TRAINING NEED ASSESSMENT REPORT

for the

KERALA SOLID WASTE MANAGEMENT PROJECT (KSWMP)

KERALA INSTITUTE OF LOCAL ADMINISTRATION
Mulankunnathukavu P O, Thrissur – 680 581, Kerala, India

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LIST OF ABBREVIATIONS

ABBREVIATION	EXPANSION
BMW	Biomedical Waste
BoQ	Bill of Quantities
BWG	Bulk Waste Generators
C&D	Construction & Demolition
CBO	Community Based Organisations
CDS	Community Development Society
CKCL	Clean Kerala Company Limited
COVID 19	Coronavirus disease 2019
DLI	Development Linked Indicators
DPC	District Planning Committee
DPR	Detailed Project Report
DUA	Directorate of Urban Affairs
DyDC	Deputy District Coordinator
ER	Elected Representative
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FGD	Focus Group Discussion
FM	Finance Management
GoK	Government of Kerala
HI	Health Inspector
HKS	Haritha Karma Sena
HSS	Haritha Sahaya Sthapanam
IEC	Information Education Communication
KILA	Kerala Institute of Local Administration
KSDMA	Kerala State Disaster Management Authority
KSPCB	Kerala State Pollution Control Board
KSWMP	Kerala Solid Waste Management Project
LSGD	Local Self Government Department
M&E	Monitoring & Evaluation
MCF	Material Collection Facility

MRF	Material Recycling Facility
NBDW	Non BioDegradable Waste
NGO	Non Governmental Organisation
PCB	Pollution Control Board
PIU	Project Implementation Unit
RRF	Resource Recovery Facility
SM	Suchitwa Mission
SBCC	Social and behavioural change communication
SPMC	State Project Management Consultant
SPMU	State Project Management Unit
SSLC	Secondary School Leaving Certificate
SWM	Solid Waste Management
TSC	Technical Support Consultant
TSG	Technical Support Group
TNA	Training Need Assessment
TPD	Tons Per Day
ULB	Urban Local Body
ULG	Urban Local Government
WM	Waste Management

EXECUTIVE SUMMARY

1. CONTEXT AND BACKGROUND

The production and accumulation of waste result from exponential urbanisation across the globe. This issue has turned into a pressing concern, contributing significantly to the exacerbation of climate change.

Kerala, as a society, exhibits a higher rate of urbanisation at the national level but faces challenges in waste accumulation. The mandatory responsibility for waste management in the state is assigned to Urban Local Governments (ULGs) as per the 74th constitutional amendments and the Kerala Municipal Act. Several verdicts from green tribunals have also emphasised the increasing role of ULBs in waste management.

In this context, the Kerala Solid Waste Management Project (KSWMP) was launched in 2021 to address waste management issues in urban local bodies across the state. A core component of this project is capacity building and training for various stakeholders. Therefore, a scientific Training Needs Assessment (TNA) is pivotal in designing and implementing systematic training and capacity building programs for different stakeholders associated with waste management.

This report is the result of a TNA conducted by the Kerala Institute of Local Administration (KILA) on behalf of KSWMP in the capacity of a Lead Training Agency.

2. OBJECTIVES

The key objectives of the TNA are:

- To understand the knowledge level of different stakeholders with respect to the rules and regulations and existing mechanisms of solid waste management in the state

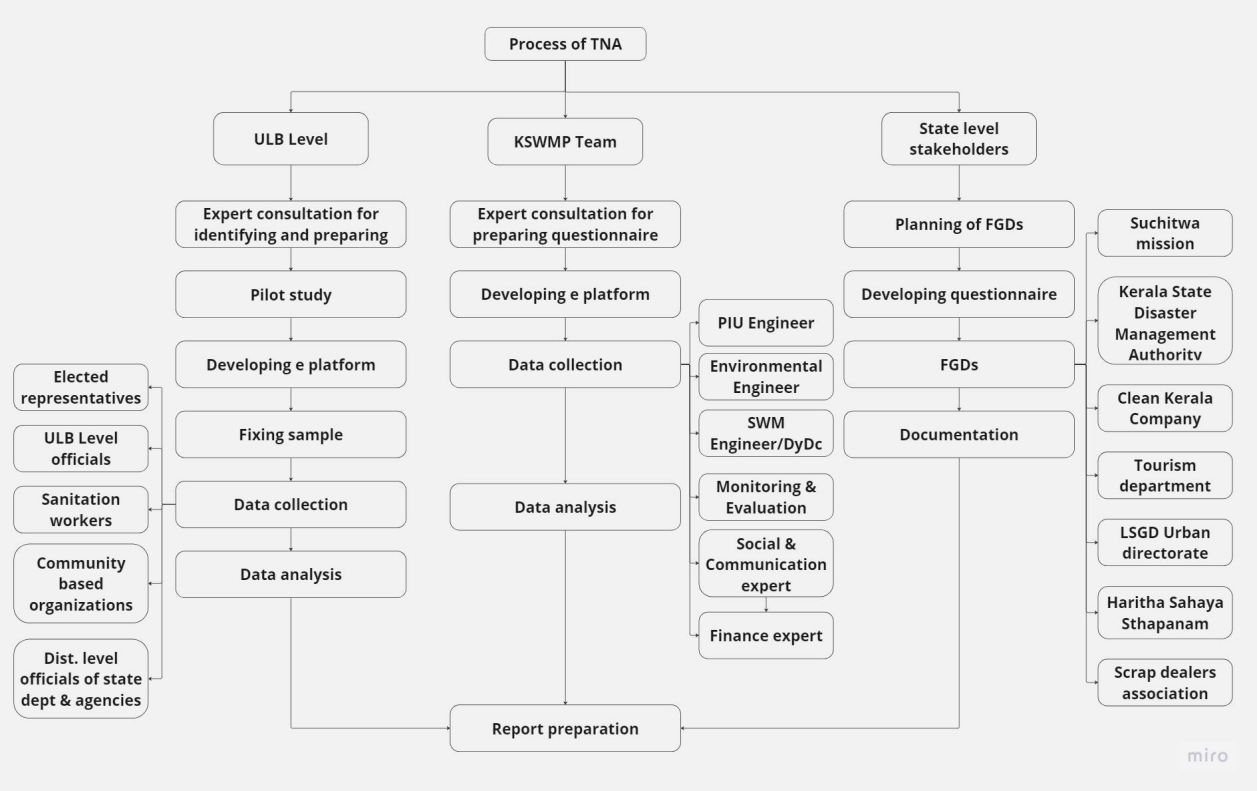
- To identify the training requirement and training preferences of the stakeholders through a disaggregated analysis
- To provide supporting evidence to design effective training strategy, method, and mode of delivery.

