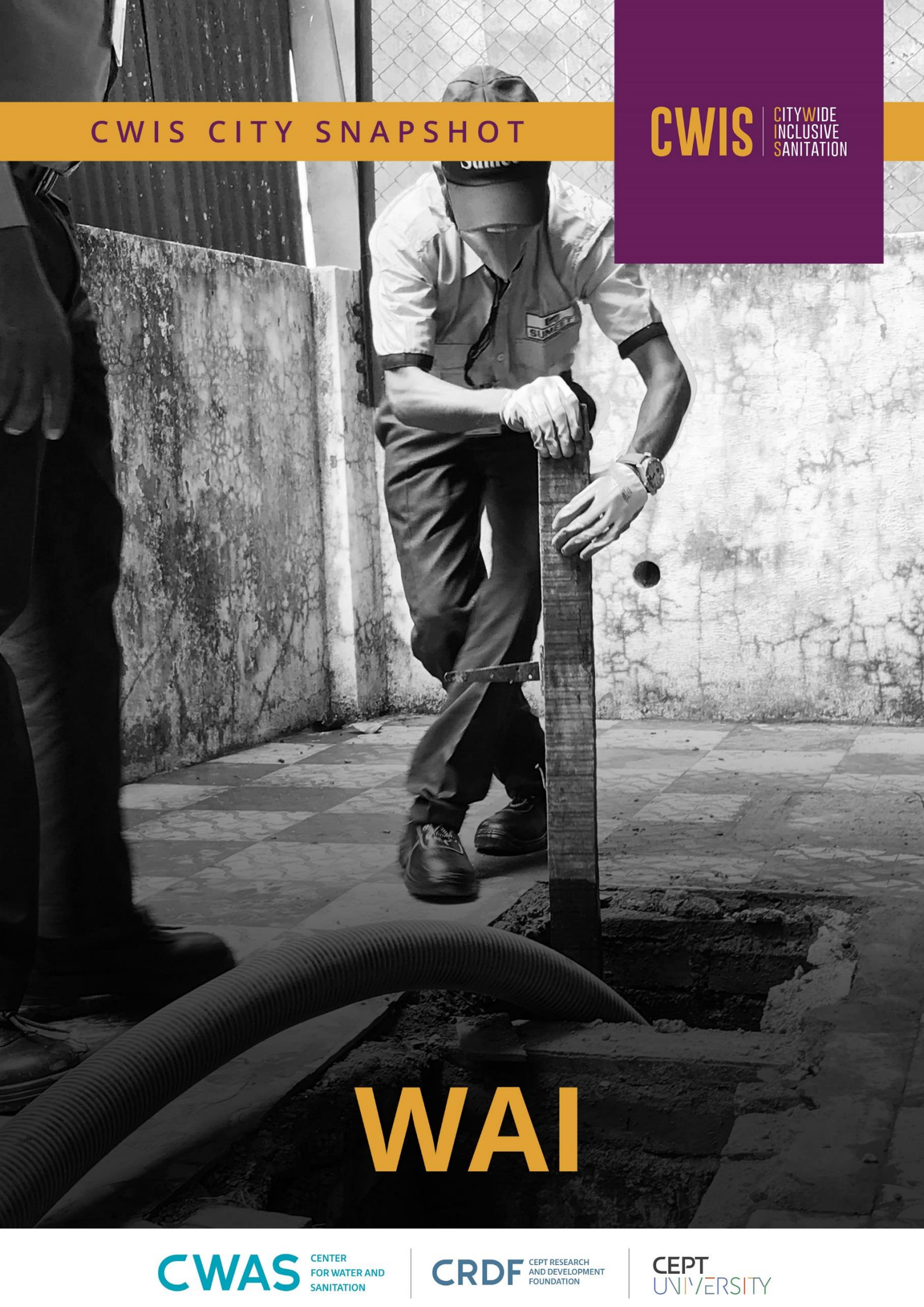


CWIS CITY SNAPSHOT

CWIS | CITYWIDE
INCLUSIVE
SANITATION



WAI



WAI CWIS CITY SNAPSHOT

The Citywide Inclusive Sanitation (CWIS) City Snapshots are designed to provide compact summaries of initiatives that are being implemented in eight cities, namely Lusaka, Kampala, Dakar, Khulna, Trichy, Warangal, Narsapur and Wai. Each of these cities has active investments designed to achieve the CWIS goals of equitable, safe, and sustainable sanitation service delivery. These city snapshots are part of the CWIS Monitoring and Learning initiative led by Athena Infonomics with support from the Bill & Melinda Gates Foundation.

