

NGO FORUM'S ACCOMPLISHMENT THROUGH PIPE-WATER SUPPLY IN RURAL AREA

Introduction

Bangladesh with many challenges to safe water supply, especially arsenic contamination in groundwater has faced a major set-back to the apparent success in safe water supply coverage. NGO Forum for Drinking Water Supply & Sanitation, the apex networking NGO in the water & sanitation sector in Bangladesh, has been dedicated to find solutions to the problem by developing, testing and promoting new feasible technologies through research and development activities. Fine-tuning safety, cost-effectiveness, social acceptance, user-friendliness, reliability, NGO Forum has an innovative option in the context of rural Bangladesh namely Pipe-water Supply Scheme especially in acutely arsenic affected villages of Bangladesh. Putia in Daudkandi under Comilla district of Bangladesh is such a village which is highly contaminated with Arsenic in shallow hand tube wells and now the villagers are using water through a distribution network from the source of Deep Tube Well, Rain-water Harvesting System and Dug-well. Collected water from the source in an overhead tank has been distributed through pipeline network by stand-posts. The scheme has been proven feasible both technically and socio-economically. Alongside the severity of arsenic, the community mobilization drive has brought very quick and positive results convincing the villagers to accept the technology against the age-old shallow tube wells with Arsenic contamination, and even paying service charges. The functionality of the Scheme comes from community management and ownership within the community and the division of tasks among community members including women, who have been trained to perform the tasks, i.e. pump operator, caretaker, treasurer and so on.

The Scheme has brought remarkable changes in the life-style of the villagers, who are availing safe, running pipe-water which is not yet thinkable or common in rural Bangladesh and getting rid of arsenicosis. It is possible to replicate it in the rural Bangladesh to solve the safe water supply crisis.

Situation Prior to Intervention

All the shallow No.6 tube wells were highly contaminated with arsenic ranging from 0.10 mg/L to 1.45 mg/L. 4 people died from drinking arsenic contaminated water. Women and children spent major portion of time in a day for fetching water from a common and arsenic-free safe water source which was rare in the community.

Establishment of Priorities

Mitigating the acute arsenic problem in the area focusing the women and children was considered as the first priority since people's lives were at stake for lack of arsenic-free safe water source. Though different alternative technologies were feasible for the geophysical characteristics of the area, but considering their unit cost, a community pipe-water supply was considered suitable.

Considering the cost involvement and people's acceptance, people's participation with cost-sharing was set as another priority issue. People's involvement in planning, implementation, operation, maintenance and cost-sharing were considered to make the scheme people-friendly, reduce the implementation cost and create a sense of ownership among people which would contribute to sustainability.

Formulation of Objectives and Strategies

NGO Forum, its partner NGO and the community people brainstormed and set the objectives and strategies in a participatory way.

Objectives

- Mitigating the severe arsenic contamination in the community by providing a simple, affordable, technically feasible and socially acceptable safe alternative water supply system.
- Designing, demonstrating, testing and promoting pipe-water supply in arsenic affected rural areas.
- Assessing social acceptance and community management of pipeline water supply having household connection in rural areas.

Strategies

Community participation in planning, implementation and management, cost-sharing by community for a sense of ownership leading to sustainability, capacity building of community, women participation in decision-making.

Mobilization of Resources

NGO Forum supplied the capital cost. The community provided land and labour for the construction, operation and maintenance costs, i.e. monthly Tk. 20 per household, used for the Operator's salary and as extra money for the community to save in the bank for emergencies. A Village Development Committee (VDC) was formed at each village with 15 well-respected men, women and general people. The VDC is playing the lead role in managing the scheme and mobilizing the villagers. Different community mobilization initiatives and capacity building training for private mason, caretakers training, training for the plant operator and plumber etc were organized. The strong human resource base contributed to the success of the Scheme. An 'Operator' operates the pumps and releases the water from the overhead tank, keeps the system clean and checks the water-points, two women 'Caretakers' maintain the water-points, release water at each point and collect monthly fee from users and gives to the operator who gives it to the treasurer. The treasurer pays utility and operator fees and deposits extra sums into the bank as future safety net. The implementing agency (the partner NGO) facilitated overall process with guidance of NGO Forum and assistance of the VDC and the community allies.

Process

More than twenty years ago, the villagers shifted to shallow tube wells to minimize the impact of bacterial diseases from unclean surface water. When they first became aware of arsenic, the community again switched to pond and canal water for a short while. They also tried rain-water collected in *motkas*, large clay containers, but, people were suspicious that preserving water in a closed container might breed harmful germs. However, because of the awareness campaigns by NGO Forum and its partner NGO, they have changed their attitude towards rain-water in a surprisingly short span of time. To involve and make the people aware on the pipe-water supply, safe water use, sanitation and hygiene practice and to ensure the sustainability of the pipe-water supply scheme different promotional activities have been conducted in the village.

Being aware and oriented on the arsenic problem and informed about the high concentration of arsenic in tube well water, the villagers decided to contact the partner NGO of NGO Forum, which was working locally. The VDC was formed and entrusted to represent their community's concerns with brainstorming solutions to alternative sources of drinking water and help facilitate awareness raising among the respective community people.

