

# Recommended SMALL WATER ENTERPRISE PERFORMANCE STANDARDS



ADDITIONAL SUPPORT FROM:

# PARTICIPATING ORGANIZATIONS

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Under the project titled 'Urban Small Water Enterprises' of the USAID's Fixed Obligation Grant Award No. AID-386-F-15-00002, Safe Water Network India has developed SWE Performance Standards and Digital Tools serving as support systems to facilitate decision-making among key stakeholders in the sector. The Stakeholder Consultation Workshop held on February 4, 2016, marked the launch of two digital tools: Technology Selection Tool and Plant Assessment Tool. The former recommends decision makers to decide treatment technologies based on the quality of the water source, while the latter enables authorities to self-assess, monitor and evaluate the performance of USWEs.

The Workshop was organized as part of a consultation process to inform these decision support tools and collect inputs to further refine the SWE performance standards. Participating organizations included:

Center for Urban and Regional Excellence (CURE India)  
Microware Computing & Consulting Pvt. Ltd  
National Institute of Urban Affairs (NIUA)  
The Energy and Resources Institute (TERI)  
United States Aid for International Development (USAID)  
Urban Management Center (UMC)  
Water Health International (WHI)  
World Bank – Water and Sanitation Program (WSP)

# PREFACE

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The Performance Standards for Small Water Enterprises are recommended to be set by the Government of India – both the Ministry of Urban Development and the Ministry of Drinking Water Supply and Sanitation to guide local governance of small water enterprises (SWEs), through either Urban Local Bodies (ULBs) or Gram Panchayats to ensure efficient and quality water access to those beyond the pipe with monitoring of performance and ensuring optimized investments. However, adoption by the Government takes time, allowing for wider stakeholder consultation, these performance standards could be used as voluntary or aspirational standards by the sector to enhance capacity and develop solutions for challenge areas.

These Performance Standards have been developed after extensive field assessment of various SWEs administered by state governments, Members of Parliament (MP) / Municipal Legislative Assembly (MLA) funds, philanthropic organizations, private sector aggregators and water entrepreneurs followed by stakeholders' convening and consultation among multilaterals, government officials and SWE aggregators.

For the purpose of this document an SWE is defined as a treatment kiosk with appropriate capacity treatment equipment - Reverse Osmosis, Ultra Filtration or Ultra-Violet unit that uses ground water or surface water for treatment and the community buys affordable water from the kiosk.

These SWE Performance Standards would not have been possible without guidance and engagement from SWE sector players and the generous grant from United States Agency for International Development (USAID) as well as funding support from other project donors; including, PepsiCo Foundation, Pentair Foundation, Newman's Own Foundation and Cisco Foundation. Our sincere thanks to Underwriters Laboratories (UL) for their guidance and reviews in establishing standards for field assessment and sustainability at each level.

The Safe Water Network team assessed SWEs on their **S**ocial, **O**perational, **F**inancial, **I**nstitutional support and **E**nvironmental criteria (SOFIE) to develop minimum indicators and sub-indicators to determine the reliability, affordability and safety of potable water supplied to communities located beyond the pipe. A digital tool 'Plant Assessment Tool' has been developed as an open-source app for Android devices to assist the sector to evaluate an SWE's performance and recommend solutions, as necessary.



# ABBREVIATIONS

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<b>AMRUT</b>	Atal Mission for Rejuvenation and Urban Transformation
<b>AOT</b>	Appearance, Odor, Taste
<b>ATM</b>	Any time Water from the kiosk
<b>GP</b>	Gram Panchayat
<b>INR</b>	Indian Rupee
<b>MDWS</b>	Ministry of Drinking Water Supply and Sanitation
<b>MoUD</b>	Ministry of Urban Development
<b>RWSS</b>	Rural Water Supply and Sanitation
<b>NABL</b>	National Accreditation Board for Testing and Calibration Laboratories
<b>SHG</b>	Self Help Group
<b>SOFIE</b>	Social, Operational, Financial, Institutional and Environmental indicators
<b>SWE</b>	Small Water Enterprise
<b>TDS</b>	Total Dissolved Solids
<b>ULB</b>	Urban Local Body
<b>USAID</b>	United States Agency for International Development
<b>WASH / WaSH</b>	Water, Sanitation and Hygiene



# INTRODUCTION

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## Need for Performance Standards for Small Water Enterprises

State Governments both in peri-urban and rural areas are promoting and encouraging Community Safe Water Solution aggregators to bridge the gap of potable water availability in urban slums and rural India, especially to the communities beyond the pipe or where treated water access is a challenge. With these SWEs on the rise, there is an impending need to assess their performance to ensure reliable and affordable potable water supply. Key performance indicators are required to measure their performance.

