

SecureWater - Whither Poverty?
Livelihoods in the DRA:
a case study of the Water Supply Programme in India

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Acronyms and abbreviations

AFPRO	Action for Food Programme
ANGRAU	Acharya ND Ranga Agriculture University
AP	Andhra Pradesh
APFMIS	Andhra Pradesh Farmers Management of Irrigation Systems (Act)
APRLP	Andhra Pradesh Rural Livelihoods Programme
AP TRANSCO	Andhra Pradesh Transmission Corporation of Andhra Pradesh
APWALTA	see WALTA
APWELL	Andhra Pradesh Groundwater Bore-well Irrigation Schemes (project)
ARWSP	Accelerated Rural Drinking Water Supply Programme
bcm	billion cubic metres
CAD	Command Area Development
CADA	Command Area Development Authority
CDS, APARD	Centre for Development Studies, Andhra Pradesh Academy of Rural Development
CESS	Centre for Economical and Social Studies
CEO	Chief executive officer
CGG	Centre for Good Governance
CGWA	Central Ground Water Authority
CGWB	Central Ground Water Board
CRIDA	Central Research Institute for Dry Land Agriculture
CSE	Centre for Science and Environment
CWSC	Chittoor Water and Sanitation Committee
Danida	Danish International Development Agency
DDO	The Drawing and Disbursing Officer
DDP	Desert Development Programme
DDWS	Department of Drinking Water Supply
DFID	UK Department for International Development
DPAP	Drought-Prone Area Programme
DPIP	District Poverty Initiatives Programme
DPR	Detailed project report
DRA	Demand responsive approach
DRDA	District Rural Development Agency
DSU	District Support Unit
DWSC	District Water and Sanitation Committee
DWSM	District Water and Sanitation Mission
EPTRI	Environment Protection, Training and Research Institute
GJSS	Grama Jana Seva Samstha
GP	Gram Panchayat, the administrative base of the 3-tier PRI structure which consists of the GP, Mandal (block) and Zilla (district)
GP	Gram Pradhan, also known as Sarpanch, the elected head of a revenue village
GoAP	Government of Andhra Pradesh
GoI	Government of India
GTZ	Gesellschaft fuer Technische Zusammenarbeit (German corporation for technical cooperation)
GWSC	Gram Panchayat Water and Sanitation Committee
HH/s	Household/s
HRD	Human resource development
HUDA	Hyderabad Urban Development Authority
HWSC	Habitation ¹ Water and Sanitation Committee
HWSG	Habitation Water and Sanitation Group
IEC	Information education and communication
IIMC	Indian Institute of Mass Communication
INR	Indian Rupees
JFM	Joint Forest Management
JFMC	Joint Forest Management Committee
km	kilometres
lpcd	litres per capita per day
M&E	Monitoring and evaluation
MJP	Maharashtra Jal Parishad
MLA	Member of legislative assembly

MNP	Minimum needs programme
MoA	Ministry of Agriculture
MoEF	Ministry of Environment and Forests
MoI	Ministry of Industry
MoP	Ministry of Power
MoRD	Ministry of Rural Development
MoU	Memorandum of Understanding
MoUD	Ministry of Urban Development
MoWR	Ministry of Water Resources
MRO	Mandal Revenue Officer
MSU	Mission Support Unit
MWSC	Mandal Water and Sanitation Committee
NC	Not covered
NABARD	National Bank for Agricultural and Rural Development
NAG	National Agenda for Governance
NDWM	National Drinking Water Mission
NGO	Non-governmental organisation
NGRI	National Geophysical Research Institute
NWDPR	National Watershed Development Programme for Rainfed Areas
NWSC	National Swajaldhara Monitoring Committee
O&M	Operation and maintenance
ODA	Overseas development assistance
PC	Partially covered
PHEDs	Public Health Engineering Departments
PIA	Project Implementing Agency
PIM	Participatory Irrigation Management
PIP	Programme Implementation Plan
PMGY	Prime Minister's Gramodaya Yojana
PMU	Programme Management Unit
PRI	Panchayat Raj Institution
PR&RD	Panchayat Raj & Rural Development
PRED	Panchayat Raj Engineering Department
PSU	Programme Support Unit
RD	Rural development
RGNDWM	Rajiv Gandhi National Drinking Water Mission
Rs	Rupees
RWS	Rural Water Supply
SADA	Shore Area Development Authority
SC	Scheduled castes
SDC	Swiss Development Corporation
Sida	Swedish International Development Agency
SL	Sustainable livelihoods
SO	Support organisation
SRCWS	State Resource Centre on Water and Sanitation
SRP	Sector Reform Programme
ST	Scheduled tribes
SWSC	State Water and Sanitation Committee
SWSM	State Water and Sanitation Mission
tcm.ft	thousand million cubic feet
TSC	Total Sanitation Committee
UNDP-WSP	United Nations Development Program-Water and Sanitation Programme (of the World Bank)
UNICEF	United Nations Children's Education Fund
USAID	United States Agency for International Development
VSS	Vana Samrakhshana Samithis
VWSC	Village Water and Sanitation Committee
WA	Watershed associations
WALTA	AP Water, Land and Trees Act
WASSAN	Watershed Support Services and Activities at Work
WCM	Water Conservation Mission
WDPSA	Watershed Development Project in Shifting Cultivation Areas

WSP-SA
WUA
ZP

Water and Sanitation Programme (of the World Bank), South Asia
Water Users Association
Zilla Parishad

Executive summary

Lack of secure access to sustainable water supplies remains a major obstacle to efforts to reduce poverty around the world. The failure of previous supply-led² approaches to realise the goal of 'water for all' has led to a global shift in water policies and the emergence of new 'Demand Responsive Approaches' (DRA).

In principle, the DRA aims to improve efficiency and therefore the financial and technical sustainability of delivery systems. In practice, this implies major changes in the roles and responsibilities of sector stakeholders. These principles as well as related principles of integrated water management, increasingly inform the development and implementation of water supply³ policies around the world, but their interpretation and the degree of their translation into practice varies substantially, both between and within countries.

At the same time, there is growing consensus on the importance of poverty reduction as a central objective of both government and donor strategies. A key concern therefore is the extent to which sector reform objectives are consistent with wider objectives of poverty reduction and how linkages between the two can be enhanced.

SecureWater research set out to examine the interpretation, application and implementation of the DRA in water supply policy and practice. The central focus of the research is on the extent to which current interpretations of 'demand' are cognisant of the complex linkages between water, poverty and livelihoods. In-depth case study research in Andhra Pradesh provides critical insights into both conceptual and practical challenges associated with the implementation of DRA in the Indian context. The ultimate purpose of the research is to highlight ways in which current approaches might be enhanced to ensure appropriate balance between sustainability and poverty reduction objectives.

The study combined key informant interviews with stakeholders at national, state and district level and in-depth fieldwork in two rural communities. A range of different research methodologies was employed to examine the nature of household economy and water-dependent livelihood activities within each community, in order to understand how these impact upon household and community *demand* for water.

The research report provides in-depth analysis of different aspects of sector reforms in India.

- The process of policy and institutional reform at national level (section 1).
- The process of policy and institutional reform in Andhra Pradesh and the way in which national and state level policy reforms are translated into practice (sections 2 and 3)
- The nature and dynamics of water-poverty-livelihood linkages in two case study locations, the extent to which these are addressed in current approaches and the implications for future design and implementation of DRA programmes (sections 4, 5 and 6).

The research makes evident the need for DRA to put people, their livelihoods, and the specific social, political and economic contexts that impact upon access to and control of water, at its core, if the popular goal of poverty reduction is to be translated into real practice.

In India, reviews – both external and internal – pointing out poor financial and operational management of technocratic supply-driven institutions and interventions influenced the sectoral shift towards the DRA, which mirrors the Government of India's (GoI) constitutional goal of decentralisation. The policy approach was officially piloted as the Sector Reform Programme in 67 districts across 26 states in 1999. Barely a year after the programme took off in the pilot districts, giving little time for an in-depth analysis, the Sector Reform Programme was announced as scaled to a countrywide programme, called the Swajaldhara, by the former Prime Minister. The concerned department later declared the reform principles as 'non-negotiable', and those which 'supersede all earlier guidelines' (GoI, 2003):

- A demand-driven, integrated approach to rural water supply and sanitation;
- Partial (10%) capital cost recovery and 100% O&M financing by users;
- Community participation in project planning, implementation and maintenance;
- Stronger links to watershed development programmes;
- Control measures on over-extraction of groundwater.

These are laudable goals and GoI is committed to reform, but important concerns remain relating to the pace and sequencing of these reforms at different levels. Fragmentation of sub-sectors is already a major problem and the challenge of effecting institutional change cannot be underestimated. In the context of this research, the contribution of poverty reduction strategies to meeting sustainability objectives of the sector remain inadequately understood and poorly articulated in policy documents. Research suggests that political imperatives have tended to override other concerns.

Having made the policy shift, in India the emphasis is on a speedy transition from a supply to a demand-led approach. However, experience in pilot districts has been variable. Many sectoral stakeholders argue that attempts to scale-up may be premature while others point out that the policy framework needs to be sufficiently broad to allow individual states to adapt it to local context. Research shows that the haste in implementation and institutionalisation is of concern, especially as the Swajaldhara guidelines do not have an explicit poverty and equity focus. Highlighting poverty issues in policy is imperative if poverty reduction is to be planned and designed in practice. However, findings in this report also highlight how 'policy from above' evaporates as it is handed down across institutions, from global to local. In this case, because of the lack of focus, perpetuating rather than narrowing the links between poverty and water.

Designed to deliver water by *demand* – identified as what users need and are able to afford – the DRA in policy enables a voice and choice for all, especially the poorest, whose needs as identified are often hijacked by the better off in water development interventions. However, several gaps are identified in the design of currently implemented demand responsive approaches, including:

- A simplistic understanding of the terms *community* and *users* – due primarily to broad assumptions made of users: their water-livelihood links, economic contexts and conflicting uses of and needs for water;
- A lack of clarity on the notion of sustainability linked to the dominant interpretation of demand as cost-recovery and community management of implemented schemes;
- Assumptions made of certain institutions' ability to assess and address demand resulting in the low priority accorded to capacity building and an ignoring of political interests that affect policy and practice.

The findings reveal broad disjunctions in water resource management policies and overlapping fragmentations of the water sector across a three-tiered (central, state and local) institutional framework.

The state of Andhra Pradesh was chosen for detailed case study analysis, given its history of drought and its progressive and reformist nature. In Andhra Pradesh, development goals entail conflict between economic growth and equity, especially in the allocation and distribution of water among regions and sectors. This is partly resolved in the development of the State Water Vision but several challenges lie in its translation to practice – evidenced by the fact that the AP Water Vision did not influence the Sector Reform agenda of the domestic water sector. A key question is how the national level sectoral reform agenda (emphasising efficiency and financial sustainability) fits with and contributes to wider state level policy objectives e.g. pro-poor growth and poverty reduction.

The report highlights the challenging nature of the institutional and policy environment in AP. In rhetoric there is increased emphasis on policy coherence among activities in different sectors, but this is not yet reflected in reality. Furthermore the adoption of DRA-based sector reforms is arguably inconsistent with the popular target-driven approach. Consequently, in the local environment, implementing the sector reform agenda has been achieved by pushing forward the programme in a supply-driven mode also, due largely to the difficulty in making a shift in institutional attitudes and practices.

Issues of institutional fragmentation and contradicting, competing uses of water remain unaddressed in the implementation of the SRP in AP. Additionally the focus on achieving targets in the face of political interference led to a reported high incidence of malpractice. This was encouraged by the lack of clarity in the policy guidelines combined with inadequate incentives to adopt new practices of assessing and addressing 'demand'. Despite a number of major concerns voiced by practitioners, pressure continues from above and within the state to maintain a

progressive status and thus AP leads the way in adopting a state-wide DRA in domestic water supplies.

State governments currently enjoy a degree of discretion in defining sector policy and plans. Swajaldhara guidelines are more comprehensive and prescriptive than in the SRP – however, the need for capacity building around the process of understanding and responding to demand remain grossly underestimated. Part of the problem is that the process of reform, remains centrally driven by GoI which provides financial incentives to states to fall in line with national policy objectives, but is far removed from the reality of policy implementation.

In-depth case study analysis in two research locales in AP provides key insights into the complex nature of linkages between water, poverty and livelihoods, the extent to which these are addressed under current approaches and implications for future design and implementation.

The sector reform agenda places huge emphasis on user communities to function as management and financing institutions. Field analyses contradict the underlying assumptions in this agenda. First, water resources, both communal and individual, remain under the control of a small but – socially, politically and economically – powerful elite which, given the gender and caste discrepancies in India, is made up of the upper caste⁴ males in village settings. Secondly, not all households can afford to make an initial investment in improved drinking water services; the key beneficiaries are generally the economically better-off. Further, there is a lack of clarity in the definition of 'sustainability' (technical, financial, social, resource) evidenced amongst other issues by the lack of any effective mechanisms for regulating water use. Contrary to popular thinking, the DRA as currently practised cross-subsidises the rich in much the same way as did the supply-led approach.

The chances of achieving financial sustainability are higher if diverse needs and demands for water can be taken into account. However, the institutional fragmentation among water sectors is wide and, despite the rhetoric in policy of addressing 'water demands', the programme is designed to deliver water only for drinking and not domestic use. Finally, the research shows that links between improved water and secure livelihoods can be established only when complementary natural and/or human assets are assured.

Building from these insights, the following realities need to be taken into consideration in the DRA.

In practice

- The community is a heterogeneous entity; deciding who or what constitutes a real level of 'community demand' is subject to narrow sectional interests. As a result, the needs of the poorest usually fail to get articulated;
- The strategy of cost recovery through community financing needs to take adequate account of how people's capacity to pay varies by household condition

and situation (age, disability, death of key earning members); by season; by 'type' of years in vulnerable agricultural (and beyond agriculture) systems; and also by changes to the wider economic environment;

- Failing this, the potential dangers are financial 'crunches' that do not enable the meeting of realistic costs of sustaining systems and therefore, possibly, eventual scheme failure;
- The distribution of water for different uses and among different users is highly specific to local situations and determined by geography and evolving economic and socio-political contexts; the conflicts between sectoral uses and individual users cannot be assumed and, therefore, solutions need to be localised;
- The impact of appropriately matching demand that represents the needs and views of the poor with clearly thought-through levels of financing contributed by households can to a large extent benefit household well-being by enabling productive and sustained livelihoods.

In policy

The DRA, by virtue of its goal to understand and address 'demand', holds great potential for understanding and

addressing the inequity in water access and use. However, this research has highlighted that 'poverty' remains inadequately understood and poorly articulated in DRA policy documents. The importance of access to WSS for poverty reduction is undoubtedly high, but because the benefits are rarely examined in detail, their full potential is unlikely to be realised.

Between policy and practice

Translating policy effectively into practice requires a systematic process of internalisation of policy reform across institutional levels. As institutions with historical perspectives of supply-led approaches grapple to carry out DRA, there is little understanding of the context and situation-specific heterogeneity in poverty and its links to water access and control. Tools for 'doing' DRA need clear strategies and guidelines for analysing and addressing the poverty-water-livelihood links and agencies need time to understand and internalise these concerns. Otherwise, the interpretation of 'demand' will continue to be restricted to delivering water to those who can pay. Thus, despite the potential for a better poverty focus, the danger that the demand responsive approach will exclude the poorest from access to appropriate water continues to be high.

I. Mapping the water sector in India

Introduction

This chapter illustrates the fragmentation in water resource management institutions, policies and practices in India. In this background an analysis is made of the shift in rural drinking water policies and programmes from a historical supply-led to a demand responsive approach (DRA), and key push factors influencing this policy shift are identified. An assessment is made of the interpretations of 'demand' as written into the sector reform agenda – and the dangers thereof in the official decision to institutionalise the DRA and, with it, the limitations of its current approach and design.

Water in the Indian constitution

Governance in India is defined within a federal framework consisting of three tiers, central government, state governments and local governance bodies at the village (panchayats) and city (nagarpalikas) levels. Constitutionally, water is dealt with by all the three tiers. However, constitutional rights and responsibilities related to water are rather blurred within the federal framework.

It is often loosely claimed that, 'water is a State subject and individual states are responsible for the provision of water'. However, several aspects of decision-making, especially relating to irrigation, hydropower, flood control and multipurpose water projects, are subject to clearance and approval by the central government. Moreover, most of the country's important rivers are inter-state (Iyer, 2002).

The 73rd and 74th amendments to the constitution, (approved in 1992 and operationalised in 1993) specify that 'inter alia, drinking water, water management, watershed development and sanitation are subjects to be devolved to the local bodies of governance, i.e. village panchayats and city nagarpalikas'. Iyer (2003) identifies the following deficiencies in the constitutional writ on water:

- It is sectorally fragmented, with an overt focus on irrigation;
- It is engineering-dominated, showing little recognition of water as an ecological and thus a basic human and animal resource;
- It has an inter-state rivers bias, which ignores the ecological impacts of poor management and exploitation of these; and
- It has a lack of clarity on administrative roles and responsibilities of state departments and local bodies of governance, especially as the latter are still evolving as operational units of administration.

Practically and administratively different aspects of water use in India fall within the purview of several ministries, line departments and institutions, at both central and state levels. The water sector is fragmented into several sub-sectors ranging from water for agriculture (irrigation), water for industrial use, water for power generation and water for drinking and domestic purposes. Comparing water

management in India to a legendary heroine, Draupadi, who had five husbands, Thakur (2000) says, 'Water in India is like Draupadi in Mahabharata'.

These categories are in turn divided into sub-categories of surface water versus groundwater, and large versus medium and small irrigation projects. In general, coordination among various institutions within a water sector is minimal, and with other sectors it is non-existent. Co-ordination is not only limited between policy and practice domains but also between and amongst organisations at the policy-making level. The Planning Commission, responsible for steering policies and programmes consists of several administrative divisions (amongst others, also relating to water) and there is little inter-divisional co-ordination. 'At the Planning Commission, where co-ordination is vitally called for, the level of interaction in most cases is limited to inter-sectoral circulation of paperwork' (Shourie, 1999).

The lack of coordination visible at policy level is multiplied in the translation of policy to practice, especially as the above distinctions do not adhere to the (recent) constitutional amendments on water.

Ownership of water

The division between surface and groundwater has important implications with regard to the issue of ownership of water.

In constitutional terms, surface water is primarily considered as river water. Here there is a partial riparian perspective to rights to water which is:

'...essentially one of rights to the waters of a flowing river inhering in, or as claimed by different users located alongside (or in the vicinity) of that river. This can arise at the level of households, farms, communities, villages or towns, but occurs in a more marked form at the level of political or administrative units within a country' (Iyer 2003).

Jurisdiction over disputes is vested in the government: explicitly, central government in relation to inter-state disputes and, implicitly, the state in the case of intra-state rivers.

In contrast, ownership of groundwater is linked to land ownership which, although subject to governmental control and regulation, is difficult to regulate legally, given obscure regulatory legislation and multiplicity of uses and responsible agencies. This leads to inequities of various kinds, given that land ownership is in most cases skewed. The linking of water and land rights has led to a situation of unmitigated tapping of groundwater by the richer sections of society with the purchasing power to invest in pumping technology. This has important repercussions on the availability of water for drinking and domestic purposes,

especially in rural areas. It is exacerbated given the fact that groundwater contributes to 50% of irrigation for agriculture, 85% of rural drinking water and a further 5% for industry (ibid).

Efforts by the state to control the over-exploitation of groundwater have largely focused on regulation through the establishment of legal or administrative controls over its use. Attempts have been made to put in place legislation controlling groundwater extraction, through the circulation of a draft central government bill to all states. However, in practice, pressure exerted by powerful agriculture lobbies – who have both political clout and the money to invest in groundwater extraction technology – has prevented any effective legislation from being implemented. Unregulated use of groundwater has been encouraged by highly subsidised irrigation electricity tariffs, and there is tremendous political resistance to the removal of subsidies and to power tariff reforms.

At a more local level, there are cases of collective action to regulate the use of groundwater primarily by banning the cultivation of water-intensive crops (Box 1).

However, collective action on the conservation of groundwater has limited value; not only is it rare, but it also can place controls on use rather than on access to

Box 1: Collective action in Hiwri Bazaar

Hiwri Bazaar in Ahmednagar district in Maharashtra is a well known example of the success of a community based watershed development programme, under the leadership of a charismatic Sarpanch (elected village head). The community programme was effective in controlling over-exploitation of groundwater, through successful bans on growing water-intensive crops like banana and sugarcane, and the control on spacing out dug wells used in irrigation. The lives of the small and marginal farmers in Hiwri Bazaar are reported to have transformed radically both economically and socially.

Source: Winrock International India (2003).

Box 2: Sukhomajri: De-linking land and water rights

Located in the foothills of the Himalayas along the Shivalik range, Sukhomajri came into prominence in the 1970s when catchment protection work based on community participation was facilitated in the village by the Ford Foundation and the Central Soil and Water Conservation Research and Training Institute, Chandigarh. The primary motive behind this was to prevent the silting of Sukhna Lake in the downstream city of Chandigarh, which was directly linked to the degradation of the catchment area of Sukhomajri and surrounding villages. Villagers were encouraged to give up free grazing and tree biomass collection in the hills. To motivate them to do so, two earthen dams were constructed, from which they were able to derive enormous benefits by drawing accumulated water for irrigation. Most noteworthy was the incentive provided to the landless and the predominantly pastoral community in the village to participate in protecting the surrounding forest through the de-linking of land and water rights. All households in the village, irrespective of the size of landholding, were allotted an equal share of water collected in the dam. This allowed the landless and the land poor, in principle, to capitalise on their share of water by selling it to large landowners.

Source: Winrock International India (2003).

water. Effective controls require that groundwater be treated as common property, within the constitution of a collective mass, irrespective of traditional user rights and practices (Comman Draft Report, 2004). This requires a radical redefining of property rights whereby water rights are in effect de-linked from land rights. Separating land and water rights has been tried in a few isolated cases in India, but has been more of an exception than a rule (Box 2).

It must be noted, however, that even in Sukhomajri, the de-linking of land and water rights has not included regulating access to groundwater. In this case it was perhaps facilitated by the fact that the water in the reservoir was a common property resource.

De-linking land and water rights will require political will; more practically, it calls for a better coordination of water use and allocation among the different sectors. This is severely constrained by the multiplicity of water departments and their overlapping and conflicting functions.

Key national water ministries and departments and international actors in India

The several official institutions with water roles and responsibilities, among which there is scarce coordination, are as follows:

- Ministry of Water Resources (MoWR). In charge of overall planning and coordination of water resources; in practice, the focus is on river water irrigation. This ministry formulated the National Water Policies (1987 and 2002);
- Ministry of Rural Development (MoRD). Three departments come under this ministry;
 - a) Department of Rural Development: responsible for implementing the 73rd amendment to the constitution which seeks to establish a third tier of governance in Panchayati Raj institutions (PRIs);
 - b) Department of Land Resources: responsible for implementing all watershed development programmes of the MoRD⁵;
 - c) Department of Drinking Water Supply: responsible for provision of safe drinking water in all rural habitations.
- Ministry of Agriculture (MoA). Development of water resources, for example watershed development. Implements programmes such as the National Watershed Development Project for Rainfed Areas (NWDPA), the Watershed Development Project in Shifting Cultivation Areas (WDPSA) and other externally aided projects. Also concerned with the popularisation of drip and sprinkler systems of irrigation for improving irrigation efficiency;
- Ministry of Environment and Forests (MoEF). Also Development Programmes and other afforestation programmes;
- Ministry of Power (MoP). Responsible for the development of hydroelectricity and as a result has close technical links with the MoWR and the Central Water Commission;
- Ministry of Industry (MoI). Concerned with the planning and development of water resources for

- industrial use;
- Ministry of Urban Development (MoUD). Responsible for drinking water in urban areas;
- Command Area Development Authority (CADA). Set up in the 1970s with the aim of enabling state governments to have greater responsibility in water management extension activities. Specifically related to development of reservoir and canal systems of irrigation to take canal water closer to farms;
- Central Pollution Control Board. Responsible for pollution control of urban and rural water resources;
- Central Water Commission. General responsibilities in initiating and coordinating, in consultation with state governments, the control, conservation and utilisation of water resources throughout the country in relation to flood control, irrigation, navigation, drinking water supply and water power development schemes;
- National Water Development Agency. Set up in 1981 to promote scientific development for the optimal utilisation of water resources in the country and for preparing feasibility reports for inter-basin transfers;
- Central Ground Water Board (CGWB). An authority regulating and controlling groundwater management and development;
- Central Ground Water Authority (CGWA). Set up in 1987 under the provisions of the Environment Protection Act as a regulatory authority following a public interest case relating to the depletion of groundwater. The CGWA is the CGWB under another name, as both have the same composition; the difference is that the CGWB is within the administrative purview of the MoWR, whereas the CGWA is within that of the MoEF. This creates a further institutional confusion;
- National Water Resources Council. An institution backed only by a resolution of the Government of India (GoI); it has no statutory backing. Its prestige and influence are derived from its composition, with the Prime Minister as its Chairman, the Union Minister of Water Resources as its Vice-Chairman, and all state chief ministers and several central ministers as members. It provides approval for the National Water Policy.

Current policy approach: a shift towards a demand responsive approach

The MoWR, MoRD and MoEF – the three major ministries directly associated with water management – demonstrate a clear policy shift towards a demand responsive approach, characterised by decentralisation based on the principle of user participation, however the pace of decentralisation, but more important, the interpretation of demand varies sectorally, although the overall stated objectives are common: to enhance rural livelihoods and to ensure community participation. These principles are reflected in the Common Guidelines for Watershed Development brought out by the MoRD, on the basis of which its programmes have been designed, such as the Desert Development Programme (DDP) and the Drought-Prone Area Programme (DPAP) (GoI, 1994, 2003). This approach has also been adopted by the MoA for its watershed programmes, such as the NWDPA.

Similarly, in the case of irrigation, there is a clear trend

Box 3: Common Guidelines for Watershed Development

The Watershed Guidelines brought out by the MoRD in 1994 were revised in 2001 and, more recently, in 2003 as the Hariyali Guidelines. The latter illustrate the policy shift towards community participation and recognise the links between watershed development and drinking water.

The Hariyali Guidelines specify that community ownership is to be created through a 5% contribution by user groups for common activities and one of 10% for work undertaken on private land. SCs/STs and those below the poverty line need only pay 5% of the costs for both common and private activities. Further, it is stipulated that the selection of watershed areas should prioritise those with larger populations of SCs/STs. Finally, the guidelines specify that Watershed Development Committees should have at least 'a one third representation of women and adequate representation of members from SCs/STs'. Despite reference to poverty alleviation, the key beneficiaries continue to be the landed (and therefore not the poorest) among the rural population.

Source: Gupta (2004).

towards reducing the role of government in operation and maintenance (O&M), through the promotion of Participatory Irrigation Management (PIM) (GoI, 1997). The MoWR has incorporated PIM as an important component, for which funds are made available under the centrally sponsored scheme of Command Area Development (CAD). PIM entails the formation of Water User Associations (WUAs) among beneficiary farmers. The WUAs enter into a contractual relation with the state, whereby the latter has to supply an appropriate quantity of water based on volumetric pricing; the WUAs are given the rights to distribute water to their members, to determine prices, and to charge for the water supplied. Appropriate division of management responsibility between users and agency varies in different cases: PIM is seen to be tested in mostly medium-sized and minor irrigation initiatives. Fewer initiatives are seen in the handing over (for O&M) of portions of major canal irrigation systems to farmers' associations.

The MoEF too has initiated a programme of Joint Forest Management (JFM) in the country, stressing partnerships between state forest departments and local communities. This initiative follows the directives of the National Forest Policy of 1988, which prioritises conservation and meeting community needs over revenue generation through commercial exploitation. The national JFM guidelines of 2000 and 2002 also seek to give adequate representation to women by stipulating that at least 33% of the members of the executive committee of the Joint Forest Management Committee (JFMC) should be women. Further, one of the posts (President, Vice-President or Secretary) should be filled by a woman. There are directives that a certain percentage (open to state intervention) of the Village Forest Committees should have a representation of SC (scheduled caste)/ST (scheduled tribe) populations.

On the whole, most major water policies have gradually and at different paces evolved towards recognising:

- water as a social and an economic good and the

- importance of user contributions;
- the need for decentralisation and community management;
- the need for inclusion of historically marginalised sections of communities in water management initiatives.

The primary drawbacks are the varied interpretations of demand and the lack of clarity on how communities are disaggregated, which stops the marginalised from being genuinely able to voice an opinion in decision-making processes as well as to secure access to water. This is especially evident as water rights continue to be linked to land rights; land ownership is not only skewed but also gender-biased, exhibiting a distinct pattern of male proprietorship.

Bilateral donors engaged in water in India

In the 1 March budget speech for the year 2003–04, GoI announced the decision to decline bilateral aid from twenty-two countries with smaller financial packages, asking these donors to target their funds at non-official interventions and agencies. Donor funding for the drinking water and sanitation sector constitutes only 4–5% of the total budget spent on the sector (GoI, 2002). However, the withdrawal of certain donors, for example Sida, the Dutch, and Danida, will have a significant impact, given the commitment of these agencies to poverty-focused approaches (See Annex 1).

The rural drinking water sector

Evolution in policy

After Independence, guided by Nehruvian socialist principles, India's priority was self-sufficiency, assumed to be achievable through enhanced industrial development and food security. This resulted in the priority given to irrigation through technocratic construction projects promoting dams, reservoirs and canal systems. Drinking water had a low priority in financial allocations, although programmes for drinking water supply and sanitation have been implemented since the inception of the first Five-Year Plan (1951–56).

Correspondingly, until 1985 there existed only one water ministry, the Ministry of Irrigation and Power at the national level, in charge of a department of irrigation under which different sectoral programmes were designed and managed. This structure was replicated at the state levels. In late 1985, the Department of Irrigation was renamed the Ministry of Water Resources; one of its first achievements was the formulation of India's first National Water Policy in 1987. This strongly signalled the need to move away from an excessive preoccupation with technocratic projects towards issues of resource management. The policy made explicit that the first priority should be drinking water. It has been argued that '...this was no more than a pious declaration; and, despite the intention of shifting the focus from projects to resource policy issues, it still devoted what may now seem to be a disproportionate amount of space to large irrigation projects' (Iyer, 2003).

The initial phases of water planning in India also saw

the overarching technocratic approach in the drinking water supply sector. The focus was on establishing a network of centralised technical institutions to plan and provide capital-intensive water supply services. With this perspective, state-level water organisations, called Public Health Engineering Departments (PHEDs), were established with central government funding in all the states during the first and second Five-Year Plans in the 1950s. These departments functioned initially under the Department of Irrigation, later under the Urban Development Department, and then much later (in the late 1980s) under the Rural Development Department. This highlights the initial 'urban bias' in water supply development. Since their inception, these departments have traditionally been responsible for

Box 4: National Water Policy

1987

- Water is a scarce and precious 'national' resource;
- The basis of planning has to be a hydrological unit, such as a basin or sub-basin;
- Project planning should be for multiple benefits, based on an integrated and multi-disciplinary approach, with special regard to the human, environmental and ecological aspects;
- Groundwater exploitation should be regulated with reference to recharge possibilities and considerations of social equity;
- The conjunctive use of surface water and groundwater should be ensured;
- In water allocation the first priority should be for drinking water;
- There should be close integration of water-use and land-use policies;
- The distribution of water should be with due regard to equity and social justice;
- Water rates should cover maintenance and operational charges and part of the fixed costs;
- Farmers should be progressively involved in the management of irrigation systems and the assistance of voluntary agencies should be enlisted in this context.

2002

Rapidly emerging policy themes in water management demanded amendment to the existing document. However, the new document has been critiqued as being a simple and rhetoric inclusion of new approaches with few links to the original document and to strategies to operationalise policy. This had been identified as one of the major flaws of the earlier paper. The new changes include:

- Promotion of watershed management through extensive soil conservation; catchment area treatment; preservation of forests and increasing forest cover; and the construction of check dams;
- Appropriate reorientation/reorganisation of institutional structures and mechanisms;
- Involvement and participation of beneficiaries and other stakeholders in the project planning stage itself;
- Optimal productivity per unit of water;
- A participatory approach to water resources management.

Although the new policy makes references to participation and local water initiatives, there is no indication of how these can be put into practice. It has come under fire for its poor conceptualisation of community involvement and management.

Source: Iyer (2003).

implementing drinking water supply schemes and programmes (Joshi, 2000). This is true for all states, except the few where World Bank initiatives encouraged a shift towards privatisation. However, the shift was largely rhetorical, for although the names and institutional identities have changed, these organisations do not function any differently from state-owned PHEDs (ibid).

During the 1960s and 1970s, international and national efforts focused on the achievement of coverage figures (Nicol, 2000). This emphasis on achieving maximum coverage in India led to the formulation of a common set of technical guidelines for the rural drinking water sector, established nationally and applied across different state governments in the early 1970s (Joshi, 2002). The technical guidelines specified:

- Complete coverage for all no-source problem villages and partially covered villages;
- Water supply to be provided within the stipulated norms of 40 lpcd within a maximum distance of 1.6km or at an elevation of 100m in the hilly regions. At least one source for every 250 persons with capacity of 40 lpcd (with an additional 30 lpcd for cattle in desert and problem areas);
- Priority of safe water provision where the existing supply sources exhibit health-harming characteristics.

The sixth and seventh Five-Year Plans (1980–85 and 1985–90) coincided with the International Drinking Water and Sanitation Decade. In India during this period there was a change in the language of official water policies. Social clauses specifying the involvement of women in decision-making and priority coverage to SC/ST habitations were added to the existing technical guidelines. However, there were no practical guidelines on how such policies were to be implemented. As a result, official water projects continued to be implemented in the old fashion. On the whole, until the eighth Five-Year Plan, a target-oriented welfare approach continued to guide the drinking water sector, with the exception of increased financial allocations for rural drinking water supply in national and state budgets.

The institutional structure

The section *Water in the Indian Constitution* points out that, in strictly constitutional terms, providing drinking water is a state responsibility; management of the resource and the systems is a responsibility of the local government in the districts and villages. Post-Independence, the centre/state institutional relationship was premised on the understanding that GoI, having initiated the process of macro-policy formulation, institution establishment and financial assistance, would gradually exit from this supporting role. State organisations initially involved in programme implementation would gradually take over policy formulation and achieve financial independence. Panchayat Raj Institution (PRI or local government) involvement in water resources management is a recent policy decision.

A culture of dependence persisted and state governments were slow to take on additional roles in water management aside from implementing programmes. The divide between policy and practice institutions is wide and generic to

most sectors. Therefore, contradictorily, drinking water institutions of the central government took on more responsibilities. In the late 1980s, the Department of Drinking Water Supply (DDWS) was established under the MoRD, with a clear mandate to provide safe drinking water in all rural habitations. Within the DDWS, a technology mission on drinking water – the National Drinking Water Mission (NDWM) – was launched in 1986 and subsequently renamed the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991. Since its inception, the RGNDWM has been the key institution in India in terms both of defining policy and of the administration of the rural drinking water sector in India. Its centrality is established through its complete control in policy planning, management and evaluation of all rural water programmes, primary among which is the Accelerated Rural Water Supply Programme (ARWSP) which is funded both by GoI and state governments. Another recent programme managed by the RGNDWM is the Prime Minister's Gramodaya Yojna for rural drinking water (Box 5).

There are other programmes under the MoRD meant to enhance groundwater levels, such as the watershed development programmes or the social forestry programme. Similarly, the MoWR has programmes for the management and conservation of water for all purposes, including drinking water. However, there is no coordination, either between programmes, or between responsible agencies at policy and practice levels.

Broadly, the institutional layout of the rural drinking water sector is as illustrated in Figure 1.

It is important to flag here that the core rural drinking water programme (ARWSP) has traditionally been

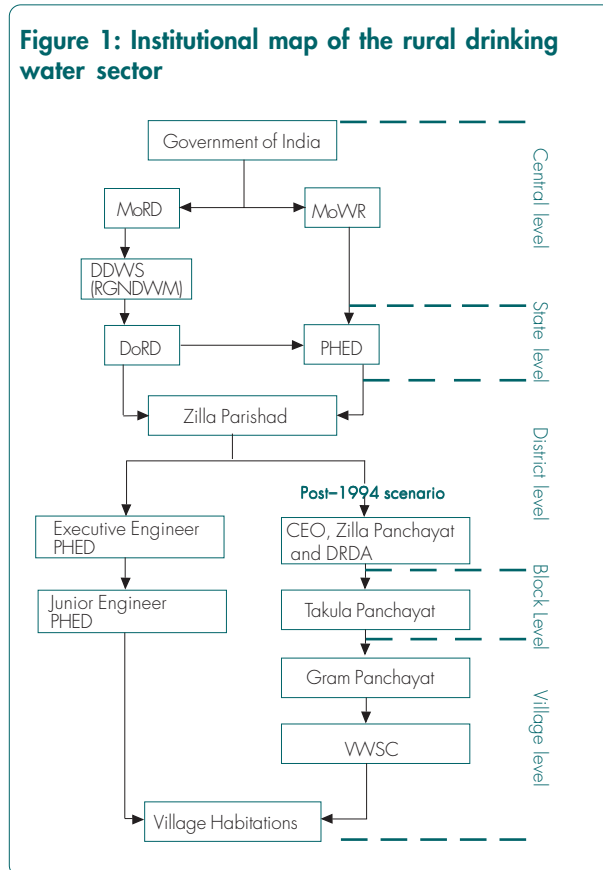
Box 5: RGNDWM rural water programmes

Accelerated Rural Drinking Water Supply Programme (ARWSP)

The ARWSP was introduced in 1972–73 by GoI to assist states and union territories to accelerate the pace of coverage of drinking water supply. The ARWSP aims at providing safe and adequate drinking water facilities to the rural population by supplementing the efforts made by the state governments/union territories under the state sector Minimum Needs Programme (MNP). Keeping in view the variations in regional problems across India's rural areas, 56 mini-missions (pilot projects) were constituted to help evolve different models.

