Sanitation: Modelling Best Practices

TAPAS DATTA

Recognizing the importance of sanitation and its criticality in determining the success and failure of the livelihood projects, PRADAN is keen on modelling best practices in the Drinking Water and Sanitation sector that can be replicated by others such as partner NGOs and state governments. This article is a study of the PRADAN experience.

PRADAN has been engaged with the rural communities, especially women's SHGs, across seven states in the country for about three decades now. Empirical evidence from its experience in the economic sector has made it realize that losses, both in terms of medical expenses and person days for engagement in productive work, are mainly due to the lack of basic services such as health, nutrition, safe drinking water and sanitation in the rural communities. The lack of hygiene and its consequent illnesses could offset the gains in the natural resource management and the livelihood sectors.

PRADAN's intervention in the Drinking Water and Sanitation (DW&S) sector is relatively recent compared to its longstanding involvement in the livelihoods sector, both on- and off-farm. DW&S is neither the mainstay of PRADAN's work nor is it its historical or current corporate mandate. The size and spread of its DW&S projects nationwide is miniscule compared to its livelihood projects. However, recognizing the importance of sanitation and its criticality in determining the success and failure of the livelihood projects, PRADAN is keen on modelling best practices in DW&S, which can be replicated by others such as partner NGOs and state governments. PRADAN's small but robust intervention in the DW&S sector in Koderma (Jharkhand), Purulia (West Bengal) and Kandhamal (Odisha) districts have already shown encouraging results in the last three years of its inception. On offer are simple, cost-effective, community-owned and managed models of DW&S that can be replicated on a wider scale.

As part of the modelling process, PRADAN thought it necessary to first analyse all the facets of the intervention, capture the experience of the stakeholders—both the communities as well as the implementers—with these systems and benchmark the current intervention against some critical factors that determine whether or not these could qualify as 'replicable models'. This then could make it possible to lay down guidelines for setting up both the hardware as well as the software components of similar interventions in the DW&S sector.

THE MACRO ENVIRONMENT

The drinking water scenario during the Eleventh Plan

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The Eleventh Plan identifies the major issues that need tackling during this period such as the problem of sustainability, water availability and supply, poor water quality, centralized vs. decentralized approaches and financing the Operation and Maintenance (O&M) costs. At the same time, it seeks to ensure equity with regard to gender, taking care of the interests of socially and economically weaker sections of society, schoolchildren and socially vulnerable groups such as pregnant and lactating mothers, disabled senior citizens, etc. There has been a major paradigm shift during the Eleventh Plan period with the restructuring of the erstwhile Accelerated Rural Water Supply Programme (ARWSP) and creating the National Rural Drinking Water Programme (NRDWP). Among other issues, this paradigm shift emphasizes the need to move forward from habitation level provisioning of drinking water to the household level. Laudable as the proposition may seem, the reality, however, poses insurmountable obstacles.

The Mid-term Appraisal (MTA) of the Eleventh Plan reports: "The National Drinking Water Mission was established in 1986. Within 10 years, the mission claimed that only 63 problem villages were left to be covered. In 1999, the unit was narrowed down to habitations and a new target of universal coverage of 15 lakh habitations was set by the end of the Tenth Plan. According to the Department of Drinking Water Supply (DDWS), the number of 'slipped-back habitations' that had to be 're-covered' in the Bharat Nirman period (2005–10) had grown to 4,19,034. The Eleventh Plan re-set the goal to 'provide clean drinking water for all by 2009 and ensure that there are no slip-backs by the end of the Eleventh Plan'. But slip-backs continue to happen on an on-going basis. NRDWP was provided with Rs 39,490 crores in the Eleventh Plan. The states are to spend a total of Rs 49,000 crores. This is nearly three times what was provided for in the Tenth Plan provision. However, the 2009 DDWS document, 'Movement towards Ensuring People's Drinking Water Security in Rural India', recognizes that the objective of providing adequate drinking water to the rural community is yet to be achieved "in spite of the collective efforts of the state and central governments and huge investments of about Rs 72,000 crores in the rural water supply scheme under both state and central Plans up to 2009."

