Livelihood Support from Watershed Development in India: Issues of Equity and Property Rights Regime

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1. Introduction:

Watershed development has emerged as an important intervention for supporting natural resources-based livelihood across different agro-climatic regions in India. The approach, especially since the mid-nineties, lays special emphasis on participatory processes, devolution of funds to the community organisations, enhancement of productivity, sustainability of resource use, and equity in distribution of benefits. These features assume special importance because unlike other projects for development of natural resources, watershed development adopts an integrated approach with a central thrust on strengthening the symbiotic relationship between land, water and forest. In the process it seeks to link private and common property resources (CPRs) including the commons.

Commons play two distinct roles in upholding the special features noted above. First, development of common property land resources (CPLRs), including forest, is essential for extending direct benefits to the landless. Second, and perhaps more important, is sharing of benefits from the newly augmented water resources resulting mainly from watershed treatments on public or common lands.

Understanding the interface between private and common property resources and maintaining a balance between the two through iterative processes of incentives and regulations for managing these resources ideally, is one of the most challenging tasks of watershed development. Balancing the concerns pertaining to the private as well as common property resources assume special significance not only from the view point of an integrated natural resource management, but also from the perspectives of equity and livelihood support. Unfortunately, the issue of regeneration and management of common property resources viz; land, water, forests have relegated to subsidiary status in the actual practice of watershed development in India [Shah, 1998].

The experiences from WDPs, especially since the mid-nineties have brought mixed outcomes. Whereas the projects have helped augmenting rainwater thereby enhancing productivity of land, these benefits have often remained limited and selective covering only a subset of the landed households. On the other hand most of the watershed projects have overlooked development of CPLRs owing to a number of constraints-legal, procedural, socio-economic and institutional. A major dilemma faced while developing natural resources within a watershed emanates from the inherent trade-off between regeneration of commons through soil-water conservation in the upper reaches and resultant productivity enhancement taking place in the lower reaches. Given that the poor depend relatively more on the commons as compared to the rich [Jodha,

1986], the issue of inequity becomes inherent to watershed development unless special measures are undertaken for compensating the poor for the environmental services and/or supplementary activities for generating livelihood support for those left out of the benefits from watershed treatments [Kerr, 2002; Sangmeshwaran, 2006; Joy, et.al; 2006].

The limited impact has raised doubts about the potential of micro watershed projects in terms of extending livelihood support to the poor. The evidence, by and large, suggests that watershed development if properly designed and implemented could serve as necessary but not sufficient condition for reducing rural poverty. Also it is alleged that if not properly designed and implemented, these projects may worsen the equity scenario in the events where increased availability of ground water, for the want of regulatory mechanisms, may to lead to further depletion of the resource.

It is therefore important to examine the issue of equity in sharing of benefits from watershed projects, focusing on common property land as well as water resources. It is however important to recognised that there is a limit beyond which the inherent inequality in ownership of land, which in turn determines access to ground water, could be overcome even if regulatory mechanisms for benefit sharing are in place. Understanding the limits set up by the existing property rights regimes thus, is an essential pre-condition for understanding the issue of equity and benefit sharing within the context of micro watershed projects.

Given this backdrop, this paper will examine: (a) role of common lands (including forest) and ground water in determining the benefits from micro watershed projects; (b) distribution of benefits across households within the village community; and (c) policy imperatives for ensuring more equitable distribution of benefits in the light of the examples of good practices. The study will be based mainly on primary data collected form households in 12 micro watersheds (about five) in the western part of Madhya Pradesh-a state having large number of watershed projects implemented in regions with substantially large proportion of forest land.

The analysis is divided into four sections. The next section discusses the issue of equity in watershed development in the light of interface between private and common property resources in Indian context. Section 3 presents evidence on equity in benefits from various watershed projects in the country. This is followed by discussion on good practices for addressing the issue of equity and livelihood promotion within watershed projects. The last section highlights policy implications.

2. Equity in watershed Projects: Interface between Private and Common Property Resources

Watershed development is one of the most important policy initiatives in India, especially since the mid-nineties, for addressing the multiple objectives of regeneration of natural resources, promotion of agricultural growth particularly in rain fed areas, and promotion of rural livelihood. By now, large number of micro watershed projects have

been implemented covering about 45 million hectors of land in different parts of the country. The plan is to cover another 65 million ha. of land covering degraded forests, pastures, and crop land [Planning Commission, 2007].

Watershed development results in enhancement of ecosystem resources and productive potential. Moreover this enhancement takes place on the basis of public funds and through collective, community effort. Thus it can be argued that *the additional resource that has been created be assured equitably to everyone in the watershed, even as prior right to previously existing resources are recognised and left largely undisturbed.* Thus, without greatly disturbing prior rights and use, potential access to productive resources for the rural poor could be created by watershed development and thereby provides equitable access within a positive sum game framework [Joy et. al; 2006a]. This would encompass the issues of what kind of technologies/ activities to be undertaken, how much would be the flow of benefits in short and long term, and who will share the benefits.

