

Assessment of participatory process of watershed management in India

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Abstract

People's participation has been enshrined in the guidelines of watershed management for harmonizing complementarities of different sectors of livelihood gathering in India. Several policy initiatives have been undertaken for realizing productive employment, poverty alleviation, environmental securities and empowerment of local people. The Central Soil and Water Conservation Research and Training Institute (CSWCRTI) initiated research and developmental efforts on paradigm shifts in six model watersheds since 1997 under the Integrated Wastelands Development Programme of the Ministry of Rural Development. These alternative concepts are being implemented by the multi-disciplinary watershed development teams of the CSWCRTI research centres located at Kota (Badakhera), Datia (Bajni), Vasad (Antisar), Koraput (Kokriguda), Udhagamanglam (Salaiyur) and Chandigarh (Bhagwasi). The progress achieved so far on the participatory approaches as well as the experiences of some other successful watershed management programmes undertaken by various agencies are discussed in this paper. People's participation was initiated through entry-point activities for building rapport and mutual confidence among stakeholders. Transparency was established through joint operation of the bank accounts. Community contributions in the form of labour, cash or material for creating a corpus fund varied from 5-65%, depending on the kind of activity and location of the watershed. Women participation varied from 2-41% and 13-19% in general body and executive council meetings respectively. The number of Self-Help Groups ranged from 6 in Bhagwasi to 18 in Salaiyur, and the involvement of women was to the extent of 70-80% in these groups. In the Aga Khan Rural Support programme in Gujarat, the women institutions varied from 15 in Surendranagar to 48 in Junagarh, out of the total number of 65 and 134 respectively. In a Doon valley watershed, the value of revolving fund of thrift credit groups varied from Rs. 56,000 – 78,000 in different villages. Over the years, there was an increasing trend in the number of participants in various meetings, number of deposits/withdrawals in the accounts and formation of Self-Help Groups, indicating greater acceptance of participatory process in watershed management programmes.

DEFINITION

Participatory development process has variable perceptions among different stakeholders, actors or partners depending on community composition, nature of resources, tenure/ownership system, gender and other societal factors. Sustainable partnership calls upon combining of responsibility, accountability, real empowerment and authority to manage funds, assets, benefits, goods as well as services. This is a bottom-up people-centred voluntary process wherein government or non-government functionaries are the

centred voluntary process wherein government or non-government functionaries are the facilitators rather than fountains of power/authority (Saxena, 1998). It is altogether a different mindset of aiming at self-propelled development with social justice. Pre-historic and vedic hymens, scriptures, customs, beliefs and religious worships indicate prevalence of different variants of people's participation in resource conservation, management and sharing with the dawn of civilization.

Community participation is defined as 'people acting in groups to influence the direction and outcome of development programmes that will affect them'. The thrust of this definition is on people being able to influence the projects, their choices being reflected in the outcomes. Participation in watershed management programmes means that the project staff does not follow a blueprint but the local communities are fully involved in the analysis of their problems and identification of strategies to alleviate them. Participation goes beyond community organizations, being able to take care of the assets created. It is explicit about the need for involvement of people in planning and implementation of the projects as the direction of programmes cannot be influenced much after they are implemented. Participation, therefore, implies sharing of goods and services, mutual negotiations, collective decisions and implementation.

Participation includes notions of contributing, influencing, sharing or redistributing power and of controls, resources, benefits, knowledge and skills to be gained through the beneficiary involvement in decision making. It is a voluntary process by which people including the disadvantaged (in income, caste, gender or education) influence or control decisions that affect them. They are able to organise themselves, identify their own needs and share in the design, implementation and evaluation of the participatory actions.

APPROACHES TO PARTICIPATORY WATERSHED DEVELOPMENT

Tank irrigation system embodying the principles of present day concept of watershed management was first evolved in southern India (Samra *et.al.*, 1996). Watershed/village level institutions of regulation, distribution, maintenance and management like 'Neerakati' were so vibrant and self-propelled that such families acquired occupational rights inter-generationally. Channelization of runoff water or perennial flows into *guhls* (water channel constructed on contour) for irrigation and other purposes in the Shiwalik and Himalayans of northern India was also a local community-driven affair without any operational aid of the state/King. Efficacy of village forest committees (*Van Panchayats*) in managing open access resources sustainably is well known. However, commercialization, interplay of market forces and excessive interventions of grants and subsidies of the state sector during the 20th century weakened management of resources by the communities. Many supply driven developmental schemes planned, financed, implemented and managed by the government agencies did not produce desired results. Leakages became quite common and after withdrawal of government intervention, the projects became nobody's business. Even good results realized initially got evaporated very quickly due to lack of belongingness by the communities. This happened specifically in the case of open access or common property resources with 'free riding' behaviour and they turned out to be the 'tragedy of commons'. In this process, a large base of livelihood gathering

and environmental securities from forests, pastures, community land and natural water bodies got degraded.

