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PRO-WASH
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in Water, Sanitation and Hygiene

Question and Answer (Q&A) Document Operation and Maintenance of WASH Infrastructure Webinar Series Webinar #4

Question: Is there any example that DPHE visited the RO site and replicate lessons learned from NJP in their project?

Answer: Department of Public Health Engineering (DPHE) officials undertake monitoring visits to RO sites on a monthly basis during which technical support and advice is provided to Water Management Committees and caretakers. Water Management Committees also share monthly progress updates to DPHE at the sub district level. DPHE officials have shared the benefits of structured RO operation and maintenance systems during stakeholder meetings and workshops and also cascaded recommendations during monitoring visits to other community water points (tube wells, pond sand filters etc.).

Question: Is there any provision of free water for extreme poor populations? What is that rationing?

Answer: Water Management Committees (WMC's) determine costing of water and also collaboratively decide when and to who to donate RO water to. For example, during cyclone Amphan in May 2020 when many water points in the area were damaged, WMC's voted to donate approximately 15,000 liters of RO water to displaced families who took refuge in cyclone shelters and embankments. In April 2021, a RO WMC distributed 6,000 liters of water for free to families affected by river erosion.

Question: What is the longest running RO system in the area you are working in? Does it seem like there is evidence for long-term functionality?

Answer: In 2019, the first RO system was installed by NJP and the plant continues to function, provide safe drinking water all year round and meet operation costs through water sales. RO systems have been installed by Government and INGO's previously - but typically these have not sustained in the long term due to weak financial sustainability and operation and maintenance structures. The ones that have sustained have a business model which entails paying for RO water and the funds are used for operation and maintenance costs. NJP is applying the lessons learned from past experiences of installing RO's in southwest Bangladesh to implement its pilot with 10 ROs as described in the presentation and learning note.

Question: How much of the water problems in the low areas is the result of upstream diversion of water? Can the government charge up stream diverters and subsidizing the use of RO in lower areas?

Answer: Upstream diversion has no major impact in the coastal low-lying areas where Nobo Jatra works. Sea level rise has is one of the factors that leads to increased soil salinity in Bangladesh resulting in saline water intrusion in ponds and water points.

Question: How much time and effort does collecting a pot of water require each day? Especially for women to come to a treatment plant.

Are there any plans to have the water delivered so women can save time for other domestic or economic activities?

Answer: To address the burden of collecting water on a daily basis, which often falls to women and adolescents, NJP facilitated WMC's to work with over 40 water vendors who deliver water to the doorsteps of households and offices. The intention is to increase consumption of safe drinking water to a wider catchment area and reduce the time spent in collecting water every day and therefore save time for other economic or domestic activities or school work (in the case of adolescents) . Only households within a short walking distance physically collect water whilst those further out opt to use the water delivery service. During COVID-19 lockdowns in March 2020-June 2020 and in April 2021, water vendors have continued to deliver water – thus reducing the need for families to venture outside their homes for water and avoid crowds or gatherings at water points.

Question: How many trips does a family have to make to get a day supply of potable water?

Answer: On average, one visit a day.

Question: To what extent does this project promote gender empowerment and disability inclusion? What have been the results of these changes?

Answer: Water Management Committees (WMCs) are the core structure that govern an RO plant and provide Social Behavior Change messaging to the community on the importance of safe drinking water and sanitation. WMCs were formed in close consultation with local communities and local Government including the Union Parishad (the grassroots tier of Government responsible for water and sanitation budgets). During the formation process, Nobo Jatra staff continuously sensitized the community on the importance of having a diverse committee, not just including women but a cross section of members including teachers, faith leaders, influential local people and those from vulnerable, extreme poor households. Once committees were formed and to avoid ceremonial 'tokenistic' leadership roles, Nobo Jatra provided leadership training to women so that they are able to effectively play their leadership role within the committees with confidence. The leadership training included tips for public speaking, problem

solving and negotiation skills. Furthermore, Water Management Committees are provided capacity building on operation and maintenance of water points, water safety plans and basic WASH concepts.

An example of an RO plant being governed by a woman president and cashier: The Moutala RO Water Management Committee is led by a woman president, Sabina Yeasmin, and consists of 14 members with 50% female representation including a woman vice president and cashier. The committee comprises faith leaders, teachers, farmers, homemakers and local businessmen. The Moutala RO plant sells an average of 70,000 liters of water per month with 3 water vendor selling/delivering water to the doorsteps of households. Approximately, 250 households are getting water access from this RO. There are 3 trained caretakers working on this RO plant - 2 of whom are women.

Question: Can you detail the cost of water including initial cost, operating cost, and maintenance cost of a cubic meter basis?

Answer: NJP designed ROs have capacity to produce 1000 liters of treated water/hour. NJP had to invest approximately USD \$26,000 per plant including all mechanical and civil structures. The unit price per liter of water sold from the ROs is \$0.004

Question: What was the average hourly water production rates capacity of the RO systems?

Answer: 1,000 liters per hour.

Question: What is the salinity level that this technology can treat?

Answer: NJP RO plants are designed to treat the raw water with up-to following salinity levels-

TDS: 7000 mg/l

Chloride: 5000 mg/l

Question: Is it possible to achieve Zero hardness of water by RO process?

Answer: Yes. Anti-scaling agent, and/or HCL dosing applies to reduce hardness initially

Question: Are the filter materials and membrane locally available for future maintenance?

Answer: Yes the filter materials and membrane are locally available and NJP have provided a list of vendors and shops that sell these to each WMC and caretakers so they can procure locally as and when needed.

Question: Do you have any clogging issues with the membranes? Iron fouling? How do you dispose of the brine/waste water?

Answer: There are three different steps of pre-filtration before feeding the water into RO membrane: pre-treatment chamber with fine and course aggregate, polypropylene filtration chamber and multimedia filtration chamber. Most of the sediment particle such as iron particle gets filtrated in the three stages including iron particles. There is a post treatment chamber to reduce physical and chemical concentration of waste water and afterward it is dispersed into an open stream.