INTEGRATED WATERSHED DEVELOPMENT PROJECT IN DISTRICT BILASPUR, M.P., INDIA

ASSESSMENT REPORT FOR SYNTHESIS WORKSHOP

3rd TO 10th SEPTEMBER, 1997

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EXECUTIVE SUMMARY

The preparatory workshop held between 20th - 29th Nov.'96 at IRC set the ground for undertaking detailed exercise on assessment and documentation of water resource management approaches. The case study under assessment happened to be an 'Integrated Watershed Management' wherein the approach meant that "physical unit of development of natural resources should be the watershed" and it should be developed from ridge to valley in an integrated fashion. The objectives of the integrated watershed development project as envisaged in the guidelines laid down by Govt. of India are as follows:

1. To promote the economic development of the village community which is directly or indirectly dependent on watershed through (a) optimal utilization of watershed's natural resources like land, water, vegetation etc. (b) employment generation and development of human and other economic resources of the village.

2. To encourage restoration of ecological balance in the watershed through:

(a) Consistent community action for the operation and maintenance of assets created and development of potential of the natural resources.

(b) Simple, easy and affordable technological solutions.

3. Special emphasis to improve the socio-economic conditions of the resource-poor and disadvantaged sections of the watershed community through:

(a) equitable distribution of benefits of watershed development,
(b) greater access to income generation activities and focus on their human resource development.

As I had proposed at the preparatory workshop, it was agreed to by the stakeholders in the District Level Advisory Committee (DLAC) on watershed to undertake the assessment on all the eight WRM principles and information was collected on all the leading/key questions utilizing appropriate participatory tools.

Since the District Rural Development Agency, Bilaspur had funds available for undertaking evaluation, it was not considered necessary to secure resources for undertaking the assessment from any other agency.

A two day workshop was organized to select the case studies and to identify involved stakeholders and also to finalize WRM principles/key questions to the assessment. Two integrated watershed development projects in village Tilaikundi and village Gahania in District Bilaspur were chosen for assessment on recommendations of DLAC. From the nature of projects which covered only one village each, it was rightly decided that the level on which assessment will focus will have to be local with village Watershed Committee (WC) and Gram Panchayat and the user groups being the main stakeholders.

It was impossible for me to personally devote time to fully carry out the assessment work. Therefore, a local NGO name Gramin Seva Sansthan was entrusted the task of assisting me in the assessment work. They were also working as a Project Implementing Agency (PIA) for watershed development. A training of three days was conducted to give the background of the assessment exercise and understanding of the eight principles and on participatory assessment tools. The assessment work at local level was subsequently carried out by Gramin Seva Sansthan with regular monitoring at my level. Various participatory tools were used to carry out the assessment.

The participatory tools were chosen depending upon the nature of the question and the stakeholders who were involved. In view of the educational backwardness of the villagers and simplicity of the projects in some respect, often more than one tool was used to get the real answers.

Since the assessment was carried out at micro watershed level which was about the size of a small village, it did not offer the usual complexities associated with multiple users for a single water source. To that extent, some of the principles and key questions did not hold much significance in the projects under assessment. It was found that the principle nos. 1, 4, 5 & 7 were strongly being adhered to in both the projects under assessment, while principle nos. 8 & 3 were only partially being adhered to, and nuances relating to principle nos. 2 & 6 did not get reflected as these principles did not appear to have much relevance in the context of projects under assessment even though the spirit of guidelines endorses the adherence to these principles.

There were very few water sources and they were dedicated for a specific purpose of meeting the domestic need of drinking, bathing, washing etc. or for meeting the irrigational needs. None of the projects under assessment had paucity of drinking water supply source and thus there were no conflicts between stakeholders over the use of drinking water or conflict in the needs of men and women. The exercise provided a good opportunity to meet the simple village folk and understand their needs about the water systems as well as their management systems.

PREFACE

I wish to thank many people who assisted me in my work of participatory assessment and documentation. But the space would run short. Still, I wish to make a mention of some of them.

To begin with, I would like to place on record my gratitude to Dr.M.N.Kulkarni, UNICEF Chief, Bhopal and Mr.Aung Chein for selecting my project for the workshop. It certainly boosted my morale. I am also grateful to the staff of IRC who were very patient, prompt and helpful and gave solid foundation to carry on the assessment and documentation work.

I would like to thank Mr.A.B.Gupta, DFO, Jhabua, Dr.Rajesh Rajora, Executive Director, DRDA, Jhabua and Dr. H.C. Jain of IRCON, Jhabua who assisted me in my work for preparatory workshop at my previous posting in Jhabua.

I would like to specially thank Mr. Vijay Tiwari and Mr. Ajay Gurudiwan of Gramin Seva Sansthan and their team who carried out the assessment.

I am grateful to Shri Sanjay Singhai, Shri T.Venkata Rao , Shri P. Rama Rao, Shri Amit Tyagi and Shri Alok Mishra who helped in typing/editing the documents.

I also wish to thank my dear Commissioner, Bilaspur, Mr. Harsh Mander for his encouragement.

And lastly and most importantly, I thank my dear wife Honey and my daughter Shubhi for having patience and providing necessary encouragement.

Date : 26th August '97
Place : Bilaspur

(Manoj Jhalani)

CHAPTER - I

BACKGROUND

At the preparatory workshop in November last at IRC, it was agreed that the participants should preferably choose two projects for assessment. Therefore, two projects were chosen for assessment in village Tilaikundi in Pali Block and in village Gahania of Korba Block of District Bilaspur in the state of Madhya Pradesh, India.

In both the villages of Tilaikundi & Gahania, Integrated Watershed Management Projects are being implemented as per the guidelines laid down by Govt. of India and Govt. of Madhya Pradesh (M.P.) under the Rajiv Gandhi Watershed Mission. Under the new Watershed guidelines, a micro watershed of size about 500 hectares forms the unit of development and this often happens to be usual size of village.

VILLAGE TILAIKUNDI

Tilaikundi is a small village with the population of 277 consisting primarily of Scheduled Castes, Scheduled Tribes and Backward Classes (some castes and Tribes which suffer from socio-economic and educational backwardness are included in the Schedule of the Constitution and there has been provision of reservation in jobs and also special allocations and schemes for them to accelerate their development). The people are basically peaceful and cooperative. 78% of men and 91% women are illiterate.

The village is situated at 82° 24′ longitude and 22° 23′ latitude. It is about 56 kms. away from the District headquarters of Bilaspur. The entire watershed is catchment of 'Jhulna nala' which is the main stream. The area is made up of Archean rocks and dominated by weathered granitic rocks. The higher reaches in the hills are made of sedimentary rocks. The micro watershed area spread over 375 hectares includes some protected forest area also which is rich in flora & fauna.

The main source of livelihood for the villagers is agricultural produce and sale of minor forest produces. However, some supplementary income to some families is also available from live stock development, fishing etc. The area has been primarily mono crop area and paddy forms the main crop. Most of the families live below the poverty line of Rs. 11,000/- per annum (equivalent to US $ 300).

