



Environment

Water Community



Solution Exchange for the Water Community Consolidated Reply

Query: Ways to improve O&M of rural water supply schemes - Experiences; Referrals

Compiled by [Nitya Jacob](#) and [Sunetra Lala](#), Resource Team

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From [Brecht Mommen](#), United Nations Children's Fund (UNICEF),
Bhubaneswar

Posted 29 July 2011

I work for UNICEF in Orissa as the WASH specialist. My main task is to provide support in improving access to water supply and sanitation in rural areas. I have found that access to safe water have been largely undermined by poor operation and maintenance (O&M). The contributing factors are:

- Poor ownership and awareness by communities about their rights and responsibilities
- Poor capacities, willingness and ownership by panchayats to maintain water supply systems
- Limited accountability mechanisms for citizens to hold panchayats accountable for the provision of safe water
- Lack of spare parts and tools
- Limited availability of mechanics and lack of motivation/incentives.

To overcome this, and improve rural water supply, I am seeking instances where better O&M has improved the water supply. I would like to learn of the modalities that have helped improve O&M and consequently, the availability and quality of water. Of special interest is the involvement of women's groups and the private sector. I also want to know of accountability mechanisms. I am looking for examples from all parts of India.

For this, I request the Community members to share their experiences regarding:

1. Are there examples where O&M issues have been addressed, reducing the downtime of safe water sources, while also limiting the pollution of the groundwater in a sustainable way?
2. What are the drivers for this improved O&M?
3. What accountability mechanisms have been found to be effective?
4. Have these been documented, or do they need to be documented? I request members to share existing documents.

Your responses will help us devise ways to improve O&M issues in rural water supply in Orissa.

Responses were received, with thanks, from

1. [Nripendra Sarma](#), Public Health Engineering Department, Guwahati
2. [Johnson Rhenius Jeyaseelan](#), WaterAid, Lucknow
3. [Sonali Patnaik](#), Arupa Mission Research Foundation, Bhubaneswar
4. [Dinesh Kumar](#), Institute for Resource Analysis and Policy, Hyderabad
5. [Anandi Mehra](#), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Himachal Pradesh
6. [Mamta Borgoyary](#), FXB India Suraksha, Noida
7. [Annie George](#), Building and Enabling Disaster Resilience of Coastal Communities (BEDROC), Nagapattinam
8. [Anita Miya](#), Aga Khan Planning and Building Service India, Mumbai
9. [Vibhu Nayar](#), Tamil Nadu - Irrigated Agriculture Modernisation and Water-bodies Restoration and Management (TN-IAMWARM) Project, Chennai
10. Brecht Mommen, United Nations Children's Fund (UNICEF), Bhubaneswar ([Response 1](#)) ([Response 2](#))
11. [Dipak Roy](#), Individual Consultant, New Delhi
12. [Hemant Khosla](#), United Nations Children's Fund (UNICEF), New Delhi
13. [Stephanie Tam](#), Northwestern University, USA
14. [Jyotiraj Patra](#), Centre for the Environment and Public Policy, Bhubaneswar
15. [Joe Madiath](#), Gram Vikas, Orissa
16. [Ramakrishna Nallathiga](#), Centre For Good Governance, Hyderabad
17. [Sireesha Patnaik](#), Friends of Women World Banking (FWWB), Ahmedabad
18. [Surendra Kumar Yadav](#), Vikram University, Ujjain
19. [Anil Gupta](#), Independent Consultant, New Delhi
20. [R K Srinivasan](#), Plan International, New Delhi
21. [Krupa Dholakia](#), Sahjeevan, Kutch
22. [Rajesh Shah](#), Peer Water Exchange, Bangalore
23. [Kalyan Paul](#), Pan Himalayan Grassroots Development Foundation, Ranikhet *
24. [Satish C. Raghu](#), Rural Environment & Community Health Awareness Society, Betul, Madhya Pradesh *
25. [Ravi Nitesh](#), Mission Bhartiya, Lucknow *

**Offline Contribution*

Further contributions are welcome!

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Summary of Responses

Poor operation and maintenance (O&M) is the main cause of failure of water supply systems in India, both in urban and rural. In rural areas, this is exacerbated by the slow response times of agencies tasked with O&M. Dissecting the reasons for this reveals diverse root causes – lack of planning for O&M while designing a water supply system, use of sub-standard material, no source protection, untrained operators, no way to determine or collect user charges, a disconnect between the engineers of the concerned agency and panchayats (or their sub-committee), and little or no community involvement.

There are as many ways to improve O&M as there are root causes. In Tamil Nadu, for example, government engineers have started working with communities, focusing on water as a scarce resource. The driver was the need to raise user charges, but under a change management initiative, they took the approach that water has to be conserved. They supplemented this with "non-structural" measures such as democratizing governance, changing attitudes in order to build community ownership, and responsibility for water service delivery. This in turn works when service providers willingly share power and partner with the community in a new governance paradigm and took a non-prescriptive or non-target-driven approach emphasizing raising awareness of the importance of managing water as a common resource; they also provided space for community action and decision making. This system has a built-in dual accountability mechanism, where engineers are accountable to the community, and the community is responsible for stopping wasteful use of water.

There are several instances where the community has taken the initiative for O&M, as in the [Gram Vikas](#) case in Orissa. In the 943 villages the NGO has developed water supply systems, people have raised a corpus of Rs. 1,000 per family (on an average). All families agree to build a toilet and bathing room. The NGO trains a few people in masonry and plumbing while the villagers gather material for the toilets, bathing rooms and water supply system. Water is sourced from a renewable source and pumped to an elevated water reservoir and supplied round the clock to houses. A volumetric charge partly covers the cost of electricity and O&M while the government pays for the rest.

In another example from the state, the Department of Water Resources started the [Orissa](#) Community Tank Management Project under which Pani Panchayats were responsible for the O&M. they were held accountable for proper maintenance of village tanks through participatory walkthroughs to assess the existing situation, and the situation during plan implementation, post implementation and as and when required. These people conducted social audits, and put in place a proper grievance redressal system. The Orissa Drinking Water Project led to setting up a large pilot titled "2-Tier maintenance system", mainly of handpumps in 3 coastal districts (undivided Cuttack, Puri and Balasore). Self-Employed Mechanics looked after 25-30 handpumps and each person got a fee of Rs. 150 per pump per year and also a bicycle and tools.

In [Kerala](#), under the Rural Water Supply and Sanitation Project (called Jananidhi) village level Beneficiary Groups (BGs) successfully planned, designed, implemented and managed the O&M for rural water supply. The 24-month project cycle included one year for social mobilisation. BGs contributed 10 per cent of the capital cost, the panchayat paid 15 per cent and the government, the rest. This co-ownership also brought in aspects of co-management, so schemes were managed by local stakeholders and not NGOs. The government trained local youth in O&M; as this was a paid service, it became an income avenue for them. The BGs sourced the materials. Additionally, the government trained BG members on book-keeping, monitoring and leadership development, and women participated in the process. This process again had accountability built in since communities were involved in the entire project lifecycle.

In [Assam](#), the Public Health Engineering Department (PHED) is tasked with rural water supply. In water-stressed parts of the state, people have been more willing to own the O&M process, but in other areas, where they rely on their own sources such as wells or tubewells, they are reluctant to do so. PHED has started setting up users' committees for the O&M of each public water supply system (that covers more than one village). These committees are linked to the panchayats, but panchayats have been reluctant to take up the slack. This indicates that community involvement and water scarcity are two critical drivers for better O&M. The Government of Assam in 2010 introduced two awards users' committees that have performed well, demonstrating its commitment to the scheme.

In [Uttar Pradesh](#), WaterAid India and Gramonnati Sansthan in Mahoba have set up four technical centres in all the four blocks which offer O&M and repair services of water and sanitation. They attend to breakdowns in 24 hours have a women's mechanic team. It runs on a business model, in which the centres charge for repairs.

In [Gujarat](#), the Gujarat Water Supply & Sewerage Board (GWSSB) set up and runs regional water supply schemes covering a group of villages. Water for these usually comes from a perennial source like the Narmada River. The board sub-contracts O&M to private vendors. However, the panchayat concerned looks after individual water supply schemes, covering a single village. The panchayat employs trained operators to run the system. The drivers for O&M include social inclusion and transparency, capacity building, financing O&M and incentives for good performance.

Under the Gujarat Environment Health Improvement Programme of the [Aga Khan Foundation](#), an eight year two-phase programme to deliver sustainable water supply and environmental sanitation services to a total of 130 villages in Junagadh, Patan and Jamnagar districts of Gujarat, clear project guidelines have ensured the accountability of all stakeholders including the community. The [Self-Employed Women's Organisation](#) has trained women volunteers to maintain handpumps and liaise with panchayats and GWSSB.

In [Jharkhand](#), an NGO has trained local youth on hand pump repair and maintenance. As a result, these youth have repaired defunct tubewells, and maintain other water sources.

Community mobilisation, followed by a felt need for water (scarcity or contamination), are the two main drivers for better O&M. Accountability mechanisms can be built into the process of community mobilisation, as some of these examples show. All these examples have been well documented; the references are given below.

Comparative Experiences

Assam

User Committees improve public participation in O&M (from [Nripendra Sarma](#), *Public Health Engineering Department, Guwahati*)

People in Assam were by and large not involved with the O&M of rural water supply schemes of the government. However, recently the Public Health Engineering Department has successfully formed user committees in some waters-stressed areas for managing each scheme and liaison with PHED. The committees' active participation has improved accountability among all, the smooth functioning of the schemes and cost recovery.

Gujarat

Panchayats take ownership of O&M (from [Anita Miya](#), *Aga Khan Planning and Building Service India (AKPBS-I), Mumbai*)

Several parts of Gujarat are drought prone. To address this, AKPBS-I implemented the Gujarat Environment Health Improvement Programme under which it made several water schemes. It focused on a strong community mobilisation programme, training water supply operators, and earmarking O&M funds. The organisation found that even five years after the programme ended, the village panchayats maintain the schemes, indicating sustainable O&M. Read [more](#).

Individual schemes under panchayat control (from [Hemant Khosla](#), *United Nations Children's Fund (UNICEF), New Delhi*)

To increase community ownership of O&M in Gujarat, the government has made panchayats responsible for the upkeep of Individual Water Supply Schemes (IWSS). They hire operators and mechanics who are paid out of panchayat funds. Many villages levy volumetric tariffs to meet O&M costs. There are many instances of successful community involvement and ownership of the drinking water supply from all districts of Gujarat. Read [more](#).

SEWA women take charge of O&M (from [Dinesh Kumar](#), *Institute for Resource Analysis and Policy, Hyderabad*)

Women suffer the most from defunct rural water schemes. The Self Employed Women's Association (SEWA) has trained village women volunteers to take care of the maintenance of the systems, including repair and replacement of small mechanical components, and liaison with the office bearers of local panchayats and district wing of GWSSB to arrange for higher level repair and maintenance, whenever needed. This has led to improved O&M. Read [more](#).

