



Environment

Water Community



Solution Exchange for the Water Community Consolidated Reply

Query: Decentralized Models for Providing Safe Drinking Water in Rural Areas - Experiences

Compiled by Nitya Jacob, Resource Person and Ramya Gopalan, Research Associate

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From [Shital Lodhia](#), Centre for Development Alternatives (CFDA), Ahmedabad
Posted 30 April 2008

I work as Assistant Professor at the Centre for Development Alternatives, Gujarat. We conduct research issues related to drinking water supply and would like to compile case studies of successful models of decentralized water supply in India, leading to the development of a flexible model for the country.

India has to ensure that all habitations have access to safe drinking water sources to achieve the Millennium Development Goals. It is also obliged to do so under other international treaties. However, in spite a strong commitment at all levels of government, and significant progress on the ground, much remains to be done.

The latest data from the Department of Drinking Water and Sanitation indicates that 11% of all habitations are not covered and 22% are partially covered. Further, 15% of habitations suffer from acute water quality problems and are identified as "unsafe source villages". The Department also admits to a failure rate of 15% that means, this number of water sources are not up to the mark as per safe drinking water criteria.

To cover all habitations will therefore require a fundamental change in the approach we are currently using. The uncovered, slipped back and partially covered habitations require a decentralized approach, with strong community involvement. The solutions lie in various technical and non-technical options including desalinization plants, dew water harvesting, rainwater harvesting, and rejuvenating old local sources.

It is important to see how technically and financially feasible such options are in various regions. It is also important to ensure the involvement of the local administration, political setup, and communities.

I would like to request the members of Water Community to share the following:

- Experiences which indicate administrative achievability of drinking water supply by involving local people
- Examples of decentralized models, which demonstrate technical viability and suitability in terms of local demand (supported by documentation)
- Experiences with projects, especially those using a decentralized approach, that have demonstrated financial sustainability in terms of long lasting solutions for operation and maintenance system

- Experiences with participative processes that have proved instrumental in supporting and promoting decentralized programmes

The experiences of ongoing efforts shared by members will help us to develop a flexible model that is replicable in other geographical areas.

Responses were received, with thanks, from

1. [S. Vishwanath](#), Arghyam and Rainwater Club, Bangalore
2. [Kochu Krishnan Murali](#), AFPRO, Bhubaneswar
3. [Avani Mohan Singh](#), Haritika, Jhansi, Uttar Pradesh
4. [M. Jahangir](#), Google Groups Drinking Water Pakistan, Islamabad, Pakistan
5. [P. S. Yadav](#), Haryana Institute of Rural Development and Department of Development and Panchayats, Haryana
6. [Suresh Babu](#), Centre for Science and Environment, New Delhi
7. [Premesh Balan](#), Doshion Limited, Ahmedabad
8. [Sarbeswar Sahoo](#), Kalpataru, Angul, Orissa
9. [Amees Mankad](#), Pravah, Gujarat
10. [P. M. Jose](#), WaterPartners International India Liaison Office, Tiruchirappalli
11. [Surekha Sule](#), Independent Journalist/Researcher, Pune
12. [Johnson Rhenius Jeyaseelan](#), WaterAid India, Bhopal

Further contributions are welcome!

[Summary of Responses](#)
[Comparative Experiences](#)
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[Responses in Full](#)

Summary of Responses

The discussion highlighted the importance of community participation in drinking water supply schemes to promote administrative achievability and strengthen local governance. Several experiences and learning substantiated the administrative achievability of involving local people, demonstrated the technical viability and sustainability and highlighted the significance of participative processes. Members also presented key suggestions for strengthening decentralized models for providing safe drinking water.

Several experiences demonstrate the administrative achievability of involving local communities in the provision of drinking water. Cases from [Maharashtra](#), [Gujarat](#) and [Rajasthan](#), demonstrated how local leaders worked to augment and safeguard their water resources at the habitation level, using their own administrative setup to address local needs and water availability. Another experience in [Hebballi village, Karnataka](#), also highlighted the role of leadership, which proved critical in enabling success. The village water supply and sanitation committee (VWSSC) under the Gram Panchayat is responsible for the system. The village people elect committee members every year, and their accounts are submitted to the Gram Panchayat regularly.

In [Gajapati District, Orissa](#), an NGO mobilized communities to establish village development committees for physical implementation and engaged (SHGs) to manage financial aspects of the project. Similarly, in [Tamil Nadu](#), the community contributed towards quality assurance of construction activities while the

Village Water and Sanitation Committee (VWSC) undertook the responsibility of regular operation and maintenance (O&M).

