

CWIS CITY SNAPSHOT

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INCLUSIVE
SANITATION

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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 Tiruchirappalli where the Indian Institute of Human Settlements (IIHS) is the lead implementing partner. This city snapshot outlines the pathway that Trichy 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	Tiruchirappalli is spread across 167 sq. km. Earlier the city was divided into 60 wards. In 2011, 5 more wards were added to the city boundary. Later in 2017, a delimitation study was carried out which changed the ward boundaries of all 65 wards with an aim to equalize the population in each ward. All information and statistics in this snapshot are based on the same administrative boundary.
	Population	8,47,387 ¹
	% of population living in informal settlements	26.96% ²
Geographic	Topography	Flat topography, with a few isolated hillocks rising above the surface. The Kaveri river flows through the city. Insanitary conditions in the area pose high contamination risk to the river, which is the main source of water supply in the city.
	Groundwater table	Average Groundwater depth is at 22.84 m in 2019, which fell by over 10 m since 2015. ³ The groundwater is colorless and odorless and suitable for drinking and domestic uses. Low groundwater table makes the groundwater less prone to contamination.
Basic Sanitation Statistics (as of 2020)	% of population covered by sewerage networks	53% ⁴
	% of population relying on onsite sanitation	47%
	Treatment infrastructure (capacity) and utilization	1 Sewage Treatment Plant (STP) with 58 MLD operational capacity, 96% of which is currently utilized.

¹ Census, 2011

² Ibid. This includes both notified and non-notified slums in the city.

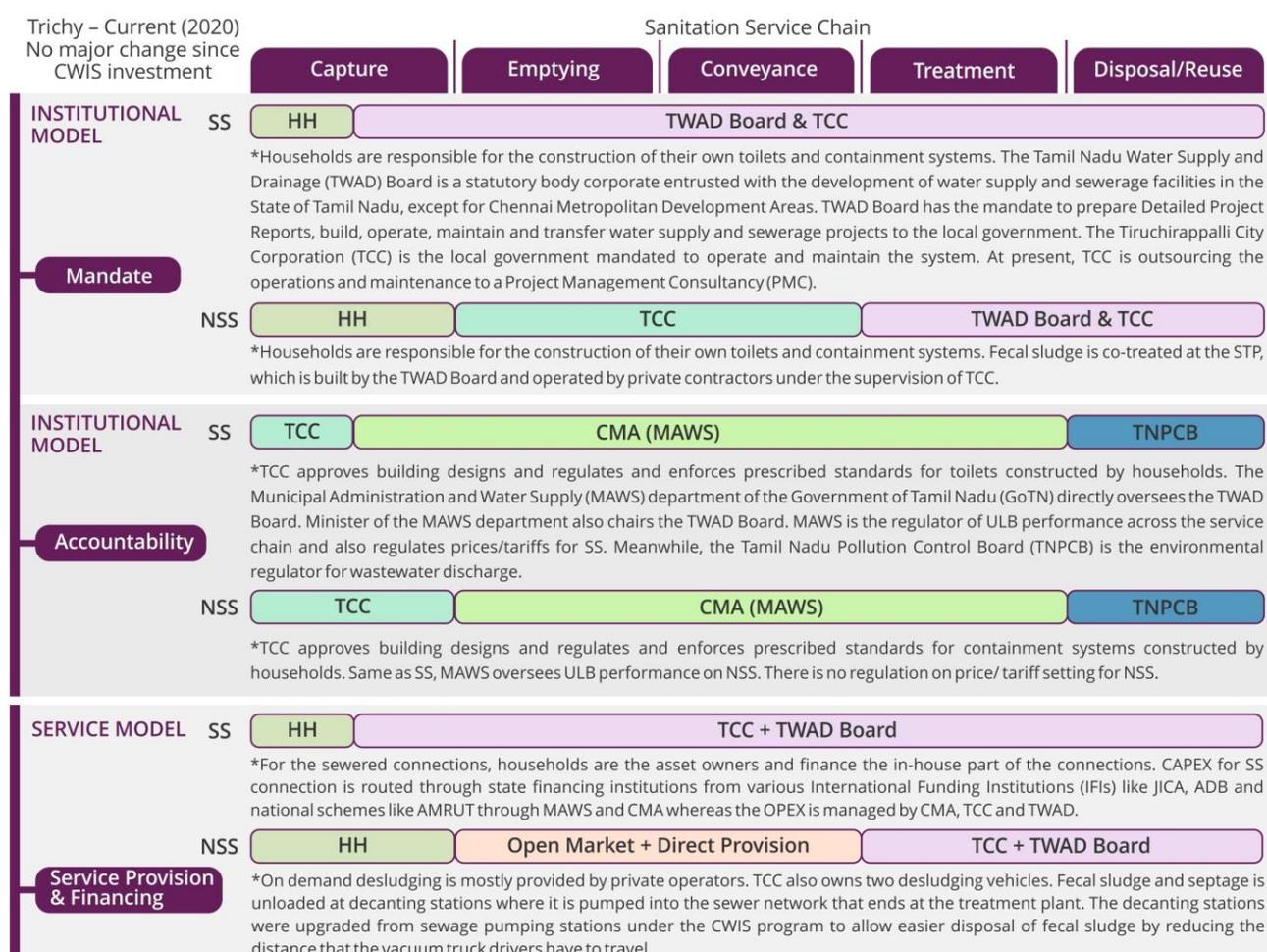
³ National Water Mission - <http://nwm.gov.in/sites/default/files/Notes%20on%20Trichy%20District.pdf>

