

PROCEEDINGS OF THE NATIONAL WORKSHOP ON COMMUNITY MANAGED WATER RESOURCES DEVELOPMENT FOR ENHANCING LIVELIHOODS

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Ahmedabad Management Association (AMA), Ahmedabad



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Water Management
Forum



Aga Khan Rural Support
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Vrutti
Livelihood Resource Agency

"Due to the joint efforts of our WUA and Water Resource Department, now water has started reaching tail-end farmers and conflicts have come down significantly."

- Rambhai Patel,
President of Hathuka
(WUA), Gujarat

"Need for the Government, NGOs, the Private Sector and Communities to work together to solve the water crisis of the country."

- Dr. Jayanti Ravi,
Commissioner and
Secretary,
Rural Development, GoG

"Formation of Sujal Samiti and child parliament has led to improvement in availability of safe drinking water and adoption of good hygiene practices."

- Mr R.Venkatesh,
Team Leader, YFA

"Equity in allocation and distribution of water must be central to all approaches."

- Nafisa Barot, Executive Director,
Utthan

"There is need for location specific policies and strategies for water management."

- V.B. Patel, Retd. Chairman,
Central Water Commission
(CWC)

"The role of women in water management & governance should be increased & institutionalized."

- Devuben Pandya,
Director, Mahiti

"Water table and water quality monitoring has led to creating awareness amongst the farmers about the groundwater availability & planning of crops based on the same."

- Mr Nandu Menat & Mr Rameshwarlal Soni,
Bhujal Jankars

"The role of Gram Panchayats must be recognized and respected."

- O.T. Gulati, President, WMF

"New challenges like 'climate change' have come up and need immediate attention of implementers, researchers and policy makers alike."

- Dr R Parthasarthy,
Director, GIDR

"Formation of Tola drinking water management committee and implementation of Community Owned Mini Drinking Water Supply System has helped in accessing clean & safe drinking water for the whole year."

- Mr Dinesh Prasad Singh,
Sarpanch, Samastipur District, Bihar

"Awareness creation and water resources development in Meghal river has resulted in reviving the perennial flow of water in the river."

- Mr Soningsinh Dumiya, President &
Bhimjibhai Varasada, Vice-President of
the Meghal River Core group

"A network of water warriors from the rural communities as well as civil society can help the cause of water at the national level."

- Apoorva Oza, CEO, AKRSP(I)

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PROCEEDINGS OF THE NATIONAL WORKSHOP ON COMMUNITY MANAGED WATER RESOURCES DEVELOPMENT FOR ENHANCING LIVELIHOODS

Background

Importance of water in sustaining life and livelihood can hardly be over-emphasized in India. As precipitation is erratic, surface water becomes unreliable and thus, people depend largely upon groundwater for domestic use, agriculture and industries. The resource is overstressed and India is struggling with increasingly serious problems of water supplies.

Factors such as population growth, economic development and climate change have a critical impact on water resources. Equally, water resources have a significant impact on production and economic growth, on health and livelihoods, and on national security. As the pressures on water resources grow, it is vital that we manage renewable freshwaters properly. But, managing water is becoming increasingly complex and contentious. In many regions, managing water has always been a major problem because of the natural variability and uncertainty in weather patterns. With climate change this problem is likely to get worse.

About 70% of the earth's surface is covered with water, which amounts to 1400 million cubic kilometres (m km³). However, 97% of this water being sea water, it is salty and only 3% is fresh water. Fresh water availability is only 35 m km³ and only 40% of this can be used by human beings. Out of the total fresh water about 68.7% is available in glaciers and ice caps, 30.1% is stored underground and 1.2% water is available on the surface of the earth. Out of the surface water, 87% is stored in lakes, 11% in swamp and 2% in rivers (Anon. 2006).

The average annual rainfall in the country is 1170 mm with a wide range between 100 mm in desert areas of Rajasthan to 10000 mm in Cherapunji. The total available sweet water in the country is 4000 billion m³ per annum and the usable water is 1123 billion m³. Out of the total usable water, 728 billion m³ is contributed from surface water and 395 billion m³ is contributed by groundwater.

India's average per capita water availability is 1460 cubic meter per year for its present population of 1278 million, which is expected to reduce to 1318 cubic meter in the year 2025 with the projected population of 1418 million and then further to 1154 cubic meter in the year 2050 with the projected population of 1620 million.

Revering water and its sources, be it the rivers, surface and underground tanks, Khadins or the step wells has been an age old tradition but unfortunately this is slowly dying due to neglect by the users. The growing urban, agriculture and industrial needs along with the

population pressures have further helped in accelerating this process. As a result, inspite of large investments in the water sector – drinking water and sanitation, development of major, medium and minor irrigation schemes, watershed development and water harvesting, a considerable percentage of rural populace is still deprived of having access to water due to lack of management.

Successful management of water resource requires accurate knowledge of the resource available, the uses to which it is put, the competing demands for the resource, measures to and processes to evaluate the significance and worth of competing demands and mechanisms to translate policy decisions into actions on the ground. Another critical factor is the users understanding of the scarceness of the resource and need for sustainable management of the same.

The pressure on water resources highlights the hydrological, social, economic and ecological inter-dependencies on rivers, lakes and other surface water bodies and aquifer basins. These interdependencies demand more integrated approaches to developing and managing water and land resources. There is a dynamic relationship between basin stakeholders and governments, who have to work together to ensure the viability of their decisions in meeting sustainable development goals. To address the multi-faceted nature of water management, many countries are now introducing an integrated approach to water resources management at the national and basin level. This includes improving institutional arrangements and working practices. (Source: A handbook for Integrated Water Resource Management in Basins, UNWater.org)

There is enough empirical evidence to show that the development of water infrastructure be they canal irrigation systems, water tanks, check dams or toilets per se does not solve the problem. Community participation in management of water resources is critical for timely, equitable and adequate access to water. Fortunately, evidence across the country shows that given an enabling environment, communities can and do manage their water resources in a judicious manner for enhancing their livelihoods. The formation of “Paani Samitis” for solving issues related to drinking and domestic water or Water Users Associations and Watershed Associations for managing the irrigation systems and watersheds was initiated in the 1990’s. They continue, albeit with mixed results and amidst fears about their sustainability, especially while scaling up.

Genesis of the Workshop:

Keeping in view the above issues, a National Workshop on Community Managed Water Resources Development for enhancing livelihoods was organized by the Water Management Forum (WMF), the Aga Khan Rural Support Programme, India - AKRSP(I) and the Development Support Centre (DSC) to share the learning across geographies and institutions.

The National Workshop showcased efforts made by Community Based Organisations (CBOs) across different states of the country. These provided useful lessons for the academicians, practitioners, donors, CSR and Government Agencies involved in the field of water management.

Introduction of the Organisers:

- **Water Management Forum (WMF):** The WMF is a National Forum formed by the Institute of Engineers India to create awareness amongst users about the scarce resource, its conservation and judicious use. The WMF organises seminars on water conservation and management in different states.
- **Aga Khan Rural Support Programme, India (AKRSPI):** The AKRSPI is a multi-state organisation working in areas such as irrigation management, drinking water and sanitation and coastal area management. It is known in the country for its work on NRM and livelihood enhancement.
- **Development Support Centre (DSC):** The DSC is a multi-state Non-Government Organisation working on water management and sustainable agriculture. The organisation is recognised as a resource agency for community based water management at the State and National level.

Design of the workshop

The 17 Sustainable Development Goals (SDGs) of the United Nations include three important goals related to water management: (1) End poverty in all its forms everywhere, (2) End hunger, achieve food security and improved nutrition and promote sustainable agriculture, (3) Ensure availability and sustainable management of water and sanitation for all. The workshop dealt with these goals, especially the third one, which in many ways is pivotal to a number of other goals.

In addition, the workshop also dealt with the specific issue of management of water in a holistic and sustainable way for the benefit of all stakeholders. The workshop tried to seamlessly integrate the demand and supply issues of all sources of water- ground water, surface water and other sources.

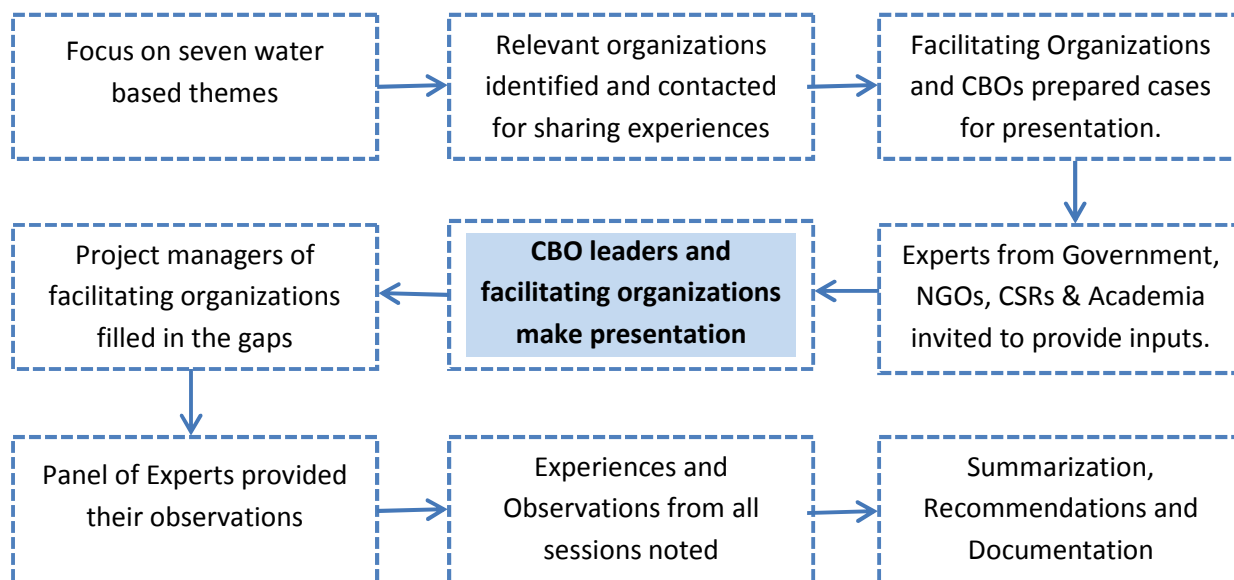
The workshop was designed to focus on the efforts of a large number of best practices/ experiences in water management across the country, undertaken by Community Based Organizations (CBOs), facilitated by NGOs, Government, CSRs and others. While the workshop aimed at giving a common platform for sharing among all these stakeholders, special focus was on the CBOs.

Objectives:

- To identify and share innovative practises/case studies of community managed water resources development across different regions of the country.

- To cull out lessons and recommend actions (at the community and state level) for scaling up of good practices.

Format of the workshop:



Themes covered in the workshop

Fifteen case studies covering the following themes related to water management were presented during the workshop. These are given in **Section-I**.

- i. **Participatory Irrigation Management:** Management of Irrigation Systems with active participation from the community through formation of Water Users Associations as practised in irrigation schemes such as Maan & Jobat in Madhya Pradesh, Waghad in Maharashtra, Hathuka, Uben & Dharoi in Gujarat.
- ii. **Participatory Watershed management:** Integrated and holistic approach for land and water management by Watershed Associations as practised in watersheds such as those in Ahmednagar & Ralegaon Siddhi in Maharashtra, Bagli in Madhya Pradesh, Bhilwara in Rajasthan, Dahod in Gujarat and in other states.
- iii. **Decentralised Management of drinking water and sanitation:** Community led and decentralised drinking water and sanitation measures at the village level as practised in states such as Bihar, Gujarat, Maharashtra and in other states.
- iv. **Participatory Groundwater Management (PGWM):** Management of aquifers through active participation by the community as practised in states such as Andhra Pradesh, Rajasthan, Gujarat and in other states.
- v. **Integrated Water Resource Management (IWRM):** A concept that looks at both the supply and demand side of water budgeting through active participation of various

stakeholders and formation of Sujal Samities as practised in states such as Rajasthan, Karnataka, Andhra Pradesh and Gujarat and in other states.

- vi. **Management of coastal areas:** Participatory measures to prevent sea water ingress and also harvest rainwater as practised in Gujarat and in other coastal states.
- vii. **River Basin Management:** Groundwater recharge of the entire river basin by the community as practised in Meghal river in Gujarat, Aravari river in Rajasthan and in other states.

Profile of Participants:

As per the design of the workshop, leaders of Community Based Organizations (CBOs) and community members were central to the entire workshop. Their initiative, zeal and perseverance to make a change had helped the community to solve the problems related to water management. Thus, their rich experience needed to be captured and shared on a platform where other stakeholders could learn from.

Other important participants were practitioners from NGOs/CSRs/Government, policy makers, funding agencies, academic and research institutions working in the field of water management in India.

There were 129 participants from 8 states (Andhra Pradesh, Bihar, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Telangana and Uttarakhand) representing CBOs, NGOs, Government, Academic Institutions, Funding Agencies and Media as indicated in the table given below:

Total participants	CBO	NGO	Government	Academic institutions	Funding Agencies	Media
129	24	57	22	8	7	11

A complete list of participants and the schedule of the workshop is given in **Section-II**.

Panel Members: The panel members for the workshop included experts from the Government, Academia, Research Institutions, NGOs and CSRs having rich experience in dealing with community based institutions in the water sector. Their experience and inputs along with those of the CBOs helped in bringing out the key learning's from the presentations made. These are summarised in the Concluding Session.

Language of Communication: Since, the National Workshop had participants from various states including those from Community Based Organizations (CBOs), it was conducted in multiple languages - English, Hindi and Gujarati. Hindi was the main language and Mr Mohan Sharma, Programme Director at DSC and principal anchor for the workshop, effectively translated English and Gujarati presentations into Hindi after each presentation for the understanding of the larger audience.

Session-I Inaugural Session

Welcome:

Mr. Mohan Sharma welcomed all the participants, especially community members travelling long distances from Andhra Pradesh, Telangana, Bihar, Rajasthan, Madhya Pradesh and Gujarat. He introduced the Chief Guest, Dr. Jayanti Ravi and other guests, Dr. R. Parthasarathy, Mr. R. Sundar and Mr. O. T. Gulati and welcomed them on the dais. After a brief introduction of the workshop theme, he invited the Chief Guest to deliver her speech.



Chief Guest's Address: Dr. Jayanti Ravi, Commissioner and Secretary, Rural Development, Government of Gujarat.

Welcome and introductory address: Mr. O. T. Gulati, President, Water Management Forum (WMF).

Key Note Address: Dr. R. Parthasarathy, Director, Gujarat Institute of Development Research (GIDR)

Closing Remarks: Mr. R. Sundar, Chief General Manager, NABARD, Gujarat

Chief Guest's Address: Dr. Jayanti Ravi, Commissioner and Secretary, Rural Development, Government of Gujarat

Dr. Jayanti Ravi addressed the august gathering wherein she focussed on the five most important government programmes and the need for proper coordination among government, NGOs and people (community). The five programmes she mentioned were: the Integrated Watershed Management Programme (IWMP), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Swachh Bharat Mission (SBM), Mission Mangalam and Housing schemes (Indira Awas Yojana, Prime Minister Awas Yojana).



Discussing the impact of watershed management in Gujarat, she observed that a large number of water harvesting structures are being constructed which has enhanced livelihoods and employment potential in rural areas. It is a matter of satisfaction that high level of community participation is leading to better ownership of projects which ultimately leads to sustainability. Counting a few important benefits of the programme, she mentioned that water level has increased tangibly, crop diversification from cereals to cash crops (consequential issue of poor nutrition has to be tackled) has happened, crop intensification

has taken place and micro irrigation systems are being adopted by farmers. Further, creation of local employment has resulted in reduction in migration. Dynamics of 'people's participation' has been observed- from initial friction to gradual cooperation and brotherhood.

She thereafter highlighted the key achievements of the following schemes:

- MGNREGA has brought in the desired objective of creating a safety net plus asset creation for long-term impact.
- Under MGNREGA, a new initiative of Self Help Groups (SHGs) being made by Project Implementing Agencies (PIAs) is giving good result.
- Under Swachh Bharat Mission, the campaign of '*mann banao....sauchalay banao*' is catching people's imagination.
- Under Mission Mangalam, SHG members are being trained as masons for toilet construction; it serves dual purposes: livelihoods and sanitation.
- Housing schemes of IAY and PMAY are enabling government to tackle poverty from many angles, and not just income.
- 'Star Sarpanches' are being awarded and later they are being used as resource persons.

She concluded her speech by reflecting on DSC's Founder Chairman, the late Mr. Anil C. Shah's dream of an umbrella organization providing common platform for development. She felt that there is need for the government, NGOs, private sector and communities to work in close coordination for better effectiveness.

Welcome and introductory address: Mr. O.T. Gulati, President, Water Management Forum (WMF)

Mr. O. T. Gulati welcomed the participants and resource persons from all over the country to the workshop and discussed the design and objectives of the National Workshop. He put forth the twin objectives of the workshop:

- It's important to share experiences on good water management practices so that new organizations don't reinvent the wheel, and experienced organizations redefine their approaches or strategies.
- The workshop would help come up with a set of recommendations for a larger audience and policy level interactions.



Delving deeper into the design of the workshop, Mr. Gulati said that boundaries of 'water' as a product has been merged for the workshop; the availability and use of water in various forms- surface water, ground water, saline water, polluted water, water for irrigation, drinking water, etc. need to be understood in a holistic manner.

The workshop is designed to be in a 'sharing and deliberation' mode rather than any lecture method. Brainstorming on critical issues pertaining to water management would help participants understand the problems in a better way and may result in innovative solutions.

He asserted that learning from experiences of various types of organizations / institutions working in different parts of the country and in different geographies is crucial for scaling up similar interventions. Thus, the workshop would come up with recommendations reflecting the views of community leaders, NGO leaders and policy makers.

Key Note Address: Land and Water Management in India: Overview, emerging challenges and possible pathways by Dr. R. Parthasarathy, Director, Gujarat Institute of Development Research (GIDR)

Dr. R. Parthasarathy, Director, Gujarat Institute of Development Research, in his key-note address presented a number of critical observations regarding trends in water management in India. Sharing findings from an extensive literature review of water management practices throughout India since 1980s, he reflected on where 'we are and where we want to go'.



He categorically observed that while 'increasing productivity' is found common in all literature, 'minimizing uncertainty' has been ignored by most. An important insight from his address was that interventions carried out in the country have created islands of excellence without scaling up; thus impact has been limited to certain pockets and has not reached the larger mass. The most important reason behind such a scenario is that the right determinants (or factors of success) have not been identified or researched properly. Majority of studies on water management have focused on impact evaluation. New challenges like 'climate change' have come up and need immediate attention of implementers, researchers and policy makers alike. Adoption of technology has been slow.

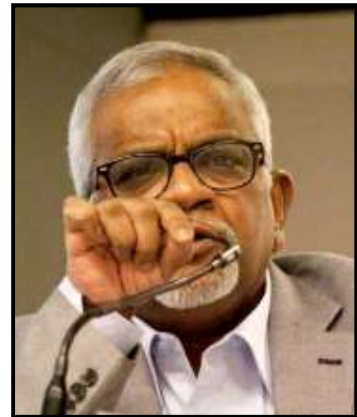
He observed that:

- Two-third of land in India is so degraded that they need special attention.
- Demand for water has been increasing steadily across all sectors; thus, water management becomes crucial.
- 'Formation of Water Users' Association (WUA)' leads to increase in productivity, though commonly believed in development sector, has not been proved by authentic studies.
- Some of the more important areas of current focus should be: water governance, allocation of water rights to WUAs / federations.
- Towards year 2050, very little ground water would be available for development and therefore Participatory Ground Water Management (PGWM) needs to be scaled up.

The full text of Dr Parthasarthy's paper is given in **Section-I**.

Closing Remarks: Mr. R. Sundar, Chief General Manager, NABARD, Gujarat

In his closing remarks to the inaugural session, Mr. R. Sundar, Chief General Manager, NABARD, Gujarat started by highlighting three of NABARD's major programmes relating to water- Rural Infrastructure Development Fund (RIDF), Indo-German Watershed Development Programme (IGWDP) and Watershed Development Fund (WDF). While RIDF is primarily focused on development of irrigation and drinking water, IGWDP and WDF are concerned with watershed development.



Mr. Sundar emphasized the fact that all of NABARD's programmes follow a participatory approach. NABARD has now adopted climate proofing component in its watershed programmes in Rajasthan and Tamil Nadu.

He brought the focus of the participants to the demand-supply incoherence in funds/ resources for water management; on the one hand communities need funds for water management and on the other hand, banks want to give away funds to appropriate clients. It is often observed that this relation is not established properly. So, there is need for addressing individual/ community fund needs; a forum or a common platform for the purpose is most welcome.

Technical Sessions:

At the end of inaugural session, Mr. Mohan Sharma thanked the dignitaries and introduced the themes of the technical sessions and pointed out that each session will be of one hour which will have a joint presentation from the community members as well as facilitating agency followed by Question & Answers and observations from the panel. The main focus will be to cull out lessons from the successful cases and suggestions on how to scale them up.