- **Six key parameters of sustainability are necessary for ensuring sustainability** of this approach Social sustainability by including people in projects, ensuring equity and access, especially for the marginalized
- Institutional sustainability which includes decentralized, democratic participatory institutions having leadership skills and ability to manage capital and O&M
- Technical sustainability which involves choosing the appropriate technology and incorporating multiple water sources and sanitation systems
- the ability to capture lifeline water free for some and to cross subsidise those whose access to water is threatened by lack of affordability but also to recover operations and maintenance cost and if possible capital cost. To be able to create a sinking fund to replace the infrastructure as and when necessary.
- Legal sustainability by operating within a robust framework of law, with the ability to enforce laws at the local level in a socially just framework
- Ecological sustainability which signifies the ability to replenish and draw within the carrying capacity of available natural resources and ensure its continuous intergenerational and ecological availability

An example of a decentralized model, which demonstrates technical viability and suitability in terms of local demand, is the [gravity flow](#) drinking water supply system up in **Orissa**. [AFPRO](#) helped develop this appropriate technology to solve the drinking water crises of the tribal people developed after its technical team conducted a detailed technical study. The water user groups test water quality, regularly clean source points and clean and maintain the sedimentation tank points, along with cleaning and maintaining sedimentation tanks and filter units.

Another case mentioned is from [Datia District, Madhya Pradesh](#), one of the driest regions in the state, which signifies the importance of designing geographically suitable schemes. Before setting up a piped water supply scheme, an NGO helped conduct an IWRM exercise to ensure the sustainability of ground water.

In [Uttarakhand](#) under the Swajal project, communities have the options of roof water harvesting tank or community water supply through gravity flow systems. The scheme's success has been primarily due to active community participation, a rigorous procurement system along with community contribution, active VWSCs and efficient O & M system. This is an example of financial sustainability and long lasting solutions for O & M systems.

There are several experiences of participative processes that proved instrumental in supporting and promoting decentralized programs. For example, in [Angul District, Orissa](#), youth groups launched a collective effort to clean and maintain common water ponds. Another project in the state, proved instrumental in providing for alternate sources of income generation for the community from the surplus wastewater generated by the system. It is a replicable example of appropriate technology and management that empowers women. [Pravah](#) in **Gujarat**, developed demonstration systems for safe drinking water that have a strong capacity building component for stakeholders, consultations with member organizations, members of Pani Samiti, and Pravah team members.

The discussion highlighted **problems of quality and quantity** of drinking water in many parts of the developing world, especially in South Asia. The issues are poor management, lack of both technical and financial capacity, supply sources providing water unfit for drinking (such as through contamination). Communities could overcome these problems by adopting traditional practices (e.g. village ponds) to maintain their water sources, such as village ponds. They could also enforce social norms that prevent open defecation in catchment areas, bunds and near water sources, and putting up fencing to prevent animals from contaminating the water.

Further education is needed to ensure youth adopt these practices, as they are powerful change agents. Government-led schemes should adopt a similar approach to achieve sustainability in water supply schemes rather than the conventional approach of laying pipelines and digging borewells at enormous costs. Different dynamics must be factored in and while decentralized solutions are ideal, villagers must take the responsibility of setting them up with the government and other agency's facilitation/intervention/support before running it independently.

The experiences illustrated above underline the importance of involving the community in developing rural water systems so people have access to adequate and safe drinking water. The first and most imperative step is to change people's attitude towards water through awareness programmes. Building awareness will increase community participation at all stages, from planning and execution to O&M, as well as contributing to capital and labour costs, thus enabling them to take greater responsibility and ownership.

Further, their advocacy efforts with local Panchayats needs improvement, which would contribute towards effective local governance, motivating transparency and accountability. While the exogenous interventions by either NGOs or Panchayats play a critical role, there is need for collective, community-based action to address drinking water and sanitation concerns in rural areas.

Comparative Experiences

Orissa

From [Kochu Krishnan Murali](#), AFPRO, Bhubaneswar

Community Based Decentralized Model Providing Water for Tribal Hamlets, Gajapati District

Inadequate access to safe and potable water, i.e. quantity and quality for drinking & domestic purposes resulted in severe hardships for women and girl children, responsible for collection and storage. To reduce drudgery faced local NGO partners mobilized the community and set up village level institutions like VDC and SHGs to provide safe & potable drinking water at the communities' doorstep. Additionally the community planned for a healthy and hygienic living.

Gravity Flow System Managed by Community

NGO partners and community, funded by ISNRMPO with [AFPRO](#)'s technical team visited project areas, discussed GFS and need for its systematic management. AFPRO and community conducted feasibility study, survey, designs, estimation and also evolved a management system including in kind labor at of 10% of total budgetary cost. As a result 600 families in 17 villages are now accessing safe and potable drinking water at their doorsteps.

Alternate Source of Income Generated by Community

Using surplus wastewater, a community started cultivating kitchen gardens and flori-culture activities. Provision of a GFS system improved personal hygiene conditions and reduced water diseases. The water user group regularly collects Rs. 1 to 5 per household for maintaining the system, thus creating a sense of ownership among the community. Women were also encouraged to participate in the decision making process and received equal wages during implementation of the system.

Collective Action in a Rural Setup, Angul District (from [Sarbeswar Sahoo](#), Kalpataru, Angul, Orissa)

Previously, the water in the large village pond was clean and safe for use, such as for cooking. Mismanagement over the years resulted in the water getting contaminated and becoming unsafe. In an effort to intervene and clean up the derelict water pond, the NGO Kalpataru tried to motivate the villagers

especially seniors to become involved. However, they received a lukewarm response and so used a different approach, using [collective action](#) by youth and students; the pond was cleaned up in a day.

