CLEAN SUSTAINABLE WATER ... FOR ALL

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Abstract

This report focuses on the observations and recommendations to leverage water ATMs as a means to provide clean sustainable drinking water to a larger population in the more rural parts of Haryana. Safe Water Network and Jal Shakti Ministry have partnered with an aim to "provide safe and adequate drinking water by 2024 to all households in rural India". They aim to achieve this through a community approach comprising rural water supply strategy, enhancing water supply infrastructure, secure water supply systems, financial sustainability and assistance and creating awareness in community.

Water ATMs are small scale water treatment stations that dispense water to consumers through card or coin based mechanism. They are typically operated by private contractors commissioned by government agencies or NGOs. The report covers improvement ideas under the categories of : Coverage (C), Execution (E) and Adoption (A).

Coverage: Need to have 10x (600 instead of 60) ATMs; optimal locations for these ATMs; importance of accurately geotagging them and encouraging women operators to run them. Execution: real time measurement of water quality, symbiotic relationships with electricity boards to ensure uninterrupted supply, and robust public-private partnership models. Adoption: higher uptime of these water ATMs, adherence to minimum service level agreements, and a 360-degree feedback mechanism with operators and customers.

Next steps are to create a viable plan (financial and operational) plan with YSDGL (Young Sustainable Development Goals Leadership) and to draft a public policy paper to help implement these recommendations with UNGCNI (United Nations Global Compact Network India).

August 01, 2023

Certificate of Internship

This is to certify that **Ms. Rhea Gupta**, a Scholar at The Shri Ram School, Aravali has successfully completed her internship program with Safe Water Network India for a period of five months, March - July 2023.

Rhea worked on the Project titled "**Clean Sustainable Water for All**", whereby she actively and diligently involved herself into the project, while interacting with the community and stakeholders.

During the course of her internship, we found her highly motivated, with an exceptional enthusiasm for research work, and a profound sense of empathy towards the community. Her commitment to addressing real-world issues in her work reflects her genuine passion for making a positive change in society.

We congratulate her on the successful culmination of this Project and wish her success in all her future endeavors.

Best Regards,

Poonam Sewak

Poonam Sewak
Trustee & VP – Programs & Partnerships

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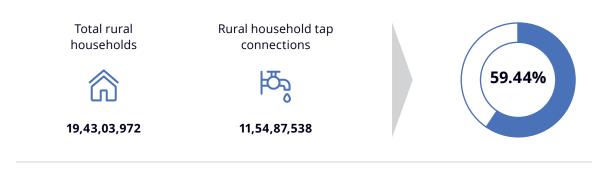
Jal Jeevan Mission – India

Jal Jeevan Mission, is envisioned to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India. The programme will also implement source sustainability measures as mandatory elements, such as recharge and reuse through grey water management, water conservation, rain water harvesting. The Jal Jeevan Mission will be based on a community approach to water and will include extensive Information, Education and communication as a key component of the mission. The Jal Jeevan Mission will be based on a community approach to water and will include extensive Information, Education and communication as a key component of the mission. JJM looks to create a jan andolan for water, thereby making it everyone's priority. (JJM, n.d.)

Mission Statement

- States/ UTs in planning of participatory rural water supply strategy for ensuring potable drinking water security on long-term basis to every rural household and public institution, viz. GP building, School, Anganwadi centre, Health centre, wellness centres, etc.

- States/ UTs for creation of water supply infrastructure so that every rural household has Functional Tap Connection (FHTC) by 2024 and water in adequate quantity of prescribed quality is made available on regular basis.

- States/ UTs to plan for their drinking water security

- GPs/ rural communities to plan, implement, manage, own, operate and maintain their own in-village water supply systems
- States/ UTs to develop robust institutions having focus on service delivery and financial sustainability of the sector by promoting utility approach
- Capacity building of the stakeholders and create awareness in community on significance of water for improvement in quality of life
- In making provision and mobilization of financial assistance to States/ UTs for implementation of the mission. (Jalshakti, About JJM, n.d.)