Jharkhand

Youth trained to take charge of tubewells (from [Mamta Borgoyary](#), *FXB India Suraksha, Noida*)

Rural water supply is in bad shape in many parts of Jharkhand and the state has yet to get a functional panchayat system. The NGO, FXB India Suraksha, focused on a village, and trained local youth on hand pump repair and maintenance. These youth have repaired three defunct tubewells, and maintain other water sources. Construction is carried out with community participation. As a result there has been a reduction in water-borne diseases. Read [more](#).

Kerala

Jalanidhi Project: 3,681 Schemes Completed (from [Annie George](#), *Building and Enabling Disaster Resilience of Coastal Communities (BEDROC), Nagapattinam*)

Under the Kerala state government's water supply programme, 3,681 water supply systems, managed by 3,891 beneficiary groups have been completed as on June-end 2008. The beneficiary communities are operating and maintaining these schemes, demonstrating their willingness to participate in similar programmes. Read [more](#)

Orissa

Communities brought in for tank rehabilitation (from [Sonali Patnaik](#), *Arupa Mission Research Foundation, Bhubaneswar*)

In Orissa, people rely on tanks for multiple uses of water. Over time tanks get silted and need cleaning, but people usually do not pay any fees. To address this, the Orissa Community Tank Management Project developed a system in which Pani Panchayats would be made responsible for O&M through an agreement. This made people feel they had to ensure their contributions did not go to waste. Around 300 tanks are in the process of being rehabilitated in this manner.

Villagers take charge of water supply and sanitation (from [Joe Madiath](#), *Gram Vikas, Orissa*)

To improve rural water supply, Gram Vikas starts with community mobilisation. It first raises a corpus or endowment of Rs. 1000 per family. All families agree to build a quality toilet and a separate bathing room. It trains young daily wage earners in masonry and plumbing who construct toilets and bathing rooms. The Government gives subsidy to the BPL families. This approach has covered nearly 1000 villages so far. Read [more](#).

Uttar Pradesh

WaterAid works with local NGO to set up technical centres for O&M delivery, (from [Johnson Rhenius Jeyaseelan](#), WaterAid, Lucknow)

In Mahoba the response to breakdowns in water supply is extremely slow, leading to hardships for people in rural areas. WaterAid India Regional Office North and Gramonnati Sansthan in Mahoba set up four technical centres which offer O&M and repair services of water and sanitation. These have trained mechanics who attend to breakdowns in 24 hours. The centre runs on a business model so that it can be self-sustained. Read [more](#).

Related Resources

Recommended Documentation

Comparative Assessment of Time Factor in Repair and Maintenance of Handpumps (from [Johnson Rhenius Jeyaseelan](#), WaterAid, Lucknow)

Paper; by Sanjay Vijayvargiya; Gramonati Sansthan; Uttar Pradesh; April 2010;

Available at [ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071102.doc](http://ftp.solutionexchange.net.in/public/wes/cr/res-29071102.doc) (DOC; Size: 264KB)

These are the results of a study to understand the operation and maintenance situation of the water sources in 25 Panchayats of Mahoba district in April 2010

Guidance Book on Social Accountability in Rural Water Supply of Himachal Pradesh (from [Anandi Mehra](#), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Himachal Pradesh)

Book; by Gesellschaft für Internationale Zusammenarbeit; New Delhi; June 2011;

Available at <http://issuu.com/aanandiimehra/docs/saminrws>

Is a case study on the pilot testing of Social Accountability in Rural Water Supply in selected panchayats of two blocks in the state of Himachal Pradesh

Securing clean environment: The FXB experience (from [Mamta Borgoyary](#), FXB India Suraksha, Noida)

Brochure; by FXB India Suraksha; Noida;

Available at [ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071101.pdf](http://ftp.solutionexchange.net.in/public/wes/cr/res-29071101.pdf) (PDF; Size: 3.12MB)

FXB India Suraksha's activities which include facilitating access to safe water and sanitation facilities in rural areas

From [Anita Miya](#), Aga Khan Planning and Building Service India, Mumbai

Gujarat Environmental Health Improvement Programme

Report; by Aga Khan Planning and Building Services (AKPBS,I); Gujarat;

Available at [ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071102.pdf](http://ftp.solutionexchange.net.in/public/wes/cr/res-29071102.pdf) (PDF; Size: 104KB)

Describes the O&M activities and responsibility plan taken up under the Gujarat Environment Health Improvement Programme for water and sanitation services

O&M Calender

Manual; by Aga Khan Planning and Building Services (AKPBS,I); Gujarat;

Available at [ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071103.pdf](http://ftp.solutionexchange.net.in/public/wes/cr/res-29071103.pdf) (PDF; Size: 20KB)

Outlines the entire planning process which helped AKPBS,I in facilitating and institutionalizing O&M at village levels

Policy Insights on User Charges from a Rural Water Supply Project: A Counterintuitive View from South India (from [Vibhu Nayar](#), Tamil Nadu - Irrigated

Agriculture Modernisation and Water-bodies Restoration and Management (TN-IAMWARM) Project, Chennai)

Article; by Vibhu Nayar and A. J. James; TN-IAMWARM Project and Pragmatix Research and Advisory Services Pvt. Ltd; International Journal of Water Resources Development; UK; September 2010;

Available at <http://tandfprod.literatumonline.com/doi/pdf/10.1080/07900627.2010.491973> (PDF; Size: 153KB)

Traces the process of change with regard to O&M, driven by democratization of governance undertaken along with engineers in the south Indian state of Tamil Nadu

Evaluation and lesson learning on DfID support to Andhra Pradesh-Lessons Learnt Document on Municipal Service Delivery for the Poor in Andhra Pradesh (from [Ramakrishna Nallathiga](#), Centre for Good Governance, Hyderabad)

Report; by Centre for Good Governance; Hyderabad; 2008;

Available at http://www.cgg.gov.in/dfid/08050158_CG_BK01_120p.pdf (PDF; Size: 37.1MB)

Describes the O&M Plan in Andhra Pradesh that involves participation of community, which renders it more community oriented, reinforces accountability of implementation

Barefoot Hydrologists (from [Jyotiraj Patra](#), Centre for the Environment and Public Policy, Bhubaneswar)

Report; by Deltares; The Netherlands;

Available at <http://public.deltares.nl/display/BFH/Home>

How trained barefoot hydrologists help in strengthening the overall institutional framework of O&M at the community level

An ecology of vulnerability: Sewerage in Ahmedabad, India (from [Stephanie Tam](#), Northwestern University, USA)

Research Paper; by Stephanie Tam; Northwestern University; Harvard Graduate School of Design; 2011;

Available at http://dl.dropbox.com/u/5192816/Ecology_of_Vulnerability.pdf (PDF; Size: 46MB)

Discusses the problems with "self-help" sewerage O&M in slums and in the city of Ahmedabad

From [Hemant Khosla](#), United Nations Children's Fund (UNICEF), New Delhi

Social Processes for Community Participation

Excerpt from book; by Water and Sanitation Management Organization; Ahmedabad; 2006.

Available at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071104.pdf>, (PDF, 259 Kb)

Outlines the process of engendering community participation in water and sanitation programmes to create a buy-in from the users for these services

Operation and Maintenance

Excerpt from book; by Water and Sanitation Management Organization; Ahmedabad; 2006.

Available at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071108.pdf>, (PDF, 201 Kb)

Defines what is meant by maintenance and the steps for effective upkeep of water supply systems in rural areas

Users as Managers: Facilitating local self-governance for drinking water supply

Book; by Water and Sanitation Management Organization; Ahmedabad; 2006.

Available at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071105.pdf>, (PDF, 4 Mb)

Describes the rationale, process, challenges and systems for fixing and collecting water tariffs in Gujarat

Women empowerment

Excerpt from book; by Water and Sanitation Management Organization; Ahmedabad; 2006.

Available at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071106.pdf> (PDF, 345 Kb)

Section of the publication that deals with women's role in maintaining rural water supply schemes, and how to mainstream them in planning and execution

From [Sunetra Lala](#), *Water Community*

Scaling Up Community Management in South Africa: Alfred Nzo District Municipality Case Study

Report; by Jean De La Harpe; IRC International Water and Sanitation Centre; The Netherlands; May 2003;

Available at <http://www.irc.nl/page/15447>

Examines the support arrangements for community-based water service providers and the extent to which Community based models comply with legislative requirements

Community Management of Water Supply Services: the Changing Circumstances and Needs of Institutional Support

Report; by Mariela García Vargas; Universidad del Valle; IRC International Water and Sanitation Centre; The Netherlands;

Available at <http://www.irc.nl/page/24560>

Seeks to characterise the challenges confronted by community management of water supply systems, as well as the institutional solutions that exist for the sector

Operation and Maintenance of rural water supply and sanitation systems-A training package for managers and planners

Training Manual; by François Brikké; Water Supply and Sanitation Collaborative Council; IRC International Water and Sanitation Centre; The Netherlands; 2000;

Available at <http://www.irc.nl/page/1842>

Intended for planners concerned with the challenging problem of how to implement effective O&M of rural water supply and sanitation services in developing countries

Sustainable Community Management of Urban Water and Sanitation Schemes (A Training Manual)

Training Manual; by Vivian Castro, Neli Msuya and Charles Makoye; Water and Sanitation Program - Africa; Kenya; 2009;

Available at http://www.wsp.org/wsp/sites/wsp.org/files/publications/africa_training_manual.pdf (PDF; Size: 652KB)

Covers technical issues such as operations and maintenance activities related to water and sanitation, but also has a focus on institutional, managerial and financial issues

Why Gender Matters

Tutorial; UNDP, Capacity Building for Integrated Water Resource Management (Cap-Net); March 2006;

Available at

http://cap-net.org/sites/cap-net.org/files/training_material_s/why_gender_matters.pdf (PDF; Size: 1.57MB)

Demonstrates that addressing gender issues in water governance improves efficiency of water use, environmental sustainability, and improves social benefits and equity

Women's Collective Action and Sustainable Water Management: Case of SEWA's Water Campaign in Gujarat, India

Report; by Smita Mishra Panda, Institute of Rural Management (IRMA), Consultative Group on International Agricultural Research (CGIAR), Collective Action and Property Rights (CAPRI) and International Food Policy Research Institute; Washington; USA; May 2007;
Available at <http://www.capri.cgiar.org/pdf/capriwp61.pdf> (PDF; Size: 374KB)

Highlights women's role in Pani Samitis to manage water resources and its positive impact on their empowerment

Mainstreaming Gender in Participatory Irrigation Management: The Case of AKRSP
Report; by Shilpa Vasavada; Gender and Water Alliance; Centre for Environment Education and Foundation Books; New Delhi; 2005;

Available at <http://www.genderandwater.org/page/5785>

Shows that involving women in water supply schemes empowers them, and leads to efficient, effective and equitable management of water resources

Flowing Upstream: Empowering Women through Water Management Initiatives in India

Book; by Sara Ahmed; Centre for Environment Education and Foundation Books; Cambridge University Press India; New Delhi; 2005; Permission Required: Yes, paid publication;

Available at <http://www.infibeam.com/Books/info/Sara-Ahmed/Flowing-Upstream-Empowering-Women-Through-Water-Management/8175962623.html>

Presents case studies of civil society interventions on issues of women's participation in community based water management systems

