Safe WATER NETWORK

REPORT SERIES

INDIA SECTOR REVIEW

SAFE WATER ENTERPRISES FOR RELIABLE AND AFFORDABLE DRINKING WATER ACCESS

JUNE 2023

FUNDING PARTNERS

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ABOUT THE REPORT

India's water supply landscape has changed since the last India Sector Review: Small Water Enterprises to mitigate the drinking water challenge, published in 2018. India is addressing universal safe water access to each home in rural and urban with piped water in a mission mode through the Jal Jeevan Mission of the Ministry of Jal Shakti by 2024 and AMRUT 2.0 of the Ministry of Housing and Urban Affairs by 2026 at an outlay of $90 Billion. Despite these tremendous government efforts, ~150 million people, mainly those residing in low-income urban communities and water quality-affected rural habitations, will lack access to treated piped water.

This report titled "India Sector Review 2023: Safe Water Enterprises for Reliable and Affordable Drinking Water Access", is the fourth in the series since its first publication in 2014. It reassesses the need for Safe Water Enterprises, popularly called Water ATMs (decentralized water treatment plants that provide affordable, safe water access) in the current scenario in India, where the government provides piped water access to each home.
SWEs have helped de-risk the cities against climate change and reduced plastic scourge. They remain the choicest safe water supply solution, especially in remote habitations, small clusters, and zones affected by rapid urbanization, where the government is unable to meet the speed of delivering water through piped supply. SWEs, for their low investment and quick to install features, remain a choice for safe water access at railway stations, marketplaces, tourist spots, schools and hospitals.

The report sheds light on the relevance, market size, and regulatory environment for the SWEs. How have the SWE models been redesigned and innovated to meet the regulatory and pandemic challenges? The report discusses the operational and financial performance of the SWEs and the funding models. The report provides glimpses of the SWE tenders, and the SWE implementers and funders.

This report is meant for water sector stakeholders, including central and state governments, state-level water supply departments, local water authorities, financing institutions, SWE implementers, NGOs, and funding partners.

We sincerely thank USAID for their guidance and funding support, which enabled us to undertake this sector review and develop the SWE Alliance for sector convergence and scale up of SWEs. We are also grateful to the Pentair Foundation and the PepsiCo Foundation, our core partners for a decade, who have enabled pilots and replication of India's safe drinking water model and promoted initiatives for the SWE sector growth.

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LIST OF ABBREVIATIONS

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ATM	Any Time Machine for Water
BCM	Billion Cubic Meters
BIS	Bureau of Indian Standards
BOT	Build, Operate, Transfer
CAGR	Compounded Annual Growth Rate
CGWB	Central Ground Water Board
COCO	Company Owned, Community Operated
COO	Company Owned and Operated
CWTP	Community Water Treatment Plant
FHTC	Functional Household Tap Connection
FTK	Field Test Kit
GoI	Government of India
HGJ	Har Ghar Jal
JJM	Jal Jeevan Mission
LPCD	Liters Per Capita per Day
MoEF&CC	Ministry of Environment, Forest & Climate Change
MoHUA	Ministry of Housing & Urban Affairs
MoJS	Ministry of Jal Shakti
NABL	Nationally Accreditation Board for Testing and Calibration Laboratories
NITI	National Institute for Transforming India
NIRDPR	National Institute of Rural Development and Panchayati Raj
OECD	Organization for Economic Cooperation and Development
PPM	Parts Per Million
PHED	Public Health Engineering Department
TDS	Total Dissolved Solids
QR Code	Quick Response Code
RMS	Remote Monitoring System
RO	Reverse Osmosis
SLA	Service Level Agreement
SDG	Sustainable Development Goal
SWE	Safe Water Enterprise
SWNI	Safe Water Network India
UF	Ultrafiltration
VGF	Viability Gap Funding
WVM	Water Vending Machine

EXECUTIVE SUMMARY

India water landscape: India has been addressing the water needs of the citizens with tap water at each home since 2019. The Jal Jeevan Mission of the Ministry of Jal Shakti has provided more than 90 million new tap connections to rural households versus a plan of 162 million. ~63[1] percent of the rural population has a functional tap water connection to their home. The Jal Jeevan Mission plans to cover all rural households with tap water before the sunset of the mission in March 2024. The AMRUT 2.0 Mission of the Ministry of Housing and Urban Affairs has planned to reach ~27 million[2] new tap connections to all urban homes in urban cities and towns by 2026. **Despite these tremendous efforts,** it is estimated that **nearly 150 million people** (95 million in Rural and 61 million in Urban) in India will still lack access to treated piped water.[3]

The water quality challenge exists and needs improvement: India faces a water quality challenge. Almost 70% of the water sources, ground or surface, are contaminated. According to a NIRDPR[4] report, 37.7 million people in India are affected by waterborne diseases annually: 1.5 million children are estimated to die of diarrhea alone, and 73 million working days are lost due to waterborne diseases each year[5]. The resulting economic burden is estimated at $600 million per year. However, with access to safe water, the disease incidence is reducing. Cholera, acute diarrheal, typhoid, and viral hepatitis have caused 10,738 deaths over the last five years since 2017.[6]

Safe Water Enterprises or Water ATMs are proven solutions for affordable, safe drinking water access. SWEs are low in investment and quick to install. They generate livelihoods and also help in the reduction of the plastic scourge[7] caused due to single-use plastic water bottles. Water ATMs in India are complementary solutions to the piped water supply and have enabling environments in both rural and urban regions. SWEs have been installed by all the States in India, and there are over 65,000 SWEs. There are about 30 national-level SWE implementers.[8] There is a growing trend of SWEs in the country, and they have migrated from urban to rural and are now at railways, marketplaces, hospitals, and schools. For example, Haryana became India's first state to develop an urban Water ATM policy[9] that directs all the urban local bodies to set up Water ATMs at every 400-meter distance. Similarly, the IRCTC recently awarded licenses for installing 2,500 water vending machines at major Indian Railways stations, of which 832 have been commissioned (operational).[10]

Safe Water Enterprises are a resilient solution for de-risking the cities to climate change and pandemics. The impact of climate change, long and hot summers, droughts, cyclones, and floods; during the COVID-19[11] pandemic, the SWEs provided reliable, safe drinking water access, making the water-stressed cities and villages resilient.

[1] Jal Jeevan Mission (JJM) Dashboard, May 31, 2023
[2] AMRUT 2.0 Operational Guidelines, October 2021
[3] Safe Water Network Analysis, June 2023
[4] National Institute of Rural Development and Panchayati Raj (NIRDPR) Report, 2019
[5] WaterAid Background Paper: Drinking water quality in rural India: Issues and approaches
[6] IndiaSpend, based on Lok Sabha data, 2018. Retrieved from Firstpost. article
[7] Hindustan Times news article, retrieved on May 15, 2023
[8] India Sector Review 2018: Small Water Enterprises to Mitigate the Drinking Water Challenge
[9] https://www.business-standard.com/article/pti-stories/hry-govt-comes-up-with-water-atm-policy-for-urban-areas-118040900928_1.html
[10] Water vending machines installed at 250 railway stations | India News,The Indian Express
[11] Dehradun installs Water ATMs during Covid

The market potential and investment needed for SWEs. The global SWE or water ATM market is expected to grow at a CAGR of 4.72% during 2017-2025.[12] In India, the SWEs can address the safe drinking water needs of 150 Million people beyond safe water access. We estimate the SWE market potential of SWEs as 60,000 with an investment of $1.05 B to provide safe water access to the communities living in rural and peri-urban areas. There is an additional market for SWEs in schools, hospitals, needs, and other high-footfall areas where at the drop of a coin, the consumer can collect safe water in their container.

A non-exhaustive list of SWEs tenders in the urban and rural show that since 2019, ~64 tenders have been released for urban cities and towns and 21 in the rural space by the government. Delhi city alone plans to install~1000 SWEs[13] to solve the drinking water crisis in slums clusters. The government usually funds the SWEs under various operation models like build own and operate for a fixed period or build own operate and transfer. SWEs are also supported by the public sector, 2% CSR funds of the corporates, impact funders, and philanthropists.

New regulation for SWEs. A new Code of Practice for Community Water Treatment Plants, SWEs, or Water ATMs is on the anvil. This code prescribes mandatory automation of all SWEs concerning water dispensing and the display of critical water quality parameters. Safe Water Network, an expert committee member of the Bureau of Indian Standards, represented the Safe Water Enterprise Alliance in formulating these Standards.

Financial viability is still a challenge for the SWE sector. The biggest challenge faced by the sector is balancing the paradigm of affordability-sustainability- and profitability for full cost recovery. The local government determines the water pricing to ensure affordability, coupled with low consumer participation and underutilization of the SWE capacity; the SWEs can generate local operating costs and a certain percentage of capital maintenance cost. This leads to their sub-optimal performance and sometimes mortality. The government recognizes this fact, and certain States are giving viability gap funding (VGF) or electricity subsidies. SWEs are also provided with VGF through various other models; for example, Results-Based Funding.

Next Steps – Future of Safe Water Enterprises. The Indian Government is investing heavily in the piped water supply to each urban and rural home, changing the landscape for the Water ATM industry. The piped water supplied from the water treatment plant by the municipality or rural water supply department is treated and safe. However, as the water travels miles in the pipes to reach home, there are cross-contamination risks due to intermittent water supply. Hence, there is a need for point-of-use filters at the household level or other community water treatment solutions. Innovative solutions like Automatic Chlorination and Online Monitoring Systems would ensure water safety in the community Overhead tanks at low cost.

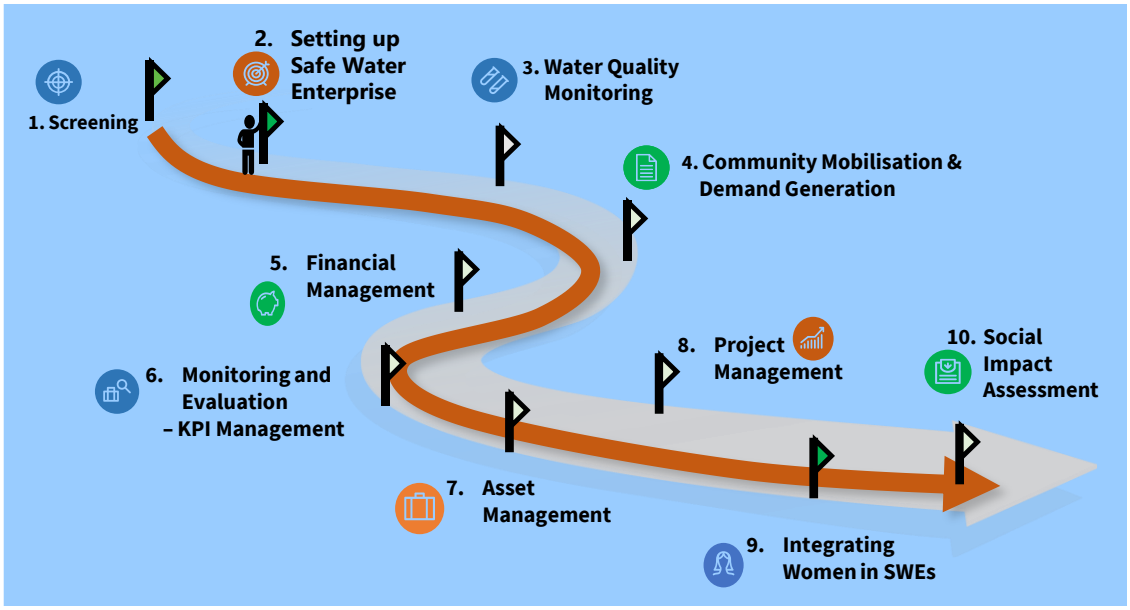
[12] Veracious Statistics Research, December 2018.
[13] TimesMirrorNOW newsarticle: Delhi Jal Board to install 1000 water ATMs in various parts of Delhi by August

Scaling Safe Water Enterprises in India and Beyond

The model documents for the SWEs are endorsed by the Ministry of Housing and Urban Affairs and promote the scale-up of SWEs. These documents can be accessed on the SWE Alliance website and are:

- Tender/RFP - Design, Construction, Installation, Operation & Maintenance of Water ATMs with Viability Gap Funding
- Model SLA for Operation & Maintenance of Water ATMs & Terms of Reference
- Water ATM Audit
- Draft Standard (Specifications) for CWTP
- Draft Code of Practice for CWTP

The iSWEET – digital Safe Water Enterprise Entrepreneur Toolkit has 10 Modules and 30 tools for training and capacity building in setting up SWEs, their operation and maintenance, gender inclusion, and monitoring.



