



Ministry of Housing and Urban Affairs
Government of India

SUSTAINABLE CITIES INTEGRATED APPROACH PILOT IN INDIA

Training and Assistance Need Analysis Report

2020-21





Ministry of Housing and Urban Affairs
Government of India

SUSTAINABLE CITIES INTEGRATED APPROACH PILOT IN INDIA

Training and Assistance Need Analysis Report

For the provision of services and activities related to the delivery
of tailored training and relevant capacity building activities
to city managing authority of Jaipur

Component 3:

Partnerships, Knowledge Management
and Capacity Building

2020-21

JAIPUR



TITLE

SUSTAINABLE CITIES INTEGRATED APPROACH PILOT IN INDIA
Training and Assistance Need Analysis Report for Jaipur

PUBLISHER

National Institute of Urban Affairs, Delhi

PARTNERS

United Nations Industrial Development Organisation
Jaipur Municipal Corporation

Copyright © NIUA (2021)
Year of Publishing 2021

PROJECT TEAM

Ms. Paramita Datta Dey, Team Lead
Mr. Kaustubh Parihar, Project Associate
Ms. Tavishi Darbari, Research Associate
Ms. Sonali Mehra, Research Associate
Mr. Gaurav Thapak, Research Associate

DESIGN TEAM

Mr. Deep Pahwa, Creative Lead
Mr. Devender Singh Rawat, Senior Design Associate
Mr. Bhavnesh Bhanot, Senior Design Associate
Mr. Tehan Katar, Graphic Designer
Ms. Preeti Shukla, Design Associate

DISCLAIMER

While every effort has been made to ensure the correctness of data/information used in this report, neither the authors nor NIUA accept any legal liability for the accuracy or inferences drawn from the material contained therein or for any consequences arising from the use of this material. No part of this report may be reproduced in any form (electronic or mechanical) without prior permission from or intimation to NIUA.

CONTACT

National Institute of Urban Affairs
1st and 2nd Floor Core 4B,
India Habitat Centre,
Lodhi Road, New Delhi 110003, India
Website: www.niua.org
E-mail: pdey@niua.org

*Note- In this report Used Water is referred to as Wastewater

Acknowledgment

We are thankful to the Ministry of Housing and Urban Affairs (MoHUA), Government of India and the United Nations Industrial Development Organization (UNIDO) for giving us the opportunity to be a part of the SC-IAP Project.

We would like to make a special mention of Shri Durga Shanker Mishra, Secretary, MoHUA, Shri Kamran Rizvi, Additional Secretary, MoHUA and Shri Binay Kumar Jha, Director, SBM-U, MoHUA for their invaluable guidance at every step. We also wish to acknowledge the efforts of Mr. Rene van Berkel, Ms. Katarina Barunica Spoljaric, Mr. Joshua Gallo, and Mr. Tomasz Pawelec, Mr. Nand Pal Singh and Ms. Manasa Suresh from UNIDO for continuous supervision throughout the process.

The journey of TANA in the challenging times of COVID-19 pandemic has been possible due to the commitment and flexibility of the officials of the municipal corporations of Guntur, Vijayawada, Mysuru, Bhopal and Jaipur. We extend our sincere gratitude to each one of them.

We would like to make a special mention of the commissioners of the pilot cities who have spared their time for interaction from their very busy schedule and long working hours. Their valuable insights are very useful to design the strategy for capacity building.

We wish to acknowledge the efforts of the city representatives of UNIDO, Mr. V. Perkari Venkat Ramana (Vijayawada and Guntur), Mr. V.N.K. Satyasai Tata (Mysuru) and Mr. B. Mishra (Bhopal), Mr. Sameer Saraswat (Jaipur). They have provided the immeasurable support throughout the TANA journey from the assessment of questionnaires to the implementation of TANA through helping us connect with the various stakeholders. Our sincere gratitude to the UN-Habitat team, Mr. Sajith Shaik (Guntur), Mr. Imran Basha (Vijayawada), Mr. Charan Kukunoor (Mysuru) and Mr. Niranjana NB (Bhopal) Ms. Shruti Rajagopalan (Jaipur), who has helped us in providing information and feedback on the questionnaires for the respective cities.



Paramita Datta Dey
Team Lead

Contents

LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS	ix
1. INTRODUCTION	2
1.1 About Sustainable Cities Integrated Approach Pilot	3
1.2 Role of NIUA	4
1.3 About TANA	4
2. FRAMEWORK OF TRAINING AND ASSISTANCE NEED ANALYSIS	8
2.1 Objectives	9
2.2 Scope	9
2.3 Limitations	10
2.4 Structure of the Training and Assistance Need Analysis Report	10
3. METHODOLOGY	12
3.1 Secondary Research	13
3.2 Primary research	14
3.3 Data Analysis Methodology	24

4.	JAIPUR – NEED ASSESSMENT AND FINDINGS	26
4.1	City Profile	27
4.2	Status of Water, Wastewater, FSSM and Solid Waste Management	27
4.3	Legislative Framework	28
4.4	Institutional Framework	29
4.5	Stakeholder Mapping	33
4.6	Training Needs Key Findings	36
4.7	Conclusion	55
5.	FINDINGS AND RECOMMENDATIONS	60
5.1	Findings of TANA	61
5.2	Recommendations	62
5.3	Curriculum	62
6.	REFERENCES	66
7.	ANNEXURES	70
	Annexure 1: TANA Questionnaire for Senior Officials	71
	Annexure 2: TANA Questionnaire for Department Heads	73
	Annexure 3: TANA Questionnaire for Mid-Level Officials	75
	Water Supply Management	75
	Wastewater Management	82
	Solid Waste Management	92
	Annexure 4: TANA Questionnaire for Ground staff	100
	Annexure 5: Detail findings of TANA for Jaipur Municipal Corporation	101

List of Tables

Table 1	Responsibility mapping of agencies for the three sectors in Jaipur	30
Table 2	Responses of JMC	34
Table 3	Summary of findings of Training Needs based on the interview with the Executive Engineer, JMC	38
Table 4	Summary of findings of Training Needs based on the interview with the Executive Engineer and Chief Engineer, JMC	40
Table 5	Summary of findings of Training Needs based on the interview with the Chief Engineer, PHED	41
Table 6	Summary of Training Needs for Mid-level Officials in Waste Water Sector at JMC	45
Table 7	Summary of Training Needs for Mid-level Officials in Solid Waste Management Sector at JMC	49
Table 8	Summary of general preferences for training programmes of Mid-level Officials at JMC	52
Table 9	Summary of Training Needs of Ground-level functionaries at JMC	55
Table 10	Summary of Training Needs for Mid-level Officials for wastewater sector in JMC	56
Table 11	Summary of Training Needs for Mid-Level Functionaries for Solid Waste Management Sector in JMC	57
Table 12	Priorities of the JMC as mentioned by the respective Commissioners	61
Table 13	Summary of gap analysis for the three sectors in JMC	62
Table 14	Curriculum Outline for Solid Waste Management for JMC	63
Table 15	Curriculum Outline for Waste Water Management for JMC	64
Table 16	Curriculum Outline for Water Management for JMC	65
Table 17	Detail Training Needs of Waste Water Sector	102
Table 18	Detail Training Needs of Solid Waste Management Sector	108

List of Figures

Figure 1	Curriculum Outline Development	5
Figure 2	Broad Curriculum Outline	6
Figure 3	Methodology adopted for the TANA	15
Figure 4	Stakeholder Mapping	16
Figure 5	Structure of Questionnaire	17
Figure 6	Structure of Form 1	18
Figure 7	Structure of Form 2	20
Figure 8	Structure of Form 3	21
Figure 9	Structure of Form 4	23
Figure 10	Structure of Form 5	24
Figure 11	Part Organogram of JMC	31
Figure 12	Part Organogram of JMC	32
Figure 13	Sector wise organisation of JMC	33
Figure 14	Stakeholder Groups in JMC	35
Figure 15	Age Group profile of respondents dealing with Wastewater in JMC	43
Figure 16	Educational Background of respondents dealing with wastewater in JMC	43
Figure 17	The Years of Service of respondents dealing with Wastewater in JMC	43
Figure 18	Job Responsibilities of the Mid-level Officials dealing with Wastewater in JMC as reported by the respondents	44
Figure 19	Age wise composition of respondents for Solid Waste management at JMC	46
Figure 20	Educational Background of respondents working in solid waste management sector at JMC	46
Figure 21	Year of Service of the respondents among Mid-level Officials working in solid waste management sector in JMC	47
Figure 22	Job responsibilities of Mid-level Officials working in SWM in JMC	47
Figure 23	Number of Capacity Building Programmes attended by Mid-level officials of JMC in the past three years	49
Figure 24	Preferred Medium of Instruction of mid-level officials at JMC	49
Figure 25	Preferred Duration of training programmes as suggested by the Mid-level Officials at JMC	50
Figure 26	Preferred location of training programmes as suggested by Mid-level Officials at JMC	50
Figure 27	Preferred time of the training programme	51
Figure 28	Preferred Mode of Training of Mid-level Officials in JMC	51
Figure 29	Expected Outcomes of the Training Programmes reported by the Mid-level Officials at JMC	52

List of Abbreviations

AE	Assistant Engineer
AMOH	Additional Medical Officer of Health
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AEE	Assistant Executive Engineer
CHO	Corporation Health Officer
C&D	Construction and Demolition
CE	Chief Engineer
CMOH	Chief Medical Officer of Health
DMA	Directorate of Municipal Administration
DEE	Deputy Executive Engineer
EIA	Environmental Impact Assessment
EE	Executive Engineer
Env. Er.	Environmental Engineer
FSTP	Faecal Sludge Treatment Plant
IUWM	Integrated Urban Water Management
IEC	Information, Education and Communication
ICT	Information and Communications Technology
JDA	Jaipur Development Authority
JE	Junior Engineer
JMC	Jaipur Municipal Corporation
LSGD	Local Self Governance Department, Government of Rajasthan
MLD	Million Litres per Day
MT	Million Tonnes
MA&UD	Department of Municipal Administration and Urban Development
MHO	Municipal Health Officer
MoHUA	Ministry of Housing and Urban Affairs
NRW	Non-Revenue Water
NGOs	Non-Government Organizations
O&M	Operation and Maintenance
PHMED	Public Health & Municipal Engineering Department
PH	Public Health
RUDSICO	Rajasthan Urban Drinking Water, Sewerage and Infrastructure Corporation
SC-IAP	Sustainable Cities Integrated Approach Pilot Project
SWM	Solid Waste Management
SOPs	Standard Operating Procedures
SI	Sanitary Inspector
SS	Sanitary Supervisor
SE	Superintending Engineer
TANA	Training and Assistance Need Analysis
ULB	Urban Local Body
UGD	Underground Drainage
UNIDO	United Nation Industrial Development Organization
UN	United Nations
UFW	Unaccounted For Water
WS	Water Supply

1

INTRODUCTION



1. Introduction

1.1 About Sustainable Cities Integrated Approach Pilot

The Global Environment Facility (GEF) launched the Sustainable Cities Integrated Approach Pilot (SC-IAP) to help cities address the challenges posed by mega-trends (urbanization, rising middle class and population growth) of global environmental degradation in an integrated manner. UNIDO is one of the specialized agencies assisting countries in accessing GEF SC-IAP set aside funds, primarily building on the country allocations the focal areas of climate change and chemicals and waste. The SC-IAP programme currently engages 28 cities in 11 developing nations. UNIDO-GEF projects under this initiative include the Sustainable Cities Integrated Approach Pilot in India.

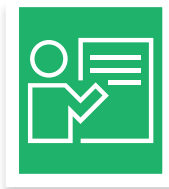
The United Nations Industrial Development Organization (UNIDO) implements the SC-IAP programme in India along with the Ministry of Housing and Urban Affairs (MoHUA). The core objective is to build resilience in five pilot cities – Jaipur, Bhopal, Mysuru, Vijayawada and Guntur – by integrating sustainability concepts into urban planning and management strategies. One key component is the identification of investment projects and technology demonstrations that encourage the development of low carbon urban infrastructure and help reduce greenhouse gas (GHG) emissions.

The main components of the project include:

Component 1 - Sustainable urban planning and management; handled by UN-Habitat,

Component 2 - Technology and investment support for innovative, low carbon pilot projects; handled by UNIDO, and

Component 3 - Partnerships, knowledge management and capacity building, handled by NIUA.



1.2 Role of NIUA

The main role of NIUA is to undertake the implementation of Component 3 – Partnerships, Knowledge Management and Capacity Building. NIUA will contribute towards building the multi-sectoral partnership platform to ensure the implementation of sustainable city strategies, by understanding various issues and challenges of technical, financial, political, social stakeholders/partners. To solve these major issues and challenges, NIUA will prepare the integrated training curriculum modules for various stakeholders in five cities. These modules will help in the implementation of the projects in the pilot cities. The training program outcomes from these cities will then be scaled up to 25 Indian cities, which share similar scale and complexity of issues in implementing sustainable strategies.

1.3 About TANA

The Training and Assistance Need Analysis (TANA) is designed and developed in coordination with UNHABITAT and UNIDO. The TANA assessed the current status of the five cities in the field of sustainability, with particular reference to water, sanitation and solid waste management. The results were shared with UNIDO and UNHABITAT for review, approval and finalization.

The results of TANA will constitute the basis for a detailed training and technical assistance program. It will include the following:

1. Baseline status of current projects on Water, Sanitation and Solid Waste Management in five pilot cities
2. Baseline assessment of the current level of knowledge of stakeholders and their training needs
3. Collection of information from stakeholders in five cities through Semi Structured Interview (SSI), Focus Group Discussion (FGD), Personal Interviews (PI)
4. Corroborating, compiling and analysing data collected from various sources
5. Conducting validation and triangulation workshop on findings of TANA
6. Review and update of TANA findings in coordination with experts, UNIDO and UNHABITAT

Based on the results of TANA, the training curriculum on Solid Waste Management, Waste Water and Water Management will be developed by NIUA in close coordination with UNIDO and UNHABITAT. This will include the following tasks:

1. Based on TANA results, modules on water, waste water and solid waste management will be prepared for relevant stakeholders
2. For developing the module & pedagogy NIUA will synergize the experience of institutional and sector experts and trainers from relevant training institutes
3. Finalizing module in coordination with UN/experts/local resources/city officials.

As per prior experience in conducting capacity building workshops, it has been identified that one curriculum fails to achieve desired outcomes for different stakeholder groups due to their varied roles, responsibilities and aspirations. Hence, we seek to curate customised training sessions for various stakeholders. A tentative curriculum outline structure is shared as below in Figure 1 and Figure 2.

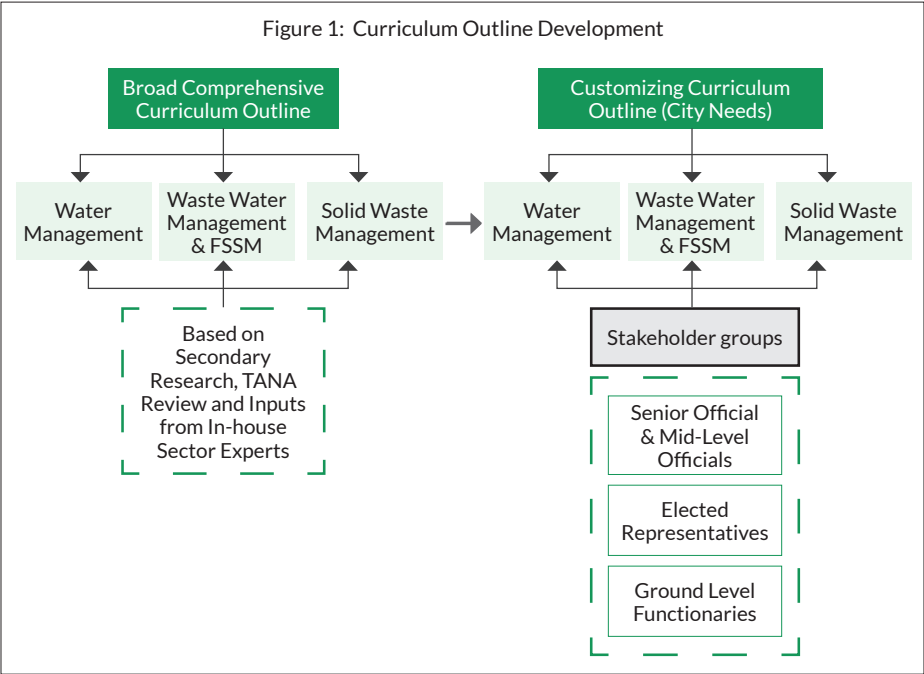


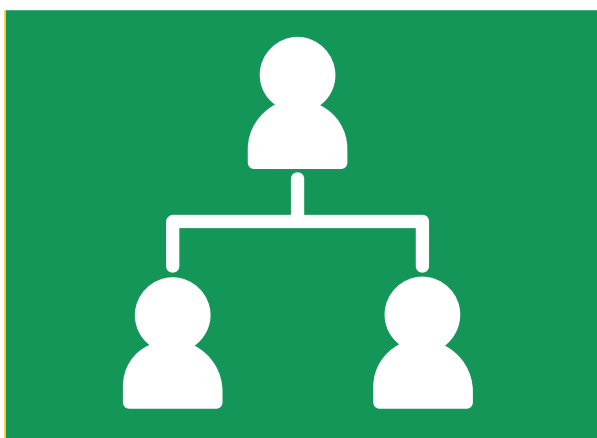
Figure 2: Broad Curriculum Outline

Chapter 1	Overview	Chapter 5	Project Management
Chapter 2	Legislations, Policies and Programmes	Chapter 6	Financial Management
Chapter 3	Technical Concepts, Available Approaches and Technologies	Chapter 7	Stakeholder Engagement
Chapter 4	Operation, Maintenance & Monitoring	Chapter 8	Good Practices
Chapter 9	Disaster Preparedness and Emergency Response		

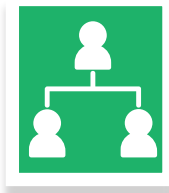


2

FRAMEWORK OF TRAINING AND ASSISTANCE NEED ANALYSIS



2. Framework of Training and Assistance Need Analysis



2.1 Objectives

The Training and Assistance Need Analysis (TANA) aims to understand the existing knowledge of the municipal corporation employees, across the hierarchy of the Urban Local Body (ULB). The findings of this study provide direction to the designing of the training curriculums customised for the needs of the five pilot cities. The specific objectives of the study are as follows:

1. To understand the focus of the ULB among the three sectors.
2. To understand the job roles of the officials, performed at various designations.
3. To determine the existing knowledge and understanding of the Municipal Corporation officials dealing with the three sectors at various designations.
4. To find the gaps in the existing knowledge of the ULB employees.
5. To determine the preferences of the ULB officials with respect to the content of the training programme.
6. To determine the preferences of the ULB officials for the training programme.
7. To provide a baseline understanding of knowledge to design the training curriculum.

2.2 Scope

With regards to this project, majorly ULBs are taken into account while trying to understand the needs of the city. The scope of this project spans over the three sectors of Solid Waste Management, Water Supply and Waste Water Management. The employees of the Municipal Corporations of the five pilot cities were interviewed. The assessment tries to cover the complete hierarchy of the employees, and hence, several members of Municipal Corporations at various

designations have been interviewed. Other parastatal agencies were also interviewed, with an intent to help city officials to plan, implement, operate and maintain sustainable city strategies and low carbon investment projects which are technically and financially viable.