3. METHODOLOGY AND PROCESS OF CONDUCTING TNA

A comprehensive methodology was followed in conducting the Training Needs Assessment (TNA) by incorporating processes to identify the training requirements of various stakeholders related to the KSWMP project.

Major stakeholders of the KSWMP programs have been divided into three groups for the purpose of conducting the TNA. The TNA was conducted in three phases, covering different groups: ULB-level stakeholders, district-level officials of departments and state agencies affiliated with waste management, a team of the KSWMP Project, and different departments and agencies affiliated with the project at the state level. The TNA process was conducted in three stages. The ULB-level TNA and quantitative survey of district-level officials were conducted between June 2022 and August 2022, while the other two levels were conducted between August 2023 and October 2023.

For the ULB level, a sample frame for TNA consists of all 87 municipalities and 6 corporations in the state. Proportional stratified random sampling using 6th State Finance Commission Fund devolution shares was conducted so that at least 20% of the municipalities and 50% of corporations are covered in the final sample. The selection includes 22 municipalities and 3 corporations. The survey questionnaires were finalised based on this pilot test.



Methodology and Process of conducting TNA in a nutshell

In the second phase, TNA among the KSWMP team was conducted by circulating questionnaires among all relevant stakeholders in a census manner. The questionnaires were circulated through the SPMU team, and data were collected using the Kobo Toolbox.

In the third phase of TNA, focus group discussions (FGDs) were conducted among state-level officials from different departments and agencies, including the Director of Urban LSGD, Joint Directors of LSGD, Suchitwa Mission, Clean Kerala Company Limited, Tourism Department, KSDMA, HSS, and scrap dealers. To address gaps identified in the first and second phases, an FGD was also carried out with Secretaries of selected ULBs. Training needs were further identified based on stakeholder's roles and responsibilities using secondary data.

4. FINDINGS OF TNA

ELECTED REPRESENTATIVES

Six hundred and three elected representatives from 22 sample ULBs in the state participated in the assessment. It is noted that most of the ER are holding the qualification of SSLC or below (64%). The share of elected representatives with secondary or higher education is relatively very less in the sample.

Broadly, the knowledge levels of elected representatives vary substantially among designations such that separate training is required for each category. Chairpersons of the sample ULBs claim to have a better knowledge of various categories of knowledge required for waste management whereas the knowledge of ward councillors is less.

Broadly, the course from the assessment suggests that Entrepreneurship and private sector participation, ULB responsibilities on SWM, Effectiveness of existing systems and ability to solve waste management related issues are the medium scored thematic areas by them. Micro areas of each of these themes are mentioned above. However, there are no areas identified as domains with poor knowledge by the elected representatives. Since they have recorded a medium knowledge level in most of the subjects. Training can be needed for almost all the areas they recorded a medium level of knowledge. Since ER, particularly the health standing committee is responsible for the effective implementation of the waste management program they can be given a basic training on monitoring and evaluation of waste management practice and projects as well. Effective cost recovery and revenue generation are pivotal components of financial management. Hence a generic training on financial management is also required to the elected representatives. Along with this a generic training on social and environmental safeguards envisaged in the project. In terms of environmental safeguards, it encompasses familiarity with state, national, and international environmental laws related to solid waste management. This involves understanding regulatory frameworks and compliance requirements. Additionally, the training covers various types of wastes, ensuring comprehension of the environmental implications associated with different waste streams.

The aspect of Pollution Prevention and Control is also integral to the training. It focuses on strategies to prevent pollution within the context of waste management

Effective financial management is of equal importance since, implementing a sustainable solid waste management function would need to ensure that there is adequate cost recovery and revenue generation.