The area receives an average rain fall of 1400 mm but the run off in this area had been very high largely due to steep slopes and deforestation prior to commencement of Integrated Watershed Management Project. Gramin Seva Sanstha is acting as Project Implementing Agency. The project was started about two years back and has an approved outlay of Rs.1.40 millions (equivalent to US $o.4 million). The project as per the guidelines of watershed development aims at optimally utilizing and developing natural resources and improving the family income. It provides for the community in the watershed area to be organized and their capacities enhanced. The project is of 4 years duration and has been moving along the desired direction.

The major water related problems being faced were that the ground water table had started receding causing threat to their only source of drinking water i.e. single hand pump. Also, the irrigation available was inadequate. After commencement of the project, there was increased awareness about the environment. Because of various water conservation treatment measures, the ground water level and moisture content in the fields has improved resulting in improved productivity. Also, irrigation cover has increased.

VILLAGE GAHANIA

Gahania is a small village situated at 82° 43′ longitude and 22° 27′ latitude. It is about 130 kms. from the District headquarter, Bilaspur. The village has a population of 406 people consisting mainly of scheduled tribe and backward classes. They suffer from socio-economic and educational backwardness.

The area is made up of Talchir groups of sedimentary deposits which is also an important reason for greater rate of erosion in the area. Gahania Microwatershed is spread over in the area of about 500 hectares. It includes some protective forest area, but this was not so rich in flora and fauna.

The main source of income here is agricultural produce and sale of minor forest produces. Production in fisheries and vegitables which have been started in the recent past has boosted the average economic condition of the villagers. However, families are still living below the poverty line.

The average rain fall received in the area is about 1400 mm . The run off in this area has been high because of steep slopes and deforestation. The main stream of this village is Dhengur nala. However, after commencement of the project the run off of this area is getting continuously reduced by the measures adopted under Intergrated watershed mangement project by watershed

committee. The water shed project is of 4 years duration and has been moving along the desired path. The project has an outlay of Rs. 2 million (US Dollars 0.055 million). The main water related problems were that of receding ground water table and contamination of ground water by ferrous contains as also the inadequacy of irrigation water sources.

The project has brought about considerable awareness about issues of watershed treatment, involvement of stakeholders and enhanced the capacity and confidence of the community.

CHAPTER-II

OVERALL ASSESMENT METHOD

The techniques employed for whole assessment were participatory in nature and included techniques like mapping, venn diagram, group discussions, matrix ranking etc. After identifying a suitable agency, namely Gramin Seva Sanstha to undertake assessment, detailed discussions were held with the staff of the agency. After discussions extending for two days on various participatory techniques, it was decided to engage different participatory techniques to seek reliable answers to different questions. Often more than one technique was needed to get reliable answers on any principle and question. Lot of information was required to be obtained through questionnaire/interview and group discussions because villagers were largely illiterate and could not be taught to properly respond to all the participatory tools of assessment. However, mapping, matrix ranking and venn diagram techniques were still used in good measure depending on the nature of key question and the stakeholders involved. Group discussions were generally used to give people the understanding of the principle and background of assesment as well as to get a feel of answers to key questions. Lot of inter- related issues were discussed to seek the real answers.

Various questions which were to be assessed through questionnaire/interviews were determined. For each principle, they were put together on separate sheets of paper. These were then made available to the agency staff engaged to carry out the assessment. It was planned that whole exercise be got done within a period of about three weeks for each of the project. This was done in the month of May, June & July. Almost all the information in the project had to be obtained at village level. The Agency engaged 4-6 people for the assessment exercise so that the quality of work would be ensured. The workers engaged in assessment were both male & female.

Assumptions made

It is assumed that everyone clearly understood what was stated to them and answered their queries honestly and objectively. It is also assumed that the two watershed projects are reflections of the integrated watershed projects being carried out in the district .

Limitations

Often the villagers who were by and large illiterate did not fully appreciate the complexities of all the eight principles as some of the complexities were not present in their integrated watershed development projects. There were not multiple sectors or agencies competing for the same source of water and therefore the microwatershed development projects did not offer all the complexities of sharing water. In answering the questionnaire, the people may have answered on the basis of what one may want to hear and not necessarily on the basis of factual situation in the ground. This was also evident from the fact that there were some variation in answers to questions which were obtained by different techniques.

Also, I joined the district of Bilaspur in March '97 and was new to the district to make appropriate choice of case studies for assessment. Both the case studies which were chosen on suggestion of DLAC turned out to be fairly similar in nature although the areas and the PIA were different.

CHAPTER-III

WATER RESOURCE MANAGEMENT PRINCIPLES ADDRESSED

PRINCIPLE-I

WATER SOURCE AND CATCHMENT CONSERVATION AND PROTECTION ARE ESSENTIAL

The project under assessment is related to integrated watershed management which essentially provides for effective catchment area treatment to ensure that the rain water is properly conserved and soil erosion checked. There had been decline in ground water table and this was a major threat to water source. This had taken place because of rapid deforestation from hills and higher reaches which resulted in high run off and also problem of siltation due to soil erosion. The use of fertilizers and chemicals also contaminated water. Because of poor percolation and high soil erosion, the quantity of ground water and quality of surface water were getting adversely affected. To take care of these problems and to improve the quality and quantity of water available, following treatment measures were employed :

1. Contour trenches.
2. Contour bunds.
3. Stone check dams.
4. Gully plugs.
5. Vegitative hedges.
6. Water harvesting ponds.
7. Nullah bunds.
8. Diversion bunds and drains etc.

After commencement of the project, the silt load has decreased and there has been improvement in the ground water table.

Methodology used

To assess the principle and to seek reliable answers to different questions relating to the principle, following methods and tools were employed :

1. Interview.
2. Questionnaire.
3. Mapping.
4. Group Discussions.
5. Venn Diagram.

Interviews of Mission Director, Watershed, Govt. of MP and CEO, Jila Panchayat and District Collector were recorded. Villagers were also asked to respond to different questions in an interview fashion. The **Table-1** shows different tools/methodology used to seek reliable answers to different questions and answers obtained from involved stakeholders.

The Project officer of PIAs also presented the results/analysis of PRA, resource mapping etc. which were done at the time of commencement of the projects. The tools were applied after giving the villagers the background of the assessment exercise and explaining the tools being used. They were requested to provide answers to the questions honestly.

Lessons Learned

From the results and context of the project, it is absolutely clear that catchment area treatment to conserve and improve the water source is extremely vital principle being employed in the project. Various simple measures to check the flow of rain water and elongate the duration of its contact with the ground were very effective. The principle is extremely important for success of the project, and, therefore, should form an important constituent of any water resource management project. It was also important that water-turbidity is reduced so that the cattle and the human beings who do consume surface flow water consume only good quality water. Use of chemical fertilizers do pose some threat to the water source.

Successess

The projects have succeeded in improving the ground water table and reducing silt load through catchment conservation measures. All stakeholders at different levels agreed that the principle was vital for all WRM projects.

Mistakes & weaknesses

Two projects under assessment focus mainly on improving the quantity of available water. But no measures were planned and executed to prevent water from contamination.