Attaining equitable benefits poses one of the most difficult challenges in implementation of watershed projects where the emphasis is on attaining productivity-enhancement by simultaneously addressing the issues of resource sustainability and equity in benefit sharing. The problems pertaining to equity in watershed projects, to a large extent, emanate due to the concerns for balancing (a) private-social benefits; (b) short term and long term gains; and (c) scientific (i.e. `ridge to valley' and integrated) approach vs. crop-productivity centric approach to resource management[1].

A large part of literature on CPRs lay special thrust on regenerating the resources by mobilizing collective action and evolving institutional arrangements for calibrating a set of incentives and punitive actions. Collective action is deemed necessary mainly for practical reasons of preventing `tragedy of the commons' to take place. Nevertheless, collective action has gathered added legitimacy because it is expected to promote participatory democracy and equity both having intrinsic values in the process of development.

However collective action does not necessarily imply equity in access/control over resources, benefit-sharing, and decision-making [Sengupta, 2004]. In fact there are evidence that prove just the contrary. For, collective or community action, in a highly stratified society like that in India, has co-existed with various strands of hierarchies and inequities-social, economic, and political.

In the specific context of watershed development, such hierarchies may have worked `favourably' for mobilizing acceptance of the project interventions, especially on common property resources if head of the village community envisages direct private

[1] In a broader context, equity cancers in a project are influenced by a number of factors such as the differing conceptualization among various agents, limits to the radical agenda that could be taken up within a given time and space, macro level policies, and the revealed preference of the society for the kind of development approach to be followed [Sangameshwaran, 2006; p. 2164]. It may be noted that much of these is beyond the control of the local community in general and the marginalized people in particular.

benefits from the project. The rest of the community does not find this `greatly unjust or objectionable' because of the two important features characterizing the highly stratified society in India. These are: (a) large part of the iniquitous benefits emanate from the structural factors hence, the weaker section of the community may tend to take this as yet another project reinforcing the existing inequality; and (b) since a large part of the investment (about 80-90%) is financed by the public /external resources, the role of the participatory institutions tends to get reduced to distribution of subsidies; unless the watershed treatments result in gross damages to the resources owned/accessed by the weaker sections, these households are least likely to get involved or raise objection to the decisions taken by the local institutions. Moreover**,** the landless communities may accept perpetuation or even further accentuation of the structural inequities because they may tend to benefit from additional employment generation during the project period. Finally, those in the upper reaches may agree for regenerative efforts in the hope that increase in the overall productivity within watershed may lead to development of markets and other off-farm livelihood opportunities mainly through `watershed-plus' activities [Kerr, 2002].

Notwithstanding these realities, equity in watershed development is a desired goal, besides being socially just, because: (a) it may create pressure on regenerating the commons, which otherwise may remain neglected in watershed treatments owing to various obstacles noted earlier; and (b) it may lead to sustainable resource-use owing to the fact that the resources (like forest/pastures and ground water) are shared among a larger number of households than those who legally owned them.

Since a large proportion of the investment in watershed projects is allocated to land based activities, and that access to augmented water for irrigation is also linked to ownership of land, the project-benefits are generally tilted in favor of the landed and the men who own the land. Development of common property resources (land, water, forest) and formation of Self-help-groups (SHGs) for promoting income generating activities thus, become the main thrust of watershed projects for addressing the issues of landless and women.

Chart 1 depicts the interface between private and common property resources and in the context of watershed development projects in India.

Chart 1: Private and Common Property Resources within Watershed: The Interface

	Watershed Treatments	Nature of Ownership and Control	Direct Impacts	Main Beneficiaries	Remarks
1.	Regeneration and Conservation of Forests/Pastures in Upper Reaches	Mainly CPRs	Controlling Erosion of Soil-Water; Reducing Siltation in the Terminal	Forest Dwellers; Livestock Keepers; besides the State (Forest Department) and the Society at	Complete ban on the use of Pastures/ Forests may Marginalise Poor Livestock

