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Who Benefits from Participatory Watershed Development? Lessons from Gujarat, India

Amita Shah

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Executive Summary

The evidence from a large number of state supported watershed programmes in dryland India suggests that the impact of such initiatives has remained limited in terms of coverage of land as well as households. To a large extent the impact is confined mainly to additional irrigation, benefiting only a small part of the total cultivated land owned by a few households in the village. In the absence of any intra-village sharing mechanism, such programmes bypass a large number of households who depend on the villages' natural resource base. What is more striking is that this continues to happen despite the increasing emphasis on participatory planning and implementation in the various watershed development programmes.

This paper represents an early attempt to highlight these problems. It assesses the performance and impacts of watershed development projects in Gujarat, one of the predominantly dryland regions in India. The analysis brings out some useful policy implications with respect to better sharing of irrigation and/or water resources, enhancing the actual benefits from farm economy and cost recovery, as well as cross-subsidisation. These early lessons may help improve the implementation, equitable impact and sustainability of future watershed development programmes.

WHO BENEFITS FROM PARTICIPATORY WATERSHED DEVELOPMENT? LESSONS FROM GUJARAT, INDIA

Amita Shah

Introduction

Watershed development programmes in India and worldwide are increasingly emphasising flexibility, participatory processes and institution building so as to fulfil *"all the demands of the Agenda 21"* in one shot (Rhoades, 1998). While this is a major step towards sustainable development, people's participation alone may not yield the desired results unless the process adequately addresses the interrelated issues of technology, equity and sustainability.

Watershed development in India has gained momentum with a variety of agencies trying out different approaches to technology, costs and subsidies, and institutional arrangements. The government's Watershed Development Project (WDP), funded by the Ministry of Rural Areas and Employment (MoRAE), has been implemented since 1994-95 in about 10,000 watersheds in all the country's major states. The WDP has three important features: unprecedented devolution of decision-making power backed up by financial allocation directly to the district level and hence to the village organisation level; creation of partnerships between government and non-government organisations; and technical and financial flexibility. The project places special emphasis on *"improving the economic and social conditions of the resource poor and the disadvantaged sections of the watershed community"*. This has to be achieved through equitable distribution of benefits from land and water resources, and also through greater access to income-generating opportunities (Government of India, 1994). However, the distribution of direct and tangible benefits, even in some of the most 'successful' projects, is often found to be selective and limited (for a detailed review see, Shah, 1998a; Deshpande and Narayanmoorthy, 1998; Kerr, *et al*, 1998). This paper tries to examine some of these issues in the light of recent experience from a state supported participatory Watershed Development Project (WDP) in Gujarat state.

Participatory Watershed Development in Gujarat

Gujarat, with its predominantly dryland conditions, is one of the five major states where the WDP has had a significant presence. Gujarat has a particularly strong NGO base, reflected in their significant involvement as Project Implementing Agencies (PIAs) for the project.

As the first batch of WDPs have now completed most of their field activities, this is a good time to assess their performance. Rao (2000) notes encouraging results in terms of increased irrigation, cropping intensity, yield, and better availability of drinking water from states like Gujarat, Karnataka and Andhra Pradesh. The projects seem to have helped mitigate the severity of the drought during 1999-2000 (Shah, 1999)[1]. While this is quite significant, one needs to understand:

- Who has benefited from what?
- How substantial are these benefits in relation to the households' livelihood needs, as well as the subsidies provided?
- Can the benefits become self-sustaining after the WDP comes to an end?

This study sought to examine the initial experiences of some of the better performing WDPs in Gujarat against the backdrop of these larger questions. The findings may help draw out lessons for other WDPs where the communities and implementing agencies have limited experience in participatory approaches. Given the strategic importance of the WDPs in a predominantly dryland region like Gujarat, the analysis could have significant implications for future policy formulation.