TABLE-I

WATER SOURCE AND CATCHMENT CONSERVATION AND PROTECTIONARE ESSENTIAL

1	Has water source and catchment protection been identified as a need presently or in the long term? (Why? By whom? When? How?)	Yes. Water source and catchment protection have been identified as a need by Govt. of India after a High Powered Committee headed by Dr.Hanumantha Rao made these recommendations in 1994. The State Govt. of Madhya Pradesh also realised its importance and declared watershed development as a mission in 1994. Water Source of catchment protection was identified as a need by the villagers as well. Thiswas reflected when PRA was undertaken in the village by Project implementing Agency Gramin Seva Sanstha at the line of commencement of the project. about two years back.	Yes.. Water source and catchment protection have been identified as a ned by Govt. of India after a High Powered Committed headed by Dr.Hanumantha Rao made these recommendations. The State Govt. of Madhya Pradesh also realised its importance and declared watershed development as mission. Water source and catchment protection was identified as a need by the villagers as well. This was reflected when PRA was undertaken in the village by Project Implementing Agency (PIA) , Deptt. of Forest at commencement of the project about 2 yrs. back.	Interview + PRA results at the time of commencement of the project.	Mission Director, Watershed, Govt. of M.P. Collector, Bilaspur, CEO, Jila Panchayat Bilaspur, Project officer of PIAs. Besides eighty persons both male and female who have_____ identified catchment protection as a need.
2.	Are catchment areas negatively influenced by any activities?	Yes. The catchment area was negatively influenced by soil erosion because of deforestation.	Yes. The catchment area was negatively influenced by soil erosion because the terrain is made of whethered Archean rocks that are easily erodable. It was negatively infuenced by deforestation also.	Questionnaire + PRA results at the commencement of the project.	PIAs + Villagers.
*	Is there marked reduction in flow volume/water level ever the last five to ten years? (Do you have to make longer distance)?	Yes. Reduction in flow volume particularly during dry season and decreasing water level was noticed.	Yes. The prime channel here is perinneal. One but cedrtainly the flow volume had decreased in dry season over the years. The women have to walk the same distance for water.	Group discussion + PRA + Interview.	PIAs and villagers.
*	Are floods occuring	Prior to commencement of the project,	Prior to commencedment of the	Questionnaire +	Villagers +

	frequently?	there were heavy floods but at present, the floods have receded as a result of catchment treatment measures.	project, there were heavy floods but at present the floods have receded as a result of catchment treatment measures.	PRA at the time of commencement of the project.	PIAs.
*	Is there a marked deterioration in water equity over the last five to ten years (turbidity level, chemical quality, taste appearance, increase in the cost for water treatment)?	There was deterioration in water quality as water turbidity was increasing due to soil erosion. No other deterioration was noticed.	There was deterioration in water quality as water turbidity was increasing due to soil erosion. Ferous content of 2-3 ppm was there in pumped waster. No other deterioration was noticed.	Group discussion	Villagers.
3.	What are the threats to water source and catchment area protection? (water quantity/quality/envirton mental degradation) ?	After a rapid deforestation given 0/a off within the catchment area was much faster resulting in low seepage of water into the strata and greater soil erosion causing turbidity.	After a rapid deforestation, the run of within the catchment area was faster resulting in low seepage of water into the strata and grater soil erosion causing turbidity. The ground water source is also contaminated by high ferous content.	Questrionnaire + Mapping.	PIA + villagers.
4.	What protection activities are being undertaken ? (Live stock control, afforestation, land management) and by whom ?	Under Rajiv Gandhi Watershed Mission, the village level Watershed Committee under the guidance and supervision of project Implementing Agency, Gramin Seva Sansthan haas undettaken catchment treatment measures like. 1. Contour bunds 2. Contour trenches 3. Gully plugging 4. Bolder check dam 5. Percolation tank 6. Pasture development 7. Afforestation etc.	Under Rajiv Gandhi Watershed Mission, the village level watershed committee under the guidance and supervision of Project Implementing Agency, Deptt. of forest has undertaken catchment treatment measures like: 1. Contour trenches. 2. Gully plugging 3. Bolder check dam. 4. Percolation tank. 5. Afforestation & Bamboo plantation.		
*	Percentage source of livestock over seven years.	5% increase (Cows, buffaloes, goats etc.)	About 15% increase(Cows, buffaloes, goats etc.) one buffalo pair to 11 Korwa faimlies wsere provided last year.	Data was obtained through survey.	Villaagers.
*	Percentage increase in irrigation , licences/irrigated area.	Yes. There is 30% increase in irrigated area.	Yes. There is 20% increase in irrigated area.		
*	Population growth in catchment area (compared to 1991 census).	Yes 13%.	Yes 22.66%. 91 census popul;ation 331 Present polulation 406.	Data was obtained through survey.	

*	Has the percentage of degraded land increased over the last five years.	No. Efforts are being made to make the land cultivable.	No, efforts are being made to make the land cultivable. There was an increase of cultivable land by 15 acres as 15 acres of waste land was made cultivable for the first time last year.	Survey and comparison with previous revenue records.	Villagers + revenue records.

PRINCIPLE-2

ADEQUATE WATER ALLOCATION NEEDS TO BE AGREED UPON BETWEEN STAKEHOLDERS (WITHIN A NATIONAL FRAME WORK)

There are usually multiple agencies in multiple sectors who want to use the same water source. Therefore, it is important that Water Resource Management takes into account the needs of various competing sectors and integrates them. Suitable mechanisms are needed for appropriate allocation of water taking into account social and economic concerns.

Methodology used

To identify the tools to assess the principle, group discussion was held at the local level with villagers which included all local level stakeholders. During group discussions itself, it became clear that the principle was hardly relevent in the context of the case studies under assessment. However, assessment was still carried out empolying the following tools :

1. Survey
2. Matrix ranking
3. Mapping
4. Group discussion

The methodology used and results obtained are given in **Table-2.**

Result

The projects under assessment are very simple projects with a water source dedicated for a specific water use. In DWSS sector, there is no competition amongst users and no conflict amongst users because of adequate availability of water for drinking. There is, however, limited water available for irrigation use. A water source is separately dedicated for irrigation needs of the villagers covered under the projects. However, the villagers in meeting of the watershed committee and in consultation with Project Implementing Agency decide the quantum of the area to be irrigated and area closest to the source up to the agreed command is chosen for the purpose of irrigation.

Lessons learned

Since the water sources have limited and dedicated use in the projects under assessment, the principle did not have much relevance in the context of our projects despite the fact that the watershed guidelines for these projects clearly provide for involvement of all stakeholders at local level in the decision making body i.e. watershed committee.

