985 Supply and Demand of Forest Products and Future Development Strategies. FAO Terminal Report.
- Campbell, J G and Bhattarai, T N 1983 People and Forests in Hill Nepal. FAO Paper No.10.
- Chowdhry, Dr Kamla 1986 Institution Building: Role of Constraints of Intermediate Agencies in Asian Seminar on Rural Development (ed) M L Dantwala, Ranjit Guha and Keith C D'Souza, Oxford Delhi.
- Government of Uttar Pradesh 1981 An Expert Committee to Report on Felling of Trees in UP Hill Region
- Government of Uttar Pradesh 1986 Afforestation and Soil Conservation Scheme Through People's participation in Hill region of UP (mimeo).
- Guha, Ramchandra 1985 Forestry and Social Unrest in British Kumaon, in Subaltern Studies IV (ed) Ranjit Guha, OUP Delhi.
- Gupta, Tirath 1986 Farm Forestry. IIM Ahmedabad.
- Hardin, G 1968 The Tragedy of the Commons. Science 162, p.1243-48.
- Hobley, Mary 1985 'Common Property Does Not Cause Deforestation', Journal of Forestry, November.
- Jackson, M G 1981 Livestock in the Economy of the Himalayan Foothills, (mimeo).
- Joshi, S C (ed) 1984 Rural Development in the Himalaya, Gyanodaya, Nainital.
- McKeen, Margaret 1985 Management of Traditional Commonlands in Japan (mimeo), Common Property Resource Management Conference, Annapolis April.
- Morse, Richard et al 1987 People's Institutions for Forest and Fuelwood Development, (mimeo), East-West Center.

- Ostrom, Elinor 1986 How Inexorable is the 'Tragedy of the Commons', (mimeo) Indiana University.
- Pitt, David 1985 People, Resources, Environment and Development: The Case of Deforestation in the Himalayas. UNEP (mimeo).
- Pitt, David 1986 Crisis, Pseudocrisis or Supercrisis - Poverty, Women and Young People in the Himalaya, Mountain Research and Development, Vol.6 No.2.
- Romm, Jeff 1981 The Uncultivated Half of India, Centre for Monitoring Indian Economy, Bombay.
- Shah, Tushaar and Ballabh, V 1987 Ownership/Use Rights and Community Involvement in Wastelands Development: Experience from Gujarat (mimeo), IIM Ahmedabad.
- Shepherd, Gill 1985 Social Forestry in 1985, Overseas Development Institute, London.
- Thompson, Michael and Warburton, Michael 1985 Knowing Where to Hit It: A Conceptual Framework for the Sustainable Development of the Himalaya, Mountain Research Development, Vol.5, No.3, 1985.







Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS
Tel: 01-935 1644



SOCIAL FORESTRY NETWORK



WORKSHOP SYNTHESIS: DISCUSSION AND OUTCOME

Gill Shepherd

Gill Shepherd is Social Forestry Research Officer in the Agricultural Administration Unit, Overseas Development Institute.

WORKSHOP SYNTHESIS:DISCUSSION AND OUTCOME

Introduction

In the workshop, not only the papers given but the subsequent sub-group discussions proved particularly useful for participants. For that reason an attempt to provide a sense of the direction discussions took is presented here.

Most people had come to the workshop with a set of issues of particular concern to them in their work, but with little certainty that others shared these. The workshop organisers did not plan topics for sub-group discussion in advance because they too wondered how widely shared their personal interests were. To allow the organisers to draw up a set of topics of wide relevance to the group, participants were asked to write down the topics about which they would most like discussion to take place, ranking them by distributing ten points between the topics they selected.