India is in a Mission mode to provide water through tap at each home to its citizens and tackle water stress.

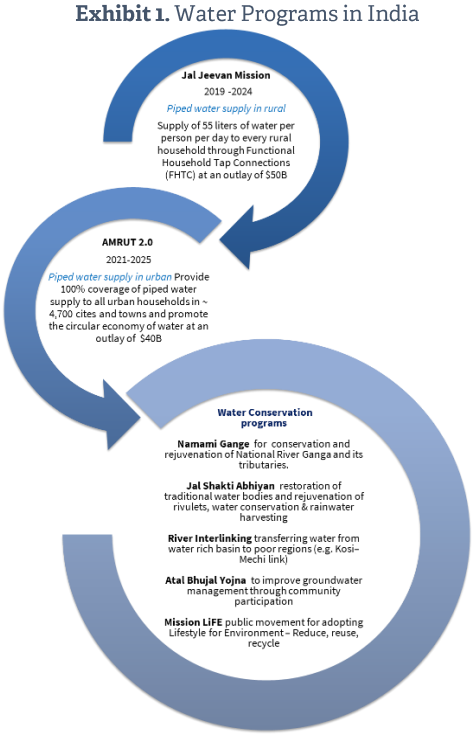
PART 1. INDIA WATER LANDSCAPE

India has 1.4 Billion people, 18 percent of the world's population but only 4 percent of global water resources. The annual per capita availability of water in India has declined to 1,486 cubic meters in 2021 which is above the international threshold of 1000m3 per person for water scarcity. Current challenges include extreme water stress, contaminated surface and ground water, depleting groundwater levels, and climate change effects like droughts, floods, and rising sea levels.

1.1 India is addressing its water needs

About 2 billion people globally lack access to safely managed drinking water services.[14] India has committed more than 240 billion dollars to the water sector through government resources in partnership with private innovators, start-ups, and water-user associations. India has undertaken ambitious programs like **Jal Jeevan Mission** by the Ministry of Jal Shakti to provide piped water access through functional household tap connections in rural India at an outlay of $50 billion and **Atal Mission for Rejuvenation and Urban Transformation** (AMRUT 2.0) Mission to provide tap connection to urban India at an outlay of $40 Billion. By 2035, the percentage of the population in India at mid-year residing in urban areas will be 43.2%[15], mainly due to unprecedented migration of the rural population to cities.

Exhibit 1. Water Programs in India



Namami Gange is an Integrated Conservation Mission set up to accomplish the twin objectives of abatement of pollution, conservation, and rejuvenation of the Ganges.[16] The **Interlinking of River Program** commits $10 billion to transfer water from the surplus basins to deficit basins/areas.[17] **Mega dams** create large-scale freshwater reservoirs for water sufficiency for agriculture, rural, and urban settlements, and **Jal Shakti Abhiyan** for water body rejuvenation and groundwater recharge. The Government has an enhanced focus on the water sector, with increasing fund allocations. **Mission LiFE** Lifestyle for the environment is a public partnership to reduce, reuse and recycle water. The Government of India has moved up the SDG ladder from water availability and access to water quality to achieving UN SDG Goal 6.1.

"We have committed investments of more than 240 billion dollars in the water sector through government resources, in partnership with private innovators, start-ups, and water-user associations. India is implementing two flagship missions to ensure universal access to sanitation and drinking water."
~ Gajendra Singh Shekhawat, Union Minister, Ministry of Jal Shakti, at the UN Water Conference 2023.

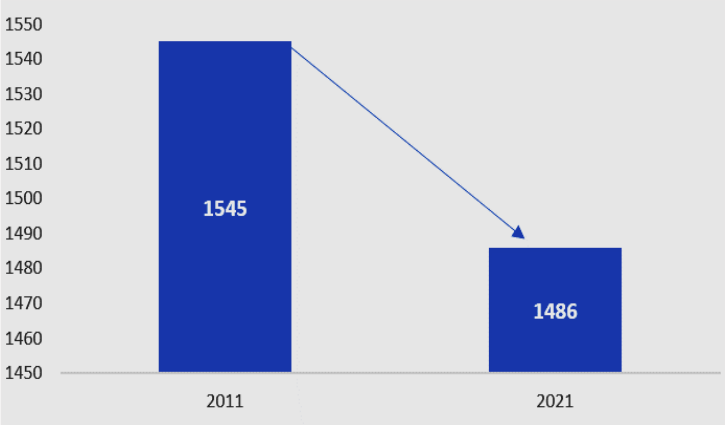
[14] The World Bank: Water Overview, October 2022
[15] UN United Nations-Habitat's World Cities Report 2022
[16] National Mission for Clean Ganga – Namami Ganga Programme
[17] Jal Shakti Ministry: Department of Water Resources, River Development and Ganga Rejuvenation: retrieved from PIB, February 2023

1.2 Present Water Situation

1.2.1 Water Availability

The utilizable water potential of India is estimated to be 1123 billion cubic meters (BCM), comprising 690 BCM of surface water and 433 BCM of replenishable groundwater.[18] Over the last decade, the average annual per capita water availability has reduced by 59 cubic meters.

Exhibit 2. India's Annual Average per capita Water Availability



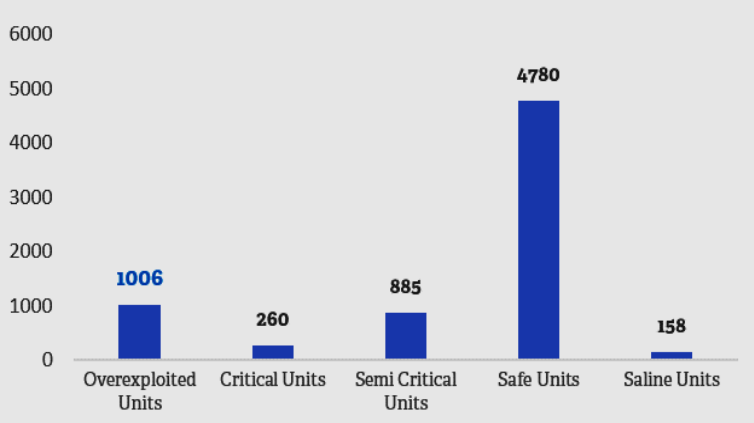
The average annual per capita water availability in India has reduced by 59 cubic meters in the last decade.

India is the largest extractor of groundwater due to its unique geography, with the average groundwater extraction for the country to be about 60.08%, as per the CGWB Report, 2022.[19] Over the last 50 years, borewells have grown from 1 million to 20 million.[20]
With more than 18% of overexploited and critical units, India is expected to be the most severely affected, while the global urban population facing water scarcity is projected to increase from 933 million in 2016 to 1.7-2.4 billion people in 2050.[21]

According to the CGWB report, the total annual groundwater extraction is 239.16 bcm (as of 2022), and the yearly total groundwater recharge is 437.60 billion cubic meters (bcm). Out of the total of 7089 assessment units, 1006 were categorized as over-exploited; 270 were critical; 1,057 were semi-critical; 4,427 were safe, and 97 were saline. The numbers of 'over-exploited' and 'critical' units have marginally declined. This can be attributed to water conservation programs promoting natural and artificial recharge and decreased groundwater extraction. Overall the groundwater recharge has marginally increased from 432 BCM in 2017 to more than 437 BCM in 2020.

[18] National Commission on Integrated Water Resources Development (NCIWRD) report
[19] National Compilation of Dynamic Ground Water Resources of India, Central Ground Water Board, October 2022
[20] World Bank Group Report, 2021
[21] United Nations World Water Development Report 2023: partnerships and cooperation for water. Retrieved from Outlook India, March 2023

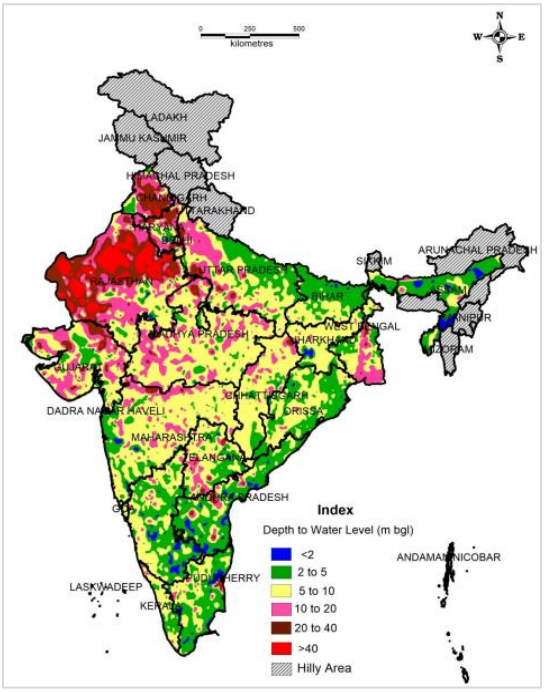
Exhibit 3. Total number of overexploited, critical and safe units in India



India is the largest extractor of groundwater 60.08%, with 1006 overexploited and 260 critical units (n=7089)

SOURCE: The Dynamic Ground Water Resource Assessment Report 2022

Exhibit 4. Depth to Water Level Map, May 2022

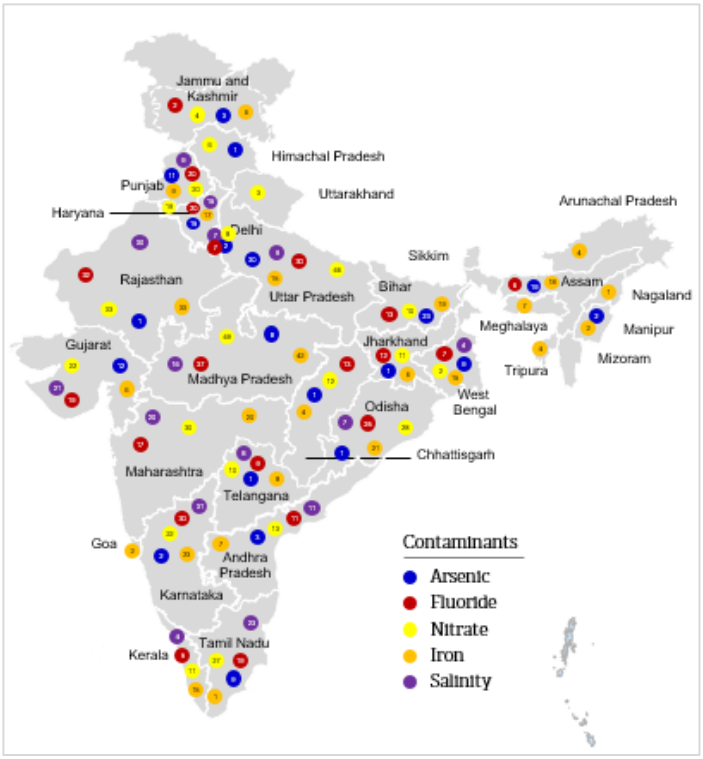


1.2.2 Water Quality

India faces a water quality challenge, as 70% of its water sources are contaminated.[22] The surface water is contaminated with microbial and chemical pollutants from untreated sewage disposal and industrial effluents. The groundwater is contaminated with geogenic contaminants, mainly nitrates, salinity, fluoride, chloride, arsenic, iron, etc.