⁴ Shit Flow Diagram Report Tiruchirappalli, India, 2016. This is a desk based SFD and for reference only. Of 53%, 45% are connected to HHs and 8% are connected to PTs.

2. Institutional and Governance Framework of City Sanitation Service Delivery

The graphic below shows the institutional mandate, accountability and service provision models for Trichy. The full institutional model of urban sanitation service delivery covers all three of the systems functions under CWIS—Responsibility⁵, Accountability⁶, and Resource Planning/ Management (financing framework)⁷. 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 Trichy, no major change has taken place during the course of the CWIS program.

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



NOTE: Financing- CAPEX for sewered connections is routed through state financial institutions from various International Funding Institutions (IFI) like JICA, ADB and national schemes like AMRUT through MAWS and CMA. OPEX for sewered connection is managed by CMA, TCC and TWAD.

⁵ Responsibility means that authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.

⁶ Accountability means that authorities' performance against their mandate is monitored and managed with data, transparency and incentives.

⁷ 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 Trichy's path to CWIS goals of equity, safety and sustainability and its performance on key functions such as clarity of mandate/responsibility, accountability and resource management. The table below is a list of Key Performance Indicators (KPIs)⁸ used to gauge changes towards CWIS, followed by another table detailing the scenario in Trichy. The KPIs EQ-1 and SF-1 specifically follow the definitions as laid out in the Shit Flow Diagram (SFD) manual⁹.

KPIs for Interventions

	Equity <i>Services reflect fairness in distribution and prioritization of service quality, prices, and deployment of public finance/subsidies</i>	Safety <i>Services safeguard customers, workers, and communities from safety and health risks—reaching everyone with safe sanitation</i>	Sustainability <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) ○ % WW 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.)
System Functions	<p>Responsibility <i>Authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.</i></p> <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 	<p>Accountability <i>Authorities' performance against their mandate is monitored and managed with data, transparency and incentives.</i></p> <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 	<p>Resource Planning/ Management <i>Resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space.</i></p> <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

⁸ 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.

⁹ 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.

Trichy Scenario

The table below presents the scenario in Trichy before the CWIS program was initiated, the target that needs to be achieved and the reforms and interventions made to reach this target. 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.