The VDC used different contemporary participatory methods including Participatory Rural Appraisal to identify the WatSan problems and to disseminate relevant information among their community. Different promotional activities were also organized amongst different groups of people to ensure strategic targeting of every member of the village by the respective partner organization with assistance of the VDC.

With the technical assistance and supervision of NGO Forum and the partner NGO, the scheme was set-up where the community contributed land and labour. The Pipe-water Supply Scheme was set based on Deep Tubewell, Rain-water Harvesting System and Dug-well as sources of safe water. Distribution of water, collected from the source in an overhead tank, was started through pipeline network by stand posts covering 3 to 4 families at each post. In the Putia village, about 114 families consisting of 685 populations are being served by the scheme. A total of 35 stand-posts have been built at the vicinity of the household to collect water for drinking and cooking purposes. Water comes to the stand-post through the pipeline from an overhead tank of 6000 liters capacity. A 100,000 liter capacity reserve tank has been built to store rain water and a pump is used to deliver water from the reserve tank to overhead tank. The roof top of the partner NGO office where the system has been constructed, is being used as the catchment for rain water harvesting. Rain water then passed through a small filtration chamber and finally stored in the reservoir. Alternative sources of water, like dug well, deep tube well have also been built to meet the water demand when there will be the scarcity of rain water. The ground water is highly

contaminated with Iron and therefore an Iron Removal Plant (IRP) has also been built for water treatment. The deep tube well using a submersible pump and the IRP is being used to supplement the water demand of the villagers.

Since installation, different aspects of the Scheme are closely being monitored by NGO Forum and concerned partner NGO following participatory approach. Water quality is monitored by field kit at field and cross-checked in the laboratory.

Results Achieved

The scheme has significantly been contributing in ensuring safe water to the households of the Putia village as an alternative and affordable technology. The community mobilization activities and awareness campaign contributed to change their suspicious attitudes about the use of rain-water. They now feel that the pipe-water supply is crucial to their existence and take its management and maintenance very seriously. Therefore they have agreed to pay for the supplied water for the proper operation and maintenance of the system.

Through the installation of the system the collaboration and coordination have been maintained strongly with various sectors including government, non-government and private sector actors. The implementation of this scheme has contributed much in improving the institutional capacity of the partner NGO and the VDC and ultimately the partnership between NGO Forum and its partner has been strengthened. The outcome of the project has drawn attention of various implementing agencies, policy-makers and donors while they have been found willing to implement this initiative in other parts of the country.

This system has been contributing to the living conditions of the users including women and children. Now the rate of illness went down at the village level to a significant extent. In the village the women had to spend a significant time of the day for collecting water from a long distance. This Pipe-water Supply System has reduced the burden of the women and now women can contribute in the development of socio-economic issues of their families.

Sustainability

The villagers consider the pipe-water supply crucial to their existence and they are taking its management and maintenance very seriously. They are paying the electricity charges and operating costs against getting water everyday. The hardcore poor families have also been addressed with special consideration in getting benefited from this Scheme.

The key to its functionality comes from ownership of the project within the community and the division of tasks amongst community members. The VDC acts as the monitor for proper O&M of the Scheme. The Operator is in charge of keeping the systems clean, turning on the pump, releasing the water, checking the water points to ensure everyone has water and reporting any problems. They feel complete social acceptance and ownership towards the Scheme because their village laid it down and pay for its O&M and overall sustainability.

Lessons Learned

From the success and social acceptability of the Scheme, it is learnt that community mobilization is a must. People in both villages had been mobilized into urgently seeking a safe alternative drinking water-source when they became aware of arsenic contamination in their tube well water. Different promotional activities under the leadership of the VDC with direct involvement of the community proved very effective. Cost-sharing contributed to sustainability of the Scheme by creating a sense of ownership among the users. As the villagers are getting safe water regularly they are willingly paying the tariff for water on regular basis which is used to bear the operation and maintenance cost.

Besides monetary contribution, contribution of land and labour, honorary caretaking support by people has made the system more affordable and people-centred. It reduced the monetary involvement and created sense of ownership among users. Capacity building of community people to keep the system functional proved very much effective. Training private masons, caretakers, plant operators, plumbers etc.

have increased people's knowledge skill and capacity leading to proper installation, operation and maintenance of the system.

Although initial capital investment cost is high but per capita investment cost is less because the source is located nearer to the supply region and it provides town facility at the village level and hence has the potentials of replicability.

Transferability

In the face of the acute arsenic problem, a simple, affordable, technically feasible and socially acceptable safe drinking water supply system proved essential. The village pipeline water supply from an alternative safe source has been the best and appropriate solution to address the drinking water problem. Considering the unit-cost of alternative safe water supply technologies it also seemed convenient to set up a system for a community exploring alternatives like Rain-water Harvesting System, Dug-well and Deep Tube well since NGO Forum already had successfully implemented all these technologies at household level and had been well aware of the acceptability of these technologies at the community level.