2.3 Limitations

The interviews and primary data collection was anticipated to be done on-site in the five cities. However, the COVID-19 crisis and the lockdown that followed as a response to it disrupted the activities. It had a two fold impact- firstly, the transport services across the country were brought to halt thereby limiting the movement of people. Hence, the research team could not interact with the Municipal Corporations in person. Secondly, during the lockdown that continued for about 2 months, municipal services of Water, Drainage, Sanitation and Solid Waste Management were marked as essential services. As a result of this, the members of the Municipal Corporation that were planned to be interviewed were very occupied with their duties and responding to the crisis. Considering the circumstances, the interviews were conducted through video or audio conferencing and online mediums, coordinated with the City Representatives of UNIDO.

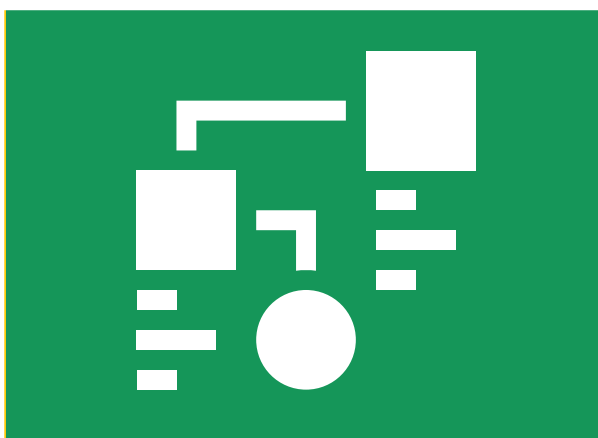
2.4 Structure of the Training and Assistance Need Analysis Report

This document has been structured into various chapters. Chapter 1 provides a basic understanding of the SC-IAP Project, a part of which is the TANA. Chapter 2 provides a framework for the TANA conducted, specifying the objectives of the analysis, defining the scope and the limitations of the process. Chapter 3 illustrates in detail the methodology adopted for the study. The following chapter is dedicated to one of the five pilot cities, providing the baseline status of the cities for the three sectors of Solid Waste Management, Water Management and Waste Water Management, followed by the stakeholder wise Training and Assistance Need Analysis findings. Chapter 5 provides a summary of the gap analysis and an outline of the curriculum that will be delivered in the city, according to the needs highlighted by various stakeholder groups. The Annexures at the end of this document can be referred to for the detailed questionnaires, followed by the detail findings of TANA for Mid-level Officials of Jaipur.

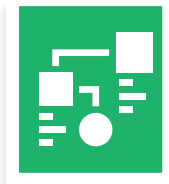


3

METHODOLOGY



3. Methodology



For understanding the training needs of the Urban Local Bodies, primary and secondary research approach was adopted to gather data of the five pilot cities in the three sectors i.e. Water Management, Waste Water Management and Solid waste management. The results of TANA will constitute the basis for a detailed training and technical assistance program. TANA includes the following:

1. A Baseline compilation of the status and relevant projects of Water, Sanitation and Solid waste management in five pilot cities.
2. Gathering information from stakeholders through Structured and Semi-Structured Interview (SSI), Focus Group Discussion (FGD), Personal Interviews (PIs) about their understanding and preferences.
3. Baseline assessment of the current level of knowledge of stakeholders and their training needs.
4. Corroborating, compiling and analysing data collected from various sources.
5. Conducting validation and triangulation workshop on findings of TANA.
6. Review and update of TANA findings in coordination with UNIDO and UNHABITAT experts.

The methodology adopted in each of these sections is detailed in the following sections. Figure 3 details the process adopted to prepare the TANA. The first step in the process was to gather the secondary data from various sources and prepare a framework for the primary data collection.

3.1 Secondary Research

To understand different aspects of the target groups and to identify their training needs, a literature review of various existing TANA reports and a baseline study of each city was done. With the help of UNIDO representatives and from the review findings, stakeholder

mapping and sampling for each city were done which is explained in Figure 4. Considering various aspects of ULBs of each city, stakeholder mapping was formulated to streamline the stakeholders into three groups, viz., i.e. Senior officials, Mid-level officials and Ground-level Functionaries. After the Stakeholder grouping, a response matrix was created for the three sectors. Accordingly, sampling was done. This was followed by primary data collection, detailed in the following section.

3.2 Primary research

The Primary data collection included various research tools, depending on the requirements and needs of the stakeholder groups. In order to understand the training needs of senior officials, personal Interviews were conducted on virtual platforms like Microsoft-Teams, Zoom or conference calls. This was done as per the availability of the interviewees. Mid-level officials were interviewed through structured questionnaires whereas, a semi-structured questionnaire was used to conduct focus group discussions with ground-level functionaries.

Figure 3: Methodology adopted for the TANA

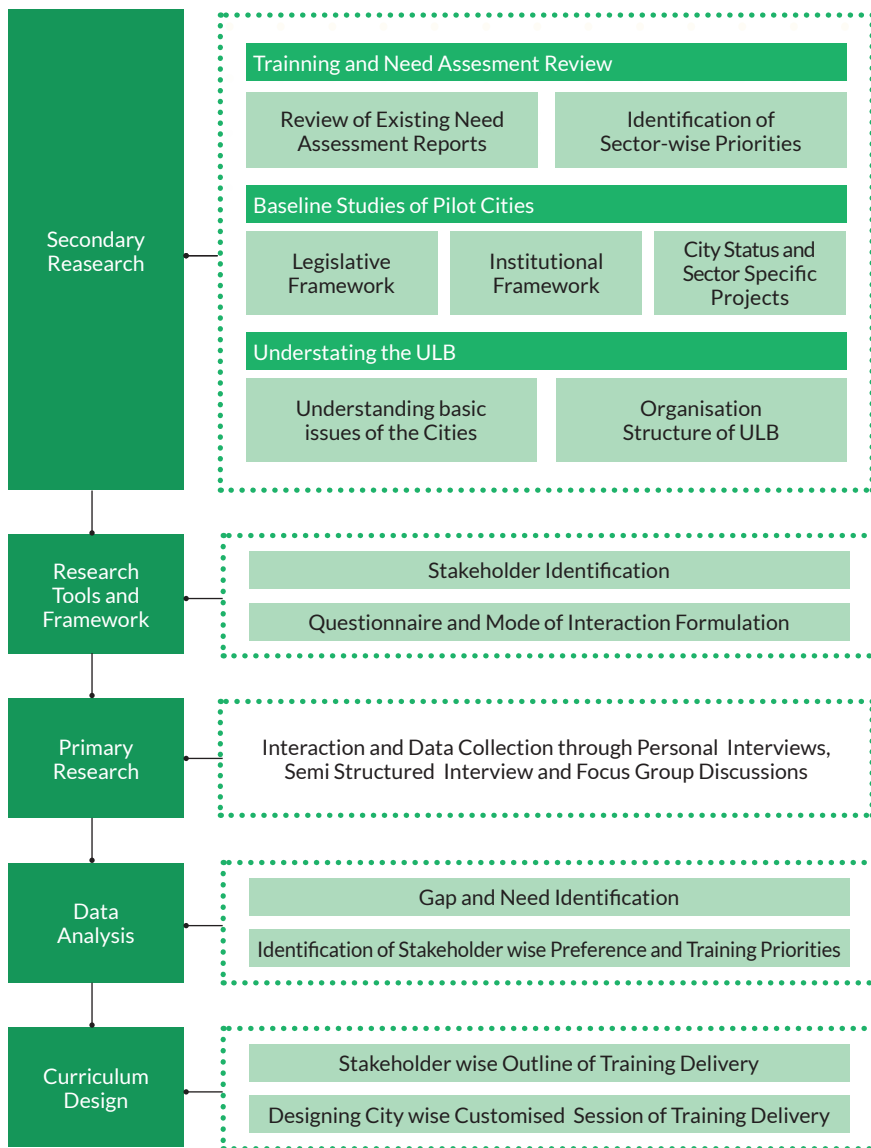
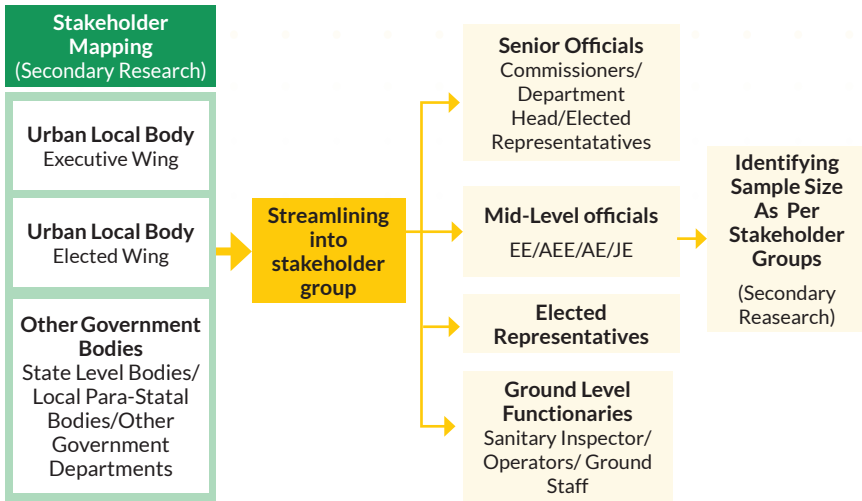


Figure 4: Stakeholder Mapping



3.2.1 Research Instrument

For this study, three main data collection instruments were deployed to collect the data from the respondents. These are as follows:

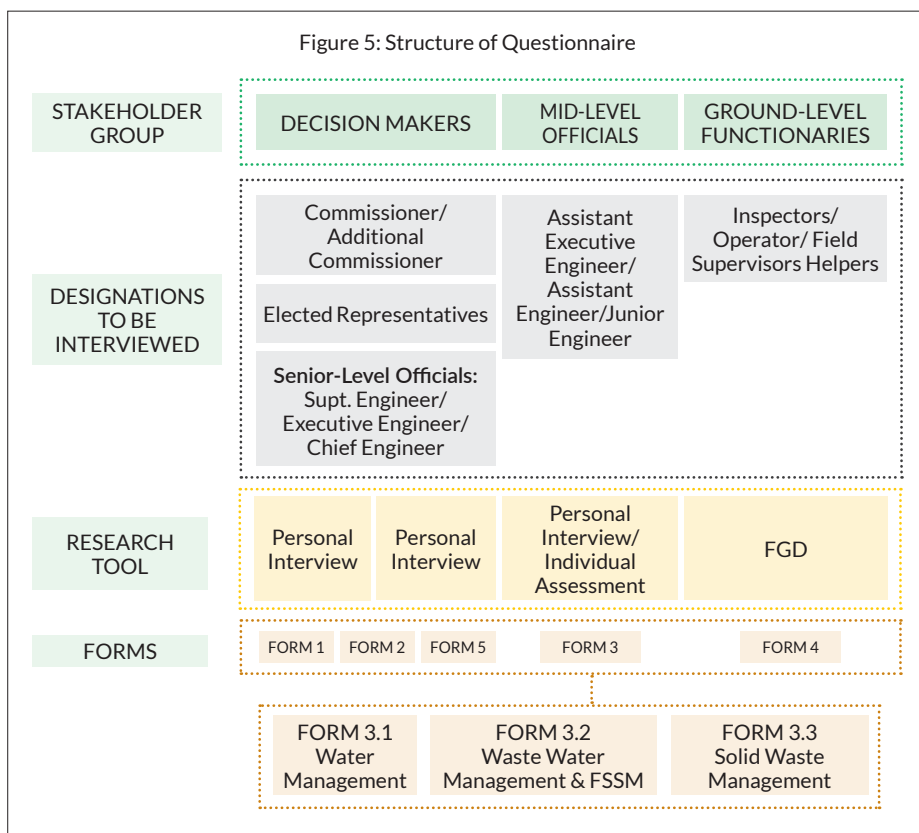
1. Semi Structured Interviews (SSI) - These were used to interact with the senior officials to understand their needs and expectations of the project. It was done with the help of a few open-ended questions considering the limited time they have.
2. Personal Interviews and Individual Assessment- Personal Interview (PI) and Individual Assessment (IA) was used for interaction with the Mid-level Officials. The objective of the IA was to assess the gaps in their knowledge concerning the sector that they work in, while the PI attempted to understand the preferences of the respondents with respect to the training delivery medium.
3. Focus Group Discussions- Focus Group Discussion (FGD) was the mode of understanding the training needs of the ground-level functionaries. In cities where the language was different or the respondents did not understand Hindi and English, a local translator facilitated the FGD.

3.2.1.1 Research Questionnaires

To analyse the needs of the identified stakeholders from each functional group, customized questionnaires were prepared for each stakeholder group. Five sets of forms each dedicated to a specific stakeholder group were developed. The overview of the structure of the questionnaire set is depicted in Figure 5.

The questionnaires covered various aspects ranging from individual and professional details like the designation of the officials, their current job responsibilities and future demands for the post, their strengths and existing skill gaps and their needs and expectations from the training programs.

The questionnaires have been developed in consultation with in-house sector experts and city representatives from UNIDO to keep a check on the validity of the questions with respect to the context



of the city. The questionnaire set was designed considering the clarity of the questions and the time needed for responding to the questions. Each questionnaire is provided with a brief description of the project.

For ethical approval, a consent form is also attached with the questionnaire which is read to the respondent before gathering any information. The interview is conducted only after the respondent has given his/her consent. Considering the limitations of the mode of interaction, consent was taken for recording the proceedings of the interview for documentation purposes. The approximate estimated time needed for conducting the interview is conveyed to the respondent at the outset. The details of questions covered under each form in the questionnaire are discussed in detail in the following sections.

Form 1

Form 1 of the questionnaire set is specially designed for conducting a one-on-one structured or semi-structured interview with the stakeholder group of senior officials. The questions are framed to gauge the perspective of the decision-makers towards the capacity building needs of the officials and staff with respect to the three sectors of water, waste water and solid waste management.

Figure 6: Structure of Form 1

FORM 1	
Q No	Expected Outcome
Q1	Assessing priorities of the city for sustainable development in three identified sectors of water, waste water and solid waste management and also gauging the focus areas in the concerned sectors
Q2	Assessing the capacity building needs of the senior, mid and ground level functionaries
Q3	Assessing the capacity building needs for effective coordination with Elected Representatives
Q4-Q5	Understanding city preparedness strategies during emergencies and assessing the capacity building needs for building resilience towards disasters and emergencies

The assessment from Form 1 helped to understand the current status and future strategies of the city in water, waste water and solid waste management. This, in turn, would help assess the capacity building needs of the city officials for efficient performance. The overview of the form structure is explained in Figure 6.

Form 2

Form 2 of the questionnaire set is designed for conducting a one-on-one structured or semi-structured interview with the senior officials under the stakeholder group of Decision Makers. The questions towards the senior officials and department heads are framed to understand the key focus areas of their particular departments and elicit their suggestions to improve the identified issues and challenges. The interview also helped in gauging the perspective of the senior officials towards the capacity building needs of their team of mid and junior officials and staff.

Assessment Form 2 helped to gauge the needs and expectations of each department working in the three sectors. It also helped to understand the current status of the city in each sector and the corresponding training needs. The overview of the form structure is explained in Figure 7.

Figure 7: Structure of Form 2

FORM 2	
Q No	Expected Outcome
Q1-Q2	Identifying the key focus areas of the concerned sector and understanding strategies for strengthening the gaps in the identified focus areas
Q3-Q4	Assessing past training experiences , understanding the current needs and gauging expectations from future training programs
Q5-Q6	Assessing the capacity building needs for effective coordination with Elected Representatives and other stakeholders
Q7	Identifying sector specific innovative and good practices adopted by the city
Q8-Q10	Understanding city preparedness strategies adopted during emergencies and assessing the capacity building needs for building resilience towards disasters and emergencies
Q11-Q12	Sector specific questions assessing current status

Form 3

Form 3 is designed for conducting a one-on-one interview with the mid-level officials of the various departments in each sector. The form has three sets - one for each sector i.e. water, waste water and solid waste management. Through this interview, information is elicited from various mid-level officials with respect to their current job responsibilities, their future aspirations and also their expectations from the training program. Since the mid-level officials have to interact with both the ground level functionaries and the senior officials for smooth functioning of the day-to-day tasks, understanding their training needs is essential for efficient service delivery.

The assessment from Form 3 helped to gauge the needs and expectations of the Mid-level Officials of each department working in the three sectors. The form is specially designed to help the officials assess their current level of understanding on various

aspects relevant to their job roles and in turn assess their needs for attending training for the same. The overview of the three sets of the form is explained in Figure 8.

Figure 8: Structure of Form 3

FORM 3.1: Water	
Q No	Expected Outcome
Q1 -Q20	Understanding respondent's profile, job responsibilities, expectations from training program and preferences with respect to training pedagogy
Q21-Q28	Assessing respondent's level of understanding with respect to various aspects of their job responsibilities and corresponding training needs
Q27 -Q31	Understanding city preparedness strategies adopted during emergencies and assessing the capacity building needs for building resilience towards disasters and emergencies
FORM 3.2: Waste Water (UGD)	
Q No	Expected Outcome
Q1 -Q19	Understanding respondent's profile, job responsibilities, expectations from training program and preferences with respect to training pedagogy
Q21-Q28	Assessing respondent's level of understanding with respect to various aspects of their job responsibilities and corresponding training needs
Q27 -Q31	Understanding city preparedness strategies adopted during emergencies and assessing the capacity building needs for building resilience towards disasters and emergencies

FORM 3.3: Solid Waste Management	
Q No	Expected Outcome
Q1-Q19	Understanding respondent's profile, job responsibilities, expectations from training program and preferences with respect to training pedagogy
Q21-Q28	Assessing respondent's level of understanding with respect to various aspects of their job responsibilities and corresponding training needs
Q27-Q31	Understanding city preparedness strategies adopted during emergencies and assessing the capacity building needs for building resilience towards disasters and emergencies

Form 4

Form 4 is designed for conducting a focus group discussion with the ground-level functionaries of the various departments in each sector. Through this focus group discussion, information with respect to their current job responsibilities, their future aspirations and also their expectations from the training program is assessed. Since the ground-level functionaries understand the issues and challenges at the ground level, understanding their perspective is essential for effective planning and implementation of any project.

The assessment from Form 4 helped to gauge the needs and expectations of the ground-level functionaries of each department working in the three sectors. The questions in the form are kept intentionally flexible to help gather anecdotal information from the ground- functionaries with respect to various issues and challenges faced on a day-to-day basis on various aspects. The overview of the form structure is explained in Figure 9.