Often, increased access to irrigation is the only direct and tangible benefit of WDPs in dryland regions. While this is obvious, access to this irrigation is generally limited to a few households and projects rarely try to expand the net of beneficiaries, for example through the provision of drinking water or fodder or by enhancing common property resources. This is worrying not only from the view point of equity, but also because of its likely impact on water use efficiency and the environment. Furthermore, subsidies are often uniformally spread, irrespective of a household's economic status or benefits received from the project; and the distribution of benefits is governed largely by the land-base of the households rather than through negotiations between households.

These issues generally elude the impact assessment studies, which often focus on the overall benefit-cost ratio and/or the improvement in the status of natural resources at the watershed level, without getting into the details of who gets what, how much and at what cost. Since most of these projects are centrally designed and funded, the project implementing agencies (PIAs) and even the recipient communities treat the project guidelines[2] and design as largely given, leaving a lot of potential linkages as well as benefits untapped.

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1 These observations are based on a few relatively better performing PIAs in Gujarat.

2 Detailed guidelines have been prepared by the Ministry of Rural Areas and Employment (MoRAE), Government of India to guide the implementation of WDPs by PIAs (see Government of India, 1994). A recent review of implementation of these guidelines has observed that "wide variability in biophysical and socio-economic conditions means that the guidelines have to be locally adapted by implementing agencies. Few currently have the human capacity to do so, and some operational procedures do not facilitate adaptation… there is little evidence of cross-learning among the wealth of approaches being developed to implement the guidelines" *(Turton, et al 1998).*

Who benefits? Evidence from the field

The study, undertaken by an independent team led by the author at Gujarat Institute of Development Research, involved Project Implementation Agencies in five districts: Rajkot, Surendranagar and Amreli in the dryland region i.e. Saurashtra; and Bharuch and Panchmahals in the hilly-tribal belt. Together these districts cover about two-thirds of the total 1348 WDPs being implemented in Gujarat. Firstly 16 PIAs were selected to examine the broad profile of activities in these five districts. This was followed by a detailed study of four PIAs (one from each district, except Panchmahals), and a sample survey of 120 households representing three categories: beneficiaries of field bunding alone; beneficiaries of water harvesting structures; and the landless. The aim was to explore the following questions rather than provide quantitative data, which would be difficult to derive from this rather small sample size of households[3]:

- What is the composition of the treatment plans selected through participatory processes?
- What benefits result from these treatments and how they are they distributed among different sectors of the village communities?
- What is the scope for reorganising the subsidy structure across watershed treatments and/or households?

Watershed Treatments

In this section we examine the activities of the 16 sample PIAs (Table 1). Whilst enhancing irrigation facilities and extending irrigation to a larger number of landed households was an important goal for these dryland villages, another major task of the WDP was to develop community resources like pasture and other wasteland, village tanks and wells for drinking water etc. so as to benefit the landless households. These are important, because the project guidelines state that at least 80 per cent of the watershed area is to be covered with treatment or developmental activities selected by the watershed communities. The village profiles revealed that about 100 out of the total 195 villages covered by these PIAs each have more than 50 hectares of community pasture land and/or cultivable wasteland. However, most of the PIAs found it difficult to develop this common land because of encroachment by villagers, as well as problems of collective management. Strangely, several of the PIAs did not even collect information on the number of landless households or on the amount of pasture or community wasteland.

3 The households were selected through a stratified random sampling procedure. Ten households representing the three categories were selected, thus 30 households from each of the four micro watersheds were covered by the primary survey.

Water harvesting structures like checkdams, providing individual private benefits, are the most common activities implemented by the PIAs (Table 1), followed by social forestry and nala plugs (i.e. small checks on the drainage lines) on common land. However, if one looks at the spread of these latter two activities among the 195 project villages, it is fairly limited. For instance, social forestry is an important component but it has been done only in 84 out of the 148 villages and covers less than two hectares in each village. A similar pattern is observed for other major treatments such as check-dams, nala plugs and contour bunds.