This snapshot focuses on the city of Wai where the Center for Water and Sanitation (CWAS), CRDF, CEPT University (CEPT) is the lead implementing partner. This city snapshot outlines the pathway that Wai is taking to achieve its CWIS goals and tracks the progress being made, including key shifts in institutional and service delivery models to support safe, equitable and sustainable delivery of services.

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1. City Sanitation Overview

Category	Indicator	Value
Demographic	Administrative boundary	The administrative boundary for Wai is 3.54 sq.km and is divided into 10 wards. All information and statistics in this snapshot are based on the same administrative boundary.
	Population	43,000 ¹
	% of population living in informal settlements	3.74% ²
Geographic	Topography	The river Krishna flows through the city, dividing it into two halves. The terrain of the city converges uniformly towards the river, which complements the natural drainage system of the town. However, the natural slope towards the river results in the open drains emptying wastewater into the river ³ . Heavy rainfall along with the undulating topography also put stress on storm water management. This is often worsened by the release of water from the upstream Dhom dam.
	Groundwater table and soil	Average groundwater depth is 2-3 meters ⁴ . The soil type is predominantly black soil, which is helpful in holding groundwater but also makes the groundwater prone to contamination in areas with improper sanitation facilities, especially in slums that are located alongside the river and the drainage channels.
Basic Sanitation Statistics (as of 2020)	% of population practicing open defecation	0% ⁵
	% of population relying on onsite sanitation	100% ⁶
	Treatment infrastructure (capacity) and utilization	1 Fecal Sludge Treatment Plant (FSTP) with 70 KLD operational capacity, 50-55% of which is currently utilized.

¹ Performance Assessment System, 2020

² 2,404 out of the 7,580 HHs are living below poverty line, data provided by Wai Municipal council

³ CEPT University, 2015. City Sanitation Plan, Wai Municipal Council. January 2015. Performance Assessment System.

⁴ Groundwater yearbook of Maharashtra and UT of Dadra and Nagar Haveli, 2017

⁵ Based on certificate issued by MoHUA for cities free of open defecation (ODF profile submitted for Swachh Bharat Mission)