Session-II Participatory Irrigation Management (PIM) & Watershed Management

<p>Case Studies:</p> <ul style="list-style-type: none"> • Experience sharing by the Hathuka Water Users Association in Ukai Irrigation Project – Gujarat. <i>(Facilitating Agency - Narmada & Water Resources Department, Govt. of Gujarat)</i> • Experience sharing by the Water Users Associations in Maan Irrigation Scheme - Madhya Pradesh. <i>(Facilitating Agency - Development Support Centre – DSC, Manavar)</i> 	<p>Panel Members</p> <ul style="list-style-type: none"> • Mr. Harnath Jagawat (Chair), N.M. Sadguru Foundation • Mr. R.K. Sama, Shroff Foundation • Mr. B. Maraviya, Sardar Sarovar Narmada Nigam Ltd. (SSNLI) • Prof Vidya Purandare, WALMI, Aurangabad
<p>Case Study:</p> <ul style="list-style-type: none"> • Energizing MGNREGS for Ecological Restoration of Commons and Natural Resource Management in Rajasthan <i>(Facilitating Agency: Foundation for Ecological Security – FES, Rajasthan)</i> 	

Experience sharing by the Hathuka Water Users Association in Ukai Irrigation Project – Gujarat



Mr. Rambhai Patel, President of Hathuka WUA (which is registered as a cooperative), presented his experience of Participatory Irrigation Management in the Ukai irrigation project. The WUA serves a command area of 1087 hectares comprising 835 farmers spread across six villages of Valod block of Surat. Before the WUA came into existence, there was a lot of conflict between canal head reach farmers and tail-end farmers as water

hardly reached the latter. Only 114 hectares (10%) of land got water supply; 4 villages never got water; less than 50% water charges were received.

The Hathuka WUA made a lot of efforts to start collective action for farmers; it held meetings with farmers, Member of Parliament and government officials. The cooperative signed a MoU with the government in 1986 to manage canal themselves. It made rules for its members and adhered to them strictly.

Major success factors:

- Strong awareness among farmers.
- Regular training & exposure visits.
- Regular repair & maintenance
- Timely release of water.
- Timely release of grant.
- Regular meetings between WUA and the Water Resources Department.

Owing to the efforts of the cooperative, 667 hectares of land has come under irrigation (an increase of 600%). They have registered 100% payment of water charges. Now water has started reaching tail-end farmers and conflicts have come down significantly. Farmers are taking three crops annually rather than a single monsoon crop. Above all, it has inspired farmers in the region to form 30 WUAs.

Experience sharing by Water Users Associations in Maan Irrigation Scheme - Madhya Pradesh



Mr. Vijay Shukla from DSC Manawar, provided a brief introduction of the project while Mr Gulabsinh Meda of Borlai WUA and Mr Rajendra Gupta of Kalwani WUA in the Maan irrigation project shared their experiences of promoting PIM. The Maan Irrigation project situated in the Narmada Basin is in Dhar district of Madhya Pradesh. The command area of the irrigation project covers 15,000 hectares, 10 WUAs and 53 villages with more than 6300 farmers. The DSC

was engaged in capacity building of the WUAs for better management of water by people and for improving livelihoods.

In the pre-project period, the canals were unlined and there was large scale seepage of water resulting in 40% water loss. There was hardly any coordination between the WUAs and the Narmada Valley Development Agency. A large number of farmers were deprived of irrigation water.

There was a lot of discontent due to the reasons mentioned above and therefore DSC initially put its effort in community awareness programmes on PIM and the need for collective efforts through WUAs. Extensive communication activities such as video shows, meetings in hamlets, training and exposure visits of Presidents and the Executive Committee

members etc. were undertaken. Participatory Rural Appraisal (PRA) techniques and transect walk on canals, awareness programmes on MGNREGA and with women helped in connecting with the people and winning their trust.

As a result of these intensive efforts, wastage of irrigation water has stopped to a considerable extent; thus a large number of new farmers are now getting water. Production

Major success factors:

- Reaching out to farmers through innovative communication methods
- Involving people in entire project cycle.
- Regular Training Programmes & exposure visits for primary stakeholders
- Formation of Women's and agriculture sub-committees.
- Support from Government.

of agricultural crops in the region has increased 1.5 to 3.5 times and farmers are adopting new technology in agriculture.

Energizing MGNREGS for Ecological Restoration of Commons and Natural Resource Management in Rajasthan



The Sarpanch of Gram Panchayat, Kakrodiaghati, Bhilwara shared the experiences of the ecological restoration initiative through MGNREGS in Rajasthan which was facilitated by FES. Mr Shantanu Roy of FES Rajasthan shared some of the important steps followed by FES which were: formation of village institution, planning following a watershed approach, inclusion of plan in Block/district plans and ensuring a conducive environment, proper monitoring and ensuring timely payment.

The impact of the interventions is seen in various forms:

- Motivated Panchayats include natural resource development in their action plan.
- Increase in wage rates in these Panchayats.
- Village institutions have established procedures to check corruption.
- Potential households getting a minimum of 100 days of work in a year.
- Strengthened local conflict resolution mechanism.
- Biomass estimation and water related data collected by Panchayats.

Observations made by Panel members:

Mr Harnath Jagawat: Organizations working on natural resource management, especially water have facilitated a large number of successful cases; lessons have been learnt and procedures are well accepted. However, the pace of scaling up is slow even now. There is need for large scale public funding and coordinated work for speeding up the process of scaling up so that more and more villages/farmers get benefits of better water management.

Major success factors:

- Facilitating participation of community in MGNREGS through formation of village institution
- Integrating rights and securing tenure arrangement with governance
- Convergence of MGNREGS through public-private partnership
- Development of technically sound local cadre
- Regular monitoring of works
- Ensuring timely payment of wages

Prof. Vidya Purandare: Sharing her experience of PIM in Maharashtra, she highlighted three points:

- Policy of distribution of water through WUAs and not directly to farmers has proved to be a good initiative.
- The provision for 33% reservation for women members in WUAs is also a welcome step.
- Leadership at community level is crucial to success of community based water management.

Mr B. Maraviya: Quoting from important studies, he observed that the Break Even Point for large dams is 16-18 years, for Lift Irrigation schemes is 6-8 years and for micro watersheds is 2-3 years. Given such a clear case for micro-watershed schemes, progress has been slow; so, there is need for serious brainstorming on analysing the causes. We need strong regulations to implement such developmental schemes. An integrated approach to water management is crucial in the long run.

Mr R. K. Sama: People's participation in programme implementation and the process of empowerment are crucial in achieving success in water management. A few important points for project implementation are:

- Role of people's contribution.
- Provision for punishment / disincentives in case of indiscipline.
- Backward and forward linkages.
- Use of technology.
- Use of bio-pesticides and other such inputs.
- Importance of local institutions.



Session-III Integrated Water Resource Management (IWRM)

Case Studies:

- People and Panchayat Led Equitable Water Governance Model in Telangana (*Facilitating Agency: Youth For Action – YFA, Hyderabad*)
- People and Panchayat Led Equitable Water Governance Model in Gujarat - Experience sharing by Sujal Samiti's in Meghraj block, Aravali District (*Facilitating Agency: Development Support Centre, Meghraj*)

Panel Members

- **Mr. Sachin Oza (Chair)**, DSC
- **Mr. Umesh Desai**, AKRSP(I)
- **Mr. E. Venkat Ramanayya**, YFA

People and Panchayat Led Equitable Water Governance Model in Telangana



Mr R.Venkatesh of YFA informed the audience that the organisation has established a model of water governance through Sujal Samitis in Mehboobnagar district of Telangana. The model is based on a convergence between Sujal Samitis and Panchayats. This is part of a pilot supported by the European Union in Karnataka, Gujarat and Telangana and is based on the Integrated Water Resource Management (IWRM) approach.

The strategy adopted by YFA has three main components: i) Child Parliament (awareness through children's involvement), ii) Sharing and learning in a network mode and iii) Panchayat integrating registered Sujal Samitis as sub-committees.

Some of the important impacts of the intervention are: improved sanitation (50% reduction in open defecation), improvement in availability of safe drinking water, increased organic farming, Panchayat approved Sujal Samitis to implement all developmental activities, etc.

Major success factors:

- Active and loyal members.
- Dedicated, honest and transparent management.
- Strong leadership.
- Equity approach.
- Performance evaluation.
- Strategic vision.
- Good coordination with government.

People and Panchayat Led Equitable Water Governance Model in Gujarat - Experience sharing by Sujal Samiti's in Meghraj block, Aravali District

Mr Dhavan Nagar from DSC gave a brief introduction of the project and the community members of the Sujal Samitis (Water Governance Committee) in Meghraj block of Aravali

district in Gujarat such as Vinodbhai Bhagora from Itawa village, Kailashben Baranda, Extension Volunteer from Zarda village, Sanjabhai Katara, Ex. Sarpanch from Valuna village and Jayaben Damor from Navaghra village shared their experiences and impact of their interventions. The Integrated Water Resource Management (IWRM) approach is being



piloted by DSC (with support from European Union) in this block. Its goal is effective and efficient management of water for ensuring better health and livelihoods. This goal is to be achieved by demonstrating a people and Panchayat led equitable, integrated water governance model for sustainable economic development.

Pre-project situation in the project area: Increased dependency on bore wells for drinking water resulting in high investments; water user groups such as 'Pani Samiti', 'Watershed Committee' and Farmers' Club working in isolation. This situation called for an integrated approach

for long term solution of water woes.

The three main components of the project approach were:

i) Better water supply (development and management), ii) Water governance and iii) Better management of demand for water. Community involvement was core to all the three components. Extensive participation of community at all levels was ensured and awareness programmes/exposure visits enabled the community to take informed decisions themselves.

There were significant benefits of the intervention: increased women's participation in water issues, better groundwater management, improvement in drinking water and sanitation facilities and increased employment and crop production.

Major success factors:

- Preparation of holistic gram panchayat planning.
- Knowledge based support by 'Bhoojal Jankars'.
- Community involvement.
- Extensive awareness and education.
- Integration of IWRM with watershed development and agriculture extension.

Observations made by Panel members:

Mr Umesh Desai: Three major focus areas in implementation: Awareness, Participation and Empowerment. He quoted late Mr. Anil Shah's words- 'benefits' and not 'greed' should be the ideal to be promoted at village level. He advocated the involvement of children in awareness programmes at village level; it not only directly addresses families, but also readies the next generation.

Mr Sachin Oza: He reiterated the importance of involving children in water and sanitation awareness. Besides, he emphasized the role of Panchayats in water management and

governance. A village water plan serves well by integrating it with plans of the Gram Panchayat. A number of schemes run in isolation at the village level; it results in unused human and physical resources and thus, convergence is need of the hour. Though difficult, this can be done at village level with appropriate strategy.

Mr Venkat R.: He brought into focus the need for NGOs doing good work across the country to come together, cooperate, learn and share regularly to speed up the process of development. Water is a common binding factor for the NGOs for coming together.



Session-IV Participatory Groundwater Management (PGWM)

Case Studies:

- Groundwater collectivisation and sharing for securing livelihoods in drought prone areas of Telangana (*Facilitating Agency: Watershed Support Services and Activity Network– WASSAN, Hyderabad*)
- Participatory Groundwater Management at village level in India - Experience sharing by Bhujal Jankar's of Gujarat & Rajasthan (*Facilitating Agency: Arid Communication and Technologies – ACT, Bhuj*)
- Safe drinking water supply to communities in Madhya Pradesh (*Facilitating Agency: Peoples' Science Institute – PSI, Dehradun*)

Panel Members

- **Mr. Haribhai Mori (Chair)**, K.J. Bajaj Foundation
- **Mr. Shilp Verma**, International Water Management Institute (IWMI)

Ground water collectivization and sharing for securing livelihoods in drought prone areas of Telangana



Mr Kumarswami Reddy from WASSAN shared the experience of innovative ground water sharing mechanism in drought prone areas of Ranga Reddy district in Telangana. Competitive digging of bore-wells coupled with water guzzling crops has made ground water situation critical.

The approach adopted by WASSAN was to select an area and convince farmers to pool their bore-wells to share ground water for irrigation purposes. An agreement was arrived at by the farmers with the Revenue officer as witness. Some important conditions set were: no new bore-wells for next ten years, priority to food and fodder crops, combining soil moisture conservation, soil organic matter, bio-mass and ground water monitoring systems.

The approach led to good results on field like timely sowing, increased yield, minimizing of pumping hours, reduced labour time, increased water use efficiency, minimizing competitive digging of bore-wells.

Major success factors:

- Water for all as a policy precept.
- Establishing water management protocols & norms.
- Soil moisture harvesting & retention.
- Focus on extensive protective irrigation to rain-fed agriculture.

Participatory Groundwater Management at village level in India - Experience sharing by Bhujal Jankar's of Gujarat & Rajasthan

Ground water is an invisible source and used privately in India though it is a public property. Awareness about its status is very low among various stakeholders. Mr Brijen Thakar from the Arid Communities and Technology (ACT) informed that the organisation is involved in capacity building and developing a cadre of 'Bhujal Jankars (BJs)' (informed groundwater practitioners) in Gujarat and Rajasthan as part of the Managed Aquifer Recharge through Village level Interventions (MARVI) project. This project is being implemented in Meghraj block of Aravali district by DSC and in the Dharta block of Udaipur district by Maharana Pratap University of Agriculture Technology (MPUAT) and the Krishi Vigyan Kendra (KVK), Udaipur and supported by the University of Western Sydney and Australian Center for International Agriculture Research (ACIAR).

Major success factors:

- Knowledge/ technology transfer to farmers
- Local level knowledge facilitators (Bhujal Jankars)
- Participatory monitoring and planning/ decision making



Mr Nandu Menat, Bhujal Jankar from Navaghara village in Meghraj, Mr Rameshwarlal Soni, Bhujal Jankar from Hinta village and Mr Radheshyam Prajapati, Bhujal Jankar from Badgaon village of Udaipur shared their experiences in promoting Participatory Groundwater Management in their respective villages. They informed the audience that after being trained by the ACT they were involved in i) water table and

water quality monitoring, ii) creating awareness amongst the farmers about groundwater status and iii) providing advisory services at the village level to Sujal Samities and to farmers on the availability of water, water quality and suitable crops / varieties based on these parameters. The BJs are now providing knowledge based support to other such schemes/ programmes in their own villages as well as other villages.

Mr. Veljibhai Goradia from PARAB, a company formed by Bhujal Jankars in Kutch to support others institutions / villagers informed about a similar project being undertaken by DSC in the command areas of three irrigation schemes in North Gujarat which was supported by the Hindustan Unilever Foundation.

Safe drinking water supply to communities in Madhya Pradesh

Mr Puran from PSI shared his experiences by informing that fluoride contamination is a major problem in Madhya Pradesh. The project area in Dhar has been reporting a large number of cases of dental and skeletal fluorosis. To solve the problem, Participatory Ground



Water Management programme was undertaken by People's Science Institute (PSI). Their approach included study of the local hydro-geology to measure the degree of contamination and then devise ways to reduce such contamination through people's participation.

The methods included: survey, collection of scientific evidence, community mobilization, agreement and documentation, village level institution development and operation and maintenance. A villager donated his well for the public purpose; the common well was shared among villagers; agreement was signed that users will only use this water for drinking purpose and not any other use. Significant benefits have been registered due to this intervention such as reduction of urinary fluoride, reduction in distance travelled to fetch drinking water & reduction in time spent by children to fetch water.

Major success factors:

- Scientific study of the geo-hydrology.
- Involvement of community.
- Village institution development.
- Water use agreement.

Observations made by Panel members:

Mr. Shilp Verma: He opined that ground water management, by nature has to be participatory; there is no other way how it can be sustainably managed. Energy management has to be integrated with groundwater management otherwise some of the efforts will be wasted.

Mr. Haribhai Mori: Haribhai shed light on a few factors affecting ground water management and emphasized on three intervention areas in particular:

- Recharging ground water.
- Changing cropping pattern for the better by focusing on milk, fruit & vegetable production.
- Large scale rain roof water harvesting.



Session-V Decentralized management of drinking water and sanitation

<u>Case Studies:</u>	<u>Panel Members</u>
<ul style="list-style-type: none"> • Community Owned Mini Drinking Water Supply System in Bihar [<i>Facilitating Agency: Aga Khan Rural Support Programme (India) – AKRSP(I), Bihar</i>] • Water Governance for Drinking Water Security in Abdasa Taluka of Kutch [<i>Facilitating Agency: Sahjeevan, Kutch</i>] • Safe Water and Sanitation: People’s Initiatives for Sustainable Solutions [<i>Facilitating Agency: Mahiti, Dholera</i>] 	<ul style="list-style-type: none"> • Mr. Rajendra Jaiswal (Chair), Prakruti Foundation • Mr R.K. Sama

Community Owned Mini Drinking Water Supply System in Bihar



Mr Neeraj Kumar from AKRSP(I) Bihar provided an overview of the project while Mr Dinesh Prasad Singh, Sarpanch from a village in Samastipur district and Mr Shatrughan Ram, Secretary of the Tola drinking water management committee from Muzaffarpur district shared their experiences on providing safe drinking water to the community. They informed that shallow hand pumps are a major source of drinking water in their area but these are unsafe due to chemical and bacterial contamination. At the same time, it is costly for the State to provide piped water supply from outside. Thus, AKRSP(I) designed a programme

to demonstrate a low-cost drinking water supply scheme at local level, suitable for 100-120 households throughout the year. With active participation and contribution from the community, they dug a deep bore well, provided a water storage tank and pipelines for serving the households.

Important activities in the intervention were: i) Technical mapping of water requirement and flow, ii) Formation and agreement with water user groups and iii) Operation and maintenance by the tola drinking water management committee.

Major success factors:

- Process driven approach
- Agreement with water user groups
- Community contribution (15%)
- Developing Local institutions

Output, outcome and impact:

- Piped water supply to community
- Drudgery reduction for women

- Saving on monthly medical expenditure
- Reduction of water borne diseases



Experience of Water Governance for Drinking Water Security in Abdasa Taluka of Kutch

Bhartiben and Pravinbhai presented Sahjeevan's unique experience in water governance at the village level. In 2009, Pani Samitis (Water Committees formed by government) existed in villages and were functional but did not have much coordination with the Panchayat. There were problems in tariff collection and records were hardly maintained. Sahjeevan decided to develop a system for water governance at the Panchayat level by producing evidence from government regulations in the past. They facilitated interactions with the Revenue

department, Panchayat department, Gujarat Water Supply and Sewerage Board (GWSSB), Water and Sanitation Management Organisation (WASMO) and NGOs to come together to collectively decide on water governance by Panchayats.

Impact:

- Drinking water availability in 104 villages.
- 70 villages have drinking water security for one year of drought.
- 47 villages have water security for two years of drought.
- 20 Panchayats made water governance main agenda at Gram Panchayat level.
- 85 Panchayats have formed legal water committees.

Major success factors:

- Identifying relevant government regulations pertaining to water governance
- Involving Panchayats
- Discussing on a common platform.
- Mobilising funds from Govt. & CSRs

Safe Water and Sanitation: People's Initiatives for Sustainable Solutions in Gujarat



Vasantben Dabhi, Sarpanch of Navagam Karna village of Ahmedabad district and Devuben Pandya from Mahiti shared their experiences in providing safe drinking water to the community. When Mahiti started working in the drought prone areas of Ahmedabad and Bhavnagar districts, they realized salinity is a major problem in the area and water is central to all development and quality of life. Their approach revolved around making women responsible for water

management and this led to very good results. The organisation through collaboration with the Coastal Salinity Prevention Cell (CSPC), Swajal Dhara scheme and WASMO has been successful in providing drinking water to 75 villages and about 2500 households in these two districts by constructing Rain Roof Water Harvesting Structures.

Based on Mahiti's experience Devuben felt that if the Government really wants to reach to the poorest and resource deprived people, then it should collaborate with committed NGOs. The NGOs also need to come together to advocate for this cause.