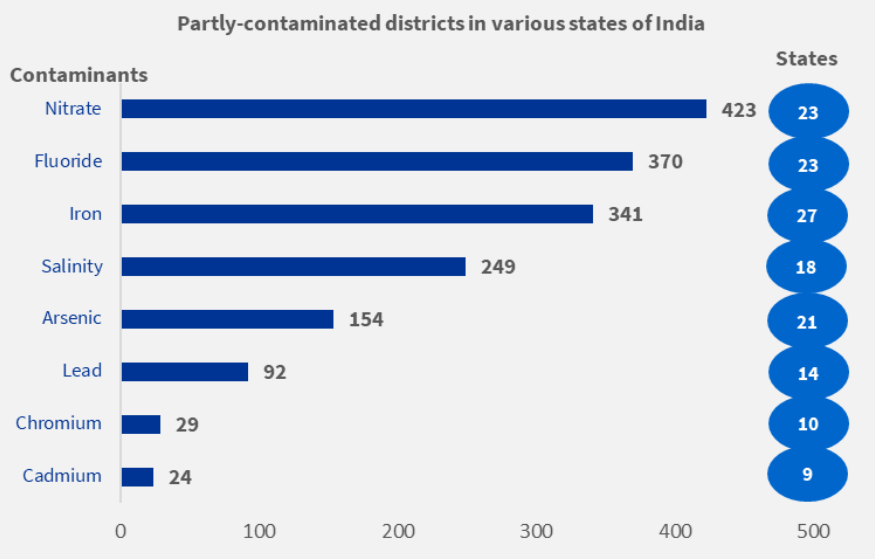
[22] Niti Aayog's Composite Water Management Index Report, June 2018

Exhibit 5. State-wise geogenic contamination of groundwater



As reported by Central Ground Water Board (CGWB) report[23], the number of partly-affected districts contaminated with arsenic, fluoride, iron, nitrate, and salinity is 1679 (Exhibit 6).

Exhibit 6. Number of partly contaminated habitations in districts



The water sources are typically contaminated by arsenic, fluoride, iron, nitrate, and salinity, with iron being the most common.

[23] Central Ground Water Board Report, 2019

As the Ministry of Jal Shakti reported, out of 16.97 lakh rural habitations in the country, the number of water quality contaminated habitations was 19,149[24] in June 2023 (Exhibit 7).

Exhibit 7. Number of water-quality affected habitations

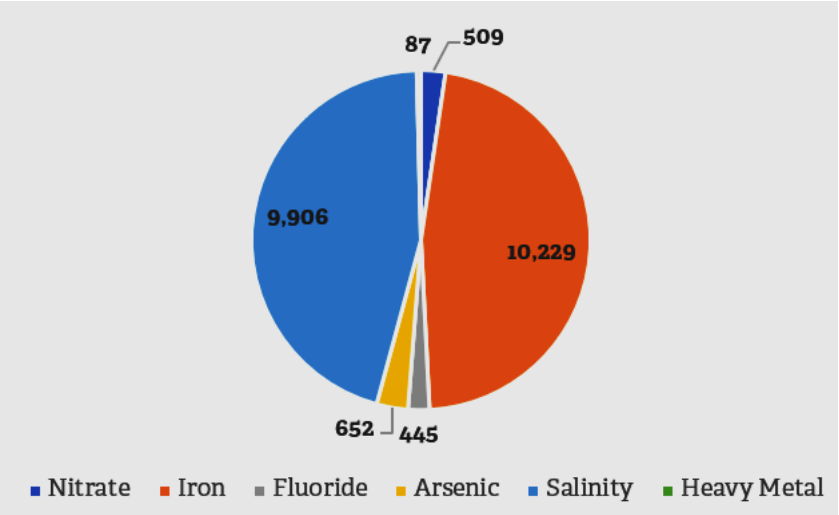
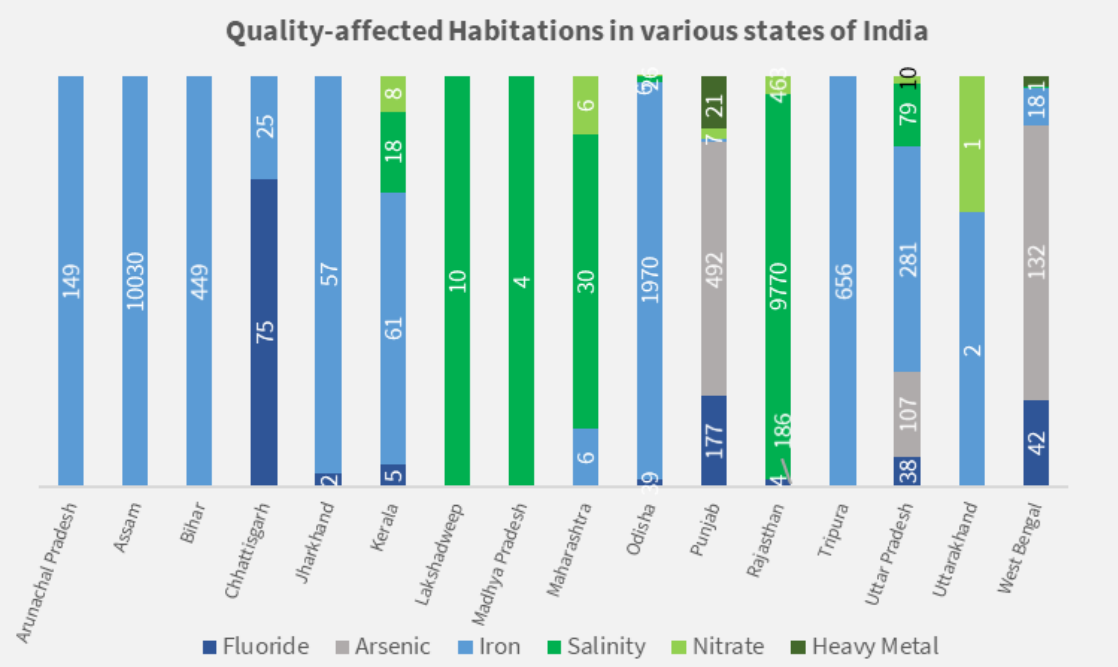


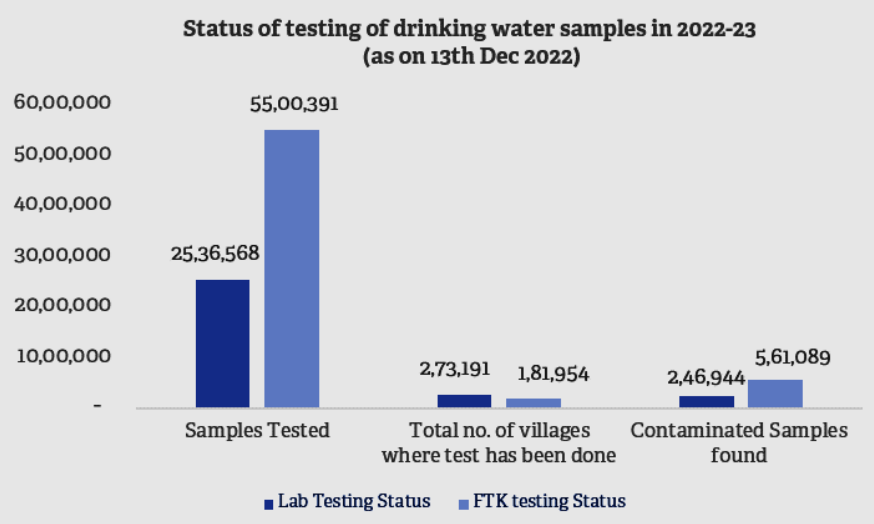
Exhibit 8. State-wise quality-affected habitations



Under the Jal Shakti Ministry's 'Jal Jeevan Mission', priority has been given to water for drinking and cooking needs through Safe Water Enterprises or CWTPs until potable water through the tap is provided. Water Quality testing has been mandated for the villages under JJM using Field Test Kits (FTKs) and NABL-accredited laboratories. The status of tests conducted in laboratories and those conducted using FTKs are as under:

[24] Jal Jeevan Mission Report, June 2023

Exhibit 9. Status of water quality samples tested using Field Test Kits



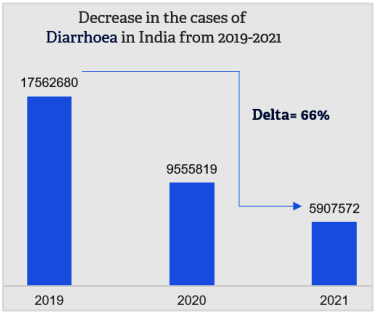
More than 10% of the samples tested through FTKs were found to be contaminated under the JJM

1.2.3 Waterborne disease burden

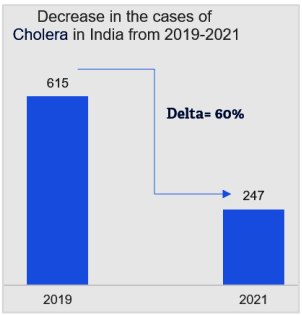
80% of global diseases are waterborne.[25] In India, 37.7 million people are affected by waterborne diseases annually.[26] Cholera, acute diarrheal, typhoid, and viral hepatitis have caused 10,738 deaths over the last five years since 2017. Of these, acute diarrheal diseases have caused the maximum number of deaths, followed by viral hepatitis, typhoid, and cholera.

Exhibit 10. Declining trend in waterborne diseases in India (2019-2021)

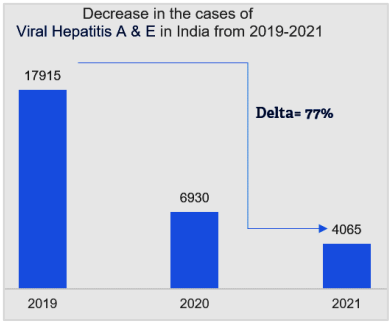
66% reduction in Diarrhea



60% reduction in Cholera



77% reduction in Hepatitis



[25] ASSOCHAM, November 2022
[26] National Institute of Rural Development and Panchayati Raj (NIRDPR) Report, 2019

It is estimated that there is a market potential of 60,000 SWEs or water ATMs in India, which would need an investment of ~ USD 1.05 billion.

PART 2. SAFE WATER ENTERPRISES

Despite India's ambitious piped water supply programs, reaching piped water access to each rural habitation and the urban home in cities and towns is difficult. Remote rural habitations face the challenge of high investment in infrastructure development for piped water access, and it is difficult to match the speed of providing utilities in the cities facing uncontrolled and rapid expansion due to urbanization and migration.