Rural communities are often blamed for damaging watershed areas due to over-exploitation and little replenishment. They are not seen as equal partners by alleging their backwardness and conservative attitude. Supply-driven or top-down implementation of the watershed management projects by the government agencies have not proved to be lasting. If any measures taken are to be effective in the long-run, they have to be demand-driven. People's involvement in problem identification and undertaking suitable measures makes them own the interventions. Bottom-up approaches in which people are involved from the design stage onwards ensure that projects are cost-effective, sustainable and replicable. Such participatory institutional mechanism of empowering communities for realizing higher productivity, sustainability and amelioration of degraded resources was experimented by the Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Dehradun from 1974 initially in four watersheds with the financial aid of Ford Foundation (Dhyani *et.al.*,1997). Significant results obtained in three of them namely, Sukhomajri in Haryana, Fakot in UP hills and G.R. Halli in Karnataka are well-documented. Additional initiatives were taken by the CSWCRTI in 1982-83, non-government organizations (NGOs) like MYRADA pinned the movement in 1984-87 and definite policy paradigms were declared by the Government. of India in 1994.

Table 1. Comparison of conventional and new approaches to watershed development (Dube, 1999).

Conventional approach	New approach
Executing agency-driven	Participatory, people-driven
Target-based	Participatory, process-based (demand-driven)
Aimed only at soil, water and vegetation conservation	Aimed also t poverty alleviation and overall human development
Transfer of technology, extension method	'People First' approach, dovetailed to TOT approach
Based on imported technology and ideas	based on indigenous technology, traditions and culture and cosmic vision of local people
Top-down planning, monitoring and evaluation	Bottom-up (participatory) planning, monitoring and evaluation
Land use based on land capability	Land use based on land suitability and people's needs and preferences
Empowered the agents of technology transfer i.e. officials	Aimed at people's empowerment
Attended to select, generally better-off farmers	Aimed at marginal, small and poor farmers with special emphasis on equity
Tended to be taken over by single department	Multi-departmental and multi-disciplinary
Villagers were not empowered	Villagers empowered
Based on large watersheds	Small watershed based on people's institution

The new guidelines being adopted by the Government and NGOs emphasize on people-led approaches to watershed management by strengthening capacities of the local people (Table 1). The following key participatory processes are essential to turn integrated watershed management programmes into people-led movement:

Bring out integrated watershed management programmes on the cosmic vision of the people
 People's empowerment and ownership of watershed management programmes
 Land use titling/tenure to land users
 Gender concerns, especially the participation of women and other disadvantaged sects
 Assured and quick benefit generation by watershed management programmes

Table 2. Relative per hectare financial norms of different donors during various periods (Samra, 1998).

Donor agency	Norms (Rs./ha)
*ICEF (Pushkar Project, 1996-99)	9,400
ICEF (Malanadu Development Society, Kanjirapally, Kerala)	10,000
ICEF (BAIF, Tiptur Project)	32,257
ICEF (IFFDC, MP, UP and Rajasthan)	17,500
DANIDA (Phase I, 1991-94)	3,511
DANIDA (Phase II, 1994-2001)	9,816
World Bank (IWDP, 1991-99)	9,800
Swiss Development Cooperation (1985-87)	6,900
Government of India	
a) Department of Wastelands Development (1998)	4,000
b) National Watershed development Programme for Rainfed Areas (NWDPR, 1998)	4,500-5,000

*India - Canada Environmental Fund

POLICY STATUS

Research carried out on the participatory integrated watershed management for realizing livelihood, productive employment, poverty alleviation and environmental securities was enshrined into several policy instruments. Participatory process in watershed management was notified by the Govt. of India by establishing Integrated Wastelands Development Programme (IWDP) in 1992. Business of '*promotion of people's participation and public cooperation and coordination of efforts of Panchayats, and voluntary and non-government agencies for wasteland development*' was allocated to the Ministry of Rural Development under the Allocation of Business Rules. Involvement of local communities, voluntary agencies, self-help groups (SHGs), user's groups (UGs) and NGOs was further consolidated by the Hanumantha Rao Committee guidelines for watershed development in 1994 (Anonymous, 1994a) and Mohan Dharia Committee reports in 1995 (Anonymous, 1995). The people's partnership envisaged in the business of Ministry of Rural Development was initially not adopted by the Ministry of Agriculture as well as Ministry of Environment and Forests. Development on watershed basis was declared as a major policy in the IX Plan document of India. There is a lot of heterogeneity in the norms of funding by different national and international donors (Table 2). In response to 1999-2000 budget speech of the Finance Minister, the Ministry of Agriculture, Government of India also adopted an approach common to Ministry of Rural Development w.e.f. October 2000.

Guidelines for watershed management

The Ministry of Rural Development of the Government of India issued common guidelines applicable to all watershed management programmes supported by them (Anonymous, 1994b). The primary objective of these guidelines is to strengthen participation. The guidelines emphasize that success in project implementation can be achieved through the participation of government and NGOs in the people's programme rather than the other way round. These guidelines also provide opportunity for NGOs to play an instrumental role in implementing the projects.