The factor responsible for this situation is the overdependence on ground water for both drinking and irrigation purposes rather than surface water and traditional water sources. Lowering of the ground water table due to over-extraction causes the water supply to be of poor quality. The lowering poses a threat more to the water used for human consumption than for irrigation. Surface-water contamination is relatively easier to contain through targeted and purposive awareness-building of communities about the importance of sanitation and waste disposal. However, ground-water contamination is an issue that cannot be dealt with easily.

Water and sanitation are inseparably linked with each other. The primary factor responsible for bacteriological contamination of water is the insanitary conditions. Recognizing this, the Government of India (GoI) and the state governments have placed considerable emphasis on sanitation during the Tenth and Eleventh Plans. This is reflected in the annual outlays as well as in the newly introduced schemes such as the Nirmal Gram Puraskar (NGP) in 2003. It has been claimed that the NGP has been a shot in the arm for the Total Sanitation Campaign (TSC) programme. Between 2003 and 2009, the coverage with individual household latrines (IHHL) in the country has shot up from 23 per cent to 62 per cent.

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By its own admission, the GoI in its MTA of the Eleventh Plan has concluded that, "Poor quality of construction and the absence of behavioural change were the main reasons for the slip-back." The state governments and the GoI have realized that "the Information, education and communication (IEC) involves a specialized set of activities that demand professionalism of a kind rather different from what line department personnel are normally trained for. Social mobilization for changing attitudes is not a one-off activity. It is a complex process that takes time in the initial stages. There is a point of inflection after which the process takes off and thereafter is led by the people themselves. But this happens only after a critical mass of qualitative effort is put in."

THE CURRENT POLICY ENVIRONMENT

Expectedly, the lessons learned from the experience of the Eleventh Plan period in the water and sanitation sectors have formed the basis for formulating the policies and strategies in the Twelfth Five Year Plan.

In the drinking water sector, source sustainability and water quality are two major areas of emphasis in the Plan. There are, of course, other areas of concern to be addressed such as poor O&M, poor quality of construction of the water supply systems using sub-standard material, faulty design and lack of ownership by the communities due to their non-involvement in the planning and implementation of the systems. Many of the Village Water & Sanitation Committees (VWSC) formed through official intervention are now defunct and even *Panchayati Raj* Institutions (PRIs) lack both the will and the knowledge to oversee construction as well as handle the upkeep of these systems.

The policy perspective, however, may be more complex than what has been mentioned above and demands a closer examination of grass-roots level issues in both the implementation and the maintenance of water supply systems in the rural areas. During the course of the study, we tried to validate some of the generic issues mentioned above. We also tried to identify the micro-level issues that may eventually become major stumbling blocks. These are mentioned here because they may form a part of the advocacy agenda for non-state parties to influence state and national policies.

The current Twelfth Plan does not acknowledge and give enough space and attention to the fact that there are many non-state parties, namely, NGOs across the country and outside of the government machinery, who have enthused, energized and built capacities amongst communities to have water supply

systems that communities lead and manage on their own. These systems are not only cost-effective and functional but sustainable too. The government does recognize the merit of these NGO-run projects and also upholds the process and result-oriented approach but, sadly, expects the existing institutions of governance to adopt these. It is like trying to fit a square peg in a round hole!

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In the sanitation sector, the challenges are more formidable. The biggest challenge is, of course, to transform the sector from its present orientation of toilet construction to building awareness among communities about sanitation and hygiene and, thereby, leading to behaviour change. Lessons learned from successful sanitation and hygiene projects have established the fact that once the connection between the incidence of disease and the unsafe disposal of excreta is perceived by communities, the adoption of improved sanitation and hygiene practices becomes rapid. The understanding of the faecal-oral route of disease transmission by the communities holds the primary key to adoption.

