CWIS | CITYWIDE INCLUSIVE SANITATION

NARSAPUR

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Leadership through Learning

NARSAPUR
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 Narsapur where the Administrative Staff College of India (ASCI) is the lead implementing partner. This city snapshot outlines the pathway that Narsapur 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	Narsapur was upgraded as a 1st grade municipality in 2001. It consists of 31 wards and 48 slums in an area of 11.52 sq. km. All information and statistics in this snapshot are based on the same administrative boundary.
	Population	58,901[1]
	% of population living in informal settlements	61%[2]
Geographic	Topography	Average elevation of the city is 2 meters. It is located on the right bank of the Vasishta Godavari River and also near the delta region.[3] It is vulnerable to cyclones, and flooding, especially slums that are located in the low-lying areas beside the river and its channels that run through the city. Insanitary conditions in these areas pose huge risks of contaminating the river, which is the city's main water source.
	Groundwater table	The average groundwater level in the city is 14.3 meters below ground level.[4] The soil in the region is predominantly sandy and slack cotton soils and delta soils. High water table, coupled with sandy /porous soil near the riverbanks, pose high risk of groundwater contamination, due to infiltration of contaminants from unsanitary onsite sanitation systems.
Basic Sanitation Statistics (as of 2020)	% of population practicing open defecation	0%
	% of population relying on onsite sanitation	100%[5]
	Treatment hardware (capacity) and utilization	1 Fecal Sludge Treatment Plant (FSTP) with 15 KLD operational capacity, 33% of which is currently utilized.

[1] Census 2011

[2] Census 2011

[3] Draft DPR for implementation of Municipal Solid Waste Management in ULBs in Andhra Pradesh for Zone-II under East and West Godavari, 2016.

[4] As per the real-time groundwater level monitoring system setup by Government of Andhra Pradesh, available at http://www.apsdps.gov.in/gw_status.jsp?s1=5
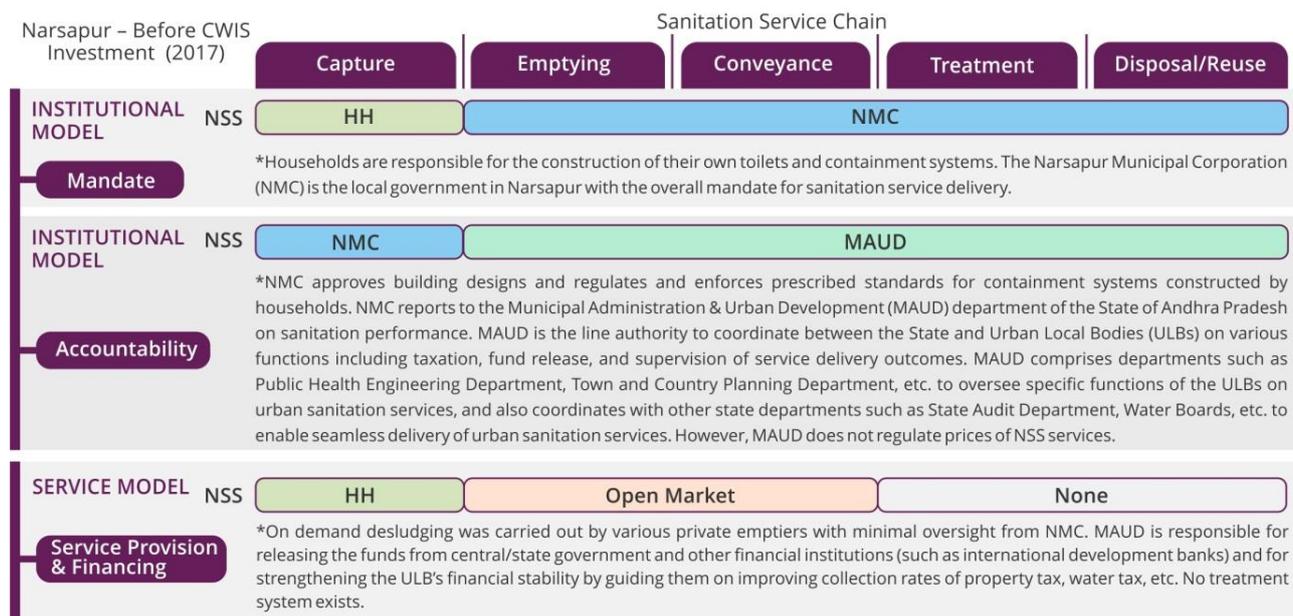
[5] ASCI, 2020.