The new guidelines are very particular about development of institutional structure. At the district level, the District Rural Development Agency (DRDA) or the Zila Parishad (elected representatives) are responsible for implementation. They select Project Implementation Agencies (PIA) among departments or NGOs interested in implementing the projects. The PIA is responsible for 10-12 watersheds, each of about 500 ha, and is expected to appoint a multidisciplinary Watershed Development Team (WDT) consisting of experts from various disciplines. At each watershed, a watershed committee implements the project under the guidance of Watershed Development Association (WDA). The funds for the project are released directly to the implementing organization i.e. watershed development team.

Participation is viewed as a fundamental right designed to empower people and build local level institutions. The involvement of the people is to be initiated through Self-Help Groups, which receive financial support from the project. The idea is to identify Users Groups comprising of individuals likely to be benefited from various components of the project. The representatives of these groups are brought together to form the village wide watershed association. Detailed procedures for facilitating participation have been suggested in a series of operational manuals.

The new guidelines have a strong focus on participation of farmers even in implementation, flexibility on treatment and costs, and demand for contributions. The guidelines provide for considerable flexibility to local organizations to design the programme. There are no cost limits for various components of the projects. They are expected to be worked out by the WDT in consultation with watershed committee and approved by the Zila Parishad/DRDA. Only those communities willing to contribute a part of the project activities are to be selected for implementation. The minimum contributions required for various activities range from 5-10%, and the people need to commit that they will take care of the common assets.

MEASUREMENT OF PEOPLE'S PARTICIPATION

Participation of people in watershed management programme is measured in the form of contributing labour, cash or material and in programme formulation, attending group meetings, discussion with and motivation of fallow farmers, avoiding harm to plantation and drawing benefits etc. People's participation index in watershed management programmes is measured based on a questionnaire where responses of the respondents are recorded. Total score assigned to each respondent is calculated. Summation of scores of

all participants divided by the total number of respondents yields the mean people's participation index (PPI) as given below :

$$PPI = \frac{\sum_{i=1}^N P_i}{N}$$

P_i = Participation score of the i^{th} individual, defined as $\sum_{j=1}^K W_{ij} X_j$

W_{ij} = Weight assigned to the j^{th} factor (question asked from the i^{th} person) with the condition that the sum of weights is equal to 100

X_j = Numerical value assigned to j^{th} response

N = Number of individuals (respondents)

K = Number of factors (questions asked to illicit information on participation)

Table 3. Scores (Nos.) and people's participation index (%) at different stages of government implemented soil and water conservation programmes in 5 selected villages of Mahi ravines, Gujarat (Khatik, 2000).

Parameters	Programme stages			
	Planning	Implementation	Maintenance	Overall
Marginal	11.94	8.88	16.38	37.20
Small	17.22	10.00	19.16	46.38
Medium	18.05	9.72	20.27	48.04
Large	20.0	9.72	24.72	54.44
Mean	16.80	9.58	20.13	46.51
Total scores (no.)	242	138	290	670
Mean scores obtained (N= 120)	2.01	1.15	2.42	5.58
Maximum possible scores	4	4	4	12
People's participation index (%)	50.25	28.75	60.50	46.52

People's participation was measured at different stages of watershed management programmes in selected villages of Mahi ravines of Gujarat state (Khatik, 2000). The highest participation was observed at maintenance stage (60.5%) followed by planning (50.0%) and implementation stages (28.8%) (Table 3). The lowest participation at the implementation stage was due to the fact that the programmes were government-sponsored and only a few farmers contributed labour and money on their fields. The participation varied with family size, land holding, age, economic category of the respondent, education standard, programme orientation/trainings attended, frequency of benefits drawn, location, organization and leadership. Landless people reflected higher PPI due to their greater dependence on common property resources and in upkeep of trees. The farmers with higher social status, more assets possession and large land holdings participated actively in watershed management programmes. Establishing participation was particularly important in the early stages because expecting responsible behaviour from people in the later stages is not only misguided but may result in ineffective projects. In another study in the Sardar Sarovar Project area, the people's participation was low in planning and designing of watershed programmes than in implementation, repair and maintenance of structures (Khatik, 2000).

ELEMENTS OF PARTICIPATORY PROCESS

There are three major outcomes of people's participation : learning, empowerment and organization building (Saxena, 1998). Participation in decision making is an important capacity building process. Learning takes place when the people participate in making new decisions and solving problems. This newly-acquired knowledge leads to changes in attitude, behaviour, confidence and leadership. Empowerment is the result of participation in decision making. An empowered person takes initiative, exerts leadership, displays confidence, solves new problems, mobilizes resources and undertakes new actions. Participation in decision making strengthens the capacity of local organization because the people working on joint management committees get opportunity to manage resources and support development. These outcomes of participation need to be measured through observable indicators, which vary from project to project. Each project should develop clearly observable indicators on people's participation so as to judge whether they are on track or not. Such indicators should then be given to monitors and evaluators, who have to do mid-course evaluation and impact assessment.