While we analyse the job role which is pertinent to mention that providing training to the elected representatives in the areas of Ability to solve issues related to waste and WM (Educating the public about waste reduction and proper disposal method, Encouraging community participation in waste management initiatives), Effectiveness of existing system of waste management (Prioritising projects based on local needs and available resources, Developing contingency plans for waste management during emergencies, Monitoring and Evaluation), Entrepreneurship and Private sector participation(Engaging stakeholders for insights and partnerships in waste management),Environmental and social safeguards (Enforcing waste management regulations and overseeing compliance), Knowledge of stakeholders on LSGs current waste management practices (Developing and enforcing by-laws for waste management, Planning, constructing, and maintaining waste treatment facilities, recycling centres, composting sites, and landfills).

ULB OFFICIALS

226 officials belonging to various designations participated in the survey. The educational qualifications of the respondents and their respective distribution across affiliations are fairly sufficient to learn the technical contents to be incorporated in the training. Hence there is a high possibility for imparting technical and professional contents to the training of urban officials. Accordingly, such knowledge can be imparted among this category of respondents. Among the respondents, Secretary/Asst. Secretary/Adl. Secretary/PA to Secretary fetched higher scores compared to those of other respondents.

The scores of engineering and accounts staff are visibly low for most of the queries related to waste management. The scores of Health Inspectors and Health Department staff stood at moderate levels compared to the other two categories of officials. Here also, separate training is recommended for each category to address the disparities in knowledge levels with respect to the duties that these officials are supposed to perform. Deeper training on waste management is required to engineering staff and health officials for improving their performance in this sector.

While we do the thematic analysis it is noted that training preference has to be given in the areas of Ability to ensure active participation and partnership of the general public in waste management, ULB responsibilities and activities for implementing legal provisions, Procurement, entrepreneurship and private sector participation, sustainable waste management practices, legal provisions of waste management, project planning, design, environmental and social safeguards, and responsibilities of health department staff in the effective management of waste. Health Department staff, who are ULB-level officials of the Government of Kerala, include roles such as Clean City Manager and Junior Health Inspector. Since the health officials, engineers and ULB secretaries have the responsibility of monitoring & evaluation of waste management projects. These thematic areas can also be incorporated in their training. Since finance management is a relevant subject to all ULB officials a special training in this area is also proposed. The focus group discussion of ULB secretaries and Joint directors of LSGD has highlighted that even though they have sufficient knowledge regarding the procurement procedures of Government of Kerala, they are not well aware about the specific procurement of World bank and KSWMP project. This underscores the relevance of a specific training to the ULB and LSGD district officials for improving the efficiency of procurements of ULB under KSWMP project. Being ULB Secretaries are the

officials responsible for overall implementation of the SWM projects. Hence they would have to be trained in the aspect of environmental and social management framework.

COMMUNITY ORGANISATIONS INVOLVED IN WASTE MANAGEMENT

A total of 527 respondents from various organisations and stakeholder categories responded to the survey. Majority of them belong to Kudumbashree, whereas fair representation is there from other organisations as well. Regarding education qualification, there is a fair distribution of samples across different educational backgrounds.

Among the respondents from community-based organisations, the members of residence associations have the highest knowledge pertaining to the queries in the assessment. They are closely followed by other organisations and the representatives from Kudumbashree. Among the sample respondents from community-based organisations, the knowledge levels of respondents from merchant associations are the lowest.

The data indicates that training preference has to be given in the thematic areas of penalties and penal proceedings under waste management laws and regulations, rules and regulations under waste management, ULB responsibilities under waste management, sustainable waste management practices, environmental and social safeguards, and ability to ensure active participation while providing training to the CBOs.

SANITATION WORKERS

A total of 933 workers associated with various stages of waste management participated in the assessment. The Majority are from Haritha Karma Sena or other institutional mechanisms associated with the area of waste management. The educational qualification of respondents in this category is relatively low compared to other categories of respondents.

The analysis of their knowledge levels suggests that the knowledge levels of recycling workers is the lowest among all sanitation workers. In many cases waste management workers' scores are closer to that of recycling workers. Knowledge levels are highest for the waste transportation workers and all other categories are located in between these three.

In general, the scores of all categories of respondents irrespective of their affiliation and region stay between 5 and 7 on a scale of 10. This indicates the scope of considerable improvement among the sanitation workers. Specifically, their awareness regarding the rules and regulations related to solid waste management, capabilities to create awareness among the public, the knowledge required to manage waste at source, green protocol practices, knowledge of biowaste management, the knowledge required to handle hazardous waste materials, and the knowledge required to transport waste materials safely require specific emphasis. Data shows that penalties and penal proceedings under waste management laws and regulations, rules and regulations under waste management, ULB responsibilities under waste management, sustainable waste management practices, health and safety, environmental and social safeguards can be the preferential training areas for sanitation workers.

STATE LEVEL OFFICIALS

Data on the education qualification of officials indicates that most of them are highly qualified. Hence there is a high possibility to impart training with sufficient technical content

to improve the overall performance of the agency in the tasks related to waste management.

There is a visible disparity among the state officials in the knowledge levels on various domains. In many sections, the officials of LSGD scored the least and their scores were well below the average values. KSPCB officials scored higher in many sections. Apart from LSGD officials, the representatives from Haritha Kerala Mission also require deeper training sessions to fill the knowledge gap.

The training needs for the Haritha Kerala Mission include a balanced focus on several aspects of waste management. These include entrepreneurship and private sector participation, environmental and social safeguards, community participation, legal considerations, sustainable waste management practices, and adherence to waste management rules and regulations.