Total rural households	Rural household tap connections	
19,43,03,972	11,54,87,538	59.44%

Objectives

The broad objectives of the Mission are:

- To provide FHTC to every rural household.
- To prioritize provision of FHTCs in quality affected areas, villages in drought prone and desert areas, Sansad Adarsh Gram Yojana (SAGY) villages, etc.
- To provide functional tap connection to Schools, Anganwadi centres, GP buildings, health centres, wellness centres and community buildings
- To monitor functionality of tap connections.
- To promote and ensure voluntary ownership among local community by way of contribution in cash, kind and/ or labour and voluntary labour (shramdaan)
- To assist in ensuring sustainability of water supply system, i.e. water source, water supply infrastructure, and funds for regular O&M
- To empower and develop human resource in the sector such that the demands of construction, plumbing, electrical, water quality management, water treatment, catchment protection, O&M, etc. are taken care of in short and long term
- To bring awareness on various aspects and significance of safe drinking water and involvement of stakeholders in manner that make water everyone's business (Jalshakti, About JJM, n.d.)

#	State	No. of Villages with PWS (Reported till 24.03.2023)					
		Nos. of Villages with (100% FHTC)	Nos. of Villages with >= 90 to < 100 % FHTC	Nos. of Villages with >= 80 to < 90 % FHTC	Nos. of Villages with >= 70 to < 80 % FHTC	Nos. of Villages with > 0 to < 70 % FHTC	Nos. of Villages with 0 FHTC
	Total	**179323**	**47779**	**28222**	**23105**	**134934**	**154264**
1	Bihar	34305	1565	726	511	1296	259
2	Gujarat	18152	0	0	0	0	0
3	Himachal Pradesh	17121	195	181	117	424	24
4	Uttar Pradesh	12373	5025	3043	2505	16414	42395
5	Odisha	12042	4366	2534	1960	11671	14159
6	Punjab	11900	0	0	0	0	0
7	Maharashtra	11552	7281	3471	2842	11921	3000
8	Telangana	10452	0	0	0	0	0
9	Madhya Pradesh	7469	4590	2260	1700	14680	12338
10	Haryana	6713	0	0	0	0	0
11	Karnataka	6580	3545	2117	1757	11111	3136
12	Andhra Pradesh	4137	3390	1751	1398	6149	1496
13	Uttarakhand	3571	4227	1581	1072	3738	822
14	West Bengal	3340	2085	1780	1360	6552	23627
15	Arunachal Pradesh	3326	218	219	179	721	597
16	Tamil Nadu	3018	1353	957	797	6204	196
17	Assam	2907	2039	1231	1279	6966	9031
18	Rajasthan	2362	2364	1733	1580	9349	22898
19	Jharkhand	1530	1909	1331	1177	11468	10867
20	Meghalaya	1503	560	470	306	1277	2282
21	Chhattisgarh	1426	1145	1414	1352	8090	6225
22	Jammu & Kashmir	1014	595	573	567	3592	419
23	Manipur	532	637	391	210	725	56
24	Nagaland	411	166	129	72	448	264
25	Goa	378	0	0	0	0	0
26	Andaman & Nicobar Islands	266	0	0	0	0	0
27	Mizoram	251	194	64	24	62	82
28	Puducherry	246	0	0	0	0	0
29	Sikkim	151	141	39	28	70	10
30	Dadra & Nagar Haveli And Daman & Diu	96	0	0	0	0	0
31	Kerala	82	59	86	117	1169	65
32	Tripura	75	90	107	156	745	3
33	Ladakh	42	40	34	39	92	3
34	Lakshadweep	0	0	0	0	0	10
	Total	**179323**	**47779**	**28222**	**23105**	**134934**	**154264 Bottom of Form**

(Jalshakti, Village wise percentage FHTC coverage, n.d.)