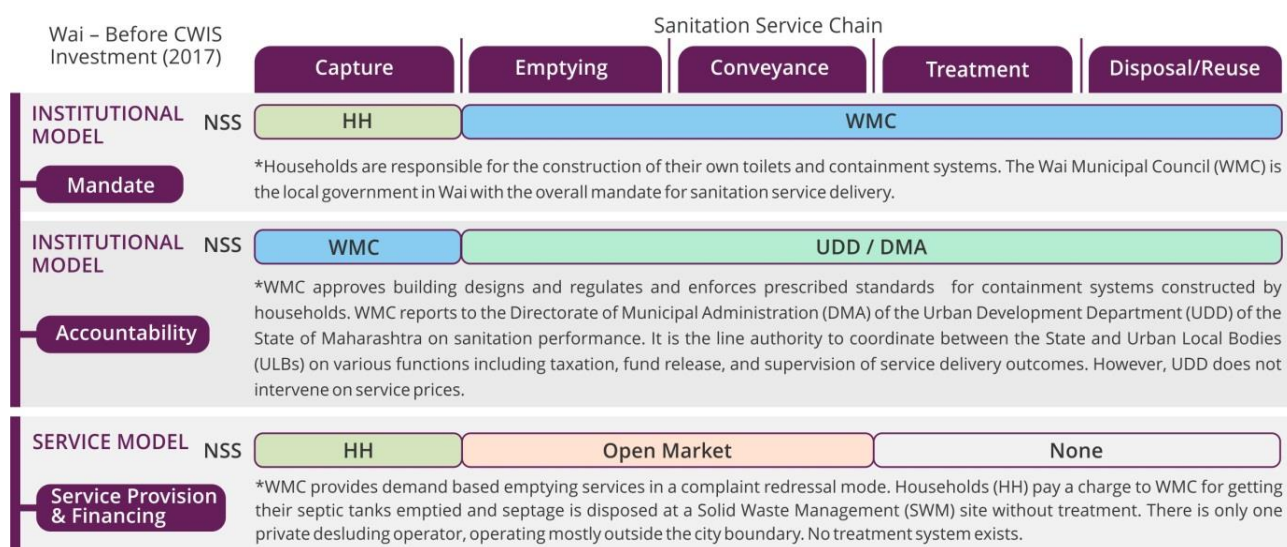
⁶ Ibid

2. Institutional and Governance Framework of City Sanitation Service Delivery

The graphics below show the institutional mandate, accountability and service provision models for Wai before the CWIS program started and the current scenario as of 2020. The full institutional model of urban sanitation service delivery covers all three of the systems functions under CWIS—Responsibility⁷, Accountability⁸, and Resource Planning/ Management (financing framework)⁹. The illustration in this section presents only responsibility and accountability, as financing framework is complex and varies widely across cities. The section on service model illustrates how sanitation services are being delivered. The service model includes a wide range of options such as direct provision by the mandated service authority, public private partnerships, and direct provision by the private sector but with oversight/regulation by the service authority or through open markets with limited oversight/regulation.

In Wai, two main changes occurred during the course of the CWIS program. The first is implementation of scheduled desludging, which allows the municipality to directly provide citywide inclusive desludging services through a private contractor. Another is the operationalization of an FSTP, which filled in the previous vacancy in treatment and disposal/reuse. Establishment of an FSTP also obliged the municipality to report to the state pollution control board (accountability) on compliance with discharge and disposal standards.

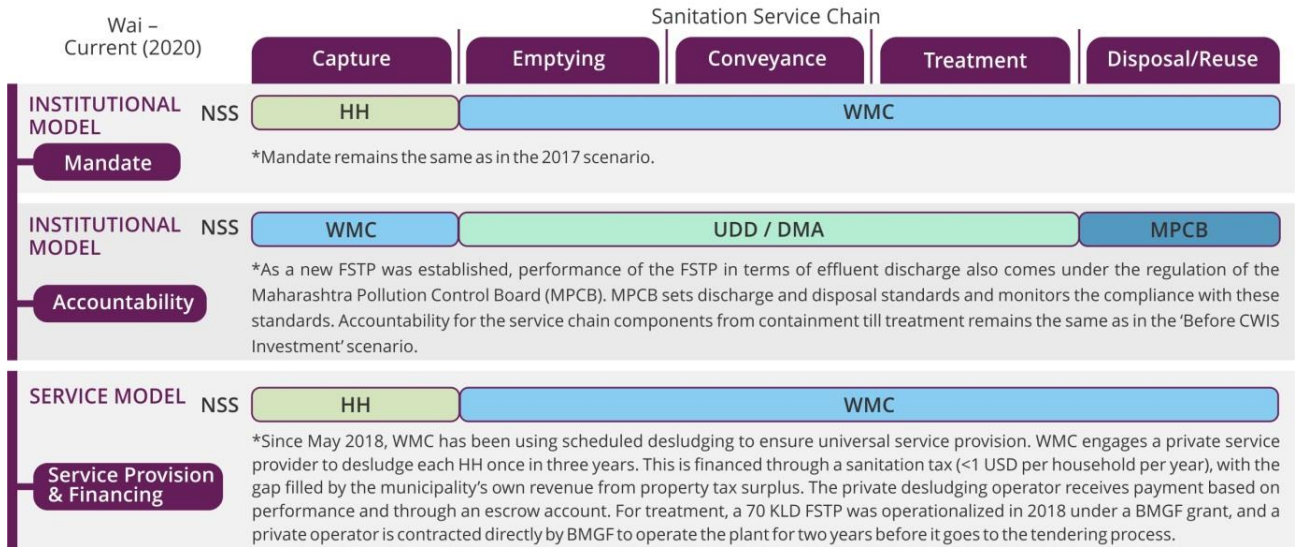
Legends: SS - Sewered Sanitation; NSS - Non-Sewered Sanitation



⁷ Responsibility means that authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.

