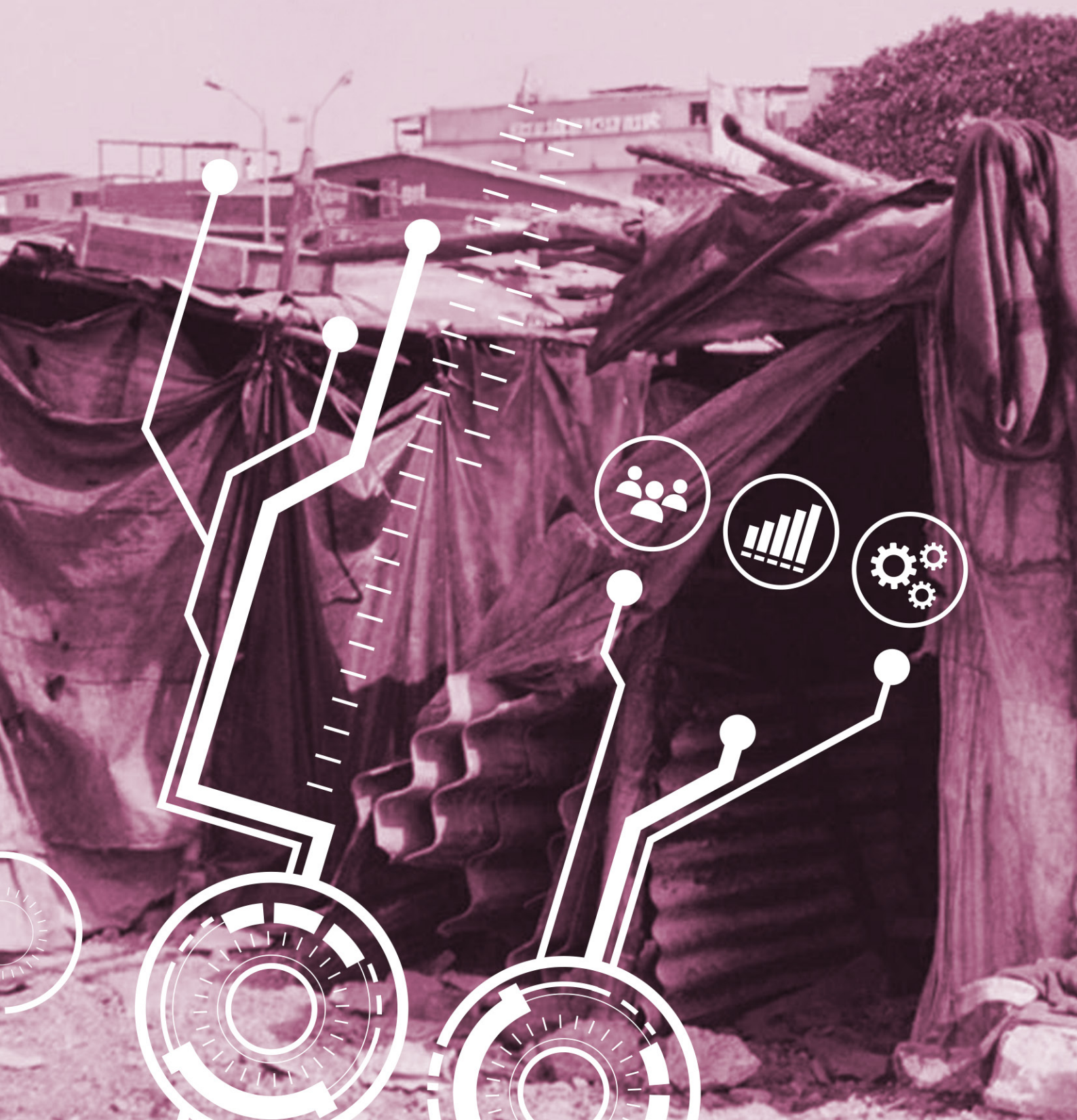




Sanitation Data Ecosystem Profile

Warangal - 2021





Executive Summary

This report reviews the sanitation data ecosystem in the city of Warangal in 2021, and consists of two sections: 1) an overview of service level data across the sanitation value chain, and an analysis of some key factors that influence the availability and sustainability of data, including reporting structures, the regulatory environment and funding sources; and 2) availability of sanitation financial data, and what affects availability. This report provides a foundation for Warangal's stakeholders to develop a strategy with action points to bridge data gaps, improve data usage, and **facilitate data-driven decision-making in sanitation**. This report does not cover data reliability and data quality, although we note that these are important issues that must be tackled in any strategy to improve accountability structures for sanitation service delivery.

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Report Highlights

#1

Toilet access data is primarily collected through national programs and the census.

Like most cities in India, Warangal relies on the Census of India (which happens every ten years) for citywide representative data on toilet access. Since 2014/15, the national Swachh Bharat Mission (SBM) has captured data on the construction of new individual household latrines (IHHL) and PT/CTs across the country. However, toilets constructed between 2011 to 2014 and outside of the scheme (due to ineligibility) are not known. A state level program in Telangana, Pattana Pragathi, is filling the gap for data collection on PT/CTs. Nevertheless, data on access to IHHLs will be incomplete until the next census takes place. As the national programs are developed and implemented around evolving goals, continued data update for IHHLs also depends on the priorities and continuity of the SBM.