Major success factors:

- Mobilising the community especially women.
- Identifying low cost simple and local solutions for tackling the problem of water availability & quality.
- Collaborating with Government agencies for scaling up

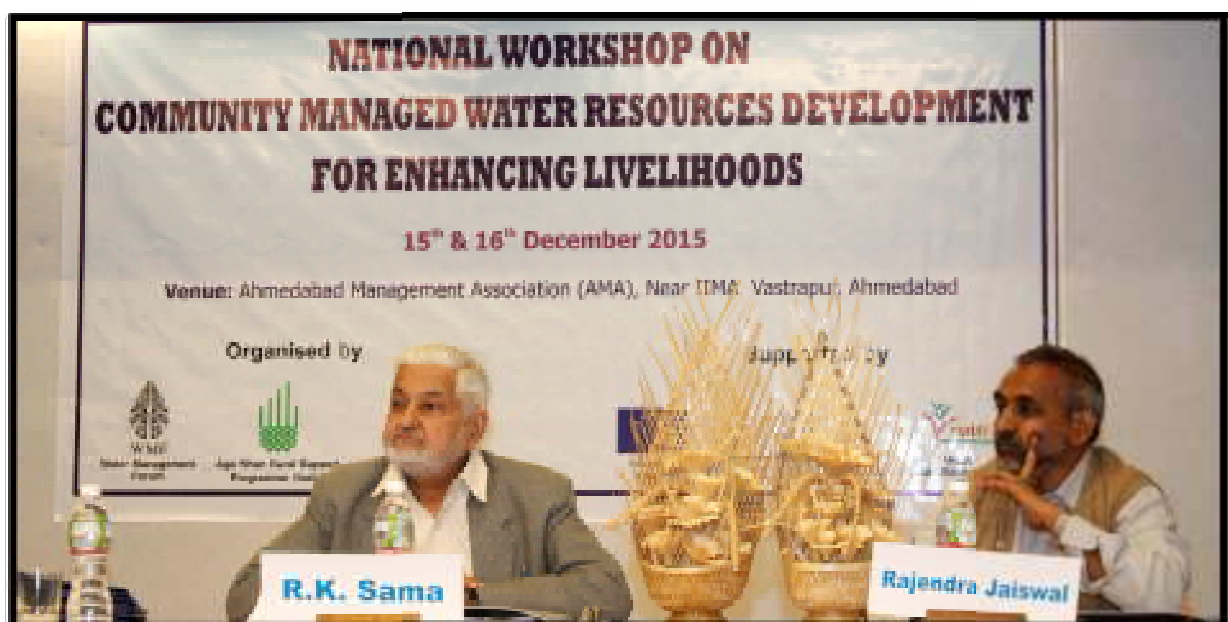
Observations made by Panel Members:

Mr. Rajendra Jaiswal: He made three important points:

- It is necessary to work with Panchayats as they are permanent bodies at village level
- Governance is crucial in water management
- Developing local water source is paramount for long term development

Mr. R. K. Sama:

- People must be made to realize the difference between 'water' and 'safe drinking water'
- Government must learn from NGOs and communities so as to make its programmes/ schemes more effective and efficient



Session-VI Management of Coastal Areas

<u>Case Studies:</u>	<u>Panel Members</u>
<ul style="list-style-type: none"> • Integrated Approaches for Coastal Area Development in Gir Somnath District, Gujarat (<i>Facilitating Agency: Ambuja Cement Foundation – ACF, Kodinar</i>) • Community Led Coastal Area Management in Gujarat (<i>Facilitating Agency: Coastal Salinity Prevention Cell – CSPC, Ahmedabad</i>) 	<ul style="list-style-type: none"> • Mr. Apoorva Oza (Chair), AKRSP(I) • Ms. Nafisa Barot, Utthan



Integrated Approaches for Coastal Area Development in Gir - Somnath District, Gujarat

Mr Chandrakant Kumbhani from Ambuja Cement Foundation (ACF) along with Mr Ashoksinh and Mr Sursinh, farmers from Kodinar block of Gir Somnath district presented the case study of the ACF, Gujarat. The organisation has been working in coastal Gujarat where over-exploitation of ground water has resulted in large scale salinity- both of soil and drinking water. It has huge adverse impact on livelihoods and health of people in coastal Gujarat. The ACF has focused on three areas of water

development: i) Water harvesting and recharge, ii) drinking water and iii) Increasing the efficiency in water use.

The ACF follows a consortium approach for area development; with funding support from TATA trusts and government schemes and local governance by Community Based Organizations (CBOs), it implements various programmes. It is now working with more than 10,500 farmers in 103 villages; they have formed 393 farmers' groups and at the apex level a Somnath Farmers' Producers' Company has been formed to manage these groups.

The ACF has a strong agriculture extension service system through which it promotes good agricultural practices. This includes an extension volunteer model, use of ICT in farm advisory, village level information centre and cluster level knowledge centre.

Major success factors:

- Consistency and focus on water resource management
- Extension services and farm advisory on the basis of soil mapping.
- Farmers' institutions and empowering communities
- Replicating best practices
- Integration of various initiatives such as KVV, KVK, BCI
- Zero-subsidy model

Community Led Coastal Area Management in Gujarat

Mr Divyang Vaghela of CSPC informed that Gujarat has the longest coast line in the country and suffers from the problem of salinity ingress. About 12% land in Gujarat is affected by soil salinity as against a



global average of 7%. The major issues include climate change, health problems, livelihoods and women's issues, water poverty and sanitation.

The CSPC adopted a two-prong strategy: (i) coping with salinity: technological solutions, saline resistant crops, alternative livelihoods, and (ii) preventing salinity ingress: rain water harvesting, advocacy, water use efficiency, awareness and behavioural changes through collaboration with NGOs.

Impact: In the project area, CSPC's interventions have resulted in 10-20% rise in production of wheat and groundnut, 50% increase in summer crops, reduction of water consumption by 30%, reduction in electricity consumption by 20%.

Major success factors:

- Focused approach
- Collaborating with NGOs
- Scientific solutions and technological interventions
- Water use efficiency
- Advocacy

Observations made by Panel Members:

Ms. Nafisa Barot: She raised a few important questions for the participants to ponder over:

- While we are doing good work, what is its impact on vulnerable sections of the society? How are the marginalized sections and women in the project area benefited? Are there any strategic interventions for them?
- Is equity in-built in the project? What are the policies dealing with the issue of equity? What values have we set in the project to achieve equity?
- Water should be for all, for all purposes; not only for agriculture. What are we doing for fishermen, salt pan workers, drinking water, etc?

Mr. Apoorva Oza: He observed that only income cannot be the indicator of poverty; there are other very important indicators, like health, sanitation, water, etc. The second point highlighted by him was the need for appropriate design of institutions for various purposes. The institutions must be formed for multi-level implementation and multi-level influencing. Their design, objectives and positioning have to be different and distinct.



Session-VII River Basin Management

Case Studies:	Panel Members
<ul style="list-style-type: none"> Enhancing livelihoods through Water Resources Development and Revival of Rivers in Maharashtra (<i>Facilitating Agency: K.J. Bajaj Foundation, Maharashtra</i>) Reviving the Meghal River in Junagadh District of Gujarat - Experience sharing by Meghal River Basin Management Committee [<i>Facilitating Agency: Aga Khan Rural Support Programme (India) - AKRSP(I), Gadu</i>] 	<ul style="list-style-type: none"> Mr. O.T Gulati (Chair) Mr. Apoorva Oza



Enhancing livelihoods through Water Resources Development and Revival of Rivers in Maharashtra

Mr Haribhai Mori informed that the K.J. Bajaj foundation follows a participatory approach to natural resources development, which includes PRA, village institution development, capacity building, networking and outreach. Water resource development forms the core of its activities. Over the years they have invested in rejuvenation of streams and rivers, interlinking of streams, construction of check dams, percolation tanks, bori-bunds, well recharge, farm ponds, group well and lift irrigation, etc.

Major success factors:

- Considerable investment in water resource development
- Participatory approach
- Capacity building
- Integrated development

The K.J. Bajaj foundation's activities have paid rich dividends to people in the project area: more than 12,000 acres of land prevented from water logging, increase in cropping intensity, soil erosion reduced. Besides, water management practices have become more efficient. Some other benefits have come from related programmes like wadi project, roof rain water harvesting, natural farming, Better Cotton Initiative, promotion of indigenous cows, rural enterprises through revolving funds, etc.

Reviving the Meghal River in Junagadh District of Gujarat - Experience sharing by Meghal River Basin Management Committee

Mr Umesh Desai from AKRSP (I) gave a brief introduction of the Meghal River Basin while Mr Soningsinh Dumiya, President and Bhimjibhai Varasada,



Vice-President of the Meghal River Core group presented their experiences of reviving the river which is situated in Junagadh district of Gujarat. They informed that before this initiative groundwater was depleting and there was scarcity of drinking water let alone agriculture. Initially there were a lot of problems in organising people from 52 different villages and convincing them to take up this daunting task. However, due to the persistent efforts of AKRSPI in terms of awareness creation and capacity building it was possible to do so.

To revive the river, AKRSP(I) has undertaken a large number of initiatives like water conservation through contour bunds and nala plugs, water harvesting by check dams, percolation tanks, recharge bore-wells, etc. Efficient use of water has been promoted through micro irrigation systems. The approach has been working with communities directly; this includes mass awareness campaigns, capacity building, formation of community institutions, etc.

Major success factors:

- Macro and holistic approach
- Focus on community involvement
- Bring in efficiency in water use

Impact:

The above interventions have resulted in increased availability of irrigation for agriculture (approximately 1000 mcft water storage), 20%-35% increase in crop production and perennial flow of water in the river.

Session-VIII Concluding Session



Summing up and way forward

Panel Members:

- Mr. V.B. Patel (Chair), Retd. Chairman, Central Water Commission (CWC)
- Mr. O. T. Gulati
- Mr. R.K. Sama
- Mr. Apoorva Oza

After 15 intensive presentations by community members and facilitating agencies on water management, the concluding session of the workshop summarized the learning in order to:

- Consolidate the important factors for success and challenges for scaling up community led water management.
- Come up with a set of recommendations for policy makers to consider while designing future policies and programmes in the water sector.

Mr. O. T. Gulati: He congratulated the representatives from various community based organisations and NGOs that had presented the successful cases across the country. He felt that:

- There is need for organizations to complement each other rather than compete with each other.
- The role of Gram Panchayats must be recognized and respected
- The role of women in water management should be increased and institutionalized

Mr. Apoorva Oza: Reflecting on the presentations and discussions during the two days, he felt that:

- Though there is a concern over government's decreasing engagement of NGOs in developmental works, all is not lost. There are certain programmes in the water sector wherein the Government seeks collaboration with NGOs. Thus, organizations must put the efforts in a well-coordinated manner.
- Given the need for collaboration between different players in the water sector, efforts should be made to strengthen the advocacy with the government.
- Community leaders can be made as motivators and they could highlight the role of NGOs.

Mr. V.B. Patel: As a retired Secretary of Water Resources of Gujarat and also the Chairman of the Central Water Commission, Mr Patel reiterated the need for the Government, NGOs, the Private Sector and Communities to work together to solve the water crisis of the country. He felt that:

- Population growth has led to multiple demands for water while the availability of water has decreased. There is an urgent need for efficient management of water.
- There is need for location specific policies and strategies for water management.
- Involving elected representatives and government officers in workshops and seminars such as this one will help orient them towards the real problems and feasible solutions. There is need to conduct such workshops every year to show case the efforts made by communities in different regions of the country.

Mr. R.K. Sama: He reflected on his long association with the water sector as a bureaucrat and then with the civil society. He felt that:

- Increasing urbanization has added to the problem of water scarcity.
- Transfer of water from one place to another may lead to conflicts, so there is need for localized water resource development and management.
- Water rationing especially in urban areas is the need of the hour.
- Measuring water foot-prints for everything that we do such as production of major crops, consumable products, electricity generation etc will make us aware of the water we consume.

Some of the important recommendations from the concluding session and the presentations made in the workshop are summarized below:

1. **Scaling up:** There is a need for up-scaling successful initiatives; however, the challenges in achieving this are:
 - Lack of proper identification of determinants → Need for better research
 - Climate change → Integration in design of projects
 - Value addition for cooperatives/ producers' groups → Revenue models

- New technology adoption → Strengthening the Lab to land process
 - Funds to accelerate the process of up-scaling → Convergence and exploring new avenues
2. **Exploring new funding options:** Since developmental projects are competing in nature, organizations involved in water management must look for new sources of funding, especially, exploring role of mainstream commercial banks; there is huge scope in this. Mainstream banks have the agenda of financial inclusion and priority sector lending; these opportunities can be tapped.
 3. **Institutional mechanism:**
 - a. **Multi-functioning Institutions:** Different types of institutional mechanisms to be set up for scaling up of varying objectives and initiatives such as direct field implementation, capacity building, networking, research and policy advocacy.
 - b. **Multi-level Institutions:** Need to move from primary institutions at the village level to larger institutions such as federations of WUAs or a river basin organisation to ensure equity and influence policy.
 - c. **Strong local institutions:** There is need for strong local institutions that have the following characteristics : clear rules and regulations, high awareness amongst members, reward and punishment policy, strong leadership and ability to mobilise resources on their own.
 4. **Role of women and children:**
 - There is a strong need for legalizing and institutionalizing involvement of women in water management and governance.
 - Involvement of school children in awareness about water and sanitation is paramount.
 5. **Integration and convergence:** There is need for an integrated approach:
 - Integration among different uses of water
 - Integration among organizational efforts
 - Convergence of programmes, schemes and funding sources
 6. **People centric and local specific approach:** People must be in centre of all developmental activities; it is going one step ahead of people's participation. It leads to effective implementation and sustainability of benefits. Solutions must be location specific and customized to the needs of the local communities.
 7. **Capacity building:** Capacity building of communities and developing local capacities (e.g. para-workers, youth, professionals, etc) is crucial for effective management of water resources.

8. **Role of local government:** Working proactively with government, especially at local levels is crucial. The Panchayat Raj Institutions have an important role to play in water management and governance; thus, organizations must find out meaningful ways to engage them.
9. **Better and new management practices:**
- Integration of energy management with water management is critical.
 - Crop water management and crop water budgeting must now come to focus and frameworks should be prepared to help organizations and communities understand this and plan accordingly.
 - There is need for risk and uncertainty management.
 - Water rationing can be thought of as a policy measure.
10. **Advocacy and Common forum for water management:** There is a great need for building up a pressure group on water. Organizations involved on water management initiatives must come together for creating a **common platform** like an NGO network. They should have a dialogue with the government for engaging civil society organizations in watershed development and other such schemes. A **network of water warriors** from the rural communities as well as civil society can help the cause of water at the national level.
11. **Equity** in allocation and distribution of water and benefits must be central to all approaches.
12. Gradually the macro approach must be to move **from water management to water governance**.

Vote of Thanks: Mr Umesh Desai, Director WRD, AKRSPI concluded the proceedings by giving the vote of thanks. He thanked all the participants, especially representatives from various Community Based Organisations who had travelled from across the country to share their experiences. He also expressed his gratitude to the European Union, Hindustan Unilever Foundation and Vrutti Livelihoods Resource Agency for supporting the workshop. He thanked to all the experts who had given their valuable time to give their inputs. In addition, he thanked Mr Bhagirath Sathwara, Programme Manager and the DSC team for taking care of all the logistical arrangements. Last but not the least, he also expressed thanks to the media for covering the event and the AMA for providing their services.



Section-I

Key Note Paper on “Land And Water Management In India: Overview, Emerging Challenges And Possible Pathways” R Parthasarathy, Professor and Director, Gujarat Institute of Development Research (GIDR)	33 to 43
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LAND AND WATER MANAGEMENT IN INDIA: OVERVIEW, EMERGING CHALLENGES AND POSSIBLE PATHWAYS

R Parthasarathy
Professor and Director
Gujarat Institute of Development Research
Gota, Ahmedabad

A Key Note Paper prepared for the National Workshop on Community Managed Water Resources Development for Enhancing Livelihood, December 15, 2015

During the last three decades beginning in the 80s, India has witnessed pioneering efforts on land and water management both by the non-governmental organisations and by the government. There had been a remarkable collaboration between NGOs and Government in addressing the challenges posed by low land and water productivity. The three decades of experiments, policies and programmes both in land and water management now necessitate innovations and renewed efforts to address newer challenges like the predicted climate change related weather behaviour. Overtime, there are also huge technological progresses that India has witnessed but land and water management policies and programmes appeared to have missed out this opportunity. This paper aims to address some of these aspects.

The focus of land and water management so far had been to improve productivity and maximising outcomes using endogenous (to the system) variables. However, the exogenous parameters like climate change induced varying rainfall call for attention toward minimising uncertainties too. Climate change related threats are not only for the arid areas but for agriculture sector as a whole. Hence a comprehensive assessment is the need of the hour.

In the developmental model that we had followed so far with the focus on land and water resources improvement there are some issues that have not been addressed. Firstly, there has been a failure of scaling up in the context of newer adaptations (largely we had been contend with creating islands of excellence) and secondly possible private involvement is still seen as suspect. When I mention islands of excellence, it involves the government and non government agencies and the academia that had analysed these without an explicit aim of scaling up the potentials.

When determining possible scaling up of the programmes, there are two main challenges. First is to identify the right determinants toward effective activities that have singular impacts on productivity of the (natural) resources. Secondly the possible approaches that take in to account the local needs. The case in point is the PIM Act which is largely based on evolving distribution practices for water scarce areas. Hence the management practices that came to be prescribed found no takers in areas where water is not scarce.

Watershed

About half of the geographical area of 329 million hectares is cultivated land which includes 143 million hectares of net sown area and 14 million hectares of current fallows. Of the cultivated land, about 53 million hectares is irrigated and the remaining rainfed. Land degradation has affected the quality of land and an estimated 175 million hectares suffers from degradation in some form such as water erosion and wind erosion (98 million ha), salinity (7.60 million ha), water logging (8.52 million ha) and so on. As of 2014, nearly two-thirds of the area requires special treatment to restore such lands to productive use. It is also estimated that about 6000 million tonnes of top soil are lost annually along with valuable plant nutrients and micro nutrients. The net impact of all these are obviously on the production and productivity of land. The watershed development programmes that were implemented were indeed designed to harmonize the use of water, soil, forest and pasture resources that conserve these resources while raising agricultural productivity. As pointed out by many authors, watershed development had also been a strategy for protecting the livelihoods of the people inhabiting the fragile eco-systems experiencing soil erosion and moisture stress. The impact studies carried out by the researchers and scientists in various parts of the country also evidenced the improved groundwater tables, newer irrigated areas and the consequent socio-economic advancement.

Even in Gujarat, the significant growth rates of agriculture from the year 2000 seem to be largely from the use of ground water. Shah (2009) has analysed the growth and pointed out that several exogenous factors like, the support prices, widespread use of Bt. cotton seeds as well as rationalised electricity distribution programme of the state, have helped Gujarat's exceptional agricultural growth performance after 1999-2000. However, the growth process has also been aided by above average rainfall in much of Gujarat's drought-prone regions of Saurashtra, Kachchh and North Gujarat during these years and the watershed programmes of previous decades (Parthasarathy, 2010).

While it is important to note the initiatives of the Government of Gujarat and many NGOs in building many rain water storage structures in Saurashtra, the groundwater resources of Gujarat are hardly one-fourth of the total water resources. There has been a drastic shift in the groundwater development and use in Gujarat over the period from 1991 to 2004. Figure 1 partly answers the question of the addition to the irrigated area during the last decade. Some of the districts like Rajkot, Bhavnagar, Amreli and Surendranagar show steep increases in net irrigated area. Figure 2 confirms the irrigated area increase over two decades is due to the watersheds which also resulted in declining use of ground water.

Figure 1 Net Irrigated Area in Saurashtra

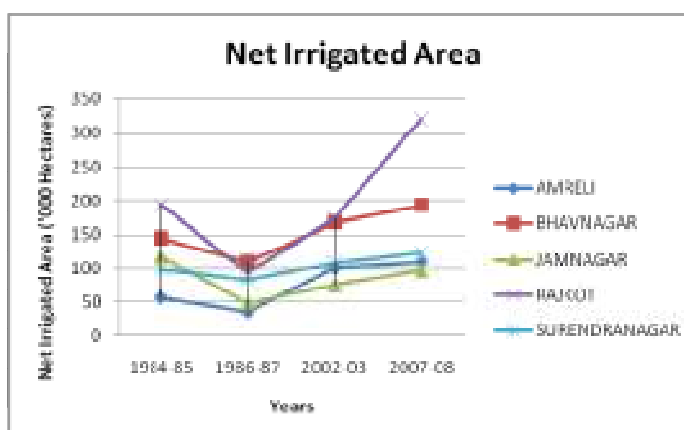
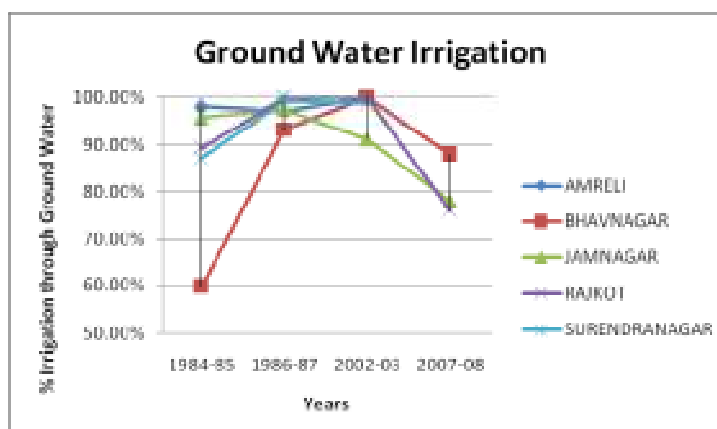


Figure 2 Ground Water use in Saurashtra 1984-85 to 2007-2008



This trend is not evidenced only in the semi arid tracts of Gujarat. In fact, many studies have pointed out the positive impacts of the watershed programmes in almost all the states of India.

Can effective community-based approaches be scaled up, adapted to newer situations and sustained? In the rainfed and semi-arid context, the relevance of the experiments by Watershed Organization Trust (WOTR) and select other NGOs in collaboration with the India Meteorological Department (IMD) in preparing a Weather Based Crop Management plan is of special importance. This innovation has been in use by some NGOs led watershed management in resource fragile areas. Apart from addressing the ground water recharge concerns this approach also takes in to account the carrying capacity of the resources and the local ecology.

Evidently, in the face of climate risks, farmers now need to have access to reliable and relevant meteorological information. WASSAN – an NGO is also coordinating a Network with over 60 Organizations across the country, including ACWADAM, Aga Khan Rural Support

Program (India) - AKRSP(I), CHIRAG, Central India Initiatives (CInI), Foundation for Ecological Security (FES), Watershed Organization Trust (WOTR) etc., in improvising watershed approaches. This network has the potential not only to find the determinants to scale up the watershed activities but also incorporate newer technologies like weather based management to adapt to the climate change induced risks. The key to innovative watershed approach therefore is in the adoption of new technologies at the village level. Eventually the land would form the basis for improved water productivity too.