The training needs for the KSPCB can be summarised into two main categories: Entrepreneurship and Private Sector Participation, and the development of comprehensive knowledge in waste management systems, agencies, and related topics at various administrative levels.

The training needs for health department officials (14 Joint Directors) in waste management in various areas. These include fostering entrepreneurship and private sector participation, emphasising the importance of community involvement, understanding environmental and social safeguards, and gaining knowledge about waste management systems and agencies at different levels. Additionally, there is a need for training on legal aspects, penalties, and proceedings related to waste management laws, as well as a thorough understanding of rules and regulations governing solid waste management. Sustainable waste management practices, including awareness of green practices and emerging technologies, also form a crucial part of the training requirements. Overall, a comprehensive training program should cover a spectrum of topics ranging from private sector engagement to legal frameworks and sustainable practices, empowering health department officials to effectively contribute to waste management initiatives.

The thematic analysis shows that rules and regulations of solid waste management, entrepreneurship and private sector participation, environmental and social safeguards, and waste management systems and agencies at various levels are the preferential areas required training to the state officials of various agencies.

KSWMP TEAM

One thirty KSWMP PIU, district and state level staff participated in the TNA process. Their educational profiles are comparatively high since their appointments are based on educational qualifications and experience. There is a high possibility of imparting professional technical training among this group in their corresponding domains.

The specific responses of each category are given below;

1) ENVIRONMENTAL ENGINEER

Eleven environmental engineers have responded to the survey. Project Monitoring and Evaluation, Public grievances, and ULB responsibilities and activities for implementing

legal provisions on SWM are the preferential areas of training for environmental engineers. Since their job roles are closely associated with environmental and social safeguards in these areas.

2) FINANCE EXPERT

Nine finance experts participated in this survey. Project Monitoring and Evaluation, ULB responsibilities and activities for implementing legal provisions on SWM, and procurement procedures and Private sector participation are the low knowledge level areas of finance experts. This indicates the need for deeper training in those areas.

3) MONITORING AND EVALUATION EXPERT

Fourteen M&E experts have responded to the questionnaire. The survey feedback indicates that M&E experts have comparatively low knowledge in the areas of ULB responsibilities and activities for implementing legal provisions on SWM and Project planning and design. Since M&E experts require the knowledge to assess the environmental and social safeguards in this area, training can be provided to them focusing on this topic.

4) SOCIAL AND COMMUNICATION EXPERT

Eleven social and communication experts have participated in the survey. The survey data indicate they have comparatively low knowledge in the areas of laws and regulations associated with waste management, Environmental and social safeguards, project planning, design and management, Data collection and analysis and public grievances.

5) SWM ENGINEER/DYDC

Eleven SWM engineers working at the district level participated in the TNA. The survey indicates that their preferential areas of training are entrepreneurship and private sector participation and Public grievances. Since SWM Engineers are responsible for planning and designing of SWM projects.They should also be aware of environmental and social safeguards. Hence it is proposed to provide training to them in this category.

6) PIU ENGINEER

Seventy-three PIU engineers have responded to the questionnaire. The study indicates that they have comparatively low knowledge in the areas of Laws and regulations associated with the waste management, Public grievances, Project Monitoring and Evaluation, Private entrepreneurship, Cost accounting, financial management, Procurement, Latest technologies in SWM, Environmental and Social Safeguards, Penalties and Penal proceedings, Data collection and analysis, Participatory approaches in SWM, sustainable waste management practices, Documentation and reporting, transportation of waste, ULB responsibilities, and Project planning and design.

FINDINGS FROM STATE LEVEL CONSULTATIONS

Conducted FGDs with 9 stakeholder groups to identify issues in the waste management sector and extract training requirements for different agencies and institutions. A total of 195

participants took part in this process.

Various stakeholders flagged the following issues as hurdles in the sector of SWM.

Issues flagged as hurdles in the sector of WM

Lack of proper operation and maintenance of SWM projects	**Absence of scientific segregation of waste**
Lack of support from ER, Lack of professionalism in managing MCFs	**Absence of systems for sanitary waste management**
Issues in proper collection of user fees	**Systems for insurance protection to Haritha karma sena members, Safety issues of HKS**
Lack of systems for scientific gap assessment	**Dearth of engineers in ULBs**
Limited capacity of MCFs	**Need of improved technologies**
Professionalisation of HKS	**Controlling of unlicensed waste collectors**
Improper implementation of green protocols	**Disaster management training to sanitation workers**
Clarity in the role of Haritha Sahaya Sthapanam	**Lack of effective monitoring mechanisms**
Poor knowledge in e-waste management	**Application of innovative systems of information technology**

The training preferences of state level stakeholders are given below;

SUCHITWA MISSION

Suchitwa Mission officials preferred the training duration of 3 days, with mode of training being either offline or hybrid modes. They show a preference for training locations within their respective districts or at the state or national level.

The discussion indicates that training preference has been given in the thematic areas of new technologies in waste management, legal provisions, the protocols of legal proceedings, social and environmental safeguards, and protocols for procurement, while providing training to the Suchitwa mission officials.

JOINT DIRECTORS LSGD, URBAN DIRECTORATE, DISTRICT PLANNING OFFICERS

Majority of the respondents prefer one day training in different stretches. They prefer either offline or hybrid mode of training within their respective districts or state or national level.

Discussion indicated that Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Procurement, Monitoring and Evaluation Framework and Finance Management as preferential training areas.