Key Highlights – JJM

- As the country celebrates Azadi ka Amrit Mahotsav, to mark 75 years of India's Independence, Jal Jeevan Mission (JJM) has achieved a new milestone by providing 10 crore rural households with safe and clean drinking water through taps on 19th August 2022

- In Goa, Telangana, Gujarat, Haryana, Puducherry, D&D and D&NH, and A&N Islands, every rural household has tap water supply

- Till date, 125 districts and 161,704 villages in the country reported as "Har Ghar Jal"

- Burhanpur District of Madhya Pradesh became the first 'Har Ghar Jal' certified district in India in July, 2022

- Goa became the First 'Har Ghar Jal' Certified State & Dadra & Nagar Haveli and Daman & Diu became the First 'Har Ghar Jal' Certified UT in India in August, 2022

- All 2.63 lakh rural households of Goa & 85,156 households of Dadra & Nagar Haveli and Daman & Diu have access to potable water through tap connection

- Andaman and Nicobar Islands became first 'Swachh Sujal Pradesh' in India in September, 2022

- Till date, 8.73 Lakh (84.83%) schools and 9.02 lakh (80.79%) Anganwadi Centers across the country have been provided with potable tap water supply for drinking and cooking mid-day meals and hand washing

- Till date, 5.18 lakh Village Water & Sanitation Committee/Paani Samitis formed, and 5.09 lakh Village Action Plans (VAPs) developed for sustained drinking water supply management

- So far, 16.22 lakh women have been trained in 1.95 lakh villages on Water Quality Testing through Field Test Kits (FTKs)

- During the FY 2022-23, more than 27.16 lakh water samples have been tested in laboratories and 57.99 lakh samples have been tested using Field Test Kits (FTKs) (PIB, n.d.)

Village wise percentage FHTC coverage

Details of Har Ghar Jal (100 % FHTC Coverage)

#	State Name	No. of Har Ghar Jal District		No. of Har Ghar Jal Block		No. of Har Ghar Jal Panchayat		No. of Har Ghar Jal Village	
		Reported	Certified	Reported	Certified	Reported	Certified	Reported	Certified
1	Andaman & Nicobar Islands	3	3	9	9	75	75	266	261
2	Andhra Pradesh	0	0	12	0	2032	553	3490	852
3	Arunachal Pradesh	0	0	0	0	602	131	2717	500
4	Assam	0	0	0	0	3	0	2069	157
5	Bihar	1	0	150	0	5958	0	33851	0
6	Chhattisgarh	0	0	0	0	145	22	465	94
7	Dadra & Nagar Haveli And Daman & Diu	3	3	12	12	25	25	96	93
8	Goa	2	2	12	12	191	191	378	378
9	Gujarat	33	8	247	87	13894	9524	18152	11759
10	Haryana	22	22	142	142	6098	6098	6713	6710
11	Himachal Pradesh	2	1	21	8	2669	971	15644	6149
12	Jammu & Kashmir	2	1	11	4	339	86	838	132
13	Jharkhand	0	0	0	0	37	9	636	150
14	Karnataka	0	0	1	0	550	80	4485	1170
15	Kerala	0	0	0	0	45	24	75	32
16	Ladakh	0	0	0	0	17	6	42	15
17	Lakshadweep	0	0	0	0	0	0	0	0
18	Madhya Pradesh	1	1	2	2	2259	805	7263	2438
19	Maharashtra	0	0	4	0	5789	647	9375	1195
20	Manipur	0	0	0	0	366	242	419	265
21	Meghalaya	0	0	0	0	1189	566	1200	568
22	Mizoram	0	0	0	0	226	146	226	146
23	Nagaland	0	0	0	0	333	199	333	199
24	Odisha	0	0	0	0	422	0	8850	0
25	Puducherry	2	2	3	3	108	108	246	246
26	Punjab	20	16	146	130	11782	11213	11865	11806
27	Rajasthan	0	0	0	0	61	25	1109	437
28	Sikkim	0	0	0	0	23	6	86	21
29	Tamil Nadu	1	1	9	7	2362	2013	2362	2013
30	Telangana	32	0	542	0	12740	0	10452	0
31	Tripura	0	0	1	0	72	27	72	27
32	Uttar Pradesh	0	0	0	0	3181	829	6197	1304
33	Uttarakhand	0	0	0	0	712	31	2548	111
34	West Bengal	0	0	0	0	19	1	2484	589
	Total	**124**	**60**	**1324**	**416**	**74324**	**34653**	**155004**	**49817** Bottom of form

