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# THE USE OF SUBSIDIES FOR SOIL AND WATER CONSERVATION: A CASE STUDY FROM WESTERN INDIA

**Paul Smith**

## Abstract

*This paper discusses the use of subsidies for soil and water conservation (SWC) in the KRIBHCO Indo-British Rainfed Farming Project being implemented in degraded areas of western India. The rationale for, and effects of, adopting subsidies are summarised. Although both project staff and farmers agree on the importance of SWC measures, few farmers can afford the investment of time and money. This is largely because production in the area is so low that most farmers are obliged to seek off-farm work during the dry season. As this is when most SWC work is undertaken, there is a need to offset the opportunity cost to farmers of forgoing employment opportunities in order to implement SWC activities. Benefits arising from the use of subsidies include priming of savings and credit groups and a temporary reduction in annual migration levels. Disadvantages include possible lack of equity and low levels of sustainability. The paper concludes by discussing alternative funding arrangements including loans, differential subsidies and other incentives. It suggests that for private farmland, farm households are subsidised with fixed land improvement grants (rather than paying those who participate in the SWC work). Farmers and their hamlet members should discuss how the money would best be used. A fixed subsidy per unit area is proposed for communal land improvement and when watershed management is conducted on a village basis. A village work plan, based on the funds available, would be formulated by village groups in consultation with project staff.*

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## Acronyms

| | |
|---|---|
| CAZS | Centre for Arid Zone Studies |
| CO | Community Organiser |
| DFID | Department for International Development (UK) |
| GoI | Government of India |
| JFM | Joint Forest Management Scheme |
| KRIBHCO | Krishak Bharati Cooperative Ltd. |
| KRIBP | KRIBHCO Rainfed Indo-British Project |
| NABARD | National Bank for Agriculture and Rural Development |
| PRA | Participatory Rural Appraisal |
| SCWD | Soil Conservation and Watershed Development |
| SEC | Socio-economic class |
| SWC | Soil and Water Conservation |

# THE USE OF SUBSIDIES FOR SOIL AND WATER CONSERVATION: A CASE STUDY FROM WESTERN INDIA

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## 1 INTRODUCTION

The KRIBHCO Indo-British Rainfed Farming Project (KRIBP) is a bilateral development project which was designed to develop a participatory approach to rural development in degraded areas of India (Jones *et al*, 1996). It is funded jointly by the UK Department for International Development (DFID) and by the Government of India (GoI). It is executed by KRIBHCO, a national fertiliser co-operative, in which 51 per cent of the shares are held by the GoI and 49 per cent by member co-operatives. The KRIBHCO project started in 1992 and has focused its attention on adjoining parts of Panchmahals District (Gujarat), Banswara District (Rajasthan) and Jhabua District (Madhya Pradesh). The area is populated mainly by members of the scheduled tribes, the *Bhils* and *Bhilala*. Villages are usually relatively socially homogeneous, although they sometimes include sizeable proportions of scheduled castes. The area is characterised by undulating land, deforestation, poor soils and low levels of agricultural production.

In the project area, agricultural production alone is normally inadequate to support families throughout the year. Thus, an important feature of life is the annual migration to urban areas between November and March each year and the remittances earned during this period form a critical component of villagers livelihoods. Farmers—sometimes whole families—travel to cities up to 200 or 300 miles away in order to find labouring work. The migrants generally return for the festival of *holi* in March, some travelling back to the cities after *holi*.

KRIBP set out to give particular weight to the needs of the poor and of women and aimed to test ways in which their needs and priorities could be taken into account. The justification for this bias on women was the rarely acknowledged, but considerable contribution of women to agricultural productivity, household decision making and the local economy in general. Men almost exclusively, are recognised as occupying the roles of decision-makers and holders of knowledge. Women have largely been valued for their labour rather than their knowledge or opinions and even women do not acknowledge their own wide knowledge and skills (Mosse, 1994).

The project began work in five villages in 1992, selected on the basis of a lack of resources such as paved roads, schools and medical facilities and on the level of social homogeneity. As the project proceeded, new villages were added primarily in response to requests from villages which had heard about the project's work. Programme activities cover a range of farming system areas; crop trials and community seed multiplication, agroforestry and wasteland development, horticulture, Soil and Water Conservation (SWC), minor irrigation, livestock development and credit management for input supply.