#2

Data on toilet access in educational institutions and healthcare facilities relies on national mechanisms.

Toilet access in schools is captured through an MIS by the Ministry of Education, which only covers the schools registered in the system and with internet access for filling out the online data collection forms. Moreover, the data collected is aggregated and published at the state level, implying that city governments do not have access to the data for their service areas for planning and decision-making. This highlights the need for national authorities to make disaggregated data on educational institutions more available to local service authorities. While toilet access in all healthcare facilities is covered by the census, data is only updated once every ten years.

#3

Despite gaps in the national level data collection mechanisms, containment and emptying data is collected through donor-funded programs.

Warangal has registered and empaneled all desludging operators in the city and tracks their activities through a mobile app. During each desludging, data is collected on the containment unit and on the emptying service itself. While the app is meant to capture all desludging services, truck drivers often don't have access to the app, which is installed on the truck owner's phone. It is not clear how the data collection will be continued once the donor-funded program period ends.

#4

Weak regulation means that CSR and donor-funded treatment plants infrequently report treatment quality data to the state environmental regulator.

Test result reports are shared with the Greater Warangal Municipal Corporation (GWMC) on request, which may share the data with the state environmental regulator, the Telangana State Pollution Control Board (TSPCB). However, as in other states in India, grant-funded treatment plants are only required to report to TSPCB once every five years to renew the certificate for operation, which leaves the frequency of data collection entirely to individual programs. In contrast, publicly owned treatment plants are obligated to collect data each month for TSPCB. This highlights the need for national and state authorities across the country (CPCB and state PCBs) to tighten reporting requirements for non-publicly operated treatment plants, to ensure high and universal availability of treatment data for different types of plants.

#5

Commercial reuse of wastewater is not yet happening, and current data reporting is donor-driven.

Once the donor-supported programs end, continued reporting of reuse data will depend on existing national and state requirements. At the national level, Swachh Survekshan (SS) 2020 included an indicator on reuse/recycle of treated wastewater. This was expanded in SS 2021 to include the commercialization of reused wastewater. If maintained in the subsequent years of SS, this indicator could serve as an incentive for the city to speed up commercialization.

#6

The situation for sanitation financial data is relatively simple, as the city is currently entirely non-sewered and have limited sources of revenue and expenditure.

The applicable data areas have high levels of data available due to state and municipal budgeting requirements, alongside publicly accessible documentation from donor-funded programs.

Summary Table: Availability and Sustainability of Key Datasets Across the Sanitation Service Chain

| Sanitation service chain | Dataset area | Data collected? | Data is representative of the entire city (for access) / covers all service providers (for emptying & conveyance)? | Periodically updated? |
|---|--|-----------------|--|---|
| Access & containment | Access: Individual Household Latrines (IHHL) | ● Y | Y | Updated every 10 years (last updated in 2011) |
| | | ● Y | N | Updated annually |
| | | ● Y | Y | Updated annually |
| | Access: Public and Community Toilets (PT & CT) | ● Y | N | Updated annually |
| | | ● Y | Y | Updated annually |
| | | ● Y | Y | Collected and updated fortnightly |
| | Access: Educational Institutions | ● Y | N | Updated annually (starting 2013) |
| | Access: Healthcare Facilities | ● Y | Y | Updated every 10 years (last updated in 2011) |
| Access/ Containment: Sewer Connection | N/A | N/A | N/A | |
| Containment: Non-sewered Sanitation (NSS) | ● Y | Y | Updated every 10 years (last updated in 2011) | |
| | ● Y | N | Collected daily, updated monthly | |
| Emptying & conveyance | Emptying (NSS) | ● Y | N | Collected daily, updated monthly |
| | Disposal at Treatment Plants (NSS)/ Decanting stations | ● Y | Y | Collected daily, updated monthly |
| Treatment | Treatment Quality | ● Y | N/A | Collected and updated monthly |
| Reuse | Reuse: Treated Effluent | ● Y | N/A | Updated monthly |
| | Reuse: Treated Biosolids | ● Y | N/A | Updated monthly |

- Institutionalized reporting
- National/State programmatic reporting
- Own activity
- Donor/ IFI program reporting
- National/State transfer
- Own revenue
- IFI/donor funding; Corporate Social Responsibility (CSR)
- Private sector; self-sustainable CBO activities

* In this summary table, references and sources have been removed to aid readability; however, full references and sources are provided in tables in the main body of the report

Data Across the Sanitation Service Chain

Achieving the Sustainable Development Goal (SDG) of ensuring safely managed sanitation for all will require accurate and up-to-date sanitation data at the city level to facilitate appropriate planning, management and decision making. This should encompass not only the typology and extent of sanitation access throughout the city, but also the management of waste from containment to emptying, transport, and treatment. However, for many cities including

Warangal, obtaining and maintaining sanitation data can be a significant challenge, resulting in gaps in data availability.

This section outlines two key data dimensions: the generation of datasets across the sanitation service chain which are critical for Greater Warangal Municipal Corporation's (GWMC) planning and decision-making; and the continued update of these datasets.