Table 1. Profile of Watershed Treatments in Selected PIAs

Watershed treatments	No. of PIAs undertaking the treatment	No. of villages under the treatment	Total no. of villages for which info. is available
I. Drainage Line + Public Land			
Checkdam	15	83 [57.2]	145
Nala Plug	13	86 [66.7]	129
Pasture Development	9	66 [36.5]	181
Social Forestry	14	84 [56.7]	148
Village Tank	5	9 [6.1]	148
II. Private Land			
Contour Bunding	11	139 [76.8]	181
Land Levelling	5	31 [17.1]	181
Farm Ponds	10	45 [24.9]	181
Farm Forestry	6	41 [22.6]	181
Input Kits	5	36 [21.8]	165
Well Recharge	11	85 [51.5]	164
Other	8	63 [38.2]	165
Total	**16**	**181**	**181**

Our discussion with the PIAs indicated that people generally do not prefer treatments like social forestry, pasture development and even contour bunding if the land is not irrigated because the benefits are not sure and/or substantial (Shah, 1997). The worst sufferer is any livestock-related component, with only scattered efforts being made in terms of organising cattle camps etc. On the other hand there is a widespread demand for land levelling which is generally accorded a low priority by the project guidelines.

Thus the PIAs have to 'influence' the priorities and persuade the villagers in the project area to include activities that generate social rather than private benefits in the treatment plans. The initial planning stage involves 'participatory' events like a few meetings with the villagers, consultations with village leaders and the formation of user groups. But there is no process for negotiation between the different stakeholders, such as the landed and landless, over the various trade-offs inherent in watershed based development.

Centrality of Checkdams and Water Harvesting Structures

There is an increasing perception among many PIAs and other development agencies that harvesting rainwater downstream rather than *in situ* conservation is a priority in the low rainfall regions in Saurashtra-Kachchh because *in situ* conservation may not help much if the rainfall is scanty and erratic. Hence the view is that watershed projects should concentrate mainly (or only) on water harvesting structures.

However, this has resulted in a proliferation of checkdams which benefit only a part of the farm land by recharging wells, without considering the implications for water resource management in the wider context of a river basin. This might lead to distorted water use planning on the one hand, and inter-personal as well as inter-regional inequality in access to water resources on the other.

In our study each checkdam on average benefits 15 hectares and six to eight households, though some households benefit from more than one checkdam. Thus the benefit from 511 checkdams (the number in the 16 PIAs' area) would be 8,176 hectares and 3,060 households. Considering that the total area covered by the 177 projects undertaken by the 15 PIAs which had made checkdams is 88,500 hectares, checkdams only benefit about 11 per cent of the total area or households. Even if we take a higher estimate of 10 beneficiary households as is the case for a few checkdams, only 15-16 per cent of households will benefit. The remaining households would therefore have to receive treatments like nala plugs and contour bunds since other forms of water harvesting structures like farm ponds, village ponds, trenches etc. are by and large missing in the treatment plans for these villages.[4]

Whilst the benefits of checkdams are more or less sure, substantial and immediate, benefits to individual farmers from other structures such as nala plugs or contour bunds may not be so immediate and/or substantial. Ideally therefore, an integrated watershed development project should try to reduce the gap between the benefits emerging from the two sets of treatments. The need is to attain a holistic and balanced approach towards watershed treatments, as well as a mechanism for resource/benefit-sharing.

Many of the PIAs seem to be missing out on this crucial aspect, especially those which emphasise water harvesting structures. For example, the Bharatiya Agro-Industries Foun-

4 Strangely, the reliance on surface and groundwater has increased substantially compared with rain water and flood water. This is despite the fact that these latter are more available (Agarwal and Narain, 1999).

dation (BAIF) has spent nearly 57 per cent of the treatment expenditure on checkdams, covering 30 per cent of the total area under the project, to the benefit of 700-800 households from different treatments in 11 villages. Yet one wonders what happens to the remaining two-thirds of the households who do not receive any benefit, except for one-off employment in various project activities (although it is possible that the coverage of beneficiaries might increase when all the project activities are implemented). Few PIAs systematically map the distribution of benefits across households and the issue of benefit-distribution is often overlooked when reviewing progress internally and externally.