The project emphasises the use of savings and credit groups as the basis for planning natural resource and economic development in the villages. The groups are based at the *falia* (hamlet) level, which normally consist of 15 to 25 households of related families or with close social ties. Households are given an initial loan from the project of Rs500 to Rs1,000[1] to provide crop inputs. Repayments are made by individuals into the group funds (partly because there are institutional constraints which prevent loans from being repaid to the project). Group funds are used to finance agricultural inputs, capital items (such as water pumps for irrigation) and also to meet social needs (such as financing weddings). To date, although these groups have been used as a focus for the implementation of SWC work, there is little evidence that group funds have been used for SWC maintenance (Mosse *et al*, 1995). In addition to establishing an alternative credit source and being a focal point for the implementation of natural resource management activities, the groups have helped to build organisational and conflict resolution skills. By 1998, there were 232 groups in about 70 villages, each with an average membership of 18 households. In 1997, average funds held by each group were Rs650 per household, generated mostly from project programmes. SWC had been carried out on about 4,250 hectares in 53 villages at a cost to the project of Rs4,000 per hectare.

The project employs pairs (ideally one male and one female) of community organisers (COs) to work in groups or clusters of three or four villages. The COs usually live in nearby towns. Village and group meetings are held regularly to carry out community problem analysis and issue-focused Participatory Rural Appraisals (PRAs) on various topics and to discuss which simple interventions can be made by the project. In the early stages of project involvement, the emphasis is on confidence building interventions that do not require complex group action—such as experimentation with new crop varieties or the purchase of small water pumps. Later, at the request of the communities, major interventions by the project may include SWC, tree planting, well construction and small-scale irrigation schemes.

At the outset of the project, there was a general consensus among project staff and advisors that although some form of subsidy would have to be offered for SWC work, it was desirable for farmers to make a considerable contribution themselves. It was decided that 50 per cent of labour costs would be paid by the project. The main justifications for offering subsidies were the need to compensate for the opportunity cost of farmers forgoing migration in order to undertake SWC work; the heavy indebtedness of many of the farmers which seemed to make the use of loans for SWC impractical at that stage of the project cycle; and intergenerational equity arguments.

## The use of subsidies for SWC activities

The low investment in SWC in areas where there is high seasonal migration has been noted by several authors (Kerr and Sanghi, 1992; Reardon *et al*, 1992; Reij, 1991) and has led many to advocate the use of subsidies if they are well thought out, properly administered and implemented with care and sensitivity (Sanders, 1988). Stocking and Abel (1992) emphasise the need to make adequate allowance for the opportunity cost of farm labour used on SWC schemes. Sheng and Meiman (1988) advocate the use of incentives including subsidies, as farmers in degraded areas often have few resources to invest in SWC except labour. De Graff (1996) discusses the role of legislation and moral persuasion in addition to economic incentives in the implementation of watershed development projects. He concludes that subsidies may be justified when the benefits from soil conservation and watershed development (SCWD) do not only accrue to the farmers concerned, but also to those downstream through the reduction of flooding and siltation or to future generations of farmers.

Other observers have reported that the use of subsidies has been disappointing or even counter-productive. Kerr *et al* (1996) point out that subsidised watershed development has been used for employment generation, to convince farmers to try new methods, to compensate for externalities such as reducing downstream sedimentation and to coerce ignorant farmers to do what the project management know is best. Sanders (1988) highlights the tendency for farmers to expect subsidies from the government or other sources for carrying out SWC works, often refusing to carry out necessary maintenance unless they are paid to do so. Pretty (1995) mentioned their effects on stifling local initiative and encouraging a subsidy dependency culture. Kerr *et al (op cit.)* summarise the drawbacks of subsidies: that they cannot be extended indefinitely (thus failing to fulfil project goals of reproducibility); they are wasteful if there are feasible alternatives; they are difficult to remove at the end of the project; and there may be undesirable side effects. Side effects may include neighbouring villages postponing self-financed SWC until the project arrives in their village or postponing maintenance in the hope that future projects will pay for it. In such cases, subsidies may act as a disincentive. Subsidies may also discourage farmers from thinking for themselves and developing other, perhaps cheaper, solutions and so would constitute the opposite of development (see also Bunch, 1982).

Few authors mention the inequity of subsidy programmes and the difficulty of taking into account the opportunity cost of subsidies. Subsidies divert resources away from other uses—if works are financed by loans rather than subsidies, the money (or labour in the case of subsidies which are less than 100 per cent of labour costs) may be better utilised elsewhere.