Prime Minister's Gramodaya Yojana (PMGY)

This initiative was launched in 2000–01 to provide additional central government assistance for selected basic minimum services: rural drinking water is one of the six components. 10% of PMGY funds have been earmarked for rural water supply and separate guidelines on rural drinking water have been issued. The PMGY emphasises taking up projects and schemes for water conservation, rainwater harvesting, water recharge and sustainability of drinking water sources in areas classified under the Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and other water-stressed and drought-affected areas. It also funds projects to tackle water quality problems and the provision of safe drinking water to uncovered and partially covered habitations.

Figure 1: Institutional map of the rural drinking water sector

implemented and managed by state public health departments. Other drinking water initiatives under different rural development programmes are under the purview and management of the District Rural Development Agencies (DRDAs) and are mostly implemented by Gram Panchayat institutions. The norms for these programmes vary and this often results in a conflict of interests and goals at the village level, as will be exemplified in the sections below.

A shift towards a demand responsive approach (DRA)

Supply-driven approaches not delivering

Internationally, throughout the Water Decade, problems of unsustainable technology and poor delivery systems were highlighted in the drinking water sector. It was pointed out that a lack of community 'ownership' and government incapacity in operation and maintenance were the primary reasons for missed targets and huge capital expenditures (Nicol, 2000).

Many such examples were quoted from India. World Bank-led reviews in the late 1990s in India pointed out that the poor financial and operational management of bureaucratic supply-driven organisations resulted in large sections of the 'unserved' poor being left out. These reviews and other independent reviews in India (CSE, 2001) pointed out that the number of problem villages had increased, despite the approximate US\$6.5 billion annual investment in the drinking water sector since the first Five-Year Plan (1952–57). Many drinking water supply facilities were identified as defunct owing to poor maintenance. GoI



Photo © S. Reddy, 2004

Rural water supply scheme, AP, India

admitted that, despite huge government subsidies, India's (rural) poor still had inadequate access to safe water 50 years after Independence. These reviews greatly influenced the shift in thinking within GoI towards alternative approaches to water management.

The demand responsive approach

The declaration of the Dublin Principles (1992) set the tone for putting an economic value on water:

- water is an economic as well as a social good;
- water is best managed at the lowest appropriate level;
- approaches that respond to demand are more sustainable.

This view was increasingly promoted by the World Bank to steer domestic water sector policies towards both financial and resource sustainability, i.e. the sustainable use of 'scarce' water. It was articulated by the Bank that 'users would pay at least 5% of their total household incomes, if services conformed to what they wanted' (Nicol, 2000; Joshi, 2002). Historically nurtured by the World Bank, this approach is now accepted globally in the water supply sector and known as the demand responsive approach (DRA).

The DRA theory identifies:

- Water supplies are scarce and the supply-driven approach is technically and economically inefficient, and especially subsidises the rich at the cost of the poor;
- Water is an economic (as well as a social) commodity and water users are potential consumers; this identification will enhance community ownership of services and resources;
- DRA allows consumers at the lowest level to choose the technology most appropriate to them – which they can afford to operate and maintain.

Box 6: DRA – the Bank's explanation

The DRA takes into account that rich men, rich women, poor men and poor women may want different kinds of service. DRA provides information and allows user choices to guide key investment designs, thereby ensuring that services conform to what people want and are willing to pay for. In exchange for making contributions, in cash or kind, for a satisfactory service, the stakeholders have a voice and choice in technology type, service level, service provider and management/financing arrangements.

Source: Dayal, Wijk and Mukherjee (2000).

On these grounds, the DRA promotes economic efficiency, technological appropriateness and financial and technical sustainability. The implementation of this approach calls for a need to change institutional actors. Rangan (1997) identifies that, 'Depending on their political persuasion, scholars, policy-makers and activists either advocate privatisation... or demand that local communities gain full ownership of natural resources; state and state-managed supply-driven approaches are monolithically blamed for the poor management and ecological degradation of natural resources'. NGOs and/or the private sector were thus initially identified as appropriate vehicles in promoting community investment and/or efficient management and the state was advised to adopt a facilitative role for itself.

The DRA and domestic water management

It is possible to identify a number of assumptions which underline emerging demand responsive approaches:

Water is a scarce resource, water scarcity universally experienced and delivering water by demand, i.e. what people need and are willing to pay for, will lead to appropriate, judicious and sustainable use.

Mehta (2000) argues that discourses that illustrate a picture of massive and universal water scarcity obscure the ecological, socio-political, temporal and anthropogenic dimensions of scarcity. Taking the semi-arid western India, as a case study, she identifies that local people have well developed coping strategies to meet basic household water needs through drought conditions and the lobbying for a dam in this Kutch region reflects a 'manufactured rather than real scarcity'. Arguments in favour of the dam are pursued diligently by the powerful large farmers, whose irrigation pumps work twenty-four hours a day, even while wells (for domestic water use) accessible to poor women run dry (ibid).

Issues of both equity and sustainability emerge here: will the mere declaration of water as an economic good lead to its prudent use? If ability to pay is the only criteria, this legitimises the perverse over-consumption of water by the irrigator 'water lords' at the cost of lack of adequate water for domestic use faced by poorer women.

An extensive literature review of emerging DRA policies in the domestic water sector reveals that there is little clarity on the use and interpretation of the term 'sustainability' (Joshi, 2002). Very often, the use of the term denotes economic and/or technical sustainability; there is an over-riding assumption that economic and technical sustainability are synonymous with environmental and social sustainability.

Conditions of water scarcity and abundance are mediated not only by competing, conflicting uses and varying economic capabilities, but also by the complex interplay of unequal social and political constructs.

In principle identifying 'demand' should take into account these issues, but these remain poorly conceived in DRA policy guidelines. There is an acute absence of

Box 7: Caste distinctions in water in Chuni village

Chuni village in the mountains of the Uttaranchal is known as a water-abundant village. A revered temple of the Water Goddess, or Jal Devi, is located at the foot of the village. She is praised for ensuring that water flows all the year around in the springs and along the small wooden bamboo pipes or guls which serve as irrigation channels. A walk around the village, however, reveals that there is acute water scarcity experienced by certain social groups amidst the abundance of water.

Khanka Kshatriya women experience water abundance. 'We are water-lords here,' says Naini Devi Khanka. Madhavi Devi Khanka of Malghar hamlet says 'ever since my husband, who was then the elected village head, brought water here to the house from the main source, we have not had to go beyond the house to fetch water.' In sharp contrast, in one hamlet of the village, eight Agari Dalit households consisting of about 30 individuals have social access to one spring – one Khanka household, consisting of two adults, has the sole legitimate access to one spring. Despite the fact that the two springs lie side by side, the Agaris must wait to be given water from the Khanka spring, depending on the Khanka's benevolence. This shows the difference between physical and social access. Hindu mythology identifies the Dalits as physically 'impure and polluting' and therefore as 'socially inferior'. The 'socially impure' Dalits cannot access the water sources used by the upper castes. This would *pollute* the sanctity of the water source, which is identified as the abode of the Water Goddess.

The Khanka family shares the water with the Dalits but in the process demands and secure obligations. The water the Agaris manage to procure by begging and sometimes stealing is not enough, so they must walk half a kilometre down steep hills to another hamlet to fetch water from a seasonal water drain. The Dalit Agari women say 'Ask us what water scarcity is – it is to not bathe in the summer heat, after toiling in the fields. It is to reuse water used in washing vegetables and rice to wash utensils, to use this water again to wash clothes and then to feed the buffaloes this soapy water. Water scarcity is to sit up the whole night filling water glass by glass as it trickles into our spring. We often don't wash the utensils and just wipe them with a cloth. We feel so dirty and unclean in the summer. We do not wash our clothes for weeks, just rinsing them with a little water. These people say, these Dalits are dirty and they smell. But how can we be clean without water?'

Source: Joshi (2002).

empirical data and adequate analytical discourse on the links among poverty, gender and water (Mehra and Esim, 1997). Water policies are poorly informed of axes of social mediation, like caste, class, age, which strategically enable or negate equal participation. There is even less information on the complexity of the local situation caused by the interplay of these factors against one another.

Rich women, rich men, poor women, poor men may want different kinds of services. Nicol (2000) identifies that water is an integral household asset: 'combined with other assets, it not only sustains life directly, but also brings in financial and non-financial income to sustain livelihoods'. Despite the inherent design to understand 'demand' currently implemented drinking/domestic water projects through DRAs, as analysis below shows, aim to provide only 'safe' drinking water. Further, there is a blanket assumption that all rural households are essentially agriculturists, and water for irrigation supplies this need,

ignoring other water-dependent livelihoods and the fact that small and marginal farmers are rarely able to influence the landed irrigation lobby at the village level. In the wording of DRA guidelines, competing water uses are ignored at the risk of resource-sustainability and water-livelihood linkages are poorly understood at the risk of financial sustainability.

All users have an equal ability to demand. Theoretically, the only barrier to having a voice and choice is the ability to make contributions in cash and kind. DRA guidelines recognise economic heterogeneity among consumers but, at the practice level, logic of consumer economic status defining service level does not always translate into neat categories of consumers and service levels. Projects do not exhibit the flexibility to accommodate those who do not fall into pre-determined categories.

Assuming this is possible, the demand responsive approaches do not clarify if those who contribute more and those who contribute less will have differential or similar opportunities to voice and choice. Such questions are rarely raised, or vaguely addressed by isolating women and Dalits (as in the case of India) and assigning either specific privileges and/or responsibilities, within a contextual framework which still 'assumes that communities, apart from being competent and resourceful, are also unitary and equitable' (Cleaver and Elson, 1995). Community management is identified as the key to sustaining services for the poor (ibid).

As analysis below reveals public spaces and public decision-making authority have historically been the domain of richer and more powerful men and, as in India, 'upper caste' men. Dalits and women have historically been excluded from these political fora. The rhetoric on participation has few practical guidelines to show how these issues can be assessed and addressed in water projects.

The private sector and NGOs effectively promote a demand responsive approach. In much the same way as the community is eulogised for its egalitarian character, the private sector and non-governmental organisations (NGOs) are classified as appropriate institutional agencies for facilitating demand management. Water policies do not clarify who constitutes the 'private sector'; the term *loosely* includes decentralised corporations, community organisations, small-scale contractors and NGOs (Franceys, 1997).

Mehta (2000) draws on analyses that show that privatisation in the water sector seems to have worked best in areas which benefited from past state subsidies. Further, private firms have been found to have focused on richer customers, raised prices beyond agreed levels and disconnected people who could not pay for the water (Barlow, 1999; Petrella, 2000).

An inherent NGO commitment to equity and equality is acclaimed and challenged equally. Goetz (1995) has been tenacious in identifying that 'institutions have not necessarily been right', both for men and women but especially for

women. Kabeer and Subrahmanian (1999) point out that inherently there is little difference among different institutions, from the family to the state; they are primarily all products of the same (unequal) social order. It is now widely agreed that NGO functioning limits choice according to gender, class and race, in relation both to their output and their internal functioning. Testing these perspectives in an institutional analysis of the forestry sector in India, Rangan (1997) validates that 'blanket prescriptions for privatisation and/or transferral of ownership to community organisations did not ensure better long-term sustainability or wiser management, and in many instances reinforced the marginalisation of poorer households'.

These assumptions will be kept in focus in the analysis of DRA practice in successive chapters.

Institutionalising the DRA: the Indian experience

Lessons learnt from the failure of supply-driven approaches, together with international influence and the inordinate delay by state governments in assuming water delivery responsibilities, resulted in a dramatic change in water supply policy by GoI in the eighth Five-Year Plan period. 'The under-performance of the rural water supply sector is likely to continue unless there is a fundamental reform of the service arrangements. It is becoming increasingly evident that the Government alone will not be able to provide necessary expansion of services to a growing population' (GoI, 1997).

Given GoI's welfare state position, the new approach was 'justified by arguing that, even though access to drinking water was a social right, rural users – while exercising this right – should access water as an economic good' (GoI, 2002). This marks the clear transition towards a demand-led approach in the rural drinking water sector in India.

The eighth Five-Year Plan (1992–97) sounded these policy shifts but there were no clear guidelines on implementing the new approaches. As a result, the rural drinking water sector continued to operate in the supply-driven mode. It is important to note that given the generic divide between policy and practice institutions, policy initiatives were undertaken at central government level with little consultation with state government implementing agencies.

Box 8: The Swajal project

The World Bank-assisted Swajal Project was one of the major rural water and sanitation projects making a paradigm shift from a supply-driven to demand-driven approach in the delivery of sustainable rural water supply and sanitation facilities. It was implemented in Uttar Pradesh (including then, Uttaranchal) and was the first attempt in India to shift from centralised procurement to transferring investment funds directly to user communities, assisted by support organisations. Swajal legally empowered Village Water and Sanitation Committees to manage all project construction funds; procure goods, works and services; manage all construction activities; and operate and maintain constructed systems.

Source: Joshi (2002).

A major thrust for institutionalising and implementing the demand responsive approach in the drinking water sector in India came from the World Bank–UNDP Water and Sanitation Program (WSP). In 1998, the WSP–South Asia signed a strategic alliance with the RGNDWM in order to provide technical assistance in developing and piloting DRA.

‘Sector reforms in India have been based on the highly successful SWAJAL project in Uttar Pradesh supported by the World Bank’ (Tripathi, 2000). Yet, that the influence was external is denied. It is officially claimed that the decision to adopt DRA was based on two studies:

- A Planning Commission-led study in 1996 which showed that the O&M of rural water supply systems was poor, especially in the dry season. PHEDs were found to concentrate on the construction of new facilities rather than O&M, and did not have enough resources to undertake both effectively.
- An Indian Institute of Mass Communication (IIMC) study in 1998–99 which revealed poor maintenance and low user satisfaction despite huge investment. This study found that the poor were willing to pay for O&M provided they were given ownership of the assets created.

The Sector Reform Programme (SRP)

The SRP represents a bold first attempt by GoI to shift to an entirely different mode of rural water supply management. This programme, announced in 1999, pilots the DRA approach in 67 districts across 26 states in India. The project continues and is probably the world’s largest (central) government-supported rural drinking water programme based on demand responsive principles (WSP, 2001; 2002). Two donors, WSP-SA and UNICEF, provided institutional support to the RGNDWM and respective state governments.

To set the stage for its adoption, the RGNDWM, in partnership with WSP, organised a state ministerial conference in Kerala in 1999. Known as the Cochin Declaration, the key reform principles were adopted officially across the states and by specific departments:

- Adopting demand responsive approaches and the use of participatory processes;
- Changing the role of government from provider to facilitator;
- Establishing financial viability and sustainability of rural water supply services;
- Promoting integrated water resources management.

The SRP is funded entirely by central government. 20% of the annual national budget for rural drinking water supply programmes is reserved for the implementation of these policy reforms in the identified pilot districts. To facilitate implementation of the new strategy, reform guidelines defined the following activities:

- Constitution of state and district-level management committees;
- Involvement of NGOs, PRIs and/or the private sector as project implementation actors;
- Constitution of Village or Habitation-level Water and Sanitation and User Management Committees;
- Planning, collection of user contributions, supervision of implementation, and O&M of delivery systems by the Village Water and Sanitation Committees and User Committees (GoI, 1999).

The essential merit in the design of the SRP lies in the attempt to create a sense of ownership and control of local communities over assets created through partial cost contribution. The SRP was constitutionally a justifiable (see *Water in the Indian constitution*) shift towards enacting the agenda of decentralised governance. However, in the SRP, the local-level institutions are the Village (or Habitation) Water and Sanitation Committee which, as examples below reveal, is not necessarily the root PRI, the Gram Panchayat (GP).

Table 1: Contrasting ‘policy’ features of the supply approach and the DRA (as outlined in the SRP)

Criteria	Supply-driven approach	Sector Reform Programme
Central role	Government	People/users/clients
Goal	Coverage	Process, Demand-based
Basis for service	Water a welfare good to be provided free of cost	Water a social and economic good demonstrated by willingness to pay
Role of government	Provider	Promoter
Role for people	Recipient	Manager
Role for women	Low	High
Actors	State monopoly	Users, Panchayats, NGO, state and private sector
Partnership scope	Low	High
Capital contribution	100% Government (50/50 state and GoI)	10% community contribution
O&M	State	Users
Level of management	State	Users – habitation level
Dependence on government	High	Low
Source protection	No clauses	Integral part of programme
Political patronage	High, provides for free riders	Relatively low, because users have to pay
Incentive for officials	High because of their role in decision-making, control of finances	Disincentive, power taken away by users

Source: Prasad (2002).

Institutionally, a major change in the SRP was the direct funding of district-level institutions, designated as the District Water and Sanitation Missions (DSWMs) by the RGNDWM. Again, bypassing state departments was a conscious attempt to enable capacity building of PRIs. However, in operation, funding went from the RGNDWM to the district institutions and then, bypassing the GPs, to the village or habitation-level committees.

Key reform principles

A demand-driven, integrated approach to rural water supply and sanitation:

- Partial (10%) capital cost recovery and 100% O&M financing by users;
- Community participation in project planning, implementation and maintenance;
- Stronger links to watershed development programmes;
- Control measures on over-extraction of groundwater (GoI, 1999; Tripathi, 2000).

Analysis in Section *Water Resources management in Andhra Pradesh: an overview*, assesses how far these policy initiatives were realised and the causes for deviations.

Key policy drawbacks of the SRP

Although the SRP was formally launched in 1999, the programme actually took off only towards the end of 2001. It took a long time for government staff both at the central and state levels to understand and implement the major paradigm shift in water supply delivery (Box 9). A detailed

Box 9: Some drawbacks in the reform policy guidelines

1. The guidelines identify a priority selection of districts facing problems of water availability and quality for piloting the new strategy. Guidelines also mention that the districts selected are to have been *progressive* in meeting water coverage through the efficient functioning of committed water institutions (GoI, 1999). It is contrary to say that progressive districts would also be problem districts. Practitioners at the state level, responsible for selecting the districts, said 'the new policy guidelines demand significant inputs from local water organisations. Therefore only those districts having committed water organisations were chosen as the pilot districts' (Mishra, 2000). This contradicts policy guidelines aimed at 'targeting coverage on a priority basis to those habitations and villages least provided with safe water supply'. There may also be other important implications. What is possible by way of piloting the revised guidelines in progressive districts may be difficult to replicate in less progressive districts.
2. The overtly economic interpretation of 'demand'.
3. The specification of various institutional reforms and the time-bound, target-oriented programme did not take adequate caution of 'the implications of the rapid transfer of policy and practice from a centralised system to a three-tier management with a federal background' (Iyer, 1994). Examples of such implications were visible in similar initiatives undertaken earlier in the Forestry and Irrigation sectors, well before the design and implementation of the reform programme.

review of the SRP, taking Andhra Pradesh as a case study state, is given in Section *The drinking water sector in AP, pre and post-Sector Reform Programme* below. It would suffice to say here that independent reviews (Winrock, 2003) point out several pitfalls in the implementation of the pilot SRP.

Swajaldhara – a hasty upscaling of the SRP

The Swajaldhara reforms had been announced in 1999, but in most states adoption and implementation of the SRP had been slow. Without any significant time gap for a systematic review of the pilot programme, an announcement was made by the Prime Minister in December 2002 to scale up the SRP to a countrywide programme, called the Swajaldhara. This political statement required the RGNDWM to commit to '...further consultations⁶ to hasten the process of adoption of the sector reforms... (Mohandas, 2003). The rationale provided for this was: i) the SRP implemented only in 67 districts would exclude the possibility of addressing demand articulated by other districts; and ii) demand and supply-driven approaches implemented side-by-side in the states would hinder the acceptance of a cost recovery approach (GoI, 2003). However, it is a common observation not limited to India, that sector strategies and decisions are more often than not driven by key individuals with specific political interests and may not necessarily represent a systematic, thought-out process.

Swajaldhara guidelines were initially announced in December 2002 as 'non-negotiable reform principles, which supersede all earlier guidelines' (GoI, 2003). It was also mentioned that the SRP pilot projects and all other water supply programmes in operation would eventually be brought under the Swajaldhara framework. GoI's attitude is 'the reforms are here to stay and there is no going back' (Kutty, 2004).

Swajaldhara was devised as a means of including in the DRA-based programme any district or community which wanted to participate. The RGNDWM agreed in principle to accept and fund proposals from district authorities, Gram Panchayats or even habitation-level user communities on the condition that they were accompanied by an upfront cash contribution of 10%.

Basically, the Swajaldhara was similar to the SRP in its adoption of a 'demand responsive approach' signifying:

- Community participation in implementation and O&M of the schemes;
- 10% of capital costs of the scheme and 100% of O&M costs to be borne by the user community; and
- An integrated service delivery mechanism and implementation of conservation measures through rainwater harvesting and groundwater recharge systems.

Revisions to the Swajaldhara guidelines

After the launch, approximately 20,000 proposals were received up to March 2003 most of which were from Andhra Pradesh (AP). The RGNDWM, far removed from the local level, experienced problems in the scrutiny of

these proposals, which resulted in a time-lag between proposal submission and allocation of funds. There is also an informal opinion that the volume of proposals, especially from AP, was viewed cautiously in terms of their validity as community contributions. Subsequently, the Swajaldhara guidelines were revised and released in June 2003. Contrary to the earlier declaration of non-negotiable principles, it was explained that, 'Swajaldhara reform initiatives are process projects. We learn as we implement the schemes. So also, the implementation guidelines get modified and amended as we go along' (Panda, 2003).

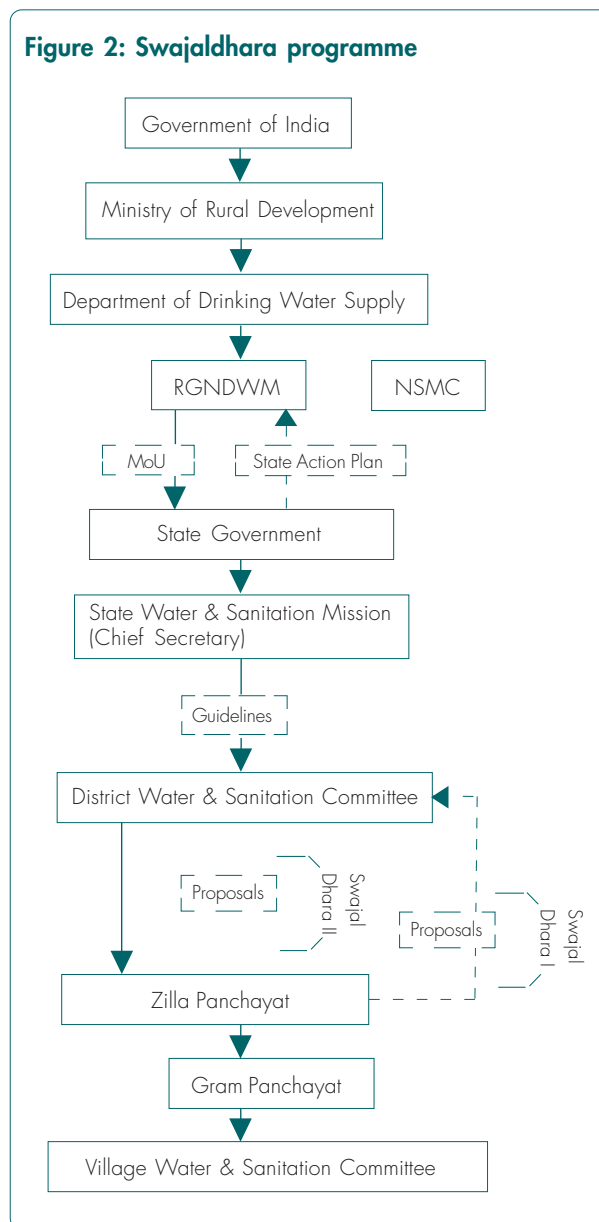
Also contrary to the goal of decentralisation, the revised guidelines firmly rope in state government departments (Department of Rural Development and PHEDs/rural water supply organisations). It is identified that an enabling environment for reform implementation cannot be devised without state government intervention (ibid). The state rural water supply departments are required to develop a strategy for the implementation of the guidelines, in the form of a 'State Vision' for the water (and sanitation) sector'. This needs to be approved by the state cabinet, demonstrating political acceptance and commitment to the reform agenda. The State Vision document needs to spell out the goals from 2007 (end of the 10th Plan period) to 2012 (end of the 11th Plan period) and provide a well strategised road map for implementation of the reform initiatives with annual district-level action plans. Annual action plans would need to be reflective of interaction with district authorities and clearly set out qualitative, quantitative and financial targets reflecting community-led planning and implementation (GoI, 2003). Based on completion of these activities and approval by the state cabinet, the RGNDWM will sign a Memoranda of Understanding (MoU) with the state department/s of drinking water supply and release funds for programme implementation. In keeping with its role in leading the reform process, the RGNDWM has circulated a draft MoU to the states. There is also a change in the pattern of fund allocations. In the SRP, funds were channelled to pilot districts; the revised guidelines specify allocation of Swajaldhara funds to all states on a water coverage/ population basis.

Institutional setup of the Swajaldhara

At the GoI level, a National Swajaldhara Monitoring Committee (NSMC) has been set up under the leadership of the Secretary, Department of Drinking Water Supply, to give periodic review of the progress of the Swajaldhara programme.

Continuing the SRP structure, State Water and Sanitation Missions (SWSMs), headed by the Chief Secretary with secretaries of the relevant departments, will provide policy direction to District Water and Sanitation Committees (DWSCs); approve all drinking water schemes undertaken in the state; and monitor and evaluate implementation and enable integration of water conservation, rainwater harvesting, sanitation, health and hygiene programmes with drinking water supply schemes at the state, district, block and GP levels.

Figure 2: Swajaldhara programme



Swajaldhara I: States can implement the Swajaldhara in blocks/GPs in districts outside Swajaldhara II districts. A group of GPs or an intermediate panchayat can come up with project proposals. Schemes involving several GPs will require specific and precise formulation of capital cost sharing, O&M arrangements and cost collection mechanisms, given the obvious difficulties in coordination. Swajaldhara I proposals will be approved by the District Water and Sanitation Committee (DWSC), provided the projects conform to the guidelines. If more than 50% of blocks/GPs in any particular district opt for rural water supply schemes under Swajaldhara I, the state government could consider proposing to the State Water and Sanitation Mission (SWSM) that the entire district be taken under Swajaldhara II.

Swajaldhara II: The district is the implementation unit for this programme. District authorities can apply directly to the SWSMs for Swajaldhara II, or state governments can identify and nominate districts where they can predict the feasibility of implementing it.

Unlike in the pilot SRP projects, the Swajaldhara seeks to ensure that the GPs have a more instrumental role in water supply services:

- PRI (GP) representation is mandatory, whatever the constitution of the local management group (Village or Habitation-level Water and Sanitation Committee);
- Unless it is a district-wide programme, all village or habitation-level schemes need to be approved by the specific GP.

As was the case in the SRP, the WSP-SA and UNICEF have committed to providing technical support to the RGNDWM for the design and implementation of the Swajaldhara. UNICEF's focus is on enabling gender and poverty sensitivity; WSP-SA, while assisting in policy development, is also designing a nationwide strategy for monitoring and evaluation (M&E) of the Swajaldhara (GoI, 2003). The purpose is to capture both the tangible (physical progress) and intangible (community mobilisation, inclusion/exclusion) outcomes in the framework. The M&E tool is currently being piloted in Tamil Nadu and Uttar Pradesh.

GoI has earmarked 20% of its rural drinking water supply funds from the ARWSP and 25% of funds under the PMGY (Section *The institutional structure*) for the Swajaldhara programme (GoI, 2002). The ARWSP budget is expected to decrease gradually as state governments come up with visions for their regions. GoI predicts a two-year transition from ARWSP to total DRA in the rural water supply sector, following which all GoI support for the upkeep of old schemes will terminate⁷. This has been proposed in Kerala but has yet to take a concrete form on a larger scale.

User communities need to pay 10% of the capital cost of the scheme either in cash or labour, and 100% of O&M costs. GoI will provide the remaining 90% of the capital cost. This cost sharing applies to habitations and the scheme will ensure 40 lpcd of water. Programmes are to be implemented on a priority basis in not covered (NC) and partially covered (PC) habitations. Service levels can be increased beyond 40 lpcd if communities are willing to contribute an increased capital cost (above 10%). If a state has no NC and PC habitations, it can implement the Swajaldhara programme to ensure increased water delivery (55 lpcd).

In contrast to the SRP guidelines, a 6 month operation and maintenance budget is allocated for Swajaldhara projects.

Additionally, the ARWSP guidelines have been amended.

'The norms may be relaxed to provide 55 litres per capita per day with a source within 0.5 kms in the plains and 50 metres elevation in the hills after the coverage of all Not Covered and Partially Covered PC rural habitations in the State is achieved, as per existing norms of 40 lpcd per day. This relaxation may be subject to the condition that beneficiaries are willing to share a part of the capital cost (which should not be less than 10 per cent) and shoulder full responsibilities for subsequent operation and maintenance' (GoI, 2002).

It is also proposed that all future donor support for the

rural drinking water and sanitation sector be premised on the DRA. For example, in August 2003 the World Bank approved US\$181 million to the state of Maharashtra to increase rural household access to improved and sustainable drinking water supply and sanitation services. This was to be implemented in a state-wide decentralised and participatory manner, in line with GoI sector reform policies and the reform agenda (World Bank Press Release No: 2004/68/SAR).

Notions of poverty in the Sector Reform Programme and Swajaldhara

Whither poverty?

The primary thrust of official water policy in the rural drinking water sector in India was on ensuring coverage. As a result, rural populations were conceptualised as a homogenous unserved mass. Despite the inscription of social clauses in policy towards the late 1980s, namely, priority coverage to SC/ST groups and involvement of women, no mechanisms were developed either for implementation or M&E of these clauses. Findings from the field have revealed that improved coverage did not necessarily imply improved, sustained services or universal improved access to water (Joshi, 2002). Several reviews have identified failing schemes as well as expropriation of benefits by the rich and powerful within communities.

Despite the shift in policy, power relations and inequities within communities have not been addressed in either the SRP or the revised Swajaldhara guidelines. The draft MoU, which has recently been circulated to enable all states to prepare individual strategies, demands that they explicitly demonstrate commitment towards:

- Enabling men and women to participate equally in all decision-making, asset control and training;
- Enabling the participation of the poor and marginalised in all decision-making, and ensuring that they benefit equally from project outputs.

There is little, apart from a few lines, that reflects change (see Box 10).

It is reported that WSP, SA is currently assisting the RGNDWM to develop process and output monitoring and evaluation tools. The extent to which equity and poverty are the focus of the proposed M&E tool and the effective use of the tool rests to be seen.

Voice and choice

Watershed and forestry management experiences in India, where a certain amount of decentralisation has been sought through the constitution of user groups or committees, have shown that the voices of the marginalised are rarely heard in decision-making. A growing volume of literature points out that these examples are not unique to India (Manase, 2003) but here they are accentuated by caste and gender inequalities, legitimised through religion and culture (Joshi, 2002). Inevitably, those with less voice will not have an equal say. However, the understanding amongst decision-makers is that such problems do not exist or they will have to be minimised rather than designed into the

Box 10: Programme guidelines: social inclusion and poverty reduction?

From ARWSP to Swajaldhara

The ARWSP guidelines issued in 1986 recognise the need to address the issue of poverty by enabling differential allocation of ARWSP funds to states/union territories based on poverty criteria (as applicable to other GOI poverty alleviation programmes):

- Earmarking of at least 25% and a minimum 10% of the total ARWSP funds for SC and ST habitations, respectively;
- Priority coverage of no-safe-source habitations to those inhabited exclusively by SC/ST or having larger SC/ST populations;
- The normal unit for eligibility for coverage under the ARWSP is a rural habitation not having a safe water source with a permanently settled population of 20 households or 100 persons. However, an exception is made whereby SC/ST habitations with less than 100 persons can be covered.

This thinking is diluted in the transition to DRA in both the SRP and Swajaldhara Guidelines. *There is no mention of the term 'poverty' in the SRP and Swajaldhara guidelines.* The SRP is to be prioritised to by what are assumed to be homogenous 'communities' able to demonstrate demand by willingness to pay and the same follows for the Swajaldhara. The only attention paid to issues of social inclusion is in the statement that women, SC/STs and poor sections of the village may be given due representation in the VWSCs. To what extent this token representation provides a voice to the vulnerable sections of communities is something that needs to be examined more critically by policy-makers.

Source: Gupta, 2003.

implementation of DRA programmes (Gupta, 2003; Joshi, 2003, 2004).

Within GoI, the answer to the issue of the marginalised is perceived vaguely: 'if there is complete coverage, which would include specific coverage for SC/ST habitations, then why should there be an issue of anyone being left out?' (Gupta, 2003 personal communication). The concept that there is no homogenous community has made little impact on mainstream thinking.

This attitude is not specific, either to India or the water supplies sector. Jodha (1985) identifies that the development system in practice does not readily respond to values it fails to recognise. 'The first step is to measure what can be easily measured...the second step is to disregard what can't be measured...the third step is to presume that what cannot be measured easily is not important...the fourth is to say that what can't be easily measured really does not exist'.

Willingness to pay

The guidelines demonstrate a poor conceptualisation of financial sustainability as there is little understanding of the links between poverty, fluctuating household economies (especially of the very poor) and realistic abilities to pay and the feasibility of operating and maintaining water delivery systems. The fact that these were issues not considered in the Swajal project, (the fore-runner to the sector reforms) perhaps reiterated the lack of insight. Field

evidence, however, shows that these issues cannot be overlooked as they impact upon both financial and social sustainability of water schemes.

Sustainability and livelihoods

Implicit assumptions are made in the reform agenda that communities will take over financial and management responsibilities if systems deliver water according to people's needs. However, there is little evidence in the Swajaldhara guidelines that the new approach will undertake a holistic assessment of 'differing domestic water needs' of rural households and deliver 'water as and how people want' (GoI, 2003). Policy thinking has not shifted from the traditional focus on supplying 'safe drinking water' (40 lpcd to 55 lpcd) as outlined in the Swajaldhara guidelines.

Some institutional disjunctions and contradictions

- As mentioned in Section *Water in the Indian constitution*, water management in India is fragmented among a number of institutions at central, state (and local) government levels, with overlapping roles and responsibilities. The Swajaldhara guidelines explicitly state the need for integrated water resource management. This was also stated in the SRP guidelines but, in the absence of specifics, policy has not translated into practice;
- In contrast to the SRP, Swajaldhara guidelines do not provision in the same measure for institutional capacity building. The analysis below in Section 3 *The drinking water sector in Andhra Pradesh, pre and post-Sector Reform Programme* shows that actors and agencies used to a historical supply-driven approach require significant time and experience to interpret and understand 'demand-response'. The fact that district administrations in any particular state function largely independently influences the fact that there has been little cross-learning. This might result in a slow pick up of the Swajaldhara in non-SRP districts and a fair degree of unequal competition on Swajaldhara funds between SRP and non-SRP districts;
- The issue of the sustainability of drinking water systems caused by over-extraction of groundwater poses a huge challenge in 'delivering appropriate and adequate water'. A few states have taken action in relation to this but very few have practical laws in operation (Iyer, 2003). That inter-sectoral water links will be established through the Swajaldhara appears ambitious;
- It has become the order of the day, with the best of intentions, to assign management roles to the community. This holds true not only for drinking water supply and sanitation, but also for irrigation, watershed management, Joint Forest Management, education, health etc. As a result, multiple user groups exist at the village level, which raises the question of what can realistically be expected from a community. Some have argued that decentralisation and community financing merely provide a convenient means of transferring the burden of state failure/s to communities. The theory is that community-managed and financed schemes are inherently more sustainable, but there is little clarity on what aspects of sustainability are being pursued;

- In considering institutional arrangements in the Swajaldhara, an important gap is the assumption made of altruistic links between Gram Panchayats and Village Water and Sanitation Committees. Reported incidences of the unequal spread of resources and power among different villages (not least habitations) under a single GP and the fact that most GPs are highly politicised structures with accountability skewed to larger political interests suggest that such links are not bereft of socio-political tensions. What or who is the appropriate user group is indeed a 'grey area';
- The National Agenda for Governance (NAG) of GoI calls for the provision of safe drinking water to all rural habitations by 2004, with emphasis on NC and PC habitations. This contradicts the DRA guidelines, where the emphasis shifts from coverage to administrative units which are able to articulate demand by demonstrating ability to pay. This would inevitably construct a bias against the not so progressive villages, GPs and/or districts, which are in all likelihood, those which are Not Covered or Partially Covered currently;
'A group of Gram Panchayats or the Intermediate Panchayat could come up with project proposals, which will be sanctioned under Swajaldhara – I by the District Water and Sanitation Committee (DWSC) provided the projects conform to the Guidelines of Swajaldhara.
The District is the unit for implementing the reform initiative under Swajaldhara – II. The State Governments would identify districts where chances of success of Swajaldhara are high and prepare proposals for implementation of Swajaldhara II'. (GoI, 2003).
- The Swajaldhara does not take into account GoI's envisaged capital-intensive, technocratic and top-down-planned Inter-Linking of Rivers Project, also the subject of intense debate and conflict. This project aims, through central assistance, to: generate power; mitigate floods; and, more relevantly, enable provision of water to drought-prone areas. If put into practice, this programme has the potential seriously to contradict and undermine Swajaldhara initiatives, as it will deter community initiatives in demand management;
- The overarching institutional disjunction is that, although based on the principle of a decentralised demand-responsive approach the reform agenda continues to be defined centrally by the GoI.

Conclusion

In India huge investments failed to address both technical and financial efficiency and sustainability of water supplies, which influenced the shift to demand responsive approaches. However, the many unresolved and contradictory intricacies in the DRA are seen repeated in GoI's DRA policy and programme design. These issues are discussed in the following sections in an analysis of the process of SRP implementation in Andhra Pradesh.

II. Water resources management in Andhra Pradesh: an overview

Why Andhra Pradesh?