WATER

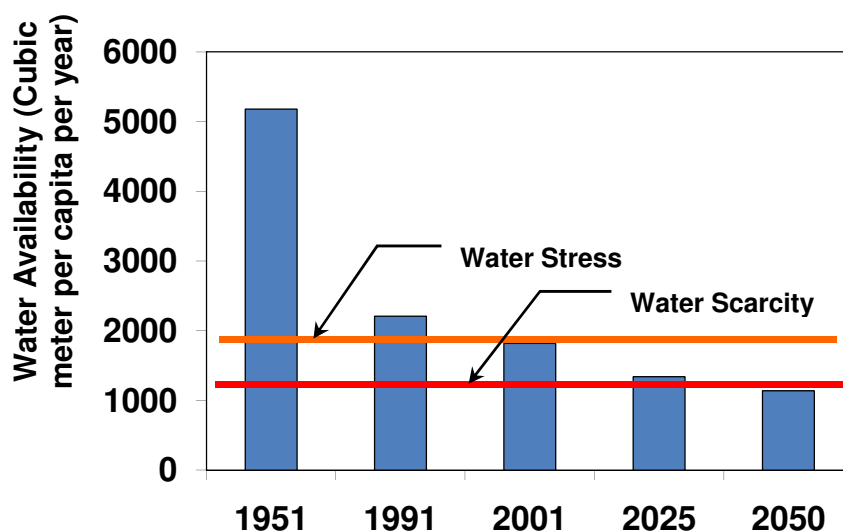
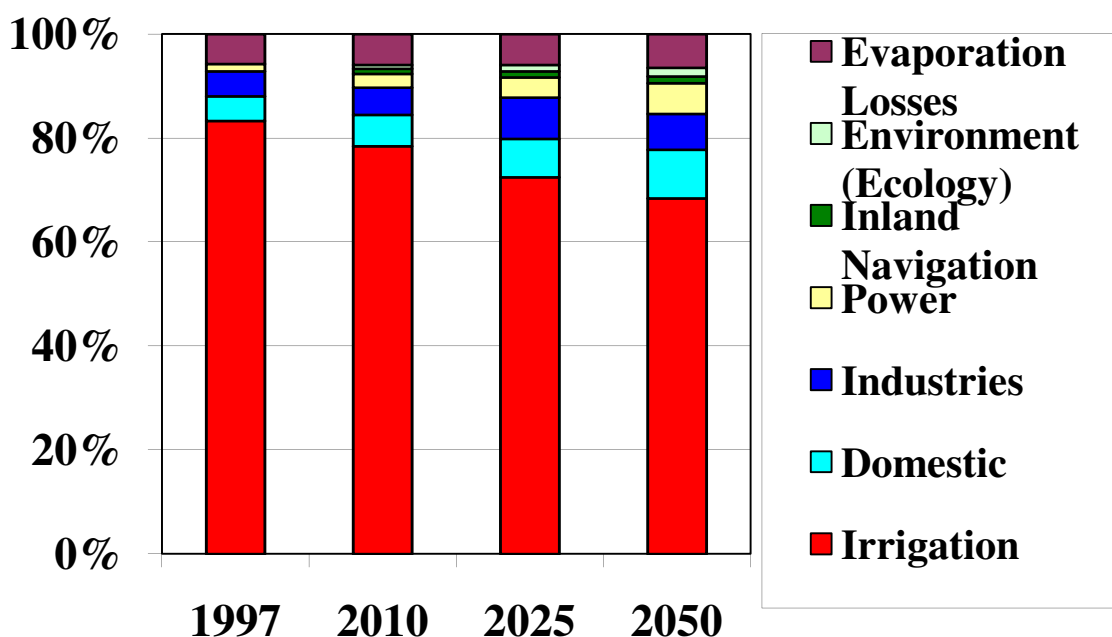
One of the lacunae is water resource has never been viewed in a comprehensive manner. It had always been compartmentalised as irrigation water, domestic water supply and water for industry. There appears to be diffidence even to acknowledge the fact that there are competing demands for water and this needs an integrated policy and programme. It is explicable that each sector has to have programme and line of action though. As India further industrialises and urbanises the demand for water from multiple sectors are only going to increase. The estimates (Figure 3) by MoWR indicate that by year 2050, India needs to increase by 5 times the water supplies to industries, and 16 times more for energy production. While drinking water demand will double, irrigation demand will rise by 50 percent.

On the surface water front, the difficulty is how to come to grips with the problem of complementarities or interaction between irrigation and other factors. Experience on large-scale projects show that irrigation system is believed to be delivering less water to farmers than what was envisaged when system was designed. Some scholars have rightly perceived an element of increasing preference of water intensive crops by farmers even in basins where cropping pattern is prescribed. Any insight in to the factors that possibly would lead to an improvement in and refinement of the continuing experiments with irrigation management transfer, participatory irrigation management programme is welcome.

In the early stages of IMT or PIM, many believed the incremental returns that member farmers expects from WUAs could become an important factor to influence individual decision for participating in PIM activities. However, no studies have so far successfully concluded that just the formation of WUAs alone has led to an increase in agricultural productivity or revenue to the farmers. Further, WUAs are understood by both policy makers and irrigation professionals as standard design for a new institutional infrastructure.

Figure 3

DEMANDS OF VARIOUS SECTORS, India (PERCENT)



As often mentioned, irrigation management transfer (IMT) or Participatory Irrigation Management (PIM) may not be the optimal solution where WUAs are located in isolated portions of the canal command. The exception to this is the DSC led Dharoi command area where the federation of WUAs makes it clear that they could make a difference to water use strategies and efficiency. It is also evident that forming WUAs and tinkering with the managerial skills of their members has so far failed to yield significant results at the scheme level in a scenario where the on-farm efficiency of water utilisation is very low. Reform measures are therefore required.

In the new paradigm, the components of water institutions are obviously influenced by factors, which are strictly exogenous like supply of water. Since this exogenous factor defines the context and represent the constraints as well as opportunities of the institution's performance, they play a major role in shaping both the nature and character of the relationship between water institution and water sector performance. However, partial emphasis on water institutions, mainly water policy in general and water users association per se fails to bring about efficient utilisation of water resource. If one goes by Ronald Coase arguments, voluntary negotiation by WUA (perhaps supported by NGOs) and irrigation department for water management may in some circumstances lead to efficient outcome. This condition might arise when there is well defined property right. But the PIM has its prime focus on water distribution with no agency reform or policy formulation role for the whole system. In any case presently water management is also not considered as the policy target.

Possible Agenda for Development of Surface Water

The above analysis shows the role of the government and NGOs in providing a supportive and enabling institutional and policy frameworks for proper water use. There is another school of thought including Government of India which in 1995 believed in a large potential gain of involving private players in water distribution and management. The National Water Policy (2002) encouraged greater participation by users in systems management and seeks to reorient water agencies toward improving the quality of service delivery by involving private parties. The rationale of private sector participation is based on the possible flow of private investments into the irrigation sector.

Countries like Mexico, Chile, Australia, USA, France and others have invited private parties to purchase concessionaries in water distribution and management. In India, the options involving private corporate sector in project construction and management are currently under consideration in many states like Andhra Pradesh, Karnataka, Madhya Pradesh, and Maharashtra. In most of these cases, the government was to acquire land and get all clearances for the project while the private company will complete the project following the operation plans and construction standards set by the government. Gujarat, besides focusing on the farmers' participation on a large scale in irrigation management, at one point in time was also looking for the viability of involving private sector in mega projects through joint ventures. Karnataka has taken steps especially in the construction of small and medium multi-functional projects and in the case of drinking water supplies where public private service model is being used. Madhya Pradesh was also planning to bring in private sector participation in projects where the dams are ready but not the canal networks. A theoretical model of the possible public private model is depicted in Figure 4.

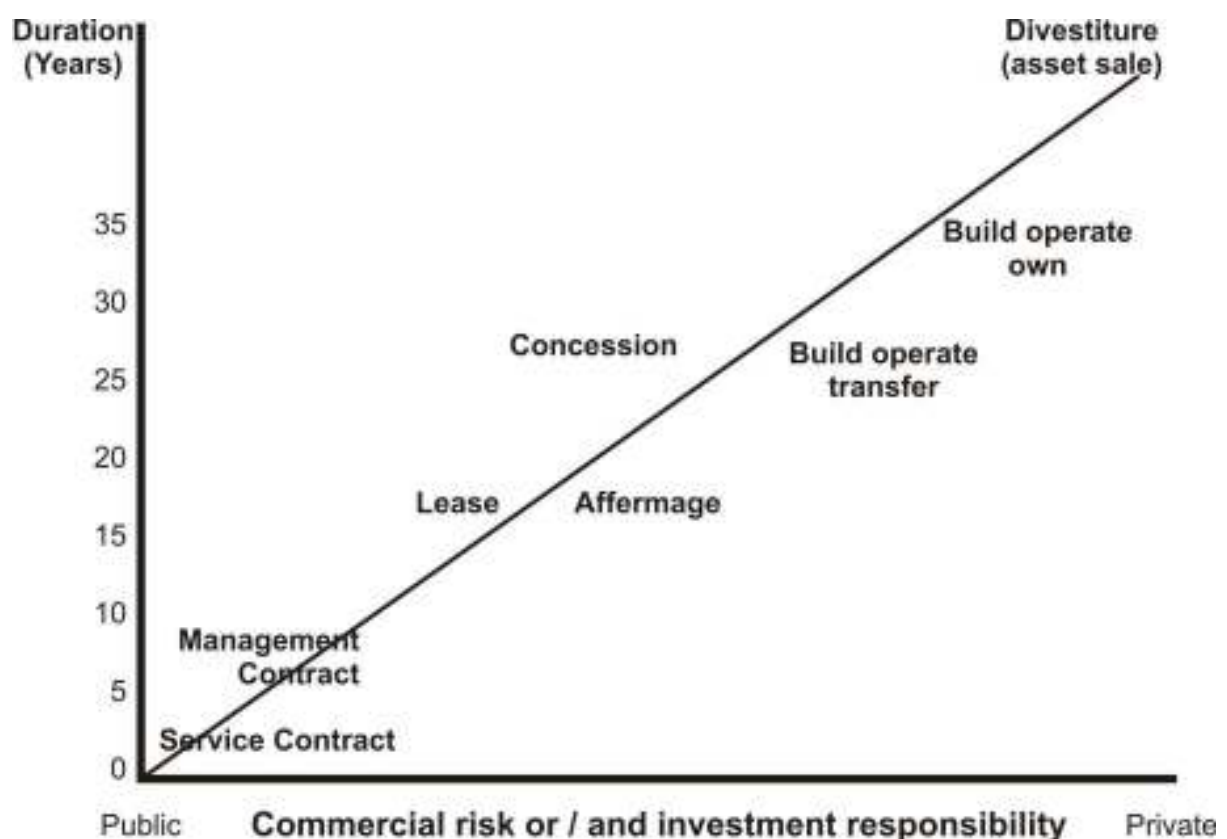
A unique and most notable attempt among the privatisation initiatives observed across the states was of the Maharashtra Government in inviting private bids for 52 irrigation projects worth Rs. 15 billion. These projects, with investments ranging from Rs. 10 million to Rs. 3.54

billion, were planned for allotment to private investors either on a build-own-sell basis or on a build-own-transfer basis. Besides the promise of an attractive return on their investment, private investors were also allowed to have the right both to promote fishery and tourism as well as to use 6 percent of reservoir storage for promoting horticulture and floriculture. Private investors were also free from the hassles of land acquisition, environmental clearance, and resettlement and rehabilitation of displaced communities as the government was to take care of those issues before handing over the projects to private operators.

Evidently, the basic philosophy of privatisation seems to be to improve water distribution and management. The literature attests that it is hard to predict the outcome of privatization, but that the form of privatization pursued will largely determine the winners and losers of the new policy.

Figure 4

Stages of Public Private Model in resource Development



Tradable Water Rights

Obviously if private participation is indeed solicited, the gains and losses are largely determined by how clear the user rights are defined. In the circumstances when the irrigation department determines supply, water right is believed to bridge this link. Water Rights will be a function of water available in the reservoir. Within WUAs, entitlement system can be conceptualized as a quota system. Water quota to the farmer members will be allocated on the basis of cropping pattern and share that the household owns is determined by the size of land holding in the command area. This will make farmers free to grow any crop, and sell water. Within each WUA, farmers will have water rights proportionate to their farm size. This should efficiently utilize water and would transfer water from low to high valued uses.

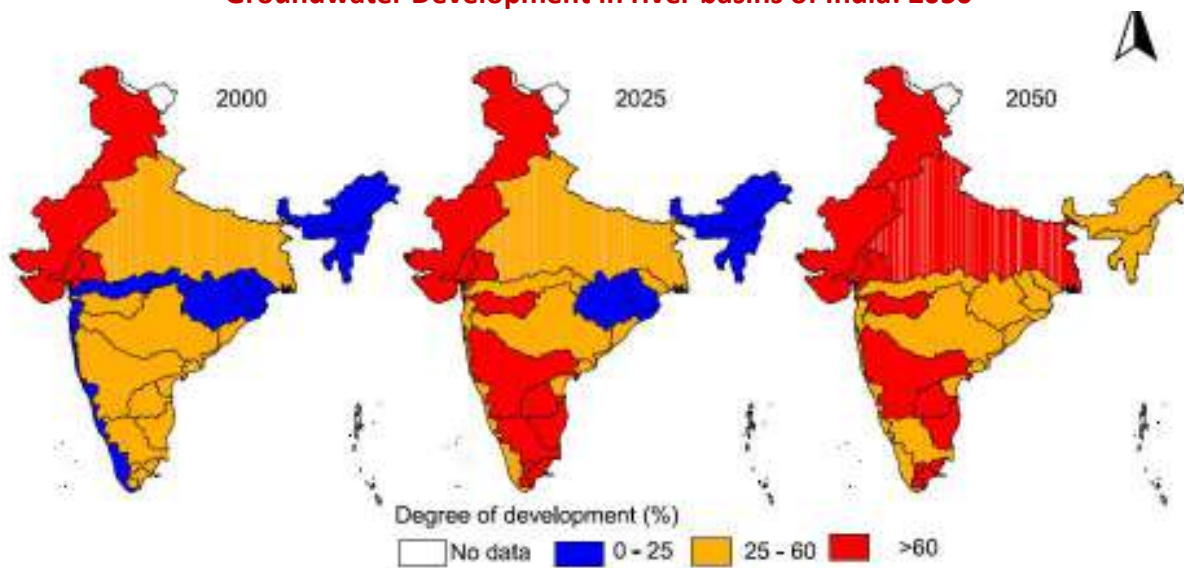
In the present scenario when supply to irrigation agriculture is fixed and is determined by department a paradigm shift in irrigated agriculture is required which will link the given supply to increasing demand for water. If tradable water rights are vested in WUAs they may provide the economic incentive to maximize net benefits generated by their activities by increasing production efficiency. Such a right will lead to greater involvement of users in R&R decisions rather than any other approaches like initiating motivation, training etc, thereby increasing the efficiency of water use.

Establishment of water rights in water resource of the system will mitigate the many problems like water logging and salinity, which happens due to mismanagement of water. Once tradable property right is granted to the WUAs, it gives the leverage for the latter to negotiate for water supply and give incentives to shift water to those who are able to pay the most for water. As water rights are proportion to share and prescribed cropping pattern, it will give buyers of water a strong incentive to conserve water as it induces user to consider opportunity cost of water. Strengthening the negotiation capacity and formalizing rights compatible with existing local allocation practices may establish vibrant water markets among the multiple users too. A pilot project testing out these principles would be able to establish the relevance of this method. Importantly it would help in scaling up the WUA as a concept since an empowered institution would emerge.

Ground Water Management

Groundwater aquifers constitute the predominant reservoir and serves as a strategic reserve of freshwater. Groundwater accounts for 60 percent of the irrigated area in the country and is the critical input for livelihoods of millions of people.

Map 1
Groundwater Development in river basins of India: 2050



Source: Amarasinghe, Upali A., et al. (2009)

It is evident that the major river basins of India are likely to face groundwater development to critical and semi-critical levels (Map 1). Physically water scarce regions may require immediate attention in terms of managing groundwater development even as the arid and semi arid and low rainfall regions are in danger of permanent decline in water table. In many of these areas water and not land seems as a limiting factor for farm production. Each region with its own geo-hydrological characteristics exhibit specific symptoms like: overdraft and salinity in Punjab, Haryana and western Rajasthan; fluoride contamination in north Gujarat and Southern Rajasthan; and, saline ingress into coastal Gujarat. On the other hand, some regions like the eastern India has over one-fourth of India's usable groundwater resources; and less than one fifth of it is developed. Various reasons like inadequate and unreliable energy supplies and uneconomic pricing of energy are the cited as the main factors behind the under development. In fact, development of groundwater in these regions can contribute immensely to the overall development, create livelihoods and address syndrome of extensive waterlogging and flood-proneness.

Given these, it is imperative to address questions like: (a) what is the groundwater potential with respect to storage, transmissivity and diffusivity across varying hydrological settings? (b) How this resource that is common pool and is fugitive, is being managed in order to develop efficient strategies. In fact, developing such strategies would require informed information on groundwater recharge and protection as part of watershed development, protection of natural recharge areas, efficient well-use, regulating energy (particularly pump capacities), determining the distance between wells and well-depths, crop water management (crop regulation and efficient application) and the possibility of well-user groups including markets.

There are emerging new innovations on this aspect too. ACT - an NGO that is working across several blocks of Kachchh district has pioneered the idea of creating barefoot hydro-geologists (Bhujal Jankars) to collect data at aquifer scale, build capacities of NGOs and government officials on aquifers and aquifer-based management. Similarly, Samerth's (another NGO) work has grown in size and technical capacity over the years from beginning to construct water structures independently to working with government to leverage resources. Both these NGOs working in Gujarat and Chattisgarh, have been instrumental in undertaking micro level work in generating information at the aquifer level in both these states. Particularly, ACT and Samerth have been instrumental in: (i) Collating data at the appropriate scale, build capacities of NGOs and government officials on aquifers and aquifer-based management, and (ii) facilitating convergence between groundwater management and various programmes, like agriculture, watershed development and livelihood and employment generation at the village and block levels. They were able to provide technical support to the government officials and NGOs. Their intervention of managing groundwater is on the principles of Participatory Groundwater Management (PGWM) at village and block levels. PGWM too seem to have potential to upscale.

While participation and participatory processes are important in developing a robust groundwater governance framework, external factors such as energy as an instrument to regulate groundwater use patterns (Shah, 2009) or crop choices to adjust to aquifer conditions and environmental fluxes (Kulkarni and Shah, 2013) are equally important in regulating demand. Achieving effective management outcomes and sustaining them depends upon the wider environment of governance and the development and livelihood choices that environment generates (Moench et al., 2012). Kulkarni et al., also have noted that if legislative reforms in groundwater law consider protecting participatory-social processes through instruments of law, it will enable a more 'legal' status to social processes.

Hence, alongside understanding the working of the participatory groundwater management interventions, it is also important to explore how these management interventions try to negotiate or integrate the regulatory or policy interventions mediated by the state or any other designated agencies. Based on such a deeper understanding of the local processes and interactions involved in the participatory management of groundwater and their outcomes, it may be important to come up with one or more of the interventionist strategies as 'models' needing scaling up to various 'groundwater resource management contexts' after appropriate modifications or adaptations.

Summing up

Evidently the discussion point toward an integrated approach to resource management that takes cognizance of the emerging challenges like climate change related possible risks by effectively using the available technologies. Toward an integrated approach, there was also a concept that fleetingly gained currency, namely IWRM. The central theme of IWRM has been one of creating an apex water body that manages the water resource ideally at sub-

basin level. An apex water body requires restructuring to exercise authority, include relevant stakeholders and be provided with support. At state level, mandates are then defined, organizational set-ups and operational responsibilities are finalised. Thus a water resource management organization which essentially can coordinate with all the departments seems as a central thrust. Further IWRM also assumes a sub-basin plan or strategy as the basis for investments and management processes. At best IWRM is an institutional reform with no guarantee for commensurate changes at ground level. It is indeed difficult to imagine that this concept would be effective in the present scenario in India.

The review suggest that there is a need and scope to (a) scaling up of the watershed programmes by incorporating real time weather related information at the village level and (b) strengthening the PIM programme by introducing tradable water rights at the WUA level. Both these programmes should actively and effectively utilise the available communication technologies toward efficient management of the resources keeping in view the multiple demands. Therefore, a meticulous review of the extant programmes in the light of newer challenges and chalking out possible strategies with a large dose of reform measures and technological support is the emergent need.

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Case Studies

Promoting Participatory Irrigation Management (PIM) in Gujarat–A case study of the Hathuka Water User’s Association

(Facilitating Agency – The Narmada & Water Resources Department, Govt. of Gujarat)

Introduction

The Hathuka Vibhag Irrigation Cooperative Ltd. (a Water User Association registered as a Cooperative in 1983) is located in Hathuka village in Valod block of Surat district. It serves a total command area of 1073 hectares in the Ukai Irrigation Scheme and the total length of the canal is 8.5 kilometers covering six villages – Golvan, Hathuka, Bhimpur, Dumkhal, Kanjod and Kumbhiya. There are 835 members in the Water User Association (WUA) out of which 735 (88%) members belong to the Scheduled Tribe (ST) and 42 members (5%) belong to the Scheduled Caste (SC) categories respectively.