CLEAN KERALA COMPANY LIMITED

Most of the CKCL officials preferred 2-day training. The majority of them wish to have training within the state. Though most of them prefer offline training, the share of those who prefer online training is also not small.

Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Entrepreneurship, and waste reduction strategies are the preferential areas of training for environmental engineers.

HAZARD ANALYST UNDER KSDMA AND DISASTER MANAGEMENT DISTRICT COORDINATOR

Majority of them opted for offline and hybrid mode of training spanning over two days. Most of their location preferences for training were centred in the state.

The discussion feedback indicates that Project and Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Monitoring and Evaluation Framework are the core areas for training.

HARITHA SAHAYA STHAPANAM

Most of them preferred training in two to three days and preferred in offline and hybrid mode. The majority opted for the state and national level as locations for training.

Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Procurement, Monitoring and Evaluation Framework, Finance Management, Entrepreneurship and waste reduction strategies, and Social Behavioral Change Communication are the preferred training areas of HSS representatives.

TOURISM DEPARTMENT

Most of the respondents from the tourism department preferred one day training in different stretches. Majority of them wish to have training within the state. Most of them prefer offline training and hybrid mode of training.

The discussion indicates that their preferential areas of training are Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Entrepreneurship and waste reduction strategies, and Handling and transfer of waste.

ULB SECRETARIES

ULB Secretaries are preferred short-term training in different stretches. They preferred a mix of offline and hybrid mode of training and also preferred the training within the district. They also highlighted the need of visiting model project at national level

The survey indicates that their preferential areas of training are Project Management, Innovative technologies, Technical Framework, Legal Framework, provisions for enforcement, Social

and Environmental safeguard,procurement guidelines of the project and waste reduction strategies

SCRAP DEALERS ASSOCIATION

Most of them preferred one day training in different stretches, and offline mode training. And the respondents opted for the location for training within the district and within the state.

Protocols for handling various kinds of waste, handling hazardous waste, Processing systems for inert wastes, and legal provisions regarding waste management are the preferential areas for training.

PROCUREMENT EXPERTS

All preferred offline mode of training. And the respondents opted for the location for training within the district and within the state.

The preferential areas for training include: Overview: Procurement Process, World Bank Framework vs. State Framework, STEP, PRICE 3.0, Tender Portals like E-tender, Bid Document Preparation and Evaluation.

SUMMARY AND RECOMMENDATIONS

Training Need Assessment throws light into the various dimensions of capacity building required to different stakeholders associated with waste management initiatives of ULBs. Following are the major recommendations proposed out of the findings of TNA.

NEED OF DIFFERENTIAL TRAINING STRATEGIES TO DIFFERENT STAKEHOLDER GROUPS

TNA indicates that the education levels and experiences of different stakeholders are significantly different. This is highly reflected in the case of elected representatives and sanitation workers when comparing with officials of ULBs and other state level officials. The qualifications of KSWMP staff are fixed in accordance with their job roles. Hence training strategies to these groups can also be different from other officials who carries general education qualifications irrespective of their job roles. This underscores the need of simplified training strategies to the categories such as elected representatives, sanitation workers, HKS members, and community-based organisations. However, a mix of simple and professional training strategies and methods can be applied to ULB and state level officials, whereas high end professional strategies can be applied to the KSWMP team.

It is also noted that a mix of classroom lecture sessions, and group activities along with field visits would be advisable to elected representatives and community-based organisations, while more practical oriented sessions would be advisable to HKS, sanitation workers and other workers engaged in waste management. Video content that reflects the situations from the field along with videos of best practices is also advisable for these groups. Sessions with data analysis from the field, group discussions to reflect on the situations and to explore

the pathways to overcome the existing challenges along with live or video sessions on best practices can be followed in the case of ULB and state officials. Exposure visits to the best national model sites would be better to include in the training programs for ULB heads, secretaries, and state officials.

TRAINING CONTENT

Training targeted to state level agencies and institutions can be focused on their areas of interventions on SWM, rather than delivering the general contents. For instance, waste collection, processing, transportation, business potentials, and legal frameworks can be the focus of training for CKCL. Likewise innovative technologies can be the major focus of the Suchitwa mission team. Managerial efficiency and leadership can be the major component training for ULB of secretaries. As discussed in the case of training strategies, training content can also be restricted by considering their preferential areas of training mentioned in TNA, and also by considering their job roles. Medium of training is also important in the case of elected representatives, sanitation workers, Community-based organisations, HKS members and general ULB officials. Considering their educational qualification, the training delivery can be through the medium of Malayalam, while a mix of English and Malayalam can be used in the case of state level officials.

TRAINING DURATION

TNA findings underscore the fact that most of the stakeholders prefer one to three days of training, whereas most of them avoided the preference of long-term training. This has a higher implication in fixing training duration. If continuous training is required for any category of stakeholder the training can be planned in different stretches by dividing the whole curriculum into multiple sessions by limiting the single session days from one to three.

TRAINING MODE

The TNA findings emphasise that most of the stakeholders preferred either offline or hybrid mode of training. However, an online strategy would be advisable for short sessions or continuous courses. E-course strategies can be developed to address these contexts. E-learning platforms are preferable to deliver such training. The generation of videos and visual content are the best strategy for delivering online training. Since waste management is an area that requires a larger change in the behavioural pattern of different stakeholders, affiliated continuous orientation through cartoons, animations and short videos are more relevant than formal training modes.