TABLE-II

ADEQUATE WATER ALLOCATION NEEDS TO BE AGREED UPON BETWEEN STAKEHOLDERS (WITHIN A NATIONAL FRAME WORK)

1.	Is sufficient water of required quality available to meet the demands of all users?	Yes. Sufficient water of required quality is available to water users for drinking and community and livestock needs. However, irrigation facility is limited.	Yes. Sufficient water of required quality is available to water users for drinking and community and livestock needs. The irrigation facility was limited and has been augmented this year considerably but it will need further augmentation to meet the needs of all. . Since pumped water contained ferous particles, people consume water from wells and in some habitation people consumed infilterated water of perinneal NALA (stream) called "DHENGUR" by constructing "DHONDI".	Interview + Group discussion	PIAs & Villagers.
*	Percentage of estimated water used by different sectors.	The Tubewsells with handpumps cater to human and livestocks needs while diversion provides the irrigation.	The Handpumps cater to non-drinking community needs. The "DHENGUR" Nala/Baghjhiria/Phutahamura stream provides for livestocks needs. The Phutahamura, Nala bundh and Gramin Nallah bund provides irrigation water.	No estimation was felt necessary.	
*	Estimated water use per sector/allocation per sector.	Each sector made use of water allocated for it.	Each sector made use of water allocated for it. There was no conflicts in water use in different sectors.	Group discussion	Villagers
*	Level of satisfaction of stakeholder with allocated volumes 'Nos. of registered	High. No complaints were received. Gram Panchayat takes decision.	High. No complaints were received regarding allocation of water for each sector. No register was made of complaints. However, villagers wanted iron removal	Interview + Group discussions with villagers.	Villagers + Gram Panchayat + Watershed Committee

	complaints, percentage of dissatisfied stakeholders) and who makes decisions?		plant for the handpumps and wanted a bigger dam to avail 100% irrigation.		
*	Percentage of stakeholders in decision making (elected stakeholders representation, percentage of stakeholders who feel their voice is heard).	10% but they included representation of different user groups they felt that everyone's voice was heard.	All stakeholders of use of water represented in decision making. They felt that everyones's voice was heard.	Group discussion + matrix ranking	
*	Availability of informattion to all stakeholders (percentage of stakeholders who feel they do not have good access to information)	Most people had broad understanding of water resources and its use.	All the stakeholders feel that they had good access to information.	questionnaire + group discussion	Villagers
*	Accessibility of informattion to all stakeholders (percentage of stakeholders who feel they do not have good access to information)	All the stakeholders feel that they had good access to information.	All the stakeholders feel that they had good access to information.	Questionnaire + group discussion	Villagers
2.	What is water allocation mechanism that exists? Who is consulted and who makes decision?	Yes. In consultation with watershed association and village level watershed committees, Gram Panchayat takes the decision. The entire adult villagers are consulted in the meeting of watershed association and the decision arrived is accepted by Gram	Yes. In consultation with watershed association and village level watershed committees, Gram Panchayat takes the decision. The entire adult villagers are consulted in the meeting of watershed association and the decision arrived is invariably consumed and accepted in Gram Panchayat.. All stake holders represented in	Matrix ranking	Vilagers + watershed committee + Gram Panchayat

		Panchayat and watershed committee. All stake holders represented in watershed committee.	watershed committee.		
3	What legal framework and traditional practice for water resources allocation exists? Is it effective?	Tradittional practice for consulting adult members of village on water resource allocation still exists. It is effective. There is district level water user advisory committee which decides on allocation of water of major and medium size reservoirs.	Traditional practice for consulting adult members of village on water resource allocation still exists. It is effective. There is district level water user advisory committee which decides on allocation of water of major and medium size reservoirs.	Group discussion + Matrix ranking + Govt. guidelines	Vilagers + watershed committee + Gram Panchayat
4	Is there equity in water distribution? Are existing distribution mechanism effective ? (do selectors/users get what has been agreed? How is this measured?)	There is equity in water distribution. Govt. has dug tubewells with handpumps and water is freely availably to those who want it. Water for irrigation is available to fields closest to diversion bunds.	There is equity in water distribution. Govt. has installed handpumps and water is freely availably to those who want it,,but the water could not be used for drinking purpose.. Water for irrigation is available to fields closest to Nulla bunds.	Interview + group discussion	Villagers + PIA
*	Percentage of people with equal access to water supply. (distance to source, number of suply hours).	Access to handpumps was equal for all except for the distance to water source. Irrigation was available only to farmers near the irrigation source.	Access to handpumps/well/Dhondi was equal for all except for the distance to water source. Irrigation was available only to farmers near the irrigation source.	Interview + group discussion	Villagers + PIA
	Percentage of people with equal access to irrigation water.	Equal distribution to all in the command area. However only 30% of the area is irrigated.	Equal distribution to all in the command area. However only 30 acres of the area is irrigated.	Matrix ranking + group discussion	Villagers + PIA

PRINCIPLE-3

EFFICIENT WATER USE IS ESSENTIAL AND OFTEN AN IMPORTANT WATER SOURCE

'Water saved is water produced' and ,therefore, efficient use of water is often an important source. However, survey and group discussions revealed that while the villagers were extremely conscious about the usefulness and the impact of watershed treatment measures, they did not share the same level of concern and understanding about effeciency in use of water. The principle did not have much relevance as far as the DWSS sector in the project was concerned as people did have adequate amount of water available for drinking. Also the project did not have complex water supply system where inefficiencies at many levels and of many kinds are evident.

Methodology and result

The tools and methods used to assess the questions and results etc. are given in the **Table 3.**

Lessons learned

From the results of the project, it is evident that villagers have been mainly concerned about harvesting the rain water but have not been efficient in respect of use of water from different water sources. Efficiency in water use is important to improve the water availability for drinking as well as for use in other sectors.

Weaknesses

The village community has not shown in practice the concern for use of water efficiently from available water sources although they have become aware of various inefficiencies. Proper choice of crops, use of water saving devices and efficient water conveyance systems could have improved the irrigation coverage.

TABLE-III

EFFICIENT WATER USE IS ESSENTIAL AND OFTEN AN IMPORTANT WATER SOURCE

1.	Is inefficiency in water use identified as a problem? If yes, who perceives it as problem and why?	Yes. It is perceived as a problem. Proper utilisation of rain water in watershed areas was not being done. The run off of this area had been very high. This problem has been perceived by the villagers as they are lacking suffieient water for irrigation. Inefficiency in use of water from DWSS and irrigation sources was not perceived as any major problem.	Yes. It is perceived as a problem. Proper utilisation of rain water in watershed area has been very high. This problem has been perceived by the villagers, because they are lacking suffiecient water for irrigation. This problem has been perceived by the villagers as they are lacking suffieient water for irrigation. Inefficiency in use of water from DWSS and irrigation sources was not perceived as any major problem.	Mapping + interview + group discussion	PIA + villagers
*	Percentage of persons in user groups identifying inefficient use as a problem (users, operators, agency staff & farmers).	All users are also farmers and 100% feel that fast and large run off is a problem. But, they did not percieve other inefficiencies. Project implenting agency has now made them aware of various inefficiencies in water use.	All users are also farmers and 100% feel that fast and large run off is a problem they diid not percieve other inefficiencies.. Project implenting agency has now made them aware of various inefficiencies in water use.	Interview Mapping	PIA + villagers
2	What inefficiencies have been identified ?	1. Running velocity is very high. 2. Huge water bearing variety of paddy crops. 3. Inefficient use of watershed area. 4. No use of water saving devices. 5. Surplus water of tubewells after bathing/washing is wasted.	1. Running velocity is very high. 2. Huge water bearing variety of paddy crops. 3. Inefficient use of watershed area. 4. No use of water saving devices. 5. Surplus water of tubewells afterf bathing/washing is wasted.	Mapping	PIA + villagers
*	Percentage of leakage in supply system	about 10% in agriculture work and about 5% at hand pump	It was not recorded.	Mapping	PIA + villagers
*	Percentage of leaking/open taps.	NIL	NIL	Mapping	PIA + villagers
*	Percentage of house-holds using drinking	95%	NONE	Group discussion	PIA + villagers