Although they would prefer to do away with subsidies, Kerr *et al* (*op cit.*) acknowledge that this will not often be possible and the best that can be done is to ameliorate the negative effects and reduce the level of subsidies below the 100 per cent commonly offered on government schemes. One suggestion they make is the development of a scheme of matching labour contributions, whereby farmers build half the bund themselves and the project employs labour to construct the other half. They suggest that subsidies are only justifiable when there has been a market failure, that is, when social costs and returns do not equal private costs and returns. This situation may occur when the discount rate (both notional and sub-conscious) which farmers apply to the cost of not doing SWC is greater than the notional discount rate that would be used by the government or society as a whole. In the case of SCWD, this may be true if the considerations of downstream farmers or later generations are to be taken into account. Another market failure, although not discussed by Kerr *et al (op cit.)* occurs when farmers do not have access to credit at commercial rates of interest. In the KRIBP area for instance, farmers typically have to pay interest rates of up to 150 per cent per annum on loans from money lenders.

Mosse *et al* (1995), commenting on the KRIBP, reported that even 50 per cent subsidies had distorted the villagers view of SWC—some groups reported a need for SWC, when they really viewed SWC as an income generating activity. However, it appears that although the desire for income in the form of subsidies from SWC is great, most farmers in project villages believe that genuine economic and environmental benefits do accrue from SWC work. Therefore it seems therefore that some form of subsidies are essential to support farmers investment in SWC, the challenge lies in determining the appropriate balance between individual and group contributions and outside assistance.

# 2 ISSUES RELATING TO DESIGN OF SUBSIDIES

For whatever reason (the attraction of subsidised work or the perception of a real need for SWC that they had previously felt unable to implement), farmers have consistently requested that the project assist them in SWC work, especially bunding on private land.

## Choice of SWC methods

There was considerable debate among the project advisors at the outset of the project as to whether the project should encourage vegetative or physical SWC methods. Although vegetative techniques are cheaper, they are relatively untried in the KRIBP area.

Insufficient soil moisture is a major reason for low crop productivity, so water conservation is a higher priority for farmers than soil conservation. Given the nature of the soils, some form of physical barrier was considered necessary by farmers and technical advisers, since bunds allow water more time to infiltrate into the soil and encourage an increase in the soil depth near the bunds. In addition, field and *nalah* [gully] bunds were widely used in the area before the project started. Part of the more fertile lowland areas was terraced without outside assistance—but in the less fertile upland areas, various government-financed schemes have been implemented, invariably paying 100 per cent subsidies. The project therefore tried to develop new ways of implementing such schemes building on existing technology.

There was a preference at the beginning of the project for contour bunds to be used, but it was quickly realised that *nalah* bunds were the most popular, followed by earth or stone field bunds. In some cases, farmers developed an innovative method of using bunds to divert water from the hillside into the *nalahs*—accepting a lower maize crop in favour of the more valued rice crop grown in the *nalahs*. Another innovation by farmers has been to plant a strip, several metres wide, of rice behind contour and field bunds to maximise the area of rice production. This has the effect of increasing the cost-benefit ratio of the work, by increasing the social and economic benefits.

In addition to physical SWC methods, the use of vegetative methods such as planting fodder grass species on terrace bunds, green manuring and mulching has been actively encouraged. Green manuring and mulching were once used by farmers in some villages and the idea of planting of grass on terrace bunds arose naturally after group discussions on bund maintenance, the opportunity cost of the land displaced by the bund, and the shortage of fodder. The project has also helped farmers to plant small plots of trees and to establish Joint Forest Management Schemes (JFMs). Unfortunately, vegetative techniques (except JFMs) have met with limited success, largely due to poor soils and low rainfall leading to poor establishment rates and growth and to uncontrolled grazing at critical times of the year (and perhaps the absence of subsidies!).

### The need to finance the opportunity cost of migration

Given the cost of physical methods of SWC and farmers' need for supplementary income—usually obtained from seasonal work—subsidies were considered essential to provide alternative finance while the SWC work was being undertaken. Loans were not considered to be a viable option, since the farmers were already heavily in debt to money lenders and were paying up to 150 per cent interest per annum on loans for other livelihood related activities. *Halma* is a local practice of mutual help, which is used for various agricultural tasks such as land clearing or planting and its use for organising SWC work was considered. Payment is in the form of food, liquor and *bidis* (cigars made from green tobacco and rolled in the leaf of a local tree). However, discussions indicated that there were less than ten days each year used for *halma* activities and organisation of SWC work on this basis was not possible. Although subsidies came to be viewed as the most practical option, the SWC component was never considered by the project to have income generation as its purpose.