Figure 9: Structure of Form 4

FORM 4	
Q No	Expected Outcome
Q1	Assessing the status of the service delivery in the given sector
Q2-Q3	Assessing the capacity building needs for effective engagement with citizens
Q4 -Q5	Assessing respondent's expectations from senior officials for effective service delivery
Q6 -Q7	Understanding the challenges and issues faced by respondent with respect to day-day job responsibilities
Q8-Q13	Assessing past training experiences, understanding the current needs and gauging expectations from future training programs

Form 5

Form 5 is specially designed for the elected representatives of the city. Since the elected representatives act as a link between the citizens and the Municipal Corporation, understanding their perspective and needs is essential. The questions are framed to gauge the perspective of the elected representatives towards the key focus areas for development in the city. The information gathered through this form would help identify the various activities currently being conducted by elected representatives in the city and the need for further support from citizens and other stakeholders. The assessment would also highlight the need and expectations of the elected representatives from the training program. The overview of the form structure is explained in Figure 10.

The questionnaires are attached as Annexures 1, 2, 3 and 4 at the end of this document. These questionnaires provided a template for the five cities. However, a few questions have been added or deleted depending on the context of the city. The information thus obtained was analysed following the methodology detailed in the following section.

Figure 10: Structure of Form 5

FORM5	
Q No	Expected Outcome
Q1-Q2	Assessing priorities of the city in three identified sectors of water, waste water and solid waste management and also gauging the focus areas in the concerned sectors and various issues in terms of service delivery
Q3-Q5	Understanding respondent's role and their expectations from other stakeholders
Q6	Understanding the expectations from the training program
Q7	Understanding the respondent's perspective and suggestions towards city preparedness strategies during emergencies

3.3 Data Analysis Methodology

After the interviews were conducted, the responses were tabulated in Excel worksheets. The Analysis was done separately for the identified stakeholder groups. The responses of the Senior officials, Ground Level Functionaries and the Elected Representatives were coded and qualitatively descriptively analysed, while the responses of the Mid-level Officials were analysed quantitatively.

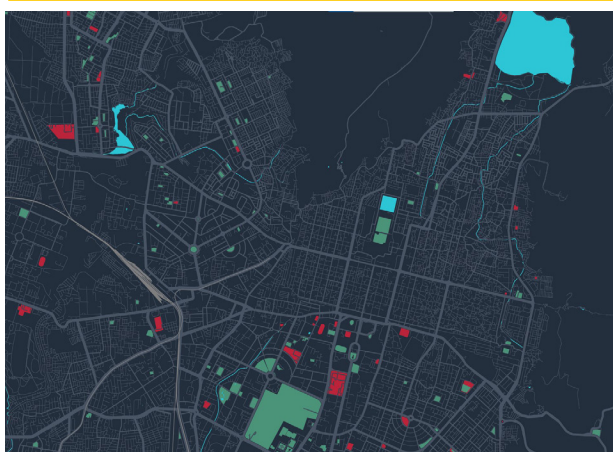
The aim of the analyses was to understand the contents of the training considering the topics of interest and needs to conduct their roles more efficiently and effectively. Their requirements with respect to the mode and attributes of training delivery such as duration, language, location, etc. were also analysed. The results are quantified and described in the training findings for each city. A summary of training needs is prepared for each stakeholder, mentioned at the end of TANA for the city.

Based on the analyses and training findings, training priorities have been detailed for the Mid-level Officials for the three sectors of Water, Waste Water and Solid Waste Management. The tables at the

end of the chapters are a summary from the detailed tables of training priorities attached in Annexure 5. The Priorities have been marked as “High” if the majority of aspects under a particular parameter were preferred by the participants. The Priority has been marked as “Medium” if brief training was preferred by the respondents on about half of the aspects under a parameter. The Priority has been marked as “Low” if the respondents suggested no training is required for a parameter.

4

JAIPUR – NEED ASSESSMENT AND FINDINGS



4. Jaipur – Need Assessment and Findings



4.1 City Profile

Jaipur is the capital and the largest city of the Indian state of Rajasthan. It is situated in the east-central part of the state, roughly equidistant from Alwar (northeast) and Ajmer (southwest). Jaipur is a tourist city with major attractions like Hawa Mahal, Jantar Mantar, Forts of Amber, Nahar Garh, etc. It is also known as the “Pink City” and the “Paris of India”, due to the dominant colour scheme of its buildings.

Jaipur is spread in an area of 467sq. km. According to the census of India 2011, the population of Jaipur is 3,046,163; of which male and female are 1,603,125 and 1,443,038 respectively making it the tenth most populous city in the country (COJ, 2011). The city has a total no. of 61,858 slums (also known as “Kacchi Basti”) in which population of 323,400 resides and there are 91 wards in the city.

4.2 Status of Water, Wastewater, FSSM and Solid Waste Management

The following sections present an overall picture with numbers and statistics, of the city of Jaipur with respect to Water, Waste Water and Solid Waste Management.

4.2.1 Water

The city of Jaipur has a daily demand of 462 MLD of water. At present, water supply from the government is 374 MLD. The remaining of about 90 MLD is a deficit, which is supplied through PHED tankers. The water scarcity report (Roberts, et al., 2013) in Jaipur claims that the Bilaspur dam supplies 275 MLD, 87MLD is supplied from tube wells, and 2 MLD is supplied by single point tube wells. The water supply is intermittent and the average duration of running water is 90-120 minutes per day. According to Census 2011, availability of treated tap water in urban areas is in 71 percent households, out of which 62 percent is treated.

4.2.2 Waste Water

The city generates about 272 MLD of wastewater daily. Out of the wastewater generated, about 62.61 MLD (23%) is treated (Amit Dass, 2014). About 56 % of population has access to sewerage network and the other population relies on septic tank. In addition, where the sewer lines does not exists, the storm water drains are used for conveyance of silt and sullage. The city has total of 8 STPs with the total capacity of 265 MLD out of which 60% are non-functional (Roberts, et al., 2013).

4.2.3 Solid Waste

Jaipur's daily production of solid waste is around 1477 MT and only 40% is processed. Out of the processed waste, 55% comprises dry waste and the remaining 45% is wet waste (source: JMC). 350 tonnes of waste is used to produce refuse derived fuel that is sold to cement factories and 250 tonnes is used to produce compost. JMC had planned to generate electricity from 550 tonnes garbage. However, it is still in progress, as the power purchase agreement is not yet signed (TOI, 2018).

4.3 Legislative Framework

Several legislations and policies have been dictated by the Government of Rajasthan (GoR) for better governance of urban areas in Rajasthan. The GoR does not have any act or legislation that outlines or delegates the function and services related to town planning to any agency.

The Rajasthan Urban Improvement Act, 1959 enforced various development authorities and Urban Improvement trust for promoting urban development in the state (GoR, 1959). These new institutions were entrusted with development activities while the responsibilities of the municipalities were relegated to maintenance related works. The Constitution Amendment (74th Amendment), 1992 was enacted to provide greater constitution status to the local bodies in the city (Vidyarthi, 2004).

The governance of urban areas has been brought into effect with the Rajasthan Town Municipalities act, 1951 that was replaced after the reorganization of Rajasthan as the Rajasthan Municipalities Act, 2009 that provided the establishment of Municipal corporations for the cities in Rajasthan (Singh, 2018). The Rajasthan Municipal

Corporation Act, 2009 defined rights and responsibilities, stating the extent, commencement, definition and declaration of urban areas (GoR, 2009).

In Jaipur, the Government has enacted 'The Jaipur Development Authority Act, 1982', to act as an establishment authority for the purpose of planning, coordinating and supervising the proper, orderly and rapid development of the Jaipur region and of execution plans, projects and schemes for the development of the city (GoR, 1982).

For the regulation of water supply and sewerage services, the GoR has enacted 'The Rajasthan Water Supply and Sewerage Corporation Act, 1979' (Bareacts, 2020). In addition, the state government has notified various policies for urban development in the state of Rajasthan such as National Urban Sanitation Policy, 2008, Rajasthan Urban Development Policy, 2015, Township development of Policy of Rajasthan, 2010, The Rajasthan State Water Policy 2010.

4.4 Institutional Framework

In the state of Rajasthan, various agencies are working in the urban infrastructure sector with varied roles and responsibilities. Some of the key agencies involved in urban development include Department of Local Self Government (LSGD), Public Health Engineering Department (PHED), various municipal bodies, urban development authority and urban improvement trusts. (HRDP, 2017) .

Jaipur Development Authority Act, 1982 was enacted creating JDA, with which all the powers of line departments were vested. Today, JDA is the authority for planning and implementation of the city development plans and infrastructure for the notified JDA area, which includes the Jaipur Municipal Corporation (JMC) area.

JMC is responsible for planning, operation and maintenance of selected infrastructure. Although JMC area is far beyond the walled city, its operations are limited to the walled city and its immediate periphery.

Jaipur Municipal Corporation (JMC) is divided into 250 wards. The Corporation is responsible for the operation, maintenance, and delivery of various services and amenities in the city. It has various financial and administrative powers as vested in by the

Rajasthan Municipal Corporation Act, 2009. JMC has recently been restructured into two parts i.e. JMC (Greater) and JMC Heritage. JMC (Greater), comprises seven zones and is responsible for maintaining the city's civic infrastructure and carrying out associated administrative duties. JMC (Heritage) comprises four zones. It aims at conserving the heritage of the city by maintaining and improving the existing infrastructure around heritage buildings.

To understand the functional responsibilities with respect to planning, funding, implementation, O&M and monitoring of the services of the three sectors in Jaipur by various agencies, a mapping of responsibilities was done. This was helpful in customising the questionnaires for the agencies making it relevant to their functions. The Table 1 represents the mapping of responsibilities for the three sectors across agencies. Based on this mapping, it was found that JMC handles the responsibilities concerning the Solid and Liquid Waste sectors within the city limits, in tandem with a few other state level agencies responsible for handling planning and financing of certain flagship and large scale projects. Therefore, for the needs assessment all the agencies were interviewed and JMC was assessed in detail.

The JMC is mandated to have an executive body and an elected body. The Commissioner of the Municipal Corporation heads the executive body and the Mayor heads the elected body. The detail organogram of the JMC is described in the Figure 11 and Figure 12.

Table 1: Responsibility mapping of agencies for the three sectors in Jaipur

Agency name	Jurisdiction	Water Management	Waste Water Management	Solid Waste Management
JMC	City Level	● ● ● ●	● ●	● ● ● ● ● ●
PHED, GoR	State Level			
LSGD, GoR	State Level		● ●	

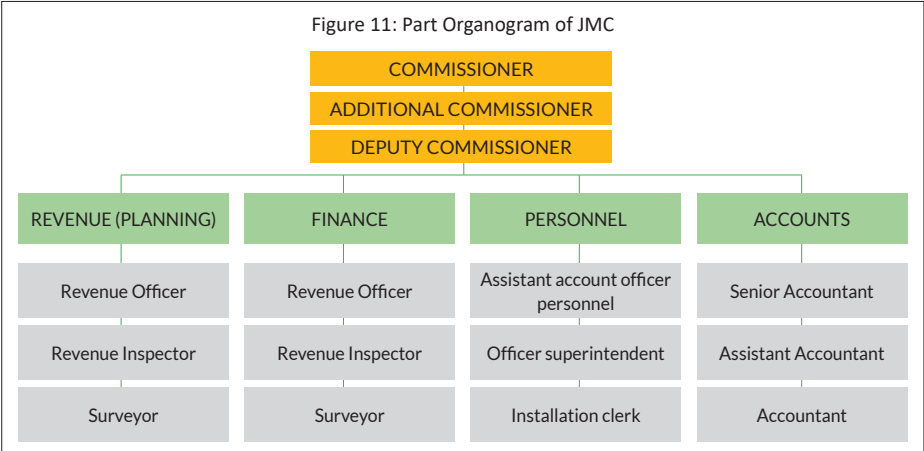
Key

- Planning and Funding
- Operation and Maintenance
- Implementation / Execution
- Monitoring

In Jaipur, the responsibilities of planning, implementation and management (including operation and maintenance) related to water and wastewater is shared between various agencies. For the Water supply sector, the Public Health and Engineering Department (PHED) is responsible for planning, execution, operation and maintenance related to water supply in JMC.

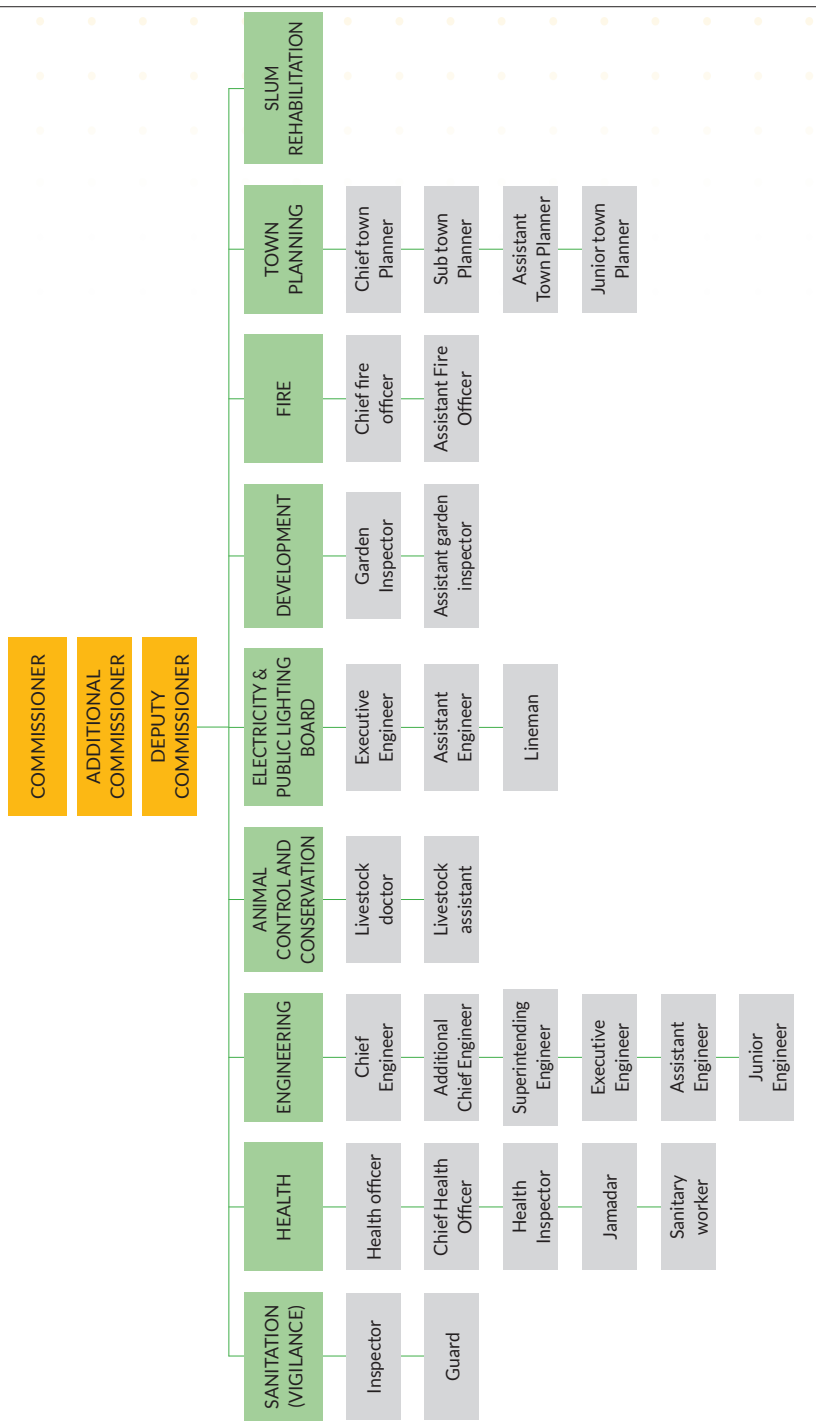
The responsibilities concerning wastewater are shared among JMC and the Rajasthan Urban Drinking Water, Sewerage, and Infrastructure Corporation (RUDISCO). RUDISCO is an agency governed by the Local Self Government Department (LSGD), which is a department of the State Government. RUDISCO is responsible for planning and execution, operation and maintenance related to wastewater in Jaipur.

In case of Solid Waste Management, the Jaipur Municipal Corporation is responsible for planning, execution, operation, and maintenance. The work is further bifurcated into two separate offices of Engineering department and Public health in JMC. Here, the Engineering department oversees the planning and implementation of the projects, which is headed by the Executive Engineer (EE). The Public Health Department, oversees the collection and conveyance for the SWM sector, which is headed by Municipal Health Officer (MOH). The senior officials such as EE and MOH are assisted by the Assistant Engineer (AE), Sub Engineer (SE) and Junior Engineer (JE) followed by the ground functionaries such as Jamadar, Sanitary Inspectors, etc. to implement the on ground projects.



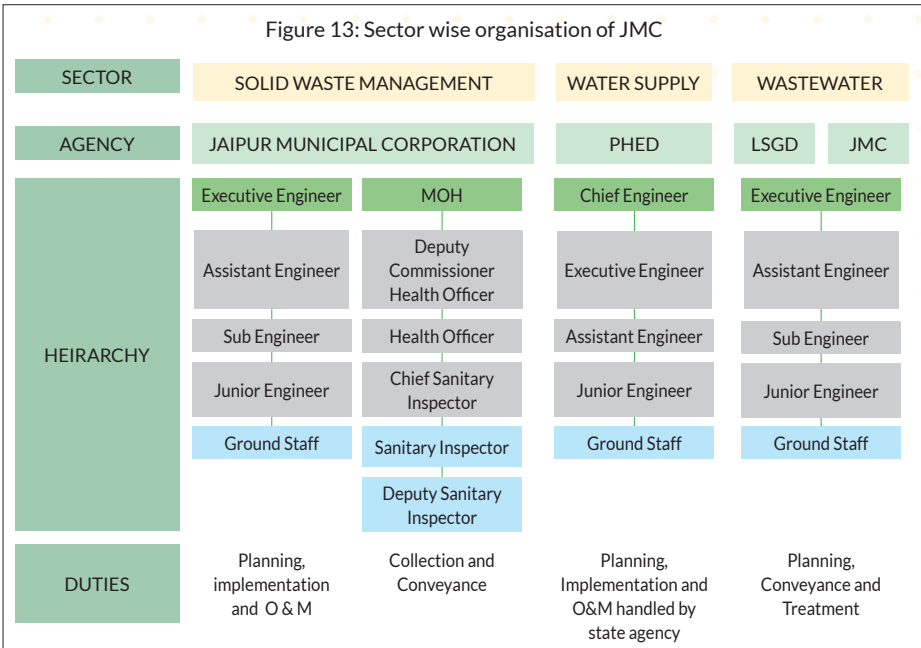
Source: Jaipur Municipal Corporation

Figure 12: Part Organogram of JMC



Source: Jaipur Municipal Corporation

Figure 13: Sector wise organisation of JMC



Source: Author

4.5 Stakeholder Mapping

Based on the organogram of the Jaipur Municipal Corporation, stakeholders were identified for providing training and technical assistance in the field of Water supply, Waste Water Management, and Solid Waste Management. The concerned Agencies are responsible of three sectors for overall planning, implementation, operation & Maintenance and monitoring are PHED, LSGD and JMC. The executive staff of JMC is divided into 3 stakeholder groups, viz. Decision makers, Mid-level Officials, and Ground- level functionaries.

