Rapid assessment report Bhubaneswar

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List of abbreviations

Abbreviations	
ABR	Anaerobic Baffled Reactor
ADM	Additional District Magistrate
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AWW	Anganwadi Workers
BDA	Bhubaneswar Development Authority
BIS	Bureau of Indian Standards
BMC	Bhubaneswar Municipal Corporation
BOD	Biological Oxygen Demand
BSCL	Bhubaneswar Smart City Limited
BSS	Basic Safety Standards
CBO	Community Based Organization's
CDA	Bhubaneswar Development Authority
CDMO	Chief District Medical Officer
CFAR	Centre for Advocacy and Research
CHO	City Health Officer
BMC	Bhubaneswar Municipal Corporation
CPHEEO	Central Public Health and Environmental Engineering Organization
CSP	City Sanitation Plans
CSR	Corporate Social Responsibility
CSTF	City Sanitation Task Force
CT	Community Toilets
DEWATS	Decentralized Wastewater Treatment
DFO	District Forest Officer
DLRMC	District Level Review and Monitoring Committee
DMA	Directorate of Municipal Administration
DMF	District Mineral Foundation
DPR	Detailed Project Report
DUDA	District Urban Development Agency
DUSC	District Urban Sanitation Committee
FGD	Focus Group Discussion
FS	Faecal Sludge
FSM	Faecal Sludge Management
FSSM	Faecal Sludge and Septage Management
FSTP	Faecal Sludge Treatment Plant
GIS	Geographic Information System
HFA	Housing Finance Agency
HH	Households
H&UDD	Housing & Urban Development Department
ICMOC	Intelligent City Operations and Management Centre
IDI	In-depth interviews
IEC/BCC	Information, Education and Communication/Behavior Change Communication

Abbreviations	
IHHL	Individual HH Latrines
JICA	Japan International Cooperation Agency
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
J-PAL	The Abdul Lateef Jameel Poverty Action Lab
KL	Kilo L
LWSIT	Lutheran World Service India Trust
M+OG	Municipal area + Outgrowth area
MAS	Mahila Arogya Samiti
MHM	Menstrual Hygiene Management
MLD	Million Liters per day
MoU	Memorandum of Understanding
MoUD	Ministry of Urban Development
MSW	Municipal Solid Waste
m	Meter
NBC	National Building Code
NGO	Non-Government Organization
NULM	National Urban Livelihood Mission
NUSP	National Urban Sanitation Policy
O&M	Operations & Maintenance
OD	Open Defecation
ODF	Open Defecation Free
OISP	Odisha Integrated Sanitation Improvement Project
OSPCB	Orissa State Pollution Control Board
OUIDF	Odisha Urban Infrastructures Development Fund
OUSS	Odisha Urban Sanitation Strategy
OWSSB	Odisha Water Supply and Sewerage Board
PECUC	People's Cultural Centre
PHEO	Public Health Engineering Organisation
PIU	Project Implementing Unit
PKDA	Puri Konark Development Authority
PMU	Project Management Unit
PPE	Personal Protective Equipment
PPP	Public Private Partnership
PS	Principal Secretary
PT	Public Toilets
RfP	Request for Proposal
RWA	Residential Welfare Associations
SAAP	State Annual Action Plans
SBM (U)	Swachh Bharat Mission – Urban
SeTP	Septage Treatment Plant
SFD	Shit Flow Diagram
SHG	Self Help Group

Abbreviations	
SLIP	Service Level Improvement Plan
SPV	Special Purpose Vehicle
STP	Sewage Treatment Plant
SWM	Solid Waste Management
TC	Total Coliform
TSU	Technical Support Unit
TTS	Temporary Transfer Site
ULB	Urban Local Bodies
UHMD	Urban Health Mission Day
WATCO	Water Corporation of Odisha
WKS	Ward Kalyan Samiti
WSC	Ward Sanitation Committee
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Executive summary

With urban population of 7 million (Census 2011), the urban local bodies in Odisha are currently facing challenges of safe sanitation and effective Faecal Sludge and Septage Management (FSSM) in the form of significant public health and environmental risks. However, there is limited data and information on FSSM at state and city level which constraints programmatic interventions. In order to implement FSSM programme in the towns/cities, it is crucial to understand the existing practices, structure, regulatory framework, capacities, awareness level, and gaps in the FSSM value chain. A rapid assessment study was conducted to examine the current FSSM scenario and generate critical information to develop a roadmap for implementation of FSSM in Bhubaneswar city. In primary survey, convergent parallel mixed method approach comprising of both quantitative and qualitative methods was used to collect data.

Bhubaneswar was founded during the Kalinga Empire over 3,000 years ago and has a unique position by virtue of the ability to seamlessly integrate its rich cultural heritage with a strong regional economic base. Post-Independence, the modern city of Bhubaneswar, designed by German architect Otto Konigsberger in 1946, was established to shape the city in serving as an administrative centre for the state. Today, the city is an emerging hub for education, health and information technology. Bhubaneswar is the most populous city in the state of Odisha governed by the Bhubaneswar Municipal Corporation (BMC). It is also one among the two smart cities from Odisha. The City is part of a larger metropolitan region with former capital Cuttack. It has a growing IT and education hub. It is known as “Temple City” and is a popular tourist destination along with nearby Puri and Konark. The total Corporation area has been divided into 67 wards spread over 186 square km.

Table 0-1: -Key figures

Sl. No	Indicators	Data
1	Total Population	8,40,834
2	Slum Population	3,01,611
3	No. of households	2,04,056
4	No. of slum households	80,665
8	Gender ratio	890 females per 1000 male
9	No. of Slums	436
10	No. of PT	42
11	No. of CT	40
12	HH with toilets connected to septic tank	84,479
13	HH with toilets connected to pit latrines	19,998
14	HH with toilets connected to sewer	54,483
15	No of cesspool vehicle	8 vehicles owned by ULB 34 vehicles owned by private cesspool operators

The total water supply quantum to Bhubaneswar City is met from a combination of surface water and ground water sources in the region. Mahanadi, Daya and Kuakhai rivers supply over three-quarters of the total daily per capita requirement of potable water, while balance is obtained from groundwater sources such as open-wells and tube-wells. Around 35% of the population has water service connection while rest depend on other sources such as pumping wells, open wells, hand pumps, tube wells and municipal/private tankers. There is no sewage treatment plant in the city area but recently, the Odisha Water and Sewerage Board (OWSSB) has started working on developing the existing sewerage network and new treatment plant for the city,. Most of

the households have onsite sanitation with septic tank and pits. Collection of solid waste for 57 wards in the city is done door-to-door. There is no existing solid waste treatment plant in the city. The waste from the city is transported using compactor, tipper, dumper placer, covered tipper and tractor to the Temporary Transfer Site (TTS) and from there to Bhuasuni located 18 km from the city. As per BMC, the city has 1600 km of road network. The BMC and Works Department (R&B) are responsible for maintenance, construction of road network (city roads) and traffic management. Roads within the industrial areas are maintained by the Odisha Industrial Infrastructure Development Corporation (IIDCO)

The Odisha Urban Sanitation Strategy 2017 mandates the formation of a Ward Sanitation Committee in each ward of the ULB consisting of 11 to 15 members. Currently, there are 17 WSCs in the city. City has community based institutions under the National Urban Health Mission (NUHM) such as Ward Kalyan Samiti (WKS) in all wards under ULB and also Mahila Arogya Samiti (MAS) groups. Over 2000 Self Help Groups (SHGs) are functioning in various wards under the National Urban Livelihood Mission (NULM). There are more than 10 prominent NGOs actively working for the urban slum population and sanitation. Integration of all across various programmes would be very critical for successful implementation of sanitation and FSSM interventions.

The income budget and expense budget estimate for FY 2014-15 was INR 431 crore and 415 crore respectively. The total expenses of ULB in FY 2014-15 were INR 161 crore as compared to the income, which was approximately 244 crore in the same period. The major part of the income is generated through assigned revenue and compensation which is 32% of the total income. The budget estimate for grants for the year 2014-15 was INR 75 crore while the actuals were INR 79 crore. The revenue base of the municipality is weak and heavily dependent on state government fund as it contributes 30% to the total income. On the other hand the major part of the expenditure was due to revenue expenditure constitutes 29% of the total cost to BMC (INR 80 crore) that matches the budget estimate for revenue The key policies regulations and guidelines focused on FSSM are indicated below.

The state level stakeholders bring in new policies, reforms and innovation with regard to funding mechanisms, creating an enabling environment and providing opportunities for the ULBs to implement reforms in sanitation or urban development projects in the city levels. While state level stakeholders build strategies, ULBs are critical stakeholders to implement those strategies, policies and plans. Bhubaneshwar is uniquely positioned among AMRUT cities with political leaders particularly involved in city affairs. Moreover, one officer (BMC Commissioner) heading two critical bodies in the city viz. BMC and Bhubaneswar Development Authority (as Vice-Chairman). He is also the Managing Director of Smart City Private Limited. The current institutional arrangement for FSSM starts with AMRUT funds being made available to OWSSB which tenders construction (on Engineering Procurement and Construction mode) and five year O&M to private players. Cesspool trucks are procured from state

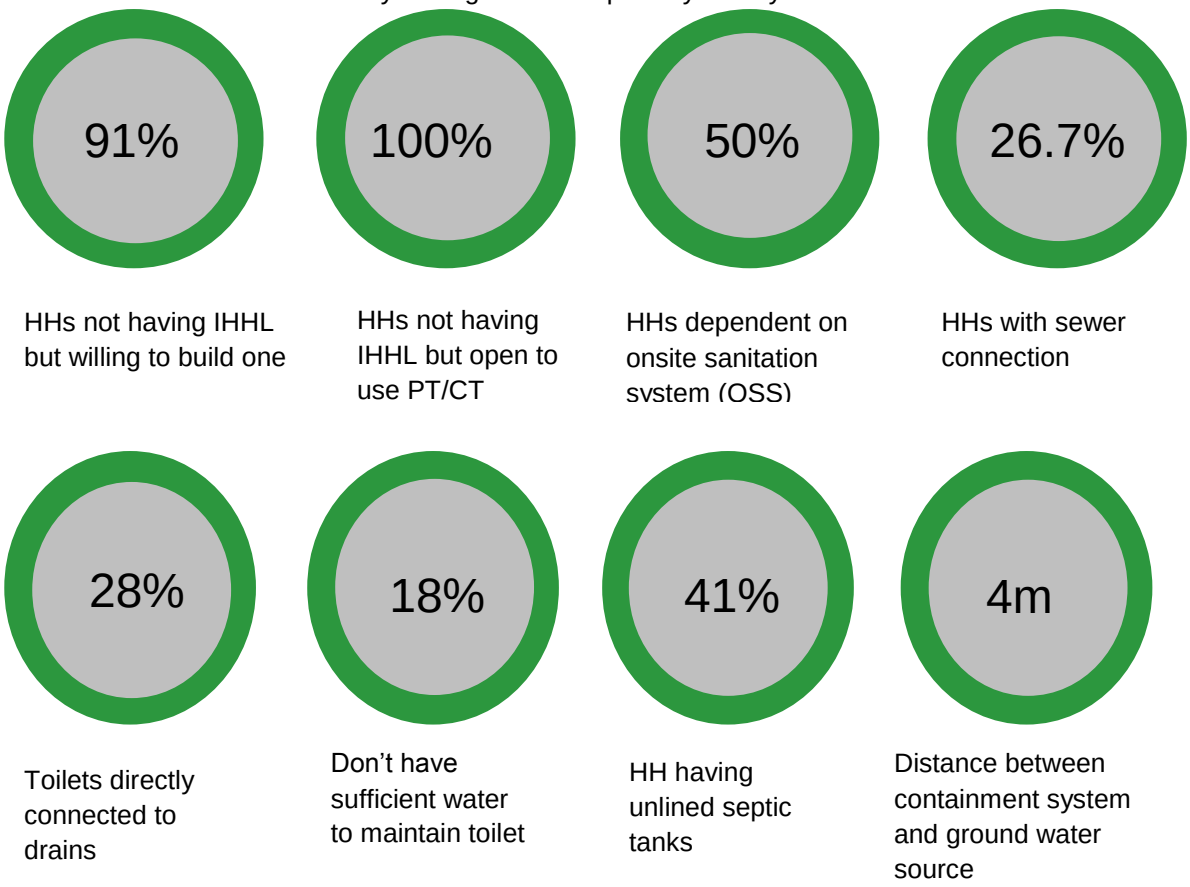
and transferred to ULB for O&M which in turn are tendered out to private players for seven year who are expected to meet operational expenses through service usage charges from households. BCC and capacity building activities are planned to be conducted through SBM funds. Remaining funds are to be allocated through convergence with schemes and departments such as Smart City, CSR council[1], National Urban Health Mission, National Urban Livelihood Mission and Labour Commission among others.

FSSM situation basis rapid assessment study is described hereunder

Toilet access and containment

As per Swachh Bhubaneswar Abhiyan (SBA) Cell, 16,953 out of 28,590 HHs who do not have access to individual toilets[2] are to be provided IHHL under the SBM based on status till May 2017. This leaves out 11,637 HHs or 58,185 citizens directly or indirectly dependent on CTs/PTs. Total 55 hybrid toilets[3] are allocated, among them, 50 toilet complexes are under progress.

A HH survey was conducted for a sample size of 780, to understand the sanitation situation in Bhubaneswar. Below are the key findings from our primary survey.



1 Recently the state government has formed the State Council of CSR under the Chief Secretary of Odisha to prioritize the CSR funds allocations and spending

2 Census 2011

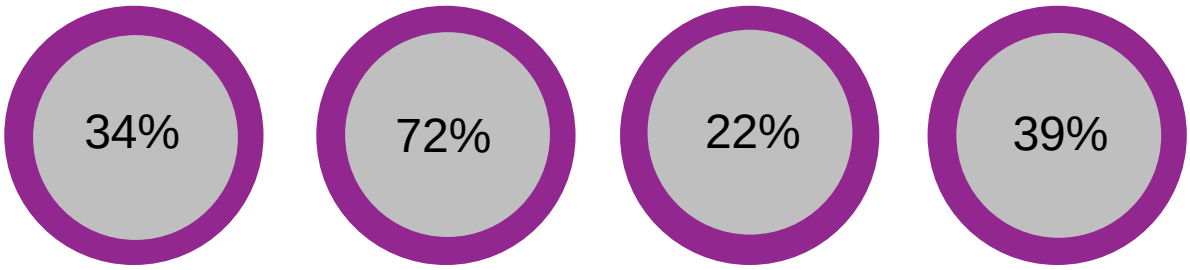
3 Hybrid toilets is a concept being derived from both community and public toilets, where both options of pay-per-daily use and/ or pay-per-month options are available.

Among slum HH using toilets, 37% have septic tanks, 42% have pit latrines and 26% toilets were directly connected to drain. There were some slum HHs wherein sewer lines were present. On the other hand, among non-slum HH, 21% have septic tanks, 21% were connected to sewer network, 30% have pit latrines and 8% toilets were directly connected to drain. Average distance between ground water source and containment system is 4m.Hence there is a high chance of ground water contamination resulting in huge health implication for citizens since majority on them are dependent on ground water. This could be corrected through focused communication with community and capacity building of masons as 90%HH sought advice from them for designing and construction of septic tank/pits.

People dispose solid waste into open drains causing clogging/ choking of drains. Drains carrying waste water over flows on roads due to this. Faecal matter directly through OD or indirectly through drains mix with water sources, resulting in ground water contamination – Health officer cum City Engineer

Emptying and transport

The current emptying capacity is 13.5 KL (3 vehicles of 4.5 KL carrying capacity each) which shall increase to 28.5 KL (additional 5 new vehicles having 3 KL carrying capacity each) with introduction of new vehicles at the ULB. Tendering is in process for new vehicles. Private players also provide service. 87% HH reported availing non-mechanized services. The gap could be due to vehicle inaccessibility due to narrow roads.New fleet of cesspool vehicles will have limited access to these HH due to vehicle width. ULB and other officials have also highlighted this issue. Interactions with ULB personnel handling cesspool emptying operations revealed that they are not aware of any regulation. Below are the key findings from our primary survey.



HHs which have not emptied septic tank for more than a year

Received services through non-mechanized methods

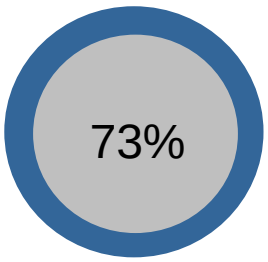
HHs with road width less than 2 meter

HHs paid more than INR 1,000 for OSS emptying

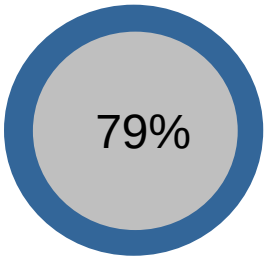
Treatment, re-use and disposal

Faecal waste is being dumped at solid waste dumping site. This activity is not monitored though. However, a new site for temporary disposal through deep row entrenchment is identified. A 75 KLD (Kilo Litre per Day) Septage Treatment Plant (SeTP) is proposed to treat faecal sludge. Construction has been started but the progress is slow. Currently, there is lack of monitoring mechanism to track dumping of faecal waste. [4]Potential for re-use of treated waste water and dried manure generated post treatment is not yet explored. Below are the key findings from our primary survey.

[4] Source: State Pollution Control Board (SPCB) during primary interaction



Contacted ULB for emptying service



HHs not aware where faecal sludge is dumped

There is a tripartite agreement between the ULBs (only AMRUT towns) in Odisha, H&UDD and the OWSSB. As per this agreement OWSSB shall be the financial and implementation intermediary on behalf of ULBs for urban infrastructures. Yet there is a need for an integrated approach. The OWSSB is constructing SeTPs and will take care of O&M until the facility is handed over to the ULB. But during primary interactions city and district level officials highlighted lack of awareness of activities on treatment plant. SeTPs and cesspool trucks are complimentary to each other but fall under the purview of different bodies. ULBs does not have

Awareness among citizens

- While 76% of the participants are aware that open defecation causes ill-health to their children, only 8% are aware that faecal contamination can cause malnutrition and 61% aware that it is one of the cause of jaundice.
- 20% of the households reported that Mahila Arogya Samiti (MAS) and 5% reported that Self Help Groups (SHGs) were creating awareness on sanitation
- Citizen's apathy, lack of participation and ownership for sanitation and hygiene was reported in FGD and IDI. Table 7-5

Based on the situation assessment, following are the interventions identified to improve FSSM situation. Interventions are divided into four thematic areas: Infrastructure related (including O&M, business models etc.), capacity building, governance reforms and IEC/BCC.

	**Toilet access and containment**	**Emptying and transport**	**Treatment, re-use and disposal**
Infra-structure (infra and O&M)	► Conversion of insanitary toilets to sanitary toilets by provision of scientific septic tanks can be prioritized ► Greater focus on CT, PT availability ► Explore sustainable O&M models incl. community led, private operators, micro enterprise led etc. ► Innovative models for O&M of these shared toilets (CT/PPT) to be explored while learning from practices adopted in other cities	► Optimize mechanized emptying fleet through mix of various types and sizes and also explore potential for transfer stations[5] which can help in collection and disposal through vehicles of various size. ► Operating models to increase penetration of mechanized services and make them affordable and available ► Pilot project using GPS technology tracking could	► Readiness of SeTP through construction to ensure provision of adequate facilities and efficient operations ► Provision for treatment of fresh sludge or undigested sludge ► Intermittent solutions like at the drain outlet point, interceptors or de-centralized treatment

[5] Transfer stations are intermediate points established to facilitate transfer of faecal sludge from smaller sized vehicles to larger ones to help efficient management of waste. This approach is also used for Solid Waste Management and also for FSSM in some cities of Africa.

	**Toilet access and containment**	**Emptying and transport**	**Treatment, re-use and disposal**
		be initiated in select wards to monitor usage of mechanized emptying services and check illegal dumping ► Explore potential for scheduled desludging	► Market for manure and treated water to be explored and included as part of the O&M contract to be defined for SeTP operator
Capacity building	► Capacity building of masons on design of scientific OSS including possibility of retrofitting or modifications in existing units ► Building capacity of CBOs such as MAS, SHGs and Ward Sanitation Committees to spread awareness on importance of scientific onsite containment system and importance of FSSM among households	► Strengthened monitoring at community level by building capacity of MAS, Ward Sanitation committee, CSTF and SHG to promote period emptying through mechanized emptying ► Capacitate ULB, parastatal and city officials through training in concept and program design to increase their involvement ► Exposure visits to learn leading practices	
Govern-ance reforms	► A regulatory set-up can be proposed for ensuring effective implementation of the Odisha septage management guidelines which mandates HHs to make it compulsory for all households to construct scientific OSS. ► Amendments could be made in ULB building bye-law to include provision of scientific containment of faecal sludge part of building approval process	► Effective implementation of the Odisha septage management guidelines which mandates HHs to clear out the septic tanks and strictly keep away from engaging manual scavengers. ► Implement provisions through ULB resolution of for emptying and transport activities. PPE usage to be made mandatory ► Explore potential for training and empanelment of cesspool emptying service providers	► Strong regulatory enforcement to stop open discharge from drains into the river ► Regulation at ULB level to enforce disposal of faecal waste at only designated site
	► Strengthening urban administration through participatory planning in city levels for integration with city planning and effectively escalate the issues to state levels through planning structures ► Restructuring the engineering department with added focus on environmental engineering ► Focus should be on zone and ward level interventions – a coordinated program and overall M&E at broader level ► Formalization of community level institutions such as CSTF, WSC in city system ► Service level scores in each wards including sanitation and its integration with CSPs		
IEC/BCC	► A communication campaign under SBM to motivate people to convert insanitary toilets to sanitary ones using incentive provided under SBM ► Disseminate information to citizens on Onsite sanitation system solutions available in market which are	► Communicate the harmful impact of non-mechanized emptying and indiscriminate dumping to relevant stakeholders - citizens, leaders, community groups, sanitation workers and ULB staff. Prepare community to build ownership on safe sanitation including ways by which we can help in building financial sustainability for FSSM services through interventions such as property tax or holding tax, sewerage charges among others. Also build their willingness to contribute towards paying for using well functional CT/PT through communication	

	**Toilet access and containment**	**Emptying and transport**	**Treatment, re-use and disposal**
	economical, retrofitable and quicker to implement	and effective operational models which reduce dependence on user fee. ► Identify ways to increase penetration of information to citizens on mechanized emptying service providers	

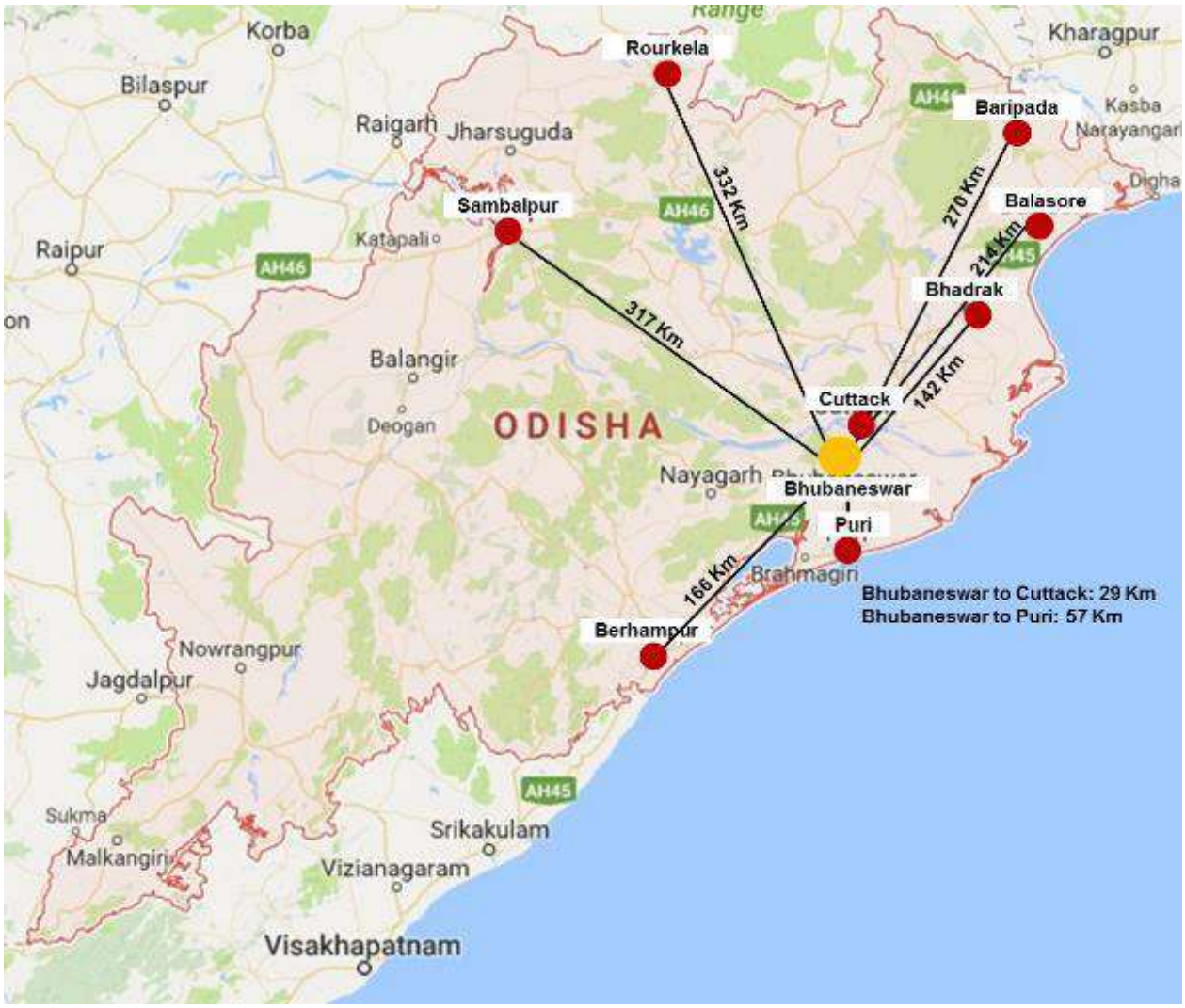
An implementation plan is also supplemented basis the key issues and related interventions as identified above during the rapid assessment. This plan shall focus on key milestones, activities, and identifying integration and dependencies across internal and external stakeholders to help steer FSSM programme in the city.

1 Introduction

1.1 Background and rationale of the study

The management of onsite sanitation remains a neglected component of urban sanitation and wastewater management. Only recently have national governments, cities, and wastewater utilities begun to address the management of septage or the sludge that accumulates inside septic tanks and other onsite sanitation systems. With urban population of more than 70 lakh (Census 2011) and statutory towns' population of 60 lakh, the urban local bodies in Odisha are currently facing challenges of safe sanitation and effective Faecal Sludge and Septage Management (FSSM) in the form of significant public health and environmental risks. Ernst & Young LLP (EY), with the support of Bill & Melinda Gates Foundation (BMGF) and at the request of Housing & Urban Development Department (H&UDD), Government of Odisha is currently working to improve the sanitation situation through effective FSSM in select towns of the state.

In consultation with H&UDD, the towns of Balasore, Baripada, Berhampur, Bhadrak, Bhubaneswar, Cuttack, Puri, Rourkela and Sambalpur were selected as these are covered under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the rivers close to these towns were polluted as per reports of the Odisha State Pollution Control Board (OSPCB)[6]. These towns depend on on-site containment systems along with the prevalence of open defecation.



[6] Odisha State Pollution Control Board report on water pollution, 2015

As per Census 2011, the Open Defecation (OD) rate for these towns have been outlined in the table below:

Table 1-1: -OD rate for 9 AMRUT towns

Town	No of households (Census 2011)	Open defecation by households (Census 2011)
Balasore (M+OG)	31,539	5,425
Baripada (M+OG)	26,079	6,807
Berhampur (MC)	73,335	8,580
Bhadrak (M+OG)	23,084	8,264
Bhubaneswar (McCourt Growth)	2,04,056	35,098
Cuttack (MC)	1,21,919	14,021
Puri (M)	40,369	6,096
Rourkela (M+OG)	71,368	19,412
Sambalpur (M+OG)	42,623	12,915

Source: Census 2011

Across the region, domestic wastewater has become the main contributor to the degradation of rivers, lakes and groundwater. Currently, there is limited data and information on FSSM at state and city level which constraints FSSM programmatic interventions. In order to implement FSSM programme in the towns/cities, it is crucial to understand the existing practices, structure, regulatory framework, capacities, awareness level, and gaps in the FSSM value chain among the key stakeholders. The rapid assessment study will assess the current FSSM scenario and generate critical information that will facilitate in developing a roadmap for implementation of FSSM in the nine AMRUT towns/cities. The rapid assessment reports are expected to generate a snapshot of the status of FSSM in nine AMRUT towns.

Objectives of the study

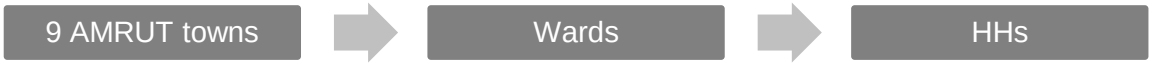
- To assess current practices of FSSM value chain
- To identify the current capacity building needs of stakeholders like Urban Local Bodies (ULBs), cesspool operators, masons, Community Based Organizations (CBOs), citizen groups.
- To assess the institutional structure for operationalization of the FSSM
- To assess the current level knowledge, attitude and practices of key stakeholders and community members with regard to FSSM to contribute to the programme design

1.2 Approach and methodology

The rapid assessment study has adopted the following quantitative and qualitative methods to collect information.

1. HH primary survey for HHs, institutions and commercial establishments on access to onsite sanitation system and practices (Annexure 1 – Questionnaire for HH Survey)
2. In-depth interviews (IDIs) with key stakeholders – Officials and elected representatives of ULBSs, officials from other government institutions like Odisha Water Supply and Sewerage Board (OWSSB), Public Health Engineering Office (PHEO), Odisha State Pollution Control Board (OSPCB) & service providers like cesspool operators, masons using semi structured IDI guide (Annexure 2 – Questionnaire for In-Depth)
3. In-depth interviews and Focus Group Discussion (FGDs) with citizen groups, Non-Government Organization (NGO), ULB-level Sanitation Committees, ward committees & other CBO. Semi structure approach was used for FGDs. (Annexure 3 – Questionnaire for Focused Group Discussion).

For identifying the representative samples, we adopted multi-stage sampling for all 9 AMRUT towns.



Sample size for Bhubaneswar

For the city of Bhubaneswar, 780 HHs were surveyed, three FGDs and 16 IDIs were conducted over the period of April to May 2017 (**Annexure 4** – In-Depth Interviews and Focused Group Discussion details). The quantitative data was analyzed using descriptive statistics and qualitative data using content analysis methods.

The analysis for sample size calculation for 9 AMRUT towns considering their Municipal area is given below:

Table 1-2: -Sample size for Bhubaneswar

City/Town Name	No. of HH	Wards	Required No of Wards	HH Required each city universe	%having latrine	Design effect	No of HHs surveyed
Bhubaneswar (MC)	2,04,056	67	30	736	80%	2	780

Sample size for wards in Bhubaneswar:

Multistage sampling strategies were followed for the selection of the HHs. In first stage, 30 out of 67 wards were selected using simple random sampling methods, and then 30 HHs from each ward were selected using systematic random sampling methods.

Sample size for HHs in Bhubaneswar:

In this assessment convergent parallel mixed method approach was used. Primary survey was conducted at HH level. Total HHs of the city was the universe of the study and HH was the sampling unit. Total number of HHs in Bhubaneswar city is 2, 04,056 (Census 2011). Sample size was calculated based on anticipated prevalence i.e. percentage of the HH having individual latrine (84%). The power 80%, 95% Confidence Interval (CI 95%) and design effect 2 was applied to the HHs having individual latrine to arrive at the number of HHs to be surveyed.

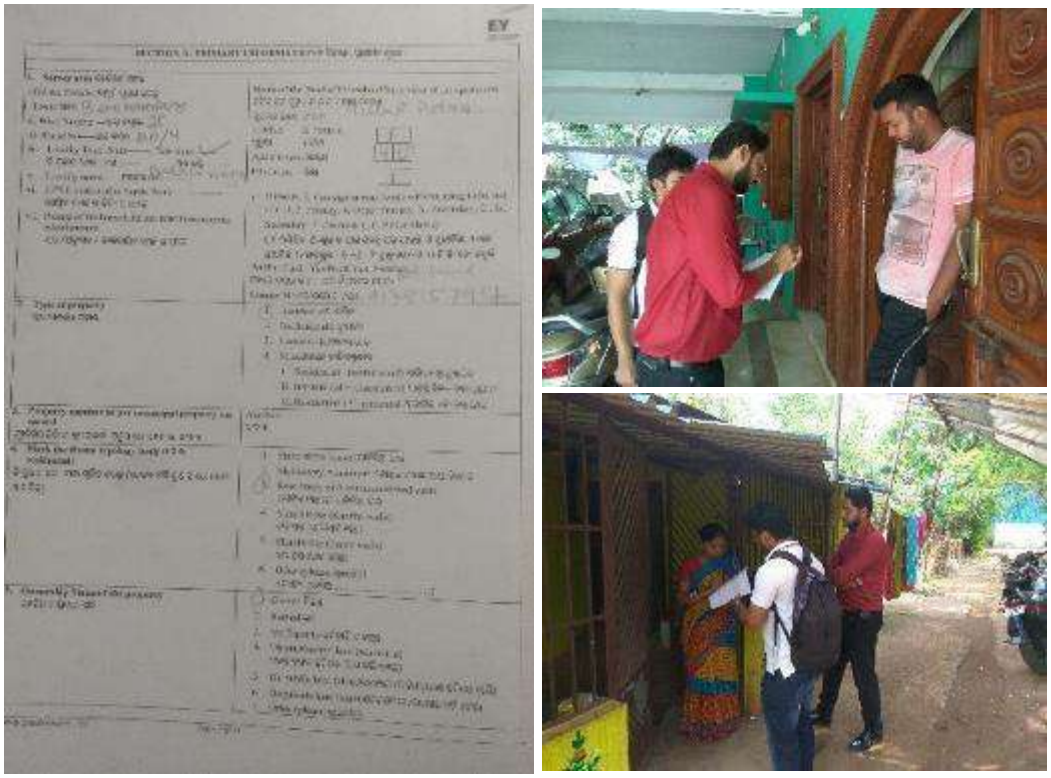
The formula used for calculating the sample size in open EPI info software is:

Sample size (n) = [DEFF*Np (1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)]

For Bhubaneswar, the required number of HHs calculated using the above mentioned statistical information and formula was 780.

Demographic information, HH access to sanitation facilities, septic tanks/pit related information and awareness on environmental and public health impact of sludge disposal and community engagement activities or each HH were collected using pre-designed questionnaire.