Andhra Pradesh was chosen as the geographical field for the SecureWater Research for several reasons:

- A progressive and reformist state government has enabled the declaration and testing of several internal and external (water) reform agenda in the State;
- The two key international water organisations in India – the WSP-SA (based in New Delhi) and UNICEF, New Delhi, (both supported by DFID in relation to water policy reforms) – assist the Government of Andhra Pradesh (GoAP) in implementing DRA reforms in the drinking water supply sector;
- The RGNDWM identifies AP as a progressive state, a forerunner in the testing and practice of reforms in the drinking water supply sector;
- Although known formerly as a river state, AP has experienced water shortages and a series of droughts. The testing of the DRA ‘relative’ to notions and experiences of scarcity was an area of research interest.

Introduction

This section provides an overview of water management issues in the state. The Andhra Pradesh Vision 2020 calls for (water-driven) economic growth in the face of a predicted water scarcity. This potential contradiction is addressed in the AP Water Vision, an exercise undertaken by the GoAP with Dutch support, but several challenges remain in its translation into action.

Table 2: Particulars

Area	276,754km ²
Districts	23
Revenue divisions	74
Mandals	1,110
Gram Panchayats (rural local bodies)	19,499
Towns/urban local bodies	264
Population (Census of India – provisional 2001)	75,727,541
1. Males	38,286,811
2. Females	37,440,730
Decadal population growth (1991 – 2001)	+13.86%
Sex ratio (male: female)	978:1000
Urban population	26.90 %
Rural population	73.10%
Literacy rate – total (2001)	44.1%
3. Males	55.1%
4. Females	32.7%
Total workers (main and marginal)	45.8%
5. Main workers	38.1%
6. Marginal workers	7.7%
7. Non-workers	54.2%
8. Scheduled castes	15.9%
9. Scheduled tribes	6.3%

Census 2001. Source: AP web

Andhra Pradesh is the fourth largest state and accounts for 8.4% of India’s territory (see Table 2).

An overview of water issues

A water stress identified and indicated to grow

Andhra Pradesh’s experience of recurring droughts in the last decade is predicted to result in demands exceeding supplies by 2025 (AP Water Vision, 2003). This projection does not take into account the relative notions of water scarcity and stress and the fact that there are regional variations in water availability and in the recurrences of drought.

Regional variations: water, the pressing agenda of discontent

The state primarily comprises three regions: Telangana, the northern part of the state, Coastal Andhra, and Rayalaseema in the South (Figure 3).

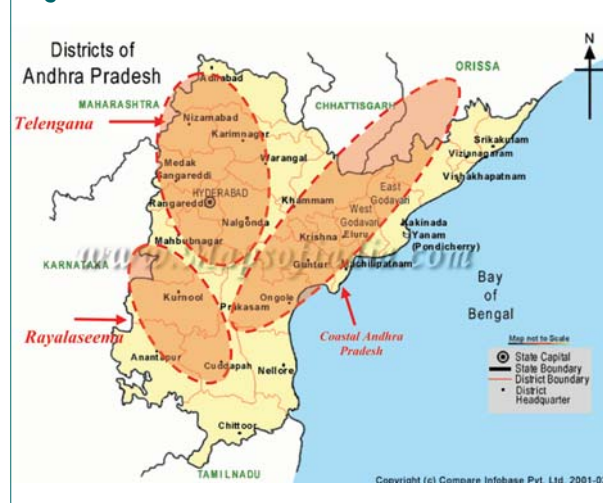
There are imbalances in water availability across regions

Table 3: Present and projected water requirements for various sectors in AP (bcm)

Description	Present	Needed by 2025
Drinking water	0.59	3.45
Irrigation	64.21	107.98
Industries	0.28	1.44
Power generation	0.03	0.06
Total	65.12	112.94

Source: AP Water Vision, 2003

Figure 3: Districts of Andhra Pradesh



and among users. Coastal Andhra, benefiting from dams built in the early eighteenth century, has the fewest water problems. However, Prakasham in Coastal AP is identified as drought-prone. The coastal districts are also frequently hit by cyclonic storms. The Rayalseema region is predicted to move from a water-scarce to a severe-scarcity situation by 2025, following the UN-based measure that a region is water scarce if withdrawal is more than 40% of availability (AP Water Vision, 2003). The region receives only about 677mm of annual average rainfall and is frequently hit by drought. Anantapur district in Rayalseema receives the lowest rainfall amongst India's non-desert districts. Much of Rayalseema is officially designated as uncultivable.

Two southern districts in Telengana – Mahbubnagar and Nalgonda – are drought-prone. However, the common understanding is that much of Telengana remains neglected in terms of water development. The Telengana Development Forum, a people's movement in favour of a separate state, perceives that successive state governments have neglected water development in Telengana.

Andhra's water resources

Surface water

40 rivers flow through AP, of which the inter-state rivers Krishna and Godavari contribute almost 90% of the state's water resources. The total annual yield of surface water (rivers) is assessed at 77.75bcm. The water resources of

Pennar and Krishna have been utilised completely, whereas Godavari has a 21.52bcm surplus. As indicated above, there is significant imbalance in water utilisation among the river basins (AP WaterVision, 2003).

Irrigation department strategies: a move towards a demand response approach

Corresponding to the GoI initiative in Participatory Irrigation Management, the AP Farmers' Management of Irrigation Systems (APFMIS) Act, 1997, provides the basis for handover of irrigation schemes/systems with command areas above 40 hectares (divided into water user units) to Water Users Associations (WUA) (land-owning farmers). Each water user area is divided into territories, for which directly elected members of the territorial constituencies form a management committee and oversee the functioning of the WUA.

Successful implementation of this act in AP has resulted in the formation of 10,292 WUAs representing 10 million farmers and covering two million hectares of irrigated land. Compared with official administration and management, there were timely and more reliable water supplies, a 10% increase in crop yields and a 20% reduction in maintenance costs (AP WaterVision, 2003).

Groundwater

The net available groundwater in the state is assessed at 30.24bcm of which about 43% is currently used (state-level Groundwater Estimation Committee, 2000). The total area on which groundwater is withdrawn increased by around 39% from 1975 to 2001. The increase varies regionally. It is reported that Rayalseema is the highest, with 52 over-exploited water basins. As reported in the section *Ownership of water*, technological innovations supported by power subsidies and easy access to institutional finance are identified as instrumental in excessive groundwater development. The agriculture sector consumes 36-40% of the power generated in the state, but contributes only 4-5% of the power revenue (AP WaterVision, 2003).

Decreased quantity is not the only problem; salinity and fluoride and iron contamination are reported in different areas. Additionally, irrigation systems have resulted in 0.132 million hectares of waterlogged land (water table depths of less than 2m.). As mentioned in Section 1 *Mapping the water sector in India*, the issue of ownership of groundwater has important implications. The state government has progressive legislation but there is little effective regulation.

Groundwater strategies in AP

AP Water, Land and Trees Act (WALTA) 2002.

- Promoting water conservation and tree cover – seeking to achieve at least 5% tree coverage in agricultural land except in small and marginal holdings;
- Regulating the exploitation and use of ground and surface waters – all groundwater users to register existing wells and tube wells and seek permission of the district administration to install new ones; no wells in over-exploited areas; well-spacing and following of area-specific depth norms to safeguard drinking water sources and prevent over-exploitation;
- Protecting and conserving water sources, land and the

Box 11: Telangana

Of the three regions of the state, Telangana has the largest area, followed by Coastal Andhra. 28% of the cultivable land in the Coastal Andhra is irrigated under canal irrigation system, compared with only 4.17% in Telangana. The amount spent by the state in Telangana for irrigation is just 20% of that spent in Coastal Andhra. By the principle of expenditure proportionate to cultivable area, Coastal Andhra gets more than twice its share of investment in irrigation.

From 1956 to date, additional irrigation potential created in Telangana is only 5%, since none of the planned irrigation projects has been completed, despite being initiated some 30-40 years ago. 12 projects sanctioned for Telangana have progressed at a snail's pace for decades. Experts and decision makers debate interminably. Inequity in canal irrigation has also been accompanied by a neglect of tank maintenance in Telangana, reducing (as a result) the cultivable area under tank irrigation. The area supported by tank irrigation has halved as compared with figures in 1956-57. This has pushed and encouraged Telangana farmers to exploit groundwater, which is suicidal in this semi-arid region. The dependence on electric pumps is not only hazardous to water conservation; power supply in Telangana, as in much of the state, is erratic and of low quality (low voltage). Farmers incur huge losses through malfunctioning of motor pumps.

Fuelled partly by water inequity and low returns, farmers in Telangana with the resources to exploit groundwater are seen to adopt cash crops over food crops. Staple cereals have declined significantly over the past two decades. It is reported that most of the larger cash-crop growing farmers are migrants from coastal areas (since the 1950s-60s) owning lands irrigated by the Nagarjunasagar and Siransagar canals.

Source: Telengana Development Forum reported by Rao (2003).

environment – penalties for pollution, obstruction and encroachment of water sources.

A multi-departmental WALTA authority has been created under the Water Conservation Mission (see below). On paper, the WALTA administration extends to the District and village levels. However, given the multiplicity of organisations and conflicting norms, there is poor enforcement and regulation of the act.

Netherlands-Assisted Andhra Pradesh Groundwater Borewell Irrigation Schemes project (APWELL)

Implemented in seven districts, this programme provided dug wells to small and medium farmers; mobilised user groups; and created awareness on the judicious usage of groundwater by matching quality and quantity of the available groundwater resources with crop selection. However, it is commonly observed that extensive power-fuelled extraction of groundwater has resulted in most of these wells becoming defunct.

Rainwater (see Table 4)

The annual rainfall in the state is 925mm, which irrigates 50% of the cultivated area. With decreasing groundwater levels and increased demands on and use of surface water, rainwater harvesting has been initiated on a massive scale under the political persuasion of the Chief Minister.

Rainwater harvesting strategies in AP

In June 2000, the Water Conservation Mission, housed in the Department of Rural Development, was created to initiate and promote rainwater harvesting on a state-wide scale. This programme coordinates with the Neeru-Meeru ('Water and You') watershed programme, bringing together eight government departments. 50% of the target area is in the Telengana region and more than 70,000 tanks have been de-silted to harvest rainwater. Other activities include contour trenching, gully control works, check dams, sunken pits, percolation and farm ponds and feeder channels on a ridge-to-valley contour.

A watershed area of 500 hectares is identified in each revenue village under a GP. Watershed Associations (WAs)

are formed in each area at the GP or village levels depending on size and spread of the programme. NGOs as Project Implementation Agencies (PIAs) assist the WA in implementing the programme. Key beneficiaries (farmers on whose lands the watershed structures are built) contribute 10% to 25% of the project cost. Additionally, as implementation is usually undertaken in drought/dry months, wage labour is provided to the landless rural poor. District, mandal and village-level committees have been constituted to promote people's participation in water conservation.

The observed impacts were a net rise of groundwater level despite failed rainfall; reduction in the number of failed drinking water borewells; and reduction in the number of habitations requiring transported drinking water (AP Water Vision, 2003).

Other water initiatives in AP

Joint Forest Management

Recognised for its water development potential, the JFM, with World Bank assistance, has been a major activity under the Community Forestry Programme (GoAP, 2002). 1.7 million hectares of forest lands come under JFM, which is managed and protected by village-level forest protection committees – the Vana Samrakshana Samithis (VSS). VSS members are residents of villages and/or hamlets (two persons per HH, of which one is a woman) located within a 5km radius of the forests. All members have partial ownership rights over about 500 hectares of the forest (per VSS); entitlements to all non-timber produce; and 100% of the value of timber and bamboo harvested officially. 50% of the funds (from the sale of timber and bamboo) meet the costs of sustaining the productivity of forests. The rest of the funds are dispersed as decided by the Samithi.

Coastal zone development and protection

The 974km coastline, with 453 maritime villages, 280 fish-landing centres and two major fishing harbours, supports water-related livelihoods, such as agriculture, aquaculture, industry and tourism. A 'no-development' zone of 1062km² has been declared by the Shore Area Development

Table 4: Monsoon rainfalls in Andhra Pradesh (mm)

Monsoon	Coastal Andhra	Royalaseema	Telangana	Andhra Pradesh
SW monsoon Normal	(June to September) 602.60	378.50	764.50	634.00
NE monsoon Normal	(October to December) 316.80	224.30	97.10	206.00
Winter period Normal	(January to February) 20.40	12.20	10.80	13.00
Hot weather period Normal	(March to May) 94.70	79.00	56.00	72.00
Total rainfall Normal	(June to May) 1034.00	694.00	928.00	925.00

Source: AP Water Vision, (2003).

Figure 4: Water institutions in AP



Authority (SADA) under the Department of Environment and Forest.

Water institutions in AP

Water ministries in AP (see Annex 2)

Functioning of ministries

Water ministries in AP exist along sectoral lines and are divided into sectors, departments and segments of departments. Based on the portfolio of services, a minister may be given partial responsibility for a sector or responsibility for more than one sector. For example, the Ministry of Irrigation is divided into two separate ministries, Major and Medium Irrigation, and Minor Irrigation, headed by two separate ministers. In contrast, the fisheries sector is housed within the Department for Backward Castes, (presumably given the marginalised status of fisherman by caste) headed by one minister.

Functioning under the ministers and representing the administration, a senior bureaucrat (Principal Secretary, or Secretary) heads a sectoral department within a ministry. The departmental heads are further supported by commissioners or directors, who are the principal implementers of specific programmes.

Some departments are further fragmented into sub-sectors to deal with specific activities. For example, the Department of Agriculture and Cooperation has three operational heads with separate offices extended down to the village level, engaged in specific but similar activities. All three divisions report to one minister. Fragmentation in ministries, sectors and departments results in an overlap of water roles and responsibilities ending up a degree of complexity in terms of accountability, responsibility and

reporting lines. For example, in the Panchayat Raj and Rural Development (PR&RD) Ministry, the Panchayat Raj department is responsible for providing drinking water and strengthening PRI (Panchayati Raj institution) administration, whereas the Rural Development department has the responsibility to develop watersheds and local water tanks, and implement rural poverty alleviation programmes. There is great urgency for coordination between these programmes, yet – although functioning within one ministry – individual programmes are implemented in isolation of other departmental initiatives. The lack of coordination also results in over-exploitation of water resources, as several departments use water differently and work without any synergy.

Most of the departments – for example, Agriculture, Panchayati Raj, Rural Development – have a strong institutional presence in all the districts. Some departments, like that of irrigation, have a strong presence in their project locations which may not relate to district boundaries. There is little inter-departmental coordination among water departments at the district level; however, a process for enabling this exists under the jurisdiction of the District Magistrate or Collector. In a generic sense, the Collector, as the de facto head of district affairs and the district rural development authority has the mandate to coordinate all departmental activities and programmes.

Policy reforms in AP

Vision 2020

The former Telegu Desam Party, was considered reformist and progressive (being proactive to change) by several bilateral and multilateral agencies. This was evident in the production of several development plans and agendas,

Box 12: Vision 2020

Eradicate poverty and take care of the old, infirm and genuinely needy;
 Promote small families;
 Give children a happy childhood and opportunities to achieve their full potential;
 Empower and support women and girls to fulfil their roles as equal with men in economies and society;
 Create resources – capital and infrastructure – to enable people to shape their own futures;
 Enable farmers, entrepreneurs and professionals to build and scale up their resources;
 Embrace innovation and latest know-how for agriculture, industry and services;
 Safeguard the environment – clean, green and safe cities and villages;
 Simple, transparent, accountable and responsive government;
 Enable people to have a voice and role in governance.

primarily the ‘Vision 2020’ document, which drew a roadmap for developing the state by 2020.

In accordance with Vision 2020, GoAP emphasised economic growth by 9–10% by focusing on agriculture, poultry, horticulture, labour-intensive and export-oriented industries (garments and leather), small-scale industries, and tourism, as sectors that offer opportunities for high growth (AP Vision, 2020). This focus significantly changes the distribution of water and the demand on water resources (see Annex 2 for details).

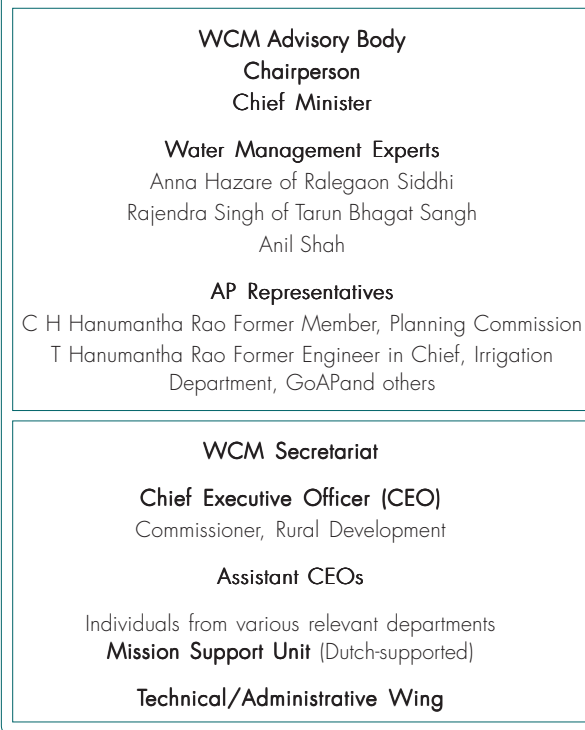
To initiate the translation of vision to action, GoAP commissioned working groups to draw up strategy papers on the above listed areas of development. Strategy papers were also commissioned on poverty and education. The poverty reduction strategy papers identify the centrality of water in addressing poverty and outline the health and livelihood benefits of secure water to the rural poor, especially those of assured agricultural labour. However, although not explicitly stated, the economic-growth-driven, trickle-down approach of Vision 2020 is justified as the process for poverty reduction in that there is:

- A focus on employment-intensive sectors, such as irrigation, agriculture and agro- processing;
- Increased irrigation and intensity of cropping to raise the demand for labour and agricultural wages; and
- Sustained improvement in the quality of natural resources as both short (wage labour, food for work) and long-term endowments for the rural poor.

The poverty strategy does, however, identify that the provision of basic minimum services to all citizens, especially the poor, is essential to ensure improvement in human development and access to markets. Social mobilisation is identified as the stepping stone to pro-poor governance. In policy language and concern, women are identified as a distinct category of the poor, with a high dependence on water. In the same spirit, social organisation is articulated primarily for women.

All sectoral departments under the former state government were directed by the then Chief Minister’s

Figure 5a: Organigram of the WCM



office to define departmental/sectoral priorities in line with Vision 2020 goals. Some departments, like irrigation, drinking water, watersheds, forestry etc. through external support, moved towards this process, many others lag behind. Improved governance was also identified as a way to streamline reforms and the UK Department for International Development (DFID) supported the establishment of a Centre for Good Governance (CGG) in Hyderabad. The aim was to enable departments to undertake institutional reforms and improve organisational efficiency from a pro-poor perspective. In practice, links are not always established between organisations like these and departments in the process of undergoing reform.

The AP Water Vision

A prolonged drought leading to the political will for a water vision.

Officially, AP faces a water-stress situation. About 42% of land is declared degraded and 548 mandals as stressed, with groundwater levels lower than 10m. A long spell of droughts was experienced throughout most of AP in the early 1990s. Water stress was reported across rural and urban areas, even in areas not formerly drought-prone. Out-migration increased in most rural contexts and there was emergency delivery of water through water tanks in both rural and urban AP.

As mentioned in Section *Andhra’s water resources*, a Water Conservation Mission (WCM) was constituted in the Department of Rural Development in May 2000 with objectives to:

- Develop a state water vision and strategy for conservation and sustainable utilisation of water;
- Initiate public debate on policy reforms related to sustainable water use issues;

Figure 5b: Organigram of the WCM

Institutional level	Structure/representation	Functions
District Water Conservation and Utilisation Committee	Headed by a state government minister managed by the District Collector and reporting directly to the Chief Executive Office, WCMInter-(water) departmental representation	Advisory control of all district-level water programmes Monitors all water programmes Finalises and allocates district budgets for all water programmes
Mandal Water Conservation and Utilisation Committee	Headed by the Mandal Territorial Constituency (independently elected representatives parallel to the Gram Panchayat structure) Chairman	Overall responsibility for preparing and influencing all water plans at the mandal level Strategically not as important as the district-level committee
Village Functional Committee for Natural Resources Management (earlier Village Water Conservation and Utilisation Committee)	Headed by village Sarpanch Composed of members of different village-level water associations	Coordinates the numerous water associations at village level

- Ensure promotion of suitable cost-effective and sustainable agenda for conservation and sustainable utilisation of water;
- Prepare a time-bound action plan to ensure coordination and convergence of key water ministries and departments.

The process was in-line with the guidelines of Vision 2020. However its development was dictated more by need than foresight. GoAP's agenda to tackle the continuing drought situation coincided with the culmination of Dutch engagement in the AP water sector. The Royal Netherlands Embassy, having completed its AP Phase 3 programme in 1999–2000, was in the process of rethinking its water strategy for AP. The synergy resulted in the Royal Netherlands Agency facilitating the development of a state water vision. A Dutch-supported Mission Support Unit was established in the WCM, consisting of a multi-disciplinary team of international and local water experts. The MSU team was the key producer of the AP Water Vision.

The challenge: translating Vision into action

The development of the Vision was a political success. The state Chief Secretary was announced as the Vice-Chairperson of the WCM advisory body. However, despite appreciation and consensus on the Vision guidelines, there is little institutional ownership of sectoral visions, as the process evolved independently and externally of the water departments.

The second objective of the WCM – to facilitate key water departments to develop integrated water visions and action plans – looks difficult. There is, as a result, a wide divide between the rhetoric and reality of translating the Vision into action, especially as this task is the responsibility of a sparse two-member (continuing) team of the MSU. The technical wing of the WCM has its own primary agenda of regulating and monitoring the progress of the Meeru Neeru programme.

An AP Water Vision Task Force (Annex 4) has been constituted with representatives from 20 key sectoral departments, lead research institutions, NGOs and the Royal Netherlands Embassy. The WCM has also formally announced the establishment of representative units across the PRI structure (see Figure 6). The District Water

Box 13: The AP Water Vision

The document reflects a distinct shift from economic growth towards equity.

The Problems

- Regional variation in water availability, use and access
- Agriculture as the largest water consumer and inefficient
- Insignificant domestic and/or drinking water needs, yet the sector faces inequity with other water (over)uses
- Increasing water for municipal and industrial demands which will create demands on irrigation systems
- Pollution of surface and groundwater, of critical importance, given the water-stress situation

Water Vision – salient features:

- Accessible, affordable and secure drinking water for all in the face of competing water needs and uses; the need for multiple-use systems, e.g. diversion of irrigation water for domestic purposes
- Water for meeting livelihood needs, other than agriculture
- Water conservation – sustainable extraction of groundwater and groundwater recharge; efficient use of water for agriculture and livestock; harvesting rainfall
- Pollution control and prevention by people, livestock, agriculture and industry
- Long and short-term mitigation of droughts
- Integrated management and governance of water sources, systems and programmes
- Financially viable systems, but the need to cross-subsidise the poorest and most vulnerable and their livelihoods
- Participatory management – special emphasis on participation of women and the landless in water management

Conservation and Utilisation Committee is operational, given its clear agenda and mandate. Such incentives do not extend to mandal and village communities. The critical question is: who will mobilise and coordinate these committees and monitor and regulate their functioning? The MSU is not adequately staffed and also, as an externally supported structure, its functioning is hinged on the continuation of the Dutch support, which is being phased out given GoI's directive to stop bilateral aid.

Conclusion

Predictions of water stress in AP are realistic but equally are relative, given the regional and locational specificities and unequal access and allocation among different sectors

and users. All of these issues contribute to the fact that water is a key part of the political agenda and an 'important business' for GoAP. The contradiction in the emphasis on economic growth and the demands on deteriorating water resources in Vision 2020 are subtly pointed out in the AP Water Vision. However, despite the 'enabling environment' and the political will, the institutional structure and capacity to translate the AP Water Vision into action is poorly conceived and strategised. Equally important is the fact that the MSU of the WCM functions primarily at the state level, but implementation of programmes is carried out at District and Gram Panchayat levels. As will be evident below, even departments such as the rural drinking water sector, which are pressed for reforms from elsewhere, have yet to use the Water Vision as the principal document for structuring reforms.

III. The drinking water sector in AP, pre and post-Sector Reform Programme

Introduction

This chapter focuses on the rural drinking water sector, assessing the sector in AP pre- and post-SRP implementation. Critical to this analysis is the fact that GoI-led reforms in the drinking water sector operate in complete isolation from the Water Visioning process in AP. Although AP is comparatively progressive in taking forward the reform agenda, an issue of concern is that ‘progress’ in implementing the SRP is due to the programme being pushed forward in a supply-driven mode. This demands an urgent need to look back and analyse experiences of implementing the reform agenda in preparation for the Swajaldhara programme.

Organisational structure of the Panchayat Raj and Rural Development Department (PR&RD)

As explained in *Section Water Resources in Andhra Pradesh: an overview*, the Panchayat Raj Department of the PR&RD Ministry is responsible for rural drinking water supply. The Rural Water Supply Division of the department plans, designs, constructs, operates and maintains rural drinking water schemes through well established field offices at district and block levels (Annex 5). Work is implemented departmentally through staff located at district and block-level offices and/or by tender to private contractors. The lines of accountability flow upwards.

As all over India, the Rural Water Supply Department in the PR&RD Ministry – established and funded through central government assistance and regulation – is essentially technocratic in structure and staffed almost exclusively by male engineers across the department. And as with other rural water supply departments and/or organisations in India, the PR&RD in AP has historically implemented a supply-driven drinking water programme in a technocratic manner.

Discussion with field-level engineers in a pilot SRP district on the situation and mode of operation pre-SRP revealed (Ramesh et.al., 2004):

- **A mismatch between planning and implementation** – The final allocation of RWS funds to the districts always fell short of budgets planned by the district team (similar to state budgets approved by the RGNDWM). Consequently, the available funds were spread thinly across the mandals and habitations. This resulted in the fact that it took over 2–3 years to complete a water-delivery scheme, which encouraged technical failures;
- **The scope for political influence and interference** – The mismatch between planning and implementation and the practice of arbitrary allocation of funds across

the district – encouraged scope for ‘influential villages’ to grab additional funds;

- **The emphasis on construction of physical structures** – In a situation where funds for a single water supply scheme came in instalments over years – the emphasis was on first building the ‘hardware’. The common practice was to first construct overhead storage tanks – regardless of whether adequate water existed for the scheme. This was because ‘hardware’ is seen and indicative of the RWS having spent the allocated money;
- **Little need or scope for inter-agency and/or inter-sectoral coordination** – In the gradual process of building the water delivery systems there was little coordination with other agencies operating in the area. At the most, the Mandal officers were called to resolve conflicts, if any over citing the water source;
- **Sparse communication between users and providers** – The rigid guidelines (specified lpcd at specified distances), the vertical modes of reporting upwards, and the lack of relevant capacity building for field engineers resulted in the fact that there was a near-complete lack of communication between the users and service providers. At best, communication was restricted to the village elite – influencing where water sources were to be cited and taps and bore-wells installed. ‘We went in and evaluated the contractors who did the work. The contractors were accountable to us. People said little – this was a government scheme. Nothing was expected of them and nothing sought;’
- **Significant workloads and little motivation to work better** – In a typical case, field engineers are responsible (required to implement schemes) for one mandal, which has about 40–50 habitations. The unit of scheme planning and implementation is habitation and/or GP, depending on the size and spread of the GP. ‘This means that we travel not less than 50 kms on any day. Yet TA/DA allowances are not regular – have not been provided for the last two years. There is a fair amount of paper work, but no secretarial assistance is provided. We are assessed for how well we are able to provide up-to date records of schemes running, operational. We are not assessed for communicating with the users;’
- **An arbitrary operation and maintenance arrangement** – In the ARWSP, schemes once implemented were supposed to be handed over to the GP. But there is no formal handing over process. Equally, GPs do not have the capacity to take over this task. ‘At best, we say the schemes are handed over, but we are still asked to repair schemes. The time delays are evident – because of the volume of work we cope with and the lack of appropriate facilities.’

Table 5: Status of rural water supply in AP as of 1 April 2000

Levels of service	Rural habitations
Fully covered (FC)	34,327
Partially covered (PC)	21,583
No safe source (NSS)	13,822
Total	69,732

Given the nature of programme implementation, drinking water statistics in the state (as in all other states) are still presented on a ‘coverage’ based interpretation (Table 5).

Much of what has gone wrong in the supply-driven approach is blamed on the centralised bureaucracy and technocratic functioning of these institutions. However, the overview above indicates that existing programmes did not encourage or enable inter-sectoral links and/or social and economic sustainability. The institutional design of the programme enables political manipulation: many influential villages (with overt political patronage) with failed schemes are able to ‘grab’ additional funds while many uncovered villages remain without safe water. How much of this is rectified in the DRA of the Sector Reform Programme is analysed below.

The Sector Reform Programme in AP

The Sector Reform Programme (SRP) was introduced against this background of the institutional incapability of the Rural Water Supply division. The programme design thereby bypassed the RWS but the SRP in AP (and elsewhere) demanded that the State Water and Sanitation Mission (SWSM) was headed in the state by the Secretary, Panchayat Raj and Rural Development (Section *The sector Reform Programme*).

The process of implementing the SRP (see Annex 6c)

In a shift of institutional roles, District Water and Sanitation Missions (DWSMs) were to be constituted in the pilot districts (see section *The Sector Reform Programme*) and the DWSMs were asked to submit detailed project reports (DPRs) directly to the RGNDWM. Following approval of the DPRs, the RGNDWM released the first instalments of funds (around Rs 40 million for each pilot district) to the DWSMs by June 2000. Despite this, there was no activity on the ground until September 2000, when a state-level workshop was organised by GoAP. This resulted in the preparation of the Project Implementation Plan (PIP), which was released in November 2000. (See Annex 6a and 6b for details on the institutional structure, specific agency roles and responsibilities in SRP implementation in AP). The PIP formalised the involvement of APARD⁸ as the capacity building consultants and also as the State Water Resources Centre and the Programme Support Unit (PSU).

Implementation of the SRP began in three (of the four) districts (see Section *Two SRP models in AP* below) after the September workshop, where it had been emphasised

that the guidelines (PIP) ‘should not be used to prescribe the rules of the game, but merely [used] as a tool to be adapted by DWSMs to guide the implementation of their individual projects. In this way, the PIP reflects the fundamental principle, the programme advocates, of demand-responsiveness’ (PIP, November 2001). Following the release of the PIP, the state government in April 2001 issued a government order formalising the Sector Reform Programme and the institutional structures for its implementation, as outlined in the PIP. The government order did not clarify in great detail the ‘informative, but not prescriptive’ nature of the PIP.

Two SRP models in AP

There were two operational models of implementing the SRP in AP: the Chittoor model, which followed the PIP guidelines to close detail, and the Khammam Model which, in a marked departure from the SRP agenda and the PIP model, worked through the Rural Water Supply (RWS) Department. The reason that PIP was announced as not prescriptive was largely because Khammam district had gone ahead in implementing the DRA through the District Rural Water Supply Department before the September 2000 Workshop (Prasad, 2003). It is important to mention here that a progressive RWS unit in Khammam, backed by a supporting District Collector had gone ahead in piloting people’s participation and contribution to operation and maintenance in a few habitations, much before the declaration of the SRP. This was done in collaboration with the Sarpanch at the Gram Panchayat level.

Given this experience and head-start, the RWS district office declined the PIP design of involving local support organisations (i.e. NGOs) for ‘mobilising and creating awareness amongst user communities’. The results were positive for the first phase of the programme. The problems of managing the SRP in the demand-responsive spirit began in Khammam when the project scaled up to 450 habitations by early 2001. The reason was primarily due to lack of adequate personnel. The work area (one assistant engineer or assistant executive engineer in one mandal) had not been reduced or revised, though the tasks and demand for paper work had increased multifold in the SRP. VWSC participation was sought with the best intentions, however this became restricted largely to interaction between the Sarpanch (president, VWSC in Khammam SRP villages/habitations) and the RWS. However, in keeping with the decentralisation objectives, the Mandal Water and Sanitation Committee, composed of Mandal level officials became an active part of programme planning and implementation.

The Chittoor Water Supply and Sanitation Committee (CWSC) managed the programme under the Project Director, District Poverty Initiatives Programme (DPIP)⁹. CWSC first selected 21 Phase 1 (NC and PC) habitations in consultation with local NGOs and the Chittoor RWS Division. 21 NGOs, one for each habitation, used information, education and communication (IEC) groups (local folk artists from the districts trained in APARD) to raise awareness on water and community mobilisation and

management through song and dance (Kalajatha/s). At the end of each Kalajatha, the team were given the task of assessing the demand for water ('will you pay for safe, adequate drinking water and, if yes, how much?'). Then followed the establishment of Habitation Water and Sanitation Committees (HWSCs) and the handing over, as far as possible, of planning, management and O&M roles. The emphasis on process, rather than product, resulted in a much slower delivery of 'finished projects'. By late March 2001, implementation of the water delivery systems was picking up in the pilot habitations. However, IEC activities had been scaled up in around 419 habitations.

IEC activities and VWSC/HWSC formation also happened in Khammam. The contrast was that scheme planning followed IEC activities in Chittoor, while the reverse happened in Khammam.

The slower process of implementation in Chittoor was detected as a flaw by the State Water and Sanitation Mission and a decision was made to revert to the Khammam model in Chittoor. NGOs were removed and the Chittoor RWS division became the DWSC under the leadership of the Superintending Engineer. The District Support Unit of the earlier CWSC continued, but now functioned under the RWS-led and managed DWSC. APARD supported the Chittoor model, but could not influence this decision. Prasad (2003) analyses the two models and concludes that in comparison to the earlier programmes (ARWSP) both models were good, but not good enough as demand responsive models.

For a complete assessment of the differences between the Chittoor and Khammam models, see Annex 6d.

The Khammam model now continues in most of the seven pilot districts and it looks as if this model will be replicated in the Swajaldhara scheme. It is thus important to assess how DRA has been interpreted under the SRP in AP.

Reviewing the SRP: the constraints in translation into practice

The few reviews conducted of the pilot SRP have revealed several shortcomings in the implementation of the programme, which is far removed from its projected spirit and intent.

A process agenda?

It is identified that the 90% GoI grant was a huge incentive for the state (and district) governments to implement the SRP. However, enabling a process of demand management and community involvement within a historic institutional culture of supply-driven approaches requires investment of resources – especially time – and this was overlooked.

The Rs40 million grant given to each district and the time-bound dictates to spend created a huge pressure to achieve targets of 'completed habitations'. Contrary to the very notion of being 'demand-based', the implementation of the SRP continued to be preoccupied with meeting targets, in the supply-driven fashion. This perspective influenced the ending of the Chittoor model and in hindsight, the volume of grant money stifled, rather than nourished local initiatives, as in Khammam. It has been argued that in most of the pilot districts, District Water Supply Committees 'supply' the demand responsive approach (Prasad, 2003; Gupta, 2004). The target orientation also relates to the way demand has been narrowly conceived, purely on the understanding of collecting 10% user contribution. As mentioned in Section *Revisions to the Swajaldhara guidelines*, the announcement of the Swajaldhara programme led to several villages and habitations in AP applying to the RGNDWM with 10% contributions. Applications from AP are said to have outnumbered the applications from the rest of the country. Local newspapers in AP reported that local politicians, contractors and even engineers had made these initial investments as proxy to user communities. This shows the amazing response to the GoI-sponsored reform agenda but also sounds a note of caution on the types of processes that 'easy GoI grants' are capable of generating.

Table 6: Strengths and weaknesses of the two models

	Chittoor	Khammam
Strengths	<ul style="list-style-type: none"> Process-oriented Participation of civil society Facilitation of HWSCs possible because of small number and slow pace Contribution realised from most 	<ul style="list-style-type: none"> Line department engaged, thus an on-the-job learning Partnerships with local government
Weaknesses	<ul style="list-style-type: none"> Line department excluded NGO engineers not experienced Training for DWSC and DSU staff not adequate No links to sanitation and water conservation 	<ul style="list-style-type: none"> Civil society engagement rhetorical Increased work burdens for line staff Operated at the revenue village level, with Sarpanch presiding all HWSCs The genuineness of community contributions questionable in some cases No links to sanitation and watershed

Continued predominance of the RWS

Theoretically, the emphasis on decentralisation in the Sector Reform Programme was to be effected by sidelining the RWS Department. However, a continued predominance of the RWS prevails in AP, as elsewhere in India. According to the initial rapid review conducted by the WSP, translation of the SRP, as another scheme implemented by PHEDs, has arisen from the incentive of the rural water supply divisions to implement works speedily, along with the tendency to retain their managerial financial control.

There is now a distinct informal understanding in AP that, although implementation and management agencies may vary, the RWS and the PR department will be the central nodal body for implementing the SRP and Swajaldhara guidelines. There are distinct merits in this, given the department's long experience of the sector. It does, however, contradict the very reason for the DRA's institutionalisation in India. Given that RWS departments have traditionally functioned in a technocratic manner and the Khammam Model (Section *Two SRP models in AP*) prevails in AP, the SRP was, and the Swajaldhara can be viewed and implemented as a supply-led project. This negates the primary challenge posed by the SRP of being able to '...generate institutions to take forward the delivery of water services at the lower levels rather than deliver taps' (WSP – Jal Manthan 2002). Again, the problem is not specific to AP.

Personnel and capacity building issues

In bringing about institutional reform, 'training programmes conducted by outsiders can at best change the attitudes of a few individuals. A lasting impact can only be achieved if planning, organisation and management issues are addressed simultaneously' (Ramachandran, 1998). The extent and quality of training and capacity building in implementing the SRP in AP supported by WSP and UNICEF is, comparatively, one of the better arrangements in the country; however, it leaves much to be desired.

As training, capacity building and software implementation agencies, APARD as the State Resource Centre, and the District Support Units (DSUs) at the district levels, are entrusted with huge responsibilities for the successful implementation of the SRP. However, these organisations are inadequate to the task in their constitution and capabilities. APARD is engaged in numerous rural development training activities and there were no initiatives to assess and update the required skills and capacity in the team. The same problem is being repeated with the [new] PMU (see below), which is currently involved in the Total Sanitation Campaign programme, which takes up most of its time and efforts.