## Purpose

The Recommended Small Water Enterprise (SWE) Performance Standards provide a framework for the ULBs and RWSS to measure, analyze and monitor SWEs. Moreover, aggregators can use these standards to evaluate their own performance across geographies. These tools can be used for self-certification, evaluation by internal supervisor, external assessment or social assessment.

## What are SWEs?

**Small Water Enterprise:** SWEs are small-scale informal operators engaged in the water provision, who have moved to fill the supply gap be it quantity or quality left by urban or rural water utilities. SWEs operate within a variety of water supply chains, featuring diverse functions and actors, depending upon the local conditions and water sources. These can be:

- Wholesale vendors e.g. tanker operators
- Distributing vendors e.g. vendors who obtain water from a source or from a wholesale vendor, and sell the water directly to consumers, via door to door sales (adding the value of convenience), including in some cases small piped networks
- Direct vendors i.e. those who sell water directly to consumers who come to collect and pay for water at the source including resellers and operators of water kiosks

Under the current context, we define SWE as a treatment kiosk with appropriate capacity treatment equipment - Reverse Osmosis, Ultra Filtration or UV unit that uses ground water or surface water for treatment and the community buys affordable water from the kiosk.

## Management of Performance Standards for SWEs

The performance parameters that have been defined to monitor and evaluate the performance of SWEs depend on the frequency of data collection, regularity of data assimilation, data analysis and scoring. It is important to define intervals between data collection during which visible changes are noticed in the parameters, thus providing meaningful insights to aggregators, operators and authorities to identify areas of improvement, supplementing their decisions and strategies for effective and efficient water delivery from SWEs.

## Role of Stakeholders

Various stakeholders are required to manage the process of measuring SWEs performance. To ensure that they are made an integral part of management and service delivery system, the following roles are required:

### Central Government

With Central Government institutionalizing the SWE under AMRUT Mission, there is a need for setting standards for measurement of 'Performance' especially delivery of quality and quantity. The SWE Performance Standards developed for management and service delivery for SWEs are required to be made an integral part of evaluation of the system. Moreover, apart from building widespread approval for the same, it is required to ensure these SWE Performance Standards trickle down to all the services, processes and projects with respect to SWEs.

### State Governments

It is necessary for the State Governments to adopt the SWE Performance Standards for SWEs to ensure that their decisions and policies for complimenting drinking water supply are based on sufficient and meaningful data points. This will assist them in charting fund allocation based on the performance to SHGs, WASH entrepreneurs, NGOs to safeguard their investments and move beyond mere 'equipment installation' that have led to failure in service delivery.

### Urban Local Bodies (ULBs) / Gram Panchayat (GP)

ULBs and GP being the primary service delivery institutions, it is vital for them to keep track of the performances to provide reliable and potable water to the citizens.

### Other Stakeholders

Assessor social or external agency assessment by appointed officials on behalf of ULBs / Gram Panchayat; internal assessment to improve performance by the SWE aggregators, investors, donors; recipient of services like community and the SWE operator.

### Standardization of Performance Standards

If the performance parameters developed for SWEs are to be effective, they must be made integral to management and service delivery system. The central government can build widespread approval for institutionalizing the SWE Performance Standards are needed to ensure all aspects of SWE operation and eventually percolate to various levels of their operation to create robust delivery.