The Decision Makers involve the Commissioner, Additional commissioner and Deputy Commissioner of JMC, and the heads of the department looking after the Waste Water and Solid Waste Management sectors (Executive Engineer or EE and Municipal Health Officer or MOH). The Mid-level Officials comprise the Assistant Engineer, Sub Engineer, Junior Engineer and Health officer. The Ground- level functionaries include all the field staff and members of JMC working as UGD Operators, sanitary inspectors,

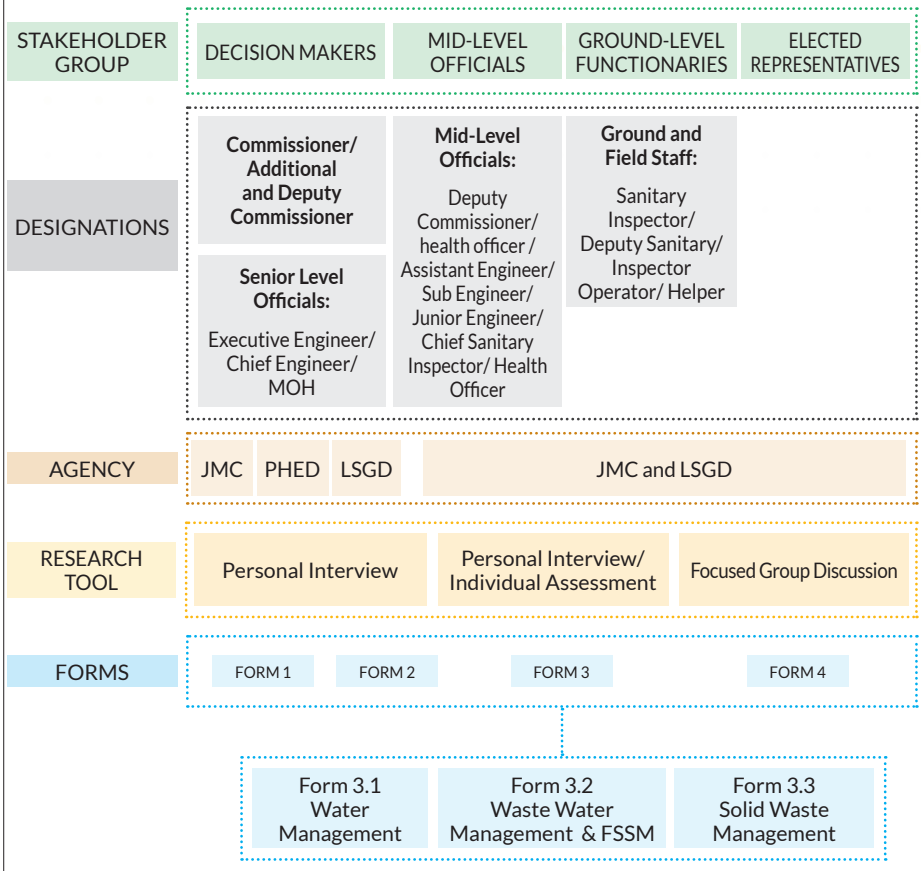
etc. The elections in Jaipur have not taken place due to which there is no the elected body. Hence, no elected representatives could be interviewed in Jaipur. Figure 14 shows the stakeholder groups for the JMC.

According to the stakeholder groups, various questionnaires were prepared in consultation with sector experts, UNIDO and UN-HABITAT city representatives. A Response Matrix was prepared, mapping the stakeholder groups and the mode of interaction with the interviewees. Due to the national lockdown and hectic schedule of the officials, online interviews were conducted as per the availability. The Table 2 shows the total number of interviews conducted from each stakeholder group. The stakeholders identified for the city of Jaipur for providing training and technical assistance in the field of Water supply Management, Waste Water Management, and Solid Waste Management are illustrated in Table 2.

Table 2: Responses of JMC

Form Number	Stakeholder Groups	Mode of Interaction	Number of Interviews Conducted
Form 1	Decision Makers	Personal Interview	4
Form 2			
Form 3.1	Mid-level Officials	Individual Assessment	6
Form 3.2			
Form 3.3			
Form 4	Ground- Level Functionaries	-	Training needs suggested by senior officials
—	Additional	Personal Interview	1

Figure 14: Stakeholder Groups in JMC



Source: Author

4.6 Training Needs Key Findings

The findings of the Training and Assistance Need Analysis (TANA) study have been categorised stakeholder wise and mentioned below. The detail findings of TANA have been represented at the end of this document as annexures.

4.6.1 Training Needs- Decision Makers in Executive body of ULB

In Jaipur, the Commissioner heads the executive body of the JMC. The Commissioner is assisted by the Additional Commissioner and the Deputy Commissioners to supervise and coordinate the various functions of the Corporation. The nodal agencies i.e. LSGD, PHED and JMC is responsible for the planning and implementation of various schemes concerning wastewater, water and solid waste management sector respectively. The stakeholder group of Decision Makers included the Commissioner of JMC, the Additional Commissioner, the Deputy Commissioner, the Chief Engineer, the Executive Engineer and the Municipal Health Officer.

Due to the unavailability of the Commissioner, the Additional Commissioner and Deputy Commissioner, interviews of the heads of the departments was taken into consideration to understand the needs and priorities of the three sectors in the city.

4.6.1.1 Wastewater Management

In Jaipur, the prime agencies responsible for the overall management of wastewater are the LSGD and the JMC. The LSGD is headed by the Chief Engineer and JMC is Executive Engineer. They delegate the work to the Assistant Engineer and Junior Engineer who then work in close coordination with the ground functionaries for the implementation of the respective projects in the city. The telephonic interview was conducted with the heads of the LSGD and JMC to understand their needs, challenges and the assistance they seek in planning, implementation, management and monitoring of services for Wastewater Management.

An interview was conducted with the Executive Engineers, Mr. Bane Singh and Mr. Umang Rajwanshi from JMC and Mr. Bhupinder Mathur, Chief Engineer from LSGD to have a glimpse of the wastewater sector and to better understand his training needs and

assess the training needs of his officials and staff members to help build their capacities for better and efficient work performance.

During the interview, Mr. Bane, Mr. Umang and Mr. Bhupinder discussed the status of the management of the wastewater sectors and elaborated on the key focus area. He also explained the need for training at both micro and macro level related to daily activities for the corporation officials for the efficient management. The following are the findings of the training and needs assessment of the interview with the Executive Engineer and Chief Engineer of the Jaipur Municipal Corporation.

Training Needs for the Executive body

Considering the prime responsibility the senior officials play in overall managing and monitoring of the wastewater sector, it was found that the officials are well aware and skilled with the needs and demands of the responsibilities that come as a part of their job. Hence, the Executive Engineers suggested that training in new technical concepts, financial management, and project management would be helpful for efficient delivery of the services.

Disaster and Emergency Preparedness

Mr. Bane suggested considering the current pandemic situation, it is necessary to train the officials to handle the crisis better. Hence, a brief training on disaster and emergency preparedness is desirable.

Training Needs for the Mid-level Officials

For Mid-level officials i.e. Assistant Engineer, Sub Engineer and Junior Engineer, the EE recommended training covering aspects of advance technology, management skills, O& M, financial and project management would help perform their duties better.

Training Needs for the Ground-level functionaries

For the ground staff a comprehensive training that builds the capacity of the staff to perform their day-to-day duties better was the prime highlighted focus area. They suggested providing training on enhancing the basic understanding in O& M, SOPs and community engagement would be beneficial. Table 3 below provides an overview of the training needs assessed across the JMC dealing with wastewater sectors as per the discussion held with the Executive Engineer.

Table 3: Summary of findings of Training Needs based on the interview with the Executive Engineer, JMC

SECTOR	STAKEHOLDER	GAPS IDENTIFIED	TRAINING NEEDS	TRAINING MODE	TRAINING MEDIUM
Wastewater Management	Senior	Technical knowledge, Planning and monitoring,	New Concepts and technologies, enhancing technical and knowledge, project and financial management	Online	Hindi
	Mid-level Officials	Technical & Engineering knowledge, management skills, O&M	Basics of Public Interaction, Operation & Maintenance, Technologies and approaches and project and financial management	Online or Offline	Hindi
	Ground Level Functionaries	Execution (O&M), skills and knowledge enhancement	Training to enhance skills to perform day to day activities	Offline	Hindi

4.6.1.2 Solid Waste Management

In Jaipur, LSGD and JMC is responsible for overall planning, managing and monitoring of the SWM in the city, which is headed by the Executive Engineer (EE) and the Chief Engineer respectively. EE is further assisted by Assistant Engineer and the other junior officials to manage and monitor the work related to the waste management activities on day-to-day basis.

A personal interview was conducted with Mr. Bane Singh, the Executive Engineer of JMC and Mr. Bhupinder Mathur, Chief Engineer of LSGD to understand their training needs and assess the training needs of his officials and staff members to help build their capacities for better and efficient work performance. The following are the findings of the training and needs assessment of the interview with the Executive Engineer of the JMC and Chief Engineer of the LSGD.

Priorities of the JMC

In the Solid Waste Management Sector, Mr. Bane Singh and Mr. Bhupinder Mathur mentioned that JMC needs support to improve services across the value chain of the SWM. As they briefly explained

that, the Jaipur city is facing various challenges to channelize the process of segregation. Moreover, they mentioned a big gap for managing composting plant, MRF and liquid waste. Hence, training would be required in enhancing the knowledge related to SWM value chain, O&M and new innovative technology that they can be opted in the city.

Disaster and Emergency Preparedness

Mr. Bane suggested considering the current pandemic situation, it is necessary to train the officials to handle the crisis better. Hence, a brief training on disaster and emergency preparedness is desirable.

Training Needs for the Senior-level functionaries

For the Senior Level Functionaries, they elaborated on their job responsibilities with respect to management of waste. They recommended that as the senior officials are involved in Planning & implementation, financial and project management, a training for the same would be highly beneficial. However, it would benefit to provide them with innovative technologies and strategies with current best practice to manage municipal waste.

Training Needs for the Mid-level Officials

For the Mid-level officials, i.e. for the AE, JE, HO, etc. he recommended that the trainings covering aspects of operation & maintenance across the solid waste management value chain would be beneficial. In addition, they added that they should also be provided exposure on new available innovative technologies across the solid waste management value chain.

Training Needs for the Ground-level functionaries

For the junior staff i.e. the Sanitary Inspectors, operators, etc. they emphasised that training on community engagement along with skill and knowledge enhancement on new innovative approaches for waste management at source for e.g. Home composting, would be beneficial.

Table 4 below provides an overview of the training needs assessed in the JMC dealing with solid waste management sector as per the discussion held with the Executive Engineer and Chief Engineer.

Table 4: Summary of findings of Training Needs based on the interview with the Executive Engineer and Chief Engineer, JMC

STAKEHOLDER	GAPS IDENTIFIED	TRAINING NEEDS	TRAINING MODE	TRAINING MEDIUM
Senior	Knowledge and Management skills	Overview of Value Chain of SWM, Innovative technologies with relevant Case Studies, project and financial management	Online	Hindi
Mid-level Officials	Importance of Segregation and Disposal	Waste management, Segregation Techniques, and Home Composting Techniques	Online	Hindi
Ground-Level Functionaries	Importance of Segregation and Disposal, skill and knowledge enhancement	Collection and Segregation techniques and importance, home composting techniques, community participation	On-Site	Hindi

4.6.1.3 Training Needs- Decision Makers in Public Health and Engineering Department

The overall management, planning, implementation and O&M for water supply management is looked after by the PHED under the state. The findings of the sectors are discussed below.

Water Supply Management

In Jaipur, Public health and Engineering department is a separate entity under the state who is responsible for overall planning, implementation, and monitoring of the water supply management, which is headed by Chief Engineer. A personal interview was conducted with Mr. Chauhan, the Chief Engineer, PHED to understand his training needs and to access the training needs of his officials and staff members to help build their capabilities for better and efficient work performance. During the interview, Mr. Chauhan briefly explained about the current status of the water supply in the city and the key focus area. He also explained the need for training at both micro and macro level related to daily activities for the officials for efficient management. The following are the findings of the training and needs assessment of the interview with the Chief Engineer of PHED in Jaipur.

Training Needs for the Senior-level functionaries

Mr. Chauhan elaborated on their job responsibilities with respect to management of water supply. He recommended that for the senior officials training on planning and management of Non-revenue water, integrated urban water management (IUWM) and new innovative technology would be beneficial

Training Needs for the Mid-level Officials

For the Mid-level officials, Mr. Chauhan recommended trainings covering aspects of Operation & Maintenance, execution of works, quality & treatment and applied engineering. He also emphasized on the need of training for 'IUWM'.

Training Needs for the Ground-level functionaries

A comprehensive training that builds the capacity of the staff to perform day-to-day O&M activities efficiently was the prime need highlighted for the junior officials. Mr. Chauhan also suggested the need to provide basic trainings on enhancing the knowledge on the understanding of the water supply systems and their monitoring for better service delivery.

Table 5 below provides an overview of the training needs assessed in the JMC dealing with water supply management sector as per the discussion held with the Chief Engineer.

Table 5: Summary of findings of Training Needs based on the interview with the Chief Engineer, PHED

STAKEHOLDER	GAPS IDENTIFIED	TRAINING NEEDS	TRAINING MODE	TRAINING MEDIUM
Senior	Planning and Monitoring, Technologies	Overview of planning of NRW, Innovative technologies with relevant Case Studies, concepts of IUWM	Online	Hindi
Mid-level Officials	Technical and Engineering knowledge, O&M	Operation & Maintenance, execution of works, concepts of IUWM, quality & treatment	Online	Hindi
Ground-Level Functionaries	O&M, execution, skills and knowledge enhancement	Training to enhance skills to perform day to day duties efficiently	On-Site	Hindi

4.6.2 Training Needs- Mid-level Officials

The senior officials and the Heads of departments depute work to the Mid-level Officials. The Mid-level Officials comprising AE and JE were individually assessed. This was done separately for the two sectors of the Wastewater management and solid waste management. The questionnaire as described in the chapter detailing the Methodology has been explained in detailed in Annexure 1, Annexure 2, Annexure 3 and Annexure 4 had a set of questions for characterising the respondent profile. The second part of the questionnaire was aimed at understanding the general preferences of the respondents concerning the training delivery. The third part of the questionnaire assessed the Mid-level Officials on various sector-specific parameters. The findings of the survey have been mentioned sector-wise in the following sub-sections.

4.6.2.1 Wastewater Management

The mid-level staff members of Engineering department dealing with the wastewater were assessed on the parameters of legislative and institutional aspects of wastewater management, technical and engineering aspects of wastewater management systems and FSSM, financial management, community engagement and project management and private partnerships concerning various responsibilities and job roles of the respondents. Based on the assessment, the gaps in their skill sets and the training priorities were identified. A brief description of the respondents' profile is discussed below.

Age-wise Classification

The respondents who were interviewed had a representation from the two age groups i.e. below 30 years and 31-40 years. Figure 15 shows the composition of age groups of people interviewed in wastewater sector in JMC.

Educational Background

In terms of the educational qualification, staff members at JMC have a higher share in Bachelor's degree than Masters. Figure 16 shows the educational profile of respondents at JMC.

Figure 15: Age Group profile of respondents dealing with Wastewater in JMC

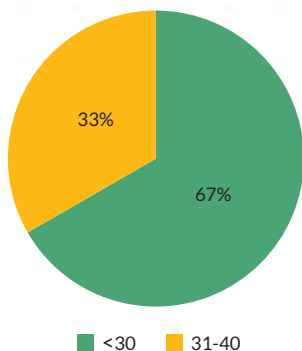


Figure 16: Educational Background of respondents dealing with wastewater in JMC

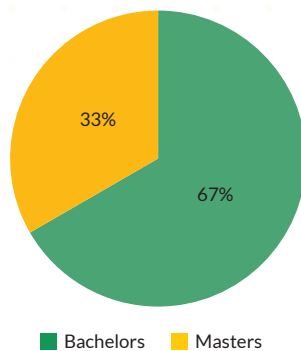
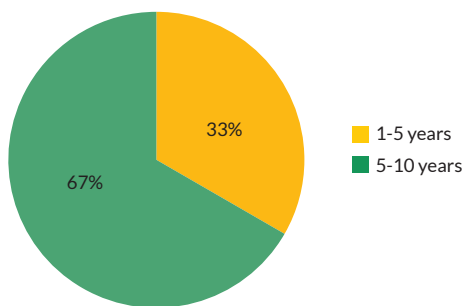


Figure 17: The Years of Service of respondents dealing with Wastewater in JMC



Years of Service

Majority of the respondents fall into the category of 1-5 years and 5-10 years of experience. Figure 17 shows the share of respondents for their years of service.

Responsibilities as part of the Job

All the respondents interviewed for UGD at JMC mentioned Technical and Engineering aspects as the most important part of their job. Following this was engaging with public and complaint redressal, conducting field supervision, staff management, planning and scheduling, Training and capacity building, legal aspects and compliance and enhancing community participation. The financial



aspects of the projects and communication is not a part of their job roles. Figure 18 shows the Key responsibilities among the Mid-level Officials in Underground Drainage cell of JMC.

Sector Specific Assessment

The following section deals with the various aspects of Underground Drainage at JMC. The respondents were assessed on their knowledge and understanding of the six domains concerning wastewater, viz. Institutional and Legislative Framework, Technical and Engineering aspects of Waste Water Treatment, Faecal Sludge and Septage Management, Financial Management, Community Engagement, and Project Management. In addition to this, their understanding of the city resilience for disasters and emergencies was also recorded. The relevance of the parameters under those six domains, concerning their jobs was recorded and their training priority was understood. The findings under the six domains are listed as under. The detail findings for the Mid-Level Staff and the methodology of analysis have been mentioned in the Annexure 3.

Institutional and Legislative Framework

The respondents have a fair understanding of all the parameters covered under institutional and legislative framework. However, a training need was expressed by the respondents for their knowledge enhancement with respect to legislation and schemes.

Technical and Engineering Aspects of Waste Water Management

While all the respondents have a good level of understanding of the Technical and Engineering aspects of SWM, they suggested an advance level training for the same.

Faecal Sludge and Septage Management

In Jaipur, the respondents expressed that they have a poor level of understanding of the subject; however, they would like a brief training on FSSM covering aspect related to occupational hazards and safety in handling Faecal sludge, Operation, Maintenance & Monitoring of faecal sludge treatment plants and Grievance redressal system.

Financial Management

The respondents mentioned that financial management is not relevant to their job. Therefore, they suggested that no training requirement for the same.

Community Engagement

The respondents shared that Community Engagement is an important part of their job role and that they would require skill enhancement training for Community Engagement and exposure on various models for community engagement and IEC activities.

Project Management and Private Partnerships

The officials mentioned that sessions on topics pertaining to Project Management would help them perform their duties well.

Table 6: Summary of Training Needs for Mid-level Officials in Waste Water Sector at JMC

Domains/ Aspects	Training Need
Institutional and Legislative framework	Yes. Most of them have fair understanding and require training on the legislative framework and various schemes.
Technical and Engineering Aspects	Most have a fair understanding of the subject. The respondents suggested a training on new available innovative technologies
FSSM	Brief training on FSSM treatment technology with available options of transporting, disposal/reuse, Occupational hazards in handling of FSSM, operation, Maintenance and Monitoring and grievance redressal system
Financial Management	No gap identified. No training required.
Community Engagement	All of them have poor understanding and require training on the same
Project Management and Private Partnerships	Brief training on Project management and private sector partnership

Most of them had a fair understanding of the topics. The officials expressed their interest in attending training on topics concerning Project planning, monitoring and control, models of PPP, Public interaction and complaint redressal system and also on use of ICT for management.