The bypassing of the state RWS department in the SRP, as outlined in the PIP, created a divide between APARD and the RWS division. This resulted in a latent hostility between RWS institutions (at the state and district levels) and APARD, which resulted in the removal of APARD from this role in November 2002 (informally July 2002). APARD was replaced by a five-member Project Management Unit (PMU) team, consisting of external



Photo © D. Joshi, 2004

Community-level planning meeting

(privately hired) consultants, housed in the PR department under the chairpersonship of the Secretary, PR department.

There has been little analysis and evaluation of the training and orientation provided to DSUs (by APARD and now the PMU) and whether this was appropriate and adequate to enable the implementation of SRPs. In AP, the time and capacity building arrangements required to prepare district and village-level missions to implement the reform agenda has not been adequate. The magnitude and scale of doing this, state-wide, is important to consider. There is a significant awareness of the SRP guidelines among DWSC staff in the pilot districts in AP; however, the same cannot be assumed for the non-pilot districts, as well as the field staff of the rural water supply departments still implementing the AWRSP.

The PMU and the DSUs, as a body of external (private) consultants, are not able effectively to influence a shift in attitudes and practices of the rigidly bureaucratic and technocratic structure of the RWS, both at the state and district level. The main body of the RWS sees the PMU and the DSUs as 'isolated' programme-based units, which undertake those aspects of the SRP that cannot be achieved by engineers. Indicative of the isolation is the 'lack of communication' between SRP/Swajaldhara reform activities undertaken by the PMU and the development of the Rural Drinking Water Vision under the AP Water Vision Guidelines.

Finally, RWS engineers in the pilot districts, but especially in Khammam had a head-start experience and some (albeit inadequate) training and capacity building in assessing and addressing the demand for water. The SRP budget had specific provisions for capacity building. The capacity building agenda and initiative by APARD failed to achieve expected goals and led to conflict largely because there was a dictate on 'the right way to do things' without considering the practicality of the field situation. More significantly, little emphasis is laid on capacity building in the Swajaldhara programme.

Inadequate monitoring of community participation

A natural corollary of the continued predominance of the rural water supply divisions and the inadequacy and inappropriateness of the PMU and DSUs meant that there



Photo © D. Joshi, 2004

Rains, filled tanks - occasional as illusions

was little community participation in the design, implementation, and maintenance of the SRP schemes. The WSP review in Maharashtra found that while projects had been implemented, the communities did not generally have an adequate understanding of the O&M aspects pertaining to the schemes. In Andhra Pradesh, the review team found insufficient community mobilisation, IEC, and capacity building activities in most districts except the 21 pilot villages in the district of Chittoor (Prasad, 2003; Joshi 2004). Field staff for community mobilisation were not trained and oriented adequately and were also insufficient in number. Where there was evidence of community mobilisation and participation, it tended to be biased in favour of a few elites in the villages.

Inadequate PRI engagement

The issue of the nature of PRI involvement and its relationship with user committees, such as the VWSCs has been contentious in the SRP plan, as funds go directly from the district administrations to the VWSCs, bypassing the PRIs. The rapid review undertaken by the WSP in October 2001 found that, with the exception of West Bengal, the PRIs had not been instrumental in implementing the SRP. In AP, however, by default as demonstrated in the Khammam model, the Gram Panchayat represented the user-level committee. However, while the PRIs are involved, the implementation of the programme has not succeeded in devolving real power to the lowest level. Substantial powers still lie with the state bureaucracy, particularly the District Water and Sanitation Committees (DWSCs). The Zilla Panchayat and Gram Panchayat are still weak as institutions, without adequate financial resources.

The Swajaldhara guidelines promote the involvement of the Gram Panchayat over Village (habitations are no longer considered as potential project units) Committees. However the GPs are identified to function as service delivery and management institutions without significant financial authority (controlled in both Swajaldhara I and II by the Zilla Panchayats).

‘The Drawing and Disbursing Officer (DDO) of the District Panchayat / DWSM shall also act as the DDO for all funds received under Swajaldhara’.
(GoI, 2003).

Prasad (2003) indicates that in developing countries, efforts

to improve governance typically translates to more authority and less autonomy.

This represents the dilemma in decentralisation, which applies to all similar programmes. Given the political nature of Gram Panchayats and the dangers of political patronage, better strategies need to be worked out to enable effective and responsible governance. However, the attitude so far has been to sideline GPs completely or turn a blind eye to issues and events of political misdeeds (see below).

The SRP and the AP Water Vision: lack of coordination

Running parallel (at state, district, block and village levels) to the institutional structure of the SRP are the Water Conservation Mission institutions (Section *The AP Water Vision*). A need for coordination is called for, especially at district level which is the most important in both programmes. Although the DWSC of the SRP (and the Swajaldhara) and the District Water Conservation and Utilisation Committee have essentially the same membership, the institutional divide in roles and responsibilities exists in practice (PMU, 2004).

Integrated water management? Competing, conflicting water needs and a pre-determined design to deliver drinking water

A demand responsive approach would ideally enable the community to identify water delivery systems whose design and structure is appropriate to the local context and meets the differing water needs of different households. In practice, in most districts the DWSC's have at best supplied a pre-determined design – a borewell and an overhead tank with piped individual and communal connections, built to deliver 40 lpcd of safe drinking water.

Meanwhile, the demand responsive approach promises to deliver household water ‘demands’ as per need, from an assumed community of more or less same-need households. Even if this was true, it would be difficult to ensure in practice, given the conflicting uses of scarce water resources prevalent in many parts of AP. The mechanisms to address this are supported by policy and legislation like the WALTA (Section *A water stress identified and indicated to grow*). However, no references to these have been made in the implementation of the SRP. Moreover, water ownership rights are vested with land rights and this constrains the regulation of groundwater, despite clauses which rule this out in the WALTA. There is also little effective regulation on groundwater withdrawal in AP, given the strong agricultural lobby.

It is pointed out by Prasad (2003) that frequent droughts and seasonal shortages of water (8-10% of hand-pumps are reported to be seasonal by RWS 2003) call for crisis management, a fact that is politically utilised to create more and more water delivery structures. This situation is not specific to AP.

Finally, in both the Chittoor and Khammam models, there was little link between water and sanitation. The GoI's

Total Sanitation Programme bears a close resemblance to the water sector reforms. However, the key factor was that the two programmes were funded by separate departments and had different institutional structures. There have been attempts to link the two and the PSU (PMU, PR&RD) is now the nodal body for both programmes. However, observations recently indicate that the focus, both at state and district levels, has now been diverted to sanitation, which risks ignoring water, given the GoAP's drive on achieving total sanitation.

Competing supply-driven initiatives

Reform districts (along with non-reform ones) continued (during implementation of the SRP) to receive funds under the ARWSS, the National Bank for Agriculture and Rural Development (NABARD), special drought programmes etc. Satya Sai Mission Trust water programmes continue in several parts of AP. All of these resources were used for the creation of water delivery structures according to a supply-led approach. The SRP District Missions had no role in some of these programmes.

The Swajaldhara programme

AP continues to be one of the front-runner states in implementing the SRP, however, the focus and impetus in the SRP, has been limited to implementing the sector reforms and there has been little realistic opportunity for reviewing the SRP and incorporating the lessons learnt in the formulation of new plans. As mentioned above, the maximum number of proposals submitted to the RGNDWM for implementing the earlier proposed Swajaldhara programme were from AP.

The PIP for the Sector Reform Programme clearly called for a move away from the assumedly, 'technocratic, inefficient' rural water supply departments, blamed for the failures of technically and financially sustainable water supplies. However, the Swajaldhara reverts once again to providing an opportunity to PR&RD to make a strong comeback on the rural drinking water scenario by becoming the 'nodal' enabling agency for this programme, which Zilla Parishads and GPs are expected to handle.

As envisaged by the RGNDWM, a complete shift towards Swajaldhara looks difficult. The resource-strapped GoAP borrows money for rural water supply programmes from various financial institutions, such as NABARD. This practice will probably continue and as, constitutionally, water is a state matter, the RGNDWM cannot counter such initiatives. However, the fact that the Swajaldhara (as the SRP) offers 90% grants (as compared with 50% in the ARWSP) could be a 'prime motivation factor' for the state to adopt the reform agenda. What happens later, if PRIs and/or user communities fail to manage and operate schemes, is an issue that is conveniently shelved by both

RGNDWM and the state government.

An analysis of the equity deficiencies in the SRP as operationalised in AP and Swajaldhara guidelines is made in Section *Notions of poverty in the Sector Reform Programme and Swajaldhara*. An analysis of the impacts of the SRP on users, from a poverty perspective, is made in the following chapters.

Conclusion

The process and history of the SRP in AP presents two distinct insights:

- The continued predominance of GoI in the sector in; and
- The continued ignoring of administrative-political overlaps and conflicts in controlling water decisions and interventions..

The SRP and the process towards implementation of the Swajaldhara is pushed from above and, to a large extent, the motivation is the increased grant amount, rather than an innate desire of state institutions to reform. Contrary to what the SRP had hoped to achieve, the process in AP led to the successful re-entry of the rural water supply departments into the drinking water supply business. This illustrates the political capital of the rural drinking water supply institutions in India, as well as the evolving institutional arrangements (solutions) in the new policy designs.

Secondly, the formulation of DRA implementation strategies in India underlines the blatant fashion in which local governments are either brushed aside or taken into consideration. This abstract planning from above ignores the fact that political entities at the ground level have historically influenced water decisions whether they are included in or excluded from project designs. Rather than pitch village or habitation/hamlet committees against established Gram Panchayats (GP) or allow GPs the space to exercise authority to the benefit of a few, it would be better to enable the development of guidelines which allow locale-specific situations to develop to the best interests of users. How this is done will require a very detailed analysis of the structure of GPs and, as research shows below, an analysis of the reasons why certain habitations exercise little control over their political representatives. That gender, caste and class factors fracture the web of users-habitation-village-GP linkages in enabling or stifling the expression of 'demand' are issues that cannot be blatantly ignored.

If the aim of the DRA in placing power in the hands of users is to be achieved in the Swajaldhara programme, the process of reform must pause for serious reflection on the taking forward and addressing of some of the above discrepancies, learnt through the implementation of the SRP.

IV. An overview of the research locales

Nattiobannagaripalli and Tanda habitations – Mandal: Peddamandyam, District : Chittoor

Chittoor has a population of 0.37 million with a density of 247 per km². It is in the Rayalseema region of AP and is divided into 66 revenue mandals. Of the total geographical area, 28.6% is cultivable. Wells and bore-wells (groundwater) provide for about 85% of the irrigation source; tanks 14.5%; and medium irrigation canals built in the recent past on the tributaries of Swarnamukhi and Bahuda rivers contribute a low 0.13%. The district receives an annual rainfall of 908mm compared with the highest state level of 1,159mm in Vizianagaram district (AP Water Vision, 2003).

Nattiobannagaripalli and Tanda, the research locales in Chittoor, are two habitations, located some 10km away from the mandal town, Peddamandyam. Together with five more habitations in the distant vicinity, they make up the Gram Panchayat, or revenue village, also known as Nattiobannagaripalli. Tanda has 64 households and Nattiobannagaripalli 67, making up an approximate population of 655.

Adjacent to one another, the distinction is by name and social grouping. Reddy families predominantly and the backward class, Valmikis, live in Nattiobannagaripalli; the Sugali tribals live in Tanda. There is one Madiga (SC) family whose house appears to be located in no-man's land, as each habitation claims his house is located in the other.

Historically, the socially dominant and resource-rich Reddys engaged the Sugali tribes, who were traditionally hunters and gatherers, as agricultural labourers. SC families from neighbouring villages were also employed as agricultural labourers and artisans. To supplement their livelihood needs, the tribal community reared animals and collected minor forest produce. In return for labour and goods, the tribal and Dalit families were given agricultural produce and, occasionally, clothes and food.

The richer families among the Reddys have historically claimed ownership of both land and water resources in the village. The tribal and Dalit families lived in temporary dwellings and, as agricultural labourers, did not own land. Local social culture determined that these families were not allowed equal access to traditional sources of water (wells and tanks) and official sources¹⁰ (hand-pumps and bore-wells built by the Rural Water Supply department and/or through Gram Panchayat funds). Land redistribution policies and legislation resulted in the transfer of land to those tribals who worked on a share-cropping basis. However, this still leaves landless many among the tribals, as well as the Dalit family, who worked as artisans.

Irrigation schemes introduced in the village in the 1980s, together with access to electricity, brought about a dramatic shift in agricultural practice and people's livelihoods. Those with access to natural and financial resources readily

exchanged the earlier practices of rain-fed subsistence cropping for water-intensive rice cultivation: three croppings per year. The benefits of improved water delivery technology have not been accessible to the poor. To date the very poor, marginal farmers have little or no access to irrigation sources and continue to grow traditional rain-fed crops, with little market value; they are rarely able to sustain family food needs.

Assured economic returns from rice production dramatically increased the divide between landowners and landless agricultural labourers. This has been accentuated because, although economic conditions have changed, there has been little improvement in daily wages of agricultural workers, especially women, which remain a pittance: Rs20/day (US\$1 = around Rs50), much lower than the officially (GoI) designated labour charges¹¹.

Intensified agriculture has resulted in severe demands on available water and other natural resources. The dense forest cover in the surrounding Edalugutta mountains, where tribal families used to access minor forest produce for home use and barter, has decreased as a result of the unsustainable practice of felling trees for firewood (used both locally and sold in the nearby markets) and other exploitation of forest resources. Also, increased cultivation in previously forested areas is thought to have contributed to increased silting of traditional tanks located in the mountain foothills, which were and remain the major water sources for rain-fed agriculture¹² and livestock in the village. Access to the forests is also more difficult nowadays as a result of Forestry Department policing. Women, primarily responsible for fetching fuel wood and fodder, spend much longer on these tasks. Decreased access to fodder and water makes it increasingly difficult to keep livestock. In the peak summer droughts, many landless poor and those dependent on rain-fed agriculture migrate with their cattle in search of fodder and water (see below for case study examples and the impacts at household level).

Social relationships and economic trends are, however, not static. Some of the tribal families, who have managed to find work opportunities in Kuwait, have recently bought land with good water sources from those of the earlier medium-rich Reddys, whose fortunes have declined given the increasing competition for water.

Vemula village – Mandal: Addakal, District: Mahbubnagar

The Mahbubnagar area, named after the Asaf Jahi ruler Mir Mahbub Ali Khan, illustrates the Mughal influence in Andhra Pradesh's history. The second-largest district, it has a population of 3.5 million, but a lower population density

Table 7: Caste and community breakdown of population in Vemula village

Type of community	Type/s of sub-community	Number of families
Scheduled tribes	Yerukalollu	3
Scheduled caste	Madiga	105
	Mala	20
	Byagarollu	10
Backward class	Kuruva	210
	Tenugu	271
	Boyollu	25
	Mytharollu	03
	Baliya	25
Others	Vysyas	05
	Reddys	150
	Muslims	04
	Katike	06

Source: Velegu Report, Adarsh Welfare Society, Addakal, (2004).
Cross checked through participatory analysis and community mapping.

of 190 per km². Four major rivers flow through the area, including Krishna, AP's largest river. However, of the 40% cultivable area, only 8.4% has canal irrigation. This is an obvious issue of discontent among Telengana residents (see Section *Regional variations: water, the pressing agenda of discontent*). Scarce groundwater continues to provide the bulk of irrigation (52%). Low rainfall (754mm), recurring drought conditions, and shallow soil levels contribute to increasing out-migration of Mahbubnagar inhabitants, who constitute the bulk of informal labour in neighbouring districts and states.

Vemula, in contrast with Tanda and Nattiobannagaripalli, is a revenue village, situated 10km from the Addakal mandal of Mahbubnagar district. There are 837 households and a population of approximately 3,245.

Agriculture is the mainstay of the village economy. Castor, pigeon pea, cotton, barley, millet and maize are the major rain-fed crops; rice and groundnut are the major irrigated crops. There are 210 marginal farmers, 218 small farmers and 88 large farmers, cultivating 353.96 hectares, 112.42 hectares and 524.08 hectares respectively. Note the skewed land-ownership patterns in Section *Profile of household categories* below. There are 25 landless in the village.

Distinctly characteristic of Vemula (and adjoining areas) is a visible intensity of water-stress related poverty; there are reports of contract (agricultural and construction) and child labour and a high number of 'poorest' households¹³. Terms and conditions for farm labour contracts are individually defined while construction labourers are paid about Rs800 a month and two meals per day. Farm work requires labour every day of the contract period as and when demanded by the employer; construction involves travel to adjoining districts and states, working every day for around six months at a stretch. However, wages vary according to physical capacity.

Box 14: Construction labour

'As construction labourers, the elderly like us are paid around 3,000 to 4,000 rupees for six months. If we are sick and cannot work, wages are deducted. If treatment is required, the costs are deducted from our wages and, if one of us dies, a message is sent back to the village for relations to come and collect the body. The food cooked collectively for all is generally unpalatable. Unless we carry mud on our heads, from morning to evening, we are not marked present,' says Harijan Pentaiah. Migration is a common phenomenon in Mahbubnagar. 65 year-old Harijan P. remarks that nearly 50% of the village population migrate from November/December to early June. 'I migrated once for seven years and kept my wife in her father's home, as I could not afford to keep her. I could barely manage to send money or earn enough to come home. When I returned, I was told my wife had been very sick and she had died. My son, Mannemkoda, now 20 years old, has done the same. I know he is in Hyderabad, but he has not come home or sent anything to me.' The migration of adults has serious consequences for children, many such being unwanted guests at the homes of slightly better-off relatives. In some cases, 'couples with small children take a young girl from her relatives, to take care of the children and to come to the work site for breast feeding. Such girls are often paid small amounts of money – Rs100–300 for the entire duration.'

Source: Field research: Mr Pentaiah (2003).

This intensity of migration is not visible in Nattiobannagaripalli, where people have been migrating only for the last five years.

The daily agricultural labour wage is Rs50 for men and Rs20 for women, far below official standards – especially for women, despite the official rhetoric of equal wages. For the official Food for Work (see below) and watershed programmes, implemented by the Rural Development department during drought situations, both men and women are paid Rs50. The high incidence of contract labour and child labour has focused a political spotlight onto Vemula and adjoining areas. The Chief Minister visited an adjoining village, Moosapet, last year and this has threatened the practice of child and labour contracts. Consequently, in Vemula, around 50–60 people cancelled their contracts with landlords; of these, 35–40 were children.

Because the government is encouraging children to study and also imposing fines on people who employ children, no child is working with any landlord in this village. Even the adult labourers broke their contracts and are doing other jobs now. It seems they did not pay back their advances. However, landlords did not pressurize for fear of punishment from government. Last year, Dasaripalli, a farmer was fined Rs25,000 for employing children in his cotton seed production plot. The government keeps a strict vigilance on child labour. Families sending children for contract labour are denied benefits like rations from the Public Fair Price shops (Reddy, 2003).

Box 15: A child labourer in Vemula

Bhagyamma, the third of four children of Satyamma and Sreenivasulu, worked as a child labourer for two years. Both her parents are wage labourers and migrate as contract labourers. They have 2.5 acres of land, of which 0.5 acres is irrigated and two are rain-fed. Personal and agricultural demands led them to take several loans, which accumulated to 1.5 lakh (one lakh = 100,000) rupees (including interest). They migrated to Hyderabad a decade back to earn money to clear these loans, taking the two elder children and leaving the younger two with grandparents. The elder daughter has a leg disability and cannot carry heavy things. Initially, she worked as a child labourer with Bhagyamma in the same house in Hyderabad, but later stopped. Bhagyamma was paid Rs1,000/year to clean utensils and sweep the house. Her employer, Raghu, took care of her food, clothes and medicine when she was sick. She was also sent to a nearby school. Initially, her parents stayed near her employer's house and she could come home during festivals. 'But later, released from our contractor's work, we moved on in search of employment and left our daughter.' Bhagyamma started missing her mother and sent messages for her to take her back. But this was not done. She finally requested her employer to send her back to the village. When she returned, her mother and father were not there. She stayed with her grandparents and is now studying in the special school for ex-child labourers and is in the third standard. Her brother, Anjaneyulu, joined her at school.

Bhagyamma, as her name signifies, was lucky. The local dailies in Hyderabad are replete with stories of tortured children working as domestic labourers. Under a GoAP drive, child labour and education for such children is a huge political issue. Vemula has one such school, run by a local NGO, Voluntary Action for Rural Development. The three school teachers and two cooks working here were reluctant to talk, as they had been advised by NGO managers not to give any interviews. Through the missionary zeal of the NGO, girls have been literally taken from cotton fields and brought here, often without parental consent. However, some inmates have genuinely sought this place, having no other refuge. About 100 young girls aged seven to 14, live cooped up in two rooms (some share sleeping spaces in nearby homes) and use two bathing units; there is no latrine. There are three classes and in both school and hostel, a cane is used liberally to 'discipline the girls'.

Source: Field research (2003).

Local institutions in the research locales

In Tanda and Nattiobannagaripalli, the standard answer to questions as to which formal organisations exist is 'the watershed committee'. A few rich Reddy farmers in Nattiobannagaripalli are members of this organisation and, although most landowners among the tribals know about the organisation, none is an elected member. Divided by caste and inequity in distribution of water, both Nattiobannagaripalli and Tanda household (HH) members are distinctly isolated from the Gram Panchayat structure and all formal organisations associated with the Panchayat. As a result, both habitations are only passive recipients of some official programmes implemented by Panchayat Raj institutions. 'A Gram Pradhan will never be selected from amongst us, as we are numerically too small a constituency'. Despite this shared problem, the tribals and the Reddys

have always been at loggerheads politically; this divide has been manipulated generically by the more powerful Reddys who have stronger political connections given the privilege of their caste, which constitutes the bulk of the political leadership locally.

Among themselves, the tribals in Tanda have their own informal leaders. The lineage is patriarchal and hierarchical and men belonging to certain families are the ritual leaders. In changing political contexts, their roles are restricted to conflict management on social, land and water issues, within the tribals and also with the Reddys. Both the two current leaders in Tanda belong to medium-income households (see classification below). Whatever their earlier beliefs and traditions, the Sugali tribals closely follow the social customs and traditions of mainstream Hindus. The emphasis is on patriarchy. Although bride price is paid by tribal men, unlike in the dowry system among the Reddys, the tribal hamlet has a large number of widowed and deserted women, many of them young, who have been sent home by their husband's families. Remarriage for women is considered inappropriate and socially degrading, a culture alien to the tribals and adopted from the traditional Hindus. In contrast, among the Reddys are many young married women, sent back to their parents' home as a result of not meeting increasing dowry demands.

Unlike Tanda and Nattiobannagaripalli, Vemula, being a revenue village in the political spotlight, has a proliferation of formal and informal associations:

- Various welfare schemes and programmes are reported as operational in Vemula, compared with a much smaller number in Tanda and Nattiobannagaripalli. Awareness of government schemes and access to formal institutions, however, varies among different wealth groups of households in Vemula (see Table 9).
- A detailed analysis of these organisations and the access of different categories of households (by wealth) to membership of and benefits from such organisations is made below.

Livelihood practices in the research locales

Livelihood practices for Tanda, Nattiobannagaripalli and Vemula are detailed in tables 10 and 11. Further information on seasonal calendars is provided in Annexes 7A and 7B.

The larger area and higher population density in Vemula present a much wider range of livelihood options. However, as analysis in the following chapter shows, livelihood practices among different wealth groups are broadly the same in Tanda and Nattiobannagaripalli.

Conclusion

Socially and economically, Nattiobannagaripalli and Tanda are smaller variations of Vemula. However, Vemula, being a revenue village, is the centre and heart of all political discussions and decisions and therefore benefits strategically from rural development programmes implemented through

Table 8: Formal and informal organisations in Vemula village and Tanda and Nattiobannagaripalli habitations

Institutions/associations in Vemula	Year of formation in Vemula	In Tanda and Nattiobannagaripalli
Temple committee, informal	1953	+
Primary school	1953	+
Post office	1953	
Nehru Youth club, rural development (RD)	1963	
Milk collection centre, RD	1978	
Middle and high school	1987	
Fish association, RD	1991	
Veterinary hospital, RD	1992	
DWCRA groups, RD	1993	+
Ambedkar association, RD	1993	
Valmiki sangham, RD	1993	
Dairy society, RD	1993	
Water users association, minor irrigation programme	1993	
Mahalaxmi Self Help Groups, APRLP	1996	
Kranthi Youth club, informal	1998	
Anganwadi, RD	1999	
Education committee, RD	1999	+
Watershed committee, watershed, now APRLP Programme	2002	+
Yadav committee, informal	2002	
Primary health centre for pregnancy check-up and delivery, RD	2002	
Mothers committee, RD	2000	
Village organisation under APRLP	2002	
Drought committee, special drought programme	2002	
Rythu mithra (farmers' groups), minor irrigation	2003	

Source: Field research (2004).

Panchayat Raj institutions, whose members live in the same village. However, as analysis below shows, the benefits are not distributed equitably. Tanda and Nattiobannagaripalli, being politically insignificant parts of a larger Gram Panchayat structure, are sidelined in political planning and decision-making at the Panchayat level. This illustrates gaps in the functioning of PRIs and the administrative boundaries and structures of revenue villages which, as

shown below, impacts upon the distribution and allocation of water funds and programmes and has equal potential to affect the implementation of the DRAs when a programme is planned at a GP level (see Swajaldhara model I).

The spectrum of inequity in the distribution of, access to and control of water and other resources is discussed below.

Table 9: Vemula schemes

Schemes	Reported in Vemula	Reported in Tanda and Nattiobannagaripalli
Old-age Pension scheme: The elderly with no assured support are selected by the Gram Panchayat. Each person is paid Rs225 per quarter (Rs75/month) at the block office. Sometimes payment is delayed by a month or so.	✓ 120 families	
Widows' pension scheme: HHs headed by single elderly women are covered. They also get Rs75/month.	✓ 4 families	
Public distribution system (PDS): Rice, kerosene, sugar and wheat are given through fair price shops. Under the Anthyodaya scheme, special ration cards (white) are provided for 'below poverty line' families. Card holders are entitled to subsidised food (rice, normally sold at Rs5.50/kg, at a further subsidised rate of Rs3 kg) and treatment in reputed superspeciality government hospitals.	✓ Many spoke of misuse of the White Ration Card provided by the Gram Panchayat to 20 not-so-poor families.	✓ Most families have a PDS card
Housing schemes under the Prime Minister's Swarnjayanti Grameen Rojgar Yojana programme: Rs10,000 grant in cash and Rs10,000 as food, for building a home.	✓ 125 poor families	✓ Most tribal families covered under this scheme
Drought rice: provided to poorest of the poor for four months @10kgs/family per month during drought/periods of unemployment.	✓ 95 families	
Drought pension: Rs75 paid to families among the elderly, who cannot work for food for four months during drought.	✓ 35 families	
Wool workers pension: Rs75 per month all year paid to families comprising the elderly among the traditional sheep rearing Kuruva, Golla and Sale castes.	✓ 20 families	✓
Individual latrine scheme: Under GoAP's recent Total Sanitation Campaign, each family receives 2.5 quintals rice (equivalent of Rs2,500 subsidy) from the fair price shop, on producing a card issued by the mandal office. Additionally, Gram Pradhan provides sand, bricks, cement rings worth Rs750.	✓ 100 families	
Watershed development programme: Details discussed later.	✓	✓
Food for Work programme: A central government scheme implemented during lean employment periods. Mostly earth works, desilting of tanks etc. are undertaken. Wages are paid in kind.	✓	✓

Table 10: Livelihood practices in Tanda and Nattiobannagaripalli habitations

Poorest¹⁴	Agricultural labour	Opportunities for work and wages have decreased significantly owing to recurring drought in the past three years.
	Firewood collection	The forest area has decreased significantly: involves risk of being caught and fined although most fines are collected unofficially or bribes are paid to avoid paying fines.
	Collecting minor forest produce	Labour-intensive and unproductive (50 paisa per kg of seeds); washed seeds fetch a bit more money but water for washing seeds was not readily available till recently.
	Tamarind, neem, castor seed collection	Limited opportunities, skilled work pays better, but most individuals in this category are not skilled.
	Watershed programme as wage labour	Limited work opportunities; demand (people needing this job) exceeds supply. Time bound (seasonal?) and not reliable.
	Food for work during lean periods	Profitable, but practised sparsely and illegally, as licensed vending requires capital investment and political networks beyond the reach of these HHs.
	Brewing liquor	Marketing is difficult and returns poor. One mat, requiring one day leaf collection from the forest and two days' work sells for Rs6.
	Mat/rope-making	Able, adult and adolescent males often fetch water on demand by rich HHs, mostly used for livestock during drought/summer periods.
Poor	Water collection and carrying	Remuneration is mostly in kind or secures social obligation from these HHs which is traded for favours in different ways.
	Migration	Migration often of whole families to neighbouring areas and states.
	Agricultural labour and farming	In addition to wage labour, the poor work their small land holdings. Returns are poor as they cannot make the required investments. Credit is taken from money lenders at high interest rates.
	Contract rearing of richer people's livestock	More creditworthy than the poorest, these HHs are leased livestock to rear by richer families. All losses borne by the share-cropper. Veterinary facilities not available in the village. Reduced availability of fodder/grass leads to taking the animals long distances for feeding. Drinking water for animals a problem during drought.
	Share-cropping	Land on lease will fetch good yields if there is rain and water is available in sufficient quantity.
	Watershed work Masonry	Work limited in quantity and time. Some skilled workers in this group, but work limited in time and availability.
Middle	Brewing liquor	Illegal and involves risk; may lead to arrest and harassment by police (excise) department; practised more widely than the former group of HHs.
	Migration	Mostly adult males in the family migrate seasonally.
	Agriculture and, to a lesser extent, wage labour on others' fields	Insufficient resources to sink required number of deep bore-wells; cannot compete with richer farmers.
	Livestock	Fodder and water a problem in droughts. Recipients of assistance from official cattle camps. Sometimes animals sold at a loss.
	Backyard poultry	Mostly consumed at home, rarely sold and bartered within the village.
	Kitchen garden	Kitchen gardening is a recent option in Tanda with the increased water supply through the sector reform project, an option that has been exploited mostly by the medium rich.
Rich	Water collection and carrying	As above.
	Shops	There are a couple of small shops that sell tea, soap, matches, cigarettes etc. Of these, the most popular is owned by a tribal male who lived and worked in the Middle East for a while and is often teased for being 'the rich Arab Dalit'.
	Brewing liquor	As will be illustrated below, liquor brewing has picked up with the improved water supply. However, this requires additional implements, which are only available to the better-off families.
	Seasonal migration	Only in extreme drought conditions and only by adult males.
	Agriculture	Rice is the main crop along with other cash crops like groundnut, vegetables and flowers etc. Has always been enough to sustain HH economies.
Rich	Livestock	Self and on lease to others.

Source: Field research (2003–04).

Table 11: Livelihood practices in Vemula

Practice	Approximate number of households associated
Agriculture	
Agriculture	627
Agriculture labour	500
Migration	335
Vegetable cultivation	100
Tamarind picking and sorting	25
Chilli powder unit	1
Flour mill	2
Fruit vending in different seasons	5
Neem seed collection	More than 200 families for 7–14 days in a season.
Livestock	
Sheep rearing	200
Dairy	300
Goat rearing	50
Butchers	3
Water collection (benefits as in Tanda/Nattiobannagaripalli)	20
Non-farm	
Telephone booth	1
Cycle taxi and mechanic	1
Welding machine	1
Auto rickshaw owners/drivers	10
Jeep drivers	4
Hotels	6
Grocery shops	9
Leaf plate making	420 for 3–4 months during leisure time
Tailoring	20
Masonry	10
TV mechanic	1
Teachers, police constables, bus conductors and drivers	10
Bangle store	1
Occupational livelihoods	
Carpentry	3
Potter	8
Blacksmith	1
RMP doctors	4
Basket weaving	3
Washing	6
Fishing	300 for 10–15 days
Toddy shop	2
Goldsmith	2
Barbers	10
Blanket weaving	5–10
Graveyard digging and funeral-related works	10

Source: Field research (2004).

V. Understanding heterogeneity in poverty/livelihoods

Introduction

As discussed in Section A *shift towards a demand responsive approach*, there are certain ambiguities in the interpretation of poverty and heterogeneity in DRA theory:

- Poorer people will require different (lower levels of service, less convenient, less water?) types of domestic water services;
- Water projects have the ability to provide a variety of services to different users within a community;
- In exchange for making ‘different’ contributions, all users will have (equal/different?) voice and choice in project design and access to and control of water delivery systems.

In order to assess these issues in analysing the impact of the currently practised demand responsive approach (DRA) in drinking water management, it is important to build a primary understanding of the links among poverty, livelihoods and water access, use and availability.

This section analyses the links between poverty and livelihoods. The first part provides a qualitative assessment of heterogeneity in poverty and the second half validates this assessment by recording quantitative differentiation in household economies.

Profile of household categories

The nature of the research exercise demanded that households (HHs) and individuals were the focus of analysis. Focus group discussions were conducted with the research community as a whole and as separate groups, arriving at a categorisation of HHs using the livelihood asset pentagon (human, natural, physical, financial and social/political) as a framework for discussion and analysis. Findings illustrate wide heterogeneity in poverty/livelihoods among households in the research locales. Accordingly, HHs in the three research locales are classified into four groups:

- Poorest HHs – These include HHs that are relatively asset-less in the ownership of physical, natural and financial assets. The struggle to cope is determined by access to and reliability of human and social assets;
- Poor HHs – Those with some physical assets – land and livestock – and/or human assets or skills that are of little productive value but enough to secure survival; HH security is still precarious but, in distinct difference to the former group, most HHs in this group are creditworthy;
- Medium-rich HHs – Includes those whose assets and livelihood practices enable a reliable, if not appropriate, safety net, enabling them to ‘work for two days and rest for one’ and ‘eat three meals a day’;
- Rich HHs – These are owners of livelihood-sustaining

assets – land and livestock – and/or who have assured employment, e.g. teachers, post-masters, contractors, other government jobs; have highest access to water, both private and (control of) communal sources; are decision-makers in formal and informal village associations.

From each of the above groups, two to three HHs were taken up in all three research locales as case study households, to analyse in-depth livelihood/poverty (and later water) links. The findings were substantiated by discussion with other HHs in each group.

Profile of the poorest HHs (40% of total population)

The salient characteristics of these HHs are:

- **Live in kutcha (of temporary construction); dilapidated houses**

The houses of the poorest are often kutcha, dilapidated with leaking roofs and (entirely or partly) collapsed walls; starkly empty and devoid of material possessions except the bare minimum basic need goods; often, but not always at the fringe of settlements – this is in some cases a sign of social exclusion. Some of the poorest HHs do have pucca (brick, cement and tin-roofed) houses, provided through the official Swarnajayanti Grameen Rozgar Yojana. However, there are many stories relating to the feasibility of this initiative (see below);

- **Essentially non-landowners**

Traditionally landless and/or marginal owners of small, scattered non-irrigated plots of land, left fallow for several years as a result of increased water scarcity; otherwise, such lands have been forcibly taken over by others (the more powerful in the larger family). Some are recipients of government-distributed land – which again is mostly fallow and of little productive value. Owing to their un-creditworthy status, these HHs are



Livestock: a key livelihood asset in rural AP

Photo © S. Reddy, 2004

Box 16a: The poorest: living on the edge 1

At one extreme of the spectrum, in Vemula village, is Harijan Chinna Bhimanna and his wife, Buchamma. In their late 70s, the couple have both lost their sight, Bhimanna completely and his wife partially. Bhimanna was a cobbler till his leather sandals lost popularity to be completely replaced by readymade footwear. He then worked as an agricultural labourer, together with his wife, on a yearly contract basis. Bhimanna developed a leg problem some 12 years ago and his wife could no longer work after she fractured her leg two years ago. Both of them now walk with the help of sticks. 'We beg; our jhole, munta and katte (bag, metal bowl and stick) are our livelihood assets.'

Bhimanna's house collapsed completely and he now lives in the house of a family who have migrated to Hyderabad. He does not need to pay a rent and can live here till he dies. The roof leaks but Bhimanna does not have the resources for repairs. There used to be electricity but this has been disconnected by the department, owing to non-payment of bills.

It is not that the government has ignored people like Bhimanna but that there is mismatch of needs and benefits. Under the housing scheme for landless Dalits, Bhimanna got some land and money for building a house. He left the construction halfway as he was unable to complete it under the given norms and conditions. Bhimanna was a recipient of the Madiga Manyam scheme, under which four acres of land were distributed to 100 Dalit families 30 years ago. 'But there is no water and what will we do with such land? It is completely infertile and thorny patches have grown.'

Bhimanna gets an old-age pension of Rs75 per month once every quarter. They also have a White Ration Card, which entitles them to eight kg of rice a month at a subsidised rate. The rice lasts for 25 days and the rest of the pension is stretched to meet the barest basic needs. 'We beg throughout the month for some vegetables etc., but effectively, for five days a month, we need to beg to eat a meal a day.' Recently, walking difficulties have made begging a problem. Bhimanna was also sick and bed-ridden for 15 days and in the last month the couple starved for two days. Some neighbours do come and offer food. The strains of surviving have completely exhausted the old couple. '**Dhabbuna chavanna radu – I am tired of living, I wish to die soon**', says Buchamma.

Slightly further up the scale and caste notwithstanding – since they have not started begging – is 27 year-old Rama Reddy and his mother Gongulamma (60) of Nattiobannagaripalli village. Rama Reddy has been an invalid with no movement in either leg from the hips down since a year after his birth. His father died a year before he was born. He has two elder brothers, both of whom have married and now live separately. The family has a small piece of land which remains fallow and the sole earning member for a long time was Rama Reddy's mother, who worked as an agricultural (and non-farm) labourer. Last year she became seriously ill. They mortgaged their last gold ornament for her treatment for Rs3,000. Visits to doctors and medicine cost around Rs4,000 but she has still not recovered and has been unable to go to labour this season. Their sole source of income is around Rs30–40 a week from making mats (made from a jungle leaf that first needs water to soften it) and repairing cots. 'My mother has been really unable to work this season, I will need to start begging soon', says Rama Reddy. One wall of their house has fallen down completely but, as they are not Dalits, they are not easily entitled to a housing loan.

