

How can we design water resources interventions to benefit poorer households?

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Abstract

Households in arid and semi-arid areas realise that increased availability and accessibility of water is critical to improving their livelihoods because insufficient soil moisture is a major constraint on crop productivity, and accessing water for domestic and other uses is physically demanding and time consuming. Interventions to improve the management of water resources need to recognise that poor households have few resources beyond their labour, and the design of interventions requires additional efforts to include poor households and ensure equitable distribution of benefits. The design of interventions need to address several key issues constraining poor households' ability to access and use water including the ownership of water and other natural resources, and the capacity of communities to contribute towards the cost of interventions.

In this paper, we discuss how poorer households can be included in the planning and design process to ensure that they benefit from water resources interventions by addressing issues related to ownership of water and land, and the distribution of benefits from interventions. The key ownership question is 'who owns what water and land resources and where?' This question is answered by communities mapping land and water resource ownership by socio-economic grouping, and then using the map as a basis for discussions about the distribution of benefits resulting from water resources interventions. Households not benefiting from the improvements are identified and alternative interventions are targeted to improve their livelihoods.

Introduction

Rural livelihoods are strongly linked to the availability and accessibility of natural resources of which water is a key component. Interventions designed to improve the management of water resources to benefit poorer households face major challenges. Poor households tend to have few surplus resources beyond their labour, and interventions require additional efforts to involve poor households in the planning and design process, and ensure they benefit from the interventions. Water-related interventions need to address several key issues constraining poor households' ability to access and use water including the ownership of resources, and the capacity of poor households to contribute towards the cost of interventions. Addressing these constraints is critical to realising equitable distribution of the benefits resulting from improved management of water resources.

In this paper, we discuss how water resource interventions are being designed and implemented by two Indian non-government organisations, Gramin Vikas Trust (GVT) and Indian Farm Forestry Development Corporation (IFFDC), during the implementation of the Western India Rainfed Farming Project (WIRFP). GVT are working to improve sustainable livelihoods for tribal people in six states of India. IFFDC initially worked on afforestation of wasteland for the benefit of the rural poor, but more recently have broadened their approach to enhance the capacities of poor rural communities while recognising and respecting their indigenous technical capabilities. The goal of

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WIRFP is to enhance the livelihoods of poor rural people and to disseminate the project approaches and technologies in seven districts of the three Indian states of Madhya Pradesh, Rajasthan and Gujarat. Villages in the project area are predominantly tribal, and socially relatively homogeneous. The project area is characterised by hilly terrain, poor soils, variable and unreliable rainfall and low levels of agricultural productivity. WIRFP is involved in a range of activities enhancing rural livelihoods including *inter alia* village community development, community forestry, rainfed agriculture and horticulture, developing water resources for irrigation and domestic use, livestock, soil and water management, participatory research, community based organisations, and technology dissemination. WIRFP is funded jointly by the Government of India, the respective state governments, the United Kingdom's Department for International Development, the Indian fertiliser cooperative Krishak Bharati Cooperative Ltd. (KRIBHCO) and the Indian Farm Forestry Development Cooperative (IFFDC).

Ownership of Water and Land Resources

Ownership of water is complex due to its mobility. When water is in the atmosphere in the form of vapour, it is considered to be common pool resource and subject to 'natural processes' such as wind and convection. When the vapour condenses and falls on the land as rain, the question of ownership becomes more complicated. One view is that landowners can retain the rainfall that falls upon their land and use the rainwater for any purpose such as irrigating crops, watering livestock, rearing fish etc. Alternative views are that water is a common pool resource and all households should be able to access the resource equally, or that government has a responsibility to ensure that water is used to the maximum benefit of the society as a whole, and hence can regulate the storage and use of all water within its jurisdiction. These views have different interpretations when the rainwater has concentrated to form a stream or river. The former view considers that adjacent landowners have rights to extracting and using river water (riparian rights), while the latter view considers that the government can regulate and sanction the use of river water (prior appropriation). When rainwater enters the soil and becomes groundwater, the dominant view is that groundwater is a common pool resource allowing landowners to abstract as much groundwater as they need, irrespective of the origins of the groundwater.