2. Institutional and Governance Framework of City Sanitation Service Delivery

The graphics below show the institutional mandate, accountability and service provision models for Narsapur 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— Responsibility[6], Accountability[7], and Resource Planning/ Management (financing framework)[8]. 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 Narsapur, the main change during the course of the CWIS program 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. In addition, all desludging operators have been registered and licensed, allowing the municipality more oversight over desludging service provision.
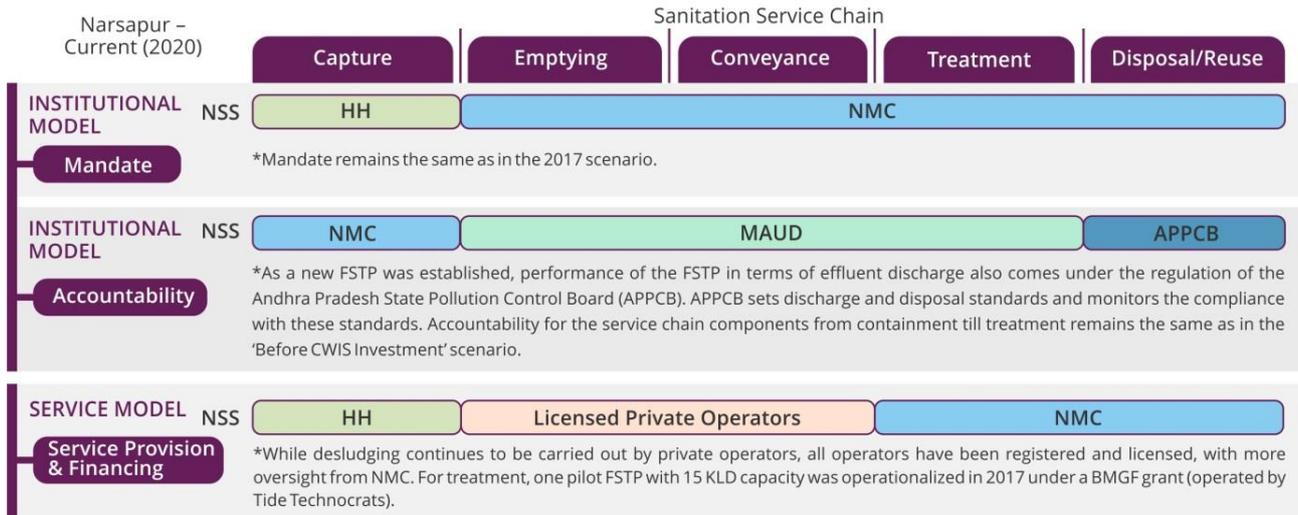
Legends: SS - Sewered Sanitation; NSS - Non-Sewered Sanitation

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6 Responsibility means that authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.
7 Accountability means that authorities' performance against their mandate is monitored and managed with data, transparency and incentives.
8 Resource Planning/ Management means that resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space.

Sanitation Service Chain

Narsapur – Current (2020)	Capture	Emptying	Conveyance	Treatment	Disposal/Reuse

INSTITUTIONAL MODEL — NSS

HH	NMC

Mandate

*Mandate remains the same as in the 2017 scenario.

INSTITUTIONAL MODEL — NSS

NMC	MAUD	APPCB

Accountability

*As a new FSTP was established, performance of the FSTP in terms of effluent discharge also comes under the regulation of the Andhra Pradesh State Pollution Control Board (APPCB). APPCB sets discharge and disposal standards and monitors the compliance with these standards. Accountability for the service chain components from containment till treatment remains the same as in the 'Before CWIS Investment' scenario.

SERVICE MODEL — NSS

HH	Licensed Private Operators	NMC

Service Provision & Financing

*While desludging continues to be carried out by private operators, all operators have been registered and licensed, with more oversight from NMC. For treatment, one pilot FSTP with 15 KLD capacity was operationalized in 2017 under a BMGF grant (operated by Tide Technocrats).