The exercise provided a long list of about twenty topics, of which the most popular were:

1. Successful strategies for common and wasteland afforestation
2. Village groups and intra-village equity problems
3. Legal obstacles to Social Forestry
4. NGOs and their relationship to others involved in forestry
5. Marketing
6. Who is gaining and who losing from Social Forestry?
7. Reaching the poor
8. Appropriate trees for the poor
9. Forester training
10. Tenure
11. Problems of short-term and long-term benefits in Social Forestry

We grouped these into five broader topics, which are those addressed in this network paper:

Better solutions for the poor (1,2,6,7,8,11)

Rights, rules and hassles (3,10)

NGOs and large-scale replicability (4)

Marketing (5)

Training and education for Forest Department staff (9)

The conclusions reached, and the suggestions for appropriate further action for those involved in Social Forestry in India, are contained within each section.

1.0 BETTER SOLUTIONS FOR THE POOR

1.1 Is wasteland afforestation appropriate for the poor?

There seem to be various problems intrinsically associated with trying to produce benefits from wastelands for the poor.

(i) Wasteland afforestation turns an individual activity into a communal one

If trees are grown on commons an individual activity - collection of fodder, grass and firewood - is replaced by a group activity in which the poor are weak partners. Planting on wastelands and commons is thus a high-risk activity for them because any revenue must be shared out in an unprecedented way.

Perhaps it would be better to try communal resource management only where use is indivisible, as in the case of a watershed or grazing area. Trees are a communal resource when they pre-exist in forest or bushland, but their ownership is quite different when labour and cash has been spent on planting them.

(ii) The function of the wasteland before tree-planting began
How were the commons being used before treeplanting was proposed? What existing resources such as grass for grazing, rope-making and so on would be lost and what was their value to those who gathered them? Can tree-growing compete in value for those wasteland users with what was there before?

Often middle and upper-income villagers were deriving no benefit from commons at the moment when tree-planting on them was proposed. For them, any prospect of economic return from the land is attractive: tree-planting is a low-risk, additional activity. But for the poor, a vital currently available resource may be being lost in return for an uncertain future share in a different, probably less valuable one.

(iii) Social inequality within the village

Just as the priorities of rich and poor in Indian villages vary, so the poor too have diverse needs.

They should be disaggregated as a category early in project planning in order to address precise and possibly conflicting needs. For instance, what proportion of the poor lack animals and have no need for fodder? Which categories use commons produce for income-generation rather than subsistence? We are still too much in the dark about how tree-planting schemes have actually been affecting the poor. All we know is that the poor have little to spare of anything; it is risky for them to give time or labour to uncertain benefits.

1.2 The short time horizons of the poor

Although trees represent tremendous opportunities for investment over time, their slow maturing rate is a particular problem for the poor. Solutions lie in devising low-risk tree-planting strategies.

i) Trees as additions to, not substitutes for, other activities
Tree-planting for the poor is most successful if treated as additional to other activities, rather than substituting for them, as the example of Group Farm Forestry in West Bengal shows. A household free to treat trees as an investment must also have a source of daily income of course, either from agricultural production or from selling labour, and careful planning with farmers of the role they expect from trees is essential if the trees are to enhance, rather than endanger livelihoods.

ii) Getting the advantages of tree-planting up-front
Tree-growing has to be planned so that some of its benefits are brought forward in time. Possibilities include planting some quick-maturing trees like papaya among others; planting trees very close and obtaining thinnings for firewood and sale; and staggering planting. The addition of a water source to wasteland planting would speed up growth rates considerably. Foresters should be prepared to prioritize species and technologies for early returns.

iii) Credit

If profits from tree-planting are to be realised by the poor, credit support is essential. Access to credit during the waiting period can be difficult, because ordinary banks are reluctant to accept a tree-crop as security. A special Forest Credit Fund for tree-growers might solve the problem. Cash subsidies for planting, however, must be offered with care. If people only plant because of a substantial subsidy, what they would otherwise have done is skewed, and the subsidies are very hard to phase out later.

1.3 Patta schemes

'Patta' schemes (land-leasing schemes) have the advantage over wasteland afforestation that beneficiaries for each piece of land in the scheme are clearly distinguished. The land for pattas should be underutilised revenue land or ceiling land, and such land should be released specifically to the poor, in preference to communal land. There is no shortage of such categories of land in many areas.