Women and Water, Stories from Dewas

Article; Catch Water Newsletter; Centre for Science and Environment; New Delhi; October-November 2002;

Available at http://www.rainwaterharvesting.org/catchwater/oct_nov2002/initiative.htm

Highlights cases where women SHG members have used the SWA Shakti scheme to create community assets for ensuring drinking water supply

Recommended Organizations and Programmes

WaterAid India, New Delhi (from [Johnson Rhenius Jeyaseelan](#), *WaterAid, Lucknow*)

1st Floor, Nursery School Building, C-3, Gate-1 Nelson Mandela Marg, Vasant Kunj, New Delhi 110070; Tel: 91-11-46084400; Fax: 91-11-46084411; wai@wateraid.org;

http://www.wateraid.org/india/what_we_do/default.asp

Has been working with Gramonnati Sansthan in Mahoba on reduction of lag time of water sources in Mahoba district of Uttar Pradesh, and improved O&M services

Self Employed Women's Association, Gujarat (from [Dinesh Kumar](#), *Institute for Resource Analysis and Policy, Hyderabad*)

SEWA Reception Centre, Opp. Victoria Garden, Bhadra, Ahmedabad 380001, Gujarat; Tel: 91-79-25506444; Fax: 91-79-25506446; mail@sewa.org; http://www.sewa.org/About_Us.asp

Has been working in the area of maintenance of rural water supply schemes, particularly decentralized water supply schemes such as hand pump and tube well based schemes

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), New Delhi (from [Anandi Mehra](#))

GIZ Office India, 21, Jor Bagh, New Delhi 110003; Tel: 91-11-24603832; Fax: 91-11-24603831; giz-indien@giz.de; <http://www.gtz.de/en/692.htm>

Brought out a book which documents a case study on pilot testing of social accountability in rural water supply in selected panchayats in the State of Himachal Pradesh

FXB India Suraksha, Haryana (from [Mamta Borgoyary](#))

A-8, Sector 19, First Floor, Noida, Gautam Buddha Nagar 201301, Haryana; Tel: 91-120-4751900;
Fax: 91-120-4751901; info@fxbsuraksha.org; <http://www.fxbsuraksha.in/>

In Jharkhand, worked with the local youth and through the youth clubs to maintain water sources and to mobilise local participation in all construction activities

Jalanidhi (Kerala Rural Water Supply and Sanitation Project), Kerala (from [Annie George](#), Building and Enabling Disaster Resilience of Coastal Communities (BEDROC), Nagapattinam)

PTC Towers, SS Kovil Road, Thampanoor, Thiruvananthapuram, Kerala 695001; Tel: 91-471-233700; Fax: 91-471-2337004; mis@jalanidhi.com; <http://jalanidhi.com/>

State-level project, assisted by the World Bank, and implemented with the state government to provide water and sanitation services involving community participation

United Nations Children's Fund (UNICEF), New Delhi (from [Dipak Roy](#), Individual Consultant, New Delhi)

73, Lodi Estate, New Delhi 110003; Tel: 91-11-24690401, 24691410; Fax: 91-11-24627521, 24691410; newdelhi@unicef.org; <http://www.unicef.org/india/wes.html>

Has initiated several projects with community-led O&M systems, and community-based handpump maintenance and water quality monitoring system in West Bengal

Water and Sanitation Management Organization (WASMO), Gujarat (from [Hemant Khosla](#), United Nations Children's Fund (UNICEF), New Delhi)

3rd floor, Jal Sewa Bhawan, Opp. Air force headquarters, Sec. 10-A, Gandhinagar 380012, Gujarat; Tel: 91-79-23247170; Fax: 91-79-23247485; wasmo@wasmo.org; www.wasmo.org;

Empowers local communities, such as Gram Panchayats and Pani Samitis, to manage their own water supply schemes, particularly with women's involvement

Gram Vikas, Orissa (from [Joe Madiath](#), Gram Vikas, Orissa)

Mohuda, Berhampur 760002, Orissa; Tel: 91-680-2261866; Fax: 91-680-2261862; info@gramvikas.org; <http://gramvikas.org/>

Has motivated people in 943 villages in Orissa to build their water supply systems, which are entirely owned, managed and maintained by the communities themselves

Plan India, New Delhi (from [R K Srinivasan](#))

E-12 Kailash Colony, New Delhi 110048; Tel: 91-11-46558484; Fax: 91-11-46558443; kulasekaran_srinivasan@yahoo.com; <http://planindia.org/about-plan>

Has been working in the rural areas of Orissa for the provision of safe drinking water to communities

From [Stephanie Tam](#), Northwestern University, USA

Kamdar Swasthya Suraksh Mandal, Gujarat

II Floor, Binori Corner, Under Dr. Shyama Mukharjee Fly Over, Jivrajpark Road, Jivraj Park, Ahmedabad 380051, Gujarat; Tel: 91-79-26611908; Fax: 91-79-26611908; kssm@youtele.com; http://kssm.org.in/about_us.html

Works with manual manhole labourers, where the O&M of sanitation services has been subcontracted to private companies

Navsarjan, Gujarat

Dalit Shakti Kendra, Village Nani Devti, Sanand-Bavla Road, Taluka Sanand, District Ahmedabad Gujarat; Tel: 91-2717-324323; Fax: 91-2717-287308; admin@navsarjan.org; <http://navsarjan.org/>

Has been addressing the issue of eradicating manual scavenging in Gujarat since 1995

National Sanitation & Environment Improvement Foundation (NASA), Gujarat

10-11, 4th Floor, Sahyog Commercial Center, Opp. Dinbai Tower, Lal Darwaja, Ahmedabad 380001, Gujarat; Tel: 91-79-25503996; info@web-designing-india.com; <http://www.nasafoundation.org/>

NASA is active in result-oriented programmes aimed to eliminate diseases by implementing sustainable schemes of pay-and-use toilets and recycling human refuse

Aga Khan Rural Support Programme (India), Gujarat (from [Ramakrishna Nallathiga](#), Centre for Good Governance, Hyderabad)

9th-10th Floor, Corporate House, Opposite Dinesh Hall, Off Ashram Road, Ahmedabad 380009, Gujarat; Tel: 91-79-66312451; Fax: 91-79-66312471; kishore@akrspi.org; http://www.akdn.org/india_rural.asp

Supports women's role in water governance and also helps SHG members to access microfinance schemes for minor irrigation and watershed development

From [Sunetra Lala](#), Water Community

Intercooperation, Andhra Pradesh

53/A/4, Sappers Lane, Balamrai, Secunderabad 500003, Andhra Pradesh; Tel: 91-40-27906991; Fax: 91-40-23356275; info@intercooperation.org.in; <http://www.intercooperation.org.in/projects.html>

Initiated a pilot project on decentralised natural resource management, including water, with a focus on empowering elected women representatives in rural areas

Samam SHG Women's Federation, Pondicherry Science Forum, Pondicherry

No. 10, II Street, PR Gardens, Reddiarpalayam, Pondicherry 605010; Tel: 91-413-2292432; erdpsf@gmail.com; <http://www.psfcerd.org/User/Samam/Samam.htm>

Members of the Federation have ensured availability and quality of drinking water, cleaned overhead tanks through their collective action

Gujarat Women's Economic Development Corporation Ltd., Gujarat

Udyog Bhavan, Block No. 8/8, Sector 11, Gandhinagar 382017, Gujarat; Tel: 91-712-23222644, 23227287, 23227119; Fax: 91-712-3227129

Provided support to women SHG groups to manage and maintain drinking water storage systems; and has demonstrated success stories of water resources managed by women

WaterHealth India Pvt. Ltd., Andhra Pradesh

No. 206, Ashoka My Home Chambers, 1-8-301, S. P. Road, Secunderabad 500003, Andhra Pradesh; Tel: 91-40-27890307, 27890308; Fax: 91-40-27890309; infoindia@waterhealth.com; <http://www.waterhealth.com>

Helped set up Water Health Centres for providing safe drinking water, which were managed, monitored and maintained by women

Responses in Full

[Nripendra Sarma](#), Public Health Engineering Department, Guwahati

I would like to share the experience of community initiatives to ensure efficient management of rural drinking water supply in Assam.

Drinking Water Supply in rural areas of Assam is managed by the Public Health Engineering Department (PHED), Government of Assam. Apart from the Government initiatives, the individual, household or community group also establishes the some water sources with full ownership of the same. Most of the rural population relied on self-water sources, ranging from shallow unlined / lined dug wells (Ring Wells) to the borewells fitted with different types of water lifting devices, like hand pumps, etc. Such water sources are facilitated with private initiatives either by individuals for their own/neighbour's benefit or by households or community groups to improve their own water supplies, without waiting for help from Government. Water sources established in own initiatives provide additional strengths to the government efforts / approach to ensure sustainable water supply and thus play a major role in ensuring the drinking water security in rural areas. However, in case of the water sources with either partial or total control of the government, although they are nearly always used by the household / community group, yet they become reluctant for owning its responsibility for O&M. This is because in rural areas, any form of payment is uncommon due to their perception that the government is responsible, and total dependence on the government.

However, in water scarce regions or considering the quality aspect in regard to safe water supply, households and communities now have started coming forward with their own initiatives for improvement of the status of water supply services by constructing and for managing the upkeep of the water supply arrangements established by the government and sometimes even bearing the establishment cost also, in part.

The felt need resulted from the situation analysis is that the role of Government needs to shift from service provider to that of a facilitator. Much of the ground-breaking work on community management of water supply has already started rolling in many areas, with due consideration to the importance of improved and safe water supply. Eventually, the Government will provide financial and policy support to the communities and community level institutions for achieving the desired levels of services on a sustainable manner.

Under the ongoing reform initiatives, the PHED, Assam, has made significant strides in recent years, initially in putting community level ownership on the agenda, and now moving increasingly towards community involvement for O&M initiatives. In its efforts to encourage the community (users) to actively participate in the O&M of rural water supply schemes, Users' Committees are being formed under the guidance of PHED, Assam, for each rural Piped Water Supply Schemes (PWSS) with the representative participations of the users from the areas covered by the PWSS. The major role of such Users' Committee is to ensure effective management of the PWSS including its regular O&M, creating social responsibilities in the form of ownership, regular supply of water and also the liaison with the PHED in case of requirement of any technical inputs.

Such an endeavour has succeeded in shifting the responsibility and the ownership of the rural PWSS to the community (users / beneficiaries) in a result oriented manner. Active participation of the Water Users Committees has resulted social accountability among all and the proactive role of the community has eventually ensured the smooth functioning of the PWSS, with people's participation. Further, cost recovery for operations and maintenance and replacement costs, in part or full, has also led to the financial viability and sustainability of the schemes.

To boost such efforts, the Government of Assam has introduced last year, two awards for the successful Users' Committees of water supply schemes, namely "Uttam Gramya Pani Jogan Parichalana Puraskar (UGPJPP)" and "Gramya Jalamitra Puraskar (GJMP)". Accordingly, from different districts of Assam, 10 Users' Committees are awarded with UGPJPP and three Users Committees are awarded with GJMP in a ceremony presided over by the Chief Minister of Assam. This demonstrates the state's high level commitment to the scheme.