			Structures	Large; Plus Direct Employment for the Poor	Keepers and Women; Lost Opportunity Due to Conservation; Employment Gain is One-Time and Short Term.
2	Drainage Line Treatment	Mainly on CPR	As Above + Recharging the Ground Water	Communities in the Lower Reaches, Owning Land and Sources of Irrigation	Poor Generally own Degraded Land in the Upper Reaches; The main Benefits may Go the Relatively Better-off Farmers in the Downstream
3	Water Harvesting Structures	Mainly on CPRs	Increased Access to Water for Irrigation through Direct Lifting or through Recharge of Wells	Owners of Agricultural Land and Wells within the Catchment of the Structure; Enhanced Availability of drinking Water in Case Public Sources are Covered within this Area	Augmented Water is Rarely Made Available for Regenerating Public (Waste) Land; Over Use of Ground Water and input Intensive Agronomic Practices may Lead to Further Degradation of Land
4	Field Bunds and land Levelling	Mainly on Private Land	Improved Soil-Moisture Profile; Reduced soil Erosion	Farmers Owning of Agriculture Land	Improper Maintenance by Farmers may Affect Efficacy of Drainage Line treatments on CPRs
5	Agro-Forestry	Mainly on Private Land	Increased Income	Farmers	
6	Income Generating Activities and Self-Help Groups (Watershed Plus)	Mainly Off-Farm	Income Diversification	Mainly for Poor and Landless	Poor Further Losing their Stakes on Land and Water

7	Development of Markets Watershed Puls)		Increased Market Options; Better Pricing and Profitability	Mainly Resourceful Farmers	
8	Formation of Community Organisations	Mainly for Managing CPRs (Land, Forest, Water Harvesting Structures)	Effective Maintenance and Strengthening of Local Governance	Dominated by the Relatively More resourceful and Powerful Persons (plus their Close Associates)	Maintenance is often Neglected due to Lack of Clarity on the Roles, Financial Responsibilities , and Mistrust/ Conflicts among the Users
9	Promoting Farm Productivity	Mainly on Private Land	Often through Input Intensive/Non-sustainable Farm Practices	Non-Sustainability of Farm Producti-vity; Water Pollution	Poor Farmers may Get Excluded due to Paucity of Financial Resources

The above depiction of the interface between private and common property resources highlight the following important features:

- Whereas much of the watershed treatments are carried out on CPRS, benefits are confined mainly to owners of crop land
- The burden of soil-water conservation and actual benefits thereof are unevenly distributed across upper and lower reaches within a watershed; absence of appropriate compensatory mechanisms may lead to conflicts of interests and/or lack of participation especially by those having land in the upper reaches.
- Harvesting of rainwater takes place mainly on CPRs (drainage line), nevertheless harvested rain water is appropriated (through recharging of wells) mainly by the owners of private cropland.
- Regeneration of degraded pastures /forests necessitates restricted access to the resources, especially for grazing of livestock. This may particularly hurt the interest of the poor and landless.
- Treating ground water, especially the part, which is augmented through watershed treatments, as CPR may help more sustainable use of water.
- Development of community pastures/forests may lead to more sustainable use of land, suitable to dry land farming systems. Allocation of augmented water for regeneration of community pastures/forests may help expediting the process.
- Greater involvement of people in management of community forest may reduce the burden on the forest officials, which in turn, may help management of the reserved/protected forests in the region.

An important message emerging from the above discussion is: Need to alter the existing property rights regime for forest, land, and ground water as a crucial pre-condition for addressing the issue of equity and thereby sustainability as well as decentralized democracy in the rural areas [Shah, 2007].

Recognising that the differentiations in natural resource endowment as well as socio-economic structures are difficult to be addressed within the scope of watershed development projects, equity considerations may remain confined to attaining only `project-based-equity [Ramchandradu, 2007]. The focus on project-based-equity however does not rule out the possibility of exerting positive impact on the other two sets of factors especially by influencing the quantum of benefits and their distribution among different stakeholders within the community. It could be argued that, project-based-equity could pave a way for braking the structural inequities across class, castes, and gender, provided the issue of equity is brought to the centre right from the initial phase of watershed development [2].

[2] For details see Shah (2001)

3. Extent of Inequity: Some evidence

Given the fact that a large proportion of watershed projects are being implemented in low potential dry land regions with low and uncertain rainfall conditions, the issue of equity arises mainly from the water centric approach of treatments in watershed projects [Shah, 2000]. It has been observed that watershed development has by and large focused on creating water harvesting structures, which in turn helps enhancing soil moisture profile and ground water. The other major intervention, covering almost all farmers within the village (micro watershed) is field bunding and land leveling. The problem with the former is that the benefits in terms of productivity is often small and has a long gestation period, whereas for the latter, the treatment is either not required or, is not undertaken due to high cost and/or adverse environmental implication. The result is that only a few farmers would actually benefit from land leveling through watershed projects; in most cases these may be relatively better off farmers, having been able to bear the cost of financial contribution. Hence, more than complete exclusion of small and marginal farmers, the issue is of limited and selective benefits from the project.

On the other hand, common property land resources (CPLRs) both- revenue waste land and forest within watershed area- are rarely treated owing to legal complexity. In fewer cases where CPLRs have been treated, the actual benefits are often negligible due to lack of protection. The same holds true in the case of provision for drinking water, which otherwise would have helped women. The larger reality therefore is exclusion of land less and at times voiceless as in the case of women, whose interests are often overlooked at the stage of designing as well as implementing the intervention.

