Training Needs Assessment: Urban Local Bodies on Septage Management

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Abbreviations

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ADTP	Assistant Directors of Town Panchayats
BMGF	Bill and Melinda Gates Foundation
CMA	Commissionerate of Municipal Administration
CPHEEO	Central Public Health and Environmental Engineering Organisation
DTP	Directorate of Town Panchayat
HRIDAY	Heritage City Development and Augmentation Yojana
FSM	Fecal Sludge Management
FSSM	Fecal Sludge and Septage Management
GoTN	Government of Tamil Nadu
IUDM	Integrated Urban Development Mission
MAWS	Municipal Administration and Water Supply Department
NUSP	National Urban Sanitation Policy
O&M	Operations and Maintenance
PHE	Public Health Engineering
STP	Sewage Treatment Plant
SBM	Swachh Bharat Mission
TNUFIDCO Limited	Tamil Nadu Urban Finance and Infrastructure Development Corporation
TNUIFSL	Tamil Nadu Urban Infrastructure and Financial Services Limited
TNA	Training Need Assessment
TP	Town Panchayat
TSU	Technical Support Unit
TNUSSP	Tamil Nadu Urban Sanitation Support Programme
ULB	Urban Local Body

Executive Summary

Introduction to the Training Needs Assessment (TNA)

As a part of developing the Tamil Nadu Urban Sanitation Support Programme's (TNUSSP's) capacity building strategy and action plan, a TNA was carried out from February 2016 to May 2016.

The objectives of this assessment were:

- To study the existing organisational structure and staffing in the State's urban institutions, Municipal Administration and Water Supply (MAWS), Directorate of Town Panchayat (DTP), Commissionerate of Municipal Administration (CMA) and their categories of urban local bodies like corporations, municipalities and Town Panchayats (TPs).
- To assess the organisational functions, human resource competencies and training needs with respect to sanitation; especially human excreta management (conventional Underground Drainage (UGD) or Sewerage and Sewage Treatment, as well as Fecal Sludge and Septage Management (FSSM) and Sewerage Management).
- To assess the training needs of government officers at different levels including top, middle and frontline staff of urban local bodies at the state and the city level, in respect of sanitation.
- To formulate and recommend capacity building and training programmes.
- To suggest a strategy for overall improvement of the full cycle of sanitation in the state including institutional capacity and human capabilities, especially in Fecal Sludge Management (FSM).

Approach and Method

The key target groups of this study were the administrators, engineers, and other implementing personnel concerned with public health in Urban Local Bodies (ULBs), and at the State level.

The study, conducted from April 2016 to June 2016, covered 12 ULBs in Tamil Nadu, including two corporations, three municipalities, six town panchayats, and one census town.

The study examined the organisation structure of the relevant ULB/Agency and in that context, sought to understand the capacity gap in relation to the roles and responsibilities of different groups of personnel.

Key Findings

i. The study revealed that there is a limited awareness on fecal sludge treatment and re-use at different levels within the ULBs. This is explained partly by the primacy accorded to solid waste management historically, and mainly due to neglect of the importance of human excreta management, although both form a part of sanitation related responsibilities of the ULBs. The realm of formal management of fecal sludge may not have enjoyed ULBs' priorities because these were traditionally seen as household matters. Operative guidelines for septage management were also recently laid (2014).

This seems somewhat surprising though since control of nuisance is a conventional role of ULBs.

ii. While sanitation roles and responsibilities form the core of municipal/ULB functions, there is a lack of sufficient competent personnel to carry out the tasks required for proper planning, implementation, and maintenance management of sanitation facilities, especially in human excreta management. Capacities need to be built anew to address the emerging challenges and opportunities in the area of FSSM.

iii. The exercise showed that the roles and responsibilities of the staff, especially that of sanitary workers and inspectors, were not clear, and there is a lack of detailed job descriptions. As a result, the roles may overlap and there may be a lack of clarity about responsibilities. Due to lack of technical, institutional and financial capacities, the agencies are unable to fulfil their mandates in respect of sanitation and public health.

iv. Limited capacities and resources in the ULBs have resulted in poor regulation over the regular emptying and cleaning of septic tanks and pits. The organisation and supply of de-sludging services in many places is far from adequate.

v. Local implementers and services providers also expressed the need for their suggestions and feedback to be taken into account, while revising the operative guidelines.

Capacity Building and Training Strategy for Urban Sanitation and FSSM in TN

The strategy shall comprise the following elements:

1. Identifying and dedicating positions within the State level institutions and ULBs (municipal corporations, municipalities, and town panchayats) to discharge roles and responsibilities;
2. Strengthening the systems and procedures for attending to the specific needs of each part of the sanitation value chain viz. safe containment, safe and timely emptying, treatment and re-use;
3. Improving the knowledge-base and skill-levels of the Government of Tamil Nadu's (GoTN's) urban sector personnel, especially in ULBs apart from State level agencies;
4. Orienting key officers and stakeholders to prioritise sanitation by testing and scaling up innovations using FSSM as a supplement/stand-alone solution to achieve the goal of 100 per cent sanitation in TN's urban areas;
5. Orientation–cum-training programmes that are woven back into standard work-routines of personnel at different levels is the first obvious step to develop realisation and ownership about the sanitation agenda. The second step will be deploying domestic and international exposure visits for officers and stakeholders, to cultivate belief in the credibility of innovations and solutions being attempted in other locations in India, and other developing countries. A short-term training plan has been presented in Chapter 8 that shall be revised and updated based on results of implementation of the strategy till December 2017.

1. Background and Objectives

1.1 Background

The GoTN has been a pioneer in not only in attempting improved standards of public health by taking steps to stop open defecation, but has also prioritised the full sanitation chain, including the strengthening of septage management as an economical and sustainable complement to network-based systems. The Chief Minister of GoTN articulated the need to address sanitation, following this, the 'Namma Toilet' ('Our Own Toilet') or Public Toilets were rolled out in urban areas. The GoTN issued Septage Management Operative Guidelines in September 2014.

The Bill and Melinda Gates Foundation (BMGF) is supporting the GoTN to achieve the sanitation mission of Tamil Nadu by helping set up a Technical Support Unit (TSU) within the MAWS. This unit supports state-wide improvements in urban sanitation, as well as aims to demonstrate innovations along the entire sanitation chain in two selected model urban locations of Trichy Municipal Corporation, and Periyanaicken-palayam and Narasimhanaicken-palayam (two town panchayats in Coimbatore District).

The TSU has specialists in the areas of planning, engineering, capacity building, knowledge management, behaviour change and communication, monitoring, learning and evaluation. These specialists support the MAWS, cities and towns to adopt sustainable sanitation innovations. The DTP is the co-ordinating agency for the Programme.

As part of the capacity building initiatives, a TNA of officers in the Urban Local Bodies (ULBs) was conducted between April and June 2016. The study was conducted at selected ULBs in the State, with an aim to identify the current capacity of the organisations to implement FSSM. The TNA focussed on the institutional, administrative, financial and human capacity of the ULBs and assessed the existing gaps in these capacities.

1.2 Need of the Study

Sanitation and safe disposal of human waste are critical to ensure good public health in populations around the world. Providing safe sanitation to citizens is one of the major functions of the ULBs. To implement safe sanitation practices at the city level, it is essential that ULBs have officers trained in sustainable FSSM practices. The study sought to identify the current capacity of the ULBs in FSSM management, and the gaps or constraints that can help in developing a strategy for improvements at different levels.

1.3 Objectives of the Study

The Objectives of the Study were to:

i. Examine the existing organisational structure and staffing in the State's urban institutions, especially the Municipal Administration and Water Supply (MAWS), DTP, CMA and the different categories of Urban Local Bodies like corporations, municipalities and Town Panchayats (TPs).

ii. Assess the organisational functions, human resource competencies and training needs with respect to sanitation; especially human excreta management.

iii. Assess the training needs of Government officers at different levels including top, middle and frontline staff of Urban Local Bodies at the state and city level.

iv. Formulate and recommend capacity building and training programmes for various stakeholders including Government officers, private and informal sector agents like masons, builders, contractors and de-sludging operators.

v. Develop a strategy for overall improvement of the full cycle of sanitation in the State including institutional capacity and human capabilities, especially in FSSM.

2. Approach and Methodology

2.1 Scope of the Study

The study sought to cover different categories of ULBs in Tamil Nadu. In addition, the ULBs were selected broadly to also cover different geographical areas of the State. Amongst the different personnel cadres/groups, the study targeted those that were primarily concerned with public health and public health engineering in these ULBs (or relevant State level agencies). The Study focussed on assessing the readiness of the ULBs in FSSM implementation at the city level.

2.2 Approach and Methodology

The following methodology was adopted for the study:

i. Understanding the institutional framework of ULB administration at the State and the ULB levels
ii. Identifying ULBs to undertake a study on the current urban sanitation systems and practices
iii. Developing questionnaires for survey to be conducted for different cadres
iv. Conducting field visits and TNA survey among the technical staff
v. Consulting administrative and technical heads to assess FSSM readiness
vi. Identifying target-group-specific training needs

2.3 Review of the Institutional Framework of ULB Administration at the State and ULB Levels

A secondary review was conducted to assess the existing system of governance including roles and responsibilities of various institutions within the ULBs with regard to urban sanitation. The aim of this exercise was to understand the existing administrative structure at the city level, the decision-making process, the flow of funds and information and the key links between various departments.

2.4 Selecting Sample Urban Local Bodies for Study

The study was conducted in 12 ULBs across the State. These were drawn to represent different class of ULBs, viz. municipal corporations, municipalities, TPs, and census towns. The ULBs were selected in such a way that they would cover a broader region of the state. The ULBs covered under the study are presented in Table 1.

Table 2.1: List of ULBs covered under the survey

Corporations	Municipalities	Town Panchayats	Census Town
1. Tiruchirappalli 2. Madurai	1. Kanchipuram 2. Bhavani 3. Conoor	1. Narasimhanaicken-palayam 2. Periyanaicken-palayam 3. Sankagiri 4. Manamadurai 5. Kotagiri 6. Sriperumbadur	1. Aruvankadu
Source: MAWS and Census 2011			

2.5 Field Visits and Interviews of Staff in the ULBs

Field visits to the ULBs identified for the survey were conducted to understand the current sanitation practices as well as the FSSM processes. The study was conducted through interviews with key stakeholders and decision makers including city commissioners, assistant commissioners, chief engineers, city health officer and chief town planning officer to understand the key barriers to institutional capacity building and, thereby, to the successful implementation of sustainable FSSM practices in the respective cities.

2.6 Questionnaire for the Survey

A semi-structured questionnaire was used for data collection. Two sets of questionnaires were used for assessment—one for the key stakeholders of the ULBs like heads of the ULBs, technical heads and senior officers and another set of questionnaire was used for middle and junior cadre of the ULBs.

The interactions with key stakeholders focussed on discussing and assessing three major capacities:

i. Institutional capacity: Current policy and administrative framework of ULBs, public health, town planning and engineering services.
ii. Financial capacity: The financial capacity of the organisations, particularly the operational and capital funding sources to initiate FSSM in the respective ULBs.
iii. Human capacity: The current human resource capacity of the ULBs and the future requirement to implement FSSM at the state level.

The questionnaire for middle and junior cadres focussed on educational background and technical qualifications, and an assessment of current situation and training needs as reported by them. The questions were based on:

i. Designation and job profile
ii. Awareness about urban sanitation
iii. Regular tasks in urban sanitation
iv. Time spent on urban sanitation
v. Key constraints in performing given tasks
vi. Preferred training areas
vii. Modes of training

2.7 Identifying Target Group-Specific Training Needs

Key training areas were identified based on the field visits, interviews, and interactions with the administrative and senior staff in ULBs. Category-wise training areas and mode of delivery were also identified.

2.8 Limitations

Since FSSM is a new area, the respondents were not able to clearly articulate their competency gaps. Hence the inferences on training requirements have also been drawn from multiple studies and reports, apart from the responses received.

3. Institutional Framework of ULBs in Tamil Nadu

3.1 Municipal Administration and Water Supply Department

The Department of MAWS is responsible for urban administration in the State. The department was formed in 1984, after bifurcation from the Rural Development and Local Administration Department. The department is headed by a principal secretary, a senior officer of the Indian Administrative Services (IAS). The Department of Municipal Administration and Water Supply is responsible for the following activities:

i. Coordinating the activities of various organisations and agencies involved in urban planning.
ii. Execution and maintenance of measures to provide improved infrastructure and services in the urban areas of the State.
iii. Making provisions for drinking water supply in rural and urban areas of the State.

The Commissionerate of Municipal Administration and the Directorate of TPs are sub-departments of MAWS. ULBs in the State are organised as 12 municipal corporations (including Corporation of Chennai), 125 municipalities, and 528 town panchayats.

MAWS also has administrative control of undertakings/bodies such as the Corporation of Chennai (CoC), the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), the Tamil Nadu Water Supply and Drainage Board (TWAD Board), Tamil Nadu Urban Finance and Industrial Development Corporation (TUFIDCO), Tamil Nadu Institute of Urban Studies (TNIUS), etc.

3.2 Commissionerate of Municipal Administration

The CMA is the nodal department responsible for coordinating and supervising the functions of all municipalities and 11 municipal corporations in the State (except CoC). The corporations are governed by their own Acts, while the municipalities are governed by a State Municipality Act.

The CMA is headed by the commissioner of municipal administration and assisted by joint commissioner of municipal administration, joint commissioner (Administration), two additional directors and two joint directors. The municipalities are divided into seven regions headquartered at Chengalpattu, Vellore, Salem, Tiruppur, Thanjavur, Madurai and Tirunelveli. These regions are headed by Regional Directors of Municipal Administration (RDMAs).

The engineering wing of the CMA, the office of the RDMA and the corporations are responsible for implementation of various schemes concerning water supply, laying of roads, underground sewerage, solid waste disposal, etc.

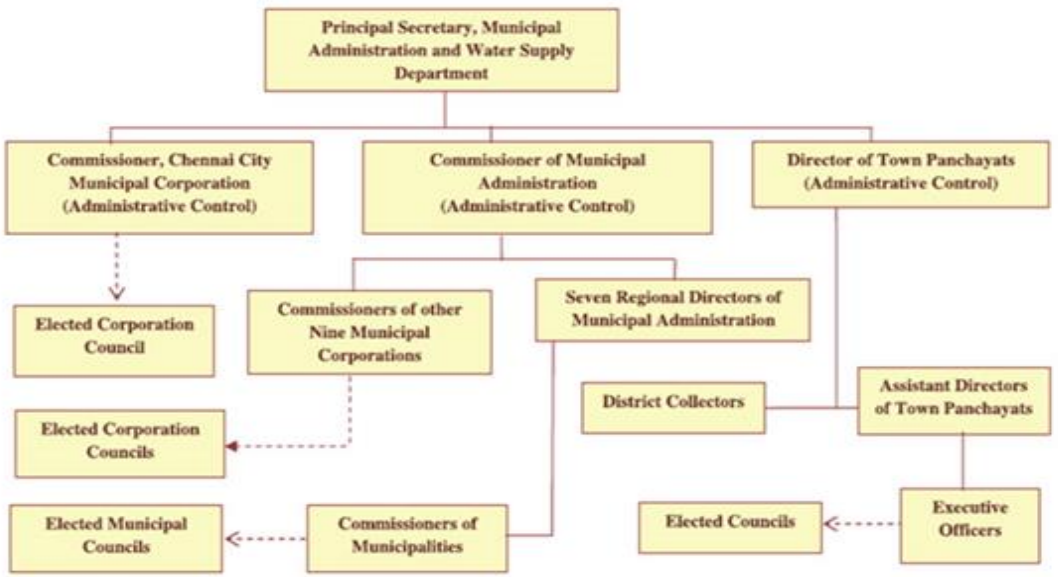
3.3 Directorate of Town Panchayat

There are 528 TPs in the State, and they are governed by the Tamil Nadu District Municipalities Act, 1920. The Director of town panchayats is the head of the department. He is also designated as the Inspector of town panchayats to review and monitor the activities relating to development programmes implemented through TPs. There are 17 Assistant Directors of Town Panchayats (ADTPs) who take care of the administration at the zonal levels.

At the district level, the collectors are the administrative heads of town panchayats. The Collector is assisted by the relevant zonal assistant director of town panchayats.

It may be noted that the elected councils in each category of ULB, provides the political leadership, while the Commissionerate and Directorates provide the necessary administrative support. The interface of administrative support to ULBs, is illustrated in (Figure. 1).

Figure 3.1: Organisation Structure of MAWS



Source: Corporation of Madurai website accessed on June 8, 2016

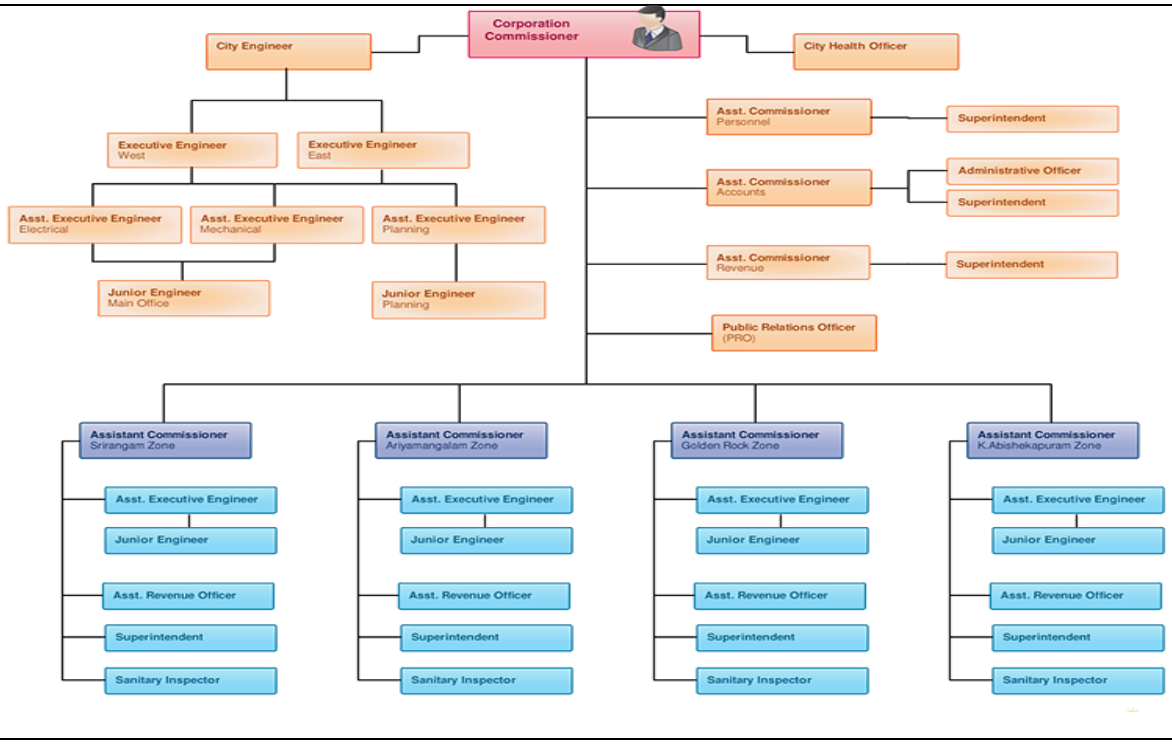
Local Administration at the ULB Level

For administrative purpose, the ULBs are classified based on population, revenue and geographical area. The indicative administrative arrangements within the corporations, municipalities and TPs, are outlined in the following sections.

3.5 Organisation Structure of Corporations

In larger municipal corporations, the administrative head is the Commissioner, usually a middle to senior administrator. She is assisted by assistant commissioners of different functions and territorial divisions, the City Engineer's office, and the City Health Officer's office. As an example, the detailed structure of Trichy Corporation is presented in Figure. 2.