Measuring participation as an outcome is a difficult task due to information problems. The output cannot be specified in detail and verified. Whether participation has actually been achieved or not, it is best known to those who organize and the people themselves. Nonetheless, some of the elements of a strategy to enhance participatory approaches include the following :

- Entry-point activities
- Transparency and implementation by the community
- Commitment from the communities to contribute
- Community organizations
- Development of private/common property resources
- Resolution of conflicts and equity concerns
- Women membership and participation
- Review/evaluation procedures which involve beneficiaries/implementers and facilitated by external agents

The CSWCRTI was entrusted the responsibility of developing six model watersheds in different regions of the country with financial assistance of Ministry of Rural Development under the new IWDP guidelines. These watersheds are being developed since 1997 by the multi-disciplinary WDTs of CSWCRTI research centres located at Kota (Badakhera), Datia (Bajni), Vasad (Antisar), Koraput (Kokriguda), Udhagamanglam (Salaiyur) and Chandigarh (Bhagwasi). The progress on participatory approaches of these watersheds along with experiences of some other success stories of watershed management programmes in the country are highlighted below :

Entry-point activities

These initial activities were designed to remove mistrust about service provider, create an intimate rapport and build mutual confidence to establish partnership with the local communities. Working with people on activities which are of greatest common interest to them was a very effective way to build bridges to enhance participation in watershed development projects. Sincere efforts to achieve people's participation through entry-point

activities, such as deepening a village pond or well, renovation of community hall (temple), installation of hand pump etc. were made. Facilitating communities in doing what interests them most created appropriate environment for working in partnership. Entry-point activities gave the communities an opportunity to work together on things which matter to most of them.

Transparency

Establishment of honesty to remove apprehension and misunderstanding of the watershed inhabitants with the government or non-government functionaries was essential for creating effective long-lasting partnership with the community. The IWDP guidelines of the Ministry of Rural Development and some of the international donors insist upon joint operation of the watershed account with the local people. Accordingly, cash books, bills and paid vouchers were kept with the watershed community (Table 4). Every payment was made through cheques signed both by the village level representative and project facilitator. The feedback from the CSWCRTI administered watersheds and Pushkar Gap Project of Ajmer revealed that villagers felt highly empowered and developed their faith and confidence in the programme after transparency was established. There was a gradual increase in the transactions, deposits and withdrawals of cash over the years in different watersheds.

Table 4. Operation of watershed development/watershed committee account in the bank in different model watersheds implemented by the Central Soil and Water Conservation Research and Training Institute, Dehradun, India.

S. No.	Watersheds					
	Bhagwasi	Badakhera	Bajni	Antisar	Salaiyur	Kokriguda
1. Name of bank	PNB, Lalru	Bundi-Chittorgarh Kshetriya Gramin Bank, Lakheri	SBI, ADB, Datia	Kheda Zila Madhyastha Sahkari Bank Ltd., Antisar	PACB, K.N. Palayam	Koraput Central Cooperative Bank, Semiliguda
2. Account No.						
Watershed development fund account	2144/11	2723 Dated 28.9.1999	01050060005 Dated 10.8.1999	A/C No. 1702,7 Dated 21.11.1997	N.A.	26 L/F - 225/2
Watershed committee account	N.A.	2694 Dated 24.7.1998	01100050029 Dated 1.7.2000	Bank of Baroda 24.2.1998 A/C No. 1972	N.A.	
3. No. of deposits						
1997-98	2	Nil	Nil	9	23	Nil
1998-99	3	6	1	23	13	2
1999-00	11	3	Nil	55	3	3
4. No. of withdrawals						
1997-98	6	Nil	Nil	Nil	54	Nil
1998-99	17	7	25	Nil	31	1
1999-00	25	27	5	2	1	19
5. Total number of transactions						
Watershed development account	N.A.	2	31	55	22	-
Watershed committee account	60	43	1	122	125	20

NA : Information not available

Table 5. Revolving funds in different villages of Seetla Rao micro-watershed management project of Doon Valley undertaken jointly by European Union and U.P. Government (Sharma and Virgo, 1998).

Criteria	Villages			
	Nahar	Dhalani	Koti	Kotra
Number of households	45	82	32	120
*GAREMA formed (Date)	April 1995	April 1994	October 1993	June 1996
Date of first loan	Sep 1996	Dec-Jan 1998	Jan 1997	Nov 1997
Number of loans granted (in 1 year)	31	8	20	18
Upper limit of loan (Rs.)	2000	3000	5000	2000
Interest rate per month	2%	2%	2%	2%
Average loan size (Rs.)	1742	3000	1375	941
Guarantors : Number of persons	2	2	2	2
Defaulters : Number	0	0	1	0
Current value of revolving fund (Rs.)	58,000	78,000	72,000	56,000
Amount held in Bank fixed deposit (Rs.)	0	30,000	20,000	0
Total value of loans to date (Rs.)	54,000	24,000	32,000	16,000