	water for cattle.				
*	Percentage of traditional irrigated area	2%	3%	Mapping + survey report	PIA + villagers
*	Percentage of irrigated area with crops with high water requirement	25%	42% area is used for paddy production which needs large amount of water, but is acceptable looking to sufficient quantity of water in Kharif..	Mapping + survey	PIA + villagers
*	Percentage of persons in users groups adopting water saving measures (reuse in the households, repair leakage reuse waste minimisation in industry.	none excepting catchment treatment measures	Excepting catchment area treatment measures no other water saving measure are being employed for efficient water use.	Mapping + survey	PIA + villagers
3.	What measures are taken for effective and efficient use of water? who are involved and who decides?	The prime measures undertaking for effective use of water are: 1. Contour trenches. 2. Contour bunds. 3. Field bunds. 4. Check dams. 5. Boulder checks etc. 6. Vegitative hedges. Users groups/ PIA/ forest management committees/ Panchayat representatives/ women group are involved in decision making. Village watershed committee decides.	The prime measures undertaking for effective use of water are: 1. Contour trenches. 2. Field bunds. 3. Earthen Checks. 4. Boulder checks etc. 5. Vegitative hedges. 6. Plantation. Users groups/ Project Implementing Agency/ forest management committees/ Panchayat representatives/ women group are involved in decision making. Village watershed committee decides.	Venn Diagram +Matrix Ranking	PIA + villagers
4.	Are there measures which have been considered but not implemented? If not, Why?	No. The measures which have been considered are being implented.	No. Most of the meawsures which have been considered are being implemented. Some measures have not been imple-mented because there are restrictions in operations in reservedv and protected forest areas. Therefore some proposed tanks could not be constructed.	Interwiev	PIA + villagers

PRINCIPLE-4

MANAGEMENT NEEDS TO BE TAKEN CARE OF AT THE LOWEST APPROPRIATE LEVELS

Till a couple of years back, the implementation, management and maintenance of water resources was the responsibility of the State Govt. and it proved inadequate to address local water management problems.

The new **Panchayati Raj Adhiniyam** of 1993 and the **watershed guidelines** issued in 1994 have recognised this and brought about a major change in the role of state with respect to planning and decision making concerning the water needs of village community. The functions have now been passed to formally elected bodies at village level called village "Gram Panchayat" and watershed committees. The planning, execution, management and maintenance of assets created under integrated watershed management project lies with watershed committees.

The village local systems/assets pertaining to drinking water have been created by the Government over the years and have now been transferred to village Panchayat for management, operation & maintenance. This has certainly resulted in greater sense of involvement, ownership and more responsive management.

With the more responsive local elected body and with decentralization of authority and power to them, the new arrangement is far more effective. The methodology used and the results of assessment are given in the **Table-4.**

Lessons learned

From the context of the project and from the results, it is evident that it is extremely important that management should be taken care of at the lowest appropriate level.

This not only ensures quick, responsive and efficient management but also provides sustainability to management of assets created under the project. It is only proper for the users to control the resources created for them.

Successes

The guidelines have rightly provided that primary task of deciding the nature of treatment and preparing the watershed development plan is for the watershed committee at village level. The project implementing agency has acted as facilitator and and guided their operation. The results are certainly very encouraging. The problems are discussed amongst local level stakeholders and resolved expeditiously to the satisfaction of the community. There is a very high degree of involvement and satisfaction.

Open issue

The task of planning, implementing, managing and maintaining integrated watershed development works has been assigned to the watershed committee under the Govt. of India watershed guidelines. However, the watershed committee does not enjoy statutory authority like a village Panchayat and as per the law community assets are intended to be managed by the village Panchayat. Since both are village level bodies and are the appropriate level for management and maintenance of the assets, conflicts between statutory body and body created under the watershed guidelines could be there particularly after the completion of the projects. Incorporation of some members of Gram Panchayat in the WC is not likely to take care fully of the likely conflicts.

TABLE-IV

MANAGEMENT NEEDS TO BE TAKEN CARE OF AT THE LOWEST APPROPRIATE LEVELS

1.	Who manages water suply system? How long have they managed the system?	Village level panchayats. Only three years. WC manages irrigation water sources created under the project. They are functional for last two years.	Village level Panchayats. They have managed systems for nearly three years now. WC manages irrigation water sources created under the project. They are functional for last two years.	Information available.	Gram Pamchayat + WC + PIA.
*	Percentage of systems with functioning monitoring system.	100%	Only one hand pump and two wells are used for community needs/drinking purpose. Other sources of irrigation were being planned and constructed by watershed committee. These are being monitored effectively. Hwever, in handpump operation management, problems were encountered.	Survey.	Gran panchayat + WC + PIA.
*	Average and range of years of experience of management committee.	3 yrs. for Gram panchayat. 2 yrs. for WC	3 yrs. for Gram panchayat. 2 yrs. for WC	Information available.	
2.	Who manages different water resources ?	Village level Panchayat committee, WC	Village level panchayat committee, WC	Information available.	Villagers
*	Operational (day-to-day managgement of surface and ground water).	Gram panchayat manages day to day operation of DWSS. WC presently takes care of day to day operations of irrigation sources created by it. Gram panchayats engage mechanic or invite Govt. mechanic to undertake repairs when the system becomes dysfunctional.	Gram panchayat manages day to day operation of DWSS. WC presently takes care of day to day operations of irrigation sources created by it. Gram panchayats engage mechanic or invite Govt. mechanic to undertake repairs when the system becomes dysfunctional.	Information available + interview	Gram panchayat, WC