3. List of CWIS Interventions

This section seeks to capture Narsapur'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)[9] used to gauge changes towards CWIS, followed by another table detailing the scenario in Narsapur. The KPIs EQ-1 and SF-1 specifically follow the definitions as laid out in the Shit Flow Diagram (SFD) manual[10].

KPIs for Interventions

	Equity _Services reflect fairness in distribution and prioritization of service quality, prices, and deployment of public finance/ subsidies_	Safety _Services safeguard customers, workers, and communities from safety and health risks—reaching everyone with safe sanitation_	Sustainability _Services are reliably and continually delivered based on effective management of human, financial and natural resources_
Service Outcomes	• **EQ-1**: % safely managed sanitation in low income areas o % wastewater (WW) contained o % supernatant (SN) contained o % FS contained o % 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	• **SF-1**: % safely managed sanitation o % WW contained o % WW contained delivered to treatment o % SN contained o % FS contained o % FS emptied (contained + not contained) o % wastewater treated o % FS treated • **SF-2**: Health and safety standards and SOPs exist to protect sanitation workers from occupational hazards, and compliance is monitored	• **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 _Authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all._	**Accountability** _Authorities' performance against their mandate is monitored and managed with data, transparency and incentives._	**Resource Planning/ Management** _Resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space._
System Functions	• **RS-1**: Policy mandate for service delivery covers both sewered and non-sewered sanitation across the entire sanitation service chain o Mandate has no exclusions o Mandate is explicitly pro-poor o Mandate is gender intentional and inclusive of vulnerable groups	• **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	• **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

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[9] 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.

10 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.

Narsapur Scenario

The table below presents the scenario in Narsapur 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 way, 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.

<table>
<tr>
<th rowspan="2" colspan="2"></th>
<th>Equity</th>
<th>Safety</th>
<th>Sustainability</th>
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<td>

EQ-1: 0% safely managed sanitation in low income areas.

0% SN contained;[11]
39% FS contained;[12]
0% FS emptied.

EQ-2: Limited women's participation in sanitation related matters through SHGs.[13]
EQ-3: No gender friendly PT/CT exists.
EQ-4: No information on the status of social security and health insurance coverage for sanitation workers.

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SF-1: 0% safely managed sanitation.[14]

0% WW contained (no sewer network in the city);
0% SN contained;[15]
50% FS contained;[16]
70% FS emptied;
0% FS treated;

SF-2: Guidelines for safety of sanitation workers along the entire sanitation service chain exist at the state level[17]. NMC enforces these guidelines via licensing document for private operators and monitors compliance of the licensing terms. Sanitary inspector from NMC is responsible for monitoring the compliance of PPE usage by sanitation workers and carries out daily checks on the desludging operators in the city.

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SS-1: Not applicable (no treatment infrastructure).
SS-2: Not applicable.
SS-3: 100% of capital investment covered by government transfers for PT/CTs.
SS-4: 0% of O&M cost recovered for PT/CTs as no user charge is collected.

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<tr>
<td>Service Outcomes</td>
<td>Starting Scenario (2017)</td>
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[11] Supernatant (SN), partially treated effluent flowing from septic tanks, is discharged directly into open drains.

[12] This includes 29% of FS safely contained from septic tanks and 10% of FS safely contained from twin pits.

[13] Self Help Group (SHG) is a small voluntary association of people (usually composed of 10-15 women) from low income groups who come together to solve their common problem

[14] All data points are taken from the Narsapur City Sanitation Plan, 2017.

[15] Supernatant/effluent is considered for systems (septic tanks, fully lined tanks and partially lined tanks) which are either connected to an open drain, storm sewer or a centralized/decentralized sewer system. In the case of Narsapur, of all sanitation systems, 20% are IHHL septic tanks connected to open drains.

[16] This includes 20% of FS contained from IHHL septic tanks, 29.5% FS contained from pit latrines and 0.41% FS contained from septic tanks connected to community toilets.

[17] FSSM: Policy and Operative Guidelines for Urban Local bodies in Andhra Pradesh, 2017.