**Gaon* (village) Resource Management Association

A Doon Valley integrated watershed management project funded jointly by the European Union and U.P. Government since 1993 adopted participatory methodology by fully involving the communities especially women in the management of their environment and to improve their quality of life (Sharma and Virgo, 1998). In all, 42 micro-watersheds were identified and the project activities were undertaken in different villages on a rolling programme (about 3-4 years). During the planning process, special focus was given by the project staff to motivate the communities by following a transparent process. The villagers were motivated to organize themselves and form their own associations such as *Gaon* (village) Resource Management Association (GAREMA) and subsidiary User Groups or Self-Help Groups. These associations were subsequently involved in the implementation of project activities. Once the mutual trust was established and the villagers and GAREMA committee members changed their attitude, the contributions and loaning by the members of a Self-Help Group started with the encouragement of project staff. Influenced by the successful repayment record, the GAREMA members themselves decided to grant loans to different persons and developed their own rules for loaning. Over a period of 12 months from agreement of first loan, a total of 31 loans were made from the revolving fund for the purchase of buffalo, chairs for renting out to the villagers during marriages and other such income generating activities (Table 5). The women Self-Help Group loans were used for medical treatment, house repairs, marriages and loan repayments. The main source of revolving funds was contributions by beneficiaries, while the membership fees constituted the primary source of SHG funds.

Participatory Integrated Development of Watersheds (PIDOW) project in Karnataka also demonstrated the benefits from participatory approaches particularly the value of understanding traditional practices of farmers, and the feasibility of government working with NGOs (Kolavalli, 1998). Many of the initial problems such as coordination between various departments of the state were overcome with an agency with multi-disciplinary staff created to take the primary responsibility for watershed development. Rajasthan has made significant progress in providing a legitimate role for watershed committees and all

the works in the watershed are executed through a transparent mechanism by transferring the funds to the watershed implementation committees.

Contributions

Farmer's willingness to bear a part of the costs is an indication that the benefits of the chosen treatments are recognized by them. This also filters out non-productive activities which were a common occurrence in the previous top-down strategies. Farmers buy a share in decision making through their contributions. When a group of people is willing to contribute, it is a further indication that institutional development has taken place and there is some capacity to maintain whatever they are contributing towards. Contributions from communities and groups also suggest that wider consultations have been held within the community as there is a tendency to spread the costs as widely as possible among the members of the community. Collection of contributions by the farmers also entails transparent processes. The farmers become aware of the expenses being incurred on various activities. Further, the farmers also demand better services from the service provider when they contribute.

Contributions are also expected to inculcate a sense of belonging for sustained management by the stakeholders. The guidelines of the Ministry of Rural Development envisage a minimum of 5% contribution in the common access activity and 10% in the private programme. Farmer's contributions are made mostly in the form of labour or locally-available material such as sand, stone, FYM etc. In a project initiated by the Indian Farm Forestry Development Cooperative Limited (IFFDC, a subsidiary of IFFCO) in Madhya Pradesh, an amount of Rs. 4-5 per day is deducted from the labour wages as contribution and converted into shares (Gaur, 1999). In Rajasthan, a labourer is given full wage rate but he is required to produce 5-10% extra output as contribution. The initial resistance to contributions is also created by some powerful lobby or local politicians. These contributions constitute a corpus fund to be used after implementation phase is over to sustain the development.

Table 6. Activity-wise contribution of villagers in Deverapalli micro-watershed in Anantpur district, Andhra Pradesh (MYRADA Kadiri project) (Naidu, 1999).

Activity	Quantity	Community contribution (in Rs.)	People's contribution (%)
Fodder development	300 acres	2,500	50
Bunding	26318 m	78,954	23
Horticulture plantation	500 plants	5,000	20
Bund plantation	300 acres	4,800	14
Forest plantation wall	2500 m	12,500	13
Nursery raising	Lump sum	17,080	11
Wasteland plantation	25 acres trenching	4,500	7

Farmers are willing to contribute a substantial portion of the project costs if the treatments suit their needs. The quantum of contributions varies with the kind of activities and location. In a project in western Gujarat, the farmers paid up to 50% of the Rs. 5000-10,000 per ha cost of land levelling (Shah, 1995). In the Deverapalli micro-watershed in Andhra Pradesh, the people's contribution was highest for fodder development followed

by bunding and horticultural plantation (Table 6). The farmers were least interested in plantation on wastelands, being a common access resource. In the CSWCRTI watersheds, the contributions were mostly in the form of labour but in Antisar and Salaiyur, the farmers also contributed cash which indicates a greater participation of the people (Table 7). The farmers' contribution in Bajni and Kokriguda watersheds was only 5%. Sometimes, the weak record of farmers' contribution also reflects the inadequate efforts made by the project staff to motivate farmers and realize the contributions.

Table 7. Contributions by farmers in different activities in the model watersheds implemented by the Central Soil and Water Conservation Research and Training Institute, Dehradun, India.