From [Johnson Rhenius Jeyaseelan](#), WaterAid India, Bhopal

Uttarakhand

Multiple Options through GFS Managed by VWSCs, Nainital

In 1997, Swajal supported scheme offered multiple options- RRWH tanks and community water supply system through GFS. The scheme still functions well mainly due to active VWSC ensuring efficient O&M, community participation and procurement system along with community contribution. However, the UPJAL nigram did not undertake purchase, quality control and the VWSC did the same ensuring quality of structures till date.

Madhya Pradesh

Geographic Considerations in Designing Schemes, Datia District

PARHIT one of WAI's partners implemented a pipe water supply scheme in this dry region. The VWSC undertook the scheme with partial support from the government. The focus was IWRM where all HHs did RWH recharge using a soak pit, surface water harvesting, rain water recharging in abandoned open/borewells and pond de-silting. After groundwater sustainability was ensured, the scheme designed pipes to supply water using a 20% contribution from the community.

Maharashtra

Water Needs Assessment and Capacity of People to Pay as Necessary Prerequisites

[WaterAid](#) was involved in pilot sector reform project in three districts. It was initially designed by Jal boards without considering the capacity of people to contribute financially or support the O&M, etc. After regular interactions/trainings/exposure visits, etc. with various stakeholders, conducting PRA/BLS and water needs assessment, 16 of 20 villages redesigned schemes to include IWRM works, O&M, consideration of capacity of people to pay, which are now running well.

From [P. S. Yadav](#), Haryana Institute of Rural Development and Department of Development and Panchayats, Haryana

Village Transformation through Community Level Activities, Ralegaon Sidhi, Ahmednagar District

Under the leadership of Anna Saheb Hazare, the village became a water-surplus village from a water deficit one. This was achieved by soil conservation, afforestation in the catchments and deepening the village water tank that helped recharge the village wells. People were prevented from sinking borewells deeper than 200 feet, which not only provided adequate and safe drinking water, but also ensured there was enough for agriculture and dairying. Read [more](#).

Rajasthan

Reviving Ecosystems through Community Involvement, Alwar District

Rajendra Singh, [Tarun Bharat Sangh](#) revived a system of 5 streams that feeds the Yamuna and ensured adequate and safe drinking water. It is a combination of social and physical reconstruction by involving the village community in reviving johads, contour bunding, soil conversation, preventing tree felling in the highlands, and promoting tree plantation. People now have enough water for drinking, delivered through tubewells and handpumps and for agriculture, and they also avoid using water-intensive crops.

Gujarat

Village Transformation through Community Participation in Water Resource Management, Raj Samadhiyala Village, Rajkot District

In this village, 15 years ago, people faced a major water crisis; groundwater table receded to a depth of 250 metres. By 1985, villagers started building check dams/tanks using funds under the DRDA with the efforts of former Sarpanch leader and present block president H.S. Jadeja. They built 45 check dams over an area of 1,090 hectares (ha). In spite of minimum or no rainfall, water is available at a depth of 15 metres. Read [more](#).

Karnataka

Beginning towards Sustainability, Equitable Access and Economic Viability, Hebbali Village (from [S. Vishwanath](#), *Arghyam and Rainwater Club, Bangalore*)

The village faced problems of a dysfunctional water system based on community connections from an overhead tank, infrequent maintenance, and availability of water and disputes at water points. DANIDA attempted to address this problem, by setting up a rehabilitation system wherein the VWSC is responsible for the system, working along with villagers to ensure sustainable water recharge. The system thus resulted in some key learnings and is beginning to show social and economic success. Read [more](#).

Tamil Nadu

Community Participation Promotes Administrative Achievability (from [P.M. Jose](#), *WaterPartners International India Liaison Office, Tiruchirappalli*)

Under a RGNDWMP pilot project, the community though initially reluctant because they considered it a state responsibility later contributed 5-10% of the estimated capital cost, after NGOs engaged in social mobilisation activities. After generating demand, the NGOs educated the community through the VWSC, on how to be responsible for O&M. The share to be paid by each community is informed once TWAD engineers prepare cost estimates and these contributing members also conduct quality assurance.

International

South Africa

Use of Negotiation Support Tool to Involve Water Users at Sub-Basin Level (from [Ramya Gopalan](#), *Research Associate*)

In 2001, CEEPA and CIRAD started a project to support sustainable establishment of decentralized water management institutions as negotiation and decision-making entities. Under this project specific tools facilitated establishment of management rules and organizing negotiation processes. Presently, expectations revolve around validation of this model, and its subsequent adoption as a negotiation support tool in pilot sessions with representatives of various water users at sub-basin level. Read [more](#).