⁸ Accountability means that authorities' performance against their mandate is monitored and managed with data, transparency and incentives.

⁹ Resource Planning/ Management means that resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space.



3. List of CWIS Interventions

This section seeks to capture Wai's path to the CWIS goals of equity, safety and sustainability and its performance on key functions such as clarity of mandate/responsibility, accountability and resource planning/ management. The table below is a list of Key Performance Indicators (KPIs)¹⁰ used to gauge changes towards CWIS, followed by another table detailing the scenario in Wai. The KPIs EQ-1 and SF-1 specifically follow the definitions as laid out in the Shit Flow Diagram (SFD) manual¹¹.

KPIs for Interventions

	Equity	Safety	Sustainability
	<i>Services reflect fairness in distribution and prioritization of service quality, prices, and deployment of public finance/ subsidies</i>	<i>Services safeguard customers, workers, and communities from safety and health risks—reaching everyone with safe sanitation</i>	<i>Services are reliably and continually delivered based on effective management of human, financial and natural resources</i>
Service Outcomes	<ul style="list-style-type: none"> • EQ-1: % safely managed sanitation in low income areas <ul style="list-style-type: none"> ○ % wastewater (WW) contained ○ % supernatant (SN) contained ○ % FS contained ○ % FS emptied • EQ-2: Women's participation in sanitation related matters • EQ-3: Gender friendly PT/CT design • EQ-4: % of sanitation workers covered by social security and health insurance 	<ul style="list-style-type: none"> • SF-1: % safely managed sanitation <ul style="list-style-type: none"> ○ % WW contained ○ % WW contained delivered to treatment ○ % SN contained ○ % FS contained ○ % FS emptied (contained + not contained) ○ % wastewater treated ○ % FS treated • SF-2: Health and safety standards and SOPs exist to protect sanitation workers from occupational hazards, and compliance is monitored 	<ul style="list-style-type: none"> • SS-1: % of treated wastewater that is reused • SS-2: % of treated biosolids that is reused • SS-3: % of utility capital investments covered by budget line/ government transfers • SS-4: % of O&M cost recovered for sanitation infrastructure (STPs/WWTPs, FSTPs, CT/PTs, desludging trucks, etc.)
	Responsibility	Accountability	Resource Planning/ Management
	<i>Authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.</i>	<i>Authorities' performance against their mandate is monitored and managed with data, transparency and incentives.</i>	<i>Resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space.</i>
System Functions	<ul style="list-style-type: none"> • RS-1: Policy mandate for service delivery covers both sewered and non-sewered sanitation across the entire sanitation service chain <ul style="list-style-type: none"> ○ Mandate has no exclusions ○ Mandate is explicitly pro-poor ○ Mandate is gender intentional and inclusive of vulnerable groups 	<ul style="list-style-type: none"> • AC-1: Service authority performance is monitored externally with clear KPIs and targets • AC-2: Performance data is sufficiently collected and reported, representative, and transparent • AC-3: Incentives and/or penalties tied to performance exist for sanitation service authority 	<ul style="list-style-type: none"> • RPM-1: Clear financing framework • RPM-2: Staff are in place and capable to execute mandate • RPM-3: Quality of investment decision-making • RPM-4: Integrated citywide sanitation plan

¹⁰ The KPIs are based on the list of CWIS indicators, which are more detailed and intended to offer comprehensive insights into a city's progress towards CWIS. This KPI list focuses on a subset of CWIS indicators and seeks to highlight interventions that can contribute to improved outcomes, as most cities are still in early stages of investment maturity. For example, the CWIS indicators measure women's usage of PT/CTs as quantitative outcomes, while the KPI EQ-3 focus on gender friendly PT/CTs as an intermediate outcome that can lead to more women using PT/CTs.