### Intergenerational equity considerations

Soil erosion rates in the project area are generally between 10 and 30 tonnes $ha^{-1}$ $y^{-1}$ (equivalent to a soil depth of 0.5 to 3 mm $y^{-1}$) (Smith, 1997). This is equivalent to an erosion rate of 3 to 20 years $cm^{-1}$ or 300 to 2000 years $m^{-1}$. Many soils are shallower than one metre and so if erosion remains unchecked in parts of the project area, yields will diminish to minimal levels within 50 to 150 years. Already there are large areas of previously productive, but now totally degraded land—particularly in Forest Department owned upland areas and steeper village areas—that are now used as pasture land. This clearly raises the issue of intergenerational equity; continued use of rapidly degrading land without SWC will have the effect of reducing the potential income of future generations. Responsibility for future generations must be shared between the ancestors and the State (or the States agents, perhaps NGOs) and this is a further justification for the project using subsidies.

The large difference between the (social) discount rate as used by society at large or international donors, and the (private) discount rate used by individuals has been discussed by several authors. It is a relative luxury for farmers to consider the severely depleted production potential of future generations, even though most farmers are aware of the problem. Because of their more immediate needs, they tend to use quite high discount rates when (sub-consciously) calculating the opportunity cost of investment in SWC. In contrast, society will need to apply low, even zero, discount rates if intergenerational equity is to be maintained. Despite the high private discount rates, there is strong evidence that the physical measures being used in the project area can result in increased productivity over a period of a few years (Smith, 1997). There is, of course, a question about the best use of money available for subsidies. For example, the subsidies might be better spent on less degraded or less steep land where the cost of treatment is less, or on some other development activity in the project area or elsewhere.

## 3 IMPLEMENTATION OF THE PROGRAMME

### Subsidies/project contribution

If SWC is identified as a priority by the community, an issue focused PRA is undertaken. Participatory soil maps of the village are drawn and used to discuss watershed boundaries, to identify the most seriously eroded areas and to discuss the range of techniques that might be used. Unlike many other projects where participation equates to labour contribution, farmers are involved extensively in the design and management of the work, such as deciding on the type and siting of SWC structures. There is no requirement for farmers or villagers to participate in, or implement SWC on their land, but they can still benefit from participation in the programme on other farmers' land. However, most choose to have some form of SWC on their land and to participate in the scheme.

Many subsidised programmes have been criticised for making farmers dependent on outside expertise. KRIBP has placed great emphasis on developing local skills related to watershed management. The *falia* groups are asked to identify trainee volunteer workers or *jankars* [knowledgeable persons], who are trained by the project to assist in the implementation of SWC activities. The *jankars* (both male and female) are given formal training for several days and regular on-the-job training. Despite the social constraints

upon women in the *Bhil* community, many female *jankars* have been encouraged to develop innovative methods of SWC, making a considerable contribution towards raising the status of women in the villages and breaking down barriers for women in decision-making roles.

The group also decides how payments for SWC are apportioned between the group saving and credit fund and individual savings. Typically, three per cent of the project payments to the group go towards group savings and five per cent towards individual savings. In addition, three per cent of the payments go the *jankars*.

Subsidies were set at 50 per cent of the nominal cost of labour for work done, based on the State minimum wage. In practice, the subsidy has been greater than 50 per cent, since the project has borne the cost of seeds and tree seedlings, transport and the purchase of some materials, such as wire for gabion structures. Subsidised SWC activities include the construction of stone and earth field bunds, contour bunds, interception drains, staggered contour trenches, *nalah* bunds, and some gully control measures such as stone check dams. The work that each group member does is recorded by the *jankar* and checks are made on a random basis by the CO or by one of the project agricultural engineers. Payments are made every two or three weeks and deductions for the payment of the *jankar* and group savings are made at source.

In practice, the work is done in small family groups, often by a husband and wife and these small groups usually agree to share the earnings. All participants are allocated individual savings ledger accounts in the group funds and a fixed percentage of their earnings from SWC is paid into the account.

### Participant contributions

Participants contribute in the form of labour. The average amount of time spent by each household on SWC and other watershed management related activities is 75 days: 48 in year one, 15 in year two and 11 in year three (Smith, 1997). Maintenance and improvements are estimated to account for four or five days per year. Approximately 15 to 20 per cent of participant contributions are used for communal land activities such as tree planting and pasture rehabilitation.