*	Strategic (policy, legal, planning).	Policy, legal & planning aspects of water resources are primarily decided at the level of State and Central Govt.	Policy, legal & planning aspects of water resources are primarily decided at the level of State and Central Govt.	Information available .	Collector, Mission director
3	Is management currently taking place at lowest appropriate/ possible level.? If yes, describe constraint in having management committee.	The management is currently taking place at the lowest appropriate and also lowest possible level.	The management is currently taking place at the lowest appropriate and also lowest possible level.	Group discussion + Interview.	Villagers + PIA+ WC + Gram Panmchayat, + Collector.
*	Per centage and management committeeswith clear task management.	One watershed committee is there with clear task management.	One watershed committtee and Gram Panchayat is there with clear task management.	Matrix ranking	villagers
*	Percentage of problems referred to hiogher level authoorities (Frequently and level of backup support)	About 25 complaints came in last two years, only 7 of them had to referred to higher level authorities.	No regiter is maintained about problems recieved, but only two of the problems had to referred to higher level authorities.	Available	Villagers
*	Percentage of users/ Stakeholders satisfied with management	75%	90% were satisfied with management.	Group Discussions	Villagers
4	Does existing legislation facilitate this principle	Yes.	Yes.	Interview	Collector, WC, Gram Panchayat
*	Is legislation effective? If not, what other appropriate manaagement exists?	It is effective. Panchayati raj adhiniyam and the State Govt. instructions facilitate functioning at the present level. As per new watershed guidelines, enough autonomy in decision making is available to watershed committee	It is effective. As per new watyershed guidelines, enough autonomy in decision making is available to watershed committee. The new Panchayati Raj Act also confers sufficient power and autonomy to Gram Panchayat.	Information available + Interview	Collector, WC, Gram panchayat
5	What are the changes taking place regarding the levels at which water	Ealier it was managed by Govt. from district level. Now the management is being done primarily at the watershed	Ealier it was managed by Govt. from district level. Now the management is being dne primarily at the watershed committee and	Group Discussion + Interview	Village + WC

	resourcse are being managed? what are the constraints, if any?	committee and Panchayat at village level. No major constraints have been felt so far except that technical personnel of Govt. are not directly under the control of Paanchayat.	Panchayat at village level. No major constraints have been felt so far except that technical personnel of Govt. are not directly under the control of Paanchayat.		

PRINCIPLE-5

THE INVOLVEMENT OF ALL STAKEHOLDERS IS REQUIRED

There is certainly a need for better coordination and collaboration for better management and satisfaction of stakeholders.

This has been appreciated in the new Watershed guidelines which provide for effective involvement of various interest groups. The Watershed guidelines clearly demand that:

a. Watershed committee will plan, implement, maintain and manage the integrated watershed development project.

b. Watershed committee will consist of representatives of Gram Panchayat, User groups and self-help groups.

c. The community will have to share about 10% of the project cost which will be utilised for maintenance of watershed works subsequently.

Methodology and results

The methodology and results/answers obtained to different questions are given in Table-5. Questionnaire, group discussions and survey were the main tools used for assessment.

Successes

While the case studies under assessment did not reflect situations of conflicts over use of water between stakeholders as there was adequate water freely available from specific sources dedicated for a particular use, it did show that lot of consultation and information sharing between different stakeholders over planning and implementation of watershed development project took place. The need to incorporate this principle has been recognised at all levels. The village community showed a high degree of participation and satisfaction with regard to watershed development projects.

TABLE-V

THE INVOLVEMENT OF ALL STAKEHOLDERS IS REQUIRED

1	Who are the stakeholders? Do they percieve themselves stakeholders and as being actively involved?	State Govt., District Level Advisory Committee, PIA, Village Panchayat, Forest Management Committee, Women's group , user group. They percieve themselves as being actively involved.	State Govt., District Level Advisory Committee, PIA, Village Panchayat, Forest Management Committee, Women's group , user group. They percieve themselves as being acively involved.	Interview + Questionnare + group discussion	State Mission director + District Collector + WC + Panchayat + village level users groups etc.
*	Percentage of stakeholders percieving themselves as being involved.	68 % of local persons interviewed perceived themselves as being involved.	60 % of local persons interviewed perceived themselves as being involved.	Interview + Questionnaire + group dicussion	State Mission director + District Collector + WC + Gram Panchayat + village level users groups etc.
2	Do stakeholders wish tio be actively involved in WRM?	Yes.	Yes.	Interview + Questionnaire	State Mission director + District Collector + WC + Panchayat at village level users groups ect
*	Percentage of stakeholders requesting information.	28%	25%	Survey	Villagers belonging to different users group, Women's groups, and members of

					PIA
*	Percentage of Stakeholders who wish to be more actively involved interesting to explore in what way they feel they can be involved.	18%	20%	Questionnaire.	Villagers belonging to different users group, Women's groups, and members of PIA
3	Who own the water resources / sources (at various levels?)	Govt. and Panchayat own the water sources	Govt. and Panchayat own the water sources	Information available	
*	Percentage of stake holders/ groups owing sources/ water rights (some sources may directly infer ownerrship such as sporing capture or wells, other may have by law or by customary rights attached)	none	none	Information available	Villagers belonging to different users group, Women's groups, and members of PIA
*	No of systems being constructed/No.of handed to community farmer cooperative.	Percolation Tank 2 Nos. Boulder checks 1400 Contour line 8500 mtr. Plantation 1800 Tewa 2 sma;ll stagnation 2 All the water resources aznd the structures have been handed over to community for management.	Percolaation tank 1 No. Boulder checks 1200 Plantation 1500 Earthen Nullah bunds 2 Contour trenches 1200 Mtr. All the water resources aznd the structures have been handed over to community for management.	Information available	Villagers belonging to different users group, Women's groups, and members of PIA
4.	What platform/ forums exists for decision making? Do they work effectively? Who takes decision?	District level advisory committee at District level and watershed commiottee at village level have been constituted to take decisions. They work effriciently. All stakeholders viz. users groups, self-help groups, women's groups, Panchayat, PIA are represented in watershed committee, which takes decisions for planning exhibition and management.	District level advisory committee at District level and watershed commiottee at village level have been constituted to take decisions. They work effriciently. All stakeholders viz. users groups, self-help groups, women's groups, Panchayat, PIA are represented in watershed committee, which takes decisions for planning	Information available. +Interview	District watershed committee

			exhibition and management.		
*	Percentage of problems acted upon (for each forum)	90% - village level, 5% district level advisory committee, 5% of problems could not be resolved.	95% decision at village level, 5% of problems could not be resolved either at village or distrifct level.	Information availaable+ survey of ministers of earlier meetings	WC+ PIA
*	Percentage of decisions acted upon (for each forum)	Same as above.	-Same as above	Information availaable+ survey of ministers of earlier meetings	WC + PIA
*	Percentage of stakeholders represented on one or more coordinating/ decision making body	95%	100% 20 adults were represented.	Information available.	Village + PIA
5	What conflict management mechanism are applied.	All the disputes are being settled amiocably by mutual decision / understanding.	All the disputes are being settled amicably by mutual discussion / understanding.	Information available.	Village + PIA
*	No.of conflicts resolved certain period or at differenht time of year (also illustrate the number of conflicts during this ;riod) for example over the life of project, cover last yuear.	After commencment of project, only two disputes arose and these two disputes were settled. Project implementing agency plays the role of a facilitator and some times as mediator.	After commencment of project, only four disputes arose and these four disputes were settled. Project implementing agency plays the role of facilitator.	Group discussion and interview.	Villagers + PIA
*	Over last during dry season (period of major shortage) During wet season(period of surplus.	During dry season only two disputes arose But they were settled by mjutual understanding with the help of project implenenting Agency.	During dry season only four disputes arose But they were settled by mjutual understanding with the help of project implenenting Agency.	Group discussion & interviews.	Village + PIA

PRINCIPLE -6

STRIKING A GENDER BALANCE IS NEEDED AS ACTIVITIES RELATE TO DIFFERENT ROLES OF MEN AND WOMEN

The user groups differing in gender have different needs with reference to use of water. And projects have to make special efforts to involve women and address their needs.