Figure 3.2: Indicative Organisational Structure of a Municipal Corporation

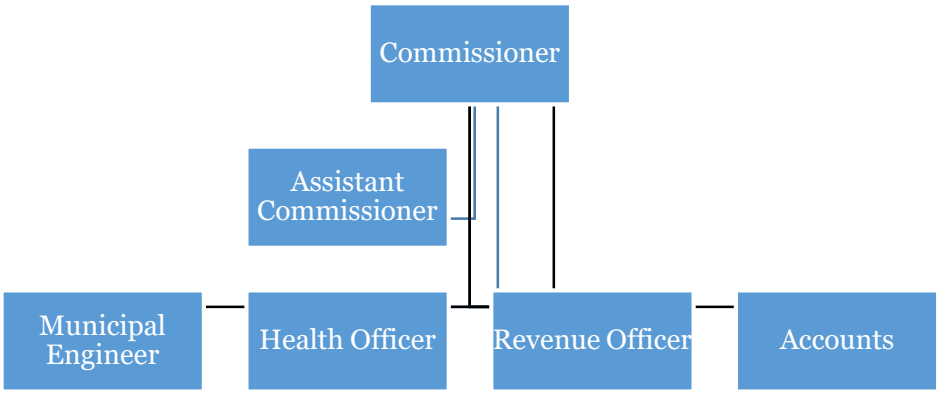


Source: http://www.trichycorporation.gov.in/accessed on April 2016

3.6 Organisation Structure of Municipalities

In municipalities similarly, the administrative head is the Municipal Commissioner. She is assisted by an assistant commissioner, municipal engineer, revenue officer, accounts manager and health officer. An indicative organisation structure of a Municipality is presented in (Figure.3). The figure below does not show the detailed staffing because, the structure and staffing pattern is likely to vary for each of the offices depending on size of the municipality.

Figure 3.3: Organisation Structure of Municipalities

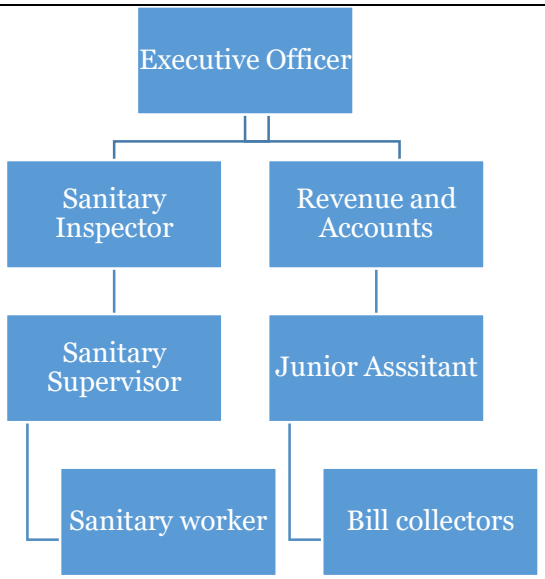


Source: TNA, May 2016

3.7 Organisation Structure of Town Panchayats

At the TP level, the Executive Officer (EO) is the administrative head, who is authorised to sign all cheques for payment from the panchayat fund. He is assisted by the Head clerk, junior assistant, bill collector, and typist for maintenance of records, collection of taxes, maintenance of assets and implementation of government programmes (DTP, 2012). A schematic structure of a TP is presented in Figure. 4.

Figure 3.4: Organisation Structure of Town Panchayats



Source: TNA, May 2016

The fore-going description suggests that while corporations have comparatively better human and financial resources, smaller ULBs have little capacities in general, and hence, even poorer capacities in sanitation. Municipalities will perhaps have variable capacities depending on their size, and the situation in TPs is marked by very rudimentary staffing and capacities.

3.8 Other Urban Development Institutions, Tamil Nadu

Apart from the different categories of ULBs, administered by the CMA and DTP, the other institutions responsible for urban water and sanitation services in the state include:

- Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB)
- Tamil Nadu Water Supply and Drainage Board (TWAD)
- Specialised institutions like the Tamil Nadu Urban Infrastructure and Financial Services Limited (TNUIFSL) and the Tamil Nadu Urban Finance and Industrial Development Corporation (TUFIDCO)
- Tamil Nadu Institute of Urban Studies (TNIUS)

These institutions also form a part of the MAWS Department. The CMWSSB provides water supply and sewerage (UGSS) services to Chennai. The Tamil Nadu Water Supply and Drainage Board (TWAD) is responsible for the provision of water supply and underground sewerage facilities in the State (outside the jurisdiction of the CMWSSB). The Tamil Nadu Urban

Infrastructure and Financial Services Limited (TNUIFSL), and the Tamil Nadu Urban Finance and Infrastructure Development Corporation Limited (TNUFIDCO) are the two urban financial intermediaries. The Tamil Nadu Institute of Urban Studies (TNIUS), at Coimbatore, has been set up by the State to undertake capacity building in the urban sector.

Apart from MAWS, the State has other departments responsible for different aspects of urban development, notably public works, housing and urban development, water resources, slum clearance board, and so. Figure.5 presents a broad division of roles in providing urban infrastructure and services, across the relevant departments and agencies in the State.

Figure 3.5: Roles and Responsibilities of Urban Development Institutions

Institutions	Development Planning	Water Supply	Sewerage	SWM	Roads	Drains	Sanitation	Housing	Slum Improvement
Directorate of Town and Country Planning									
Department of Housing and Urban Development									
Public Works Department									
Water Resources Department									
Municipal Corporations, Councils & Town Panchayat									
Tamil Nadu Water Supply And Drainage Board									
Tamil Nadu Slum Clearance Board									
Tamil Nadu Infrastructure Development Board									

Source: http://www.maduraicorporation.co.in/accessed on May 2016

Note: Primary role is marked in Green and secondary role in Blue.

4. Urban Sanitation in Cities: Role of ULBs

According to the 74th Constitutional Amendment Act 1994, ULBs are responsible for safe sanitation in the State. While the administrative head of the ULBs focuses on the managerial policies and administration of sanitation programmes in the cities, the Public Health Department, municipal cadres and the Engineering Department have major roles in executing the mandate of sanitation.

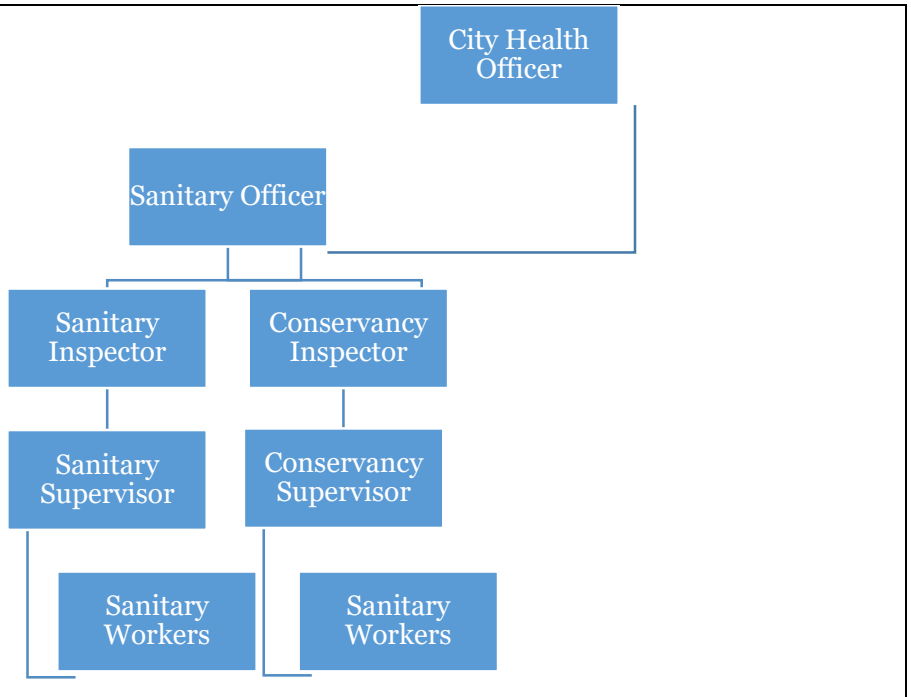
4.1 Role of Public Health Department in Urban Sanitation

The Public Health Department is responsible for sanitation at the ULBs and is entrusted with the following tasks.

i. Monitoring authority for sanitation
ii. Reporting to higher authorities on the existing sanitation status
iii. Solid waste management
iv. Cleaning of streets
v. Cleaning of community and public toilets
vi. Controlling open defecation and maintenance of toilets
vii. Assuring that excreta is not disposed in open drains and
viii. Creating awareness among the public about better sanitation.

The Public Health Department consists of sanitary officers, sanitary inspectors, sanitary supervisors and sanitary workers. In major corporations, the City Health Officer is in charge of the Public Health Department, where as in municipalities, the Municipal Sanitary Officer is in charge of the department. In town panchayats, sanitary inspectors discharge the same responsibility.

Figure 4.1: Public Health Department



Source: TNA, April 2016

The following categories of staff are drawn from the Public Health cadres/department:

i. City Health Officer: The City Health Officer heads the Public Health Department at the corporation level.
ii. Sanitary Officers: The sanitary officers head the department at the municipal level and zonal level. It is the duty of the sanitary officer to ensure compliance to standards of sanitation in cities.
iii. Sanitary Inspectors: The sanitary inspectors have a supervisory function on public health in the TPs. In the case of municipalities and corporations, they work under the health officer and sanitary officer.
iv. Conservancy Inspectors: This position is understood to exist only in old corporations and municipalities. In the current survey, only Madurai has this position as part of their corporation structure.
v. Sanitary Supervisors: Their role is to supervise the activities of sanitary workers.
vi. Sanitary Workers: Handle the daily sanitary work activities at the cities, consisting of sweeping, collection of garbage, clearing of open drains.

4.2 Role of Municipal Cadres in Urban Sanitation

The Urban Local Bodies in Tamil Nadu are staffed by designated cadres through various government regulations, rules and orders.

4.3 Public Health Cadre

The public health cadres are regulated through the Tamil Nadu Municipal Public Health Service Regulations, 1970 which puts forth a list of Class I, II, III, IV and V officers. The Class I comprise directly recruited officers that include the women medical officers, lady superintendent, medical officer (Public Health Laboratory) and medical officer (I.D. Hospital). The Class II officers constitute the sanitary officers and selection grade sanitary inspector, wherein a health officer through direct recruitment forms the Class III of the cadre list. Under the Class IV cadre there is a sanitary inspector and foreman. Class V consists of the other personal like matrons, cinema operators, etc.

In addition to the 1970 Health Regulations, The Tamil Nadu Municipal (non-centralised regular) Public Health Establishment Regulations were enacted in 1976. Under these regulations the Sanitary workers like sweepers, scavengers, *thotties*, Cart driver, Drain cleaners, Tank and burial and burning ground watchman, and all other sanitary workers including those employed for Anti-Malaria, Anti-Filaria, guineaworm and compost schemes are employed through direct recruitment and later were eligible to be promoted to Sanitary Supervisors.

4.4 Municipal Engineering Cadre

The Municipal Engineering Service Rules 1970 appointed and delegated several grades of officers for various engineering works. The Class I officers had drainage, water works and sewage farms superintendent in addition to other engineers. Similarly, there are nine other classes consisting of electrical superintendent, mechanical superintendent, public works overseers, works inspectors, head workman, drivers, etc.

According to Section 303 read with Section 77-A of the Tamil Nadu District Municipalities Act 1920, the Tamil Nadu Municipal Engineering Service Rules came into force with effect from 24 December 1997. The service will consist of the following categories and cadres given below:

i. Category I: Chief engineer (Municipal Corporation)
ii. Category I-A: Superintending Engineer
iii. Category II: Executive engineer/Regional executive engineer
iv. Category III: Asst. Executive Engineer
v. Category IV: Asst. Engineer

4.5 Municipal Town Planning Cadres

The municipal town planning cadres consists of a senior town planning officer, town planning officer, Grade-I, town planning officer, Grade-II, town planning inspector and town planning assistant draughtsman.

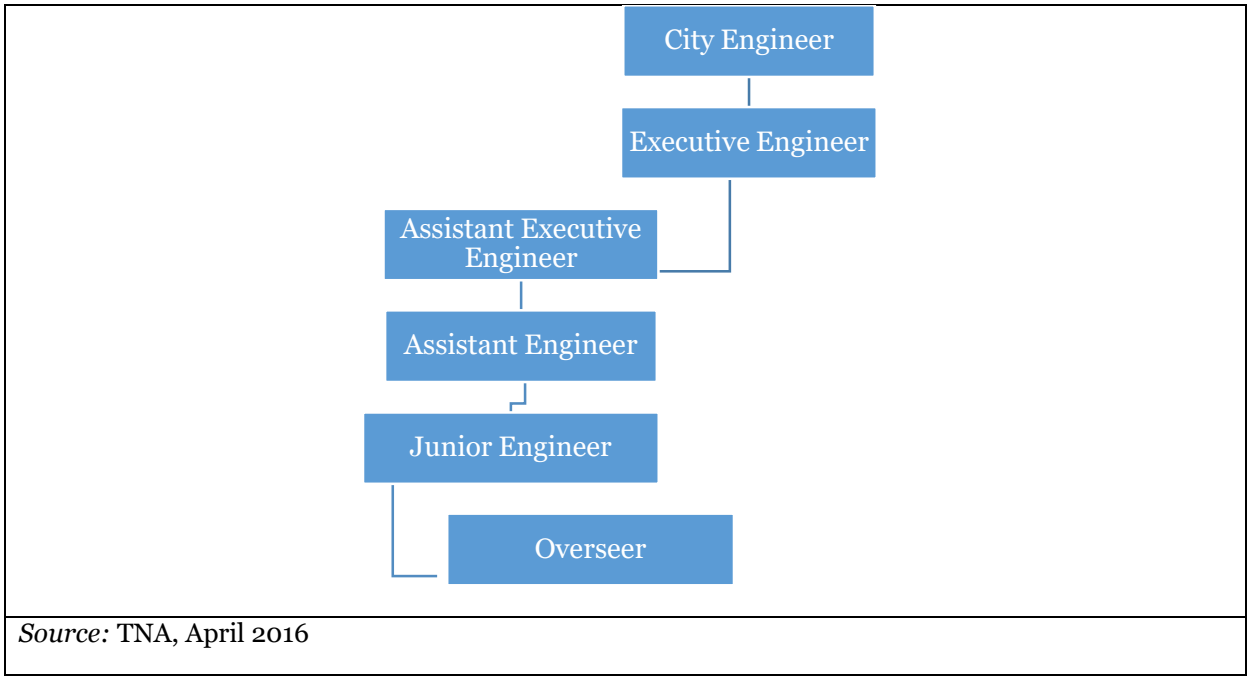
In addition to the above, the Tamil Nadu Municipal General Service Rules 1970, TN medical Service Rules 1970 and TN Municipal Commissioner Services also enforce appointment of cadres for various posts.

4.6 Role of Engineering Department in Urban Sanitation

The Engineering Wing of the ULBs takes charge of the construction and maintenance of the toilets, drains, sewers, and treatment plants. The Engineering Wing (Public Works) is in charge of purchasing equipment, maintenance of machinery and vehicles, and providing equipment for sanitary workers. Their roles include:

i. Construction of public, community and government school toilets
ii. Construction and maintenance of sewers including sanitary sewers, storm water drains and combined sewers
iii. Construction and maintenance of open drainage systems
iv. Construction, operation and maintenance of pumping stations
v. Construction and maintenance of sewerage treatment plants
vi. Treatment and re-use of waste water
vii. Purchase and maintenance of equipment and vehicles for sanitation
viii. Maintaining records of de-sludging vehicles owned by ULB
ix. Regulating and maintaining records of de-sludging vehicles owned by private vendors
x. Preparing tenders for equipment and vehicle purchase for urban sanitation
xi. Approval of tenders for equipment and vehicle purchase for urban sanitation

Figure 4.2: Engineering Wing in Cities

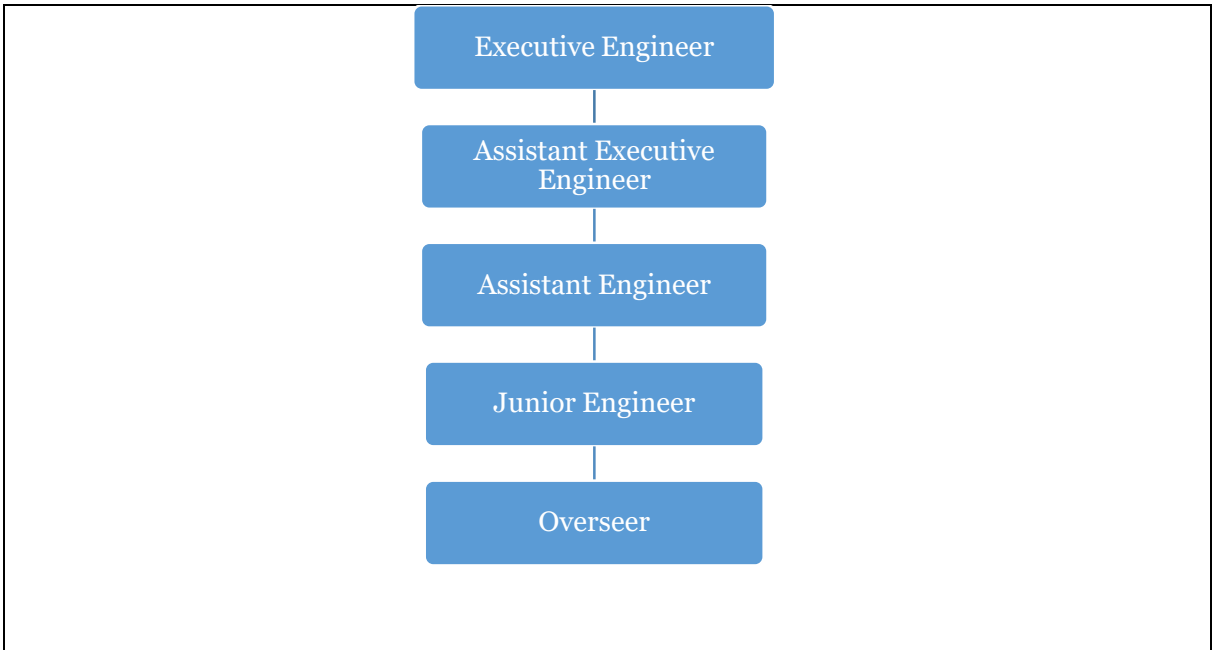


Source: TNA, April 2016

4.7 Engineering Department in Town Panchayat

There are no specific posts for the engineering staff in the TPs. The engineers are deployed at the zonal levels. There are 15 zonal TPs in Tamil Nadu, in which the engineering department is structured in the following manner.

Figure 4.3: Engineering Wing at the Zonal Level Town Panchayat



Source: TNA, April 2016

In the Engineering department, the following categories of staff work at the city level.

i. The City Engineer is the Head of the Engineering Department at the corporation level.
ii. The Executive Engineers are responsible for zonal level administration at the corporations, municipalities and town panchayats.
iii. The Assistant Executive Engineer (AEE) assists the executive engineer in zonal administration.
iv. The Assistant Engineer is posted in the Division, and designated to assist higher officers. His duties include planning, designing, and overseeing construction and maintenance of building structures including sewers, septage treatment plants and open drainages in the city.
v. The Junior Engineers assist the assistant engineers in executing activities at the city level. They are the supervising authority in implementing engineering activities.
vi. The Overseers carry out instructions received from higher offices from time to time, with regards to proper execution of a work in their department. They conduct inspection at the public undertakings at regular intervals and report to junior engineers about tools & plant required for a work to be completed in time and keep a watch over the proper use of tools and plant, if any, issued to contractors.

4.8 The Role of Town Planning Department in Sanitation

The Town Planning Department is supposed to ensure that the public, private and industrial institutions are constructed according to the Building Rules, and the wastewater and human excreta is not disposed of in open spaces or into water bodies.

5. Key Findings: Senior Engineering Staff and Executive Leadership of ULBs

The survey covered heads of ULBs, technical heads and senior officers. The following officers participated in the survey as part of the TNA:

Table 5.1: Key Stakeholders Interviewed

No.	Designation	Number of people interviewed
1	Commissioner	4
2	Assistant Commissioner	4
3	Executive Officer	5
4	City Engineer	1
5	City Health Officer	2
6	Municipal Engineer	2
7	Executive Engineer	5
8	Assistant Executive Engineer	9
9	Town Planning Engineer	2
10	Head Clerk	6
	Total number of officers who participated in the survey	**40**

Source: TNA, 2016

A detailed city-wise classification of the officers is available in Annexure 1

5.1 Awareness of Key Officers on FSSM and their Current Practice

The study revealed that majority of the respondent officers had limited knowledge on fecal sludge treatment.