Overview of Data Availability and Gaps in Warangal

Table 1 summarizes the availability of datasets in Warangal mapped to the key data areas across the sanitation service chain, the coverage of each dataset, and the frequencies of update. In cases where more than one data source is available for the same indicator data point, each dataset is presented in a separate row.

Table 1: Overview of data availability and data sustainability across the sanitation service chain

| Sanitation service chain | Dataset area | Data collected? | Data is representative of the entire city (for access) / covers all service providers (for emptying & conveyance)? | Periodically updated? |
|---|--|------------------|--|---|
| Access & containment | Access: Individual Household Latrines (IHHL) | Y ¹ | Y | Updated every 10 years (last updated in 2011) |
| | | Y ² | N ³ | Updated annually ⁴ |
| | | Y ⁵ | Y | Updated annually |
| | Access: Public and Community Toilets (PT & CT) | Y ² | N | Updated annually |
| | | Y ⁵ | Y | Updated annually |
| | | Y ⁶ | Y | Collected and updated fortnightly |
| | Access: Educational Institutions | Y ⁷ | N ⁸ | Updated annually (starting 2013) |
| | Access: Healthcare Facilities | Y ¹ | Y | Updated every 10 years (last updated in 2011) |
| | Access/ Containment: Sewer Connection | N/A ⁹ | N/A | N/A |
| Containment: Non-sewered Sanitation (NSS) | Y ¹ | Y | Updated every 10 years (last updated in 2011) | |
| | Y ¹⁰ | N ¹¹ | Collected daily, updated monthly | |
| Emptying & conveyance | Emptying (NSS) | Y ¹⁰ | N | Collected daily, updated monthly |
| | Disposal at Treatment Plants (NSS)/ Decanting stations | Y ¹² | Y | Collected daily, updated monthly |
| Treatment | Treatment Quality | Y ¹³ | N/A | Collected and updated monthly |
| Reuse | Reuse: Treated Effluent | Y ¹² | N/A | Updated monthly |
| | Reuse: Treated Biosolids | Y ¹² | N/A | Updated monthly |

Data is available for all segments of the sanitation service chain in Warangal. Nevertheless, there are some gaps in the representativeness and frequency of update of the available data. From toilet access and containment to emptying, the few key datasets that are updated frequently do not cover the entire city, while those that are representative of the city are updated very infrequently.

The data coverage gap for toilet access in educational institutions is the most significant. Warangal relies entirely on the national Unified District Information on School Education Plus (UDISE+), a ministerial initiative that captures school sanitation access annually. Indicators collected include the number of separate toilets for boys and girls, availability of water in the toilets, and presence of a handwashing facility with soap. UDISE+ aims to cover all schools offering formal education in the country, but data is only available for the schools registered on the portal with internet access to fill out the reporting forms.

On the other hand, while the Census of India captures data from all public and private hospitals, clinics, and health centers, the data is updated only once every ten years. The central government implemented the National Health Mission from 2013 to 2020, which included data collection

on toilet access in healthcare facilities across the country. However, the scheme came to an end in 2020, and no other mechanism to collect data on toilet access in healthcare facilities has replaced it.

The dataset on emptying is collected through the FSSM Tracker, which is a mobile app developed by the Administrative Staff College of India (ASCI) to track the activities of desludging operators, from emptying to transport and disposal at the Fecal Sludge Treatment Plants (FSTP). In addition to functions such as GPS tracking and alerts, the app allows desludging operators to enter data on the containment unit once it is emptied, thus capturing data on household containment and the emptying service itself. While the FSSM Tracker is intended to cover all emptying services, the app is installed on the phones of truck owners, who is often not the person performing the actual desludging service. The driver hired by the truck owner to perform the services is hence often unable to record containment data or be tracked. To tackle this issue, **there is a need for GWMC to establish by-laws and rules to ensure compliance with recording data on emptying services**, regardless of whether the city continues to use the app or adopts another mechanism for collecting emptying data.

Motivation for Data Collection/ Collation

Understanding the underlying factors driving data collection provides critical context and insights that helps evaluate data reliability, identify stakeholders, and reveal why some data areas are prioritized or neglected. Decision

makers can therefore make more informed choices about data-driven policies and programming. This section delves into Warangal's sanitation datasets and explores the motivations behind them.