		Equity	Safety	Sustainability
		Service Outcomes	<ul style="list-style-type: none"> • EQ-1: No data on safely managed sanitation in low income communities (LICs) <ul style="list-style-type: none"> ○ 0% SN contained • EQ-2: Limited women's participation in sanitation related matters through Gramalaya¹⁰ • EQ-3: No gender friendly PT/CT exists • EQ-4: Only permanent sanitation workers (all 1176 of them) employed by TCC are covered by social security and health insurance 	<ul style="list-style-type: none"> • SF-1: 60%¹¹ safely managed sanitation <ul style="list-style-type: none"> ○ 53% WW contained ○ 0% SN contained ○ 2% FS contained ○ 16% FS emptied¹² ○ 45% WW treated ○ 14% of FS treated • SF-2: Health and safety standards and SOPs to protect sanitation workers from occupational hazards exist at national level¹³. No system exists to monitor compliance.
Reforms & Interventions	<ul style="list-style-type: none"> • IHS conducted a baseline assessment on slum sanitation infrastructure (type of facilities, type of onsite sanitation systems, desludging). 	<ul style="list-style-type: none"> • TCC conducted assessment of IHHL to upgrade their containment systems in order to reduce groundwater pollution. • TCC upgraded the pumping stations to decanting stations with screens to allow disposal of FS for co-treatment at the STP. 	<ul style="list-style-type: none"> • TCC is exploring options to sell the treated biosolids from the WWTP. 	

¹⁰ Gramalaya is a non-government stakeholder which promotes WaSH activities through empowerment of women, children and marginalized communities

¹¹ Shit Flow Diagram Report Tiruchirappalli, India, 2016. This is a desk based SFD.

¹² This includes 1% FS contained emptied and 15% FS not contained emptied.

¹³ Manual scavenging Act of 2013 prohibits manual emptying of septic tanks; CPHEEO Manual on Sewerage and Sewage Treatment Systems – 2013 (Chapter 9 on occupational health hazards and safety measures)

	<ul style="list-style-type: none"> • TCC provided O&M funding for the SHE teams and AWASH¹⁴ teams (women belonging to SHGs) to operate and manage CT/PTs; IIHS trained these teams on the O&M of CT/PTs. • TCC selected 125¹⁵ out of a total of 460 CT/PTs to be retrofitted with gender inclusive design, such as sanitary napkin dispensing machines, incinerators, hooks behind toilet doors etc. Retrofitting has started in 2020. • IIHS conducted capacity building for sanitation workers¹⁶ to orient them on existing national/state welfare schemes and linked individual sanitation workers to various government schemes. • IIHS and TCC aim to conduct periodic health camps to provide health care services to sanitation workers.¹⁷ 	<ul style="list-style-type: none"> • TCC is rehabilitating the 30MLD treatment arm of the STP which is not operational.¹⁸ • IIHS organized capacity building training for sanitation workers on safe sanitation practices (usage of PPE gears). • IIHS conducted IEC and BCC campaigns in schools to create awareness on MHM, covering 2500 students. 	
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¹⁴ AWASH committees/ SHE Teams formed by the women members of SHG of the respective slums. The SHE /AWASH teams look after the upkeep and maintenance of the community toilets constructed in their slum. TCC covers the O&M cost for the CT/PTs maintained by SHE/ AWASH teams, while the user charges collected is used to provide salary for these women. SHE/ AWASH teams report to the Women's Action for Village Empowerment (WAVE) Federation, an NGO formed by women's SHGs and supported by TCC, IIHS, Gramalaya, and WaterAid.

¹⁵ These 125 toilets were selected based on the repair requests raised by their caretakers (SHE/AWASH)

¹⁶ This included 37 school toilet cleaners and 87 CT/PTs caretakers.

¹⁷ TCC conducts two types of health camps: (i) A monthly health camp for permanent and contractual TCC sanitation workers, where each of them is provided with a tracking card and this check-up is part of their job mandate and (ii) A monthly public health camps by Public Health Centre (as per instructions from TCC). The informal sanitation workers benefit from these camps as treatment and medicines are provided free of cost. IIHS aims to conduct specialized health camps for informal sanitation workers and is working on providing tracking cards for them.

¹⁸ The STP in Trichy has two treatment arms, one at 58MLD which is currently operational, another at 30MLD which is not.