In town panchayats and municipalities, where Sewage Treatment Plants (STPs) are not available, the officers were either unaware or had limited formal knowledge of FSSM. The officers also mentioned that many of the frontline and junior cadre are not adequately aware of the rules and regulations governing building of septic tanks and its linkages with public health.

The ULBs have limited facility to desludge the septic tanks. Due to unavailability of sufficient vehicles, the general public relies more on private de-sludging contractors. In the larger corporations and special grade municipalities, where STPs are available, the ULBs have initiated practices to regulate the activities of the de-sludging contractors. This includes imposing fines on those disposing untreated sludge and providing strict guidelines on disposing sludge at the selected pumping stations or STPs. However, where there is no UGD

(underground drainage), particularly in the ULBs without STPs, on-site systems will need regular de-sludging and safe disposal of fecal sludge. Currently, this is not strictly followed in most cases, as presented in Table 3.

Table 5.2: Awareness of FSSM

Awareness	Fully Aware	Somewhat Aware	Limited Knowledge	No Response
Awareness of GoTN Septage Management Policy 2014	12	19	6	3
Awareness on Types of Toilets (Dry/Wet)	25	12	0	3
Awareness on Containment Systems	24	13	0	3
Awareness on Transportation	20	7	10	3
Awareness on Disposal	22	5	10	3
Awareness on Treatment	7	14	16	3
Awareness on Reuse	4	13	20	3

Source: TNA, 2016

5.2 Current Policies: Status and Issues

5.2.1 Institutional Capacity

At the institutional level, the Tamil Nadu Municipal Building Rules 1972 and Public Health Act 1939, read with Operative Septage Management Guidelines, provide the framework for urban sanitation. However, the authorities face challenges in places where land is not available and where there is a lack of financial resources. Respondents also mentioned that though building rules prevent the disposal of septage in open areas, drains and water bodies, alternative safe disposal options are not provided.

The officers suggested revisions and upgradation of the policies, acts/rules to implement FSSM at the state level, keeping in mind the social stigma as well as the cultural practices prevalent in society. Table 4 presents feedback of respondents across the different elements of the full-cycle sanitation value chain.

Table 5.3:Respondents' Feedback on policies and framework for Urban Sanitation

Particulars	Rules	Issues	Solutions
Containment	Building Rules are specified.	Though the rules are in place, they are not clear in terms of types of containment systems and restrictions on certain types of containments based on groundwater level and environmental issues.	The building rules may be modified according to the environmental challenges, which may reduce the unhealthy practices in containment systems.

Table 5.3:Respondents' Feedback on policies and framework for Urban Sanitation			
Particulars	**Rules**	**Issues**	**Solutions**
Conveyance	Places where the UGD is available, the Municipal rules are followed. In the case of on-site sanitation, the Public Health Act is generally followed.	Though there are strict guidelines preventing disposing of human excreta in public places, many private vendors dispose of the fecal sludge at open places, river-side and farmlands.	Regulation of private de-sludging operators, awareness of potential health hazards, guidelines for safe disposal, and providing locations to dispose the fecal sludge are needed.
Treatment	Not aware of rules for safe treatment and reuse of fecal sludge and treated wastewater.	Treatment of septage is an issue in places where UGD is not available. Lack of treatment plants result in disposal of untreated septage by the public.	In ULBs where UGD is not available, designated FSSM treatment plants should be set up. A regulation to monitor regular de-sludging is also suggested.
Disposal/Reuse	- Same as above -	Disposal/Usage of treated septage and waste-water has to be addressed. The cultural and social stigma attached to septage is one important aspect to be addressed.	Awareness creation among the public about septage treatment and reuse is suggested.
Source: TNA, 2016			

5.2.2 Human Resources Capacity

i. Almost all ULBs reported shortage of staff, especially frontline staff in the Health Department. In some ULBs, the shortage is as high as 50 per cent. Therefore, the existing staff have an increased workload, which hinders their day-to-day work. For this reason, many ULBs have started outsourcing the sanitation work.
ii. Some officers pointed out that they are unable to regulate the activities of the outsourced staff.
iii. Officers recommended filling up of vacant positions to reduce the burden on the existing staff.
iv. Respondents also pointed out the need to have an integrated management system, to enable monitoring and tracking in FSSM.

A detailed city-wise analysis is presented in Annexure 2**.**

5.2.3 Financial Capacity

i. The ULBs are classified according to population and revenue, with revenue being the key factor in implementing policies at the ULB level. Officers mention that taxes are often the only source of funds that prove to be inadequate, thereby limiting the ability to acquire and operate vehicles, equipment, manpower and infrastructure for implementation of FSSM in ULBs.

ii. Due to shortage of funds, majority of the ULBs encourage on-site sanitation systems. The de-sludging expenses are met by the general public. This leads to unhealthy practices like constructing deep underground pits by households who do not wish to get their containment structures regularly cleaned.

iii. Currently, most of the ULBs are included in Swachh Bharat Mission (SBM). Some of the cities are selected under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart Cities and Heritage City Development and Augmentation Yojana (HRIDAY) Missions. These programmes do have explicit components for investments in FSSM. Where ULBs are part of Integrated Urban Development Mission (IUDM), they have the support of the GoTN in meeting the operational expenses and capital expenses of constructing UGDs.

iv. Officers also suggested implementing full-scale e-Governance to reduce paperwork and ensure systematic recording. Generating a module on Septage Management as part of e-filing system was also recommended.

City-wise analysis is presented in Annexure 3**.**

5.3 Training Needs of Key Stakeholders

While the primary survey did not cover the training record of officers, it was understood from GoTN documents that they have undergone training on policies and processes in urban sanitation and a few of them in septage management, as well.

Officers opined that their personnel would be willing to attend training programmes, and these can be expected to improve their knowledge, skills and behaviour. Creating awareness on safety and health standards, and building rules and regulations among the staff were recommended. Occupational safety guidelines for the frontline staff was also mentioned as a major requirement.

6. Key Findings: Sanitary and Conservancy Inspectors, Supervisors and Workers (of Public Health Department)

The TNA covered both engineering and public health staff of the selected ULBs. About 252 employees participated in the survey. The survey included a proportional number of sample from each category against the original category-wise staff strength in the ULBs. Currently, nearly 75 per cent of the staff are frontline sanitary workers, about 20 per cent are sanitary supervisors and nearly five per cent are sanitary inspectors and officers.

The category-wise classification of the sanitary staff is presented in Table 5.

Table 6.1: Profile of Public Health staff		
Sl. No.	**Designation**	**No. of Respondents**
1	Sanitary Officer	10
2	Sanitary Inspector	25
3	Conservancy Inspector	7
4	Sanitary Supervisor	75
5	Sanitary Worker	135
Total Number of Staff Interviewed		**252**
Source: TNA, 2016		

A detailed city-wise breakup is presented in Annexure 4.

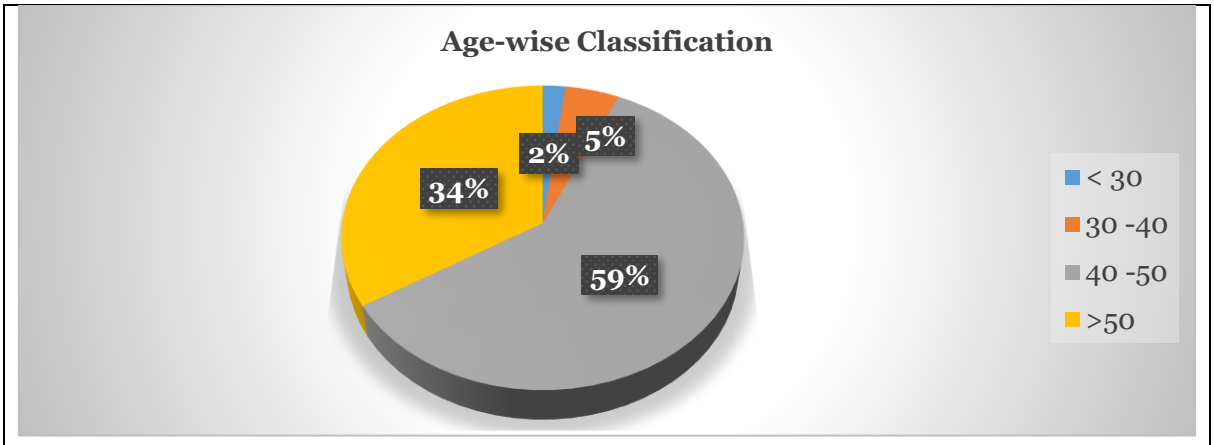
As detailed job profile/description of the staff was not available for reference and understanding. Therefore, the respondents were requested to describe their routine tasks under their current roles.

6.1 Age-wise Classification

Most of the respondents (59 per cent) were in the 40–50-year age group. About 34 per cent of the staff are above 50 years of age. Two per cent of the staff are below the age of 30 and another 5 per cent fall in the 30–40 years category.

Those in the higher age bracket showed little interest in getting trained in new areas of sanitation as many of them are due for retirement. Since majority of those who were part of the survey fell under this bracket, it is essential to take this into account while designing training programmes from them.

Figure 6.1: Age-wise Classification

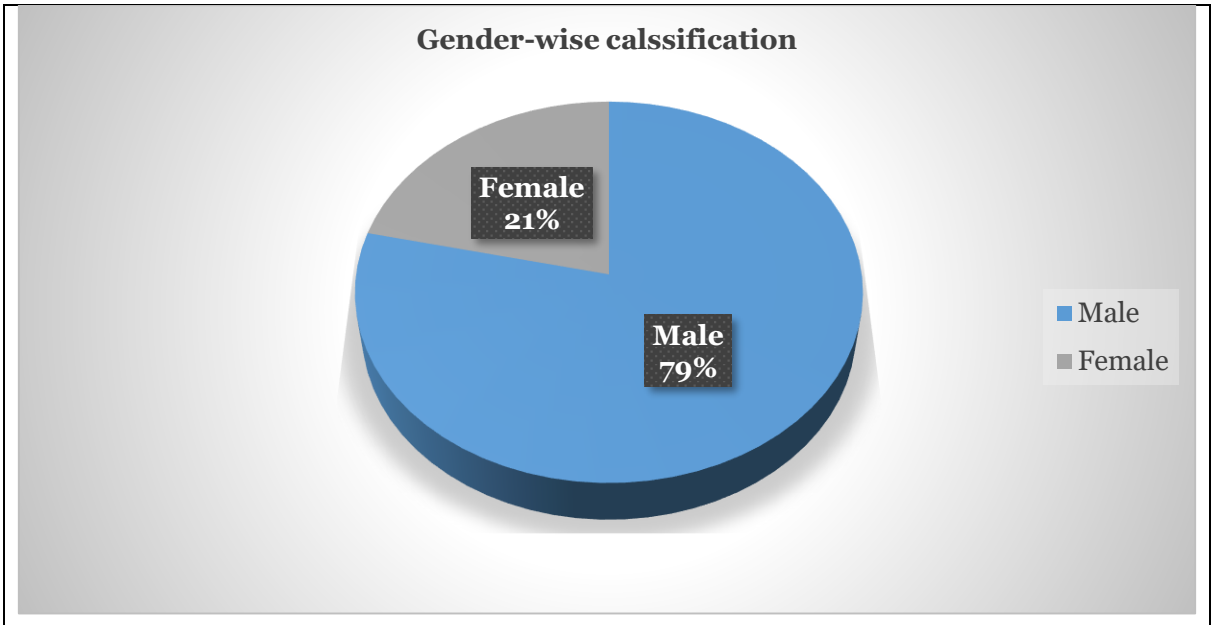


Source: TNA, May 2016

6.2 Gender-wise Classification of the Respondents

The survey included both male and female employees. Out of the 252 participants, 79 per cent were male employees and 21 per cent female employees. The workforce in the Public Health Department is predominantly male. Women workers are mainly employed for the cleaning of streets and garbage collection.

Figure 6.2: Gender-wise Classification of Respondents



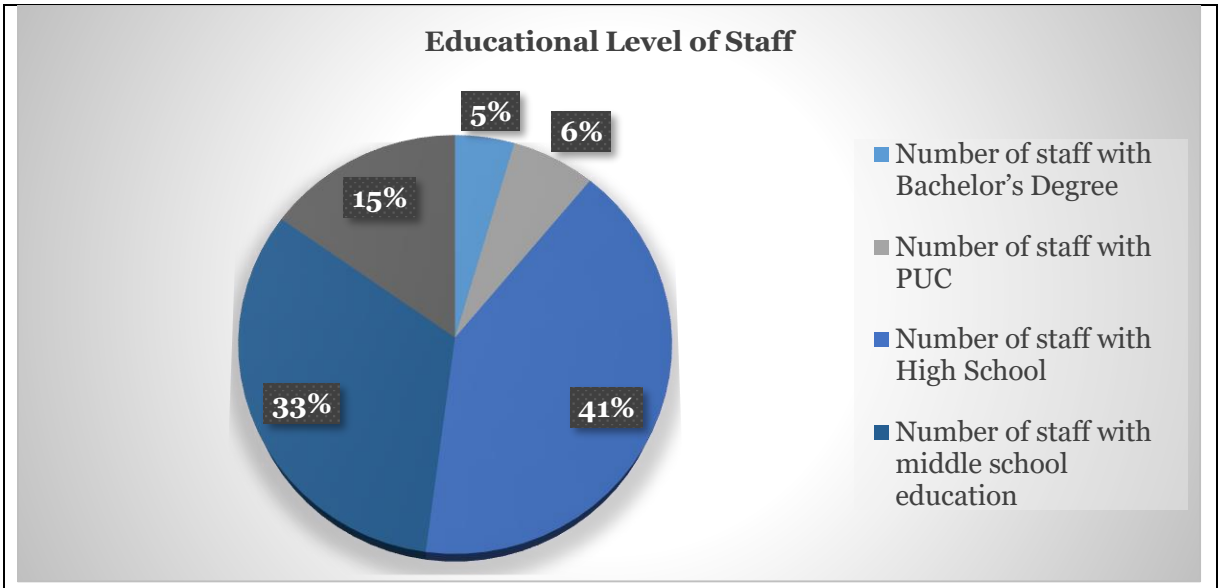
Source: TNA, May 2016

6.3 Education

The educational background of the staff is relevant in developing the training curriculum, training methods and delivery. In the Public Health Department, about 75 per cent of the workforce consists of sanitary workers. The basic qualification required for the sanitary

workers is middle school (8th Class Pass). This was reflected in the survey results. About 42 per cent of the staff are high school dropouts, and 33 per cent of them had middle school education.

Figure 6.3: Educational Background of the Staff



Source: TNA, May 2016

Only the positions above sanitary inspector demand graduation as a qualification. Hence, the number of staff members with bachelor's degree is very small. The category-wise educational classification is presented in Table 6.

Table 6.2: Educational Qualification of Public Health Staff

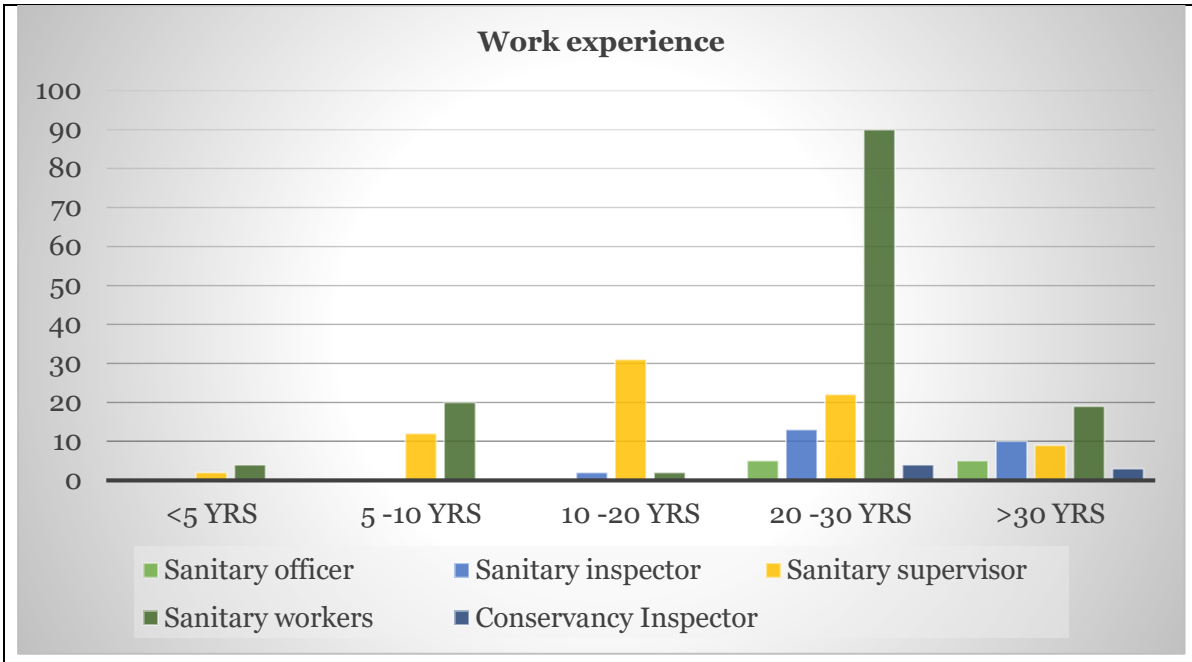
Sl. No.	Designation	Education				
		Bachelors	Diploma in Sanitation	PUC/Plus two	High School	Middle school
1	**Sanitary officer**	3	13	0	0	0
2	**Sanitary inspector**	9	16	0	0	0
3	**Sanitary supervisor**	0	0	5	65	4
4	**Sanitary workers**	0	0	6	43	86
5	**Conservancy Inspector**	1	3	3	0	0
Total		**13**	**32**	**14**	**108**	**90**

Source: TNA, 2016

6.4 Experience of Employees

Most of the employees have been serving in the department for 20 to 30 years. In the case of sanitary supervisors and sanitary workers, only some of the staff fall in the group of fewer than 5 years' experience. The long years of experience in current practices can also pose a potential hurdle in training personnel on new systems and practices.

Figure 6.4: Work Experience of the Staff



Source: TNA, May 2016

The survey tried to identify the current work-schedules of the public health staff in sanitation. Figure 12 provides an overview on the current tasks of the sanitary staff and the amount of time spent on these tasks. This data also gives an understanding of the major tasks carried out by the ULBs, as part of the urban sanitation work in the city. On a daily basis, the following tasks are reported by the public health staff:

i. Garbage collection, transport and disposal (Solid Waste Management)
ii. Street sweeping and other cleanliness activities
iii. Cleaning/clearing of drains
iv. Management/regulation of toilets in households and other properties
v. Checking of disposal of toilet wastes into drains and open areas
vi. Management/regulation of community toilets
vii. Management/regulation of public toilets
viii. Cleaning and un-clogging of sewer manholes or other structures clogged with human excreta
ix. Management/regulation of de-sludging trucks and personnel associated
x. Management/regulation of human excreta wastes disposal or treatment sites
xi. Other human excreta management tasks

Figure 6.5: Time utilised for sanitation on daily basis

Daily tasks in urban sanitation	Time utilised for urban sanitation on a daily basis (Response in %)						
	NA	0 -10%	10 -20 %	20 -30%	30-40%	40-50%	50 -60%
Solid waste management			.4	.8	33.7	36.5	28.6
Street Sweeping			15.5	27.8	38.5	9.5	8.7
Cleaning of drains			62.3	35.7	2.0		
House hold toilet	95.1	3.7	1.2				
Checking disposal of toilet waste in drains		53.6	22.6	4.4	19.4		
Management/ regulation of Community toilet		10.7	53.6	10.7	5.6	19.4	
Regulation of public toilet		19.8	48.0	27.8	4.4		
Manhole cleaning	66.7	23.8	9.5				
STP management	67.9	32.1					
Cleaning of other waste		79.0	21.0				

Source: TNA, May 2016

As Figure 13 shows, solid waste management and cleaning of streets are the major tasks carried out by the sanitary workers. On an average, 40 per cent of the time is spent on solid waste management and 30 per cent on street sweeping.