The Har Ghar Jal: Jal Jeevan Mission of the Government of India was launched in 2019 to provide safe and adequate drinking water through individual functional household tap connections (FHTCs) by March 2024 in rural India. At the time of initiation on August 15th, out of 194 million households, 16.64% of households already had tap water connections. As of June 2023, the FHTCs reached ~63%[27] and are expected to reach 90%[28] by March 2024.

The Government's flagship program, Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0 (phase two), was launched in October 2021 for five years and is subsumed with phase 1 (AMRUT) of June 2015 till March 2023. Out of 106 urban households, 79 million had already been provided with tap water connections (from phase 1 of AMRUT). Therefore, the AMRUT 2.0 Mission is focused on providing household tap connections to new 2.68 crores (or 27 million) urban households. Considering urban migration and any slippages with annual average population growth, the Mission is expected to cover 68 million tap water connections[29] by March 2026.

2.1 Safe Water Enterprises – An Affordable Solution

Decentralized Safe Water Enterprises (SWEs) or Water ATMs hold promise for addressing the gaps in coverage, as identified above, and are proven cost-effective solutions that are quick to install. These ATMs provide 24x7 affordable, reliable, safe drinking water access to remote habitations, people living in slums, and on-the-go consumer at railway stations, market place, heritage sites, etc.

While India may continue to experience low access to safe water in both urban and rural areas, SWEs come across as a complementary solution to piped water supply or beyond the Mission's end-of-period.

Besides improving safe water access and public health by reducing waterborne diseases, they have an added advantage of generating livelihoods and preventing single-use plastic water bottles that are detrimental to the environment. India's bottled water market had a compound annual growth rate (CAGR) of 6.9 percent between 2015 and 2020[30] , and it is expected to grow at a CAGR of 5.18% between 2023-2027.[31] The Government of India has taken steps to mitigate pollution caused by littered Single Use Plastics. An SWE consumer collects water in a bottle or a can in their own container.

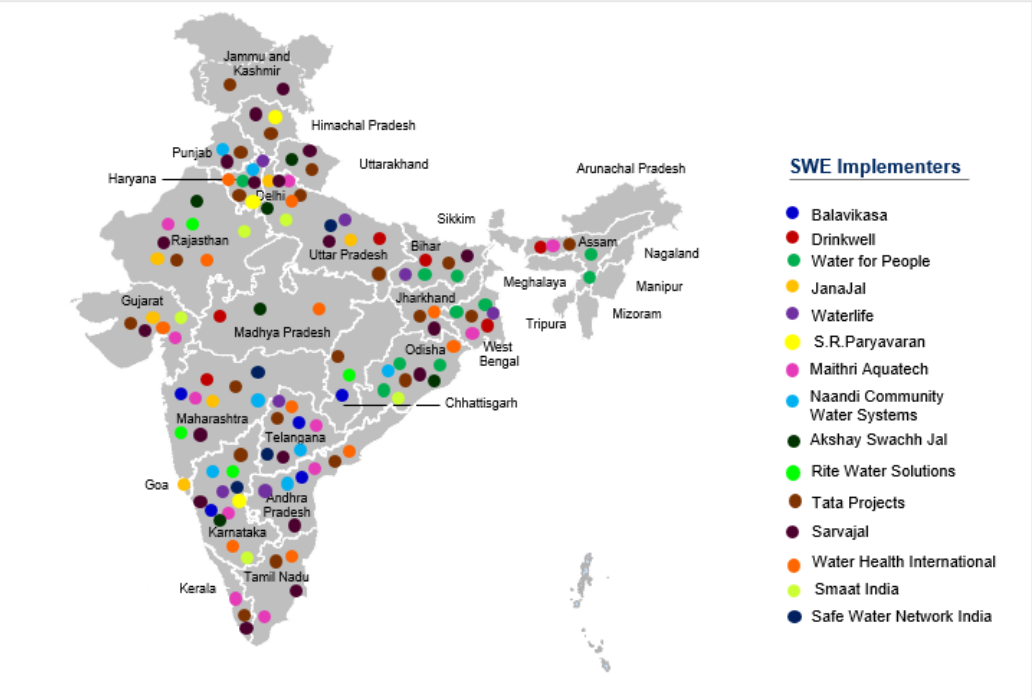
SWEs directly contribute to the United Nations Sustainable Development Goals: SDG 6.1: Safe Drinking Water for All; Goal 5: Gender Equality; Goal 11: Sustainable Cities and Communities; and Goal 13: Climate Action.

[27] JJM Dashboard, June 1, 2023
[28] Business Standard news article, February 21, 2023
[29] Safe Water Network estimates, based on current Mission status
[30] Bottled water: CAGR by country worldwide 2020 | Statista Market Forecast
[31] Bottled Water - India | Statista Market Forecast

2.2 Safe Water Enterprises: Prevalence and Potential in India

The SWEs are prevalent in India across the country in rural areas, cities, towns, and railways. There are ~65,000 SWEs in India. SWEs continue to increase and are a chosen safe water delivery solution at schools, hospitals, marketplaces, and tourist sites.

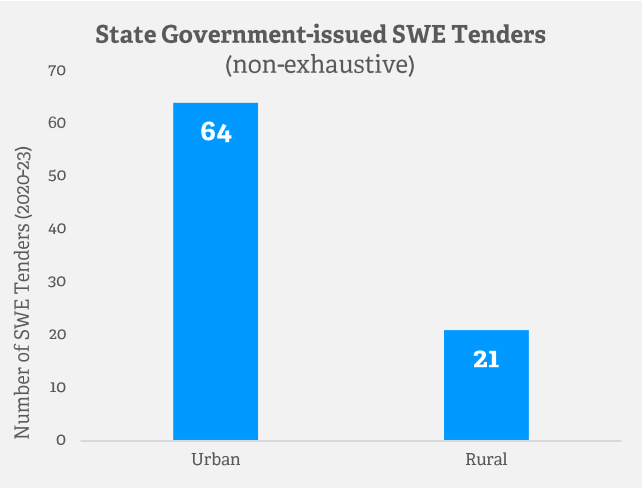
Exhibit 11. Safe Water Enterprise presence in India



SWE footprint in India, as set up by the SWE implementers, is over 65,000.

Since 2019, 20 states have issued 85 tenders for SWEs, through which 323 SWEs have been set up in rural and 494 in urban.[32] [Refer to the Annexure 3]
The total number of water ATMs set up in different states of India between 2019-2022 is more than 15,000.[33]

Exhibit 12. SWE Tenders issued by State Governments (2020-2023)



[32] SWN analysis
[33] SWN research

2.3 SWE Market Potential and Investment Required

Globally, the decentralized (SWE) water market is expected to grow at a CAGR of 4.72% during the forecast period, 2017-2025.[34]

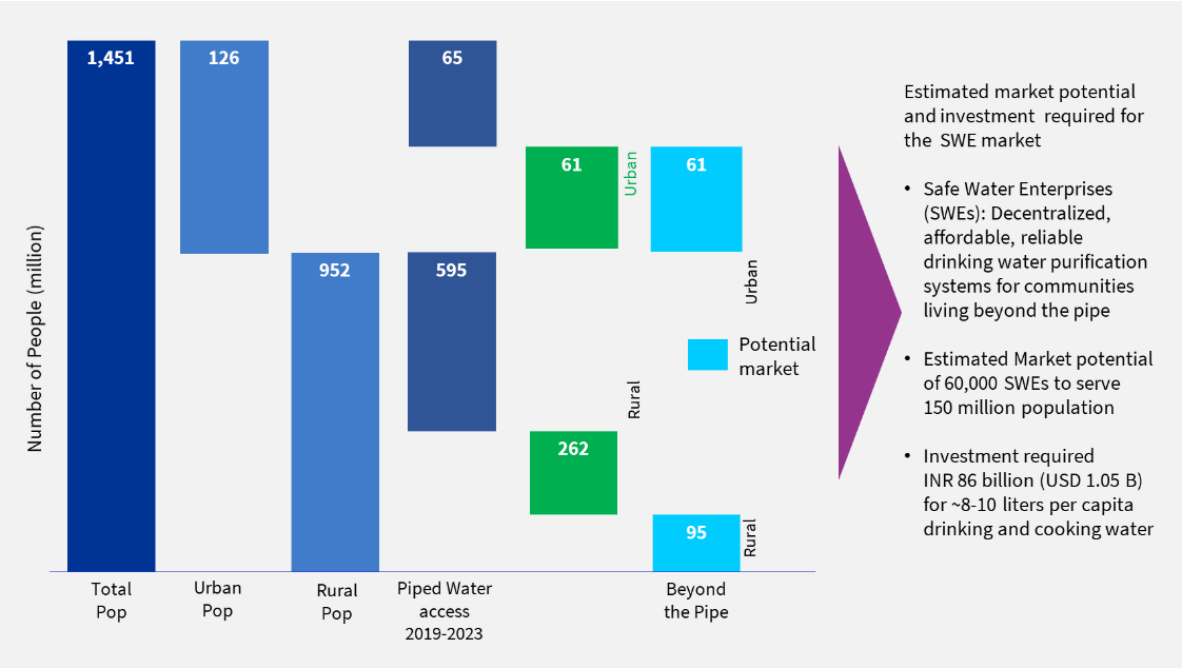
The 2018 India Sector Review estimated the total investment of USD 6 billion-plus operating subsidy required to provide safe water to all communities beyond the pipe, with market potential for ~220,000 SWEs to serve ~369 million people.[35] Since then, the Government's flagship programs, the Jal Jeevan Mission of 2019 for piped water with a tap at each home in rural and a similar program AMRUT 2.0 of 2021, for urban, has reduced the SWE market. With the government's mission strides in piped water access, we estimate that there would still be ~19.4 million households (10%), or 95 million people, living beyond the pipe in rural India. The AMRUT 2.0 mission, upon completion due to slippages and urban migration with an annual population growth rate of 2.15%,[36] would still leave behind ~10.8 million households (40%) or 61 million people to be provided with safe water access. It is forecasted that India will have a population of 1.47 Billion[37] in 2026. We, therefore, estimate the addressable market potential for **60,000 SWEs** that could provide affordable access to safe water to **~150 million people**, requiring an investment of **USD 1.05 billion** (see Exhibit 12).

Exhibit 13. Assessment of SWE Market Potential in India

Categories	Total Households (M)	Beyond the Pipe Population (M)	Potential of SWEs or Water ATMs	Assumptions
Urban	106	61	10,000	• Beyond the AMRUT 2.0 Mission in 2026, we estimate there would still be ~61 M people residing in 10.8 Million households beyond piped water access due to slippages and urban migration at a 2.15% annual growth rate. • Average household size: 4.7 (Census 2011)[38] • People served by one urban water ATM = 5,000
Rural	194	95	50,000	• Upon the completion of the Jal Jeevan Mission in March 2023, the government estimates that there would be ~10% of households beyond piped water access • Average household size: 4.9 (JJM)[39] • People served at one rural water ATM = 1,800
Total	**300**	**150**	**60,000**	
Railways		7349[40]	29,400	Average number of water ATMs required at each station = 4

[34] Veracious Statistics Research
[35] October 2018. "India Sector Review: Small Water Enterprises to mitigate the Drinking Water Challenge"
[36] Macrotrends, 2023
[37] Statista, 2023
[38] Retrieved from Census 2011
[39] Retrieved from Jal Jeevan Mission dashboard of Ministry of Jal Shakti
[40] Retrieved from UNAcademy, 2023 on May 31, 2023

Exhibit 14. Market Potential of SWEs in India



About 150 million people, or ~30 million households, is the potential market size for SWEs.