Related Resources

Recommended Documentation

Rural Water Supply: The Hebballi Experience (from [S. Vishwanath](#), *Arghyam and Rainwater Club, Bangalore*)

Article; by S. Vishwanath; Water Supply Framework; India Together; August 2007

Available at <http://www.indiatogether.org/2007/aug/env-hebballi.htm>

Showcases a successful and sustainable piped water supply in rural India, presenting some steps towards equity and sustainability in spite of few challenges that remain

Assessment Report - Rural Health and Environment Programme (from [Avani Mohan Singh, Haritika, Jhansi, Uttar Pradesh](#))

Report; by Anjal Prakash; WaterAid India; New Delhi; Supported by Haritika and Methodist Relief and Development Fund; UK; October 2007

Available at <http://www.solutionexchange-un.net.in/environment/cr/res30040801.pdf> (PDF Size: 721 KB)
Reports on the participatory assessment of the outcome of water, sanitation and hygiene promotion programme of Hartika undertaken with community participation

From [P.S. Yadav](#), Haryana Institute of Rural Development & Department of Development and Panchayats, Haryana

A Successful Case of Participatory Watershed Management at Ralegan Siddhi Village in District Ahmadnagar, Maharashtra, India

Case Study; by B. Misra; FAO Corporate Document Repository

Available at <http://www.fao.org/docrep/X5669E/x5669e06.htm>

Exemplifies people driven development and demonstrates what villagers can do when they take control of their development, converting Ralegaon to a water surplus village

A Midsummer Dream

Analysis; Centre for Science and Environment (CSE); Down to Earth; New Delhi; 30 June 2002

Available at

http://www.downtoearth.org.in/full6.asp?foldername=20020630&filename=anal&sid=1&page=1&sec_id=7

Showcases Raj Samadhiyala and other villages and efforts of a visionary leader like H. Singh Jadeja, a village institution for decisions and community participation in WRM

Olson's Theory of Collective Action (from [Sarbeswar Sahoo, Kalpataru, Angul, Orissa](#))

Article; Wikipedia

Available at http://en.wikipedia.org/wiki/The_Logic_of_Collective_Action

Suggested as background to the experience in Angul District, Orissa wherein collective action helped solve the problem of drinking and sanitation water in rural areas

From [Ramya Gopalan](#), Research Associate

Decentralization and Co-ordination of Water Resource Management

Book; by Douglas Parker and Yacov Tsur; Natural Resource Management and Policy Series; Kluwer Academic Publishers; 1999; 451 pp.; ISBN 0792399145; Permission Required: Yes. Paid Publication; Review by P. Wouters and P. Jones available at [link](#)

Presents role of co-ordination and decentralization in the design and implementation of water management policies, analyzing relevant decentralized mechanisms

Action Research for the Development of a Negotiation Support Tool towards Decentralised Water Management in South Africa

Working Paper; by Stefano Farolfi; Department of Agricultural Economics, Extension and Rural Development; University of Pretoria; Pretoria, South Africa; 2004

Available at <http://www.up.ac.za/academic/ecoagric/fulltext/2004-01.pdf> (PDF, Size: 532 KB)

Supports the sustainable establishment of decentralised water management institutions as negotiation and decision-making entities on WRM at basin level

Decentralized Model Reference Adaptive Control of Water Quality in Water Distribution Networks

Paper; by Zhong Wang; Polycarpou, M.M.; Uber, J.G.; Intelligent Control; 2000; Page(s):127 – 132; Permission Required. Yes, Paid Publication; Abstract available at <http://ieeexplore.ieee.org/Xplore/login.jsp?url=/iel5/7088/19098/00882911.pdf?arnumber=882911>

Presents a partially decentralized adaptive control approach for water distribution networks

Community based RWSS in Decentralized Service Delivery Environment

Poster; Water and Development; Water Week 3

Available at http://www.worldbank.org/html/fpd/water/waterweek2003/posters/Poster1-Jalanidhi_Project.pdf (PDF, Size: 26 KB)

Details the Kerala Rural Water Supply and Sanitation Project, Jalanidhi, adopting Demand-Responsive Approaches through use of participatory processes and IWRM

Decentralized Water Supply Schemes - A Sustainable Solution to Watershort Drylands of India

Discussion; Changemakers.net

Available at <http://www.changemakers.net/en-us/node/6942>

Discusses an innovative project wherein decentralization of water supply schemes led to self reliance and increased local villagers' control over the water resources

Recommended Organizations and Programmes

From [Kochu Krishnan Murali](#), AFPRO, Bhubaneswar

Action for Food Production (AFPRO), New Delhi

25/1-A Pankha Road, D-Block, Janakpuri, New Delhi 110058; Tel: +91-11-28525452/28522575/28525412; Fax: +91-11-28520343; afprodel@afpro.org; <http://www.afpro.org/>; Contact D. K. Manavalan; Executive Director; ed@afpro.org

Performed detailed location specific technical study to bring out a fitting technology to solve the drinking water problem/crisis for the tribal inhabitants of Gajapati District

Water and Sanitation Management Organisation (WASMO), Gujarat

3rd Floor, Jalsewa Bhavan, Sector 10-A, Gandhinagar 382010 Gujarat; Tel: +91-79-23247170/23247171/23237075; Fax: +91-79-23247485; wasmow@wasmow.org; <http://www.wasmow.org/eng/default.shtm>

Helped women take the lead in creating community-led water supply systems, setup RRWH systems in all government buildings in Saurashtra and Kutch

Tarun Bharat Sangh, Rajasthan (from [P S Yadav](#), Haryana Institute of Rural Development & Department of Development and Panchayats, Haryana)

