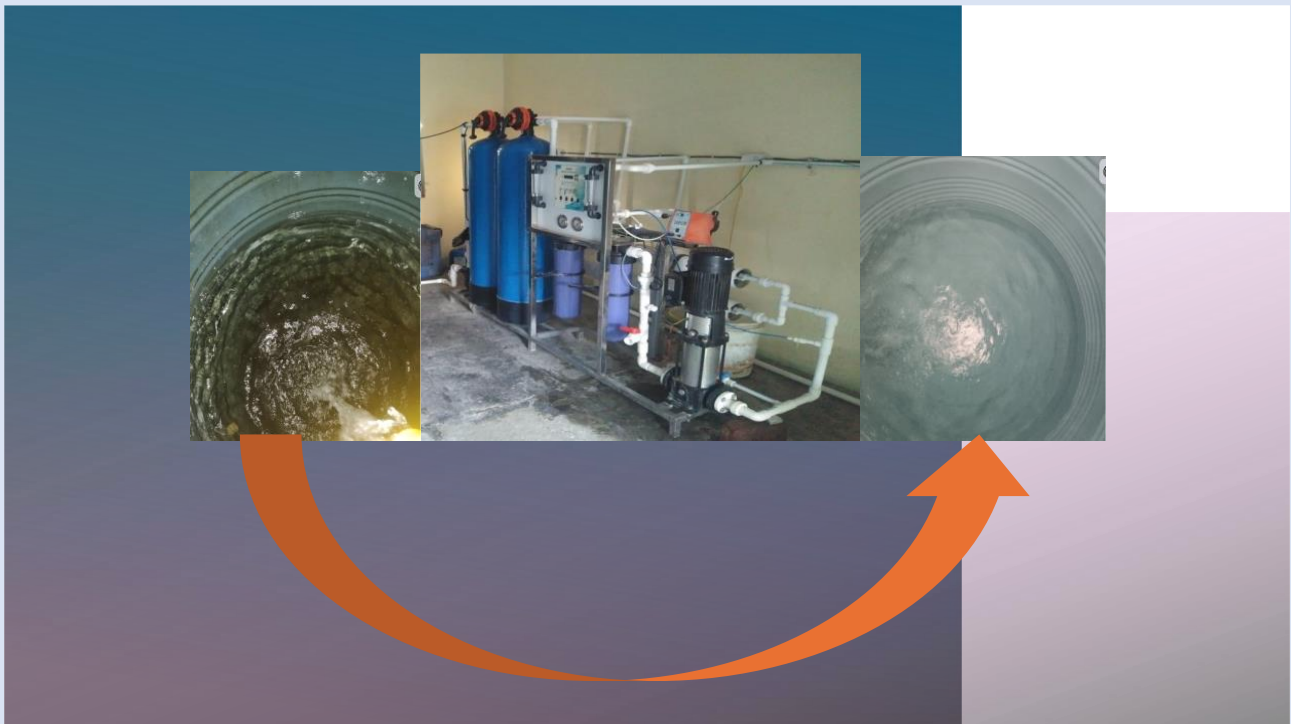


ASSESEMENT REPORT TEN REVERSE OSMOSIS WATER PURIFICATION PLANTS- PURANDAR TALUKA-2024 BHARAT FORGE LIMITED

Executive Summary



DOORSTEP
HEALTH
SERVICES

Certified Social Impact Practitioners

Assessment Team

Project Director- Dr Suchitra Mankar

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Acknowledgements

This report assesses the ongoing impact attributed to installation of ten reverse osmosis plants by Bharat Forge Ltd in the period 2019-2022. It also has audited the functioning of the ten RO plants. The process has been undertaken in March 2024.

We wish to acknowledge the cooperation and understanding received by the study team from Bharat Forge during the entire exercise.

Any assessment needs support of all stake-holders, village, elders, communities or staff. We acknowledge with gratitude the involvement of all stake-holders. They were cooperative, prompt, interested and enthusiastic in their interactions and inputs.

Special mention is made of the efforts of Shri Sagar Kale who accompanied us and coordinated our visits.

Finally we acknowledge the effort of Dr. Leena Deshpande and the entire CSR team. They provided valuable inputs and direction throughout the assessment process.