Such awards have again renewed the commitments of the Users' Committees to bear the social responsibilities with the true spirit of cooperation and involvement. However, the impact of these social movement on rural drinking water supply are yet to be documented for showcasing the achievements, which may set examples to be followed by other communities in future.

Another important issue is the affiliation of the Users Committees to the PRIs. The PRIs are yet to take this responsibility to form such Users Committees and also for monitoring the sustainability in this regard, due to their involvement in other decentralized programmes under Panchayati raj system.

However, there are some inherent demerits also as follows:

- More focus on accessibility, low cost and less importance on proper management and water safety plan.
- Less recovery of water users' charge to cater for the need for its O&M.
- Lack of thrust on ownership and more dependence on Government.

Finally, the impact of these social movements on rural drinking water supply has already become transparent through Social Accountability, which refers to the users' point of view - addressing demands / sustainability of supply and its water sources.

- These initiatives need to be institutionalised keeping in view of their sustainability and the rural community needs to be mobilized to own and sustain these programmes on rural water supply.
- The development agents, like NGOs, CBOs, etc., and above all, the Community should be properly advocated to ensure the effective social mobilization
- Considering this, a participatory demand driven approach is highly warranted with a focus on necessary awareness generation amongst the Community on the need for "Total Water Security".
- There comes the profound role of development workers / agencies to support the Government approach and activities to pave the ways for fruit bearing implementation to prevent drinking water borne risks to ensure Water Safety and Security to all.

[Johnson Rhenius Jeyaseelan](#), WaterAid, Lucknow

WaterAid India Regional Office North and Gramonnati Sansthan in Mahoba has been working on reduction of lag time of water sources in Mahoba district of Uttar Pradesh. The Bundelkhand region faces a severe problem of water scarcity and the lag time in repair is sometimes more than a month. To tackle this problem a model project has been implemented. We have established four technical centres in all the four blocks which offer O&M and repair services of water and sanitation. Any complaint of breakdown is attended to in 24 hours and we have a women's mechanic team.

The centre runs on a business model so that it can be self-sustained. The centre charges for all major and minor repairs and has trained mechanics, all type of tools, spares and also has sanitation materials in addition to water quality test kits for water quality testing. The centre has been successful in reducing the time for major repair to less than 24 hours and there has been no report of breakdown of the repaired water source again.

The centre also does mini water supply line O&M and liaises with panchayats so that more complaints come to them. The mechanics have safety equipment, and carry a global positioning system and a camera to document every repair. The centre has helped to increase their skills, provide them job opportunities thereby their income and is expected to be self-sustaining from this year.

The following table shows the impact of the centre:

Particulars	Situation in April 2010	Situation in March 2011
Panchayats	11	11
Total number of installed handpumps	320	320
Average number of handpump per village Panchayat	29	29
Breakdown reported during last 3 months from the month of assessment	142	78
Repaired out of the total breakdown	100	73
Breakdown percentage	44 percent in 3 months	24 percent in 3 months
Percentage repaired out of breakdown	70 %	94 %
Average un-repaired of the total installed	13%	2%
Average time of response for repairing / attending the breakdown source		
1 day	No	06 Panchayats
2 day	02 Panchayats	04 Panchayats
1 week	04 Panchayats	01 Panchayats
2 week	03 Panchayats	No
More than 2 weeks	02 Panchayats	No

- The improvement in the repair and maintenance of handpumps is clearly visible after establishment of Samudaik Sahabagita Kendra [SSK]. The overall functioning is also improved and response time in case of breakdown has reduced significantly.
- In 10 out of 11 Panchayats included in the particular comparison the maximum time of repair is 2 days.
- 94 percent of the total reported breakdown was addressed within 2 days' time
- The improvement is basically due to establishment of a dedicated centre with required spare and tools and more specifically locally available trained human resources.
- Transparent and affordable functioning is the USP of the intervention

A short report (<ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071102.doc>) and presentation (<ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071101.ppt>) are attached. For more feedback and queries do contact me and also for more details.

Sonali Patnaik, Arupa Mission Research Foundation, Bhubaneswar

I would like to share with you a bit of my experience with regard to WASH and other water sectors such as minor irrigation systems (tanks also used for washing/ bathing purpose) in Orissa's context. I hope it will be useful:

An example where O&M issues been addressed, reducing the downtime of safe water sources, while also limiting the pollution of the groundwater in a sustainable way?

In Orissa source water for bathing/washing is not limited to tube wells and bore wells but also minor irrigation systems which have catchments/tanks. Often, water from these tanks systems is directly used by households for daily activities as well as farming and other livelihood purposes. The tank system does get affected over a period of time and there is a need for regular O&M. Often there is a lack of ownership and unwillingness to pay user fees by people. To address this issue, the Orissa Community Tank Management Project of the Department of Water Resources developed a system wherein the Pani Panchayats (Water User Associations) would be partly made responsible for the O&M. It was made mandatory for the Pani Panchayat to sign an agreement saying they were willing to participate in the project and share the responsibility for its O&M, pay a small part of the cost in terms of labour, cash or kind. It was also mandatory for

them to open an O&M account, collect user fees and save it for use during the post project phase. It was only after such an agreement was made that a project was initiated. As a result, the community felt that since they had contributed, they had the responsibility of ensuring that their contribution did not go to waste. Around 300 tanks are in the process of being rehabilitated in this manner.

With regard to skills in O&M, certain members of the Pani Panchayat were trained to do so as per guidelines. This was monitored by the executive engineers of the concerned districts along with the members of the Pani Panchayat and the community (Participatory Monitoring). Social Audits were also done.

The impact of renovating and rehabilitating the system was based on a pre-assessment (environmental and hydrological). Any negative impacts of renovation/rehabilitation or future usage were scientifically assessed as well as identified through discussions with the community based on which O&M plans were designed. This included pollution of groundwater and other likely risks. Grievance redressal mechanisms were put in place. Risks were identified, and addressing such risks was built into the programme.

What are the drivers for this improved O&M?

- Technical analysis (environmental/hydrological) pointing towards what needs to be done and what are the likely impacts and socio-economic and environmental risks
- Appropriate and long term community mobilisation strategy, capacity building and training. Institutionalisation of the strategy based on socio-economic assessments and interaction with community, identification of capacities/skills/knowledge available with the community and key players like the Panchayati Raj Institutions, Pani Panchayats, SHGs and community
- Identification of all stakeholders and the role they play in the sector as well as what other things they can do to enhance performance, participation and finally O&M; developing this into a strategy and part of the project implementation plan
- Sensitisation of the community, the PRIs, Pani Panchayats and the staff of the concerned Department
- Allowing for the collection of the water user fees by the Pani Panchayat in a separate account called the O&M account to be used post project. Once the system was in place and capacity building was done, stakeholders began carrying out their responsibilities. This motivated them as they were concerned about sustainability. They were also taken on exposure visits
- Having provisions for NGOs to assist in capacity building and training, sensitisation and carrying the project implementation plan forward by providing handholding support to the community
- Having a Manual in place in the local language describing each step.

What accountability mechanisms have been found to be effective?

- Participatory walkthroughs (Government staff, community, NGOs, PRIs) to assess the existing situation, and the situation during plan implementation, post implementation and as and when required
- Social Audit by Government staff, community, NGOs and PRIs
- Having a proper grievance redressal system in place
- Joint signatures of the Pani Panchayat and junior engineers for financial transaction and sharing the same during social audit in the presence of the community
- Discussions of the same during Gram Sabha meetings, especially in PESA districts.

Have these been documented, or do they need to be documented? I request members to share existing documents.

The documents for the Project Implementation Plan and the Pani Panchayat Manual are large files. In case you feel the information I have shared is useful please email me and I will mail them across some parts of it.

I just evaluated a project in West Bengal in connection with strengthening of Panchayats in West Bengal. The panchayats there were very active in creating awareness on WASH through wall paintings. In some interior pockets of Purulia district (which also has a tribal population), a lady Sarpanch proudly showed me the toilets that were constructed across a village in every household. I visited her house and asked to see the toilet. She first hesitated. The hesitation was because the toilet was waterlogged. She said she could not even let her children use it because a) there was regular water logging b) the shed was made of tin/aluminum sheets with sharp edges which were unsafe for her children. So the family still defecated in the open, and it was not just her household but everyone who had these toilets continued the practice. There was a lack of sufficient support from the WASH team on the technical aspect of the toilet (the construction material), lack of gender and child sensitivity, lack of post construction walkthroughs and discussion so as to understand what the problems were and why people continued to not use the toilets. A target based approach by the WASH team without any supporting mechanism defeated the good intentions. Panchayats generally do not have people who are technically oriented; the Panchayats themselves require some capacity building and training. There is certainly a need to have in place a post construction O&M strategy, which is either missing or not communicated to the community/PRIs properly.

Dinesh Kumar, Institute for Resource Analysis and Policy, Hyderabad

I am only aware that Self Employed Women's Association (SEWA) has been doing a good amount of work in the area of maintenance of rural water supply schemes, particularly decentralized water supply schemes such as hand pump and tube well based village schemes. Here, the village women volunteers, who are members of SEWA, were trained to take care of the maintenance of the systems, including repair and replacement of small mechanical components, and to liaison with the office bearers of local Panchayats and district wing of GWSSB to arrange for higher level repair and maintenance, whenever needed. They also had some experience in the Santalpur regional water supply scheme, which covered hundreds of villages, in managing water supply at the village level through *Pani samitis* (Dutch funded project). The best person to contact is Ms. Reema Nanavati of SEWA.

As regards drivers, the community action for managing water supply sources seem to be working in areas where they are alternative source of water for domestic supply in hostile environment like the one I mentioned. The fact of the matter is that whenever the village (public) water supply sources run dry, communities start depending on farm wells, and village ponds to meet their needs.

As regards groundwater pollution prevention, there is no experience from this part of the world in mobilizing social action for protecting groundwater quality. I also do not think, this has happened anywhere with community initiatives, without any institutional and policy interventions such as enforcement of pollution tax, and monetary incentive for reducing area under crop production and disposal of animal waste (as tried in some European countries) on soil.

Another source of rich information could be WASMO in Gujarat.

Anandi Mehra, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Himachal Pradesh

There is a *Guidance Book on Social Accountability in Rural Water Supply of Himachal Pradesh*. Please visit <http://issuu.com/aanandiimehra/docs/saminrws> for the same. The book documents a case study on pilot testing of social accountability in rural water supply in selected panchayats, of two blocks in the State of Himachal Pradesh that was carried out under Indo German Bilateral Project "Capacity Building of Panchayati Raj Institutions in Himachal Pradesh" in collaboration with the Irrigation and Public Health Department (IPH). This Guidance Book in English highlights the process and involvement of key stakeholders (gram panchayats, IPH department and community) in ensuring accountability, transparency and participation of all the stakeholders and presenting the Action plan /Action taken report in the gram sabha.

I would request you to contact Mr. Farhad Vania (email - farhad.vania@giz.de) to send you the guidance books on community managed water supply. A WASH documentary in Hindi as well as English is also available at GIZ Delhi office; they could be contacted for the same.