### Framework for SWE Performance Standards

The central tenant of SWEs is sustainability. SWE Performance Standards target performance that promotes sustainability across: **S**ocial, **O**perational, **F**inancial, **I**nstitutional, **E**nvironmental (**SOFIE**) factors. Performance Standard tools, provided in the next section, cover SOFIE factors:

1. **Social** Sustainability
  - a. Consumer Participation
  - b. Affordability
2. **Operational** Sustainability
  - a. Water Quality
  - b. Reliability
3. **Financial** Sustainability
  - a. Capital Source
  - b. Viability
4. **Institutional** Sustainability
  - a. Regulatory Compliance
  - b. Capacity Building Activities
5. **Environmental** Sustainability
  - a. Reject water produced and utilized

The template for the SWE Performance Standards is organized by title, unit and definition for each of the following categories:

- a. Data Requirement
- b. Performance Indicator
- c. Rationale for the Indicator
- d. Frequency of Measurement
- e. Responsibility of Measurement

### **Frequency and Responsibility of Measurement**

It is important to set the frequency and responsibility of measurement. This can be annual for external or social assessment but needs to be more frequent for internal or self- assessment to improve the functions of SWEs. So the frequency has to be determined basis what is practical and feasible and a responsible person authorized to conduct the assessment.

<b>Assessor</b>	<b>Frequency of Measurement</b>
Self-certification	Monthly or Daily as needed per parameter
Supervisor	Quarterly
External / Social assessment	Annually



## Standardized SWE Performance Standards

## 1. Social Sustainability

## a. Coverage

<b>Data Requirement</b>		
<b>Data required for calculating the indicator</b>	<b>Unit</b>	<b>Remarks</b>
Total number of households in the service area (Refer Census data)	Number	Service area being referred to here is a ward, slum, village
Total number of households serviced by the SWE	Number	Households that procure treated water for drinking and cooking should be included. The households that are dependent on other water sources for drinking, such as bore wells, open wells, piped connections, etc. should not be included
Distance required to travel for water procurement	Meters	This refers to the maximum distance required to travel to the SWE for fetching water
<b>Performance Indicator</b>		
<b>Indicator</b>	<b>Unit</b>	<b>Definition</b>
Household level coverage of SWEs	%	Total number of households served as a percentage of total number of households in the vicinity of treatment facility /distribution point up to a maximum of 500m.
Population access	Number	Total population covered i.e. number of households x average household size; walk-in consumer
<b>Rationale for the Indicator</b>		
The household level coverage provides a perspective on the penetration of the services rendered by the SWEs. The goal is to reach majority of population either directly or through distribution points within 500 m.		

**Frequency of Measurement**

Monthly

**Responsibility for Measurement**

Ward/Slum/Village/Community

**b. Affordability**

<b>Data Requirement</b>		
<b>Data required for calculating the indicator</b>	<b>Unit</b>	<b>Remarks</b>
Price per liter at SWE	INR	Record price stated by the operator, price displayed at the kiosk and the price the consumer claimed he/she paid. Verify the actual payment from kiosk records.
Price per liter at delivery point	INR	Record the price stated by the distributor vehicle driver and the price the consumer claimed he/she paid. Verify actual payment from records at kiosk.
<b>Performance Indicator</b>		
<b>Indicator</b>	<b>Unit</b>	<b>Definition</b>
Price of water sold at SWE	INR	As per U.N. guidelines, the expenditure on water should be less than 3% of the household income. Frequently, very poor households limit use of purchased water only for drinking to limit expenses.
Price of water sold through delivery	INR	
<b>Rationale for the Indicator</b>		
With demand being inversely proportional to pricing, this indicator will monitor affordability of the services at the SWEs. It also helps generate demand Tradeoff and a balance between affordability and financial viability is precarious but must. Both are critical to meet long-term sustainability of water access. As per UN guidelines, the expenditure on water should be less than 3% of the household income. It is often seen that very poor households limit use of purchased water only for drinking to limit expenses.		

**Frequency of Measurement**

Monthly

**Responsibility for Measurement**

Ward/Slum/Village/Community

## 2. Operational Sustainability

### a. Water Quality: Daily Water Quality monitoring and periodic Laboratory Testing assessment to verify if the following practices are being followed or not