They have no kitchen garden; a scrawny hen lies tied to a pole by a string, as neither Rama nor his mother can chase after it and their house is not fenced. Their dependence on others is high. Having no water in the house and being unable to fetch it they need to ask others for even meagre domestic needs – which amount to about five pots (10 litre capacity) a day – yet they have little to offer in return to those who may help.

'I would like to keep a shop, this is what I could do best, provided somebody would bring me supplies from the market. But how will this ever be possible? I went to Peddamandyam, as they were registering names of the physically handicapped. I have done that, let's see if anything else follows. I need a bicycle lift to cross the two kilometres of kutcha terrain, before I reach the road head. But that is not always available and, often, I walk on my crutches. I fall so many times and it is a humiliating exercise each time. The bus, too, costs money, which makes it difficult for me to travel.'

Agricultural labour, non-farm labour, fuel-wood collection, migration – none of these is a livelihood opportunity for such HHs.

Laund Venkatamma in Vemula uses her Dalit single-woman status as a survival strategy. She is the self-proclaimed priestess of Verangamma temple in the village. Dedicated to Yellamma, goddess of the fields and forests, Venkatamma goes into a trance when Yellamma takes her over. On local festive days – Ugadhi (new year) and Yerokkaku (festival of bullocks and beginning of agricultural activities) – devotees offer food, alcohol (only Dalit women drink alcohol) and saris to Yellamma through Venkatamma. On these days, she cleans and decorates the temple, takes a bath, wears new saris offered to Yellamma and feasts on the food and alcohol. 'The goddess relishes alcohol through me', says Venkatamma.

However, beyond this, Venkatamma lives life on the edge. Slightly blind and in her 70s, her old age pension is inadequate to support her and she needs to borrow money from her daughters on a regular basis. Her house, built under the government support programme, is falling down and she does not have the resources to repair it. Her son was a bonded labourer and the house loan was given under that programme – Vetki Chakiri Vimukti Pathakam (Liberation from Bonded Labour). Subsequently, he migrated to Hyderabad but died a couple of years ago after the consumption of illicitly brewed alcohol. Her small half-acre plot, given by the government, was sold by her husband to his brother's sons, despite the norm that such land cannot be sold. These relatives were giving Rs50 per year for this, but this stopped when her husband died two years ago. Venkatamma survives largely through the support of her daughters. Goddess Yellamma, who helps others in their fields and harvests, does not seem to work miracles for Venkatamma's own fields.



Photo © S. Reddy, 2004

'Pucca' subsidised housing for poor households

- often unable to take the risks required to pursue agriculture;
- **Few or no livestock**
The only livestock are a few poultry. Loaning of animals – primarily goats and sheep – by richer HHs for contract rearing to medium-rich and poor HHs is a common practice in both research locales, but the poorest HHs are not creditworthy (or risk-worthy) for such loans;
- **Wage labour, migration and minor forest produce collection and sale: predominant livelihood options**
These options exist only for those HHs with physically able members;
- **Include the elderly and the disabled who survive on social welfare**
Welfare both officially and from the community is inadequate and unreliable. Harijan Pentiah of Vemula says of the official old age pension scheme 'Kaduuninda thina kunda chavu rakunda' (this pension neither fills our stomach nor lets us die);
- **Socially underprivileged**
Mostly, but not always, these households are Dalits (SCs);
- **Daily meals not assured**
Usually only one nutritionally inadequate meal a day, e.g. rice and salt. If there are very small children, there is no milk for them;
- **Resort to begging**
These HHs are not creditworthy, hence have little access to loans, in cash or kind. The members mostly beg (cooked) food on a regular basis.

The economies of the poorest HHs are precarious and unpredictable, as they lack ownership of key livelihood assets common in rural settings, i.e. land and livestock. Where there is ownership, there are neither the resources nor the implements required to convert physical assets into productive assets. As analysis below shows, the ability to survive hinges on the other two assets – human and social – which determine how families cope in different situations and conditions.

For those who can work, the dominant livelihood strategy is manual wage labour. Agricultural labour is the key, failing which (in droughts, bad months), these HHs resort to non-farm labour (brick-making, earthworks and other construction), fuel-wood collection and, if all this fails, to seasonal migration, a common feature among this group. However, for a significant number of HHs, the only option

for survival is social welfare.

Among the poorest HHs, there is wide diversity in vulnerability. Caste, gender, age and physical ability and disability determine how and why certain individuals fare better or worse. This highlights the traps of assuming homogeneity, either within a community, a small group or a HH. If poverty and livelihoods need to be understood and addressed, the focus of analysis needs to be people and the inter-relationships among assets, resources and institutions.

Profile of the poor HHs (22% of total population)

The salient characteristics of these HHs are:

- **Appropriate housing**
Live mostly in pucca houses; if kutchha, of relatively good construction. Often have kitchen gardens – cultivated, if water is available;
- **Dependent on a primary livelihood asset, physical – such as land – and/or human – skilled labour**
- **Some are marginal farmers**
Most families in this group have one to two acres of land, which in most cases is productive only if there are good rains. None have individual irrigation facilities. Thus most lands lie fallow but some farmers take the occasional risk of growing seasonal crops in predicted good seasons. Good and bad seasons determine HH economy to a large extent. 'If the rains are good, we don't expect help (credit, loans) from others; otherwise we have to do all sorts of work;'
- **Some keep livestock**
Either on lease from richer HHs or personally owned. For HHs rearing livestock – cattle, goats, sheep, poultry etc. – lack of control over appropriate water sources and fodder makes this practice hugely risky. Often, in bad seasons, animals are sold for a fraction of their actual worth;
- **Practise share-cropping**
Several HHs practise leased farming. The terms and conditions of the lease are 50% of the produce (or its approximate worth) to be provided to the landowner; implements and losses are the lease holder's;
- **Traditional and still practising artisans**
Many HHs do not own land and/or livestock, but are traditional artisans like carpenters, weavers, potters etc. There is reduced demand for their skills and sustaining the HH economy has become difficult for many;
- **Traditionally, farm and non-farm wage labour; collection of minor forest produce and migration are secondary coping strategies**
However, increasingly, in both Vemula and Nattiobannagaripalli, these are becoming primary livelihood strategies;
- **Daily meals assured**
'If we work, we can light our stoves' says Cheena Naik of Nattiobannagaripalli. This is in distinct contrast to the poorest group, where work opportunities are not readily available and, even when working, one still cannot eat more than one meal a day;
- **Most children go to primary school**
In many families, the boys also continue with secondary education. A big emphasis is placed on educating children;

Box 16b: The poorest: living on the edge 2

K. Peddanna's household in Nattiobannagaripalli village is definitely better off than the cases studied so far, even though, in the lone Dalit family, he is a social outcast, not desired by the two neighbouring habitations as part of their community. The small, one-room hut is distinctly isolated from the main village complex. Kennemudugn Peddanna migrated to this village around 40 years ago with his wife, son and daughter. He built a small hut on land lying vacant and does not have legal tenure of his homestead. A cobbler by profession, he used to make leather bags and buckets for fetching water and irrigating small fields, and also made and repaired footwear. With improved irrigation facilities there is no longer any demand for leather bags and buckets and now, as footwear is readily available in the market, he is virtually jobless. K. Peddanna's household in Nattiobannagaripalli village is definitely better off than the cases studied so far, even though, in the lone Dalit family, he is a social outcast, not desired by the two neighbouring habitations as part of their community. The small, one-room hut is distinctly isolated from the main village complex. Kennemudugn Peddanna migrated to this village around 40 years ago with his wife, son and daughter. He built a small hut on land lying vacant and does not have legal tenure of his homestead. A cobbler by profession, he used to make leather bags and buckets for fetching water and irrigating small fields, and also made and repaired footwear. With improved irrigation facilities there is no longer any demand for leather bags and buckets and now, as footwear is readily available in the market, he is virtually jobless.

Poor in material assets and made redundant by changing contexts, Peddanna – in comparison to Bhimanna and Rama Reddy (Box 16a) – is richer in human and social assets. There are four physically able adults in his house (his daughter married and went away, but he has a daughter-in-law). This enables them to access labour opportunities as and when available. Also, as the lone Dalit in Nattiobannagaripalli, Peddanna has sole responsibility for skinning all dead cows in the village: the skin he hands over to the owners and the flesh is his to keep or sell. Poor in material assets and made redundant by changing contexts, Peddanna – in comparison to Bhimanna and Rama Reddy – is richer in human and social assets. There are four physically able adults in his house (his daughter married and went away, but he has a daughter-in-law). This enables them to access labour opportunities as and when available. Also, as the lone Dalit in Nattiobannagaripalli, Peddanna has sole responsibility for skinning all dead cows in the village: the skin he hands over to the owners and the flesh is his to keep or sell.

Peddanna also depends on Nagi Reddy, the richest farmer in the village, for whom he provided the maximum services prior to improvements in irrigation techniques. Nagi Reddy gives him occasional loans in return for assured labour – a form of contract labour, advantageous to both. Peddanna would rather have this support than file a legal case against such practices. Apart from labour, there are other obligations to be met by him and his family. Peddanna's younger son, Sidappa, 10 years old, takes Nagi Reddy's cattle for grazing. Peddanna also depends on Nagi Reddy, the richest farmer in the village, for whom he provided the maximum services prior to improvements in irrigation techniques. Nagi Reddy gives him occasional loans in return for assured labour – a form of contract labour, advantageous to both. Peddanna would rather have this support than file a legal case against such practices. Apart from labour, there are other obligations to be met by him and his family. Peddanna's younger son, Sidappa, 10 years old, takes Nagi Reddy's cattle for grazing.

During last year's drought, Peddanna's family was among the first to migrate and the last to come back. Sidappa stopped school then and has since left. As the lone Dalit and released from all strains of maintaining a 'kinship show of dignity', Peddanna is free to beg for food and does this with the tribals and the Reddys. If it was not for medical expenses, Peddanna's family would manage to survive quite well, although, of course, never benefiting beyond survival. Proof of this is the fact that Peddanna's family ration card has been confiscated by the PDS owner, to whose uncle, a doctor, Peddanna owed Rs300. He had taken treatment on loan when he was hospitalised for severe diarrhoea a few years ago. He paid back Rs116, but was told that, taking interest into account, he now owes Rs900. The doctor asked his nephew to confiscate the ration card till the Rs900 was paid back. As a result, Peddanna now buys all his food at full market price. 'I would be better-off, if I had some land or some livestock. I know several others in the village have been given livestock on loan but no one is willing to give me a loan.' During last year's drought, Peddanna's family was among the first to migrate and the last to come back. Sidappa stopped school then and has since left. As the lone Dalit and released from all strains of maintaining a 'kinship show of dignity', Peddanna is free to beg for food and does this with the tribals and the Reddys. If it was not for medical expenses, Peddanna's family would manage to survive quite well, although, of course, never benefiting beyond survival. Proof of this is the fact that Peddanna's family ration card has been confiscated by the PDS owner, to whose uncle, a doctor, Peddanna owed Rs300. He had taken treatment on loan when he was hospitalised for severe diarrhoea a few years ago. He paid back Rs116, but was told that, taking interest into account, he now owes Rs900. The doctor asked his nephew to confiscate the ration card till the Rs900 was paid back. As a result, Peddanna now buys all his food at full market price. 'I would be better-off, if I had some land or some livestock. I know several others in the village have been given livestock on loan but no one is willing to give me a loan.'

However, options available to Peddanna are not available for Rama Reddy or for Chittamma, another member of this group from Nattiobannagaripalli. Chittamma, a young widowed tribal woman with a child of four years, lives with her widowed and aged mother. Chittamma is slightly better off than Rama Reddy, being able to work. However, as a tribal and a woman, there are many obligations that bind and constrain her. She cannot easily migrate or take up non-farm labour opportunities; she needs to maintain her social links by contributing to funerals and marriages among her community. She cannot marry again and find support this way. In Chittamma's case, as for many women, 'kinship burns' more than it sustains (Kabeer and Subrahmanian, 1999).

Source: Field research and analysis (2001–03).

HHs belonging to this category are not resource-rich, but do have some productive assets or marketable skills (in contrast with the former group). A little land, even if only rain-fed, a few livestock, the slightly secure employment of some family member(s) and/or skill in some practice for which there is a need, are some of the safety nets that enable these HHs to survive. However, external or personal factors can effect changes in assets and cause the slip into poverty. The single feature that distinguishes between the poor and the poorest is the ability of the former to raise loans to meet basic needs and to invest in productive outputs.

As for the poorest group, there is wide diversity in vulnerability among these HHs. This is largely due to conditions and contexts, personal or external, which render their sparse assets either redundant or unproductive. A variety of coping strategies is adopted temporarily, among which taking credit is one key strategy. The attempt to diversify livelihoods and to secure HH well-being, both in the short and long-term is evident. Education is perceived as a key long-term investment.

Profile of the medium-rich HHs (13% of total population)

HHs belonging to this group are definitely 'one-up' on the ladder of a secure livelihood. Their salient features are:

- **Permanent (pucca) houses**
Built with private resources, loans (if taken) have been repaid. Most houses have individual water and electricity connections; own physical assets, like bullock carts, bicycles, sometimes motorcycles, TV, fans, radios; wear good clothes and ornaments (some gold);
- **Diversified livelihoods**
Most are small farmers: three to five acres of land, of which half to two acres are irrigated by bore-wells shared within an extended family; assured kharif agricultural return from irrigated fields; able to risk cultivation in dry (rain-fed) lands except in peak drought situations. Many HHs practise leased farming: the terms and conditions – 50% of the produce (or its approximate worth) to the landowner; implements and losses the lease holder's to bear. 'In a good year, we can get 10 bags of paddy, 10 bags of groundnut and clear all our debts;'
Most have livestock: mostly bullocks for ploughing (their own lands), a few cows for milk, and hens. Animal produce seldom sold. Goats and sheep kept by a few as livelihood assets;
Part-time non-agricultural professions: many men have travelled outside the village for training purposes, have migrated and/or are aspirant 'immigrants' (as far as the Middle East). In the village, many men are employed as part-time plumbers, electricians, masons, tailors, small tea-shop keepers etc. Women and men are engaged in firewood and MFP collection during non-agricultural seasons;
- **Complete daily meals assured**
Three times a day; the 'pinch' of not eating appropriately is felt only in severe drought situations or when personal circumstances have led to large debts;
- **Notable emphasis placed on education and on diversifying livelihoods**

Most children have studied up to higher secondary levels; there is knowledge of alternative careers and ability to send – mostly – sons for training and higher education outside the village;

- **Loans taken but not always for survival needs**
Loans are taken regularly for weddings (dowry for girls) and often for prolonged and serious illness etc;
- **Fluctuating livelihood security**
Many families reported that, as a result of drought-like conditions from 2000 onwards, they started working as farm and non-farm wage labourers and even migrated for wage labour – for the first time in their lives (in 2002). A few families have been migrants for a longer time. Experiences of migration varied from good to bad. Better-off HHs would not like to go again; HHs closer to being poor felt migration was a better option than risky farming.

These families also have better control over personal resources and are able to secure resource productivity. Most HHs have diverse assets and diversified livelihoods. Moving away from coping with survival, they are often able to invest in a sustained and meaningful education for children. This in turn opens the option of multiple livelihood opportunities. This was also reported in a longitudinal (1975–2001) livelihood study done by an ODI team in Mahbubnagar (Deb et al., 2002).

Despite a commonality in livelihood practices, there is – as in other groups – variation in HH economies. Some, like Bikanna and his family, are on the borderline between medium rich and poor. Others are distinctly medium rich. An increased level of contact and relationships with local political leaders either through caste, kin or other social networks help secure better access to official programmes and benefits, enabling opportunities for livelihoods diversification and security, as in the case of Basappa. This reiterates the commonly held view of political manipulation of official programmes at the village level. What is commonly observed is that expenditure on health influences the HH economy significantly. These HHs also need to maintain a certain 'social dignity' which requires expenditure in issues identified as socially relevant. This creates a dent in HH economies: for example, focus group discussions with this group revealed the issue of dowry more prominently than among others.

Profile of the rich HHs (24% of total population)

- **Look better-off – permanent housing, good clothes**
All families have permanent houses built with their own resources (none is a recipient of grants); (comparatively) large amounts of money spent on house construction; HH goods – TV, fans, radios, phones, bullock carts, bicycles, motorcycles; also mechanised agricultural inputs like tractors, maize threshing machines; good (ironed) clothes and ornaments (some gold);
- **Predominantly agrarian**
Most are farmers with land in excess of 20 acres and practise irrigated cultivation in more than 10 acres (few exceptions, for example pastoralists with smaller irrigated plots). Many HHs have leased some land for share-

Box 17: The poor

At one end of the spectrum are HHs endowed with assets – physical and human – that were formerly productive but are currently redundant and/or of little productive value.

Vadla Janakamma and Vadla Krishnaiah of Vemula village belong to this group. Krishnaiah is a skilled carpenter by profession and, till a few years ago, he received orders from as far away as Hyderabad. Two years ago, he had a stroke and his left hand does not work any more. Janakamma now goes for wage labour. Additionally, she receives support from her married daughters and their husbands. They have a son, Bhisma Chary, who is 12 years old and studying in the eighth standard. Their younger daughter was also studying but after her father's accident she stopped and now works in a tailoring shop run by her elder sister in Hyderabad.

Their *pucca* house has electricity but the family finds it increasingly difficult to pay the Rs 125/month bill. They own no land or livestock, as the traditional practice was that farmers gave grain to artisans. Krishnaiah is desperate to get treatment for his hand. A Kerala ayurvedic doctor did begin to treat him and his hand did start improving, but he could not afford the Rs 15,000 that was quoted for the complete treatment. He tried finding other jobs but has had no success. The family has taken out many loans, mostly for health needs, and are weighed down by the burden of repayments. Yet, because of their earlier status, they still need to maintain a certain social dignity in the community. Janakamma took another loan recently to celebrate the child delivery ceremony of her elder daughter, although she could barely afford to do this.

Myasa Ramanamma Reddy is a 50 year-old widow living alone in Nattiobannagaripalli. She works as an agricultural labourer. Her only son, Ravindra, 22, works as a weaver in Peddamandam. They have an acre of non-irrigated land where they used to grow groundnut with a yield of almost five quintals. The field has been fallow for more than two years. 'There is simply not enough water for me to practise farming.' Ravindra does not send any money home. 'He earns just enough to keep his family going and he took a loan from his employer for my husband's funeral and a part of his salary goes into paying that. But if things are very bad with me, I can ask him for some money. What I earn is just enough to provide me two meals a day.'

Ramanamma and her husband were given a house loan through a government scheme, but they had to sell this (illegally) when the rains failed them for four years and they were in debt to loans taken to practise farming. This was when they decided to send Ravindra to the city. They do not have electricity, which is there in many HHs in this category. Two months after her husband died, Ramanamma was given a PDS card; however, after a few months, the fair price shop dealer stopped giving any rations, saying the card existed in the name of her husband and Ramanamma was not eligible. Unable to counter this, Ramanamma buys rice at the market price. This is her major expense.

The HHs of both Janakamma and Ramanamma survive on manual wage labour and social networks. While they still command some respect in the community, on the strength of which they can take loans, they are rapidly slipping into poverty. Lack of health care is what is feared most. This in most cases eats away previous savings. But both HHs are hopeful: Krishnaiah hopes his hand will heal or that he will find another job and Ramanamma hopes for a good season, when she will attempt to take another loan to grow groundnuts.

65 year-old Mythari Kona Venkanna and his wife, Ningamma, belonging to the weaver community, are skilled practising weavers. They make bamboo baskets, sieves, fans, windows etc., which are in occasional demand in Vemula village. 'Earlier, there were 13 families practising this trade, we had formed a society and the block office used to supply raw materials. Now, that has all stopped. Most of the families have migrated. I have to go all the way to Pebber, some 15km away, to procure bamboo. I pay a man to help me with this. There is no support for us in this profession.' During the peak season, harvest period and Diwali (October/November), they earn around Rs 1,000 in 15 days, of which 50% is profit. Increasing age and ill health are what the couple fear. 'We have just one skill. As long as we are healthy, we can survive; otherwise, we have to simply lie down and sleep hungry.' This includes the occupational hazard of splitting bamboo into thin strips, which is becoming increasingly difficult as they are both developing vision problems. However, their skills and their ability to earn a little ensure that they are creditworthy. The couple have borrowed Rs 600 at 3% interest for some basic household needs and are confident that they can pay it back in time.

At the other end of the spectrum in Nattiobannagaripalli are the lesser poor, like M Kotha Reddappa Nayak, whose assets are productive. Kotha Reddappa moved to Tanda some nine years ago, with his wife, daughter and two sons, following a dispute with his brothers. He bought a small homestead for Rs 2,700 and built a small hut and animal shed. He has no agricultural land but has a pair of bullocks. He buys bullocks (for around Rs 12,000 a pair) just before the harvesting period and sells them after the work season is over. He has to take a loan for this, payable at interest of 24% per annum. Sometimes, he loses money in this transaction, but this is better than feeding and taking care of the animals over the drought period. Lack of fodder and water over the dry summer months is a huge problem. 'Last year I was able to keep my animals because the government provided fodder and water for the livestock. I had to move to the nearby Panchayat town for this during the entire period. I took a loan of Rs 2,000 and bought some rice, chillies and salt for the family and left.' For the past few years, Kotha Reddappa has been migrating, but often alone.

He also has some goats, on loan from a richer farmer. He had to pay for this and, at the end of the loan period, the goats are shared. However, he remains responsible for keeping these animals and, in case of death, he has to pay back the total value of the animals procured. He is able to sell the manure (one tractor load fetches Rs 500). He also works as an agricultural labourer whenever possible. Kotha Reddappa's two sons go to a government residential school, fully subsidised for tribal and scheduled caste students. His daughter, Sunita, stopped studying after primary school and helps graze the goats. The major spending of this HH is on health. Kotha Reddappa's wife, Laxmi Devi, has been sick for several years. 'She is unable to work as she gets fever and pain in her body every few days. This year alone we have spent around Rs 7,000 so far on her treatment.'

If things go well and there is no illness, HHs like Kothareddappa's are able to survive well. But, this not being the case, many HHs in this group survive on their ability to take and recycle loans. 'We take loans from one person and then from another to pay back this loan and so on...' Loans are taken for healthcare, marriages, funerals etc. and payment with interest eats into HH livelihood security. For the poor, livelihoods are slightly more predictable, but still not secure. A small unanticipated happening throws these HHs off balance and pushes them down to the poorest category.

Source: Field research and analysis (2001–03).

Box 18: Medium rich

Goullola Bikkanna, of Vemula village, lies at the bottom end of the medium poor. He predominantly practises farming on his five acres, of which two are irrigated by a bore-well, drilled two years ago. That cost him Rs60,000 and costs around Rs1,000–1,500 every year for repairs. 'Last year, there was no water, so we worked as wage labourers.'

His is one of the temporary houses, without electricity or individual water connection. He has two bullocks, which he uses in his fields; he would have liked to buy more cows for milk production but there is no money. His elder son, Veerana, who works in Hyderabad, is able to send around Rs1,000 every alternate month. He has two daughters, one of whom he continues to support even though she is married. Sayamma, the elder daughter, and her husband, Kondanna, have migrated to live with Bikkanna as a result of water problems in their village, bringing with them their herd of 50 sheep and goats.

His ration card has not been updated despite changes in his family's size. He claims that he is rather isolated in the village, 'We were not here in the village for a decade as I was working in Hyderabad as a wage labourer and because of this I have few contacts.' Bikkanna has quite a number of loans: he has borrowed Rs40,000 and Rs20,000 from private money lenders to whom interest is payable. To clear these loans, he applied for a government loan for buying sheep (as a member of the Polkampally cooperative society). He mortgaged his land ownership papers for this and got Rs18,000 of the total sanctioned amount, Rs21,000. The rest was 'processing fees', as explained to him by officials. However, he did not buy sheep and used this money to pay off other creditors. 'When the officials came to assess, I showed the sheep of another person and paid him and the official for getting this verified.' His wife, Narasamma, is not a member of any Mahalaxmi group. 'Life was better in Hyderabad. I have sunk into debt after coming back. But I am old and can no longer cope with labour demands in the city.'

Peda Reddappa Nayak (40) of Nattiobannagaripalli, better-off than Bikkanna, is still on the lower side of the medium rich. He has quarter of an acre of land irrigated with a bore-well which he shares with others. He also has two acres of rain-fed land, on which he currently grows groundnuts. He has his own bullocks.

Peda Reddappa Naik is involved in brewing arrack, which is sold at Rs20/litre. His wife makes mats in her spare time, which he says provides the money for luxuries, like betel nut and *beedis* (hand-rolled cigarettes). In non-agricultural seasons, he collects firewood from the forest and transports it to market on his bullock cart. Often, he employs wage labourers for this work. His wife, Nagamma, and he also earned around Rs1,500 last year collecting the bark of the *Ryala* tree, which has medicinal value. The couple are willing to work hard in order to allow the children to continue their education. His two sons study outside the village and the elder is doing graduate studies. He took a loan for his daughter's marriage, which he is still paying. Because of that, he does some agricultural labour occasionally.

52 year-old Yata Basappa in Vemula village has three acres of land, of which 0.5 acres is irrigated by a shared bore-well. A traditionally well-to-do family, their house was constructed some 100 years ago and was recently renovated for Rs40,000. They have an individual water connection and electricity. Only one of Basappa's three sons has pursued higher education – the middle son, Murali, is in an intermediate school in Mahbubnagar. This was because the others did not show an interest in studying. The family has a pair of bullocks but for several years, since the onset of water scarcity, they have sold the animals at drought times and bought new ones in June, just before or after the first rains. He would like to keep more livestock and not have to 'distress-sell' but this is not possible because of the lack of water and fodder in summer. Not very resource-rich, Basappa nevertheless has good political contacts: the previous Sarpanch is a family friend and he also knows the MLA well. These contacts have enabled his son, Satyanarayanna, to be elected as Vice-Sarpanch and this 'helps us serve the poor in Vemula', says Basappa wryly. Officially, there is no remuneration for this work but informal gains are plenty.

These contacts also mean that Basappa is well aware of the various development programmes available in Vemula and can access them. He is a member of the farmers' market group, Rythu Mithra, and the watershed committee. His wife, Bamma, is a member of the APRLP-supported Mahalaxmi group and this helps in obtaining loans at low interest rates. His daughter, Jayamma, has polio-affected legs but 'we educated her till class 12, so she can access government-supported schemes and employment for the physically handicapped. At the moment, she works as a tailor and earns around Rs150/month.'

Basappa's half-acre irrigated field does not yield enough to sustain the family. He claims that wage labour is done by his wife, Satyanarayanna and the middle son, Mallesha. Satyanarayanna's connections as the Vice Sarpanch must boost the HH economy to some extent. The family have taken a couple of loans, from the Mahalaxmi group and the bank, mainly for medical treatments. All of these have been paid back.

Venkataramana Reddy of Nattiobannagaripalli is a young man of 27 with diverse skills. He practises farming with his father and uncle on an irrigated shared three-acre landholding. They have their own bore-well, which was, until last year, yielding enough water for rice cultivation in all the fields. Additionally, they have some fields where they practise rain-fed agriculture. 'We have grown some groundnuts there. Yes, we can afford to take the risk of planting crops in rain-fed fields.' After school, he trained as a mason, plumber and electrician in a polytechnic. He earns from practising all these skills in the habitation and nearby villages. Some years ago, he went to Kuwait; as a result of several problems he had to return without earning any money. The loan that he took for this trip has been paid back. At home, he has enough cattle to plough his fields. His young wife does not go out for agricultural labour and they are definitely going to educate their three young children.

However, Venkataramana still has to take loans. A major financial burden on the family is the loan taken for the marriage and dowry demands for his young sister, 18 year-old Laxmamma. Married a year ago, she has been returned home by her in-laws for not bringing the promised Rs50,000 dowry. Venkataramana was sent to Kuwait by his father for this reason but he did not fare well. He was supposed to balance this out in his marriage but he had a love marriage and did not press his wife's family for a dowry. Because of this, he has been cast out by his father; there are thus two kitchens in the same house.

Source: Field research and analysis (2001–03).

Box 19: The rich

In Vemula village, 55 year-old Dyavari Buchanna is the functional patriarch of his nine-member (excluding children) HH, which is somewhat different from most HHs in this category. Dyavari, in contrast with other members of this group (predominantly farmers), is a pastoralist. He identifies the daily task of looking after more than 200 sheep as having prevented his two middle sons from attending school. His eldest son studied to intermediate level and his youngest son is in the tenth standard. His 75 year-old mother, Sayamma, who lives with him, his wife, Gopamma, and his two daughters-in-law are all illiterate. The house was built some 18 years ago and the family spend around Rs2,000/year for repairs. They have both water and electricity connections at home.

Buchanna has six acres of land, of which an acre is irrigated and the rest rain-fed. The land did not traditionally belong to the family but was bought by him some 30 years ago, primarily to provide grazing for the sheep. The family have a bore-well, drilled some 23 years ago at a cost of Rs20,000. Most of the produce is consumed at home except for castor, which is sold. Last year the water yield was very low and there was no productive gain. Buchanna owns a tractor, financed through a bank loan, and, when there is no work at home, one of his sons drives the tractor on a hire basis in Hyderabad.

Buchanna's major worries are inadequate water for his sheep. 'In the summer months, we have to migrate and move along with the animals to where water and fodder can be found. This is done in turns by the large family. The water from our bore-well is not enough and it is not possible to take such a large number of sheep to others' bore-wells. Every year we sell about 25 sheep, as well as wool and meat. Last year we lost 60 sheep to *Moothi rogam* (Foot and Mouth). Last year was the worst for us in several years. There is no government assistance or support for sheep farmers.'

The bank loan on the tractor is worrying for the family. As expected, hiring opportunities are sparse and they are only able to make a net profit of about Rs5,000 annually, which does not even cover the loan payments. Sayamma feels the tractor should be sold but for Buchanna this is a status issue: he is not willing to concede easily.

Mude Narasimulu Nayak in Tanda and his wife, Sonki Bai, represent another variation in this category. 'We were both bonded labourers and Narasimulu ended his contract only three years ago. We have worked hard and invested all our resources in educating our three children, two sons and a daughter. All three of them are primary school teachers (thanks to the preferential reservation for the STs).' This is an upwardly mobile family: they have bought a plot of land in the block headquarters with the collective incomes of the two sons. Narasimulu now works as a tractor driver for a rich farmer. The family have three plots of land in the village, with two *pucca* houses and one plot used now as a kitchen garden. They received housing grants. There is an individual water connection; Narasimulu is in fact the head of the HWSC. The family also has electricity.

Narasimulu has 5.25 acres of land, which he was given during the time of land distribution. Of this, 0.25 acres is tank-irrigated and they grow groundnut in the drylands. Sonki Bai sometimes goes to do agricultural labour but mostly she works in her own field and in her daughter's fields.

On the other side of the village, in Nattiobannagaripalli, Krishna Reddy's HH, consisting of two sons, three daughters and his wife, is the richest family in the village. Two of the daughters have been married. His two youngest children no longer study. Krishna Reddy's elder brother lives next door with his parents. His son failed his 10th board exams and Narasimulu feels it is better for him to look after the fields. His daughter studied up to eighth standard and no longer attends school. 'It is not important for her to study, we have to marry her anyway.' He owns 20 acres of land, of which six are irrigated through tank irrigation and two through personal bore-wells. The rest are scattered patches of rain-fed fields. He has two bullocks and 20 cows which are kept for ploughing and, mainly, manure. He owns 50 sheep which he has loaned for shared rearing to three families in Tanda. He has never had to buy rice and in a good year is able to sell up to 75 bags, which fetches around Rs75,000. He grows several other crops for both subsistence use and sale and his household income and expenses are varied. His is one of the few houses in the village where clothes for washing are collected by a washerman; clothes are ironed for everyday wear. Individuals from poorer households are paid to collect firewood and, to a lesser extent, water (no individual source facility in the Reddy HH) for domestic use. Krishna Reddy also attends and settles village land disputes and commands obligation from many in both habitations.

Nagi Reddy's family is the richest in Vemula village. His 14-member HH includes four adult sons, three of whom are in secure employment (in the army, the police and as a government bus driver). All his sons and his one daughter are married and they have four grandchildren in the house, all of whom are studying. Nagi Reddy's house is large – he spent more than Rs200,000 on the construction. They have both electricity and an individual water connection. Nagi Reddy owns a massive 52 acres of land, of which 10 acres is grazing land, 18 acres drylands and the rest irrigated through the tank system and the bore-well. He has drilled 21 wells, spending 2.5 lakh, and has five functional bore-wells. Much of the crop is sold. The family have four bullocks, four buffaloes and eight cows. The milk is both sold and consumed. He also has a tractor, bought on a bank mortgage. Nagi Reddy's eldest granddaughter is 16 years old and wants to take the joint entrance examinations for entry to medical and/or engineering school and the family is investing a significant amount of money for this – as seen below. Nagi Reddy is not politically active but, to be sure, little happens in Vemula without his approval.

Source: Field research and analysis (2001–03).



Village market: fruits, vegetables, spices.

Photo © S. Reddy, 2004

- cropping;
- **Productive agriculture**
Access to water is assured, through privately owned bore-wells as well as preferential access to communal water sources, like tanks. Investment in bore-wells is not a huge problem. One farmer, Nagi Reddy, drilled 21 bores before he located water in two sites. No constraints on buying seed, fertilisers, pesticides; better access to markets through assured transport;
- **Some HHs depend on assured employment**
These include those who were initially small and/or marginal farmers and who, by virtue of securing assured employment, have moved to the rich category. For some of these, agriculture practice is on the decrease; a little farming is still practised, mostly for HH consumption;
- **Adequate livestock**
Most have adequate livestock for use in the fields. However, owing to drought, a few families have replaced animals for ploughing with tractors; many keep cows for milk, which is both consumed and sold. Many HHs keep large numbers of sheep and goats, some of which are loaned to others in the village;
- **A rich balanced diet at all times**
There is never a food crisis for these families;
- **Farming – not education – a priority for the essentially agrarian HHs**
While the importance of assured employment was recognised, it was clearly underlined that ‘land’ sustains the families; it was emphasised that at least one or two ‘sons’ continued to focus on practising agriculture. This was also, as pointed out, because ‘our children cannot compete with urban children, as the education facilities here are not good and with this and the reservation policies for the backward classes, securing assured employment is difficult if not impossible’. However, most men in the family are literate and, while elderly women are not, children – both girls and boys – have studied up to primary, if not secondary, levels;
- **Money made through taking and giving loans**
Bank loans on low interest rates are assured by mortgaging land and house(s) as collateral. This not only allows enhanced productivity of land and livestock but also enables these HHs to give loans to others in the village for much higher interest rates, or to give loans to secure contract labour;
- **No wage labour**
Most HHs in this category employ wage labourers and do not provide labour. Exceptions are helping in others’

fields, which is mutually practised.

At the top of the ladder, the richer HHs are indeed resource-rich – from the comparative view point of the whole community. Those HHs who have diverse livelihoods (secure permanent employment, farming and/or as pastoralists) are the most secure. These are the money lenders, the leaders, decision-makers and, more importantly, livelihood opportunity providers, especially for the poorest and poor families in the village. For most of these HHs, water for productive use is an assured and secure asset. They are also rich from a human and social perspective. They consist usually of large, extended families with dependable networks both within and beyond the village.

There are the greater and the lesser ‘rich’ in both Vemula and Nattibannagaripalli but for all HHs livelihood security is assured. The distinct characteristics of these HHs are assured access to formal credit institutions; assured water for farming, even if for only HH consumption needs; presence in or influence upon decision-making institutions in the community; and the fact that they do not provide wage labour.

Differences in household economies – a comparative analysis

Various methods were used to record and research household income and expenses. Initially, structured interviews were conducted with case study HHs, assessing weekly market day and other expenses to build up weekly spending patterns. Seasonal calendars, starting with the current month, were used to initiate discussion on household income. The rich and medium-rich HHs were able to recall expenses and income on a month-by-month basis. However, the poor and, particularly, the poorest HHs could recall neither expenses nor incomes beyond a month at most. This verified the research hypothesis that HH economies fluctuate and are unpredictable for those with insecure livelihoods. It is important to note here that, in DRA water interventions in practice, people’s ability and willingness to pay for improved water sources is recorded (if at all) as a one-off exercise, determined in the set period of the project cycle, showing little awareness and consideration of seasonal fluctuations in rural economies (for instance, harvest and lean periods).

Consequently, to triangulate and validate weak recall capacities, financial dairies (Hulme, 2003) were maintained to record a three-month period of HH income and expenses in case study HHs in one research locale. The findings below represent an extrapolation from the various analyses.

The magnitude of differences in total income and expenses between the rich and poorest households is staggering, as is the wide range of production strategies and expenses of different households. Contrary to the popular assumption that all households can contribute ‘at least 5 per cent of their income¹⁵’, this research shows that many of the poorest households run on a deficit income and thus have zero capacity to invest in improved basic services. Additionally, analysis in Section 6 *Water: issues, concerns*

and the situation in the research locales shows that the poorest HHs are often unable to capitalise readily on available water (abundant water provided for domestic use) for productive gains as can those HHs that are asset rich.

Importantly, and as illustrated above, HHs placed in one group cannot be neatly categorised: even within one wealth category there is a wide variation among HH economies. The variation is represented in this study by creating two sub-categories of households in each of the four identified wealth categories. The same observation applies to the distinctions between categories, which are almost blurred. A more realistic representation of HH economies would thus be a linear progression in HH economies.

Table 12 and Figure 6 provide a comparison of approximate annual household incomes and expenses. Figures 7a, 7b, 8a, 8b, 9a, 9b, 10a and 10b show the breakdown of household income and expenses for different wealth groups.