Key issues

The dilapidated state of canals with its limited water served only a fraction of farmers. Only 114 ha (about 10%) out of the 1073 ha was irrigated and a majority of farmers could cultivate only rainfed crops such as Jowar and paddy in the Kharif season. Four villages in the command area had no water for 23 years due to poor distribution network. On the other hand, farmers located at the head-reach of the canal took water multiple times leaving the tail-end farmers deprived of water. Moreover, 820 (98%) of the 835 farmers were completely dependent on canals for irrigation as they could not afford wells or bore-wells due to poor economic condition. The high disparity between the demand for and supply of canal water led to regular conflicts and tension amongst the farmers in the command area. A majority of the farmers were not able to meet their basic needs and were forced to venture out of their villages in search of labour work. The main crops grown in the command area are as follows:

Sr. No	Season	Major Crop	Percentage
1	Kharif	Sugarcane	95
2	Rabi	Sugarcane	95
		Ground nut	3
		Vegetables	2
3	Summer	Sugarcane	95

Strategy

There was need to rehabilitate the canals so as to improve their conveyance capacity, increase cooperation amongst farmers and Water Resource Department (WRD) and improve the recovery of water charges. Active participation of the community through formation of a Water Users Association and collaboration with WRD was essential for achieving the three goals mentioned above.

The officers from the WRD as well as elected representatives approached the village leaders and explained the concept of Joint Irrigation Management to them. After convincing the leaders, village meetings were then conducted to communicate with the community at large wherein they were encouraged to form a WUA. Eleven board members were selected from six villages and a payment of Rs.51 as share fee per member was collected. The WUA thus formed was registered under the Cooperative Department and later on as per the Gujarat PIM Act. The WUA in 1986 signed a Memorandum of Understanding (MoU) with the Water Resources Department for taking over the management of the irrigation system.

Roles and responsibilities of the WUA

Canal rehabilitation work worth Rs. 4 crores was completed by the WUA from 2009-2012. The WUA has also developed a garden on both sides of the canal for a 1 kilometre stretch. It has employed four supervisors and 12 labourers for water distribution and operation and maintenance of the canals. The labourers are also involved in irrigating the field of all farmers in the command area for which the WUA charges a nominal fee of Rs.20/acre. In addition to the fee collection, the WUA also collects water charges as per the Government rates and in ensuring that members obey the rules and regulations of the WUA. Non-compliance and misbehaviour attracts a fine of Rs.1000. The employees are also provided with dress, mobile and insurance facilities by the WUA. In case any employee is found consuming alcohol, he is expelled from the job.

Roles and responsibilities of the Water Resources Department

The WRD conducted surveys, prepared plans and estimates and provided technical guidance for canal rehabilitation. It also conducts regular meetings in villages spreading awareness about the WUA and its work. Regular fund allocation, resolving conflicts amongst WUA members, coordination & monitoring, conducting regular capacity building programmes for WUA members and executive committee at WALMI are some of the important responsibilities carried out by the Department.

Impact

The impact of the WUA on the lives of farmers in the command area has been manifold. The command area is experiencing a domino effect resulting from the increased availability of water to majority of the farmers such as:

- More than half (667 hectares) of the cultivated land (1073 hectares) in the command area is now under irrigation.
- Improvement and rehabilitation of canal system, ensuring rotation and promotion of appropriate use of canal water has led to water availability to farmers located at the tail-end of the canal.
- Less number of farmers now go out of their villages for labour work as they can now be engaged in cultivating their own lands.



- An increase in household income has led to households digging tube-wells on their lands and 40 new tube-wells for irrigation have been dug up in the recent past. This has led to increase in area under irrigation.
- A jump in the productivity of sugarcane from 15 tonnes to 45-60 tonnes has been observed in the command area. Farmers are now able to cultivate three season crops from only Kharif crops previously.
- An understanding amongst farmers of villages has developed which has led to lesser conflicts, reduction in wastage of water and 100% advance recovery of water charges. A sum of Rs. 10 lakhs was received as water charges in 2014-15. The net income of WUA was Rs. 5 lakhs after deducting an expenditure of approximately Rs. 5 lakhs.

The Hathuka WUA serves as a role model for other villages in the region. The positive outcomes and impacts of the Hathuka WUA has inspired formation of about 30 WUAs in the region.

Lessons for replication

The Hathuka WUA is one of those rare WUAs in the country which has continued to perform well for more than 30 years. Some of the important lessons learnt are:

1. *Active participation of farmers though difficult is necessary for managing irrigation systems. Realising this, a few officers from the Water Resources Department themselves took the initiative to convince farmers to form a WUA. Such efforts need to be recognised and encouraged so as to motivate other officers within the Department.*
2. *Technical support and regular guidance from WRD to WUA members and the Executive Committee is necessary to enable them to maintain and repair the canal system. Besides training, it is important to provide hand-holding support to the WUAs on technical and other aspects so that they can effectively carry out the various functions expected of them. The Hathuka and other successful examples of WUAs in the country show that wherever they are provided appropriate guidance, the WUA does not only maintain the canal system but can be effectively involved in its rehabilitation also.*
3. *An enlightened leadership within the WUA enables amicable resolution of conflicts, appropriate allocation of water to all the farmers especially the tail-end farmers and also fosters a spirit of partnership between the WUA and WRD. The leadership within Hathuka realised that there was a need to provide services to the farmers and hence they hired supervisors and labourers for canal maintenance, water distribution, water charge collection and also for irrigating the fields of members. In turn, they also provided facilities to the work force and charged the members for the same. Strict enforcement of norms laid down by the WUA ensured that all members receive adequate and timely water supply.*

Promoting Participatory Irrigation Management (PIM) in Madhya Pradesh – A Case study of the Water User’s Associations in the Maan Irrigation Project (Facilitating Agency - Development Support Centre – DSC, Manavar)

Introduction

The Maan and Jobat Irrigation Systems are in the Narmada basin and located in the Dhar district which is one of the most backward districts in Madhya Pradesh. The project has three partners – Development Support Center (DSC), Narmada Valley Development Agency (NVDA) and the Revenue Department.

The Maan project has a command area of 15,000 hectares and a canal network of 240 kilometres having 14 distributories and 66 minors. It covers 53 villages having about 8000 households of which 7000 households i.e. about 87% belong to the Scheduled Tribes (ST). There are 10 Water User Associations (WUAs) in the command area.



Key Issues

In 2007, the (DSC) was invited by the Madhya Pradesh Rural Project (MPRLP) to build the capacities of the WUAs in Man and Jobat projects. At that time, the canal network was unlined which led to extensive seepage and wastage of around 40% of water. There was lack of trust between the farmers and the WUA and between the WUA and the NVDA. The functionaries were newly elected and therefore did not have much idea of their roles and responsibilities or the main provisions of the Madhya Pradesh PIM Act. There were conflicts between farmers, between WUAs within the command area and between the WUA and NVDA because of insufficient and erratic water supply and inequitable water distribution between the WUAs situated at the head-reach and tail-end. Since the WUAs did not have a regular source of income, they could not carry out repair and maintenance of canals.

Strategy

The villages needed to get together and understand the issues related to access to canal water. Proper capacity building of WUA members and information dissemination to the farmers was one of the most important tasks at hand. Based on its experience of promoting PIM in Gujarat, the DSC focused on building the capacities of the WUAs and bridging the trust deficit between them and the NVDA. Through collaboration with the WUA and NVDA it carried out the following tasks:

- i. Intensive interaction with the community by conducting various Participatory Rural Appraisal (PRA) exercises to understand their problems and challenges and their suggestions for improvement.

- ii. Building community awareness on canal irrigation and appropriate use of water by using various Information Education and Communication tools and techniques such as video films, slogan writing on walls and wall paintings, print material such as appeal letters, leaflets etc.
- iii. Exposure visits of WUA members, Executive Committee members and office bearers to various successful PIM projects across the country.
- iv. Regular capacity building and hand-holding support to WUA members on technical, administrative, financial and legal aspects.
- v. Joint survey by WUA officer bearers and officers from NVDA and preparation of plans and estimates for canal rehabilitation.
- vi. Establishment and capacity building of sub committees for conflict resolution, quality control and monitoring.
- vii. Formation and capacity building of farmers clubs and women's groups in villages.
- viii. Collection of membership and irrigation services fees by WUAs.
- ix. Construction of water course and field channel to make canal water reach villages located at the tail-end of the canal.

Impact

The impact of this programme has been manifold. Increased availability of water in villages has not only led to the increase in area under irrigation but also resulted in increase in productivity, revenues and introduction of new crops in the area. Some of the key impacts are:

- i. Recorded increase in productivity of wheat, cotton and chick pea (chana) from 18 to 34 quintal, 16 to 27 quintal, 80 to 100 quintal per hectare respectively.
- ii. Increased farmer revenues from Rs 3.3 crores in 2005 to Rs 29 crores in 2015.
- iii. Increase in use of certified seeds for wheat, chilli and cotton and introduction of new crops such vegetables, fruits and flowers.
- iv. Adaption of new farming techniques by farmers.
- v. Reported 29% increase in agriculture produce received in mandis.
- vi. Increased incomes have led to decrease in the crime rate.

The Maan and Jobat projects have received accolades and awards from the Chief Minister of the State, it has also a special mention by the Planning Commission and the World Bank Mission Report of 2012. The farmers have recently formed their own Producer Company which they hope will be equally successful.

Challenges

Though the project has received positive impacts as mentioned above and has encouraged the community to work hard towards achieving the goals, there are a few challenges that need to be addressed. These challenges create impediments in the smooth functioning of the WUA and realisation of the irrigation potential and at the same time provide key learning for other projects. Some of the challenges are:

- i. The elected representatives and office bearers change every five years due to elections, while earlier due to availability of project funds structured training programmes and exposure visits could take place, now it is not possible to do so.

- ii. Delay in release of funds for repair and maintenance of canals by government department tends to de-motivate the WUAs as they are unable to carry out timely repairs.
- iii. Given the topography and soil condition, the funds allotted for repair and maintenance are insufficient.
- iv. Less/no time left for management of irrigation system by the committee members due to increased involvement in agricultural activities.
- v. Populistic measures by elected representatives that tend to de-motivate the office bearers in implementing good practices among members.

Lessons for Replication

The experience of promoting PIM in Maan project indicates that:

1. *There is need for continuous capacity building of the elected representatives and office bearers of the WUA as they tend to change after each election. Besides, the field level situation is also quite dynamic and they require hand-holding support from the Water Resources Department and training agencies such as WALMI /reputed NGOs.*
2. *The quantum of funds allotted for O & M of canals cannot be uniform across all regions of state as there is difference in the topography and soil conditions. They need to be based on the actual requirement of the region and the physical condition of Irrigation System. Funds need to be released to the WUA on time so that they can carry out the O & M works before the commencement of the irrigation season.*
3. *As the area under irrigation increases, the elected representatives of the WUAs will get less and less time for carrying out the various tasks such as maintaining records, supervision during water distribution etc. Thus, there is need for the WUA (as shown in the Hathuka case study) to generate enough revenue to hire people to carry out such tasks.*
4. *While there is emphasis on capacity building of WUA members, very little attention is given to sensitisation of the officers or elected representatives. As a result, good practices established by WUAs are not sustained. Thus, there need to be mechanisms and resources to orient them.*

Energizing the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for Ecological Restoration of Commons and Natural Resource Management in Rajasthan

(Facilitating Agency: Foundation for Ecological Security – FES, Rajasthan)

Introduction

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) ensures 100 days of employment to persons in rural areas. There lies an ideal opportunity to club this scheme with restoration of commons and natural resource management at the village level. The Foundation for Ecological Security (FES) effectively tapped this opportunity to implement MGNREGS for rejuvenating the natural resources in Bhilwara district of Rajasthan.

Strategy

The FES acts as a facilitator and project implementing agency of MGNREGS which ensures that there is participation from the community, all the process steps are followed, relevant committees are formed and participatory plans are developed at the village level. It follows a programmatic approach towards implementing MGNREGS in villages. A sense of ownership of the community not only towards the physical assets created but also for preservation of natural resources is important. This requires direct involvement of village institutions at planning, implementation, monitoring and governance level.

Effective implementation of MGNREGS helps to achieve two purposes – augment rural livelihoods and improve the ecosystem in the area. Physical assets such as nalla plugs, trenches etc developed by the people help in restoring natural resources in the area and at the same time help the households to gain meaningful employment. Women and vulnerable groups are also empowered as these groups find a source of employment and take active part in planning of works.

The FES plays various roles at various levels as a Project Facilitation Agency and as a Project Implementing Agency. As a Project Facilitation agency in MGNREGS implementation, the FES' involvement lies in - conducting social audit, building capacities of Panchayat members, para-workers, formation of village level institutions, helping them in perspective planning and providing technical support. As a Project Implementing agency, FES's role lies in providing technical estimates to PIAs, supervision of work, preparation and submission of master plan, measurement plan, and completion report, capacity building, formation of village level institutions and perspective planning. The organisation also mobilises funds from other sources for carrying out awareness creation and capacity building activities.

Process

The FES follows the following steps for implementing MGNREGS at the village level:

- i. It helps formation of a village institution with members carefully selected from the village.

- ii. The next step includes capacity building of members of the village institution, Panchayati Raj Institutions (PRIs), para-workers, volunteers and local leaders.
- iii. Facilitating planning activities for implementation of MGNREGS for restoration of natural resources in the village. A watershed approach is followed for preparation of a perspective plan focussed towards natural resources in the village.
- iv. This plan is then included in Gram Sabha and block/district action plan.
- v. The FES then facilitates potential demand generation (Form 6) for works.
- vi. After completing administrative formalities, the FES ensures a conducive environment for working which includes – proper work site facilities, preparation of task chart, regular on-site meetings, daily task measurement and declaration and creating a sensitized community.
- vii. Regular monitoring of work is essential and for this FES helps facilitate formation of vigilance committees.
- viii. The last step in the process is ensuring timely payments to all the workers.

Impact

Community efforts in implementing the scheme have resulted in a number of positive effects. Some of them are highlighted below:

- i. Vulnerable households and women groups are ensured regular and full payment.
- ii. Potential households have also been able to complete 100 days of employment which has led to increase in household incomes.
- iii. Formation of village level institutions and other committees and capacity building of village representatives has led to strengthening of local conflict resolution mechanisms and establish appropriate monitoring processes to check corruption.
- iv. The Panchayats now understand the importance of restoration of natural resources in their respective areas and are motivated to include natural resource development works in their action plans.
- v. Biomass estimation and water related data is now being collected by village institutions.
- vi. Pasture land development and various soil and moisture conservation initiatives have been completed in villages.
- vii. The impact of the works undertaken is done by using GIS.



Challenges

There however lie a few challenges in implementing the scheme:

- i. Procedural delays in receiving sanctions from the government pose a big roadblock in smooth implementation of the scheme.

- ii. If a project requires more than 100 days of labour of persons, then that creates complications in implementation as 100 days of guaranteed labour is considered as a maximum and not minimum.

Lessons for Replication

1. *Implementing agencies be they government or non-government need to realise the potential of government schemes such as MGNREGS to develop productive assets, restore the natural resources and provide livelihoods.*
2. *The schemes per se will not be able to achieve the desired results unless implemented properly. Thus, mobilising people, especially women and marginalised sections into a village institution and ensuring their participation in the Gram Sabha is vital. This enables development of a more inclusive plan, transparency in execution and sustainability of assets created.*
3. *Capacity building of Panchayat members and para-workers and providing them technical support is necessary to ensure effective implementation of MGNREGS.*
4. *Funding for awareness creation, capacity building and hand-holding support to village communities and the Panchayats in government schemes is rarely sufficient. Thus, there is need for additional fund mobilisation from other sources for filling up such gaps.*

People and Panchayat led Equitable Water Governance Model in Telangana

(Facilitating Agency: Youth For Action – YFA, Hyderabad)

Introduction

The People and Panchayat led equitable governance model is a pilot initiative in Gujarat, Telangana and Karnataka supported by the Vrutti Livelihood Resources Agency and the European Union. This case study focuses on the learning from Telangana. The objective of the programme is to achieve efficient and effective management of water as a common property resource for ensuring positive health and livelihood outcomes, leading to poverty reduction in vulnerable population located in rainfed areas. The programme is being implemented by the Youth for Action (YFA) in Mehaboobnagar district of Telangana. The vision of the programme is to achieve convergence of Sujal Samitis (SS) and Panchayats and adopting an Integrated Water Resource Management (IWRM) approach.



Strategy

The strategy adopted to achieve the goals starts with formation and registration of Sujal Samitis (SS). The SS thereafter facilitate formation of child parliaments to positively influence young minds. The SS work in a sharing and learning mode wherein they share different aspects of water management with the community as well as other neighbouring villages. At the same time they learn from the experiences of organisations adopting similar approaches. The Panchayats are motivated to integrate SS as sub-committees so that they own the processes and outcomes as well as become sustainable in the long run.

Process for formation of the Sujal Samiti

The following process is followed for the formation of the Sujal Samiti:

- i. An informal meeting with village leaders and the community is conducted. The community is made aware about the benefits of forming a SS and importance of IWRM.
- ii. A Participatory Rural Appraisal (PRA) is conducted to get an idea of the needs / demands of the people living in different locations of the village.
- iii. A detailed household survey is thereafter conducted to get an understanding of the availability and use of water for different purposes such as drinking and sanitation, agriculture, animal husbandry etc.
- iv. Water plans are prepared based on demand assessment and data revealed in survey. An assessment of the water availability is also made by considering the average rainfall, water harvested and recharge through different structures.
- v. The Sujal Samiti is then constituted and registered under the Societies Act 2001.

Organisational structure of Sujal Samiti

The SS consists of a President, Vice President, General Secretary, Joint Secretary, Treasurer and Members. The general body meets at least once a month. A total of 20 members, 10 women and 10 men are selected from ASHA, AWW, GP, SHG, Watershed groups, Yuvaja Sanga (Youth groups) and other groups.

Roles and responsibilities of the Sujal Samiti

The roles and responsibilities of the Sujal Samiti are:

- i. Conduct weekly and monthly meetings.
- ii. Identification of issues/problems.
- iii. Participating in training programmes and exposure visits.
- iv. Awareness generation.
- v. Election of office bearers.
- vi. Motivating households to do shramdaan (contribution by labour).
- vii. Documenting and maintaining the minutes of meetings conducted.
- viii. Maintaining accounts of the grants received and expenditure carried out for various activities.
- ix. Ensuring active involvement of women and children.
- x. Implementation of activities related to drinking water & sanitation, health & irrigation.
- xi. Establishing linkages and with various Government Departments and other agencies for submission of proposals.
- xii. Collection of contribution from the community.
- xiii. Water Quality Monitoring for Safe Drinking water
- xiv. Follow best practices related to water management.

Networking with different stakeholders

The SS also regularly interacts with other stakeholders such as the Gram Sabha, Panchayat members, Block level officers, District Collector, MLAs, MPs, Water and Sanitation Dept. They also visit neighbouring villages and network with other Sujal Samities in the state as well as outside. The members of Sujal Samities gain skills, confidence and knowledge through such networking and also gain access to more resources.

Convergence of different programmes

Through convergence with other Government schemes, the SS have also undertaken activities such as construction of CC road, laying new pipeline, construction of mini tank and cattle trap, repair and renovation of existing water sources such as bore-well, hand pump and water taps. The total amount mobilised through such convergence is **Rs 11.84 crores**. In addition the SS have also conducted awareness generation programmes for Child Parliaments in 20 villages.

Recognition at the village and district level

Looking at the interventions carried out by the Sujal Samities, the Panchayats have recognised their contribution and have included them as sub-committees. The district Collectors have also recognised the important role played by the Sujal Samities and the Zilla Parishad has passed a resolution to involve them in all the development activities at the village level.

Impact

The activities carried out by the SS have led to several changes in behaviour of households in the village such as:

- i. Open defecation has reduced by 50%.
- ii. Increased adoption of organic farming.
- iii. Improved health and nutrition amongst women and children.
- iv. Adoption of good hygiene practices such as – daily bathing, regular changing and washing of clothes, washing hands with soap before eating etc.
- v. Women now do not have to spend extended time in fetching water which has led to more time availability for other daily chores and for rest.

Lessons for Replication

Adopting the Integrated Water Management (IWRM) approach at the village level is quite challenging. The experience of YFA in Telangana shows that:

1. *There is need to create awareness about the concept amongst all the stakeholders at the village level such as the Asha workers, SHG members, youth groups etc and organise them into a Sujal Samiti.*
2. *Involving children as change agents especially for programmes related to drinking water and sanitation can prove to be quite effective and can lead to behavioural change among adults too.*
3. *Developing an integrated water plan based on rainfall and water availability from different sources and water use for different purposes such as drinking water, sanitation, agriculture, animal husbandry etc is essential for adopting the IWRM approach.*
4. *The Panchayat is one of the biggest drivers of convergence since most of the Government schemes are routed through them. Thus, their active involvement and recognition of Sujal Samiti as a Sub-Committee of the Panchayat is important.*
5. *Since IWRM involves multi-sectoral interventions – drinking water, sanitation, soil and moisture conservation, agriculture etc, it requires funding from and collaboration with different government departments which is not very easy.*

People and Panchayat led Equitable Water Governance Model in Gujarat

(Facilitating Agency: Development Support Centre, Meghraj)

Introduction

The Meghraj block is situated in the North-East of Aravalli district (Gujarat) with the total population of about 1.6 lakhs out of which 36.4 % belongs to Schedules Tribes and 3.8% belong to Scheduled Caste. It is semi-arid having annual rainfall of 500-700 mm and has undulating land with 5-10% slope. The soil typology is black, sandy loam and hilly terrain with rock formation. The per house-hold land ownership in Meghraj is quite low and 77% of the total house-holds own 1 hectare or less, 16% own 1-2 hectare land while 7% people own more than 2 hectare land. Maize is the major crop being cultivated in Kharif season and wheat is the major crop being cultivated during Rabi season. The main source of irrigation is tube-well.