The other challenges include making available a wider range of technologies for toilet construction so that communities can make an appropriate choice of technology, suitable for their geo-climatic conditions. Besides this, the availability of water for ablution and cleaning the toilets is also a challenge to be dealt with. By implication, therefore, ensuring the availability of water in toilets becomes a pre-requisite before the construction begins. This partly explains why, despite having achieved high coverage levels across the country (62 per cent), the usage rate found in the studied villages is horrendously low (4 per cent).

NEED, RATIONALE AND SCOPE OF THE CURRENT STUDY

The purpose of this study is to examine and analyse the experience of the people of Koderma and Purulia for whom this sector is relatively new. The findings of the study could be used to demonstrate cost-effective and community based 'models' that could be replicated, both by PRADAN elsewhere as well as by the government and non-governmental partners.

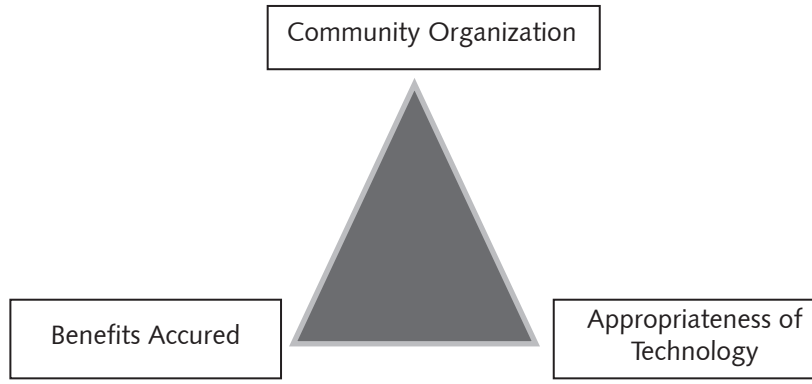
The main narrative in this study provides a detailed description and critical analysis of the DW&S projects in Koderma and Purulia. It tries to draw lessons from the experience, providing an insight into the strengths, the areas that require improvement, the opportunities that these offer for future expansion and consolidation, and the possible threats, or rather obstacles, faced in scaling-up; the study suggests possible safeguards too.

The study tries to contextualize PRADAN's intervention within the prevailing macro environment pertaining to the sector in the country. It attempts to examine the relevance of the pilot in the context of the national policy mandate and its potential to be accepted as a national model for wider replication.

FRAMEWORK FOR ANALYSIS

The study uses a framework for analysis looking at three aspects to critically analyse the achievements of the interventions, keeping in mind PRADAN's objective of creating a sustainable 'model'. Figure 1 is a diagrammatic representation of the framework.

Figure 1: The Framework for Analysis



1. **Community organization** (What led to the community demanding a certain commodity or service?)

   The term 'community organization' is used in the present study to represent the gamut of activities and processes whereby members in a given community are mobilized around a common issue or issues, which affects/affect their lives adversely; eventually, they resolve to address these issues collectively.

2. **Appropriateness of technology**

   In determining the choice of technology in a community based water and sanitation project, the following key questions are crucial:

   - Do the majority of the members in the community understand how the technology works?
   - Are the hardware components used in the technology available locally or at least within a reachable distance?
   - Should there be a breakdown, would the communities be able to repair it on their own?
   - Is the technology effective and competitive, in terms of the costs involved?

3. **Benefits accrued** (Are the demands of the community met?)

For the purpose of this study, again, we have made a distinction between 'realized' benefits and 'perceived' benefits. Realized benefits are those that are more obvious, and perceived benefits depend on the 'informedness' of the community. To illustrate the point: 'Water flows from a tap in my own backyard!' is a realized benefit whereas, 'We and our children should drink only this water so that we don't fall sick like we used to in the past' is a perceived benefit.