Figure 1-1: -HH Questionnaire and Survey



1.3 Limitations of study

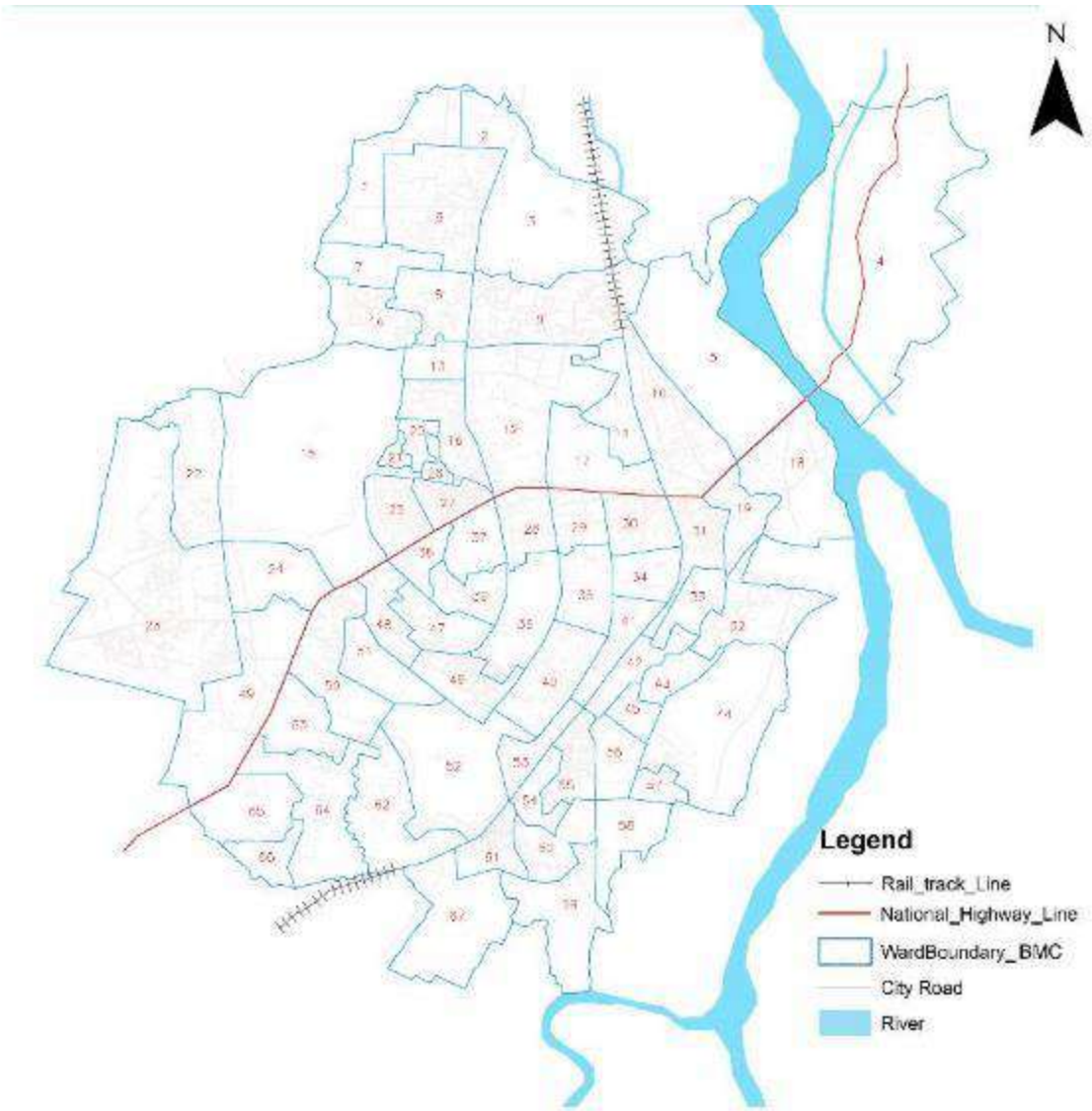
The rapid assessment of sanitation situation in the city of Bhubaneswar is performed in a period of two months, April to May 2017 with an intent to provide a quick overview of aspects relevant to sanitation and faecal sludge situation in a city and hence, can be limited in coverage.
Sample survey has its own limitations in terms of representative opinion which may not apply for general population. Sampling techniques explain the limitations in detail.
Storm water drainage is not being considered as part of the report since it is beyond the scope of FSSM. Study on FSSM is limited to pits and septic tanks while storm water drainage falls under liquid waste management.

2 City profiles

2.1 Location and regional settings

Bhubaneswar is the capital city of the State of Odisha. It has a long history of over 2000 years. The largest city of Odisha, Bhubaneswar today is a center of economic and religious importance in the region. Bhubaneswar is situated between 21° 15' North Latitude 85° 15' Longitude and at an altitude of 45 meters above sea level. Geographically, the city is situated in the eastern coastal plains of Odisha and south-west of the Mahanadi River. About 61% of the city is under extreme to moderate cyclone risk while 59% is under extreme to moderate urban flood risk. Almost 50% of the city is under extreme to moderate earthquake risk.

Figure 2-1: -Ward map of Bhubaneswar



Source: Bhubaneswar Municipal Corporation

2.2 Demography

The administrative jurisdiction of the BMC spreads over an extent of 186 sq. km. The entire municipal area is divided into 67 wards. The growth rate during 1991-2001 registered a 57.3% growth with

population of 6,47302. It is projected by 2030, Bhubaneswar will have population of about two million[7]. It was observed that the city had a population growth rate higher than that of state.

Table 2-1: -Key demographic indicators

Synod	Indicators	Data
1	Total Population	8,40,834[8]
2	Slum Population	3,01,611[9]
3	No. of HHs	2,04,056[8]
4	No. of slum HHs	80,665[9]
5	No. of non-slum HHs	1,21,208[9]
6	Average no. of person per HH	4.17
7	Gender ratio	890 females per 1,000 males

Source: Census 2011, BMC survey

2.3 Overview of sanitation situation in Bhubaneswar

Bhubaneswar is one of the planned cities in India. City's spatial growth is dumbbell-shaped with most of its growth taking place towards the North, North-East and South-West. Out of Bhubaneswar's total population of 8.40 lakh, 36% reside in slums where open defecation is a serious challenge. There are 436 slums, identified by BMC covering 80,665 households and 3,01,611 population. Insanitary toilets, open defecation, choked drains, solid wastes dump yards are especially prevalent in the slums leading to threat of water and vector borne diseases. The slum locations have been identified as open defecation spots by the BMC.

Most of the commercial establishments and institutions are located in the out-growths of the city and do not have access to sewerage treatment plants.

Both centralized sewer network system and onsite sanitation system co-exist in Bhubaneswar. The city largely depends on onsite sanitation system. Though there has been no outbreak of disease in the recent past, cases of jaundice, typhoid, cholera, malaria, dengue, etc. are found in different parts of the city. High OD and high rate of dependence on on-site sanitation is a critical feature of the city. While the city has about 80% of the HHs having access to individual latrines, most of them are connected to drains. The specific detail related to access to toilets, open defecation scenario and FSSM value chain is captured in Section 4: FSSM Situation Assessment.

Table 2-2: -IDI and FGD responses for sanitation situation in Bhubaneswar

Objective:	To understand key sanitation issues
Participants:	Sanitary Inspector (SI), City Health Officer (CHO), Councilor, City Engineer
Key observations:	• Solid waste management, • Open defecation practiced • Water contamination of ponds/lakes present near temples and contamination of open wells due to garbage disposal • Dumping of garbage disposal in open drains leading to clogging of drains. • Proper containment for toilets is not available. • Toilets and septic tanks connected to drains • Faecal waste is currently being dumped by cesspool vehicles in areas within the city like Chandrashekarpur and areas outside the city like Dumduma along with other open spaces, water bodies and storm water drains • High water contamination leading to recurring diseases like jaundice and diarrhea

[7] Slum free city plan of action under Rajiv Awas Yojana

[8] Census 2011

[9] BMC survey

Figure 2-2: -Insanitary HH toilet along with open drain

Figure 2-4: -IDI with CHO

Figure 2-3: -IDI with cesspool operator

2.4 Infrastructure facilities

2.4.1 Water supply

The total water supply quantum to Bhubaneswar City is met from a combination of surface water and ground water sources in the region. Mahanadi, Daya and Kuakhai rivers supply over three-quarters of the total daily per capita requirement of potable water, while balance is obtained from groundwater sources such as open-wells and tube-wells. It is imperative to briefly examine the availability and sustainability of the water sources that cater to the city's need of water:

- The present supply is reportedly covering 35% of the total population with per capita supply rate

of 248 LPCD[10] based on the population of Bhubaneswar.

- Surface water is available to a significant extent with Mahanadi being a perennial river. The availability, albeit being perennial, entails significant costs in transmission owing to its location which is approximately 30 km north of the city
- The total production capacity of the five treatment plants for the city is 230 Million Liters per day (MLD). About 223 MLD of water is being treated daily. Apart from surface sources, there are 336 production wells which supplement 42 MLD.
- Bhubaneswar city divided into 9 zones and 88 sub zones for water supply purpose.

Figure 2-5: -Barrage on Mahanadi River

Figure 2-6: -Intake pipes on Kuakhai River - Picture showing channel dug on riverbed to divert main flow

2.4.2 Sewerage systems

Bhubaneswar is partially covered with an underground sewage collection and conveyance system comprising trunk sewers, branch sewer lines and appurtenances (manhole). Though 33 % of urban area is covered by sewerage network, there is no treatment plant in Bhubaneswar. The disposal is irregular and mostly to open drains.

Table 2-3: -Sewage network components

Sr. No.	Indicators	Existing Service Level
1.	Coverage of latrines (individual or community)	80 %
2.	Coverage of Sewerage Network System	33 %
3.	Efficiency of collection of services	33 %
4.	Efficiency in Treatment Adequacy of sewerage treatment capacity	0 %

(Source: BMC)

At present, there is no systematic and organized method to collect and treat waste from septic tanks. Three cesspool emptiers of 4500L capacity and five Cesspool emptiers of 3000L capacity are available with the BMC. In most of the cases, septic tanks overflow either into nearby drains or open fields etc.

Decentralized waste treatment system has been planned for the city. Around 90 MLD sewage is generated in the city. Since no STP is there, no sewage is treated.

Table 2-4: -Details on upcoming SeTP

Planning & Design	Construction/ Implementation	O & M
Planning and design cell in OWSSB	Project team headed by divisional PE OWSSB supported by PMU and PDMC. There will be MoU between Municipal Corporation and State Government/ OWSSB for implementation.	O&M team headed by City Engineer of Bhubaneswar Municipal Corporation.

[10] Service Level Improvement Plan (SLIP) for Bhubaneswar, 2015

2.4.3 Solid waste management

Out of 67 wards in Bhubaneswar Municipal Corporation (BMC), 57 wards are grouped into four packages for the purpose of the solid waste management activities (municipal solid waste collection & transportation, conservancy cleaning, drain cleaning & de-silting). Three private agencies under Public Private Partnership (PPP) mode are carrying out the entire SWM (Solid Waste Management) activities in the privatized 57 wards (Table 2-5) on daily basis, which includes door-to- door garbage collection, street sweeping, MSW (Municipal Solid Waste) transportation, drain cleaning, drain de-silting, conservancy cleaning and bush cutting. In the remaining 10 wards, BMC is carrying out the SWM activities on daily basis. Tricycles are used for door-to-door garbage collection. Mixed wastes are collected from the HHs and transported to dumpsite. The staff involved in door-to-door waste collection are provided with vest, gloves and masks to protect from pollution. Approx. 520 tons of MSW is generated per day in Bhubaneswar.

Table 2-5: Door-Door Garbage Collection System in Bhubaneswar

Package	Wards	Operator for SWM activities	Package	HHs	Nos of Manpower involved in door-door garbage collection activity
I	1,2,6,7,8,13,14,15,22, 24,25,27,37,38,39.	M/s. Ramky Enviro Engineers	I	41691	645
II	3,10,11,12,17,18,19,23,28, 30, 31, 34, 35, 36.	M/s. Jagruti Welfare Organization	II	43942	700
III	40,41,46,47,48,49,51,52, 53,62,63,64,65,66.	M/s. Jagruti Welfare Organization	III	40424	672
IV	32,33,42,43,45,54,55,56, 57,58,59,60,61,67.	M/s. PMR Consortium	IV	42341	561
BMC Managed	4,5,9,16,20,21,26,29,44,50	BMC	BMC Managed	33475	712

BMC has deployed adequate number of tri-cyclers, trollies, auto-tippers and 120-240 liters of bins for door-to-door collection of garbage.

Figure 2-7: -In spite of bins, waste is littered around it.

Table 2-6: - IDI and FGD response on solid waste scenario in Bhubaneswar

Objective:	To understand the solid waste scenario
Participants:	SI, SBM in charge, CHO

Key observations:	• The waste is directly disposed into the drains • Lack of awareness on segregation of waste and throwing waste in bins

Figure 2-8: -Waste disposed in open drains

Regulation of user charges for SWM for BMC jurisdiction has been approved by Govt. of Odisha and is collected from each and every wards. The slabs of charges have been prepared as per the State's advisory on User Charges based on JnNURM guidelines mentioned in Annexure 6 - User fee notification for solid waste management.

Administrative charges: An office order has been issued to collect administrative charges from HHs/shops and commercial establishment/small scale industries and other industries for litter and disposing solid waste on streets and public places instead of municipal bins. The SWM user charges are applicable for everybody. This proposal has also been passed by the Corporation. Copy of office order and corporation resolution is given in Annexure 6 - User fee notification for solid waste management.
The ULB is planning to motivate HHs by engaging NGOs for source segregation of solid wastes. . Emphasis will be given on kitchen waste to be used as compost in backyard of individual houses. Road sweeping is carried twice a day in commercial areas including Sunday/holidays. Also night sweeping of main roads is done through mechanical sweeping in BMC jurisdiction by engaging a private sanitation agency.

Action Plan for 100% transportation of waste: Tipper, trucks, dumper placers/compactors transport the MSW collected from various part of the city to Temporary Transfer Station (TTS). An area of 25.806 Ac near Sainik School is being used as the TTS where the collected wastes are weighed and recorded. The payment to the private agencies is done on monthly basis based on quantity of waste collected & transported. All MSW collected at the TTS is transported by the private agency through tippers and heavy vehicles to the dump site (61.485 Ac) located at Bhuasuni. The wastes so collected at land fill site are dumped and levelled in layers by BMC on a daily basis. There are no operational solid waste treatment plant in Bhubaneswar.
Implementation of online monitoring and tracking of WSW Management activities at BMC area under a PPP mode was taken up by M/s. CSM Technologies through bidding process. Currently the BMC is tracking 65 vehicles as part of the pilot project.

Table 2-7: -Details of private agencies for SWM

Sl. No.	Sanitation Agency Name	Vehicle Details	No. of Vehicle engaged	No. of Trips	Average Transported Waste (Tones/Day)
1	**M/s Jagruti Welfare Association**	Dumper Placer	5	20	50
		Compactor	8	25	123
		Covered Tipper	8	25	77
2	**M/s Ramky Enviro Engineers**	Compactor	8	14	80
		Tipper	3	7	45
3	**M/s PMR**	Dumper Placer	4	5	15

Sl. No.	Sanitation Agency Name	Vehicle Details	No. of Vehicle engaged	No. of Trips	Average Transported Waste (Tones/Day)
	Consortium	Compactor	3	4	43
		Covered Tipper	4	8	22
4	**BMC**	Tractor	22	2	65
	Total		65	110	520

2.4.4 Road network

The width of the approachable road is one of the key indicators for water and sanitation programme. Bhubaneswar city is more than 2,000 years old and the roads in the internal parts of the city are very narrow and are mostly inaccessible for large vehicles. A large part of the streets in old town area is less than 4.5 m in width, thereby creating bottlenecks in the core part of the city. In such a situation, cesspool operations via large capacity cesspool vehicles can be a challenge. Currently, there are around of 5 private cesspool operators. One of them even does not own any vehicle and rents it from other source upon receiving a request for desludging. There is a shortage of small capacity cesspool vehicles. Under such scenario, there is a high probability of HHs using individuals/scavengers to clean the septic tanks.

2.5 Community based institutions and structures

2.5.1 Ward Sanitation Committee (WSC)

The OUSS 2017 mandates the formation of a Ward Sanitation Committee in each ward of the ULB consisting of 10 members. Ward Councilor/Corporator, Sanitary Inspector or a designated officer by ULB for each ward, frontline workers, representatives of local Committee/Bazar Committee, representatives of Residential Welfare Associations (RWAs) of the ward, representatives from slum sanitation committee, representatives of CBO (SHGs, youth club etc.), senior citizens and eminent persons of the area shall be nominated to the said Committee by the Mayor in consultation with the local corporator. The WSCs shall oversee the sanitation activity in the ward. The member-convener of each ward would be notified by the Commissioner. 17 WSCs have been formed in Bhubaneswar. These committees in Bhubaneswar are responsible for maintaining community toilets.

2.5.2 Community based institutions under the National Urban Health Mission (NUHM)

a) Ward Kalyan Samiti (WKS): WKS is formed at ward level under the urban local bodies (ULBs). It consists of 12 members including the Corporator, frontline health workers, SI, community organizers etc. One of the main responsibilities of the WKS is to identify various health, water, sanitation and nutrition related issues/ problems and health resources of the ward particularly the slum areas. Bhubaneswar has 67 WKS, one in each ward.

b) Mahila Arogya Samiti (MAS): MAS is a local women's collective with an elected Chairperson and a Secretary. Each MAS covers approximately 50-100 HHs in slum and slum like settlements in a ward. One MAS usually consists of 11-15 women members depending on the slum. It addresses local issues related to health, nutrition, water, sanitation and social determinants of health at slum level. It is facilitated by the ASHA who acts as the Member Secretary. The total target area is divided and around 10-12 HHs are allocated to each MAS member for effective tracking and follow up.

The NUHM provides INR 5,000 as annual untied fund to each MAS for undertaking different activities in their slum or coverage area. The untied fund can be used for conducting fortnightly/monthly meetings of MAS, sanitation and hygiene, meeting emergency health needs etc. The MAS meet at least once in a month.

In Bhubaneswar, a total of 617 MAS are functional. They are active in generating awareness on health and sanitation among the targeted HHs and several women have emerged as community leaders. MAS meetings are usually organized on 20th of every month. They also participate in WKS meetings and raise issues related to health, sanitation, water and hygiene issues of their respective areas. Though the MAS members have been trained by NGOs on health and nutrition and other urban schemes, sensitizing the MAS members particularly on open defecation, its impact on health and FSM would be useful in spreading awareness among the HHs.

2.5.3 SHGs formed in urban slums under the National Urban Livelihood Mission (NULM)

The main objective of the NULM programme is to reduce poverty and vulnerability of the urban poor HHs by enabling them to access gainful self-employment and skilled wage employment opportunities, resulting in an appreciable improvement in their livelihoods on a sustainable basis, through building strong grassroots level institutions of the poor. It aims at providing shelters equipped with essential services to the urban homeless in a phased manner.

Women SHG groups from same section of society/likeminded come together mobilization of urban poor and for enhancing their livelihood opportunities. It also has a social agenda as it focusses on generating awareness on critical social issues. Till now, over 2,000 SHGs have been formed in Bhubaneswar. The women SHG leaders are acceptable community leaders who can sensitize the other group members on sanitation and its impact on health. They can also motivate women to build Individual HH Latrines (IHHL) and adopt desirable sanitation practices

2.5.4 Others

The prominent NGOs actively working for the urban slum population and sanitation in Bhubaneswar are as follows:

Table 2-8: -NGO's working for urban sanitation and slums

S. No.	NGO	Focus area
1	Humara Bachpan	Works with children and families from urban poor neighborhood to create a strong constituency of 5000 child leaders
2	People's Cultural Centre (PECUC)	Community Level Intervention, Policy Advocacy, Developing Alternative Models of Development , Promoting and Strengthening Community Based Organizations, Capacity Building of all Stakeholders, Information Dissemination, Networking and Alliance Building, Research Study and Publication
3	Lutheran World Service India Trust (LWSIT)	Raising awareness raising, sensitization and training programs for underprivileged rural and urban communities to develop their capacities.
4	Practical Action	Providing technical information on water and sanitation, waste management, construction etc. and provides consulting services for on same.
5	Centre for Advocacy and Research (CFAR)	Advocacy services to urban poor communities

Source: Primary source

Table 2-9: -IDI and FGD response for roles of CBO in Bhubaneswar

Objective:	To understand the roles taken by CBOs
Participants:	Sanitary inspector, Corporator and CBOs
Key observations:	• Community mobilization measures are being taken by the community based organization like MAS, SHG groups, community leaders, Anganwadi Workers (AWW) for sanitation including Menstrual Hygiene Management (MHM). • Awareness to HHs on the adverse effects of open defecation, having insanitary toilets, disposing garbage on roads on health through group meetings and interpersonal counselling • 17 WSCs have been formed. It looks after O&M of community toilets. • There is a need to train the WSCs on subjects like SWM, garbage disposal, toilet construction and FSSM . • The MAS spread awareness on toilet construction and usage as per the Swachh Bharat Mission.

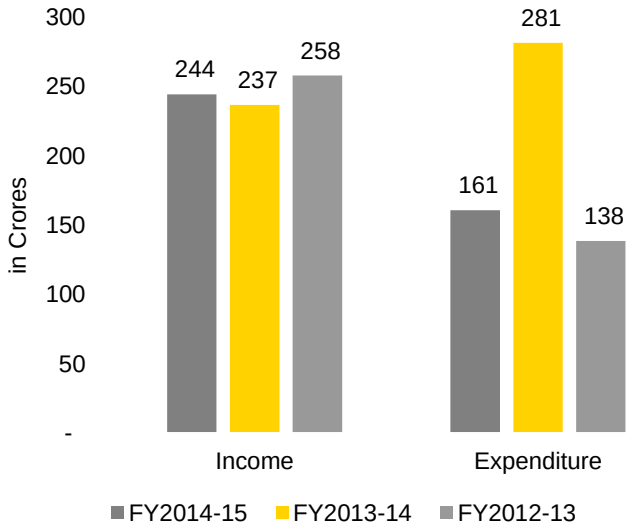
Figure 2-9: -FGD with CBO

2.6 Municipal Finance

Bhubaneswar city is administered by BMC while there are various Government departments and their directorates with development related responsibilities and functions. Among all service providers, only BMC and PHEO have their own sources of revenue, collected in the form of taxes and/or user charges though most of their revenue/income is in the form of assigned revenue and/or budgetary revenue grant. Barring BMC and PHEO, all other service providing agencies are providing the services through Government budgetary support. BMC follows single entry (case-based) accounting system for maintaining municipal accounts.

An attempt is made to analyze the income and expenditure patterns in the Municipality during FY 2014-15, FY 2013-14, and FY 2012-13. It is observed that the income calculated during the FY 2012-13 are marginally higher than those in FY 2014-15 and FY 2013-14. Income is always more than expenditure except for the FY 2013-14, where expenditure doubled.

Figure 2-10: -Income and expenditure pattern in Bhubaneswar



Income

The budget estimate for 2014-15 income was INR 431 crores while the actual income was INR 244 crore. A detailed analysis of municipal revenues and expenditures for the year 2014-15 shows that assigned tax revenues and assigned revenues and compensations are the major source contributing to an overwhelming INR 79 crore (32%) of the total income while the same as per budget was

estimated to INR 7 crore. The revenue base of the municipality is weak and heavily dependent on state government fund as it contributes 30% to the total income. The next major contribution is from tax revenue as well as fees and user charges, each of which contribute approximately 15% and 4% respectively, of the total revenue. Tax revenue includes holding tax, latrine tax, electricity tax and sewerage tax.

Bhubaneswar currently collects holding tax from the tax payers. Collection from holding tax is approximately INR 24 crore during 2014-15. There is tremendous potential for increasing the number of holding as well as augmenting holding tax collection. BMC is zeroing in the areas at present through various programmes like door-to-door collection, awareness campaign for payment of tax, assessment of hitherto unassessed holding and reassessment of under assessed holding through special squads and camps etc. for enhancement of collection as well as detection of holdings. BMC is already working on the proposal for Geographic Information System (GIS) linked Property Tax/Holding Tax collection system for the city. Request for Proposal (RfP) for a pilot project of one month has already been floated

Sources such as income from investments, sale and hire charges and income from investments together contribute 5% of total income. Rent from Municipal properties is approximately 1% of the total income.

Table 2-10: -Income of BMC in FY2014-15

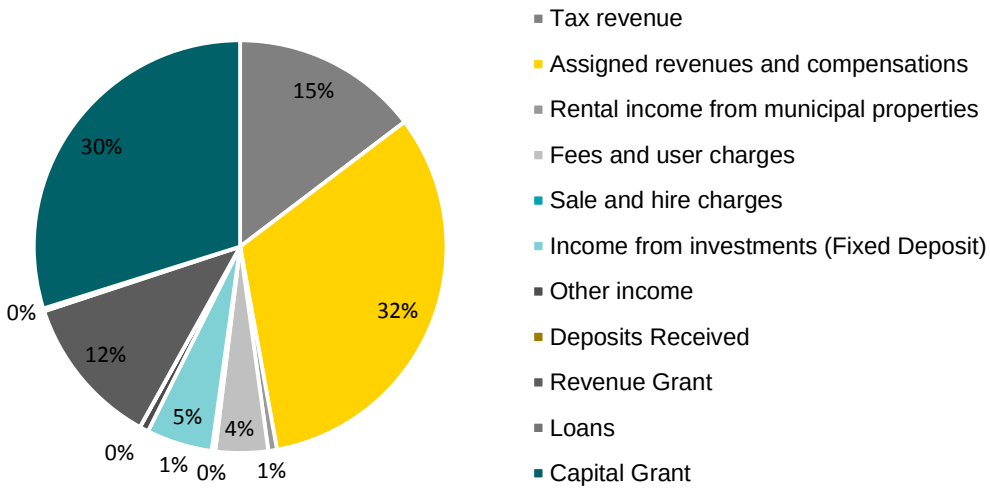
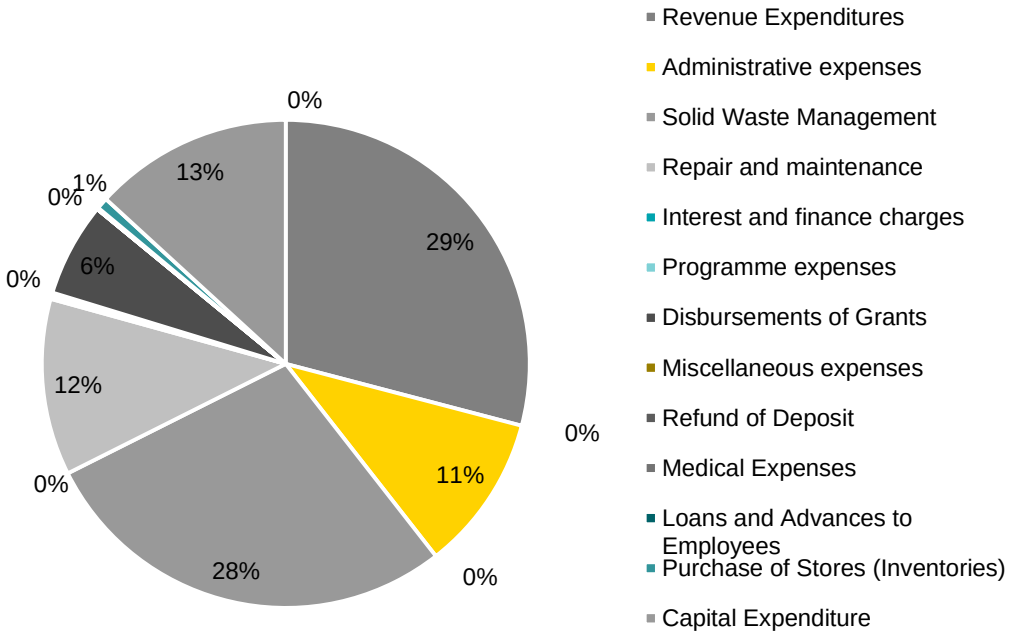


Table 2-11 Expenditure of BMC in FY2014-15



The total expenses of ULB in FY 2014-15 were INR161 crores as compared to the income, which was approximately 244 crores in the same period while the budget estimate for total expenses was INR 415 crores.

Revenue expenditure constitutes 29% of the total cost to BMC (INR 80 crores) that matches the budget estimate for revenue. This includes the salary paid to staff. It can be observed that expenditure for solid waste management constitutes another 28%. Repair and maintenance and administrative expenses is 12% and 10% respectively.

3 Policy, regulatory and institutional framework

3.1 Overview of national policies and framework

The public policies of urban sanitation in India is moving in-line with political and development contexts, trends and patterns of urbanization and the magnitudes of challenges that urban sanitation sector is posing before the nation. Urban sanitation is primarily a state subject. However, urban sanitation is dealt at center, state and city level by Government of India, Government of Odisha and Municipalities, respectively. In the field of urban sanitation policies in India and in Odisha, there is a 'paradigm shift' in approaches and frameworks in the current policies and programs in compare to the previous ones. At present, urban sanitation interventions are target oriented[11] and partnership based[12] to bring universality, efficiency and sustainability in sanitation services. Across the Country including Odisha, urban sanitation activities are being governed by the Swachh Bharat Mission (SBM-U) programme.

1. Swachh Bharat Mission (Urban)

A recent study conducted by Ministry of Urban Development (MoUD), 2016 found progress of Odisha in the SBM targets need accelerations[13] to meet the mission targets. Out of 511 cities[14], declared as ODF till March 2017, not a single city form Odisha has been able to find a place in this list. The Swachh Survekshan 2017 conducted by MoUD in all major cities in Odisha shows decline in ranks indicating real challenges before the state to achieve sanitation goals. In the FSSM context, SBM guideline specifies that "in addition to the construction of the toilet superstructure, an onsite treatment system (such as twin pits, septic tanks, bio-digesters, or bio-tanks) should also be constructed for the collection, treatment, and/or disposal of sewage at or near the point of generation[15]. The guidelines specifically mentioned that ULB officials or private contractors should "ensure safe disposal of septage at a treatment plant," however, it doesn't specify any monitoring framework or suggestive action steps that states can adopt if the quality standards of construction of septic tanks or emptying and safe disposal by private contractors are not met.

2. National Urban Sanitation Policy (NUSP), 2008 [16]

The key perception of NUSP 2008 is that changing mind-sets is often harder than changing technology and the policy attempts to address many institutional issues, the plight of the urban poor, especially the manual scavengers, the lack of awareness on sanitation, integrated planning, and the lack of technical knowhow and capacity due to which most of our infrastructure facilities to not operate efficiently. NUSP, 2008, brought about a paradigm shift in India's approach from a 'conventional centralized sewerage network' approach of urban sanitation to a more 'holistic framework'. With regard to FSM, NUSP has very clearly outlined the following:

i. Promoting proper disposal and treatment of sludge from on-site installations (septic tanks, pit latrines, etc.)
ii. Ensuring that all human wastes are collected safely, confined, and disposed of after treatment so as not to cause any hazard to public health or the environment;
iii. Promoting proper functioning of network based sewerage systems and ensuring connections of HHs to them;
iv. Encouraging recycle and reuse of treated waste water for non-potable applications, wherever possible.
v. Initiating a framework for cities to prepare City Sanitation Plans (CSPs) under the scheme of State Sanitation Strategy.

[11] SBM targets to make India ODF by 2nd October 2019

[12] One of the guiding principles of SBM is encourage PPP and involve civil society groups, academic institutions, corporate bodies, users associations, NGOs, corporations and ensure citizens participation etc.

[13] MoUD 2017

[14] MoUD 2017

[15] SBM(U) guidelines 2016

[16] A revised version of NUSP is currently in draft in draft but has not been released yet.

A key highlight of the Policy and the award plan is that the focus is not on infrastructure development alone but outcomes and behavior change. Under the policy, all states are required to develop state sanitation strategies according to the national guidelines. Odisha was the first state in the country to develop Odisha Urban Sanitation Strategy (OUSS) in 2011 in response to the NUSP 2008. The state has also redeveloped the OUSS in 2016 by fixing a target to achieve NUSP goals and objectives by 2026. In In order to realize the goals of NUSP, MoUD has recently released a primer on FSSM as well as Rapid Assessment Tool to estimate the budget for FSSM. The aim is to implement citywide FSM. This tool gives an estimate of the financial requirement of the city to put in place the necessary infrastructure for FSM. The MoUD has also directed the states to assign responsibility of FSSM to the respective 'Water and Sanitation Board' and rename these boards as 'Water, Sanitation, and Septage Board.[17]

3. Atal Mission for Urban Transformation (AMRUT) guidelines 2017

AMRUT is a step forward to implement NUSP 2008 in urban areas. The AMRUT guidelines 2015 stipulated the need of septage management especially, 'mechanical and biological cleaning of septic tanks' and central funding support in partnership of state government has been suggested. However, it does not emphasize on dedicated septage treatment facilities or disposal/reuse of the sludge. Enhanced convergence between AMRUT and SBM (Urban) would streamline activities of making ODF communities. In Odisha, only nine Class I cities with population above one lakh are covered under the AMRUT programme and are constructing the SeTPs. Small towns are not covered in AMRUT and the guidelines focus more on coverage rather than treatment and reuse. The AMRUT cities/towns covers almost 50% of Odisha's urban population and all nine cities have a clear cut SLIP covering all sanitation components on priority and have adopted an 'integrated service approaches' - water supply, access to toilets by all, storm water management, waste water management and solid waste management. The state has also prepared a State Annual Action Plan (SAAP) for project period (2015-2020).

National FSSM policy 2017

The key objective of the urban FSSM Policy is to set the context, priorities, and direction for, and to facilitate, nationwide implementation of FSSM services in all ULBs such that safe and sustainable sanitation becomes a reality for all. It seeks to address the efficiency of systems in place for onsite sanitation whereof the faecal sludge output needs to be managed in an environmentally safe manner including the proper engineering design, construction and maintenance of septic tank systems, pit latrines and such other systems generating faecal sludge. It defines the roles of each levels- center, state and ULBs with technology options and clarification of roles and responsibilities of institutions. Only on-site sanitation facilities and areas served by such facilities would fall under the purview of this FSSM Policy. It does not seek to cover network or conventional sewerage system (including treatment plants) of wastewater/sewage management[18]. However it addresses synergies between FSSM and sewerage systems or municipal solid waste (MSW) management, e.g., co-treatment of faecal sludge and septage at sewage treatment plants or co-treatment and management of faecal sludge and septage, and MSW.

The Policy lay stress on the setting up of faecal sewage treatment plants in cities and urban local bodies, as well as address the restructuring of sewerage systems in urban India. It also addresses gaps in urban sanitation and lays a clear vision and objective to deal with faecal sludge and septage management. It has been duly recognized by the MoUD that the objectives of the SBM cannot be fulfilled without a dedicated FSSM Policy. Management of faecal sludge in urban areas should go hand-in-hand with the installation of toilets before the gap between production of sludge and its treatment becomes too wide to exist. The policy provides proper outcomes with well-defined directions.

3.2 State level policy and regulatory framework

1. Odisha Urban Sanitation Policy (OUSP-2017)

[17] AMRUT reforms

[18] National FSSM 2017

Odisha Urban Sanitation Policy (OUSP) 2017 is the most recent policy document that has evolved on the lines of overall sanitation goals and objectives set in the national and international policies and programmes on sanitation. The aim of this Policy is to support the implementation of India's National Urban Sanitation Policy, 2008 in Odisha. It also has brief sections on institutional mechanisms, planning and financing, incentives for urban local bodies (ULBs), and implementation, reaching the un-served population and urban poor, provision for migrants and the floating population, and behavior change communication, proper operation & maintenance of all sanitary installations.
Key outcomes envisaged through OUSP 2017 are

- Urban areas will be Open-defecation (ODF) and open discharge free (ODF +/++)
- Sewage, septage and liquid waste will be safely managed
- MSW will be safely managed
- Women and girls will have access to safe MHM
- Safety standards and guidelines would be followed in the entire service chain
- Cities/towns would not pollute rivers/ basins
- A sustainable and comprehensive business model over septage management

2. Odisha Urban Sanitation Strategy (OUSS-2017)

OUSS (2011) had a target to achieve ODF by 2017. However, this target has now shifted to 2026. SBM target is to achieve ODF by 2019. Odisha urban sanitation strategy (2017) was formulated to achieve the goals set in OUSP 2017. Key strategies are -

- Solid Waste –Practice of 3 R's at source, door to door collection, transport dumping and treatment
- Cost recovery, end to end service, reuse
- Sanitation is beyond toilets (ODF+ and ODF ++)[19]
- Liquid Waste – waste water management , FSSM services in sanitation chains
- Multiple Approaches for ODF – IHHL, Public Toilets, Community Toilets, Hybrid Toilets, Mobile Toilets etc.
- Sanitation still remains supply driven. It needs to be demand driven
- Equity and safety for access and use for the vulnerable and unserved
- Awareness
- Institutional roles and responsibilities as well as capacity building
- Emphasis on O&M , PPP and private participation
- Environmental concerns in service delivery
- Robust city and district level institutional structures – District Urban Development Agency (DUDA), District Urban Sanitation Committee (DUSC), City Sanitation Task Force (CSTF), Ward Sanitation Committee (WSC) and users association for engagement

3. Odisha Septage Management Guidelines (2016)

The Housing & Urban Development Department, Government of Odisha, intends to put in place a set of operative guidelines for ULBs that will formalize and provide a framework for safe handling of septage in the entire sanitation delivery chain (containment, emptying, transport, treatment, and disposal/reuse) and aims to achieve the goals of OUSS,(2016-2026). These guidelines conform to the advisory note on septage management developed by the MoUD and the guidelines on design and construction of septic tanks issued by the Bureau of Indian Standards (BIS) and the Central Public Health and Environmental Engineering Organization (CPHEEO). Further, these guidelines are intended to strengthen the existing framework focused on implementing the provisions of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, in the state of Odisha.
The operational procedures outlined in these guidelines are applicable to all ULBs of Odisha and covers the following areas:

- Framework on septic tanks, including standard design and construction;

[19] ODF+ (No undesignated discharge of septage, sewage and black water)
ODF++ (No open discharge of human faecal and liquid waste, and safe containment, transport, treatment, and disposal of all human faecal waste, and waste water (black and grey)

- Adoption of desludging procedure for the septage generated;
- Safe transportation of septage from collection point to receiving facility;
- Technological intervention for proper treatment of septage, disposal, and re-use;
- Public awareness

The guidelines framed by the H&UDD of Odisha have made it compulsory for all HHs to construct septic tanks and stop the sludge from out flowing into municipal drains. The rules direct house owners to contact only civic body officials or other registered sanitary agencies to clear out the septic tanks and strictly keep away from engaging manual scavengers.