The need for striking a gender balance has been stipulated in the guidelines of watershed development and has been widely accepted also. The guidelines provide for a minimum of 30% representation in the decision making forum of watershed committee. There is also the new Panchayati Raj Act which also provides for 30% reservation for women in Panchayat bodies. These bodies have now been entrusted the responsibility of maintaining the DWSS assets and old water tanks.

Methodology and result

The methodologies or tools used and results/answers obtained as part of assessment of principle 6 are given in **Table-6.**

Lessons learned

There is need for gender balance as water related needs of the two genders are different. This has rightly been recognised in the project guidelines and widely acceped also. However, the case studies under assessment did not have multiple sectors using same water source to enable us to critically assess as to whether the needs of both genders are being addressed or not. Therefore, the principle had limitated relevance for case studies under assessment.

Success

It was gratifying to note that persons at planning, decision making and user levels felt the need for gender balance in WRM projects.

TABLE-VI

STRIKING A GENDER BALANCE IS NEEDED AS ACTIVITIES RELATE TO DIFFERENT MEN AND WOMEN

1	How are gender differences if any percived at ?	A need for gender balance is percived at all levels	A need for gender balance is percived at all levels		
	Planning level	The need of men/women are different therefore planning shoud certainly take care of women.	The need of men/women are different therefore planning shoud certainly take care of women.	Interview	State mission director + district collector
	Decision making level	The need of men/women are different therefore planning shoud certainly take care of women.	The need of men/women are different therefore planning shoud certainly take care of women.	Interview	District collector, PIA, WC
	User level	The needs and roles of men/women are different and therefore planning should take care of both men and women.	The needs and roles of men/women are different and therefore planning should take care of both men and women.	Interview + group discussion	WC, user groups, women groups
*	Percentage of persons iidicating needs for gender differenciations (planners, decision makers and users)	Planning level 100% Decision makers 80% Users male 80% Female 85%	Planning level 100% Decision makers 80% Users male 25% Female 40%	Questionaire/ Interview	State mission director, DLAC members, PIAs, WCs, User groups
2	What are the differences in the degree of participation and influence over decision making by men and women ?	Participation of women is comparatively less than that of men. However, the women manage to influence decision making in a significant way.	Participation of women is no way inferior to that of men. The women managed to influence decision making in a significant way. More no. of women usually participated in the meetings.	Interview + minutes of earlier meetings	PIA + WC
*	Percentage of decisions making gender diferentiation.	Formations of women thrift and credit groups and special drive for enrolment of girl child in school.	Two decisions only. One was to form only women self-help groups, another was to provide productive assets to women beneficieries only.		

*	Percentage of stakeholders representatives that are women (at decision making forums)	40%	60%	Information available	PIA, WC
*	Percentage of men and women that are satisfied with the influence of their gender in decision making.	95% men are satisfied. 35% women are satisfied.	100% men are satisfied. 60% women are satisfied.	Venn diagramme + Matrix ranking + interview	WC, villagers
	Percentage of meetings time to suit both men & women.	100% meetings after dinner. This time suits women also.	100% meetrings in the evening. This time suits women & men both.	Interview.	PIA + watershed committee.
3	Do approaches promote equal participation and access to resources for both genders.	By the help of PRA techniques like mapping, venn diagramme etc. to assess the problems and resources, equal participation is assured. Everyone sits on same platform and discusses freely.	By the help of PRA techniques like mapping, venn diagramme etc. to assess the problems and resources, equal participation is assured. Everyone sits on same platform and discusses freely.	Interview	Collector + PIA + Watershed committee.
*	Percentage of gender specific activities (differentiate between women & men).	Special drive for women education of district level, formation of thrift and credit groups and providing assets and resources to women self-help groups to undertake economic activity..	Special drive for women education of district level, formation of thrift and credit groups and providing assets and resources to women self-help groups to undertake economic activity..	Interview	
4	What are the gender sensitisation programmes, if any, at different levels ?	No gender sensitisation programmes were specifically organised at middle and higher levels. However, spirit of guidelines insist on gender sensitisation programmes. Therefore, training of Watershed Development Team members/ Project Implementing Ageency/ Watershed committee/ Panchayat and women groups included specific sessions to sensitise them on gender issues, gender differences between men and women in access/ use of basic needs and quality of life and need for gender balance.	No gender sensitisation programmes were specifically organised at middle and higher levels. However, spirit of guidelines insist on gender sensitisation programmes. Therefore, training of Watershed Development Team members/ Project Implementing Ageency/ Watershed committee/ Panchayat and women groups included specific sessions to sensitise them on gender issues, gender differences between men and women in access/ use of basic needs and quality of life and need for gender balance.	Information available	Collector, PIAs

PRINCIPLE -7

SKILL DEVELOPMENT AND CAPACITY BUILDING ARE KEY TO SUSTAINABILITY

For the first time, the government as per the new watershed guidelines have laid down emphasis on management taking place at lowest appropriate level and also on capacity building. Adequate provision has been made in the projects for community organization and training to enable grassroots village level watershed committees and user groups to discharge their functions efficiently and effectively. The new watershed guidelines provide for appropriate policy and functional framework. They make provision with the facilitating agency PIA to invest in community organization, formation of user groups, self-help groups and to train watershed committees/user groups/self-help groups/watershed development team members etc. There is also provision in the projects for human resource development and secretarial/managerial support is available for watershed committees in the project. The results and methodology used is given in the **table 7**:-

Lessons learned

From the results and context of the project, it is obvious that capacity building is fundamental to sustainability of the project. The organized & empowered communities trained at planning, implementation and management of the project would be better able to sustain the project after the projects are complete.

Successes

Despite the large scale illiteracy and backwardness, the community appeared empowered, organised and understood fully well 'why' and 'how' of watershed development.

TABLE-VII

CAPACITY BUILDING IS THE KEY TO SUSTAINABILITY

1.	Is capacity building a part of project activities? If so, what are the key capacity building initiative at different levels?	Yes, it is very much a part of project activity. Key capacity building initiative are training of PIAs/ WDT/ WC/ Volunteers/ self-help groups/ user groups.	Yes, it is very much a part of project activity. Key capacity building initiative are training of PIAs/ Watershed Development Team/ Watershed committee/ Panchayat/ Volunteers/ Self-help groups/ User group.	Questionnaire + available in watershed guidelines.	Villagers + PIA + Collector.
*	Percentage of budget allocated for training or capacity building.	5% of budget is reserved for training and 5% for community organisation.	5% of budget is reserved for training and 5% for community organisation.	Available	PIA + Collector.
*	Percentage of persons who have received training through the programme.	Top 100% Middle 80% Low 20%	Top 100% Middle 60% Low 25%	Survey	Villagers +PIA + Collector.
2.	Can capacity . be developed at all levels? If not what are the constraints/reaons(legal, constitutional, lack of resources etc.).	Yes. But PIA did not receive full allocation from DRDA for training purpose as prescribed user watershed guidelines. Therefore,they have had some financial constraints.	Yes. But PIA did not receive full allocation from DRDA for training purposes as prescribed under watershed guidelines. Therefore, they have had some financial constraints.	Interview.	Collector + PIAs.
*	Percentage of trained people utilising recently acquired skills(if not available you may use a proxy indicator such as number of systems properly maintained).	Most of the people utilised skills aquired during the training.	90%. High percent of structures were properly maintained.	Interview + survey	PIA + Watershed committee.
3.	Which techniques are/philosophy is used for capacity building?	PRA, exposure visits, discussions, study, analysis of past and present development of human relations, street dramas, folk songs etc. The trainer is to act more as a facilitator and has to involve participants in learning and problem solving.	PRA, Exposure visits, discussions, Analysis of past and present, street dramas etc. The role of trainer is that of a facilitator.	Group discusions + Interview	PIA + Watershed committee.