THE FIELD STUDY

For the purpose of this study, we visited both the DW&S project locations in Koderma and Purulia in the first phase and Kandhamal (Odisha) in the second phase. However, this study looked into the Purulia and Koderma experience in depth; because Kandhamal was at a very nascent stage and, hence, might not demonstrate all the facets of a DW&S project, it was not studied in detail.

In Koderma, we visited Belkhara and Dharaidih villages. In Purulia, we visited Berada and Hesla villages. The Purulia team had focused mainly on awareness generation and sensitization of the community. They informed the

communities about how diseases occur and spread, and how the faecal-oral route is linked. The major work was done on the sanitation programme. Villages in Koderma and Purulia were taken up for intervention around the same time. They do have common features and yet they differ on many counts. Because this was a study and not an assessment, we tried to link and correlate the varying degrees of achievements in these two locations with their unique characteristics. This helped us take note of some of the lessons learned and record them as important factors, to be considered by planners of similar projects.

The Table below shows the observations and analyses from Purulia and Koderma locations of PRADAN, with respect to the framework of analysis.

In Odisha, we visited Uhakia village in Baliguda block of Kandhamal district. PRADAN's DW&S intervention in Odisha presents a different technological option that takes advantage of the unique terrain and topographical characteristics of the location. The water for household consumption is more of an off-shoot of the gravity flow-based irrigation system for agriculture. Both the surface run-off and sub-surface flow of water in the upper catchment area are trapped in a reservoir and, subsequently, conveyed to the village through PVC pipes (about 1800 m), using the force of gravity. This water is further channelled through distributaries to individual households. The system provides potable water for drinking, washing and other domestic use through the day. However, unlike in the other two locations, community mobilization around

Community Organization	Appropriateness of Technology	Benefits Accrued
Mini Piped Water Supply in Koderma		
◆ Regular meetings of the women's groups in the village provided a ready platform for the initiation of discussions. ◆ The benefits of having a safe source of water were perceived having learned about the link between unsafe water, diseases and loss of income. ◆ Community-led planning and implementation of the PWS was ensured. ◆ Ownership of the community	◆ The technology used is simple, cost-effective and easy to understand. ◆ The hardware components used in the construction are available in the local market. ◆ The community was well aware of the technical details and specifications of the materials used.	◆ Women could articulate both the 'realized' as well as 'perceived' benefits. ◆ Women were aware of the consequences of drinking unsafe water and emphasized the clean handling of water. ◆ Women felt that they now had more time for other work because the drudgery of fetching water was no longer there.

Community Organization	Appropriateness of Technology	Benefits Accrued
Sanitation Programme in Purulia		
◆ Like Koderma, Purulia also had women's groups and communities in PRADAN's intervention area that had already risen above the level of subsistence to where they were beginning to be conscious of 'quality-of-life issues'. ◆ Generating understanding 'on how falling sick is related to unsafe water consumption, unhygienic living and insanitary conditions' were the main focus. ◆ Communities taking charge at each stage of planning and implementation was also ensured. ◆ Ownership of the community	◆ Emphasis was placed on SHG members and the community understanding the designs of the sanitary units. Exposure visits were organized for SHG members and the masons who would finally construct the toilets. ◆ Training programmes and handholding support were given to the masons, and the construction was monitored for technicalities. ◆ The units were flexible rather than standardized. ◆ The cost of construction of these toilets was well within the recommended estimates.	◆ PRADAN's sanitation programme was based on the solid foundation of a clear understanding of the benefits, and the families would be able to sustain it even if PRADAN were to withdraw from it at any time. ◆ The women enjoy the privacy and convenience of toilets and do not have to face the difficulties faced by those women in villages where such an intervention has not been made. ◆ Assured privacy, convenience and dignity were the other benefits cited by the women

Water, Sanitation and Hygiene (WASH) was not very visible. The people were happy to receive the water at their doorstep; because there was no contribution by the community, they did not feel any ownership.