4. Smart city and Sustainable sanitation in Odisha

Out of 98 smart cities in India, two are from Odisha – state capital city Bhubaneswar and industrial city Rourkela. Both the cities have adopted area based and pan city approaches in smart service deliveries to citizens.

Bhubaneswar has employed an extensive citizen engagement process to guide its journey for transformation to a smarter city. Building upon the inputs received from citizens, the overall approach focuses on promoting Smart Growth supported by sound economic development principles; while at the same time, directing investment in initiatives that promote sustainability, inclusiveness and livability by leveraging technology as an enabler.

Based on the citizen feedback received during Round 1 of the engagement initiative, Mobility and Waste Management as Pan-City Smart solutions and Town Centre as Smart District were selected to create an implementable Strategic Plan.

Furthermore, building upon the 24 Smart City Features identified by the Government of India's Smart Cities Mission, Bhubaneswar shaped its approach around the following 7 'Smart City Pillars' to align the citizen's aspirations and needs with city systems.

1. Governance- Citizen Participation, Intelligent Government Services
2. City Planning and Design-Mixed Land Use, Compact Cities
3. Urban Utilities-
    a. Water: Water Supply, Water Management
    b. SWM: Waste Management
    c. Sanitation: Sanitation, Waste water management
    d. Energy : Energy Supply, Energy Source, Energy Efficiency, Underground Electric wires
    e. ICT: IT Connectivity
4. Urban Mobility- Street Design, Public Transport
5. Shelter- Inclusive Housing
6. Economic Development-Economy and Employment
7. Social Development- Identity and Culture, Education, Health, Open Spaces, Safety and Security, Air quality

With the intent of developing a pilot 'Smart District' that applies the features of Smart Cities in a defined area, the citizens of Bhubaneswar through online and offline polling voted unanimously for the Bhubaneswar Town Centre District.

The boundary of the district, covering an area of 985 acres, is defined by properties fronting Janpath Road on the east, Udyan Marg on the south, railway tracks on the west, and Maharishi College Road on the north. Key city landmarks in the district include: Ashoka Market, Master Canteen Chowk, Bhubaneswar Railway Station, City Bus Terminal, Ram Mandir, Rajmahal Chowk and its immediate surroundings.

With a potential of transforming into Bhubaneswar's central business district, the area presents an opportunity to promote transit and pedestrian oriented development that will ultimately help in leveraging a self-contained district. The district hinges on the principle of bringing together people, jobs, and services connected with each other primarily by walking, cycle or public transport as primary modes along with improved infrastructure facilities.

In Bhubaneswar, an amount of INR 556 crore has been sanctioned for Intelligent City Operations and Management Centre (ICOMC), which is under pan city proposal. An amount of INR 400 crore has already been received by Bhubaneswar Smart City Limited (BSCL) for this.
Bhubaneswar has its smart city company limited and has set up Special Purpose Vehicle (SPV) for programme implementation. The scope for water supply and sanitation services considers covering the entire city and also includes the approach to scale it up as the city expands. Convergence of smart city programmes with all other missions like AMRUT, NULM, SBM, Housing Finance Agency (HFA) and digital India, can give ample of choices to improve standards of services within the city.
The state capital, Bhubaneswar has successfully maintained its distinction of being recognized by various international and national agencies as "one of the best places to do business in India". This recognition is partially responsible because of the high quality infrastructure facilities provided by the joint efforts of BMC and BDA with support from the Government of Odisha. On the other hand, the city continues to tackle challenges that are negative consequences of urbanization faced by many cities. Bhubaneswar now suffers from a growing threat of an ever-increasing volume of waste generated by the increasing population, which is one of the most challenging tasks governments are struggling to manage. Also, after being ranked 25th among the 28 state capitals under the Swachh Bharat Mission, BMC is looking at better management of the city's waste services and sanitation - from garbage collection, recycling, and sewage management to littering, access to public toilets, and eliminating open defecation.

3.3 Existing regulatory framework

The regulatory and institutional framework for FSM is defined in the earlier sections. In Odisha, FSSM rules and programmes falls under multiple agencies. The OWSSB creates assets and infrastructures and sewerage network projects in five cities[20] at present. The O&M of sewerage facilities is done by the OWSSB for the CDA area in Cuttack and in Puri and the Rourkela Municipal Corporation (RMC) for Koel Nagar area in Rourkela.

State level

ULB is the constitutional body accountable and responsible for the sewerage system septage system as part of urban sanitation as per 74th Constitutional amendment but lacks capacity to handle the service. The state government has arrangements for tripartite agreement between the H&UDD, parastatals and ULBs for the service provisions. In case of Bhubaneswar, Water Utility Company (WATCO) is expected to take the responsibility of asset management including sanitation.
The Directorate of Municipal Administration (DMA) is the key department to monitor the ULBs for adherence of rules and regulations and promote capacity in HR and Finance. The Urban Sanitation Mission is headed by the Chief Minister of Odisha and State Steering Committee is headed by the Chief Secretary and the State Management Committee is headed by the Principal Secretary of H&UDD. Public health and environment standards are as per the CEPHEO guidelines and the Orissa State Pollution Control Board (OSPCB) serves notices to violators including the ULBs. It is strictly mandated under the laws to adhere to BIS, Basic Safety Standards (BSS) and National Building Code (NBC) for the construction of septic tanks. The two mission directorates - AMRUT and SBM - are handling the FSSM services. However, the above mentioned standards and guidelines are required to be implemented by development authorities (BDA, PKDA, CDA SDA, BeDA etc.[21]) under the overall guidance of State Directorate of Town Planning
Moreover, other departments are also linked. The Planning & Coordination Department which handles the District Mineral Foundation (DMF) funds can play big role in FSSM under the present strategy of the government. The Health & Family welfare department will be heavily involved in community mobilization. For skill promotion among the masons and scavengers, the Skill Development Authority and finance agencies like SC ST Finance Corporations can be leveraged. Engagement of private agencies has become more common as many corporate houses and private

[20] Puri was commissioned in 2014. Bhubaneswar and Cuttack is under process and expected to be commissioned by 2018 (JICA). In Sambalpur and Rourkela –contract has already been awarded. Brahmapur is in DPR stage.

[21] Bhubaneswar Development Authority, Cuttack Development Authority, Sambalpur Development Authority, Brahmapur Development Authority

parties have started playing a role in FSSM.

District level:

District Collector is given ample power in urban sanitation to steer the processes both as a regulator and as a promoter. As urban sanitation carries multiple processes district administrations such as District Forest Officer (DFO), Additional District Magistrate (ADM), Tehsildar and others are part of FSM processes. Project Director, District Urban Development Agency (PD-DUDA) is vested with powers to supervise and monitor the ULBs in all affairs including the District Urban Sanitation Committees (DUSC). DUSC is expected to take ownership of urban sanitation planning and execution, get funds and approvals from state and center and also integrate the same with district planning. Institutions like OSPCB, OWSSB, PHEO, Water Resource Department (basin engineers) based in the regional set ups are also part of FSSM institutions. However, district structures and agencies need to be more proactive in urban sanitation.

City level

City level institutions are basically ULB councils who take all decisions over the ULB affairs. It consists of legislative wing, controlled by the Mayor and Chairpersons and executive wing headed by Executive Officers and Commissioners. The CSTFs and WSCs are also have roles to pay as per OUSS 2017.

CASE IN POINT: FSM policy is backed by investment plan

Besides the above policies, the Government of Odisha also has a plan for FSM services in the State. The State acknowledges high urban OD rate of 33.2[22]%, 49.41 % HHs with septic tanks, only 2% of liquid waste is being treated. The State Government concurs that although underground sewerage is desirable, it requires high investment, longer implementation period as well as a high O&M cost. The government cannot wait longer as the number of toilets are increasing under the SBM and there is a high probability of aggravation of river pollution, surface and ground water contamination and spread of epidemics such as cholera and jaundice etc. in the cities. In this situation, FSSM emerges as an alternative to underground sewerage system which is efficient, effective and has low capital and O&M cost. The government has put in place a financial, technical, institutional and regulatory framework and a septage management model where "sludge may be treated in an anaerobic digester and liquid may be treated in anaerobic baffled reactor and planted gravel filter. The treated sludge and effluent can be reused in horticulture and other similar purpose[23]. **As a matter of policy[24], the government has provisioned 0.5 acres of land for population of 25,000 and 1 acre of land for septage treatment facilities for cities with population above 25,000.**

The government has designated the OWSSB to be the institution for creation of required infrastructure on behalf of ULBs and private operators be engaged on Performance Based Service Contract (PBSC) for O&M of septage treatment facility and cesspool trucks. The user fee from the HHs may be used to fully/ partly repay the cost of O&M and ULBs / state to subsidise.

The government is also considering an on-line regulatory framework to be operational where guidelines for septic tanks and its specifications(linked to building plan approval), regulation of septage transportation operations, user fees for septage transport, treatment and disposal, SoP for all levels of septage management and levy of penalty for open defection, discharge of raw sewage, septage to drain and discharge of septage at places other than the treatment facility or designated place – will be developed.

For Capex, from 2016-17 to 2019-20, **a total investment of INR 213.75 crore is planned for FSSM in all 112 statutory towns of the State.** A proposal for a separate division of septage management in the State is under government's active consideration. **Under AMRUT, out of total investment of INR 1,598.96 crore in nine Class-I cities in the State, INR 17.86 crore[25] have been approved for setting up of nine SeTPs. The government has also provided 209 cesspool trucks of different capacities to all 112 cities for sludge emptying in two phases (123+83).**

Government is also proactively considering to get funds from FSM services from DMF (District Mineral

[22] Census 2011

[23] MOM of 31.3.2016, the H&UDD. detailed presentation of "improving urban sanitation through Septage management"

[24] Odisha septage management guidelines

[25] OWSSB (CAPEX for 8 plants. Bhadrak is not included)

Foundation), Corporate Social Responsibility (CSR) funds of Corporate houses and donor agencies. The nine focus cities have been rated on credit worthiness to pull funds from the market for infrastructure projects including water supply, sanitation and waste water management.

Urbanization of rural areas

Conceptually urbanization has proved a key source of employment and GDP rise for any area, clusters and country. This brings transformations through innovations and improves quality of life indexes through basic services. Odisha being a least urbanized state, the government's strategy is to put the state on high urban trajectories. This was also showcased before the investors in the recently concluded Make in Odisha conclave. One of the trends that the State witnessed during year 2001 to 2011 is the increase of census towns from mere 23 to 116. In contrast there was very slow growth of statutory towns. It just increased from 107 to 112 during this period which indicates most of Odisha's census towns are under the village administration.

Urbanization in statutory towns also observe multiple challenges due to rural characters of urban areas as most of the areas are converted rural areas and have no urban services at all. Odisha has two areas of urban in and around a town i.e. the municipal areas and planned areas. In case of municipal areas, there are ULB councils and municipality to govern the areas. However in case of planned development area, the development authorities are engaged to do the master plans, Comprehensive Development Plan among others but area is under the village administration. Recently in Bhubaneswar some areas are included into city administration. Rourkela, Sambalpur and Berhampur had to convert some villages into urban to qualify as municipal corporation. This is emerging as a major challenge for the corporation to ensure urban services. Also there is a resistance from public to not to be part of the urban system as they have to pay taxes and lose benefits of rural development. Now 76 cities have master plans. More rural areas are converted to be urban but without service infrastructures such as sewerage, water supply, FSSM among others.

CDPs, master plans are also not commensurate with the infrastructures and social economic developments. There is governance and infrastructures deficit and low or zero citizen participation and ownerships. Rural to urban migration as critical factors of urbanization is felt only in few clusters not universally in all the cities and due to natural growth of population in some clusters, census towns are increasing by definitions but not by services.

Ensuring FSSM in cities requires a strong integration of municipal administration and village administration to cater to both city limits and outgrowth areas in infrastructure and operation and maintenance of conveyance and treatment facilities.

Regulatory and institutional developments

From the point of view of urban sanitation in general and FSSM in particular, most encouraging developments in Odisha are formations and operations of District Mineral Development Foundation (DMF)26 in all 30 districts, formation of CSR state Council under the chairmanship of Chief secretary of Odisha and the proposal for enactments of Urban Waste Water Management Act.

In case of DMF, until June 2017, around INR 2,800 crores have been collected as royalty from mines and minerals areas but remain unspent. This could be leveraged out for the urban sanitation infrastructures including SeTPs, constructions of CT, PT and HTs including even purchase of cesspool trucks as these infrastructures involves bulk money to be budgeted. Though all 30 districts are DMF districts, yet some 13 major mineral rich districts have huge opportunities to be leveraged out. Keonjhar district has taken the lead and SeTPs have been sanctioned from DMF funds in five ULBs.

Like DMF, as per Companies Act 2013 every corporate entity with net profit of INR 5 crore is required to spend 2% of their profit on mandatory CSR activates. Odisha is one of the leading industrial state with quite a good amount of CSR funds which could be spent for development of the state. Recently the state government has formed the State Council of CSR under the Chief Secretary of Odisha to prioritise the CSR funds allocations and spending where urban sanitation is on high priority of the state government. This gives an opportunity to be leveraged out with proper planning where the scope is for all the ULBs in the entire state. Funds to the tune of ~INR 11 lakh crore is currently in being invested in the state.

Another important development is proposal for the Urban Waste Water Management Bill 2016 (which is under the legal scrutiny) by the H&UD department and mostly likely be enacted as a law in this year can push regulated sanitation in urban areas by making FSSM services processes legally, institutionally, technology wise and managerial point of view implementable in the state.

[26] DMF provides support to person and areas in districts affected by mining related operations. Fund is collection through royalty from mine lease holders, a part of which (typically 33% of royalty collected) is contributed towards DMF.

4 FSSM situation assessment

4.1 Toilet containment typologies

Bhubaneswar has 2 lakh HHs. As per census 2011, 80.2% of the HHs have individual toilets. Open defecation (OD) due to lack of toilet access stands at 17.2%, which is higher than national urban average of 12.6%. Around 2.6% of HHs are dependent on public or community toilet. As per the survey conducted by BMC, 436 OD points were identified in Bhubaneswar. Most of the OD points are either located near waterbodies or slums. It was noted that open defecation is being practiced mostly by male members even after being provided individual toilets under SBM. This is mainly because of habits, family size and lack of water supply. This can be noted from our primary survey wherein, 61% of the HH felt that lack of water supply to toilets is the major reason for practicing OD.

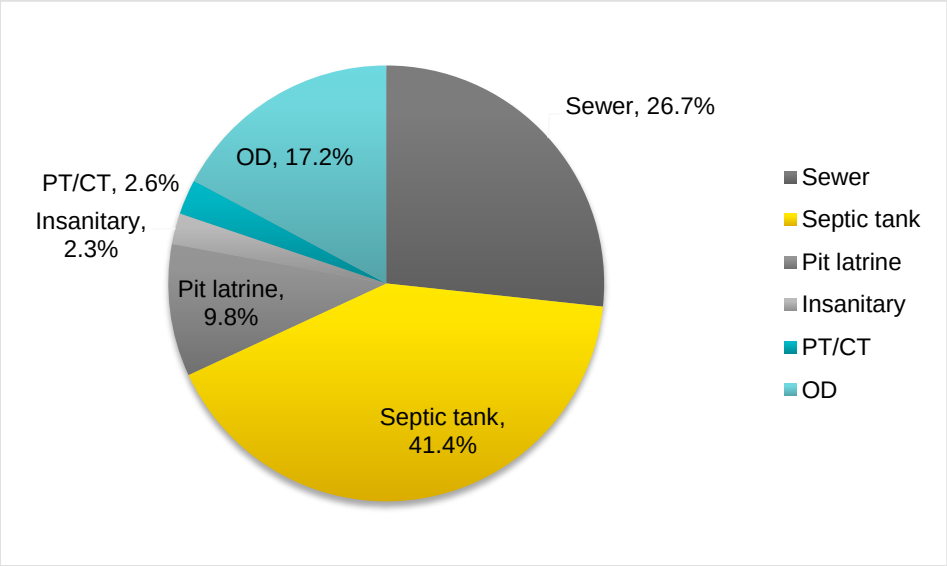
Under SBM, requests for 28, 590 IHHL have been received and summary is presented hereunder:

Table 4-1: -SBM Progress (as on 25 May 2017)

Received	Verified	Approved	Rejected	Constructed	Commenced
28, 590	17, 401	16, 953	3, 447	2,975	4, 114

Source: SBM-PMU Odisha

Figure 4-1: -Sanitation system at HH level and access to toilets



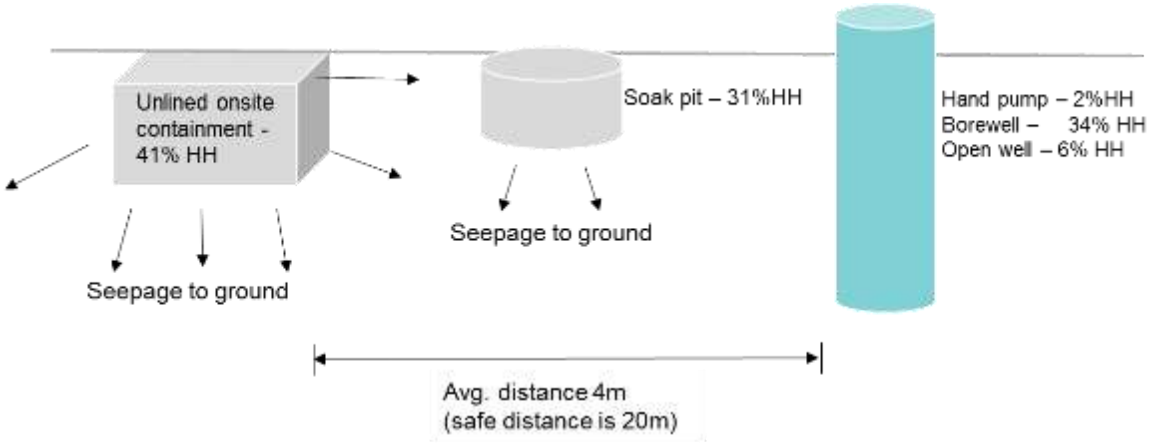
Source: Census 2011

Toilets which directly dispose into drains and/or require night soil to be removed by human or animal are considered as Insanitary

Connectivity to sewer network is 26.7 %. More than 50% of HHs are dependent on onsite containment system (septic tank and pit latrine). Our primary survey indicates that around 50% of slum population and 33% of the non-slum population have unlined onsite systems. 31% HHs have septic tank connected to soak-pits. Together, this could be a potential source of ground water pollution due to lack of safe distance from water source. Median of distance found between onsite system and open well or hand-pump or bore-well during survey is 4 m, which is lower than conventionally considered safe distance of 20m. This holds significance as it was found that approximately 38% of total HH[27] are dependent on water sources other than tap water (from treated sources) within premises. Primary survey data supports this.

[27] HH Amenities and Assets, Census of India, 2011

Figure 4-2 Situation with onsite containment system as per our primary survey for Bhubaneswar



During HH survey, and stakeholder consultations the problem of direct connection of toilet outlets to drains was brought to light. Even some of the septic tank had outlets connecting them to open drains.

Figure 4-3 : - Septic tank connected to open drain

Figure 4-4 :- Toilet connected to open drain

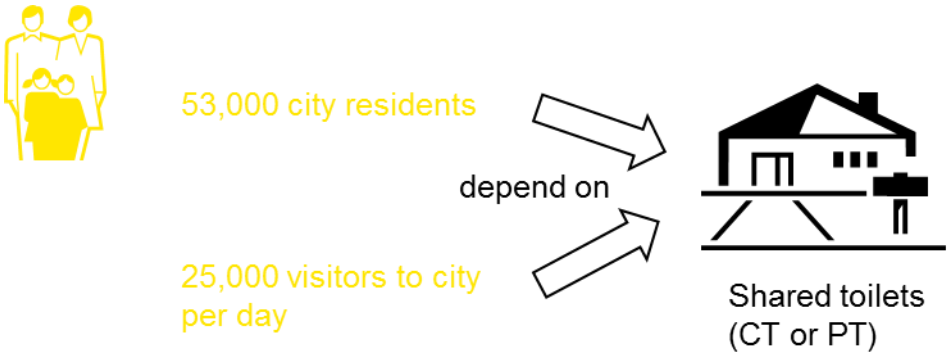
Primary interaction with masons reveal that most of the time masons are not aware if they are following right standards. They rely on engineers for designs to execute construction.

Variation in design can have bearing on performance of treatment plant as undigested sludge from unscientific septic tank can have different characteristics than those achieved from scientific septic tanks designed as per norms. The proposed SeTP at Bhubaneswar is designed considering scientific septic tank.

Masons also reported that HHs also sometimes avoid making septic tanks to avoid cost of making one, emptying and also in cases where space is a constraint. This was further confirmed through the primary survey which revealed ***that 5% of HHs directly connect their toilet to drain (Insanitary toilet).***

"Toilets and septic tanks connected to open drains is one of key challenge for implementing FSSM in the city" – City Engineer.

4.2 Status of CT and PT



Census data indicates that 19.8% of the HHs do not have access to HH IHHL. Of these 17,000 HHs are going to be provided IHHL under the SBM[28]. So 23,000 HHs will not have individual toilets and are directly/indirectly dependent on public or community toilet. In addition, there is need for public toilet to cater to the floating population of 25,000 per day who come to this Temple City for various purposes[29].

[28] SBM – PMU Odisha

[29] SLIP AMRUT - Bhubaneshwar 2015

H&UDD has started a noble initiative of building hybrid toilets. The concept being derived from both community and public toilets, where both options of pay-per-daily use and/ or pay-per-month options are available. Presently, under the scheme, the Department has signed a memorandum of understanding (MoU) with Sulabh International to build 6,000 toilets in the nine AMRUT towns. Implementation is done under SBM. 55 hybrid toilets are allocated for Bhubaneswar. Following is the overall status of shared toilets in the city.

Table 4-2: -Status of Community Toilets (CT) and Public Toilets (PT)

Toilet type	Existing complexes (available for usage)	Existing complexes (defunct)	New (under construction)	New (yet to start construction)
Public toilet	42	2	17	-
Community toilet	40	14	17 (Project Samman)	9 (Project Samman)
Hybrid toilet	0	Not applicable	50	5[30]
TOTAL	**82**	**16**	**84**	**9**

Source: BMC

As per BMC, 325 CT (1325 seats) is the target by 2019. Among which, 40 CTs (468 seats) have already been completed.

90 PT (629 PT seat) is the target for 2019. Among which, construction of 38 PTs (396 seats) have been achieved.

Figure 4-5: -Public Toilet under Project Samman at Bapuji Nagar, Ward No. 53

Under the scheme of hybrid toilets, presently 55 toilet complexes are to be constructed. All of them are at construction stage or nearing completion. All locations are specifically chosen by Sulabh International considering the Operation & Maintenance (O&M) sustainability. As on date, nine hybrid toilets have been constructed at following locations:

- Near DAV School, Chandrashekharpur
- In front of XIMB
- Tankapani Road
- Near RTO Office
- Mancheswar Railway Stadium
- Jaydev Vihar Square
- Opposite Prabhujee E.M. School
- IDCO Land, Near Durga Mandap
- Near Venkateswar English Medium School

H&UDD has also taken approach to develop user-centered shared toilet design with various O&M models for community toilet in the city in collaboration with The Abdul Lateef Jameel Poverty Action Lab (J-PAL) under Project Samman. The toilet and urinal pans are designed keeping in mind the user.

[30] Construction has not started due some problem with land allocation.

O&M of these units shall be managed by community.

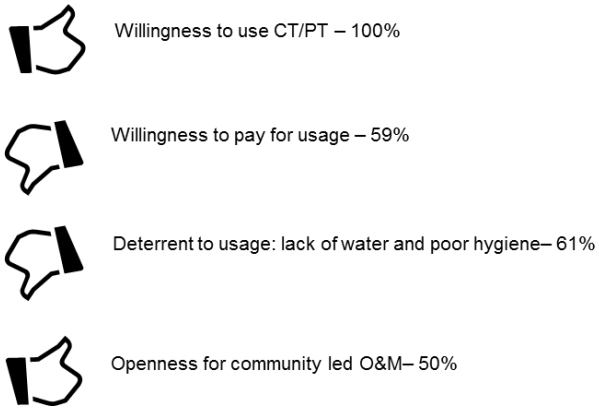
Figure 4-6: -New CTs set-up under Project Samman

Table 4-3: Management of PT & CT

Toilet type	Construction	O&M	O&M revenue source
Hybrid	Private agency (Sulabh)	Private agency (Sulabh) – 10 years contract extendable for another 10 years on performance basis.	User fee
CT (Project Samman)	NBCC	Community	User fee
CT (existing)	BMC	Community	
PT (existing)	Sulabh	Sulabh- 10 years of contract	User fee

The primary survey indicates that citizens practicing OD are willing to use CT/PT and around 60% of the HHs are willing to pay for usage. 50% of the HHs also highlighted that they are willing to explore community led models for O&M of the facilities. BMC is working on a model for O&M for community toilets. As of now, 17 WSCs have been formed which look after the O&M. Annexure 5 shows the MoU signed between WSC and BMC to maintenance of community toilets.

Figure 4-7: -Key responses from citizens through primary survey



The BMC is currently planning to procure five mobile toilets which will be called ‘Toilet on Wheels’. This will be funded by OUIDF. BMC is also planning to buy 20 e-Toilets. e-Toilet is India's First Electronic Public Toilet and incorporates full cycle approach in sustainable sanitation by integrating convergence of electronics, mechanical, web-mobile technologies thereby controlling entry, usage, cleaning, exit, and remote monitoring capabilities with multiple revenue options

4.3 Emptying and transportation

Mechanized emptying and transportation services is provided by the ULB as well as private players. Below table provides overall snap-shot of services available in the city. Until last year, the emptying capacity was 13.5 kilo L (KL) and has been increased to 28.5 KL with introduction of new vehicles at the ULB. A request for proposal was floated in December 2016 inviting tenders from private operators towards the operation and maintenance of the newly acquired trucks. The price bid evaluation for the tender has been completed and approved by the state nodal authority. ULB is in the process of identifying temporary disposal site under SeTP is functional.

Table 4-4: -Mechanized cesspool emptying and transport available with the ULB

S. N.	Service provider	Capacity	Service rates (INR/trip/truck)	Service hours	Operating model
1	ULB (existing)	3 trucks X 4,500 L	INR 900	6am to 6pm	Owned and operated by ULB. One operator and two helpers
2	ULB (new)[31]	5 trucks X 3,000 L	To be confirmed		Owned by ULB. Operated by private player.
TOTAL		~28,500 L			

Source: ULB data

Figure 4-8: -Mechanized cesspool emptying and transport available with private operators

	Name of Service provider	Capacity		Number of vehicle	Operating model
1	Jagannath Social Welfare Organization	1000L- 4,500 L		6	One operator and two helpers
2	Sainath Fabricare	1000L-8000L		10	
3	Maa Mangla	3000L- 4500L		4	
4	Om Sainath	3000L-4500L		5	
5	Individual/Unregistered Entrepreneurs	3000L		9	Some of these operators don't own any vehicles.
TOTAL		~80,000 L		34	

Source: Primary interaction with Cesspool operators

The BMC is in the process of developing online vehicle tracking system to monitor 65 solid waste carrying vehicles. A keen interest has been shown by Additional Commissioner, CFO, and City Engineer, to integrate cesspool vehicles in the same way to serve the customers within stipulated time and hassle free manner, and ensure that cesspool vehicle is emptied at designated site/treatment plant.

[31] New cesspool vehicle was sent to BMC in June 2016

Figure 4-9: -New and old cesspool emptying trucks of BMC

Majority of the trucks in the existing fleet are of 3,000 L capacity or more as seen in Figure 4-9. Such vehicles typically have width of 2.2 m. This creates difficulty in providing services in certain areas of Bhubaneswar having of lesser road width. This was confirmed during the primary survey which found that 22% HH have road width less than 2m. In such situation, it is possible that HHs may resort to other means such as non-mechanical emptying and open defecation to prevent filling of onsite sanitation system. This also has impact on prices of cesspool services as was found during interactions with the private operators.

"In many cases, septic tank is not accessible due to narrow roads. About 30% of the HH is inaccessible to big cesspool vehicles. This would require alternative method to avoid manual labor and achieve 100% FSSM in the city"- City Engineer.

Figure 4-10: - Road having less than 3m of width

During discussions with ULB Corporators, one of them stated that even they preferred private operators over BMC services, as citizens typically have to wait for 2 to 3 days (sometimes even more) to avail services from BMC. During consultation with CBOs, similar issue came up. They said that using smaller vehicles may be a solution to this though usage of longer pipes would be more appropriate in most of the cases.

Figure 4-11: -Road access for cesspool vehicles

	< 2 metre (m) road width	2 to 5 m width
Slums	18%	76%
Non-slums	25%	60%

Sainath Fabricare, a private cesspool operator in Bhubaneswar is interested in taking up the O&M for the SeTP apart from running the cesspool vehicles.

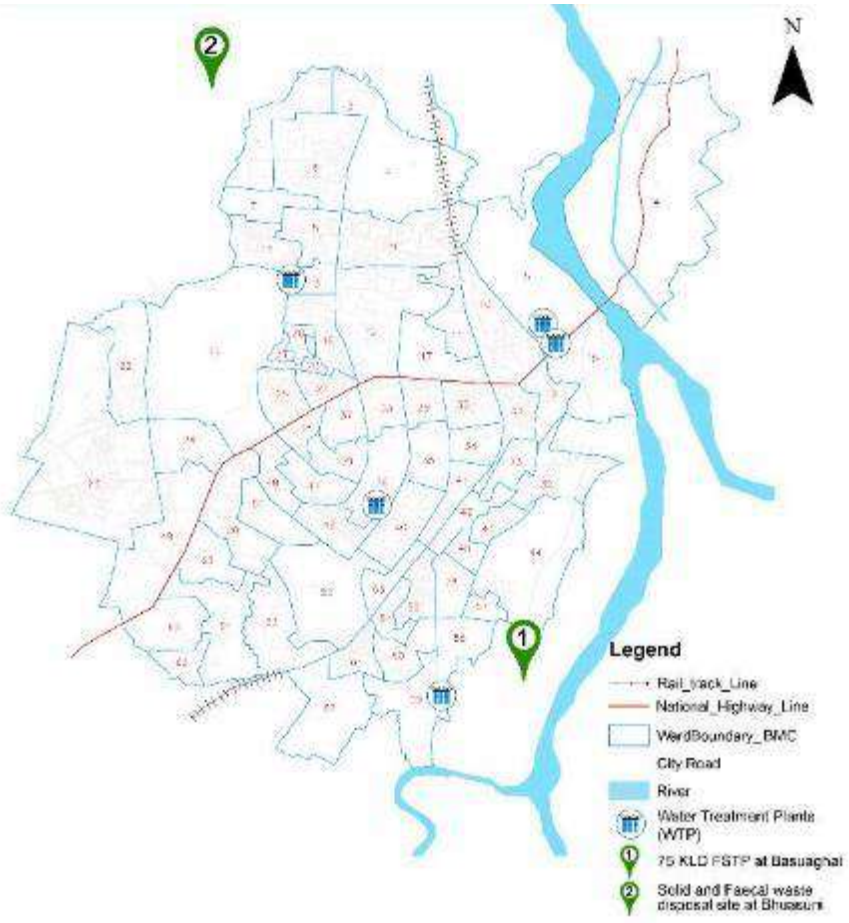
Existing regulations around cesspool emptying are weak or absent. During interactions with cesspool operators they said that they are not following any safety guidelines or use any personal protective equipment (PPE) while they are fully aware of different type of PPE. Owing to this situation, a recent

RfP floated on cesspool operations mentions a mandate for the cesspool operator to follow guidelines around safety practices.
Private operators informed that they spread information of their services through contact numbers painted on their vehicles. One of the private operators even said that they maintain records for their customers and call them up to enquire if they require service.

Figure 4-12: - Contact number painted on the back of the vehicle

4.4 Treatment and disposal/re-use

Currently, the city generates 75 cubic meter of sludge per day.[32] However, it doesn't have facility to safely treat and dispose faecal waste. BMC has not officially designated any site for faecal waste disposal. ULB cesspool vehicles dispose the faecal sludge mostly in Bhuasuni Dumping Yard, which is about 18 km from the city, whereas private sectors doesn't have designated place to dispose faecal sludge. Our primary interactions revealed that operators currently dump faecal waste in open fields,



[32] As per projections calculated against Census 2011 population data. Considering 53.8% of the population use septic tanks.

drains and water bodies. This is leading to pollution of water bodies and serious health implication. There are no regulations governing the operations of cesspool operators as confirmed through interactions with ULB officials and operators. Also mechanism to track their operations is presently absent.

Figure 4-14: - Private cesspool operator dumping near Baramunda bridge

Cesspool vehicles often dispose faecal sludge near habitation and sometimes even close to the houses from which it has been emptied. Faecal Sludge is also dumped in the open drains. – City Corporators.

Figure 4-15: -Faecal Sludge dumping yard, Bhuasuni, near Chandaka.

Assessment of water quality is critical in ensuring hygiene, health and eliminating the possibility of breakout of water-borne diseases and related health hazards. The primary identified sources of water for drinking and bathing purposes within the city limits are:

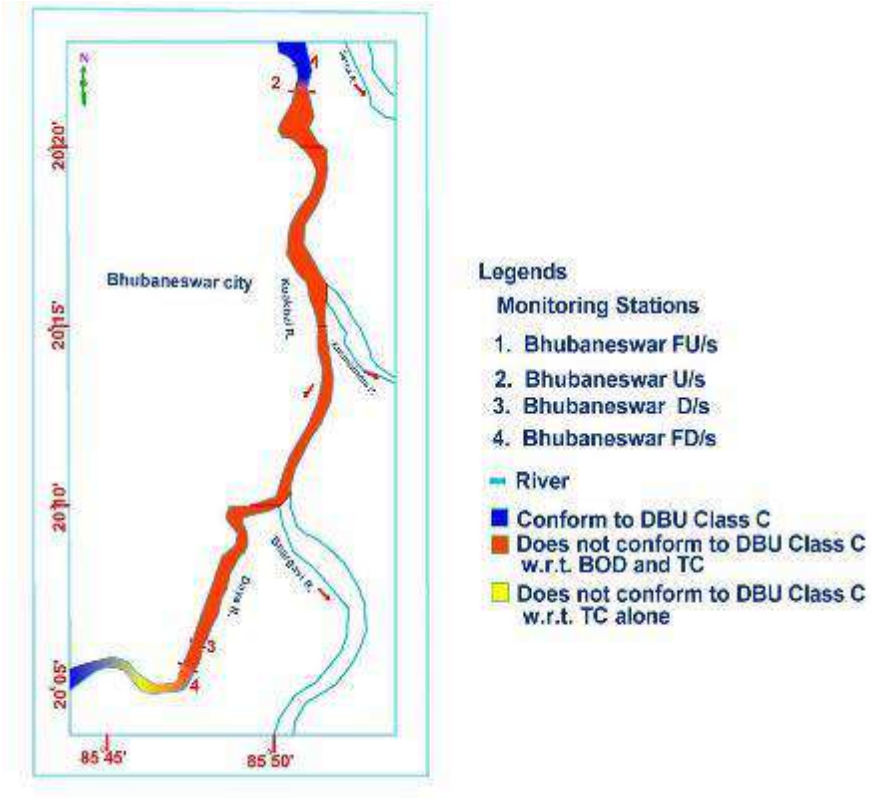
- Kuakhai and Daya rivers;
- Gangua Nallah and major drains (10 nos.) that convey wastewater and raw sewage to the Daya river;
- Lakes that double as groundwater recharge points and surface sources; and
- Groundwater sources providing water for potable purposes – open wells & tube wells.

The designated quality of water at the aforementioned sources is monitored duly considering the impact of discharge of wastewater and raw sewage from areas not covered with sewage systems, industrial areas and economically weaker sections located near the sources of surface water.

4.4.1 Water Quality Assessment of Surface Sources

Kuakhai River is a distributary of Mahanadi River which flows by Bhubaneswar, Odisha. Daya River starts as a branch of the Kuakhai River at Saradeipur (near Badahati) and is then joined by the Malaguni River below Golabai and flows through Khordha and Puri districts before emptying into the north-eastern corner of Chilika Lake. Most of the water supply of Bhubaneswar is met by the Kuakhai River along with Daya River.