6.5 Awareness on Urban Sanitation

Most of the respondents thought that the tasks pertaining to 'urban sanitation' were the activities that they take up on a daily basis. Respondents identified the following as major tasks in urban sanitation:

i. Cleaning of streets
ii. Cleaning of public and community toilets
iii. Cleaning of open drains
iv. Removal of garbage
v. Prevention of epidemics
vi. Prevention of stray dog menace
vii. Efficient solid waste management
viii. Control of open defecation and urination
ix. Control of stray animals

6.6 Awareness on Septage Management

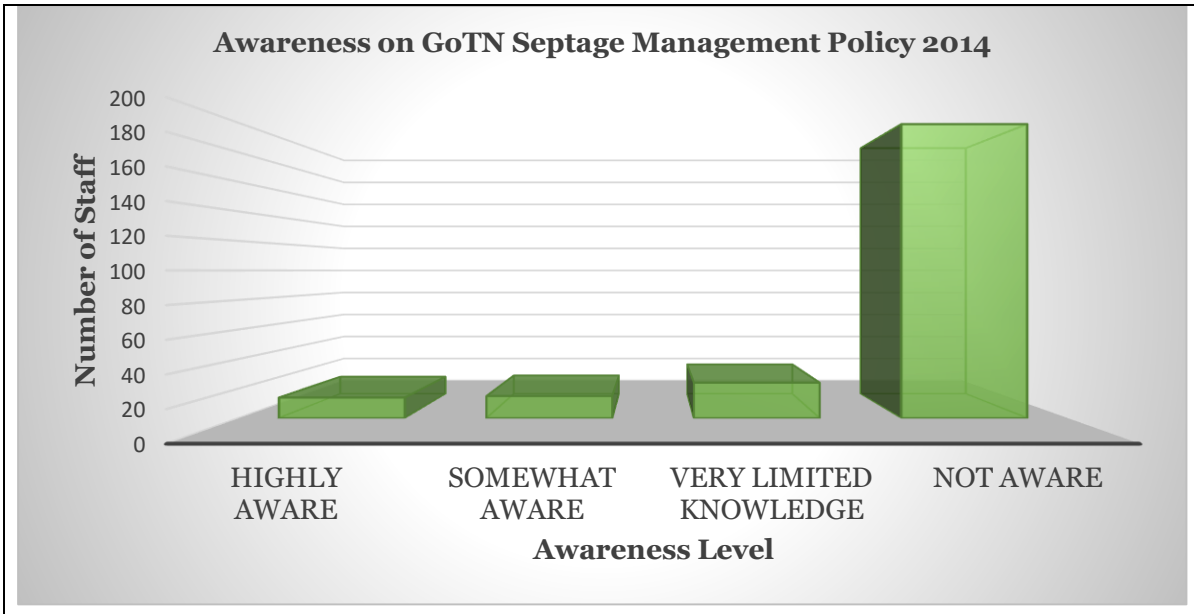
With respect to the full cycle of sanitation of human excreta management, respondents were not aware of safe disposal, treatment and reuse stages. They did not report formal knowledge on the concepts of septage management. On describing the treatment of fecal sludge, some reported recall of septic tanks, STP operation, and de-sludging by private operators.

With respect to septic tank design and construction, common answers were related to soak-pits and septic tanks, and problems associated with poor capacity of these structures.

6.7 Awareness of the GoTN Guidelines on Septage Management

The public health staff working in Corporations and Municipalities report having some recall and knowledge of the Septage Management Guidelines. Sanitary inspectors also seem to have some knowledge about the Guidelines, while the sanitary workers do not seem to be aware of this.

Figure 6.6: Awareness about GoTN Septage Management Guidelines 2014



Source: TNA, May 2016

Table 6.3: Awareness on GoTN Septage Management Operative Guidelines 2014

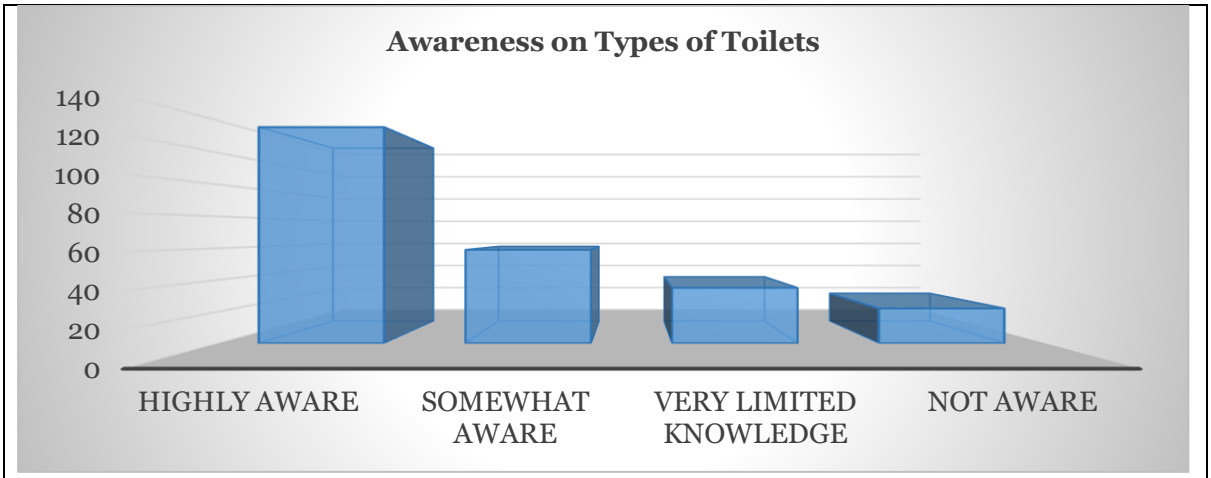
Designation	Awareness on GoTN Septage Management Policy 2014			
	Highly Aware	Somewhat Aware	Very Limited Knowledge	Not Aware
Sanitary Officer	4	3	3	0
Sanitary Inspector	8	8	7	2
Conservancy Inspector	2	1	3	1
Sanitary Supervisor	0	3	6	66
Sanitary Worker	0	0	5	130

Source: TNA, May 2016

6.8 Awareness on Types of Toilets

To understand the awareness and familiarity with different types of toilets, the respondents were shown pictures of different types of toilets. Most of the respondents were aware of the common types of toilets, including wet and dry toilets, pour flush and cistern flush toilet.

Figure 6.7: Awareness on Types of Toilets



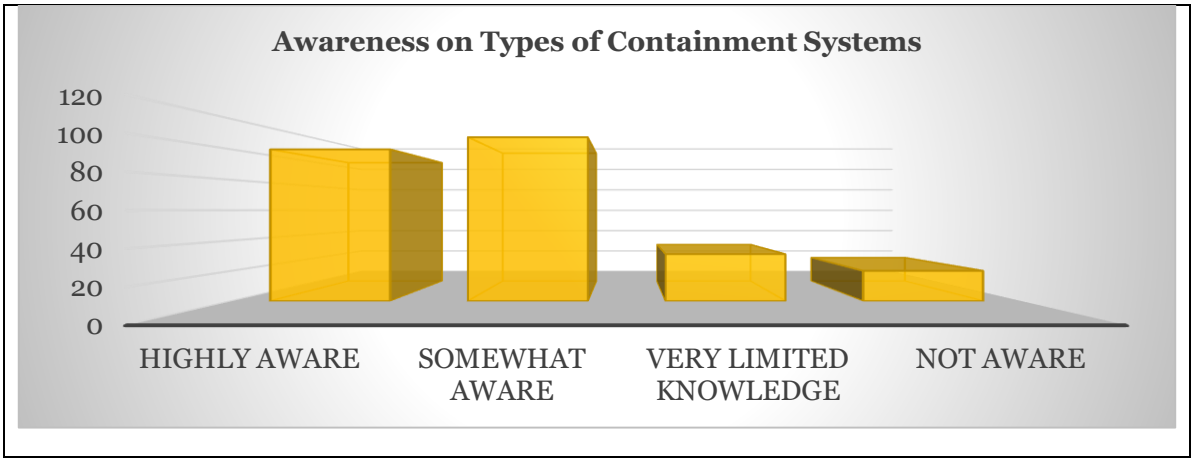
Source: TNA, May 2016

Table 6.4:Awareness on Type of Toilets –Category Wise				
Designation	**Awareness on Types of Toilets**			
	Highly Aware	**Somewhat Aware**	**Very Limited Knowledge**	**Not Aware**
Sanitary Officer	4	3	3	0
Sanitary Inspector	18	5	2	0
Conservancy Inspector	2	1	3	1
Sanitary Supervisor	32	25	12	6
Sanitary Worker	80	25	15	15
Source: TNA, May 2016				

6.9 Awareness on Containment Systems

The majority of respondents were also aware of the different types of containment systems including septic tanks, single pit and double pit toilets. To understand the level of their knowledge, a few questions were asked about details of design and functioning of the septic tanks, single and double pit toilets, and how de-sludging needed to be done in each type of toilet. Most of the respondents had a fairly good knowledge of these containment systems. Some were able to also point out that in many households, septic tanks are a mere concrete structures without chambers and since treatment was not carried out in these tanks, they required regular de-sludging.

Figure 6.8: Awareness on Types of Containment systems



Source: TNA, May 2016

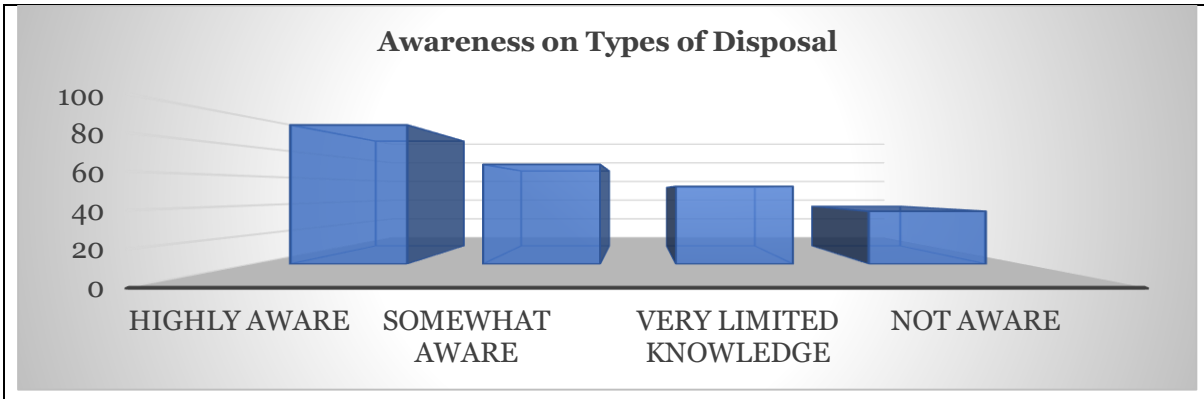
Table 6.5:Awareness on Types of Containment Systems: Category Wise				
Designation	**Awareness on Types of Containment Systems**			
	Highly Aware	**Somewhat Aware**	**Very Limited Knowledge**	**Not Aware**
Sanitary Officer	6	3	1	0
Sanitary Inspector	12	8	3	2
Conservancy Inspector	2	3	1	1
Sanitary Supervisor	23	32	15	5
Sanitary Worker	55	59	10	11
Source: TNA, May 2016				

6.10 Awareness on Disposal

Questions were asked to assess methods of septage disposal from the containment structures. The respondents in this regard mainly spoke about two methods that are currently used—sewers and disposal by vehicles**.** In places where underground sewerage system is not covered, the staff have limited knowledge on the frequency of disposal, places where it is disposed and the treatment, thereafter.

Table 6.6:Awareness on Disposal				
Designation	**Awareness on Disposal**			
	Highly Aware	**Somewhat Aware**	**Very Limited Knowledge**	**Not Aware**
Sanitary Officer	5	3	1	1
Sanitary Inspector	8	7	5	5
Conservancy Inspector	3	2	1	1
Sanitary Supervisor	15	31	22	7
Sanitary Worker	64	25	24	22
Source: TNA, May 2016				

Figure 6.9: Awareness on Types of Disposal

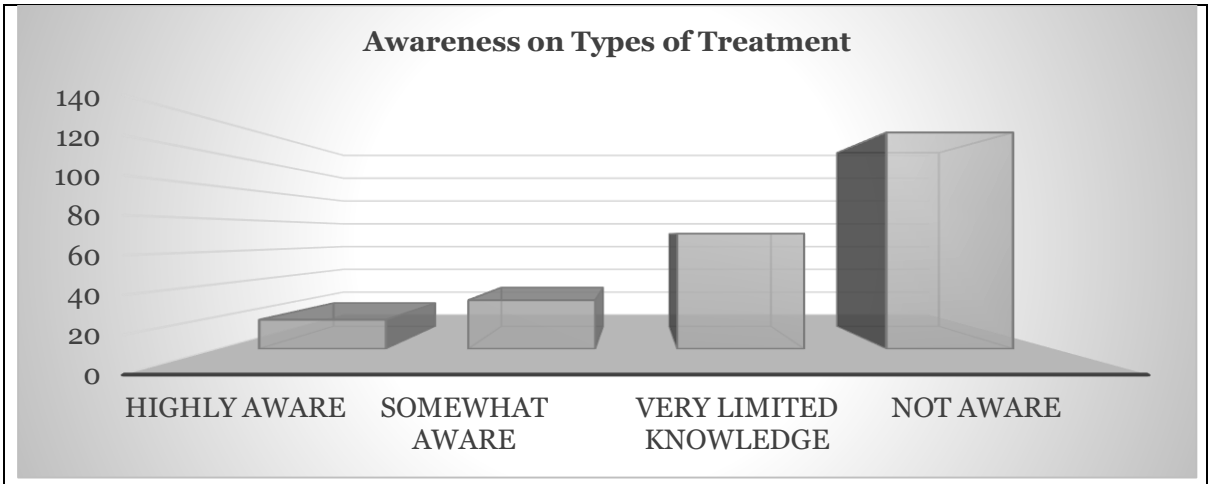


Source: TNA, May 2016

6.11 Awareness on Treatment

The majority of the respondents had limited or no awareness of septage treatment systems. While they seem to be aware of STPs, treatment of fecal sludge and the need for treatment was not clear to them. The staff in the higher category—sanitary officers and sanitary inspectors—were somewhat aware of the process; but their technical knowledge was limited.

Figure 6.10: Awareness on Types of Treatment



Source: TNA, May 2016

Table 6.7:Awareness on Treatment

Designation	Awareness on Types of Treatment			
	Highly Aware	Somewhat Aware	Very Limited Knowledge	Not Aware
Sanitary Officer	6	3	1	0
Sanitary Inspector	2	9	11	3
Conservancy Inspector	2	3	1	1
Sanitary Supervisor	5	9	21	40
Sanitary Worker	3	6	37	89

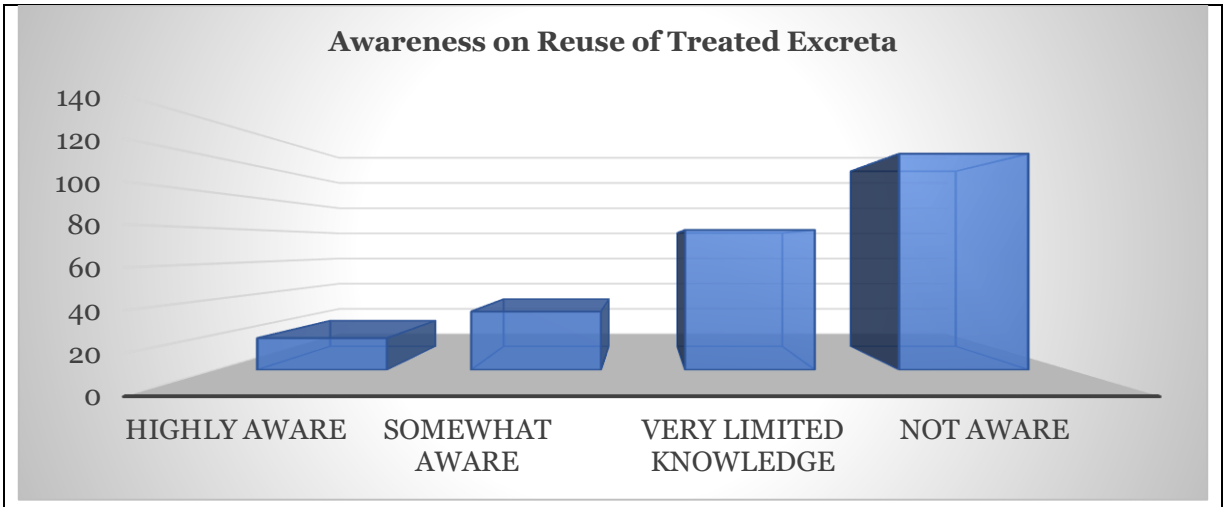
Source: TNA, May 2016

6.12 Awareness about Re-use

Awareness on re-use of septage is very limited and many of the respondents have not seen the treated septage and its reuse. They also pointed out that there is a cultural and social stigma attached to the reuse of treated human excreta.

In the case of sanitary workers, a few of them showed good awareness on treated excreta as some of them may have worked in or seen STP operations.

Figure 6.11: Awareness on Reuse of Human Excreta



Source: TNA, May 2016

Table 6.8:Awareness on Reuse of Human Excreta

Designation	Awareness on Types of Reuse			
	Highly Aware	Somewhat Aware	Very Limited Knowledge	Not Aware
Sanitary Inspector	2	4	6	13
Sanitary Worker	8	12	48	67
Sanitary Supervisor	5	13	22	35
Sanitary Officer	2	2	2	4
Conservancy Inspector	1	2	1	3

Source: TNA, May 2016

6.13 Other Observations

The number of sanitary inspectors and officers indicate an average of 40 per cent shortfall in staffing. The workload, therefore, falls on the existing staff and this hinders the timely completion of assigned work.

With respect to dependencies on other departments, many of the respondents claimed that their collaboration with other departments is minimal, and that they do not find much difficulty in getting work completed with other departments.

Most of the staff claimed that their experience, familiarity with the locations and efficiency in their work, are the key strengths in performing their work. Some of the key constraints reported include staff shortage, lack of citizen cooperation and political interference. Caste-based bias was mentioned in some locations.

6.14 Training in Public Health Department

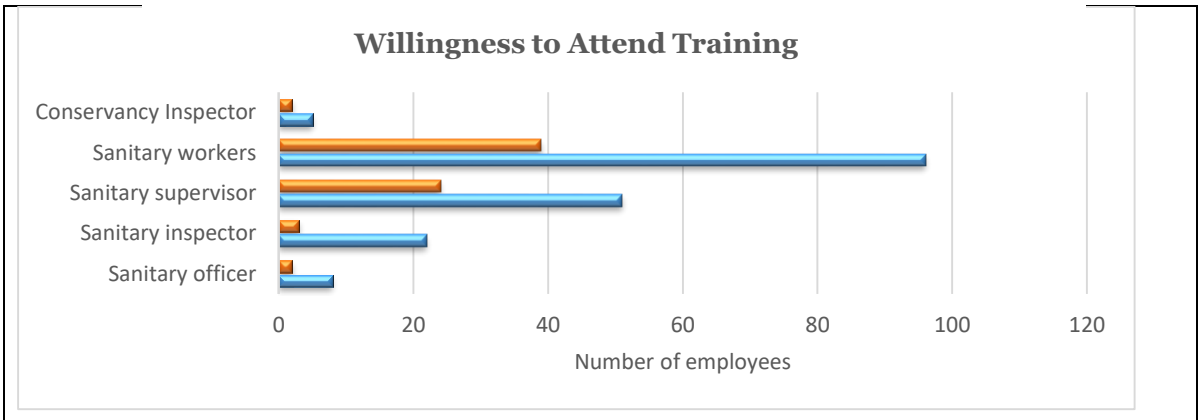
Due to unavailability of sufficient funds, the training programmes for the public health staff is offered only to the sanitary officer and sanitary inspectors. Sanitary supervisors and sanitary workers therefore, seem to have very little or no exposure to training in any process relating to sanitation.

Figure 6.12: Past Training in Sanitation

Source: TNA, May 2016

Most of the respondents said that they needed training and were willing to participate in the FSSM training. However, sanitary officers and inspectors who were nearing completion of their service preferred not to attend any training.