POSITIONING PRADAN'S INTERVENTION IN THE MACRO ENVIRONMENT

Against this backdrop of the policy environment, its thrust areas and priorities, we tried to position PRADAN's limited but comprehensive intervention in the DW&S sector. What needs to be borne in mind, however, is that no single 'model' of a good DW&S intervention such as PRADAN's can be replicated across the country since the cultural, social and geo-climatic diversity of the regions within the country is immense. In the context of this section, we choose to use the expression 'recreate' rather than 'replicate'.

In the course of this study we tried to benchmark PRADAN's DW&S interventions against the issues identified in the MTA of the Plan and the changes proposed in the Twelfth Plan.

Drinking Water	
Twelfth Plan Emphasis	**Pradan's Intervention**
Source sustainability	PRADAN gives primacy to surface water use rather than ground water. All the locations identified by it for the installation of PWS systems draw water from streams rather than from ground water sources. Besides, its DW&S projects are not stand-alone but form a part of the larger operations in the area of natural resources management (NRM), including land and water resources management.
Water quality	Water quality is regularly monitored by communities mainly for bacteriological contamination. Water is filtered and purified at source, and stored and handled safely by the families.
Poor construction quality	Construction activities are managed by the primary stakeholders (men and women of the village) themselves under technical guidance from PRADAN rather than by outside contractors. The design inputs have been provided by a partner NGO, which has years of experience in the construction of similar systems.
Poor quality of material used	All material used in the construction are ISO certified and procured directly from the supplier by a purchase committee constituted by the community
Lack of ownership by communities	PRADAN follows an intensive process of awareness building, demand generation, participatory planning, community managed implementation, funds management and O&M. This ensures that the communities have full ownership of the process from start to finish.
Poor O&M	The O&M function is managed entirely by the communities through their designated groups, costs of which are met from a separate fund created through the contribution of the families.
Sanitation	
Top-down, target-driven approach	There is very little that PRADAN can do about the current orientation of the government except advocating for reforms. However, it has demonstrated the efficacy of the decentralized, community-led-and-managed toilet construction operations, in which families have the freedom to choose the location, the design and the material to be used.
Low usage rate	All the toilets constructed in the villages are being used and maintained by the villagers, including children. The toilets are perceived as family assets rather than as alien objects thrust upon them and which may be allowed to perish over time from disuse and disrepair.

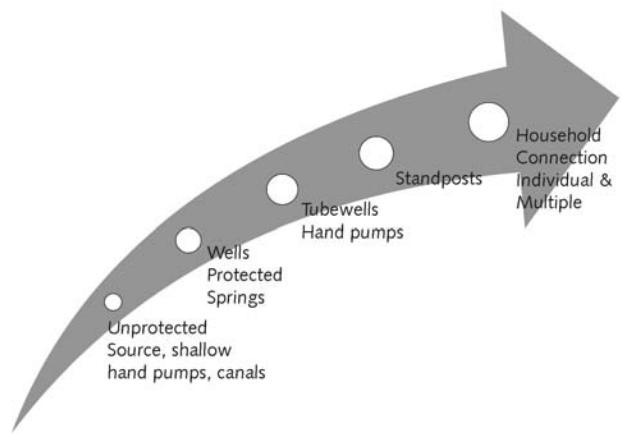
Lead: Sanitation: Modelling Best Practices

Sanitation	
Twelfth Plan Emphasis	**Pradan's Intervention**
Availability of water at the user point (the toilet) without causing an additional burden of fetching water by the women of the household	To some extent, this issue has been addressed by PRADAN, especially where there is a piped water supply point inside the homes of the families. However, more effort is to be made to reduce the drudgery of fetching water in villages, where the source is a well or a hand pump.
Targeted and purposive awareness generation to precede any construction activities within communities about the importance of sanitation particularly helping communities understand the faecal-oral route of disease transmission	This has been a major strength of PRADAN's approach. No construction activities are initiated before a stage is reached where all the members of the community have fully understood and internalized why diseases occur and the hazards of open defecation.