Impacts on Household Economy

This section examines the short term impact of the project on rural households by comparing 120 households in four micro watersheds before and after implementation of the project. The micro watersheds are selected from four PIAs - Halenda (BAIF-Rajkot); Bhimgadh (GLDC-Surendranagar); Kamigadh (TECH-Amreli); and Teliamba (AKRSP-Bharuch). The sample households have been drawn from the three categories: (i) those covered by a user group of a water harvesting structure; (ii) those benefiting from field bunding; and (iii) the landless. Table 2 provides a brief profile of the sample households.

Table 2. Profile of the Sample Households in the Study Villages

Household Type		Halenda (Rajkot)	Bhimgadh (S.nagar)	Kamigadh (Amreli)	Teliamba (Bharuch)	Total
WHS		10	15	10	-	35
FB		10	15	10	15	50
LL		10	-	10	15	35
Average land holding (acres)*		8.84 (1.63)*	7.91 (5.01)	15.36 (10.32)	5.37 (NA)	9.43 (4.17)
Average area of irrigated land (% of total)**		3.42 (38.7)	1.53 (18.7)	4.34 (14.1)	0.57 (0.7)	2.61 (20.9)
Access to irrigation (No. of households)**	Yes	20	29	10	01	60
	No	nil	1	10	14	25
No. of checkdams		8	8	1	-	17
Total No. of beneficiary households **		53	62	8	-	123
Total no. of households*		644	152	248	298	1342
Landed		584	103	180	208	1039
Landless		60	49	68	98	275

*Note: *Indicate average land holdings in the village in 1991. *Before Project Intervention.*
**After Project Intervention. WHS=Water Harvesting Structures. FB =Field Bunds.*
LL = Land Levelling. Note that the number of households in the category of field bunds is larger than the other two. This is because of the absence of landless households in Bhimgadh and non-existence of water harvesting structures in Teliamba.

This shows that a large proportion i.e. 25 out of 85 landed households have access to irrigation. The average size of landholdings is fairly large i.e. 9.43 acres. Overall 40 per cent of the farmers have less than 2.5 acres of land; the rest have relatively larger land holdings. The sample households thus seem to be relatively well endowed in both land and water resources. It would have been more equitable if subsidies were linked to the capacity of the beneficiary households to pay for the cost of the treatment. A part of the subsidies then could have been used for expanding the coverage of project beneficiaries.

Crops, Productivity and Income

The project has led to a significant increase in the irrigated area (a net increase of 143 acres), which has almost doubled since the project started. With increased irrigation the gross cropped area has also increased, especially during *kharif* (i.e. the monsoon), because increased irrigation has led to a significant shift towards cotton, a long duration crop sown during that season. The number of farmers growing irrigated cotton has increased from 36 to 54 and those growing unirrigated cotton has increased from 22 to 32. This shift has taken place mainly by replacing the four major *kharif* crops: groundnut, *til*, *bajri* and fodder.

Whilst there are inter-district variations, overall the project seems to have had a positive impact on crop productivity (Table 3), except for unirrigated cotton and unirrigated fodder where yields have declined marginally.

Increased crop productivity has largely brought higher net returns to the farmers, except for irrigated cotton where net returns per acre have declined, probably because of the increased cost of inputs like fertiliser and pesticides. In the case of unirrigated cotton, there was in fact a decline in yield. Since the price of irrigated cotton increased only marginally, i.e. from Rs. 319 to 350, this has not covered the increased cost of production. Nevertheless, if one looks at the average net returns earned per household, there is an increase in the case of irrigated cotton (due to the increased area under the crop); unirrigated cotton shows a decline which is more or less commensurate with the declining yield.

The total net returns (from all crops combined) to households has increased by Rs. 15863 per household (63 per cent) since before the project (Table 4). However, the income gain is higher for those who benefited from checkdams compared with those benefiting from field bunds alone.