4.6.2.2 Solid Waste Management

The mid-level staff members dealing with the Solid Waste Management were assessed on the legislative and institutional aspects of SWM, technical and engineering aspects waste management and waste disposal, financial management, community engagement and project management and private partnerships concerning various responsibilities and job roles of the respondents. Environmental Engineers from the department were interviewed. Based on the assessment, the gaps in their skill sets and the training priorities were identified. A brief description of the respondents' profile is discussed in the following.

Age-Wise Classification

The respondents who were interviewed had a representation from the two age groups i.e. below 30 years and 31-40 years. Figure 19 shows the composition of age groups of people interviewed in JMC.

Educational Background

All respondents working for solid waste management in JMC have a Master's degree Figure 20 shows the educational background composition of the respondents among Mid-level Officials working for solid waste management in JMC.

Figure 19: Age wise composition of respondents for Solid Waste management at JMC

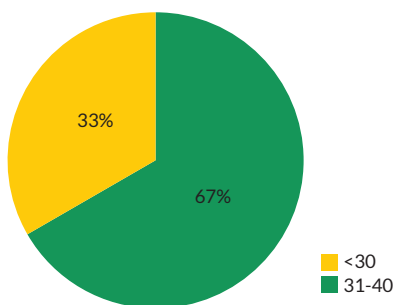


Figure 20: Educational Background of respondents working in solid waste management sector at JMC

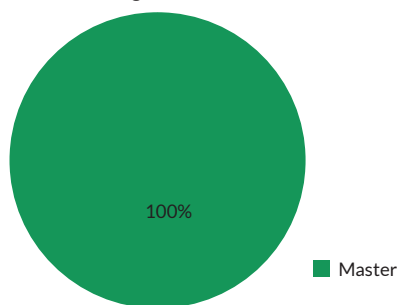
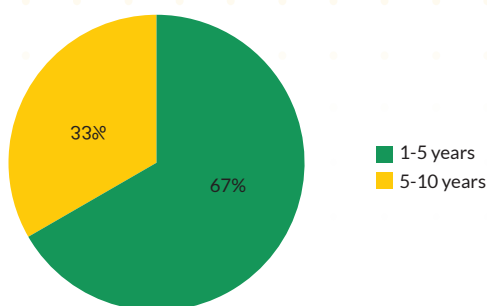


Figure 21: Year of Service of the respondents among Mid-level Officials working in solid waste management sector in JMC



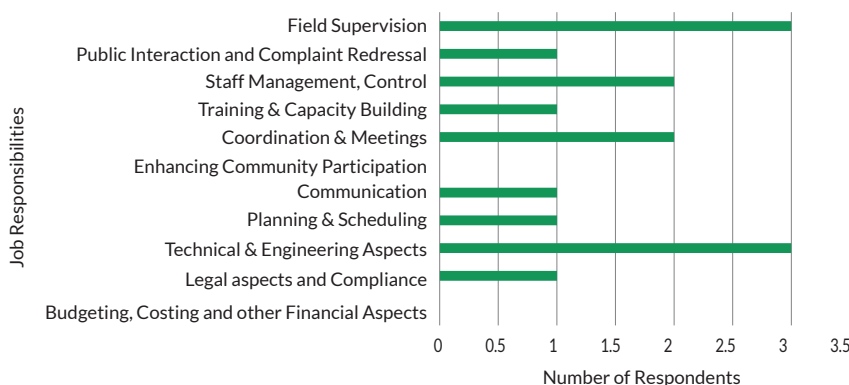
Years of Service

In terms of year of experience, most of the respondents fall into the category of 1-5 years and 5-10 years. Figure 21 shows the years of experience of the Mid-level Officials dealing with SWM at JMC.

Responsibilities as part of the Job

Most officials working at JMC have to deal with the technical and engineering aspect and conducting field supervision. Following this was staff management, control, coordination and meetings, public interaction and complaint, training and capacity building, planning and scheduling and legal compliance. The financial aspects of the projects and enhancing community participation is not a part of their job roles. Figure 22 shows the job roles taken up by the respondents in the SWM at JMC.

Figure 22: Job responsibilities of Mid-level Officials working in SWM in JMC



Sector Specific Assessment

The following section deals with the various aspects of Solid Waste Management at JMC. The respondents were assessed on their knowledge and understanding of the five domains concerning solid waste management, viz. Institutional and Legislative Framework, Technical and Engineering aspects of Solid Waste Management and Waste Disposal, Financial Management, Community Engagement, and Project Management. In addition to this, their understanding of the city resilience for disasters and emergencies was also recorded. The relevance of the parameters under those five domains, concerning their jobs was recorded and their training priority was understood. The findings under the five domains are listed as under. The detail findings for the Mid-Level Staff and the methodology of analysis have been mentioned in the Annexure 3.

Institutional and Legislative Framework

The respondents have a fair understanding of the topics about the Legislative and Institutional Framework. They suggested training on the same would be beneficial.

Technical and Engineering Aspects of Solid Waste Management

The topics related to the value chain and its management in SWM are very relevant to the job roles of the respondents. Hence, training on solid waste value chain management needs to be delivered.

Financial Management

Majority of the respondents expressed the subject to be highly relevant with respect to their job responsibilities. While all the respondents have a poor level of understanding of the subject, they suggested that a training on the same would be beneficial.

Community Engagement

Community engagement is not an important part of the work for the Mid-level Officials working in the solid waste management sector in JMC. Hence, training is not required.

Project Management and Private Partnerships

It was observed that they have a fair to poor understanding of the project management and private partnership. However, they suggested that training on the same would be highly beneficial and help them to perform their duties well.

Table 7: Summary of Training Needs for Mid-level Officials in Solid Waste Management Sector at JMC

Domains/ Aspects	Training Need
Institutional and Legislative framework	Yes. They need an understanding of the legislative framework in SWM.
Technical and Engineering Aspects	Brief training on value chain management.
Financial Management	Brief training required.
Community Engagement	Brief training on the subject
Project Management and Private Partnerships	Brief training on project management and private sector partnership.

The findings of TANA for the Mid-level Officials working for solid waste management sector have been summarised in Table 7.

4.6.2.3 General Preferences for Training Programme

To understand the logistical preferences of the Mid-level Officials at JMC, few questions exploring their preference for the language of training delivery, mode of delivery, duration of the programme, and the expectations for the same were identified. The findings related to the general aspects of the training programme, based on the cumulative responses of the three sectors are listed below.

Exposure through Previous Programmes of Capacity Building

It was observed that the Mid-level personnel working at JMC are not regularly provided with the capacity building and training

Figure 23: Number of Capacity Building Programmes attended by Mid-level officials of JMC in the past three years

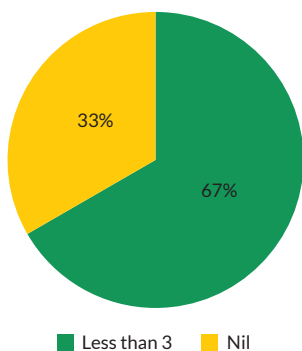
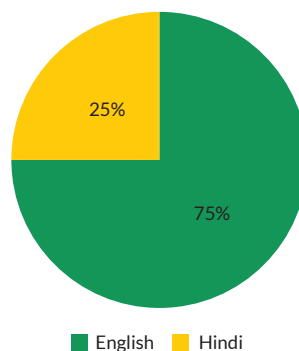


Figure 24: Preferred Medium of Instruction of mid-level officials at JMC



programmes. In the past three years, most respondents have attended 1-2 training programmes. Figure 23 shows the share of respondents who have attended any training programmes in the last three years.

The medium of instruction of Training Programmes

A large majority of the respondents are comfortable with English being the preferred medium of instruction of training programmes, followed by Hindi. Figure 24 shows the preference of language for the training delivery.

Duration of Training Programme

Most respondents suggested a 2-Day long training programme. This was followed by 3 Day being the preferred duration of the training programme. Figure 25 shows the share of respondents for their preferred duration of the training programme.

Location of Training Programme

Concerning physical training and exposure visits, questions were asked to assess the preference of the Mid-level Officials. Most respondents prefer a training programme in other states and within the city. Least number of respondents suggested the training programmes should be delivered outside the city within state. Figure 26 shows the share of respondents corresponding to their preference for the location of the training programme.

Figure 25: Preferred Duration of training programmes as suggested by the Mid-level Officials at JMC

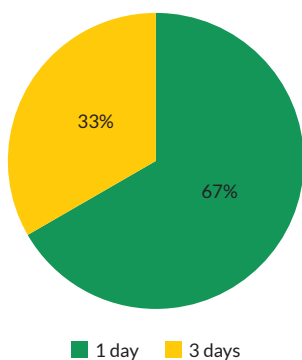


Figure 26: Preferred location of training programmes as suggested by Mid-level Officials at JMC

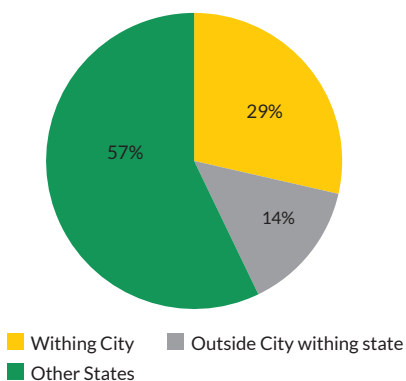
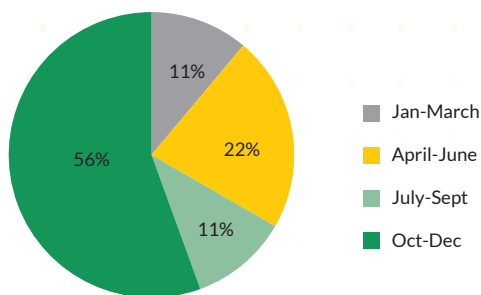


Figure 27: Preferred time of the training programme



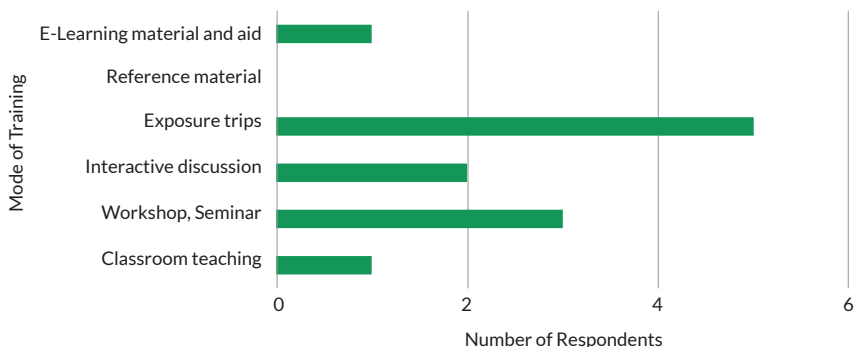
Time of Training Programme

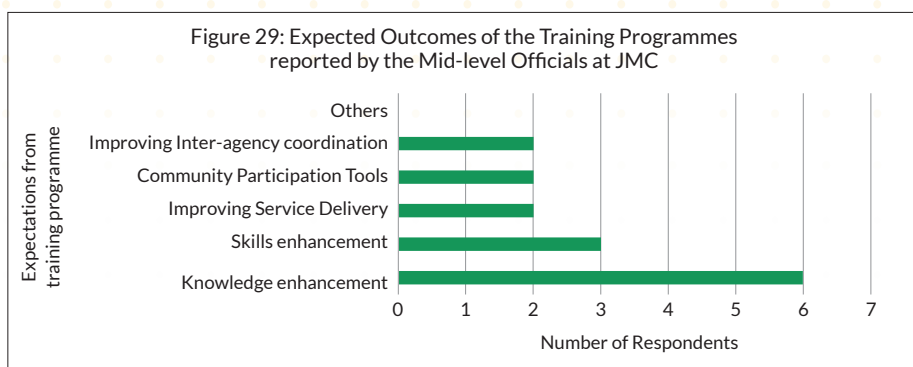
Considering their schedule and commitments concerning their jobs, most respondents prefer the months of October to December to deliver the training programmes. The second most preferred time of training delivery was found to be the months of April, May and June. The month of July to September and January to March are the least preferred time for the training delivery. Figure 27 shows the details of the share of the preferred time duration of the training delivery.

Mode of Training Delivery

Most respondents suggest exposure trips, workshop, seminars and interactive discussion as the preferred mode of training delivery. Figure 28 shows the choices of the respondents concerning the mode of training delivery.

Figure 28: Preferred Mode of Training of Mid-level Officials in JMC





Expectations of participants from the training programmes

The respondents are keen on knowledge and skill enhancement and learning to improve service delivery. Since Community Engagement and Public Interaction is an important part of the job of the Mid-level Officials, commonly across the three sectors, the respondents expect Community Participation tools as part of the training programme. Figure 29 shows the preferred expected outcomes of the training programmes.

The general preferences of the training programme as discussed above are summarised in Table 8.

Table 8: Summary of general preferences for training programmes of Mid-level Officials at JMC

Parameter	Preference/Remarks
Exposure through Previous Programmes of Capacity Building	less exposure to capacity building programme
Medium of Instruction	English and Hindi
Duration	2-3 Days
Time	April-June and October-December
Location	Other state
Mode of Delivery	Online / Exposure Trips, workshop, seminar
Expected Outcomes	Knowledge Enhancement, skill enhancement

4.6.3 Training Needs- Ground Level Functionaries

The Ground Level Functionaries comprise the personnel working in the field performing the very fundamental jobs and have first-hand exposure to the issues of functioning and maintenance. These include functionaries working in the ULB. Due to unavailability of the ground staff, we had an interview with the senior official, Executive Engineer, Mr. Bane Singh, Mr. Umang Rajwanshi and Chief Engineer, Mr Bhupinder Mathur and Mr. Chauhan for understanding the training needs of the ground staff to have a glimpse of the needs, issues and challenges they face in performing their day-to-day job responsibilities. The detailed findings have been mentioned sector-wise in following sub-sections.

4.6.3.1 Wastewater and Water supply

The prime agencies responsible for planning and implementation, operation and maintenance and monitoring for wastewater management is JMC and for water supply is PHED. However, to assess the needs of the ground functionaries, the senior official during the interview stated their needs and the assistance they seek in wastewater sector. The following was observed among the personnel on the ground level.

Priorities of the Ground functionaries

As mentioned by the senior officials, the Ground level functionaries at JMC get constant support from their senior officials. However, they understand that there is a need to sensitise the public to conserve water. They adept with the technical knowledge and their experience in the field helps perform their duties well.

Training needs

As suggested by the officials, they had a training requirement for new innovative approaches and technologies in both the sectors. Additionally, they need to train on how to interact and deal with the community in a better manner and the current practices focussing on O& M guidelines and SOPs would be helpful in their day-to-day job responsibilities.

Mode and Medium of training

The senior officials suggested that the preferred mode of training for ground functionaries is physical training for better understanding of the concepts. Hindi is the preferred medium of instruction for the Ground-level Functionaries.

4.6.3.2 Solid Waste Management

In Solid Waste Management, Jaipur Municipal Corporation is responsible for the primary and secondary collection, segregation of municipal solid waste, cleaning of drainage channels.

The Executive Engineer oversees the implementation of sanitation and SWM activities through Assistant Engineer. Assistant Engineer with help of ground functionaries such as Sanitary Inspector implements works on the ground. The following has been found concerning the needs of the ground-level personnel and field-level workers.

Issues and Support Needed

The senior officials stated that the ground functionaries get full support from the seniors, subordinates and the citizens. However, during this pandemic situation the ground functionaries are facing difficulties in managing the Bio- medical waste. Therefore, training for the same can be beneficial in performing their day-to-day activities.

Training Needs

As suggested by the senior officials, a training related to operation and maintenance and new innovative technology would be beneficial. In addition, they emphasised that training on home composting and community participation.

Mode and Medium of training

The senior officials suggested that the preferred mode of training for ground functionaries is physical training for better understanding of the concepts. Hindi is the preferred medium of instruction for the Ground-level Functionaries.

Table 9 provides an overview of the training needs assessed across various departments in the JMC dealing with wastewater and solid waste management sectors for the ground level functionaries.

Table 9: Summary of Training Needs of Ground-level functionaries at JMC

SECTOR	GAPS IDENTIFIED	TRAINING NEEDS	TRAINING MODE	TRAINING MEDIUM
Solid Waste Management	Technical management and Operation and Maintenance	Training on various available technology for home composting, skills enhancement and community engagement	On-site	Hindi
Water and Waste Water Management	Technical and management skills and Operation and maintenance	Training on available technology to enhance skills and community participation to perform day to day duties efficiently	On-site	Hindi

4.7 Conclusion

The TANA findings of the various stakeholders explained in the previous sections are summarised as below:

The focus of the Jaipur Municipal Corporation as assessed from the interview held with the senior officials is to adopt new innovative sustainable technologies across the three sectors of water, wastewater and solid waste management for efficient service delivery. In JMC, SWM is the top most priority followed by wastewater. The senior officials are keen on enhancing their knowledge and skills to explore approaches that focus on efficient resource management

As per the discussions held with the senior officials of PHED for the water sector, it was identified that the prime focus was to sharpen their skills for better management, planning and operation and maintenance in water sector. Also the Chief Engineer specifically highlighted that training on Integrated urban water management would be helpful for the officials to bridge the gaps and challenges they are facing in their respective areas.

During an interview with the senior officials, it was specified that some parts of Jaipur lack management of wastewater. He solicited a training on Faecal Sludge management.

Most officials in Jaipur across the three sectors have a fair understanding of their subjects. However, they expressed the desire

to enhance their knowledge in the same and get introduced to new concepts, systems and technologies. The detailed analysis of the training priorities of the Mid-level Officials is discussed in Table 11 and Table 12 for the two sectors of Wastewater management and Solid Waste Management respectively. The tables have been summarized from the detailed tables in the Annexure 9. Priority has been marked as High if the majority of aspects under a particular parameter were preferred by the participants. The Priority has been marked as Medium if a brief training was preferred by the respondents on about half of the aspects under a parameter. The Priority has been marked as Low if the respondents suggested no training is required for a parameter.

A need was identified from both Mid-level Officials and ground level functionaries to provide case study based training for operation and maintenance of services and facilities in their respective sectors.

Given the current COVID-19 situation, almost every stakeholder group has shown an interest in delivery of the trainings pertaining to disaster and risk preparedness.