The investment required is determined by the following method.

Exhibit 15. Investment required to set up water ATMs

Particulars	Amount (USD)	Assumptions
Investment required	1.05 B	For 60,000 SWEs/water ATMs, assuming the CapEx at ~INR 14 Lakhs, we estimate an investment of INR 86B or $1.05B

Exhibit 16. SWE Environment[41]

India - Key Information Areas

Population 2021 1.41 B[1]		Population with access to safe water 2022[4] 829 M (58.8%)		Water Quality	Water tariff[4]	Water Availability-7		Renewable water resources -[9]	Water Borne Disease burden[10] 2021	Under Five Mortality Rate -[11]	Life Expectancy-12	Literacy Rate-13	Electricity Supply 99% access[14]		Country rank as per JMP / SDG 2020-[16]	EPI Rank - 17
Urban[2]	Rural[2]	Urban	Rural -5	Contaminants	USD 0.22 per m^3 (up to 5 m^3)	Surface	Ground	1,427 m^3 per person per year	38 million people annually	41.9 per 1000 live births (Global - 37)	69.89 years (Global - 72.6)	77.7% (Global-87%)	Type	Tariff-[15]	121 /193	168 /180
498M (35.4%)	914M (64.6%)	234 M (47%)	595 M (62.45%)	Microbial, parasites, nitrate, arsenic, fluoride, iron, Salinity		690 BCM/ year (17.2%)	437.6 BCM/ year	Lower Falkenmark Index					Hydro, thermal & Nuclear	USD 0.08 per kWh		

SWE enabling environment

- India is addressing water needs of its population through Jal Jeevan Mission in rural and AMRUT2.0 in urban at an outlay of $ 90B. More than $2400 B have been invested in water conservation programs.
- SWEs are in the Central and State government policy for providing affordable safe drinking water access to the communities in rural and urban slums, at schools, hospitals, marketplaces, tourist spots and railway stations.
- SWEs are funded through public and private sector.
- The local government at the gram panchayat / urban local ward are the governing authorities.
- The water quality to comply to BIS 10500 Standards
- Benchmarking of performance of SWEs

Business Sustainability

- India ranks 63 out of 190 for the Ease of Doing Business Index[18]
- India ranks 68 out of 141 for the Global Competitiveness Index[19]
- Foreign direct investment (FDI) in India amounted to >USD 44 billion in 2022, which represented growth equal to 1.1 % of the country's GDP in Sep 2022.[20]

Infrastructure / Partnerships

- The Ministry of Jal Shakti/ Department of Drinking Water & Sanitation provides technical and financial assistance to the States to provide safe and adequate drinking water to rural India with focus on service delivery.
- AMRUT-2.0: Mission to provide tap connection to all around 4700 cities and towns.
- The States and ULBs promote PPP in SWEs
- Proficient SWE Implementers exist

Need / Challenge

- 70% of water in India is contaminated. India ranks a low at 120 out of 122 countries in water quality.
- Waterborne diseases such as cholera, acute diarrhoeal diseases, typhoid, and viral hepatitis have caused 10,738 deaths over the last five years
- Lack of decentralization of finances, roles, and responsibilities in WASH in States to sub-state levels
- Additional challenges include increasing source water constraints, lack of skilled manpower, affordable water pricing does not permit full cost recovery
- In the Global MPI 2021 ranking, India ranks 66 out of 109 other countries. The National MPI (Multidimensional Poverty Index) score of India is 0.118, In Urban areas, the MPI score is 0.08, and in rural, it is 0.155, as per Niti Aayog

India – SWE current market

- Safe Water Network is leading the National Safe Water Enterprise Alliance and is also an implementer.
- There is public and private funding for SWEs. They are funded through 2% CSR corporate funding
- To serve 150 million people beyond safe water, about 60 000 water ATMs are needed with an investment of about ~$ 1.05 B.
- The program is export-ready globally

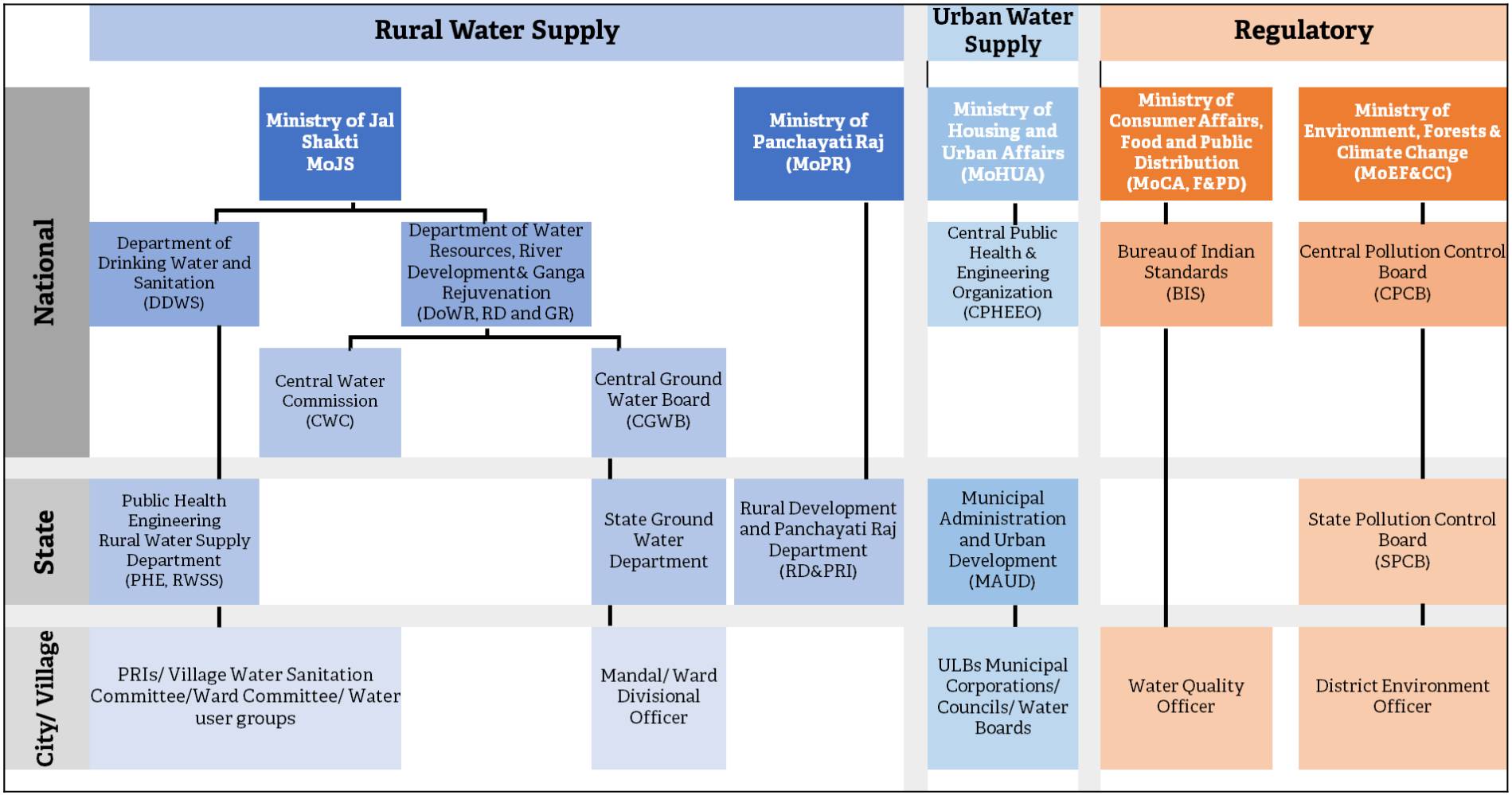
[41] Refer Annexure 3 for references.

2.4 Regulatory Framework

The water sector is governed by a three-tier system in India. The National government at the center makes policies, the State Government's PHED/ RWSS departments are the nodal agency responsible for water availability, access, and quality, and the local government, as per the 73rd and 74th Amendment are responsible for design, planning, implementation, and management of the local water supply. The State government determines the regulation, water tariffs, and governance. There is a shift in policy from infrastructure creation to service delivery with a focus on the circular economy of water.

Exhibit 17 illustrates the regulatory authorities that govern the policy and water service delivery in rural and urban India.

Exhibit 17. India Water Policy & Regulatory Institutions



2.4.1 Scaling up SWEs with the national platform: SWE Alliance

Safe Water Network, in collaboration with USAID in 2017, founded and leads the national SWE Alliance in India to converge the fragmented SWE sector through policy, advisory, and digital knowledge platform that shares capacity-building tools and best practices and promotes networking. It has 47 members: SWE implementers, manufacturers, the private sector, academia, and civil society. The SWE Alliance has worked with the government to recommend policies to enable SWE to scale up. Some of these are mentioned below:

A. SWE Alliance engagement with MOEF&CC

In May 2019, the National Green Tribunal issued a directive regulating the use of Reverse Osmosis as a water purification method due to high reject water. This was followed by a draft notification from the Ministry of Environment, Forests and Climate Change (MoEF&CC), imposing severe restrictions on using RO water treatment systems that significantly impacted the SWE implementers and the communities they served.

The restrictions of the draft notification were:

i. The water use efficiency of RO systems should be 80% or higher, effectively prohibiting RO since such a high recovery is unachievable under the current state of the technology.

ii. RO systems were forbidden to be used in places where the source water supply has Total Dissolved Solids (TDS) lower than 500 ppm. This condition becomes problematic because it neglects to consider scenarios where TDS is lower than 500 ppm. Still, other contaminants exceed the acceptable limit (e.g., fluoride, for which the acceptable limit is 1 ppm, or arsenic, for which the limit is 0.01 ppm).

In response to the notification, SWE Alliance drafted recommendations to the MoEF&CC, making a case for the critical role played by SWEs for affordable, safe water access to the poor. Based on our representation and submissions, the MoEF&CC issued a final notification that specified reasonable and practicable rules for manufacturing and using RO-based water treatment systems.

B. SWE engagement with the Bureau of Indian Standards (BIS)[42] for Community Water Treatment Plants (CWTPs)

Safe Water Network India as a Member of the Technical Committees at BIS: Due to the events and issues described under Section A above, BIS was tasked with developing new standards for water purification systems. As a member of the FAD 30 Committee and the Expert Panel, we reviewed and updated the RO standard.

New Indian Standards for Community Water Treatment Plants (CWTPs)

There was no standard to regulate the manufacturing and performance of the SWEs or CWTPs though their presence has been since the last three decades. As the convener of the Panel for the "Code of Practice for Design, Installation, Operation & Maintenance of Community Drinking Water Treatment Plants" (CWTP) standard, SWNI led the drafting of this standard, with contributions from SWE Alliance partners.

2.5 Operating Models of SWEs

Various SWEs operating models have emerged in the last two decades. However, the most common ones fall broadly into three basic categories of economic models, which include public-private partnerships (PPPs), company-owned and operated (COO), and company-owned, community-operated (COCO). Each has benefits and risks to the various stakeholders

[42] The Bureau of Indian Standards (BIS) is the National Standards Body of India under the Department of Consumer Affairs, Government of India.

and a range of funding and asset ownership structures. These are summarized in the exhibit below.