Warangal's Sanitation Related Administrative and Reporting Structure

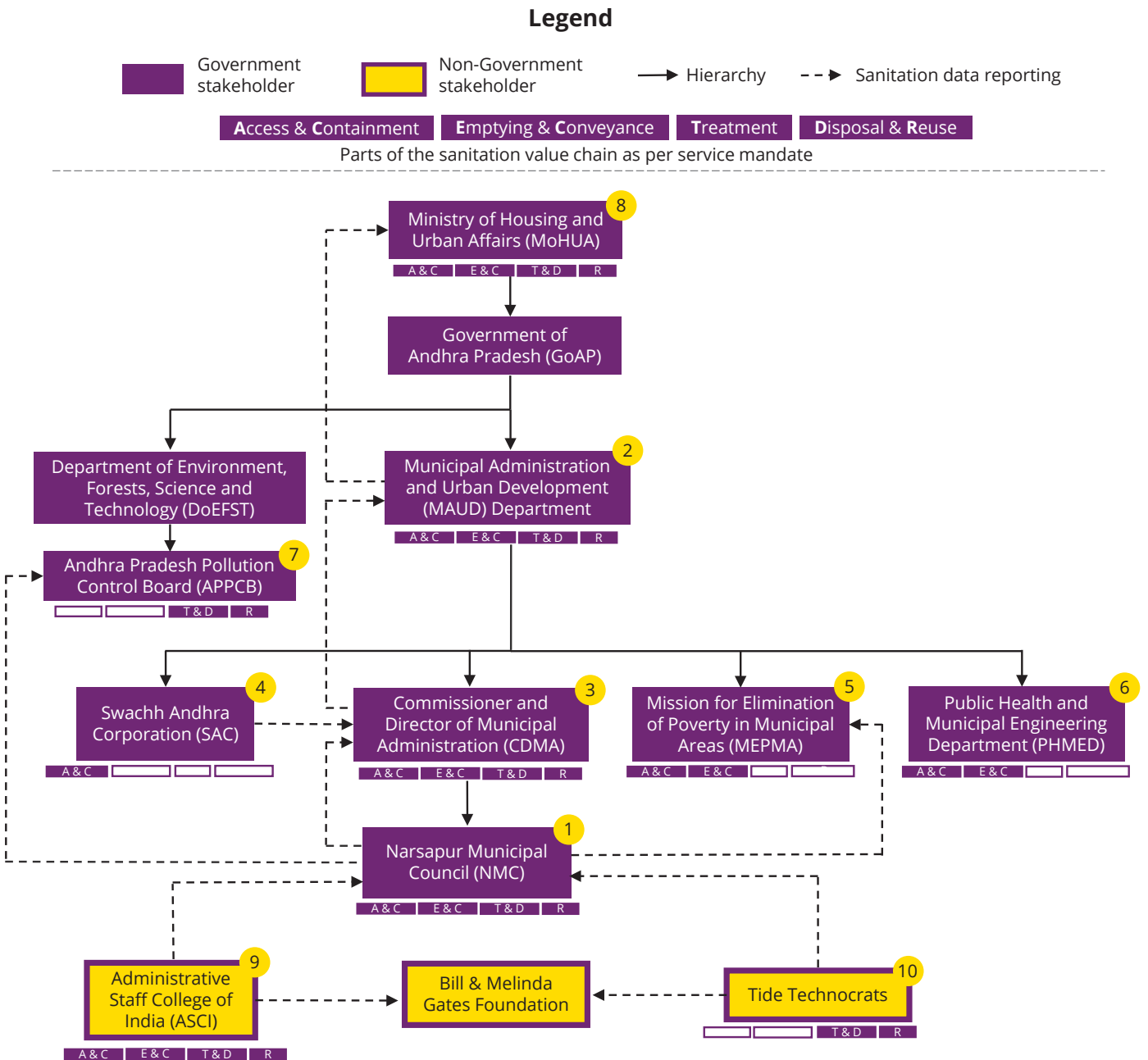
Figure 1 below summarizes the mandate and key activities of various stakeholders involved in sanitation (both government and non-government) together with the reporting structure. A high-level overview of the city's governance structure with respect to sanitation mandate and accountability is also available in the Warangal CWIS Snapshot ([link](#)).

GWMC is the local authority responsible for sanitation service provision in Warangal, and its mandate is defined by the Telangana Municipalities Act of 2019. Figure 1 shows that GWMC is the focal point for all sanitation data generation and exchange in the city. GWMC submits most of its sanitation performance data to the Commissioner and Director of Municipal Administration (CDMA), except for treatment quality data which is reported to the Telangana State Pollution Control Board (TSPCB). Additionally, GWMC also reports on sanitation conditions among the poor to the Mission for Elimination of Poverty in Municipal Areas (MEPMA), a parastatal agency which works to improve the quality of life of the vulnerable.

Sanitation performance data across all ULBs in the state is aggregated and reported to the Ministry of Housing and Urban Affairs (MoHUA). MoHUA designs sanitation related policies, guidelines and programs to be implemented across all states and cities in India.

At the city level, GWMC has established a Non-Sewered Sanitation (NSS) Cell to implement and sustain FSM interventions, with support from ASCI. Additionally, programs funded by donors or organizations through their Corporate Social Responsibility (CSR) initiatives are implemented directly by these organizations or through their local support partners and contracted private parties. Hence, sanitation data generation in Warangal as of 2021 is a result of national requirements, state programs, municipal activities and needs, or donor/CSR-driven program requirements.