'Pattas' should be land pattas not tree pattas, to avoid confusion over rights and to avoid chaining people into too rigid and unattractive a system. It is better to give land on which agriculture may be practised along with tree-growing, and to give it for a generous leasehold period such as 30 or 90 years.

More recognition should also be given to the special relationship of communities living on the forest boundary to the forest itself. Encroached or degraded margins can be replanted and protected by those who live nearby, as has happened in South Gujarat, in return for harvesting rights within the forest.

If tree-planting and previous land-use are priorities, perhaps for different categories of villager, then, logically, village lands should be made more ample to accomodate both needs. Often ceiling land or revenue land could be made available.

1.4 The poor and risk-avoidance

(i) project planning with risk avoidance in mind
Since the poor are extremely risk-averse, more time is needed, in projects especially for them, for careful investigation in advance of implementation and more room for flexibility and change along the way. The poor need a good deal more help than the rich. Hurriedly

thought-through ideas should not be tried out on them, because they cannot afford to experiment with a risky innovation. Participants stressed, too, the importance of spending enough time to discover the priorities of the poor, and regularly checking to make sure that these were being met. In some areas of India, for instance, it would seem that the poor are more enthusiastic about the wage employment aspects of Social Forestry than they are about tree-ownership. But the preference is simply a strategy for risk aversion: if low-risk ways of retaining the trees as assets were available, preferences would be likely to change.

(ii) extension and the poor

Good extension is vital for the poor. Firstly, they are often on the worst land. In dry areas in particular a great deal of technical innovation is often needed for which well-thought through extension and demonstration is vital. Secondly the poor are often poorly placed to hear of schemes intended for them because they are illiterate, busy and rarely in contact with influential people. They must be sought out by extension workers with a commitment to telling them of the options open to them. Thirdly, more value-adding through local processing of raw products - seed-crushing and fruit processing for instance - should be developed involving the poor.

(iii) moderating the play of market forces

Some participants felt strongly that the Indian Government should guard against a price-crash by leaving pole and pulpwood production to private farmers (rich and poor) and limiting its own implementation role to conservation and environmental protection.

(iv) diversification

Most households could become a little richer if they had a mixed selection of one or two dozen valuable trees (fruit and minor forest produce) planted by the house. The main obstacle is usually only the practical one of dissolving the horticulture/forestry boundary preventing some fruit trees being offered. The poor probably need species diversity more than the rich, because they experience deficits in both cash and subsistence requirements.

1.5 The poor and the State

Much Central Government commitment to the poor is dissipated at district-level. On the one hand there should be greater professional rewards for successfully getting government funds to the poor and successfully implementing schemes for them. On the other, the district-level funding situation needs stream-lining. Funds are available for tree-planting through the Forestry Department, Agriculture, Soil Conservation, Community Development, and through schemes for scheduled castes and tribes. Officials have to account to each body separately for funds spent. One participant argued strongly for the funnelling of all monies for the poor into a special pool to simplify accounting and speed the process of implementation of projects.

1.6 Research needs for the poor

We are still very poorly informed about the response of the poor to tree-planting schemes, and the extent to which they have benefitted from or been impoverished by them. There is much rhetoric on each side, but very little hard data of the kind being generated by Tushaar Shah in West Bengal.

More study of ongoing projects is needed before new ones are embarked upon. In particular research is needed on the land pattas distributed to individual households in contexts where that land was previously communally owned. Have the beneficiaries gained much? Have the dispossessed lost much? We need comparative analysis of such experience.

2.0 RIGHTS, RULES AND HASSLES

Several participants had come to the workshop with problems about legal and tenurial rights at the top of their own agenda. 'We don't even know what we don't know,' said one despairingly. This section list the problems as people saw them and some proposed solutions.