Activity	Contribution by farmers (%)	Mode of contribution
Bhagwasi		
Crop improvement	65	Labour
Horticulture plantation	51	Labour
Poplar plantation	42	Labour
Land levelling and bunding	26	Labour
Gabion structures	22	Labour
Badakhera		
Horticultural plantation	50	Labour
Agroforestry	30	Labour
Vegetative barrier	20	Labour
Land levelling and check dams	10	Labour
Bajni		
Purchase of sprayers	50	Cash
Purchase of diesel pump tools kit	50	Cash
Raising of vegetable seedlings	50	Cash
Land smoothing and bunding	40	Cash
Trenching earthwork	5	Labour
Digging of village pond	5	Labour
Stone wall and cattle proof trenching	5	Labour
Antisar		
Bunding-cum-levelling	20	Cash
Crop and fodder demonstrations	21	Cash
Horticultural plant action	14	Cash
Exposure visits	11	Cash
Salaiyur		
Mango plantation	40	Labour and cash
*HDPE lining of water storage pond	50	Cash
Agave plantation	25	Cash
Drip irrigation	18	Cash
Tamarind plantation	15	Labour and cash
Desilting work in private ponds	10	Cash
Land levelling	10	Cash
Kokriguda (Koraput)		
Community place construction	10	Labour
Plantation and pastures	5	Labour
Boundary fencing	5	Labour
Soil conservation earth work	5	Labour
Vegetative barrier	5	Labour
Private field plantation	5	Labour

*High density polyethylene

Table 8. Self-Help Groups/User Groups in different model watersheds implemented by the Central Soil and Water Conservation Research and Training Institute, Dehradun, India.

Category	Watersheds					
	Bhagwasi	Badakhera	Bajni	Antisar	Salaiyur	Kokriguda
Self-help groups	Carpet weavers (10)	Mason (12) *	Basket making (4)	Levelling/bunding	Coir rope making	Bhairabi group (18)
	Carpenters (14)	Carpenter (8)	Knapsack sprayers (4)	Water management	Petty shop	Vegetable growing (10)
	Masons (12)	Tailor (15)	Horticultural development (9)	Forest development	Coconut frond weaving	Fruit growing (3)
	Blacksmiths (1)	Barber (6)	Vegetable production (10)	Animal husbandry development	Tailoring	Mauli group (12)
	Tailoring and embroidery (60)	Blacksmith (3)	Dairy and fodder production (11)	Agricultural development	Fibre extraction from agave	Honey bee keeping (5)
	Afforestation (1)	Washerman (1)	Crop production (9)	Cottage industry	Power sprayer	Vegetable growing (7)
			Self-employment (3)	Fruits, vegetables and spices	Sheep rearing	Women group (9)
			Poultry production (10)	Marketing management	Selling vegetables	Mushroom growing (14)
				Pasture management	Coconut selling	Vegetable preservation (8)
					Selling of cattle feed	
					Plastic bag wire knitting	
					Thrift society	
No. of SHGs	6	6	8	9	18	6
Total financial assistance given (Rs.)	63,500	24,144	9990+1695 (contributed by industry)		54,047	
Amount repaid (Rs.)	NA	NA	NA	Nil	20049	NA
Women participation (%)	80	26	25	Nil	70	One exclusive women group

*Figures in () indicate number of members, SHG = Self help groups

Community organizations

The approaches to community organization are to establish small groups, known as Self-Help Groups, Users Groups or interest groups, and to build on existing Panchayati (elected representatives) or non-Panchayati Raj institutions. The PIDOW – MYRADA experiences emphasize on the initiation of SHGs, with the poorest in the communities. The principle is to organize small fractions which have something in common before bringing the desperate groups together in the community level organization. Participation in these groups gives farmers the opportunity to work together in small numbers under the most favourable conditions on issues that are dear to them in the company of socio-economically similar individuals. These experiences make them more able to work at the community level on issues over which there may be less unanimity. They also learn the skills in small groups that would be required to work in larger groups and at the community level.

Seventy-third Constitutional Amendment Act on empowerment of Panchayati Raj Institutions (PRIs) described a greater role for them in watershed development programmes. However, the experiences in several states have shown that many PRIs are inexperienced for implementing watershed projects because they tend to be more political and their working is partisan. The guidelines of the Ministry of Rural Development and many international donors advocate a greater participation of the non-PRIs, SHGs, voluntary organizations, NGOs and religious organizations to develop watershed programmes. The states like Rajasthan are contemplating to declare even voluntary organizations and SHGs as statutory bodies for undertaking watershed management programmes. Several SHGs/UGs on various employment-oriented small production systems were formed in the CSWCRTI administered watersheds in different regions of the country (Table 8). These groups have a sizable participation of women, particularly in the Salaiyur and Bhagwasi watersheds.

Role of informal voluntary institutions of like-minded people having common interests is also being advocated by the NGO sector and many international donors. Many SHGs were promoted by the MYRADA during 1980s as credit and thrift groups. Similarly, different kinds of institutions were set up in Gujarat in the Aga Khan Rural support programme (Table 9). A few of them like lift irrigation and canal irrigation groups were registered under Societies Act but most of them were formal. Initially, the membership of village development groups (*Gram Vikas Mandals*) was dominated by land-owning males but in the later years, women development groups (*Mahila Vikas Mandals*) were also set up to remove this imbalance by empower them.

Table 9. Type of village institutions in Aga Khan Rural Support Programme in different districts of Gujarat (Underwood 1998).