When there is a drought, these viewpoints may conflict as demand exceeds the supply of available water. For example, in 2002 after three years of drought in southern Rajasthan, the state government stopped implementation of soil and water conservation activities in the catchment of the main reservoir providing drinking water to the city of Udaipur to maximise the runoff of water into the reservoir. Similarly, the State's Irrigation Department was considering banning the implementation of water conservation activities in the catchment of their reservoirs to maximise replenishment (Tod 2002). During the second and third years of the drought, the government of Madhya Pradesh banned irrigation from all water sources to conserve water for domestic use.

Closely related to ownership of water resources is the ownership of land resources, as land use practices of agriculture and forestry are often major users of water, and provision of irrigation water for crop production can bring large benefits to landowners within a short period of time. Land ownership rights have been an established feature of British society for centuries, and similar land ownership rights have been adopted by many countries including India, United States of America etc., although in many places this has resulted in conflicts with traditional land ownership patterns. Land in rural areas can be owned by diverse groups of stakeholders including:

- Federal or state governments (often forest land);
- Local government/communities (often pasture land);
- Privately by individual households living within the community and registered with the government;
- Privately by individuals households living within the community but not registered with the government (encroached land)

- Privately by individual households not living within the community and registered with the government (absentee landlords).

Activities to Improve the Management of Water Resources

Households in WIRFP area realise that improved management of water resources is critical to improving their livelihoods because insufficient soil moisture combined with loss of soil to erosion are major constraints on crop productivity, and accessing water for domestic and other uses is time-consuming and physically demanding, especially during hot and dry summer months when water may only be available from remote sources. Provision of water for irrigation is often the main demand of communities, although women may demand better access to water for domestic and other uses.

GVT's and IFFDC's approach to improving the availability and access of water involves working with communities to develop and agree a management plan for improving land and water resources through a process of PRAs, focus group discussions and similar techniques designed to involve male and female members of all households including poor households in the planning process. The natural resources available within the community are identified in the plan, along with different interventions that villagers would like to undertake to improve their land and water resources. Issues related to ownership of land and water resources are addressed by strengthening village institutions, and then working through the institutions to improve villagers' understanding and awareness of relevant issues.

Once the plan has been agreed, implementation of the water resources interventions may require external support, as communities cannot afford the investment required due to the low productivity of their existing resources. Community institutions are assisted in forming linkages with other institutions including elected officials and government staff, and then to use the linkages to access resources and learn of other water management changes that may affect their village. Villagers work through groups to implement the activities, and the groups are based on kinship or on the physical proximity of different households around a water source.

During the planning and design of interventions, the question of the equitable distribution of benefits arises in connection with two issues: the amount the community should contribute towards the cost of interventions, and the extent to which different households benefit from the interventions.

Community Contributions for Implementing Water Resource Interventions

As with other similar rural development programmes, a key requirement is that communities contribute towards the cost of implementing water resources interventions. The community's contribution is taken as an indication of a community's demand for the intervention, and is expected to increase the community's sense of ownership of the completed works and their willingness to maintain the intervention. The majority of a community's contribution tends to be in the form of labour, as few households have surplus financial or other resources to contribute.

Following considerable discussion between communities, GVT staff and advisors, GVT decided that the wages to be paid to villagers for implementation of measures would be fixed at 50% of the state minimum wage for unskilled labour, while the other 50% was assumed to be the community contribution in terms of foregone income. IFFDC followed a similar approach to determine wage rates.

The wage rate paid turns out to be equivalent to local wage rates for agricultural labour and other similar work in villages, as the state minimum wage is much higher than local wage rates. For example, where the state minimum wage was Rs 50 per day, the project paid Rs 25 per day to villagers to implement water resources interventions. As the local wage rate was also Rs 25 per

day, poorer households, who rely on labouring as a source of income, considered the payment reasonable.

Better-off households may not need the income from working on the interventions, even those affecting their own land, and leave the work to poorer households who need the income. In such cases, the better-off households have not contributed to the cost of the improvements, and yet receive the benefits from the intervention. In the case of providing irrigation, major benefits can be forthcoming within 1 or 2 years, thereby rapidly improving the income of the better-off, land-owning households at no cost. In contrast, poorer households have improved their short-term income, but contributed a disproportional share of the community contribution and received few direct long-term benefits from the intervention.