2.1 The confusion over the rights of participants in forestry projects

Social Forestry has come into existence in India in a legal milieu established to prevent the felling of India's natural forests for profit or in the course of agricultural clearance. Laws never intended to cover villager tree - planting nevertheless apply to it. The chief problems with this situation identified at the workshop were:

i) that there are inconsistencies between Central and State Government legislation, policy and practice with regard to territorial and Social Forestry.

ii) that laws, rights, and privileges vary from State to State and from area to area of States. For instance, the administration of revenue lands varies widely.

iii) that simplification is needed of the rules affecting private forestry so that the right exists to fell privately owned trees at will and take them to sell at the market of choice. Six permits are currently needed for this in Bihar, and all States have much inhibiting legislation.

iv) that the Forest Conservation Act 1980 has gone too far. It says that Forest Land cannot be alienated from the Forest Department, which rules out projects such as the otherwise highly desirable use of barren forest land for participatory people's forestry. In some States, such as Karnataka, low quality (C and D class) agricultural land was declared forest land before village afforestation was embarked upon.

v) that panchayats have a very unclear relationship to local panchayat lands and common lands, which can be effectively denied in direct negotiations between the Revenue Department and the Forestry Department.

2.2 Arriving at a clearcut situation

The first step needed is a clarification of what the relevant laws and statutes are in each State. Although Chhatrapati Singh at the Indian Law Institute has done some work on the problem, help will be required for what is an enormous task.

The need is for a complete set of State by State studies of current law, using State civil servants (many of whom spend their working lives interpreting Revenue department laws), administrators, land tenure and human rights lawyers and representatives of Voluntary Organisations.

When a codification of current law relevant to Forestry is complete, it must be agreed with government. It should then be publicised as widely as possible so that ordinary people know exactly what their rights and duties are in relation to the Forest Department, tree-planting on village land and tree-planting on their own land. The information should be included in project documents such as Karnataka's Project Implementation Manual, and in newspapers and magazines. Extension officers should also have the duty to publicize the information correctly.

2.3 The rights which need to be established

Inevitably, as clarification of the current legal situation is completed, it will become clearer where change is imperative. Where legislation is confusing or contradictory, government orders can sometimes clarify or rationalize the situation, for instance. But the real advantage of conducting a big-scale investigation into Forest Law, is that explicit, implicit and subjective interpretations of the relevant laws can be disentangled, and the really important and intractable anomalies highlighted.

The aim of the exercise should be to give treeplanters better rights to their own product, primarily. This will certainly involve a simplification of the system of felling permits, transit permits, and royalty permits, and will open up tree-products markets and break the government's current monopoly in these.

A second aim should be clearer definition of rights of access to various categories of land. Rights on common land and the distinction if any in particular areas between revenue land near to a village, and village common land need clarification in most places.

The result should be the removal of many of the current disincentives to Social Forestry.

2.4 Effecting change

Change will come from various directions. The human rights and land-rights lawyers with whom Singh is working will propose solutions to some of the problems identified.

Campaigning bodies such as voluntary organisations and the media will work for change by highlighting problems which offend natural justice or on which legislative change is called for. They will make sure that villagers are aware of their rights and assert them, perhaps by collective action, focus on an issue, force liberalisation

Donors can contribute by cooperating together to press for any important changes in law or practice which are identified, and by making proposals for new action. The focus which non-formal bodies train on particular issues may encourage them to press for particular liberalisations of the law. They also have a duty to examine the Forest Act finalised this year, which will certainly be promulgated before the review of problems and anomalies suggested here can be undertaken.

3.0 NON-GOVERNMENTAL ORGANISATIONS: WHAT IS THEIR CONTRIBUTION?

3.1 NGO strengths in the implementation of forestry projects

At their best, NGOs have the capacity to be experimental, practical, innovative and spontaneous. They may be able to pilot and initiate something which becomes part of normal practice in time. NGOs are also able to work on a mix of problems in a more integrated way than is possible for those funded sectorally.