Table 10: Summary of Training Needs for Mid-level Officials for wastewater sector in JMC

Parameter	Trainings Needed	Training Priorities
LEGISLATIVE AND INSTITUTIONAL FRAMEWORK		
Legislative framework	Yes	
Institutional Framework	No	
Provisions and Elements of Water Management in Missions and Scheme	Yes	
WASTE WATER MANAGEMENT TECHNOLOGIES		
Need for waste water management	Yes	
Wastewater Generation	Yes	
Waste Water Treatment	Yes	
Waste Water Disposal/Reuse	Yes	
Grievance Redressal System	Yes	
FAECAL SLUDGE AND SEPTAGE MANAGEMENT		
Faecal Sludge and Septage Management	Yes	
Occupational Hazards and Safety in handling Faecal Sludge	Yes	

Parameter	Trainings Needed	Training Priorities
Operation, Maintenance & Monitoring of Faecal Sludge Treatment Plants	Yes	
Grievance Redressal System	Yes	
FINANCIAL MANAGEMENT		
Sources to access funds (details of grants or loans at central, state and local level, details of external funding agencies, institutions, borrowing capacity of ULBsetc.	No	
Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, punitive measures, etc.)	No	
Resource Mobilization	No	
Various Business Models	No	
Cost Recovery, Cost Efficiency & Financial Management	No	
COMMUNITY ENGAGEMENT		
Need for Community Engagement, Water Use Efficiency	No	
Various Community Engagement Models and Structures	No	
Information, Education & Communication (IEC)	No	
PROJECT MANAGEMENT AND PRIVATE SECTOR PARTNERSHIP		
Project Planning, Monitoring & Control	Yes	
Various Models of PPP	Yes	
Public Interaction and Complaint Redressal System	Yes	
Use of ICT, GIS, RS and Technology in management of assets and resources	Yes	

* Green represents High Priority, Yellow represents Medium Priority, and Blue represents Low priority

Table 11: Summary of Training Needs for Mid-Level Functionaries for Solid Waste Management Sector in JMC

Parameter	Trainings Needed	Training Priorities
LEGISLATIVE AND INSTITUTIONAL FRAMEWORK		
Legislative framework	Yes	
Institutional Framework	No	
Provisions for SWM in Missions And Schemes	No	
SOLID WASTE VALUE CHAIN MANAGEMENT		
Waste Segregation and Collection	Yes	
Wet waste management Technology and approaches	Yes	
Dry waste management approaches and technology	Yes	

Parameter	Trainings Needed	Training Priorities
Selection of Solid waste management technologies	Yes	
Waste disposal – Sanitary landfill	Yes	
Occupational Health and Safety	Yes	
FINANCIAL MANAGEMENT		
Sources to access funds (details of grants or loans at central, state and local level, details of external funding agencies, institutions, borrowing capacity of ULBs etc.	Yes	
Various stakeholders from financing point of view	Yes	
Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, etc.)	Yes	
Resource Mobilization	Yes	
Various Business Models	Yes	
Cost Recovery, Cost Efficiency & Financial Management	Yes	
COMMUNITY ENGAGEMENT		
Need for Community Engagement	Yes	
Various Community Engagement Models and Structures	Yes	
Information, Education & Communication (IEC)	Yes	
PROJECT MANAGEMENT AND PRIVATE SECTOR PARTNERSHIP		
Project Planning, Monitoring & Control	Yes	
Public Interaction and Complaint Redressal System	Yes	
Use of ICT for management	Yes	

* Green represents High Priority, Yellow represents Medium Priority, and Blue represents Low priority

Based on the findings of the TANA conducted through interviews and assessments, a broad curriculum structure, customized for the Jaipur Municipal Corporation is presented in Chapter 5.



5

FINDINGS AND RECOMMENDATIONS



5. Findings and Recommendations



One of the objectives of this study is to identify the gaps that exist in the knowledge and understanding, and determine the training needs of the ULB officials in the five pilot cities. This would guide the design of the customised curriculum modules that would be delivered to the officials of various cadres in the five cities. This chapter provides findings as a comparison of the ULBs in the four cities after interviewing the officials and analysing the results. This is followed by a curriculum outline, which forms the recommendations of this report, mentioning the topics for training delivery to the officials in the three sectors, customised for each city.

5.1 Findings of TANA

The findings of the TANA are summarised here in tables. Table 12 shows the priorities of the ULBs as reported by their respective Commissioners. The priorities are mapped as per the preferences out of the three sectors of solid waste management, wastewater management and water management. They are categorised as per sector, each dealing with one sector. For a comprehensive understanding, the tables mention the findings of each city with respect to the stakeholder group. Table 13 show the needs of the cities for solid waste management, wastewater management and water management respectively.

Table 12: Priorities of the JMC as mentioned by the respective Commissioners

City	First Priority	Second Priority	Third Priority
Jaipur	Solid Waste Management	Waste Water Management	Water Management

Table 13: Summary of gap analysis for the three sectors in JMC

City	Decision Makers	Mid-level Officials	Ground Level Functionaries
Solid Waste Management	Technical and Management skills (project and financial aspects)	<ul style="list-style-type: none"> Legislative Framework around solid waste management New technologies and models in value chain management Disaster & Emergency Preparedness 	<ul style="list-style-type: none"> Home composting methods Waste segregation Skill enhancement Community engagement
Waste Water Management	Technical management, Planning and monitoring	<ul style="list-style-type: none"> Legislative Framework around waste water management New technologies of waste water treatment Overview of FSSM Project Evaluation and Project Monitoring 	<ul style="list-style-type: none"> O&M Community engagement
Water Supply Management	Overview of IUWM	<ul style="list-style-type: none"> New Water Quality management and Treatment; O&M Project Evaluation and Project Monitoring Overview of IUWM 	<ul style="list-style-type: none"> O&M Overview of water supply systems and monitoring

5.2 Recommendations

The training need findings provide the preliminary directions to design the training curriculum and the modules to be delivered. Formulating a training curriculum outline is one of the outcomes of this study. The outlines are based on the findings of TANA, including few new concepts and strategies like Disaster and Emergency Preparedness, IUWM, Demand Side management and FSSM, etc., that would be relevant in the coming decades to tackle climate change resonating with the aim of GEF. The following section provides the training outlines for the four cities each outlined for the sectors and stakeholders.

5.3 Curriculum

Based on the findings and recommendations, the curriculum outlines for Jaipur are prepared mentioning in brief the topics that would be covered in the training. Broadly, the topics are similar across the cities, however, the contents under each topic would be dealt with varying depths depending on the identified city needs and demands. The curriculum outline of each city are mentioned in following sub-sections. The curriculum outline mentioned below is a tentative programme. The detailed curriculum, however, might vary in terms of the session name and contents.

Table 14, Table 15 and Table 16 provide the curriculum outline for JMC for the sectors solid waste management, wastewater management and water management respectively.

Table 14: Curriculum Outline for solid waste management for JMC

Stakeholder Group	Session Name	Topic to be delivered / Session contents
Decision Maker	Overview of SWM	SWM value chain and Waste hierarchy, Overview of existing legal framework, convergence with other government missions
	Issues and Challenges	Issues and Challenges of the current practices (Planning, implementation and execution, O&M, etc.)
	Innovation in SWM value chain	<ul style="list-style-type: none"> • New Innovative Approaches and Technologies • Case studies: Successful SWM Models, Innovations (waste to wealth products)
	Financial and Project Management	<ul style="list-style-type: none"> • Strategies for financially sustainable projects; • Resource Mobilization (tapping available funds and resources from various levels of governance and other sources)
Mid-level Officials	Overview of SWM	SWM value chain and Waste hierarchy, Overview of existing legal framework, convergence with other government missions
	Legislative Framework	National and state level policies, Rules and Guidelines
	Issues and Challenges in SWM	<ul style="list-style-type: none"> • SWM value chain - Technologies (Cost-effective technologies, advantages and limitations, selection criteria, capacity, efficiency, CAPEX/OPEX, Private Sector Partnership etc.) • Existing SBM ICT platforms, IEC tools • Successful SWM Models – Composting, Dry waste management, Bioremediation, MRF centres, Innovations • Health and Safety protocols- Use of PPE Kits
	Community Engagement	Public interaction and sensitisation
	Project Management	DPR Handling, Contract Management, Financial Management, Procurement
	Disaster Preparedness and Emergency Response	Management Strategies and operating Protocols and Guidelines during Emergencies and Disasters
Ground-level Functionaries	Context Setting	Components of Solid Waste Management (Value Chain) Issues and Challenges in SWM
	Guidelines and SOPs	Various standard operating procedures and Guidelines
	Occupational Health and Safety Measures	Use of PPE kits and health checkups
	SWM Workers as Change Agent	Community Engagement tools, Behavioral Change, Communication skills
	Treating Waste at source	Home composting models, onsite community composting models, dry waste management
	Emergency Response	Guidelines for handling, treatment and disposal

Table 15: Curriculum Outline for wastewater management for JMC

Stakeholder Group	Session Name	Topic to be delivered / Session contents
Decision Maker	Overview	Elements and components of Wastewater Management and FSSM
	Issues and Challenges	Issues and Challenges of the current practices (Planning, implementation and execution, O&M, etc.)
	Project Management	DPR Handling, Contract Management, Financial Management, Procurement
	New Available Technologies	New Innovative Approaches and Technologies (O&M, Treatment)
Mid-level Officials	Overview	Elements and components of Wastewater Management and FSSM
	Legislative Framework	National and state level policies, Rules and Guidelines
	Issues and Challenges	Issues and Challenges of the current practices (Planning, implementation and execution, O&M, etc.)
	New Available Technologies	New Innovative Approaches and Technologies (O&M, Treatment)
	Project Management	DPR Handling, Contract Management, Procurement
	Disaster Preparedness and Emergency Response	Management Strategies and operating Protocols and Guidelines during Emergencies and Disasters
Ground-level Functionaries	Context Setting	Overview of Waste Water management and FSSM
	Guidelines and SOPs	Various standard operating procedures and Guidelines
	Sanitation Workers as Change Agent	Community Engagement tools, Behavioral Change, Communication skills
	Emergency Response	Guidelines for handling, treatment and disposal

Table 16: Curriculum Outline for water management for JMC

Stakeholder Group	Session Name	Topic to be delivered / Session contents
Decision Maker	Urban Water Management Landscape for India	Overview of Water Management Policies and Programmes at National and State Level
	Contemporary approaches for Water Management	IUWM, Water Audit, Water Budgeting, WSUD
Mid-level Officials	Urban Water Management Landscape for India	Overview of Water Management Policies and Programmes at National and State Level
	Legislative Framework	National and state level policies, Rules and Guidelines
	Issues and Challenges	Issues and Challenges of the current practices (Planning, implementation and execution, O&M, etc.)
	New Available Technologies	New Innovative Approaches and Technologies (O&M, Treatment)
	Project Management	DPR Handling, Contract Management, Financial Management, Procurement
	Disaster Preparedness and Emergency Response	Management Strategies and operating Protocols and Guidelines during Emergencies and Disasters
Ground-level Functionaries	Context Setting	Overview of Water management
	O&M Guidelines and SOPs	Various standard operating procedures and Guidelines

6

REFERENCES



6. References



1. Amit Dass, A. S. J. a. M. P. P., 2014. Integrated Wastewater Management in Jaipur City, Rajasthan, India. *Nature Environment and pollution Technology*, Volume 13, p. 4.
2. Bareacts, 2020. *Latestlaws.com*. [Online]
Available at: <https://www.latestlaws.com/bare-acts/state-acts-rules/rajasthan-state-laws/rajasthan-water-supply-and-sewerage-corporation-act-1979/>
[Accessed July 2020].
3. COJ, 2011. *Jaipur Census city data*. [Online]
Available at: <https://www.census2011.co.in/census/city/77-jaipur.html> [Accessed July 2020].
4. GoR, 1959. *The Rajasthan Urban Improvement Act, 1959*, Jaipur: Government central press of Jaipur.
5. GoR, 1982. *The jaipur Developmenr Authority Act, 1982*. Jaipur: s.n.
6. GoR, 2009. *Rajasthan Municipalities Act, 2009*. Rajasthan: s.n.
7. HRDP, 2017. *RUDISCO Human resource development Policy*, Rajasthan: s.n.
8. Roberts, K., Reiner, M. & Gray, K., 2013. *Water Scarcity in Jaipur, Rajasthan, India*, Rajasthan: Jal Bhagirathi Foundation.
9. Singh, S., 2018. *Urban local Government in Rajasthan*. [Online]
Available at: <https://www.rajras.in/index.php/urban-local-government-rajasthan/>

10. TOI, 2018. *Only 25% of solid waste being processed in Jaipur*.
[Online] Available at: <https://timesofindia.indiatimes.com/city/jaipur/only-25-of-solid-waste-being-processed-in-city/articleshow/64953056.cms>
11. Vidyarthi, S., 2004. 74th Constitution amendment act and present economic growth as catalyzing agent for urban development. *ITPI*.



7

ANNEXURES



Annexure I

TANA Questionnaire for Senior Officials

Project Title:

"Sustainable Cities Integrated Approach Pilot in India"

COMPONENT 3:

Partnerships, Knowledge Management and Capacity Building

The United Nations Industrial Development Organization (UNIDO) is implementing the SC-IAP programme in India along with the Ministry of Housing and Urban Affairs, Government of India. The core objective is to build resilience in five cities – Jaipur, Bhopal, Mysuru, Vijayawada and Guntur – by integrating sustainability concepts into urban planning and management strategies.

NIUA has been engaged by the UNIDO to conduct a Training and Assistance Need Analysis (TANA) for the ULB officials and elected representatives. This assessment will be conducted across Water, Waste Water and Solid Waste Management (SWM) sector in the city. The results of TANA will constitute the basis for developing a detailed training curriculum on Water, Waste Water and SWM. The designed training modules will help in enhancing the knowledge and build capacities of ULB officials towards sustainable city management. The content of these training modules will also contribute towards achieving the objectives of national level initiatives such as Smart Cities Mission, AMRUT, PMAY, NULM, NUHM and Swachh Bharat Mission. Development of the comprehensive training modules will be followed by a training and technical assistance program.

Name of the city

Date

Department

Cell

CONFIDENTIALITY STATEMENT

The information shared in this interview will be used only towards the analysis of the Training Need Assessment and shall not be shared for any other purpose. Only the researchers involved in this study will see your responses

VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. If you do not want to participate, please return the questionnaire to the researcher. You also do not have to answer any question that makes you uncomfortable.

Please Sign below for your consent for the proceedings and/or the audio/video documentation of the same.

Name of the Respondent

Designation:

Signature

1. As per you, rank the priorities of the ULB at present out of the three sectors of Water, Waste Water and Solid Waste Management on a scale of 1 to 3, with 1 being of highest priority and 3 being of lowest priority.
2. In your ULB, what are the key issues pertaining to water, wastewater and solid waste management?
3. How is your relationship with the Elected Representatives and community in the wards in the ULB? How do you work together?
4. Please mention the challenges in Planning, Financing, Implementation, and Monitoring in these sectors.

	Water Supply Management	Wastewater Management	Solid Waste Management
Planning			
Financing			
Implementation			
Monitoring			

5. What are your suggestions for the aforementioned challenges in the sectors?
6. How do you consider this project can assist in developing the capacity of your ULB, based on your prior experience? (priorities/key areas for training)
7. As per you, who do you think are the key stakeholders?

Annexure 2

TANA Questionnaire for Department Heads

1. Provide list of Functional Representatives (designation –wise) for each of the departments under the specified Agencies: An example is given below:

SECTOR: SOLID WASTE MANAGEMENT / WASTE WATER MANAGEMENT / WATER MANAGEMENT					
AGENCY NAME:					
SL. No.	Department	Designation	Job Responsibilities	Total Staff	
				Permanent	Contractual
i.	PHED (An example)	Executive Engineer	<ul style="list-style-type: none"> Project Planning and Execution DPR Preparation Tender Approval & Management 		

2. List of projects operational in the city in your sector:

SECTOR: SOLID WASTE MANAGEMENT / WASTE WATER MANAGEMENT / WATER MANAGEMENT								
Sl. No	Project Name	Govt./ Bilateral & Multilateral Loans/ Funding Grants/ Others (if any)	Partners			Current status of Project Implementation		
			Funding	O&M	Technical	Planning	Under Construction	Functional/ Operational

3. Are there any NGOs or other private agencies working with the ULBs in your city?
If Yes:

Sl. No	Name of the NGO/Private Agency	Point of Contact	Type (Private/ NGO/ RWA/ Others)	Sector(Solid Waste/ Waste Water/ Water Management)	Type of Work/ Project Name	Role

4. How many the RWAs (active/non-active)? What is your mode and frequency of engagement with them?
5. What are your key focus areas in your sector and why?
6. Do you have any suggestions for improvement in those areas?
7. Were there any capacity building trainings held for your staff earlier? Do you find them useful?
- a. Do you have any suggestions to improve the same?
8. How is the coordination of the Elected Representatives and community in these sectors?
- a. (If not, do you have any recommendations for improving the same?)
9. Are there any innovative or best practices in the city in your sector?

Annexure 3

TANA Questionnaire for Mid-Level Officials

Water Supply Management

A. GENERAL INFORMATION

1.	Name						
2.	Gender						
3	Age Group (in yrs)	<30	31-40	41-50	51-60	60<	
4.	Contact number (mobile)						
5.	Email						
6.	Educational qualification (Please tick the highest educational degree)	Higher Secondary	Senior Secondary	Diploma	Bachelors	Masters	Others (Specify)
7.	Field of Education						
8.	Department				Cell		
9.	Designation						
10.	Type of position	Permanent		Contractual		Others(Specify)	
11.	Number of Years of Experience in the current position	1-5 years	5- 10 years		10-15 years		Above 15 years

12.	In your current position what are your responsibilities? (Tick as many relevant)	
	Planning & Scheduling	
	Legal aspects and Compliance	
	Technical & Engineering Aspects	
	Budgeting, Costing and other Financial Aspects	
	Communication	
	Field Supervision	
	Coordination & Meetings	
	Staff Management, Control	
	Training & Capacity Building	
	Enhancing Community Participation	
	Public Interaction and Complaint Redressal	
Any Other (Please Specify)		

13. Have attended any training programmes/ workshops/conference in last three years regarding Water Supply and Management?

a. Yes

b. No

If Yes, Specify the following:

Name of the training programme/ workshop/ conference	Topic/ Subject	Year	Duration	Organized by	Sponsored by	Level of relevance to current Job function/ duties		
						Highly Relevant	Some what Relevant	Not Relevant

14. Please suggest your preferred medium for the training programmes?

a. English

b. Hindi

c. Others(Specify)

15. What are your expectations from the training programmes?

- a. Knowledge enhancement
- b. Skills enhancement
- c. Improving Service Delivery
- d. Community Participation Tools
- e. Improving Inter-agency coordination
- f. Others (Specify)

16. Please suggest your preferred duration of training programmes

- a. One day
- b. Two days
- c. Three days
- d. Others(Specify)

17. Please suggest your preferred mode of training. You may tick more than one.

- a. Classroom teaching
- b. Workshop, Seminar
- c. Interactive discussion
- d. Exposure trips
- e. Reference material
- f. E-Learning material and aid
- g. Others (Specify)

18. Please suggest your preferred location of training programme

- a. Within city
- b. Outside city, within state
- c. Other states
- d. Any Other (Specify)

19. Please suggest your preferred time frame for attending the training programme?

- a. Jan-March
- b. April-June
- c. July-Sept
- d. Oct-Dec
- e. Other (Specify)

20. Of the following items, which do you identify important for training, to equip for future growth? You may choose more than 1
- Water Quality, Source Augmentation, Water Reuse
 - Demand Side Management
 - Supply Side Systems and Management
 - Water Balance and Water Budgeting
 - Water Tariff and Pricing
 - Non-Revenue Water (NRW) and Unaccounted for Water (UFW) and its reduction
 - Rainwater Harvesting and Storm Water Management
 - Water Bodies Rejuvenation, Ground Water Management
 - Others

B. TRAINING NEEDS ASSESSMENT: WATER MANAGEMENT:

As per your level of knowledge and awareness rate yourself on the following parameters:

21. INSTITUTIONAL AND POLICY FRAMEWORK FOR WATER

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Awareness			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Legislative Framework						
1.1	National water policy, 2012						
1.2	Water (Prevention and Control of Pollution) Act, 1974						
1.3	Environment (Protection) Act, 1986						
1.4	State Water Policy						
1.5	Municipal Corporation Act and other Municipal Acts						
2.	Institutional Framework						
2.1	Roles and Responsibilities of Government Institutions (State/City/ULB) in water						
2.2	Institutional Framework (State level/City Level/ ULBs)- Jal Shakti Ministry						
3.	Provisions and Elements of Water Management in Missions and Scheme						
3.1	Swachh Bharat Mission, 2014						

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Awareness			Training Needed	
			Good	Fair	Poor	Yes	No
3.2	Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 2015						
3.3	Smart Cities Mission, 2015						
3.4	14 th & 15 th Finance commission						
3.5	Any State Schemes						
4.	Others if any (specify)						

22. WATER MANAGEMENT SYSTEMS

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Water Supply Systems						
1.1	Types of Water Supply Systems (characteristics, features, requirements, selection methods, etc.)						
1.2	Available Treatment Technologies (technologies, selection criteria, treatment efficiency, land and infrastructure requirement, capex/Opex, etc.)						
1.3	Water Supply Networks -Technical and Engineering aspects						
2.	Water Reuse Systems and Requirements						
3.	Factors Affecting the selection of water management system (Estimating water demand, supply, existing infrastructure, cost, design, etc.)						
4.	Reduction of Water Losses						
5.	Water Budgeting and Water Balance						
6.	SCADA (Supervisory Control and Data Acquisition)						
7.	Others, if any (Specify)						

23. Do you wish to explore private sector participation for Rain Water Harvesting?

- a. Yes
- b. No

If Yes, Do you need any training for the same?