34/46 Kiran Path, Mansarovar, Jaipur – 302020; Tel.: +91-141-2391092; watermantbs@yahoo.com; <http://www.tarunbharatsangh.org/>; Contact Rajendra Singh; Founder; rajendrasingh@tarunbharatsangh.org

Pioneers in the field of community-driven decentralized water management systems, as the only solution for water security and appropriate availability of water for everybody

WaterAid India (WAI), New Delhi (from [Johnson Rhenius Jeyaseelan](#), WaterAid India, Bhopal)

India Country office, 25, Navjivan Vihar, Malviya Nagar, New Delhi-110017; Tel.: +91-11-26692206; http://www.wateraid.org.uk/uk/what_we_do/where_we_work/india/examples_of_our_work_in_india/default.asp

Involved in watsan sector reform projects adopting a decentralized approach, interacting with stakeholders and involving communities for quality management and through contributions

Pravah, Gujarat (from [Premesh Balan](#), Doshion Limited, Ahmedabad and [Amees Mankad](#), Pravah, Gujarat)

C-24 B, Second Floor, Kalkaji, New Delhi 110019; Tel: +91-11-26440619/26213918/26440619; mail@pravah.org; <http://www.pravah.org/>

Undertakes demonstrations in decentralized models for providing safe drinking water and experiences of its members with self reliant decentralized drinking water systems

People's Learning Centre for Water and Sanitation (PLC WATSAN), UTTHAN, Gujarat (from [Surekha Sule](#), Independent Journalist/Researcher, Pune)

C-1157, 1st Floor, Manu Raja Chamardiwala, Opp. SBS, Kaliyabhid - Bhavnagar 364002; Tel.: +91-278-2573061; plc_watsan@rediffmail.com; <http://www.plcwatsanuttan.org/>

Identified the need for people's learning and since last two years has been imparting training in various aspects needed for decentralized solution in water and sanitation

Recommended Communities and Networks

Rainwaterharvesting.Org, Centre for Science and Environment (CSE), New Delhi

<http://www.rainwaterharvesting.org/>

Presents numerous initiatives across different agro-climatic regions of the country, with details of community based water management initiatives

Responses in Full

[S. Vishwanath](#), Arghyam and Rainwater Club, Bangalore

Based on the experience of the village of Hebballi, Chitradurga District, Karnataka 6 key parameters of sustainability are key to ensuring non-slippage of habitations.

Social sustainability- including participation of people in projects, equity, access, and taking care of those less empowered

Institutional sustainability- including decentralized, democratic participatory institutions with leadership skills and ability to manage capital and operations and maintenance

Technical sustainability - making the right technical choice of appropriate technology as well as incorporating multiples sources of water (including rainwater harvesting, surface and ground water) and multiple systems of sanitation

Financial sustainability - the ability to capture lifeline water free for some and to cross subsidise those whose access to water is threatened by lack of affordability but also to recover operations and maintenance cost and if possible capital cost. To be able to create a sinking fund to replace the infrastructure as and when necessary.

Legal sustainability - to have and operate within the robust framework of law say for example to manage groundwater without competing claims from other uses scuppering drinking, domestic and livelihood water needs and to be able to enforce the law at the local level in a socially just framework

Ecological sustainability - to be able to replenish and draw within the carrying capacity of available natural resources and to ensure its continuous availability inter generationally but also for ecosystem requirements

A case study I wrote up on the village Hebballi is here - <http://www.indiatogether.org/2007/aug/env-hebballi.htm>

I hope you find it useful. The bottom line to me appeared leadership at the habitation level which enabled a relative (NOT FULLY) success story to emerge.

Kochu Krishnan Murali, AFPRO, Bhubaneswar

We would like to appraise a community based decentralized model in Gajapati District of Orissa in provision of safe Drinking water for the tribal hamlets.

"Community based Planning, Implementation and Management of gravity flow drinking water supply system in the extremely down trodden and poverty stricken tribal dominated hamlets of Gajapati District of Orissa State"

In the tribal dominated hamlets of Gajapati district of Orissa state, inadequate access to safe and potable water, both in terms of quantity & quality for drinking & domestic purposes have really put the women & Girl child in the villages to severe hardships, as they are responsible for its collection & domestic storage. They used to spend at least about 4 – 5 hrs a day to collect the water from distant unreliable sources by trekking through the hazardous pathway down hill to fetch water from unprotected spring sources locally termed as "Chuans". In order to reduce the drudgery of the tribal community, especially the women folk and girl child, the local NGO partners of ISNRMPO (Indo Swiss natural resource management project) mobilized the community and set up few village level institutions like VDC & SHGs with a prime Goal for provision of "Safe & Potable Drinking Water at the communities' doorstep.