	Target Scenario (2021 and beyond)	<ul style="list-style-type: none"> • EQ-1: 100% safely managed sanitation in low income areas. • EQ-2: Strengthened women members from SHGs for sustainable and effective management of CT/PTs. • EQ-3: 125 CT/PTs to be upgraded into gender friendly toilets. • EQ-4: All 3000 sanitation workers and their families have social security and health insurance. 	<ul style="list-style-type: none"> • SF-1: 100% safely managed sanitation by leveraging existing sewerage infrastructure. 	<ul style="list-style-type: none"> • SS-1: 20%¹⁹ of treated effluent is reused. • SS-4: 100% of O&M cost recovered for STP.
System Functions	Starting Scenario	Responsibility	Accountability	Resource Management/ Planning
		<ul style="list-style-type: none"> • RS-1: TCC has the mandate for overall sanitation service delivery (both sewer and non-sewered sanitation) in Trichy. <ul style="list-style-type: none"> ○ Mandate does not explicitly mention pro-poor as a focus; ○ Mandate does not explicitly mention the needs of women or other vulnerable groups. 	<ul style="list-style-type: none"> • AC-1: MAWS is the performance and economic regulator²⁰ for TCC while TNPCB is the environmental regulator for wastewater discharge. <ul style="list-style-type: none"> ○ TCC's performance is assessed by three national level performance monitoring mechanisms: Swachh Bharat Mission (SBM) MIS, Swachh Survekshan (SS), Service Level Benchmarks (SLBs); ○ On grievance redressal, TCC has zonal level contact numbers, and the Junior Engineer and the Assistant Executive Engineer handle the complaints. • AC-2: Sanitation performance data is available only for toilet access and FS emptying; no data is collected for FS treatment. 	<ul style="list-style-type: none"> • RPM-1: There is no separate budget allocated for FSSM under the TCC budget. • RPM-2: No elected representatives in the sanitation department, for the past 2 years. • RPM-3: Assessment of resource availability and environmental impact are conducted and mandatory while making investment decisions. • RPM-4: No integrated city sanitation plan.

¹⁹ As per the SLB targets set by MoHUA

²⁰ MAWS oversees TCC's performance across the sanitation service chain and undertakes critical capital investment works. It regulates the prices/ tariffs for sewer and sanitation. There is no economic regulation of prices/tariffs for non sewer and sanitation.

		<ul style="list-style-type: none"> • AC-3: All cities in India are eligible for 14th Finance Commission grant²¹ contingent on meeting minimum performance threshold. 	
Reforms & Interventions	<ul style="list-style-type: none"> • Through an MoU between TCC and WAVE, SHE and AWASH teams have been institutionalized to take up the responsibility of managing the CT/PT functioning. TCC offers handholding support to these teams, whenever necessary. 	<ul style="list-style-type: none"> • TCC enforced a standard license agreement for private desludging operators and uses the GPS based monitoring system to regulate operations and disposal of FS. • TCC implemented a state level MIS (MuSu)²², which is used by the MAWS department of the State Government of Tamil Nadu for tracking desludging data at the ULB level. 	<ul style="list-style-type: none"> • IIHS identified existing roles and gaps in sanitation staffing at TCC and shared a revised staffing model outlining the roles and responsibilities. • IIHS analyzed TCC's sanitation and investment plan, identified gaps in terms of FSSM, gender and inclusion and updated it.
Target Scenario	<ul style="list-style-type: none"> • RS-1: TCC's mandate to explicitly be pro-poor, gender inclusive and focused on sanitation service delivery to vulnerable groups. 	<ul style="list-style-type: none"> • AC-2: TCC monitors the performance and compliance of private desludging operators to licensing requirements, and performance data is available; sanitation related data is comprehensively collected and captured through various state and national level MIS. 	<ul style="list-style-type: none"> • RPM-1: A budget line is established for FSSM. • RPM-2: Improved staff capacity (skills wise²³) in TCC to deliver sanitation services.

²¹ 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.

²² The MIS and the linked MuSu App are developed by IIHS under the TNUSSP program.

²³ FSM orientation sessions, training on district level programmes and gender-sensitive planning

Acronyms:

AWASH - Association of Water, Sanitation and Hygiene
BCC - Behavior Change Communication
CT/ PT - Community Toilet/ Public Toilet
FSSM - Fecal Sludge and Septage Management
IEC - Information Education Communication
IHHL - Individual Household Latrine
IIHS - Indian Institute of Human Settlements
MHM - Menstrual Hygiene Management
MIS - Management Information System
MAWS - Municipal Administration and Water Supply
PPE - Personal Protective Equipment
STP - Sewage Treatment Plant
SN - Supernatant
SHE - Sanitation and Health Education
SHG - Self Help Groups
TCC - Tiruchirappalli City Corporation
TNUSSP - Tamil Nadu Urban Sanitation Support Programme
ULB - Urban Local Body