In contrast to some government schemes in the area which offer a 100 per cent subsidy, KRIBP chose a subsidy of 50 per cent because it was thought that farmers should, and would, contribute part of the cost. It was anticipated that there would be a short-term gain in crop production in addition to the long-term benefits of reducing soil erosion rates. Participants are paid 50 per cent of the State minimum wage according to a "Schedule of Rates" (a government prepared table listing the expected amounts of earth that could be moved on a daily basis under different conditions). The subsidies are paid to participants with no limit on the number from each household that can participate. The project initially used different rates in each State according to the published Schedule of Rates, but this became unworkable due to the considerable differences between States and an average rate was introduced. Another complication has been that the wages farmers pay to one another for casual work in the village is normally lower than the State minimum. Hence, the nominal 50 per cent subsidy is, closer to 60 to 80 per cent of local wage rates. Moreover, the Schedule of Rates are rather generous and so actual earnings are probably similar to the local wage rate or the net earnings (remittances) that would have been gained had the farmer migrated.

Participants who normally migrate have to decide whether the remittances earned during migration outweigh the value of the subsidy and the social and economic advantages of remaining in the village. Such benefits include the opportunity to increase livestock production and to obtain a second season crop and the expected short- and long-term benefits obtained from watershed treatment. Since the uptake rate of SWC work has been high and there has been a considerable reduction in the level of migration, we can only assume that the comparison is favourable. It remains to be seen whether increased agricultural productivity as a result of the SWC and other project interventions leads to a reduction in migration after the end of the project.

Finally, it is important to remember that when individuals make a decision about whether to work on SWC within the group, they are not primarily concerned with the good of the whole group and altruism is not likely to figure very highly. The group will only be successful if it is perceived that all the members benefit, even if not equally. The subsidised SWC programme also means that everyone in the household including women can work and receive an income directly, whereas migrants are often male.

## 4 IMPACT AND MAINTENANCE OF SWC STRUCTURES

Impact assessment studies and informal group interviews have supported the view that physical methods have increased agricultural production. The increases have resulted from:

- increased cultivated area as a result of fallow land coming into more frequent cultivation;
- increased area as a result of reclaimed gully and *nalah* areas;
- increased yield (mainly in the *nalah* areas);
- the ability to change from maize to rice in ponded areas behind bunds;
- growing improved varieties of maize and rice;
- increased water table height in the *nalah* areas (by up to one metre);
- reduction in the amount of seed and organic material being washed away by surface runoff;

An added advantage mentioned by farmers is the improvement in the value of their land, which in the light of the establishment of bank savings accounts, is an important factor.

### Effect of subsidies on priming savings and credit groups

Payments from subsidies have strengthened groups and have led to a reduction in the levels of indebtedness to money-lenders. The project has become unpopular with money-lenders and there is some nervousness on the part of villagers that the money-lenders will no longer be there once the project is over, especially if the savings and credit groups begin to fail. One disadvantage of the present arrangement has been that groups acquire considerable

funds before they have any experience in managing savings and credits groups. Another potential difficulty is that the rules for disbanding groups have not been adequately worked out—it is not clear whether if the group was disbanded, members would get an equal share or an amount proportionate to the amount paid in. On reflection, it would have been better if all funds had been associated with individuals as it is unclear to groups and the project how individual contributions into the group fund relate to the level of credit that is available to them.

## Maintenance of physical work and subsidies

Experiences in other areas suggest that farmers are often reluctant to maintain subsidised works. In KRIBP, this has not been the case. Farmers have been quite conscientious in maintaining bunds and other SWC structures, perhaps because of the high degree of consultation between the project and the farmers when considering the design and siting of bunds and other physical work. Furthermore, the effects of poor maintenance on the effectiveness of their own structures and the potential deleterious effects on neighbours structures have often been discussed during group meetings facilitated by project staff and this has exerted moral pressures on farmers.

The project area is also somewhat unusual in that the amount of share-cropping or renting of land is minimal. In most cases, farmers have title deeds to their land so uncertainty of tenure is rarely a reason for poor maintenance. The KRIBP experience has been that farmers will be willing to maintain structures if they believe the costs of maintenance are less than the benefits obtained and they do not think someone else will come and do it for them.

## Evaluation of the use of subsidies

De Graff (1996) used a number of conditions to evaluate the use of subsidies in SCWD projects in a number of countries. These have been reproduced in the first column of Table 1 and evaluated for the KRIBP.