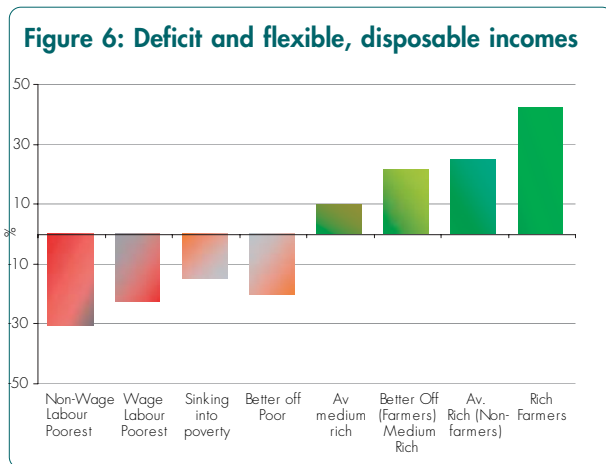
Conclusion

The figures and analyses show that poorest and poor HHs function on deficit budgets. The poorest cope with this deficit by begging for food and money; the poor, being creditworthy, borrow money at high interest rates. Continual drought in the research locales over the past two to three years has magnified the deficit in HH economies. However, it should be noted that the analyses drew similarities with

the ODI longitudinal study conducted in Mahbubnagar district (Deb et al., 2002).

Beyond this, the figures illustrate that:

- Expenses on health are high for most wealth income groups and cause a significant dent in HH economies. In practical terms, this implies very low incomes for the poorest and a disproportionate amount of this spent on health expenses which yield, as revealed above, far from satisfactory outcomes. Expense on health issues increases proportionately with increased income, which also signifies increased ability to attend to health problems and to access more expensive and better health care. However, this is a generic overview and the fact that HH decisions on expenditure are influenced by gender and other differentials cannot be overlooked;
- As HH wealth increases, the proportion of expenditure devoted to food decreases significantly. This signifies the increased ownership of land and the potential to make this asset productive;
- Similarly, HH buying-power to satisfy non-food needs increases in line with improved income;
- Diversified sources of income represent a particular key to the success of middle-income HHs. The widespread adoption of this practice suggests that diversification of livelihoods happens by conscious choice when HH basic needs are more or less secure;
- For the richest HHs, irrigated agriculture is the predominant source of income, signifying access to water (groundwater through bore-wells) even in drought situations.



Finally, it is important to point out that in the research locales, the poorest and the poor made up 62% of the total population. Thus, these groups' deficit HH incomes and low and unpredictable capacity to pay (for basic services) were not exceptions and/or anecdotal. Equally, for most HHs, incomes fluctuate in good times and bad. These issues can be broadly taken as true for most villages in AP¹⁶. These are the key issues that need to be taken into account in designing and implementing DRA-type approaches.

Table 12: Annual incomes and expenses (Rs)

Categories	Poorest		Poor		Medium rich		Rich		
	Sub-categories	Non-wage labour (physically disabled, elderly)	Wage-labour (physically able to work)	Sinking into poverty	The better-off poor	The average medium rich	The better-off medium rich	The average rich	The Better-off Rich
Total income		1,300	5,481	5,500	14,050	25,637	29,200	25,410	125,000
Total expenses		1,700	6,028	6,450	17,500	25,140*	22,940	22,150	72,141

* The figures were high due to one case study HH's significant expenditure on healthcare

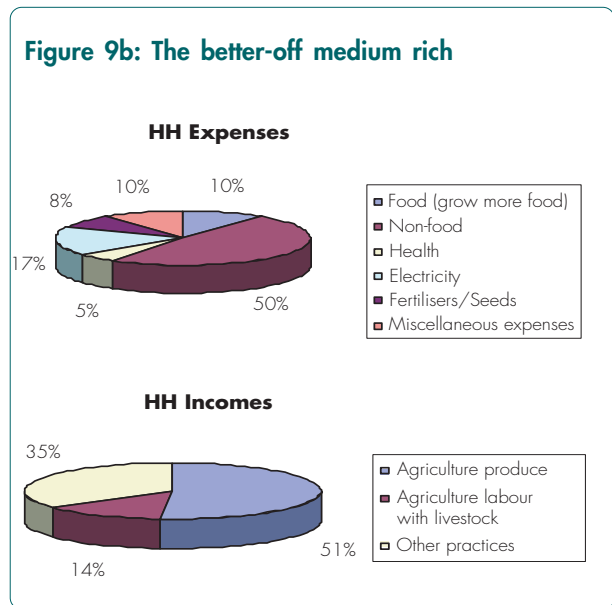
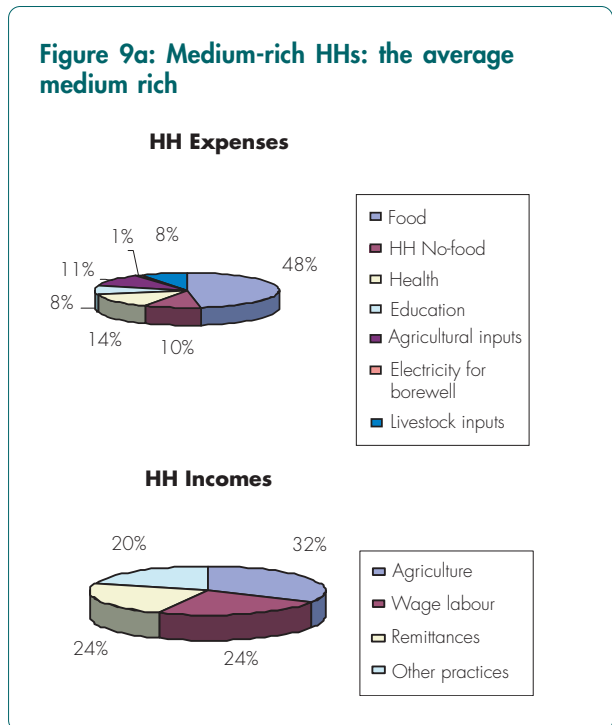
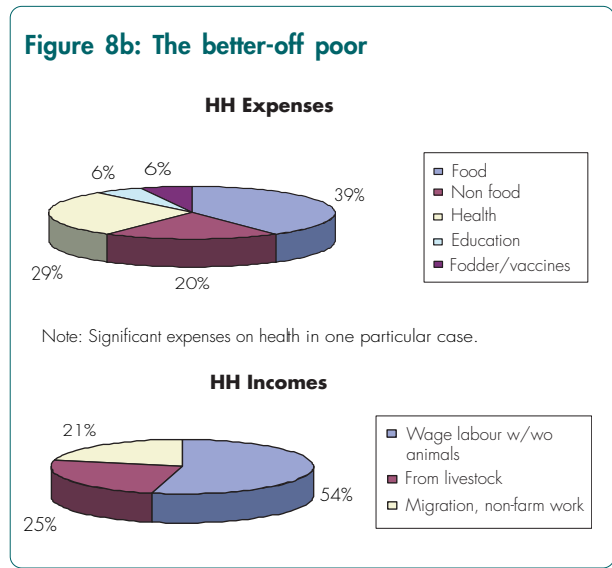
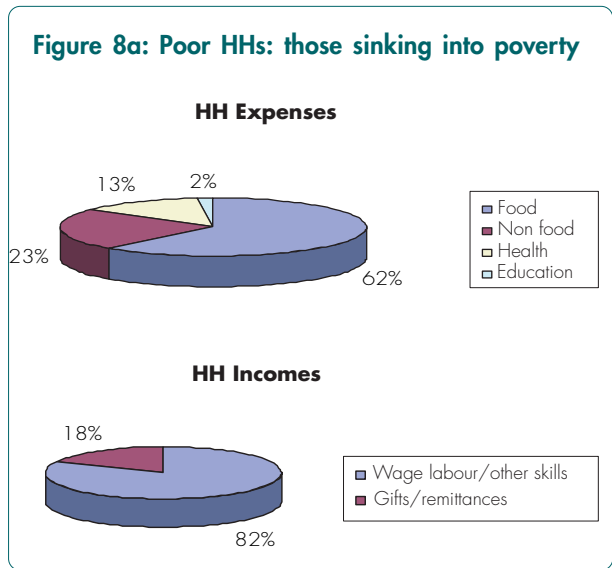
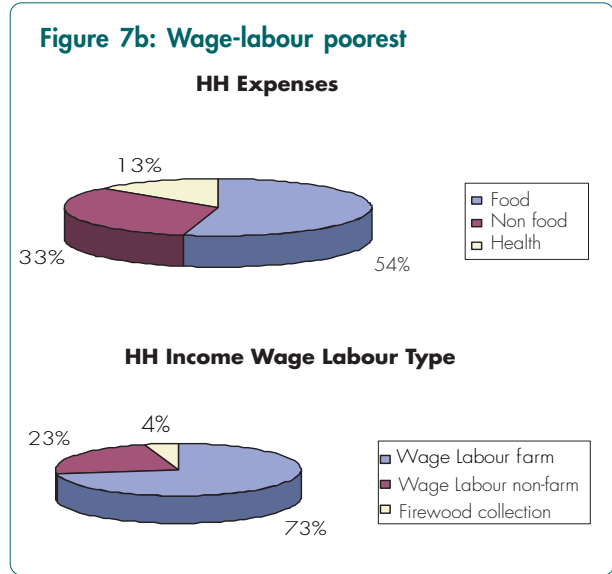
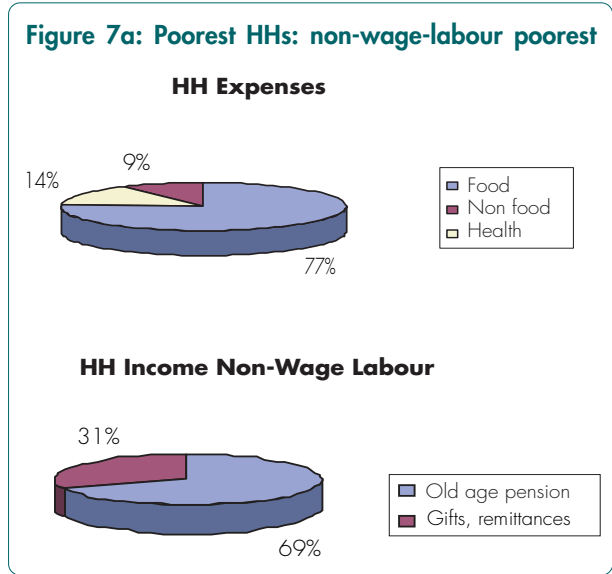


Figure 10a: Rich HHs: the average rich (essentially non-farmers)

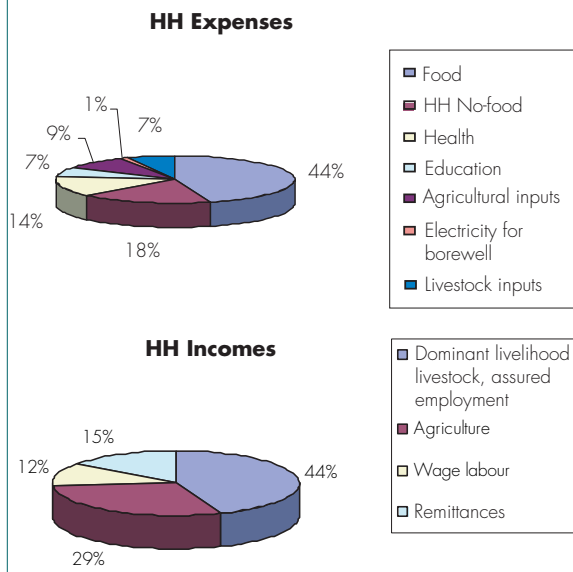
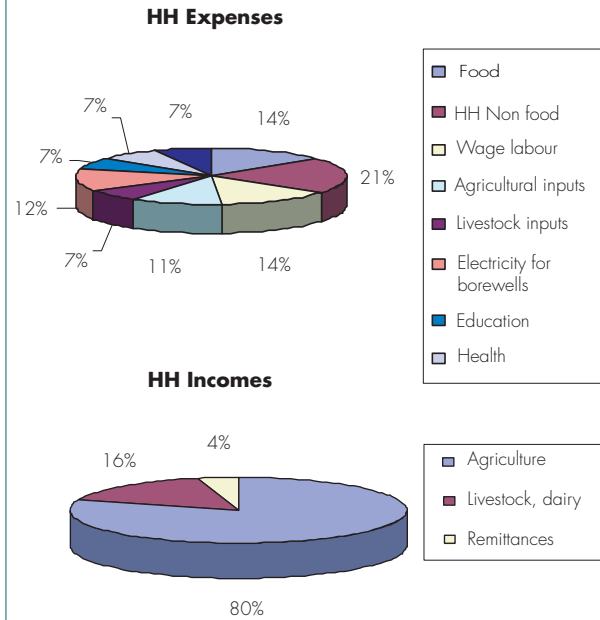


Figure 10b :The rich (essentially farmers)



VI. Water: issues, concerns and the situation in the research locales

Introduction

This chapter builds on the analysis of poverty–livelihood links in Section *Understanding heterogeneity in poverty/livelihoods*, taking it forward to explore the intricate connections among poverty, livelihood issues and access to and control over water resources and domestic water delivery systems.

In Vemula village, water has always been an issue of dissent. As mentioned earlier, inequity in access to and availability of water is clearly visible. There is a rice mill just at the entrance to Vemula village and, as analysis below shows, a daily scarcity of water to meet basic domestic needs among poorest and poor families. This shows the conflict among different sectoral uses as well as the inequity in control and access to water and challenges the assumption of a general notion of water scarcity in Vemula (and Mahbubnagar).

The situation is similar in Tanda and Nattiobannagaripalli. The Sector Reform Programme, implemented in Tanda as the Chittoor model (see Section *Two SRP models in AP*), is analysed against this backdrop of inequity. The design delivers – by default – more than appropriate amounts of water and, indeed, has improved the water situation for the tribals in Tanda. However, the scheme contrary to a DRA design does not address the goals of financial, technical or resource sustainability. The operation and maintenance charges levied on the users is still subsidised (no charges levied for electricity used); does not take into account differential use and appears hugely inadequate to meet short and long-term costs of running the system (see detail below). As there is no regulation in use, the rich and the medium rich with complementary assets and capacity to convert improved access of water to potential economic gains have gained comparatively greater benefits from this than have the poorest. In justifying the shift towards DRA, it is argued (see Section *A shift towards a demand responsive approach*) that supply-led approaches by default cross-subsidised the rich. These concerns do not seem resolved in the implementation of the DRA, as interpreted in the SRP and as understood and implemented in the field.

The findings highlight that inequity in water resources results from an entrenched inequity in political, social and economic contexts, mutually reinforced across different institutional levels.

Vemula

Vemula presents a complex and conflicting water situation. There are many water initiatives and many water

associations here, all of which have been designed to cater to the needs of the better-off.

A dominating Water User Association (WUA)

There are 13 water tanks in Vemula. The largest one, Pedda Cheruvu, irrigates 194 acres of land, of which 60% belongs to the Reddys, 35% to other backward castes and 5% to SC farmers. According to the 1997 GoAP Act, the management rights of such tanks have been handed over to a Water Users Association (see Section *A water stress identified and indicated to grow*). This is made up of aayacut farmers (farmers who are landowners in the tank command area). The 194 acres irrigated by this tank are divided into 30 acre plots to enable the election of a WUA member from each plot. Large farmers, who own 30 acres of land, are automatically elected members of the WUA; 15–20 smaller farmers elect one member. WUA members elect the president of the committee, whose tenure is for two years. Every three months the meeting of the main committee takes place (See Annex 8 for members list and activities of the WUA).

The WUA members argue that there is not adequate water for irrigation and that tank management initiatives are only partial solutions.

Here in Vemula, we are entirely dependent on rainfall, which has failed consecutively for several seasons now. The answer to our well-being is an irrigation channel. The Krishna river is just 40km away, water has been channelled from there to all mandals except Addakal. There are 64 mandals in Mahbubnagar district and obviously we are not a priority for the MLAs elected from the district. Behind our façade of well-being, we are quite naked now. Huge loans have been taken to intensify irrigation, but the returns are minimal. A large number of us have started to sell our lands, but who (except the mad) will buy land in such conditions? Here amongst us are farmers ready to follow the example of the suicides (of cotton growing farmers) that were noted in Karnataka. We pay Rs230 to Rs250 per month for a three-phase connection and the supply is less than five hours a day. At the most, we can only expect produce from one to two acres (WUA Members in Vemula, personal communication with researchers, 2003).

There is an inequity in distribution of irrigation waters among mandals, as there is across regions: the reason for this is signalled as political influence or lack of it. However, none of the rich farmers (and their HHs) has ever migrated or gone through the distress-sale of livestock.

Another issue of dissent is the conflict between water for irrigation and water for domestic use. 'A couple of years ago, a geologist from the Rural Water Supply and Sanitation department identified an area below the Pedda Cheruvu tank as the site for putting a bore-well for drinking-water. Since then the dilemma has been the competing uses of this water. We have lost our (irrigation) rights to this water' say the WUA members, even though they use the same source for their drinking water needs. In 2002, the domestic water situation in Vemula was the worst in the decade and villagers put up a collective fight to ensure that water in the tank was not depleted by irrigation use. Irrespective of caste, wealth, gender and political leanings, non-aayacut members of the village approached the village Sarpanch and asked him not to give permission for use of the tank water for irrigation. A village meeting was coordinated, resulting in conflict between the aayacut farmers and other villagers. The aayacut farmers contested this move and approached the Mandal Revenue Officer (MRO) for intervention. A decision was made by the MRO to allow the release of water in small quantities, four feet of water in two instalments of two feet each. The MRO assured the villagers that this use would not affect drinking water needs. The

release of water from the tank was strictly monitored by the villagers (group discussion in Vemula, 2003).

Male farmers from rich HHs constitute the majority in the WUA and are, by connivance or luck, head-end farmers in most tank schemes and also the major consumers of these waters. These farmers also have an informal but distinct control of water in other smaller tanks.

An unequal allocation of the watershed programme

A generic divide among different water sectors is clearly visible in Vemula. The watershed programme operates in total isolation from the Water Users Association and also the drinking water sector initiatives. Watershed programmes are common in all drought-prone areas of Andhra Pradesh. These programmes are sponsored by the Ministry of Rural Development and the Ministry of Agriculture and are monitored and anchored by the WCM (see Section *Andhra's water resources*) and are implemented by Project Implementing Agencies (both government and NGO). The programme consists of two phases: capacity building and implementation. Capacity building involves awareness generation and mobilisation of the community, along with some exposure visits to successful watershed villages. This phase also involves water-harvesting in a small portion of the watershed (sub-watershed) by the village community, with NGO facilitation. This phase involves compulsory labour – shramadan – by some households for a common water-harvesting structure in the village. This is followed by release of the implementation phase budget, during which construction works are undertaken in 500 hectares of land in each village. The farmers on whose land water-harvesting structures are built need to contribute 16% of the total cost. Payments for the work are made on market day and wage labourers acknowledge that payments are accurate and transparent (discussions with Watershed Management Committee and other villagers in Vemula, 2003).



Photo © S. Reddy, 2004

Alternative water sources: Adoni Kunta tank

Box 20: Adoni Kunta tank

Adoni Kunta is a tank lying just adjacent to the Dalit colony. This is on government-owned land, but the water is used mostly by Sudhakar Goud – one of the richer farmers – as his lands lie in the command area of the tank. Some Dalit farmers also have their lands here. Sudhakar has established a bore-well close to the tank and keeps that under lock and key. Although the Dalits readily access the tank for fetching water for domestic and livestock use, they have never dared to think of pumping this water for other uses. The reasons are more political than economic. Inadequate and contradictory legislation and poor strategies for exercising legislation discussed at the beginning of this report foster the evident inequality in access to water. As explained above and seen here, the primary reason is the linking of groundwater to land-ownership. Landowners exercise a more subtle ownership and control of surface water located on private lands. Surface water on public lands is said to be communal but is essentially linked to agricultural uses and practices established over a long period of time. Thus traditional users of such sources, essentially the local elite, continue to exercise a dominant informal right over them.

Source: Field research in Vemula (2003).

The Watershed Committee in Vemula is a political structure, with members selected from local leaders belonging to three different political parties. Despite the policy rhetoric,

Box 21: Discontent with the watershed programme

'Bunding ¹⁷ activities in our small field would get the land levelled; prevent erosion; increase moisture content; and harvest rainwater where it falls. The ban on bunding (because bunds are not stable structures and it was suspected that claims were being made for work not done under the programme) is politically motivated. The large percolation tanks, now being built as watershed structures, benefit only the few rich farmers on whose land the tank is built. A few surrounding farmers may benefit but this is all. The Gram Panchayat and the Watershed Committee work hand-in-glove. Contrary to policy guidelines, beneficiary farmers are not involved strategically; the work is mostly done by a select few committee members, who act as contractors. The farmer to whom a watershed structure is allocated signs his name and is issued a cheque, which he has promptly to hand over to a committee member.'

Source: Discussion with non-watershed beneficiaries in Vemula (2003).

the programme in Vemula caters to improving the watershed structure of the richer and bigger farmers, who directly influence the committee. Poorest HHs often have no land and thus are only short-term (wage-labour) beneficiaries of the programme. There is strong discontent among land-owning poor and medium-rich HHs in Vemula, expressing the fact that the watershed programme has been hijacked by the richer farmers.

Unequal access to and control over groundwater

Bore-wells are the most common irrigating structures in Vemula. However, access to groundwater is dependent on ownership of land and the resources to invest in drilling them. This gives rich HHs unlimited access to available groundwater and allows them continued production across the year. These facilities are denied to both poorest and poor HHs. Many medium-rich HHs in the village have invested in shared bore-wells. The costs for drilling a bore-well: buying the motor, buying other implements like pipes, switches etc, and getting a sanction for the supply of the three-phase power, amounts to Rs40,000–60,000. The cost varies depending on the depth at which water is found; this is largely dependent on the presence or absence of competing bore-wells nearby. Some farmers have found good water supply at around 200 ft, whereas others have failed to source water even at 350 ft.

Water from shared boreholes is enough only for one annual cropping of paddy. These HHs do not practise agriculture in the summer months. The cost of using the motors, the reduced availability of water, the dangers of motors being damaged: all these factors influence these decisions. Huge losses are incurred when water is not found and this pushes these families into debt. This shows the difference between medium-rich and poor HHs: poor HHs owning some land are not able to take these types of loans.

Water for domestic use – a self-evolved DRA

Mahbubnagar is not a Sector Reform Programme pilot district. Nevertheless, in Vemula village a DRA approach to domestic water management has evolved on its own.

Water available through 65 public stand-posts built (as

Box 22: DRA in Vemula

‘Traditionally, we used dug wells for our domestic water needs. Two separate dug wells existed, one for the village community and one exclusively for the Dalits.¹⁸ There was a transition to hand-pumps provided by the Rural Water Supply and Sanitation department. However, as water scarcity increased, the RWSS had only quick-fix answers which were not solutions. Every summer, 10 to 15 hand-pumps would be dug, most of which would not deliver water. In 1997, a site for a bore-well was identified downstream of the main village tank. A large water tank was built, pipe lines were laid and 65 community taps provided. The filling of the tank depended on the availability of the three-phase current, for agricultural bore-wells.’

Source: Focus Group discussion in Vemula (2003).

reported) closest to the houses of the more influential in Vemula was not adequate for the 837 households. Access to water was a contentious issue, especially in the summer months from February to June. The better off in Vemula were not happy with being involved in daily conflicts over water and, in a DRA spirit, affordability was used as a criterion to improve preferential access. Lobbying by richer HHs led the Sarpanch to develop a system of individual connections. Demand increased incrementally (and is now said to be saturated) until 130 individual connections were made. There were few restrictions on opting for an individual connection: paying upfront a connection fee of Rs1,000 – Rs15 per month as O&M charges and obtaining a house tax clearance statement from the Mandal Revenue Office (the purpose of securing this was not very clear). Community tap-stand users did not pay a maintenance fee. All of these decisions were made by the Gram Panchayat and the Sarpanch approved the request for new connections. A water caretaker was appointed for providing new connections and operating and maintaining the system.

There are three major pipelines leading from the tank. One is diverted to the Dalit Colony and the other two to the main village. Water is released on alternate days to these lines, between 6.00 and 6:30 in the morning and the same time in the evening. There is much concern among the villagers that Sardar favours the rich and those with individual connections. ‘He has designed the system to deliver water differently to different connections.’

Individual connections have greatly reduced the burden of many households, some of whom have also installed individual pumps to increase water-pressure. However, the clamour for a few buckets of water continues for the poor and poorest HHs, who use the 65 public stand-posts to meet their domestic water needs.

Such fights are not anecdotal in Vemula. For those who fetch water from community stand-posts, the days begin and end with violence. Pots are readily used to hit others; water is dropped and thrown away. These difficulties have to be tolerated every day.

Box 23: The water caretaker

Sardar, the water caretaker, collects user fees from HHs with individual connections and hands the money to the Sarpanch. He is paid Rs800 for this; Laund Sayanna, a Dalit farmer, is paid Rs400 (from the collection fees) for cleaning all the drains in the village.¹⁹ The villagers identify the Sarpanch as responsible for meeting their water needs and he meets these demands. ‘Last year during the water shortage, we dug three more bore-wells but there was no water in any. I paid Rs8,500 out of my own pocket to a villager to pay for use of his bore-well for supplying additional water to the water tank. I also had to pay for laying new lines from this bore-well, which amounted to Rs38,000. I also provided water free of charge to all, from my bore-well. All repairs and other needs are undertaken by me. It costs about Rs1,500 to 2,000 for annual maintenance of the system.’

Source: Discussion with Mr Sardar (2003).

Inequity in domestic water use and access

Two indicators, i.e. quantity of water used and distance travelled to fetch water, were used in the study to assess inequity in water use and access among different HHs. These factors were assessed in the dry summer months and in good seasons in all three research locales.

Box 24: Dissent

Bisam Reddy is a small farmer in Vemula who has recently made the decision to move away from the village. A job as watchman in a private college in Mahbubnagar town is the first step forward, although his wife, Venkatamma, shuttles between Mahbubnagar and Vemula in order to work in the fields. This shift from the village was partly the result of a fight for water at a community stand-post and, as Bisam Reddy identifies, the complete inability to voice a say in equal access to water. They have an eight-year-old son and a daughter, Indramma, who is married but stays with them along with her husband. Last summer (2003) the water scarcity situation was acute. Venkatamma used to fetch water from a community water post a few metres away from the house of a neighbour, Madhav Reddy. An additional 8–10 households collected water from this connection. However, given that his household is closest to the tap-stand and by virtue of his better economic status, Madhav Reddy claims an informal ownership. Any insistence by others to 'share' water equally results in blatant abuse. One day that Venkatamma was away from home, a fight broke out between her daughter, Indramma, and Sumithra, Madhav Reddy's wife. Sumithra's whole family beat Indramma till her clothes got torn and she fainted. Madhav Reddy beat her with a *cherlakola* (rope whip used to beat bullocks while ploughing). Other villagers who were there did not interfere in the fight, as Madhav Reddy is a powerful man. The magnitude of the conflict resulted in the arrival of the police, who reprimanded Madhav Reddy. Venkatamma and her husband arrived later and rushed Indramma to the hospital, where they were told that Indramma's uterus was permanently damaged. Venkatamma wanted to register a police case with the help of a doctor's report, but the village elders pacified her and instead held a big meeting in the village to decide the punishment for Madhav Reddy. A fine of Rs3,500 was imposed on Madhav Reddy to be paid to Bisam Reddy. Venkatamma feels some elders in the village strategically avoided a police case to reduce the punishment for Madhav Reddy. Venkatamma says that if she had an adult son she would have taken them to task. But with her aged husband she decided to keep silent. She feels that her family is weak in all aspects and hence decided to settle the issue amicably as per the village elders' suggestion. Even now, Madhav Reddy's family abuses Venkatamma. After a few months, both her daughter and son-in-law, Raghava Reddy, migrated to Rajasthan in search of employment.

After the fight, Madhav Reddy was asked to pay charges for an individual connection and the status of that particular community tap changed, by order of the Sarpanch. All the families who used to fetch water from this post are suffering and go to distant community posts located 200–300m away from their houses to fetch water. It is said that the quota for individual connections is now saturated, but even if this choice were available, not all of these affected HHs can afford to pay the charges.

Source: Discussions with Bisam Reddy and Venkatamma, Madhav Reddy and adjoining households (2003).

Domestic water needs in dry months February to June/ July (longer periods in drought conditions)

Most rich HHs and a few medium rich have individual water connections; most of the poorest and poor HHs in Vemula fetch water from communal stand-posts. The poorest and poor families were never asked about, and also never able to contest, the Sarpanch's decision to make individual connections to those who could pay. Sardar, the water caretaker, does not see this as a huge problem:

'Most of these are Dalit HHs. They are mostly small families and their water use is anyway less than that of others. They don't use much water as they don't take a bath every day. The Dalit habitation (officially relocated as a separate colony) is right next to the tank and even though I try to regulate water on alternate days, there is some outflow to the Dalit side, so they get water daily.'

This view was challenged by the Dalit families, who verified that the water allocated to their colony is so little that they have to go and ask for water from the main village tap-stands every day. Venkatamma (see Section *Profile of the poorest HHs*) says 'I have to cross the main road to go to the village to bring water and sometimes the water comes at night.' It is dangerous to cross the main road with her cataract-affected eyes. Her status as a priestess does not influence a better water delivery system. Her house is near the school and yet the school watchman does not allow her to fetch water from the school tap-stand. 'He refuses, saying their plants need to be watered and, during holidays, he locks the gate.'

Water needs and use increase with increases in HH incomes and expenses. In dry months, most poor and poorest HHs make do with not more than one or two pots of water per day from the communal stand-posts. In contrast, the individual taps of the rich HHs deliver at least 15–20 pots of water every day. It is evident that the delivery system and management of water in Vemula is tampered with, to allow better access to households who can give the water caretaker informal payment or exercise their social clout to demand better water supplies. 'This is possible because Sardar (the village water caretaker) ensures that a high pressure is generated at particular points by making appropriate alterations to the water pipelines. For this he is paid money, so there is distinction in the amount of water available to individual connections.' Sardar denies this but says that 'yes, technically, I can fix the pipelines in



Domestic water storage and use

Photo © S. Reddy, 2004

such a way that the water flow and pressure is different at different points’.

Lacking land and livestock, the need of the poorest HHs is restricted to water for basic domestic purposes, like cooking, cleaning, washing, bathing etc. As the figures below show, their water use does not increase substantially in the better water months. Poor HHs with some livestock need a bit more water but in summer months a distress-sale of livestock becomes inevitable, as seen in the figures below. Livestock kept by medium-rich and rich HHs are not sold in distress (in summer). If the individual systems fail to deliver adequate water at home for livestock, the rich HHs employ wage-labour to fetch it. The physical burden of ‘fetching water’ in the summer is thus highest for those medium-rich households without an individual connection. A gender-bias in decision-making is reflected in these HHs, where men make the conscious choice to prioritise high investments (Rs40,000 to 60,000) in agricultural bores rather than invest a meagre Rs1,000 for individual household water connections. This also applies to poor households that decide not to opt for the distress-sale of livestock. A great deal of time and effort is spent on fetching water, especially during the summer months. Water is recycled several times; kitchen waste water is used to wash clothes or utensils, and then used to water plants in the backyard.

Women from the poor and medium-rich category of HHs reported visiting more than one community stand-post every day in Vemula. Other family members are also involved: young boys from HHs that have bicycles often cycle to fetch water. The practice of storing water in several pots is common among these HHs, especially in the drought months, in contrast with the poorest HHs who cannot afford the luxury of storage pots.

During the drought period, the community stand-posts fail to deliver more than one pot of water for each HH. Each stand-post services around 10-15 people and one person is only allowed one pot of water in cyclic turns. Last year, 50 year-old Sakira, wife of Mehboob Ali, fell down and was badly hurt in a stampede to fetch water. A few days later, she fell down again while carrying water home and was bedridden for three months before she finally died.

HHs without individual connections need to resort to accessing agricultural bore-wells. This is not readily tolerated



Water dependent livelihood activities: weaving mats, baskets

by the bore-well owning landlords, who use these sources for irrigation and for livestock. For people dependent on wage labour, not having adequate water is a huge problem as it affects the ability to reach work on time and secure work for the day. Most of the manual wage labourers need to reach work at 8:30 to 9:00 but often the water timings and the distance travelled to fetch water clash. Ramulamma, a Dalit woman who works as a wage labourer, says ‘if we are late, we are sent back. It is a choice between fetching water and a day’s wage labour. In the drought months, it is the same, there is a crowd at most of the nearby bore-wells and inevitably we are late.’

The elderly and disabled face problems of another kind in fetching water. Buchamma, Bhimanna’s wife (poorest, see Section *Profile of the poorest HHs*) is unable to use the standard 14 litre pot, as a result of physical disability. She uses a smaller five litre pot, which also means she gets less water than others.

‘I walk 300 metres every day to fetch water and need to cross a small landing over a drain. It is painful to do this, especially with the water load. I have fallen down in the drain twice and my fracture has got worse. I need to stop and rest twice, both ways. There

Figure 11: Water use (litres/day) in the four different HH wealth categories in Vemula in summer months (February to June/July) and drought periods

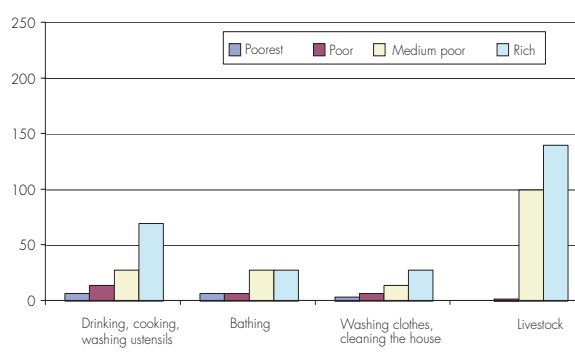


Figure 12: Distance travelled (km) to fetch water by the four different HH wealth categories in Vemula in summer months (February to June/July) and drought periods

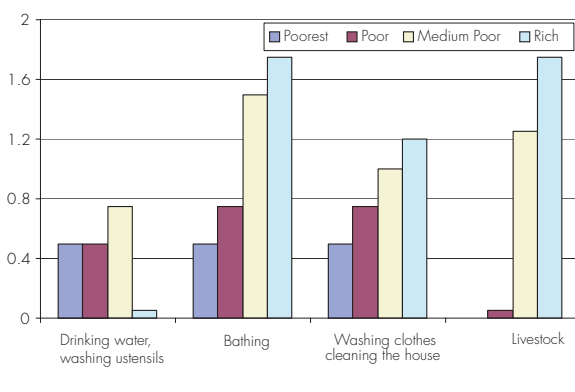


Photo © S. Reddy, 2004

is always a rush and crowd, with 40–50 people at one tap. Sometimes people help me, but not always. In the dry months, we greatly reduce our water use, as it is far more difficult for me to walk up to the bore-well. If I had money, I would have opted for an individual connection, but how can I afford this? (Field research: Buchamma, 2003).

Similarly, lack of water affects the water-dependent trades of some poorest and poor HHs.

‘During the drought months, we cannot weave, the heat makes the bamboo strips hard and it is difficult to cut and weave unless it is properly soaked in water. But we can barely manage to get a few pots of water for HH use. If there was adequate water, we could have worked during the summer to sell more during the harvest periods, when demands for products are high.’

Between water for agricultural use and water for drinking, a number of other water-dependent livelihoods are too marginal to be given importance. Kitchen gardens, rearing sheep and goats, running small restaurants, pottery-making, washing clothes and fishing are practices pursued by poor and middle-income groups. Most of these traditional livelihood practices die a slow death in Vemula. There is hardly any water to keep the activities up; they can only be carried out in better (more water) months. Equally, there is no institutional support to make these practices productive/profitable. Ram Chander used to be among the well-off potters, but recently he has changed profession to become an auto driver. He invested Rs30,000, taken as a loan, in buying a second-hand auto. As he says, ‘there is neither the water nor the facility to market the pots I build. I took an individual water connection, but the returns are so poor. Within the village, there are eight of us, and there is no facility for us to take our goods beyond the village, so the ability to sell is poor.’

Women from many of the poorest and poor families collect neem seeds from the village and forests and sell them during the summer months. They say ‘for removing the pulp, water is required. If we can get water and clean the seeds, we are paid 50 paise more per kg. But this is not possible.’

Water needs are diverse and vary across HHs. There is an apparent equal access to water for all (excluding the fact that Dalits can only access their own stand-posts) at community stand-posts. However, wealth and social status influence ownership of supposedly communal sources. This applies to both stand-posts, which provide water for domestic use, and tanks, used for irrigation purposes. Bore-wells are identified as belonging to individual farmers and there is a greater legitimate exercise of control on them by landowners who have invested in them. A water conflict exists and is visible among different HHs in Vemula and, simply put, it can be characterised as an unequal struggle between poor women and medium and richer male farmers.