Dr (Gp Capt) Suchitra Mankar MD
Founder Director
Doorstep Health Services

Executive Summary

Introduction. The RO plants were installed in the villages between 2019 and 2022 by Bharat Forge limited as part of the 100 Village development Program under Corporate Social Responsibility. The impact of the project was assessed in 2022 and then in 2023. This year, 2024 the focus of assessment is on the sustainability of the initiative and assessment of changes as compared to previous years

Scope of Work.

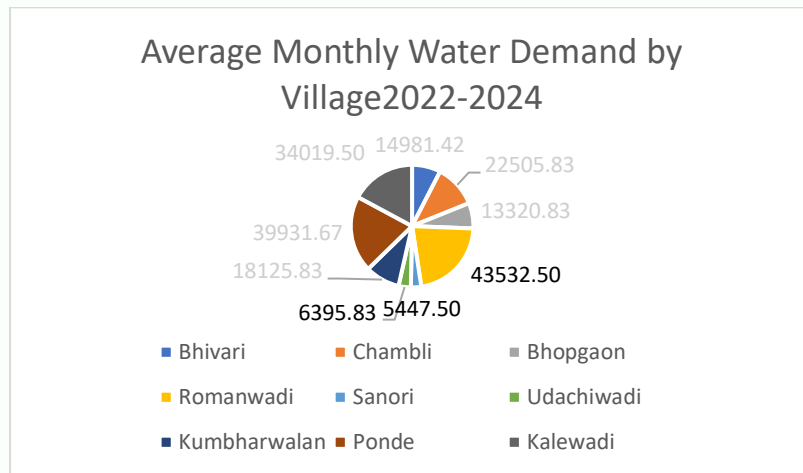
1. Based on the scope given by Bharat Forge, the assessment team proceeded with the following: -
 - a. Audit of the plants in terms of operations, functionality, upkeep and sustainability.
 - b. Identifying any changes compared to previous years.
 - c. Examine to what extent has the intervention achieved its objectives (outputs and outcomes) or will do so in the future.
 - d. Recommendations (if any) to make the programs more effective.

Methodology and Assessment Framework

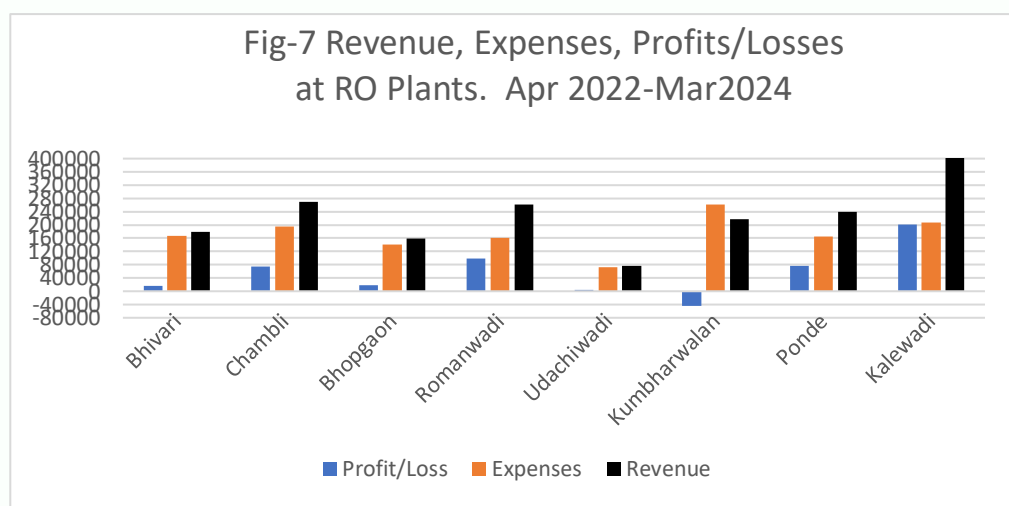
2. Multifaceted evaluation including document review and surveys was carried out. Results were evaluated on parameters like:-
 - a. Parameters laid down by Organisation for Economic Co-operation and Development (OECD)
 - b. Alignment with Sustainable Development Goals (SDG)
 - c. Impact Mapping (Details at Annexure-6).