Figure 4-16: -Polluted Stretch of Kuakhai and Daya Rivers along Bhubaneswar city



Source: State Pollution Control Board

Surface water quality of Kuakhai and Daya rivers have been monitored for a significant period, collected samples tested in accordance with the prescribed standards by the OSPCB and evaluated for compliance with water quality criteria to identify the 'designated-best-use' classification.
Points that can be deduced from the test results of the samples taken are as follows:

- It can be inferred that the water quality of both Kuakhai and Daya rivers for 'designated-best-use' prescribed by the CPCB criteria for water quality only satisfies the requirements partially and is classified as Class "C", which refers to "Drinking Water Source with Conventional Treatment and Disinfection"
- Daya River is seen to exceed the benchmark by a significant measure posing a serious health hazard.
- The situation in Daya River can be attributed to the impact of sewage and wastewater discharge from Gangua *Nallah*[33].
- Gangua *Nallah* is a natural stream that originates from Gadakhan Village, flags along the eastern boundary of Bhubaneswar and west of Daya River. This *nallah* serves as the discharge sink of major drains (10 nos.) that convey sewage, sullage and storm water from secondary and tertiary drains from different parts of the city. Gangua *nallah* ultimately joins the Daya River southeast of Bhubaneswar near Kanto Village.

[33] Environmental Management Plan, State Pollution Control Board, Odisha

- Therefore, it is imperative that dumping of faecal sludge/sewage need to be controlled. Treatment of faecal sludge/sewage has to be ensured in order to achieve compliance with water quality requirements as outlined in Class – A "Drinking Water Source without Conventional Treatment and Disinfection".

Table 4-5: - River Pollution over the years in Bhubaneswar

River	Point of Sample	BOD (mg/L)				TC (MPN/100mL)				Present Frequency of Deviation	Present % of Deviation
		2012	2013	2014	2015	2012	2013	2014	2015		
Kuakhai	Upstream	2.4	2.0	1.5	1.3	22,460	33,678	31,218	36,642	12 (TC)	100 (TC)
	Downstream	-	-	-	-	-	-	-	-	-	-
Daya	Upstream	-	-	-	-	-	-	-	-	-	-
	Downstream	4.3	4.2	4.4	4.3	40,783	49,300	85,727	74,908	12 (BOD), 11 (TC)	100 (BOD), 92 (TC)

Source: Odisha state pollution control board annual river water pollution reports

4.4.2 Water Quality Assessment of Lakes/Ponds

Bhubaneswar, being a temple city is dotted with a number of water bodies that serve not only as ground water recharge basins, but also as water sources for religious rituals by the city's inhabitants. Water quality was checked in seven major water bodies to gauge the overall quality of surface water and the impact of human intervention.

Surface water from the following major lakes/ponds was monitored and tested for quality assessment purposes:

- Vani Vihar Lake;
- Baramunda Bus Stand;
- Unit – IV Lake;
- Brameshwar Temple Pond;
- Mausima Temple Pond;
- Bindu Sagar and
- Kedar Gouri Tank.

Points that can be deduced from the test results of the samples taken are as follows:

- It can be seen that the overall water quality of all the monitored water bodies does not meet the water quality criteria for designated-best-use under 'Class B'. Therefore, these sources are not suitable for bathing purposes or religious rituals.
- Further, since these water bodies are being used for religious rituals, it is highly imperative that adequate measures be taken to ensure that incidental water quality at least meets the minimum criteria for 'Class B'.

An evaluation of the important parameters to assess quality of surface water in the major water bodies is listed in the table below:

No.	Parameter	Water Quality	Water Quality Criteria	
			Benchmark	Designated-Best-Use/ Compliance
1.	pH	6.5-7.5	6.0-8.5	B/Nominal
2.	Biochemical Oxygen Demand – BOD (mg/l)	2.0 – 24.0	<3.0	B/High
3.	Dissolved Oxygen – DO (mg/l)	4.2 – 7.1	>5.0	B/Moderate
4.	Total Coliform – TC (MPN/ 100 ml)	290 - 9000	<500	B/ High

Source: Environmental Management Plan, State Pollution Control Board, Odisha

4.4.3 Groundwater Quality Assessment

Groundwater is extracted to an extent of 40.00 MLD through the use of open-wells and tube-wells in several locations within the city to supplement the supplied quantum of the existing system to meet daily water demand. It can be assumed that additional groundwater extraction through localized sources is in practice to meet increasing water demand from high-rise residential dwellings, commercial places and related consumer areas not covered by the existing water supply system[34]. This has resulted in more tube/bore wells and thus decreasing the average distance between septic tank and bore/tube wells. The primary survey shows that the average distance in Bhubaneswar is 4m. Groundwater quality has been tested through obtaining samples from both open-wells and tube-wells at strategic locations. The collected samples have been tested in accordance with the standards of CPCB and evaluated for compliance with the water quality criteria to identify the "designated-best-use" and treatment/disinfection requirements, if applicable.

Groundwater quality has been assessed through testing samples obtained from the following locations:

- Open-wells: Palasuni Village, Sainik School, Baramunda Bus Stand, Khandagiri Chhak, Niladri Vihar, Staya Nagar, Sunderpada, Baragarh Village and Vani Vihar
- Tube-wells: Baramunda Market Complex, Khandairi Chhak, Ram Mandir, Capital Hospital, Sunderpada, Kalpana Area, Naragarh Brit Colony, Unit-IV Market, Vivekananda Marg and Satya Nagar.

Points that can be deduced from the test results of the samples taken are as follows:

- Though ground water quality matches water quality requirements of Class – A "Drinking Water Source without Conventional Treatment and Disinfection", quantity of faecal coliform and total coliform are on the higher end.

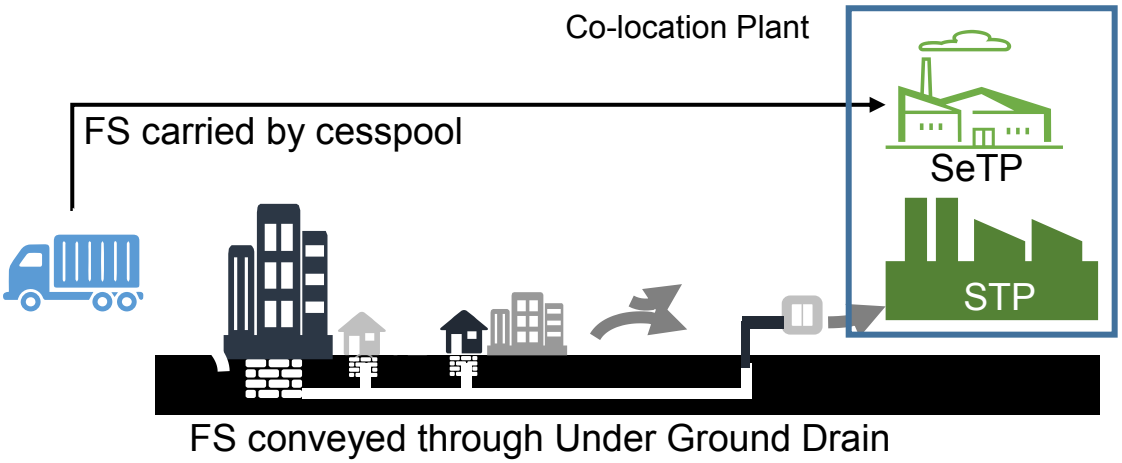
An evaluation of the important parameters to assess the quality of groundwater extracted from open-wells and tube-wells at the aforementioned locations is listed in the table below:

No.	Parameter	Water Quality		Water Quality Criteria	
		Open Well	Tube well	Benchmark	Compliance
1.	pH	6.2 – 7.9	5.2 – 7.4	6.5 – 8.5	A/Moderate
2.	Total Coliform – TC (MPN/100 ml)	7 – 55	<=6	<50	A/Moderate
3.	Faecal Coliform – FC (MPN/100 ml)	2 – 32	<=2	<50	A/Nominal

The state government has taken steps to implement septage treatment plant in order to treat and thereafter safely dispose or reuse the faecal waste. This is being covered under the AMRUT scheme. The treatment plant is designed such that it has capacity to handle faecal waste generated for next 7 years[35]. Incremental capacity required beyond this would is being planned to be covered through sewerage system. The proposed plant shall work on ABR approach with supernatant going to pond system for treatment while separated sludge shall be sent to unplanted drying bed to remove pathogens.

[34] According to HH Amenities and Assets, Census of India, 2011, 62.96% of HH have access to tap water (from treated sources) within premises.

Figure 4-17: -Co-treatment approach adopted by BMC for disposal of faecal waste



Capacity	Area	Cost	Lifecycle period	Distance from city	Technology	Expected date of completion
75 KLD (kiloliter per day)	22 acre (Co-located with STP)	2.85 crore	20 years	6 km from BMC	Anaerobic Baffled Reactor (ABR)	October, 2017 according to contract. It may get delayed by a few months.

Figure 4-18: -On-going work at Bhubaneswar SeTP (co-treatment within STP)

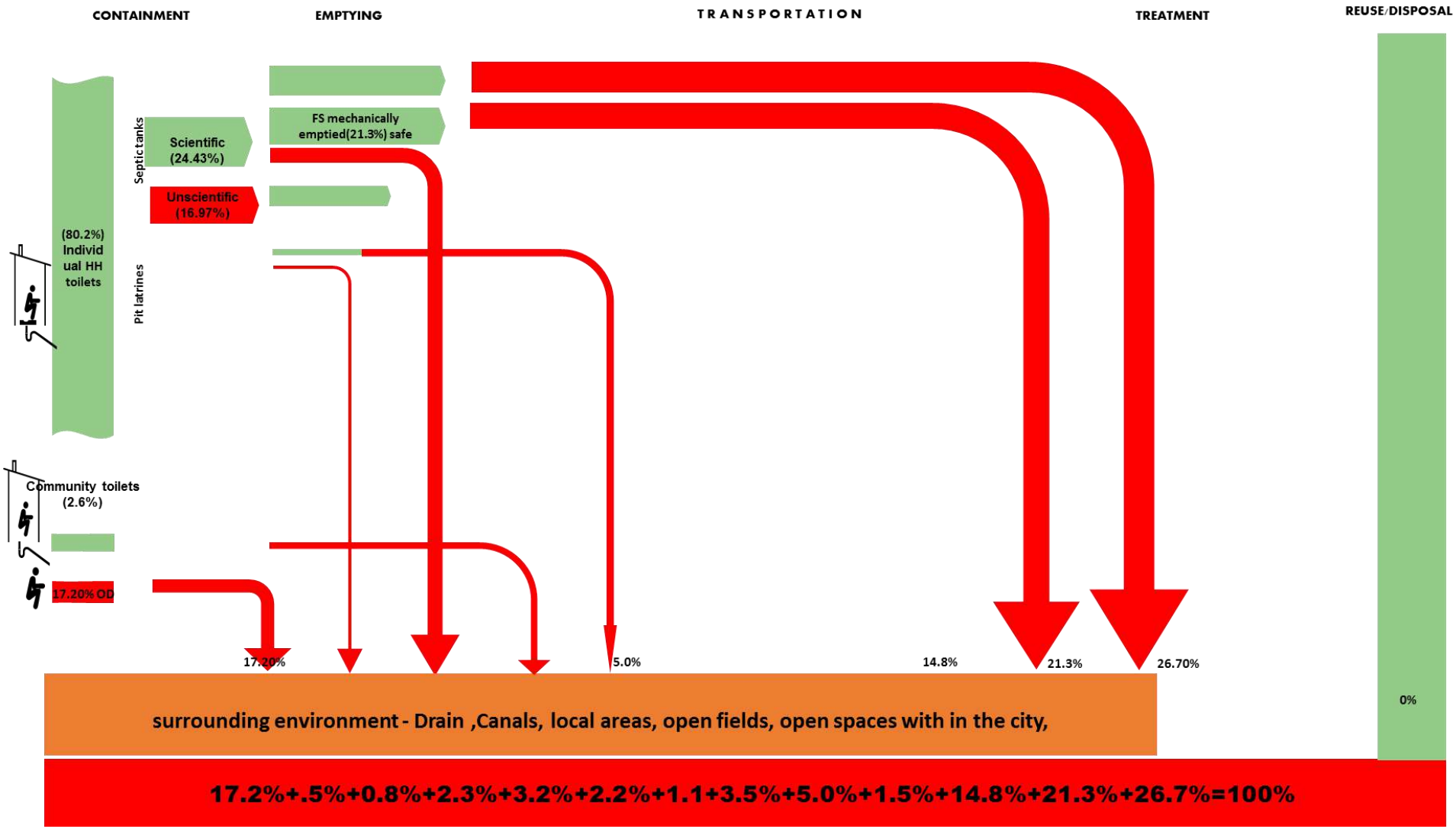
A 22 acre of land was provided for co-treatment plant, among which 2.14 acres have been allocated for SeTP construction.

Construction work has already started. Brickwork of Admin Block, foundation for PGF, boundary wall construction, and under construction of drying beds are in process.

In addition, during the construction phase of the SeTP at Basuaghai, temporary safe disposal is required for the faecal waste being generated in Bhubaneswar. As such, an interim solution of deep row entrenchment has been identified and notified by the government. BMC is to identify a total of 2.14 acres of land for deep row entrenchment considering the present situation of on-site containment in Bhubaneswar.

Figure 4-19: -Typical deep row entrenchment site

4.5 Shit flow diagram (SFD) of Bhubaneswar



4.5.1 Assumptions made for SFD

- Census 2011 data used for access related information
- Scientific and unscientific septic tanks and pit latrines are divided in the ratio 59:41 respectively based on finding of our primary survey covering lined and unlined containment system.
- 'Other systems' identified in census is included as pit latrine
- Toilet which have night soil removed by animal and human as part of insanitary toilet.
- FS emptying and transport is divided as safe and unsafe in the ration of 87:13.
- CT/PTs have scientific septic tanks

5 Stakeholder mapping and analysis

Basis the assessment of regulatory framework prevalent at the center, state and at the municipal level conducted in the previous chapter, the stakeholders of the sanitation value chain have been identified. Their roles and responsibilities across the value chain have been assessed and their influence and interest is presented in the subsequent sections of this section.

5.1 Stakeholder identification

The state level stakeholders bring in new policies, reforms and innovation with regard to funding mechanisms, creating an enabling environment and providing opportunities for the ULBs to implement reforms in sanitation or urban development projects in the city levels. While state level stakeholders build strategies, ULBs are critical stakeholders to implement those strategies, policies and plans. The district level stakeholders play supervising roles and monitor the progress besides facilitating the implementing processes in a limited way. District level stakeholders are required to integrate the plans and programme in the cities of the respective districts into the district planning processes, thereby escalating these local plans into the state level planning processes through the district level planning committees. Despite the abovementioned provisions, urban development programmes are not reflected in the district planning processes in Odisha. In addition, private stakeholders also play a critical role in investment for capex and O&M of FSSM services.

Table 5-1 Stakeholders at state level and district level

State level	District level
► State Urban Sanitation Mission headed by the Chief Minister of Odisha which is the highest policy making body for urban sanitation ► State High Power Committee headed by the Chief secretary of Odisha and convened by the PS H&UDD ► State SBM Directorate, headed by the State Mission Director reporting to PS H&UDD. It has a Project Management Unit (PMU) ► Technical Support Unit (TSU) on FSSM under the H&UDD ► Directorate of Town Planning – to integrate FSM rules and standards into town planning laws ► Department of Water Resource ► Directorate of AMRUT headed by Special Secretary for infrastructure creation, funding and reforms ► Directorate of Municipal Administration (DMA) to monitor the regulatory services oversight of sanitation ► Odisha Urban Infrastructures Development Fund (OUIDF) for PPP and investment ► PHEO for water supply ► The OWSSB – nodal agency ► PDMC – EIL ► Consulting Firms and funding agencies – BMGF, DFID, Practical Action, J PAL South Asia, EY, IPG, Deloitte, Tata Trust and others	► District Level Review and Monitoring Committee (DLRMC) - for monitoring ► Development trusts/ authorities – for enforcements and regulations ► District Mineral Foundation (DMF) funding & finance for FSM ► Corporate Houses -Corporates Social Responsibility (CSR) ► Regional Centers of Pollution Control Board – pollution checks air, water and soil etc. ► Regional OWSSB offices – to execute sewerage and SeTP projects/ waste water management ► Regional PHEOs for water supply ► SBM PIU ► **City level** ► ULB - Mayors, Dy Mayors, EO/Commissioners, Engineers ► City Sanitation task force (CSTF) ► Ward Sanitation Committee (WSC) ► PIUs of various schemes - SBM, PMAY, NULM, AMRUT & others ► Frontal units of line departments such as MAS, WKS, SHGs & others ► Influential & key educational institutions, industrial units, trade union associations ► Residential Welfare Associations/ Slum federations ► NGOs, CBOs, youth clubs, Puja/ peace committee, citizen groups etc. ► Outsourced agencies as service providers ►

Seven key roles have been identified across the sanitation value chain encompassing funding, planning & designing, implementation, operation & maintenance, policy support, regulatory function and monitoring mechanism. The table below presents the outcomes of the mapping of stakeholders for overall sanitation management in Bhubaneswar.

Table 5-2: Stakeholders and their functions in sanitation value chain

Key areas	Funding	Planning & designing	Implementation	Operation & Maintenance	Policy support	Regulatory function	Monitoring mechanism
Toilets (HH level) with containment	SBM, Households	SBM, Masons, Household	ULBs, Households, Private contractor	Households	State Sanitation Mission	With ULBs	State SBM Directorate & ULBs
Toilets (CT and PT) with containment	State govt. ULB CSR/ NGOs PPP SBM	Engineering dept., Sanitation dept., Town planning dept., ULB	• Private operators / ULBs • Engineering dept. in ULB	Private Operators / Sulabh/ ULBs	State urban Sanitation Mission	ULBs	State SBM directorate & ULBs
Emptying and transport (septage)	Households ULB (PT/CT)	ULB	ULB	Private Operators & ULB	H&UD	ULBs/ OSPCB/ OWSSB	ULB
Treatment, safe disposal and re-use	AMRUT	OWSSB	OWSSB	OWSSB/ private operators	OWSSB/ H&UDD	OSPCB/ OWSSB	OWSSB /H&UDD
IEC Campaign (Information, Education and Communication)	SBM Directorate	SBM Directorate	ULB, Community Based Organisation		SBM Directorate /ULB	ULB	ULB/ SBM Directorate
Capacity Building	Mission Directorate	Mission Directorate	ULB, Community Based Organisation		SBM Directorate	ULB	ULB/ SBM Directorate/ H&UDD

5.2 Interrelationship between stakeholders

Promoting sanitation sector across a value chain often requires identifying the key stakeholders involved in various other sectors and engaging them in planning and implementing activities. For example, the Road Transport Organisation (RTO) and Transport Department's support may be needed in improving the emptying and transportation practices in these towns. Similarly, the agencies preparing land-use plans, master plans, building bye-laws etc., need to make provisions for earmarking land for septage treatment and enforcing appropriate sanitation systems. Irrigation Department has an understanding of waste water flows and pollution of water bodies and their inputs may also be crucial in promoting waste water treatment. Many of the ULB departments may need to have convergence of activities with these stakeholders. Hence, an exercise for identifying the key stakeholders across various sectors and convergent role of ULB departments is undertaken and

presented in the following table-

Table 5-3: -Interrelationship of stakeholders across various sectors in Bhubaneswar

	Stakeholders		
Sector	**Planning, Regulation Monitoring**	**Implementation**	**Operation and Maintenance**
Land Use/ Master Plan/ Building Byelaws	Directorate of Town planning Development authorities and improvement trusts	Directorate of Town planning Development authorities and improvement trusts	Regional improvement trusts and development authorities/ ULB (Amendments)
Water Supply	PHEO/WATCO	PHEO/WATCO	PHEO/WATCO
Sewerage and waste water treatment	OWSSB/WATCO	OWSSB/WATCO	PHEO/WATCO
Drainage	Major drains- Water Resource Department Minor drains- ULB	Major drains-Water Resource department Minor drains- ULB	Major drains- Water Resource Department Minor drains- ULB
Traffic and Transportation	RTO	Commiserate of police	RTO
Storm Water Drainage	Water Resource Department	Water Resource Department	Water Resource Department
Access to toilets	Mission directorate	ULB (Sanitation department)	ULB(Sanitation department)
Solid Waste Management	ULB (Sanitation and engineering)	ULB (Sanitation and engineering)	ULB (Sanitation and engineering)
Slum Development/ Urban Poverty Programme	ULB (Slum Improvement department)	ULB (Slum Improvement department)	ULB (Slum Improvement department)
Housing or EWS	H&UDD	ULB	ULB
Environment/ Forestry	Forest department , ULB	ULB	ULB
Industrial Development	Industry Department	Industry Department	Industry Department

In order to implement the 74th Amendment Act, the Government of Odisha (GoO) has formed a joint venture government company, Water Corporation of Odisha (WATCO) along with BMC, PHEO and H&UDD to manage water and sanitation services in Bhubaneswar, Khurda and Jatani region on pilot basis. The basic objective of WATCO is to manage water sanitation infrastructure and services on commercial basis to make the sector sustainable. The key issues to be dealt by WATCO are:

a) Reduction of NRW
b) 100% water metering
c) 24*7 water supply
d) 100% sewerage connection
e) O&M cost to be recovered through collection of user fee from public
f) PPP models for water and sanitation sector

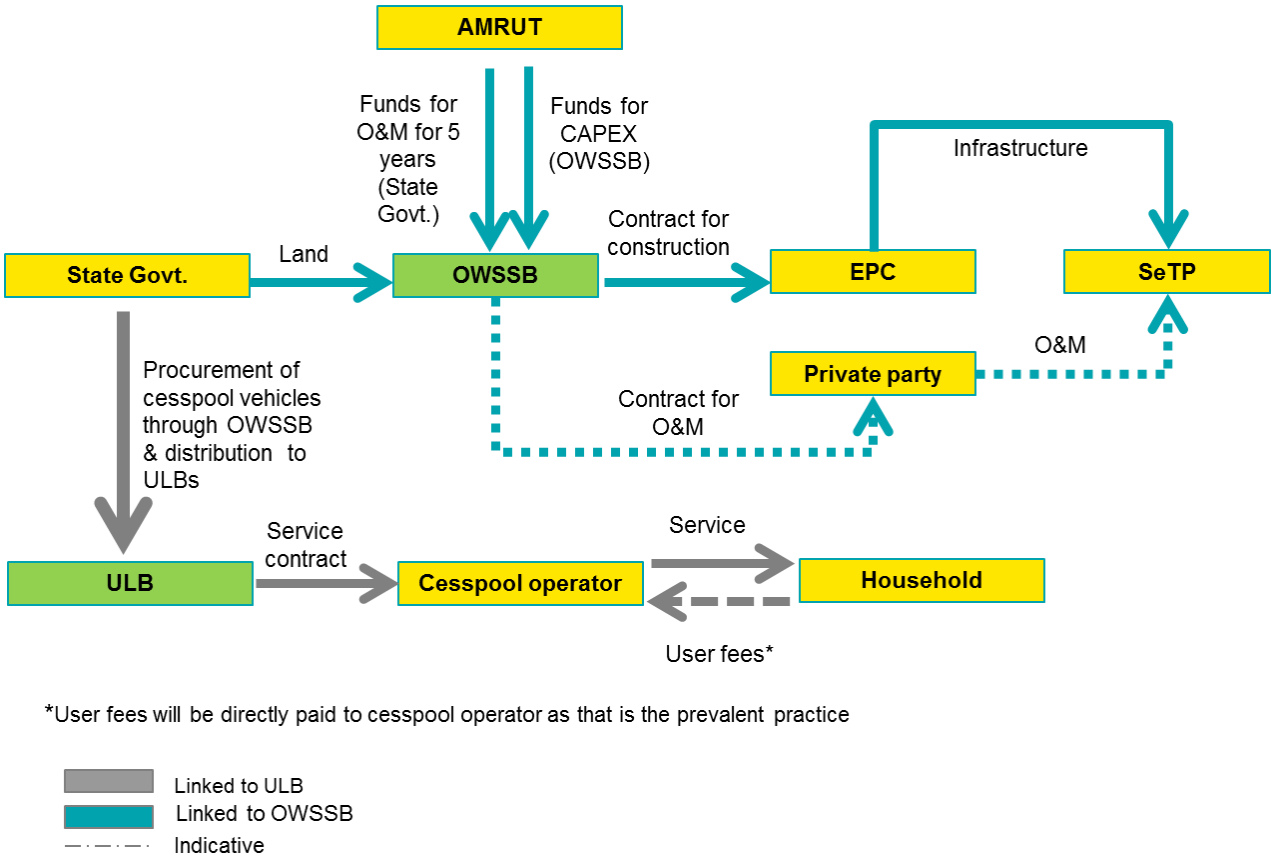
One of the observation from the above table is that urban infrastructure including sanitation and FSSM remains outside the purview of the ULBs. But in case of SWM, the ULBs manage, collect, transport and treat (landfills) through private participation quite successfully. Improvement is quite satisfactory in case of adopting bylaws and standards. In case of liquid waste or waste water treatments , the ULB should be given the power and capacity to handle these functions directly instead of fully transferring the responsibilities to OWSSB and then remain out of its ambit during construction and O&M for certain period of times. Similarly, in case of storm water drainage, in Bhubaneswar, the responsibilities have reportedly transferred to BMC for better management of storm water in the city. Therefore, government may consider giving opportunities and chance to the ULBs to

undertake urban infrastructural projects so that they can gain knowledge, skill and experiences to usher a new beginning and have the required power as well as accountability.
It has been observed from the past experience of implementing projects that often the beneficiaries who are most affected by the project outcomes do not have adequate influence on the project. On the other hand those stakeholders who have high influence often do not have adequate interest in project activities. Hence, a carefully designed strategy of engaging the stakeholders based on an analysis of their interest and influence is quite useful. Influence refers to the power and authority to make decisions and allocate funds. Interest indicates the highest beneficiaries of the successful outcomes of the project. Basis interactions with officials at various levels, certain key issues have been identified.

Key issues in stakeholder interrelationship

Cesspool emptying of sludge and corresponding treatment in SeTP are important aspects of the FSSM value chain. Earlier, ULB and private operators used to run cesspool vehicles separately. Under the new Private Public Partnership (PPP) model, ULB will incur the capital expenditure for purchase of cesspool vehicles and the private party will bear the operating expenses. ULB can monitor where the cesspool operator is dumping the sludge. Under the new scenario, it is important to understand the relationship between OWSSB and ULB specific to FSSM service. The institutional framework has been depicted in the figure below.

Table 5-4: -Institutional framework for FSM service



Source: National workshop by OWSSB, 2016

1. In case of FSSM two key city level infrastructures – SeTPs and cesspool trucks are complimentary to each other but fall under the purview of different bodies. OWSSB constructs SeTPs and are responsible O&M of the treatment plant by the private parties. The cesspool trucks are placed with the ULBs by the OWSSB[36] after central procurement at the state level (June 2016). ULBs are responsible for engagement with private operators for emptying and transportation. Thus different

[36] On behalf of H&UDD

parts of the value chain are mapped to different stakeholders which can result in coordination challenges.

2. Further clarity is required on-
   - Revenue generation from SeTPs
   - Cost recovery from reuse of treated resources
   - Tariff policy
3. Under the present scenario, cesspool trucks are not considered as revenue generation assets for most of the ULBs. However, certain human resource as well as operational costs are involved in management of the fleet of cesspool vehicles. Currently the operations are proposed to be managed by private operators. The critical aspect to consider is who will bear the expenses for O&M of SeTP after five years and what will be operating model at that stage.

4. Scaling up the FSSM solution in non-AMRUT cities under this framework will be challenging because OWSSB is not an institutional structure. It is a project based organization of the PHEO and has presence in almost 103 cities in the State. Therefore, roles of different levels should be clarified and a functional relationship should be established between the ULB, district administration, parastatals – OWSSB and OSPCB etc. for FSSM services.

5. There is a lack of integrated approach to FSSM within various bodies and department. PCB is responsible for monitoring to ensure that dumping of waste into drains or rivers. While they have the authority to penalize, they can only notify the private and ULB run vehicles in case of indiscriminate dumping. They have the regulatory power but no executive authority to implement it. It is important that monitoring is done in coordination and not in insolation by multiple departments.

6. City systems have weak structure as they have no formal power. Under the AMRUT programme, ULBs are the prime stakeholder for reforms implementation. However, in practice, ULBs have formally transferred the service procurements and implementation of infrastructural projects under AMRUT to the parastatals through ULB's council resolutions and through tripartite agreements between H&UDD parastatals and ULB. But district level institutions have shown interest in taking responsibilities provided they are given clarity of their roles over ULB affairs by the government. This is a positive trend observed by the TSU during interactions with key stakeholders.

6 Capacity Building

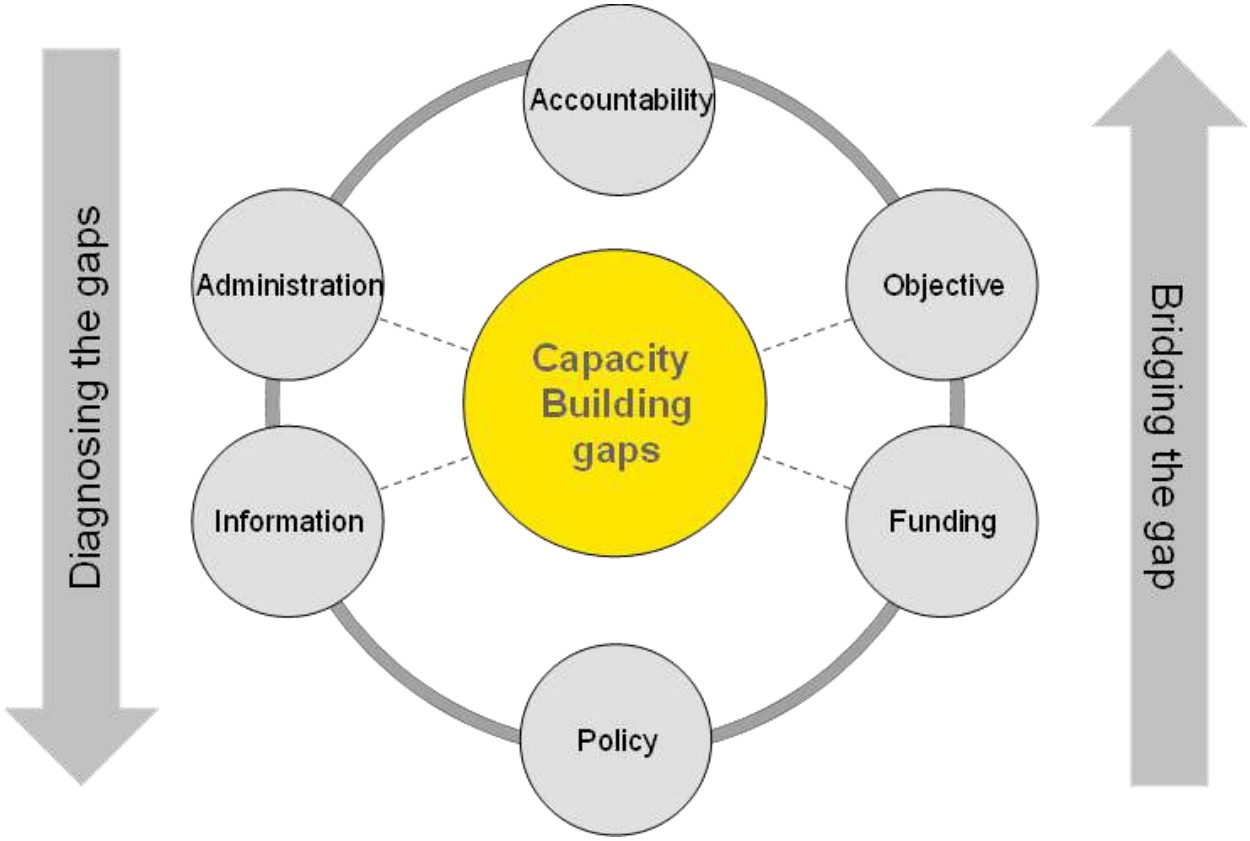


Table 6-1: -Key gap assessments and strategies for capacity building in Bhubaneswar

Key capacity areas	Gaps Identified / observations	Strategies suggested	Key target groups
Institutional arrangement within city	► Existing institutions are indifferent and lack consistent approach to sanitation issues ► Lack of structured engagement and integration with existing institutions ► CSP has not been formalized and implemented as a binding document ► Rules and regulation and enforcement are not clear. It falls under the purview of multiple departments and not on ULB exclusively.	► Integration of community level informal groups with city sanitation programs ► Formalization of community level institutions such as CSTF, WSC in city system ► Strengthening front-line departmental groups for FSSM services in cities ► Focus should be on zone and ward level interventions – a coordinated program and overall M&E at broader level at ward level	► CSTF, WSC ► Puja committees, Sahi committees, slum federations, youth clubs, sports clubs, cultural groups etc. ► Mahila Arogya Samiti, Ward Kalyan Samiti , SHGs ► Ward Councilors ► Zone level officials of city
Community engagement and ownerships	► Low level of engagement at present. No active citizen participation due to lack of engagement and recognition in the city governance ► Lack of volunteering and mentoring from local communities ► Informal community structures (ex. Puja basti committee) have no functional relations with line departments (ex. MAS/ Ward Kalyan Samiti) and front-line personnel. They are not aligned to city system operationally. ► No to limited data availability to prepare ward plans ► Potential Institutions/ establishments are not mapped and consulted for sanitation campaign in the city ► Communication and messaging are stereotyped and typically ineffective.	► Promotion of volunteering and mentorship on sanitation at ward level including community engagement and recognition systems and processes ► Integration with ULB council, staffs and committees through interactions ► Converging all community level influencers, line departmental frontal units and city councilors at zones and ward levels to discuss, decide and agree over key sanitation issues ► Base line sharing with ward councilors ► Service level scores in each wards including sanitation and its integration with CSPs ► Messaging needs to target community engagement and more inclusive and contextual ► Assign each ward level sanitation promotion to the key institutions in the city such as IIT, XIMB, BJB College, Utkal University, NISER & other private and govt. institutions	► SHGs and SHG federations ► Ward councilors and standing committee members ► City officials ► Community organizers, sanitary inspectors - MAS, WKS, Youth Clubs, Traders associations ► Slum committees directly interacting with PCB, OWSSB, PHEO,BMC, RWAs and colony societies ► Engagement with the corporates, lawyers' association, bus owners associations, workers unions, doctors association, schools and colleges ► Bar council
City leadership in undertaking reforms/ enforcement/regulation	► Lack of data and knowledge on FSM and overall sanitation sectors ► Low skill to comprehend issues of sanitation in local contexts and finding solutions	► Exposure visits to learn leading practices ► Better data management for improved decision making process in councils. Data should be regularly shared from wards to city level including city council, mayor, standing committee chairman, and ward councilors	► Mayor, Deputy mayor ► Standing Committee ► Councilors ► Commissioner ► Deputy Commissioners ► Additional commissioners

Key capacity areas	Gaps Identified / observations	Strategies suggested	Key target groups
	► Accountability and power lies with different stakeholders leading to gaps in planning and implementation ► Incoherent relationship between council, standing committee and executive wings (commissioner) and city administration ► The capacities of engineering department are already maxed and may not have capacities to manage the expected workflow of waste-water and SeTPs	► Capacitate target audience through training in concept and program design to increase their involvement ► Create pilots to show workability of concepts and plan roll-out ► Model SOPs should be prepared and shared with the city officials ► CSP should be adopted as a binding document ► City level resolutions on critical sanitation decisions should include enforcement and regulatory mechanism as well as involvement of community structures in its implementation	► Engineers ► Finance section ► City health offices ► Sanitation department ► PIUS- AMRUT, SBM, PMAY, NULM and others ► Departmental front line organizations
Administrative/ governance areas	► Multiple agencies are involved in services and no coordination and accountability ► Lack of skilled manpower ► Low planning and spending capacity of available funding ► Low capacity in mobilization of own sources of revenue and alternative financing sources (DMF, CSR, PPP and others) ► Awareness of FSSM is limited, whether it is a complimentary, supplementary or alternative solution among other technical aspects. Similarly, the planning needs to be integrated going forward, for example in Cuttack 100% areas of HHs and institutions are targeted to be covered in the sewerage services by 2018 ► Community level structures (informal and formal) are not in tandem but active in their own spheres ► New community institutions and user associations are strategic but remain out of formal system ► Key components of sanitations infrastructures- toilets, water supply, waste water management, SWM and drainage have missing interlinks	► Strengthening urban administration through participatory planning in city levels for integration with urban planning and effectively escalate the issues to state levels through planning structures ► Prepare operating model options for sanitation and FSSM ► Plan interactions with community level organizations for local specific solutions	► District Collector ► ADM, Tehsildar ► PD DUDA ► DFO ► Regional PCB ► Regional OWSSB ► Regional PHEO ► City Commissioner ► Additional Commissioners ► Deputy Commissioners ► City Engineer ► City sanitation officer ► Officials of BDA ► Members DUSC ► Members of CSTF ► Members of DPC ► Members of Standing Committees ► Corporators of BMC ► Key institutions in the city including other line departments – health, education MLAs, MPs, Department of social justice

Key capacity areas	Gaps Identified / observations	Strategies suggested	Key target groups
	operationally but aim to have common outcomes on sanitation		► Water resource department ► Private agencies
Creation of environmental engineering cell in engineering section	► BMC does not have environmental engineering sections to comply with standards in Public health and environment.	► Restructuring the engineering department with added focus on environmental engineering	► Mayor, Deputy Mayor of BMC ► Commissioner ► Standing committee on sanitation and health ► City engineer
Private participation in the urban infrastructures (Capital and operating expenditure)	► People are not aware of reasons of privatization of sanitation services leading to dissatisfaction among the workers ► SWM is accepted and adopted as an essential element of sanitation vis-à-vis FSSM having limited understanding and acceptance ► Recurring and frequent outbreaks of water borne diseases in the city has increased demand for FSSM services ► Low participation of private operators in bid process of cesspool vehicles ► Public is not aware of end-to-end service provisions of FSM value chain which restricts demands for FSM ► Pricing and sanitation use fees / tax is a political / legal issues ► High expectation of public from ongoing sewerage projects and people are expecting it to address to address all sanitation issues	► Interfacing of BMC officials with potential private operators, and business communities ► Empanelment of masons with adequate trainings ► Masons associated with developers associations should be trained ► Increased involvement of house owners associations and RWA in undertaking innovative models ► Key engineering and management institutions to be involved for mentoring and creation of entrepreneurship models for sanitation services including banks and financial institutions, SC/ ST financial corporations, micro-finance institutions, Livelihood and Skill development authority	► Private operators ► Masons ► Banks and financial institutions ► Skill development authorities ► NULM ► NBFCs and MFIs

7 Primary survey - HH level

7.1 Rationale of the primary survey

As described in Section 1.3, a limited primary survey was conducted in the selected areas of Bhubaneswar to collected data on the FSSM situation, existing practices, structure, capacities and awareness level, and gaps across the value chain. The collected data is expected to generate evidences which would further help in developing a road map towards implementation of FSSM programme.