3.1 Equity in Benefits: Select Evidence

There are not many studies that have gone into the issue of equity in benefits-sharing and the factors influencing that in the otherwise vast and growing literature on watershed development in India. In what follows we have presented some evidences from the existing studies.

Chart 2: Equity in watershed Projects- Some Evidence

Sr. No.	Details	Authors and Project /Area under the Study
1	• No net increase in availability of grass, fuel and tree fodder from CPLRs under any of the projects • Most respondents said that they benefited form the projects; the land less and semi landless however, were the most likely to express satisfaction	Kerr, et al; 1998 (Maharashtra, A.P., Karnataka)
2.	Reduced availability from commons due to closure of the treated CPLRs; Benefits increase	Kerr, 2002 (as above)

	along with size of the land holding	
3.	Benefits mainly from WHS covering maximum up to 50-60 households in a village	Shah, A. 2001 (Gujarat, MoRD)
4.	No significant increase in gross return per acre among beneficiary vs. non-beneficiary households. The poor households have gained more mainly because of the direct employment on the project site	Reddy, R. 2003 (Andhra Pradesh)
5.	Water harvesting structures have made significant impact; there are non-tangible benefits in terms of increased availability of water at various locations. But there is no mechanism for repair and maintenance; (this may imply that in absence of this the impact may reduce and cover fewer beneficiaries over time)	Reddy and Ravindra, 2004 (Andhra Pradesh)
6.	All round positive impact on most of the impact indicators. Improvement in the economic condition of the poorest households in the project area as compared to other areas (it is not clear whether the income gain is sustainable in the post-project phase or not).	Teri, 2005 (on WB project in Punjab, Haryana, Uttaranchal, J & K, HP)
7.	In most watersheds there was nothing to graze. Village level decision making increases with land holding size	Ranjitha, 2005 (IWMI-LEAD study)
8.	Special emphasis on low cost treatment and inclusion of Landless in SHGs	Nayak, 2005 (DANIDA, Ratlam)
9.	Contrary evidence of reduction in income inequality (by Reddy, R.) and increase in inequality (by Singh, et.al; 1993) A number of innovative institutional arrangement for addressing the issue of equity by providing water rights, reserving access to CPLRs to the landless, waving of contribution by the poor	Joy and Paranjape, 2004 (based on a review of WDPs in three states)
10.	Persistent gender bias in terms of representation in WDCs and wage rates	Sen, Shah, and Kumar (2006) M.P.

The above observations clearly suggest that the economic benefits are not only limited in terms of coverage of beneficiaries, but also heavily influenced by the decision-making processes at various stages of implementation. This brings us back to the central importance of institutional mechanisms that may ensure choice of appropriate treatments and at the same time distribution of benefits flowing thereof.

3.2 Watershed Treatments on CPRs: Evidence from Madhya Pradesh

The evidence in this sub-section draws from a set of ongoing studies being carried out by the author in Madhya Pradesh (M. P.)-a state having large tracts of land under forest and pastures [Sen, Shah, and Kumar, 2006][3]. The set of evidence is based on Rapid Assessment of 349 completed micro watersheds spread over 18 out of 45 districts in the state. The next set of evidence is drawn from a house listing of 2120 households inhabiting 12 villages in Ratlam district of the state; these villages have been selected for a detailed investigation into bio-physical, socio-economic, and institutional impacts of watershed projects completed before 4-5 years. The preliminary observations the studies may help gauging the extent and nature of watershed treatments, the benefits derived from that, and the distribution of benefits across land holding classes within the selected villages.

3.2.1 Coverage and Benefits of Watershed Treatments among 346 Villages

As noted earlier majority of the watershed treatments are carried out CPRs [See Chart 1]. The treatments on private resources consist of mainly of field bunds, land leveling, plantation, farm ponds, and deepening of wells. Table 1 presents information of the major treatments on CPRs among the 346 sample villages in M. P.

Table 1: Intensity of Major Treatments

Major Treatments	Total Sites / Structures	% of Villages Covered*	Mean
01. Pucca Check Dams	885	62.7	4.1
02. Kachcha Check Dams	1048	22.5	13.4
03. Created Village Tank	733	60.4	3.5
04. Deepening of Village Tanks	135	21.4	1.8
05. Percolation Tanks	283	13.6	6.0
06. Farm Ponds (Public)	362	11.8	8.8
07. Gabion / Other Structures	289	8.1	10.3
08. Nala Plug/Gully Plug	64025	81.8	226.2
09 Plantation on Public Land	253	73.1	1.0

* Out of the total 346 villages covered under the study

It is observed that drainage line treatments such as Gully plugs; check dams and village tanks have been undertaken in 60-80 per cent of the villages covered by the study. This is fairly significant. What is also noteworthy is that nearly three fourth of the sample villages were covered under plantation on public land; this may involve forest as well as Government/Community (waste) land.