Nevertheless the average level of crop yields and the resultant net returns continue to remain fairly low, especially in the case of unirrigated crops. Since irrigation benefits reach only a part of the village community, the project's impact is likely to remain narrow unless special efforts are made to address the technological needs of rainfed crops. This points to the critical need for measures to promote dryland farming technologies like composting, mulching, and mixed cropping, as well as soil moisture conservation treatments like trenches, land levelling and farm ponds. An extension

Table 3: Economic Gains (1998-99)

Crops	Variables			
	No. of sample farmers	Area in acres	Yield kg/acre	NR*area (Rs.)
Cotton I	54	243.53	616	6195
Difference*	18	124.54	43	-619
Cotton UI	32	79.62	364	4507
Difference	10	10.01	-54	-227
Groundnut I	35	211.95	380	3095
Difference	-6	-44.95	89	1310
Bajri UI	12	19.09	377	1581
Difference	-5	-27.11	72	527
Jowar UI	15	24.99	520	1633
Difference	1	-7.55	376	1143
Fodder I	11	7.44	6909	6860
Difference	3	2.67	326	4009
Fodder UI	16	31.57	1842	1383
Difference	-7	-4.40	-22	149
Pulse UI	6	10.07	114	1251
Difference	-2	-16.87	38	699
Til UI	8	30.74	218	3295
Difference	-6	-3.95	21	1107
Paddy UI	14	24.93	305	690
Difference	1	2.19	71	192
Wheat I	7	8.14	1290	5473
Difference	0	-3.66	409	3017

*Note: *Difference over 1996-97. Rainfall-wise the two reference years were more or less comparable*
NR = Net Returns; I = Irrigated; UI = Unirrigated

service which focuses on these aspects would be critical for their effective adoption, but extension support is more or less absent from most of WDPs under study (the important exceptions are AKRSP, DSC and BAIF).

We tried to work out average benefits and costs for checkdams (Table 5) using information from the three micro watersheds where the activity has been carried out. The aim was to assess the economic viability of the activity as well as the beneficiaries' ability to pay for the cost. The estimated value of the stream of benefits is about Rs. 76,000/- per check-dam over a period of 15 years against an initial investment of Rs. 83,400/-. For this, the beneficiaries pay about 20-25 per cent of the cost; the rest is a government subsidy. At present, these benefits are limited to only a minority of house-

Table 4. Change in net returns to households before and after the project intervention (Rs/household)

Activity		Districts				
		Rajkot	Surendra -nagar	Amreli	Bharuch	All
Checkdams and other activities	1999	51336	29998	84872	-	51773
	1996	24393	16070	56994	-	29830
	Difference	26943	13928	27878	-	21943
	%	110.45	86.67	48.91	-	73.56
Field bunds alone	1999	39388	25337	65065	8689	30141
	1996	21168	16930	48408	4941	20172
	Difference	18200	8407	16657	3748	9969
	%	86.07	49.66	34.41	75.86	49.42
Total	1999	45362	27668	74969	8689	40957
	1996	22781	16500	52701	4941	25094
	Difference	22581	11168	22268	3748	15863
	%	99.12	67.68	42.25	75.86	63.21

holds. The issue, therefore, is how to spread these benefits among a larger number of households either directly or by sharing water rights, or by cross-subsidisation. For instance, only 53 households benefit from the eight checkdams in Halenda (Rajkot), out of the total 644 households in the village. In Teliamba (Bharuch), where no checkdams were created, yield increases and net returns per household are fairly low, but are spread more widely (i.e. among almost all the farmers in the village).

Table 5. Cost-benefit analysis for checkdams

Indicators (per checkdam)	Value
Initial Investment (Rs.)	83,400
Area Covered (Acres)	37.1
Beneficiary Households (No.)	7.5
Incremental Net Returns (INR) during a Normal Year (Rs.)	1,40,000
Average INR over 15 years duration considering a 5 year cycle of crop-productivity (Rs.)	76,000
Average INR per acre (Rs.)	2,047
Total capital cost (Rs.)	10,48,600
Discounted present value of benefits (Rs.)	2,57,455
Benefit: Cost	4.07

Other Benefits

Apart from crop yield and net returns, there are other possible project benefits for farmers. Since it is too early to measure these benefits in quantitative terms, we have tried to capture farmers' perceptions about these changes:

- A large proportion (70 per cent) of farmers reported an increase in soil moisture, though the impact is somewhat limited (i.e. 57 per cent) in Surendranagar which has low rainfall and level topography compared with Bharuch (78 per cent) which has medium rainfall and hilly topography.