Figure 1. Sanitation related administrative and reporting structure in Warangal



- 1 NMC is the primary stakeholder with the responsibility to implement sanitation activities in the city. It shares data on municipal functioning, SLBs/Swachh Survekshan/SBM with CDMA.
- 2 MAUD is the state authority which monitors ULB performance across the service chain. It guides the municipalities in performing their day to day activities in adherence to the policies and procedures.
- 3 CDMA is the apex authority of MAUD. In its supervisory role, CDMA monitors the functioning of the ULBs against key parameters such as the tax collections, project and civic works execution, implementation of the schemes of the Government etc.
- 4 SAC is the state-level unit launched in 2015 to work in tandem with the national-level SBM with the main objective to facilitate Andhra Pradesh become ODF. It conducts periodic evaluation of SBM progress and reports the comprehensive findings to the MAUD.
- 5 MEPMA is a parastatal agency which works towards eliminating poverty and vulnerability of the urban poor and thereby improving the quality of life. It collaborates with NMC on various programs related to slum sanitation.
- 6 PHMED is in charge of formulation, design and execution of water supply and sewerage schemes in all the ULBs besides the technical control over all the engineering works too. PHMED reports to MAUD.
- 7 APPCB is the state board responsible for the compliance of treatment plants to environmental laws, and monitors treatment quality and discharge of treated effluent. NMC shares data with APPCB, as and when requested.
- 8 MoHUA is the federal ministry under Government of India, with executive authority to issue policy guidelines relating to urban development. It reviews the sanitation performance of all ULBs, as submitted by the states.
- 9 ASCI is the lead implementing partner and the CWIS grantee for Narsapur. It works closely with NMC on capacity building, knowledge management and advocacy in the field of urban water and sanitation.
- 10 Tide Technocrats is the private player contracted by BMGF to operate and maintain an FSTP for 2 years, before NMC takes over the maintenance. Tide sends effluent discharge test results to NMC on a fortnightly basis.

Reporting Requirements and Data Generation

To further understand the influence of these various types of reporting requirements and needs, they have been classified into four categories: **1) institutionalized reporting**, which are inbuilt mechanisms of the overall government system and could include things such as the national census and routine regulatory reporting; **2) national/ state programmatic reporting**, which are initiatives of the national/ state government with a fixed timespan; **3) own activity**, which are collected entirely for the city's own operational purposes and needs and not reflected in other national/state/ donor-driven reporting processes; **4) IFI/ donor program reporting**, which are collected and reported for IFI/ donor driven programs.


It is worth noting that even though type 2) programs may also receive financial support from IFIs/ donors, the agenda is mostly driven by the national/ state governments. On the other hand, some of the datasets collected under IFI/donor supported programs may receive support from the service authority and be used by the service authority for other purposes once they become available, but only the data collection initiated by the service authority itself would count towards type 3).

Using this classification, Table 2 below shows the reporting requirement of each dataset presented in Table 1.


Table 2. Data generation as linked to data reporting requirements

| Sanitation service chain | Dataset area | Data collected? | Data is representative of the entire city (for access) / covers all service providers (for emptying & conveyance)? | Periodically updated? |
|--------------------------|--|------------------|--|---|
| Access & containment | Access: Individual Household Latrines (IHHL) | Y ¹ | Y | Updated every 10 years (last updated in 2011) |
| | | Y ² | N ³ | Updated annually ⁴ |
| | | Y ⁵ | Y | Updated annually |
| | Access: Public and Community Toilets (PT & CT) | Y ² | N | Updated annually |
| | | Y ⁵ | Y | Updated annually |
| | | Y ⁶ | Y | Collected and updated fortnightly |
| | Access: Educational Institutions | Y ⁷ | N ⁸ | Updated annually (starting 2013) |
| | Access: Healthcare Facilities | Y ¹ | Y | Updated every 10 years (last updated in 2011) |
| | Access/ Containment: Sewer Connection | N/A ⁹ | N/A | N/A |
| | Containment: Non-sewered Sanitation (NSS) | Y ¹ | Y | Updated every 10 years (last updated in 2011) |
| Y ¹⁰ | | N ¹¹ | Collected daily, updated monthly | |
| Emptying & conveyance | Emptying (NSS) | Y ¹⁰ | N ¹¹ | Collected daily, updated monthly |
| | Disposal at Treatment Plants (NSS)/ Decanting stations | Y ¹² | Y | Collected daily, updated monthly |
| Treatment | Treatment Quality | Y ¹³ | N/A | Collected and updated monthly |
| Reuse | Reuse: Treated Effluent | Y ¹² | N/A | Updated monthly |
| | Reuse: Treated Biosolids | Y ¹² | N/A | Updated monthly |

 Institutionalized reporting

 National/State programmatic reporting

 Own activity

 Donor/ IFI program reporting

As in many other Indian cities, ongoing data generation on toilet access in Warangal is largely driven by the Census of India and two national sanitation programs: the Swachh Bharat Mission (SBM) and the Swachh Survekshan (SS). Beginning in 2014 with the goal to make India Open Defecation Free (ODF), SBM subsidizes the construction of new IHHLs and PT/CTs, with an MIS tracking progress across states and cities towards their toilet targets. Launched in 2016 as part of the SBM, SS is an annual survey of cleanliness across cities in India. **Of these three data sources, only the**

national census collects citywide representative data on toilet access across most residential and institutional categories (households, public/ community toilets-PT/CTs, and healthcare facilities) **and on different types of containment units**. Fortunately for Warangal, an additional dataset is available for PT/CTs through the recently launched state-wide Pattana Pragathi Toilet Monitoring System (PPTMS), which requires fortnightly updates on the conditions of all PT/CTs.