We tried to gauge the number of beneficiaries per structure created on CPRs. The estimated number of beneficiaries is presented in Table 2. It is observed that water

[3] The studies have been conducted under the aegis of Forum for Watershed Research and Policy Dialogue (ForWaRD), www.forward.org.in

harvesting structures like check dams generate direct benefits for additional irrigation water for about seven households per structure. In all, about 4,032 households spread over nearly 62 per cent of the sample villages. Similarly 2535 and 1080 households were benefited directly through creation and deepening of village tanks respectively. Besides these a number of households may have been benefited through plantation on public land in the 253 villages as shown in Table 1. We have not obtained information on this aspect.

Table 2: Coverage of Beneficiaries: Tentative Estimates

Type of Treatments	No. of Structures	No. of Structures in Good Condition	Average No. of Bene-ficiaries	Total No. of Bene-ficiaries
Pucca Check Dams	885	576	07	4032
Kachchha Check Dams	1048	499	03	1497
Village Tanks	733	507	05	2535
Deepening of Village Tanks	135	104	NA	NA
Percolation Tank	283	180	06	1080
Farm Ponds (public)	362	276	2.5	690

Unfortunately, many of the structures/treatments on the CPRs has been damaged hence requires repair and maintenance. Similarly, only two third of the plots under plantation were found to be in good/moderate condition with survival rate of 30 per cent or more. This is not surprising if one looks at the overall scenario of protection and management of CPLRs under Joint Forest Management (JFM) or Community Management of Village Pastures in large parts of the country.
The issue however, is particularly concerning in the light of the fact that institutional arrangements for future management of the treatments on CPRs is fairly unclear as depicted in Table 3. As large as 50 per cent of the villages did not have any clear understanding on what will be the arrangement for future management of such structures and who will be responsible for that and how.

Table 3: Arrangements for Future Management

Responses	Total
No arrangement at present	50.0 (173)
Handed over to Panchayat	25.14 (87)
Individual beneficiaries/ User groups	28.03 (97)
WDF as possible source of finance	49.71 (172)
All	100 (346)

To a large extent the above scenario persists, despite the specific provisions in the policy guidelines for evolving institutional arrangements, owing to the lack of clearly defined rights and responsibilities of the communities for managing CPLRs treated under watershed projects.

The major problems are twofold: First, there is no statutory provision in most states for treating forestland forming a part of the watershed project. The agency implementing specific watershed projects has to seek permission from the Forest Department of the respective State Government for treating the forest-land within the watershed. This may come through in many (but not all) cases, invariably with substantial amount of delays. The second problem pertains to the lack of clarity on usufruct rights and also responsibility of the village communities for future management of the CPLRs. This, as well recognized, is a sure route for unsustainable development and ineffective devolution.

The overall benefit from watershed projects thus, appears to mixed as indicated in Table 4. About 25 per cent of the households reported high level of benefits whereas 44 and 31 per cent of the villages had medium and low level of benefits from watershed projects.

Table 4: Overall Benefits by Year of Starting

Level of Benefit	Year				All
	Before 1996	1996-98	1999-2000	2000+	
Low	39.7	26.7	32.3	26.8	31.2
Medium	45.2	46.7	38.7	39.0	44.0
High	15.1	26.7	29.0	34.1	24.8
All	100.0	100.0	100.0	100.0	100.0
(N)	(73)	(105)	(31)	(41)	(250)

3.2.2 Who Benefits from Watershed Development?: Perceptions from Selected Villages in Ratlam (M. P.)

Information on the perceived benefits from the completed watershed projects was obtained by conducting a complete listing of 2120 households in 12 villages in the study area in Ratlam district in M. P. The information was obtained through an open-ended question asking the respondent to report in what manner they have been associated/benefited from the watershed project implemented in their village. The responses have been summarized in Table 5.