Village Institution	Districts			
	Bharuch	Junagadh	Surendranagar	Total
Village development group (GVM)	51	24	17	92
Women development group (MVK)	40	48	15	103
Self-help group	0	15	2	17
Watershed group	0	0	29	29
Users group	0	28	0	28
Lift irrigation group	13	2	1	16
Canal irrigation group	6	1	1	8
Children's group	2	16	0	18
Total	112	134	65	311

GVM = Gram Vikas Mandal, MVK = Mahila Vikas Mandal

Non-Panchayati Raj institutions such as SHGs, UGs and other village institutions are established in the watershed based on factors such as caste, need, expertise etc. The process followed by the Indian Farm Forestry Development Cooperatives (IFFDC) in the SHG formation involved identification of potential members initially through individual contact followed by the concept of sharing and setting of bye-laws. Thereafter, representatives like a group leader and a treasurer are elected and bank accounts are opened with nominal deposits of membership fee. The SHGs can make independent decisions to provide loans for different activities, such as raw material for cottage industries (basket making, pottery,

production of *agarbattis*, leaf plates and fruit and vegetable processing), setting up consumer stores, goat, cattle and pig rearing, and a variety of other such activities. By making loans for productive activities, the SHG members are encouraged to set up their own farm-based micro-enterprises. There are at present 298 SHGs with a total saving of Rs. 11.37 lakhs (Gaur, 1999). There is a discernible trend of increasing membership over the years which is an indication of members' faith in the SHGs (Table 10).

Table 10. Progress of self-help groups (SHGs) in Indian Farm Forestry Development Cooperative Limited in three states(Gaur, 1999).

Year	Number of SHGs				Total number of members	Saving (Rs in lakhs)
	Utter Pradesh	Madhya Pradesh	Rajasthan	Total		
1996-97	35	11	24	70	969	2.04
1997-98	27	32	16	75	1101	1.75
1998-99	58	66	29	153	2326	1.62
Total	120	109	69	298	4396	11.37

Recognizing the need to involve the local community in the process of protecting the Ranthombhore National Park, the World Wildlife Fund (WWF) - India embarked on an eco-developmental project for the villages on the eastern periphery of the park in 1991 (Mamgain, 1999). Village forest protection committees (VFPCs) were set up to involve village communities in the protection and management of degraded forests assigned to villages in the cluster. There are now 6 VFPCs in the cluster of villages, protecting 320 ha of degraded forests and village grazing lands (Table 11). Conservation activities in the forest area increased water availability in the wells dug upon village lands and sustained interests of farmers to protect the forests.

Table 11. Contributions @ 15-20% of labour wages in Ranthambhore National Park of Rajasthan (Mamgain, 1999).

Name of Village Forest Committee	Name of Bank	Contribution (Rs.)
Gram Van Suraksha Evam Prabandh Smiti, Fariya	SBBJ, Khandar	51,990
Gram Mahila Van Suraksha Evam Prabandh Smiti, Fariya	SBBJ, Khandar	50,505
Gram Van Suraksha Evam Prabandha Smiti, Gopalpura A	BOB, B.Khurd	38,715
Gram Van Suraksha Evam Prabandha Smiti, Gopalpura B	BOB, B.Khurd	34,940
Gram Van Suraksha Evam Prabandha Smiti, Pawandi	AKGB, Khandar	54,020
Gram Vikas Evam Charagah Vikas Smiti, Khandeola	AKGB, Khandar	59,784

Village level institutions (VLIs) with a smaller household membership function more efficiently than those with large members where there is a wide divergence in the concerns and needs of members. It is necessary to provide adequate incentives, train and sustain a cadre of VLIs during the entire course of project so that they continue to assist the village communities even after the project draws to a close. Village level institutions became used to grants and doles, and to prolonged support for employment and improved living conditions. As a result, the village institutions cease to function once the project is over. Therefore, the VLIs should be made self-reliant, able to generate their own resources in the course of time so that they are self-sustaining in the long-run.

Women participation

Women constitute more than half of the total manpower in the hilly and arid watersheds as the men folk often migrate in search of gainful employment elsewhere. Decision making in most areas is still male-dominated and their migration complicates implementation of participatory processes. Therefore, active participation of women is of utmost importance in the watershed management programme, particularly in the fragile and marginalized situations. The women are shy by nature and are reluctant to participate initially. But when they are motivated and made to realize the benefits of the project, their involvement is complete and active. The women are relatively more empowered in the matriarchal system of north-eastern states, Lahaul-Spiti area of H.P. and Kerala. Functioning of women SHGs in small production systems, such as raising of nurseries, operation of gobar gas plants, silk worm rearing, basket making, credit and thrift society is generally better than men. In the Aga Khan Rural Support programme in Gujarat, the women membership and the number of women groups was very low in the beginning but it increased progressively over the years. Similarly, the participation of women in the village level institutions as well in the meetings of general body and executive committee was quite encouraging in the CSWCRTI implemented watersheds, except in Bajni and Antisar (Table 12).