Another unforeseen consequence of this approach is that, in some villages, men even from poorer households are unwilling to work for the wage rates offered as they compare the wage rate to what they could earn on migration. However, the men are quite willing for women in their household to work at the perceived 'lower rates'. The lack of participation by men may cause additional problems, as there may be a shortage of men to do some of the more demanding tasks such as quarrying stone.

GVT and IFFDC are experimenting with changing the funding of water-related interventions by increasing the community contribution. Other options being considered include providing land improvement grant to all households in the village, irrespective of land holding, and allowing poorer households to 'sell' their grant funds to better-off households or providing loans for land improvements. Smith (1998) has discussed potential problems with community contributions.

Identifying Beneficiaries

The short-term benefits from the construction of water-related interventions go to the labourers who employed to implement the intervention. The benefits of the employment include provision of income close to their homesteads at a time when there is a shortage of other work, assured and prompt payment of wages, training in group organisation, participation in savings schemes, and skill development (such as literacy, record keeping, banking etc.). These latter benefits may lead to longer-term improvements in the livelihoods of poorer households. For example, once groups have been formed and functioning, the group can also access credit from their own savings or other sources to finance crop production or other income generating activities.

Direct long-term benefits from interventions designed provide irrigation go mainly to the owners of the land, and when considering the distribution of benefits within a community, a key question is 'who owns what land and where is the land located'? The location of the land is important as the quality of land may vary considerably, with the lower-lying land close to streams or rivers usually being much more productive than land on steep hillsides. Lower-lying land tends to have finer-textured, deeper soils with better water retention properties while higher land tends to have shallow, coarser-textured soils that are more drought-prone. Indeed, there is often a 'socio-economic' contour reflecting the topographical contour wherein the medium/better-off households own the good quality lower-lying land while poorer households own less productive land further up the hillside.

In order to determine where different households own land within a community, GVT's and IFFDC's approach is to prepare a map showing the location of land owned by different socio-economic groups. The socio-economic status of households is determined from wealth ranking exercises carried out during PRAs. The location of fields is determined from land record maps, with the owners of individual plots being identified through group discussions.

Mapping land ownership within a village can be complex and time-consuming as land records are rarely up-to-date, and land holdings become very fragmented because of local inheritance customs.