It would be a strange NGO too, which did not pride itself on good relationships with project beneficiaries, and on its commitment to equity issues. Good NGOs can often be the conscience of more formal bodies and although they can be priggish in this role, they have in fact frequently instigated beneficial change in the way projects are conceived and good practice defined.

NGOs are important in areas where Government intervention is limited, or does not extend right down to village-level, though there may well be a conflict in the role which Government would like them to take in this circumstance, and the role which they envisage for themselves. Nevertheless, they may have the capacity to act as brokers between local people and government, putting the viewpoint of the poor to those who might not have heard it, acting as pressure groups, and helping locals to find out about grants and schemes for which they might be eligible.

Finally, NGOs are often able to obtain funding directly from Northern NGOs and other bodies, and can use it independently.

3.2 Constraints on NGOs

NGOs are faced with a sharp conflict of interest in India: one which is not always so acute elsewhere in the world. On one hand campaigns for the rights of the poor, tribals and others, demand confrontational political commitment. On the other, NGOs need government cooperation and inputs actually to work on rural development projects for the

poor. If the balance between confrontation and cooperation is got wrong, the poor may suffer. Individual NGOs probably need to consider these problems more carefully, to decide whether they are mainly campaigners or implementers, and to recognise that one activity places limits on the other. In the sphere of forestry, better NGO cooperation with the Forestry Service is usually needed though NGOs are often bad at such cooperation even with one another.

3.3 The potential for NGO / Forestry Service trade-offs

In principle, the complementary strengths of the voluntary sector and of government could enhance the work of both. NGOs have the freedom to try things out without commitment in a way difficult for government, and their good rural development projects are a potentially invaluable training ground for state foresters, where participatory extension methods may be experimented with.

NGOs in turn would usually benefit from training in the technical skills of government foresters. Special short courses for NGOs keen to have an involvement in forestry would help them and forge more friendly links between them and State Forestry Services. It would make a lot of sense for NGOs and government to evolve comparable standards of evaluation and monitoring of projects, and for NGOs to professionalise their inputs in coordination with government.

But none of these things can happen in an atmosphere of ill-will and suspicion. While National Government and donors may urge forest departments to cooperate more with NGOs, State forestry officials are likely to continue to be unenthusiastic if all they experience is ceaseless criticism from NGOs.

3.4 Effective NGOs

Effective NGOs will vary in size, though will be unlikely to be very tiny; they ought to have a good enough district and State-level relationship with government for mutual learning to be possible without loss of face; and they will treat good communication of their activities to government colleagues and to other NGOs as a duty. They must of course be well-trusted by the people they primarily work for. The advantage of managing the difficult balancing act which these prescriptions imply, is that the chief weakness of NGOs - inability to continue to fund a project after a short period - can be vitiated by the project's incorporation into the government programme.

3.5 Scaling Up

Finally the nature of the relationship between NGOs and government forestry is mainly of interest because the best NGOs have a good track record in participatory styles of rural development. Since the current working hypothesis is that a big-scale attack upon deforestation and soil erosion can only come through good villager-forester relationships, and a strong economic rationale for tree-planting from the farmer's point of view, NGO experience is potentially invaluable.

However, caution is needed. Some grassroots initiatives cannot be scaled up because they are too capital or labour-intensive for large-scale replication, or because they depend upon the kind of conscientisation which must by its very nature be extra-governmental. Better M. and E. would help both NGOs, and those who would emulate them, to see which these are.

Since many NGO projects are regarded as pilot projects by their implementers, replicability should be given more priority by them than is often the case. Even where a voluntary organisation has had a charismatic beginning, there is a stage where institutionalisation will occur - and where replicability should be taken seriously. In that way the best of the NGO's poverty-oriented and morally thoughtful approach stands a chance of being combined with government's broader and more durable impact.