TRAINING LOCATION

Training location is an important factor in the effective delivery of training. Since 93 ULBs are located in 14 districts, the convenience of stakeholders has to be considered while organising training. As per the feedback in TNA, training of the elected representatives, sanitation workers, HKS members, and community-based organisations can be conducted at district level itself. This can be organised at the subdistrict level by clustering ULBs. ULB officials training can be organised at district level while training of state level officials, and

KSWMP officials can be organised either at the regional or state level.

THEMATIC VS STAKEHOLDER APPROACH IN TRAININGS

The knowledge level assessment of different stakeholders indicates that many of the stakeholder groups training are lying in different themes. There are some groups of stakeholders who require a mix of themes in general training such as elected representatives, and community-based organisations.

However, there are many stakeholder categories that require detailed training in different themes. ULB secretaries, DyDCs, PIU engineers, LSGD urban team, Joint directors of LSGD and Suchitwa mission officials are included in these categories. Hence, thematic based short trainings can be organised to them in different time frames. There are some other groups who require training in specified thematic areas in accordance with their job role. Different thematic experts of KSWMP, health officials and engineers of ULBs are included in these categories. Thematic training can be organised to them in two or three stretches in different time frames. Courses in the online platform can be provided to the groups who require continuous training in special and different themes.

1 INTRODUCTION

Solid waste is a by-product of economic activities performed in a society (Balasubramanian, 2020). Municipal solid waste materials generally include garbage (food wastes), rubbish (combustible), yard wastes, street sweepings, ashes, hazardous materials, dead animals, abandoned vehicles, industrial wastes, demolition wastes, construction wastes, etc.(Diaz et al., 1993). Solid waste management is inevitably linked to several environmental and economic outcomes (Kaza et al., 2018). In the absence of proper management, solid waste causes pollution of air and soil, and contamination of water sources. In many urban regions, clogging of drains creates stagnant water conducive to insect breeding and creating floods during rainy seasons, and a significant share of urban air pollution is attributed to improper management of solid waste (Tseng, 2011). Globally, 'solid waste contributes to climate change and is one of the largest sources of pollution in oceans' (Kaza et al., 2018). Therefore, systematic solid waste management is necessary to reduce the adverse effects of waste materials on human health and the environment, and to encourage economic development and improvement in the quality of life.

In Kerala, Solid Waste Management (SWM) is currently being carried out in a decentralised manner wherein the treatment of biodegradables is being promoted at the waste generator's level (households, institutions, and community) by the use of micro bio-digesters and composting plants. Some of the municipalities and corporations collect biodegradable wastes from sources (Households and institutions) and process it in their plants. In the case of non-biodegradable primary waste collection is done through Haritha Karma Sena (HKS) and the further handling of waste is done by Clean Kerala Company Limited (CKCL) and other private institutions. There are lacunae in the systems to treat and dispose of the non-biodegradable waste due to lack of proper facilities. The recent data from the war

room portal of LSGD show the percentage of door-to-door collection of biodegradable waste in corporations and municipalities are 65% and 41% respectively. This shows the considerable need of considerable improvement in the collection of non-biodegradable waste as well. The state is also planning for 8 regional waste-to-energy treatment plants in larger ULBs. The Kerala Solid Waste Management Project (KSWMP) envisages strengthening the institutional and service delivery systems for solid waste management in Kerala. KSWMP would indicatively support the following interventions:

- Strengthening and scaling up city-level SWM systems
- Upgradation of existing household/institution decentralised treatment plants to scientific treatment such as bio-digestion
- Scaling up the decentralised treatment by setting up improved community-level and ULB Level biodegradable treatment plants
- Providing necessary infrastructure (bins, collection vehicles) for primary collection
- Setting up the primary collection mechanism for untreated biodegradable waste (for households and institutions with no decentralised processing facilities) and left-overs/ inert post decentralised processing
- Upgradation of existing Material Collection facilities and Recycling Facilities (MCFs, MRFs) and Resource Recovery Facilities (RRFs)
- Scaling up of necessary secondary collection infrastructure (such as MCFs, RRFs) based on holistic need assessment

Government of Kerala (GoK) intends to utilise financial support from the World Bank and Asian Infrastructure Investment Bank to strengthen the institutional and service delivery systems for Waste Management services at a regional, municipal level and corporation levels in Kerala through KSWMP (87 Municipalities among the 93 Urban Local Bodies (ULBs)) (P168633). KSWMP is proposed as an Investment Project Financing (IPF) (with Development Linked Indicators (DLI)). The Project Development Objective is to strengthen the institutional and service delivery systems for municipal solid waste management in selected ULBs in Kerala. The KSWMP Project Development Objective stated in accordance with the Project Implementation Manual is to strengthen the institutional and service delivery systems for SWM in Kerala. The Project is expected to benefit the state government and the participating ULBs in improving and enhancing their SWM sector value chain at a regional and local level.

Accordingly, the project comprises three components.

- Institutional development, capacity building, and project management support: This includes technical assistance to the Local Self Government Department (LSGD) and ULBs for Training, awareness, IEC, and Project Management.
- Grant support to ULBs: This component will provide financial grants to the participating ULBs for improving their Solid Waste Management (SWM) systems. Primarily (a) primary collection and transportation systems; (b) waste segregation and at-source treatment for biodegradable waste (households, institutions and markets/ commercial spaces); (c) Upgradation of the existing Material Collection Facilities (MCFs) and development of new Comprehensive Material Recovery Facilities (MRFs);

(d) development of biodegradable waste management facilities; and (f) closure/ remediation of small scale existing dumpsites and g) COVID 19 response support activities.