Apart from the intention to reduce the drudgery to women and girl child there was also a hidden agenda to bring together the entire community at large for a common consensus and plan for their healthy and hygienic living with decentralized drinking water supply system. Accordingly, the NGO partners along with community members have prepared an action Plan and submitted the same to ISNRMPO agency for funding. ISNRMPO requested AFPRO as a nodal technical agency for a detailed location specific technical study to bring out a fitting technology to solve the drinking water problem/crisis for the tribal inhabitants. The technical team of AFPRO along with the various stake holders visited the project areas and discussed with the community about the possibilities of GFS (Gravity flow system) and the need and necessity for a systematic management of the system developed so as to achieve the maximum benefits. The AFPRO team along with the community members conducted the feasibility study, survey, designs & estimation of various components. Prompt and regular technical guidance are provided during the project implementation phase by AFPRO. A definite implementation and management strategy was also evolved along with the community member's willingness and participation for systematic implementation and effective management of the system. The VDC's were involved in physical implementation process and the other SHGs were engaged in managing the financial aspects. Community contribution has been derived/ volunteered @ of 10% of the total budgetary cost in terms of kind labor. Both male & female members have been actively involved in the implementation process.

The designed drinking water supply system works on the Force/principle of Gravity motion. It comprises of a Collection chamber, sedimentation & Filter unit, Storage tank and Stand posts for water distribution at each and every locality/settlement. More than 600 families of 17 villages are now accessing the safe & potable drinking water at their doorsteps. Water Quality testing and regular cleaning of Source Points are maintained by the water user groups. Sedimentation tank & Filter unit are also cleaned and maintained properly at every month. Chlorination at Storage tank and Proper Drainage system at Outlet point were also being provided. Now the Womenfolk in the project villages were able to save 4 – 5 hrs a day and are engaged in additional agricultural & NTFP collection activities. They also maintain efficiently and effectively the daily household requirements. Now the Girl children are regularly going to schools.

Alternate source of income are also generated by the community from the surplus waste water of the system.

The Community members have started cultivating kitchen gardening & floriculture activities. The provision of this GFS SYSTEM improves the personal hygienic condition and there is consequent decline in waterborne and water related diseases. The communities have also developed a forest protection mechanism and are controlling the deforestation at the upper catchments of the source for its sustainability. They water user group regularly collects Rs.1 – 5 per household for its maintenance. Involvement of Local mason in the water user group makes the system of maintenance proper and apt. norms and strategies for operation and maintenance are derived at common consensus. This creates a sense of ownership among the community.

Women were encouraged to have their say in every decision making process. Equal wage payment to both men & women were provided during implementation inbuilt a sense of equity. Gender equity and equality is reflected from planning to operation phase. Both male & female commonly share responsibility for the sustainability of the system. As of now the local village institutions successfully continue with proper representation from female & male members of the villages in the monthly meetings. This has contributed to an enhanced self esteem of the village women. Male members are also appreciating the women's involvement in the village Development process. This project with several impacting case studies will be an eye opener to other similar location specific regions in India for replicating the technology and management processes of the decentralized Drinking water supply system with total community cohesiveness and participation with due respect to women empowerment and emancipation.

[Avani Mohan Singh](#), Haritika, Jhansi, Uttar Pradesh

We are implementing a programme called Rural Health and Environment Programme (RHEP) with assistance from MRDF in 11 villages. The following link provides details of the project:

Assessment Report - Rural Health and Environment Programme

Report by Anjal Prakash, WaterAid India, New Delhi; Supported by Haritika and Methodist Relief & Development Fund, UK; October 2007

<http://www.solutionexchange-un.net.in/environment/cr/res30040801.pdf> (Size: 721 KB)

[M. Jahangir](#), Google Groups Drinking Water Pakistan, Islamabad, Pakistan

Quality and quantity of drinking water is a serious issue of the developing world and especially in South Asia, we have common problems. Unfortunately we are trying to sort them out individually in Pakistan, India, Bangladesh and Nepal and Sri Lanka.

The problems include poor management, lack of capacity both technical and financial, water from supply sources being unfit for drinking, or getting contaminated in the supply system due to corroded pipelines.

In Pakistan we are trying to solve this issue by providing water treatment plants in localities. This water is not connected via piping systems but by the consumers from the treatment plants.

Apparently, this is a perfect solution but it is not without hiccups. Each plant has to be designed according to the raw water quality, operation and maintenance systems have to be in place, and regular monitoring of the performance and ownership by the community are must.

Having done this I believe it is the most viable immediate solution to the supply of safe drinking water to communities

I am sure we in Pakistan have a lot to share in this experience, while we are installing more filtration

plants and learning from this decentralized supply experience - <http://www.waterpakistan.com/>; <http://drinkingwater.wordpress.com/>; <http://groups.google.com/group/drinking-water-pakistan>

P. S. Yadav, Haryana Institute of Rural Development & Department of Development and Panchayats, Haryana

There are several instances of community driven decentralized water supply systems for both drinking and agriculture in different parts of India that have created sustainable water sources.

1. In Ralegaon Sidhi, Ahmednagar district, Maharashtra, under the leadership of Anna Saheb Hazare, became a water-surplus village from a water deficit one. They achieved this by soil conservation, deepening the village water tank that helped recharge the wells in the village, and afforestation in the catchments. People were prevented from sinking borewells deeper than 200 feet. This not only provided all people there adequate and safe drinking water but also ensured there was enough for agriculture and dairying. From a drought-affected, crime infested village, it has now become a model for other development activists in the country.
2. In Alwar district of Rajasthan, Rajendra Singh has revived a system of 5 streams that feed the Yamuna River and ensured adequate and safe drinking water. It is a combination of social and physical reconstruction by involving village community in reviving johads, contour bunding, soil conservation, preventing tree felling in the highlands, and tree plantation. People now have enough water for drinking through tubewells and handpumps and for agriculture, even though they avoid water-intensive crops.
3. In Saurashtra and Kutch, with the help of WASMO, women have taken the lead in creating community-led water supply systems. They have setup rooftop water harvesting systems in all government buildings – schools, chaupals, anganwadi centres, banks, etc.
4. In Village Samdhiala, Rajkot is another example, where Hardev Singh Jadeja has led a movement for water conservation and harvesting to ensure adequate and safe water.