7.2 Demography of HHs

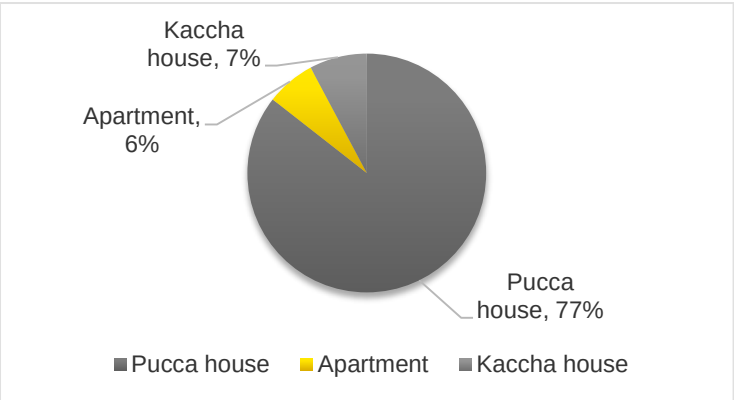
A total of 780 HHs were surveyed for the demographic assessment, out of which 66% HHs were from non-slum areas. Nature of the property was mostly residential (87 %). House typology for 77% of the surveyed HHs was *pucca* house.

Details of demographic profile of the surveyed HHs are given in the following table:

Table 7-1: -Demographic profile of HHs

Demographic profile of the survey HH	N	%
Nature of the locality (N=780)		
Slum	268	34
Non-slum	512	66
Nature of property (N=780)		
Residential	675	87
Institutional	9	1
Commercial	74	9
Any mixed	22	3
HH ownership (N=780)		
Owned	534	69
Rented	173	22
Staff quarter	18	2
Public land	55	7
HH size (N=780)		
Small (four or less than four)	573	2
Medium (five to seven)	192	25
Large (more than seven members)	15	73

Figure 7-1: -House typology



69% of the HHs surveyed were owned by the residents while 7% of the HHs were built on public land. More than 70% of the HH have large family size (more than seven members) and 2% have small family size (four or less than four members). The average no. of persons per HH among the respondents is observed to be higher than the census 2011 statistic.

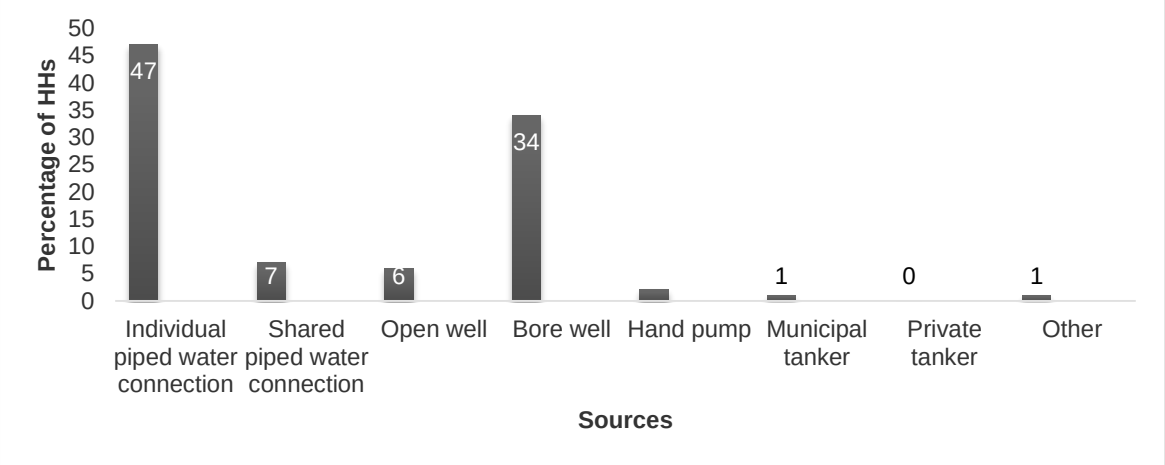
7.3 Source of water for domestic use

Prime source of domestic water for 47% of HHs is individual piped water connection. For HHs with piped water connection, only 5% had water supply more than eight hours per day and 45% reported that the water supply was between two to four hours per day and 36% reported that the water supply was less than two hours per day. About 34% depended on bore well.

In order to increase the demand on latrine use, availability of water is an important component. 80% respondents reported that they are getting sufficient domestic water for maintenance of toilet.

There is a high chance of groundwater contamination for the HHs having well/hand pump in close proximity to pit/septic tanks owing to seepage from the pit/septic tanks. The survey result shows that 40% HHs have well/ hand pump situated in house/plot with average distance of 4 meters from pit/ septic tank.

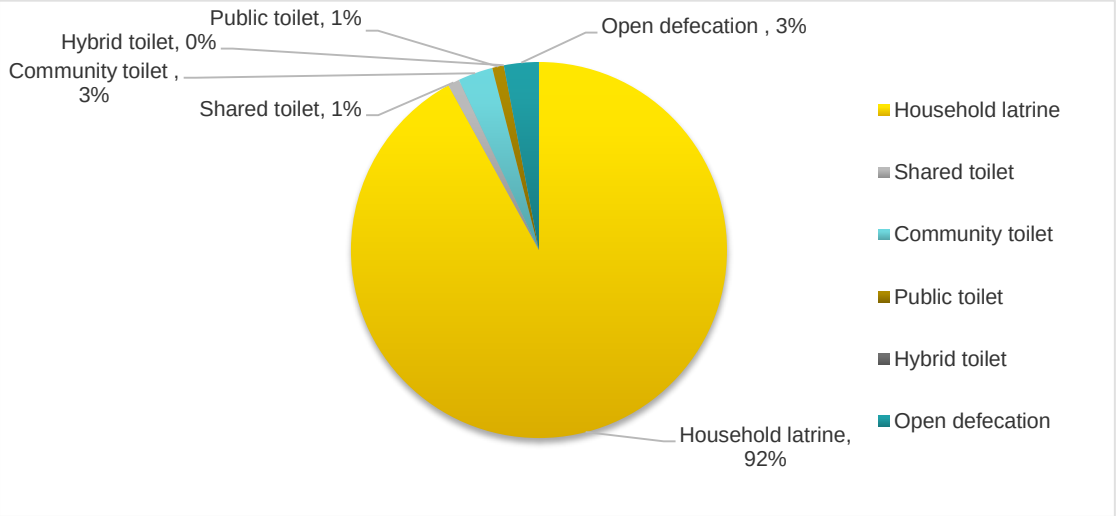
Figure 7-2: -Primary source of domestic water



7.4 HH sanitation accessibility/facility scenario

As per the survey for 780 (slum and non-slum) HH, 92% had individual latrines. Out of 780 HHs, 268 HH were slum HHs. *76% slum HHs had access to individual toilets while 13% used public toilets, 6% used shared toilets and 7% HHs practices open defecation.* Figure 6-3 shows defecation practice of the HHs is given.

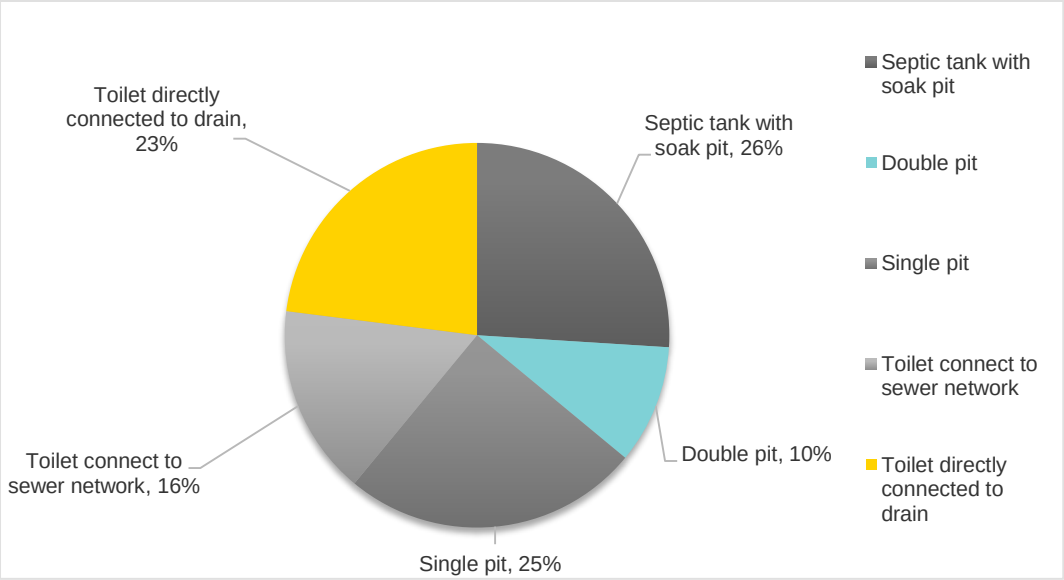
Figure 7-3: -Defecation practice by HHs



Among 247 slum HHs using toilet, 37% had septic tank, 42% had pit latrines and 26% toilets were directly connected to drain. There were some slum HHs wherein sewer lines were present. On the other hand, out of 511 non-slum HH, 21% had septic tanks, 21% were connected to sewer network, 30% has pit latrines and 8% toilets were directly connected to drain. Figure 7-4 highlights the

information on disposal from latrine connection for all the HH surveyed.

Figure 7-4: -Latrine connection for disposal



7.4.1 HH views towards community/public toilet

Out of 37 HHs using CT/PT, 23 opined the availability of dustbin for disposal of sanitary pads, 26 said that there is facility for hand washing. 49% HHs using CT/PT paid more than INR100 and 27% spent less than INR 50 per month. With respect to maintenance of the toilets, 54% HHs reported that the maintenance was done by the Municipality while the remaining felt that the maintenance was done by the community.

While 49% HHs using community toilets felt that the toilets were average in terms of cleanliness and maintenance, 43% HHs felt that it was poor. However most of them perceived that there is scope for improvement in maintaining the toilets and facilities provided by the operator.

7.4.2 Open defecation scenario

Out of 142 HHs practicing open defecation, 99% did not have IHHL nor had access to community/public toilets. Among the HHs practicing OD, when asked about problems associated with OD, 92% perceived that during OD there is lack of safety for girls and women, 80% felt that inconvenience in terms of time (before dawn and after dusk), and 55% viewed maintaining privacy was a major challenge associated with OD.

About 4% of the HHs in spite of having latrines practiced OD, mostly because of lack of availability of water (61%), small septic tank (6%), in order to avoid frequent cleaning (23%) of tank/pit and remaining 6% prefer to defecate outside.

Table 7-2: -Open defecation scenario

Open defecation scenario	n	%
Reason for practicing (N=22)		
Lack of access to PT/CT	20	91
Habit	2	9
Problem associated with OD		
Lack privacy **(N=22)**	19	86
Lack of safety for girl and women **(N=22)**	17	77
Lack of dignity **(N=22)**	18	81
Inconvenience in terms of time **(N=22)**	22	100
Inconvenience in terms of distance **(N=22)**	15	68

Open defecation scenario	n	%
Infections and diseases **(N=22)**	11	50
Willing for construction of individual HH latrine (N=22)		
Yes	20	91
No	2	9
If no reasons (n=2)		
Lack of fund	2	100
Lack of space	0	0
Willing for individual superstructure with pit/septic tank (N=22)	13	59
Will be interested for use of community/public toilet (N=22)	22	100
Willing to pay for using community/public toilet (N=22)	13	59
Willing to community level management of community/public toilet (N=22)	11	50
Number of HH practice OD in spite of having latrine facility (N=758)		
No	727	96
Yes	31	4
Reason for practice OD in spite of having latrine facility (N=31)		
Lack of water facility	19	61
Small septic tank or pit	2	6
In order to avoid frequency of cleaning	7	23
Habits	2	6

Key findings:

- Among the OD HHs, 91% were willing to construct individual HH latrine
- All the HHs practicing OD were interested to use community toilet
- Only 59% of the HHs were interested in paying money to use CT.
- 50% HH so agreed for community level management of CT

7.4.3 Septic tank/pit status of the HHs

Total 463 HHs had septic tanks/pits. About 21% of the septic tank/pits were located inside the house. Out of 368 septic tanks/pits located outside of the house 46% were in front side and 54% were located in back side of the house. About 41% of the septic tanks/pits were rectangular in shape. While designing and construction of septic tanks/pits, 90% of the HHs sought advice from mason/contractor. About 56% HH checked ground water level during construction of septic tank/pits. About 51% slum HHs had lining in their septic tanks whereas 67% non-slum HH had lining in their septic tanks.

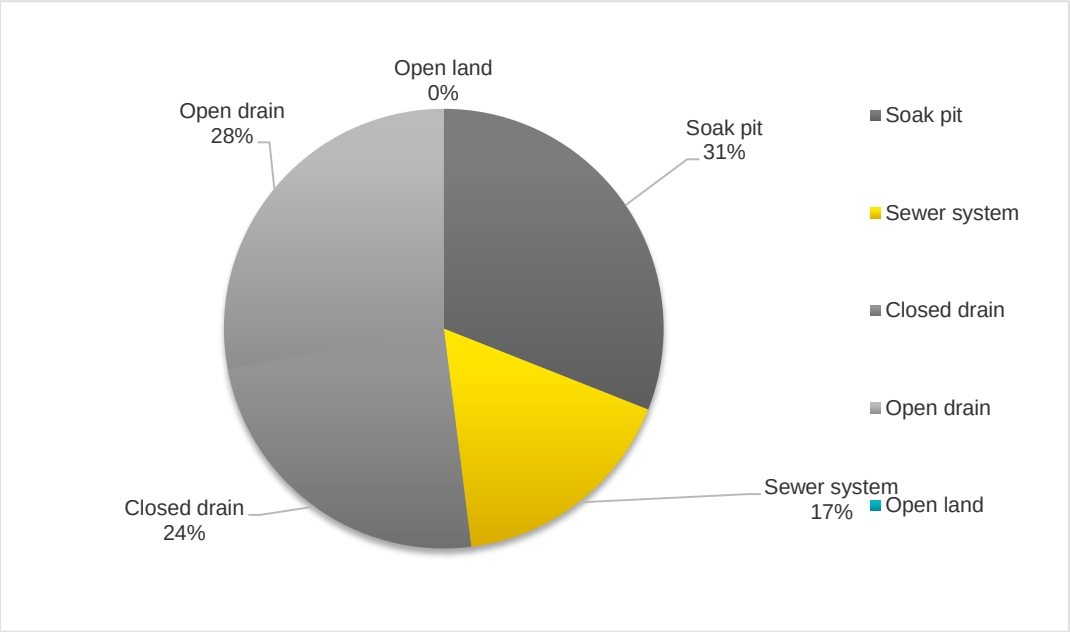
Table 7-3: -Description of septic tanks/pits

Description of septic tank/pit	n	%
Location (N=463)		
Inside the house	95	21
Outside the house	368	79
Front side of the house	169	46
Back side of the house	199	54
Shape (N=463)		
Rectangular	190	41
Circular	273	59
Seek advice for designing and construction (N=463)		
Mason	417	90
Contractor	42	9
Municipality officials	5	1

NGO/Neighbor/Relative/Friend	0	0
Ground water level checked before construction (N=463)		
Yes	261	56
No	202	44
Type of the lining (N=463)		
Lined	273	59
Non-lined	190	41
Gray water connection to septic tank/pit (N=463)		
Kitchen water	2	1
Washing/bating water	16	3
Surface/roof water	0	0
Size (N=262)		
Breadth in ft, Average (range)	5 (3 – 10)	
Length in ft, Average (range)	7 (3 – 36)	
Depth in ft, Average (range)	8 (3 – 56)	

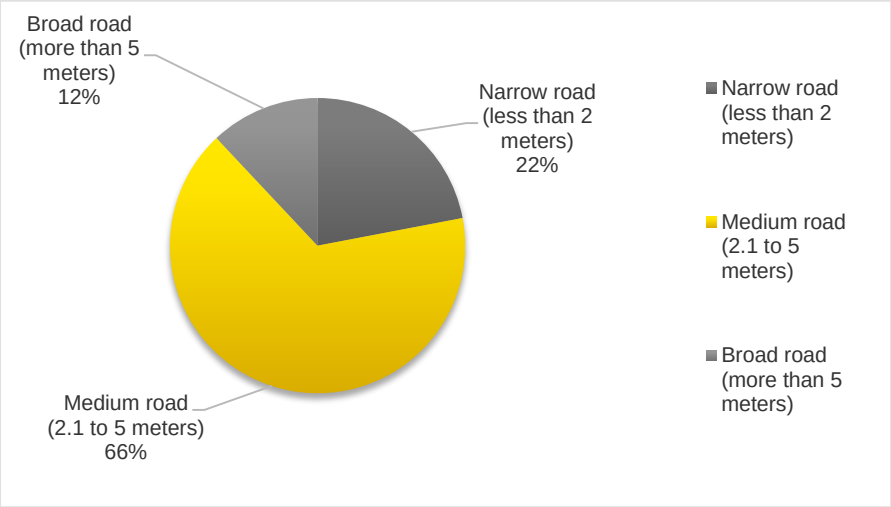
Out of 463 septic tank/pits 31% were connected to soak pits, 17% sewer system and remaining 52% to drain. Figure 7-5 details the outfall connection.

Figure 7-5: -Outfall connection of septic tanks/pits



As per the survey, both slum (76%) and non-slum (60%) HHs having access to septic tanks reported that the roads had width between 2.1 – 5 m. Figure 7-6 describes the road accessibility for both slum and non-slum HH having septic tanks.

Figure 7-6: - Road accessibility to HHs having septic tanks/pits



7.4.4 Septic Tank emptying practice

It was reported that both slum and non-slum HHs get their septic tanks/pits cleaned either from municipal service provider or private cesspool operator. Out of 463 HHs having septic tanks or pits, municipality is the most preferred service provider at 73% and 21% preferred private providers. Remaining 6% preferred non-mechanised services. About 54% contacted government cesspool for emptying*, however, 5% communicated with manual laborers.*

About 29% non-slum HHs got their septic tanks cleaned within 6 to 12 months and 29% non-slum HHs have not got their septic tanks cleaned as of yet.

While getting the septic tanks cleaned, 73% HHs did not face any barriers on locating and breaking, 16% HHs faced barriers related to breaking of floor tiles/manholes and for 11% HHs, the cesspool truck could not reach their house. *Above 70%% HHs were not satisfied in emptying, transportation and disposal.*

Table 7-4Figure 7-7 presents the detail of septic tank emptying practices. In order to get the cleaning done, around 60% HHs paid between INR 500 -1000, 34% HHs spent INR 1000 - 1500, and 3% spent between INR 1500 – 2000.

Figure 7-7: -Septic tank emptying services received

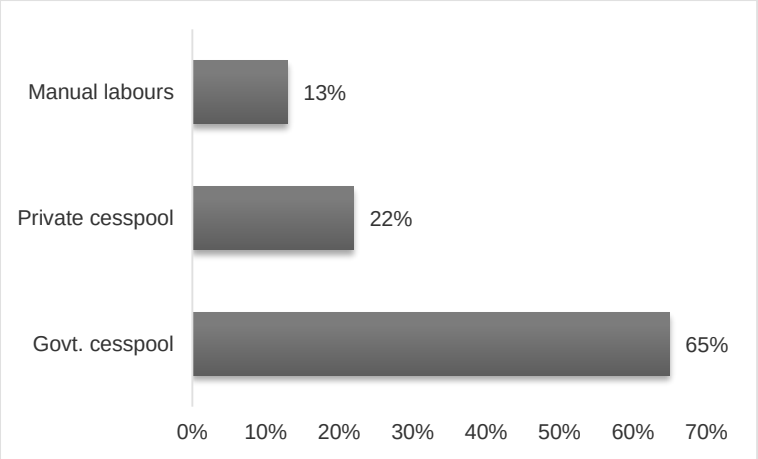


Table 7-4: -Septic tank emptying practice

Septic tank empty practice (N=463)	n	%
Preferred service provider (N=463)		
Municipality	337	73

Private	97	21
Local labor	29	6
Self	0	0
Not yet decided	0	0
Contacting for emptying (N=463)		
Govt. cesspool	252	54
Private cesspool	82	18
Manual labors	25	5
Not yet communicated	104	22
Septic tank emptying service received (N=359)		
Govt. cesspool	233	65
Private cesspool	79	22
Manual Labor	47	13
Amount spent for emptying process (N=359)		
No cost	4	1
500 to 1000 INR	215	60
1001 to 1500 INR	122	34
1501 to 2000 INR	11	3
2001 to 3000 INR	4	1
More than 3000 INR	4	1
Barriers in emptying (N=359)		
Access of cesspool truck to house	38	11
Breaking floor tiles/manholes	59	16
Difficult to locate	0	0
No barriers	262	73
Satisfied in emptying, transportation and disposal (N=359)		
Yes	80	22
No	279	78

Key findings:

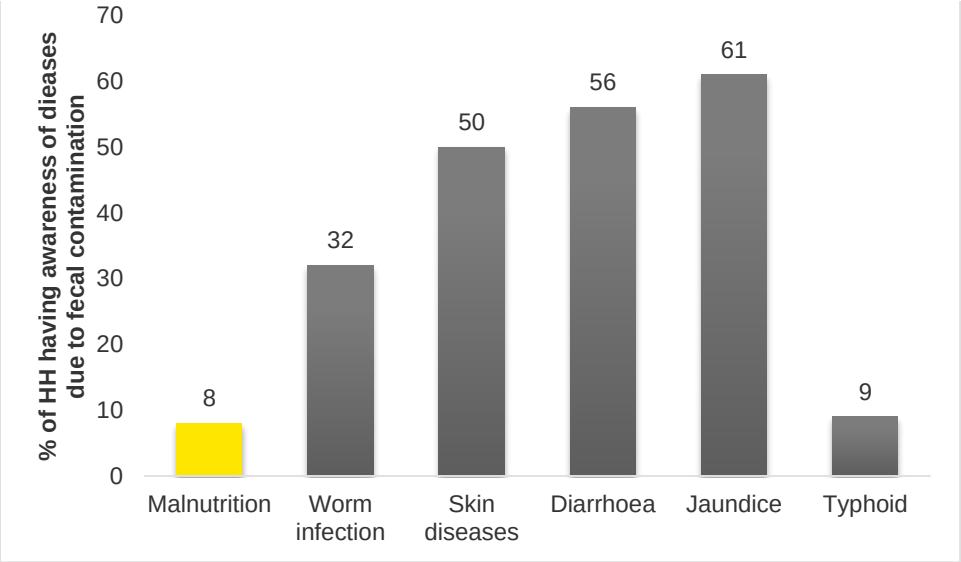
- ULB is the most preferred service provider in Bhubaneshwar with 73% preferring it
- 29% HHs in non-slum area have never cleaned their septic tank or pit
- Above 70%% HH were not satisfied in emptying, transportation and disposal.
- 11% reported difficulty in access to vehicles

7.4.5 Awareness on environmental and health impact of sludge disposal

Out of 780 HHs, 41% HHs were aware on environmental and health impact of sludge disposal. 80% HHs were not aware of the location of disposal of sludge. The remaining HHs viewed that the collected sludge was either disposed at drain/canal (18%), agricultural land (2%), or was directly thrown into the river (1%).

Only 1% of HHs family members suffered from diarrhea and jaundice during last three months from the survey. Figure 7-8: -Awareness on diseases due to faecal contamination shows that only 8% are aware of harmful impact of poor FSSM on malnutrition. This is true for both slum and non-slum area. 41% HHs were aware on adverse health impact of unsafe disposal, 76% HHs on ill effect of open defecation on child health. 61% HHs were aware about faecal contamination leading to jaundice and 56% HHs were aware about faecal contamination causing diarrhea. 15% HHs were aware about

Figure 7-8: -Awareness on diseases due to faecal contamination



FSTP being set-up in the city.

7.5 Status of community engagement in sanitation activities

20% HHs reported that Mahila Arogya Samiti and 12% HHs reported that youth club were creating awareness on sanitation. However, they were only discussed about children and women healthcare.
Several state and national level NGOs are also engaged in community mobilization and capacity building of communities, especially among in urban slum pockets of the City.

Table 7-5: -Community engagement

Community engagement in sanitation	n	%
Community group create awareness on sanitation (N=780)		
Mahila Arogya Samiti	154	20
Self Help Group	41	5
Ward Kalyana Samiti	21	3
Youth club	95	12
Pooja committee	35	4
Sanitation related issues discussed during community engagement (N=780)		
Children and women health	164	21
Faecal sludge and septage management	8	1
Promoting use of public and community toilets	5	1
Other sanitation related issue	5	1

8 Key issues and action plan

We carried out HH surveys, in-depth interviews with key ULB and non-ULB departments and focus group discussions with relevant stakeholders on sanitation and FSSM at the city level. This helped in the identification of key issues, concerns and gaps on infrastructure, operations, capacity building and behavior change and communication. This chapter summarizes the key issues and identified next steps. Subsequent to identification of these aspects, an implementation plan shall be prepared to ensure effective delivery of interventions for each of the cities.

Inputs from the following stakeholder has been taken and their views has been outlined in the section below:

- Mayor
- Commissioner, BMC
- Additional Commissioner, BMC
- Deputy Commissioner, BMC
- Finance Officer
- Deputy Commissioner & SIO
- Sanitary Inspector
- Corporator
- HHs
- Executive Engineer, Public Health Engineer Organization (PHEO)
- Regional Officer, OSPCB
- City Health Officer, BMC
- Project Engineer, Odisha Water Supply and Sewerage Board (OWSSB)
- City Engineer, BMC
- Community based organizations
- Masons and
- Cesspool operator

In the following table, we are describing a summary of key findings, issues, references and required interventions.

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
1	Insanitary toilets	► The Census 2011 shows that about 2% of the households have insanitary toilets[37]. ► Based on the household survey, we found out that out of 780 HHs, 23% has insanitary toilets and 28% of HH connected to septic tanks have outfall directly into open drains. ► During the consultations (FGDs, IDIs) with the ULB and non-ULB officials and CBOs, insanitary toilet was highlighted as one of the key issues for sanitation in Bhubaneswar.	► A communication campaign under SBM could be initiated to motivate people to convert insanitary toilets to sanitary ones using incentive provided under SBM either through building septic tanks/ pits or connecting to sewer lines ► Ward councilors/ corporators need to be sensitized on this to convey to households in their respective wards ► CBOs such as MAS, SHGs and Ward Sanitation Committees should be oriented to spread awareness among households in their respective wards ► Information on onsite sanitation system solutions available in market which are economical and quicker to implement to be disseminated to citizens	**IEC/BCC**
			► A regulatory set-up can be proposed for ensuring effective implementation of the issue. BMC is currently working on Automated Building Plan Approval System. Amendments could be made in ULB building bye-law to include provision of scientific septic tank as part of building approval process. ► BMC is working on the proposal for GIS linked property/holding tax collection system. This platform could be used for gathering data on containment system to have a better working model for onsite sanitation system.	**Governance reforms**
2	Unscientific septic tanks	► As per the HH survey, out of 453 HH with septic tanks, 39% are non-lined which can lead to seepage of sewage into groundwater. ► As per household amenities and assets, Census of India 2011, 63% of the household have access to tap water (from treated sources) within premises. The rest	► Further capacity building of masons on design of scientific septic tank is desired ► Building capacity of CBOs such as MAS, SHGs and Ward Sanitation Committees to spread awareness on importance of scientific onsite containment system among households in their respective wards.	**Capacity building**

[37] *Toilets which directly dispose into drains and/or require night soil to be removed by human or animal are considered as Insanitary*

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
		depend on either ground or other sources. 90% of HHs indicated during primary survey that they rely on mason for designing and construction of septic tank/pit. However, as per discussions with masons in FGD, HHs take a final decision on this aspect. If masons face any problems, they consult engineers who in turn help them with designs. Masons are never trained, there is gap in knowledge. ► As per discussions with ULB officials and CBO, the households are not aware of adverse effects of unsafe containment. HHs are not particular about septic tank standards and are unaware about the adverse effects of contamination ○ As per conventional safe practice, minimum distance between groundwater source and containment unit. ○ 33% households (HH) reported presence of unlined onsite systems and majority of them are single pits. ○ About 49%.HHs have OSS connected to soak-pit. ○ 44% HHs have never emptied their OSS. ○ 45% of the city households depend on open well, bore well, hand pumps and municipal tankers. ► As per the SLIP report, 2015, present source of water used is both surface water and ground water. ► As per discussions with masons in FGD, it is the households that take the final decision with respect to the design of septic tanks. Even if the masons highlight the importance of including baffle wall/ lining, they choose to ignore it for saving costs. ► As per discussions with ULB officials and CBO, the households are not aware of adverse effects of unsafe containment.	► A regulatory set-up can be proposed for ensuring effective implementation of the Odisha septage management guidelines which mandates ULBs to make it compulsory for all households to construct septic tanks. ► Amendments could be made in ULB building bye-law to include provision of scientific septic tank as part of building approval process.	**Governance reforms**
			Communication messages to HHs with focus on: ► Dos and Don'ts of building septic tanks ► Importance of schedule desludging and how to do it ► How treatment of septage and sludge before disposal has an positive impact on health and environment ► Onsite sanitation system solutions available in market which are economical and quicker to implement and can be retrofitted to be disseminated to citizens	**IEC/BCC**
			► Explore potential for scheduled desludging program	**Infrastructure (infra and O&M)**

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
3	Practice of open defecation	► As per primary survey, 91% of HHs surveyed who defecate in open do not have IHHL and lack access to other toilets facilities ► HH survey highlighted that the households having toilets practice open defecation because of lack of water facilities (61%), in order to avoid frequency of cleaning (23%) and habit/ culture (6%). ► 91% households not having toilet access and resorting to OD are willing to construct one. ► All HHs interviewed during primary survey showed willingness to use CT/PT.	► Construction of IHHL and CT/PT ► Facilitating the process of building IHHL along with the components for applicants so that they are not demotivated. The process need to be implemented at an accelerated pace.	**Infra-structure (infra and O&M)**
			► Engaging with CBOs to motivate people to build and use IHHL and through CT/PT especially through sustained inter personal counselling for a targeted households who do not have access to toilets.	**IEC/BCC**
4	Lack of space for IHHL	► As per the household survey, 43% households feel that there is lack of space for constructing IHHL ► As per discussions with ULB officers, land acquisition is a problem for construction new PT/CT	► Greater focus on CT, PT availability and better O&M of the available and upcoming facilities ► Explore sustainable O&M models incl. community led, private operators etc. ► Under the Prime Minister Awas Yojna (PMAY), the government has adopted AWASS Yojana in the Odisha where urban poor and slums dwellers have been given opportunities to avail decent housing units for their stay in cities. Under the affordable housing schemes and slum rehabilitation through PPP models, a large number of housing units are being constructed where toilets are also constructed along with the containment units which need to be constructed as per FSSM requirements. Particularly, the beneficiary led housing schemes where supports from the PMAY is extended could be considered on how the toilets can be built and retrofitted if needed as it gives scope for the same. New housing schemes also give chance to regulate sanitations as per the laws and also ensure roads and other complexes for cesspool vehicles etc. Directorate of Town Planning along with the ULBs need to coordinate the programmes.	**Infra (infra and O&M)**
5	Challenges in emptying septic tanks due to narrow lanes	► As per the primary survey, 22 % HHs surveyed have narrow roads (less than 2m width). This leaves them inaccessible to majority of existing fleet of city with ULB.	► Size of cesspool vehicles should be planned keeping in mind the narrow roads and explore alternative technologies for emptying during procurement. Solutions of mechanized emptying such as Vacutug to be explored along with manually operated mechanized machines in slums with extremely narrow lanes.	**Infra (infra and O&M)**

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
	and low usage of mechanized service	► 22% reported during survey that they never cleaned their septic tank or pit. ► CBOs, ULB and other officials and cesspool operators have also highlighted this issue. ► Lack of access to mechanized emptying vehicles indirectly creates scope for non-mechanized manual work. Currently 13% HH confirmed receiving such services. ► 33% HHs have reported that they aren't aware of any communication medium through which they can access information on mechanized emptying service providers	► Need for transfer stations[38] which can help use of vehicles of different sizes to be explored to optimize the cost of transport which could help reduce price of service delivery. ► Operating models that can help makes payment for cesspool emptying affordable for urban poor to be devised ► Devise monitoring mechanisms to track usage of mechanized emptying services	
			► Strengthened monitoring at community level by building capacity of MAS, Ward Sanitation committee, CSTF and SHG to promote usage of mechanized emptying	**Capacity building**
			► Communicate the harmful impact of non-mechanized emptying to relevant stakeholders - citizens, leaders, community groups, sanitation workers and ULB staff ► Identify ways to increase penetration of information to citizens on mechanized emptying service providers	**IEC/BC**
			► A regulatory set-up can be proposed for ensuring effective implementation of the Odisha septage management guidelines which mandates HHs. The rules direct house owners to contact only civic body officials or other registered sanitary agencies to clear out the septic tanks and strictly keep away from engaging manual scavengers. ► Explore potential for empanelment of cesspool emptying service providers with ULB and provisions to implement applicable sections of septage operating guidelines 2016 for emptying and transport activities.	**Governance reform**
6	Sewage disposal in adjoining rivers	► As per Odisha PCB report on sewage pollution, the total coliform (TC) for Kuakhai (Upstream) ranged between 22,000 – 37,000 MPN/100ml for the years 2012-2015. The TC values for Daya ranged between	► Creation of onsite sanitation treatment facilities for primary treatment including conversion of insanitary toilets to sanitary toilets by provision of scientific septic tanks can be prioritized ► Readiness of FSTPs to ensure provision of adequate facilities and efficient operations	**Infra-structure (infra and O&M)**

[38] Transfer stations are intermediate points established to facilitate transfer of faecal sludge from smaller sized vehicles to larger ones to help efficient management of waste. This approach is also used for Solid Waste Management.