Mamta Borgoyary, FXB India Suraksha, Noida

I am happy to share with you our experience in this field. In particular, I would like to share with you our experience of our project on WASH in four tribal areas of Jharkhand. As part of the project, we have successfully worked with the local youth and through the youth clubs to maintain the water sources and to mobilise local participation in all construction activities such as soak pits, garbage pits, etc. We are working with the local youth who are our agents of change. We have group of youths who have been provided technical training on hand pump repair and maintenance and they are successfully managing the maintenance of the water sources. Building accountability through participation in planning and execution has been one of the main achievements of our intervention. Very briefly our progress so far is:

- Trained youths have repaired 3 defunct tubewells
- The youth club is regularly engaged in maintenance of tube wells, platforms and all other drinking water sources
- All construction activities are carried out by community participation by providing free labour
- We have recorded reduction in commonly curable diseases in the village (we organise regular health camps and the data has been analysed)
- Community mobilisation for safe and hygienic practices has been our main strategy, we observe that personal hygiene has improved in the villages
- We have garnered community willingness and participation to move from open defecation to household toilets. We are currently working to see if the TSP can be better implemented in these villages.

Our organisation FXB India Suraksha is working on water and hygiene in different parts of the country (Andhra Pradesh, Jharkhand, Pondicherry, Tamil Nadu, and Mizoram). These are small pilot projects where we are implementing different strategies to meet our goal. We find in almost all the pilots, engaging the youth in a meaningful way has ensured that the issues of ownership, accountability and maintenance are tackled successfully.

We will be very happy if you would like to visit our site in Jharkhand. Kindly let me know. In addition I will be happy to share with you more in case you need additional information. Please find a brochure of our work on water and sanitation at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071101.pdf> (PDF; Size: 3.12MB). For more information on our work please visit our website: www.fxbsuraksha.in

Annie George, Building and Enabling Disaster Resilience of Coastal Communities (BEDROC), Nagapattinam

I am Annie George from an NGO called Building and Enabling Disaster Resilience of Coastal Communities (BEDROC) in Nagapattinam. I have had the opportunity to work for a World Bank funded "Rural Water Supply and Sanitation Project" in Kerala called the Jalanidhi Project from 2000-2004. This project was quite successful in running community based water and sanitation schemes where the communities, through village level "Beneficiary Groups" (BGs) successfully planned, designed, implemented and managed the O&M of the project.

The whole project cycle was for 24 months - 4 months for pre-planning, 8 months for planning, 8 months for implementation and 4 months for post-implementation support. So, considerable time was dedicated to social mobilisation and the creation of local leadership. This helped in strengthening the group dynamics and creating a shared agenda.

The BG once formed, signed a tri-partite agreement with the Kerala Rural Water Supply and Sanitation Agency and the Grama Panchayat (GP). One of the most crucial aspects was the financial contribution by the BG members worked at 10 per cent of the total estimated capital cost. The GP had to pay 15 per cent. This co-ownership also brought in aspects of co-management which ensured that the scheme was managed by the local stakeholders rather than external NGOs.

Interested community members/youth were trained in O&M aspects and were on call for repairs. As this was a paid service, it also ensured employment opportunities. As all the construction/hardware materials were sourced locally by the BG members themselves during the implementation period, availability of replacements was never an issue. The BG members were already aware of the availability and the rates.

There were a series of trainings held for the members, right from book-keeping to monitoring, leadership development, etc. Women were encouraged to participate and special care was taken to ensure that one of the three key positions in the BG was always held by a woman. Apart from this, there were special women empowerment programmes woven into the project components, which supported the women in developing small businesses on their own with project loans/funding.

Rain water harvesting was popularised as a means of replenishing the wells/bore wells as well as for using as drinking water.

The Project Implementation Plan, the Bye-laws, various MIS reports (both progress and process oriented) on the project would be available with the Jalanidhi office in Trivandrum and also their website jalanidhi.org. They would also welcome site visits. Hope this will be useful for you in formulating your plans.

[Anita Miya](#), Aga Khan Planning and Building Service India, Mumbai

Our understanding is that poor O&M system is due to:

- O&M costs are frequently higher than original anticipated and not fully taken into account at the project planning stage. Although the situation has improved in recent years with the application of lessons learned over the last two decades. There are still water supply projects that ultimately fail because of inadequate provision for these costs.
- The majority of failures in water supply and sanitation projects, over the long term are attributable to problems with maintenance, and most of these problems are institutional rather than technical in nature. A successful cost effective maintenance programme is often much more difficult to achieve than the installation of the water system in itself.

Please find our response to the issues raised by Brecht Mommen

Are their examples where O&M issues been addressed, reducing the downtime of safe water sources, while also limiting the pollution of the groundwater in a sustainable way?

We have implemented the Gujarat Environment Health Improvement Programme (GEHIP 2002-2005) comprising multiple water and sanitation construction activities. To date, the village panchayats are maintaining created assets under the programme, thereby indicating establishment of sustainable O&M mechanisms. From the inception of the programme, we made conscious efforts to internalise and develop a plan for O&M along with planned activities. Our approach focused on:

- A strong community mobilisation programme, especially sensitising village leaders (Panchayat and Village Development Committee-which is sub-committee of Panchayat)
- Developed and trained water supply operators for environmental and technical guidelines of each activity along with maintenance calendar
- Facilitated earmarking O&M funds (for example we mobilised 20 per cent of community contribution and kept the same in fixed deposits for 5 years in bank)

What are the drivers for this improved O&M?

- Equal weightage for O&M along with programme preparation, implementation, commissioning and handing over of the set up.
- Identification of Water Supply Operator (WSO) and imparting him/her appropriate training package.
- Preparation of detailed outline of an O&M manual.
- Capacity building of Village Development Committee especially of WSO on basic management of the system, identification of problems and their alternate solution.
- Post-commissioning technical training to WSO/Village Development Committee
- Earmarked finances for O&M fund for next five years, 20 per cent of the community contribution to be deposited into Fixed Deposit (FD) in the name of VDC. This fund is to be judiciously used for operation and maintenance of the facilities – existing, renovated and created, and if there is any shortfall then that is replenished by community contribution/donation, etc.

What accountability mechanisms have been found to be effective?

A well defined responsibility plan was developed, refer to page number 2 of the document that is available at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071102.pdf> (PDF; Size: 100 KB)

Have these been documented, or do they need to be documented? I request members to share existing documents.

You can see our documents, one mentioned above, and another available at <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071103.pdf> (PDF; Size: 16KB) for the entire planning process which helped us in facilitating and institutionalizing O&M at village levels.

Vibhu Nayar, Tamil Nadu - Irrigated Agriculture Modernisation and Water-bodies Restoration and Management (TN-IAMWARM) Project, Chennai

I am sharing my paper authored with A.J. James published in International Journal of Water Resources Development, Volume 26 Issue 3, September 2010 as "*Policy Insights on User Charges from a Rural Water Supply Project: A Counter-intuitive View from South India*". It is based on a "Randomized trial of impact of user charges on O&M Behavior of 105 panchayats in Tamil Nadu where treatment was controlled for user charges (the study was designed in collaboration with MIT Cambridge). The abstract states, "When government engineers work closely with rural communities to raise awareness of water as a scarce resource, greater community ownership results and water supply service delivery and user charge

collections improve. This runs counter to the conventional hypothesis that (higher) user charges lead to more finances and hence, improved service delivery. More sustainable service delivery results when engineers adopt a non-prescriptive and flexible approach and work with communities—rather than impose targets of 100% collection of operation and maintenance costs from the outset, as is done widely. The key is attitudinal change, driven in this case by democratization of governance undertaken along with engineers in the south Indian state of Tamil Nadu.”

In conclusion, the paper states: Village panchayats were randomly divided into three equal groups and assigned a revenue generation target based on the proportion of operation and maintenance costs to be covered to test the conventional wisdom that (higher) user charges lead to conservation of resources, greater accountability, efficiency of service delivery, hence better collection, and consequently a greater proportion of operation and maintenance expenditure recovered by collection, and overall greater user satisfaction. The findings of the study, however, show that the fixing of higher user charge based on revenue targets has not induced either greater collection of user charges or greater declines of operation and maintenance costs. Clearly, there are some other factors at work.

The alternative view is that when the community understands the importance of water as a resource, there is greater participation in conservation and management and consequently greater responsibility and ownership over the drinking water supply system and decisions concerning the use of water as a scarce resource requiring conservation. As a consequence, performance and service delivery improves. This turns the conventional hypothesis on its head; a greater community desire for more effective resource conservation and cost effective service delivery may also lead to the imposition (or increase) of tariffs. There are three key policy implications of the study findings: (1) structural measures of community participation (such as imposition of user charges, forming village water Policy Insights on User Charges from a Rural Water supply Project committees, and handing over responsibility to communities) do not work on their own, and need to be actively supplemented by ‘non-structural’ measures such as democratizing governance, changing attitudes in order to build community ownership, and responsibility for water service delivery; (2) the best way to improve management and conservation is not to approach it as a financial problem requiring user charges, but as a water resource scarcity problem that requires community awareness, understanding and hence involvement for its resolution—which will prosper only in an environment in which service providers willingly share power and partner with the community in a new governance paradigm; and (3) a non-prescriptive or non-target-driven approach emphasizing raising awareness of the importance of managing water as a common resource, and on providing sufficient space for community action and decision making, are key ingredients to evolving successful and sustainable community-managed water supply systems.

These approaches can be replicated and used to reform policy. However, the success of the approach depends critically on a change management process that addresses institutional and attitudinal factors inhibiting change. The findings of the study, however, should hopefully stimulate fresh thinking on learning from, discussing about and contextualizing similar approaches amongst policymakers across the developing world.

You can download the full paper on the website of International Journal of Water Resources Development, at <http://tandfprod.literatunonline.com/doi/pdf/10.1080/07900627.2010.491973> (PDF, 155 KB)

Thanks to all of those who have responded to my query. It is very interesting to hear from others about this topic and gives food for thought and debate. I would like to seize this opportunity to dig a layer deeper into my query:

- It would be interesting to know about the **sustainability** beyond the project cycle. What is the evidence that water supply remained to be well maintained after the external support of the project has been removed. So 10 years after the project - what has happened? What supporting mechanisms have proven to be vital to ensure the sustainability?
- **Community ownership** has proven to be a vital aspect. Community contributions before the start of the project, as mentioned by the PHED in Guwahati, can be a powerful tool to ensure this ownership. But how do we deal with Orissa situation, when the water sources have already been constructed by RWSS and handed over to PRI for O&M? In Orissa no community contributions for O&M are imposed for public stand posts, wells and handpumps; PRI fund O&M using state funding. So how do we make communities owners- and should we? So can there be ownership on the services without payment
- Concerning the aspect of accountability, I am looking for **models of social audits**, whereby the communities are able to demand for their rights of water supply service from their PRI. What experiences do we have here? In Uganda there was a pilot of community score cards, whereby the community would periodically evaluate the services provided. Do we have some of these kinds of experiences?
- Concerning the **drivers**, I am interested in the internal drivers, as opposed to the external "project drivers", why was the community or government willing to improve the O&M situation? Who spearheading the change process and what was their motivation? What motivated the others to follow the change? What are the experiences of the water community?
- Concerning the **private sector** involvement, it would be great to hear from them about what drives them and what is required to go for effective maintenance and supply chains? Do we have some business studies about O&M of rural water supply? What cases do we have related to a private sector involvement in O&M of rural water supply; PPP models, and supply chains that reach to the community level (without government procurement systems facilitating the supply to community level)?