Salient Findings

3. All ten plants -model DARCO 1:1 1000LPH-were assessed. Basic details regarding initial costs etc are placed in Table at Annexure-3. Other salient points are given below.
4. Villages where Plants are Installed: The plants were installed at Bhivri, Chambli, Bhopgaon, Kumbharvalan, Pondhe, Udachiwadi, Sonori, Askarwadi and Kalewadi.
5. **Serviceability.** RO Plants were operational in all but two Villages- Sonori and Askarwadi
6. **Committee.** All villages had formed committees that met periodically in order to oversee the RO plant and its operations
7. **Plant Operator.** Villages had appointed a plant operator who was responsible for the day to day functions of the plant.
8. **Filter Changes.** The Membrane filters and the Carbon filters had been recently changed at all plants except Sonori and Askarwadi.
9. **Electricity Bills, and Power supply.** These ranged from Rs 500/- per month to Rs 4000/- per month. Three Villages had Solar Power plants installed recently- namely Kalewadi, Udachiwadi and Chambli.
10. **Monthly Cost of running plant.** The running cost per RO Plant based on documents available and the income is given at Annexure-4. The average cost per month (including the cost of filter changes, repairs, electricity, payment for operator etc) was Rs 82293.50 per year.
11. **Water Demand.** The water demand varied from village to village. Overall the demand had increased.



12. **Water cost.** The cost of water was at Rs 0.50 per litre in most villages. Pondhe and Romanwadi had reduced the price to Rs 0.25 per litre.
13. **Raw water.** The source of water was usually from a bore well, village well or village bavdi. The raw water was highly coloured, with sediments, high dissolved solids and unpalatable taste. Bacteriologically too it showed faecal contamination. The water quality report is placed at Annexure-5.
14. **RO Water Quality Report.** The water quality report showed that the treated RO water was chemically suitable. However, all water samples showed coliform contamination at all sites. This makes the water unsuitable as per laid down standards.
15. **Breakdowns, Repairs, AMC.** All plants needed some maintenance and upkeep. This along with filter changes was provided by the same proprietary firm to all RO Plants.
16. **Reject water handling.** 60-65% of raw water was rejected. All sites had made arrangements for utilizing this water. This water was now used mostly for domestic use by villagers, for watering plantations and for water harvesting. Udachwadi had connected this water to toilets of the school.
17. **Revenue and Cost of Running RO Plants.** Sonori and Askarwadi expense documents were not available. All others except Kumbharwalan had broken even or were profitable. Revenue and profits were highest at Kalewadi.



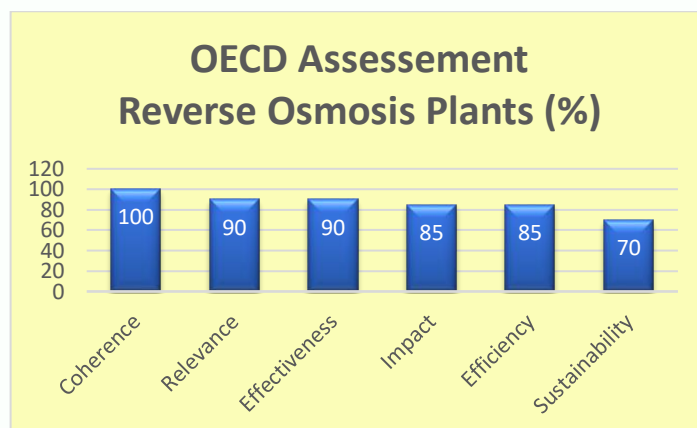
Water Payment/Receipt system. Some plants use monthly cards(Chambli, Udachiwadi and Kalewadi) and coins. Others use only coin system. Card system ensures a more transparent account .