Table 12. Institutional performance and participation of women in village level institutions in different model watersheds Implemented by the Central Soil and Water Conservation Research and Training Institute, Dehradun, India

Category	Watersheds											
	Bhagwasi		Badakhera		Bajni		Antisar		Salaiyur		Kokriguda	
	No. of meetings	No. of participants	No. of meetings	No. of participants	No. of meetings	No. of participants	No. of meetings	No. of participants	No. of meetings	No. of participants	No. of meetings	No. of participants
General body meetings												
1997	8	270	1	115	1	21	2	77	2	169	1	9
1998	4	168	1	86	2	53	3	61	2	131	3	120
1999	2	56	1	22	1	38	3	81	1	167	6	226
2000 (up to March)	-	-	-	-	1	25	-	50	-	-	1	41
Women participation (%)		31		41		9		2		28		26
Executive committee meetings												
1997	7	62	-	43	1	4	-	-	2	27	-	-
1998	8	80	2	1	1	7	9	86	2	53	5	47
1999	7	67	42	18	1	11	6	36	-	-	8	75
2000 (up to March)	-	-	3		1	9	5	36	6	49	3	30
Women participation (%)		15		15		14		13		19		13

Common/private property resources

Ownership of resources exercises a major role on the extent of participation by the watershed inhabitants. Common use and common property resources are afflicted with 'tragedy of commons'. It is difficult to realize contributions in cash or kind for the maintenance of these resources but there are strong tendencies for over-exploitation of these

resources. Sustainability and lack of investment are affected by group dynamics. Use of these resources can be regulated or disciplined by charging some amount at rates to be agreed mutually by the society. Selling of grass from common land, harvested rainwater for irrigation to the members of registered society and equitable sharing establish social fences around the resources.

Development of community lands is a thorny issue in most of the watershed development programmes. Improved management of common lands is beneficial to the poorest who depend more on them. However, distorted nature of land ownership and land rights dampen the incentives for better collective management of resources. Because the village people have an option of encroaching on common lands, they do not have a collective stake in managing village lands. Watershed development is an opportunity to clear encroachments or legitimize the status quo and prevent further encroachments.

Table 13. Caste and land holding wise population distribution in the model watersheds implemented by the Central Soil and Water Conservation Research and Training Institute, Dehradun, India

Category	Watersheds					
	Bhagwasi	Badakhera	Bajni	Antisar	Salaiyur	Kokriguda
Total population	1101	3829	993	1895	1148	215
No. of families						
Scheduled castes	34	16	-	48	91	-
Scheduled tribes	-	18	104	27	-	65
Other Backward castes	72	37	72	172	197	-
General	72	46	-	129	-	-
No. of holdings						
Landless	80	-	99	55	20	-
Marginal	31	48	38	62	54	6
Small	22	25	29	126	79	18
Medium	29	34	10	-	6	42
Large	16	10	-	169	-	6
Total area (ha)	550	683	532	812	513	318

Conflicts/equity

Participatory paradigms of watershed concept are highly dynamic, situation- or resource-specific and still in evolutionary process. Ensuring equitable distribution of benefits, goods and services from watershed development particularly to those who have no rights to land and water is a formidable task. The development of common lands, improvements in forests and any benefit from better availability of water for non-agricultural purposes offer some avenues. Several policy initiatives for improving the delivery system with the help of community involvement are afflicted with attitudinal and behavioral contradictions. In the Bunga watershed of Panchkula district, the Government of Haryana vested its management with the PRI through a notification when hitherto unproductive resources were made productive by creating village level institution. This conflict could ultimately be resolved through a judgement of Hon'ble Punjab and Haryana High Court. Similar differences among the senior level government functionaries for harmonizing the guidelines of different ministries have been observed elsewhere. Chief Secretaries of many

states are not very supportive of direct remittance of development funds from the central sector to the district level. At the district level, there is unhealthy competition between the Chairman of the Zila Parishad and District Collector to exercise financial control over the watershed development funds. At the village level, the Panchayati and non-Panchayati Raj Institutions are not prepared for harmonizing their relative strengths for ensuring long-lasting participation of the community. Most of the watershed programmes are essentially land-based but there are several landless (Table 13) as well as weaker sections in many cases who feel left out of the programme. The new guidelines have a provision of activities targeted on landless and weaker sections of the watershed.

Women participation in the PRIs is operating, in many cases, through their husbands as a proxy. Harnessing of complementarities of the NGOs, GOs, PRIs and NPRIs is also lacking for utilizing their comparative strengths and avoiding uncalled for dogmatism. For example, the NGO sector in many cases is better equipped to deal with the participatory issues, whereas the government functionaries have a vast experience and more manpower for tackling biophysical aspects of participatory process. Nonetheless, there are some successful experiences of working of an NGO (MYRADA) and GOs (Dryland Development Board) in Karnataka. This calls upon a definite mechanism of networking and conflict resolution in the participatory process of watershed management.

The experiences of M.S. Swaminathan Research Foundation and India-Canada Environment Fund project in the east-coast show that the process of conflict resolution among the different groups within the community and of arriving at a definite consensus to evolve strategy for implementation at the village level is a time-consuming and cumbersome process (Sankaramurthy, 1999). Further, the project staff need to put adequate effort in securing commitment from the Government departments to adopt conciliatory approach to accept communities as partners for better management of resources.

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