Table 5: perceived Benefits from watershed Projects (% of Households)*

Activity	Land holding		Total	Irrigation		Total
	Landless	Landed		With	Without	
1. Project Related	35.6	42.8	40.8	46.1	40.0	42.8

Employment						
2. Field Bunds	0.9	15.5	11.5	14.9	16.0	15.5
3. Plantation (on Private land)	4.3	17.7	14.1	14.0	20.7	17.7
4. Member of SHG	3.1	8.4	7.0	6.7	9.9	8.4
5. Direct Irrigation	0.2	6.6	4.9	0.1	12.0	6.6
6. Member of the Watershed Committee	0.3	1.2	1.0	0.1	2.1	1.2
7. Received Organic Inputs	0.3	0.8	0.7	0.1	1.3	0.8
8. Received Improved Seeds	0.0	2.5	1.8	2.7	2.3	2.5
9. Recharge of ground water Table	0.0	0.5	0.4	0.0	1.0	0.5
10. Cattle Camps	0.0	0.1	0.1	0.0	0.2	0.1
11. Biogas Plants	0.2	0.1	0.1	0.1	0.1	0.1
12. Loan from SHGs	0.0	0.1	0.1	0.1	0.0	0.1

***** Of the 2120 households covered by the house listing.
Source: Primary Survey
The important observations from Table 4 are:

- Direct employment on the project activities is the single most important benefit reported by the households. This is followed by distribution of planting material and then by irrigation by lifting water from the structures.

- The proportion of households reporting direct employment benefits is higher (42.8%) among landed as compared to landless (35.6%) households.

- Nearly 12 per cent of the households got direct irrigation facilities owing to watershed projects; many more have been benefited indirectly due to recharging of the ground water table due to watershed treatments.

- Those with land and also irrigation were larger beneficiaries from the self -help groups and also were office bearers of the watershed committees as compared to the landless.

- Benefits from CPLRs did not appear in the list of benefits obtained from the respondents**.**

The information presented in Table 4 however, need to be interpreted with some caution. Since the responses were not obtained by specifically checking out on the various likely benefits, those that have been realized only due to watershed projects have been reported. For instance, the benefits in terms of increased area under irrigation have not been reported; only those who could directly draw water from the water harvesting structures have been reported. Similarly, the incremental resources (fuel, fodder, Non Timber Forest Produce), if any, from pasture/forest land have not

been reported since these resources were already available form the CPLRs prior to the watershed project.

Notwithstanding the limitations the evidence reinstates the fact that the benefits from watershed projects are (a) mainly in terms of direct employment and irrigation; and (b) persons from relatively resourceful households occupy membership in the community-based institutions.

There are however, a number of innovative initiatives in the country for attaining better equity within the context of the watershed project[4]. Most of these deal with recognition of the participatory and equity principles at the time of planning and implementation. There are a few, which have focused on the equitable access/entitlement to at least the augmented resources such as water and the produce from CPLRs. For instance the experiment of `Pani Panchyat' demonstrate the feasibility of treating water as a CPR, where every households within the village gets right to access water, irrespective of their ownership of land.

Similarly, the much-acclaimed initiative in Ralegaon Siddi had adopted the principles of `Five Bans', which apart from banning free grazing, tree felling, and further extraction of ground water also banned consumption of liquor and promoted adoption of family planning measures. Inspired by such experiments, several watershed projects had adopted a approach whereby the community is to give advanced commitments for imposing bans/restrictions on: grazing, felling of timber, digging new well, deepening of wells, and cultivation of irrigation intensive crops etc.

It may be noted that the examples of good practices are generally a few. Scaling them up may need multi-pronged approach at on legal, social, and most importantly institutional fronts. Some of the examples of good practices have been presented in the subsequent section.

4. Examples of Good Practices[5]:

4.1 Developing Common Property Resources: The DANIDA-Experience [Sen, 2005].

DANIDA had supported a major initiative for Danida Watershed Development Programme (DANWADEP) in three distrcts viz; Dhar, Jhabua, Ratlam districts of M.P. The project covered 118 villages over the two phases during 1997-8 and 2007-8. The programme had laid special emphasis on the equity aspects focusing mainly of development of common property land resources and operationalisation of the user rights by different sections of the community.

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4 For details see Shah, 2008

5 The case studies presented in this section are based on the contributions by various authors for the Comprehensive Assessment Watershed Projects in India, coordinated by ICRISAT. Fore details see Shah (2008).

The project has created a number of drainage line and soil and water harvesting structures and pastures on common land. User Groups have been formed to look after the maintenance of these assets. Issuing of formalised user rights is relevant for the high cost water harvesting structures and pasture plots only. In case of smaller soil and water harvesting structures user rights are to be secured from the Gram Panchayat. Finally, as some of the pasture plots are on land owned by the Forest Department the project needs to liaison with the Department or the user rights.

A total of 18 pasture plots have been established by the project. Of these, 14 have been established on land owned by the Revenue Department. The project has also constructed around 30 medium size heading type water harvesting structures on common land. The project has to approach the concerned Gram Panchayat for securing user rights for the User Groups. A major problem faced by the project in securing user rights is that the User Groups have been formed later on after the establishment of the asset leading to less participation and feeling of commitment of the beneficiaries.