PRINCIPLE -8

WATER IS TREATED AS HAVING AN ECONOMICAL AND SOCIAL VALUE

Most of the Indian population resides in villages. A sizeable population residing in villages is quite poor. Water being a very *basic need* is rightly considered the *basic right* of all. While there is indeed an economic value attached to providing water of suitable quality and in maintaining the system, the role of welfare state in country of poor citizens has been to provide water, particularly drinking water practically free of charge.

The State Govt. has constructed assets for providing drinking water/irrigation facility. While the Government provides maintenance budget for maintenance of handpumps/drinking water sources, people may be required to pay nominal operational/maintenance charge for irrigation facility. But so far , fee charged is not related to amount of water used in a direct sense. It has relationship either to the area under cultivation or is equally divided between all such users and, therefore, efficiency of water used which would result by having economic value of water has not got effected.

One of the important features of new watershed guidelines is that these projects are taken up only when villagers consent to share part (10%) of the cost of watershed treatment. This share is kept as **watershed development fund** to be utilised for maintenance of assets after the project is over. Therefore, in effect, people are paying O&M cost of irrigation structures created under the projects. However DWSS sources are created by the Govt. at full subsidy and adequate maintenance grant is also provided to the Panchayats.

Methodology and result

Table-8 shows the methodology used and answers to the questions.

Lessons learned

If people are involved in planning, execution, management and maintenance of works carried out under the project, they are prepared to meet the operational and maintenance costs even when they are economically not so well off. However, it must be noted that the project did help in improving the family incomes of the village community in both the projects.

Successes

People have, in effect, paid for the O&M costs of assets created under the projects as per the Govt. of India guidelines. This, therefore, reflects that besides social value, water should have an economic value has been appreciated by stakeholders at all levels.

Weaknesses

Contribution charged is not related to water used. Therefore, commitment to efficiency of water used is not evident and villagers recognition that water has an economic value also may still be vague.

TABLE-VIII

WATER SHOULD BE TREATED AS HAVING AN ECONOMICAL AND SOCIAL VALUE

1.	Do all the users pay for use.	No. Not for use of water for drinking purpose. But they pay for use of water for irrigation.	No.They do not pay anything for water used either for drinking or domestic or irrigation etc.	Group discussions	PIA & villagers
*	Percentage of water users that pay for water. (waste supply, Irrigation, Industry).	None for water supply. There is no industry. Water users of Irrigation water have to pay.	None.	Group discussions + interview	PIA & villagers
2.	Is there a tariff system for different water users?	There is single tariff system for different water users. One common system exists for charging some fee in proportion to area covered under irrigation. However, water users within the watershed share the cost of water shed development works which is deposited in watershed development fund which is used for maintenance of assets/works.	No. However, water users within the watershed share the cost of watershed development works which is deposited in watershed development fund which is used for maintenance of assets/works.	Group discussions.	PIA & villagers
3.	Does the tariff system (or cost recovery system) meet the * Capital cost * O&M cost * replacement cost	 No No for DWSS. Yes, as far as the assets created primarily for ground water recharge and irrigation under the project are concerned No	 No No for DWSS. Yes, as far as the assets created under the project are concerned. No	Group discussion	PIA & villagers

	Ratio of income from tariffs and O&M cost.	None for DWSS. 65% of cost of maintaining irrigation facility is being met by the fee charged at present. Besides there is money deposited in the water shed development fund.	None for DWSS. Actual assessment will available after the project is complete		
4.	Is there any cross subsidy system to enable poor communities to receive water suply? If so, how does it work? what level of suply services poorer communities?	There is no cross subsidy system. The government, is providing the entire cost of providing drinking water and provides full maintenance support.	There is no cross-subsidy system at the local level. The government is providing the entire cost of providing drinking water and provides full maintenance support.	Group discussions + available information	PIA & villagers.
*	Is the financial system transparent? If so , how it is transparent?	No financial system virtually exists at local level in the DWSS sector as the state Govt. & Central Government are meeting the entire cost of providing drinking water and also provide 100% maintenance support for drinking water facility. There is high level of transparency as regard the expenditure made on watershed treatment as every individual has a right to information on all expenditure incurred by watershed committee.	No financial system virtually exists at local level in the DWSS sector as the state Govt. & Central Government are meeting the entire cost of providing drinking water and also provide 100% maintenance support for drinking water facility. There is high level of transparency as regard the expenditure made on watershed treatment as every individual has a right to information on all expenditure incurred by watershed committee.	Group discussions + Interview.	Collector, PIA, WC and Villagers.
*	Percentage of users considering they pay as fair price.	No one pays for DWSS. 100% of users feel that they pay a fair price for irrigation and also that the contribution charged is fair.	No one pays for DWSS. 100% of them feel that 10% contribution charged for Watershed Development Fund is fair.	Interview + Group discussions.	Collector, PIA, WC, Villagers.

CONCLUSIONS

Participatory assessment exercise was exceedingly useful. It revealed that almost all the stakeholders, who were mainly villagers in the projects under assessment, felt that all the 8 principles were indeed important and should form part of WRM approach. It was also gratifying to note that most of these principles are intended to be adhered to as per the watershed guidelines of Govt. of India, 1994 and as per the directions of the Rajiv Gandhi Watershed Mission. The watershed development projects under assessment showed strong adherence to the principle nos. 1, 4, 5, 6 & 7. Adherence to principle 5 also reflected adherence to principle 2 in spirit. However, since the unit size of watershed to be taken for development is about 500 hectares, they usually do not have the complexities as envisaged in principle 2. They usually do not have multiple sectors or institutions sharing the same water source. Therefore, while principle no. 2 did not appear relevent in the context of projects under assessment, the spirit to adhere to it was certainly there.

While the stipulation in the watershed guidelines to demand a share from the participants against the cost of watershed development works to be kept for maintenance support was a positive feature in recognising economic value of water source, the spirit to accord economic value to water was generally amiss. This was also reflected in poor adherence to principle no. 3 relating to efficiency in water use. However, some beginning has been made and there is likely to be greater adherence to both the principles no. 8 & 3 as the need to adhere to them has been felt and reasonably accepted at all levels.

All in all, it was gratifying to note that the need to adhere to the 8 principles was accepted at all levels and was being implemented also in good measure in both the projects under assessment. It certainly shows, however inadequately, that WRM approches all over the country and probably the world can practically adhere to the 8 principles and achieve better success.