Figure 6.13: Willingness to Attend Training



Source: TNA, May 2016

Table 6.9:Past Training Record and Willingness to attend Training – Public Health					
Training	**Sanitary Officer**	**Sanitary Inspector**	**Sanitary Supervisor**	**Sanitary Workers**	**Conservancy Inspector**
Have you attended any training programme in sanitation?	8	19	13	29	3
Are you willing to attend training programme?	8	22	54	96	5
Total	**16**	**41**	**67**	**125**	**8**
Source: TNA, May 2016					

6.14.1 Containment Major Training Areas Identified

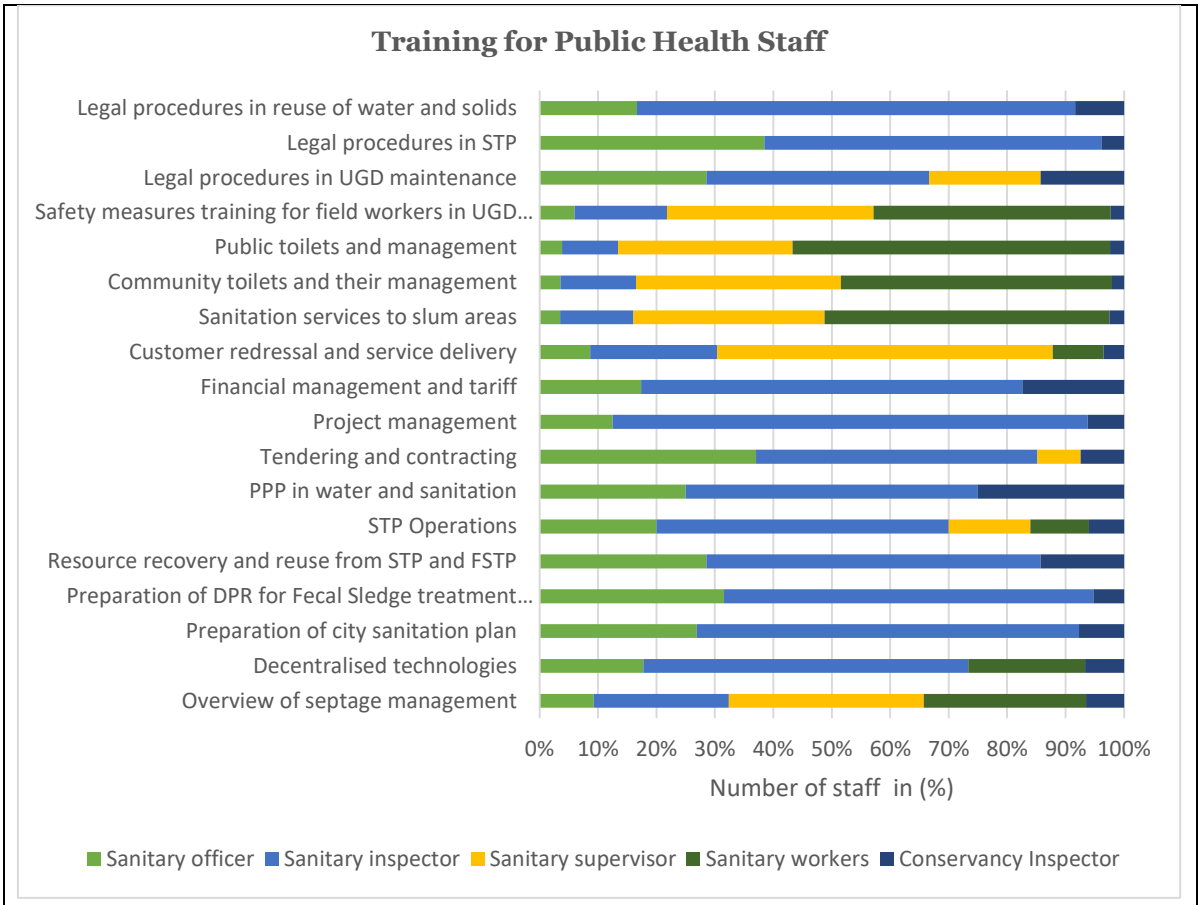
The following training topics were suggested by public health personnel:

i. Septage Management
ii. Sewerage Management
iii. Project Finance and Management
iv. Citizen Awareness and Engagement
v. Safety Measures for Septage Management
vi. Legal Aspects of Septage Management

Table 6.10: Topics Identified by the Staff for Training					
Training Areas	**Sanitary Officer**	**Sanitary Inspector**	**Sanitary Supervisor**	**Sanitary Workers**	**Conservancy Inspector**
Septage Management	8	22	60	114	6
Citizen Awareness	8	21	50	60	4
Legal Aspects of Septage Management	7	15	25	0	3
Safety Aspects in Septage Management	8	20	50	86	4
Source: TNA, May 2016					

(Figure 22) presents the details of the training needs identified by respondent Public Health personnel.

Figure 6.14: Training for Public Health Staff



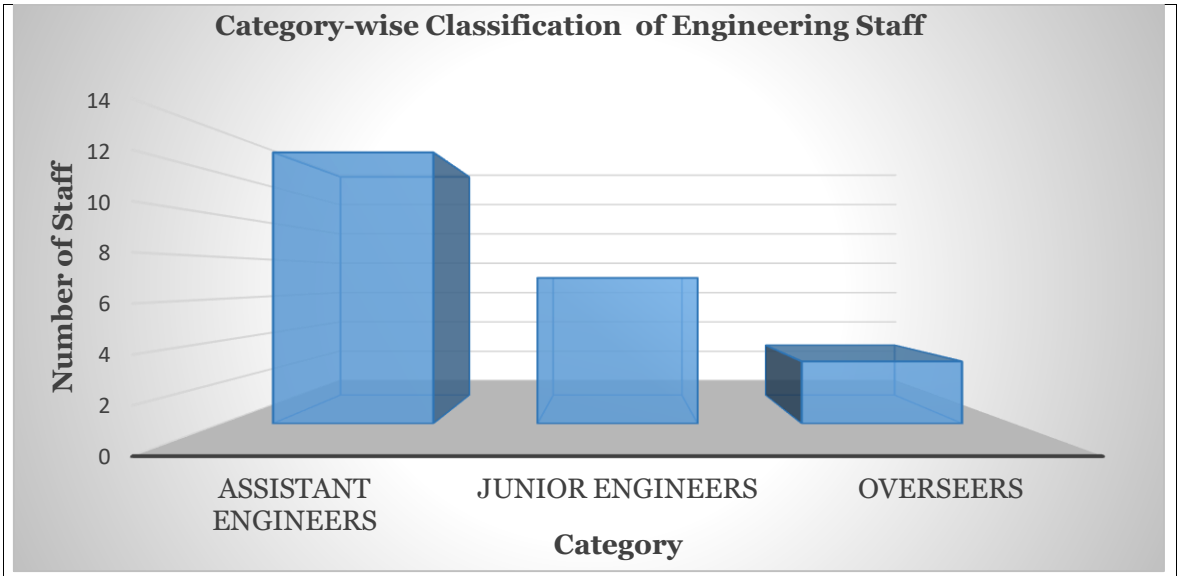
Source: TNA, May 2016

A detailed listing of training needs is presented in Annexure 5.

7. Key Findings

About 23 engineering personnel were interviewed for the Study. The sample consisted of 13 assistant engineers, 7 junior Engineers and 3overseers (Figure 23).

Figure 7.1: Category-wise Classification of the Engineering Staff



Source: TNA, May 2016

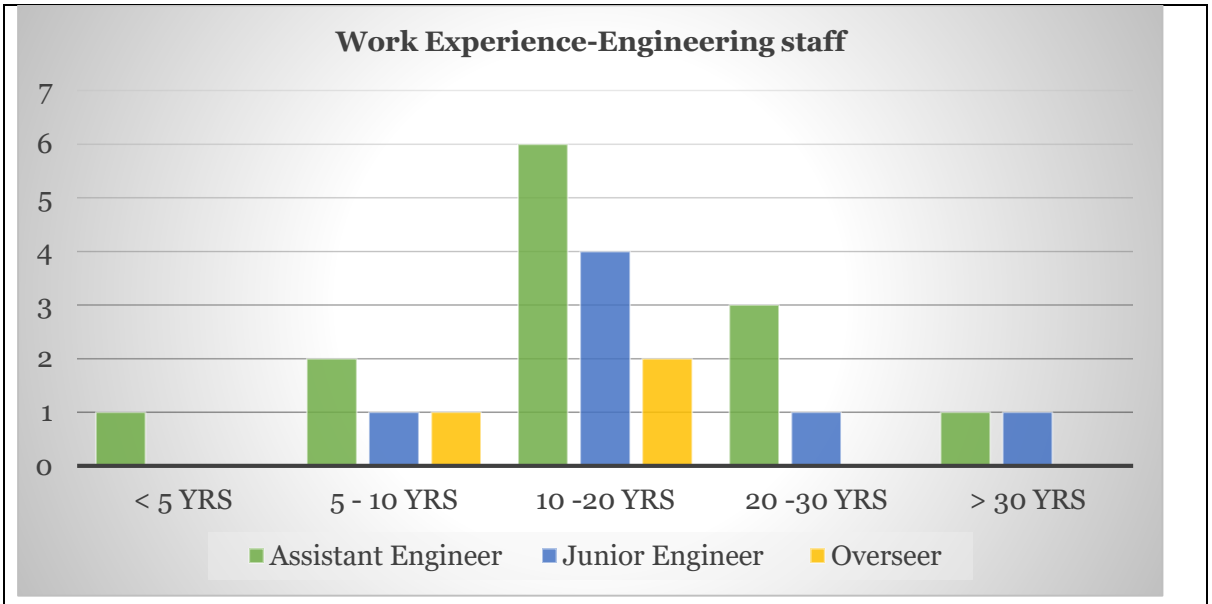
Sl. No	Table 7.1: Engineering Staff Interviewed	
1	Number of staff interviewed	23
2	Number of staff with Bachelor's Degree in Engineering	13
3	Number of staff with Diploma in Engineering	6
4	Number of Asst. Engineers who received training in urban sanitation	8
5	Number of JE who received training in urban sanitation	4
6	Number of overseers who received training in sanitation	1

Source: TNA, May 2016

7.1 Work Experience

Majority of the respondent engineering personnel have more than 10 years of work experience in their field. They are aware of the different stages of urban sanitation. They mostly deal with the final three stages in the sanitation value chain—transport, treatment and re-use.

Figure 7.2: Work Experience of the Engineering Staff

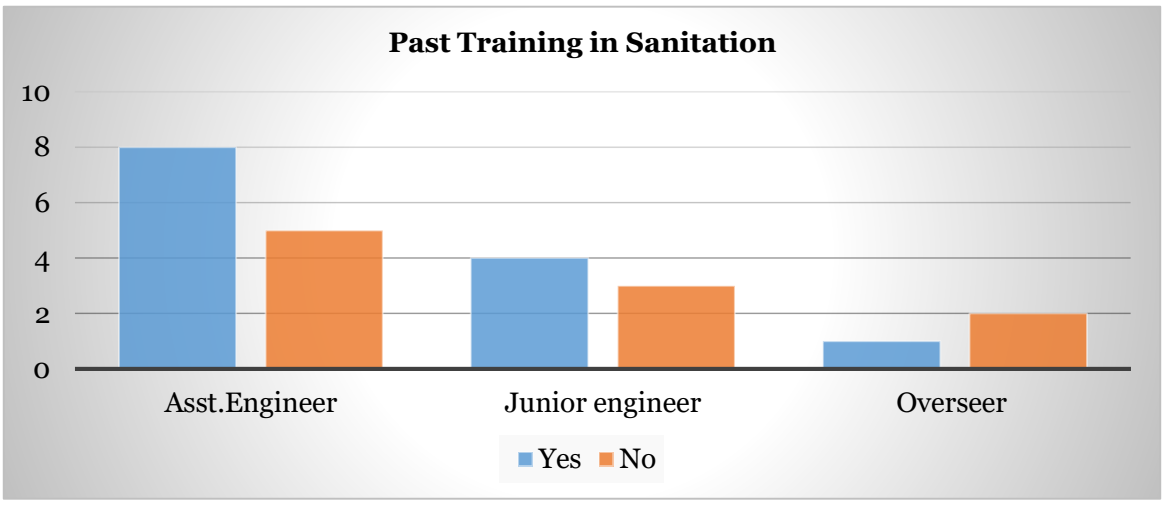


Source: TNA, May 2016

7.2 Training in Engineering Department

Assistant engineers and junior engineers mentioned that they had received training in various technologies relating to the construction of different structures and in financial management, while a few others have also received training in water and sanitation systems. Very few overseers seem to have received any kind of training, at all.

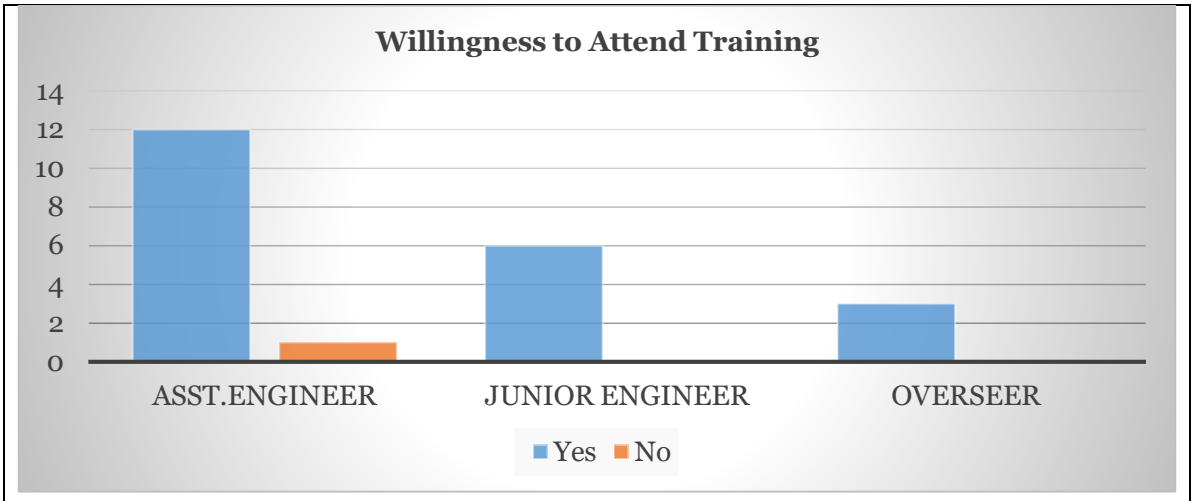
Figure 7.3: Past Training in Sanitation



Source: TNA, May 2016

Most of the respondents expressed their willingness to participate in training programmes to improve their knowledge levels.

Figure 7.4: Willingness to Attend Training



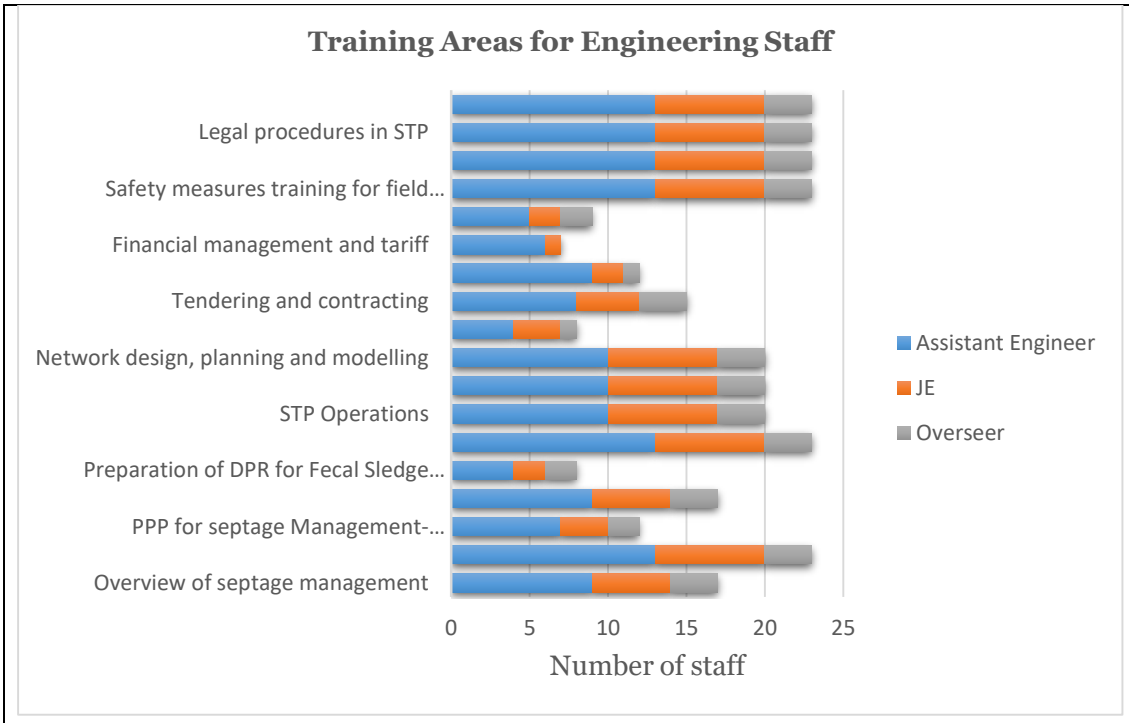
Source: TNA, May 2016

Based on the survey, the following areas of training were identified for engineering staff:

i. Legal procedures in septage management, STP and re-use of solids
ii. Safety measures in septage and sewerage management
iii. Decentralised technologies for treatment and management

(Figure. 27) presents the detailed listing of training areas, enlisted by respondents under this study.

Figure 7.5: Training Areas for Engineering Staff



Source: TNA, May 2016

8. Capacity Building and Training Strategy plan

The fore-going analyses provide the following key cluster of findings:

i. There is limited awareness on fecal sludge treatment and re-use at different levels within the ULBs. This is explained partly by the primacy accorded to solid waste management historically, and mainly due to neglect of the importance of human excreta management although both form a part of sanitation related responsibilities of the ULBs. The operative guidelines for septage management which were recent laid in 2014, enjoy a good recall amongst the more senior officers and especially in bigger ULBs.

ii. While sanitation roles and responsibilities form the core of municipal/ULB functions, there appears to be a lack of adequate number of personnel to carry out the tasks required for proper sanitation management in cities. Not only were the vacancy levels high in some specific locations, but also there were shortcomings in the quality of personnel deployed. Of course, capacities need to be built anew to address the emerging challenges and opportunities in the area of FSSM, which is a new realm albeit some of the officers and engineers might be familiar with UGD/sewerage systems and STPs.

iii. The exercise showed that the roles and responsibilities of the staff, especially that of sanitary workers and inspectors, were not clear and there is a lack of detailed job descriptions. As a result, the roles may overlap and there may be a lack of clarity about responsibilities. Limited capacities and resources in the ULBs have resulted in poor regulation over the regular emptying and cleaning of septic tanks and pits. The organisation and supply of de-sludging services in many places is far from adequate.

iv. Local implementers and services providers also expressed the need for their suggestions and feedback to be taken in revising the operative guidelines.

8.1 Strategy for Capacity Building and Training for Urban Sanitation and FSSM in TN

Based on the fore-going analysis, it is clear that the strategy for improving institutional capacities in urban sanitation, especially FSSM, will involve the following elements:

a) Identifying and dedicating positions within the State level institutions and ULBs (MCs, municipalities, and town panchayats) to discharge roles and responsibilities;
b) Strengthening the systems and procedures for attending to the specific needs of each part of the sanitation value chain viz. safe containment, safe and timely emptying, and treatment and re-use;
c) Improving the knowledge-base and skill-levels of the GoTN's urban sector personnel, especially in ULBs apart from State level agencies;
d) Orienting key officers and stakeholders to prioritise sanitation by testing and scaling up innovations using FSSM as a supplement/stand-alone solution for achieving the goal of 100 per cent sanitation in TN's urban areas.

Orientation-cum-training programmes that are woven back into standard work-routines of personnel at different levels is the first obvious step to develop realisation and ownership about the sanitation agenda. The second will be deploying domestic and international exposure visits for officers and stakeholders, to cultivate belief in the credibility of innovations and solutions being attempted in other locations in India, and other developing countries. These will need to be followed up by systemic changes in institutions and policies, and drawing upon state and private sector players to gradually strengthen the systems for planning, financing, implementation, Operations and Maintenance (O&M) management. Citizens' awareness and participation as well as strengthened roles of private sector, will need to be implemented in-step with conventional approaches of training for the sector to develop systematically and deliver on the sanitation and public health agenda of the State.