- c. Yes
- d. No

24. FINANCIAL MANAGEMENT

Sl. No	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Sources to access funds (details of grants/loans at central, state, and local level)						
2.	Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, etc.)						
3.	Resource Mobilization						
4.	Various Business Models						
	Cost Recovery, Cost Efficiency & Financial Management						
5	Others if any (Specify)						

25. COMMUNITY ENGAGEMENT

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Need for Community Engagement, Water Use Efficiency						
2.	Various Community Engagement Models and Structures						
3.	Information, Education & Communication (IEC)						
4.	Others if any (Specify)						

26. PROJECT MANAGEMENT AND PRIVATE SECTOR PARTNERSHIP

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Project Planning, Monitoring & Control						
1.1	Preparation of Detailed Project Report (DPR) including physical and financial methods for cost estimate, budget, costing, legal compliances, EIA, etc.						
1.2	Tendering and Procurement						
1.3	Contract Management						
1.4	Technical and Engineering Aspects						
1.5	Administrative and Financial Management (Cost Recovery, Cost Efficiency)						
1.6	Operation, Maintenance and Monitoring						
1.7	Enforcement & Accountability						
1.8	Project evaluation						
2.	Various Models of PPP						
3.	Public Interaction and Complaint Redressal System						
4.	Use of ICT, GIS, RS and Technology in management of assets and resources						
5.	Others if any (Specify)						

27. Do you think systems are well prepared for the disaster and emergencies?
28. Was the cities response well prepared for the COVID 19 crisis?
29. Were there proper operating procedures laid out for the management and functioning?
30. What would be your suggestions to improve?
31. Other Important Information / Remarks / Suggestions

Wastewater Management

A. GENERAL INFORMATION

1.	Name						
2.	Gender						
3.	Age (in yrs)	<30	31-40	41-45	51-60	>60	
4.	Contact number (mobile)						
5.	Email						
6.	Educational qualification (Please tick the highest educational degree)	Higher Secondary	Senior Secondary	Diploma	Bachelors	Masters	Others (Specify)
7.	Field of Education						
8.	Department			Cell			
9.	Designation						
10.	Type of position	Permanent	Contractual	Others(Specify)			
11.	Number of Years of Experience in the current position	1-5 years	5- 10 years	10-15 years		Above 15 years	

12.	In your current position what are your responsibilities?	
	Planning & Scheduling	
	Legal aspects and Compliance	
	Technical & Engineering Aspects	
	Budgeting, Costing and other Financial Aspects	
	Communication	
	Field Supervision	
	Coordination & Meetings	
	Staff Management, Control	
	Training & Capacity Building	
	Enhancing Community Participation	
	Public Interaction and Complaint Redressal	
	Any Other (Please Specify)	

13. Have attended any training programmes/ workshops/conference in last three years?

- Yes
- No

If Yes, Specify the following:

Name of the training programme/ workshop/ conference	Topic/ Subject	Year	Duration	Organized by	Sponsored by	Level of relevance to current Job function/duties		
						Highly Relevant	Some what Relevant	Not Relevant

14. Please suggest your preferred medium for the training programmes?

- English
- Hindi
- Others(Specify)

15. What are your expectations from the training programmes?

- Knowledge enhancement
- Skills enhancement
- Improving Service Delivery
- Community Participation Tools
- Improvement Inter-agency coordination
- Others (Specify)

16. Please suggest your preferred duration of training programmes

- a. One day
- b. Two days
- c. Three days
- d. Others(Specify)

17. Please suggest your preferred mode of training. You may tick more than one.

- a. Classroom teaching
- b. Workshop, Seminar
- c. Interactive discussion
- d. Exposure trips
- e. Reference material
- f. E-Learning material and aid
- g. Others (Specify)

18. Please suggest your preferred location of training programme

- a. Within city
- b. Outside city, within state
- c. Other states
- d. Any Other (Specify)

19. Please suggest your preferred time frame for attending the training programme?

- a. Jan-March
- b. April-June
- c. July-Sept
- d. Oct-Dec
- e. Other (Specify)

B. TRAINING NEEDS ASSESSMENT: WASTE WATER MANAGEMENT:

As per your level of knowledge and awareness rate yourself on the following parameters:

20. INSTITUTIONAL AND GOVERNANCE FOR WASTEWATER AND SANITATION

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Awareness			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Legislative framework						
1.1	Environment (Protection) Act, 1986						
1.2	Water (Prevention and Control of Pollution) Act, 1974						
1.3	National Environmental Policy, 2006						
1.4	National Urban Sanitation Policy, 2008						
1.5	Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013						
1.6	Framework for municipal functions (Municipal act, Service rules, Building bye-laws, Municipal Bye-laws, etc.)						
1.7	CPCB/SPCB Guidelines						
1.8	NGT Rules						
1.9	State Urban Sanitation Policy and State Urban Sanitation Strategy						
2.	Institutional Framework						
2.1	Organization structure, Roles and Responsibilities of Government departments						
2.2	Roles and Responsibilities of other relevant stakeholders like SPCBs, NGOs, RWAs						
2.3	Inter Institutional Coordination mechanism, reporting						
2.4	National Rating Scheme for Sanitation (Swachh Survekshan) and Other protocols (ODF, ODF+, ODF++, Water+, etc.)						

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Awareness			Training Needed	
			Good	Fair	Poor	Yes	No
3.	Provisions and Elements of Water Management in Missions and Scheme						
3.1	Swachh Bharat Mission, 2014						
3.2	Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 2015						
3.3	Smart Cities Mission, 2015						
3.4	14 th and 15 th Finance Commission						
3.5	NULM and NUHM						
4.	Others if any (specify)						

21. WASTE WATER MANAGEMENT

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Waste Water Management						
1.1	Need for waste water management						
2.	Wastewater Generation						
2.1	Sources of waste water generation						
2.2	Available options for conveyance of waste water (types, features, limitations, selection criteria, etc.)						
2.3	Technical and Engineering aspects of types of conveyance systems (Infrastructure, capacity, capex/opex, O&M, etc.)						

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
3.	Waste Water Treatment						
3.1	Types (Off-site sanitation system, Decentralized Wastewater Treatment (DEWATS), On-site sanitation system, etc.)						
3.2	Available Technologies (types, features, treatment efficiency, limitations, selection criteria, etc.)						
3.3	Technical and Engineering aspects of available technologies (Infrastructure, capacity, capex/opex, O&M, etc.)						
4.	Waste Water Disposal/Reuse						
4.1	Awareness on associated health risks due to improper disposal						
4.2	Current practices of Waste water reuse						
5.	Grievance Redressal System						
6.	Others(if any)						

22. FAECAL SLUDGE & SEPTAGE MANAGEMENT (FSSM)

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Faecal Sludge and Septage Management						
1.1	Need for FSSM						
1.2	Design and Construction Guidelines for various types of containment systems and desludging frequency						
1.3	Available Technologies for desludging of Septic Tanks (available equipment, advantages and limitations, selection criteria, capacity, efficiency, capex/opex etc.)						
1.4	Available options for transporting the faecal sludge and septage (Features, limitations, capacity, selection criteria, capex/opex, etc.)						
1.5	Available Treatment Technologies (technologies, selection criteria, treatment efficiency, land and infrastructure requirement, capex/opex, etc.)						
1.6	Available Options for Disposal/Reuse						
2.	Occupational Hazards and Safety in handling Faecal Sludge						
2.1	Awareness on associated risks to health						
2.2	Mitigating measures (PPE, Training on use of tools/equipment, Training on standard operating procedures, etc.)						

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
3.	Operation, Maintenance & Monitoring of Faecal Sludge Treatment Plants						
3.1	Operation						
3.2	Asset Management						
3.3	Administrative/ Financial Management						
3.4	Monitoring and Record-keeping						
3.5	Managing volumes & schedules of FS collection						
3.6	Utilizing available local resources						
3.7	Storage & sale of end products						
4.	Grievance Redressal System						
5.	Others, if any (Specify)						

23. Do you wish to explore private sector participation for FSSM?

- a. Yes
- b. No

If Yes, Do you need any training for the same?

- c. Yes
- d. No

24. Specify the various value chain points across FSSM for which you wish to explore private sector participation?

25. FINANCIAL MANAGEMENT

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Sources to access funds (details of grants or loans at central, state and local level, details of external funding agencies, institutions, borrowing capacity of ULBsetc.						
2.	Various stakeholders from financing point of view						
3.	Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, punitive measures, etc.)						
4.	Resource Mobilization						
5.	Various Business Models						
6.	Cost Recovery, Cost Efficiency & Financial Management						
7.	Others if any (Specify)						

26. COMMUNITY ENGAGEMENT

SL. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Need for Community Engagement						
2.	Various Community Engagement Models and Structures						
3.	Information, Education & Communication (IEC)						
4.	Others if any (Specify)						

SL. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Project Planning, Monitoring & Control						
1.1	Preparation of Detailed Project Report (DPR) including physical and financial methods for cost estimate, budget, costing, legal compliances, EIA, etc.						
1.2	Tendering and Procurement						
1.3	Contract Management						
1.4	Technical and Engineering Aspects						
1.5	Administrative and Financial Management (Cost Recovery, Cost Efficiency)						
1.6	Operation, Maintenance and Monitoring						
1.7	Enforcement & Accountability						
1.8	Project evaluation						
1.9	Human Resource Management						
2.	Various Models of PPP						
3.	Public Interaction and Complaint Redressal System						
4.	Use of ICT, GIS, RS and Technology in management of assets and resources						
5.	Others if any (Specify)						

27. Project Management and Private Sector Partnership

28. Do you think systems are well prepared for the disaster and emergencies?

29. Was the cities response well prepared for the COVID 19 crisis?

30. Were there proper operating procedures laid out for the management and functioning?

31. What would be your suggestions to improve?

32. Other Important Information / Remarks / Suggestions

Solid Waste Management

A. GENERAL INFORMATION

1.	Name						
2.	Gender						
3.	Age Group (in yrs)	<30	31-40	41-50	51-60	>60	
4.	Contact number (mobile)						
5.	Email						
6.	Educational qualification (Please tick the highest educational degree)	Higher Secondary	Senior Secondary	Diploma	Bachelors	Masters	Others (Specify)
7.	Field of Education						
8.	Department			Cell			
9.	Designation						
10.	Type of position	Permanent		Contractual		Others(Specify)	
11.	Number of years of Experience In The Current Position	1-5 years	5- 10 years		10-15 years	Above 15 years	

12.	In your current position what are your responsibilities? (Tick as many relevant)	
	Planning & Scheduling	
	Legal aspects and Compliance	
	Technical & Engineering Aspects	
	Budgeting, Costing and other Financial Aspects	
	Communication	
	Field Supervision	
	Coordination & Meetings	
	Staff Management, Control	
	Training & Capacity Building	
	Enhancing Community Participation	
	Public Interaction and Complaint Redressal	
	Any Other (Please Specify)	

13. Have attended any training programmes/workshops/conference in last three years regarding Solid Waste Management?
- Yes
 - No

If Yes, Specify the following:

Name of the training programme/ workshop/ conference	Topic/ Subject	Year	Duration	Organized by	Sponsored by	Level of relevance to current Job function/duties		
						Highly Relevant	Some what Relevant	Not Relevant

14. Please suggest your preferred medium for the training programmes?
- English
 - Hindi
 - Others (Specify)

15. What are your expectations from the training programmes?

- a. Knowledge enhancement
- b. Skills enhancement
- c. Improving Service Delivery
- d. Community participation tools
- e. Improving Inter-agency coordination
- f. Others (Specify)

16. Please suggest your preferred duration of training programmes

- a. One day
- b. Two days
- c. Three days
- d. Others(Specify)

17. Please suggest your preferred mode of training. You may tick more than one.

- a. Classroom teaching
- b. Workshop, Seminar
- c. Interactive discussion
- d. Exposure trips
- e. Reference material
- f. E-Learning material and aid
- g. Others (Specify)

18. Please suggest your preferred location of training programme

- a. Within city
- b. Outside city within state
- c. Other states
- d. Any Other (Specify)

19. Please suggest your preferred time frame for attending the training programme?

- a. Jan-March
- b. April-June
- c. July-Sept
- d. Oct-Dec
- e. Other (Specify)

As per your level of knowledge and awareness, rate yourself on the following parameters:

20. INSTITUTIONAL AND POLICY FRAMEWORK FOR SOLID WASTE MANAGEMENT

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Awareness			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Legislative Framework						
1.1	National Urban Sanitation Policy, 2008						
1.2	Solid Waste Management rules						
1.3	Plastic Waste Mgmt rules						
1.4	C & D Waste Mgmt rules						
1.5	E- Waste Mgmt rules						
1.6	Bio- medical waste Mgmt rules (relevant parts)						
1.7	Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013						
1.8	Emergency Response Sanitation unit						
1.9	National Safai Karamcharis Finance & Development Corporation (NSKFDC)						
1.10	National Rating Scheme for Sanitation (Swachh Survekshan, ODF++, Water Plus)						
1.11	State level State SWM Policy and Strategy						
1.12	SWM Bye-Laws						
2.	Institutional Framework						
2.1	Roles and Responsibilities of Government Institutions (State/City/ ULB) in solid waste management ex –MOEFCC, MoHUA, SPCB's, CPCB, CPHEOO, NGT etc.						
2.2	Institutional Framework (State level/ City Level/ULBs)						
3.	Missions and Schemes						
3.1	Swachh Bharat Mission, 2014						
3.2	Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 2015						
3.3	Smart Cities Mission, 2015						
3.4	National Urban Livelihood Mission						
4.	Others if any (specify)						

21. SOLID WASTE VALUE CHAIN MANAGEMENT

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Waste Segregation and Collection						
1.1	Types of Waste streams (characteristics, features, etc.)						
1.2	Transportation of waste -Technical and Engineering aspects, transfer stations						
1.3	Available Technologies (technologies, selection criteria, treatment efficiency, land and infrastructure requirement, capex/Opex, etc.)						
1.4	Mainstreaming of waste pickers in waste management (Human resource management)						
1.5	Use of ICT in Collection and Transportation						
2.	SWM technologies (technical and engineering aspects) (Composting, Windrow Composting, Aerated Static pile composting, In-vessel composting, Anaerobic composting, Vermi Composting, Biomethanation, Incineration and energy recovery, Pelletization/Refuse Derived fuel system, Pyrolysis and Gasification, Plasma Pyrolysis, Sanitary Landfill)						
2.1	Wet waste management Technology and approaches						
A.	Composting techniques						
(i)	Types (Advantages & Disadvantages, Treatment efficiency, land requirement, selection criteria, etc.), Technical and Engineering aspects and Capex, Opex and Revenue aspects						
B.	Biomethanization						
(i)	Types (Advantages & Disadvantages, Treatment efficiency, land requirement, selection criteria, etc.), Technical and Engineering aspects and Capex, Opex and Revenue aspects						
2.2	Dry waste management approaches and technology						
(i)	Material recovery facility						

Sl. No.	Parameters	Relevance w.r.t. to Job role (Rate 0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
(ii)	Types (Advantages & Disadvantages, Treatment efficiency, land requirement, selection criteria, etc.), Technical and Engineering aspects and Capex, Opex and Revenue aspects						
(iii)	Recycling/ Reuse/Recovery technologies						
(iv)	Potential Buyers						
3.	Selection of Solid waste management technologies						
3.1	(Estimating waste generation volume, existing infrastructure, cost, etc.)						
3.2	Available SWM technologies (Types, features, treatment efficiency, selection criteria)						
3.3	Technical and engineering aspects of available technologies						
4.	Bulk waste generators (BWG) management						
4.2	Bulk Waste Generator Identification/ Verification Process, compliance process, Types of BGG (Institutions, hotels, RWA's), Available technologies for BWG,						
5.	Waste disposal – Sanitary landfill						
5.1	Planning, Designing and Construction of Secured landfill (Site selection, CAPEX, OPEX)						
5.2	Methods of Land Closure and Capping						
5.3	Planning and Designing Leachate Treatment Facility						
6.	Occupational Health and Safety						
7.	Circular Economy models in Waste management (Closing the loop concept)						

22. Do you wish to explore private sector participation for SWM?

- a. Yes
- b. No

23. If Yes, Do you need any training for the same?

- a. Yes
- b. No

24. Specify the various value chain points across SWM for which you wish to explore for private sector participation?

25. FINANCIAL MANAGEMENT

Sl. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Sources to access funds (details of grants or loans at central, state and local level, details of external funding agencies, institutions, borrowing capacity of ULBs etc.						
2.	Various stakeholders from financing point of view						
3.	Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, etc.)						
4.	Resource Mobilization						
5.	Various Business Models						
6.	Cost Recovery, Cost Efficiency & Financial Management						
7.	Others if any (Specify)						

26. COMMUNITY ENGAGEMENT

SL. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Need for Community Engagement						
2.	Various Community Engagement Models and Structures						
3.	Information, Education & Communication (IEC)						
4.	Others if any (Specify)						

27. PROJECT MANAGEMENT AND PRIVATE SECTOR PARTNERSHIP

SL. No.	Parameters	Relevance level w.r.t your job responsibility (0 to 5)	Level of Knowledge & Understanding			Training Needed	
			Good	Fair	Poor	Yes	No
1.	Project Planning, Monitoring & Control						
1.1	Preparation of Detailed Project Report (DPR) including physical and financial methods for cost estimate, budget, costing, legal compliances, EIA, etc.						
1.2	Tendering and Procurement						
1.3	Contract Management						
1.4	Procuring, Installation & commissioning/ setting up SWM projects						
1.5	Technical and Engineering Aspects						
1.6	Administrative and Financial Management (Cost Recovery, Cost Efficiency)						
1.7	Operation, Maintenance and Monitoring						
1.8	Enforcement & Accountability						
1.9	Project evaluation						
1.10	Human Resource Management						
2.	Various Models of PPP						
3.	Public Interaction and Complaint Redressal System						
4.	Use of ICT for management						
5.	Others if any (Specify)						

28. Do you think systems are well prepared for the disaster and emergencies?

29. Was the cities response well prepared for the COVID 19 crisis?

30. Were there proper operating procedures laid out for the management and functioning?

31. What would be your suggestions to improve?

32. Other Important Information / Remarks / Suggestions

Annexure 4

TANA Questionnaire for Ground staff

1. What are your future aspirations with the job?
2. What do you think is the status of the ULB in terms of sanitation and water supply?
3. How is your interaction with the community and residents? How frequently do you interact? What is your mode of communication?
4. What support do you currently get from the community and what are your expectations from them?
5. What support do you need from government officials and other superiors to perform your responsibilities better and efficiently?
6. What support do you need from your subordinates to perform your responsibilities?
7. What support do you need from other departments to perform your responsibilities?
8. What are your strengths while performing your job?
9. What are the difficulties you face in doing your job?
10. Have you received any kind of training before? (What kind and when) Were they useful?
11. What are the areas in which you would like to be trained for?
12. What kind of training would you prefer - face-to-face or virtual? Do you think exposure visits to good practice sites is useful? Why and how?
13. What is the right duration for training (face-to-face) and virtual?