Reforms & Interventions		
• MEPMA[18] and ASCI conducted slum vulnerability mapping to capture information on physical and social infrastructure conditions of toilets in slums. • ASCI together with MEPMA created 31 gender forums, one in each ward, as information dissemination platforms for the sanitation workers' communities, women and vulnerable poor; ASCI institutionalized the Gender Resource Center (GRC) in MEPMA, run by volunteers from the gender forums, to connect community members to relevant departments in NMC. • NMC introduced equal representation of women in CSTF (previously an all-male group) and formed a gender sub-group to guide and support gender equality related interventions. • ASCI conducted workshops to inspire and train interested women to become masons and desludging operators in the city. 50 women were trained in these workshops. • ASCI conducted a gender friendliness audit of all the 16 CTs, 6 PTs and 31 government schools in 2019, resulting in NMC assigning a gender budget of INR 5,00,000 ($6611). This budget is earmarked to ensure financial sustainability for gender initiative in sanitation. • NMC provides sanitary pads and incinerators to all schools with adolescent girls via municipal and CSR funding.	• ASCI operationalized one FSTP-15 KLD based on pyrolysis technology (pilot project funded by BMGF grant). • NMC with support from ASCI began construction of a new 15 KLD WWTP using NMC's own funds. • ASCI supported NMC in developing guidelines on design of toilet superstructure and containment, and trained masons to construct safe containment units by converting insanitary toilets to sanitary toilets. • ASCI trained 144 sanitation workers and desludging operators on the MoHUA's SOP on Cleaning of Sewers and Septic Tanks (2018).	• Private FSTP operator (Tide Technocrats) is exploring the reuse potential for agricultural and brickmaking purposes. • ASCI engaged the private sector for PT management using a PPP model (Design-Build-Operate-Transfer) that includes defined service level standards for safe and financially sustainable services across the value chain (PT management, desludging services and for construction and O&M of FSTP, etc.). 2 PTs have been implemented under PPP.

[18] Mission for Elimination Poor in Municipal Areas, a parastatal agency in Andhra Pradesh which works towards eliminating poverty and vulnerability of the urban poor in a sustainable manner and thereby improving the quality of life.

	Target Scenario (2021 & beyond)	• **EQ-1**: 100% safely managed sanitation in areas occupied by LIC.[19] • **EQ-3**: All CT/PTs to be gender sensitive, with essential features such as safety and privacy, MHM and hygiene requirements, accessibility, maintenance, provision for caregivers and parents and design specifications and standard dimensions of toilet units for differently abled.	• **SF-1**: 100% safely managed sanitation and treatment of WW and FS as per the National Green Tribunal standards. • **SF-2**: 100% compliance with worker safety standards prescribed at the national level.	• **SS-1**: 20% of treated effluent is reused.[19] • **SS-2**: 20% of treated sludge is reused.[19] • **SS-4**: 100% O&M cost recovery for the FSTP.

System Functions	**Starting Scenario (2017)**	**Responsibility**
		
		• **RS-1**: NMC has the mandate for overall sanitation service delivery in Narsapur.
		  o Mandate does not explicitly mention pro-poor as a focus;
		  o Mandate does not explicitly mention the needs of women or other vulnerable groups.
			Accountability
			
			• **AC-1**: MAUD is the performance and environmental regulator for NMC; no economic regulation exists; no grievance redressal system in place.
			  o NMC's performance is assessed by three national level performance monitoring mechanisms: Swachh Bharat Mission (SBM) MIS, Swachh Survekshan (SS), Service Level Benchmarks (SLBs)
			• **AC-2**: Sanitation performance data is available only for toilet access and FS emptying, no data is collected for FS treatment.
			• **AC-3**: All cities in India are eligible for the 14th Finance Commission grant[20] contingent on meeting minimum performance threshold.
				Resource Management/ Planning
				
				• **RPM-1**: No dedicated budget for FSSM.
				• **RPM-2**: No dedicated staff for NSS.
				• **RPM-3**: NMC's investment decision making is based on evaluation of different technologies to meet service delivery gaps.
				  o Detailed financial analysis (including CAPEX and OPEX requirements and lifecycle cost analysis) is conducted for the technologies shortlisted;
				  o For the FSTP implemented, an environmental impact assessment was conducted in order to receive consent of implementation certificate from the state pollution control board.
				• **RPM-4**: An integrated citywide sanitation plan exists, covering blackwater, greywater, and solid waste management.