Even though government is making enough effort to provide tap connection to every household in the country, states like Uttar Pradesh, West Bengal, Rajasthan, Odisha, Telangana, Jharkhand are still far behind.

Safe Water Network India

We believe water is a fundamental human right. We envision a world with healthy, thriving communities sustainably managing their own safe water

Solving the Global Water Crisis through Innovation and Collective Action

Working with local leaders, institutions, implementers, and community members, we will improve access to safe water for 50 million people by 2026

Mission	We reach millions in underserved communities by developing affordable, equitable solutions and accelerate access by providing technical assistance and catalyzing sector-wide collaboration.

Our Values			
Accountability	**Adaptive Learning**	**Collective Action**	**Inclusion**
We recognize trust is earned through operating with integrity, holding ourselves to the highest standards possible, actively listening and transparently sharing our work and ideas as well as our failures.	We know the world is evolving, as is the water sector and technology and believe we can learn from our peers, sector leaders, and, most importantly, the people we serve. We are committed to continuous improvement, embracing change, and challenging ourselves.	We acknowledge our path is not always linear, but we persevere. "Network" is in our name, and we know our success is dependent on collaboration within the sector and throughout the larger ecosystem.	We believe that sustainable solutions for safe, affordable water supply must be locally led. We strive to create an inclusive environment for our team and in the communities we serve.

Impact in India

1.3M
people through direct contact

99%+
station uptime

346
communities

54%
of the network led by women

How does it work?

- SWN works closely with the Ministry of Jal Shakti and the Ministry of Housing & Urban Affairs to support the development of national water policy to extend piped networks throughout India. Safe Water Network also leads the SWE Alliance, a national multi-stakeholder platform, which promotes safe water enterprises as resilient, complementary solutions.

- Using its technical and management expertise, Safe Water Network is improving the performance of one of India's largest portfolios of water treatment plants in the state of Karnataka. Safe Water Network is also a key Technical Resource for the national and state governments, providing comprehensive water management solutions and training.

Community-centered Design

Accountability	Adaptive Learning
We recognize trust is earned through operating with integrity, holding ourselves to the highest standards possible, actively listening and transparently sharing our work and ideas as well as our failures.	We know the world is evolving, as is the water sector and technology and believe we can learn from our peers, sector leaders, and, most importantly, the people we serve. We are committed to continuous improvement, embracing change, and challenging ourselves.

The iJal Women's Empowerment Program

"The iJal Women's Empowerment Program, piloted in the State of Telangana's Medak district, promotes female entrepreneurship by linking self-help groups (SHGs) to new sources of income, offering over 170 women access to employment while providing a sustainable source of water for 150,000 community members" (Network, n.d.)

Field Visits

Water ATMs (Anytime Water Machines) are water dispensation systems that can be operated automatically with a coin or smart card, or manually. These are operated by private companies and are a good augmentation to distributing safe drinking water in localities. Most of these ATMs leverage the RO (reverse osmosis) method of filtration. They are often installed at public places like railway stations, bus stops, crowded shopping areas where the need for potable drinking water is acute.

In India, the need for water ATMs is higher than in most other countries. Ranked 120 out of 122 countries in the Water Quality Index, according to Niti Aayog, we are a country where only 18% of our population has access to potable piped water (according to Comptroller and Auditor General). Given the socio-economic situation of the country, most households cannot afford their own personal RO. Hence to fulfil the Sustainable Development Goal of availability and sustainable management of water by 2030, there has been a spurt in the growth of water ATMs.