Some of the key activities and tasks under the Strategy will include the following:

i) The lack of awareness about sanitation, especially FSSM, are consistently cited as the main cause of the poor state of services. Well-trained personnel, including engineers, overseers, sanitary inspectors and workers, are necessary for the proper management of fecal sludge in the urban areas of the State. An orientation-cum-training on FSSM for State and ULB personnel is therefore an important step. State level training workshops need to be followed up with regional events that involve detailed training on strengthening planning, implementation, and monitoring systems.

ii) Septage handling/emptying, and related management guidelines/regulations should be strengthened by skill building programmes for different target groups including government, private de-sludging operators and their personnel, masons, builders, contractors, etc.

iii) Since the implementation of septage management policies requires involvement at multiple government levels, a clear delineation of roles is required to enable the staff with coherent job responsibilities and for bridging the skill gaps.

iv) Empowering personnel with technical and managerial capacity for operating septage and sewage management is a critical necessity, especially due to the variable qualities of source of septage/sewage and the complexity of processes. Strengthening of the institutions with effective operating procedures is needed while the agencies can be empowered with more clearly-defined roles.

v) Creating internal practices of knowledge sharing systems and on-the-job training can also ensure in-house knowledge development and receptivity within the department.

vi) While the training materials and methods need to be tailored to meet the needs at different levels of the target audience, progress on training should be systematically tracked and monitored by creating a State and ULB level training database and tracking mechanism. Record-keeping and manifest forms should be an integral part of a comprehensive septage management programme.

vii) Training centres that cater to the capacity building function of the ULBs, need to incorporate septage management as part of their curricula, as well as deliver stand-alone modules for different stakeholder groups in the State.

8.2 Training Plan: Short Term

Based on the TNA, a short-term training plan has been developed to train various stakeholders in FSSM (Fig. 28).

Figure 8.1: Training Plan

Capacity Building & Training Plan				
No.	**Target Audience**	**Trainings Programs**	**Program days**	**No. of People Trained**
1	Masons	Construction of Septic Tanks and Leach Pit (Basic)	1 days	150
		Construction of Septic Tanks and Leach Pits (Advanced)	2 days	
2	Builders & Contractors	Full Cycle Sanitation Orientation	1/2 day	0
3	Desludging Operators	Full Cycle Sanitation Orientation	1/2 day	30
		Occupational Health & Safety	1/2 day	
4	Private Sector (Treatment Facilities Construction, Operators and Consultants)	Treatment and Reuse	1/2 day	15
5	Sanitary Workers	Full Cycle Sanitation Orientation & Municpality Building Rules	1 day	200
6	Sanitory Inspectors and Supervisors	Full Cycle Sanitation Orientation & Municpality Building Rules	1 day	20
7	Asst. Engineers, Junior Engineers, Planners & Overseers	Full Cycle Sanitation Orientation Orientation & Treatement	1 day	20
8	Senior Engineers & Executive Leadership of ULB	Full Cycle Sanitation Orientationn ,Treatement & Regulations	1.5 days	50
9	7 + 8	Exposure Visit	2 days	25

Source: TNA, May 2016

Based on the results of the above training programmes, as well as in light of the outcomes of the other activities in capacity building and training, e.g., domestic and international exposure visits, orientation-cum-training programmes, etc. Medium-term plans will be prepared.

8.3 Supply side of Capacity Building and Training

There are a number of training and capacity building institutions on urban management and development in India, and in Tamil Nadu. These offer courses on a range of engineering and managerial aspects of water and sanitation management. Since FSSM is emerging new body of knowledge and practice, ready-made courses and modules are being developed in various institutions.

The TNUSSP consortium comprises IIHS, a prospective university, that conducts a number of academic and executive training programmes at the Bangalore City Campus, apart from customised training delivered at client/Government's locations, e.g., State Capitals, etc. CDD Society, a consortium member of TNUSSP, organises training programmes on a range of engineering and related subjects pertaining to DEWATs, Fecal sludge treatment, etc., based out of their Bangalore offices, as well in clients' locations. The Devanahalli FSTP, constructed and operated by CDD Society, also serves as a demonstration–cum-familiarisation site for a range of officers, engineers and decision-makers from different states and cities.

While the TNUSSP Team will prepare and deliver masons' training programmes in the two model cities, it is possible to respond for demand for training programmes elsewhere through the TNIUS, as well as base these out of ITIs, and engineering colleges as well. The TNUSSP provides the opportunity to put together the training modules, and conduct Training of Trainers (ToTs) who can in turn, roll out the training programmes as a part of their scheduled offerings.

The Tamil Nadu Institute for Urban Studies (TNIUS) has been set up to deliver programmes in urban management for GoTN officers, and elected representatives, etc. Apart from TNIUS, Tamil Nadu has network of capacity building, training and educational institutions, that could potentially provide the back-bone for a number of basic and specialised training programmes on urban sanitation as well as FSSM.

A preliminary mapping of training and capacity building institutions in the State is presented in Annexure 9.

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Annexures

Annexure 1: Key Stakeholders Details

Designation	Corporation		Municipalities			Census Town	Town Panchayats						Total
	Tiruchirappalli	Madurai	Kanchipuram	Bhavani	Coonoor	Aruvankadu	Narasimhanaickenpalayam	Periyanaickenpalayam	Kotagiri	Manamadurai	Sriperumbudur	Sankagiri	
City Health Officer	1	1	0	0	0	0	0	0	0	0	0	0	2
Executive Engineer	1	2	1	1	0	0	0	0	0	0	0	0	5
Assistant Executive Engineer	4	2	1	1	0	0	0	0	1	0	0	0	9
Municipal Engineer	0	0	1	1	0	0	0	0	0	0	0	0	2
City Engineer	1	0	0	0	0	0	0	0	0	0	0	0	1
Town Planning Engineer	1	0	0	0	1	0	0	0	0	0	0	0	2
Executive Officer	0	0	0	0	0	0	1	1	1	0	1	1	5
Head Clerk	0	0	0	1	0	1	1	1	1	1	0	0	6
Asst.Commissioner	4	0	0	0	0	0	0	0	0	0	0		4
Commissioner	1	1	1	1	0	0	0	0	0	0	0	0	4
Total	13	6	4	5	1	1	2	2	3	1	1	1	40

Annexure 2: Human Capacity requirement: City-wise

Place	Human Resource (Current)	Suggestions Received During Survey
Tiruchirappalli	Shortage of staff majority in the Public Health sector. Sanitary Inspectors: Only 1/10 of the approved capacity is available at present. Sanitary Supervisors: There is 20–30 per cent shortage. Engineering Wing: The STP operations are mainly done by outsourcing/contract labour. Shortage of middle cadre engineering is also a challenge. Nearly 20 per cent shortage in middle to top level engineering. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new.
Madurai	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Since the vacant posts are not filled there is 20–30 per cent shortage. Sanitary Supervisors: There is 20–30 per cent shortage. Engineering Wing: The STP operations are mainly done by outsourcing/contract labour. Shortage of middle cadre engineering is also a challenge. Nearly 20 per cent shortage in middle to top level engineering. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new.
Kanchipuram	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Since the vacant posts are not filled there is 20–30 per cent shortage. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new.

Place	Human Resource (Current)	Suggestions Received During Survey
Bhavani	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Since the vacant posts are not filled there is 10–20 per cent shortage Sanitary Supervisors: There is 20–30 per cent shortage. Engineering Section: The STP operations are mainly done by outsourcing/contract labour. Shortage of middle cadre engineering is also a challenge. Nearly 20 per cent shortage in middle to top level engineering. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one.
Conoor	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Since the vacant posts are not filled there is 20–30 per cent shortage. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one.
Aravankad	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: The vacant psot is to be filled in. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one.
Narasimhanaicken Palayam	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Since the vacant posts are not filled there is 20–30 per cent shortage. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one. Filling of SI post is very crucial.
Periyanaicken Palayam	Shortage of staff mainly in the Public Health sector. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: a shortage of staff.	Filling of approved and vacant posts are more important than creating new one.

Place	Human Resource (Current)	Suggestions Received During Survey
	Major share of the work is done through SHG.	
Kotagiri	Shortage of staff mainly in the Public Health sector. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one.
Manamadurai	Shortage of staff mainly in the Public Health sector. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one.
Sriperumbadur	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Post is vacant. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one. Filling of SI post is very crucial.
Sankari	Shortage of staff mainly in the Public Health sector. Sanitary Inspectors: Post is vacant. Sanitary Supervisors: There is 20–30 per cent shortage. Sanitary workers: Acute shortage. Major share of the work is done through SHG.	Filling of approved and vacant posts are more important than creating new one. Filling of SI post is very crucial.

Annexure 3: Financial Capacity

Place	Finance (Current)	Suggestions Received During Survey
Tiruchirappalli	Toilets are available; majorly sewers. STPs available. Financial resources are available. It is managed well. Land available.	SBM urban funding; proposed for SMART cities. Tariff revision needed to meet operational expenses.
Madurai	Sufficient toilet facility is not available. Majorly sewers. STPs available. Financial resources are available. It is managed well. Land availability is a concern.	SBM urban funding; selected for SMART cities. Tariff revision needed to meet operational expenses.
Kanchipuram	Partial UGD	HRIDAY city, SBM funding is also available. Tariff revision needed to meet operational expenses.
Bhavani	Partial UGD	SBM funding available. Tariff revision needed to meet operational expenses.
Conoor	On-site. Financial resources are limited. No STP; land is a concern. Toilet facility is sufficient.	SBM funding available; treatment facility to be addressed. Tariff revision needed to meet operational expenses.
Aravankad	Not connected to sewers; majorly on-site; financial resources are very limited. No STP provision; land is a concern	SBM funding available; treatment facility to be addressed. Tariff revision needed to meet operational expenses.
Narasimhanaicken Palayam	Not connected to sewers; majorly on-site; financial resources are very limited. No STP provision; land is a concern.	SBM funding available; treatment facility to be addressed. Tariff revision needed to meet operational expenses.
Periyanaicken Palayam	Not connected to sewers; majorly on-site; financial resources are well managed. No STP provision, but land available.	SBM funding available; STP will be implemented soon. Tariff revision needed to meet operational expenses.

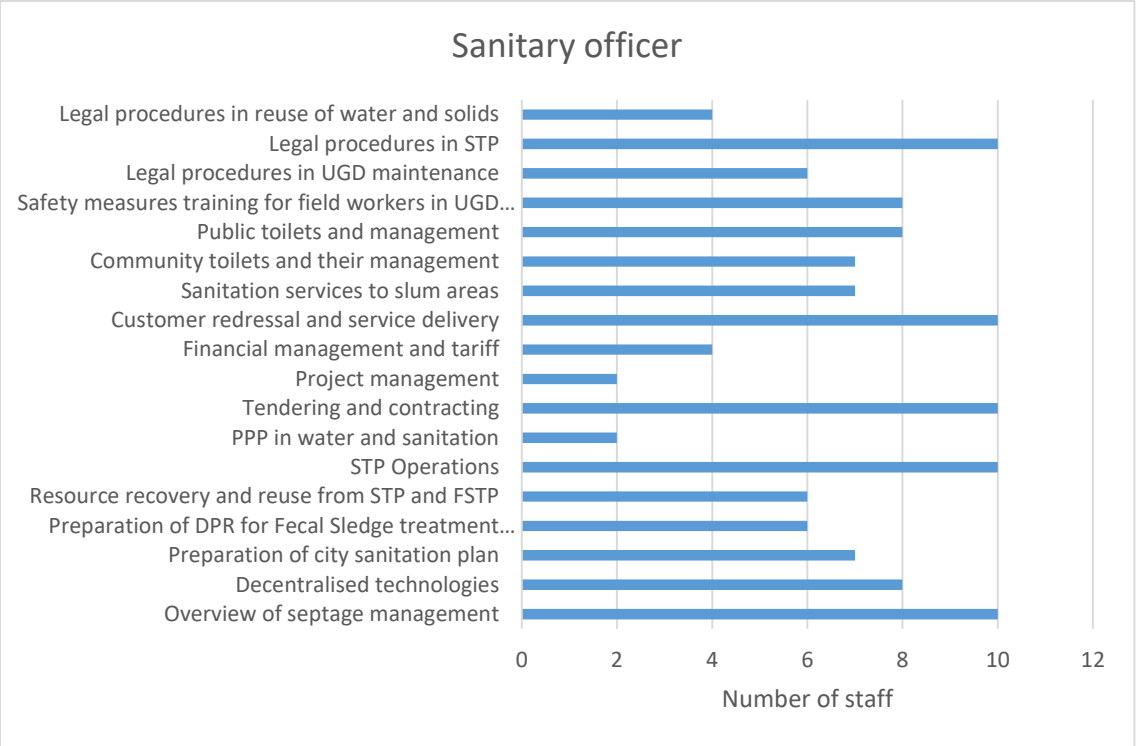
Place	Finance (Current)	Suggestions Received During Survey
Kotagiri	Not connected to sewers; majorly on-site; financial resources are well managed. No STP provision; land is a concern.	SBM funding available; treatment facility to be addressed. Tariff revision needed to meet operational expenses.
Manamadurai	Not connected to sewers; majorly on-site; financial resources are very limited. No STP provision; land is a concern.	SBM funding available; treatment facility to be addressed. Tariff revision needed to meet operational expenses.
Sriperumbadur	Partially connected sewers; majorly on-site; financial resources are very limited. No STP provision.	SBM funding available; STP will be implemented soon. Tariff revision needed to meet operational expenses.
Sankari	Not connected to sewers; majorly on-site; financial resources are very limited. No STP provision; land is a concern	SBM funding available; treatment facility to be addressed. Tariff revision needed to meet operational expenses.

Annexure 4: Public Health Staff: City-wise Detail

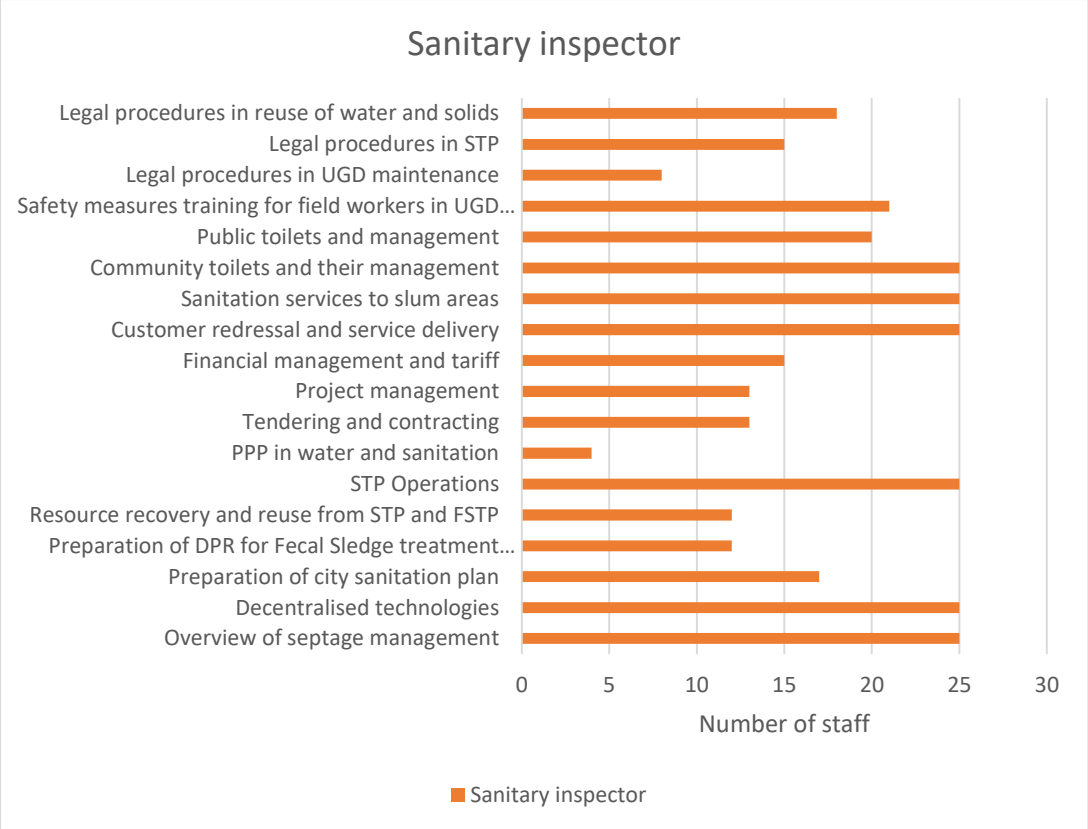
Designation	Corporation		Municipalities			Census To	Town Panchayats						Total
	Tiruchirap	Madurai	Kanchipur	Bhavani	Coonoor	Aruvanka	Narasimh	Periyanai	Kotagiri	Manamad	Sriperumb	Sankagiri	
Sanitary Inspector	7	9	1	2	3	0	0	1	1	1	0	0	25
Sanitary Worker	69	40	4	3	0	2	1	4	3	2	3	4	135
Sanitary Supervisor	40	20	2	2	3	1	1	1	1	1	2	1	75
Sanitary Officer	4	4	1	1	0	0	0	0	0	0	0	0	10
Conservancy Inspector	0	7	0	0	0	0	0	0	0	0	0	0	7
Total	120	80	8	8	6	3	2	6	5	4	5	5	252