There was high dependency on rainfall and ground water for agriculture as well as drinking water and at the same time there was poor water harvesting infrastructure leading to subsistence agriculture. Looking at the needs of the people and the topography of the region, the DSC established its operations in Meghraj in 1998 through implementation of the participatory watershed programme. Thereafter, based on the multiple requirements and demands of the people, it took up interventions on micro-finance, sustainable agriculture, drinking water etc. This led to formation of multiple institutions such as the Watershed Committee, Paani Samiti, Farmer Clubs and Women's Federation. However, there was hardly any coordination amongst these institutions which directly or indirectly dealt with "water". In addition, they worked in isolation and had very little collaboration with the Panchayats. Thus, there was need for an institutional mechanism in and around the water agenda (Water Governance) in an integrated manner which looked at improving the supply of water and at the time managing the demand for water for different uses. Thus, DSC introduced the concept of IWRM in 18 villages of Meghraj block on a pilot basis.

Strategy

The goal of IWRM project is to achieve efficient and effective management of water as a common property resource for ensuring positive health and livelihood outcomes, leading to poverty reduction in vulnerable population located in rainfed areas. The objective of the project is to establish and demonstrate a people and Gram Panchayat led equitable integrated water governance model for sustainable economic development in Gujarat.

The concept of IWRM is based on addressing issues of supply, demand and governance.

- **Better Supply**

Better supply of water can be achieved by improving the condition of water resources and water supply in the area. Water sources can be improved by revitalisation of existing structures for both surface and ground water, development of new resources to augment supply and include water audit and hydrological monitoring for developing a water plan.

- **Water governance**

Water based institutions, involvement of PRI and community is the key for improved water governance. Awareness generation and capacity building of institutions play an important role in the entire process. There is also a need to develop conflict resolution and negotiation mechanisms at the village level.

- **Better management of demand**

Demand assessment for different uses of water such as agriculture, domestic use etc should be the first step towards better management of demand. There is also a need to change age-old practices and cropping patterns depending on availability of water in the area. Farmers need to understand and implement the concept of crop-water budgeting.

Process

An important aspect of IWRM is active involvement and ownership of the community in the process. The following process is followed to ensure involvement of the community:

- i. An informal meeting with village leaders and the community is conducted. The community is made aware about the benefits of forming a SS and importance of IWRM is also put forward.
- ii. A Participatory Rural Appraisal (PRA) is conducted next wherein a situational analysis of the sources of water supply and the demand for water for different uses such as agriculture, animal husbandry, drinking water and sanitation is carried out.
- iii. A detailed Baseline survey is conducted next.
- iv. Identification of Extension Volunteers (EVs) - women and men belonging to the village and their capacity building is carried out.
- v. Dialogues with existing village institutions as well as PRI members
- vi. Sujal Samiti is then constituted with representatives from the existing village institutions, Panchayat and 50% women.
- vii. Formulation of bye-laws for fixing the roles and responsibilities of the Sujal Samiti as well as the community.
- viii. Water plans are prepared based on demand assessment and data revealed in survey.
- ix. Groundwater monitoring is carried out by Bhujal Jankars and they share their observations with the Sujal Samities.
- x. Funds from other Government and Non Government Organisations are tapped to implement a holistic plan.
- xi. The IWRM programme is integrated with other interventions related to agriculture development, groundwater management, MGNREGA etc.



Currently 18 Sujal Samitis have been formed in 18 villages having 264 members. Eighteen village women volunteers are involved in spreading awareness on IWRM. The SS members and volunteers conduct regular monthly meetings, planning and execution of different activities such as repairing of hand pumps, check dams and defunct drinking water scheme,

demonstration of roof top rainwater harvesting system and construction of earthen farm bunds, stone farm bunds and sanitation units.

A “Dignity Fund” of Rs. 4.5 lakhs to the Sangam Women’s Federation (A Saving & Credit Cooperative of 786 women facilitated by DSC) has been sanctioned by Wall-Mart. Interest free loans will be given to women members of the federation to construct toilets and the Sujal Samiti’s and EVs will take responsibility of monitoring the progress and also the quality of works. They will be provided continuous guidance and support by DSC.

Impact

The implementation of the IWRM programme by Sujal Samities and DSC has led to the following impacts:

- i. The social impact of the project includes improvement in women’s health, increased participation of women and increased awareness about ground water issues and other aspects related to health, water, sanitation and ecological agriculture. A cadre of women volunteers with sound knowledge on water governance has been developed.
- ii. The environmental impact includes better management of groundwater sources leading to an increase in water table, introduction of sustainable agriculture and improvement in the availability as well as quality of drinking water.
- iii. Improved water governance at the village level with involvement from the Panchayat members has led to interventions on issues related to availability, quality and reduction in water use. It has also led to mobilisation of funds for water resources development from other government programmes such as MGNREGA and promotion of drip through the Gujarat Green Revolution Company.

Lessons for Replication

The implementation of IWRM in Meghraj provides the following lessons:

1. *Preparation of holistic plan, including health, livelihood, NRM and agriculture development is necessary for sustainable use of natural resources.*
2. *Since, IWRM is multi-sector (water, land, agriculture) and multi-segment (women, children, farmers), a holistic approach to community mobilization is essential for success.*
3. *Involvement of the community especially women and Panchayats is important. Thus, crop water planning and water budgeting exercises should be undertaken with them to make them understand the importance of IWRM.*
4. *The IWRM interventions have to be integrated with watershed development, participatory groundwater management and agriculture extension activities.*
5. *Convergence of different programmes, departments and institutions is challenging but a necessary condition for success of IWRM and thus the Sujal Samities need to network with them.*
6. *Capacity building and hand-holding support is required for at least 5-6 years given the complex nature of IWRM projects.*

Groundwater collectivisation and sharing for securing livelihoods in drought prone areas of Andhra Pradesh

(Facilitating Agency: Watershed Support Services and Activity Network – WASSAN, Hyderabad)

Introduction

India is struggling with rapid depletion of ground water and there is need for urgent action to prevent its further deterioration. One of the reasons of rapid depletion of ground water is rampant and competitive digging of borewells by farmers on their agricultural land. Cropping patterns have altered in the recent past in which farmers prefer to cultivate high water consuming crops as they fetch higher price in the market. There are neither social nor government regulations on the use of groundwater.

Drought prone areas have seen a surge in the number of borewells, but a proportional increase in the area of land under cultivation has not been reported. This phenomenon leads to further depletion of ground water in drought-prone areas. Failure of rainfall further aggravates the situation and leads to multiple negative effects – crop and investment losses, increase in farmer debt, decline in productivity, increased migration, scarcity of fodder and increased pressure on groundwater.

Effective measures have to be undertaken to stop competitive and rampant digging of borewells in drought prone areas to save ground water.

Strategy

The probable way out of this dire situation is to harvest more rain water, bring about an improvement in soil moisture, increasing its retention capacity, reduction in evaporation, find avenues for supplemental and protective irrigation and crop diversification.

Borewells, though a cause of depletion of groundwater also serve as lifeline for the farmers. The strategy should be based on restricting further digging of borewells. The WASSAN's approach to this situation in drought-prone areas has been to promote sharing of water from borewells by a group of farmers. Collectivization of farmers for sharing of groundwater to improve their livelihoods is the main objective of the PGWM initiative. This not only ensures equitable use of water but also promotes better social cohesion amongst farmers.

Area approach

A selected area is divided into three zones. The first zone, with intensive irrigation is where borewell exists and here there is no dearth of water for irrigation. The middle zone is called irrigated dry as it is partially irrigated. The third, outermost zone, is mostly rain-fed and there is an immense need for water in this area. Here, extensive protective irrigation is needed.

Process

The following steps are undertaken to promote water sharing amongst farmers:

- i. An area is selected instead of individual farmers.
- ii. An agreement is sought for sharing/pooling their borewells in that particular area. However, ownership of the borewell is still retained by the farmer.
- iii. An agreement is arrived which is witnessed by the Mandal Revenue Officer.
- iv. Laying of pipe line network for the entire area is done.

The farmers have to follow certain guidelines without fail:

- i. No new borewells to be dug for at least next 10 years.
- ii. Crop plans and institutional systems for operation of the system have to be followed.
- iii. Priority should be given to food and fodder crops.
- iv. It is imperative to combine interventions on SMC, soil organic matter, biomass etc.
- v. It is also necessary to regularly monitor groundwater.

Case of Malkaipet Thanda, Ranga Reddy district

A group of 18 farmers in 50 acres of land with 7 borewells have come together to pool in their borewells. The pipeline was laid out under the following conditions:

- i. All rain-fed land must be covered by this network.
- ii. Eleven non-borewell owners were also covered.
- iii. Critical irrigation to be provided for rainfed crops.
- iv. Provision of Rabi irrigation for 25 acres of land.

Impact

The impact of this programme is multiple. Firstly, non-borewell owners got access to water for their land. In addition, it provided for protective irrigation, timely sowing, reduced pumping hours and labour time, increased water use efficiency and no crop failures. This has also led to increase in crop productivity and income of farmers.

The success of the programme has encouraged Andhra Pradesh government to extend the programme to two more districts for 1000 Ha with an investment of Rs. 10 crores.

Lessons for Replication

1. *Water for all should be the policy precept.*
2. *There is need to focus on soil & moisture conservation and water harvesting especially in rainfed areas.*
3. *Since groundwater is depleting in rainfed areas, the aim should be to provide extensive protective irrigation for rainfed agricultural land.*
4. *Establishment and enforcement of groundwater norms and protocols by the community are two critical elements of PGWM.*
5. *Lastly, legislation should be made and financial incentives should be provided to encourage farmers to come together to manage groundwater.*

Participatory groundwater management at village level in India – Empowering communities with science for effective decision making (Facilitating Agency: Arid Communication and Technologies – ACT, Bhuj)

Introduction

It is no secret that groundwater (GW) is fast depleting in India. Water table is deteriorating by the day and stringent measures need to be taken by the government and communities to save and restore groundwater for future generations. Lack of proper scientific understanding of groundwater is one of the main reasons for worsening groundwater situation. Communities do not perceive groundwater as a common resource and act individually. There are a few qualified experts in this field and therefore there is limited understanding of the complexity of the issue both at the field as well as policy level. On the other hand there are also a few myths associated with GW. Some of them are – only highly qualified people can understand and manage GW, that GW is unlimited and there is a river stream feeding it, villagers cannot understand GW dynamics etc.

Strategy

The Arid Communities and Technology (ACT), Bhuj is involved in capacity building and developing a cadre of ‘Bhujal Jankars’ - BJs (informed local groundwater practitioners) in Gujarat and Rajasthan as part of the Managed Aquifer Recharge through Village level Interventions (MARVI) project. This project aims to demonstrate how community participation is possible for restoring and saving groundwater. This project is being implemented in 6 villages of Meghraj block of Aravali district by DSC and in 5 villages of the Dharta block of Udaipur district by Maharana Pratap University of Agriculture Technology (MPUAT) and the Krishi Vigyan Kendra (KVK). It is supported by the University of Western Sydney, IWMI and The Australian Centre for International Agriculture Research (ACIAR).



Criteria for selection of Bhujal Jankars

The community members and implementing agencies selected the BJs based on the following criteria:

- i. They know how to read and write in local language and have basic knowledge of mathematics.
- ii. Have good oral communication skills
- iii. Are connected to agriculture and are familiar with the issues in their village
- iv. Are interested in helping the community
- v. Can give time for training themselves and training others

The ACT trained 21 BJs by increasing their capacity and understanding of groundwater. The BJs were trained with relevant theory and practical exercises in their local settings so that they can perform geo-hydrological evaluation of area, monitor groundwater and share their findings and experiences with village communities. The BJs went through a 45-day training programme covering mapping, land and water resource analysis, geo-hydrology, and water balance analysis and finally groundwater management strategies. In addition, the ACT is also training 20 BJs from 24 villages of the command area of three irrigation schemes in North Gujarat wherein the DSC is implementing a similar programme supported by the Hindustan Unilever Foundation.

Impact

The capacity building of BJs by ACT and the two implementing partners has build their confidence and they are now:

- i. Monitoring the water table and water quality of wells and tubewells.
- ii. Creating awareness amongst the farmers about the groundwater status.
- iii. Providing advisory services at the village level to Sujal Samities and to farmers on the availability of water, water quality and suitable crops / varieties based on these parametres.
- iv. The Bhujal Jankars are now providing knowledge based support to other such schemes/ programmes in their own villages as well as other villages.
- v. These BJs act as local experts and change agents for GW restoration.
- vi. A recommendation to develop about 19,000 BJs has been accepted for the national aquifer mapping programme in the XIIth Five Year Plan of the Government of India.

Lessons for Replication

The capacity building initiative undertaken by ACT and the two implementing partners illustrates that:

- 1. Villagers can develop expertise on a complex issue such as groundwater management.*
- 2. Developing a cadre of such local groundwater professionals is immensely beneficial to the communities as it helps them in deciding their cropping pattern based on the water availability and also in developing protocols for groundwater management.*
- 3. Capacity building of BJs is resource intensive both in terms of time as well as expertise. Thus, there is need for funding support for such initiatives.*
- 4. In order to effectively utilise the knowledge gained by the BJs, it is important to involve them in the mainstream natural resources management programmes such as the Integrated Watershed Management Programme and MGNREGA.*

Providing safe drinking water supply to communities in Madhya Pradesh

(Facilitating Agency: Peoples' Science Institute – PSI, Dehradun)

Introduction

India battles with fluorosis throughout the country in different intensities. The Eastern region (Bihar, Jharkhand and Odisha), Madhya Pradesh (MP) and Andhra Pradesh (AP) are the worst effected states in this respect. This case study focuses on efforts made by the People's Science Institute (PSI) to provide clean and safe drinking water to communities in Dhar district of MP. The Dhar district is in the south west of MP and comprises of 54% tribal population. A drought-prone area, Dhar has high level of fluoride in groundwater. Excessive fluoride in drinking water causes dental and skeletal fluorosis.

Relation between Depth and Water Quality

Source	Concentration of Fluoride	Depth	Use
Wells	0.3 to 0.7 mg/L	20-50 ft	Irrigation
Hand pumps	1.6 to 11 mg/L	180-250 ft	Drinking water
Tube wells	5 to 8 mg/L	180- 350 ft	Drinking water and Irrigation

- Acceptable Standards for Fluoride is 1.0 to1.5 mg/L

The Dhar region comprises of Deccan basalts which were formed from lava eruptions on surface millions of years ago. Slate and granite are found at the base of basalt. This granite consists of fluorite mineral, which is the cause of fluoride in groundwater. As per a survey conducted by PSI in seven villages of Dhar region – Kaalapani, Badichetri, Daheriya, Maalpura, Bankpura, Sankota and Katchwanya, 24% of surveyed population (3332 people) was found to be affected by dental and skeletal fluorosis.

Strategy

The PSI's approach towards providing community based safe drinking water in three fluoride affected states, is based on the principles of Participatory Ground Water Management (PGWM). The PGWM approach includes recognizing groundwater as a common pool resource, studying local hydrogeology for assessing extent of geogenic contamination and working towards its sustenance and equitable use by involving communities. The uniqueness of this programme lies in the three points mentioned below:

- i. Use of science of hydrogeology to correlate the depth of fluoride mineral bearing rocks and water contamination.
- ii. Use of alternative sources of water such as well water instead of expensive de-flouridation method.
- iii. Active involvement of the community in maintaining and managing the drinking water system.

Process

The programme is implemented through six major steps:

- i. Conducting surveys for situation analysis – this includes collection of secondary data, health surveys in schools, village/household surveys and Rapid Rural Appraisals.
- ii. Collection of scientific evidences –geological study is conducted and water quality and urinary fluoride monitoring is also conducted to gauge the level of contamination.
- iii. Community mobilization – Meetings with community, village leaders for sharing results of monitoring reports, demonstration of tests, conducting awareness drive in schools, puppet shows in villages for awareness generation.
- iv. Agreements and documents –Consent from the Panchayat and Water User’s Committee is taken, safe drinking water supply plans are drafted with detailed O&M plans and bank accounts are also opened.
- v. Development of village level institutions – Water User Committees are formed at the village level.
- vi. Operation and Maintenance – Capacity building of Water User Groups (WUGs) and local organizations is conducted.

The three fluoride affected villages – Kaalapani, Badichetri and Daheriya were selected on the basis of level of fluoride contamination in water, presence of fewer number of safe drinking water sources, resource availability, willingness of community to participate, feasibility and average distance between safe water sources and households. Three water supply tanks were set-up in each village. This helped in providing safe water to 315



households while in Katchwanya village the villagers were motivated to change the source of drinking water from the one they were using thereby benefitting 215 households.

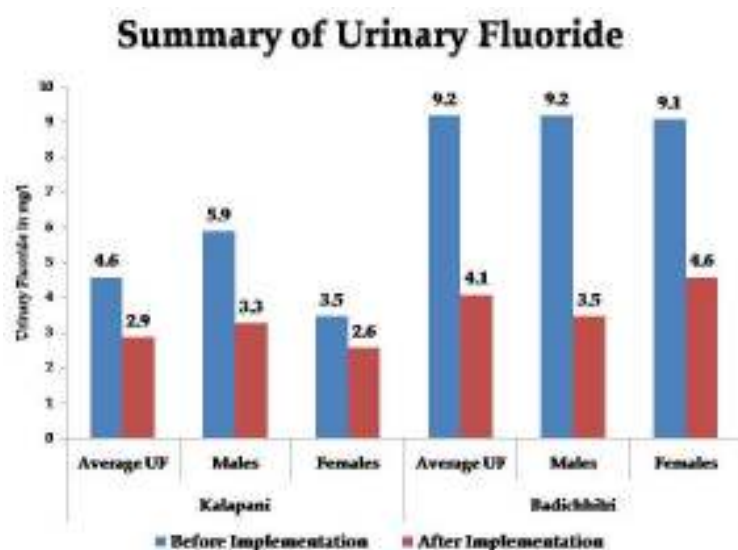
Roles and responsibilities of Water User’s Groups (WUGs)

The WUG carries out the following responsibilities:

- i. Supply of water from the identified safe water source to the households twice a day for a fixed number of hours.
- ii. Payment of electricity bill.
- iii. Collection of money and deposit in bank.
- iv. Operation and maintenance of safe water source
- v. Ensuring usage of water for drinking purposes only.
- vi. Prevention of open defecation near water source and its recharge areas.

Impact

- i. Provision of safe drinking water to 530 households in four villages through development of new source as well as sharing water from existing sources.
- ii. Installation of water supply tanks in three villages has led to decrease in presence of urinary fluoride.
- iii. Substantial reduction in distance travelled to fetch clean water every day.
- iv. Behavioural changes include – increased knowledge on water and sanitation issues. About 95% respondents report to have washed hands with soap after defecation.
- v. Reduction in number of days people fell sick and the money spent on medication.
- vi. Scaling of the interventions in other four villages.



Lessons for Replication

1. Fluorosis is a major problem across many states and its impact can be reduced through a combination of scientific and community based interventions.
2. Groundwater monitoring of different sources of drinking water and study of the geo-hydrology is essential for understanding the intensity of the problem.
3. Low cost local solutions and alternate safe sources need to be explored so that these can easily be accepted and managed by the community.
4. Though communities are aware of fluorosis as they are victims of the same, there is need to generate awareness and effectively communicate the causes as well as the remedial measures.
5. Involvement of community especially women, village institution development and their capacity building is essential for maintenance and management of drinking water systems.
6. Water use agreements between the village institutions such as Water Users Committees and Water User Groups /villagers for groundwater management need to be established and implemented to ensure sustainability of the safe water source.

Community Owned Mini Drinking Water Supply System (COMDWSS) in Bihar

[Facilitating Agency: Aga Khan Rural Support Programme (India) - AKRSP(I), Bihar]

Introduction: The Aga Khan Rural Support Programme (India), (AKRSPI) started its operations in India in year 1985 and covered around 1200 villages in Gujarat. It has gradually expanded its interventions in the state of Madhya Pradesh in 2004 and in Bihar in 2008. It covers about 150 villages in M.P and 400 villages in Bihar. In Bihar, the initial assessment brought out the need for intervening on multiple themes such as drinking water and sanitation, micro finance and agriculture development in the State. The underprivileged communities remain the prime target groups across these themes. Currently AKRSP(I) reaches out to over 18,000 households in nine blocks of Samastipur and Muzafarpur district through various interventions.



Key Issues: The main source of drinking water in northern Bihar is shallow hand-pumps. These hand-pumps access water from shallow aquifers (50-60 feet) which contain chemical and bacterial contamination. The AKRSP(I) has tested more than 3500 water samples in the area, out of which 87% samples are unfit for drinking purposes. Most of the households are not ready to install filters in their hand-pumps. Expensive village distribution systems are also in defunct state in most of the villages. There was a need for introduction of low cost water supply scheme which provides clean and safe drinking water to rural communities via piped water supply throughout the year.

Strategy: This need of the rural communities in rural Bihar led to the genesis of Community Owned Mini Drinking Water Supply System (COMDWSS). These drinking water supply systems are managed by the community and cater to 100-120 households on an average. The benefitted households enjoy access to clean and safe drinking water throughout the year.