Exhibit 18. Summary of SWE Operating Models

Model Variables		PPP		COO	COCO			
		BOT/BOOT (Tariff/Annuity)	Management contracts		Concession (Cross – over b/w PPP & COCO)	SHGs	Entrepreneur	Community
CapEx & its funding	Water Source Land & Building Treatment technology	Concessionaire builds infrastructure based on tender specifications	The asset is handed over to the concessionaire by the Awarding authority	Private Entity responsible for funding, installation, operation, and maintenance of the system	Awarding authority plans, licenses, and awards work. Assume a statutory role to ensure the public interest	Provided by the local body (Gram Panchayat/ ULB)	Provided by Entrepreneur	Provided by the local body (Gram Panchayat/ ULB)
					Facilitated by NGOs, Funded through grants, and other philanthropic aid			
CapManEx (Capital Maintenance Expenditure)		Usually not part of the project cost. Follow a project approach rather than a service delivery approach	NA	Private operators usually provide for depreciation but do not set aside capital for CapManEx	Usually not budgeted as part of the project cost. However, some NGOs collect fixed amounts as a contribution towards a reserve for major repairs and replacement of the equipment at the end of its useful life			
Pricing	(Indicative Pricing)	Fixed tariff under tender (Rs. 2-3/ 20L)	Fixed management fee	Price fixed by the private Entity (Rs. 5-7/20L)	Fixed under the concessionaire agreement	Affordable pricing fixed by the NGO along with the local governing body under a third-party agreement		
Opex	Operator Salary, Electricity, Rent, Chemicals, Service	Operating Expenses are met out of revenues collected from the sale of water	Operating Expenses are met out of revenues collected from the sale of water	Paid out of Revenues collected from the sale of water	Operating Expenses are met out of revenues collected from the sale of water			
Social Impact	Community Outreach Local capacity building Sale at kiosk Sustainability	Given low tender pricing, it is a CapEx-centric model, with low or no focus on local skill-building, or community engagement, and also has usually higher slippages		Profit pressures can lead to unaffordable pricing and/or unreliable quality	High due to sites allocated by awarding authority are hospitals, courts, etc. for benefit of general public	Highest as the SHGs work effectively, especially in empowering women in the community	Entrepreneurs usually maximize gains through distribution at a higher price as compared to price at a kiosk	Community models lack the initiative to increase sales and, thereby, consumer participation.
Financial Viability	Ability to pay (Consumer)	Higher ability to pay as prices are affordable (Contracts are awarded on an L1 basis)	NA	Tend to operate in communities with relatively higher ability to pay	Prices set by awarding authority ensure it's within the ability to pay for the consumer	Communities usually adopt the model with low income and hence the low ability to pay	High as Entrepreneurs are business-minded and the model is common in communities with relatively higher income	Communities usually adopt the model with low income and, therefore, low ability to pay
	Willingness to pay (Consumer)	High		NA	Medium	High	Low	Medium
Asset Ownership		Concessionaire transfers to Awarding authority post project completion	Awarding Authority	Private Entity	Ownership gets transferred to the community after a fixed time frame/ fixed repayment			

2.6 Capital and Operating Expenditure of SWEs

For SWEs to achieve financial sustainability, it is critical to cover the total life cycle costs – OpEx -costs of operations, CapManEx- preventative maintenance, capital maintenance, support costs direct or indirect, and the CapEx -Capital cost so that reliable and sustainable water service is provided throughout the life of SWE. These Capital cost to set up an SWE and the Operating costs are depicted in the exhibits below. It isn't easy to recover fully as the water price is kept affordable.

Exhibit 19. CapEx required to set up an SWE

Particulars	Amount (USD)	Amount INR	% of Total Cost
Land for housing SWE and Borewell for raw water source	2,500	200,000	14%
Building (renovation)	1,250	100,000	7%
Electricals /5 KL Water Tank/Pump/Piping etc.	625	50,000	4%
Sub-Total	4,375	350,000	24%
Water Treatment Plant (1000 LPH) incl. RMS; automatic dispensing; digital payment	9,375	750,000	53%
Civil works - SWE design and layout; dispensing points water supply	3,125	250,000	18%
IEC and consumer activation	900	72,000	5%
Sub-Total	13,400	1,072,000	76%
(1$ = INR 80) Grand Total	17,775	1,422,000	100%

OpEx: Operating Expenditure is the recurrent (regular, ongoing) costs for operating water systems. The operating cost would include operators' salaries, electricity and other staff, consumables & chemicals, materials, continued training & monitoring, and consumer activation cost. These costs are further divided into:

1) **Direct operating costs** are covered by the water sale revenue partially or fully. These include monthly operating expenses such as operator salaries, electricity and raw water bill, chemicalsand consumables for local service, repair, and maintenance.
2) **Cluster management costs** are usually covered by grants/donor subsidies, including repairs & maintenance expenses of value spares and charges of the field service entity that undertakes the repair.
   Monitoring & evaluation costs include personnel salaries in head office and field, travel costs to collate data on operations, and the financial situation of the SWEs in a cluster.

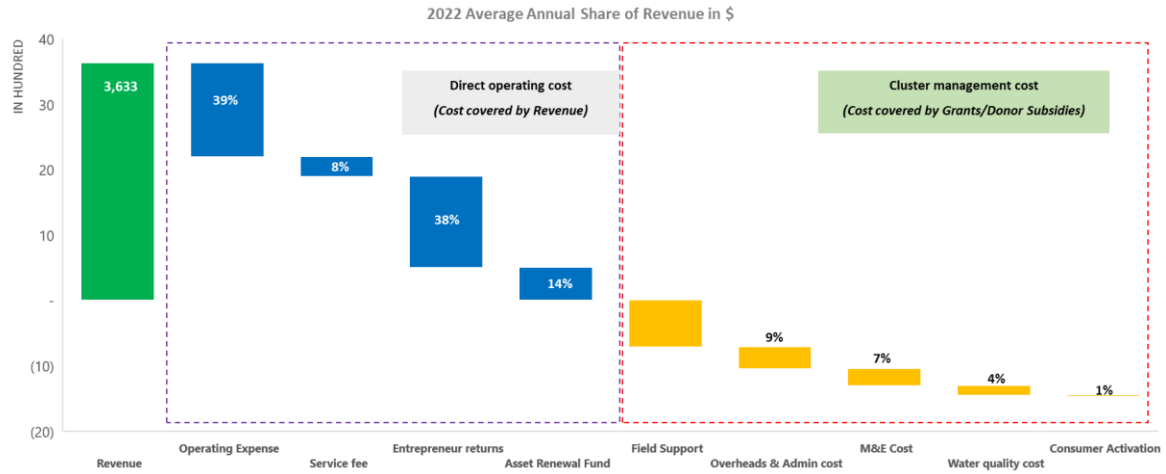
Exhibit 20. Breakdown of OpEx

Particulars	**Amount (USD)**	**Amount INR)**	**% of Total Cost**
Operator Salary (Minimum wages)	40-180	3,000-14,000	~19%
Electricity/Power Cost	40	3,200	15%
Chemicals & Consumables	15	1,200	3%
Other expenses	15	1,200	2%
Field Support cost	50-60	4000-5,000	~20%
Grand Total	**175**	**14,000**	**59%**

2.7 Understanding the Financial Performance of SWEs

Financial sustainability has been one of the biggest bottlenecks in scaling Safe Water Enterprises. Revenues from the water sold at the SWEs are priced affordably, usually at Rs. 5/20L, $0.7/20L. These cover local monthly operating costs, including regular repairs and preventive maintenance. Exhibit 2.5 shows the typical revenue share for various expenditure heads in an optimized SWE operation.

Exhibit 21. Typical financial performance of SWEs



Water sales revenues cover the local operating level, including operator's salaries, electricity, chemicals, consumables, and regular repair and maintenance; the cluster management costs associated with ensuring sustainability are not covered by revenues. SWEs need performance-linked result-based viability gap funding support, direct and indirect 20% for field support, 1% for consumer activation, 4% for water quality testing and 7% for Monitoring &Evaluation, and 9% for overhead and admin cost. The total VGF needed is approximately 41%.

2.8 Evaluation of Viability Gap Funding Mechanisms

SWEs need and have been provided Viability Gap Funding for reliable delivery of affordable, safe water in cash or kind by the government, philanthropists, impact funders, and result-based organizations. The exhibit below evaluates funding options based on the needs and preconditions. The highest net score (6) is the most favorable funding mechanism (Result-based funding & forgivable loans), whereas equity funding is the least good, which is scored at (0). Equity funders would opt for organizations/implementors that do not need CapEx funding, look for positive cash flow and growth with flexible funding options, and be privately owned. Portfolios/organizations operating at a deficit would not consider funding options like a blended structure, concessionary debt, or commercial loans as they would have a payback method/period.

Similarly, the preconditions for each funding mechanism are different. A positive cash flow or portfolio will be a significant criterion for a blended structure, debt, and commercial loans. In contrast, other funding mechanisms like Subsidy, Impact bonds, and CSR funding would not consider the cash flows as their main criteria would be a social impact.

Exhibit 22. Evaluation of funding mechanism based on needs and requisite preconditions

Considerations:

- Cash Flow
- Growth Rate
- Social Impact
- Data Management
- Ownership Model
- Past Experience

	NEEDS					PRE-CONDITIONS							
	Portfolio Operates at a Deficit	OPC station operates at a deficit	No CapEx Funding Available	Need Flexible Funding	High Risk/ Uncertain Conditions	Positive Cash Flow or Portfolio	Positive Cash Flow of OPC stations	Proven Record of Achieving Outcomes	Social Impact	Strong MEL & Data Management Systems	Cash flow growth rate > interest rate	Privately Owned	NET SCORE
Government Subsidy	X	X	X		X				X				2
Philanthropic Funding	X	X			X			X	X	X			4
Social Impact Bond	X		X	X	X			X	X	X			5
Results-Based Financing incl. carbon credits	X			X			X	X	X	X			6
Forgivable Loans	X			X			X	X	X	X			6
Blended structure (concessionary)			X	X		X		X	X	X	X		2
Concessionary Debt			X	X		X		X	X	X	X		2
Blended structure (commercial)			X	X		X		X		X	X		1
Commercial Loans			X	X		X		X		X	X		1
Equity			X	X	X			X			X	X	0

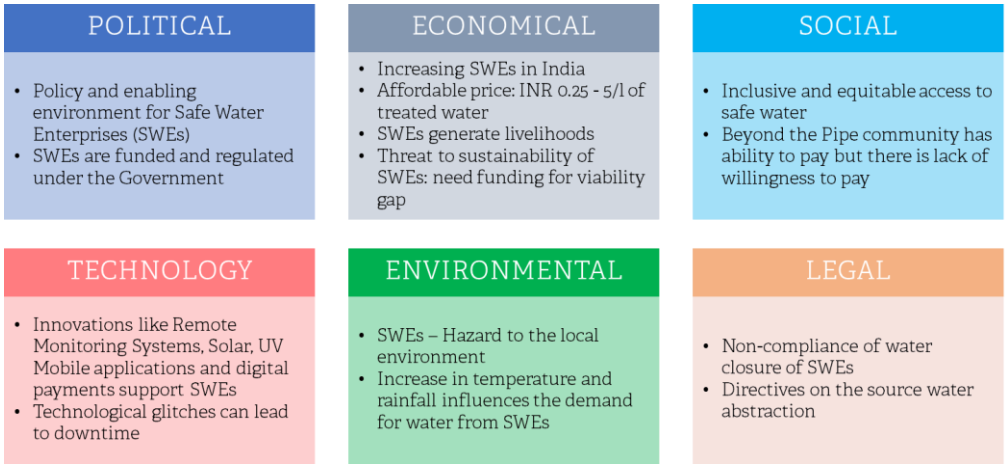
SWE implementers prioritize funding mechanisms that align with the organization's mission and values and do not place a significant financial burden on them. Therefore, they are not interested in repayable funding mechanisms, which typically require repayment of the funds over a specified period with interest.