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
		40,000 and 75,000 MPN/100ml for the years 2012-2015. ► There are no STPs in Bhubaneswar city. Therefore, the sewage generated in the city is currently not treated.	► Identify intermittent solutions like at the drain outlet point, interceptors or de-centralized treatment can happen	
			► Strong regulatory enforcement to stop open discharge from drains into the river	**Governance reform**
7	Improper disposal of faecal sludge	► Bhubaneswar city officially does not have a designated faecal waste dumping site. ► Operators mention that distance increase their operating cost and also reduces the no. of trips they can make per day as it takes longer to travel to the dumping site. ► There is no monitoring mechanism in place to track dumping of faecal waste at dedicated site/treatment plant ► Cesspool emptying truck operators are not governed by any regulation for their operation.	► Readiness of SeTP to ensure provision of adequate facilities and efficient operations ► A pilot project using GPS technology tracking could be initiated in select wards. ULB vehicles can be mounted with GPS devices which track the movement of vehicles. Considering that site for temporary disposal is being identified, GPS tracking would help map the trips made to this site.	**Infra-structure (infra and O&M)**
			► Strengthened monitoring at community level by building capacity of MAS, Ward Sanitation committee, CSTF and SHG to promote disposal of waste at designated sites	**Capacity building**
			► Communicate the harmful impact of indiscriminate dumping non-mechanized emptying to relevant stakeholders - citizens, leaders, community groups, sanitation workers and ULB staff	**IEC/BCC**
			► Regulation at ULB level to enforce disposal of faecal waste at only designated site	**Governance reform**

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
8	Re-use of treated waste	Potential for re-use of treated waste water and dried manure generated post treatment is not yet explored	► Implementation strategy and plan to be devised based on learnings from Project Nirmal and interventions in other places. ► Market for manure and treated water to be explored and included as part of the O&M contract to be defined for SeTP operator	**Infra-structure (infra and O&M)**
9	Recurring incidence of water borne diseases	► As per discussions with health officers and CBO's, jaundice, diarrhea and amoebiasis are recurring diseases. ► The survey suggested that presence of unlined septic tanks (41%) and average distance between septic tank and water source at 4m can be a probable cause of recurring water borne diseases.	► Communication messages for CBOs to link the adverse effect of poor sanitation and FSSM on water and food contamination and consequent effect on health ► Inform citizens about options available for retrofitting existing unscientific septic tank	**IEC/ BCC**
10	Attitude of people towards sanitation and hygiene	► It has been found from FGD and IDIs that people practice open defecation without any conscience of hygiene and sanitation. ► As per FGD's with CBOs, their discussions during community meetings are limited to solid waste management, health and hygiene, and construction of toilets. SHGs and MAS members were creating awareness on sanitation. However, these discussions are only limited to use of PT and CT. Even household survey led to the same observation. 20% of the households reported that MAS, 5% of the households reported that SHGs and 3% WKSs are creating awareness on sanitation. Also, existing discussions are only limited to use of PT and CT.	► Building capacity of CBOs such as MAS, SHGs and Ward Sanitation Committees to spread awareness on importance of sanitation, hygiene and FSSM among households in their respective wards.	**Capacity building**
			► For ULB officials (especially Community Organizers, Sanitary Inspectors), CBOs on FSSM and on the key messages to be conveyed to community	**IEC/BCC**
11	Gaps in stakeholder engagement, coordination and institutional	► OWSSB constructing SeTPs and will take care of O&M until the facility is handed over to the ULB. Further clarity needs be brought in for - a. Revenue generation from SeTPs b. Cost recovery from reuse of treated resources c. Tariff policy d. Transition plan and management after 5 years	► Operating model to be formulated for sustainable operation of SeTP through various models including cost recovery through sale of dried and treated sludge and treated waste water. ► Inputs from this model to be incorporated as part of O&M contract for private agency ► Potential integrated FSSM contract i.e. cesspool operation and SeTP operation to be checked.	**Infra (infra and O&M)**

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
	framework	► There is a need of integrated approach to FSSM. Multiple department work are currently working in silos. ► BMC has recently deployed an environmental engineer to comply with standards in public health and environment. Integration with FSSM is yet to be made. ► Low level of citizen participation due to lack of engagement and recognition in the city governance	► Capacitate ULB, parastatal and district officials through training in concept and program design to increase their involvement ► Exposure visits to learn leading practices ► Strengthen city level groups by building capacity of MAS, WSC, CSTF and SHG to promote and drive citizen engagement ►	**Capacity building**
			► Strengthening district administration through participatory planning in city levels for integration with district planning and effectively escalate the issues to state levels through planning structures ► Restructuring the engineering department with added focus on environmental engineering ► Focus should be on zone and ward level interventions – a coordinated program and overall M&E at broader level ► Formalization of community level institutions such as CSTF, WSC in city system ► Service level scores in each wards including sanitation and its integration with CSPs	**Governance reforms**
12	Limited awareness created by CBOs such as MAS, SHG, WKS and other citizen groups on FSSM	► Primary survey shows that 20% of the households reported that Mahila Arogya Samiti (MAS) and 5% reported that Self Help Groups (SHGs) were creating awareness on sanitation. ► HHs reported during survey that FSSM is not being discussed currently during the community engagement of these CBOs	► Capacity building program focused building understanding of sanitation and FSSM among bodies that function at various levels in the urban areas of district in the following order: District Urban Sanitation Committee (DUSC), City Sanitation Task Force (CSTF), City Project Implementation Agency (PIU), Ward Kalyan Samiti (WKS), MAS and SHG. ► Monitoring of dissemination and concurrent evaluation of impact achieved	**Capacity building**
13	Lack of funds & spending capacity at the ULB	► One of the key issues which emerged during the IDIs and FGDs with ULB officials and council members is "the lack of funds and human resources" at the ULB level as a major bottleneck to undertake need based innovative sanitation and infrastructure programme.	► Specialised urban cadre staff for mobilizing funds as mobilization capacity for funds is certainly constrained by the lack of qualified and skilled human resource	**Capacity Building**

S.No.	Key issue/observation	Supporting data	Proposed interventions / Action point/	Thrust area
	level	However, it is also observed that spending capacity of the ULB is also a key area of concern. Even though the own source revenue base has been decreased or taken away by the state and central governments (first Octroi and now GST), alternative sources of funds have been created. Particularly, after the 14 Central Finance Commission (CFC) and Fourth State Finance Commission (SFC), the ULBs of Odisha have good amount of devolution funds available to be spent on the developmental activities but remain unspent as found in recent cluster level reviews conducted by the H&UDD. ► In the devolution front, the ULBs are expected to get INR 5379 crore under the 4th SFC and INR 1772 crore under the 14 CFC during (2015-2020). Secondly, the government through various channels has been raising funds form the markets borrowing for the ULBs for basic services and infrastructures. The government has also adopted PPP models of different types to undertake projects to improve infrastructure for basic services. ► Most cities are found not very successful in property assessments and the properties assessed have not come under the tax nets. Thus, the city loses funds.	► The ULB should tap funding from the DMF and CSR funds.	**Governance Reforms**

Rapid state assessment has mapped the situation on ground and identified key gaps and action points across the following thrust areas.

- Infrastructure (infra and O&M)
- Capacity building
- IEC/BCC activities
- Governance and reforms

The key to sustaining urban sanitation and FSSM activities is to implement, operationalize and make effective the action points drafted in the strategy. A detailed city-wise implementation plan would follow this situational assessment report. This will include prioritization of interventions, estimated timeline, and resource requirement for implementation of key interventions identified.

9 Annexures

9.1 Annexure 1 – Questionnaire for HH Survey

Study on on-site sanitation system & practices with focus on faecal sludge &septage management
Survey questionnaire

ସହରାଞ୍ଚଳ ରେ ପରିମଳ ବ୍ୟବସ୍ଥା ଏବଂ ସ୍ପଷ୍ଟ/ନିର୍ଦିଷ୍ଟ ଭାବେ ନର୍ଦମା ମଳ ର ଅଭ୍ୟାସ ଏବଂ ଏହାର ସଫା ପରିଚାଳନା ବିଷୟରେ ସର୍ଭେ

ସର୍ଭେ ପ୍ରଶ୍ନାବଳୀ

Form ID:
ସୂଚନାପତ୍ର

ଅନୁସନ୍ଧାନର ଅଭିପ୍ରାୟ: ମୁଁ ହାଉସିଂ ଆଣ୍ଡ ଅର୍ବାନ ଡେଭେଲପମେନ୍ଟ ଡିପାର୍ଟମେନ୍ଟ ରୁ ଆପଣଙ୍କ ଅଞ୍ଚଳକୁ ଏକ ଅନୁସନ୍ଧାନ କରିବା ପାଇଁ ଆସିଅଛି । ଏହି ଅନୁସନ୍ଧାନର ଉଦ୍ଦେଶ୍ୟ ହେଉଛି, "ସହରାଞ୍ଚଳ ର ପରିମଳ ବ୍ୟବସ୍ଥା ଓ ପାଇଖାନା ସଫା ପରିଚାଳନା ବିଷୟରେ ସମୀକ୍ଷା କରିବା" । ଏହି ଅନୁସନ୍ଧାନରେ ହେବାକୁ ଥିବା ମୁଖ୍ୟ ଆଲୋଚନା ଓ କଥୋପକଥନରେ ଆପଣଙ୍କୁ ଭାଗ ନେବା ପାଇଁ ଅନୁରୋଧ। ଆପଣଙ୍କ ସହଯୋଗ, ଆପଣଙ୍କ ସହରକୁ ନିର୍ମଳ ରଖିବାରେ ସହାୟକ ହେବ। ଏହି ଅନୁସନ୍ଧାନରେ, ଆପଣଙ୍କ ଅଂଶଗ୍ରହଣ ସମ୍ପୂର୍ଣ୍ଣ ସ୍ୱେଚ୍ଛାକୃତ ଅଟେ। ପୂର୍ବରୁ ଇଚ୍ଛୁକ ଥିବା ସତ୍ତ୍ୱେ ଯେ କୌଣସି ସମୟରେ ଯଦି ଆପଣ ଚାହିଁବେ, ତାହା ହେଲେ ଆପଣଙ୍କ ମତ ପରିବର୍ତ୍ତନ କରି ଆଲୋଚନାରୁ ଓହରିଯାଇପାରିବେ। ଏହି ଆଲୋଚନା ଆପଣଙ୍କ ବୃତ୍ତି ବା ଧନ୍ଦାରେ କୌଣସି ପ୍ରଭାବ ପକାଇବ ନାହିଁ। ଯଦି ଆଲୋଚନାରେ କିଛି ବ୍ୟକ୍ତିଗତ କିମ୍ବା ସଂବେଦନଶୀଳ ପ୍ରଶ୍ନ ଥିବାର ଆପଣ ଅନୁଭବ କରନ୍ତି କିମ୍ବା କୌଣସି ପ୍ରଶ୍ନ ଆପଣଙ୍କୁ ଅଡୁଆ ଲାଗେ ତେବେ,ଆପଣ ତାହାର ଉତ୍ତର ନ ଦେଇପାରନ୍ତି ବା ସେଥିପାଇଁ ଆପଣ ଆଲୋଚନରୁ ଯେ କୌଣସି ସମୟରେ ଓହରିଯାଇପାରନ୍ତି ଏବଂ ଆପଣଙ୍କ ଏହି ନିଷ୍ପତ୍ତିକୁ ସମ୍ମାନ ଜଣାଇ ଆପଣଙ୍କୁ କୌଣସି କାରଣ ପଚରାଯିବ ନାହିଁ। ଏହି ଆଲୋଚନା ରେ ଭାଗ ନେଲେ ଆପଣଙ୍କୁ କୌଣସି ପ୍ରକାର ସିଧାସଳଖ ଲାଭ ମିଳିବ ନାହିଁ। ଏହି ଅନୁସନ୍ଧାନର କଥୋପକଥନକୁ ଡିଜିଟାଲ ରେକର୍ଡିଂ ପାଇଁ ଅନୁମତି ମାଗୁଛୁ। ଏହି ଅନୁସନ୍ଧାନରେ ଆପଣଙ୍କ ନାମ ଏବଂ ଆପଣ ଦେଇଥିବା ସମସ୍ତ ତଥ୍ୟ ଗୋପନୀୟ ରଖାଯିବ। ଅନୁସନ୍ଧାନରେ ଜଡିତ ଥିବା କର୍ମଚାରୀଙ୍କ ବ୍ୟତୀତ ଏହି ତଥ୍ୟ ଆଉ କାହାରିକୁ ଜଣାଯିବ ନାହିଁ। ଯଦି ଆପଣଙ୍କର ଏହି ଅନୁସନ୍ଧାନ ସମ୍ବନ୍ଧୀୟ କିଛି ଜିଜ୍ଞାସା/ସନ୍ଦେହ ଅଛି,ତାହେଲେ ଆପଣ ଡିସଟ୍ରିକ୍ଟ କୋଡିନେଟୋର ଙ୍କ ସହ ଯୋଗାଯୋଗ କରନ୍ତୁ।

ସମ୍ମତି / ଅନୁମତି ପ୍ରମାଣପତ୍ର

ଅଂଶଗ୍ରହଣକାରୀ/ ଅଭିଭାବକଙ୍କର ମନ୍ତବ୍ୟ

ମୋତେ ଏହି ଅନୁସନ୍ଧାନର ଆଲୋଚନାରେ ଭାଗ ନେବା ପାଇଁ ଅନୁରୋଧ କରାଯାଇଛି। ପୂର୍ବରୁ ସୂଚନା ପତ୍ରରେ ଥିବା ତଥ୍ୟକୁ ମୁଁ ପଢିଛି ଅବା ମୋତେ ପଢି ଶୁଣାଇ ଦିଆଯାଇଛି। ସୂଚନା ପତ୍ରରେ ଥିବା ବିଷୟ ବସ୍ତୁ ଏବଂ ସେହି ସମ୍ବନ୍ଧୀୟ ପ୍ରଶ୍ନ ପଚାରିବାର ସୁଯୋଗ ମୋତେ ଦିଆଯାଇଛି ଓ ଏହାର ସନ୍ତୋଷ ଜନକ ଉତ୍ତର ମୋତେ ମିଳିଛି । ମୁଁ ସ୍ୱେଚ୍ଛାକୃତ ଭାବରେ, ଏହି ଅନୁସନ୍ଧାନରେ ଭାଗ ନେବା ପାଇଁ ନିଜର ସମ୍ମତି ଜଣାଉଛି।
ଅଂଶଗ୍ରହଣକାରୀ ନାମ :_____

ଅଂଶଗ୍ରହଣକାରିଙ୍କ ଦସ୍ତଖତ_____

ଯଦି ଅଶିକ୍ଷିତ: ମୁଁ ଏଠାରେ ସାକ୍ଷ୍ୟ ଦେଉଅଛି ଯେ, ଅଂଶଗ୍ରହଣକାରୀ ଜଣକ ସୂଚନା ପତ୍ରକୁ ସଠିକ ଭାବେ ପଢି ବୁଝିଛନ୍ତି ଓ ତାଙ୍କୁ ପ୍ରଶ୍ନ ପଚାରିବାର ସୁଯୋଗ ମିଳିଛି ତଥା ସେଥିପାଇଁ ସେ ଆଲୋଚନା ରେ ଭାଗ ନେବା ପାଇଁ ସ୍ୱାଧୀନ ଭାବେ ସମ୍ମତି ଜଣାଇଛନ୍ତି ।
ସାକ୍ଷ୍ୟକାରୀଙ୍କ ନାମ _____

ଅଂଶଗ୍ରହଣକାରିଙ୍କ/ ଅଭିଭାବକଙ୍କର ଟିପ ଚିହ୍ନ
ସାକ୍ଷ୍ୟକାରୀଙ୍କ ଦସ୍ତଖତ _____

ତାରିଖ (ଦିନ / ମାସ /ବର୍ଷ) _____

<u>ଅନୁସନ୍ଧାନ / ସମ୍ମତି ନେଉଥିବା ବ୍ୟକ୍ତିଙ୍କ ଘୋଷଣା:</u> ମୁଁ ସଠିକ ଭାବରେ ସମ୍ଭାବ୍ୟ ଅଂଶଗ୍ରହଣକାରିଙ୍କୁ ସୂଚନା ପତ୍ରଟି ପଢିବାର ସୁଯୋଗ ଦେଇଛି/ପଢି ଶୁଣେଇଛି ଓ ମୋର ଶ୍ରେଷ୍ଠ ଦକ୍ଷତା ଅନୁସାରେ ବିଶ୍ୱାସ ରଖିଛି ଯେ, ଅଂଶଗ୍ରହଣକାରୀ ଏହି ଅନୁସନ୍ଧାନର ଉଦ୍ଦେଶ୍ୟ ସମ୍ପୂର୍ଣ୍ଣ ବୁଝିପାରିଛନ୍ତି।ତାଙ୍କୁ ପ୍ରଶ୍ନ ପଚାରିବାକୁ ସୁଯୋଗ ଦିଆଯାଇଥିଲା ଓ ସେହି ସମସ୍ତ ପ୍ରଶ୍ନର ସଠିକ ଉତ୍ତର ଦିଆଯାଇଛି । ଅଂଶଗ୍ରହଣକାରୀ ଜଣଙ୍କୁ ଆଲୋଚନାରେ ଭାଗ ନେବା ପାଇଁ କୌଣସି ବାଧ କରାଯାଇ ନାହିଁ; ସେ ନିଜ ଇଚ୍ଛା ଅନୁସାରେ ଅଂଶଗ୍ରହଣ ପାଇଁ ନିଜର ସମ୍ମତି ପ୍ରଦାନ କରିଛନ୍ତି ।

ଅନୁସନ୍ଧାନକାରିଙ୍କ ଦସ୍ତଖତ_____

ତାରିଖ (ଦିନ / ମାସ /ବର୍ଷ)_____

SECTION A: PRIMARY INFORMATIONକ ବିଭାଗ : ପ୍ରାଥମିକ ସୂଚନା	
Survey area ସର୍ବେକ୍ଷଣ ଅଞ୍ଚଳ *(Fill the Details)(*ସମ୍ପୂର୍ଣ ପୂରଣ କରନ୍ତୁ i. Town: ସହର ii. Ward Number ---ୱାଡ଼ ନମ୍ବର- iii. House No-----ଘର ନମ୍ବର _____ Locality Type: Slum-------, Non slum------- କି ପ୍ରକାର ଅଞ୍ଚଳ : ବସ୍ତି ------ ଅଣ ବସ୍ତି-------- Locality name: ଅଞ୍ଚଳର ନାମ -------- GPS Location Id of Septic Tank---------- ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ର ଜିପିଏସ କୋଡ଼ Picture of the HH/institution/commercial establishment ଘର /ଅନୁଷ୍ଠାନ / ବ୍ୟବସାୟିକ ସଂସ୍ଥା ର ଫଟୋ	Name of the Head of HH/Supervisor of the apartment: ପରିବାରର ମୁଖ୍ୟ ଙ୍କ ନାମ / ଆପାର୍ଟମେଣ୍ଟ ସୁପରଭାଇଜର ଙ୍କ ନାମ 1. Male 2. Female ପୁରୁଷ ମହିଳା Age:(in years)ବୟସ Education: ଶିକ୍ଷା Illiterate, 2. Can sign or read /write without going to formal school, 3. Primary, 4. Upper Primary, 5 . Secondary, 6 . Sr. Secondary, 7. Graduation, 8. P.G &Above) (1-ଅଶିକ୍ଷିତ, 2-ସ୍କୁଲ ନ ଯାଇ ଲେଖି ପଢି ପାରନ୍ତି, 3-ପ୍ରାଥମିକ, 4-ଉଚ ପ୍ରାଥମିକ ,5-ହାଇସ୍କୁଲ , 6-+2 , 7-ଗ୍ରାଜୁଏଟ/+3 ,8-ପି ଜି ଏବଂ ତଦୁର୍ଦ୍ଧ Aadhar Card: Yes/No:If Yes, Number: ଆଧାର ନମ୍ବର-ହଁ ନା : ଯଦି ହଁ ତେବେ ନମ୍ବର- Contact No:ଯୋଗଯୋଗ ନମ୍ବର :
Type of property ପ୍ଲଟ/ସମ୍ପତ୍ତିର ପ୍ରକାର	Residentialଆବାସିକ Institutionalଆନୁଷ୍ଠାନିକ Commercialବ୍ୟବସାୟୀକ Mixedଉଭୟ ବର୍ଗ/ଶ୍ରେଣୀର Residential +Institutionalଆବାସିକ+ ଆନୁଷ୍ଠାନିକ Institutional + Commercial ଆନୁଷ୍ଠାନିକ+ ବ୍ୟବସାୟୀକ Residential + Commercial ଆବାସିକ +ବ୍ୟବସାୟୀକ
Property number as per municipal property tax record ମ୍ୟୁନିସିପାଲିଟି ଟ୍ୟାକ୍ସ ରେକର୍ଡ ଅନୁସାରେ ସମ୍ପତି ର ସଂଖ୍ୟା	Number: ସଂଖ୍ୟା
Mark the House typology (only if 2 is residential) କି ପ୍ରକାର ଘର ତାହା ସୂଚିତ କରନ୍ତୁ (କେବଳ ଯଦି ପ୍ରଶ୍ନ 2 ରେ ଉତ୍ତର ଆବାସିକ)	Stand-alone houseଗୋଟିକିଆ ଘର Multi-story Apartment ଏକାଧିକ ମହଲା ଆପାର୍ଟମେଣ୍ଟ Row house with common shared walls ଗୋଟିଏ କାନ୍ଥରେ ଧାଡିକିଆ ଘର Slum House (Kachha walls) ବସ୍ତି ଘର (ଝାଟିମାଟି କାନ୍ଥ) SlumHouse (Pucca walls) ବସ୍ତି ଘର (ପକ୍କା କାନ୍ଥ) Other (please specify) ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାଅ.....)
Ownership Statusof the property ସମ୍ପତ୍ତିର ମାଲିକାନା ସ୍ଥିତି	Owned ନିଜସ୍ୱ Rented ଭଡା

	Staff quarterକର୍ମଚାରି ବାସଗୃହ On encroached land (non-slum) ଜବର ଦଖଲ ଜମିରେ (ଅଣ ବସ୍ତି ଅଞ୍ଚଳ) On public land (slum)ସରକାରୀ/ସର୍ବସାଧାରଣ ଜମିରେ (ବସ୍ତି) On private land (slum)ବେସରକାରୀ/ଘରୋଇ ଜମି (ବସ୍ତି) Other (please specify) ଅନ୍ୟାନ୍ୟ (ଦୟାକରି ଦର୍ଶାଅ)
In case of apartment, name of the apartment building ଯଦି ଆପାର୍ଟମେଣ୍ଟ ,ତେବେ ଆପାର୍ଟମେଣ୍ଟର ନାମ ଲେଖନ୍ତୁ	Nameନାମ _____
No of blocksବ୍ଲକ ସଂଖ୍ୟା	Numberସଂଖ୍ୟା _____
How many flats are there in this propertyଏହି ଜାଗାରେ କେତୋଟି ଫ୍ଲାଟ ଅଛି	Numberସଂଖ୍ୟା _____
Number of flats that are occupied କେତୋଟି ଫ୍ଲାଟ ଅଧିକୃତ/ଦଖଲରେ ଅଛି	Numberସଂଖ୍ୟା _____
How many HHs are there on this property?ଏହି ପ୍ଲଟରେ କେତେଜଣ ପରିବାର ଅଛନ୍ତି	Numberସଂଖ୍ୟା _____
How long has your family been staying in this house?*(Not applicable in case of unauthorized slum)* ଏହି ଘରେ ଆପଣଙ୍କ ପରିବାର କେତେଦିନ ହେଲା ରହି ଆସୁଛନ୍ତି ? (ଅଣ ସୀକୃତିପ୍ରାପ୍ତବସ୍ତି ପାଇଁ ଏହା ପ୍ରଯୁଜ୍ୟ ନୁହେଁ)	Numberସଂଖ୍ୟା _____
Select the type of Institution (only if 2 is institutional) ଅନୁଷ୍ଠାନଟି କି ପ୍ରକାର ବାଛନ୍ତୁ (କେବଳ ଯଦି ପ୍ରଶ୍ନ 2 ରେ ଉତ୍ତର ଅନୁଷ୍ଠାନ ଥାଏ)	Hospital/Nursing Homeଡାକ୍ତରଖାନା/ନର୍ସିଙ୍ଗହୋମ School/Collegeସ୍କୁଲ/କଲେଜ Religious Institutionଧାର୍ମିକ ଅନୁଷ୍ଠାନ Government Officeସରକାରୀ ଅଫିସ Other (Please Specify)ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାଅ)
Select the type of commercial (only if 2 is commercial) ବ୍ୟବସାୟୀକ ସଂସ୍ଥାଟି କି ପ୍ରକାର ବାଛନ୍ତୁ (କେବଳ ଯଦି ପ୍ରଶ୍ନ 2 ରେ ଉତ୍ତର ବ୍ୟବସାୟୀକ ଥାଏ)	Industryଶିଳ୍ପ Shop/private officeଦୋକାନ/ବେସରକାରୀ ଅଫିସ Hotel/Lodgeହୋଟେଲ/ଲଜ Other (please specify)ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାଅ)

SECTION B: WATERବିଭାଗ-ଖ : ପାଣି									
14	Sources of Water for domestic use*(Can mark more than one)* ଘରୋଇ ବ୍ୟବହାର ପାଇଁ ପାଣିର ସ୍ରୋତ (ଏକାଧିକ ସ୍ରୋତ ମାର୍କ କରିପାରିବ)								
	Piped water supply ପାଇପ ଦ୍ୱାରା ପାଣି ଯୋଗାଣ		Public (Free) ସର୍ବସାଧାରଣ (ମାଗଣା)		e. Bore well ବୋରିଂ କୂଅ	f. Hand pump ନଳ କୂଅ	g. Municipal Tanker ମୁନିସିପା	h. Private	i. Others (specify) ଅନ୍ୟାନ୍ୟ (
	a. Individual HH Connectio	b. Shared HH Connection	c. Stand Post ଷ୍ଟାଣ୍ଡ	d. Open well ଖୋଲା					

	n ଘରେ ନିଜ ର କନେକ୍ସନ	ଗୋଟିଏ ଘରୋଇ ପାଣି ପାଇପ କନେକସନ କୁ ଏକାଧିକ ପରିବାର ବ୍ୟବହାର	ପୋଷ୍ଟ	କୂଅ			ଲିଟି ଟ୍ୟାଙ୍କର	tank er ବେସର କାରୀ ଟ୍ୟାଙ୍କ ର	ଦର୍ଶାନ୍ତୁ)
15	Please indicate duration of water supply. *If the option of Que no 14 is a/b/c* ଦିନକୁ କେତେ ସମୟ ପାଣି ଆସେ। (ଯଦି ପ୍ରଶ୍ନ 14 ରେ ଉତ୍ତର *a/b/c* ଥାଏ)	Less than 2 hours in a day ଦିନକୁ 2ଘଣ୍ଟାରୁ କମ Between 2 to 4 hours in a day ଦିନକୁ 2ଘଣ୍ଟା ରୁ 4 ଘଣ୍ଟା ମଧ୍ୟରେ Between 4 to 8 hours in a day ଦିନକୁ 4 ରୁ 8 ଘଣ୍ଟା ମଧ୍ୟରେ More than 8 hours in a day ଦିନକୁ 8 ଘଣ୍ଟାରୁ ଅଧିକ							
16	Is the quantity of water available sufficient to use and maintain the toilet in your house?ଆପଣଙ୍କୁ ଯେତିକି ପରିମାଣ ର ପାଣି ମିଳୁଛି ତାହା ଘରେ ଥିବା ପାଇଖାନାର ବ୍ୟବହାର ପାଇଁ ଯଥେଷ୍ଟ କି ?	Yesହଁ Noନାହିଁ							
SECTION C1: Sanitation – Toilet in the house/institution/commercial establishment ବିଭାଗ ଗ1 : ପରିମଳ – ଯଦି ଘରେ/ଅନୁଷ୍ଠାନ/ବ୍ୟବସାୟୀକ ସଂସ୍ଥାରେ ପାଇଖାନା ଥାଏ									
17	How is your toilet connected to, for disposal? Pls. take a picture of the facility, if possible. ଆପଣଙ୍କ ପାଇଖାନା କାହା ସହିତ କନେକ୍ସନ ହୋଇଛି ? ଯଦି ସମ୍ଭବ ଦୟାକରି ଏହାର ଫଟୋ ନିଅନ୍ତୁ *(To be physically verified by surveyor)* (ସାକ୍ଷାତକର୍ତ୍ତା ନିଜେ ଯାଞ୍ଚ କରନ୍ତୁ) (Picture would be put against each of the option)(ପ୍ରଶ୍ନ ପଚାରିଲା ସମୟରେ ଫଟୋ ଦେଖାଇ	Sewer networkଭୂତଳ ନର୍ଦମା / ଡ୍ରେନ ବ୍ୟବସ୍ଥା Septic tank with soak pit ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ଶୋକପିଟ ସହିତ Septic tank connected to open/closed drain ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ଟି ଖୋଲା/ବନ୍ଦ ଥିବା ନର୍ଦମା ସହିତ କନେକ୍ସନ Single pitଗୋଟିଏ ପିଟ Double pitଦୁଇଟି ପିଟ Directly to open/closed drain ଖୋଲା/ବନ୍ଦ ଥିବା ନର୍ଦମା ସହିତ ସିଧାସଳଖ କନେକ୍ସନ Others, specifyଅନ୍ୟାନ୍ୟ , ଦର୍ଶାଅ							

	ଉତ୍ତର ଲେଖନ୍ତୁ)		
18	Picture of the toilet taken ପାଇଖାନାର ଫଟୋ ନିଆଗଲା ?	YesହଁNoନାହିଁ	
19	Provide a brief description of the septic tank/ Pit ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ/ପିଟର ସମ୍ପୂର୍ଣ୍ଣ ବିବରଣୀ ଦିଅନ୍ତୁ Locationଅବସ୍ଥିତି Shapeଆକୃତି Sizeଆୟତନ Access road to the septic tank ସେପ୍ଟିକ ଟ୍ୟାଙ୍କକୁ ପହଞ୍ଚିବା ରାସ୍ତା Type of the bottom ତଳ ଭାଗ ଟି କି ପ୍ରକାର ର	Inside the houseଘର ଭିତରେ Outside the houseଘର ବାହାରେ In case of option 2, ଯଦି ଉତ୍ତର 2 ହୁଏ , 2i. Front Side of the propertyଘର ଆଗରେ 2ii. Back Side of the propertyଘର ପଛରେ Rectangularଆୟତାକାର Circularଗୋଲାକାର Don’t Knowଜାଣିନାହିଁ Breadth/Diameter_____ft. ଓସାର/ବ୍ୟାସ ...ଫୁଟରେ Length_____ft.ଲମ୍ବ.....ଫୁଟରେ Depth_____ft.ଗଭୀର.....ଫୁଟରେ No of rings used in septic tank (in case the shape is Circular): Don’t knowଜାଣିନାହିଁ Narrow road (less than 2 mts.) ଅଣ ଓସାରିଆ ରାସ୍ତା (2ମିଟରରୁ କମ) Medium (less than 5 mts.) ମାଧ୍ୟମ ଧରଣ(5 ମିଟରରୁ କମ) Broad road (more than 5 mts.) ଓସାରିଆ ରାସ୍ତା (5ମିଟରରୁ ଅଧିକ) Linedସିମେଣ୍ଟ ପ୍ରସ୍ତର Non-linedମାଟି ପ୍ରସ୍ତର	(Picture would be put against each of the two option) (ପ୍ରଶ୍ନ ପଚାରିଲା ସମୟରେ ଫଟୋ ଦେଖାଇ ଉତ୍ତରର ଲେଖନ୍ତୁ)

20	How old is your toilet ଆପଣଙ୍କ ପାଇଖାନାଟି କେତେବର୍ଷ ର ପୁରୁଣା	_____ (in years)(ବର୍ଷରେ)	
21	How many persons are there in this HH? (for Commercial, approx.. numbers of toilet users)ଏହି ପରିବାରରେ ମୋଟ କେତେଜଣ ଲୋକ ରହୁଛନ୍ତି ? (ଯଦି ବ୍ୟବସାୟୀକ ସଂସ୍ଥା ହୋଇଥାଏ ତେବେ ଆନୁମାନିକ କେତେଜଣ ପାଇଖାନା ବ୍ୟବହାର କରନ୍ତି)	Children (less than 18 year):___, Other Male: ___ Other female: ___ ଛୋଟ ପିଲା (୧୮ ବର୍ଷରୁ କମ)....., ଅନ୍ୟାନ୍ୟ ପୁରୁଷ :…….. ଅନ୍ୟାନ୍ୟ ମହିଳା	
22	Do you share your toilet with any other Family	Yesହଁ Noନାହିଁ	
23	If yes who are the members from other family use it	Male Female	
24	Did anyone help you in designing and construction of toilet ପାଇଖାନା ନିର୍ମାଣ ଏବଂ ଏହାର ଡିଜାଇନ/ପରିକଳ୍ପନା ପାଇଁ କେହି ସାହାଯ୍ୟ କରିଥିଲେ କି ? Who helped you in designing and construction of toilet ନିର୍ମାଣ ଏବଂ ଏହାର ଡିଜାଇନ/ପରିକଳ୍ପନା ପାଇଁ କିଏ ସାହାଯ୍ୟ କରିଥିଲେ	Yesହଁ Noନାହିଁ If yes, then, who provided guidance ଯଦି ହଁ , ତେବେ କିଏ ନିର୍ଦ୍ଦେଶ ଦେଇଥିଲେ Masonରାଜମିସ୍ତ୍ରୀ Contractorଠିକାଦାର Municipality officialsମୁନିସପାଲ କର୍ମଚାରି Neighborsପଡୋଶୀ Relatives and friends ବନ୍ଧୁବାନ୍ଧବ/ ସାଙ୍ଗସାଥୀ NGOଏନଜିଓ Any otherଅନ୍ୟାନ୍ୟ	
25	Do some member(s) of your family do not use the toilet in the house and practice open defecation? ଆପଣଙ୍କ ପରିବାରରେ କୌଣସି ସଦସ୍ୟ ଘରେ ଥିବା ପାଇଖାନା ବ୍ୟବହାର କରନ୍ତି ନାହିଁ ଏବଂ ଖୋଲା ଜାଗା /ବାହାରକୁ ଝାଡା ଯାଆନ୍ତି କି ?	Yesହଁ Noନାହିଁ	

	If yes, who does it ଯଦି ହଁ , କେଉଁମାନେ ଯାଆନ୍ତି	Male Members ପୁରୁଷ ସଦସ୍ୟ Female Membersମହିଳା ସଦସ୍ୟ Children (below 18 Yrs)18 ବର୍ଷରୁ କମ ପିଲାମାନେ Others (specify):ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାଅ)	
	If, yes please explain the reasons for doing so ଯଦି ହଁ, ଏହିପରି କରିବାର କାରଣ କୁହନ୍ତୁ	Lack of water ପାଣିର ଅଭାବ Matter of habit/ cultural preference ଏହା ଏକ ଅଭ୍ୟାସ/ପରମ୍ପରାଗତ ପସନ୍ଦ Joint/ group activity ସାଙ୍ଗହୋଇ ଝାଡା ଯିବା ର ଅଭ୍ୟାସ Small septic tank/pitଛୋଟ ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ/ପିଟ Avoid frequent cleaning ବାରମ୍ବାର ସଫାକରିବାକୁ ପଡିବନି Any other (specify)ଅନ୍ୟକିଛି (ଦର୍ଶାଅ.....)	
Toilet Typologies, Emptying, Transportation and Disposal ପାଇଖାନାର ପ୍ରକାର , ମଳ ବାହର କରି ବାହାରେ ପକାଇବା			
26	Which of the following are connected to the septic tank/Pit latrine ନିମ୍ନ ଲିଖିତ ମଧ୍ୟରୁ କେଉଁ ଗୁଡିକ ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ/ପିଟ ପାଇଖାନାକୁ ସଂଯୋଗ କରାଯାଇଛି Wash Basins ହାତ ଧୁଆ ବେସିନ Kitchen waste water ରୋଷେଇ ଘର ର ଆବର୍ଜନା ପାଣି Washing area ଲୁଗାସଫା ଜାଗା Bathing area ଗାଧୋଇବା ଜାଗା Surface water (e.g. area above the septic tank ସେପ୍ଟିକ ଟ୍ୟାଙ୍କର ଉପରି ଭାଗର ପାଣି Roof water ଛାତ ର ପାଣି Other (please specify) ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାନ୍ତୁ)	Please tick all that apply ଦୟାକରି ସମସ୍ତ ଉତ୍ତର ଗୁଡିକୁ ଟିକ ଚିହ୍ନ ଦିଅନ୍ତୁ ।	Total Number (where applicable)ସମୁଦାୟ ସଂଖ୍ୟା (ଦରକାର ସ୍ଥାନରେ)
27	Outflow of septic tank/pit latrine is connected to	Open drainଖୋଲା ନର୍ଦ୍ଦମା / ଡ୍ରେନ Closed drain	

	ସେପଟିକ ଟ୍ୟାଙ୍କ/ ପିଟ ପାଇଖାନାରୁ ବାହାରୁଥିବା ମଇଳା କାହା ସହିତ କନେକ୍ସନ ହୋଇଛି	ସ୍ଲାବ / ଘୋଡଣିଥିବା ନର୍ଦ୍ଦମା / ଡ୍ରେନ Sewer system ଭୂତଳ ନର୍ଦ୍ଦମା / ମାଟି ତଳେ ଯାଇଥିବା ଡ୍ରେନ ର ବ୍ୟବସ୍ଥା Soak pitପାଣି ଶୁଖିବା ଖାତ	
28	Where does the discharge of grey water and effluent from septic tank or latrines take place? ପାଇଖାନା କିମ୍ବା ସେପଟିକ ଟ୍ୟାଙ୍କ ରୁ ବାହାରୁଥିବା ମଇଳା ପାଣି ଏବଂ ଆବର୍ଜନା କେଉଁଠିକି ଯାଏ ?	Drainନର୍ଦ୍ଦମା / ଡ୍ରେନ Sewer system ଭୂତଳ ନର୍ଦ୍ଦମା / ମାଟି ତଳେ ଯାଇଥିବା ଡ୍ରେନ Soak pitପାଣି ଶୁଖିବା ଖାତ Any other, please specifyଅନ୍ୟାନ୍ୟ ଦର୍ଶାନ୍ତୁ	
29	Where is the liquid waste from your house discharged? ଘରୁ ବାହାରୁଥିବା ମଇଳା ଆବର୍ଜନା ପାଣି କେଉଁଠିକି ଯାଏ ?	Drainନର୍ଦ୍ଦମା / ଡ୍ରେନ Soak pitପାଣି ଶୁଖିବା ଖାତ Open areaଖୋଲା ଜାଗା Any other, please specifyଅନ୍ୟାନ୍ୟ ଦର୍ଶାନ୍ତୁ	
30	Is there a well or hand pump in your house/plot? ଆପଣଙ୍କ ଘରେ /ପ୍ଲଟ ରେ ଖୋଲା କୂଅ କିମ୍ବା ନଳକୂଅ(କେବଳ ପୁରୀ ପାଇଁ) ଅଛି କି?	Yesହଁ Noନାହିଁ	
31	If yes, pls. record the distance between the well and septic tank/pit ଯଦି ହଁ ତେବେ କୂଅ ଏବଂ ସେପଟିକ ଟ୍ୟାଙ୍କ/ପିଟ ମଧ୍ୟରେ ଦୂରତା କେତେ ?ରେକର୍ଡ କରନ୍ତୁ	Distance in meters_____ ଦୂରତା ମିଟର ରେ -------	
32	Was the ground water level Checked before deciding depth of pit/ septic tank? ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ/ପିଟର ଗଭୀରତା କେତେ ରହିବତାର ନିଷ୍ପତି କରିବା ପୂର୍ବରୁ ପାଣିର ସ୍ତର କେତେ ଅଛି ଯାଞ୍ଚ କରିଥିଲେ କି ?	Yesହଁ Noନାହିଁ	
33	What are the purposes for which water from the well is used *(Can encircle more than one)* କେଉଁକେଉଁ ଉଦେଶ୍ୟ ରେ କୂଅ ର ପାଣି ବ୍ୟବହାର କରାଯାଏ	Drinking and cooking without treatment ବିଶୋଧନ ନ କରି ପିଇବା ଏବଂ ରୋଷେଇ କରିବା Drinking and cooking after treatment ବିଶୋଧନ କରି ପିଇବା ଏବଂ ରୋଷେଇ କରିବା Non-drinking purposes such as bathing, washing etc.	