- Development of regional solid waste, Construction and Demolition (C&D) waste and Biomedical Waste (BMW) processing, recycling and disposal facilities, and legacy waste management systems.

The institutional development component requires capacity building of the stakeholders involved in the project. In order to undertake a systematic capacity building exercise training need assessment is a basic prerequisite. For this Kerala Institute of Local Administration (KILA) was assigned as an agency for conducting TNA. KILA has conducted TNA in three phases. The first phase was targeted on different stakeholders at the ULB level and state level officials in Haritha Kerala Mission, Suchitwa Mission, Pollution Control Board, and Health department the major agencies affiliated to waste management in the state. The second phase has been focused on state and district teams of KSWMP. The third phase has focused on different state level stakeholder groups such as the LSG department, Suchitwa Mission, Tourism department, Kerala State Disaster Management Authority, Haritha Sahaya Sthapanam, and Scrap Dealers Association. The third phase has been covered through Focus Group Discussion. The TNA report consists of 9 chapters. ie; Introduction, methodology, Covering the factors such as the profile of the respondents, Knowledge, and capacity levels of stakeholders, Training preference of different stakeholders and overall findings of the assessment. The report ends with highlights of the training preferences of each stakeholder group and the training areas prepared.

1.1. OBJECTIVES

The key objectives of the TNA are:

- To understand the knowledge level of different stakeholders with respect to the rules and regulations and existing mechanisms of solid waste management in the state
- To identify the training requirement and training preferences of the stakeholders through a disaggregated analysis
- To provide supporting evidence to design effective training strategy, method and mode of delivery

1.2. TARGET GROUPS OF TNA

The assessment targets multi stakeholder groups affiliated to waste management at UBL and state levels. All elected representatives of the selected ULBs, eight officials including the Secretary, Additional Secretary, Deputy Secretary, P.A. to the Secretary, employees from the health and engineering wings of the ULBs, one employee from each of the sanitation divisions of the ULBs, administrative staff members handling the accounts of SWM in the ULBs, one members of Haritha Karma Sena (HKS) from each ward division, ten members from each of the Kudumbashree CDS in the ULBs, office bearers of residents associations in the ULBs, office bearers of merchants associations, and representatives of institutions who generate bulk quantities of waste (hospitals, schools, flats, wedding halls, etc.)-(minimum 10 office bearers from each ULB) are the major stakeholders included in the first phase of

the assessment. The state level officials such as Suchitwa Mission, Haritha Kerala Mission, KSPCB and officials of health department were also covered in the first phase.

The second phase targeted staff team members of KSWMP at State, district and PIU level. The third phase covered representatives of all organisations and stakeholder groups affiliated to waste management at the state level.

Table 1.1: Targeted vs Actual responses received in the first phase

Participants	Actual response	Targeted Response	Percent Response
Elected representatives of ULBs	603	1041	57.93%
Officials from ULBs	226	208	108.65%
Community Based Organisations/ Kudumbashree	527	520	101.35%
Workers involved in Waste Collection and Management:	933	1041	88.45%
State-level Officials	47		

1.2.1. Roles and responsibilities of target groups

Elected Representatives

- Developing and enforcing ULB level SWM by-laws
- Allocating funds for waste management projects
- Prioritising SWM projects
- Monitoring and Evaluation of SWM programs
- Planning and monitoring of SWM systems (Composting, Landfills, MCFs, RRFs etc)
- Social Behavioural change communication for better SWM
- Encouraging community participation
- Enforcing waste management regulations and ensuring its compliance
- Building collaborations for SWM initiatives
- Developing and implementing contingency plans in emergencies
- Ensure environmental sustainability of SWM projects
- Environmental safety ensure health security and safety of waste collection staff
- Gender rights of SWM staff

ULB Officials

Accounts staff:

- Preparation of budget for SWM projects or programs

- Monitoring and regulating the spending on SWM projects
- Processing invoices of service providers and vendors
- Preparing financial statements and reports
- Managing grants and other financial resources
- Ensuring contracts complaints
- Creating and maintaining assets records
- Cost-benefit analyses of projects and programs
- Maintaining financial data and records
- Facilitating financial and performance audits
- Evolving strategies for financial sustainability of SWM projects

Engineering staff;

- Planning and designing of waste management infrastructure
- Managing and maintaining waste management facilities
- Planning and overseeing bio and non waste management projects
- Conducting environmental impact assessments
- Implementing innovative technologies and waste management solutions
- Ensuring measures for environmental security in SWM project sites

Health staff;

- Regular inspections of waste management facilities
- Monitoring and regulating the disposal of waste
- Promoting waste segregation at the source
- Conducting public awareness campaigns
- Ensuring environmental security in workplace
- Protecting gender rights of SWM workers
- Ensuring health safety measures of SWM staff
- Enforcement of legal provisions for SWM
- Managing public health issues in SWM sites
- Assessing and addressing the potential health impacts of SWM projects
- Developing and implementing emergency plans
- Capacity-building trainings for health and SWM workers
- Collecting and maintaining data on waste management

Secretary;