It is also worth noting that the census does not capture any data on educational institutions. The only dataset for Warangal on toilet access in schools is the Unified District Information on School Education Plus (UDISE+), which is collected directly by the Ministry of Education. However, sharing this data with city governments has been a challenge. While details about each school is available and accessible to the public through the ministry's website, the reports are aggregated at the state level and city governments do not have direct access to compiled data for their cities. **If the data collected from the schools could be collated at the city level and made available to the city governments, this could facilitate city-level planning and coordination,** reduce duplication of data collection initiatives, and maximize the use of the data collected.

While both SBM and SS require toilets to be connected to sewers, septic tanks (with or without soak pits) or twin pits to be considered "sanitary", data on toilets connected to each type of containment unit is either only partially captured or not collected at all. The SBM MIS into which all cities report does not include data fields that ask for the containment type of the constructed toilet. SS has included an indicator on containment since the 2019 survey, but it focuses on a binary classification of containment units into "closed" (sewers, septic tanks, twin pits) vs. "open" (all other) systems. Moreover, the SS data portal for city level self-reporting only asks for the number of households/ commercial establishments/ CT&PTs connected to sewers and the number connected to septic tanks to arrive at an aggregate number used to calculate the indicator 'score'. The datasets required for national level reporting alone are hence not adequate for understanding the situation of containment units in the cities.

Influence of Funding Sources on Data Sustainability

Sustaining sanitation datasets requires regular and frequent updating of sources, potentially causing significant strain to already stretched resources for city governments and utilities. Understanding the viability of sanitation data ecosystems requires consideration of funding sustainability

Warangal's Funding Sources for Sanitation

Warangal has multiple sources of finance for sanitation: own revenue (sanitation tax, water charges, property tax, vacant land tax, other user charges etc.), state-approved annual budget, grants (planned transfers from state and

While the FSSM Tracker App developed as part of a donor-supported program does offer an additional source for containment data, given the low level of desludging in the city and the challenges with tracking all emptying services, there is a long way to go from having a representative and up-to-date dataset on containment situations across the entire city.

Besides data collection on emptying, current data generation on treatment and reuse are also entirely driven by donor-supported program reporting. While the datasets are frequently reported for program monitoring by the donors, the frequency of regulatory reporting is a concern. As per the environmental regulations in India, treatment plants funded through grants or by the private sector are only obligated to conduct testing to obtain and renew the No Objection Certificate (NOC) once every five years. This requirement is more lenient compared with reporting requirements for publicly owned treatment plants, which are monthly. While the responsibility for maintaining the FSTP will likely be taken over by GWMC once the donor-led program ends, the current regulations imply that the frequency of data collection and reporting will depend entirely on requirements of the specific donor program until handover. To improve treatment data availability for grant funded treatment plants, **it is important that the national and state environmental regulatory authorities apply the same reporting requirement to all treatment plants.**

Similarly, an indicator on the reuse/ recycle of treated wastewater has been included in the SS 2020 and 2021 rounds to encourage reporting from all cities, yet the current reporting on reuse in Warangal remains driven by donor-supported programs.

and the impact that inevitable political, administrative, and fiscal changes might have on ongoing data collection and maintenance efforts. The following section seeks to overview the resourcing landscape for sanitation in Warangal, and consider its impact on data sustainability and future viability.

central governments, under various projects, programs and schemes); and donor/CSR funding. Table 3 provides a quick glimpse of the characteristics associated with each of Warangal's funding sources for sanitation.

Table 3. Sources of sanitation finance in Warangal

| | MoHUA (National level) | CDMA (State level) | GWMC (City level, own revenue) | BMGF (Donor, through ASCI as a TSU) | Banka Biolo (CSR) | WABAG (CSR) |
|--|---------------------------|-----------------------|--------------------------------------|--|-------------------------------|-------------------------------|
| CAPEX or OPEX | CAPEX | CAPEX | OPEX | Both | Both | Both |
| Grants or Loans | Grants | Grants | - | Grants | Grants | Grants |
| Infrastructure or Soft interventions | Both | Infrastructure | Both | Both | Infrastructure | Infrastructure |
| Recurring or program-linked | Recurring | Recurring | Recurring | Program-linked | Program-linked | Program-linked |
| Sewered sanitation (SS) or non-sewered sanitation (NSS) | NSS | NSS | NSS | NSS | NSS | SS (DEWATS) |
| Part of the sanitation value chain addressed | Access | Access | All parts of the service chain | All parts of the service chain | Treatment and Disposal/ Reuse | Treatment and Disposal/ Reuse |

Influence of Funding Sources on Sanitation Data

The sanitation funding sources presented above can be broadly classified four categories: **1) national/ state transfers**, all of which are classified as grants; **2) city's own revenue**; **3) IFI/ donor funding**, which can be grants or loans but are external sources and always linked to specific programs; **4) private sector or self-sustainable Community Based Organization (CBO) activities**, which

operate on a business model. Data collection in a city may be funded through several of these sources but not necessarily all of them. To understand how these funding sources affect sanitation data in Warangal in different ways and their implications for the continued update of datasets, Table 4 below further overlays Table 2 from Table 2 with funding sources.