	(ଏକାଧିକ ଉତ୍ତର ପାଇଁ ଗୋଲ ବୁଲାନ୍ତୁ)	ପିଇବା ବ୍ୟତୀତ ଅନ୍ୟାନ୍ୟ ଉଦ୍ଦେଶ୍ୟରେ (ଗାଧୋଇବା,ଲୁଗା ସଫା କରିବା ଇତ୍ୟାଦି) Any other (specify) ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାନ୍ତୁ)	
34	Do you think the water from the well can get contaminated due to proximity to toilet? ପାଖରେ ପାଇଖାନା ରହିଲେ କୂଅର ପାଣି ଦୂଷିତ/ସଂକ୍ରମିତ ହେବ ବୋଲି ଆପଣ ଭାବୁଛନ୍ତି କି?	Yesହଁ Noନାହିଁ	
35	Whom you contact for emptying of septic tank	1.ULBs 2.Govt Cesspool operators 3.Private cesspool operators 4.Manual labours	
36	What was the source of information related to emptying septic tank	1.Hoardings 2.Newspaper 3.T.V. Ads 4.Pump lets 5.Internet Others if any…specify	
37	Did any member of your family suffer from diarrhea/dysentery in the last 3 months? ଗତ 3 ମାସ ଭିତରେ ଆପଣଙ୍କ ପରିବାରର କୌଣସି ସଦସ୍ୟ ଙ୍କୁ ଡାଇରିଆ / ଝାଡା ବାନ୍ତି / ପତଳା ଝାଡା ହୋଇଛି କି ?	Yes- 01 ହଁ No-02 ନାଁ If Yes, who : ଯଦି ହଁ ତେବେ କିଏ ? 1. Children ପିଲାମାନେ 2. Adult ବୟସ୍କ 3. Both ଉଭୟ	
38	Did any member of your family suffer from jaundice in the last 3 months? ଗତ 3 ମାସ ଭିତରେ ଆପଣଙ୍କ ପରିବାରର କୌଣସି ସଦସ୍ୟ ଙ୍କୁ ଜଣ୍ଡିସ ହୋଇଛି କି ?	Yes- 01 ହଁ No-02 ନାଁ If Yes, who : ଯଦି ହଁ ତେବେ କିଏ ? 1. Children ପିଲାମାନେ 2. Adult ବୟସ୍କ 3. Both ଉଭୟ	
39	How frequently is the septic tank/pit latrine emptied? କେତେ ବ୍ୟବଧାନରେ ସେପ୍ଟିକଟ୍ୟାଙ୍କ /ପିଟ ପାଇଖାନା ସଫା କରାଯାଏ	6 months 6 ମାସ 6 – 12 months 6-12 ମାସ 12 – 24 months 12-24 ମାସ 24 – 36 months24-36 ମାସ More than 36 months 36 ମାସରୁ ଅଧିକ Not yet emptied since construction ତିଆରି ହେବା ଦିନଠାରୁ ସଫା ହୋଇନାହିଁ	

		Mention the last date of emptying of the septic tank/pit latrine-------- ଶେଷ ଥର କୌ ତାରିଖ ରେ ସେପ୍ଟିକଟ୍ୟାଙ୍କ /ପିଟ ପାଇଖାନାସଫା ହୋଇଥିଲା ଲେଖନ୍ତୁ ……	
40	Why was the septic tank emptied ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ କାହିଁକି ସଫା କଲେ ?	Schedule emptying is required ଉପଯୁକ୍ତ ସମୟରେ ସଫା କରିବା ଦରକାର ଥିଲା Blocked toilet ପାଇଖାନା ଭର୍ତି ହୋଇ ବନ୍ଦ ହୋଇଯାଇଥିଲା Overflow from access hole/manhole ମଇଳା ଗୁଡିକ ସେପ୍ଟିକ ଟ୍ୟାଙ୍କର ଦୁଆରମୁହଁ ଦେଇ ବାହାରକୁ ବାହାରି ଆସିଥିଲା Foul Smellଦୁର୍ଗନ୍ଧ ବାହାରିଲା Other, Specifyଅନ୍ୟାନ୍ୟ ଦର୍ଶାନ୍ତୁ Don’t know/Rememberଜାଣି ନାହିଁ /ମନେ ନାହିଁ	
41	How is the septic tank emptied? *(Encircle appropriate no.)* ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ କିପରି ସଫା କରାଗଲା (ଉପଯୁକ୍ତ ଉତ୍ତର ଗୁଡିକ ଗୋଲ ବୁଲାନ୍ତୁ)	Manually using local labour ସ୍ଥାନୀୟ ଶ୍ରମିକ / ମଜୁରିଆ ହାତରେ ବାହାର କଲେ Using suction machine (pvt.) ବେସରକାରୀ ସକ୍ସନ ମେସିନ ବ୍ୟବହାର କରି Using suction machine(govt) ସରକାରୀ ସକ୍ସନ ମେସିନ ବ୍ୟବହାର କରି Self ନିଜେ	
42	Were there any problems during emptying of septic tanks? (multiple answer) ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ସଫା କରିବା ସମୟ ରେ କୌଣସି ପ୍ରକାର ଅସୁବିଧା ହୋଇଥିଲା କି? (ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Access or distance for suction truck to house ଘର ଠାରୁ ସକ୍ସନ ଟ୍ରକ ଦୂରରେ ଥିଲା କିମ୍ବା ସୁବିଧା ନଥିଲା Break floor tiles to access septic tank ସେପ୍ଟିକ ଟ୍ୟାଙ୍କର ଚଟାଣ ର ଟାଇଲି ଭାଙ୍ଗିଯାଇଥିଲା Break concrete manhole to access septic tank ସେପ୍ଟିକ ଟ୍ୟାଙ୍କର ଉପର ସିମେଣ୍ଟ କଂକ୍ରିଟ ଘୋଡଣି ଟି ଭାଙ୍ଗିଯାଇଥିଲା Difficult to locate the septic tank ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ଖୋଜି ପାଇବାରେ ଅସୁବିଧା ହୋଇଥିଲା Made a messଅପରିଷ୍କାର ହୋଇଯାଇଥିଲା No problem foundକୌଣସି ଅସୁବିଧା ହୋଇନଥିଲା Others, specifyଅନ୍ୟାନ୍ୟ ଦର୍ଶାନ୍ତୁ Don’t knowଜାଣିନାହିଁ	
43	Who is your preferred service provider for emptying septic tank? ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ସଫା କରିବା ପାଇଁ ଏମାନଙ୍କ ମଧ୍ୟରୁ ଆପଣ	Municipalityମୁନସିପାଲିଟ Private operatorବେସରକାରୀ ସଂସ୍ଥା/ଅପରେଟର Local Laborସ୍ଥାନୀୟ ଶ୍ରମିକ Self ନିଜେ	

	କାହାକୁ ପସନ୍ଦ କରନ୍ତି ।	Any otherଅନ୍ୟକେହି	
44	How much do you pay for the emptying services? *(Encircle appropriate no.)* ସେପ୍ଟିକଟ୍ୟାଙ୍କ ସଫା କରିବା ପାଇଁ କେତେ ଟଙ୍କା ଦେବାକୁ ପଡିଥିଲା ? (ସଠିକ ଉତ୍ତରରେ ଟିକ୍ କରନ୍ତୁ)	Rs 500 – 1000 ୫୦୦ ରୁ ୧୦୦୦ Rs 1000-1500 ୧୦୦୦ ରୁ ୧୫୦୦ Rs 1500 -2000 ୧୫୦୦ ରୁ ୨୦୦୦ Rs 2000-3000 ୨୦୦୦ ରୁ ୩୦୦୦ More than 3000 3000 ରୁ ଅଧିକା No cost- କୌଣସି ଖର୍ଚ କରିନାହାନ୍ତି	
45	Are you satisfied with the services related to proper emptying, transportation and disposal?(multiple answer) ସେପ୍ଟିକଟ୍ୟାଙ୍କ ଠିକ ଭାବରେ ସଫା କରିବା ,ବାହାରିଥିବା ମଳ କୁ ନେଇ ଠିକ ଭାବରେ ପକାଇବା ବିଷୟରେ ଆପଣ ସନ୍ତୁଷ୍ଟ କି ?(ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Yesହଁ Noନାହିଁ Give reasons in case option is Yes ଯଦି ଉତ୍ତର ହଁ ହୁଏ ତେବେ ଏହାର କାରଣ କଣ ? Lower costକମ ଖର୍ଚ Timely availability/ quick response ଠିକ ସମୟରେ ମିଳିବା/ ଶୀଘ୍ର ଆସନ୍ତି Ease of contactଯୋଗାଯୋଗ ଅତି ସହଜ Better expertiseଭଲ ଦକ୍ଷତା Better equipmentଉନ୍ନତ ଉପକରଣ Any Otherଅନ୍ୟକିଛି Give reasons incase option is No ଯଦି ଉତ୍ତର ନାହିଁ ହୁଏ ଏହାର କାରଣ କଣ ? High cost ଅଧିକ ଖର୍ଚ Delay in responseଆସିବାରେ ଡେରି କରନ୍ତି Difficult to contact ଯୋଗାଯୋଗ କରିବାରେ ଅସୁବିଧା Poor expertise କମ ଦକ୍ଷତା Poor equipment ନିମ୍ନମାନର ଜନ୍ତ୍ରପାତି / ଉପକରଣ Any otherଅନ୍ୟକିଛି	
46	Where is the sludge collected from septic tanks disposed? *(for authentication, user may be asked whether they have actually seen it)* ସେପ୍ଟିକ ଟ୍ୟାଙ୍କରୁ ବାହାରୁଥିବା ମଇଳାଗୁଡିକ କେଉଁ ସ୍ଥାନରେ ପକାଯାଏ ? (ଉତ୍ତରଦାତା ଙ୍କୁ ପଚାରନ୍ତୁ ସେ ନିଜେ ଏହା ଦେଖିଛନ୍ତି କି ?)	Next to the houseଘର ପାଖରେ Drain/Canalଡ୍ରେନ/କେନାଲ Agricultural landଚାଷ ଜମିରେ Any Other (Specify)ଅନ୍ୟାନ୍ୟ (ଦର୍ଶାଅ) Riverନଦୀ Not awareଜଣାନାହିଁ	

47	Are you aware that a SeTP is being set up in your city to treat FSS for safe disposal?	1.Yesହଁ 2.Noନାହିଁ	
48	Do you know that faecal sludge can be treated as a resource and reused?	1.Yesହଁ 2.Noନାହିଁ	
49	Are you concerned about where the sludge is disposed? ଯେଉଁ ଜାଗାରେ ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ର ମଳ ପକାଯାଉଛି ସେଥିପାଇଁ ଆପଣ ଚିନ୍ତିତ କି ?	Yesହଁ Noନାହିଁ	
50	Are you aware of the adverse impact on health and environment due to unsafe disposal of faecal sludge? ଝାଡା/ ଆବର୍ଜନା ଗୁଡିକ ଅସୁରକ୍ଷିତ ଭାବରେ ପକା ଯାଉଥିବା ଯୋଗୁଁ ସ୍ୱାସ୍ଥ୍ୟ ଏବଂ ପରିବେଶ ଉପରେ ପ୍ରତିକୂଳ ପ୍ରଭାବ ପକାଉଛି ବୋଲି ଆପଣ ଜାଣିଛନ୍ତି କି ?	Yesହଁ Noନାହିଁ If yes describe them ---------- ଯଦି ହଁ , କେଉଁ କେଉଁ ପ୍ରତିକୂଳ ପ୍ରଭାବ ପକାଉଛି କୁହନ୍ତୁ	
51	Are you aware whether any sewerage connection being laid down in your area ଆପଣଙ୍କ ଅଞ୍ଚଳ ଦେଇ ଭୂତଳ ନର୍ଦ୍ଦମା/ ଡ୍ରେନ ଯାଇଛି ବୋଲି ଆପଣ ଜାଣିଛନ୍ତି କି ?	Yesହଁ Noନାହିଁ NA ପ୍ରଯୁଜ୍ୟ ନୁହେଁ	
52	Did the municipal authority/OWSSB inform you to connect your septic tank/pit latrine with the sewerage line ଆପଣଙ୍କ ଭୂତଳ ନର୍ଦ୍ଦମା/ପିଟ ପାଇଖାନା ସହିତ କନେକ୍ସନ ପାଇଁ ମୁନିସପାଲ ଅଧିକାରୀ/ ଓଡିଶା ଜଳ ଯୋଗାଣ ଏବଂ ସ୍ୱେରେଜ ବୋର୍ଡବିଭାଗ ତରଫରୁ ଆପଣଙ୍କୁ ସୂଚନା ଦିଆଯାଇଥିଲା କି ?	Yesହଁ Noନାହିଁ NA ପ୍ରଯୁଜ୍ୟ ନୁହେଁ	

53	If 52 is Yes, are you informed that the external connection cost from property boundary to nearest sewerage manhole will be done by OWSSBଯଦି ପ୍ରଶ୍ନ 52 ରେ ଉତ୍ତର ହଁ ହୁଏ – ଆପଣଙ୍କ ପ୍ଲଟ ପାଚେରି ରୁ ପାଖରେ ଥିବା ଭୂତଳ ନର୍ଦମା/ ଡ୍ରେନ ସହିତ ସଂଯୋଗ ପାଇଁ ହେଉଥିବା ଖର୍ଚ ଓଡିଶା ଜଳ ଯୋଗାଣ ,ସ୍ୱେରେଜ ବୋର୍ଡ ବିଭାଗ ବହନ କରିବ ବୋଲି ଆପଣ ଙ୍କୁ କୁହା ଯାଇଛି କି ?	Yesହଁ Noନାହିଁ NA ପ୍ରଯୁଜ୍ୟ ନୁହେଁ	
54	If 52 is Yes, what are the impediments in taking a sewerage connection ଯଦି ପ୍ରଶ୍ନ 52 ରେ ଉତ୍ତର ହଁ ହୁଏ –ଭୂତଳ ନର୍ଦମା / ଡ୍ରେନ ସହିତ କନେକ୍ସନ କଲେ କି ପ୍ରକାର ବାଧାବିଘ୍ନ / ଅସୁବିଧା ହେବ ?	Difficulties in obtaining road cutting permission from municipality ରାସ୍ତା କାଟିବା ପାଇଁ ମୁନିସିପାଲିଟି ର ଅନୁମତି ପାଇବାକୁ ଅସୁବିଧା Inconvenience due to Digging / Cutting the Road ରାସ୍ତା ଖୋଳିବା / କାଟିବା ଯୋଗୁ ଅସୁବିଧା Financial Problem(ଆର୍ଥିକ ଅସୁବିଧା) Any other, please specify ଅନ୍ୟାନ୍ୟ ଦର୍ଶାନ୍ତୁ NA ପ୍ରଯୁଜ୍ୟ ନୁହେଁ	
55	Are you able to afford internal plumbing cost କନେକ୍ସନ ପାଇଁ ଦରକାର ହେଉଥିବା ପାଇପ କାମ ର ଖର୍ଚ କରିବା ପାଇଁ ଆପଣ ସକ୍ଷମ କି ?	Yesହଁ Noନା NA ପ୍ରଯୁଜ୍ୟ ନୁହେଁ	
56	Are you aware of any complaint redressal system which you can approach in case of any complaint related to emptying, collection & transportation	Yesହଁ Noନା	
57	Have you ever complained? Was your complaint addressed satisfactorily?	Yesହଁ Noନା	
SECTION C 2: Sanitation – No Toilet in the House HHs Using Public or Community Toilet			

ଭାଗ ଗ -2 : ପରିମଳ – ଯଦି ଘରେ ପାଇଖାନା ନାହିଁ ଯେଉଁ ପରିବାର ରେ ପାଇଖାନା ନାହିଁ କିମ୍ବା ଯେଉଁ ମାନେ ସର୍ବସାଧାରଣ ପାଇଖାନା କିମ୍ବା ଗୋଷ୍ଠୀ ପାଇଖାନା ବ୍ୟବହାର କରୁଛନ୍ତି ସେମାନଙ୍କୁ ପଚାରନ୍ତୁ			
58	Since you do not have a toilet in your house, where do most members of your family go to meet their toilet needs? ଯେହେତୁ ଆପଣଙ୍କ ଘରେ ପାଇଖାନା ନାହିଁ , ଘରର ଅଧିକାଂଶ ସଦସ୍ୟ ମଳତ୍ୟାଗ(ଝାଡା) କରିବା ପାଇଁ କେଉଁଠିକି ଯାଆନ୍ତି	Public toilet ସର୍ବସାଧାରଣ ପାଇଖାନା Community toiletଗୋଷ୍ଠୀ ପାଇଖାନା Neighbor's toilet ପଡିସା ଘର ପାଇଖାନା	
59	Is there separate toilet for men and womenପୁରୁଷ ଏବଂ ମହିଳା ଙ୍କ ପାଇଁ ଅଲଗା ପାଇଖାନା ଅଛି କି	Yesହଁ Noନାଁ	
60	Is there closed dustbin for disposal of used sanitary napkinବ୍ୟବହୃତ ସାନିଟାରି କପଡା ପକାଇବା ପାଇଁ ଘୋଡଣି ଥିବା ଡଷ୍ଟବିନ /ଅଳିଆ ବାକ୍ସ ଅଛି କି	Yesହଁ Noନାଁ	
61	What is the status of cleanliness/maintenance of the public toilet? If the option ofQue 54 is1ସର୍ବସାଧାରଣ ପାଇଖାନା ଟିର ସଫା ସୁତୁରା /ଦେଖାରଖା କିପରି ହୁଏ – ଯଦି ପ୍ରଶ୍ନ 54 ରେ ଉତ୍ତର 1 ହୁଏ	Very Goodବହୁତ ଭଲ Goodଭଲ Averageମଧ୍ୟମ ଧରଣର / ଚଳିବ Poorଖରାପ Very Poorଅତି ଖରାପ	
62	For the public toilet that you use, do you pay any usage charges? If the option of Que 54 is 1 ସର୍ବସାଧାରଣ ପାଇଖାନା ବ୍ୟବହାର କରିବା ପାଇଁ ଆପଣଙ୍କୁ ଟଙ୍କା ଦେବାକୁ ପଡେ କି (ଯଦି ପ୍ରଶ୍ନ 54 ରେ ଉତ୍ତର 1 ହୁଏ)	Yesହଁ Noନାଁ If yes, how much ଯଦି ହଁ ତେବେ କେତେ ଟଙ୍କା	
63	What is the status of cleanliness/maintenance of the community toilet?	Very Goodଅତି ଭଲ Goodଭଲ Averageମଧ୍ୟମ ଧରଣର / ଚଳିବ	

	ଗୋଷ୍ଠୀ ପାଇଖାନା ଟି ର ସଫା ସୁତୁରା / ଦେଖାରଖା କିପରି ହୁଏ If the option of Que 54 is 2ଯଦି ପ୍ରଶ୍ନ 54 ରେ ଉତ୍ତର 2 ହୁଏ	Poorଖରାପ Very Poorଅତି ଖରାପ	
64	Who maintains the community toilet? ଗୋଷ୍ଠୀ ପାଇଖାନା ଟି ର ଦେଖାରଖା କିଏ କରେ If the option of Que 54 is 2ଯଦି ପ୍ରଶ୍ନ 54 ରେ ଉତ୍ତର 2 ହୁଏ	Municipalityମୁନିସିପାଲିଟି NGOଏନ ଜି ଓ Communityଅଞ୍ଚଳର ଲୋକମାନେ No maintenance. କୌଣସି ପ୍ରକାର ଦେଖାରଖା ହୁଏ ନାହିଁ	
65	For the community toilet that you use, do you pay any usage charges? ଗୋଷ୍ଠୀ ପାଇଖାନା ବ୍ୟବହାର କରିବା ପାଇଁ ଆପଣଙ୍କୁ ଟଙ୍କା ଦେବାକୁ ପଡେ କି If the option of Que54 is 2 (ଯଦି ପ୍ରଶ୍ନ 54 ରେ ଉତ୍ତର 2 ହୁଏ)	Yesହଁ Noନାଁ If yes, how much ଯଦି ହଁ ତେବେ କେତେ Less than Rs 50 per month per family. ପରିବାର ପ୍ରତି ମାସକୁ 50 ଟଙ୍କା ରୁ କମ Between Rs 50 to Rs 100 per month per family. ପରିବାର ପ୍ରତି ମାସକୁ 50 ରୁ 100 ଟଙ୍କା ଭିତରେ More than Rs 100 per family per month. ପରିବାର ପ୍ରତି ମାସକୁ 10 0 ଟଙ୍କା ରୁ ଅଧିକା	
66	How satisfied are you with community toilet? ଗୋଷ୍ଠୀ ପାଇଖାନା ବ୍ୟବହାର ରେ ଆପଣ କେତେ ସନ୍ତୁଷ୍ଟ If the option of Que 54 is 2ଯଦି ପ୍ରଶ୍ନ 54 ରେ ଉତ୍ତର 2 ହୁଏ	Highly Satisfied ଅତି / ବହୁତ ସନ୍ତୁଷ୍ଟ Satisfiedସନ୍ତୁଷ୍ଟ Neither satisfied or dissatisfied ସନ୍ତୁଷ୍ଟ ନୁହଁ କି ଅସନ୍ତୁଷ୍ଟ ନୁହଁ Dissatisfiedଅସନ୍ତୁଷ୍ଟ Highly dissatisfiedଅତି /ବହୁତ ଅସନ୍ତୁଷ୍ଟ	
67	According to you, in which area/s need improvement in the public/ community toilet ଆପଣଙ୍କ ଅନୁସାରେ ସର୍ବସାଧାରଣ / ଗୋଷ୍ଠୀ ପାଇଖାନା ରେ କି ପ୍ରକାର ଉନ୍ନତି କରିବା ଦରକାର ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Facilitiesସୁବିଧା Maintenanceଦେଖାରଖା Securityସୁରକ୍ଷା Any other, please specifyଅନ୍ୟାନ୍ୟ ଦର୍ଶାନ୍ତୁ	
68	Do you practice hand washing with soap/detergent/liquidsoap in the toilet? ଆପଣ	Yesହଁ Noନାଁ	

	ଶୌଚଳୟ ରେ ହାତ ଧୋଇବା ପାଇଁ ସାବୁନ /ସାବୁନ ପାଉଡର /ଲିକୁଇଡ ସାବୁନ ବ୍ୟବହାର କରନ୍ତି କି *(This question is to be asked to all HHs)*ଏହି ପ୍ରଶ୍ନ ଟି ସମସ୍ତ ପରିବାର କୁ ପଚରାଯିବ		
69	If No, why ଯଦି ନାଁ କାହିଁକି	No handwashing station ହାତ ଧୋଇବା ପାଇଁ ବେଶିନ ନାହିଁ Soap not available ସାବୁନ / ସାବୁନ ପାଉଡର / ଲିକୁଇଡ ସାବୁନ ଉପଲବ୍ଧ ନାହିଁ No water supplyପାଣିର ସୁବିଧା ନାହିଁ Don't think it is important ଏହା ଦରକାର ବୋଲି ଭାବୁ ନାହିଁ	
SECTION C 3: Sanitation- No Toilet in the House Open Defecation ଭାଗ ଗ 3 : ପରିମଳ –ଯଦି ଘରେ ଶୌଚଳୟ ନାହିଁ ବାହାରକୁ ମଳତ୍ୟାଗ (ଝାଡା)କରିବାକୁ ଯାଆନ୍ତି			
70	Do your family members practice open defecation?ଆପଣ କିମ୍ବା ଆପଣଙ୍କ ପରିବାରର ସଦସ୍ୟ ମାନେ ଖୋଲା ରେ/ ବାହାରକୁ ମଳତ୍ୟାଗ କରିବାକୁ ଯାଆନ୍ତି କି ?	Yes, Alwaysହଁ ସବୁବେଳେ Yes, Sometimesହଁ ବେଳେବେଳେ Noନାଁ If sometimes, then state when ଯଦି ବେଳେ ବେଳେ ଯାଆନ୍ତି ତେବେ କେତେ ବେଳେ / କେଉଁ ସମୟରେ	
71	If Yes, Who in the family practice open defecation ଯଦି ହଁ ପରିବାରରେ କେଉଁ ମାନେ ଖୋଲା ରେ/ବାହାରକୁ ମଳତ୍ୟାଗ କରିବା ପାଇଁ ଯାଆନ୍ତି ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Allସମସ୍ତେ Only Male membersକେବଳ ପୁରୁଷ ଲୋକ Only childrenକେବଳ ପିଲା ମାନେ Only Female membersକେବଳ ମହିଳା ମାନେ	
72	If yes or sometimes, what are the reasons for you to practice open defecation? ଯଦି ହଁ କିମ୍ବା ବେଳେ ବେଳେ ,ତେବେ ଖୋଲା ରେ/ବାହାରକୁ ମଳତ୍ୟାଗ କରିବା ପାଇଁ ଯିବା ର କାରଣ କଣ	Lack of access to community/public toilet ସର୍ବସାଧାରଣ / ଗୋଷ୍ଠୀ ପାଇଖାନା କୁ ଯିବା ପାଇଁ ଅସୁବିଧା Matter of habit/ cultural preference ଏହା ଏକ ଅଭ୍ୟାସ / ପରମ୍ପରାଗତ ପସନ୍ଦ Joint/ group activityମିଳିମିଶି କି ଯିବା ଅଭ୍ୟାସ Any other, pleasespecify:ଅନ୍ୟାନ୍ୟ ଦୟାକରି ଦର୍ଶାନ୍ତୁ	
73	What are the problems associated with open defecation faced by you	1. lack of Privacyଗୋପନୀୟତା ରହେନି 2. Lack of safety for women and girls	

	and your family members?(ଖୋଲା ରେ/ବାହାରକୁ ଶୌଚ/ ଝାଡା ଗଲେ ଆପଣ କିମ୍ବା ଆପଣଙ୍କ ପରିବାର ଲୋକଙ୍କୁ କି ପ୍ରକାର ଅସୁବିଧା ହୁଏ – ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	ମହିଳା ଏବଂ ଝିଅ ପିଲା ମାନଙ୍କ ପାଇଁ ବିପଦ 3. lack of Dignityସମ୍ମାନ / ମର୍ଯ୍ୟାଦା ହାନି 4. Inconvenience – timeଅବେଳରେ ଯିବା ଅସୁବିଧା 5. Inconvenience – distanceଦୂରତା ଜନିତ ଅସୁବିଧା 5. Infections and Diseasesସଂକ୍ରମଣ/ରୋଗ ର ଆଶଙ୍କା 7. Any other, Specify:ଅନ୍ୟାନ୍ୟ , ଦର୍ଶାନ୍ତୁ	
74	Will you be interested in using a community/public toilet if individual toilet is not possible? ଯଦି ନିଜେ ପାଇଖାନା ତିଆରି କରିବା ସମ୍ଭବ ନୁହେଁ ତେବେ ଆପଣ ଗୋଷ୍ଠୀ /ସର୍ବସାଧାରଣ ପାଇଖାନା ବ୍ୟବହାର କରିବା ପାଇଁ ଆଗ୍ରହୀ ହେବେ କି ? ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Yesହଁ Noନାଁ If no, give reasonsଯଦି ନାଁ ତେବେ କାରଣ କୁହନ୍ତୁ Not hygienicସ୍ୱାସ୍ଥ୍ୟକର ନୁହେଁ No water facilityପାଣିର ସୁବିଧା ନାହିଁ Unsafe/ insecureଅସୁରକ୍ଷିତ/ବିପଦପୂର୍ଣ Inconvenienceସୁବିଧା ନୁହଁ Not willing to share with others ଅନ୍ୟ ମାନଙ୍କ ସହିତ ମିଶି ବ୍ୟବହାର କରିବା ପାଇଁ ଇଚ୍ଛା ନୁହେଁ High costଅତ୍ୟଧିକ ଖର୍ଚ Any otherଅନ୍ୟାନ୍ୟ	
75	Are you willing to pay for the use of public / community toilet?ପଇସା ଦେଇ ସର୍ବସାଧାରଣ / ଗୋଷ୍ଠୀ ପାଇଖାନା ବ୍ୟବହାର କରିବା ପାଇଁ ଆପଣ ଇଚ୍ଛା କରିବେ କି ?	Yesହଁ Noନାଁ If yes indicate the amount per usage or per month: Public toilet: ……per family /month Community toilet……..per family /month ଯଦି ହଁ ତେବେ ବ୍ୟବହାର କରିବା ପାଇଁ ପ୍ରତି ପରିବାର ପିଛା ମାସକୁ କେତେ ଟଙ୍କା ଦେଇପାରିବେ କୁହନ୍ତୁ ସର୍ବସାଧାରଣ ଶୌଚାଳୟ ..... ଗୋଷ୍ଠୀ ଶୌଚାଳୟ	
76	Are you willing for individual superstructure with common pit/ septic tank?ଗୋଟିଏ ନିଜସ୍ୱ ଶୌଚଳୟ ର ଢାଞ୍ଚା ରେ ଏକାଧିକ ପରିବାର ବ୍ୟବହାର ଯୋଗ୍ୟ ସେପ୍ଟିକଟ୍ୟାଙ୍କ /ପିଟ ତିଆରି କରିବାକୁ ଆପଣ	Yesହଁ Noନାଁ	

	ଇଚ୍ଛା କରିବେ କି ?		
77	Were there any efforts made in your area to construct community toilet? *(Encircle appropriate no's)*ସରକାରଙ୍କ ତରଫରୁ ଆପଣଙ୍କ ଅଞ୍ଚଳରେ ଗୋଷ୍ଠୀ ପାଇଖାନା ତିଆରି କରିବା ପାଇଁ ପଦକ୍ଷେପ ନିଆ ଯାଇଥିଲା କି ?	Yesହଁ Noନାଁ	
78	Do you think your community will take responsibility for O&M of a community toilet?ଆପଣଙ୍କ ଅଞ୍ଚଳର ଲୋକମାନେ ଗୋଷ୍ଠୀ ପାଇଖାନା ର ଦେଖାରଖା ଦାୟିତ୍ୱ ନେବେ ବୋଲି ଆପଣ ଭାବୁଛନ୍ତି କି	Yesହଁ Noନାଁ	
79	Will you be interested in constructing individual toilet in your house? ଆପଣ ଘରେ ଗୋଟେ ନିଜସ୍ୱ ପାଇଖାନା ତିଆରି କରିବା ପାଇଁ ଆଗ୍ରହୀ କି ? ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Yesହଁ Noନାଁ If no, give reasons:ଯଦି ନାଁ ତେବେ କାରଣ କଣ Lack of fundsଟଙ୍କା ପଇଶା ର ଅଭାବ Lack of spaceଜାଗାର ଅଭାବ Out of habitବାହାରକୁ ଯିବା ର ଅଭ୍ୟାସ Any otherଅନ୍ୟାନ୍ୟ	
80	From where do you get information on sanitation (toilets, sewerage system, septic tank emptying ଆପଣ ପରିମଳ ବିଷୟରେ (ଯଥା ଶୌଚାଳୟ, ସ୍ୱେରେଜ ବ୍ୟବସ୍ଥା / ଭୂତଳ ନର୍ଦମା/ ଡ୍ରେନ , ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ସଫା କରିବା ଇତ୍ୟାଦି) କେଉଁ ଠାରୁ ସୂଚନା ପାଆନ୍ତି ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Municipal officialsମୁନିସିପାଲିଟି କର୍ମଚାରୀ Media (TV, radio) ଗଣ ମାଧ୍ୟମ (ଟିଭି , ରେଡିଓ , ଖବର କାଗଜ ଇତ୍ୟାଦି) Mikingମାଇକ ଦ୍ୱାରା ପ୍ରଚାର Neighbour/friends/relatives ପଡୋଶୀ/ସାଙ୍ଗ ସାଥି/ ବନ୍ଧୁ ବାନ୍ଧବ NGOsଏନ ଜି ଓ Others (Specify)ଅନ୍ୟାନ୍ୟ	
81	What more information would you like to know about septic tank emptying?ସେପ୍ଟିକ ଟ୍ୟାଙ୍କ ସଫା କରିବା ବିଷୟରେ ଆପଣ ଆଉ ଅଧିକ କି ପ୍ରକାର ସୂଚନା	When to empty କେବେ ସଫା କରାଯିବ About service providers & their contact details ସଫା କରୁଥିବା ସଂସ୍ଥା / ସେମାନଙ୍କ ସମ୍ପୂର୍ଣ୍ଣ ଯୋଗାଯୋଗ ନମ୍ବର	

	ଜାଣିବା ପାଇଁ ଚାହାନ୍ତି ଏକାଧିକ ଉତ୍ତର ସମ୍ଭବ)	Fees/Chargeଫିସ /ପାଉଣା /ମୂଲ୍ୟ About benefits of doing it ଏହା କଲେ କି କି ଉପକାର /ସୁବିଧା ମିଳିବା ବିଷୟରେ About disposal ପକାଇବା ଜାଗା ବିଷୟରେ 6.Design	
		<u>Community Engagement with HH</u>	
82	Are you aware about any citizen/Community groups working on health and sanitation in your area	Yesହଁ Noନା	
83	If Yes, Nature of community groups	Mahila Samities Youth groups Common interest groups Pooja Committees Self help groups If others..specify	
84	Does anybody from citizens groups approached you to discuss sanitation issues	Yes/No	
85	If Yes, what are the subject they discussed with you	Issues related to children and women health FSSM Promoting the use of PT/CT Specify, if any other	
87	If PT/CT are maintained by citizen group, do you think the community usage will increase?	Yes No Don't know	
		<u>Health related</u>	
88	Do you know the ill effects of open Defecation on health & growth of children?	Yes/ No	
89	If yes, what are those ill effects	1. Malnutrition 2. Worm infestation 3. Skin disease 4. Diarrhoea 5. Jaundice 6. Typhoid	

N:B - Response for questions from 51 to 55 are to be collected from respondent of Puri, Bhubaneswar, Cuttack, Rourkela & Sambalpur.