I am very much looking forward to hear more from the Water Community!

[Dipak Roy](#), Individual Consultant, New Delhi

O&M of water supply systems in Orissa had been addressed specifically in the Danish International Development Agency (DANIDA) supported Orissa Drinking Water Project (1983-1994), and this led to a large pilot titled "2-Tier maintenance system", mainly of handpumps in 3 coastal districts (undivided Cuttack, Puri and Balasore). The system was based on identification, training and nurturing of teams of Self-Employed Mechanics (SEM), who typically looked after 25-30 handpumps. Each SEM received a fee of Rs. 150 per pump per year and was provided with a bicycle and tools. The system was monitored rigorously and also documented very well. (See "Water and Sanitation Sector assessment" in Orissa: Final report by Scott Wilson Consultants, 2005, for a good summary of the project and of the sector in general).

After the closure of the DANIDA project, the "2-tier system" was extended by RWSSO, Orissa with UNICEF's support between 1996 and early 2000's. There is some documentation done by

UNICEF from 2005-2007. (Please check with Lopamudra Tripathy, UNICEF, Bhubaneswar for details)

Pipe water supply systems covering a number of villages have been installed and maintained well by a major NGO Gram Vikas in southern Orissa. This is a model worth looking into simply because it is seen to be working well. In the Gram Vikas projects cost-sharing by users, both capital costs and partial recovery of O&M, is a precondition for project design. The model has also been reviewed by the Government of Orissa (GOO) and the Government of India (GOI) and acknowledged as a good practice. (Please contact Joe Madiath, Director, Gram Vikas, Mohuda, Ganjam, Orissa for details)

In Decemebr 2011, WaterAid, Bhubaneswar office supported a study which looked at the capacities of Village institutions - Village Water and Sanitation Committees vis-à-vis Village Health Committees {or Gaon Kalyan Samiti (GKS) of the National Rural Health Mission (NHRM)} and the larger issue of the role of gram panchayats in O&M of water supply systems. The background to the study was a proposal within GOO to combine the functions of Village Water and Sanitation Committee (VWSC) and GKS, as per the recommendations in the 2010 DDWS (GOI) guidelines. The study was based on detailed qualitative and quantitative studies carried out in 40 gram panchayats in 4 representative districts and has been shared with the Chief Engineer, Rural Water Supply and Sanitation (RWSS) Orissa.

A major pipe water supply system with a good history of O&M and with all the building blocks of a community-managed project is the "Aapni Yojana" in Western Rajasthan in which 370 villages in 3 desert districts have been provided with 24X7 pipe water from public stand posts and with assured water quality. This project has also been extensively documented by the KfW Entwicklungsbank and the Institute of Health Management Research (IHMR), Jaipur. Goutam Sadhu, currently faculty member of IHMR (mobile number: 08107777867) is a good source of institutional memory for this project.

UNICEF has several historical experiments with community-led O&M systems, Women Handpump Mechanics in Jharkhand (East Singhbhum) and Uttar Pradesh (Banda), community-based handpump maintenance and water quality monitoring system in West Bengal (East Medinipur), and so on (documents on these could be available in UNICEF, Delhi office).

I am afraid the above looks more like an inventory of projects, but more detailed information is available on these areas.

[Hemant Khosla](#), United Nations Children's Fund (UNICEF), New Delhi

In response to this discussion, I would like to present my experiences in the WASH sector in Gujarat. I have attempted to reply to your query point-by-point and am also enclosing a few documents for your kind reference.

O&M of rural water supply schemes in Gujarat

In Gujarat, 80% of the water supply schemes are based on ground water based sources of which, major chunk of the schemes (85-80%) are Regional Water Supply Schemes (RWSS), while 15-20% schemes are Individual Water Supply Schemes. The RWSS is implemented, commissioned, operated and managed by the Government agency (the Gujarat Water Supply & Sewerage Board - GWSSB) as these schemes cater to group of villages which in some cases is as large as 30-40 villages. Designing, implementation, operation and maintenance, and the cost of implementation of the projects run into crores. Considering the fact that the designing, implementation and O&M of the schemes is a highly technical task, the onus of the same lies on

the GWSSB. The implementation and O&M of the schemes is being handled by the GWSSB by hiring out third party vendors/ contractors.

In case of the Individual Water Supply Schemes (IWSS), the responsibility of the O&M rests with the Village (Gram) Panchayats. The Gram Panchayats employ operators and mechanics on wage basis for the routine checks and periodic repair and maintenance of the water supply schemes. The funds for the same are being utilised from the various taxes which the Panchayats collect annually. Moreover, in many villages where the IWSS is in operation since decades, there is a tariff mechanism in place for meeting the costs for regular O&M while major costs for instance the replacement of pipelines/ pumps, etc., is being met from funds available with the Gram Panchayats. Besides, in case of the in-village water supply systems catering to all households developed under the centrally sponsored Swajaldhara programme or the State Government sponsored Sector Reform State (SRS) programme, the onus of the entire O&M of the systems lies with the Gram Panchayats or the Village Water & Sanitation Committees (VWSCs). There are many instances of successful community involvement and ownership of the drinking water supply spread across all districts of Gujarat - the instances/ case studies list is exhaustive and ever increasing.

Examples of successful O&M:

The Government of Gujarat has institutionalised the reforms in water supply sector way back since the year 2002. Facilitating the process of decentralisation and aligning it with the 73rd Constitutional amendment (Panchayati Raj Act), the Gujarat Government issued Government Resolution for constitution of a Village Water & Sanitation Committee (VWSC) or Pani samiti (as termed in the State), which is a sub-committee of the Village (Gram) Panchayat and would be responsible to plan, design, implement and operate the in-village water supply systems. The Water and Sanitation Management Organisation (WASMO) was created as a Special Purpose Vehicle (in the year 2003) under the Water Supply Department primarily for taking forward the reform principles by enabling and empowering the village level institutions (GPs and VWSCs) to by day-to-day hand-holding, technical guidance and ensuring sufficient financial resources for the implementation of the water supply schemes. Scaling up from around 82 villages in the Ghogha region, Bhavnagar district in the year 2003 WASMO has successfully scaled up the decentralised community managed drinking water supply programme across all 26 districts of the State (more than 11,000 villages covered), of which more than 6,500 villages have completed the implementation of the in-village water supply systems and more than 3,000 villages have institutionalised the systems of O&M of the schemes by setting up a meticulous tariff system to successfully manage the systems and a document was published in the year 2006 showcasing the O&M by the community [Users as Managers.pdf]. Although this document was published in the year 2006, it needs considerable updating as the O&M systems in villages have been scaled up considerably since then.

For addressing the issue of downtime of safe water sources, a multi-pronged approach has been adopted by the State, which is as follows:

The GP/VWSC employs operators/ mechanics for regular monitoring of the systems, their operation and periodical upkeep and maintenance. These operators/ mechanics have been duly trained by various agencies viz. Government & NGOs for carrying out the O&M of the rural water supply schemes. They are paid monthly honorarium which in turn is being met from the user charges (tariff) collected by the Gram Panchayat/ VWSC; as the case may be.

The Government has adopted a long term approach of multiple drinking water sources in the village, which include piped supply as well as water supply from local sources (which are developed under different programmes). In cases where there is disruption of water supply from one source, the alternate source caters to the need of the community. Moreover, in most of the cases where the villages have a dual water supply, the community uses the sources for

differential usage, for instance piped supply for drinking purposes and water from the local source for ablution, cattle and other domestic needs.

Considering the fact that the State faces droughts, rendering the water sources non-functional for some months, water resource management initiatives have also been taken up in many cases, which include artificial recharge, revival of traditional bodies, catchment protection (for diversion of excess runoff water to the sources). Moreover, especially in tribal areas where a large number of hand pumps have been installed, the Government agencies take up capacity building of the local youth for taking up repair of hand pumps. Annually, part of the funds allocated for O&M of water supply is also being transferred to Gram Panchayats for meeting the financial requirements for hand pump repairs.

Addressing ground water contamination is a complex issue as it is affected by externalities, namely geogenic contamination as well as contamination due to human activities. Efforts are underway to address the issue of groundwater contamination. To address quality problems by geogenic contaminations like Fluoride, the State has adopted a long term strategy of shifting to safe sources, of which the Narmada based drinking water supply grid is one option which the State is implementing and has been quite successful. Moreover, water resource management initiatives like artificial recharge, protection of catchment area (by social fencing, norms set up by village level institutions) are also adopted in many cases to bring down the level of contamination. For addressing the issue of salinity, which is widespread in Gujarat, apart from recharge measures, the installation of community-managed Reverse Osmosis (RO) plants have been taken up in few villages.

Drivers for improved O&M:

- **Social inclusion & transparency:** A great emphasis has been laid on community involvement and ownership in drinking water supply programmes for addressing the sustainability of the systems and processes. Services of drinking water supply and sanitation being of prime significance have been recognised for seeking inclusion of users. Involvement of the ultimate user groups in the entire process commencing from planning, designing and implementation of programmes has laid out the foundation stone for effective and improved O&M of water supply schemes and delivery of good services. Transparency in the entire process has ensured the development of faith amongst community cutting across caste / economic barriers, gender issues and has resulted in sustainability of the programme.
- **Capacity building:** Considering the fact that the communities and village level institutions lack skill sets for carrying out specialised functions which may be technical and/ or managerial, capacity building on various aspects of the programme(s) is imperative. Continuous, intensive and focused capacity building efforts for information dissemination and skill upgradation at various stages of implementation has been the key to enable communities carry out the various functions assigned to them in the decentralised water supply & sanitation programme(s). Capacity building especially on technical aspects and linkages with supply chain for procurement of material/ manpower would ensure smooth O&M of water supply systems.
- **Financial resources:** Ensuring adequate financial resources to meet the regular/ routine upkeep of the systems as preventive maintenance would result in its longevity; which requires negligible financial resources. In cases of breakdown maintenance/ repair, there might be huge requirement of finances. The financial resources can be ensured through setting up a systematic tariff structure and recovery mechanism. Additionally, at the village level, financial resources from other developmental grants/ donors etc can also be utilised for O&M. In case of the water supply programmes implemented through the VWSCs, the O&M cost has been in-built into the programme whereby it is recovered from the user households as water tariff. The calculation of the annual cost for the O&M considers aspects like regular operational costs, manpower charges, costs for chlorination agents and other repairs. The

VWSC then decides a recovery plan (monthly/ quarterly/ half-yearly/ annually) and also differential tariff mechanisms depending upon the economic condition of the users. The tariff structure is formally approved by the Gram Sabha and put into place. In many cases, strict regulations have been framed by the VWSCs/ Gram Panchayats to ensure recovery of the tariff and imposing penalties on the defaulters (fines/ disconnection of water supply etc.). Besides, as per conditions laid down in the Centrally (GoI) sponsored Swajaldhara programme, Gram Panchayats/ VWSCs which have effectively managed the operation and maintenance for a year or more are eligible to receive a one-time O&M incentive amount (to the maximum limit of 10% of the cost of the scheme), the amount can be utilised for further augmenting the drinking water supply scheme/ operational systems. The O&M incentive amount is also being regularly disbursed to the Gram Panchayats/ VWSCs.