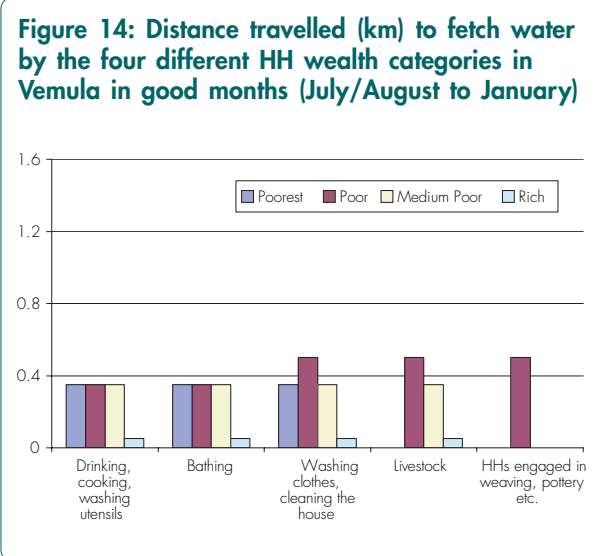
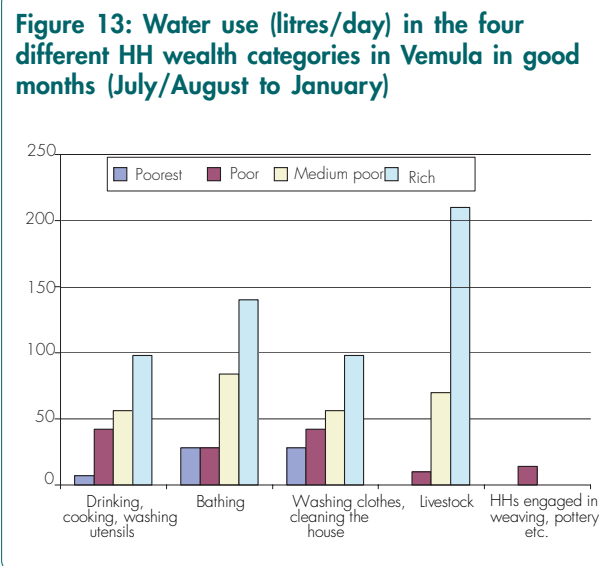
Water use patterns in good months

To summarise: without any external influence, a water

delivery system has been established providing different levels of service according to capacity to pay. The system was designed with effective political support, in order to better address the needs of the rich and powerful few. The voices and choices of the less well-to-do are rarely heard. Richer HHs need and use the most water in Vemula; they travel the shortest distances in dry, drought periods, as the system delivers enough water for meeting basic household water needs. The agricultural bore-wells owned by these HHs provide water for livestock; wage labour is employed if water needs to be carried home.

Medium-rich HHs have the same water needs as rich HHs and the facilities outlined above extend to such HHs with individual connections. However, in the dry months, when water availability decreases, these families cannot afford to pay labour for water carriage. Medium-rich and poor HHs who have water-related skills and lack individual connections suffer a seasonal scarcity of water. For the asset-less poorest, not having adequate water results in loss of wage-labour days, although their water needs do not vary enormously in good and bad months.

Water is a valuable asset for all in Vemula but the interests



and the stakes vary. While some have been able to benefit from improved water access, for others it remains a scarce commodity, well outside their range of control. These findings are significant for those who consider ‘community’ management of resources without effective regulation, to be of equal benefit to all.

Tanda and Nattiobannagaripalli habitations

Pre-project situation

The nature and context of water problems in Tanda and Nattiobannagaripalli are not very different from Vemula. When the research was initiated in late 1999, Tanda and Nattiobannagaripalli habitations had just experienced a summer of near-drought. Concerns over inappropriate and inadequate water for domestic use were expressed, especially by the tribals in Tanda. Traditional domestic water sources, like dug wells, were no longer usable in the two habitations and the domestic water delivery structures were hand-pumps provided by the Rural Water Supply Department. These were neither adequate nor reliable, especially in summer. In 1995, a deep bore-well for providing water for domestic and livestock use was sanctioned for both habitations by the Gram Panchayat from the GP fund (see Section *The institutional structure* for reference to multiplicity of water programmes). However, the tap and tank for using the water was built in Nattiobannagaripalli and the Reddys, who live there, exercised an informal but distinct control and ownership of this asset. The age-old social practice of ‘untouchability’ was applied to the tribals to restrict their access. The tribals and the lone Dalit family could not access it themselves. They were provided with water from the bore-well tap by the Reddys only after the Reddy families had had their share of water.

As a result of inadequate access, many tribal families went to agricultural bore-well sites to fetch water for domestic use²⁰. Most of these bore-wells are owned by the richer Reddy farmers. While a certain degree of communalism is taken for granted, the levels of thoughtfulness exhibited by the bore-well owners fluctuates according to water-stress situations. ‘In the summer months, control and ownership of this water is exercised by these landowning farmers through various means. They often mixed cowdung with the water and justified that this was a way to fertilise their fields. But we know this was to restrict access. What could we do, after all they own the water’ [as they own the land on which the bore-wells are sunk] (discussion with tribal HHs in Tanda, 2001).

As in Vemula, over the last decade there has been a marked increase in the number of bore-wells belonging mostly to richer HHs. Smaller, marginal farmers, primarily dependent on shallow open wells for irrigation, have lost access to their irrigation water sources. Almost all the open wells of Tanda and Nattiobannagaripalli, dug personally and/or through government or donor subsidies (AP Wells Programme), dried up. For the first time in the last decade farmers like these, and those who depended on rain-fed agriculture, laid fallow their lands. As in Vemula, securing groundwater depends on two issues: i) ownership of land, which is tied to water rights over groundwater; and ii) the

ability to invest.

The watershed programme, assisted by NABARD, came to Nattiobannagaripalli at a later date than to Vemula. There is general consensus that, although more beneficial to larger landowning farmers, the watershed programme has provided temporary support in drought months to many of the poorest families working as wage labourers. Under these programmes, the wages of Rs40/day are higher than the standard agricultural wage of Rs20/day. There is, however, little hope that water availability will improve moisture content in the soil and increase fodder availability for all, as the emphasis is on developing and using water (field discussions and analysis in Nattiobannagaripalli, 2003).

The official Food for Work programme was intensified in all the habitations in Nattiobannagaripalli village. However, Kotha Reddappa, a tribal pastoralist in Tanda, points out that such initiatives continue to meet the needs of the socially and politically powerful.

‘Under the Food for Work programme, several tanks – Bandaru kunta, Chinnakunta, Renumakula kunta, Pedda Cheruvu and Chinnacheruvu – were de-silted in the village. But the most important tank, Tellelukunta, was not included. If Tellelukunta was de-silted, the collective benefits would be huge; however, this would have submerged two acres of water-abundant fields belonging to the richest farmer in Nattiobannagaripalli, Mr Nagi Reddy. The Sarpanch and Mandal officers collectively decided not to touch Tellelukunta.’

Water scarcity in Tanda and Nattiobannagaripalli, as in Vemula, affected rich and poor HHs differently. However, a caste bias overshadowed these distinctions and the various tribal HHs in Tanda faced a near equal lack of access to and control over water for domestic use.

There is similarity with the situation in Vemula, in that water use increases with improved HH economy. Though not illustrated in the graphs above, the same pattern applies to the Reddy HHs in Nattiobannagaripalli. In Vemula, though, access to water was highest for the richest and the medium rich; this was not the situation in Tanda. Hierarchy by social distinction was used to control access to water for all tribal HHs, regardless of their economic status. This resulted in a greater water stress and burden on rich and medium-rich tribal HHs.

The Sector Reform Programme (SRP) in Tanda

It was during this period that Chittoor was identified as a pilot district for the implementation of the SRP in AP. As discussed in Section *Two SRP models in AP*, the Chittoor SRP model was managed and implemented by the Chittoor Water Supply and Sanitation Committee (CWSC). Following almost rigidly the Project Implementation (PIP) Guidelines, Tanda was one of the 21 pilot habitations identified by a local NGO, Grama Jana Seva Samstha (GJSS), as a partially covered habitation. This was confirmed by the CWSC in consultation with the Chittoor Rural Water Supply division. GJSS had been implementing the

Figure 15: Amount (litres/day) of water used by the four categories of HHs in Tanda in dry summer months (February to June/July) and in drought situations pre-project

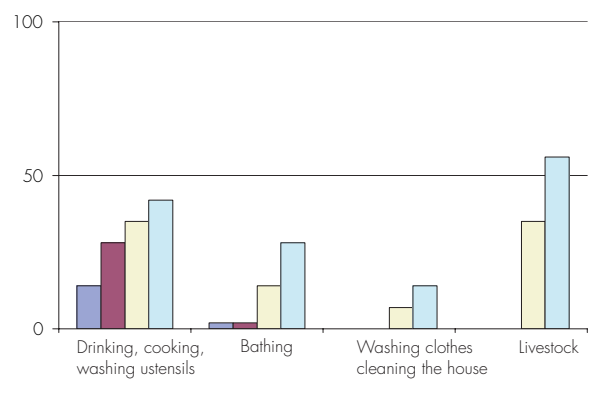
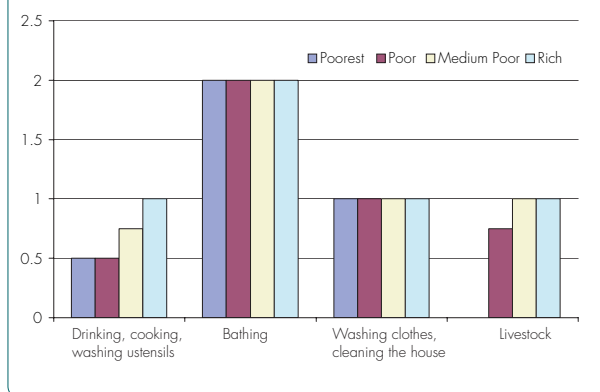


Figure 16: Distance travelled (km) to fetch water by the four categories of HHs in Tanda and Nattiobannagaripalli in dry summer months (February to June/July) and in drought situations



watershed programme in Nattiobannagaripalli and the inequity in water allocation and availability in Tanda was evident to the field team.

The CWSC then decided to implement the scheme only in Tanda habitation, based on this and several other factors:

- The Reddys already had private bore-wells – for agriculture and for domestic use. A bore well in the habitation had been provided by the Panchayat Raj Engineering Department four years before;
- In the tribal habitation, there were hand-pumps built under the earlier programme, but the performance and reliability of these was poor;
- Caste and group conflicts did not make it possible to plan a single scheme for the two habitations;
- Policy prioritised provision of drinking water to STs. [There is no mention of a priority provision of water supplies to STs and/or SCs in the SRP, which follows the approach of demand management of water for those communities willing and able to pay for improved services. This probably reflects a mix-up with ARWSP guidelines, which specified this clause.²¹

GJSS, along with the District Support Unit (DSU) team of the CWSS, trained by APARD, conducted awareness (Kalajatha) camps in the village. The messages relayed were that the water scheme had to be implemented by the committee and, after completion, O&M was to be the responsibility of the villagers. It was reported that several sessions of discussions were conducted with tribal HHs to arrive at a consensus on the representatives for the nine-member Habitation Water and Sanitation Committee. Eventually, the committee was headed by Mr Narsimhulu (rich HH, see Section *Profile of the rich HHs*) as Chairperson, with his daughter, Ramanamma, as Treasurer. Project guidelines specified that, as far as possible, the treasurer should be a woman; Ramanamma was one of the few literate tribal women. Ramanamma's role was to ensure that the 10% community contribution was collected and deposited in a local bank, which was opened as a joint account between her and her father.

The geologist from the mandal office of the RWS

Department identified the site for a bore-well. The DSU engineer designed the scheme – a bore-well supplying water to an overhead tank by an electric motor and 15 public stand-posts for the 64 HHs in Tanda. A 15-year population projection was taken into account to determine the tank capacity (20,000 litres). No other design options were given by the engineer. The community was asked to open a bank account and deposit 10% of the total project cost, amounting to Rs35,000 before project initiation. This was calculated by the committee as a contribution of Rs500 per HH, payable in cash or labour (at Rs45 per day for men and Rs30 per day for women). The Habitation Committee supervised HHs providing labour to ensure they worked to the equivalent of Rs500. The committee also determined that individual connections would be made available on payment of an additional Rs500. O&M costs were calculated at Rs15 for individual connections and Rs10 for communal use of stand-posts. The scheme was implemented under the supervision of the RWSS engineer from the mandal office, with support from GJSS and the habitation committee (DSU Staff, 2003).

Thirteen HHs opted for individual connections. The extra money for this was collected on completion of the scheme and deposited in the bank as an O&M fund. Of this fund, only Rs700 currently remains (end 2003); the rest has been spent in repairing the pump motor.

The present situation is that the Rs15 O&M charges for individual connections have been reduced to a standard Rs10 for all HHs. However, a few (around 10 HHs) are reported as not paying user fees; efforts by the caretaker (whose job it is to make these collections) to make them pay have not been fruitful. The larger community is quite lax about this and most HHs who pay are not unduly concerned as they have unlimited access to water for a low monthly payment of Rs10. O&M charges are collected from the rest of the HHs by a caretaker, whose duty involves operating the pump twice daily and chlorinating the tank once a month. The 20,000 litre tank, filled twice a day and with no restrictions on use, ensures a high degree of water availability even in water-scarce months. There is high user satisfaction, especially as the system, less than one year old, functions well, with low O&M needs.

Figure 17: Annual (all months) water use (litres/day) by the four categories of HHs in Tanda post SRP project

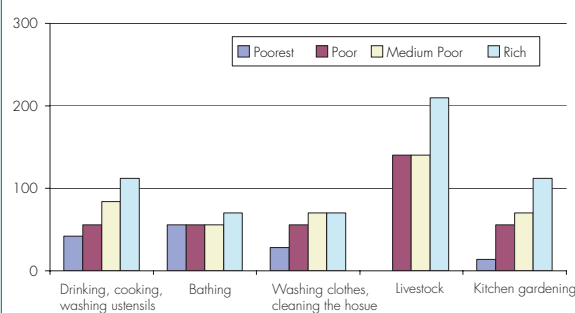
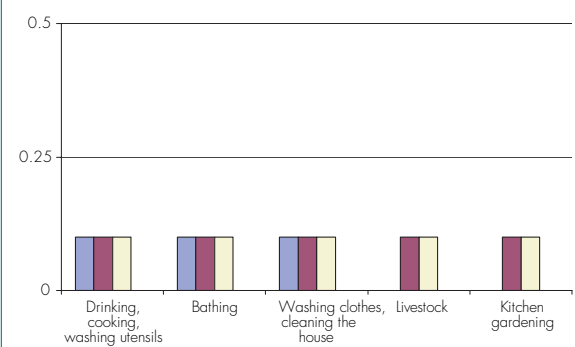


Figure 18: Distance travelled in fetching water (km) all months by the four categories of HHs in Tanda post-SRP project



Note: All the rich and some medium-rich tribal HHs have water in their courtyards and do not travel to fetch water any longer; all other HHs travel approximately the same distance, given the ratio of 1:4 for a communal stand-post placed between 4 HHs; the graph obviously discounts the lone scheduled caste HH in Tanda, which does not have access to these stand-posts).

In a complete reversal of the earlier situation, the tribals in Tanda are now domestically 'water secure'. In fact, convenience having overruled caste restrictions, Reddy families (who had earlier declined to join the service and who pay nothing) living close to Tanda also collect water from these public stand-posts. This is not opposed by the tribal families, especially as there is enough water to spare.

The impacts of the SRP on poverty-livelihood linkages in Tanda and Nattiobannagaripalli

For the few rich tribal HHs in Tanda, the constraints of not having appropriate, adequate and reliable water, especially in summer, resulted in:

- Conflicts at the water site (reported as enhancing domestic strife);
- Use of the whole HH in fetching water, especially in the summer heat when water requirement for livestock is greater;
- Unhygienic living conditions: there was never enough water for bathing and cleaning;
- Distress-sale of livestock at the onset of summer;
- The beginnings of drought-influenced migration.



Low cost containers for water storage and transport

Photo © S. Reddy, 2004

Box 25: The head of the Water Committee

Narasimulu Nayak, elected head of the Water Committee, has gained a lot from the SRP. Donating the land for the overhead tank has had good trade-offs for him. He has three tap connections in his house, two in the courtyard and one in the bathroom, all direct connections from the tank. Since last year, husband and wife have started intensive kitchen gardening. Using Narasimulu's tractor (see Section *Profile of the Rich HH*) and water from the pump, they are growing tomatoes and chillies in three large homestead plots. There is slight discontent among others in Tanda on seeing this. However, since there is enough water for all nobody has raised any objections. Narasimulu is particular about the tank overflowing everyday and irrigating his kitchen gardens.

Source: Field discussion and analysis (2003).

Consequently, most of the rich HHs in Tanda readily opted for an individual HH water connection. For some this is added convenience (given the four HHs to one public stand-post ratio); for others, it supplements livelihood options. Liquor brewing has picked up after the SRP, especially as clean water yields a better quality and quantity of liquor. These HHs, like other rich HHs, are able to arrange money for new livelihood opportunities.

Next door, in Nattiobannagaripalli, Krishna Reddy was among the prominent Reddys who voiced the decision that the Reddys would not participate in the water scheme 'with the tribals'. He is confident that Panchayat funds will be provided to build communal and individual connections from the bore-well connection that exists in Nattiobannagaripalli. Domestic water requirements (for HHs like his, as in Vemula) are large, especially given the number of livestock. However, he employs cheaply available labour for carrying water home for domestic use. This illustrates the dangers of individuals like Krishna Reddy being able to make decisions for his 'Reddy' community, decisions that do not take into account the views and needs of the poorest and the poor among the Reddys, especially the physically disabled families like Rama Reddy's (see Section *Profile of the poorest HHs*).

For the medium rich in Nattiobannagaripalli, the constraints of not having appropriate, adequate and reliable water resulted in the same problems as those for the rich HHs; most HHs belonging to this group also opted for individual connections. The contribution was within the affordability limit and, as there is no restriction on water

Box 26: Venkataramana

The RWS geologist specified that the bore-well site be located on khas, or fallow land, not owned by any individual. However, this was 30 metres away from the bore-well of a medium-rich Reddy farmer, Venkataramana. 'I was very upset when I came to hear that this was where the project bore-well would be sunk. The project bore-well is better and stronger than mine. I tried to talk to the people in Tanda, but they refused to listen. I went to the Collector's office in Chittoor and he told me 'drinking-water supply is a priority. This is a government order. We will sink the bore-well there for providing water to the Tanda residents.' Our bore-well used to provide adequate water to irrigate three acres but, since last year, the water enables cultivation only in a one acre field and three families (his uncles) share this produce. Last year, for the first time in my life, I migrated to Bangalore. My old parents too migrated to Chennai. Having never worked before, they were cheated and not paid for the work they did in a factory. I am trying to go to Kuwait again. I don't think I can depend anymore on the water in our bore-well.'

Source: Field research: Venkataramana (2003).

use, the benefits are multiple in terms of the reliability and convenience factors of having water at home; and the reduction in distress-sale of livestock during the summer (water is no longer a problem and these HHs (unlike the poor) can afford to buy fodder).

A few individuals belonging to this group, both women and men, are also members of the Habitation Water and Sanitation Committee. The water use in these HHs in Tanda has increased significantly since the SRP. It is common to see the use of long plastic pipes to wash homes clean, to water plants, to bathe animals etc. and to hear women and men from these HHs comment 'we are able to grow some plants at home, and our homes look cleaner and greener'.

However, not all is bright for the medium groups in Nattiobannagaripalli. In the Reddy habitation, the SRP has been a big problem for Venkataramana (see Section *Profile of the medium-rich HHs*).

The situation in Box 26 is exacerbated by the fact that there is no restriction on use for either of the bore-wells – Venkataramana's or the one provided in the scheme. As seen in Box 25, the Habitation Committee president, Narasimulu Nayak, stands to gain from the water overflow. The researchers overheard his anger when the pump caretaker shut off because pump as the water in the tank had started to overflow: 'who asked you to turn the water off?'

None of the poor HHs are members of the Habitation Water and Sanitation Committee and only one of them has paid for an individual connection. The experiences of Kotha Reddappa, a poor pastoralist (Section *Profile of the poor HHs*), illustrates the fundamental concern of the research, i.e., programmes designed for cost recovery need to take account of the fluctuating economies of rural households.

The patterns and strategies for payment and cost were in this case imposed by project guidelines demonstrating

Box 27: Kotha Reddappa

'I would have liked to take an individual connection. This would have made it easier for my wife to fetch water, especially as she is not well and it would be easier to fetch water for animals. Also I could have intensified kitchen gardening. But the money collection for this scheme took place at a time when it was just impossible for me to spare the amount. I don't know how I can take an individual connection now [the programme has no support scheme for latecomers]. A lot of the water issues and activities affect us. But who listens to us? This also happened in the watershed programme. Because we don't have land, people assume we don't have any need for water.'

Source: Field research: Kotha Reddappa (2003).

little understanding of HH needs, fluctuating HH incomes and fluctuating abilities to pay for incremental improvements in water demands.

However, in contrast to the system in Vemula, the design of the water delivery system in Nattiobannagaripalli delivers enough water to HHs like Kotha Reddappa's to meet needs other than drinking. The wide network of taps makes water available at less than 50 metres for almost every HH in Tanda. Fetching water for multiple domestic uses is therefore not a huge burden for those physically able to carry water. The greatest benefit of this has been the freeing of time which can be invested in wage labour. This was mentioned by almost all poor HHs.

None of the poorest HHs in Tanda has an individual connection, but they have all contributed capital costs for the scheme and every HH in Nattiobannagaripalli pays an equal O&M fee. The inequity of this cost sharing is evident in the case of women-only HHs like Chittamma's (see Section *Profile of the poorest HHs*), which survive on daily wage labour of Rs20 (for women). Chittamma was asked to contribute Rs500 as the capital cost contribution, like all HHs in Tanda. The Treasurer, Ramanna, is Chittamma's first cousin, but it was obvious that there was no sympathy extended to Chittamma. This challenges the assumptions made of collective women's voices and concerns among rural women (Kapadia, 1995). Chittamma says 'I worked a few days a week for the scheme and rest of the days as wage labour. It was a difficult period. But having reliable water for use at home means a lot. It enables me to reach work on time. Equally important is the shame of not being able to pay like others.'



Small scale commercial use: tea houses

Photo © S. Reddy, 2004

Despite the hardship, there is a definite change in the pattern of water use in HHs like Chittamma's. The adequate supply of water, the reliability of having water twice a day, the ease of turning a tap on: these mean a great deal to all families in Tanda, but especially to members of the poorest HHs, who return home tired each day from agricultural labour.

However, such comfort was not extended to all in Tanda. Peddanna's HH, the lone Dalit family in Tanda (see Section *Nattiobannagaripalli and Tanda habitations*), was not part of the scheme. Several reasons are offered by him and others for this:

- He is not a part of Tanda;
- He begs from us, how can we ask him to pay Rs500?;
- He can still fetch water, no one will stop him from using the communal stand-posts;
- I was never asked, never consulted;
- I did go up to meet the CWSC team, I went three times and sat through the meetings, but never found the courage (the space) to raise this. I would come back home and feel ashamed to tell my wife what happened;
- I could not have paid the costs, but I do still need the water and, because of the social restrictions, I do need an independent source.

The reasons for excluding Peddanna are not completely clear. However, what he says has a major lesson for the DRA:

'I am not allowed access from the communal stand-posts. I can only access water from the tank built to feed animals. This is not clean water, but we take water for all other uses from here and, for drinking and cooking, we fill water from the tap leading to the tank. This is tiresome, because we need to hold the pot in our hands all the time as the water fills. Even here, we are often told that we dirty and pollute the water. I fought and gained access to the water. It was built by the government, it is a government resource, not yours, and I have rights to access it.'

The SRP attempted handing over ownership of schemes to an assumedly homogeneous 'community' but Peddanna had to fight and reverse this ownership back to an absentee 'government' in order to gain access to a common source.



Water collection: communal stand post

To conclude: barriers of caste and social group and divisions among habitations, such as those in the research locales, are not overcome by the design of the SRP. These factors most strongly affected families like Rama Reddy's (see Section *Profile of the poorest HHs*). Disabled and frail, Rama Reddy and his mother would have benefited enormously from access to a HH water connection but, as in Vemula, currently practiced DRAs do not readily distinguish between users (households and/or individuals) who make decisions on behalf of the community. Strategically, in the process of making a decision for the community, the well-to-do, like Nagi Reddy, do not readily consider the situation and problems of people like Rama Reddy and his mother.

In very different ways, Rama Reddy, Venkataramana Reddy and Peddanna are sad losers in the process of outsiders' assumptions about and generalisations on water abundance/scarcity and an 'equal' ability to voice choices. It is indeed true that Venkataramana's family has been exploiting the available water for several years; however, the fault is with the system and not with individuals or groups. Solutions must tackle deficiencies in systems which breed inequities. Narasimulu benefiting at the expense of Venkataramana is not a preferred option. This exposes the limitations of the DRA in its currently practised form, where assumptions are made, heterogeneity ignored, concepts of sustainability poorly defined and subject to interpretation and capture.

Insecure livelihoods and unequal access to water resources: the role of local institutions

Several factors contribute to the experiences of inequality researched and illustrated above. Fundamental to the inequity – and contrary to the assumptions made in the DRA – is the 'unequal voice and choice' of different HHs and individuals constituting a community. Emerging from this reality is the fact that inequality in social relations and the resulting inequality in the distribution of resources, responsibilities and power are shaped by and in turn shape institutions (Kabeer and Subrahmanian, 1999). This is the single powerful fact that explains the exclusion of the poorest and the poor.

None from the poorest HHs in Vemula are members of any of the 24 formal and informal groups that exist and operate there. They are merely beneficiaries of welfare doled out by local official development agencies, such as the old age pension, widows' pension, housing for single women, drought rice programme, drought pension etc. The multitude of official poverty alleviation programmes here is a result of the extreme drought situation in the mandal and district. However, despite the need, there is a wide gap between the rhetoric and the reality in welfare programmes.

Even where there is NGO intervention, these HHs are still left out. Under the Andhra Pradesh Rural Livelihoods Programme (APRLP) intended for the poorest HHs, women are encouraged to form micro-credit groups and loans are sanctioned against savings. This programme,

Photo © S. Reddy, 2004

managed by a local NGO in Mahbubnagar, is implemented by groups of local women. However, there is no such group for the poorest women in Vemula. The explanation is common, 'They cannot save and we cannot issue loans, unless the ability to pay back is guaranteed.'

As the lone Dalit, Peddana was completely excluded both from the management and the benefits of the Sector Reform Programme in Nattiobannagaripalli. This exclusion holds true for all other water initiatives in all the three research locales.

Box 28: 'Panchayat holds up his home, Dalit burns self' Dediya (Jhalawar)

Forty-year-old Bajrang Lal had one dream all his life – a house of his own. A Dalit from Dediya village in Jhalawar, Chief Minister Vasundhara Raje Scindia's constituency, also known as the most backward region in the state, Lal managed to put away some money after feeding his family of six. A month ago, he put the roof on his incomplete house. Three days ago, he stood outside, poured kerosene over himself and lit a match. The reason: the panchayat samiti would not return the Rs2,000 Lal had paid in advance for a grant under the Swarnajayanti Grameen Rozgar Yojana. Lal left a dying declaration, saying 'corrupt' panchayat members had threatened him when he brought up the issue of the money.

'In his dying declaration, he named the gram sevak, the upasarpach and the sarpanch's husband', Jhalawar collector Rohit Kumar said. 'According to him the gram sevak took Rs2,000 from him in advance to release the payment and then harassed him for complaining about it.' Sarpanch Nathu Lal Yogi has been arrested while gram sevak Anandi Lal has been suspended. Sarpanch Sumitra Bai and her husband have disappeared. The two are likely to be arrested on charges of corruption and incitement to suicide. None of which is consolation to the family.

'He was thrilled', said Mathura Lal, inconsolable after his son's death. 'Building the house was one thing, paying bribes and putting up with threats quite another. We have no land nor do we own anything else. This house would have been my son's asset. Instead, it has claimed a family member.' 'I don't think we will ever be able to move into that house', said Lal's younger brother, Om Prakash. 'Everything has changed in these three days.'

For Lal, building his house was the easy part. Trouble began when the gram sevak refused to pay him his cash due – Rs2,000 of the Rs10,000 cash grant that the government gives to below the poverty line (BPL) Dalit families to build houses. Lal protested against the corruption in the samiti and word got around. The samiti members began to threaten him.

'It happens all the time', says Chatar Bhuj, trying to be heard over the wailing in Lal's house. 'I built my house three years ago and got only Rs10,000. We just have to put in the rest because they just don't give it to us. They keep it.' The government grants Rs20,000 to such families – half in cash, half as wheat. On record, the money had been released to the panchayat samiti which it was to pay in instalments. Lal never got his due.

'I have ordered verification of all individual housing schemes within a week', the collector said. 'And then, there will be sample testing to ensure that this incident is never repeated again.'

Source: Anuradha Nagaraj, *The Indian Express* (31 January 2004).

By contrast, some poor HHs in Vemula, Nattiobannagaripalli and Tanda are members and beneficiaries of some local initiatives: for example, the APRLP women's micro-credit groups in Vemula. Janakamma (see Section *Profile of the poor HHs*) was able to access a loan of 3,000 from the group, paid back at 1.5% interest. Among the Mahalaxmi groups, only those members who are able to save (minimum Rs40 per month) are assessed as being capable of paying back and eligible for loans (Discussions with Mahalaxmi Groups in Vemula, 2003).

HHs like Kotha Reddappa's (see Section *Profile of the poor HHs*) have benefited from the drought relief programmes of GoAP. As passive beneficiaries of welfare, these HHs are able to benefit if something comes their way, but they are not socially influential and cannot get their voices heard in the evolving institutional contexts. Last year, arrangements were made for all cattle to be brought from drought-affected areas to the nearby mandal town, Kalcherla, where water and fodder were provided by the government, free of cost for two months. During this time 'I borrowed Rs2,000 from a neighbour at 5% interest and bought some rice, salt, chillies for the family and left for Kalcherla. I lived and worked there for two months. I was able to keep my goats and also earn some money to pay back the loan. This is a temporary arrangement, what is more important is to ensure that the watershed programme is implemented on common grazing grounds, if people like us are to survive. But who will listen to us, especially since we have no land' (Kotha Reddappa, 2003).

Moving up the ladder of decision-making, medium-rich HHs are able to express opinions, even if they are not able to change decisions in their favour. Many farmers in this group voiced concerns regarding the functioning of the Watershed Committee and the Water Users Association. This was in contrast to poor farmers, who spoke in a hush, fearing that the richer farmers on whom they are dependent would be 'upset'. Apart from being beneficiaries of welfare programmes, these medium-rich HHs are also members of decision-making bodies. There is more awareness in this group about government programmes, initiatives etc., and a definite 'inclusion' of these HHs in local governance structures and processes, even if the inclusion is not effective.

The GoI norms have benefited the few tribal HHs belonging to this group. By virtue of being 'tribal', they have access to loans for home construction under the Swarnajayanti Grameen Rozgar Yojana. That they were also able to invest their own resources to make 'good' houses stands in stark contrast to those from the poorest groups – for whom the programmes were designed – who cannot even manage a house loan, or for whom such needs are beyond survival priorities. Many rural livelihood programmes appear to have been formulated based on an official 'image' of the 'rural poor', one which portrays these medium-rich rural HHs.

Finally, members (and especially male members) of rich HHs are the decision-makers in all important, formal and informal, associations in the community. In Nattiobannagaripalli, the only reason the Reddys do not

head the Gram Panchayat is the scattered nature of the revenue village and the fact that the Reddy habitation is too small to get a political majority. However, this does not stop them from getting their voices heard. Gram Panchayat funds for the revenue village were used to build a bore-well for provision of their domestic water needs and it is said that Panchayat funds will be used a second time to build a network of stand-posts.

It has been seen that, contrary to popular assumption, not all tribals are poor and, equally, not all Reddys are rich. However, the combination of caste, economic well-being and gender merges to offer farmers like Nagi Reddy in Vemula and Krishna Reddy in Nattiobannagaripalli important membership of strategic institutions which hold decision-making powers on behalf of the entire community. Both these farmers are members of the Water Users Association, Watershed Committee and the Ryuthu Mithra (farmers' market association). They are equally involved in resolving disputes within the village. In much of rural India, caste and gender to a large extent determine political status and decision-making authority.

Conclusion

Resource-focused rather than people-focused programmes, which ignore distinctions in social, economic and political conditions, exacerbate the exclusion of the poorest and the most vulnerable. Water interventions in the research locales are provided aplenty, but political and social space is lacking for marginalised HHs and individuals to voice their needs and opinions and to gain access to services provided.

Water is a livelihood asset only when it can complement other assets. Inequity in the distribution of water does not matter much here; what does matter is the combined effect of inequity in water along with other assets. If poverty is to be addressed, redistribution of capital assets will need to go hand-in-hand with provision of secure and reliable water.

For the asset-less poorest, the trade-offs of having access to secure, reliable water are indirect: for example, freeing time and energy for wage labour. Securing wage labour is the key livelihood strategy for these HHs, who would thus stand to gain from the inequitable water access and resultant continued farming of the rich. These indirect gains do not readily translate to improved HH economy, given the poor regulation of fair wages, and are especially not achievable if human and social capital are lacking. However, in the case of the elderly and disabled among the poorest, the benefits of appropriate (as close as possible to the HH) water delivery systems are high, even though they are currently excluded by design, given their inability to pay more for better services.

Adequate and appropriate water does secure the livelihoods of the 'few-asset' poor HHs; however, for HH



Photo © S. Reddy, 2004

Water dependent livelihood activities: pottery

security to be assured, programmes must move beyond the narrow domains of providing safe drinking water. Productive water needs here include water for irrigating small landholdings, for livestock, and for traditional livelihood activities. However, many of these families lack access to adequate water for domestic use and also represent the greatest losers through over-exploitation of available groundwater sources by rich and medium-rich HHs.

Water is undoubtedly a livelihood asset for medium-rich HHs; partial, if not adequate, access to this water is seen to have been secured by this group. Having more or less resolved the problems of access to water for domestic use and unable to compete for productive water with the rich HHs, a wise decision to diversify livelihoods, using opportunities that are not water-dependent, has been made.

For the traditionally landed and rich HHs, well-being and security revolve around adequate and reliable water. This explains the persistent focus on developing (exploiting) water and the reluctance to diversify livelihoods even in the face of water scarcity. This also explains why (male) farmers in this category exert strong influence on all water initiatives in the village.

Such entrenched inequities in social organisation and water availability and use are overlooked in current practice, which assumes an altruistic and unitary user community and compartmentalised water use and/or need. The drinking water sector will continue to grapple with these assumptions in the translation of theory to practice, unless DRA design and implementation is revised to take in a truly poverty and livelihoods perspective.

The evidence presented here shows that future design and implementation of DRAs to water supply development requires a better understanding of the links between poverty, livelihoods and water availability, access and use. Continued lack of explicit attention to these issues will mean that intended and potential benefits of a DRA are unlikely to be realised both in terms of sustainability (scheme and finance) and poverty reduction.

VII. Annexes

- Annex 1. Bilateral donors in India water supply
- Annex 2. Matrix of water ministries, roles and responsibilities in AP
- Annex 3. AP Water Vision – Water Conservation Mission Task Force
- Annex 4. Demands on water as per Vision 2020 goals
- Annex 5. Organisational structure of the PRED in AP
- Annex 6a. Institutional structure and specific agency roles and responsibilities in SRP implementation in AP
- Annex 6b. Roles and responsibilities of institutional entities for implementing the SRP Project actions and actors – responsibility matrix
- Annex 6c. Sector Reform Programme – institutional model
- Annex 6d. The differences between the Chittoor and Khamman models
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Annex 1. Bilateral donors in Indian water supply

Danida	The Danish assistance in the water and sanitation sector in India has mainly addressed groundwater-based rural water supply systems. Over the last two decades, assistance has been provided in the states of Tamil Nadu, Orissa, Madhya Pradesh, Kerala and Karnataka. Their current two main projects in Tamil Nadu and Karnataka do give a preference to rehabilitation and necessary augmentation of existing schemes rather than construction. They encourage community contribution to capital costs and are designed for management at the lowest appropriate level. However, Danida is now in the process of phasing out bilateral aid to India.
Sida	Swedish development cooperation in India has focused on poverty and environment. It has been particularly interested in extending its know-how in the field of technology in the environmental field to find solutions to problems such as the lack of clean water. Sida has supported watershed development programmes in the arid and semi-arid areas of India, such as Gujarat and Rajasthan. Sida too is going to be phasing out bilateral aid to India in the coming few years.
Dutch Development Assistance	A substantial proportion of Dutch development assistance to India has been concentrated on drinking water supply, irrigation and water transport. It has focused on Kerala, Andhra Pradesh and Gujarat. Dutch development policy has been supportive of and reflects the emphasis on 'ownership' as the central element in the sector wide approach. The Dutch too have been streamlining their project portfolio over the past few years.
Swiss Development Corporation (SDC)	One of the priority areas for Swiss development support to India has been in the natural resource management sector. SDC programmes have been concentrated in the semi-arid and arid regions of the Deccan plateau (Karnataka, Andhra Pradesh, Rajasthan, Gujarat and Maharashtra). One of SDCs focus areas has been the sustainable management of water resources in these areas.
GTZ	A major focus of German financial and technical assistance has been environmental policy, protection and sustainable use of natural resources. A significant amount of support has been provided to watershed protection. Main projects include the Indo-German Changar eco-development project in Himachal Pradesh and the bilateral project on watershed management (IGBP) in Maharashtra.
Japan	Globally, the Japanese have been one of the largest bilateral donors, accounting for on average one-third of the total ODA for drinking water and sanitation. Under support for 'environmental conservation', Japanese aid has been focused on anti-pollution measures, water quality improvement, afforestation and improvement in the urban environment. Support has been provided to increase agricultural productivity by improving irrigation systems and techniques.
USAID	USAID's water-related support to India has focused on the water-energy nexus. Emphasis is being placed on economic reforms in the power sector. As a result, a new element of their India programme will address water the crisis through the nexus with the power sector. The link between dependable electricity supply and water conservation is also being explored with farmers, as part of a focus on unregulated groundwater pumping.
DFID	DFID is the second largest bilateral donor in India today, with its aid programme focusing on poverty reduction. So far, one of the six main focus sectors of DFID has included water and sanitation. DFID has recently started a joint programme with UNICEF in order to enhance the effectiveness of new water and sanitation programmes. In the future, it will work primarily at the state level to promote more effective demand-led investments. Further, DFID will continue to link up with the Indian government's poverty alleviation programmes, including the watershed development programme, through its work on rural development and sustainable rural livelihoods. DFID is also ready to support commercialisation of public utilities, such as water and power, in order to promote more effective and responsive service delivery systems.