Name of the Investigator:ସାକ୍ଷାତକର୍ତ୍ତା ଙ୍କ ଦସ୍ତଖତ	Date of investigation:ସାକ୍ଷାତ୍କାର ତାରିଖ
Survey start time:ସର୍ଭେ ଆରମ୍ଭ ର ସମୟ	Survey end time:ସର୍ଭେ ଶେଷ ର ସମୟ
Name of the data quality controller: ସୂଚନା ର ମାନ ନିର୍ଧାରକ ଙ୍କ ନାମ	Date of back check:ଯାଞ୍ଚ ତାରିଖ

9.2 Annexure 2 – Questionnaire for In-Depth

- **Interview with Mayor**

1. What are the key sanitation issues in your city?
2. What are the main water borne diseases that occurs in the City since the last 5 years? How do you deal with them?
3. Will the City be able to meet the SBM deadline?
4. What are the key challenges in toilet construction and usage in the City?
5. How important is FSM as part of sanitation?
6. How is faecal sludge/septage managed in the City?
7. Does the City have a sewerage system? If yes, what is the status of coverage?
8. What is the level of coordination with OWSSB, PHEO, PCB, Water Resource Department etc. to deal with SWM and liquid waste?
9. How many cesspool trucks are operating under the ULB? What is your suggestion to make cesspool vehicle operation a profitable business?
10. Are you aware about the ongoing SeTP being constructed in your city?
11. How can citizens and communities be made aware about the benefits of SeTP and be engaged proactively?
12. How is the ULB planning to undertake the O&M of SeTP?
13. Are you aware about the recent changes in urban sanitation policies and programmes for sustainable sanitation by the Central & State Government?
14. Under the OUSS and OUSP-2017, there is a need to form CSTFs and WSCs in the city. Please share your views on how best that could be formed and made functional under your leadership.
15. How can communities from your ward be mobilized to participate in FSSM?
16. What kind of capacity building is needed among the ULB and non-ULB stakeholders for effective FSSM?
17. How can Ward Committee members be effectively engaged for improved sanitation in the wards and help the communities raise demand for sanitation services?
18. Do you think the people from the City will agree to pay more for improved sanitation facilities?

- **Interview with Collector**

1. What are the sanitation priorities of the city for coming years?
2. Does the city have a City Sanitation Plan (CSP)?
3. How are you planning to meet the SBM deadline of 2nd October 2019 to make the city ODF? What are key bottlenecks in implementing the programme?
4. Is there any strategy adopted to meet local level challenges in sanitation?
5. Has there been any plan to implement the recently notified policies/strategies such as OUSS, OUSP, along with SBM and AMRUT and other schemes?
6. Is there any district level coordination between different agencies such as OWSSB, PCB, DUDA, PHEO and ULB in sanitation infrastructures creation and management?
7. Are there any plans to utilize the potentialities of CSR, DMF and other sources of funding for sanitation programmes?
8. What are the key challenges with regard to FSSM in the City?
9. How do you see private participation in O&M of cesspool vehicles and SeTPs?
10. Awareness level is very low among the people on FSSM as toilet construction is still ongoing. How do you propose to undertake IEC, BCC and capacity building activities on FSSM in the city?
11. What kind of capacities need to be built to deal with FSSM at the city & district level?
12. What do you suggest could be the best way for effective FSSM in the city?
13. What do you think about the opportunities for reuse of treated septage (fertilizer)?

- **Interview with Financial Officer**

1. What are the various revenue sources of ULB?
2. What is the status of revenue generated from cesspool vehicles in Baripada?

3. Do you think two cesspool truck is sufficient to meet the service demand?
4. So, the places where big cesspool vehicles are unable to reach, how are septic tanks emptied? Is there any instances of manual emptying of septic tanks?
5. How is the revenue generated from cesspool services get managed?
6. The revenue generated from cesspool is being used only for cesspool operation or any other domain under ULB functionality?
7. Do you think if these revenues are dedicated particularly for cesspool operation then it will be effective?
8. Are you aware of SeTP budget and its O&M?
9. Do you think engagement of private operator will be helpful, what is your take on PPP model?
10. Is there any specific funds allocated for Capacity building for various stakeholder under sanitation domain?
11. As per your knowledge, who will be expected target group for potential capacity building strategy in Baripada?
12. Looking at the current finance budget how much funds can be mobilized for Capacity building strategy in within ULB budget?
13. Is there any other funds received from any Company / DMF / Govt. Program/ or any financial institution. Or is there any unutilized funds
14. Do you think you need more funding to increase the functionality of FSSM, or do you think Baripada ULB funding is sufficient?

- **Interview with Deputy Commissioner & SBM nodal officer**
  1. To what extent is FSSM services integrated with SBM?
  2. What are the current level of FSSM addressed under SBM at the ULB level in the city?
  3. Are current capacities adequate to deal with FSSM at the city level?
  4. What kind of capacities need to be built to deal with it?
  5. Which are the key institutions which needs to be involved at district and city levels?

- **Interview with Sanitary Inspector**
  1. What are the key sanitation issues in your city? Please state the top three
  2. Is FSSM a part of the sanitation services in the city?
  3. What are the key issues related to FSSM value chain in the city?
  4. How can FSSM activities be monitored by ULBs at the city level?
  5. How can communities be made aware about the FSSM services and participate in the same?
  6. Are current capacities adequate to deal with FSSM at the city level?
  7. What kind of capacities need to be built to deal with it?
  8. Has Ward Sanitation Committees been formed for each ward in the City?
  9. What role can Ward Sanitation Committees play in improving sanitation and enhancing community participation?
  10. What kind of capacity building do the committees require to perform better?
- **Interview with Corporator**
  1. What are the major sanitation issues in your ward?
  2. Whether Ward Sanitation Committees have been formed?
  3. If yes, what is the size of the Committee and how does it function?
  4. What role do ward councilors/corporators and ward committees play in making their respective wards ODF?
  5. How is faecal sludge/septage managed in your Ward?
  6. How can communities from your ward be mobilized to participate in FSSM?
  7. What kind of capacity building do you require to work on FSSM?
  8. How can Ward Committee members be effectively engaged for improved sanitation in the wards and help the communities raise demand for sanitation services?
  9. Do you think the people from your ward will agree to pay more for improved sanitation in your respective wards?

- **Interview with Project Director, District Urban Development Authority (DUDA)**

1. What are the key issues related to urban sanitation in urban areas?
2. What are the key roles and responsibilities of DUDA in implementation of sanitation programmes?
3. What are the key challenges in making the towns and cities ODF in the district?
4. What is the district specific plan to address challenges in sanitation?
5. What kind of coordination presently exists between DUDA and the ULB?
6. What is the linkage between DUDA and other urban development programmes like AMRUT, SBM, OULM etc.?
7. How important is FSSM in sanitation in urban areas of the district?
8. What role can the DUDA play in effective FSSM?
9. What kind of capacities need to be built to deal with FSSM at the city & district level?
10. Government has strategically planned to empower and capacitate DUDA as planning and monitoring agency for all urban services in the district. What are your key suggestions on this?

- **Interview with Regional Officer, Pollution Control Board**

1. What is the status of river and ground water pollution from municipal sewages in the district?
2. Number of water bodies and sources contaminated in the district?
3. Do you have ULB wise details on the grades of water?
4. What is the amount of contamination of ground water in your area?
5. Have you observed human contact usage of contaminated water in activities like bathing, drinking etc.?
6. From which locations do you collect your samples for water quality testing?
7. What kind of monitoring is done by the PCB to prevent water contamination at the City level?
8. How frequently is the water quality monitored as per water quality protocols and what is the sample size adopted?
9. Is there any coordination with OWSSB, PHEO, ULB and the district administration?
10. Does the PCB monitor the indiscriminate dumping of septage which is one of the major causes of water contamination?
11. How much awareness do people have on water quality issues and its impact on health and environment?
12. Have you undertaken taken any public awareness activities on water pollution and its prevention?
13. Does the PCB have any coordination with river basin engineers in the region? If not, why, as they are responsible for water conservation and prevention from pollution.
14. Are you aware about OUSS, OUSP 2017 of the GoO?
15. Are you aware about the status of FSSM in the City? (desludging, cesspool operators, SeTP?
16. Are there any norms prescribed by MoEF which should govern the characteristics of effluent of a SeTP.
17. What are the standards for site allocation and approval for the construction of a SeTP?

- **Interview with City Health Officer**

1. What are the key health issues related to sanitation in your city? Please state the top three?
2. What is the ULB's approach to deal with sanitation problems?
3. What are major reasons for OD in the city?
4. What is the role of CHO in city sanitation improvement?
5. What are the public health and environmental consequences of poor sanitation in your city?
6. Are you aware about FSSM services as an integrated component of sanitation?
7. How important is FSSM as a key health issue?
8. What is the trend of water related disease, particularly water borne diseases?
9. Has your city faced jaundice, cholera, diarrhea and typhoid during the last two years? What are the other most frequent diseases?
10. Do you think FSSM should be prioritized in CSPs
11. How can the community and citizens be made aware about the health consequences of poor FSM?

- **Interview with Chief District Medical Officer**
  1. What are the key health issues related to sanitation in your city? Please state the top three?
  2. What is the Health Department's approach to deal with sanitation problems?
  3. What are major reasons for OD in the city?
  4. What is the role of H&FW Dept. in city sanitation improvement?
  5. What are the public health and environmental consequences of poor sanitation in your city?
  6. Are you aware about FSSM services as an integrated component of sanitation?
  7. How important is FSSM as a key health issue?
  8. What is the trend of water related disease, particularly water borne diseases?
  9. Has your city faced jaundice, cholera, diarrhea and typhoid during the last two years? What are the other most frequent diseases?
  10. Do you think FSSM should be prioritized in the CSP?
  11. How can the community and citizens be made aware about the health consequences of poor FSM?

- **Interview with Executive Engineer, Public Health Engineer Organization (PHEO)**
  1. PHEO is the nodal agency for O&M of the infrastructures developed by the OWSSB. How does the PHEO coordinate? Are there any challenges?
  2. Does the PHEO have any role in the O&M of SeTP being constructed?
  3. Revenue collection for sewerage is one of the key activity of the PHEO. What is the current price structures of connection fees (capex) and what is the price for OPEX (monthly) collected by PHEO?
  4. What is the rate of the demand for sewerage services from the public at present?
  5. What is the level of utilization of sewerage facilities?
  6. How many samples pass the norms prescribed by the MoEF for drinking water supply?
  7. How many water sources are used for water supply?
  8. Is water distributed in the city through PHEO water tankers?

- **Interview with Project Engineer, Odisha Water Supply and Sewerage Board (OWSSB)**
  1. What is the role of OWSSB in creating urban sanitation infrastructure at the City level?
  2. Have you received any communication from the OWSSB on FSSM services in the cities?
  3. What is the level of coordination with ULB on construction of SETP in the city?
  4. Is the ULB aware that it is responsible for O&M of SeTP after its completion?
  5. What kind of capacity building is required for the O&M of SeTP at the ULB level?
  6. Are there any challenges which you faced during the SeTP construction? If yes, please state them.
  7. What is the plan for integrating the SeTP with the other services of the FSSM value chain?
  8. What plans are in place for making the SeTP socially acceptable, like landscaping etc.?
  9. What portion of the city's population has been considered to calculate the capacity of the SeTP?
  10. What plans are in present for the remaining population?

- **Interview with City Engineer**
  1. What is the status of sanitation infrastructure in the City? (Length of sewer lines, status of desludging, cesspool operation, and disposal sites if any for septage, solid waste etc.)
  2. What is status of the sewerage system in Baripada?
  3. Is there any target when the City will be Open Defecation free? How many HHL, CT/PT, hybrid toilets are been sanctioned, completed and in use?
  4. What is the status of disposal site?
  5. How important is the issue of FSSM in city sanitation?
  6. Do you think when faecal sludge gets discharged in open drain or dumped in open it will contaminate water bodies?
  7. Who monitors the cesspool vehicle?

8. How does the ULB coordinate with other departments, is there any joint planning, coordination or joint review of program related to SBM, FSSM?
9. Have you gone through the DPRs for SeTP construction?
10. Any suggestions to improve FSSM in the city?

- **Interview with District Social Welfare Organization**
  1. What are the key sanitation issues in the urban areas?
  2. How can the communities be engaged to raise demand for sanitation services?
  3. What is the role of DSWO in implementing and monitoring sanitation programmes?
  4. Are you aware about FSSM services as an integrated component of sanitation?
  5. Your Department is the nodal department to implement the Manual Scavenging Act 2013. How are you implementing with ULB?
  6. What are the ways in which sanitary workers can be prevented from being engaged in manual scavenging?

9.3 Annexure 3 – Questionnaire for Focused Group Discussion

► Community based organizations

1. What are the key health issues related to sanitation in your city? Please state the top three?
2. On what sanitation issue do you work in the city?
3. In which areas of the city do you work and with whom do you work with?
4. What kind of community mobilization activities do you do?
5. Do you use any kind of communication activities to inform and mobilize communities?
6. Are there any urban slum committees that you work with? If yes, in which wards?
7. Have you worked on MHM in any of the areas in the town?
8. Are you aware about FSSM value chain in sanitation?
9. How can communities be made more aware about their role and participation in FSSM?
10. What kind of capacity building and support do you require to work on FSSM?

► Masons

1. Are you aware of NBCC / IS standards for septic tanks and pits?
2. Do you practice these standards while constructing the septic tanks?
3. Based on your experience, what percentage of septic tanks and pits conform to these standards?
4. Do you think the current design of the septic tank is good? If No, can you suggest the best kind of technology for FSM that you provide?
5. Have you ever been trained or imparted knowledge on septic tank construction by any government /private agency?
6. Who are the builders of septic tanks and pits in the city and do you think they have adequate knowledge about design of septic tanks and pits as well as emptying and transportation?
7. Do you think HHs in the city have knowledge of any specification or standards for construction of septic tanks and pits?
8. Which type of septic tanks and pits are easier for emptying?
9. Who contacts you for construction of septic tanks and pit latrines? Builders or House owners?
10. What kind of capacity building do you require to build standard septic tanks and pit latrines?

► Cesspool operator

Name of the Operator:
Education of Operator
Registered name of the company and address (if any):
Start date (year) of business operations:
Area of Service:
General Description:

- Age of the operator
- Caste of the operator
- No. of Vehicles operating
- Who is owner of the cesspool truck – self – private - ULB
- No of people employed in business
- No of people deploy for each vehicle
- Number and type of vehicles owned at the start of business

Year Procured	Average trips in a day	Make/ Technology of vehicle	Capacity

1. How did you come to know about the emptying and transportation business? (trigger for starting this business

2. Do you see any increase in demand of your service after you have started operations?
3. Average number of trips per day in the current year of operations
4. User charges per trip in the current year
5. Did you apply for permissions to the government for starting the business
    a. Yes
    b. No

    If yes please list the departments and nature of permission

Department	Nature of permission	Requirements for giving permission	Time taken for approval	Charges paid
Industries department				
PCB				
MA&UD				
RTO				
Any Other				

6. Was there any directive or GO from the ULB to initiate FSM services to the private operators?
    a. Yes
    b. No

    If yes please provide us the reference document
7. Do you have any contractual arrangement with the ULB?
    a. Yes
    b. No

    If YES please provide us a sample copy of contract documents (EoI, RFP, etc.)
8. How do you receive requests from HHs for emptying and transportation
    a. Phone
    b. In person
    c. From ULB
    d. Any other
9. What is the nature of information you seek from the HH when a request for emptying and transportation is made?

Q1	
Q2	
Q3	
..	
..	
..	

10. Do you have any process of maintaining records in the form of a register or book for the requests received from HHs?
    a. Yes
    b. No

    If yes please provide a copy of such record (register/book)
11. How do you plan your operations after a request is recorded and accepted?
12. Do you have any guideline or manual that needs to be followed for emptying and transportation?
    a. Yes
    b. No

If yes please provide a copy and indicate the name of the author of guideline/manual

13. How do you advertise your operations and create awareness about your business among the HHs?

- Posters
- Pamphlets
- Wall Paintings in public areas
- News papers
- Mobile Street loud speaker
- Display board at ULB
- Through Internet/ website

14. What are the tools provided to workers and vehicles for emptying and transportation?
15. What are the factors considered for planning the transportation routes? Please chose from the below and also add relevant ones?

Any traffic or peak hour protocols	
Most direct route	
Expected volumes of septage of pumps	
Proximity of disposal pumps	
Others	

16. What are the key steps in locating the septic tank and initiating the dislodging?
17. What are the problems faced in initiating dislodging? (while locating the septic tank and parking the truck for operations)
18. Do you break open the floor or cover of the septic tank. If doing so who is responsible for repairing it and who bears masonry charges and do you take any permission for the same
19. Do you provide any masonry support for your costumers, if so what kind of engagement you have with the mason
20. What are the safety and security precautions taken by workers for initiating and completing dislodging?
21. Do you know the different types of safety gears that are used for operations
    a. Yes
    b. No

    If Yes List them

Norm Source	Safety Equipment	Tick if responds
CPHEEO	Gloves	
CPHEEO	Boots	
CPHEEO	Hard Hat	
CPHEEO	Face Mask	
Robins, 2007	Hand wash supplies	
Robins, 2007	Light	
Self - Domain knowledge	Plastic/ Rubber over coat	

22. Do you have guidelines or rules to be followed either from ULB or other organizations during dislodging?
23. What are your terms of agreement with your costumer (descriptive – What work is the operator providing to his costumer i.e. like sanitizing the site after cleaning etc.) Describe
24. Is it mandatory for workers to wear safety gear and how do you ensure compliance?
25. Do workers experience any health problems after dislodging? Have they developed any prolonged illnesses which can be attributed to continuous exposure to the dislodging? (discuss with sub ordinates)
26. What are the key steps after completing the dislodging including sanitizing the location, washing hands etc.?
27. What is the procedure for collection of user charges?
28. Do you maintain any billing book to account your payments?

a. Yes
b. No

If yes please provide a copy

29. Did you follow any criteria for pricing your services? or How did you price your services
    a. Yes
    b. No

    If YES, please describe the criteria
    a- Value of vehicle purchased
    b- Salary of operator & Helper
    c- Fuel expenses
    d- Operation and maintenance expenses
    e- Others if any

30. Did any customer ever raise a complaint on damage of his property? Neighbors or anyone in the community complain of the dislodging process? Explain
31. Are there any instances that you have either rejected or could not provide the service related to de-sludging? Explain
32. Did you or any of your staff members undergo training or awareness orientation with regard to septic tanks, collection, emptying, and transportation and disposal activities?
33. What is proportion of septic tanks and leach pits are emptied by you in a month (separately)?
34. Is there any kind of septic tank that you cannot desludge? If yes give the reasons
    a- Not able to locate tank/Pit
    b- Septic tank is sealed/ Covered with tiles
    c- Not accessible for existing cesspool vehicle
    d- Due to no emptying for long period, desludging is not lucrative as time taken is inefficient
    e- Others if any
35. Are you aware about practice of manual desludging & emptying in the city?
36. If yes, are you aware how many septic tanks and pits are manually emptied in a month?
37. Do you provide support for costumers for manual desludgers?
38. Do you face any problems from the traffic authorities, neighbors, colonies or vehicles on road while transporting the sludge?
39. Did your truck breakdown anytime while carrying faecal load in the vehicle? What do you do if it happens??
40. Did your vehicle ever leaked from the container when it is loaded? What will be your first step if such thing happens?
41. What is the most commonly used location for disposal of faecal sludge? Provide locations.

S.No	Location	Land use

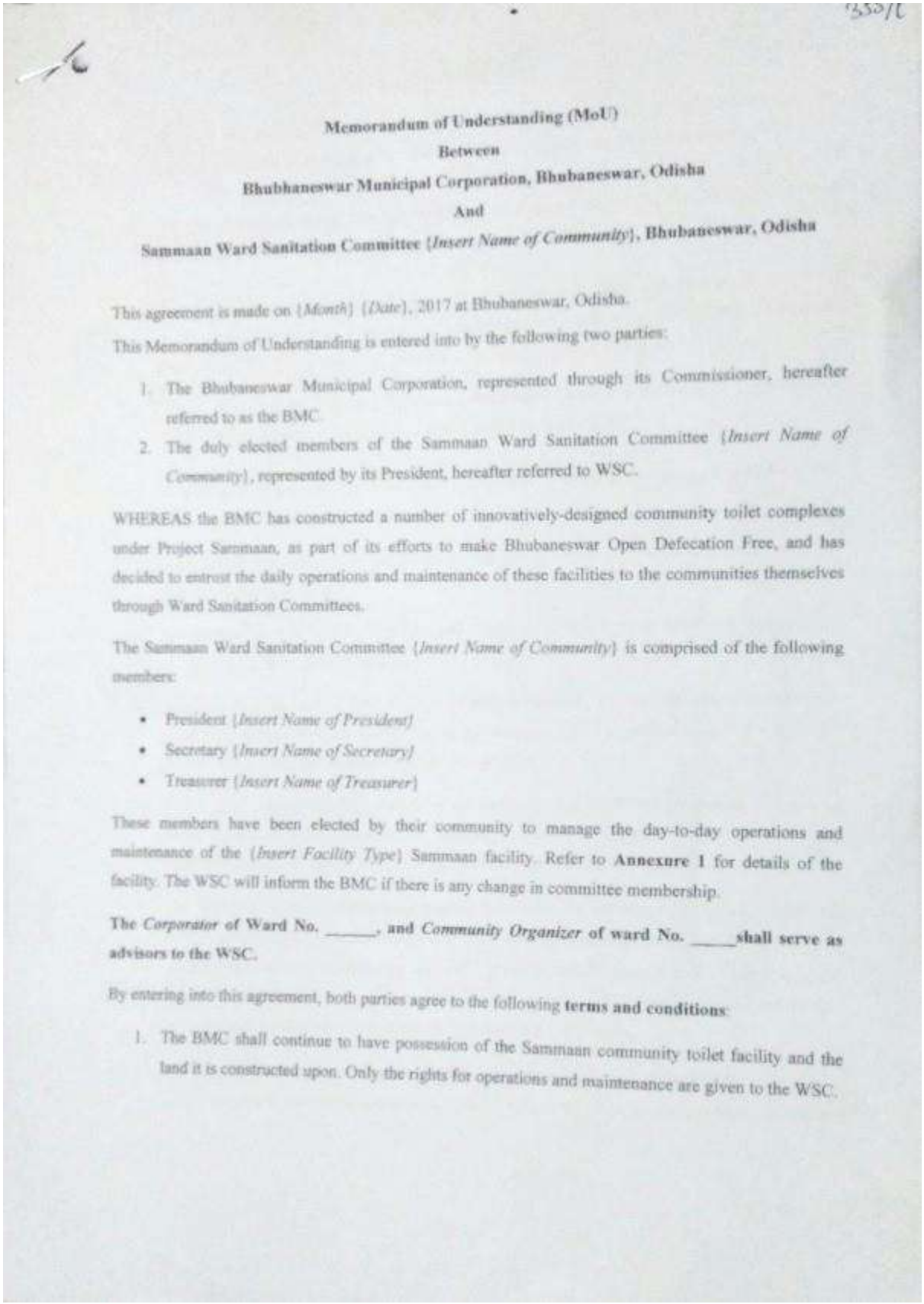
42. Do you have a dedicated faecal waste disposal place as prescribed by ULB? List of the locations.
43. Do you face any problem or rejection from community or any other authority for disposing waste?
44. Did any authority levy fine or file a complaint for disposing waste in a particular location? Give the details and also share a copy of the same.
45. Did your vehicle retain faecal waste for few days, without disposing it for non-availability of site or any other reason? If so, how many days and reasons?
46. Do you dispose waste during day or in the night (preference and why)
47. Do you sell faecal sludge to any person or any industry for example farmers, or fertilizer industries?
48. What is your annual business turn over?
49. Did you take any lone for the vehicle, if so can you please provide some details
50. What are your profits from last year?

51. Will you be willing to supply sludge if a treatment plant is established?
52. Will you be willing to construct or operate a septage treatment plant?
53. Will you support the entry of other operators into emptying and transportation and treatment?
54. If citizens expect a lower tariff for emptying, would you be open to the idea?

9.4 Annexure 4 – In-Depth Interviews and Focused Group Discussion details

S.no	Name	Organization	Position held	Date of interaction
1	Mr. Ananta Narayan Jena	Bhubaneswar Municipal Corporation	Mayor	28th April 2017
2	Dr. Krishan Kumar, IAS		Municipal Commissioner	28th April 2017
3	Ms. Mansi Nimbhal, IAS		Additional Commissioner, SBM	28th April 2017
4	Mr. Srimanta Mishra		Deputy Commissioner , SIO	6th May 2017
5	Mr. Subhranshu Mishra		Zonal Deputy Commissioner-North	
6	FGD		Sanitary Inspectors	6th May 2017
7	Meeting with Corporators		Corporators	6th May 2017
8.	Dr. Chandrika Prasad Dash		City Health Officer	18th May 2017
9.			Community Organizers	25th April, 2017
10	Mr. Dwaipayan Pattanaik		City Engineer	28th April 2017
11			Executive Engineer I and II	
12	FGD with CBOs (NGOs, MAS, SHGs)			25th April, 2017
13	FGD (Masons)			25th April, 2017
14	Mr. Mukhi Choudhury	Private cesspool operator	Owner	5th May 2017
15	NA	ULB cesspool operator	Operator	6th May 2017
16	NA	PHEO	EE, PHEO	TBD
17	Mr. Hari Bandhu	PCB	RO, PCB	25-May-2017
18	Mr. Karunakar Ghadai	OWSSB	Executive Engineer, OWSSB	3rd May 2017

9.5 Annexure 5 – MoU signed between BMC and WSC for maintaining community toilets



Memorandum of Understanding (MoU)

Between

Bhubhaneswar Municipal Corporation, Bhubaneswar, Odisha

And

Sammaan Ward Sanitation Committee {*Insert Name of Community*}, Bhubaneswar, Odisha

This agreement is made on {*Month*} {*Date*}, 2017 at Bhubaneswar, Odisha.

This Memorandum of Understanding is entered into by the following two parties:

1. The Bhubaneswar Municipal Corporation, represented through its Commissioner, hereafter referred to as the BMC.
2. The duly elected members of the Sammaan Ward Sanitation Committee {*Insert Name of Community*}, represented by its President, hereafter referred to WSC.

WHEREAS the BMC has constructed a number of innovatively-designed community toilet complexes under Project Sammaan, as part of its efforts to make Bhubaneswar Open Defecation Free, and has decided to entrust the daily operations and maintenance of these facilities to the communities themselves through Ward Sanitation Committees.

The Sammaan Ward Sanitation Committee {*Insert Name of Community*} is comprised of the following members:

- President {*Insert Name of President*}
- Secretary {*Insert Name of Secretary*}
- Treasurer {*Insert Name of Treasurer*}

These members have been elected by their community to manage the day-to-day operations and maintenance of the {*Insert Facility Type*} Sammaan facility. Refer to **Annexure 1** for details of the facility. The WSC will inform the BMC if there is any change in committee membership.

The *Corporator* of Ward No. _____, and *Community Organizer* of ward No. _____shall serve as advisors to the WSC.

By entering into this agreement, both parties agree to the following **terms and conditions**:

1. The BMC shall continue to have possession of the Sammaan community toilet facility and the land it is constructed upon. Only the rights for operations and maintenance are given to the WSC.

2. The BMC shall handover the facility to the WSC in 'like new' condition after a proper inspection has been conducted of the facility structure and systems (i.e. septic, plumbing, electrical).

3. The WSC shall operate and maintain the facility for a period of 3 years, post which both parties will mutually decide to either continue, modify or terminate the agreement.

4. The WSC has the right to collect user charges and to retain these user charges as operating revenue. For the first year of operations, these charges will be decided by the Project Sammaan team through the BMC. The WSC are required to adhere to these user fees.

5. After the first year, the WSC may decide user charges per community requirement. These charges should adhere to, and not exceed, Government of Odisha guidelines.

6. After hand over, the WSC will clean and maintain the facilities to the standards outlined in the Sammaan O&M manual. Standards include:

- Adequate staffing with at least one full-time caretaker and one regular sweeper who comes to the facility on a daily basis.
- Making sure that the facilities stay open and operational 7 days a week and that operating hours suit user traffic from the community.
- Thorough cleaning of the facility twice daily with disinfectant, and spot cleaning at least every 4 hours throughout operating hours. The WSC is responsible for procuring sufficient cleaning supplies to maintain the facility in a hygienic condition.
- Timely rectification of minor repairs, as per Sammaan O&M Manual guidelines. The cost of minor repairs, such as replacement of light bulbs, faucets, and tiles; fixing of pipe leaks and locks; replacement of capacitors in ceiling fans and water pumps, shall be born by the WSC.
- The WSC will Open a separate bank account specifically for the Sammaan facility, jointly held by two members of the WSC, and maintenance of a daily cashbook tracking all expenditures, revenue, deposits and withdrawals. The WSC is responsible for ensuring that there is a proper record of all financial transactions relating to the operations and maintenance of the facility, either through bank account statements or through cashbook records.
- Ensuring the safety and security of the facility premises and the users of the facility. This includes taking immediate corrective action in the event of illicit activities on the premises (ex. alcohol,

gambling), or in case the safety and security of women and children is endangered. The BMC agrees to extend all necessary support to the WSC to resolve safety and security issues, especially when the WSC makes a written request for assistance.

7. Major repairs will be coordinated and paid for by the BMC as and when required. These include exterior painting, septic tank & soak pit de-sludging and replacement of water pump motor. A list of major and minor repairs is contained in **Annexure 2**. The BMC is responsible for addressing these major repairs as soon as possible to minimize discontinuity in facility operations.

8. A dedicated Project Sammaan PMU will be in operation until November 2018. This PMU will support the BMC by monitoring facility operations via bimonthly facility audits to assess the physical condition of the facility and monthly financial audits of the bank account statements and cashbook of the facility. Results of these audits will be provided to the WSC. This PMU will also collect, escalate and track Project Sammaan-related complaints.

9. The WSC is responsible for addressing and rectifying issues found during these audits. If rectification requires major repairs, the WSC should request BMC assistance.

10. Maintenance support of Rs. 800 per seat per month, a total of Rs. *{Insert facility specific figure}* shall be paid by the BMC to the WSC for a period of 12 months from the date of facility opening. After 12 months, the BMC reserves the right to re-evaluate this grant funding based on the financial status of the facility. The BMC must inform the WSC of any proposed changes to maintenance support.

11. The BMC shall pay maintenance support to the WSC each month within one week of receiving the necessary documents and proofs from the WSC and Sammaan PMU.

12. The Annexure-1 and 2 are to be read as part of this MOU.

13. The Courts at Bhubaneswar alone shall have the jurisdiction in relation to any litigation.

Annexure 1: Amenities by Facility Typology

DESCRIPTION	VS2WC	BL2	EL2	BL4	EL4	BL6	EL6	BL8	EL8	BL10	EL10	BL12	EL12
NO. OF SEATS (MALE)	1	1	1	2	2	3	3	4	4	5	5	6	6
NO. OF SEATS (FEMALE)	1	1	1	2	2	3	3	4	4	5	5	6	6
UNIVERSAL ACCES STALL	0	1	1	1	1	1	1	1	1	1	1	1	1
BATHING STALLS(MALE)	0	0	1	0	2	0	3	0	4	0	5	0	6
BATHING STALLS(FEMALE)	0	0	1	0	2	0	3	0	4	0	5	0	6
URINALS	2	2	2	3	3	3	3	4	4	4	4	4	4
CHILD POTTY SEATS(MALE)	0	1	1	1	1	1	1	2	2	2	2	3	3
CHILD POTTY SEATS(FEMALE)	1	1	1	1	1	1	1	2	2	2	2	3	3
CLOTHES WASHING STALL(MALE)	0	1	1	1	1	1	1	2	2	2	2	3	3
CLOTHES WASHING STALL(FEMALE)	0	1	1	1	1	1	1	2	2	2	2	3	3
SPITTING TROUGH(MALE)	1	1	1	1	1	1	1	1	1	1	1	1	1
SPITTING TROUGH(FEMALE)	1	1	1	1	1	1	1	1	1	1	1	1	1
CARETAKER'S ROOM	0	0	0	0	0	0	0	1	1	1	1	1	1
CARETAKER'S BOOTH	1	1	1	1	1	1	1	1	1	1	1	1	1
UTILITY AREA	1	1	1	1	1	1	1	1	1	1	1	1	1
INCINERATOR	1	1	1	1	1	1	1	1	1	1	1	1	1
SHOPS	0	0	1	0	1	0	1	0	1	0	1	0	1
APPROXIMATE AREA(sq.ft.)	210	425	645	640	1025	850	1400	1070	1780	1280	2160	1500	2540
No. of Actual Seats (OA Stall + Child Potties)	3	5	5	7	7	9	9	13	13	15	15	19	19

Note: Grant funding per month is calculated based on the number of Actual Seats. For example, grant funding for a BL6 facility would be Rs. 7200 per month (9 seats X Rs. 800 per seat).

Annexure 2: Major vs. Minor Repairs

Minor Repair	Major Repair
Light bulb, tube light replacement	Septic tank and soak pit desludging
Broken light switches, Faulty electrical sockets	Replacement of water pump motor
Leak taps, replacement of taps	Water tank replacement
Broken door locks and handles	Exterior painting/white washing
Replacement of ceiling fan capacitor	Broken/leaking septic tank
Replacement of water pump capacitor	Broken stall doors
Broken tiles	
Broken toilet pan	

Note: This is not a complete list of repairs. The list above is meant to provide examples of which repairs are classified as minor and which repairs are classified as major.

9.6 Annexure 6 - User fee notification for solid waste management

The Odisha Gazette

EXTRAORDINARY

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BHUBANESWAR MUNICIPAL CORPORATION

NOTIFICATION

The 5th February 2015

No. 3078—XXII (L)-53/2013—In exercise of the powers conferred by Section 657, read with Section 193 and Section 659 of the Odisha Municipal Corporation Act, 2003 (Odisha Act 11 of 2003) and in supersession of the Bhubaneswar Municipal Corporation Regulation, 2006 except as respect to things done or omitted to be done before such supersession having been approved and confirmed by Government, the Bhubaneswar Municipal Corporation do hereby make the following regulations, namely:—

1. **Short title and commencement.**—(1) These regulations may be called the Bhubaneswar Municipal Corporation User Charges Regulations, 2015.

2. They shall come into force on the date of their publication in the Official Gazette of the State.

2. **Definition**—(1) In these regulations, unless the context otherwise requires,—

(a) "Act" means the Odisha Municipal Corporation Act, 2003;

(b) "Form" means Form appended to these regulations;

(c) "Schedule" means Schedule appended to these regulations;

(d) "Section" means a section of the Act.

(2) Words and expressions used in these regulations but not expressly defined therein shall have the meaning as respectively assigned to them in the Act.

3. **Application for Grant of permission to connect drain**—(1) No person, owner or occupier of any premises shall connect his home drain with the corporation drain without a written permission of the Commissioner.

(2) An application for connection to drain of the corporation shall be submitted in Forms to the Commissioner in duplicate containing full Name and Address of the applicant and shall state the street and assessment number of the Holding upon which such work is intended to be executed and all necessary particulars required in such Form.

8. User Charges on other items—The User Charges on any other item not expressly covered is to be collected as per the rate given in Schedule 'G.'

9. Collection of User Charges-—(1) Save as otherwise specifically provide in these regulation User Charges shall be collected on monthly basis and it is not paid monthly, cumulative dues shall be collected along with interest at the rate of twelve percentum per annum from the date of due.

(2) A receipt shall be granted in respect of payment of User Charges to the persons concerned.

10. System for One Time Payment—If the User Charges is paid in advance, for the entire year's demand than amount for nine months will be charged instead of twelve months.

11. Penalty—Whoever contravenes any of the provisions of these regulations shall be punished with fine which may extend up to two hundred rupees and in case of continuing contravention, with an additional fine, which may extend to one hundred rupees per day.

12. Recovery of User Charges— If the User Charge is not paid, recovery will be made as per the provisions of Act.

By order of the
Bhubaneswar Municipal Corporation
K. KUMAR
Municipal Commissioner