¹¹ Definitions as per the [SFD Manual](#) i.e., %SN contained = 0.5 * %Septic tank/ fully lined tank (sealed)/ lined tank with impermeable walls and open bottom connected to a centralized/decentralized combined sewer or foul/separate sewer; %WW contained = %Toilet discharges directly to a centralized/decentralized combined sewer or foul/separate sewer; %FS contained (all conditions when there is 'low risk' of groundwater pollution) = %Toilet discharges directly to soak pit + %Septic tank/ fully lined tank (sealed)/ lined tank with impermeable walls and open bottom connected to soak pit or no outlet + % Lined/ unlined pit, no outlet or overflow + % Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow + %SN contained.

Wai Scenario

The table below presents the scenario in Wai before the CWIS program was initiated, the reforms and interventions made to reach corresponding targets¹², which are envisioned to be achieved over a timeline beyond 2021. The table seeks to cover key interventions, both those completed over the past few years and those under planning, by all stakeholders that contribute to goals aligned with the CWIS idea. The table is not restricted to interventions that are part of the BMGF funded CWIS program or the CWIS grantee.

*NOTE: Acronyms are available at the end of the section.

Service Outcomes	Starting Scenario (Prior to 2017)	Equity	Safety	Sustainability
		<ul style="list-style-type: none"> ● EQ-1: 0% safely managed sanitation in LICs. <ul style="list-style-type: none"> ○ 0% SN contained;¹³ ○ 47.5% FS contained;¹⁴ ○ 15.7% FS emptied.¹⁵ ● EQ-2: Limited participation of women in sanitation related matters through Self Help Groups (SHGs).¹⁶ ● EQ-3: No gender friendly PT/ CT exists: CTs/PTs did not have gender inclusive features like MHM facilities. ● EQ-4: No data on social security and health insurance coverage for sanitation workers. 	<ul style="list-style-type: none"> ● SF-1: 0% safely managed sanitation. <ul style="list-style-type: none"> ○ 0% WW contained (no sewer network); ○ 0% SN contained; ○ 49% FS contained;¹⁷ ○ 15.7% FS emptied;¹⁸ ○ 0% FS treated. ● SF-2: Health and safety standards and SOPs to protect sanitation workers from occupational hazards exist at the national level.¹⁹ 	<ul style="list-style-type: none"> ● SS-1: Not applicable (no treatment infrastructure) ● SS-2: Not applicable ● SS-3: 100% of the capital investment cost (CT/PT and ULB owned desludging vehicle)²⁰ is covered by WMC's municipal revenue. ● SS-4: 3% of O&M cost recovered²¹ for sanitation infrastructure.

¹² These targets are yet to be discussed with the city authorities.

¹³ Supernatant from septic tanks is discharged into natural drains and river Krishna without any treatment.

¹⁴ 65% slum population have access to IHHL and 30% have access to CT; all toilets are connected to septic tanks. As per the 2015 Wai City Sanitation Plan, "effluent from septic tanks/pits of all toilets is directly discharged into open or closed drains along the streets." As per the SFD method, 50% of the content of septic tanks connected to drains can be considered FS and another 50% is considered SN.

¹⁵ "Approximately only 2 percent of septic tanks are cleaned annually...septic tanks for community toilet blocks are emptied too frequently (once a week)". CSP, 2015

¹⁶ Under the National Urban Livelihoods Mission (NULM), launched in 2013 with the aim of reducing poverty and vulnerability of the urban poor, several households were mobilized to form Self-Help Groups (SHGs).

¹⁷ 68% of citywide population have access to IHHL and 30% have access to CT; all toilets are connected to septic tanks. As per the SFD method, 50% of the content of septic tanks connected to drains can be considered FS and another 50% is considered SN.