18. Sustainability. The ten RO plants have completed nearly three years of operations. As on the date of reporting eight of these plants are functioning smoothly. Some other factors that aid sustainability:-

- a. All plants have formed committees to oversee the functioning of the plants. This will help in sustaining the project.
- b. All except Askarwadi and Sonori had changed the membrane filters and carbon filters. PP filters were being changed regularly (some washing and reuse was noticed).
- c. All use their own containers for water. That helps reduce costs and also ensures clean containers.
- d. Though no AMC has been done, plants are being repaired regularly.
- e. Revenue collection is adequate to meet expenditures in all villages with operational plants-except Kumbharvalan that is showing a significant loss.
- f. Bank accounts are maintained on at Chambli and Romanwadi. All others are collecting cash and using it via the gram panchayat. This practice lacks transparency. Also there is no way of knowing coins collected as the ATMs are reset.
- g. Electricity bills are mostly cleared however, few Villages have uncleared bills.
- h. Usage of water from RO plants has increase over past three years. A survey was undertaken to understand the perception of the population as regards RO water plants installed in the villages. Villagers were quite satisfied with the RO plant The plant was providing reliable supply and now most villagers had stopped using home RO in favour of the village plant.
- i. There is spare capacity for water purification. If nearby villages can be contracted with, then sustainability may improve due to improved revenue.
- j. As plants go beyond five years, the rate of breakdowns will increase. Getting into AMC now will help and prove cost effective.
- k. Cleanliness of the plant and surroundings needs to be ensured. This will ensure lower risk of water contamination.

19. Impact Mapping. (Annexure-6). Based on data available, the RO plants have a positive impact on the awareness regarding need for purified water and on the health of the community which in turn would improve overall economic development. The only significant possible negative impact can be due to discharge of high TDS effluent in the environment over a long period of time.

20. OECD Assessment.



Element	Grade (Max 10)	Remarks
Coherence How well does the intervention fit?	10	Fits perfectly with National need, SDG and Vision of Bharat Forge of comprehensive Village Development.
Relevance Is the intervention doing the right things?	9	It is providing purified water which directly impacts health, hygiene and sanitation.
Effectiveness Is the intervention achieving its objectives?	9	Yes, most villagers are using water from the plant, there is awareness about the need to drink clean water and cases of diarrheal diseases have reduced.
Efficiency How well are resources being utilized?	8.5	Plant capacity is underutilized. Maintenance of plants needs revenue. Villages need to prioritize this aspect.
Impact What difference does the intervention make?	8.5	It improves the health and well-being of the population, which in turn improves productivity. The effluent created needs to be recycled so that there is no degradation of the soil in the long term. In case not well utilized it can eat into Gram panchayat funds
Sustainability Will the benefits last?	7.5	To be sustainable, the maintenance of the plant, adequate utilization of water from the plant, generation of revenue from the plant and earmarking of funds for the plant needs to be ensured by Gram Panchayat

21. **Sustainable Development Goals.** The project is aligned with following Sustainable Development Goals :-

- a. **SDG 3** Ensure healthy lives and promote well-being for all at all ages
- b. **SDG 6** Ensure availability and sustainable management of water and sanitation for all.

22. **Recommendations**

- a. Contamination with Coliform organism has been found in all water reports. Chlorination of RO water may be undertaken. All leaks in the RO system should be repaired. Hygiene and sanitation of the area should be ensured. This should be on a high priority.
- b. At Askarwadi and Sonori, feasibility of the tankers supplying water to villages being utilized for RO plant ,may be studied.
- c. At Askarwadi, if utilization is very low, alternate options may be explored. Keeping RO plant closed for long period can have adverse effect on plant serviceability.
- d. Fool proof system of accounts may be set up. The accounting process may be standardised and transparent. All water should be purchased by Card only.
- e. The reasons for shortfall between expense and revenue at Kumbharvalan needs to be investigated. Since all other plants are breaking even or are profitable.
- f. Plan for increasing utilization of available capacity of the RO plants will help increase in revenue for maintenance.
- g. Awareness about chlorination of water, even for RO water may be created. Posters may be put up at water delivery points for the same. Villagers can add chlorine solution at home/or it can be done centrally at the plant itself.
- h. Six monthly water testing, chemical as well as biological is essential to monitor water quality after water filtration. This should also be done whenever the membrane filters and carbon filters are changed
- i. The use of personal containers by villagers is a good idea and should be implemented.
- j. TDS of water at all Villages should be maintained between 50-150 ppm.