Annexure 5: Detailed TNA for Public Health Department

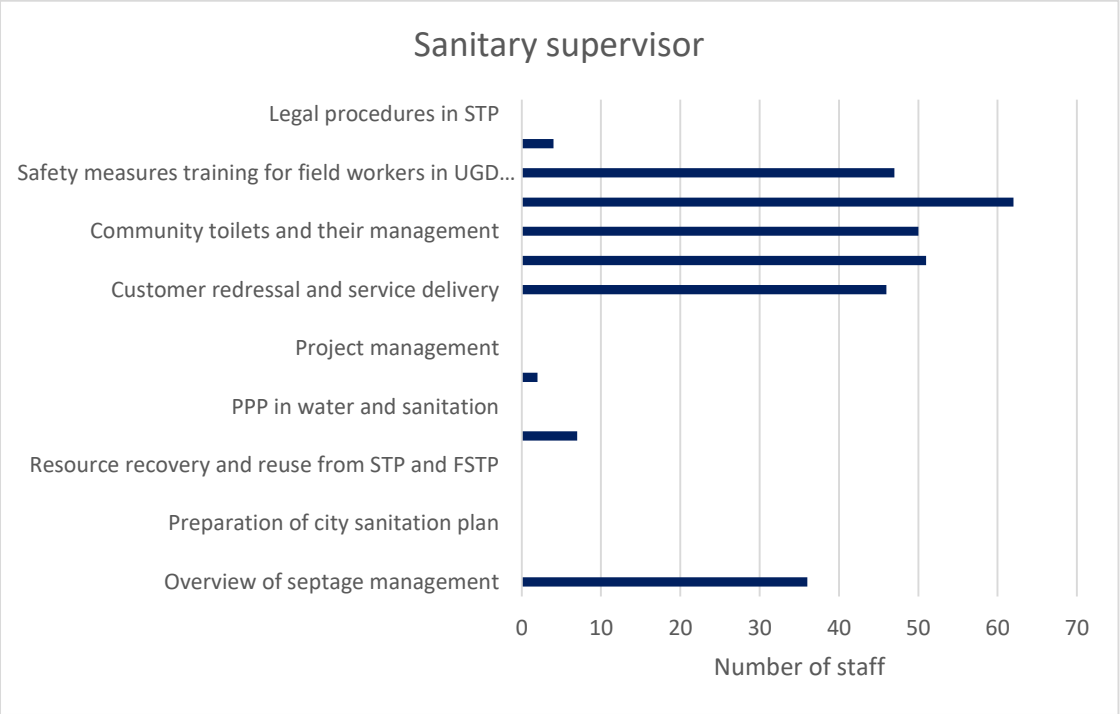
TNA for Sanitary Officers



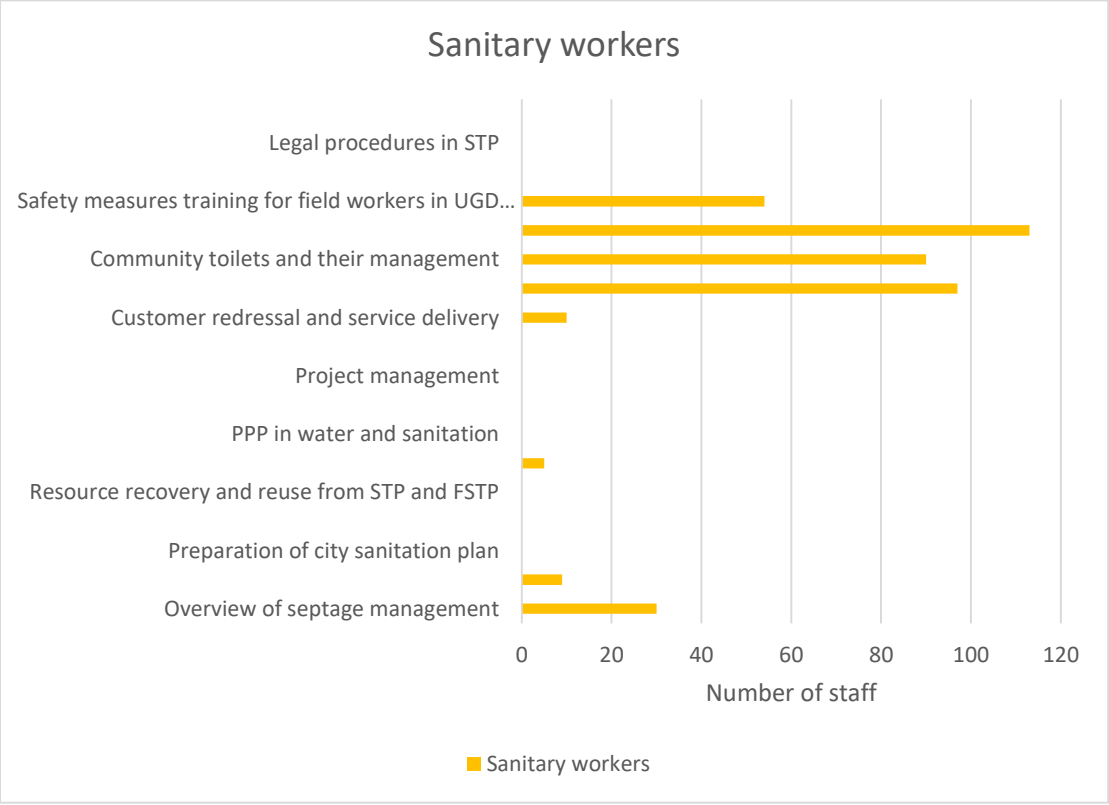
TNA for Sanitary Inspector



TNA for Sanitary supervisor



TNA for Sanitary workers

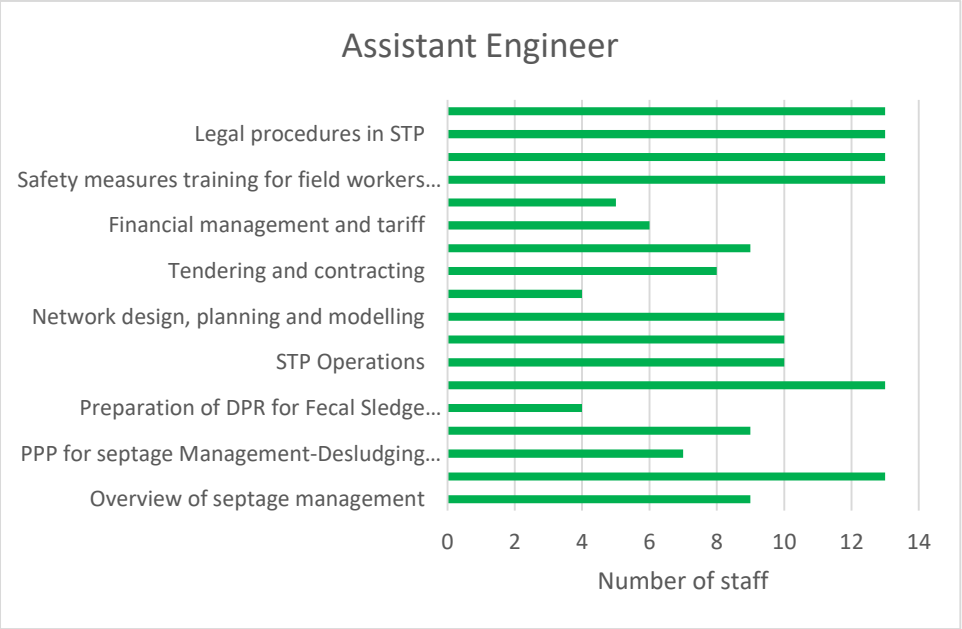


Annexure 6: Detailed TNA Results for the Engineering Staff

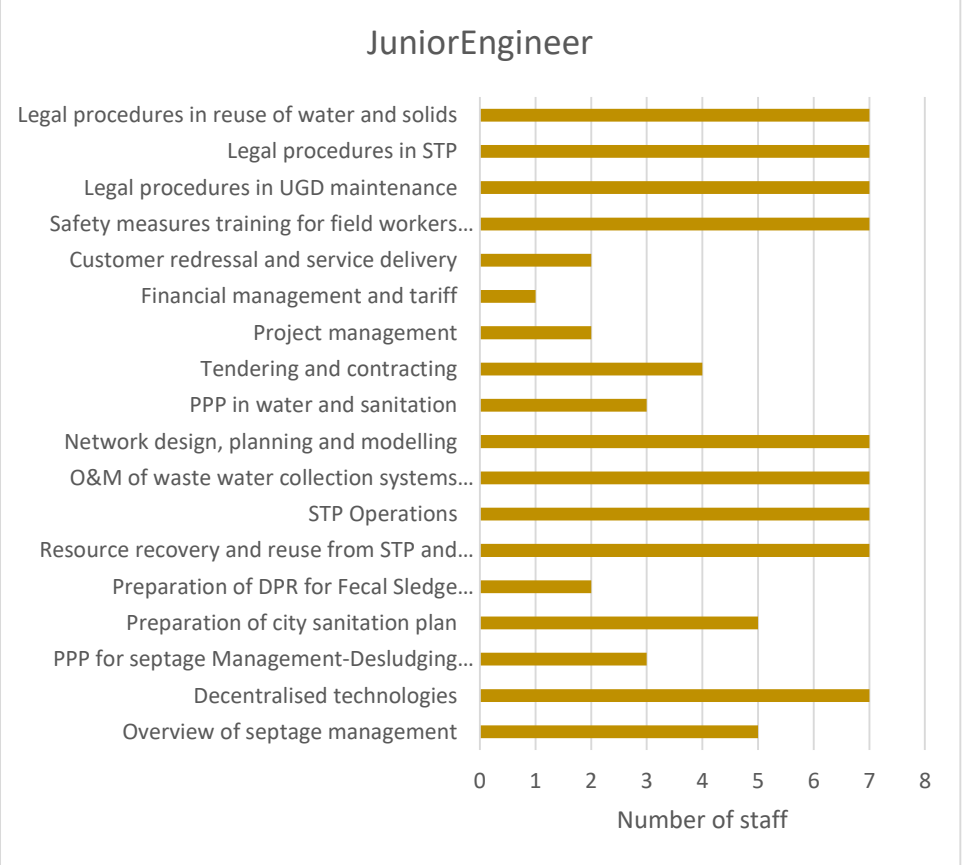
Training area	Number of employees		
	Assistant Engineer	Junior Engineer	Overseer
Overview of septage management	9	5	3
Decentralised technologies	13	7	3
PPP for septage Management-Desludging services, FSTP management	7	3	2
Preparation of city sanitation plan	9	5	3
Preparation of DPR for Fecal Sludge treatment systems	4	2	2
Resource recovery and reuse from STP and FSTP	13	7	3
STP Operations	10	7	3
O&M of wastewater collection systems and treatment plants	10	7	3
Network design, planning and modelling	10	7	3
PPP in water and sanitation	4	3	1
Tendering and contracting	8	4	3
Project management	9	2	1
Financial management and tariff	6	1	0
Customer re-dressal and service delivery	5	2	2
Safety measures training for field workers in UGD maintenance	13	7	3
Legal procedures in UGD maintenance	13	7	3
Legal procedures in STP	13	7	3
Legal procedures in reuse of water and solids	13	7	3

Annexure 7: Category-wise TNA of Engineering Staff

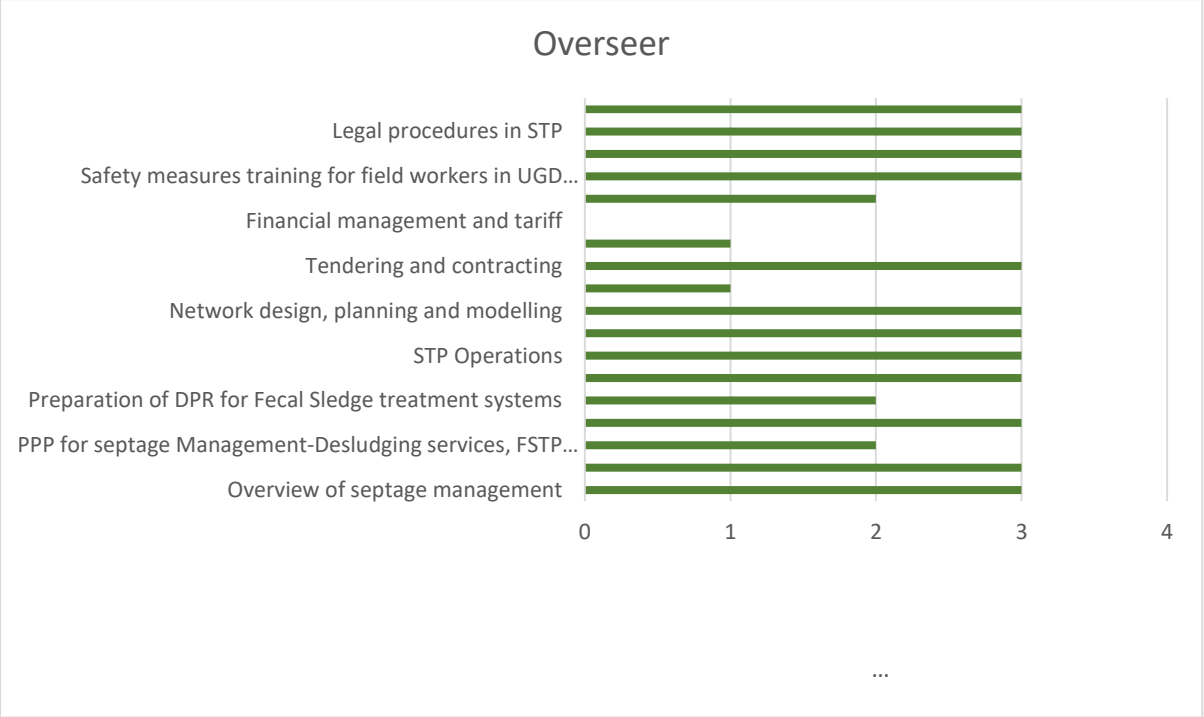
Assistant Engineer



TNA for Junior Engineer



TNA for Overseer



Annexure 8: TNA instruments: Semi-structured Interview

About the Programme:

The GoTN has been a pioneer in not only in attempting improved standards of public health by taking steps to stop open defecation, but has also prioritised the full sanitation chain, including the strengthening of septage management as an economical and sustainable complement to network-based systems. The Chief Minister of GoTN articulated the need to address sanitation, - following this, the 'Namma Toilet' ('Our Own Toilet') or Public Toilets were rolled out in urban areas. The GoTN issued Septage Management Operative Guidelines in September 2014.

In a bid to strengthen sanitation in urban areas, a new programme TNUSSP was launched in November 2015. The TNUSSP supports the GoTN and select cities in making improvements along the entire urban sanitation value chain. The TNUSSP is being implemented by a consortium of organisations led by the Indian Institute for Human Settlements (IIHS), in association with CDD Society, Gramalaya and Keystone Foundation.

BMGF is supporting the GoTN to achieve the Sanitation Mission of Tamil Nadu by helping set up a TSU within the Municipal Administration & Water Supply Department. This Unit supports State-wide improvements in urban sanitation, as well as aims to demonstrate innovations along the entire sanitation chain in two selected model urban locations of Trichy Municipal Corporation, and Periyanaicken-palayam and Narasimhanaicken-palayam (two TPs in Coimbatore District).

Given that improvements need to be made in the entire urban sanitation chain, a Training Needs Assessment is essential for capacity building and training. We will be grateful for your views and suggestions in this regard.

Confidentiality

The information shared in this interview will be used only towards the analysis of the TNA for the TNUSSP and shall not be shared for any other purpose. You may choose to not respond to any question, if you so wish.

Individual details:

1.1	Name:	
1.2	Age:	< 30 | 30–40 | 40–50 | > 50
1.3	Sex:	
1.4	Contact details:	
	1.4.1. Email:	

	1.4.2. Mobile:	
	1.4.3. Phone:	
1.5	City	
1.6	Department	
1.7	Designation	
1.8	Level/grade	
1.9	Education:	Ph.D | Masters | Bachelors/Poly-technic | Intermediate/School Others (please specify)

Job related details:

1.1. Years of experience in Agency/Department/ULB
   a) < 5 years
   b) 5–10 years
   c) 10–20 years
   d) 20–30 years
   e) > 30 years

1.2. Please share details about your last two postings.

1.3. How long have you been in your current role?

1.4. Are you on deputation? If yes, please share details of parent department.

1.5. To whom do you report to in your current roles and responsibilities?

1.6. What are your key responsibilities at work?
   Probe for engineering, administrative and managerial tasks.

1.7. What are the tasks that can be said to be pertaining to 'urban sanitation' according to you? Record verbatim first, and then probe.

1.8. Please list out the main tasks or activities that you perform.

1.9. How much of your time is spent on urban sanitation?
   {Prompt if responses are not easily forthcoming}

   i. Garbage collection, transport and disposal (Solid Waste Management)

ii. Street sweeping and other cleanliness activities
iii. Cleaning/clearing of drains
iv. Management/regulation of toilets in households and other properties
v. Checking of disposal of toilet wastes in to drains and open areas
vi. Management/regulation of community toilets
vii. Management/regulation of public toilets
viii. Cleaning and un-clogging of sewer manholes or other structures with human excreta
ix. Management/regulation of de-sludging trucks and personnel associated
x. Management/regulation of human excreta waste disposal or treatment sites
xi. Other human excreta management tasks

1.10. What support do you need from your supervisor or other superiors, to perform your responsibilities?

1.11. What support do you need from your subordinates to perform your responsibilities?

1.12. What support do you need from other departments to perform your responsibilities?

1.13. What are your strengths while performing your job?

1.14. What are the difficulties you face in doing your job?

1.15. What are the areas for improvement for you to perform better in your job?

Perceived Training Needs:

1.16. What are the areas in which you would like to get trained on?
Write Top 5 areas: (Please see Annex A)

S. No	Area	Topic	Benefit/Use
1			
2			
3			

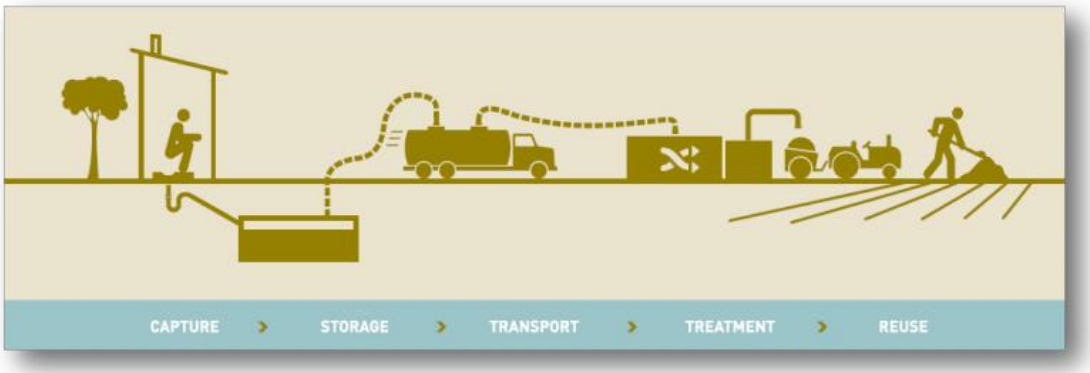
4			
5			

1.17. Training programmes attended during your service.
Please mention the last 5 programmes.

Sl. No	Year	Place	Topic	Duration	Institution	How were you able to benefit from this training? Any follow-up done?
1						
2						
3						
4						
5						

Sector Awareness:

This section focusses on your awareness on current best practices in the area of Urban Sanitation.



1.18. With reference to the above image, which parts do you feel competent and knowledgeable about?

1.19. Are you aware of different options/technologies available for different parts of the chain shown above? Can you name a few?

1.20. What are the typical flaws in septic tank design and construction?

1.21. How should the effluent coming out from septic tank be treated before being let out to the environment?

1.22. How should the sludge in septic tank be handled or disposed?

Are you familiar with different issues, rules and solutions pertaining to?

Sl. No.	Part of Sanitation Chain	Issues	Rules and Regulations	Solutions
1	Safe containment of excreta: design and maintenance of toilets, pits, septic tanks, etc.			
2	Safe conveyance: maintenance and de-sludging of septic tanks, sewer maintenance, etc.			
3	Safe disposal post treatment: STPs, sewage treatment facilities, etc.			

1.23. Are you aware of the Septage Management Operative Guidelines issued by GoTN?

Yes | No

If yes, discuss some of the key features of the Guidelines that the respondent is familiar with.

Training Areas and Topics:

Sl. No	Area	Code	Topics
1	Septage Management	SP1	Overview of Septage Management
		SP2	Decentralised Treatment Technologies
		SP3	PPP for Septage Management: de-sludging services, FSTP Management
		SP4	Preparation of City Sanitation Plan including Septage Management
		SP5	Preparation of DPR for Fecal Sludge Treatment Systems
		SP6	Resource Recovery and Reuse from STP and FSTP
2	Sewerage Management	SW1	STP Operations
		SW2	O & M of waste water collection systems and treatment plants
		SW3	Network Design, Planning and Modelling

Sl. No	Area	Code	Topics
3	Project Finance and Management	PF1	PPP in water and sanitation
		PF2	Tendering and Contracting
		PF3	Project Management
		PF4	Financial Management and Tariffs
4	Citizen awareness and engagement	CA1	Customer redressal and service delivery
		CA2	Sanitation services to slum areas
		CA3	Community Toilets and their Management
		CA4	Public Toilets and their Management

Checklist for Interviews with Key Stakeholders

The following set of discussion points and questions are to be used as a guide to discuss with key officers in DMA, DTP, selected TPs, municipalities, and corporations.

Introduction to TNUSSP

The GoTN has been a pioneer in not only in attempting improved standards of public health by taking steps stop open defecation, but has also prioritised the full sanitation chain, including the strengthening of septage management as an economical and sustainable complement to network-based systems. The Chief Minister of GoTN articulated the need to address sanitation in the coming years following this, the 'Namma Toilet' ('Our Own Toilet') or Public Toilets were rolled out in urban areas. The GoTN issued Septage Management Operative Guidelines in September 2014.

In a bid to strengthen sanitation in urban areas, a new programme TNUSSP was launched in November 2015. The TNUSSP supports the GoTN and select cities in making improvements along the entire urban sanitation value chain. The TNUSSP is being implemented by a consortium of organisations led by the Indian Institute for Human Settlements (IIHS), in association with CDD Society, Gramalaya and Keystone Foundation.

BMGF is supporting the GoTN to achieve the Sanitation Mission of Tamil Nadu by helping set up a TSU within the Municipal Administration & Water Supply Dept. This Unit supports State-wide improvements in urban sanitation, as well as aims to demonstrate innovations along the entire sanitation chain in two selected model urban locations of Trichy Municipal Corporation, and Periyanaicken-palayam and Narasimhanaicken-palayam (two TPs in Coimbatore District).