¹⁸ All community and public toilet septic tanks were regularly desludged and maintained

¹⁹ Manual scavenging Act of 2013 prohibits manual emptying of septic tanks; CPHEEO Manual on Sewerage and Sewage Treatment Systems – 2013 has a chapter on occupational health hazards and safety measures.

²⁰ The total capital investment cost for all CT/PTs in the city is USD 37,841 (INR 28,60,000 @ 1 USD = 75.58 INR). With respect to the desludging vehicle, the capital investment was funded by the ULB in 2012. The exact amount for the vehicle is not known but can be approximately considered to be 30,000 – 35,000 USD.

²¹ The total O&M related expenses in Wai is USD 233,567 per annum (INR 1,76,53,000 @ 1 USD = 75.58 INR). This includes Community and Public Toilet maintenance, maintenance for publicly owned desludging vehicle and staff salary for sanitation services. Please note that the staff salary includes for the staff members who are also engaged in solid waste management services, as there is no clear distinction between roles of staff members assigned for liquid waste and solid waste management. The revenue generated is USD 6,616 from desludging services and from public toilet usage.

	<p>Reforms & Interventions</p>	<ul style="list-style-type: none"> ● CEPT is helping households reliant on CTs to construct IHHLs through toilet design interventions (targeting space constraints), linking them to sanitation credit (for financial constraints), and IEC/BCC outreach (for awareness/ attitudinal issues). ● WMC actively consults with SHG members on IHHL strategy and interventions to encourage women’s participation in sanitation related matters. SHG members help identify the HHs without access to IHHL and mobilize funds for construction of IHHL.²² ● CEPT assessed CTs and PTs for gender inclusive design (e.g. MHM facilities) with more focus on CTs in slum areas.²³ ● CEPT conducted training and orientation on FSM for women elected representatives to strengthen their representation in the council.²⁴ ● WMC and CEPT organized workshops and health camps for all sanitation workers, both permanent and contractual. 	<ul style="list-style-type: none"> ● CEPT trained masons and contractors for better construction of toilets (both superstructure and substructure). ● WMC and CEPT organized training workshops on safe usage of PPE gears and health camps for 80+ sanitation workers. WMC plans to conduct health checkups for sanitation workers on a quarterly basis. ● WMC offers affordable scheduled desludging service to all HHs regardless of location and income status.²⁵ IEC and BCC campaigns have been conducted to sustain scheduled desludging services – currently there is a 90% acceptance rate. Besides, all community and public toilet septic tanks are regularly (once every one to two weeks) desludged and maintained. Currently, the CEPT team is monitoring the groundwater, effluent and river water quality to understand the environmental benefit of scheduled desludging. ● CEPT team records the usage of PPE gears during desludging services carried out by the private operator via SaniTab. ● WMC with TIDE Technocrats and CEPT’s assistance operationalized a 70KLD Fecal Sludge Treatment Plant (FSTP) based on pyrolysis technology. 	<ul style="list-style-type: none"> ● CEPT is supporting WMC to strengthen the collection efficiency of key revenue sources such as property tax. <ul style="list-style-type: none"> ○ WMC implemented a sanitation tax of INR 60 (<1 USD) per HH per year (linked to property tax) to fund desludging operations;²⁶ ○ CEPT team supported WMC to establish an escrow account for payments to the private desludging operator. ● TIDE Technocrats is reusing treated wastewater (WW) from FSTP for landscaping activities at the FSTP and SWM site. ● CEPT / TIDE submitted a proposal to WMC for creating an urban forest at the FSTP to reuse treated WW and FS; WMC has approved it through a council resolution. ● WMC approved CEPT/TIDE’s proposal for solar installation at the FSTP site to cover 100% of electricity. The implementation is expected to be completed by Aug-Sep, 2020.
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²² Most SHGs have their accounts with nationalized banks (Bank of Maharashtra) created under the NULM program, so the CEPT team is currently connecting the SHGs for sanitation loans to banks in which they already have an account. The CEPT team helps in facilitating this process of application for a toilet, applying for additional credit if required and completing the construction of the toilets.