The organisation creates awareness on the need for water testing. Various community meetings are held to orient households on the quality of drinking water in their area. Samples are then collected and sent for testing in water testing laboratories. The water quality reports are then shared with the community which results in appropriate colour coding of the water source. A Tola Drinking Water Management Committee is established for regular monitoring of water sources in a particular area. Remedial measures are then sought depending on the severity of situation.

Setting up of COMDWSS is a long and intensive process. Community awareness and buy-in on the poor state of drinking water in their respective areas is important and the first step towards establishing COMDWSS. The entire process for setting up of COMDWSS can be divided into four major stages. The process starts with community meetings and seeding the COMDWSS idea with different households. The next step includes detailing out a technical plan/map for water requirement and flow. A Water User Group is set-up next, followed by implementation of water supply system in the tola and opening of bank accounts of the Water User Group (WUG). Inauguration and operation and maintenance of the supply

system are the last steps in this process. The average cost of establishing one COMDWSS is about Rs 3 lakhs for 100 households.

Roles and responsibilities of the Water User's Group and Tola Committee: The User Groups and the Tola Drinking Water Management Committee monitors, operates and maintains the COMDWSS on a regular basis via collection of a nominal and affordable fee from beneficiary households. The fee ensures sustainability of the COMDWSS. Beneficiary households are encouraged and responsible for repair and maintenance of COMDWSS via *shramdaan* (contribution by labour). Furthermore, the Tola Drinking Water Management Committee also plays an important role in empowering women to take active part in Operation and Maintenance and day-to-day affairs of COMDWSS.

Impact

- i. As of January 2016, 39 COMDWSS with 3535 beneficiary households, 571 water user groups and 39 core management committees have been established. Active involvement of the community is evident from the fact that COMDWSS receives regular flow of income via user fees and contribution by labour.
- ii. The COMDWSS presents the household with an affordable and consistent (24x7 supply) method to access clean and safe drinking water as it costs approximately Rs. 3000 /household, which is cheaper than shallow hand-pump installation cost of Rs. 8000 - 10,000. This is substantial cost saving for a low income household.
- iii. The COMDWSS also reduces drudgery for women as they now no longer have to travel long distances to fetch drinking water as it is available to the household at their door step.
- iv. Long term impacts include (but are not limited to) improved quality of life, reduction in water-borne diseases and a reduction in medical expenditures in the long run.

Lessons for Replication

The implementation of Community Owned Mini Drinking Water Supply System in Bihar shows that:

1. *Water testing is not a common practice amongst rural households or for that matter even urban. Thus, efforts need to be made to convince the community on its importance. Simple measures such as lab testing of water samples and colour coding of water source creates awareness in the community.*
2. *Though challenging, it is important to involve the community especially the marginalised sections and women from the initial stage of the project. This enables them to get a clear idea of the rationale, the goals, the possible challenges and the implementation process.*
3. *Capacity building of communities on technical aspects is necessary to reduce their dependency on external actors.*
4. *Provision of regular and good quality of services to low income rural households ensures their contribution in the process. It also establishes the fact that poor households are ready to pay for good quality, end to end services especially when it concerns a basic need such as availability of clean drinking water.*

Water Governance for Drinking Water Security: A Case study of *Pani Thiye Panjo* programme in Abdasa Taluka of Kutch district (Facilitating Agency: Sahjeevan, Kutch)

Introduction

“*Pani Thiye Panjo*” meaning “let us make water ours again”, is a programme for decentralised drinking water scheme and water governance. This is a collective initiative of the state, community, civil society and the corporate sector.

The programme was implemented in 2009 in partnership with the Water and Sanitation Management Organisation (WASMO), Arghyam and the Suzlon Foundation. The partners were involved at various levels and performed different roles and responsibilities. The Suzlon Foundation and WASMO provided finance for capital costs, whereas Sahjeevan and WASMO were responsible for awareness creation and capacity building.



A total investment of Rs. 479.15 lakhs was made by multiple partners such as WASMO, Suzlon Foundation, Ministry of Rural Development, Pravah etc. The communities contributed approximately Rs. 40 lakhs for carrying out various physical interventions. Similarly, various organisations such as Araghyam Foundation provided support for capacity building while ACT and Parab provided technical support and research on aquifer management.

Key Issues

The Pani Samitis (Water Management Committees formed by government) for managing the drinking water facilities in the village were functioning, but there was hardly any coordination between them and the Gram Panchayats. They were formed for executing the project and possessed more funds than the Panchayats which led to the creation of parallel power dynamics. There were issues in tariff collection and in addition, no record of assets created for water resources was being maintained.

Strategy

A campaign for all stakeholders was conducted to educate them about issues pertaining to water governance. The Pani samitis were formed under the Gujarat Panchayats Act, 1961 by the Gram Sabha after a series of consultations with the Taluka Development Officer (TDO), Talati and WASMO. The Taluka Panchayats were also convinced to make water governance an important agenda at the block level.

The assets developed for water resources were registered in the Panchayat records for the first time in Gujarat. The community members also developed rules and regulations for

management of surface and groundwater. These included mandatory payment of water tax, payment to the operator for providing services, monthly meetings of the Pani Samities and penalties for non-compliance and wastage of water. Through consultations with WASMO, the Gujarat Water Supply and Sewerage Board (GWSSB), the Revenue and the Panchayat Department, *'Steps for Water Governance'* were developed. The goal of water governance was: –

'To bring out the power of the local self-governance institutions – the Panchayats, to make them conscious of their authority and responsibility, to strengthen sustainability of decentralised drinking water security scheme created under their leadership and to set an example in Gujarat state.'

Process

The steps for water governance are:

- i. Formation of a Water Committee (WC) by the Panchayat in the Gramsabha
- ii. Registration of any asset created in the village in the Panchayat Asset Register no-19.
- iii. Preparation of O & M budget for the Water Scheme and integrating it with the financial budget of the Panchayat.
- iv. Enabling the WC to draft rules and regulations, getting it approved in the Gramsabha and displaying the same on a common notice board.
- v. Maintaining records of all financial transactions of the water scheme as per the Panchayati Raj Act.
- vi. Motivating the Gramsabha to approve the rules for protection of surface and groundwater.
- vii. Co-ordination meeting between the Water Committee and the Panchayat to be held every month.
- viii. Present Accounts of the Water Scheme in the Gramsabha each quarter.

Impact:

The key impacts of the *"Pani Thiye Panjo"* programme were:

- i. Drinking water is now available in 104 villages.
- ii. Seventy villages in the project area have water security for a drought period of one year.
- iii. Forty seven villages have water security for two consecutive droughts.

- iv. Eighty Five Panchayats have formed legal water committees and have included water resources assets in the Panchayat asset register no. 19.
- v. Physical interventions such as check dams, renovation of ponds, rain-roof water harvesting structures etc. have been constructed by the Panchayats.

Lessons for Replication

The experience of promoting water governance in Kutch shows that:

1. *Providing drinking water security in a water scarce village is quite challenging. It requires working on surface and groundwater resources as well as their management. This in turn involves partnering with the relevant government departments as well as other agencies and bringing them on a common platform*
2. *Providing safe drinking water is one of the mandates of the Gram Panchayat. However, at times programmes for drinking water are directly implemented by the Government Department or NGOs without much consultation with the Panchayat. This often creates conflicts between the institutions developed for implementing such programmes and the Panchayats. Thus, it is important to involve the Panchayats in these programmes so that they also own the same and take it forward.*
3. *Working on water governance issues is also not easy. As a first step, it is important to identify relevant government regulations pertaining to water governance. Thereafter it requires dialogues and consultations with the Panchayati Raj Dept. as well as the PRI members at the village, block level and district level to ensure that addressing drinking water issues becomes their agenda too.*
4. *Providing capacity building inputs to the Panchayats and the village institutions on legal, technical, institutional and financial aspects is critical for sustaining the programme. This would also require mobilizing additional funds for conducting awareness campaigns, exposure visits and training programmes.*

Safe Water and Sanitation: People's Initiatives for Sustainable Solutions

(Facilitating Agency: Mahiti, Dholera)

Introduction

The Mahiti is a grassroots development organization located at Dholera village in Dhandhuka Taluka of Ahmedabad district in Gujarat. In 1981 it was started as a project activity of "Utthan" an Ahmedabad based NGO to create awareness on drinking water and thereafter registered as an independent entity in 1994.

Key Issues

The operational area of Mahiti is called "Bhal" meaning forehead where nothing grows. Similarly, the Bhal area is also full of challenges for development and restoration of natural resources. It has saline coastal land without underground fresh water and fertile land. Rivers such as Sabarmati, Bhogavo, Sukhbhadar, Ghelo and Kalubhar flow through this region and merge with the Gulf of Cambay. The average rainfall is 400 – 600 millimetres but most of the water flows into the sea. Sea water ingress has damaged the soil in coastal areas and it has turned saline and hard. Availability of drinking water is one of the major issues faced by rural communities residing in this region. Though in Ahmedabad district, this region is extremely backward in context of development indicators such as education, health, social infrastructure and availability of natural resources.

The Mahiti has been working to address these issues through natural resource management and development activities. These efforts include drinking water and sanitation, soil and moisture conservation measures, improvement on soil health and agriculture development. These interventions are designed and implemented through the insights and active participation of rural communities.

Strategy

It has been over two decades since Mahiti began its interventions in this highly saline and barren Bhal region of Ahmedabad and Bhavnagar districts of Gujarat. In Bhal, as in so many parts of India, feudal practices had left women with little power to direct their own lives or to contribute effectively to community well-being. Violent conflicts over scarce drinking water were a daily affair, inhibiting collective action. It was here that Mahiti decided to organize women around issues of everyday livelihood and survival. The government had an ambitious plan to supply drinking water to this region through pipeline and tankers, a scheme that was non-sustainable and that would have led to accentuation of conflicts between vested-interest groups and the underprivileged.

The Mahiti started community organization efforts among the women and other underprivileged sections of the community in the region. A powerful women's movement emerged, leading to the creation of an institution widely respected today for its achievements: Mahiti. Women compelled the government to support development of decentralised drinking water resources through rainwater harvesting techniques. They also ensured equity in the distribution of water.

Process

Water conservation measures such as check-dams, percolation tanks, farm ponds, waste-weirs, hand-pump recharge and roof top rainwater harvesting are all elements in Mahiti's comprehensive approach. In each of the villages, the location of water resources to be developed is selected in consultation with geologists and members of the Village Water Committee (VWC).

Since all the activities related to water resources development are implemented by the VWC (in which women have more than one-third representation), Mahiti's role is only that of a facilitator. The Mahiti has organized training workshops, exposure visits, and awareness drives to benefit members of the VWCs. These capacity building efforts have enabled women and other members of the VWCs to understand technical, financial and logistical aspects of water resource management.

Because the people of these villages are involved in planning, executing and managing the community's water resources as also making financial contribution to the project, a strong feeling of ownership has developed among them.

Having formed village level institutions and community based organizations in over 100 villages of two districts; Mahiti is now in the process of reaching out to more villages while consolidating its community mobilization efforts by forming area level federations.

Impact

The Mahiti's initiatives on improving access to drinking water have gained recognition at the State level. The key impacts observed are:

- i. Construction of more than 2000 Roof-Top Rainwater Harvesting Structures (tanks), 21 Rainwater Harvesting Plastic Lined Ponds and water distribution schemes have led to improved availability of drinking water in Ahmedabad and Bhavnagar districts. As many as 75 % of the total 100 villages in two districts have become self-reliant as far as drinking water is concerned.



- ii. The Mahiti also has addressed the problem of water quality. It has developed a Water Testing Laboratory which is being executed by a lab technician. More than 600 water samples have been tested in the laboratory. The reports of the water samples giving information about the water quality have been shared with the VWC.

iii. The most visible impact of Mahiti's intervention has been on the health of women and children. There has been

a substantial increase in the income of families living below the poverty line as women are able to engage themselves in farm and non-farm activities, now that they have been freed from the burden of fetching drinking water, fodder and fuel.

- iv. There has been a marked decline in the migration of people from villages as the people are able to find gainful employment in their own or nearby villages following introduction of additional cropping season. Earlier, in the absence of adequate water resources, people could grow crops only during the monsoon.

Lessons for Replication

1. *Decentralized people centered drinking water and sanitation systems offer greater flexibility to address the problem as per the requirement of the communities. They also provide better opportunities for equitable distribution of resources since local communities' play an active role at all stages of its management and utilization.*
2. *Water and Sanitation programmes can be sustainable only through active participation of vulnerable communities specially women at all levels. If women are given appropriate opportunities to bring out their strength, they exhibit tremendous power against various vested-interest groups. They are keen to take action, perseverant and have the strength to resolve conflicts.*
3. *Local wisdom and knowledge need to be respected and tapped for solutions to be sustainable. Scientific inputs are essential but they need to complement and add value to local wisdom rather than discarding them.*
4. *The drinking water and sanitation issue is not merely that of service delivery. It is multifaceted and therefore needs to be addressed accordingly. As seen from Mahiti's experience, one needs to intervene not only at the programmatic level but also the institutional and power structures in the society.*

Integrated approaches for Coastal Area Development in Gujarat

(Facilitating Agency: Ambuja Cement Foundation – ACF, Kodinar)

Introduction

The Ambuja Cement Foundation (ACF) is present in 21 locations across 11 Indian states. It reaches out to more than 14 lakh people in 860 villages. In Gujarat it works in 327 villages situated in the coastal area covering Una, Kodinar, Sutrapada, and Veraval blocks of Gir Somnath District (bifurcated from Junagadh district in 2013).

Key Issues

The vagaries of monsoon and very few water harvesting structures in the region led to acute water shortage. The total quantity of water available was less and the quality of the water was also poor. Salinity ingress due to over exploitation of ground water had become a big problem. Water from all the rivers originating from the Gir forest were draining into the Arabian Sea and none of it was getting harvested. The situation worsened to a state where drinking water became scarce. Lack of water for irrigation resulted in decreased agricultural incomes and increased the drudgery of women who had to fetch water from distant sources.

Strategy

The ACF adopts an integrated approach to Coastal Area Development (CAD) and undertakes various activities in three major areas – water harvesting and recharge, drinking water and efficient use of water in agriculture. The table given below indicates the various activities under these three areas.

Water Harvesting and Recharge	Drinking water	Efficient Use of Water
<ul style="list-style-type: none">• Check Dam• Percolation tank• Percolation Well / Well Recharge• Farm Bund• Interlinking of rivers/Bandhara	<ul style="list-style-type: none">• Roof top Water Harvesting Structures• Drinking Water distribution System• Drinking Water Sources - Ponds / wells / Hand pumps	<ul style="list-style-type: none">• Drip Irrigation System• Sprinkler Irrigation System

The organisation actively works on efficient use of water in agriculture by promoting drip and sprinkler irrigation in different crops such as sugarcane, cotton, groundnut, wheat, bajra and mango through collaboration with the Gujarat Green Revolution Company (GGRC). The scaling up of drip irrigation is achieved through procuring farmer loans under GIZ's UPNRM programme. The promotion of drip and sprinkler irrigation has covered around 3017 hectares of land and generated water savings of 7.04 MCM.

The organisation has also developed a model for providing agriculture extension services and farm advisory on the basis of soil mapping. It has set up village level information centres and cluster level knowledge centres and promotes package of desirable practices through Farmer Field Schools and use of voice messages.

Process

The ACF started working on harvesting water by constructing check dams at sites suggested by the community and after undertaking feasibility surveys in different villages. The organisation has implemented watershed development projects in 10 villages. The Watershed associations and watershed committees were formed for planning, executing and monitoring of the project. These initiatives were then scaled up for water resource development on river basins of the region namely *Shingoda, Sangawadi and Somat*. A series of water harvesting structures and interlinking canals have been developed. Informal groups of the beneficiary farmers were formed for project planning, execution of work and maintaining the assets created.



To ensure drinking water availability for each household in the village, the ACF promotes roof-top rain water harvesting structures and till date 3397 such structures have been constructed. It has also renovated 107 wells and partnered with WASMO for implementation of drinking water distribution schemes in 42 villages. Pani Samiti's have been formed in each village where the schemes have been implemented. The Pani Samiti has played a vital role for planning, implementing and managing the assets created under the project.

Impact

Some of the notable impacts due to the comprehensive approach adopted by ACF are:

- i. Increased groundwater level by 2-12 meters at various places. Substantial reduction in TDS has improved the quality of water in coastal areas. Drinking water is now more accessible and these areas are also experiencing increased crop intensity.
- ii. Reduction in migration to other areas for employment, improvement in the standard of living and reduced drudgery for women.
- iii. Construction of water harvesting structures has led to reversal in salinity ingress and has pushed the saline fresh water interface considerably.

Lessons for Replication

The Coastal Area Development initiative undertaken by ACF shows that:

- 1. Salinity ingress is a regional problem in coastal areas. Therefore action is required to resolve the problem of a region/a cluster of villages. Isolated interventions in a few villages will not help to resolve the problem. A thorough understanding of the magnitude of the problem is essential. Therefore, it is of utmost importance for one to understand the problem from the villagers' angle and also consider the solutions they have to offer for the problem. Based on all these inputs, the interventions need to be planned and prioritized.*
- 2. Promotion of low water-intensive crop farming can have a positive impact on reducing the demand for water. Demand side management in the coastal areas is necessary as excessive usage of water not only leads to depletion of groundwater but also in deterioration of soil quality.*
- 3. Intervention on water resources development requires large amount of investment for construction of check dams, interlinking of rivers, construction of ponds, bandhara etc. and hence partnership with the government is essential for scaling up such interventions. This is also necessary for dealing with legal issues like work in notified areas, land acquisition, renovation of the defunct assets etc.*
- 4. Since coastal areas require multiple interventions and that too on scale, it is necessary to forge partnerships and collaborations with various agencies (Government departments, private sector, research institutions etc.) working in the coastal region. This not only helps in effective implementation of various interventions but also in bringing in knowledge and enhancing the learning experience.*

Community Led Coastal Area Management in Gujarat

(Facilitating Agency: Coastal Salinity Prevention Cell – CSPC, Ahmedabad)

Introduction

Climate change is causing adverse effects all around the world. Perhaps, the most effected regions in the world are coastal areas. Salinity ingress in these areas is a major problem. Rise in sea level leads to saline water occupying more and more of land near coastal areas. This not only leads to loss of fertile land, but also increases the salinity of groundwater making it unfit for drinking and irrigation purposes.

Gujarat has the longest coastline in the country stretching across 1600 kilometres. This coastline is battling with salinity ingress at the rate of 0.5km/year. This has resulted in Gujarat possessing 12% saline land, more than the global average of 7%. Salinity ingress affects around 1200-1500 villages and a population close to 1.8 million.

Direct effect of salinity ingress, as explained above, is loss of fertile land. As majority of the population is dependent on agriculture, salinity ingress obliterates their source of income and poses a threat to many others. Salinity ingress also reduces fertility of land which results in low productivity and thereby loss of income for coastal households. As source of livelihood is limited in these areas, this results in heavy migration of families to other areas/cities.

Groundwater sources are also contaminated making them unfit for drinking and other essential purposes. Lack of water results in poor sanitation conditions which are detrimental to health of population at large but women are the most affected. Sanitation coverage in coastal areas in Gujarat stands at 32% against a state average of 62%. Contamination in drinking water has led to an increase in reported cases of kidney stones and skin diseases and therefore households have to now spend much more on availing medical facilities.



Women have to fetch clean and safe drinking water for the family from far off areas. This adds to their existing drudgery and loss of productive hours of the day. Drop-out rate of adolescent girls is extremely high in such areas.

Strategy

It is clear that any intervention to be introduced in coastal areas in Gujarat needs to tackle two issues –cope with existing salinity and prevent further salinity ingress. A two pronged strategy was devised by the Coastal Salinity Prevention Cell (CSPC) to combat issues in coastal Gujarat.

Activities under '***coping with salinity***' are:

- i. Management of drinking water quality through technological solutions.
- ii. Promotion of saline resistant and low water intensive crops and fodder.
- iii. Promotion of alternative livelihoods through mari-culture and non-farm livelihoods amongst small and marginal farmers.

Activities undertaken for '***prevention of salinity ingress***' are:

- i. Introduction of rain water harvesting and groundwater recharge with technical support to farmers.
- ii. Promotion of water use efficiency measures in the community.
- iii. Building awareness in the community via behaviour change campaigns.
- iv. Building strong partnership with the government and taking active part in advocacy.

The CSPC focuses on a collaborative approach to reach scale. It forms a consortium with leading research and academic institutions, the government, civil society organizations, donors, corporate sector and communities. A cluster approach was adopted for dissemination of information and planning the activities. A total of 14 clusters were formed for this purpose.

Impact

The total outreach of the programmes is around 100,000 households across 400 coastal villages. The following are the major achievements of CSPC:

- i. More than 40,000 acres of land has been brought under Micro-Irrigation Systems (MIS).
- ii. Water storage capacity has been increased by 200 MCFT through the introduction of water harvesting and recharging techniques.
- iii. More than 6000 farmers have adopted low cost water recharging systems.
- iv. Around 6000 households have been covered through Rooftop Rainwater Harvesting Structure (RRHS).
- v. About 300 village level and 2 regional level institutions, covering 2500 people, have been promoted.

Impact of Micro Irrigation Systems

Use of MIS has resulted in direct reduction of water and electricity consumption by 30% and 20% respectively. A 10-20% reported increase in production of groundnut and wheat has been observed. Also, farmers were able to cultivate more summer crops such as Bajra and Rajko (fodder). A 50% increase in production of summer crops was observed. Farmers are now earning Rs.12000 more per acre.