ANNEXURES

1. SWE Market: PESTEL Analysis

The PESTEL [Political, Economic, Social, Technological, Environmental and Legal] analysis of macro trends impacting the SWEs indicate that increasing water crises, global climate change, and urban water management sectors will propel the water ATM market demand and are complementary solution to piped water in India.

Exhibit 23. PESTEL Analysis of the SWE market



2. SWEs: SWOT Analysis

Exhibit 24. SWOT Analysis of Safe Water Enterprises

Strength

Inclusive approach: community participation in the process right from planning and implementation to the monitoring of activities

Local, Regional, and National Governments have a coordinated involvement in safe water supply

Existence of Standardized education content - SOPs, Resource material, Training modules, communication material for specific segments- posters, leaflets, flipcharts, etc. for water health-related awareness.

SWEs are proven model

Weakness

Poor convergence between various State departments and schemes
Tender award based on L1 (lowest criteria) often results in the selection of sub-optimal agency

Lack of adequate monitoring and evaluation processes in SWE project planning

Inadequate water pricing

Lack of devolution of funds, functions, and functionaries

Lack of skilled technicians for SWEs

Opportunity

Increased investment from international funders & corporates invested in water

Enhanced government focus through existing policies to ensure safe water supply resulting in budget allocation for water supply infrastructure.

Availability of tenders, PPP agreements, and service contracts to manage piped water supply technicians, mechanics, contractors, operators, and other service providers

Threat

Climate change. Impacting the raw water supply and SWEs functioning

Lack of investment in SWE infrastructure due to the economic crisis (wastewater treatment plants, pipelines, saving measures, etc).

Poor retention of qualified trainers in SWEs

Full cost recovery is a challenge due to affordable pricing

The SWOT – Strength, Weakness, Opportunity, and Threat analysis of SWEs indicates that SWEs are ready for expansion and scale-up in India.

3. SWE Market Environment, Potential and Investment

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4. Tender Summary

Exhibit 25. Summary of Tenders issued by various States in India (2020-2023)

TENDER SUMMARY						
#	**State**	**Tender Description**	**Tender Issue Period**	**Tender Ref. No.**	**Urban/ Rural**	**Units**
1	Andaman & Nicobar	Drinking Water ATM / Water Vending Machine (8 pieces)	**Mar-20**	GEM/2020/B/680766	Urban	8
		E-Tender for Supply, Installation, Commissioning, Testing & AMC of 250 LPH RO Water Purifier Plant at Dolphin Beach Resort, Swaraj Dweep	**Mar-20**		Urban	1
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Mar-20**	GEM/2019/B/368367	Rural	1
		Drinking Water ATM / Water Vending Machine (5 pieces)	**Mar-20**	GEM/2020/B/506175	Rural	5
		Drinking Water ATM / Water Vending Machine (8 pieces)	**Mar-20**	GEM/2020/B/544014	Rural	8
2	Bihar	Drinking Water ATM / Water Vending Machine (1 pieces)	**Dec-19**	GEM/2019/B/443610	Urban	1
		Drinking Water ATM / Water Vending Machine (10 pieces)	**Dec-19**	GEM/2019/B/453602	Urban	10
		Drinking Water ATM / Water Vending Machine (5 pieces)	**May-20**	GEM/2020/B/635298	Urban	5
3	Chattisgarh	Operation and Maintenance of Reverse Osmosis Plants with Solar Powered ATMs and Delivery of Safe Drinking Water at Seven Different Villages around NTPC Sipat for 2 years.	**Mar-22**	NIT No: 9900236983	Rural	7
		Drinking Water ATM / Water Vending Machine (4 pieces)	**May-20**	GEM/2020/B/641810	Urban	4
4	Delhi	Installation Of 150 Reverse Osmosis (R.O) Plants And Water Dispensing Units (Wdus) At Various Parts Of Delhi On Design, Build, Finance, Operate And Transfer (Dbfot) Basis	**Dec-21**	DJB/EE(Project)W-VIII/F-2(159)/2021/	Urban	150
5	Gujarat	Request for proposal For Setting up of Water ATM for Safe Drinking Water including Designing, financing, constructing / installing, operating and maintaining of Water ATMs and vending of water from Water ATMs at Public Places through Public Private Partnership (PPP) at designated locations under "Smart City Mission" at Gandhinagar City.	**2017-2018**	GSCDL-WATM-RFP-Infra-1-2017/18	Urban	10
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Dec-19**	GEM/2019/B/442671	Urban	3
		Drinking Water ATM / Water Vending Machine (7 pieces)	**Jan-20**	GEM/2019/B/466673	Rural	7
		Drinking Water ATM / Water Vending Machine (18 pieces)	**Feb-22**	GEM/2022/B/1899752	Rural	18
		Bids Are Invited For Ro Plant, City - Morbi	**Mar-23**	36461534	Urban	2
		Bids Are Invited For Ro Plant With Water Cooler Ro Total Quantity: 8 City - Tapi	**Mar-23**	36460690	Urban	8
		Drinking Water ATM / Water Vending Machine (4 pieces)	**Mar-22**	GEM/2022/B/1969616	Rural	4
6	Haryana	Bids Are Invited For Ro Plant Ro System Total Quantity: 10	**Mar-22**	36461443	Rural	10
7	Jammu & Kashmir	Drinking Water ATM / Water Vending Machine (1 pieces)	**Oct-21**	GEM/2021/B/1601182	Urban	1
		Drinking Water ATM / Water Vending Machine (2 pieces)	**Sep-22**	GEM/2022/B/2510923	Urban	2
8	Jharkhand	Drinking Water ATM / Water Vending Machine (1 pieces)	**Oct-19**	GEM/2019/B/387610	Urban	1

		Drinking Water ATM / Water Vending Machine (2 pieces)	**Oct-19**	GEM/2019/RA /22058	Urban	2
9	Karnataka	Drinking Water ATM / Water Vending Machine (1 piece)	**2020**	GEM/2020/B/ 688224	Urban	1
10	Kerala	Tender for Installation of RO Plant in Pookkottur Phc	**Jan-23**	35817086	Rural	1
		Bids invited for RO Plant Total Quantity: 2	**Feb-23**	36640172	Urban	1
11	Ladakh	Design, Supply, Installation, Testing, Commissioning and Maintenance of 25 nos. of Water ATMs of 250 LPH capacity with kiosk at different locations (public places) in the districts of Leh and Kargil under UT of Ladakh	**2020-2021**	NHIDCL/Infra/Ladakh/Tender/2020-21/76	Rural	25
12	Madhya Pradesh	Water Purifier and Filter	**May-22**	22022-A	Urban	23
		Request for proposal for Setting up of 10 nos Water ATM for Safe Drinking Water including Built, Operate and Transfer of Water ATMs and vending of water from Water ATMs of 500 litre capacity at Public Places through Public Private Partnership (PPP) at designated locations under Dewas City	**Nov-20**		Urban	10
		Water Purifier ATM	**Apr-19**	SME -1251	Urban	1
		Complete supply and installation of RO plant and chiller with coin operated water vending ATM having 2000 liter per hour capacity	**2019**	1087 Tarana/2019	Urban	1
		Empanelment of Agencies for Supply, Installation, Operations and maintenance of Compact Water Purifier & Cooler at 100 Locations in Indore	**Feb-19**	75/ISCDL/18-19	Urban	100
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Dec-19**	GEM/2019/B/461127	Urban	1
		Two water ATMs, MP	**Jun-22**	GEM/2022/B/2214782	Urban	2
13	Odisha	Drinking Water ATM / Water Vending Machine (5 pieces) - Power Grid Corporation of India Limited	**Mar-20**	GEM/2020/B/ 589323	Urban	5
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Feb-22**	GEM/2022/B/1902238	Rural	3
		Drinking Water ATM / Water Vending Machine (10 pieces)	**May-22**	GEM/2022/RA /109219	Urban	10
14	Pune (Central railway)	Installation and Operation of Water Vending Machine on basis at various Railway Stations	**Apr-22**	Pune/C/Catg/ WVM/Cluster 3/Pune/22	Rural	3
15	Punjab	Bids Are Invited For Ro Plant Mse Ro 500Lph With Storage Tank 500 Ltr Capacity Wash Basin With Stand, Plumber And Other Fittings, Pre-Fabricated Shed Size 10 Ft X 10Ft X 10Ft With Plinth And Tiles Total Quantity: 2	**Mar-23**	36459845	Rural	2
16	Rajasthan	Providing, Installation & commissioning of Coin Operated Water vending Machine (water ATM) with 1000 LPH RO Plant and Chiller capacity 2 ton Including 5 year O&M at 1. Lahoti Chowk/Kua 2. Chacha Nehru Park 3. Near Ambedkar School, Karmchari Colony Nokha.			Urban	3
		Tender Document for Balance work of Providing, Installation & commissioning of 92 Nos. Reverse Osmosis plants including operation and maintenance for a period of seven years after installation in various water quality	**Dec-20**	NIT No. - 61/2021-22	Rural	92

		affected villages of Rajasthan in districts Ajmer, Bhilwara, Nagaur & Tonk (Region Ajmer)				
		Providing, Installation & commissioning of Coin Operated Water Vending Machine (water ATM) with 1000 LPH RO Plant and Chiller capacity 2 ton Including 5-year O&M at 1. Lahoti Chowk/Kua 2. Chacha Nehru Park 3. Near Ambedkar School, Karmchari Colony Nokha.		OFFICE OF THE MUNICIPAL BOARD NOKHA BIKANER	Rural	3
		UV Water Purifier (50 LPH)	**Aug-21**	NIB-613/2021-22	Urban	2
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Oct-19**	GEM/2019/B/372150	Urban	1
		Drinking Water ATM / Water Vending Machine (5 pieces)	**Feb-20**	GEM/2020/B/522852	Urban	5
		Drinking Water ATM / Water Vending Machine (2 pieces)	**Apr-20**	GEM/2020/B/620281	Urban	2
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Aug-22**	GEM/2022/B/2372910	Urban	1
17	Tripura	Drinking Water ATM / Water Vending Machine (1 piece)	**Sep-22**	GEM/2022/B/2457912	Urban	1
18	Uttar Pradesh	Request for Proposal for Setting up Solar Based Water ATM for Safe Drinking Water including Designing, Construction / Installation, Operating and Maintenance of Solar based Water ATMs for Period of 3Years in Moradabad Smart City	**2021**	716/MSCL/2021(1)	Urban	1
		30 Smart Drinking water Station in Chandpur (Bijnor)	**Apr-22**		Rural	30
		Bids Are Invited for Water Purification System (Q3) Total Quantity: 1	**2023**	37211114	Urban	1
		11 R.O. Plants	**2022-2023**	80/E-Tendering/2022-23	Urban	11
		Drinking Water ATM / Water Vending Machine (Q3)	**2022**	GEM/2022/B/2145897	Urban	2
		Drinking Water ATM / Water Vending Machine (5 pieces) (Under PAC)	**2019**	GEM/2019/B/357823	Urban	5
		Drinking Water ATM / Water Vending Machine (1 pieces)	**2020**	GEM/2020/B/516476	Urban	1
		Drinking Water ATM / Water Vending Machine (2 pieces)	**2020**	GEM/2020/B/550572	Urban	2
		Drinking Water ATM / Water Vending Machine (8 pieces)	**2020**	GEM/2020/B/599869	Urban	8
		Drinking Water ATM / Water Vending Machine (2 pieces)	**2020**	GEM/2020/B/627220	Urban	2
		Drinking Water ATM / Water Vending Machine (3 pieces)	**May-20**	GEM/2020/B/627303	Urban	3
		Drinking Water ATM / Water Vending Machine (2 pieces)	**Dec-20**	GEM/2020/B/909219	Urban	2
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Mar-21**	GEM/2021/B/1101499	Urban	3
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Mar-21**	GEM/2021/B/1116654	Urban	3
		Drinking Water ATM / Water Vending Machine (2 pieces)	**Mar-21**	GEM/2021/B/1117226	Urban	2
		Drinking Water ATM / Water Vending Machine (7 pieces)	**Apr-21**	GEM/2021/B/1153416	Urban	7
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Apr-21**	GEM/2021/B/1156859	Urban	1
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Sep-21**	GEM/2021/B/1476212	Urban	1
		Drinking Water ATM / Water Vending Machine (5 pieces)	**Sep-21**	GEM/2021/B/1490570	Urban	5