4.2 Durable Livelihood Assets: Promotion of Dug Wells in Jhabua [Mandal, et.al.; 2007].

The geo-hydrological features characterised by fairly impervious compact basalt rock in the region, necessitates different strategy for water harvesting and water-use for promoting livelihood of the poor farming community within watershed projects. ASA-Action for Promotion of Social Advancement- has recognised the challenge posed by the specific geo-hydrological characteristics, have evolve a strategy for optimum use of harvested water stored at the sub-surface level.

Long drawn experience of working on watershed projects in the region, had led to a realisation that tapping the sub-surface water flow for irrigation is an efficient means to enhance availability of irrigation to a large number farming households with relatively lower cost. Driven by this rationale, ASA has undertaken a programme of promoting dug wells in the area where watershed treatment has been undertaken.

An impact assessment covering 50 households owning dug wells in 11 villages observed following changes:

Assets Gained	Main Results
• Increase in number of wells by 148 %; • Number of houses owned by farmers increased by 30 %; • Increase of number of pakka homes by 54 %; • Farmers living in lower standard of housing more than halved; and • Other investments including 58 %	• Irrigated land increased from 13 % to 57 % (259 Acres), an additional 204 Acres; • During Rabi season, prior to DWP, 14 Acres of productive land increasing to 137 Acres afterwards; an increase of 879 %; • Increased land leading to

of farmers purchasing a water pump and 30 % acquiring small livestock.	increased income as well as enabling short-term food security; reduced need for economic migration; less dependency on Money Lenders; and crop diversification leading to long-term food security; and • Land in production during Kharif increases by 31 % from 293 Acres to 382 Acres.

Social Impacts:

- All respondents reporting an improvement in living standards; majority describing conditions after DWP as "good";
- Proportion of households with no migrating members doubles from 30 % to 60 %; and
- Number of children attending school increased by 70 % from 53 children pre-DWP to 90 children post-DWP in education.

The evidence thus, indicated that the dug wells programme is an effective means for livelihood enhancement and poverty reduction. This however, may require additional funding beyond the provisions under watershed projects. Promotion of self-help groups seem to have worked well in addressing the issue of additional fiancé for the dug well programme.

4.3 Tracking CPLRs-Need for Investing in People's Institutions [Tewari, 2007]: Seva Mandir, with its long drawn presence in Southern Rajasthan represents one of the few experiences of turning the tide of dealing with the legal complexities as well as community based contestations over CPLRs, which hold the key for equity in watershed projects in some of the central-western regions in the country. This case study describes how Seva Mandir succeeded in the struggle over CPLR-development, and emphasizes the fact that the process involves setting-up of the mechanisms for identification of encroachers, removal of encroachment, and compensation for the loss accruing to the encroachers. All these require investing a lot in people's institutions, much beyond the policy-space available within the context of watershed projects.

The state owned land constitutes 73% of total land in the villages in Rajasthan where Seva Mandir is implementing watershed projects. Since 1985 Seva Mandir has assisted development of around 15000 Ha of land out of which approximately 10% of the total works has been taken on common lands. The limited coverage of common land, despite Seva Mandir offering much higher incentives for undertaking work on the village commons, is an indicator of the problems and challenges faced at the grassroots level.

Strangely, the experience suggests that an important precondition for working on the common land is to cater to the individual needs by help developing private lands. This has been attempted through various interventions such as *Mini Chak,* which caters to one household having up to 5 Ha. of wasteland. Where farmers do not have much of private land, two three or more farmers can pool their wasteland together and can develop their land with the help of Seva mandir. All these activities are designed in such a way that there is bigger incentive of the group work.

Over time, it has been realized that the true goals of watershed development couldn't be achieved unless it works on social and property arrangements in the region. It recognized the existing distortions in the land relations and started evolving a social capital base and development of common property to bring equity in the development process. The democratically evolved institutions provide forum to the last person of the community to raise their concerns and accordingly their developmental needs are taken care of and development of common resources caters to their livelihood and other developmental needs.

4.4.1 Land for Food Security [Satheesh, Undated]: Leveraging the existing policy-space for purchase of agricultural land by the landless in Andhra Pradesh, Deccan Development Society (DDS), has instantiated a process of empowerment among landless women by making them owners of land. Regenerating highly degraded land to provide extra meal to the poor has shown the way to how equity issue could be addressed within the existing policy-space. Of course, this does not happen over night; a committed group of development agencies need to work with confidence and zeal to be able to tread on new paths.

DDS works intensively in dry land regions in the state. While most of the poor households own at least a small piece of land in the project area, the land is often highly degraded. As a result, Dalit women (and also men) often work as wage labour on farm land and sugar factories. By routing all resources for land regeneration DDS supported women in negotiating with men in the community, Government officials, and members of the upper caste households for accessing common land for cultivation by the group of women. This of course, was an uphill task.