Impact of soil and water conservation activities

The following direct impacts were reported:

- i. Groundnut production increased by 100%.
- ii. Wheat production increased by 25%.
- iii. Increase in cultivation area for Rabi crops by 400% and summer crop by 25-30%.
- iv. About 10-15% increase in milk production.
- v. Reduction in soil erosion from 4-5% to 1-1.5%.

Impact on drinking water and sanitation

- i. Number of working days for women has increased due to increased water availability in their local areas. Lesser number of women now have to travel long distances to fetch clean drinking water.
- ii. Time spent on fetching water has also considerably reduced with only 7% women spending more than 60 minutes in the activity. About 65% women spend less than 30 minutes in accessing clean drinking water.
- iii. Toilet facilities are now being used by almost 98% of households.
- iv. Higher number of villages now enjoy tap connectivity within their households.

Impact on the sector at large

Efforts made by CSPC and its partners have been recognized by the government and have led to formation of strategic partnerships to provide more impetus to the programmes. Some of the highlights are:

- i. The state government has recognized the issue and efforts and has formed a State Level Steering Committee (SLSC) in which CSPC acts as the convener responsible for influencing policy. This is a unique institution in the country at present.
- ii. The efforts also witnessed the formation of a strategic partnership programme called the Coastal Area Development Project (CADP) in the WASH sector with an investment of Rs. 50 crores. This is a partnership between the government and national and international donor agencies.
- iii. A resolution was passed in favour of Participatory Irrigation Management (PIM) which aims to benefit more than 10,000 farmers in the area.

Lessons for Replication

The following points should be kept in mind if the larger objectives of tackling salinity ingress and improving livelihoods of communities living in coastal areas are to be met:

1. Livelihood strategy should focus on diversification in agricultural activities to mitigate risk.
2. Strengthening and capacity building of community institutions is a must as they play a pivotal role in sustainable development.
3. Farmers need to be provided with appropriate skill building for alternate livelihoods.
4. Integration of multiple interventions such as integrated crop management, drinking water and sanitation and alternate livelihood options help in achieving larger impact
5. Learning on the ground need to be translated into appropriate policies and programmes to achieve scale. This can be done only through collaborative efforts with the Government, Civil Society, Academic and Research institutions, Corporate sector and Funding agencies.

Enhancing livelihoods through Water Resources Development and Revival of Rivers in Maharashtra

(Facilitating Agency: K.J. Bajaj Foundation, Maharashtra)

Introduction:

The Kamal Jammalal Bajaj Foundation (KJBF) was established in 1977, in the memory of Mr. Jammalal Bajaj, a close associate and adopted fifth son of Mahatma Gandhi. Since then the KJBF has been promoting Gandhiji's constructive programmes and honouring people who have aligned themselves with the Foundation's philosophy and causes.

Water Resource Development (WRD) forms the core of its activities. Over the years the organisation has invested in rejuvenation of streams and rivers, interlinking of streams, construction of check dams, percolation tanks, bori-bunds, well recharge, farm ponds, group well and lift irrigation etc. The following paragraphs describe the experience of KJBF in WRD including revival of several rivers such as *Panchdhara*, *Yashoda*, *Punsuda* and *Wana* in the Wardha district of Maharashtra.



This district is located in the Vidharba region and has been experiencing a distress situation in agriculture. The percentage of people living in Wardha district is far higher than in the State as a whole. Cotton, soybean, sorghum and wheat are some of the main crops grown in this region.

Strategy

To achieve sustainable livelihoods through WRD and revival of rivers, the KJBF follows an approach that is based on:

- i. Active involvement of people in the planning, implementation and maintenance.
- ii. Local institution building
- iii. Capacity building of village volunteers, User Groups and beneficiaries.
- iv. People's contribution towards cost.
- v. Implementation of soil and moisture conservation measures including excavation of channels.
- vi. Water resource development and management
- vii. Sustainable agriculture

Process

The communities and their institutions are actively involved in the planning, implementation and maintenance of the various interventions mentioned above. They also contribute

towards the cost of these interventions. User groups are formed and trained for construction and maintenance of structures. For revival of rivers, the lay-out is given by the village volunteers along with site Engineer of KJBF. They mark the channel and also supervise the machines as the work proceeds. The User Group and its members remain present during the execution. A good aspect of the intervention was using the machine that KJBF had invested in. The machine today does the work at Rs 35 per cubic meter of excavating earth work. The current market rate for such earthwork is around Rs 90 per cubic meter. The KJBF had invested in the capital cost of procuring such machines. The cost of Rs 35 per cubic meters is on a no profit and no loss basis and hence recovers the operation and maintenance cost, salary of the operator and some additional surplus for replacement of the machines in the long run.

Impact

The key impacts of the various interventions indicated above are:

- i. About 34,836 families have been benefited.
- ii. More than one lakh acres of land covered.
- iii. More than 12000 acres of land protected from water logging.
- iv. In 1824 wells, water is available for 10-12 months in a year.
- v. Increase in cropping intensity and farmers are now farming in more than one season.
- vi. Cropping pattern improved; inter-cropping, horticulture, floriculture, vegetable farming, dairy, etc have come to focus.
- vii. Water management practices have improved; drip and other micro irrigation systems are gaining popularity.
- viii. Some other benefits have come from related programmes like wadi project, roof rain water harvesting, natural farming, Better Cotton Initiative, promotion of indigenous cows, rural enterprises through revolving funds etc.

Lessons for Replication

1. *Revival of rivers is one of the best options for recharging groundwater in a large area and creating water sources for irrigation. This model can be easily adopted across the country.*
2. *The initial cost for revival of rivers is high and therefore it requires mobilisation of substantive funds. However, the long term benefits outweigh the costs as it positively impacts a significant area and its population.*
3. *River revival also creates potential sites for construction of other water harvesting structures such as check dams, lift irrigation schemes and Boribandhs. Thus, it paves a way for a comprehensive water resources development programme.*
4. *Organising the community and facilitating User Groups in the initial stage helps in creating a sense of ownership and leads to better maintenance of the structures.*

People's movement to revive the Meghal River in Gujarat

[Facilitating Agency: Aga Khan Rural Support Programme (India) - AKRSP(I), Gadu]

Introduction

The Meghal River Basin Management (MRBM) project deals with reviving the river Meghal in Junagadh district of Gujarat. This area was once known as the groundnut bowl of India. The river basin has a catchment area of 471 sq.kms and the length of the river is 70 kms covering 52 villages. The average rainfall is 777 mm.



Key Issues

Groundwater depletion was immense in the area as erratic rainfall had led to over-exploitation of ground water. Crop productivity was extremely low and unavailability of water also resulted in failure of crops leading to loss of incomes. The area was also battling with paucity of drinking water.

Farmers were also unaware of new farming methods and irrigation practices which were resulting in rampant use and wastage of water. The area was also battling with salinity ingress in some parts.

The Major objectives of the MRBM project are to:

- i. Revive the Meghal river and make it perennial so that water is available 24x7 and 365 days a year.
- ii. Raise awareness about Meghal river basin management amongst people.
- iii. Have more surface and ground water in the river basin area.
- iv. Harness rainwater through active involvement of people.
- v. Promote efficient use of groundwater.
- vi. Suggest changes in the government policy.

Strategy

There was an immediate need to undertake water conservation and harvesting activities in the basin area. The following activities were initiated by AKRSP(I):

- i. Mass communication – Various mass communication campaigns were undertaken to change attitude of the community towards water conservation. Padayatra, film shows, street plays, slogan writing, lokdayaro and jalsammelan are some of such activities/campaigns.
- ii. Capacity building measures – Members of the gram sabha, volunteers and community members were provided training on various aspects.

- iii. Formation of Community institutions – The Meghal River Core Group was formed from among those village representatives who were interested in working for the development of the river basin and taking a leadership role in their village. The Gram Jal Bachav Sangathan, a village representative body with multiple Jal Bachav Juths (sub-group at village level) were also formed.
- iv. Water conservation – construction of contour bunds and nalla plugs was undertaken.
- v. Water harvesting and water recharge structures – construction of check dams, percolation tanks, recharge bore wells, bori-bundhs and widening and deepening of river was undertaken.
- vi. Rain roof water harvesting structures for storing drinking water were also constructed.
- vii. Efficient use of water via drip and sprinkler irrigation methods was promoted and a total area of 11000 Ha (8000 Ha by sprinkler and 3000 Ha by drip method) was covered.

Impact

Due to the concerted efforts by the Government, AKRSP (I), other NGOs and the people of the Meghal river basin villages, the following results have been achieved:

- i. Awareness among the people of Meghal river basin villages has increased and they began thinking and working at the regional level instead of limiting themselves to the individual or household level. This enabled them to achieve the larger objective of reviving the river.
- ii. The biggest impact of this people's movement has been that the Meghal river is almost perennial today, flowing for nine to ten months in a year. Even in the scorching summer month of April, one can find some water still flowing in the river. Earlier, the water would dry up by the end of winter in January and the levels would start decreasing very quickly once the monsoon ended in September. Now people are determined and confident that due to their efforts in the next two years the river will flow throughout the year.
- iii. It is said that around 25 years ago, open wells had to be dug till 60 feet to find water while bore wells routinely went up to the depth of 800 to 1000 feet. Presently, water is available at around 30-40 feet in the open wells. Interestingly, people now dig up to 100 feet so that there is a larger stock of water available.
- iv. A majority of the farmers are now able to grow three crops in a year namely Kharif, Rabi and summer. Earlier, only Kharif and Rabi season was possible and that too only for a few farmers. The Rabi crop would often have very low productivity due to lack of irrigation towards the critical end stages of the crop. Sometimes when the rains failed, even Kharif crops needed life-saving irrigation which many farmers failed to provide. The main crops earlier were groundnut (Kharif) and wheat (Rabi). Now the farmers grow groundnut in

Kharif and in summer as well. In Rabi they grow wheat, bajra, coriander, cumin, fennel, and vegetables. This has led to an increase in income by about 67%.

Lessons for Replication:

- 1. Organising people at the river basin level is a humungous task. Normally, development interventions take place at the sub-village or village level but the river basin treatment requires people from a large number of villages to come together. It requires high community mobilisation skills and mass awareness through padyatras, street plays etc.*
- 2. The community, particularly the leadership qualities exhibited by a group of people played an important role in taking up this challenge in Meghal. Thus, it is important to identify and motivate such members from the community, form a core group and encourage them to facilitate village level and sub-village level groups. They need to be emotionally attached to the larger goals and objectives so as to take up the various responsibilities.*
- 3. The river basin approach requires multi-sectoral interventions such as water resources development, drinking water and sanitation and agriculture development. It necessitates large financial investments that can only be mobilised through collaboration with the Government, the private sector, donors and other agencies. Policy support by the Government is also a must.*
- 4. While on the one hand it is necessary to increase the supply of water through water resources development, one also needs to work on the demand side management through adoption of scientific package of agriculture practices, promotion of low water consuming crops and drips and sprinklers.*
- 5. The river basin approach requires long term and sustained efforts from all the stakeholders such as the community, facilitating agencies, donors and the Government. Thus, it is important that the programmes designed for such interventions continue for several years.*

Section-II

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Programme Schedule

Session	Topic	Resource Persons
I	Welcome - Mr. Mohan Sharma , Programme Director, DSC Introduction - Mr. O.T. Gulati , Chairman, Water Management Forum (India)	
	Chief Guest's address - Dr. Jayanti Ravi , Secretary & Commissioner, Rural Development, Government of Gujarat Key note address - Dr. R. Parthasarthy , Director, GIDR Closing Remarks - Mr. R. Sundar , CGM. NABARD Gujarat	
II	<u>Participatory Irrigation Management</u> <ul style="list-style-type: none"> • Experience sharing by Hathuka Water Users Association in Ukai Irrigation Project – Gujarat. • Experience sharing by Water Users Associations in Maan Irrigation Scheme - Madhya Pradesh. <u>Watershed Management</u> <ul style="list-style-type: none"> • Energizing MGNREGS for Ecological Restoration of Commons and Natural Resource Management in Rajasthan 	<u>Panel Members</u> Mr. Harnath Jagawat (Chair) , N.M. Sadguru Foundation Mr. R.K. Sama , Shroff Foundation Mr. B. Maraviya , Sardar Sarovar Narmada Nigam Ltd. (SSNNL) Prof Vidya Purandare , WALMI, Aurangabad
III	<u>Integrated Water Resource Management</u> <ul style="list-style-type: none"> • People and Panchayat Led Equitable Water Governance Model in Telangana • People and Panchayat Led Equitable Water Governance Model in Gujarat - Experience sharing by Sujal Samiti's in Meghraj block, Aravali District 	<u>Panel Members</u> Mr. Sachin Oza (Chair) , DSC Mr. Umesh Desai , AKRSP(I) Mr. Venkat R. , YFA
IV	<u>Participatory Groundwater Management</u> <ul style="list-style-type: none"> • Groundwater collectivisation and sharing for securing livelihoods in drought prone areas of Andhra Pradesh • Participatory Groundwater Management at village level in India - Experience sharing by Bhujal Jankar's of Gujarat & Rajasthan • Providing safe drinking water supply to communities in Madhya Pradesh 	<u>Panel Members</u> Mr. Haribhai Mori (Chair) , K.J. Bajaj Foundation Mr. Shilp Verma , IWMI
V	<u>Decentralised Management of Drinking Water and Sanitation</u> <ul style="list-style-type: none"> • Community Owned Mini Drinking Water Supply System in Bihar • Experience of Water Governance for Drinking Water Security in Abdasa Taluka of Kutch • Safe Water and Sanitation: People's Initiatives for Sustainable Solutions 	<u>Panel Members</u> Mr. Rajendra Jaiswal (Chair) , Prakruti Foundation Mr R.K. Sama
VI	<u>Management of Coastal Areas</u> <ul style="list-style-type: none"> • Integrated Approaches for Coastal Area Development • Community Led Coastal Area Management 	<u>Panel Members</u> Mr. Apoorva Oza (Chair) , AKRSP(I) Ms. Nafisa Barot , Utthan
VII	<u>River Basin Management</u> <ul style="list-style-type: none"> • Enhancing livelihoods through Water Resources Development and Revival of Rivers in Maharashtra • Reviving the Meghal River in Junagadh District of Gujarat - Experience sharing by Meghal River Basin Management Committee 	<u>Panel Members</u> Mr. O.T Gulati (Chair) Mr. Apoorva Oza
VIII	<u>Summing up, Way Forward and Conclusion</u> Mr. V.B. Patel, (Chair) , Ex. Chairman, CWC Mr. O.T. Gulati, Mr. R.K. Sama, Mr. Apoorva Oza	
	Vote of Thanks - Mr. Umesh Desai	

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'Gujarat model good for managing water resources'

Times News Network

Ahmedabad: There will be twofold rise in demand for water by household and fivefold rise by industries in next two decades, said experts on the first day of two-day workshop on Community-managed Water Resources Development at Ahmedabad Management Association here on Tuesday.

They added that Gujarat's irrigation initiatives can be implemented in other states too.

The event has been organized by Water Management Forum (WMF), Aga Khan Rural Support Programme (AKRSP) and Development Support Centre (DSC).

Agriculture Dept. CEO of AKRSP (India), said that Gujarat has a diverse geography and so every region has its own water conservation practices. "In that sense, Gujarat is microcosm of India's water conservation practices," he said.

NURTURING ELIXIR OF LIFE

HATHUKA | Due to lack of water, farmers in Hathuka near Usal in Surat started to work as labourers. Six villages involved in repairs and modernization of irrigation canal where each farmer shelled out Rs 51 to become part of water users association. Today, there is 600% increase in area under irrigation.



YFA | Youth for Action in Talangana developed Sujal Samiti in Meliboli Nagar district where volunteers worked closely with government for village-level awareness initiatives. Open defecation got reduced by 50% in 40 villages. Time for women to fetch water also got reduced.

DSC | DSC started working at Mangrej in Anand, an area solely dependent on rains for farming. Integrated Water Resources Management was implemented that helped villagers understand the basics of groundwater management and sustainable agriculture.

PSI | People's Science Institute at Dehroli worked at Dhar in Madhya Pradesh where fluorosis was rampant. Officials found fissile mineral rocks at depth. Communities were stopped on community agreed to site source well and share water.

"While Andhra Pradesh has ATM-like water distribution centres, Madhya Pradesh has community-based water quality monitoring. Likewise, Gujarat has water cooperatives and irrigation awareness initiatives that can be implemented in other states," said Sachin Das, executive director of DSC.

← Times of India

DNA ↓

AVOIDING CONFLICTS

Silent for 29 yrs! Farmer's mantra for peace in life

The 68-year-old from Tapi has not spoken a word in last 29 years

Seetha Keshavnath

Ahmedabad: While conservation experts would ever have wished their brains to come up with that perfect solution to conflict management and clear communication, a 68-year-old farmer from Hathuka vil-

lage in Valsad taluka of Tapi district has already found one. His secret formula to avoiding miscommunication is in fact quite simple - shut up!

Thakorbhai Patel, 68, hasn't spoken a word in last 29 years. He communicates through post and paper which he often carries along. However, he claims that people of his village now understand his sign language. Such is his silence that many a time he has been mistaken for a mute person.

HOW DID IT HAPPEN?

The farmer and his wife: Thakorbhai Patel decided to do away with speech as he realised it was the safer way to raise spiritually.

It all started when 29 years ago, Patel set out to build a temple in his village and faced the scrutiny from his Bhajan Mandali to construction. "The year the temple was built, landlocked falling in the month of Shravan. In addition to the usual restrictions, I decided to keep a strict vrat (vow of silence) for 30 days. At the end of the period, I felt better as a person and de-

clined to continue the main vrat," writes Patel about his annual vrat.

He claims he has never spoken a word since then, even accidentally. Ask him what differences he feels from the time he used to speak and now Patel says conflicts have come down. "When you don't speak at all and communicate through writing as I do, the scope for conflict gradually reduces." Patel recommends it as a good solution for conflict resolution. Patel said his family and the villagers have adjusted to his oath.

AN ACTIVE MEMBER OF VILLAGE GROUP

Patel was part of the Hathuka Taluk Sahakar Mandal Irrigation co-operative that was in Ahmedabad to discuss its canal management. Patel, who is the secretary of the mandal, says he regularly writes up all his work including attending the meetings. "Whatever I have to say I write it down and circulate. When I go out of the village I carry post and report along," said Patel.



બુધવાર, તા. ૧૬ ડિસેમ્બર, ૨૦૧૫

હથુકા પિયત મંડળીએ જાતમહેનત જિંદાબાદના સૂત્રને સાર્થક કર્યું
તાપીના હથુકાના ગ્રામજનો
નહેરના પાણીનું મેનેજમેન્ટ કરે છે

અમદાવાદ, મંગળવાર: ગુજરાતના છતાં ગ્રામ વિસ્તારમાં પાણીનો વાપર ક્યાં માંડી રહી છે ત્યારે સર્વોચ્ચ કિલ્લા હથુકા ગામના લોકોએ હોરના પાણીને મેનિજમેન્ટ કરવાનું કાર્ય શરૂ કર્યું છે. આ કાર્યનું આરંભ તો ૨૦૧૫માં જ થયેલો હતો.

નહેરની આસપાસ ૧ કિ.મી. સુધીની બંધીઓ પહોંચે માટે આરંભમાં હથુકા પિયત મંડળીએ નહેરની સામગ્રી વાપર અને હાઈવે પર અલગવાર કરનાં વલનવારો, પ્રકાશીઓને આરામ કરવા અને સેવા સુવિધા નહેરની આસપાસ લોકોને સુધી પહોંચાડી બંધીઓને આરામ કરવામાં આરંભ કર્યું છે.

બંધીઓમાં પાણી માટે આરંભ કરવા પછી અમદાવાદ છે. હથુકા પિયત મંડળીના મંડળી કારોબારી હેડેડ કોર્ડે છે. સાંજના સમયે આરંભ કરી તેની સામગ્રી સમગ્ર પ્રદેશને પહોંચાડી છે. આમને આજીવન સુધી આરંભ કરવા પ્રયત્ન કરવામાં આવેલું છે.

મંડળીના મંડળી છે. નહેરના પાણીનું મેનેજમેન્ટ કરવા હથુકાના આ મેનિજમેન્ટ મંડળી દ્વારા ૨૦૧૫ સંકરમાં નહેરના પાણીનું મેનેજમેન્ટ કરીને મંડળીના સમગ્ર સુવિધાઓની સુવિધા કરવા પ્રયત્ન કરવામાં આવેલું છે.

વાર્ષિક રૂ. ૧૨૦૦ ફી લઈને મંડળીના મજૂરો જ ખેતરમાં પાણી વાળે છે : પાણીનો અગાડ-ચોરી કરનારાને રૂ. ૧ હજાર દંડ, માફીપત્ર

← Gujarat Samachar

Glimpses of the Workshop



The Organisers

Water Management Forum (WMF):

The WMF is a National Forum formed by the Institute of Engineers India to create awareness amongst users about the scarce resource, its conservation and judicious use. The WMF organises seminars on water conservation and management in different states.

Aga Khan Rural Support Programme, India (AKRSPI):

The AKRSPI is a multi-state organisation working in areas such as irrigation management, drinking water and sanitation and coastal area management. It is known in the country for its work on NRM and livelihood enhancement.

Development Support Centre (DSC):

The DSC is a multi-state Non-Government Organisation working on water management and sustainable agriculture. The organisation is recognised as a resource agency for community based water management at the State and National level.



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