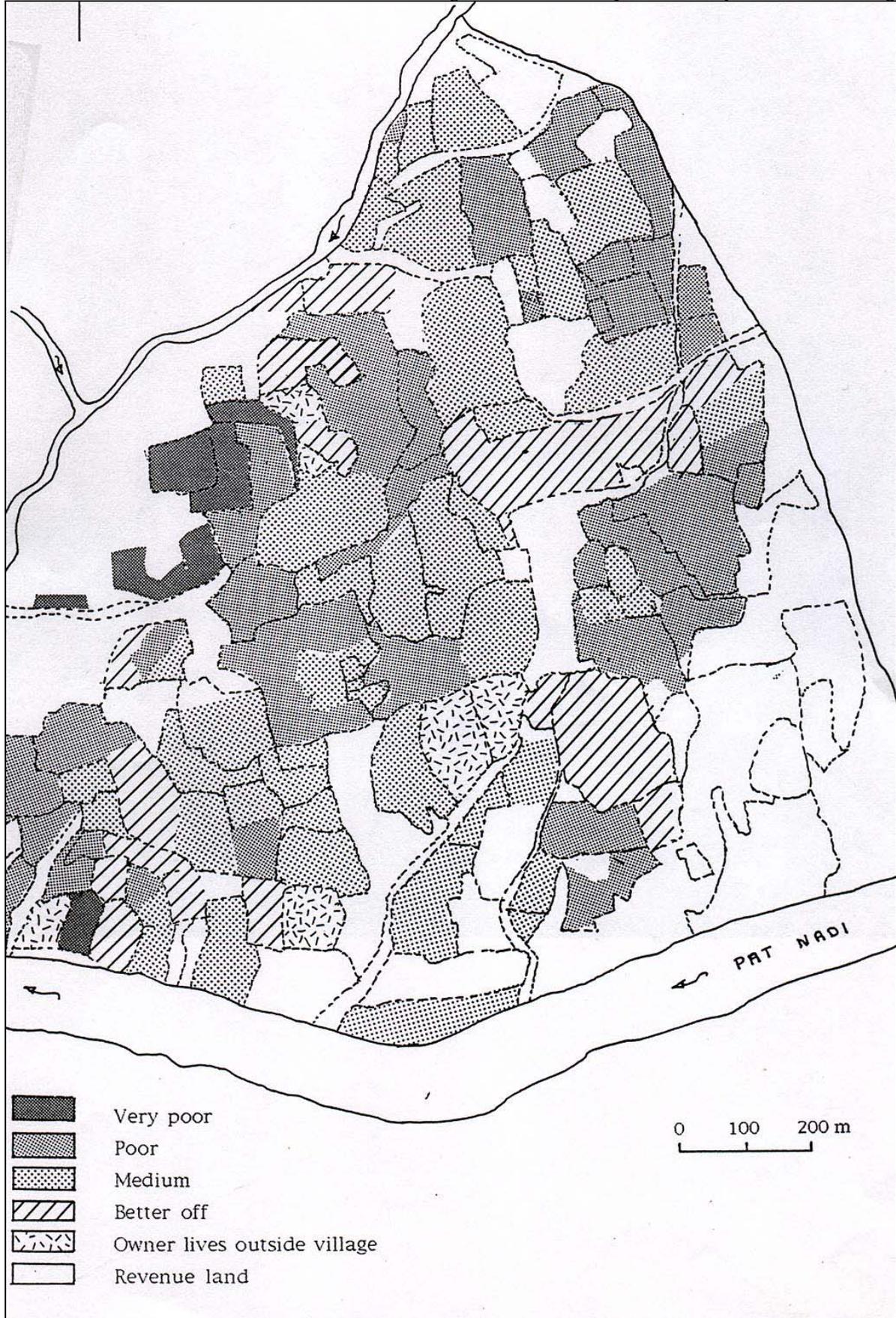
Villagers can also be very suspicious about providing information about land ownership because of fears that their land may be taken over by government or subject to tax. However, where GVT and IFFDC staff have good relations with communities, the information required was forthcoming and maps showing the distribution of land ownership by different socio-economic groups have been prepared, as shown in Figure 1 (Tod 1994).

The benefits of maps showing the land ownership by socio-economic status include:

- Determining the distribution of the investment in water resource interventions amongst different socio-economic groups or households.
- Adjusting the layout/location of interventions, particularly those related to irrigation, to include poorer households.
- Ensuring that all households including poorer households have equitable access to water for domestic and other uses.
- Identifying the quality of land owned by different socio-economic groups.
- Determining the potential benefits accruing to different socio-economic groups from water resource interventions.

This latter point is important for equitable distribution of benefits as communities can determine what other resources should be targeted to poorer households to balance the investment being made in water interventions that primarily bring long-term benefits to medium and better-off households. For example, poorer households could be given priority access to common resources such as pasture land, groundwater or water bodies. Both GVT and IFFDC have discussed this particular option with some communities, but the discussions require strong community groups and takes time as project staff need to understand the relative importance of different resources in villagers' livelihoods. Experience elsewhere indicates that for poor households to access and manage the distribution of water resources requires considerable institutional support for poorer households to participate in the scheme. For example, in Bangladesh, several non-government organisations tried to form groups of poor households to manage irrigation pumps and sell water to farmers, but the groups required considerable support in the long-term and few groups have managed to be sustainable.

Figure 1: Ownership of Land by Wealth Ranking



Conclusions

Water resources interventions can be designed to benefit poor households by analysing the linkages between a community's social, economic and technical characteristics to determine the distribution of benefits and recognising that poor households have few resources beyond their labour. Several key issues constraining poor households' ability to access and use water should be addressed during the design process including the ownership of water and other natural resources, and the capacity of communities to contribute towards the cost of interventions. The key ownership question is 'who owns what water and land resources and where'? This question can be answered by communities mapping land and water resource ownership by socio-economic grouping, and then using the map as a basis for discussions about the distribution of benefits resulting from water resources interventions. Households not benefiting from the improvements can be identified and alternative interventions targeted to improve their livelihoods.

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