Annexure 5

Detail findings of TANA for Jaipur Municipal Corporation

The detail findings of the TANA for the Mid-level Officials are tabulated in this annexure. It has been prepared for the three sectors of Water, Waste Water, and Solid Waste Management separately. The frequency of responses is mapped cumulatively. The numbers under the relevance column are the total number of people who responded in numbers between 0-2 or 3-5 for that respective parameter, with 0 being completely irrelevant and 5 being highly relevant to their job role. The numbers mentioned under 'Level of Understanding' column are the number of people who responded that they have a 'Good', 'Fair' or 'Poor' understanding of the corresponding parameter. The total number of respondents saying that they would require training for that particular parameter. The higher of the two numbers listed under relevance becomes results in the total; the parameter is taken as relevant if there is a higher number under '3-5' column, else it is listed as not relevant. A similar logic has been followed to find the general level of understanding of the respective parameters. The column with the highest of the numbers under 'Good', 'Fair' and 'Poor' renders the 'Level of Understanding' under the 'Total'. A training priority is estimated from the higher of the columns under 'Training Needed' column.

Table 17: Detail Training Needs of Waste Water Sector

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total			
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required	
1.	LEGISLATIVE AND INSTITUTIONAL FRAMEWORK											
1.1	Legislative framework											
1.1.1	Environment (Protection) Act, 1986		3	2			2	1	Yes	Good	Yes	
1.1.2	Water (Prevention and Control of Pollution) Act, 1974		3	1			2	1	Yes	Fair	Yes	
1.1.3	National Environmental Policy, 2006		3				3		Yes	Fair	Yes	
1.1.4	National Urban Sanitation Policy, 2008		3	1			2	1	Yes	Fair	Yes	
1.1.5	Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013	1	2			2	2	1	Yes	Fair	Yes	
1.1.6	Framework for municipal functions (Municipal act, Service rules, Building bye laws, Municipal Bye laws, etc.)		3			1	3		Yes	Fair	Yes	
1.1.7	CPCB/SPCB Guidelines		3	1		1	2	1	Yes	Poor	Yes	
1.1.8	NGT Rules		3	1			2	1	Yes	Fair	Yes	
1.1.9	State Urban Sanitation Policy and State Urban Sanitation Strategy	1	2				1		Yes	Fair	No	

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
1.2	Institutional Framework										
1.2.1	Organization structure, Roles and Responsibilities of Government departments	2	1			2	1	2	No	Poor	No
1.2.2	Roles and Responsibilities of other relevant stakeholders like SPCBs, NGOs, RWAs	2	1			1	1	2	No	Fair	No
1.2.3	Inter Institutional Coordination mechanism, reporting	2	1			1	1	2	No	Fair	No
1.2.4	National Rating Scheme for Sanitation (Swachh Survekshan) and Other protocols (ODF, ODF+, ODF++, Water+, etc.)	1	2	1		1	2	1	Yes	Poor	Yes
1.3	Provisions and Elements of Water Management in Missions and Scheme										
1.3.1	Swachh Bharat Mission, 2014	1	2			1	2	1	Yes	Fair	Yes
1.3.2	Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 2015	1	2			1	2	1	Yes	Fair	Yes
1.3.3	Smart Cities Mission, 2015	2	1				1	2	No	Fair	No
1.3.4	14 th and 15 th Finance Commission	2	1			2	1	2	No	Poor	No
1.3.5	NULM and NUHM	2	1			2	1	2	No	Poor	No

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
2.	WASTE WATER MANAGEMENT TECHNOLOGIES										
2.1	Need for waste water management		3	1			2	1	Yes	Fair	Yes
2.2	Wastewater Generation										
2.2.1	Sources of waste water generation		3	1			2	1	Yes	Fair	Yes
2.2.2	Available options for conveyance of waste water (types, features, limitations, selection criteria, etc.)		3	1			2	1	Yes	Fair	Yes
2.2.3	Technical and Engineering aspects of types of conveyance systems (Infrastructure, capacity, capex/opex, O&M, etc.)		3	1			3		Yes	Fair	Yes
2.3	Waste Water Treatment										
2.3.1	Types (Off-site sanitation system, Decentralized Wastewater Treatment (DEWATS), On-site sanitation system, etc.)		3	1			2	1	Yes	Fair	Yes
2.3.2	Available Technologies (types, features, treatment efficiency, limitations, selection criteria, etc.)		3	1			2	1	Yes	Fair	Yes
2.3.3	Technical and Engineering aspects of available technologies (Infrastructure, capacity, capex/opex, O&M, etc.)		3	1			2	1	Yes	Fair	Yes
2.4	Waste Water Disposal/Reuse										
2.4.1	Awareness on associated health risks due to improper disposal		3	1			2	1	Yes	Fair	Yes
2.4.2	Current practices of Waste water reuse		3				3		Yes	Fair	Yes
2.4.3	Grievance Redressal System		3			2	3		Yes	Fair	Yes

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
3.	FAECAL SLUDGE AND SEPTAGE MANAGEMENT										
3.1	Need for FSSM	1	2	1		1	2	1	Yes	Poor	Yes
3.1.1	Design and Construction Guidelines for various types of containment systems and desludging frequency	1	2	1		1	2	1	Yes	Poor	Yes
3.1.2	Available Technologies for desludging of Septic Tanks (available equipments, advantages and limitations, selection criteria, capacity, efficiency, capex/opex etc.)	1	2	1		1	2	1	Yes	Poor	Yes
3.1.3	Available options for transporting the faecal sludge and septage (Features, limitations, capacity, selection criteria, capex/opex, etc.)	1	2	1		1	2	1	Yes	Poor	Yes
3.1.4	Available Treatment Technologies (technologies, selection criteria, treatment efficiency, land and infrastructure requirement, capex/opex, etc.)	1	2	1		1	2	1	Yes	Poor	Yes
3.1.5	Available Options for Disposal/Reuse	1	2	1		1	2	1	Yes	Poor	Yes
3.2	Occupational Hazards and Safety in handling FS										
3.2.1	Awareness on associated risks to health	1	2	1		1	2	1	Yes	Poor	Yes
3.2.2	Mitigating measures (PPE, Training on use of tools/equipments, Training on standard operating procedures, etc.)	1	2	1		1	2	1	Yes	Poor	Yes

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
3.3	Operation, Maintenance & Monitoring of Faecal Sludge Treatment Plants										
3.3	Operation procedures (Technical and Engineering)	1	2	1		1	2	1	Yes	Poor	Yes
3.3.1	Asset Management	1	2	1		1	2	1	Yes	Poor	Yes
3.3.2	Administrative/Financial Management	1	2	1		1	2	1	Yes	Poor	Yes
3.3.3	Monitoring and Record-keeping	1	2	1		1	2	1	Yes	Poor	Yes
3.3.4	Managing volumes & schedules of FS collection	1	2	1		1	2	1	Yes	Poor	Yes
3.3.5	Utilizing available local resources	1	2	1		1	2	1	Yes	Poor	Yes
3.3.6	Storage & sale of end products	1	2	1		1	2	1	Yes	Poor	Yes
3.4	Grievance Redressal System	1	2	1		1	2	1	Yes	Poor	Yes
4.	FINANCIAL MANAGEMENT										
4.1	Sources to access funds (details of grants or loans at central, state and local level, details of external funding agencies, institutions, borrowing capacity of ULBsetc.	2	1			2	1	2	No	Poor	No
4.2	Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, punitive measures, etc.)	1	2			2	1	2	Yes	Poor	No
4.3	Resource Mobilization	2	1			2	1	2	No	Poor	No
4.4	Various Business Models	2	1			2	1	2	No	Poor	No
4.5	Cost Recovery, Cost Efficiency & Financial Management	2	1			2	1	2	No	Poor	No

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
5.0	COMMUNITY ENGAGEMENT										
5.1	Need for Community Engagement, Water Use Efficiency	2	1			2	1	2	No	Poor	No
5.2	Various Community Engagement Models and Structures	2	1			2	1	2	No	Poor	No
5.3	Information, Education & Communication (IEC)	2	1			2	1	2	No	Poor	No
6.	PROJECT MANAGEMENT AND PRIVATE SECTOR PARTNERSHIP										
6.1	Project Planning, Monitoring & Control										
6.1.1	Preparation of Detailed Project Report (DPR) including		3	1			2	1	Yes	Fair	Yes
6.1.2	Tendering and Procurement		3	1			2	1	Yes	Fair	Yes
6.1.3	Contract Management		3	1			2	1	Yes	Fair	Yes
6.1.4	Administrative and Financial Management (Cost Recovery, Cost Efficiency)		3			1	3		Yes	Fair	Yes
6.1.5	Operation, Maintenance and Monitoring		3	1			2	1	Yes	Fair	Yes
6.1.6	Enforcement & Accountability		3	1		1	2	1	Yes	Poor	Yes
6.1.7	Project evaluation		3				3		Yes	Fair	Yes
6.2	Various Models of PPP		3	1			2	1	Yes	Fair	Yes
6.3	Public Interaction and Complaint Redressal System	2	1			2	2	1	No	Poor	Yes
6.4	Use of ICT, GIS, RS and Technology in management of assets and resources	2	1			1	3		No	Fair	Yes

Table 18: Detail Training Needs of Solid Waste Management Sector

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Relevance	Total	
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No		Level of Understanding	Training Required
1.	LEGISLATIVE AND INSTITUTIONAL FRAMEWORK										
1.1	Legislative framework										
1.1.1	National Urban Sanitation Policy, 2008		3	1	2		2	1	Yes	Fair	Yes
1.1.2	Solid Waste Management rules		3	1	2		2	1	Yes	Fair	Yes
1.1.3	Plastic Waste Management rules		3	1	2		2	1	Yes	Fair	Yes
1.1.4	Construction & Demolition Waste Management rules		3	1	2		2	1	Yes	Fair	Yes
1.1.5	E- Waste Management rules		3	1	2		2	1	Yes	Fair	Yes
1.1.6	Bio- medical waste Management rules (relevant parts)		3	2	1		1	2	Yes	Good	No
1.1.7	Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act, 2013	1	2	2	2	1	3	1	Yes	Fair	Yes
1.1.8	Emergency Response Sanitation unit	1	2		1	1	2	1	Yes	Poor	Yes
1.1.9	National Safai Karamcharis Finance & Development Corporation (NSKFDC)	1	2		1	1	2	1	Yes	Poor	Yes
1.1.10	National Rating Scheme for Sanitation (Swachh Survekshan, ODF++, Water Plus)	1	3	1	1		2	1	Yes	Poor	Yes
1.1.11	State level State SWM Policy and Strategy		3	2	1		1	2	Yes	Good	No
1.1.12	SWM Bye-Laws		3	2	1		1	2	Yes	Good	No

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
1.2	Institutional Framework										
1.2.1	Roles and Responsibilities of Government Institutions (State/City/ULB) in solid waste management ex - MOEFCC, MoHUA, SPCB's, CPCB, CPHEOO, NGT etc.		3	2	1		1	2	Yes	Good	No
1.2.2	Institutional Framework (State level/City Level/ULBs)		3	2		1	1	2	Yes	Good	No
1.3	Provisions for SWM in Missions And Schemes										
1.3.1	Swachh Bharat Mission, 2014		3	2	1		0	3	Yes	Good	No
1.3.2	Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 2015	1	2	2		1	0	3	Yes	Good	No
1.3.3	Smart Cities Mission, 2015	1	2	2		1		3	Yes	Good	No
1.3.4	National Urban Livelihood Mission	1	2	1		2	1	2	Yes	Poor	No

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
2.	SOLID WASTE VALUE CHAIN MANAGEMENT										
2.1	Waste Segregation and Collection										
2.1.1	Types of Waste streams (characteristics, features, etc.)		3	1	2		2	1	Yes	Fair	Yes
2.1.2	Transportation of waste -Technical and Engineering aspects, transfer stations		3	1	1	1	1	2	Yes	Poor	No
2.1.3	Available Technologies (technologies, selection criteria, treatment efficiency, land and infrastructure requirement, capex/Opex, etc.)		3	1	1	1	2	1	Yes	Poor	Yes
2.1.4	Mainstreaming of waste pickers in waste management (Human resource management)		3	1	1	1	2	1	Yes	Poor	Yes
2.1.5	Use of ICT in Collection and Transportation	1	2	1	1	1	1	2	Yes	Poor	No
2.2	Wet waste management Technology and approaches										
2.2.1	Composting techniques		3	1	2		2	1	Yes	Fair	Yes
2.2.2	Biomethanization		3	1	1	1	2	1	Yes	Poor	Yes

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
2.3	Dry waste management approaches and technology										
2.3.1	Material recovery facility	1	2	1	1	1	1	2	Yes	Poor	No
2.3.2	Types (Advantages & Disadvantages; Treatment efficiency, land requirement, selection criteria, etc.), Technical and Engineering aspects and Capex, Opex and Revenue aspects		3	1	1	1	2	1	Yes	Poor	Yes
2.3.3	Recycling/ Reuse/Recovery technologies	1	2	1	1	1	2	1	Yes	Poor	Yes
2.3.4	Potential Buyers	1	2	1	2		1	2	Yes	Fair	Yes
2.4	Selection of Solid waste management technologies										
2.4.1	Estimating waste generation volume, existing infrastructure, cost, etc.	1	2	1	2		2	1	Yes	Good	Yes
2.4.2	Available SWM technologies (Types, features, treatment efficiency, selection criteria)		3	1	2		2	1	Yes	Fair	Yes
2.4.3	Technical and engineering aspects of available technologies		3	1	2		2	1	Yes	Fair	Yes
2.4.4	Bulk waste generators (BWG) management		3	1	1	1	2	1	Yes	Poor	Yes

Sr. No.	Parameter	Relevance		Level of understanding				Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor		Yes	No	Relevance	Level of Understanding	Training Required
2.5	Waste disposal – Sanitary landfill											
2.5.1	Planning, Designing and Construction of Secured landfill (Site selection, CAPEX, OPEX)		3	1	1	1		2	1	Yes	Poor	Yes
2.5.2	Methods of Land Closure and Capping		3	1	1	1		2	1	Yes	Poor	Yes
2.5.3	Planning and Designing Leachate Treatment Facility		3	1	1	1		2	1	Yes	Poor	Yes
2.6	Occupational Health and Safety		3	1	1	1		2	1	Yes	Poor	Yes
3.	FINANCIAL MANAGEMENT											
3.1	Sources to access funds (details of grants or loans at central, state and local level, details of external funding agencies, institutions, borrowing capacity of ULBs etc.	1	2	1	1	1		2	1	Yes	Poor	Yes
3.2	Various stakeholders from financing point of view	1	2	1	1	1		2	1	Yes	Poor	Yes
3.3	Understanding types of Financial Transfers (Tariff Regulations or Local Revenue Sources, etc.)	2	1	1	1	1		2	1	No	Poor	Yes
3.4	Resource Mobilization		3	1	1	1		2	1	Yes	Poor	Yes
3.5	Various Business Models		3	1	2			2	1	Yes	Fair	Yes
3.6	Cost Recovery, Cost Efficiency & Financial Management		3	1	1	1		2	1	Yes	Poor	Yes

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
4.	COMMUNITY ENGAGEMENT										
4.1	Need for Community Engagement		3		2	1	3		Yes	Fair	Yes
4.2	Various Community Engagement Models and Structures		3		2	1	3		Yes	Fair	Yes
4.3	Information, Education & Communication (IEC)		3		2	1	3		Yes	Fair	Yes
5.	PROJECT MANAGEMENT AND PRIVATE SECTOR PARTNERSHIP										
5.1	Project Planning, Monitoring & Control										
5.1.1	Preparation of Detailed Project Report (DPR) including physical and financial methods for cost estimate, budget, costing, legal compliances, EIA, etc.		3	1	1	1	2	1	Yes	Poor	Yes
5.1.2	Tendering and Procurement		3	1	1	1	2	1	Yes	Poor	Yes
5.1.3	Contract Management	1	2	1	1	1	2	1	Yes	Poor	Yes
5.1.4	Procuring, Installation & commissioning/ setting up SWM projects		3	1	2		2	1	Yes	Fair	Yes
5.1.5	Technical and Engineering Aspects		3	1	2		2	1	Yes	Fair	Yes
5.1.6	Administrative and Financial Management (Cost Recovery, Cost Efficiency)	1	2	1	1	1	2	1	Yes	Poor	Yes
5.1.7	Operation, Maintenance and Monitoring		3	1	2		2	1	Yes	Fair	Yes
5.1.8	Enforcement & Accountability		3	1	1	1	1	2	Yes	Poor	No
5.1.9	Project evaluation		3	1	2		2	1	Yes	Fair	Yes

Sr. No.	Parameter	Relevance		Level of understanding			Trainings Needed		Total		
		0 to 2	3 to 5	Good	Fair	Poor	Yes	No	Relevance	Level of Understanding	Training Required
5.2	Human Resource Management	0				3		3	No	Poor	No
5.3	Public Interaction and Complaint Redressal System	1	2	1	2		2	1	Yes	Fair	Yes
5.4	Use of ICT for management	1	2	1	1	1	2	1	Yes	Poor	Yes



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.



National Institute of Urban Affairs

National Institute of Urban Affairs

1st Floor, Core 4B, India Habitat Centre, Lodhi Road, New Delhi - 110003

Phone: 011-24617517, 24617543, 24617595, Fax: 011-24617513

E-mail: niua@niua.org • Website: www.niua.org