In Humnapur village, the group had obtained wasteland for developing th eland through plantation, despite the opposition from Sarpanch of the village Panchayat. This resulted into retaliation from a section of the community, which destroyed the plantation consecutively for two times. Notwithstanding the opposition, women continued to work on the land and also created a storage water tank near the land. This helped watering the plants during drought years.

Regeneration of land through women's groups helped enhancing food security among the poor households. This has not only resulted in extra meals being cooked in these households, but also raised women's self esteem and their recognition within the village community. The real challenge is to build further on such initiatives, which essentially requires committed social workers along with financial support and ability to influence

the government functionaries besides women's own strengths to resist various forms of opposition within the village community as well as households.

4.5 Bringing Local Governance for Water-Use in M.P [Banerjee, 2007]: This case study provides a detailed account of how SAMPARK and SPS tried to reverse the structural inequity in water-use in a tribal setting in M.P. This was achieved by making the community come to a common agreement on the rules of water use within watershed projects. There was of course, strong resistance by the caste community. The resistance emanated not only due to restrictions imposed on water-use but, also due to the challenge it posed to the authority of the caste-groups, which they have enjoyed even within a predominantly tribal region. The author points to the fact that challenging the established authorities is often difficult as it draws support from the state-administrations. This makes it difficult for a single agency to sustain their effort over a long period of time.

As per the approach adopted by SAMPARK, the first step was to form SHGs of poor-tribal households, which may help creating a common platform and also relieve them from the debt burden from the private money lenders. The next step was to obtain common land for watershed treatment over which there were conflicts with the landed households and the Patel, who objected to ban the grazing. The tribal groups decided to go ahead with social fencing and protection of the common land. The conflict led to physical assault by the powerful on the poor who stopped Patel's family member from grazing. It was through traditional community Panchayat that the Patel was fined for his criminal action.

The contestation however, continued as the tribal groups were forging ahead with watershed treatments and the requisite restrictions on the use of ground water. The visible benefits in terms of fodder and ground water provided further impetus to the tribal groups to give up the common land for plantation and regeneration under the watershed projects.

The initial success of project implementation however, led to a realization that people's involvement cannot be sustained unless the intervention encompasses larger issues of livelihood, social conflicts and structural inequity. It is essential that watershed projects create avenues for institution building and networking among larger set of village communities and activities. SAMPARK has thus graduated from a narrow technical approach for natural resource development to a larger socio-political change.

5. Policy Implications.

It may be recognized that while it is difficult to make a complete shift in the approach for planning and implementation of watershed development projects, special efforts should be made at the state/district level agencies to ensure critical minimum achievements in terms of the equity oriented features listed above.

In this context the Report of the Parthasarathy Committee [MoRD, 2006] clearly mentioned that: Benefits of public investment must be seen as public good, to be shared with equity among all sections. The concern for equity should run through all stages viz; beneficiary- selection benefits sharing, conflict resolution and monitoring and evaluation. Similarly, gender-equity may be addressed by adopting a comprehensive approach for increasing representation of women through a separate women's watershed council, equal wage s for equal work, reduction of drudgery and income-enhancement.

Following aspects may deserve special future policies so as to improve equity outcomes of watershed projects in India. .

1. An integrated policy for land and water use across different agro-ecological zones with special emphasis on water-use efficiency should precede macro level planning for watershed based development of natural resources. This should take care of the spatial prioritization and also the compensation mechanism within an upstream-downstream context.

2. Promotion of equitable use of augmented water through the project by providing incentives for adoption of water-use regulation and water-saving crops/technologies so as to facilitate the resource poor to gain from the project.

3. Legislative and administrative mechanisms for facilitating poor's access to CPLRs; their intensive management including through enhanced availability of water, and development of livestock, and other high valued farming.

4. Some of the processes essential for bringing women's/poor's practical as well as strategic concerns and representation of their SHGs into watershed committees should be treated as non-negotiable right from the initial phase.

5. Need to invest in creating local institutions for governing the use of scarce resources on the one hand, and increasing the size of the economic surplus through productivity enhancement such that the poor tend to benefit from both-direct intervention for income generation and also the trickle down effect as well as market development.

It may however, be reiterated that whereas watershed development and equity in sharing of benefits thereof are critical precondition for expanding the production base within dry land areas, these may not necessarily lead to poverty reduction, given the structural constraints governing ownership and control over land, water and forests within micro watersheds. It may however, be safely concluded that these interventions may help mitigating the risk of falling into poverty especially among the landed communities and /or strengthen the livelihood base among a sub-set of the poor within watershed villages. Strengthening the poverty reduction impact of watershed development may require going beyond micro-watershed to a larger unit such as a

stream or sub-river basin; coordinated approach for land, water, and forests; and above all legal as well as institutional mechanisms that ensure that the landless and the poor have a share in the benefits of watershed development, much of which emanates from common property resources.

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