Various schemes are helping drive the initiative on water – Har Ghar Jal, Swajal, MGNREGA for water conservation, Jal Kranti Abhiyan, National Water Mission, National Rural Drinking Water Programme, NITI Aayog Composite Water Management Index, Jal Shakti Ministry and Jal Jeevan Mission. (To The Point, 2018).

In order to understand better how safe drinking water reaches millions of people in India, I decided to visit various water ATMs in and around Gurgaon, Haryana. As per an article in Times of India (Sep, 2018), MCG had decided to install 60 water ATMs in and around Gurgaon itself (MCG to set up 60 Water ATMs in Gurgaon, 2018). When I looked up Google Maps, it showed me 12 such locations.

I made an attempt to visit several such ATMs (2 not found, 2 closed, 2 interviewed in Gurgaon and 2 interviewed in Haryana)

We could not find 2 ATMs. Maps showed a location but they were not there and nobody in the local vicinity knew about them (e.g. one of them has the address as 22, Block H, Block D, Sector 46, Gurugram).

We found atleast 2 ATMs that were closed. We were told there is some work going on, but apparently there has been ongoing work since the last 6 months. Yet it seemed like the actual ATM was decrepit and no work was seen to be happening. For example, the water ATM at Good Earth Mall was run down, closed for over 6 months, with all kinds of advertisements and paper stuck over it (see Appendix for pictures)

We managed to interview operators and customers at a few water ATMs (e.g. at Nakhroli, and at Sector 30). We had some interesting conversations

- All the operators and customers were very eager to talk and share their experiences; they were thrilled that a school student is trying to understand about water supply and wants to interview them

- Pricing and purchasing:
  - In the water ATM at Nakhroli, and at Navada Fatehpur Govt School, the method of purchasing water is through cards (not smart cards). Basically a customer has to register and they get a plastic card with a number (like a ration card) and that allows them ability to purchase water. The card itself is for Rs 30 and there is a monthly recharge of Rs 170 – this allows them 20 litres of water daily which works out at 30 p per litre.
  - By contrast, in the water ATM at Sector 29 and at Sector 30, water can be purchased by anyone and while 1 litre costs Rs 3, but 20 litres costs Rs 20.

- Method of filtration:
  - All the water ATMs I visited had the same water filtration method where water would come in, pass through filters, get to a motor that would press the water out
  - In the water ATMs in Haryana, the water came through a pipe and got stored in a large tank outside. While in the water ATMs in Gurgaon, they came through the pipe straight into the filtration system
  - Also the ATMs in Gurgaon had a cooling unit such that the final water dispensed was cool; the water ATMs in Haryana had no such cooling unit

- Installation and maintenance:
  - All water ATMs took 4-6 months to install
  - Maintenance needs are quite low with a need to change the water filter every 3-4 months. This is done by the sub-contractor who comes and does it
  - For any maintenance need or breakdown, the operators can call the sub-contractor who sends someone to fix it. There is rarely any breakdowns and if any, they are electrical in nature
  - One of the operators in Gurgaon was skilled enough to manage any electrical shortcomings himself

- Hours of operation and pay:
  - The water ATMs in Haryana were open for a limited period of time (8 AM to 9 AM; and 5 PM to 7 PM only) while the water ATMs in Gurgaon were open for 12 hours (8 AM to 8 PM)

- Water quality check
  - It was interesting that none of the ATMs had any technical method to check the quality of the water
  - Also there was no regular sampling of water to be sent to the labs for any certification
  - In 2 of the ATMs, the operators claimed that they do physical checks (colour and odour)