4.0 MARKETING

4.1 Trees as cashcrops

In India it is now perfectly clear that people want marketable treecrops from forestry in addition to, and often in preference to trees for subsistence products. This fact puts an onus on foresters engaged in extension work with farmers and villagers to help them maximise returns on land and labour investments and to address the question of markets and marketing problems at the outset.

Which species have the best marketing potential? What are the most profitable end-uses for trees grown and what are the costs in attempting to supply these? What markets are available to farmers and how can sales of produce be effected? What local, state-level and national linkages have a bearing on the marketability of treecrops in particular situations?

4.2 The market information required

i) appropriate species and products

Products such as bamboo and other 'minor forest produce' have the potential for profitability, as well as traditional wood products, and ought to be given more consideration. Many have cash and subsistence uses but are rarely available to the smallholder as seedlings.

There should be more effort too to raise species which offer opportunities for processing on the spot, so adding value to the original product at source, along with extension help in processing. Examples mentioned included oil seed species including eucalyptus oil, fruits, species for charcoal production and species for dry fodder for fodder banks.

ii) help with marketing

Tree growers need good quality extension help with marketing from the Forestry Service to market trees successfully. In particular they need:

information on markets available

information about size and quality specifications

widely diffused price and marketing information

advice on different product and marketing options

Strategies may vary according to the client - individual or village group or coop.

The Forestry Department itself is currently unused to selling except by auction, and whole new marketing structures have probably got to be built up, starting with the setting-up of villagers' marketing groups.

iii) prices

- diffusing price information

The first step in creating a better market is in making details of demand, price and profitability far more readily available to treegrowers as a defence against middlemen with an incentive to skew such information.

- the threat of a price crash

The only way of avoiding a price-crash, important with a crop taking several years to mature, is for the government to be prepared to declare price support measures in advance.

- planning for tree-farmers

The Forestry Department should also undertake forward planning on behalf of farmers, monitoring trends in prices and seeking new outlets and end-uses for tree-products.

The most urgent potential problem in this area is the level of pulpwood importation into India. Unfortunately there is a world pulp surplus. Imported pulp is far cheaper than its Indian counterpart, and at the moment, 50-70% of demand is met from imports. If current import restrictions were lifted, Farm Forestry in India would probably receive a death-blow. On the other hand, if a more extensive import ban were imposed, commercial tree-production would be even more profitable for Indian farmers, though prices would be higher for manufacturers.

Workshop participants felt strongly that as much as possible of the market should be earmarked for farmers, and that not only imports, but also the growing of pulpwood by government itself should be halted in favour of farmers.

- forest-based industries

Forest-based industries should no longer be subsidized: they offer unfair competition both for resources and in the market, to the small producers the Forestry Department should be supporting. They currently obtain forest produce at 10 rupees a tonne, while individuals are paying 1000 rupees a tonne.

4.3 Selling

i) sellers' cooperatives

More information is needed on the best formula for marketing trees grown by villagers. Should the coop be involved only in farm-gate sales, or also in transporting wood to market?

There are a few models for investigation, including tenants' tree marketing coops in South Gujarat. Are local middlemen a necessity? Should they be encouraged or avoided?

How will marketing from wastelands rather than from farmers' own fields be managed locally?

ii) selling fuelwood to towns

Is there any way of setting up fuelwood marketing coops to towns which would make the production of fuelwood for this end more economically attractive, and would still be of value to poor townspeople?

4.4 Data needs

(i) Effective marketing of wood products by farmers is still in its infancy in most parts of India, though not universally. Urgent investigations of systems which already exist are required, which take note of distribution, analyse where the profits are, and indicate the services intermediaries provide.

(ii) What structures should be built up from village to wider sales networks?

(iii) Where should marketing support come from? Must the help inevitably come from the Forestry Department, or is there a case to be made for some other agency to step in? Who can best organise villagers to sell their trees in a less exploitable way?

(iv) How can the Forest department become more involved in marketing?