The TSU has specialists in the areas of planning, engineering, capacity building, knowledge management, behaviour change and communication, monitoring, learning and evaluation. These specialists support the MAWS, cities and towns to adopt sustainable sanitation innovations. The DTP is the co-ordinating agency for the Programme.

The first phase of the program will be for two years (Nov 2015 to Oct 2017).

Training Needs Assessment

The TNUSSP focusses on full-cycle sanitation. Given the gaps as highlighted above, a strong capacity building component has been envisaged as part of the programme. Before a training plan is developed and implemented, a Training Needs Assessment Study has been initiated to identify current and future capacity gaps. This will help in focussing the training interventions to produce desired outcomes. The focus of the current exercise is on the full chain of human excreta management—especially on on-site installations like septic tanks, regular de-sludging and safe conveyance, and their safe disposal after treatment (called FSM or Septage Management).

(Let discussions on UGD/sewers and SWM be there but try bringing it back to the above as much as possible during the course of the discussions.)

Questions:

For Commissioners/EOs:

1. Where does the city stands in terms of its importance—economic/regional, etc. What have been the main drivers and priorities of the ULB at present?

2. Which are the divisions/departments/cells in the ULB with responsibility for:

i. Water supply
ii. Solid waste management
iii. Drainage
iv. Sewerage
v. Sanitation

(Please collect Organisation structure and staffing details, and refer to relevant sections of the Acts and rules thereunder regarding these.)

3. {Trace the full chain of urban sanitation first, see if there is awareness, data on what happens to excreta across the chain, etc., can also include sewerage/UGD in this. Follow up with a discussion on the following points, one by one}

4. In your ULB, what are the key issues pertaining to safe containment, conveyance and treatment/disposal of human excreta?

5. What are the key gaps in rules and regulations for these?

6. What are the technologies and solutions for resolving the above issues and gaps?

S. No	Part of Sanitation Chain	Issues	Gaps in Rules and Regulations	Solutions (technologies or other)
1	Safe containment of excreta – design and maintenance of toilets, pits, septic tanks, etc.			
2	Safe conveyance: maintenance and de-sludging of septic tanks, sewer maintenance, etc.			
3	Safe disposal post treatment: STPs, sewage treatment facilities, etc.			

7. What are the other key aspects that need strengthening in order for the city to achieve OD-free status and to dispose of 100 per cent of its human excreta safely after treatment?

(Prompt for institutional, financial, social, and other issues).

1.
2.
3.
4.
5.

8. According to you, what is the level of success so far in implementing the Septage Management Operative Guidelines brought out by GoTN in September 2014?

See if the candidate is aware of this, and list whether any action has been initiated on this?

9. What are the current initiatives/programmes/schemes that are being implemented to improve the sanitation situation in the city?

i. Extending access to toilets and addressing Open Defecation
ii. Improved sewerage and treatment
iii. Improved de-sludging of septic tanks and treatment/safe disposal
iv. Improved SWM
v. Improved drainage management
vi. Other related aspects

1.
2.
3.
4.
5.

(Prompt for SBM-Urban, AMRUT, and other GOTN schemes and grants for the above)

10. What are the key organisational gaps in the ULB to take care of sanitation in a comprehensive manner in your ULB?

11. What measures, specifically for capacity building, can be taken to address sanitation questions?

{Please organise discussions around the following:}

i. Current staff: what are the improvements needed in their skills and capacities?
ii. What kind of new positions and personnel are needed in managing sanitation well?
iii. What rules and regulations are needed, or existing ones strengthened?
iv. What systems and procedures are needed?
v. What facilities and infrastructure are needed?
vi. What finances are needed for capital and O&M?
vii. Tariffs
viii. Engagement with vendors, de-sludging operators, and other stakeholders
ix. Social/customer interface
x. Needs of special areas and communities, e.g., in Slums, industries, etc.
xi. Others

12. What is the percentage shortfall in staff you see at this time in the urban sanitation function?

i. Implementing Municipal Building Rules (including toilets) for approvals, and verification at completion stage
ii. Regulation of on-site installations, i.e., toilets to ensure that these are connected to UGD/sewers or to pits and septic tanks, and these are not leaking fecal matter into open areas or drains untreated
iii. Personnel for operating de-sludging trucks that the ULB owns and manages
iv. Personnel for regulating private sector de-sludging trucks
v. Personnel for monitoring/maintaining treatment sites and facilities (for human excreta)

{Depending on the respondent, we can help construct a mapping of existing personnel and proposed based on perceived shortfall. Let us see how dependable these estimates turn out to be}.

13. Are you in-sourcing or outsourcing any work at this time? Please describe the nature of work.

14. Are there any functional overlaps with other departments/organisations?

15. How do you think capacity building may assist in developing, testing, and scaling up new techno-managerial approaches such as septage management and non-UGD methods to improve sanitation management at the City-level?

16. Where do you see major gaps with respect to capacity (human resources) to address the full cycle of sanitation?

i. Knowledge/Understanding

ii. Skill sets
iii. Attitude/Behaviour issues

17. Do you have written Job Descriptions/Key Result Areas for your key personnel?

Yes | No

18. If not, what are the reference points of ensuring that staff do their work satisfactorily?

19. What has been the record of trainings in the past? Who provides training, where, etc.

20. What do you think is the willingness of your staff to attend training programmes?

18. Do you have a Citizen's Charter that assures service levels? What kind of RTI requests do you receive?

19. What are the key constraints and difficulties in your organisation performing well?

20. What can be done to remedy these deficits?

Annexure 9: Capacity Building and Training Institutions in Tamil Nadu

Tamil Nadu is one of the more progressive states in terms of education levels and literacy rates and ranks high in the Nation. The Gross Enrolment Ratio (GER) for Tamil Nadu is higher than most states in India for both primary and upper education. Tamil Nadu has 37 universities, 552 (in 2014) engineering colleges and 1150 arts colleges.

There are various mediums available to build capacities in the form of formal institutions, as presented in Table (1):

Table 1: Mediums of Education

Forms of Presence	University • State • Private • Deemed	College • Affiliated • AICTE approved	Service • Online • Study centre
Courses Offered	Professional • Conventional (Engineering, Medicine, Law) • Vocation based (IT, BFSI, Retail.)	General • Arts, Science, Commerce	
Modes	Campus	Distance	

Tamil Nadu Directorate of Technical Education (TNDTE) under the control of the Tamil Nadu Higher Education Department deals with diploma, post-diploma, Degree, Postgraduate courses and research programmes. It also regulates the establishment of technical institutions including commerce institutions such as typewriting, shorthand, and accountancy.

Objective

In order to strengthen the capacity for urban sanitation in the state of Tamil Nadu, the TNUSSP team mapped and assessed the existing capacity of the state and the various institutions that exist, the courses they offer and the audiences that they cater to.

The method used was secondary research on colleges, universities, special research institutions, public-private and civil society organisations that cater to delivering or building capacities of people in areas of environmental health, sanitation, hygiene, water and any relevant broad areas related to urban studies. It was identified by performing a simple search on 'google' search-engine using keywords such as TN institutions, environmental health institutions in Tamil Nadu, Sanitation and hygiene institutions and organisations. The search results were short-listed based on top hits and information from the National Skill Development Corporation website, Directorate General of Training Website, Tamil Nadu

Government websites such as the Ministry of Urban development, Advanced training institute, etc.

Findings

Of the institutions that are available in Tamil Nadu, those that are relevant to this study fall under universities that offer courses in Engineering such as Environmental engineering, Hydrology and Water Resources and Public Health as given in Table 1, 2, 3 and 4 and general courses that are available in water sanitation and in urban studies.

Vocational Education in Tamil Nadu:

Apart from these, Tamil Nadu has a strong infrastructure for vocational education across districts compared to other Indian states. There are 62 government ITIs, of which 12 are exclusively for women, one is for Scheduled Castes and one is for Scheduled Tribes. The government ITIs offer 39 engineering trades and 17 non-engineering trades to students in the 14-40 age group. The total seating capacity at government ITIs is 21,736. There is an 18 per cent reservation of seats for Scheduled Castes and 1 per cent for Scheduled Tribes. 51,000 applications are received each year. Courses offered are Mechanical, Electrical, Pump Mechanic, Fitter, Wireman, Welder, Cutting & Sewing, Steno English, Ceramics, Food processing, Environmental Protection/conservation Technology, Tractor Mechanical, Housekeeping, Steward, Front Office, Leather goods maker, Draughtsman, Turner, Information Technology, etc., of which Environmental Protection/Conservation Technology is relevant to environment.

Private Sector participation:

According to Ernst and Young (EY) report of Private sector participation in Indian higher education, there are 600+ university and university level institutions in India of which 46 per cent constitute state universities. The gross enrolment ratio for higher education in Tamil Nadu stands at 17.60 which is higher than the national average. Access, equity, and quality are great challenges and pushes the need for private sector participation. A number of private players have entered the skill development space in Tamil Nadu also, particularly in the IT sector. Datamatics was one of the earliest players to enter this space in the 1990s. Other large skill training providers include NIIT, Aptech, CSC, Brilliant, and Datapro. There are organisations such as TeamLease that provide human resource services in the organised sector to various industries and they operate out of Chennai among other regions in India. They are one of largest temporary staffing companies in India according to CRISIL in terms of revenue and employees. There are several other staffing and consulting services organisations in Tamil Nadu and most are concentrated in major cities that provide services for professional placements and placements overseas like Skillwise, Genie.

Other Affiliated Organisations:

Centre for Technologies in Public Health:

The Centre has its presence in Thanjavur in Tamil Nadu and is involved in research and capacity building initiatives in the field of public health apart from research, design and providing technology solutions.

Institute of Town Planners, Regional Chapter, Chennai:

The Institute of Town planners is dedicated to the field of town planning with the objective to promote planned, economic, scientific and artistic development of towns, cities and rural areas, to be involved in teaching and workshops and ascertain and notify the law and practice relating to town planning. It offers UG, PG, and other courses.

Madras Institute of Development Studies, Chennai:

The MIDS was founded in 1971. In 1976 the Government of India through the Indian Council of Social Science Research (ICSSR) reconstituted MIDS as a National Institute in March 1977. MIDS undertakes developmental problems, conducts seminars and conferences on development issues concerning Tamil Nadu. It also aims to foster inter-university co-operation among social scientists of the universities of the four southern states and works to promote research.

Government Training Institutes:

Central Training Institute for Instructors was established in 1962 with the assistance of ILO to train vocational instructors for Industrial Training. This is located in Guindy, Chennai.

Advanced Training Institute, Chennai:

The Advanced Training Institute Chennai was established in the year 1968 under Directorate General of Employment & Training (DGE&T), Ministry of Labour & Employment, Government of India, with the assistance from United Nations Development Programme (UNDP), the International Labour Organisation (ILO) to impart training and updating the skills of engineers, supervisors, technicians, executives of industrial personnel and faculties of educational institutions through courses of short duration conducted in modules and tailormade courses as per the specific needs of their Industries, Government Establishments, PSUs , Technical Institutions. It is located at 32-acre land at Guindy.

TWAD Board:

The Hydrogeology wing of TWAD Board has the responsibility of scientific source identification works in the field of exploration, exploitation, assessment of water sources. It is also committed to ensure conservation and management of the water resources for the sustainability of sources to provide protected, potable water supply to the rural and urban population. It offers training courses to staff on deputation basis at Anna University, Chennai.

Tamil Nadu Institute for Urban Studies (TNIUS):

The institute was constituted in the year 1981, to impart training to ULBs, to conduct research studies, and to conduct consultative services in urban development and administration. It is a premium research Institute in urban management promoted by the Government of Tamil Nadu. The managing committee consists of members from MAWS, CMA, Director, TNIUS and Members. It currently offers courses for sanitary inspectors, officers, in-service training, PG Diploma (Urban Financial Accounting and Management, Solid Waste Management). The centre is located in Coimbatore.

Tamil Nadu Agricultural University (TNAU):

The water technology centre set up at the Tamil Nadu Agricultural University as part of one of the southern wings for teaching and research has functions including waste water management, water stress management, and groundwater management among others.

The Government of Tamil Nadu:

The Government of Tamil Nadu's department of Employment and Training provides coaching and employment opportunities for eligible candidates through their portal and through their offices.

Specific Courses by Ministry of Urban Development:

Government of India: Ministry of Urban Development offers the Public Health Engineering (PHE) Training Program. Central Public Health & Environmental Engineering Organisation (CPHEEO), the technical wing of the Ministry of Urban Development and Poverty Alleviation made efforts to launch and promote PHE Training Programme.

1. Long Term Courses: Post Graduate (M. Tech/M. E course): Anna University

24 months (4 Semesters) in Public Health Engineering OR Environmental Engineering. The Government provides training to in-service engineers and para engineering staff of the various State Public Health Engineering Departments, water supply and sewerage boards, urban local bodies, etc., in 12 recognised institutes.

2. The duration of Short Term Course is three months and is conducted by Anna University, Chennai, Tamil Nadu

3. Refresher courses are offered in:

1. Centre for Environmental Studies, Anna University, Guindy Campus, Chennai–600025.
2. TWAD Board, TWAD House, 31, Kamarajar Salai, Chennai–600005
3. Public Health & Preventive medicine, Institute of Public Health, Poonamallee, Chennai–600056
4. Metro Water Training Centre, Chennai Metropolitan Water Supply and Sewerage Board, No. 56, Raji Street, Ayanavaram, Chennai–600023

Non-Government Organisations:

1. The Gandhigram Trust, Dindigul: http://www.gandhigram.org/
   It works on enhancement of socio-economic status of village community through interventions in health, education, social welfare, livelihood and extension services. The Gandigram institute of rural health and family welfare trust is one among six, central training institutes of the country.

2. Gramalaya, Trichy: http://www.gramalaya.in/
   Gramalaya has worked in the field of water and sanitation, waste water management and good sanitary practices since its inception in 1987. It encourages community participation and engagement and enables the communities to work in the projects by being a part of the implementation process.

3. Scope, Trichy http://www.scopetrichy.com/
   Scope, an NGO established in the year 1986 has worked in the field of sanitation and has concentrated on building toilets for the local community. The scope has constructed over 15000 flush pits and pour pit latrines. Over the last 5 years, Scope has constructed over 5000 Ecosan toilets in Tsunami hit coastal regions of Tamil Nadu among others.

4. Wash Institute (Water, Sanitation and Hygiene Institute) - http://www.washinstitute.org/

   WASH has established its formal course centre in Dindigul district in Tamil Nadu. It offers the following courses at Kodaikanal:
   - One-year PG diploma in environmental sanitation science course
   - One-year certificate course on capacity building for health workers

   The courses are affiliated to Madurai Kamaraj University.

5. DHAN Foundation, Madurai: http://www.dhan.org/
   The Development of Humane Action foundation looks to build people and institutions through scalable innovations to help reduce poverty and enable self-reliance. Sanitation, safe drinking water, and good health are some of the priorities among several initiatives.

6. EcoPro, Auroville: http://www.ecopro.in/
   EcoPro contributes to an ecologically sound management of natural resources, primarily of water and soil. They offer training in Effective Microorganisms (EM) technology, sometimes in the context of seminars and workshops in organic farming and urban gardening, sanitation, and ecosan, wastewater treatment technologies, composting and municipal solid waste management, and sustainable management of water and natural resources.

7. Leadership through Education and Action Foundation (LEAF Society), Namakkal: http://www.leafsociety.in/

   LEAF society strives to create equal opportunities for the marginalised and vulnerable communities by implementing water & sanitation projects in five villages with support from ARGHYAM to bring an attitudinal shift & behavioral change among most vulnerable and marginalised communities.

8. Arghyam: http://www.arghyam.org
   Arghyam's alliance for water and sanitation initiative in Tamil Nadu works towards the Total Sanitation campaign and aims to increase the access to water and sanitation in poor communities in Tamil Nadu by implementing the Gramalaya Model. It also aims to build the capacities of other organisations to work in the water and sanitation sector.

9. MFI (GUARDIAN): www.guardianmfi.org
   GUARDIAN works towards promoting household water and toilet facilities under water credit, providing technical support for the creation of affordable watsan (water & sanitation) infrastructure, involving like-minded NGOs, MFIs, and financial institutions for the cause of watsan promotion and creating a healthy environment.

Gap Analysis:

From the secondary research, we note that there are nearly 30 colleges offering the course of environmental engineering and about 7 offering public health. This includes both, public and private institutions. There are long term, short term and refresher courses offered to officers on service by the Municipal of Urban development along with certificate courses. Other centers that offer courses concentrate mostly on-demand courses and vocation based training and do not offer courses in sanitation, water management or urban planning or studies. Several civil society organisations are involved in working in this sector and also offer workshops and models and conduct research in the field. Although there is a presence from the Government, TNIUS is the sole organisation which looks to build the capacities of other organisations and officers in urban planning and research and this organisation also offers limited courses to a limited audience. The strength in Tamil Nadu lies in the presence of the number of private, public and the vocational courses that are present but these courses are not focussed towards offerings in specialised training in sanitation or hydrology.

Recommendations:

In order to build the capacity in the state in the field of water sanitation and urban studies, the following are the recommendations:

- To have courses focus on sanitation, public health, hydrology and look at means of improving enrollments in these courses
- Have specialised courses in urban planning
- Identify various stakeholders, provide training at different levels, improve and provide vocation—skill based training—related to sanitation
- Have more organisations participate in sanitation and provide for capacity building of these organisations through knowledge sharing
- Improve the network of organisations and civil society organisations participating in the sector and build partnerships to work together
- Strengthen capacities of existing organisations to conduct more courses and to account for more students, officers and provide better bandwidth of courses

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6. Ernst and Young – Reports. http://www.ey.com/in/en/industries/india-sectors/education (accessed 3 January 2017)
7. Tamil Nadu Colleges. http://www.colleges-in-tamilnadu.com/coursedetails/ (accessed 2 January 2017)

Sl.No	Table 1 : List of Engineering Colleges that offer Environmental Engineering courses
1	Aarupadaiveedu Institute of Technology, AVIT, Kanchipuram
2	Adhiparasakthi Engineering College, Melmaruvathur
3	Adhiyamaan College of Engineering, Hosur
4	Alagappa Chettiar (AC) College of Engineering and Technology, Karaikudi
5	Anna University: College of Engineering, Chennai
6	Anna University Trichy: BIT campus
7	Abdul Hakeem College of Engineering and Technology
8	Bharath Institute of Science and Technology, Chennai
9	Coimbatore Institute of Technology, Coimbatore
10	Dr. MGR Educational and Research Institute
11	Erode Sengunthar Engineering college
12	Excel Engineering College, Salem
13	Government College of Technology, Coimbatore
14	Gnanamani College of Engineering, Namakkal
15	Hindustan University, Chennai
16	Kalasalingam University, Krishnankoil
17	MAM College of Engineering (MAMCE), Tiruchirappalli
18	Mahendra Engineering College, Salem
19	National Institute of Technology (NITT), Tiruchirappalli
20	Periyar Maniammai University, Thanjavur
21	Ponnaiyah Ramajayam Institute of Science and Technology, Thanjavur
22	PSNA College of Engineering and Technology, Dindigul
23	SRM School of Civil Engineering
24	Sathyabama University, Chennai
25	Tagore Engineering College, Chennai

Sl.No	Table 1 : List of Engineering Colleges that offer Environmental Engineering courses
26	Tanjore Main Road, National Highway 67, Tiruchirappalli
27	Thiagarajar College of Engineering, Madurai
28	VIT University (Formerly Vellore Institute of Technology), Vellore
29	Vinayaka Mission Variyar Engineering College, Salem
30	Vinayaka Mission University, Salem

Sl.No	Table 2:List of Colleges that offer courses in Public health:	
1	Christian Medical College	Vellore
2	Indian School of Business Management and Administration	Chennai
3	National Institute of Epidemiology	Chennai
4	SRM University	Kanchipuram
5	Dr. MGR Medical University (Dip/MPH)	Chennai
6	Madras Medical College (Dip)	Chennai
7	Sri Ramachandra Medical College and Research Institute(Dip)	Chennai

Sl.No.	Table 3:Hydrology and Water Resources Engineering	
1	Anna University	Chennai
2	Bharath Engineering College	Chennai
3	National Institute of Technology	Trichy
4	SASTRA University	Thanjavur

Sl.No.	Table 4: Water Resource Engineering	
1	Anna University	Chennai