# 5 WIDER ISSUES

## Institutional constraints in fixing the level of subsidies

The project has found it difficult to approve a reduction in subsidies lest they be accused of exploiting farmers by activist groups. In some areas, villagers have complained that KRIBP rates are lower than the rates on government financed schemes in the area (which are usually based on 100 per cent of the State minimum wage). This difficulty stems from a perception that the farmers are quasi-employees of the implementing agent. The concept that the payments are grants rather than wages has not always been appreciated. If the idea that group members and *jankars* are employed by the project is to be removed, new ideas and ways of implementing the project are needed. The ability of groups to maintain their own financial records needs to be improved so that group appointees can receive money from the project on behalf of the group and distribute it appropriately to the members.

**Table 1 Evaluation of KRIBP project according to conditions given in de Graff (1996)**

| Condition | Remarks | Score |
|---|---|---|
| Moral persuasion would not suffice. | Probably not, but very little has been attempted. | + |
| Target group would otherwise incur financial loss. | Evidence is that most farmers would benefit over 3 or 4 years. | - |
| Incentives should reach the target group, be used for the designed purpose and exclude non-target groups and other purposes. | Most subsidies have been used for the purpose. However a small number of people from other villages have gate-crashed on the incentive scheme. | + |
| Incentives should have minimal side effects that are counter-productive and should not bring about financial loss to other actors. | No negative effects that are known. Some worries that the savings and credit groups seeded with subsidy money will antagonise the money-lenders. | + |
| Value of the incentives should not exceed the net social gains (to other actors and society at large). | Very difficult to assess but if we take into account future generations and use a zero discount rate, it is unlikely that the value of the incentives will exceed the gains. | + |
| Other actors should consider the incentives as a fair compensation for the financial loss otherwise incurred. | Poorer farmers complain that they subsidise better off farmers. | - |
| The administration of the incentives should be flexible enough to cope with changing socio-economic or environmental conditions. | Institutional constraints have made flexibility difficult. | - |
| The incentives should leave the land user enough flexibility to reach the intended purpose in his own way. | Achieved to some extent though the choice could be improved. | - |
| The incentives should be administered relatively easily and be the simplest or cheapest way to reconcile the conflicts of interest. | Administration of the subsidies has been very expensive for the project in time and money. | - |
| The incentives should be temporary and withdrawn after 5 to 10 years without creating dependency or counter-productive effects. | Yes, but there are worries that the subsidies may have increased the reluctance of farmers to undertake SWC. On the other hand, it can be argued that the project has weaned them off expecting 100 per cent subsidies. | + |

### Equity issues

There is considerable variation in the size of landholding in the project villages—the average ranges from about 0.5 ha to 2.0 ha—with the result that medium and better-off farmers receive relatively more help from the project. If the subsidised payments are lower than local wage rates (and poorer farmers only do the work because there is no other work available), then larger farmers are subsidised by the poorer farmers who do more of the work. The few landless labourers in the project area lose out even more, as they do not benefit from having work done on their land. Because of this, one might expect them to be less keen to work on the project. Indeed some of the poorer farmers have complained that they contribute more than others into the group fund because they tend to do more SWC work. Furthermore, the landless receive no other benefit than the subsidised payments for the SWC work. The present arrangements for subsidising SWC clearly discriminate against some of the poorest members of the society. To complicate matters further, beneficiaries have not always been people from the group. The project has found it difficult to exclude non-group members from joining in the work, and these people gain neither from the benefits of SWC on their land nor from the benefits of being able to make use of group funds.

### Wider socio-economic aspects

It has been argued that the payment of subsidies has the effect of creating dependency and discouraging farmers from undertaking SWC activities on their own. This may be partly true, but is probably an over-simplification. Other factors that prevent individual initiatives are the breakdown of traditional leadership patterns within the village and as plot sizes become smaller (largely as a result of the expanding population), farmers have to migrate in order to supplement their income and so have insufficient time to spend on SWC activities. Discussions with farmers indicate that they view project subsidies opportunistically. Once the project is over, many may revert to annual migration—though hopefully on a reduced scale due to increased production as a result of SWC and other project interventions. Another concern that has been expressed is that the temporary reduction of migration may contribute towards the breaking of ties between migratory groups and employers in the cities.