		Drinking Water ATM / Water Vending Machine (2 pieces)	**Sep-21**	GEM/2021/B/1507997	Urban	2
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Sep-21**	GEM/2021/B/1529585	Urban	1
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Oct-21**	GEM/2021/B/1551458	Urban	3
		Drinking Water ATM / Water Vending Machine (4 pieces)	**Oct-21**	GEM/2021/B/1556101	Urban	4
		Drinking Water ATM / Water Vending Machine (2 pieces)	**Oct-21**	GEM/2021/B/1575516	Urban	2
		Drinking Water ATM / Water Vending Machine (2 pieces)	**Nov-21**	GEM/2021/B/1621744	Urban	2
		Drinking Water ATM / Water Vending Machine (4 pieces)	**Nov-21**	GEM/2021/B/1623763	Urban	4
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Nov-21**	GEM/2021/B/1630550	Urban	3
		Drinking Water ATM / Water Vending Machine (25 pieces)	**May-22**	GEM/2022/B/2127315	Urban	25
		Drinking Water ATM / Water Vending Machine (1 pieces)	**May-22**	GEM/2022/B/2184353	Urban	1
		Drinking Water ATM / Water Vending Machine (3 pieces)	**Jul-22**	GEM/2022/B/2302659	Urban	3
		Drinking Water ATM / Water Vending Machine (1 pieces)	**Sep-22**	GEM/2022/B/2514538	Urban	1
		Tender For 1000 LPH RO WATER PLANT CHILLER AND BORRING IN PRIMARY HEALTH CENTRE AND ISTALLATION	**Feb-23**	4227916230225-0		1
19	Uttarakhand	Supply and Installation of 100 Nos. water ATM at various palace of Char Dham Yatra Marg (Uttarakhand), and its appurtenant works with testing commissioning and handing over to maintenance body after proper completion of including supply of all material, labour, T&P etc. complete.	**25-Feb-23**	1569 / NIVIDA / 466	Rural	100
20	West Bengal	Tender for Installation of Water Treatment Plant at Gangajalghati PHC	**Apr-23**	37213370	Rural	1
		Tender for Community Drinking Water Purification Plant with Spot Source For Removal Of Arsenic, Iron, Bacteria Etc. Present in Ground Water At Village Sitanagar Under Kalinagar-Ii GP	**Apr-23**	37213167	Rural	1
		Tender For Water Treatment Plant With Solar System At Uttar Tola Madrasa At New Simulia	**Apr-23**	37213064	Rural	1
		Tender For Water Treatment Plant With Solar System Near House Of Bahadur At Dakshin Daitan	**Apr-23**	37212986	Rural	1
		Appointment Of Fabricators For Portable Container Toilets/ Water Koisks/ Prefab Panchayat Bhawan, Classrooms - SAIL	**Jun-22**	SAIL/ CMO/M/ EOI/ June 2022	Urban	5

5. SWE Practitioners (Non-exhaustive List)

Exhibit 26. List of SWE Practitioners in India

	Sopar Bala Vikasa	Maithri Aquatech	NaandiFoundation (No details about their water busi)	Rite Water Solutions	Safe Water Network	Sarvajal	Water For People	Waterlife	Water Health International	Josab	SRPEPL	SMAAT India	Swajal (name changed to boon)	Janajal	Drinkwell	Akshay Swachh Jal (iField Energy)
Year established	1991	2016	1998	2009	2009	2008	1996	2008	1995	1999	1988	2006	2011	2013	2013	2013
Number of Supply units*	1400	198	408	2327	350	1965	619+1,321 (school)+69 clinic (including WASH) =2009	4000	>650	250	2000	1,685	250	32	200	600
Location	5 States	Telangana	5 States	6 States	4 States	20 States	5 States	12 states	14 States	2 States	4 States	PAN India	7 States	4 States	5 countries	19 States
Economic model**	CMS		PPP	PPP	CMS	CMS/Franchisee/PPP	CMS	PPP/ Franchisee	PPP	Private (BOO)	Private	CMS	Franchisee	CMS	Micro Franchisee	
Ownership of kiosks	Community	Self/Community	Self for 5-10 years, then transfer to community	Government for 3-5 years, then transfer to community	Community/Local Entrepreneur/SHG	Self (local entrepreneur leases the plant)	Community	Local Entrepreneur	Self for 25 years, the transfer to communi	Self for 7 years	Self	Community/ local entrepreneur	Franchise Owner	Self		
Management of operations	Community	Self/Community	Self for 5-10 years, then transferred to community	Self for 3-5 years, then transfer to community	Community/Local Entrepreneur/SHG	Community/ local entrepreneur	Community	Self (first 5 - 15years, according to contract)	Self for 25 years, the transfer to communi	Self for 7 years	Self	Local community	Self/Local Entrepreneur	Self		
Capacity (LPH)	250-2,000	6-2000	1,000	500-2000	1000	250 - 2000	600-720	1000	1000 - 2,000	4000	-	80 (2000 L per day)		15000 L per day		500-1500 LPH
Capacity/plant (People served)	800-3,200	4-3,200	-	<1000	5,000-8,000, depending on power availability	110,000	-	2000	8,000-20,000		4,000		-	-	0.25m	1700
Principal technology	RO	Atmospheric Water Generators: Carbon filtration, Sediment filtration, UV, Mineralisation	RO & UV	Contaminant specific: RO, electro-coagulation, UV, electro chlorination, ultrafiltration, ion exchange	Six stage process with sand, carbon and micron filter, RO, UV and residual chlorine, Nano Filtration, Nano + R.O.	Six-stage filtration, RO,UV, Ion removal	Arsenic removal filters	Contaminant specific; RO (60%) , adsorption, media filtration, arsenic/fluoride removal	RO and patented UV technology		Ultra & Nano filtration systems, RO and Membrane bio reactors.	Ultra & Nano filtration systems, RO and UV.	9 stage patented technology	Six stage process with RO, ultra & UV filter; technology agnostic	Patented Hybrid Ion Exchange _ reverse Osmosis	
Average CAPEX, INR (US$)	395,000 ($4,750)	500,000-800,000 (7,150-14,350)	500,000-1,000,000 ($7,150-14,285)	600,000-1200,000 ($7,300-14,600)	700,000-1,000,000 (8,400-12,000) [without solar] ~2,000,000 (24,000) [with solar]	360,000-720,000 (4,335-8,674)	150,000-180,000 (1,800-2,168)	900,000 (12,860)	1,200,000-1,800,000 (14,460-21,690)		----	~ 5,00,000 [4,00,000 + 99,000] ($6,024)	----	----		INR 1000000 ($12300)
Average monthly OPEX, INR (US$)	7,000-12,000 (84-145)		10,000 (145)	12000-15000 (145-170)	12,000-15,000 (145-170)	Not disclosed	16,500-18,500 (236-265)	7,000-9,000 (100-129)	Not disclosed		----	----	----	----		INR 24000 ($295)
Price of water per liter, INR (US$)	0.15 – 0.25 (0.0017-0.0030)	< 2 (0.025)	0.25 (0.0030)	0.25 (0.0030)	0.25 (0.0030)	0.3-0.5 (0.0036-0.006)	0.02-0.04 (0.0028-0.0057)	0.25-0.4 (0.0035-0.0057)	0.3 (0.0042)	1 (0.0120)	----	----	----	1-5 (0.0120-0.0602)		INR 0.5 ($0.0061)
Price of subscription	-		60 (0.851) per month (20L/ day limit)	-	Smart Card Flexible Top up	Smart card flexible top-up	10 -25 (0.14-0.35) per month (20L/ day limit)	-	-		-	Smart ard flexible top-up	----	----		-
Product brand name	Sujal ATW Kiosk	Megdhoot	iPure	Rite Water	iJal	Sarvajal	AMAL	Waterlife	Dr. Water			SMAAT	Swajal Water Hut	Janajal or WOW		Akshay Jal
Distribution (pick-up/P; door-to-door/ D2D)	P	P	P	P+D2D	P (70% users) P+D2D	P+D2D	P (60%-70% of users) + D2D	P+D2D	P+D2D				P	P		

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ABOUT SAFE WATER NETWORK

We envision a world with healthy, thriving communities that sustainably manage their safe water. Founded in 2006 by the late actor and philanthropist Paul Newman and a group of civic leaders in New York, Safe Water Network catalyzes to ensure that millions of people in underserved communities around the world have access to safe water by leveraging a three-pronged approach:

1. **Field Implementation:** We collaborate with communities to develop sustainable solutions to improve and expand access to safe water.
2. **Technical Assistance:** We strengthen and build capacity with implementers and other stakeholders to improve performance and facilitate replicating sustainable, safe water solutions.
3. **Sector Engagement:** We drive global collaboration and advocacy across the worldwide water ecosystem to reduce sector fragmentation and enable the scale-up of decentralized, market-based water supply.

Safe Water Network's programs offer culturally, socially, and economically sustainable solutions to the lack of access to safe water, one of the world's most urgent and complex challenges.

Safe Water Network operates in India and Ghana, providing direct access to 1.7 million people and indirectly impacting more than 25 million people.

For more information on Safe Water Network, please visit www.safewaternetwork.org

AUTHORS

Poonam Sewak, *Vice President - Programs & Partnerships*
Pooja Singh, *Head of Monitoring & Evaluation*
Reena Kumari, *Research Manager*

GHANA
4 Odol Beyeden Street
East Legon
Accra, Ghana
Phone: +233 302-544-255
Email: ghana@safewaternetwork.org

INDIA
The Centrum, TB-3, 3rd Floor, 369-370
Main Mehrauli-Gurgaon Road, Sultanpur
New Delhi, India 110030
Phone: +91 11 26 80 0884
Email: india@safewaternetwork.org

USA
122 East 42nd Street
Suite 2600
New York, NY 10168
United States
Phone: +1 212-355-7233
Email: info@safewaternetwork.org

www.safewaternetwork.org
www.swealliance.org
June 2023