Table 4: Overview of datasets as linked to funding sources

| Sanitation service chain | Dataset area | Data collected? | Data is representative of the entire city (for access) / covers all service providers (for emptying & conveyance)? | Periodically updated? |
|---|--|-------------------|--|---|
| Access & containment | Access: Individual Household Latrines (IHHL) | ● Y | Y | Updated every 10 years (last updated in 2011) |
| | | ● Y | N | Updated annually |
| | | ● Y | Y | Updated annually |
| | Access: Public and Community Toilets (PT & CT) | ● Y ² | N | Updated annually |
| | | ● Y ⁵ | Y | Updated annually |
| | | ● Y | Y | Collected and updated fortnightly |
| | Access: Educational Institutions | ● Y | N | Updated annually (starting 2013) |
| | Access: Healthcare Facilities | ● Y ¹ | Y | Updated every 10 years (last updated in 2011) |
| | Access/ Containment: Sewer Connection | N/A | N/A | N/A |
| Containment: Non-sewered Sanitation (NSS) | ● Y ¹ | Y | Updated every 10 years (last updated in 2011) | |
| | ● Y | N | Collected daily, updated monthly | |
| Emptying & conveyance | Emptying (NSS) | ● Y ¹⁰ | N | Collected daily, updated monthly |
| | Disposal at Treatment Plants (NSS)/ Decanting stations | ● Y | Y | Collected daily, updated monthly |
| Treatment | Treatment Quality | ● Y | N/A | Collected and updated monthly |
| Reuse | Reuse: Treated Effluent | ● Y ¹² | N/A | Updated monthly |
| | Reuse: Treated Biosolids | ● Y ¹² | N/A | Updated monthly |

- Institutionalized reporting
- National/State transfer
- National/State programmatic reporting
- Own revenue
- Own activity
- IFI/donor funding; Corporate Social Responsibility (CSR)
- Donor/ IFI program reporting
- Private sector; self-sustainable CBO activities

This layering reveals further nuances associated with sanitation data availability and sustainability. The SS dataset covers the entire city and is seemingly more comprehensive than SBM MIS data, which only captures new toilets constructed under the scheme since 2014. In reality, however, the lack of central funding for city self-reported data under SS means that new data collection is limited. As cities must rely on their own revenue to generate and report the data, data collection rarely happens every year. Most cities across the country resort to using a combination of existing data sources—for toilet access data, for example, this means that cities usually use the Census 2011 data as a basis and add the increment captured under SBM to obtain overall access. The data points tend to leave out toilets constructed between 2011-2014 and those constructed outside of SBM.

On the other hand, SBM is funded by program-linked transfers from national and state governments, with a contribution from the city as well. While the state and city shares of the subsidy contribution are entirely reserved for the CAPEX of new toilets, funds allocated by the national government additionally cover city-level administrative costs (disbursed to the state, which then disburses the amount to the city), including those associated with data collection.

Regarding datasets generated from donor-funded programs (i.e., containment and emptying data from the FSSM Tracker, and all treatment and reuse data), sustainability will be a significant challenge when the program funding ends. While monitoring for the FSSM Tracker app is being done by GWMC's own staff with support from ASCI, the exit strategy for continued data collection through the app is unclear. For treatment, as GWMC plans to take over the FSTPs after the grant period ends, continued data collection might be less of an issue thanks to state regulatory requirements. Reuse data could also continue to be collected for SS, if the indicator is maintained.

Considering both reporting requirements and funding sources for datasets across the sanitation service chain, **the datasets that will most likely continue to be generated and updated in Warangal are the census data** (access and containment), **PT/CT data through Pattana Pragathi**, **UDISE+ data** (toilet presence in registered schools), and **treatment data** (treatment quality testing, collected monthly and reported annually). SBM data is likely to continue to be updated for another five years, and has the potential to generate more data in current data blank spots for Warangal, especially around household toilet access.

Data on Sanitation Finance

The generation and continued update of data across the sanitation service chain assists the service authority and accountability authorities to track progress, and plan programs and interventions for service improvement. Data on city-level finance for sanitation helps shed light on the cost-

effectiveness and financial sustainability of current sanitation service provision. However, sanitation finance data is often patchy or unavailable. Table 5 below summarizes the data available in Warangal in key financial data areas.