²³ While the city is pushing for IHHL for all households, households in slum areas will be shifting to the houses constructed under the national PMAY (Pradhan Mantri Awas Yojana) scheme - which intends to provide housing for all in urban areas by year 2022. The DPR for this has been approved and is currently under tendering process. Hence until then, the primary focus is to make the CTs in the slum areas gender inclusive.

²⁴ Within the elected body of WMC, out of 57 members (19 wards x 3 representatives from each ward), there are 10 women elected representatives.

²⁵ The service is contracted to a private operator (Sumeet Facilities Private Limited) using a performance-based contract.

²⁶ The sanitation tax (revenue generated of 5,292 USD) implemented in the city along with the funding from BMGF towards O&M of the FSTP (31,754 USD) has increased OPEX (total OPEX is 72,373 USD) cost recovery from 0% in the starting scenario to 51% in the city. In the previous year, the collection rate for sanitation tax was 66%, which generated a revenue of USD 5,292.

	Target Scenario (2021 & beyond)	<ul style="list-style-type: none"> ● EQ-1: 100% safely managed sanitation in areas occupied by LICs.²⁷ ● EQ-3: All CT/PTs to be gender sensitive. 	<ul style="list-style-type: none"> ● SF-1: 100% safe management for WW and FS generated as per NGT (National Green Tribunal) standards.²⁷ ● SF-2: 100% compliance with worker safety standards prescribed at the national level. 	<ul style="list-style-type: none"> ● SS-4: 100% O&M cost recovery for sanitation services in the city.²⁷
System Functions	Starting Scenario (Prior to 2017)	Responsibility	Accountability	Resource Management/ Planning
		<ul style="list-style-type: none"> ● RS-1: WMC has the mandate²⁸ for overall sanitation service delivery in Wai. <ul style="list-style-type: none"> ○ The policy mandate document defines WMC's mandate such that it provides services to all citizens of the city irrespective of their income level, status, gender, etc. ○ The mandate document does not contain specific language regarding service delivery to the poor, women, or vulnerable groups. 	<ul style="list-style-type: none"> ● AC-1: The State Urban Development Department (UDD) is the performance regulator; no economic regulation exists; the Maharashtra Pollution Control Board (MPCB) is the state environmental regulator. <ul style="list-style-type: none"> ○ WMC's performance is assessed by four national level performance monitoring mechanisms: Swachh Bharat Mission (SBM) MIS, Swachh Survekshan (SS)²⁹, Service Level Benchmarks (SLBs) and San Benchmarks; ○ On grievance redressal, WMC has an Inwards Department where complaints of all types are registered and directed to the concerned department for further action. ● AC-2: The program level monitoring mechanisms (SBM-MIS and SS) record sanitation performance data focusing particularly on sanitation access; SLBs and San Benchmarks capture performance data on liquid waste management (including sewerage) 	<ul style="list-style-type: none"> ● RPM-1: No dedicated budget for FSSM. ● RPM-2: There was an acting sanitation inspector from another department. ● RPM-3: The SaniPlan tool is used to conduct detailed assessment for sanitation investments across the sanitation service chain in Wai <ul style="list-style-type: none"> ○ Detailed analyses were made for the selection of financial model to be employed for desludging. ○ Detailed feasibility assessments were conducted to select the appropriate FSTP treatment technology. Technologies³¹ were evaluated based on parameters such as expertise required for designing, construction and maintenance; capital and operational cost requirement; land requirement; resting period and reuse efficiency. ○ For the selected technology, the

²⁷ While there are no specific targets defined by WMC, the city follows the overall program/scheme level goals such as achieving open defecation free (ODF) status or safe management of FS to achieve ODF++ status under SBM. In this case the targets mentioned are as per the WW benchmark referred from Service Level Benchmark (MoUD, 2009), the FS benchmark taken from the PAS framework (CEPT, 2015)

²⁸ According to the MMCNPIT Act, 1965, WMC has the sole responsibility of providing water and sanitation services in Wai. WMC is responsible for the "collection, removal, treatment and disposal of sewage...from all properties". With respect to the construction of IHHL, a written permission should be taken from the Commissioner by the property owner.