Communities have adopted traditional practices such as maintenance of village ponds, preventing open defecation in their catchments, bunds and anywhere near water sources, and fencing them to prevent animals from contaminating the water. Further education is needed to ensure these practices become deep seated and permanent. School children – the next generation – should be educated about these and similar practices so they are carried forward.

It is important for government-led schemes to take a similar approach to achieve sustainability in water supply schemes rather than the conventional approach of laying pipelines and digging borewells at enormous cost. The examples above underline the importance of involving the community in developing rural water systems so that people have adequate and safe drinking water.

Suresh Babu, Centre for Science and Environment, New Delhi

This is in response to Shital Lodhia's mail. There are numerous outstanding initiatives across different agro-climatic regions of the country. Please refer to <http://www.rainwaterharvesting.org/> for details of such community based water management initiatives.

Premesh Balan, Doshion Limited, Ahmedabad

Thank you for raising this query and hope you would get many such examples from across the country. Would like to bring to your notice that the work done by Pravah in Gujarat could also be explored, also the experiences of its members in really trying out the self-reliant decentralized drinking water systems.

Sarbeswar Sahoo, Kalpataru, Angul, Orissa

I will share one of our personal experiences in addressing the issue of water; (not *per se* drinking water) in my village in Angul District of Orissa through the local voluntary organisation Kalpataru.

As a part of the rural community, I understand the problems related to water scarcity both drinking, sanitation as well as irrigation especially during summer season. On the other hand there in each and every village lies the communal water ponds and tanks in derelict conditions. We thought to intervene in cleaning the pond in my village which is very large in size and earlier when it was clean and safe people were using the water for cooking purposes, especially dal as this water was effective in cooking dal. But over the period due to mismanagement the water become dirty and unsafe. We have tried to motivate the villagers especially the seniors but the response was lukewarm. However the response from the youth and school students were impressive and we through the effort of collective action were able to clean the pond within one day.

Our objective was to experiment Mancur Olson's theory of Collective Action [Refer http://en.wikipedia.org/wiki/The_Logic_of_Collective_Action] in a rural setup. My personal experience says that the problem of drinking and sanitation water in rural area can be solved with the help of collective action. But there needs to be an exogenous intervention either by the NGOs or the Panchayat. First step as usual is to make people to change their attitude towards water through awareness programmes.

Amee Mankad, Pravah, Gujarat

Pravah is a state level network of NGOs, individuals, institutes focusing on advocacy efforts for people centered, gender sensitive inclusive systems for drinking water and sanitation in Gujarat. Members of Pravah have demonstrated especially for advocacy in 37 places of Gujarat. These demonstrations are the examples of decentralized programs in drinking water sector of Gujarat. Besides these 37 units, members of Pravah are working in different parts of Gujarat with innovations in the sector.

Pravah is also advocating for area specific policies in drinking water schemes of Govt. Advocacy is a crucial aspect of Pravah activities and to develop active models for it, Pravah has demonstrated community based drinking water systems for sustainable drinking water and sanitation facilities in 37 villages across Gujarat. These demonstration systems are seen as a model for the safe drinking water and are based on certain principals of Pravah. As physical implementation can not be done without adequate capacity building of various stakeholders involved, a series of consultations were organized with member organizations, members of Pani Samiti and Pravah team members. These demonstrations in different villages have become an important tool for advocacy by Pravah. I would like to share few examples:

- Pani Samiti of Pandri, a village in Surendranagar district constructed 80 RRWHS. Pani Samit is of all women members. They initiated the work with 10 dalit families and developed confidence among others as well.
- In Rajkot district, Pipardi village received water from Narmada pipe lines but it reaches only once in a week. Realizing the fact that only local source development is the long term solution, the village has developed a new well and deepened a pond.
- People of Panch Talavda, a Village in Bhavnagar district had confidence in their well, which was completely neglected and abandoned by the government bodies. Village Pani Samiti revived it and got a permanent, reliable source.
- Eklwa village in Patan District of North Gujarat was facing acute water quality problems (Fluoride). Though the entire area is heavily dependent on bore well, this village - encouraged by a tour to another village - paved a new way with constructing 62 individual RRWHS in the village. Secretary (water supply) advocated for this village at National level in his presentation.
- People of Kankar Na Muvada, a village in Panchmahal district, opted for RRWHS after a failure of reviving two bore wells. But there was a difference. Charting a new way, they decided to themselves to go for a RRWHS to be shared between 3-4 house holds.

- Ambosi, a village in Valsad district reversed the common belief that "there can't be any option for water other than a well or bore well on the hilly terrain of Tribal belt". Now people from surrounding areas and beneficiaries of Government schemes flock this village to know the benefits of RRWHS.