- Customers:
  - The 7-8 customers we interviewed were all very happy with the water ATMs and had no issues
  - One customer felt that the density of water ATMs can be increased as he had to come almost 1 km each day to get 20 litres of water
  - Another customer had a unique observation. For the 20 litre bottles, once the caps are opened, they apparently break and cannot be reused. Then when they fill the water, there is no cap to seal the 20 litre bottle and that becomes inconvenient to carry. His suggestion was if plastic caps can be made available for the bottles

- Operators
  - The pay for the operators in Gurgaon were INR 12000-14000 per month; while for the operators in Haryana were INR 4000-5000 per month (although for far fewer hours)
  - Operators in Gurgaon were both men who were semi-skilled to skilled. Operators in Haryana were women and anganvadis for whom this was a part time job
  - One of the Gurgaon operators was actually very skilled, very fluent in English and whose primary job was being a Russian translator for tourists. But due to the Russia-Ukraine war, and therefore fall in Russian tourists, he was doing the job of a water operator temporarily

- Economics
  - In the Nakhroli ATM, there were 75 cards at INR 200 each which meant a monthly income of INR 15,000. The operator earned close to INR 5000 and on top of that there are costs of electricity, water filter and any interest cost on the investment
  - In the Gurgaon ATM, 8-10 bottles of 20 litres each sold each day, which meant a daily income of INR 200-300 and a monthly income of INR 10000. Yet the operator income was INR 14000 and electricity charges etc on top.
  - However on normal days there is also a water tanker comes. On days, when the water tanker does not come, the water sales from the ATM shoots up

Policy Recommendations

First of all, it is important that needy individuals are able to find water ATMs close to them. Hence, the geo-tagging of water ATMs accurately becomes a crucial element in locating them and being able to leverage its usefulness. Partnerships with Google Maps, MapMyIndia would be useful to ensure that these ATMs show up on the maps most commonly used on the phones of most citizens and residents. This will also ensure accuracy of the location on the map so as to avoid frustration and erosion of confidence amongst the customers in finding water ATMs when they need it.

Secondly, ensuring uptime of water ATMs is crucial and there should be some minimum standards and serice level agreements for the same. We found a fair percentage of water ATMs that were not operational when we went there because of various reasons – construction, repair and maintenance or hours of operations. Having some consistency of hours of operations will also make the use of the water ATMs more predictable and will therefore enhance usage. Service level agreements should also take into account stringent standards for quality testing and measurement. There should be some processes and systems in place for real time measurement of water quality, and a governance process in place for frequent and regular checks of the water being sent to testing labs with a certification process to validate the quality of the water.

Thirdly, we should ensure optimal set up and employment at the water ATMs. From a location standpoint, we should ensure that there is some science and analysis behind where water ATMs should be placed. Priority should be provided to either commercial locations (like open bazaars, bus stations, railway stations etc) or to residential locations that do not have easy access to clean drinking water. From an operational standpoint, it would be useful to mandate or encourage enlisting women as ATM operators. This would help bring them into the workforce, give them a sense of identity and provide economic independence to them.

Fourthly, we should have a continual mechanism of seeking feedback from water ATMs and improving its operations. For instance, supplying water ATMs with bottles of different sizes, alongwith reusable caps can provide flexibility and ease of carry to the customers. Establishing a symbiotic relationship with the Electricity Board to ensure regular, uninterrupted electrical supply to the ATMs will also enhance its usage. Considering optimal methods of water purification (e.g. UV purification) that may be cheaper and quicker to install can be another idea.

Finally, while the above points are all what we should "do", there are a few "do nots" as well. We should ensure that the objective of placing the water ATMs is not lost on the sub-contracting agencies and that privatization of water supply and profiteering do not become the paramount intent. We should also ensure any scenario where supply to the water ATM adversely impacts the supply of water to other parts of the locality where the water ATM is situated.

Overall, water ATMs is a splendid concept to alleviate a very serious issue and the initiative has been off to a great start. We should ensure that we maintain the momentum through continually working on the policies and recommendations to make this a very successful and sustainable initiative.

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