²⁹ Swachh Survekshan is an annual survey launched in 2017 as a part of SBM which deals with cleanliness, hygiene and sanitation in cities and towns across India.

		and non-sewered sanitation); Sanitation baseline scenario was captured using the SaniTab tool. ● AC-3: All cities in India are eligible for the 14th Finance Commission grant ³⁰ contingent on meeting minimum performance threshold.	operational financial model was developed for a period of ten years ● RPM-4: A citywide sanitation plan exists, focusing on blackwater management.
Reforms & Interventions	<ul style="list-style-type: none"> ● CEPT ensured improved engagement of WMC (both elected and administrative wing) for sanitation related activities. <ul style="list-style-type: none"> ○ WMC passed council resolutions for various FSM related activities, such as provision of scheduled desludging and sanitation tax, construction of IHHL. etc. ○ All sanitation related contracts issued by WMC have a clause related to the safety and improved working condition of sanitation workers. 	<ul style="list-style-type: none"> ● CEPT created a citywide database on desludging services using the SaniTab application. This is linked to the SaniTab dashboard which is an MIS to track sanitation situation and desludging service performance across the city. ● CEPT developed an online FSTP outlet quality monitoring system (SanQ) to monitor quality of treated WW. This has been linked to a dashboard prepared by the private operator. The private operator shares fortnightly reports with WMC on FSTP operations. 	<ul style="list-style-type: none"> ● WMC created a dedicated budget line for FSSM (scheduled desludging). ● Based on the institutional roles and responsibilities assessment of WMC done by CEPT, WMC has started to involve sanitation supervisors in monitoring FSSM emptying operations. ● Using the SaniPlan tool, CEPT is developing a city level investment plan to finance sanitation services. The plan identifies improvement actions and the source for capital investment based on three financing mechanisms - grants, own source and innovative financing such as PPP and VGF).
Target Scenario	● RS-1: Within the existing mandate, more legal and regulatory tools are in place for WMC to better execute its sanitation mandate.	● AC-2: An MIS platform exists (SaniTrack) for tracking end to end (across the value chain) operations of sanitation service delivery in the city.	<ul style="list-style-type: none"> ● RPM-2: Sufficient staff are in place and equipped for sanitation service delivery. ● RPM-4: Management of greywater and supernatant from septic tanks is integrated into the city sanitation plan.

³¹ Technologies evaluated - Sedimentation ponds /Settling Tank/ Thickening ponds, Sludge drying bed / Unplanted sludge drying bed, Planted sludge drying bed, Co-Composting, Deep row entrenchment, Mechanical Dewatering, Waste stabilization pond (Non - aerated) and Advanced nutrient recovery (SaniPlan - IFSM Tools For Citywide Assessment and Planning; Document accessed from: https://pas.org.in/Portal/document/UrbanSanitation/uploads/IFSM%20toolkit_CEPT_AIT.pdf). However, the current treatment plant in Wai uses pyrolysis due to CWIS investment.

³⁰ The Fourteenth Finance Commission (14FC) of Government of India disburses Performance Grant to urban local bodies (ULBs), subject to certain eligibility criteria. This is for a time period of five years, from 2015-2020 wherein 80% forms the Basic Grant and 20% forms the Performance Grant. These funds are devolved only for basic services and their O&M purposes.

Acronyms:

CEPT - Centre for Environmental Planning and Technology

CT/ PT - Community Toilet/ Public Toilet

CSP - City Sanitation Plan

DMA – Directorate of Municipal Administration

FSSM - Fecal Sludge and Septage Management

FSTP - Fecal Sludge Treatment Plant

HH- Household

IHHL - Individual Household Latrine

LIC - Low Income Community

MHM - Menstrual Hygiene Management

MIS - Management Information System

OSS - On Site Sanitation Systems

SHG - Self Help Group

SWM- Solid Waste Management

SOP - Standard Operating Procedure

UDD - Urban Development Department

WMC - Wai Municipal Corporation