- 87 per cent of the households reported that the project has improved drinking water facilities by various measures such as deepening the community wells, repairing hand-pumps and recharging private wells. The proportion is particularly high (nearly 100 per cent) in Surendranagar and Bharuch where specific initiatives were undertaken as entry point activities by the PIAs.

- The impact on fodder and fuel has been somewhat limited. Less than 50 per cent of the respondents indicated the possibility of such an impact in the future. This is mainly due to limited coverage of community wasteland in the study villages. The major way to increase fodder and/or fuel availability would be increased crop residue obtained from the rise in crop productivity. Since this impact is likely to be confined to a select group of farmers, especially those benefiting from the water harvesting structures, the overall impact in terms of fodder and fuel might be limited.

Benefits to the landless

Whilst a major benefit from the project has been the improved availability of drinking water, fuel and fodder are still neglected issues. Similarly, in the case of allied activities like information and credit support or skill formation and promotion of income generating activities, the impact is almost insignificant. As a result, the major gain for the landless households is only through direct employment in project activities, and these will not be sustained beyond the life of the project. Strangely, even some of these one-off employment opportunities are reduced by using machines instead of labour.

Thus, the WDPs show a clear hierarchy of benefits and beneficiaries, with households receiving irrigation benefiting most, followed by those getting on-farm treatments like field bunds, and the landless with and without livestock, receiving least. Since this hierarchical pattern is largely governed by the given geo-hydrological profile, superimposed on the existing structure of land ownership and associated water rights, the observed inequality in the distribution of project benefits is fairly obvious. What is particularly concerning is that these issues are treated as more or less structurally determined, rather than being placed at the centre of a participatory process. The need therefore is to initiate a negotiation process between the different categories of beneficiaries and stakeholders.

Extension and credit support

Of the 88 cultivating households, only 32 reported having received extension support. The proportion ranges from as high as 78 per cent in the case of Bharuch to as low as 10 per cent in Amreli. In fact, extension support is yet to be recognised as an impor-

tant aspect of watershed development programmes. Whilst several PIAs have distributed subsidised seed and fertiliser, such measures are not critically needed at this stage when farmers, by and large, are already convinced of using these improved inputs. The crucial need is to ensure more effective use of the additional soil moisture and/or irrigation made available through the project's activities. Since these resources are also likely to be limited and uncertain, information on appropriate dryland farming practices and crop selection would be important. Moreover, credit is going to be an essential component in a watershed programme so as to benefit farmers from different socio-economic strata. Such initiatives are yet to be taken on a large scale.

Project Sustainability

Since those who received a substantial income gain from the project have made very little contribution towards the treatment cost, the case for cross-subsidisation across households should be explored if watershed activities are to be sustained in an equitable manner and in the long term. This could be attempted by partly shifting the subsidies from (a) private to public resources; (b) checkdams/water harvesting structures to water saving devices; and (c) landed to landless households.

We asked households whether they would be willing to share the project costs in future. Ninety per cent said they would; however, when asked specifically to name a figure, the proportion of respondents fell to 51 per cent. The amount indicated by these farmers ranged from one day's labour to 50 per cent of the total cost. Most felt they were only willing to contribute 20 per cent in the event of a similar project initiative in future. These perceptions, to a large extent, are conditioned by the heavy subsidies involved in the project design. Breaking this mind-set and reducing subsidies are essential aspects of a participatory process if the watershed based development activities are to continue beyond the end of the project.

How realistic are these futuristic perceptions? We looked at households' own past soil and water conservation initiatives. Surprisingly, only 37 per cent of the landed households made any effort in this direction; the proportion is higher in Rajkot and lower in Bharuch. This is concerning because a large number of respondents indicated the need for improvement in the on-farm treatments carried out under the project.