### Effect of subsidised work on demonstration and adoption of biological and agronomic methods of watershed management

To some extent, the project has felt a pressure to perceive the disbursement of funds and the payment of subsidies as a measure of success. In this regard, it is no different than many other SWC programmes. Although a holistic approach to watershed management was advocated at the outset of the project, most of the project time has gone into organising physical aspects of SWC. As a result, the demonstration and extension of lower cost methods have suffered. These include techniques such as: green manuring to improve SWC and reduce erosion; the adoption of improved implements to reduce labour requirements for weeding and increase rates of soil formation; tree planting; rehabilitation of rangelands; planting grass on bunds; tree planting on uncultivable land; and the planting of grass strips on steeper land.

## 6 LOOKING TO THE FUTURE

### Possible new approaches

The ideal situation is one where farmers finance improvements to their land themselves, because they perceive the short and long term benefits of physical, biological and agronomic SWC approaches to be greater than the costs. Realistically, some way of financing improvements in land management will have to be found, especially among resource-poor farmers in the most severely degraded areas. Whilst loans need to be given more careful consideration, a subsidy culture has grown up in rural areas. In the short term, perhaps the best that innovative projects may hope for is to reduce subsidy levels and to implement them in ways which reduce any negative impacts. KRIBP experience suggests that more equitable ways of subsidising work need to be found or alternative incentives for SWC should be offered. What is also clear is that project implementing agents need to exercise greater degrees of flexibility in their arrangements than has often been the case.

Small groups remain the best vehicle for planning watershed work and making payments. Subsidising payments for daily work is not equitable and needs to be replaced with a fairer way of paying for land improvement—perhaps based on households or farm parameters. Subsidies will need either to be progressive, benefiting the poorer farmers more than the better off farmers or at least neutral, benefiting all social groups equally.

### Variable subsidy rates

One way of reducing inequity might be to use variable subsidy rates on a household basis, perhaps according to socio-economic class (SEC), to the number in a family or by offering different subsidies according to the size of holding. SEC is assessed as a matter of routine in KRIBP by wealth ranking exercises. However, offering subsidies on the basis of SEC may be unpopular if people are averse to being branded as poor (though this has not been the experience of the project so far). A further difficulty with this approach is that wealth ranking may be less accurate as there will be an incentive to be classified in a lower SEC. The most serious objection is that there is currently no accurate and consistent method of assessing wealth classes across villages.

Subsidies could be paid on the basis of the size of holding so that larger farms qualify for lower percentage subsidies than smaller farms. A further refinement would be to take into account the land class and offer a higher subsidy for the worst land, but this may be too complicated to work in practice.

## Fixed subsidy rates

An alternative option would be to allocate a fixed land improvement grant to each household or individual, irrespective of farm size or SEC. This would benefit poorer farmers relatively more than the better-off. Landless labourers could also be offered the same grant, if they came up with a suitable proposal, perhaps to improve a portion of communal (waste) land that they were given some rights over by the group or village officials. The disadvantage of offering subsidies to households would be that there may be a temptation for single households to claim they are really more than one in order to increase their subsidies. Another difficulty is that some poor farmers have large areas of poor land and so would be disadvantaged by such a scheme. There would also be a risk that no SWC would be undertaken on some land, for example on land belonging to better-off farmers who were unwilling to take out a loan. Such a scenario would mean that a strict watershed approach would not be feasible. However, following a strict watershed approach has always been difficult where emphasis is placed on farmer participation and where watershed boundaries rarely coincide with village administrative boundaries. The Forest Department does not allow SWC activities to be carried out on its land by villagers (for fear of villagers subsequently making a claim to ownership), despite this land invariably occupying the upper part of the catchment. Offering subsidies on a *per capita* basis may present difficulties in some instances because of the need to decide when to include absentee household members in the calculations.

No perfectly equitable system of subsidies is possible, though it appears that a fixed grant per household would be the most equitable of the options outlined above. A refinement may be to offer a fixed grant per household and to supplement this with an additional payment for each adult family member resident in the village during the monsoon season. In addition to household grants, a grant based on land area paid to the group or the village in order to accommodate work done on communal land would also be required.

The allocation of funds on a household basis would still require that work on some farms be done by other group members. Farmers themselves would pay workers after receiving their grant (probably about Rs1500 per household) paid in several payments once the work had been verified by project staff. To a large extent, farmers, in consultation with the group and subject to approval by the implementing agency, should be left to decide how the money is to be used (e.g. tree planting, field bunds, contour trenches, *nalah* bunds). Such an approach would be an interesting way of checking which SWC measures farmers thought were the best.