Table 5. Financial data availability for Warangal

| Financial Data | Dataset Area | Data Collected? (Yes, No, Not Applicable, Unknown*) |
|---|---|--|
| Revenue | Total annual sewerage/ sanitation fees (collected on water bills) for the city | Y ¹⁴ |
| | Disaggregation of sewerage/ sanitation fees (on water bills) for sewer vs. non-sewered households, if the city has sewers | N/A |
| | Sanitation surcharge (on water bills) for sanitation improvement interventions | N/A |
| | Sanitation tax as part of property tax/ water bills/ independently for service provision | N/A |
| | Total annual revenue generated from PT & CTs owned and operated by the service authority, if user fees are charged | N/A |
| | Total desludging revenue to service authority from HHs and/or institutions (for services directly provided by vehicles owned and operated by the service authority) | N/A |
| | Total annual tipping fees from desludging operators | N/A |
| | Fees from private players contracted to operate PT & CTs / treatment plants, including license fees | N/A ¹⁵ |
| | Fines and penalties (for illegal sewer connections and drains, FS leakage/ spillage, etc.) | U ^{*16} |
| | Sales of treated effluent and biosolids | N/A |
| Expenditure | CAPEX for each treatment plant | Y |
| | Annual O&M cost for each treatment plant | Y |
| | CAPEX for the sewer network | N/A |
| | Annual O&M cost for the sewer network | N/A |
| | CAPEX for PT/CTs owned by the service authority | Y |
| | Annual O&M cost for PT/CTs owned by the service authority | Y |
| | CAPEX for desludging vehicles owned by the service authority | N/A |
| | Annual O&M cost for desludging vehicles owned by the service authority | N/A |
| | CAPEX for transfer/ decanting stations (incl. mobile transfer stations) | N/A |
| | Annual O&M cost for transfer/ decanting stations (incl. mobile transfer stations) | N/A |
| CAPEX for any other assets owned by the service authority | N/A | |
| Annual O&M cost for any other assets owned by the service authority | N/A | |
| Direct Subsidies | Direct HH subsidies provided by the service authority for toilet & containment | Y |
| | Direct HH subsidies provided by the service authority for emptying | N/A |

* Cannot be deduced from publicly accessible sources.

The situation of financial data for Warangal is relatively simple, as the city is currently entirely non-sewered and has limited sources of revenue and expenditure. The only sanitation-related revenue source for GWMC is the sanitation tax collected through water bills. GWMC does not own any desludging vehicles and all emptying in the city is carried out by private operators; neither is any tipping fee charged to the operators. All CTs in the city have been constructed by GWMC and are operated and maintained by the communities themselves through Self Help Groups (SHGs) that report to GWMC; GWMC contributes to part of the compensation of these SHGs and

budgets the expenditure. Meanwhile, all PTs have been constructed through Design-Build-Finance-Operate-Transfer (DBFOT) PPP models, in which private operators are operating and maintaining the PTs without any financial transactions with GWMC.

The data areas that are applicable to Warangal have good amounts of financial data available due to state and municipal budgeting requirements and practices, and public records from donor-funded programs. Data on toilet subsidies is also available due to the national SBM documenting practices.

Notes

- ¹ Collected under the Census of India. The data collection and update are funded by the national government.
- ² Collected by cities and reported through the Swachh Bharat Mission (SBM) MIS. This data is collected for the national SBM programmatic reporting. Data collection and update are funded through the mission itself.
- ³ SBM started in 2014/15 and only tracks new toilets that have been constructed under the scheme.
- ⁴ SBM specifies all cities to follow a monthly online update; however, this is not consistently followed by all cities. A strict annual update is done at the end of each year, before submitting to the higher (state-level) authorities.
- ⁵ Collected under the Swachh Survekshan (an annual national cleanliness survey). The SS data contains a component of ULB self-reported data, which is funded by the ULB's own revenue; and components of independent third-party validation and citizen feedback, which are funded by the national government. The ULB self-reported component is the main source of data, whereas the other components only serve validation purposes.
- ⁶ Collected under the recent initiative - Pattana Pragathi Toilet Monitoring System (PPTMS) by the sanitary inspectors, using an application. The data is to be reported by all cities to the state Department of Municipal Administration and Urban Development, using funding from the state government.
- ⁷ Collected under the Unified District Information on School Education Plus (UDISE+). All registered schools input information into a portal designed for data reporting. The data collection and update are funded by the national government.
- ⁸ Though UDISE+ has the mandate to collect data from all formal schools, data is available only for those that are registered and have internet access.
- ⁹ There is no sewer in Warangal. WABAG, which is a multinational company that focuses on water and wastewater treatment, has used its CSR funds to build a decentralized wastewater treatment system (DEWATS) for a slum in Warangal. The project is currently under implementation. Once operational, WABAG will cover the OPEX for a year.
- ¹⁰ Collected via the FSSM Tracker App, which was developed through donor funding to track live movement of private desludging vehicles, from emptying to transport and disposal of fecal sludge at the FSTP. The truck operator is also supposed to enter data on the containment unit that is desludged.
- ¹¹ While the App is intended to track all emptying services in the city and record data on the containment units desludged, the truck driver performing the desludging service is often not the truck owner, on whose phone the App is installed. Hence the data cannot be recorded in these cases.
- ¹² Collected via the FSTP logbooks.
- ¹³ Collected by Tide Technocrats (private FSTP operator contracted by BMGF) and Banka Biolo (CSR initiative). Warangal currently has two adjacent FSTPs, both of which were established using grant funding. Collected data is also shared with GWMC. GWMC has decided to allocate funds to support the OPEX of the two FSTPs, once the grant period ends.
- ¹⁴ A 2% sanitation tax is collected as part of water bill for all households with water supply connections.
- ¹⁵ GWMC contracts out PTs to private operators, who collect user fees and take care of the O&M. GWMC does not receive any license fees from the contractors.
- ¹⁶ Spillage from the desludging vehicles can be fined. However, monitoring and enforcement of compliance is unclear.

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