Village watershed committee funds are generated mainly by retaining a part of the wages paid to the beneficiaries to work on project treatments. In most cases these funds are small since few beneficiaries directly contribute to the fund. Unfortunately, most on-farm treatment is done by machine and/or by hiring labour from outside for reasons of efficiency, non-availability of family labour, unwillingness to undertake hard manual work etc. However, this means that people have little stake in the physical structures created by the project and little commitment to maintaining them, instead expecting the leaders of the watershed committee and the PIA-functionaries to 'somehow' take care of these assets. This situation might also be associated with project subsidies.

Policy Suggestions

Given the administrative delays and the difficulties in changing the treatment plans that are prepared and approved by the government right at the beginning, the WDPs, to a large extent, are shaped by the pre-determined ideas of PIA administrators. Thus they remain mainly supply-driven and dominated by an irrigation-centric approach, especially in the drought prone districts of the Saurashtra-Kachchh region. While this might be a valid approach for such regions, more systematic planning may be required both at the micro (i.e. village) level as well as macro (i.e. river-basin) level. Unless this is ensured, the decentralised approach towards water resource management may cause environmental problems and at the same time create inter-regional as well as inter-household conflicts.

What is needed therefore, is to replace the irrigation-focused approach with one which emphasises limited irrigation for all, including for community land. What is equally important is an appropriate structure of incentives for promoting water use efficiency. Better distribution as well as use of water could be attained if it is treated as a common resource in which everybody has a direct stake. Participatory planning and management thus become essential.

We suggest the need for a mechanism to enhance both the total quantity of benefits, as well as their distribution among a larger number of households within the village community. This is vital if the WDP is to work as a development strategy for the dryland regions, as distinct from merely a strategy for resource conservation or supporting subsistence livelihoods (Rao, 2000; Turton *et al.*, 1998). This requires greater attention to the three interrelated issues governing the size and distribution of benefits: economic incentives, cost sharing, and cross-subsidisation. In turn, this would also help establish a participatory process based on negotiations which would be more sustainable than the short lifetime of the project. The following specific suggestions might help guide a future strategy for participatory watershed development, especially in the dryland and/or semi arid regions.

1. Almost every household should have a direct stake in each of the major watershed treatments and, in turn, pay for their cost irrespective of the land base. This helps not only in ensuring people's stake in the project, but also gives a focus for a negotiation process between the different stakeholders, including the landless households. Cost sharing therefore becomes an important policy instrument which can bring different stakeholders to the negotiating table (Shah, 1999). At present financial contributions are obtained mainly from those directly employed or benefiting from a specific activity. This creates more segregation within the watershed community rather than bringing people together over a common cause. In the current situation with the project more or less fully subsidised, there is little need to consider conflicting claims on natural resources. For instance, the watershed community rarely considers a legitimate claim on water for regeneration of pastures and forest.

2. Cost sharing should be related to the expected direct benefit from the project activities and also provide for a facility for differing levels of payment i.e. at the time when financial benefits actually start flowing. This would facilitate efficient use of resources and enlarge the fund available to the village watershed committee. In turn, the committee should pass on funds to individual user groups for repairs and maintenance. The activities which generate substantial private benefits should be least subsidised compared with those where the benefits are less tangible, take longer to be realised and benefit wider society rather than individuals (Kerr et. al., 1996). Instead of external agencies deciding these norms, it should be left to the people themselves.

   There are already some good examples of cost sharing in watershed projects from various parts of India[5]. For instance, experience from MYRADA, OUTREACH, DANWADEP, AKRSP, and BAIF suggests that if effectively implemented, people can be made to pay up to 50 per cent of the cost of some of the treatments where private benefits are fairly high. These contributions then supply a revolving fund to take care of future investment needs. However, there is still a need for a mechanism to link together the different stakeholders, such as those who benefit from a checkdam and those having a very high stake in developing community pastures.