These are some of the examples of Pravah's demonstrations. Besides these members of Pravah are working and demonstrating by their own in this sector.

Pravah will be highly obliged to share its work with community members.

P. M. Jose, WaterPartners International India Liaison Office, Tiruchirappalli

"Community participation in drinking water supply schemes promotes administrative achievability and strengthens local governance."

My earlier association with Central Ministry of Rural Development, Dept of Drinking Water Supplies funded Rajiv Gandhi National Drinking Water Mission Programme, implemented in Virudhunagar district of Tamil Nadu. Being social mobilisation coordinator of this pilot initiative, I have following experiences/thoughts to share.

Under this pilot project, the community was supposed to contribute 5-10% of the estimated capital cost. Though the target communities were initially reluctant to pay for water structures, and felt it was purely state's responsibility to provide them drinking water – the social mobilization activities carried out involving NGOs have paid dividends.

Once demand is generated/or consensus evolved among the villagers on need for new water delivery structures, NGO educated the community members about the Village Water and Sanitation committee (VWSC), which is responsible for operation and maintenance of newly created water supply sources. Now applications for establishing the sources are forwarded through the Block Development Officer to TWAD engineers by the local Panchayat.

After the TWAD Board engineers prepared cost estimations for the water delivery installations based on the source availability, the share of community is informed – usually 10% of the total capital cost. For Dalit villages it is 5% only. The villagers have adopted various strategies for mobilising resource for community contribution.

My experience being part of this program was that in all the villages where community contributed-they took part in quality assurance of construction activities. They formed few sub groups for monitoring the progress. After handing over of the structure, the responsibility of regular operation and maintenance was taken up by the VWSC. The district water and sanitation mission printed and supplied water tariff card to be used by the users.

The bottom line is, once the community members took part in the programme right from planning to execution to O&M and contributing for capital costs or labour, they took up the responsibility and ownership. In addition, their influence and involvement in local Panchayat also improved, thus contributing for effective local governance-by motivating transparent functioning and accountability.

Surekha Sule, Independent Journalist/Researcher, Pune

I am just back from a tour to Bhavnagar in Gujarat where well-known NGO Utthan has set up People's Learning Centre for Water and Sanitation (PLC Watsan). While decentralised solutions are ideal, the villagers have to take the responsibility of setting it up with government and other agency's facilitation/intervention/support and then running it independently. In the first place, villagers are not

aware of the issue, the government schemes/support and conditions therein and their role in it. The PLC Watsan has identified this need for people's learning and since last two years has been imparting training in various aspects needed for decentralised solution.

My observation is that it is a very long drawn process and hence one should be careful about expectation about the success. All villagers do not act immediately and spread and apply the knowledge gained in their villages. Besides there are lot of different dynamics at play which has to be factored in. However, PLC's model is worth emulating. After Bhavnagar, they are spreading out to the state and national level through local partnerships.

Johnson Rhenius Jeyaseelan, WaterAid India, Bhopal

Recently I visited Swajal supported projects in Nainital, Uttarakhand. The scheme has multiple option of roof water harvesting tank, community water supply system through gravity flow system. The scheme implemented in 1997 is still functioning well. In the visited village the VWSC is active and functioning, the O & M is very efficient. The scheme success was due to community participation and community procurement system followed along with community contribution. The UPJAL nigam did not do any purchase, quality control but it was the VWSC which did the same and thus the quality of the structure till date is good. So for any scheme to be successful community participation, procurement is the key.

Secondly, WaterAid was involved in the pilot sector reform project in three districts of Maharashtra. Initially the scheme was led by the Jal boards who in the first visit itself designed scheme without looking into capacity of people to pay contribution, O&M etc. After regular interactions/trainings/exposure visit to TN and Kerala with NGOs, Government, VWSC members and community representatives and conducting PRA/BLS, water need assessment schemes conducted. Thus out of 20 villages, 16 villages redesigned schemes which included IWRM works, O&M, capacity of people to pay. Today the schemes implemented are running well and the same implemented across all districts.

Thus schemes designed should be geographically suitable. In Datia district in Madhya Pradesh, PARHIT one of WAI's partners implemented a pipes water supply scheme. Datia is one of the driest regions. Initially the focus was on IWRM where all HHs did RWH recharge through soak pit, surface water harvesting, rain water recharge to abandoned open wells/borewells and pond de-silting. After the ground water sustainability was ensured they designed a pipes water supply scheme for which community contributed nearly 20% of the cost. The entire design, estimation, selection of vendor, purchase, and quality control was done by the VWSC. The government partly supported the scheme. The VWSC in that village has a stocked spares to attend to any repair for HPs that are functioning in the village and have plans to create a spares bank to stock spares for the new scheme.

I will also share case studies of similar interventions in Chatrapur, Datia and Morena.

Many thanks to all who contributed to this query!

If you have further information to share on this topic, please send it to Solution Exchange for the Water Community in India at se-wes@solutionexchange-un.net.in with the subject heading "Re: [se-watr] Query: Decentralized Models for Providing Safe Drinking Water in Rural Areas - Experiences. Additional Reply."

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