<b>Data Requirement</b>		
<b>Data required for calculating the indicator</b>	<b>Unit</b>	<b>Frequency of measurement by operator</b>
Appearance, Odor, Taste (AOT)	None	To be conducted daily at the SWE by the operator
pH	None	
TDS	mg/L	
Residual Chlorine	mg/L	
Microbial (Field Test Kit)	per 100 mL	To be conducted weekly at the SWE by the operator if quality-compliant. If noncompliant, test daily for a week until compliance is reached.
<b>Performance Indicator</b>		
<b>Indicator</b>	<b>Unit</b>	<b>Definition</b>
Availability of test reports		Test reports available from NABL accredited laboratory on a monthly basis in municipalities and for rural areas at least twice - pre and post monsoon
AOT		All three parameters to be agreeable on a daily basis
Total Dissolved Solids	mg/L	Amount of dissolved solids content in the water served through SWEs. Target value is below 500 mg/L.
<b>Rationale for the Indicator</b>		
Adherence to the prescribed water quality norms regularly is imperative to prevent health hazard. It is important to periodically monitor the quality of water per the prevailing regulation from a NABL accredited laboratory.		
<b>Frequency of Measurement</b>		
AOT and TDS daily at SWE and test reports available from NABL accredited laboratory on a monthly basis in municipalities and for rural areas at least twice - pre and post monsoon		
<b>Responsibility for Measurement and Assessment Location</b>		
SWE		

**b. Reliability**

<b>Data Requirement</b>			
<b>Data required for calculating the indicator</b>		<b>Unit</b>	<b>Remarks</b>
Supply Time Window		Hours/day	The hours the SWE/ATM is operational and serving water per day
Downtime	Technical	Days/month	Total number of hours the SWE was shut down due to malfunction or maintenance within the last 30 days.
	Sales Day	Days/month	Total number of days in the previous month that had zero water sales at the SWE.
<b>Performance Indicator</b>			
<b>Indicator</b>	<b>Unit</b>	<b>Definition</b>	
Supply time window	Hours/day	Total number of hours per day the SWE is operational and selling water	
Technical downtime	%	Total hours the SWE is non-operational due to maintenance or repair, expressed as a percentage of total number of days in a month. Target is <10% per month	
Zero sales days	%	Total number of days in a month that has zero sales at the SWE divided by the total number of days in a month. Target is <5% per month	
<b>Rationale for the Indicator</b>			
Downtime results in the lack of consumer water access for the consumers. With information about the total supply time, technical downtime and zero sales days lost, the administration will be in a position to analyze downtime factors e.g. absence of electricity, raw water availability, operator absence, treatment system under repair, etc. i.e. factors contributing to sales loss due to the technical performance of the SWE, thus we can evaluate quality of predictive maintenance and minimize downtime to ensure continuous potable water to consumer.			

**Frequency of Measurement**

Monthly

**Responsibility for Measurement**

SWE Level

### 3. Financial Sustainability

<b>Data Requirement</b>		
<b>Data required for calculating the indicator</b>	<b>Unit</b>	<b>Remarks</b>
Capital Expenditure	INR	<ul style="list-style-type: none"> <li>Total capital expenditure of infrastructure including land, building, raw water source, electricity connection, tanks and piping</li> <li>Treatment equipment</li> </ul>
Operating Expense	INR	Total operating expense of the SWE per month (i.e., water bill, electricity bill, rent, salaries, water quality test charges, consumables, spares, service fees, etc.). Operating expense should also be calculated per year to account for monthly variations.
Revenue	INR	Revenue through water sales per month. Revenue should also be calculated per year to account for seasonal variations.
Asset Renewal fund	INR	Amount of fund i.e., cash reserves, availability for asset renewal and high-value spares
Profit/Loss	INR	Calculate whether the SWE is profitable or incurring losses after meeting all the expenses
<b>Performance Indicator</b>		
<b>Indicator</b>	<b>Unit</b>	<b>Definition</b>
Source of Capital	None	Based on source of funding – Government, Grant, Self-funded, SWE franchisor and Bank Loan
Financial Viability	-	Assessed in terms of ability to cover operating expenses, service fee and asset renewal fund through revenues
<b>Rationale for the Indicator</b>		
<p>Financial sustainability is the key to SWE success. For long-term operations of the SWE financial sustainability at the operating level with sustainability funds for asset renewal and high value spares in the long term are essential. These can be attained only after operator gets fair remuneration and the entrepreneur gets reasonable returns on his investments and sweat equity. On an annual basis, all SWE should target breakeven after meeting all the above expenses from revenue to minimize need for operating subsidies. Additionally, if the SWEs are operated by aggregators there should be provision for returns their efforts as well.</p>		