## Reduction of subsidy levels

The idea of weaning beneficiaries off subsidies as the project progresses is often discussed. This may work by gradually reducing the level of subsidies paid each year. The problem would be that if a watershed approach was adopted, those at the top of the watershed would get the greatest amount of subsidy. Jealousies between neighbouring villages entering the project at different times are also likely to arise, so this option is not a favoured one.

## Loans

Several authors (e.g. Kerr and Sanghi, 1992) have proposed the use of credit for SWC activities that are profitable to farmers, limiting subsidies to unprofitable activities. Impact assessment studies carried out by the project in several villages using crop cutting measurements have indicated that the cost of the labour inputs into land improvement through SWC will often be paid back in increased yields in two or three years, especially in *nalah* areas. Offering loans is therefore one option of financing SWC. Farmers would need to be convinced before taking the loan that there is a short term pay-back. Now that KRIBP has been established, this may work as farmers have seen the benefits. On the other hand, many will want to know why subsidies have been stopped.

Loans have been offered by the project for items such as small water pumps for irrigation. Recovery has been good and the repayments have been made into group funds, so there is a precedent for using loans for farm improvement. Ashok (1997) makes some innovative suggestions as to how loans from banks and from the savings and credit groups can be given greater impetus in KRIBP. These include evolving simple accounting systems, the recovery of loans in kind, the use of indigenous self-help groups called *notra* or *chandla* (which pool resources for weddings) and the provision of training to develop more participatory structures rather than relying on the development of individual leadership.

One approach would be to offer loans to supplement a fixed land improvement grant awarded on a household basis. The balance of the requirement for the (usually) richer, larger farms could be made up with loans from the project. Loans would not be confined to the richer farmers so long as there was an undertaking to spend the money on SWC and farmers were convinced that SWC measures would produce a benefit more than the cost of the loan. Unfortunately, many farmers are already heavily in debt to money lenders. Recovery of a large number of loans by a project would require a large amount of administration and projects would also need to plan for this. Although projects could hardly insist on comparable interest rates, the rate would have to include inflation and perhaps two per cent for administration.

The Reserve Bank of India and the National Bank for Agricultural and Rural Development (NABARD) have issued clear policy guidelines to all banks to encourage them to lend to self help groups. A positive recent development has been that there are now seven groups which have access to formal credit through commercial banks under the NABARD scheme. The use of such loans for watershed improvement by local groups needs to be encouraged on an experimental basis and monitored closely.

## Title deeds in exchange for SWC work

A novel approach that may work for some farmers who have encroached onto Forest Department land would be to offer title deeds before the end of the customary 10 years and waiving of the annual fee for illegal cultivation if farmers undertook SWC work on

encroached land. The cost of labour to the farmer would be considerably less than having to pay the annual fee. Aside from new national legislation being required, a further limitation is that it is the poorer farmers who encroach onto—the often unproductive—Forest Department land. It also amounts to coercing the farmer to undertake SWC, possibly against their better judgement. It is likely that the obstacles of having such a policy agreed by the Forest Department would be virtually insurmountable.

## 7 CONCLUSION

To ensure that improvements to watershed management are sustainable and economically viable, the reduction of subsidies for SWC should be encouraged. Any subsidy that is offered should be based on a detailed assessment of the local cost of labour and remittances as a result of work undertaken during migration, rather than the State minimum wage. If subsidies are used, they should not be paid to those undertaking the work directly, but to households on completion and verification of agreed work. There needs to be more flexibility on the part of the project managers to experiment with different forms of subsidies.

Savings and credit groups based on *falias* or *tolas* (hamlets) and consisting of 15 to 20 households play an important role in implementing SWC and other watershed management activities. They provide a forum for planning activities and discussing conflicts of interest as well as providing a focal point for training. They can also be used to reduce the administrative burden on project staff when paying subsides. For this to be achieved there needs to be a greater emphasis on training in basic book-keeping methods. Groups need to decide for themselves the modalities of any scheme to save part of the earnings from SWC work. Possible inequities and other problems associated with placing a percentage of the earnings into a group fund which is not owned by any individual should be pointed out.

In planning improvements to the productivity and management of communal land, it may be that the village is the most efficient unit. While the preparation of well thought out village work plans with an appropriate emphasis on integrated land use planning is to be encouraged, they should also take into account possible sources of finance. It would encourage villagers to plan, in a more realistic and participatory way, if grants by projects were based on a notional cost per unit area.

## ENDNOTE

1 $1 is equivalent to Rs43

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