For addressing the issue of sustained and safe drinking water supply, it is imperative that all the above mentioned drivers of O&M be given equal importance.

Effective accountability measures:

To ensure that service providers are accountable to their customers and vice versa, the following things have to be considered:

- Transparency in processes and systems: The program facilitators (Government/ NGOs) have ensured transparency right from the initial stages of the programme(s). Detailed information about the various aspects of programme in the easiest possible manner, defining clear cut roles and responsibilities of various stakeholders and the support which the facilitating agency have provided have proved as 'trigger' for generating community ownership in the programme. It has been mandatory that the implementing agency (VWSC) is formed through a village General Assembly (Gram Sabha), which is the stepping stone of the entire process. At every stage of the programme, the VWSC seeks endorsements from the community and also provide information on the physical and financial progress, which enables development of trust between the VWSC and the community at large. Concurrent social audit at timely intervals also ensures similar checks and balance.
- Grievance redressal mechanisms: Setting up proper grievance redressal systems to ensure that users get uninterrupted and quality services is mandatory. In layman's terms, users would be 'willing and happy to pay' if they get adequate water supply for their needs. In situations of preventive maintenance or emergency maintenance if service is disrupted, information to users should be conveyed and alternative options may be sought. In many villages, the VWSCs have set up formal/ informal systems for grievance redressal.
- Incentives for good performance: Members/ functionaries of well functioning VWSC can be felicitated by the community and incentives in cash/ kind could be a way to recognise the quality of services. Services of the personnel hired out by the VWSC (operators/ mechanics/ plumbers/ any other) have been duly recognised, which has motivated their performance.

WASMO has published various theme based and process oriented documents for wider dissemination. Moreover, the bi-monthly newsletter Loksamvaad, highlights the successful endeavours of the community in the local language, which is delivered to all villages regularly and also has a good readership among rural schools and urban areas.

Reference material:

Users as Managers. <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071105.pdf>, PDF, 4 Mb
Operation & Maintenance - section from the publication - 5 years of decentralised drinking water supply systems in Gujarat. <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071108.pdf>, PDF, 201 Kb

Social processes for community participation - section from the publication - 5 years of decentralised drinking water supply systems in Gujarat. <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071104.pdf>, PDF, 259 Kb

Women empowerment - section from the publication - 5 years of decentralised drinking water supply systems in Gujarat. <ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071106.pdf> PDF, 345 Kb

Publications and case studies of successful endeavours in the field of drinking water supply in Gujarat have been uploaded by the Ministry of drinking water & Sanitation, Government of India (Please refer the link: <http://ddws.gov.in/CaseStudies.htm>)

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If you may need any other clarification/ further information, I would be obliged to help you.

[Stephanie Tam](#), Northwestern University, USA

My research focuses on urban sanitation in Ahmedabad, but I've been dealing with issues of accountability in sewer O&M that may be of some interest to the query. My paper on the problems with "self-help" sewerage O&M in slums and in the city can be downloaded [here](#).

I cannot offer solutions, but I do offer some caution against privatized, self-help sanitation schemes.

Poor government maintenance of Ahmedabad's sewers has led to loss of confidence in public O&M so that autonomous action is regularly taken by individuals to maintain sewer lines themselves by hotwiring sewer and storm water lines. While this in some way empowers residents and ensures that things "get done", it ultimately compromises the entire sewer system because autonomous changes are not done with full knowledge or understanding of the system and often contradicts ongoing sewer projects performed by government consultants. Sewage chokes up the storm water drainage, leading to water logging throughout Ahmedabad every monsoon season.

The same kind of "self-help" ethos is endorsed in slums where users are thought to be empowered if they build and maintain their own sewer lines and toilets (see Ahmedabad's Parivartan/Slum Networking Project and the 500 NOC scheme). It is coupled with the idea that slum dwellers will be educated about their civic responsibilities if they have to face the consequences of misusing their toilets and sewers. However, slum homeowners are outsourcing gully trap maintenance and toilet-building, presumably to manual scavengers and slum masons. Confining sanitation to the private sector in slums is leading to exploitation of the poorest of the poor (see Rod Burgess's criticism of John Turner's self-help housing).

Whatever O&M is done by the government is likewise outsourced to manual scavengers. Even though manual sewer maintenance is nationally banned and there is a Gujarat High Court Order injunction against it, the decentralized administrative structure of the maintenance board ensures that manual maintenance continues to occur with impunity. By subcontracting O&M work to

private contractors, zonal boards acquit themselves of accountability for the exploitation of manual manhole workers (see [KSSM](#) and [Navsarjan](#)).

Casteism is deeply embedded in sanitation O&M in Gujarat. In self-help schemes, public regulation gives way to private exploitation and there is no means of ensuring accountability. In the paper, I mention two organizations ([NASA](#) and [ESI](#)) that attempt to provide alternative sanitation scenarios that will be more humane for manual scavengers or break the link between caste and sewer O&M. ESI (the Environmental Sanitation Institute) in particular works on rural sanitation and hygiene, and would be a good resource for further information. [Duncan Mara](#) has been campaigning for redesigning sewers (simplified sewerage), which is cheaper, reduces maintenance needs and also makes maintenance easy and humane.

[Jyotiraj Patra](#), Centre for the Environment and Public Policy, Bhubaneswar

Deltares in association with Gram Vikas in Odisha is implementing the "Strengthening the impact of bare foot hydrologists (BFH) in rural water supply and sanitation" project, which is funded by the Netherlands government. These trained BFHs could help in strengthening the overall institutional framework of O&M at the community level. This could also contribute to community ownership through informed engagement. The details of this project is available at <http://public.deltares.nl/display/BFH/Home>

[Joe Madiath](#), Gram Vikas, Orissa

We at Gram Vikas have been quite successful in motivating quite a few villages in Orissa (943 so far) to build their water supply systems, which are entirely owned, managed and maintained by the people themselves. More than water supply in these villages 100 per cent of the families has built for themselves a toilet and bathing room each for every family without even a single exception. 100 per cent of the families use toilets. I do not see toilets being used unless water is available in the toilet or in close proximity. We do have some issues with less than 5 per cent of the villages.

Until the end of March 2011, Gram Vikas has worked with villagers from 943 villages with over 55,000 families and over 299,000 people in the field of water and sanitation. In these village communities have done the following:

1. Raised a corpus or endowment of Rs. 1000/- per family on an average with the poor giving less, and the better off more. This is deposited in a bank at the best interest rates. The principal of the corpus cannot be touched, whereas the interest earned can be used as will be explained later. All families without any exceptions agree to build a quality toilet and a separate bathing room.
2. Gram Vikas trains young daily wage earners, (men and women) from the village in masonry and plumbing.
3. While these persons are undergoing training for about 60 to 100 days, all families make bricks, collect sand and aggregates.
4. The newly trained masons construct toilets and bathing room under Gram Vikas supervision for each family, while the family provides all the necessary labour. No family can be left out and all will have the same type of toilets and bathing rooms.
5. As a social cost, the Government gives BPL subsidy to the BPL families and Gram Vikas gives Rs. 3000/- to non-BPL families, who do not have toilets and for BPL and SC and ST families Gram Vikas tops up the amount to Rs. 3500/- to meet the cost of external materials like cement, steel, doors, toilet pan, etc.
6. >From a renewable safe source, potable water is pumped up or brought up by gravity to an elevated water reservoir, from where it is distributed to every family 24 hours a day through

- 3 taps – one each in the toilet, bathing room and in the kitchen or just outside the kitchen depending on the needs of the female member of the household.
7. If the water is pumped up using electricity a water meter is connected to the supply of each family and families pay volumetrically for the amount of water they use, ensuring equity and justice.
 8. Gram Vikas' preference is for sanitary dug wells and take-up watershed and water recharging activities to recharge these dug wells. People prefer water from dug wells as it is softer and does not contain contaminants like iron, fluoride etc. Gram Vikas' concept is that you have only as much right to water as you can recharge. You cannot 'steal' water from future generations.
 9. In most villages the rate fixed for a litre of water is a quarter paisa, which means it would be Re. 1/- per 400 litres. In almost all villages, however, they collect about 1/2 paisa per litre (one rupee for 200 litres). They meet all electricity charges and other O &M costs with half of the collection and the other half is used to run schools where there are no schools, or appoint additional teachers in schools where, as is often the case, one teacher teaches 5 classes.
 10. The interest from the corpus can only be used to maintain 100% coverage of sanitation in the village. When a new family establishes a new house, as no open defecation is allowed in the village, the new family contributes to the corpus whatever be the contribution and from the interest of the corpus, the cost of external materials are provided to the new family. Thus, the programme ensures 100% sanitation and piped water coverage for the foreseeable future of the village. This way the continuous need for external subsidy is also eliminated.
 11. The funding for establishment water supply comes, largely, from the Department of Drinking Water and Sanitation Government of India through the State Government. The State Government gives Gram Vikas only a maximum of 90% of the capital cost of the scheme and 10% is contributed by the people in the shape of local materials and labour. The Rural Water Supply and Sanitation Services (RWSS), Government of Orissa has also made it mandatory for Gram Vikas to have 100% sanitation before establishing water supply with funds from RWSS.
 12. In the RWSS established water supply villages, there is no need for people to establish sanitation facilities or pay 10% of the capital costs. RWSS also meets all costs of electricity and all other O & M costs. Yet there are villages that prefer the Gram Vikas model and are ready to pay for quality services managed on their own.
 13. The entire management is in the hands of a management committee comprising 50% women and 50% men. The management committee also comprises proportionate representation of dalits, adivasis and minorities. The committee is a legally registered body.
 14. In most villages, the management committees give a report and accounts to the general body once a month.
 15. Inclusive sanitation and water supply paves the way for other community efforts such as hygiene, cleanliness of the village, children attending schools, children getting immunized, etc. They gradually graduate to the livelihood arena and natural resource management and take gigantic steps towards a better quality of life for everyone in the village.
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[Ramakrishna Nallathiga](#), Centre For Good Governance, Hyderabad

It is interesting to know about the strengthening of rural water supply system through improved O&M, for which the examples of participatory water supply management in Gujarat (Aga Khan Foundation) serve as a good example. Madhya Pradesh has also witnessed a similar experience in some parts of the State with UNICEF intervention.

Andhra Pradesh has experimented to an extent in the towns/ cities of AP under erstwhile APUSP of DFID. Under this programme, the communities prepared O&M Plans and executed some of the works through community contracting. The O&M Plan would involve participation of community,

which renders it more community oriented, and its execution with community, that reinforces the accountability of implementation.

The whole process of O&M planning of water supply interventions in APUSP towns has been brought out under the lesson learning document prepared by me at CGG (as a lesson). A copy of the same can be found at the following link.

http://www.cgg.gov.in/dfid/08050158_CG_BK01_120p.pdf

Sireesha Patnaik, Friends of Women World Banking (FWWB), Ahmedabad

While going through your query and issues stated in it, which covers problems faced at community level for O&M, we would like to share a small experience with you.