5.0 TRAINING AND EDUCATION FOR THE FOREST DEPARTMENT

5.1 The problem: new tasks for foresters

Training appropriate for Social Forestry is currently ad hoc, on-the-job and informal. The need now is for a variety of different things: broader training at Schools of Forestry as well as more varied field experience.

Course work for students should impart a better grasp of the work of others in rural development and agriculture; and a sense of the relationship between forestry and agriculture, water conservation and livestock-keeping. Much more training and experience in the monitoring and evaluation of Social Forestry projects is needed too.

Foresters need hands-on experience of village-level extension work, of helping villagers to market their trees, and of the identification of constraints from the farmers' point of view. Foresters must also - probably through the medium of in-service training - be taught how to generate publicity and education materials.

5.2 Training institutions

Who should the trainers be? The traditional forest training institutions are in flux and need the help of new courses; many forestry officials feel threatened by change and may be inclined to resist new ideas if they are not taught by those sympathetic to the previous role of foresters.

On the other hand, agricultural universities in India are now developing forestry courses - an aspect of the much broader range of bodies now involved in tree-planting - and centres such as the Indian Institutes of Management are also being drawn in. If foresters are not to be left behind, they and their training institutes must move fast to take on board the rural development approach.

Peer group training is especially important for mid-career foresters. This can take place by more exchanges between States and by visits to see the programmes of others. It was felt that secondment of younger foresters to good NGO forestry programmes, as already happens in one or two States and in Social Forestry elsewhere in the world, would be a good form of training.

5.3 Who should be trained?

Opinions varied on the priorities for training. While many people thought most training should be made available for the new younger generation of foresters, others felt that the priority was the reorientation of very senior people in the Forestry Service. Until their commitment was won, Social Forestry would remain an unattractive option for junior foresters, who would see that prestigious careers were built through Territorial Forestry rather than Social Forestry. The point was also made that it was important to select only the people who had shown some interest in Social Forestry. Training for reluctant or unpromising individuals was a waste of time and money.

5.4 Training materials

There were many suggestions for the generation of training materials. Some found simulation games useful for practising the handling of village situations. It was suggested that there is probably quite a lot of good training material around already, being developed by others, both in other States and among NGOs (the Mahiti project was cited as one possibility). The main need is to find and draw these materials together. It was also suggested that Forestry might look

fruitfully for good training materials by going outside forestry itself and looking at the materials being developed by Community Development projects.

Some people felt that case study materials on positive and negative interactions between the Forestry Department and rural people would be useful, with videos of case studies.

5.5 Training through field research

One workshop participant put the problem of forester reorientation and its solution very succinctly: make the patient the doctor. If a forester is asked to go and talk through a problem with villagers and report back with suggestions for solving it, he will have acquired a sympathy for those who suffer the problem in the process of reaching his conclusions.

Several people felt for this reason among others that appropriate pieces of field research, undertaken as a part of field training, would help foresters become acquainted with the needs of the poor, and give them practice in learning how to find out what to do about them.

5.6 The administrative burden of field staff

While all agreed that more training was very important it was also pointed out that field staff often spend little time in the field, not because they dislike field activity, but because they have so much paperwork that extension actually forms a very small part of their week.

Those senior to field staff need to rethink this problem, and create the conditions under which field staff can spend more time with the people they serve, and less on form filling. Simplified forms, more delegation and more deputation would be very welcome and many staff would be happy to spend more time with villagers than they can currently manage.

Conclusion

The workshop participants were able to test their own opinions against one another in the sessions recorded in this paper. Each topic was first discussed in a rapid brain-storming way in small groups, and then the whole workshop met to hear group rapporteurs before splitting off to discuss the next agenda item. A great deal of work was done by everybody in the space of a single afternoon.

Since the group were almost all actively involved in research or implementation in India, there will certainly be practical outcomes from the workshop, including Social Forestry Network research, which will be reported in due course.

24

O.D.I. Registry
CT



Agricultural Administration Unit

Regent's College

Inner Circle

Regent's Park

London NW1 4NS

01-487 7413