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[19] While there are no specific targets defined by NMC, 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). With respect to the reuse standards, while the SLBs have a specific focus towards reuse of sludge from the treatment of sewage, the same benchmarks have been extended for the reuse of treated biosolids and effluent from fecal sludge.

[20] 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.

Reforms & Interventions	• The State Government of Andhra Pradesh introduced the Andhra Pradesh Ward Secretariat Act, which enables decentralized governance through ward secretariats in the city. These secretariats are responsible for executing NMC's mandate in each ward. In Narsapur, 15 ward environmental and sanitation secretariats together with the ward women and weaker section protection secretary are responsible to focus on sanitation issues in their respective wards. Among these secretariats, 350 ward secretaries have been trained on FSSM subject.	• ASCI developed ICT tools and systems for the provision and monitoring of sanitation services.
		  o Maintain an FSTP logbook with notes on truck details, in addition to recording the truck plate number through an RFID scanner;
		  o Established S-line[21] (helpline) as a call center for desludging requests and for complaint redressal;
		  o Collect citizen feedback on PT through punching machines with 1-5-star ratings. PT monitoring app maintained by municipality for weekly monitoring;
		  o Fortnightly report on FSTP performance to Commissioner.
		• ASCI is conducting a GIS based sanitation situation assessment of the entire city to plan for scheduled desludging. This includes mapping of all the OSS in the city with the size of their containment units.
		• The State Government of Andhra Pradesh started two initiatives for grievance redressal—Puraseva and Spandana. Puraseva is a mobile app which enables citizens to avail information and seek grievance redressal for 91 municipal services (including sanitation); under the Spandana program, citizens can meet the municipal officials every Monday with their concerns.
			• NMC allocated 8.5% of the total municipality budget towards sanitation related activities for the year 2020-21, 10% of which is directed towards FSSM related O&M. ASCI worked with the Public Health Department of NMC to include FSSM and gender factor in the budget, which was initially focused mainly on solid waste management.
			• NMC and ASCI involve the gender sub-group of CSTF in planning decisions on construction of CT/PT, O&M of existing CT/PT, conversion of insanitary toilets to sanitary toilets and construction of gender inclusive CT/PT.
			• ASCI established a dedicated NSS cell to oversee the sanitation services and respond to the state government.

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[21] Sanitation Line - a dedicated sanitation helpline where trained staff support citizens on all aspects of septage management.

Target Scenario (2021 & beyond)	• **RS-1**: Within the existing mandate, more legal and regulatory tools as well as governance systems are in place for NMC to better execute its sanitation mandate	• **AC-1**: Citizen grievance redressal system for sanitation is in place, and performance data on grievance redressal is reported to MAUD. • **AC-2**: Sanitation related data is comprehensively collected and captured in an MIS.	• **RPM-1**: FSSM is introduced as a separate budget line item in the city government budget with annual enhancements. • **RPM-2**: Dedicated staff for NSS exists and 100% municipal sanitation workers (135) and private desludging operators (12 members) are adequately trained on FSSM to meet service delivery needs.

Acronyms:

SN- Supernatant
WW- Wastewater
WWTP- Wastewater Treatment Plant
FS- Fecal Sludge
ASCI - Administrative Staff College of India
NMC - Narsapur Municipal Corporation
GRC - Gender Resource Center
CSR- Corporate Social Responsibility
MAUD - Municipal Administration and Urban Development
IHHL - Individual Household Latrine
CT/ PT - Community Toilet/ Public Toilet
FSSM - Fecal Sludge and Septage Management
NSS- Non Sewered Sanitation
SHG - Self Help Group
FSTP - Fecal Sludge Treatment Plant
CSTF- City Sanitation Task Force
MEPMA - Mission for Elimination of Poverty in Municipal Areas
MHM - Menstrual Hygiene Management
MoHUA - Ministry of Housing and Urban Affairs
SOP - Standard Operating Procedure
PPP - Public Private Partnership
ICT- Information Communication Tool