FWWB works with micro-finance NGOs who have promoted self-help groups and community based organisations and empowered them to approach banks and government. In one of the cases, our partners' used a public governance model where the community elects a representative from among themselves, who lists the issues and addresses them by approaching officials from the municipality. Hence, awareness to a certain problem can only be resolved once the community is aware of it, and an elected representative would ensure community participation by entrusting responsibility to individuals.

In another example, we had an opportunity to visit a village in Gandhi Nagar (Gujarat) which won Nirmal Gram Puraskar. The village had a separate water distribution system, a reverse osmosis plant and a water head tank. They had also planned for rainwater harvesting and solid waste management. WASMO is actively involved in the programme. If required, we can try and link you with few people.

If providing them facilities and making panchayat responsible for it is not working, and then someone has to find out why. The government should ensure public participation for implementation of any scheme. Any project which involves government schemes for the public requires a lot of effort in the beginning, few critical points to be looked at are:

1. Relevance of scheme to the area: a basic market survey
2. If a requirement exists but people aren't aware of the need then spread awareness, share benefits of the programme and its relevance to their livelihood and health with them
3. Government representatives can share an example of a *nirmal* village, and invite the sarpanch of that village to share his experience with the community
4. Involve the community in listing out their needs and how they can get it
5. The community should come with a vision and mission for the village with yearly targets, and simultaneously the government representatives can ensure that schemes are made available
6. The community shall put in efforts to send applications for the listed request along with the planned activity. This will be the first effort made by the community, hence it contributes towards ensuring community participation
7. The community can set up fund into which the government can pay money
8. To achieve the planned targets the community elects a representative on yearly basis who would supervise and co-ordinate with government in implementation and management of facilities. A basic salary/pay can be fixed by the community for the representative

It would be ideal if the youth of the village are mobilized and involve in the programmes. To encourage villagers, the government can announce a special prize for the villages that are best kept and maintained like the Nirmal Gram Puraskar. Thus, a holistic approach is necessary to address the requirements of the community/village. Probably these inputs are very generic, but they can become a strong base for programme.

Surendra Kumar Yadav, Vikram University, Ujjain

I agree with the inputs of [Stephanie Tam](#). Another important factor that I have personally noticed in some villages is that the distance between latrines and hand pumps are not adequate. Often it is less than 10 metres. So improving O&M and thereby the availability and quality of drinking water in rural settings is really a challenging job and IEC may be given stress for local rural community in this regard.

Anil Gupta, Independent Consultant, New Delhi

There is a solution which I suggested to some US-based NGOs trying to find solutions for villages in Africa. This has already been adopted with collaboration of Water One.

1. You need to identify village clusters in close proximity with natural water sources like ponds, lakes, wells etc.
2. We need to provide truck-mounted water purification plants operated by engine of the truck or secondary generator, with capacities of something like 200 to 1000 litres per hour, which can be carried on something like TATA 1610 truck
3. Villagers can go to a central water storage in each village may be in 5-6 villages every day to purify the locally available water to drinking water standards for say 3-4 days storage for village consumption
4. The life cycle of this kind of arrangement is as long as the truck's life. The 7th day is for maintenance or change of resin after its life is over.

The cost of such water could be less than 80 paise per litre and it shall pay for itself by decrease in occurrence of water borne diseases and expected expenses towards health care as a result.

R K Srinivasan, Plan International, New Delhi

Plan India is working in rural areas of Orissa and provision of safe drinking water is a major issue. Since most of the water sources are groundwater dependent, it is extracted through hand pumps and borewells. The quantity of water from these groundwater sources dwindles in summer season. Most part of area where we are working with community falls in hard rock terrain with thick laterite cover. The laterite prevents the natural percolation of ground water. So to ensure a continuous water supply, in the absence of natural recharge, the focus should be on artificial recharge of groundwater.

Also another major issue is the presence of high level of iron in the water. This not only affects water taste, but also causes problem in washing cloths and in the cooking also, apart from health issue which arises as a result of consuming contaminated water.

Hence in order to improve rural water supply schemes it should be combined effort of groundwater augmentation through rainwater harvesting and diluting iron rich groundwater using rainwater. Also promotion of household level iron removal plants should be promoted

Krupa Dholakia, Sahjeevan, Kutch

We are working in the Kutch district of Gujarat. We have an example of drinking water schemes run by panchayat pani samitis. Their O&M is very effective even though most are individual water supply schemes. The Gujarat Water Supply and Sewerage Board and WASMO and also we have one programme with WASMO-PANI THIYE PANJO. We are all promoting local sources such as wells or borewells. This document (<ftp://ftp.solutionexchange.net.in/public/wes/cr/res-29071109.doc>) gives more details.

Rajesh Shah, Peer Water Exchange, Bangalore

The Peer Water Exchange (PWX) was created to address this very problem:

- How do you get data from the field?
- How do you verify it?
- How can you see who are the different players and what is the overlap?

By creating one central exchange that can hold all the projects of all the different agencies, we can create a picture of what actions are happening in the field. This will help connect folks working on sanitation, water, watershed, purification, etc. There are many instances where different agencies do not know who else has worked in the area and what have they done. There are also instances of different projects by different players in the same place.

By allowing any person to report on any project, the input from the field can be tremendously increased. For example, if any person passes near a project already existing on PWX (currently almost a 1000 villages in India) then they can stop for a bit, take a photo, interview someone, note general observations, etc. And report. Even via SMS.

Using PWX AnalytiX one can search for projects that have not been visited, been visited by the implementer, or by a 3rd party. Soon to come, will be the ability to search for projects visited in the past 6 months, or visited within certain time after completion. We can easily include SMS reports from the beneficiaries themselves. Each visitor report is tracked chronologically and attached to a master report for the project. Thus we can handle different O&M strategies, see which are working and which are not, and share and learn.

There are many more features that PWX addresses. The lack of collaboration that exists in the water is one. On PWX the members decide on the funding - so it is the first participatory decision-making system where field players can vote. So their input shapes projects from far. We just finished a funding round with 18 agencies peer reviewing each others applications and thus improving them. So people collaborate, not just peer review.

PWX is 100% transparent and thus fully documents every project - you can see whether the implementer has put in a final report or not. This transparency does cause many agencies to leave, but many who are happy to share all, including failures, stay and make it the water sector's vibrant exchange.

Thus we are finding the drivers (or lack of) for O&M:

- People who really believe in transparency (those who have it on their websites).
- People who want everyone else to succeed everywhere in delivering water and sanitation.
- People who do not close their books at the ribbon-cutting ceremony, but keep the project alive for years after to see how it went.

Kalyan Paul, Pan Himalayan Grassroots Development Foundation, Ranikhet *

Over the last two decades, Grassroots has enabled over 500 villages across the hills of Uttarakhand and Himachal Pradesh to benefit from enhanced quantities of safe drinking water. This has been possible for the following reasons:

- We assisted communities to adopt an *appropriate technology* which would empower them to implement, operate and maintain the systems
- We provided skills and knowledge to dozens of *barefoot engineers* to locate potential sites and construct infiltration wells

- We encouraged communities to share the cost of investments on community-managed drinking water systems
- We also motivated entire communities to adopt twin-pit water seal toilets as an integral part of drinking water systems and alongside enabled them to plant and protect native species of trees and shrubs in order to renew and sustain the basic hydrology in their ecosystems
- Conventional systems do not too well largely due to in-appropriate technology which is basically piped water supply systems from distant and alien sources, over which communities do not have any control and operation and maintenance responsibilities are always kept close to the chest of government line departments. Besides, catchment area treatment and renewal of hydrology is never considered as an integral part of water supply systems.

There are significant lessons from across the country and these are best understood through field visits and workshops.

**Offline Contribution*

Satish C. Raghu, Rural Environment & Community Health Awareness Society, Betul, Madhya Pradesh *

In UP, a few years back, community based handpump maintenance project was implemented by UP Jal Nigam in the district on Mahoba, Robertsganj and Allahabad supported by UNICEF. The main component of this program was setting up path finders at the village level mainly concerning the O&M of India Mark III and II handpumps. As the resource person, I conducted trainings in the pilot project area.

It was a good to know that Gramonnati Sansthan with the support of Water Aid is running a programme for the O&M of IM II & III handpumps. Going through the experiences in O&M and suggestions, there are few important points can be added for the "O" down time of handpumps which are often the only reliable source of drinking water at village level:

- Data for Installation of HP should have the following: A. Location. B.- Depth of Tubewell. C.- Diameter of TW. D- Type of Casing pipe. E - Diameter of casing pipe. F- Length of casing pipe. G - Aquifer depth. H- Yield of Bore. I- Water level.
- Program has Five Important Aspects -
 - Quality of HP.
 - Quality of Installation
 - Quality of maintenance
 - Training
 - Community Participation
- The success of a HP O&M program depends on
 - Water level
 - Alternate water source
 - Accepted by users
 - Geological formation
 - Awareness and Motivation- Clean water usage, health and Sanitation
 - Manufacturing standards
- Reason for HP breakdowns are
 - Construction
 - Performance
 - Spare parts
 - Maintenance.
- Preventive Maintenance should cover the following -

- Tightening of all bolts and nuts
- Check firmness of pedestal
- Clean drain hole
- Check movement of handle
- Lubricate HD Chain
- Check flow of water

We are sure that by checking and monitoring of HP Lag TIME can be brought to 'O' in all the 11 panchayats of your project area.

**Offline Contribution*

Ravi Nitesh, Mission Bhartiya, Lucknow *

It is quite right to have these types of queries, which directly connect you to root level problems and then you become engaged in brain storming to find a better and optimized way to get the solution.

O&M itself is a field that needs continuous inspection with focused approach. It is a field requires quick decisions and a dynamic approach of the person tasked with the responsibility.

Water supply schemes in almost all cities are dependent on a supply grid. These grids have been laid in urban areas, while rural areas still have sources of alternate supply routes from natural sources.

Most of the water pipelines which have been laid require periodic inspection and maintenance, which is not done. This maintenance is required not only on the part of officials concerned, but also from consumers.

These pipelines sometimes get damaged through third party digging. Sometimes these grids get affected by internal/external corrosion. The design of these systems is poor and seldom are they designed with modern methods. They also do not take into future needs of a rapidly growing population.

Specifications, standards and laying procedure of these water supply pipelines should be well documented as per the terrains, and these procedures should get accredited with a central department.

The O&M personnel engaged in these pipelines should be trained periodically. They can also be brought together for regular experience sharing sessions. Those who do their work well should be rewarded.

**Offline Contribution*

Brecht Mommen, United Nations Children's Fund (UNICEF), Bhubaneswar (response 2)

I feel that some aspects need further discussion and exploration, as some elements have not been addressed fully. For example accountability - there are examples of audits around expenditures, but how about accountability around "water as a service" how do citizens hold their government accountable for that human right? It would be nice if I could somehow give that feedback to the sector and invite them for more debate.

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: O&M of rural water supply schemes - Experiences; Referrals. Additional Reply."

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