CONCLUSION

PRADAN has addressed most of the issues mentioned above. However, because we are talking about modelling, a comprehensive model must have all the facets of an ideal DW&S system, integrated into one organic whole at the same place and at the same time. For example, in Koderma, despite having safe drinking water sources such as a PWS system with water points in the homes of the families, there are no sanitation facilities and the villagers are still going out to defecate in the open. We appreciate that a beginning has been made to enthuse the communities to construct IHHLs by constructing the first demonstration toilet in Belkhara. However, sanitation and hygiene awareness was incomplete. Although we understand that PRADAN was not in a position to take up the sanitation programme

Figure 2: Evolution of Drinking Water Programme



Source: "National Rural Drinking Water Programme: A Framework for Implementation" – DDWS, GoI

immediately due to constraints of funding, it could have still included the issue in its awareness building and demand generation programmes and linked these with the TSC programme of the government as in the case of Purulia.

A comprehensive model must have all the facets of an ideal DW&S system, integrated into one organic whole at the same place and at the same time

Purulia presents a different picture. The work done in the area of sanitation is exemplary. Conducting a baseline study before the initiation of the project, analysing family spending on illnesses and finally linking the disease prevalence (mainly water-borne because these constitute more than one-third of the diseases) with poor sanitation, leading to demand generation for IHHLs. But the integration of water with the issue of sanitation was found missing. This is not to say that the project has lost sight of the issue of safe water availability. The existing secondary sources of water (hand pumps) have been protected from contamination through proper platforms and drainage; new hand pumps have been sunk replacing the old and dry ones. However, we have not seen any evidence of these interventions reducing the burden on women having to fetch water for sanitation. Another critical aspect of the water programme that needs to be borne in mind by programme planners and evaluators is the concept of a 'water safety net'. The general criticism of the water programme in India, since Independence, has been the preference for new technologies over the older ones and, consequently, traditional sources such as dug wells and step wells *(bawris)* were ignored, and new sources such as hand pumps and, later, PWS systems became prevalent. Figure 2 is a graphic representation of the water programme in India.

However, what the figure masks is the fact that, in reality, during this journey from unprotected sources, shallow hand pumps and canals to household connections—individual and multiple, the popular source of water in each of these stages was neglected and forgotten once the next stage was attained.

It is, therefore, imperative that in any given rural location, the communities are given the options of alternative safe sources at the same time so that if one fails, the communities can fall back on the other. A paper issued by DDWS mentions the following as one of the paradigm shifts that have occurred in NRDWP: "(To) move away from over dependence on single source to multiple sources through conjunctive use of surface water, groundwater and rainwater harvesting."

The emphasis on ensuring the presence of the secondary and tertiary sources of water alongside the primary one is an important and a significant departure from what has been the approach historically.

This aspect was ignored in the PRADAN interventions in both Koderma as well as in Purulia. During our visit to the villages, we found that the wells were in a state of disuse and disrepair. Even those reported to be used sometimes were not in good shape. The other aspect that needs to be considered prior to advocating the PRADAN model as replicable with the GoI and the state governments is the issue of source sustainability because this is one of the priority considerations in the Twelfth Plan. Besides, the near total reliance of the communities on hand pumps, as in Purulia, may not be an acceptable proposition for wider replication.

The hydro-geological conditions in the three districts are still conducive and the extraction

of groundwater may not be considered 'undesirable' or 'forbidden'. However, the projects should not be allowed to neglect the traditional sources that serve as secondary and tertiary sources of water.

PRADAN projects in two different locations together present contours of what could be considered as a replicable 'model'. However, if these have been conceived as stand-alone projects, they may not serve the overall purpose of disease reduction. Hence, PRADAN may like to take a more holistic view of the DW&S intervention (it may well be there already but it has not articulated it in the context of DW&S). In our view, PRADAN should allow its DW&S projects in Koderma and Purulia to grow into holistic and comprehensive models with each component of it fitting with the other into an organic whole, and then advocate this recipe.