3. The third important aspect therefore is of linking up the community through resource sharing and cross-subsidisation. To a large extent, this can be achieved by using the strategic importance of water and water harvesting structures. For instance, any structure which generates additional irrigation facilities should also contribute water to activities like fuel plantations, fodder development, drinking water facilities etc. In case such measures are not needed or not feasible, the direct beneficiaries of such structures should be made to pay for activities (like a fodder bank) that can directly improve the quality of life among those who remain excluded from the major benefits of such measures. Alternatively, water rights to all the households may be another strategy to attain equity (Koppen, 1999). While this has been tried out through *Pani Panchayats* for irrigation schemes in a number of villages in Maharashtra, where decisions about distribution and use of water are made by community based organisation representing all the households, including the landless, who also have exchangeable rights to water (Patil, 2000), it may not be feasible in a watershed programme where structures are small and additional water is limited. The better option at present might be to invest in the measures which have substantial private benefits, recover a part of the cost, and pass it on to the activities that can help the rest, especially the poor.

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5 For details on experiences of cost sharing see Shah, Anil (1999); also various papers presented at the National Workshop on Cost Sharing in Watershed Development, organised at MANAGE, Hyderabad, September 12-13, 2000.

Another closely related issue is that of distribution of water across farms. There is already a debate on the efficacy of providing limited water to a large part of the land mass, versus supplying it intensively to only a few farms. Experiments in dryland regions in Western India suggest that it is possible to provide limited water to a large number of plots, which in turn can ensure livelihood security to even small and marginal farmers having 0.78 to 1.57 hectares of land (Shah *et al*., 1998). Efforts are needed to work out such technological options so as to arrive at an economically viable land and water unit.

4. The fourth issue relates to the participatory process through which the project is introduced to the village community. Given the fact that the project is initiated, designed and funded by the state, there are certain operational constraints that impinge on the participatory processes. Unless the PIAs are experienced in the craft of participatory development and also have their presence felt by the people in the region, participatory tools like PRAs, village meetings, group formation or even collection of a token contribution by the watershed communities may remain superficial. People generally tend to agree even to inequitable ideas since nobody stands to lose out and at least a section of society is likely to derive substantial benefits. To a large extent this happens because the project is often being seen as making a one-off investment in the usual set of soil-water conservation measures. Since people find it easier to trust a credible PIA than trusting some of their own people, co-operation is generally not difficult to bring about until one of the issues of resource or cost sharing arises. The experiences suggest that most PIAs tend to avoid bringing up these issues, but those who do eventually gain in terms of collecting more contributions and using them more effectively (Shah, 1999). The need therefore, is to start with joint assessment of the beneficiaries' ability to contribute, and to reallocate funds for other activities where the actual benefits as well as the households' ability to pay is fairly limited. This will help trigger a process of negotiations among different stakeholders.

   There is also a need to translate the participatory spirit of the watershed guidelines prepared by the Government of India into actual practice. This requires continuous orientation and training for the functionaries of the funding agency, the PIAs and the people. Unless this is ensured, the guidelines are likely to be read as a book of rules where the procedures, rather than the people, become the central focus of the projects.

   In the case of National Watershed Project for Rainfed Agriculture (NWPDRA) (funded by the Ministry of Agriculture, Government of India), the NGO's role is mainly limited to mobilising people's participation through awareness generation, group formation and co-ordination with the implementing agency. There is greater scope for the NGO to design, plan and execute the project, though within the bounds of the watershed guidelines.

5. Finally, the issue of developing market linkages needs special consideration if the initial benefits are to be sustained in the long run. For instance, several of the very important soil and water conservation measures or agronomic practices, despite their economic viability, do not get adopted simply because there are no well developed and regulated markets for rendering services/inputs like land levelling, farm ponds, composts, bio-fertilisers, seed banks etc. Some of these activities are difficult to manage at the micro-watershed level, and yet there could be a substantial demand for them, so efforts should be made to promote markets for such services. It is here that the state may have to play a proactive role by providing investible funds and moderating market operations. These kinds of initiatives may also have significant mileage in terms of expanding the net of benefits from watershed projects. The idea is to reallocate rather than reduce the state's funding to enhance the size of the project benefits as well as the number of beneficiaries.

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