#### **Frequency of Measurement**

Monthly; Annually

#### **Responsibility for Measurement**

SWE Level; Cluster level; National level

#### 4. Institutional Sustainability

##### a. Regulatory Compliance

<b>Concession Agreement</b>
It is important for the SWE to function in compliance with the prevailing state's regulations; thus, obtaining a Gram Panchayat Resolution from the village or the MoU from the ULB seeking permission to set up and operate the SWE. The concession agreement should define that the SWE has rights for i) raw water abstraction/provision, ii) electricity connection, iii) site approval to house the treatment facility and iv) reject water disposal, etc.; so treated water in compliance with the local quality standards can be made reliably available to consumers at a defined price from the kiosk.

##### b. Capacity Building Activities of the SWE operator

<b>Data Requirement</b>			
<b>Data required for calculating the indicator</b>	<b>Unit</b>	<b>Remarks</b>	
Presence of earthing for electricity connection	-	Electrical safety compliance; personnel safety	
a. Training provided for Operations & Management	-	Details about the training given for operations and management, if any, to the SWE operators to be verified by: <ul style="list-style-type: none"> <li>• operations methodology</li> <li>• plant hygiene</li> <li>• updated record keeping for technical and sales</li> </ul>	
Training provided for Water Quality and Quality Assurance	-	Details about the training imparted to the SWE operators and the trainer to be verified by: <ul style="list-style-type: none"> <li>• their ability to use TDS meter, pH meter, H<sub>2</sub>S field test kit, chlorine measurement accuracy</li> <li>• updated record keeping for daily water quality</li> </ul>	
Training provided for consumer activation and demand generation	-	Details about the training. <ul style="list-style-type: none"> <li>• trainer and frequency of training</li> <li>• methods and tools of engagement</li> </ul> Evaluate by observing consumer interaction and consumer feedback	
Hygiene and Cleanliness	Area around raw water source	-	Cleanliness of all the heads mentioned must be observed and reported
	Area around treatment plant	-	
	Area around storage	-	
	Cans (wash & storage)	-	
	Leakages	-	Report leakages, if any, in the entire plant

<b>Performance Indicator</b>
<p>The regulatory compliance and the concession agreement are most crucial to the legality of the SWE and is a must.</p> <p>With skills enhancement and increasing involvement of the SWE operator in the areas of plant operations and maintenance; record keeping; water quality and quality assurance, and consumer activation, will enable provision of quality water. Most of these evaluations are qualitative in nature and can be scored in a range of 0-10.</p>
<b>Rationale for the Indicator</b>
<p>Operator training in preventive and predictive maintenance is integral to the reduction of technical downtime and service reliability to the consumer.</p>

<b>Frequency of Measurement</b>
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Quarterly
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<b>Responsibility for Measurement</b>
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Aggregator level, SWE Level
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## 5. Environmental Sustainability

<b>Data Requirement</b>		
<b>Data required for calculating the indicator</b>	<b>Unit</b>	<b>Remarks</b>
Disposal of reject water	Liter	The outflow of reject water from the SWE is as per concessionaire agreement
Reject water produced	Liter	Measure and record monthly amount of reject water produced. Install meter on reject water line or calculate from the amount of raw water abstracted less the amount of treated water produced.
Reject water utilized	Liter	Measure how much reject water is utilized, i.e. for sanitation, cleaning use, etc.
<b>Performance Indicator</b>		
<b>Indicator</b>	<b>Unit</b>	<b>Definition</b>
<i>Measurement of water table</i>	Meter	Used to track and monitor the ground water table in the SWE region to understand water reservoir depth and depletion.
<i>Disposal of reject water</i>	Liter	Assess the compliance of the process to governing laws for disposal of reject water at dedicated wastewater pits or drainage into appropriate sewage system. It is encouraged to pipe this water for sanitation use to nearby schools and households.
<b>Rationale for the Indicator</b>		
For overall sustainability of water supply, we must use water judiciously and discharge reject water generated from SWEs as per norms.		

<b>Frequency of Measurement</b>
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Quarterly
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<b>Responsibility for Measurement</b>
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SWE Level
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