Annex 2. Matrix of water ministries, roles and responsibilities in AP

Nature of responsibility	Ministries responsible	Departments responsible	Specific sub-divisions responsible for 'water' related activities
Drinking water, water development and wage employment	Ministry for Panchayat Raj, Rural Development, Rural Water Supply and Wage Employment	Panchayat Raj and Rural Department	<p>Rural Water Supply wing of Panchayat Raj State Water and Sanitation Mission District Water and Sanitation Committee</p> <ul style="list-style-type: none"> • Planning, construction, O&M of rural water supply <p>Rural Development wing of Rural Development District Water Management Agency (earlier drought-prone areas programme DPAP)</p> <ul style="list-style-type: none"> • O&M of minor irrigation tanks having a command area of less than 40 ha • Implementation of Watershed Development, Drought-Prone Area, Desert Development and Employment Assurance Schemes • Implementation of the WALTA
	Ministry for Municipal Administration and Urban Development	Municipal Administration and Urban Development Department	<p>Public Health and Municipal Engineering Department</p> <ul style="list-style-type: none"> • Planning, construction and maintenance of urban water supply, drainage, sanitation and sewage treatment systems in urban local bodies <p>Hyderabad Metro Water Supply and Sewerage Board</p> <ul style="list-style-type: none"> • Planning, construction and maintenance of urban water supply, drainage, sanitation and sewage treatment systems in Hyderabad and 10 surrounding municipalities
Water resources development	Ministry for Minor Irrigation, AP Industrial Development Corporation (APIDC), Ground Water Development and Sericulture Ministry for Major and Medium Irrigation	Departments for Major and Medium Irrigation Department of Minor Irrigation, APIDC and Groundwater Development and Sericulture	<p>Engineer-in-Chief, Major; and Medium and Minor Irrigation Department AP State Cooperative Rural Irrigation Corporation</p> <ul style="list-style-type: none"> • Basin-wise planning of State water resources • Monitoring of river flows, sediment loads etc. • Hydrological studies for projects and seeking approval from Central Waters Commission • Design, planning, construction and maintenance of major, medium and minor irrigation schemes • Implementing the APFMIS <p>State Groundwater Directorate</p> <ul style="list-style-type: none"> • Block-wise semi-detailed hydro-geological surveys • Periodic determination and estimation of groundwater potential in each district

Nature of responsibility	Ministries responsible	Departments responsible	Specific sub-divisions responsible for 'water' related activities
			<ul style="list-style-type: none"> Pre and post- monsoon data collection from wells to assess quality and quantity
	Ministry for Agriculture and Horticulture	Agriculture Department	Commissioner of Agriculture <ul style="list-style-type: none"> Formation of district-wise agriculture – production, intensification plans Agriculture extension Integrated nutrient and pest management
		Horticulture Department	Director of Horticulture <ul style="list-style-type: none"> Promotion and extension of horticulture activities and drip irrigation
	Ministry for Energy	Energy Department	AP State Energy Board <ul style="list-style-type: none"> Hydro and thermal power generation and distribution
	Ministry for Forest, Environment, Science and Technology	Department of Environment, Forest, Science and Technology	Chief Conservator of Forests <ul style="list-style-type: none"> Promotion of forests regeneration and rainwater harvesting in forest areas Supervision of works of Wildlife wing
			AP Pollution Control Board Head office in Hyderabad and 5 zonal and 18 regional offices <ul style="list-style-type: none"> Enforcement of: Water Prevention and Control of Pollution Act 1974, Water Prevention and Control of Pollution Cess Act 1977, Air Water Prevention and Control of Pollution Act 1981, the Environment Protection Act 1986, Hazardous Chemicals and Wastes Handling Rules 1989
	Ministry for Major Industries, Commerce and Export Promotion	Department of Industries and Commerce	Directorate of Industries <ul style="list-style-type: none"> Formulation of policies for industrial development
			AP Industrial Development Corporation <ul style="list-style-type: none"> Development of industrial estates with infrastructural facilities AP Industrial Infrastructure Corporation
	Minister for Animal Husbandry and Dairy Development		Directorate of Animal Husbandry
			Commissorate of Fisheries <ul style="list-style-type: none"> Formulation of action plans for improved livestock, poultry, dairy production and fisheries
		Animal Husbandry and Fisheries Department	AP Dairy Development Corporation
	Ministry for Backward Classes and Fisheries		AP Fisheries Corporation Ltd. <ul style="list-style-type: none"> Promotion of livestock health and better feed programmes Marketing of livestock, poultry, dairy production and fisheries products

Annex 3. AP Water Vision – Water Conservation Mission Task Force

GoAP departments

Commissioner and Director and Addl Director, Agriculture
Director and Addl Director, Animal Husbandry
Vice-Chairman and MD and Engineer in Chief, Andhra Pradesh Industrial Infrastructure Corporation
Member Secretary and Joint Chief Environment Scientist, AP Pollution Control Board
Director and Chief Engineer, APTRANSCO
Special Commissioner, Andhra Pradesh Academy of Rural Development
Principal Chief Conservator and Chief Conservator, Forests
Director and Additional Director, Fisheries
Director and Joint Director, State Groundwater Directorate
Director, Health and Jt Director, Communicable Diseases
Managing Director, Hyderabad Metropolitan Water Supply and Sewerage Board
Commissioner and Director, and Addl Director, Horticulture Vice-Chairperson and Managing Director, Hyderabad Urban Development Authority (HUDA)
Asst Director, Urban Forestry, HUDA
Principle Secretary and Chief Engineer, Major, Irrigation and Command Area Development
Director and Chief Analyst, Institute of Preventive Medicine
Engineer in Chief and Executive Engineer, Public Health and Municipal Engineering
Commissioner and Special Commissioner, Rural Development
Chief Engineer and Joint Director, Rural Water Supply
Commissioner and Deputy Director, Shore Area Development Authority
Commissioner, Sericulture
Commissioner, Sugar

Other institutions

Acharya ND Ranga Agriculture University – ANGRAU
Central Research Institute for Dry Land Agriculture – CRIDA
Environment Protection, Training and Research Institute – EPTRI
National Geophysical Research Institute, NGRI

NGOs

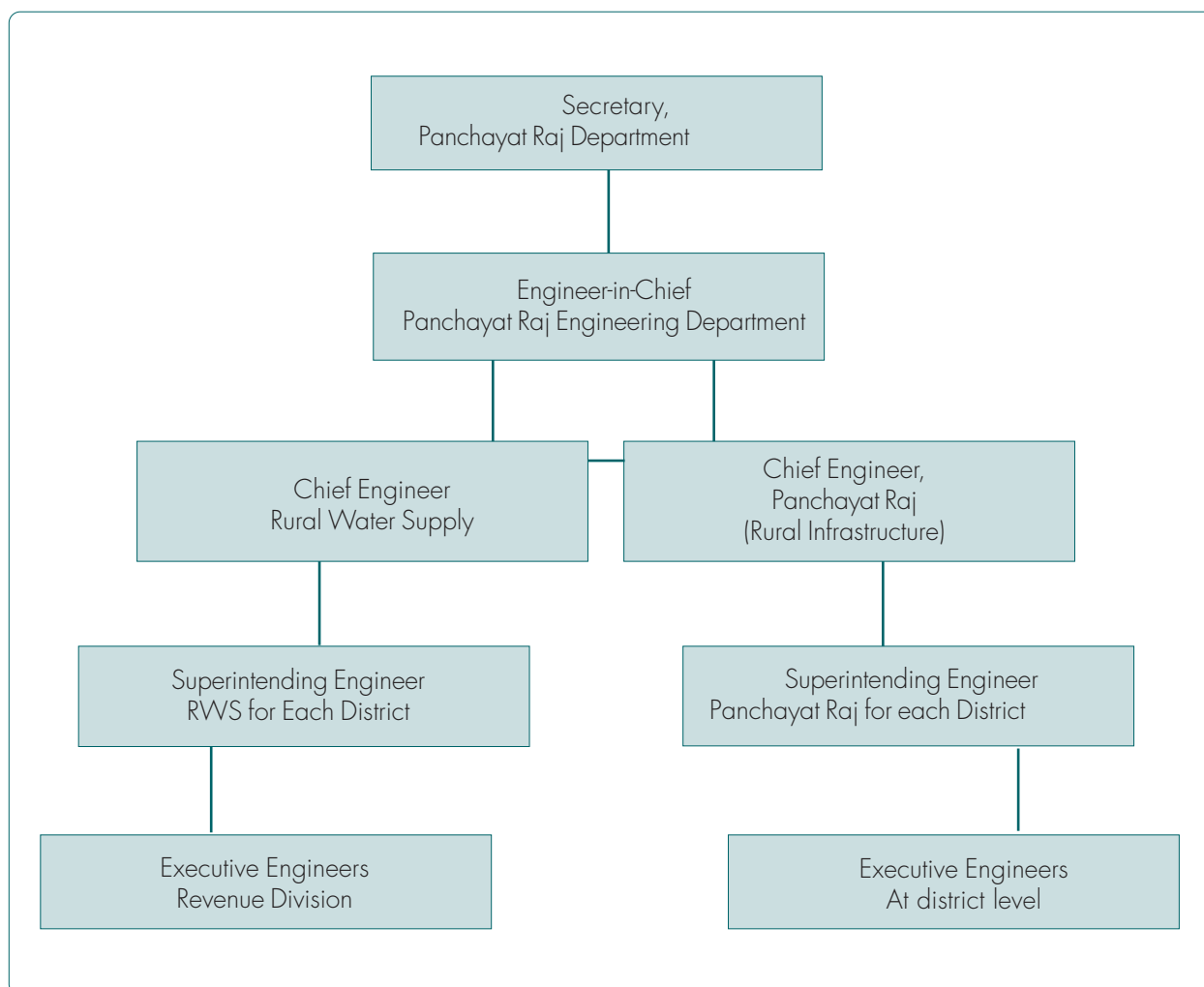
Action for Food Programme – AFPRO
Centre for Economical and Social Studies – CESS
Watershed Support Services and Activities at Work – WASSAN

Royal Netherlands Embassy

First Secretary
First Secretary (Development) AP Coordinator
Programme Officer

Annex 4. Demands on water as per Vision 2020 goals

Vision 2020	Demand on water/issues identified
Improving quality of life	
Drinking water to all	Diversion from Irrigation sources Protecting sources
Better sanitation (because water pollutant)	Treatment of waste, polluted water Faeces collection and safe disposal
Enhanced power supply	Water diversions from irrigation sources for hydro and thermal power generation
Conservation of natural resources	Ecological requirements part of (water) development
Growth engines	
Rice	Increased, assured irrigation Restrict rice in water-scarce areas
Dairy	Water for livestock and irrigation for fodder cultivation R&D to check waste water used for fodder cultivation
Poultry	Water for poultry including summer cooling Increased maize production Better rainwater harvesting, better domestic supplies for HH practices
Horticulture	Increased demand on groundwater Drip irrigation for efficiency
Fisheries	Integration with other water uses
Industry	Increased water demand and waste-water treatment facilities
Tourism	Demand for good quality and quantity water Regulation of pollution control

Annex 5. Organisational structure of the PRED in AP

Annex 6a. Institutional structure and specific agency roles and responsibilities in SRP implementation in AP

Sub-district level

Habitation level

Habitation Water and Sanitation Group (HWSG) and Habitation Water and Sanitation Committee (HWSC)

HWSG comprises of one adult member from each user household of which 50% must be women and shall be registered as a society under the Andhra Pradesh Societies Registration Act of 1860.

Selection and removal of the HWSC as legislated in the Societies Act

Approve/ratify the proposals/decisions of HWSC taken on technology, service level, operating and managing arrangements for the schemes.

HWSG implements the water supply scheme in-house through HWSC, or by contracting to private organizations.

Users pay 10% of the capital cost of the project (the remaining 90% comes out of the project funds from the Rajiv Gandhi National Drinking Water Mission) and 100% of all operation, maintenance and repair costs and fix user changes.

The communities will be provided with appropriate support in community development and engineering aspects by engaging Support Organizations (to be selected through a selection procedure

Adopt regulations regarding conservation and usage of drinking water resources and environmental sanitation guidelines in the area of operation and monitor its implementation.

HWSC – The executive arm of the HWSC. Members to be elected from among the HWSG and 50% of them shall be women and at least one-fifth of the members must be from SC/ST families. Each HWSC will have the following office bearers: Chairperson, Secretary and Treasurer (preferably women)

Conduct HWSG meetings on technology choice; assess demand and O&M commitments and financial (capital cost and contribution) implications involved in each choice and come to a final decision

Investigate, design, construct, own, operate and maintain water supply schemes, ground water recharge schemes, sanitation and hygiene promotion schemes etc. within the geographic boundaries of the habitation or to ensure that this happens through some contracted agency Procure goods, works and services for implementing, operating and maintaining the infrastructure under the project and incur the necessary expenditure.

Take over and rehabilitate existing water supply schemes in the area of operation

Prepare reports about the status and progress of the scheme implementation and submit the same to the GWSC, DWSM, SWSM etc.

GP Water and Sanitation Committee (GWSC)

The Gram Panchayat President will act as the Chairman while the Women Ward Member nominated from among the Ward Members will act as the Deputy Chairperson of the HWSC. The Executive Officer Gram Panchayat will be the Member Secretary. The GP will recognize the GWSC as a functional subcommittee as per Andhra Pradesh Panchayati Raj Act.

Mandal Water and Sanitation Committees (MWSCs)

Only in multi-panchayat schemes. MWSC will represent the Presidents of the GPs concerned, Mandal Development Officer as the Member Secretary, Assistant Executive Engineer, (RWS), Mandal Revenue Officer, Mandal Executive Officer, Medical Officer, Assistant Engineer, TRANSCO etc. as members.

District level

District Water and Sanitation Mission (DWSM)

As a registered society under the Societies Act of 1860. The DWSM, within the overall policy guidance of SWSM will implement the Sector Reform Programme at the district level in close liaison with the Zilla Parishad and the District Administration.

Approve habitations selected for implementing the project

Monitor project implementation at the district level

Approve annual budgets and annual action plan for project implementation

Approve all contracts above a specified limit (determined by the SWSM)

District Support Unit (DSU)

The implementation arm of the DWSM

Overall administration and management and of project implementation
 Liaison with Government of India, Rajiv Gandhi National Drinking Water Mission, Government of Andhra Pradesh etc.
 Coordination with all line departments for example PRED, health, education, etc.

Support organisations

NGOs, private sector, universities and other research institutions, community-based organisations and even certain government departments.

To provide technical and institutional services, as and when required to the HWSG and HWSC

District Water and Sanitation Committee

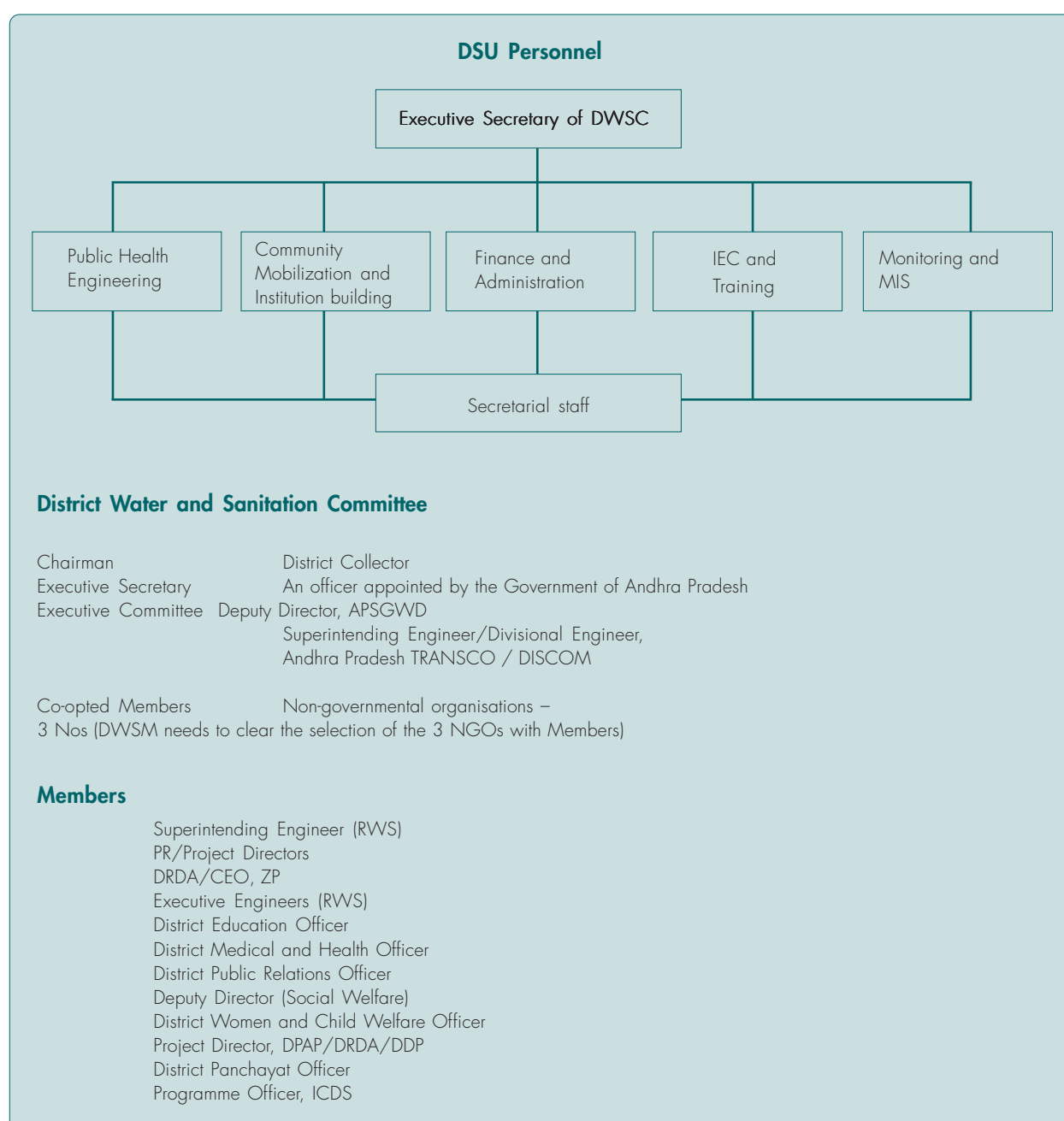
The executive body of the District Water and Sanitation Committee

Accord technical sanction to the schemes prepared by the HWSC and recommended by the GP/MPP

Recommend annual budgets and action plans to the General Body

Enter into contracts for project implementation up to limits sanctioned by the General Body

Recommend annual reports, financial statements, monitoring reports etc. for the approval of General Body



State level

State Water and Sanitation Mission (SWSM)

Overall policy guidance

Liaison and coordination with various concerned departments of the State Government and other sector partners

Monitoring (physical and fiscal)

Interaction with the Government of India, Rajiv Gandhi National Drinking Water Mission and donor agencies

Project Support Unit (PSU)

An inter-disciplinarian SRP Secretariat with one Public Health Engineering Expert and one Community Development Specialist with two supporting staff (however, this will be left to the discretion of the SWSM). Housed within the Centre for Development Studies of APARD. One of the experts designated as the State coordinator for sector reforms.

Facilitate implementation of the Sector Reform Programme

Ensure coordination among various pilot districts and overall State level management of the pilot project

Provide technical support to DWSSMs

Communicate progress of project implementation to GoAP and SWSMC

Regular monitoring and evaluation of the project implementation in the districts and report the same to GoI

State Resource Centre for Water and Sanitation (SRCWS) for Capacity Building

Identified as APARD

Nodal agency at the state level responsible for need assessment, strategy formulation, material development, training and capacity building of key stakeholders at the state level.

Capacity building of the key stakeholders of the project in close liaison with the SWSM

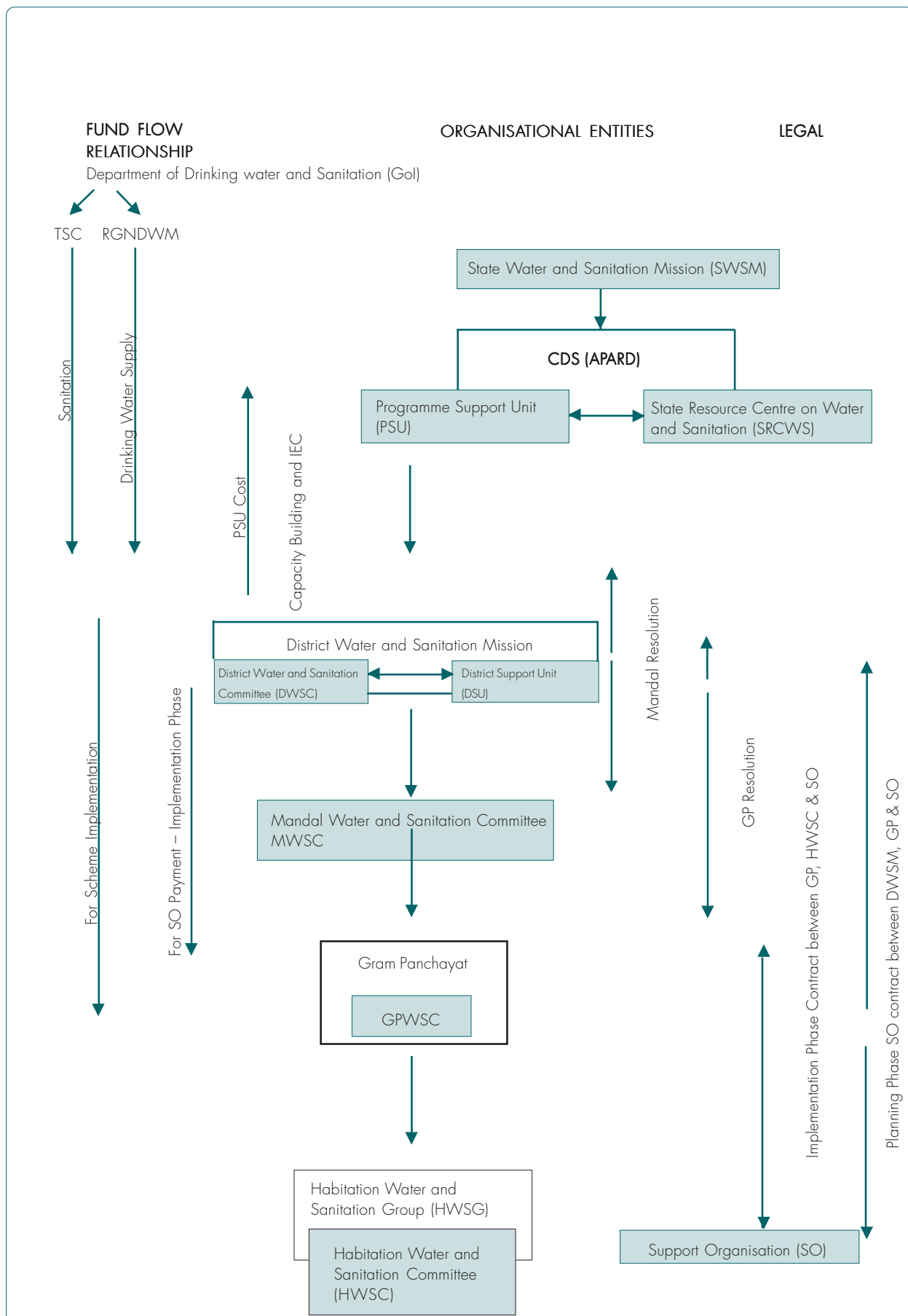
Monitor, evaluate and assess the impact of various training programmes.

Annex 6b. Roles and responsibilities of institutional entities for implementing the SRP Project actions and actors – responsibility matrix

	Roles and responsibilities	SWSM (PSU)	SRWCS	DWSM (DSU)	GWSC	SO	HWSG (HWSC)
A	Pre-planning phase (five months)						
	1.Orientation/training of SWSM and DWSM	x	x	x			
	2.Habitation identification			x			
	3.SO Selection and contract between DWSM and SO			x			
	4.DSU orientation	x	x				
	5.GP orientation			x			
	6.First phase SO capacity building			x		x	
	7.Community sensitisation			x		x	
	8.Final selection of habitations			x		x	
B	Planning phase (9 months)						
	1.Awareness creation			x		x	
	2.Community organisation including formation of HWSG and HWSC					x	
	3.Resource mapping and hygiene practices analysis					x	x
	4.Opening of bank account at the habitation level						x
	5.Selection of SO for implementation and contract between SO and HWSC			x			x
	6.Second phase SO capacity building		x	x			
	7.HWSC capacity building			x		x	
	8.Feasibility study of drinking water source and needs assessment on hygiene practices					x	x
	9.Community contribution for source establishment					x	x
	10. Technology option selection					x	x
	11.Preparation of CDAP/implementation phase proposals					x	x
	12.Preparation of detailed scheme report					x	x
	13.Participatory review process			x		x	x
	14.Construction of demonstration units			x		x	x
	15.Technical sanction			x	x		
	16.Mobilise community cash contribution						x
	17. Deposit cash contribution						x
C	Implementation phase (eight months)						
	1.Mobilisation of remaining community cash contribution				x		x
	2.Construction training		x	x			
	3.Community contracting activities for construction activities						x
	4.Undertaking construction activities						x
	5.Undertaking groundwater recharge activities					x	x
D	Post-implementation phase (three months)						
	1.Ongoing O&M activities by the HWSC						x
	2.Refresher training on O&M					x	x
	3.Monitoring sustainability					x	x
	4.Project impact evaluation and sharing	x		x	x	x	x

Source: PIP, PRED, GoAP, (November 2001).

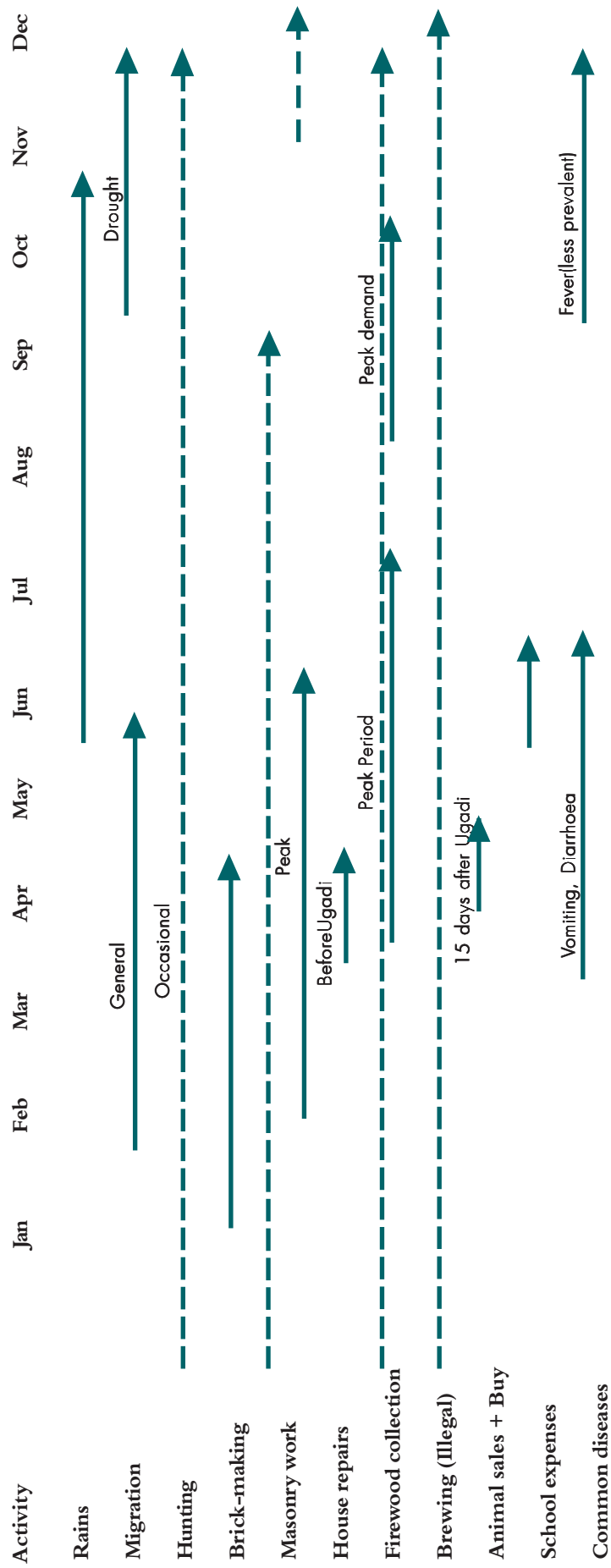
Annex 6c. Sector Reform Programme – institutional model



Annex 6d. The differences between the Chittoor and Khammam models

Criteria	Khammam	Chittoor Phase 1
Central Role	Centrality of the RWS continued	People/users/clients
Goal	Emphasis on coverage continued	Process, Demand-based
Basis for service	Cost recovery promoted, but findings were that the HWSC or key individuals in the HWSC were re-subsidising users	Near-complete emphasis on cost-recovery
Role of government	Still provider of schemes	Positive shifts to promoter
Role for people	A positive shift to 'local' management – O&M was a responsibility of the 'HWSC'	Manager
Role for women	Low, rhetorical	Women involved but not always to their advantage
Actors	Largely state and panchayat	Users and state
Partnership scope	Existed, but the time for process not available	High but flawed, dependence on the WCSC high
Capital contribution	10% 'community' contribution not recovered in all cases and/or some in the community paid	10% community contribution in most cases
O&M	Gram Panchayat or key HWSC members	Users and/or key HWSC members
Level of management	Gram Panchayat	Users – habitation level
Dependence on government	Still high	As above (see partnership scope)
Source protection	Not emphasised	Not emphasised
Political patronage	High, because it enabled active roles of the Sarpanch and the gram panchayats	Relatively low, because users had to pay, but no further disaggregation of the 'habitation community'
Incentive for officials	Still high, officials decide where and how to manage and implement	RWS ignored; NGOs done away with; HWSC operational in most cases, but WCSC still the apex in the power hierarchy.

Annex 7a. Seasonal calendar – Nattiobannagaripalli and Tanda habitations



Note: For agricultural activities in the two habitations see Annex 7b.

Annex 7b. Seasonality calendar – Vemula

Note: The agricultural activities are similar in all the research locales.

This exercise of studying seasonality in Vemula was carried out by a group of people in order to understand the various works taken up by different people in Vemula during different periods of a normal year with average rainfall. The seasons are classified according to the local phases, known as karthis, which are specific periods of times in the year (associated with and marked by local festivals) with different number of days in each phase.

Telugu karthi/festival	Work done/other issues
Ugadhi (March last fortnight and April first fortnight)	Harrowing of fields, stubble clearing and ploughing. Labour availability is rare and the wage rate is Rs30/day for men and Rs20/day for women. 50% of HHs in the village are away, migrated. Intense drinking water problem. This is the active season for bullocks and the rates of both bullock hire and sale are high during this period. Less problems with wild boars. Watershed works implemented during this period. Fodder and water availability a problem for livestock, often distress sale of livestock.
Ashwini and/or Bharini (2 April fortnight to may first fortnight)	Farmyard manure transportation to the fields. Drinking water problem is severe. Fodder and water availability for livestock intensifies. A lean food period.
Yerrokka punnamma (Krithika and rohini; May second fortnight)	Sowings of all rain-fed crops like castor, jowar, ragi and maize. Labour work is available for 50% of the village labour force. Daily wage rate is Rs30 for women and Rs60 for men. Rains start in rohini karthi normally. When animals eat newly grown grass after first showers, they get a disease called. 'Paturugum' for which there is no cure. Breeding season for cows, goats and sheep. Fodder problem continues.
Mirgu (1 June fortnight)	Sowing of paddy (rice) begins. 50–70% of women get wage work and the wage rate is Rs25–30/day.
Aridra (22 June to 5 July)	Last chance to sow rice. All the women in the village get wage labour and the wage rate is Rs30/day.
Pedda pushyalu (6 July to 19 July)	Paddy transplanting, mostly by women. Weeding in paddy, also by women. If enough water is there in the village tank, all the women get wage work. Wage labour Rs30/day for women. More rains during this period. Time for releasing the fish seedlings in the village tank.
Chinna pushyalu (20 July to 2 August)	Paddy transplantation by women. Castor and cotton sown. Peak labour period for women, Rs40–50/day and Rs70/day for men. More rains. Fish seedlings are released.
Asleti (3 August to 16 August)	Paddy transplantation by women. Weeding in paddy by women. Peak labour availability like in chinna pushyalu. More rains.
Moga (17 August to 30 August)	Weeding in paddy by women. Peak labour availability for men and women. Buffaloes – breeding period. More rains.

	Fish seedling can be released.
Pubba (31 August to 13 September)	Weeding in paddy by women. More rains. Buffaloes – breeding period. Planting of trees under the watershed development programme. Diseases occur in paddy.
Uttera (14 September to 26 September)	Paddy crop matures. Harvesting of jowar crop. Buffaloes – breeding period. Diseases occur in paddy.
Aswhini (27 September to 11 October)	Harvesting and threshing of kharif crops like jowar, maize and castor. Only to 20–30% of available labour used. More rains. Goats breeding period. Diseases in jowar at maturity stage. Powdery mildew disease in castor.
Swathi (24 October to 8 November)	Weeding of rabi ground nut mostly by women. Harvesting of kharif paddy by men and women. Only 20–30% labour force get employment.
Isaki (9 November – 24 November)	Rabi paddy nursery raising. Harvesting of cotton, children often used (nimble hands). Only 20–30% labour force get employment. Rains during this period result in loss to farmers.
Anuradha (25 November to 10 December)	Rabi nursery raising of paddy by women. Transplanting of rabi paddy by women but less work compared to kharif crop. Only 20–30% of labour force get employment. This period is the best time to buy bullocks as they are cheap as there will not be much agriculture work. For half the price of normal rate the animals are available. Watershed works execution start from this period. Wild bore problems – men sleep in the fields.
Moola (11 December to 26 December)	Paddy transplanting by women. Only 20–30% of labour force get employment. Watershed works are implemented. Wild bore problems – men sleep in the fields
Sankranthi (January first fortnight)	Weeding of rabi paddy by women. Harvesting of rabi groundnut by men and women. 75% of the labour force get employment and the wage rate is Rs20–25/day, for both men and women. Migration starts, 50% of those dependent on wage labour migrate. Watershed works are executed. Wild bores attack crops at night requiring constant vigilance
Siva rathri (January second fortnight)	Harvesting of groundnut by men and women. Weeding of rabi paddy by women. Employment for 50% of labour force (those not migrated) in the village. Migration continues. Diseases in paddy. Agriculture bore-wells start pumping less water. Watershed works are continued.
Manne konda jatara (March first fortnight)	Harvesting of rabi groundnut by men and women. Harvesting of rabi paddy. Migration continues. Watershed works continue. Harvesting of fish from the village tank.

Annex 8. WUA Members and the work undertaken by the WUA in Vemula

Name of WUA Members

B.Sreenivas Reddy (president)
 K.Yugandhar Reddy (Vice-president)
 V.Venkat Reddy (member)
 V.Krishna Reddy (member)
 K.Kranthi Kumar Reddy (member)
 S.Venkataiah (Backward caste)

Funds available under the minor irrigation project as utilised by the committee:

Kinds of work undertaken	Budget spent
Feeder channel	2 lakhs
Repair to irrigation channel and bund maintenance	3 lakhs
De-silting the tank	150,000.

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IX. Endnotes

- ¹ Habitation – a revenue village or Gram Panchayat may consist of one village or several habitations (settlements) depending on the spread of the area and population size.
- ² Water provided (supplied) free of charge, by virtue of the good and the service being considered a basic human need.
- ³ Synonymously used to signify the domestic and/or drinking water sector.
- ⁴ The laddered Hindu society is stratified into a rigid social hierarchy, consisting of four caste groups. Brahmins, Kshatriyas and the Vaishyas in descending social order are the three upper or higher caste groups, constitutionally referred to as the ‘general castes’. The general castes are distinctly distanced from the Sudras or the ‘lower caste’ group, referred to traditionally as ‘untouchable’ and officially as the ‘scheduled castes’ (SCs). India’s scheduled castes prefer to call themselves ‘Dalits’ or the ‘oppressed’.
- ⁵ However, programmes relating to conservation, development and management of land resources remain scattered in different ministries and departments.
- ⁶ Described as a one-day session held on 17.4.2003 with the Non-governmental Organisations, External Support Agencies and the State Governments in order to take stock of the processes and problems in the implementation of the Sector Reform Pilot Projects and also consider the possible road map for the future of the reform initiatives introduced under the Rural Drinking Water Supply Sector (Panda, 2003).
- ⁷ Personal communication, WSP-SA.
- ⁸ The AP Academy of Rural Development – a GoAP-supported training and capacity building institution for various rural development initiatives.
- ⁹ A World Bank supported poverty alleviation programme, now known as the GoAP’s Velegu Programme
- ¹⁰ The terms ‘traditional’ and/or ‘indigenous’ imply that the design, management and control of water delivery systems are established without any influence external to the local community (Agarwal and Narain, 1997). Systems of water delivery introduced through British colonialism and which also formed the seed of official water planning after Independence are referred to as official (Sengupta, 1985 and Shiva, 1989).
- ¹¹ First fixed at Rs35, revised to Rs50 in 2002 and to Rs66 in September 2003.
- ¹² Crops dependent on rainfall.
- ¹³ Note categorisation of households in Section *Profile of household categories*.
- ¹⁴ For details of wealth ranking and classification among households, see Section 5.
- ¹⁵ According to World Bank reviews conducted in the 1990s, reported by Cleaver and Lomas, 1996.
- ¹⁶ Supported by a longitudinal livelihoods diversification study in AP: Deb *et al.*, 2002.
- ¹⁷ Building low-height earth-walls around an area of cultivable field
- ¹⁸ Hindu social exclusion norms define that Dalits cannot use the same water sources (especially for drinking purposes) as higher caste Hindus, as the Dalits are considered polluting.
- ¹⁹ Note, only Dalits perform ‘polluting’ tasks such as cleaning drains.
- ²⁰ The norms of untouchability do not apply for water used for agricultural purposes.
- ²¹ The CWSC team reported that the demand for water was higher amongst the tribals. However, this also reflects a flaw in the DRA. It was the richer families amongst the Reddy’s who did not face water problems and who represented their ‘community’s voice and choice. This did not reflect the latent demand for appropriate, adequate water amongst the poor and poorest Reddy families.