- Developing waste management policies, strategies, and action plans

- Budget allocation and monitoring
- Entering and monitoring contractual SWM projects
- Monitoring and evaluation of SWM projects
- Monitoring of waste collection system
- Public awareness on SWM

Community Based Organizations

Bulk waste generators;

- Processing of bio waste at source
- Handing over non bio waste to the approved agencies or systems
- Ensure better waste storage facilities
- Follow waste reduction strategies
- Participating or initiating recycling programs
- Conducting waste audits
- Providing proper data to ULB
- Implementing environmentally responsible waste management practices
- Educating staff on SWM practices
- Ensuring environmental safety in SWM

Kudumbashree;

- Community education on SWM practices
- Organising local waste collection drives
- Promoting waste reduction strategies
- Reporting legal violations on SWM
- Encouraging community composting
- Organising periodic clean-up drives
- Providing training and workshops
- Social audits of SWM programs and projects
- Campaigns on SWM issues
- Collaborating to maintain public spaces free from litter and waste
- Creating livelihood opportunities
- Promoting gender rights of SWM workers

Merchants organisation;

- Promoting waste segregation at the source
- Ensuring Collection and disposal of non bio waste through authorised agencies

- Providing suitable waste collection and storage facilities
- Handling and disposing of hazardous waste generated
- Conducting campaigns and educational programs
- Practices to minimise waste generation
- Promoting waste reduction strategies
- Providing data to the ULB

Residence Association;

- Encouraging waste segregation at the source
- Promoting bio waste processing at source
- Promoting waste reduction strategies
- Promoting waste recycling programs
- Encouraging community composting
- Conducting campaigns and community educational
- Reporting legal violations from SWM

Voluntary organisation;

- Communities education and campaigning on SWM
- Promoting scientific waste collection and segregation
- Promoting source level processing of bio waste
- Promoting waste reduction strategies
- Conducting waste audits
- Organising clean-up drives and community events
- Collaborating with the ULB's waste management authorities
- Coordinating with local authorities and emergency response teams

Sanitation Workers

Waste collector / Waste Transporters/ Waste Management Workers;

- Collecting waste from all sources
- Segregating waste at the source
- Planning and optimising collection routes
- Maintaining waste collection equipments and vehicles
- Adhering to SWM guidelines on safety and security
- Collection of user fees
- Maintaining records of waste collection
- Promoting use of waste bins and containers for waste collection

- Providing customer support
- Secure transportation of waste
- Collection, safe transportation of bio waste to the processing centres
- Scientific running of bio waste processing plants

Rag-pickers/ Recycling workers;

- Separating recyclable materials from non-recyclable waste
- Collecting reusable items
- Handing over reject materials to the authorised agencies
- Earning income through the sale of collected recyclable materials
- Collaborating waste management systems
- Promoting waste segregation and recycling
- Adopting health safety measures
- Collaborating with municipal waste management systems
- Maintaining records on waste movement

Sanitation workers;

- Collecting waste from sources
- Cleaning streets, sidewalks, and public areas.
- Segregation of wastes
- Identifying and separating recyclable materials
- Safe collection and transportation of bio waste
- Using compaction equipment to reduce the volume of waste
- Operating waste collection vehicles
- Maintaining and servicing collection and disposal equipments
- Planning and optimising collection routes
- Adhering to safety protocols and guidelines
- Managing landfill sites

Waste Collection Agencies;

- Collecting waste from MCF, RRF
- Segregation of waste
- Maintaining of RRF
- Safely handling and transporting hazardous waste materials
- Operating waste collection vehicles
- Maintaining and servicing collection and transportation equipment

- Planning and optimising collection routes
- Implementing safety protocols, guidelines
- Ensuring environmental safety in collection site
- Maintaining records of waste collection activities
- Providing customer support
- Ensuring gender justice of labours
- Implementing labour welfare measures
- Follow social safeguard methods
- Collection user fee

Haritha Karma Sena;

- Collecting and transporting waste from sources
- Collection user fee
- Segregation of waste
- Safely handling of hazardous
- Operating waste collection vehicles and equipment.
- Reporting legal violations in SWM
- Following safety guidelines
- Efficiently navigating assigned collection routes
- Optimising collection protocols
- Assisting during natural disasters
- Community Education on SWM practices
- Reporting issues like damaged bins, irregular waste generation
- Scientific management of mini mcf, mcf and RRF

State agencies, departments, and officials (Covering first and third phase)

Haritha Kerala Mission;

- Selection and deployment of HSS
- Empanelment of agencies for waste management and organic vegetable farming
- Evaluate the SWM activities based on reports received from the districts
- Empanelment of service providers who will supply raw materials required for SWM
- Assist ULBs in concluding contracts with Clean Kerala Company Limited (CKCL) for taking over the non-biodegradable waste from MCFs run by ULBs
- Assisting ULBs in finding suitable locations for setting up RRFs in association with CKCL.

Suchitwa Mission;

- Technical support group for LSGIs in the waste management
- Assist in achieving total sanitation coverage by LSGIs
- Providing policy, strategy, planning, implementation and monitoring support Waste Management
- Organising IEC campaigns and Capacity Building activities in Sanitation and Waste Management
- Promotion of Green Protocol, compliance by individuals, institutions, and various tiers of Government.

Kerala State Pollution Control Board;

- Enforcement of rules in the State through local bodies
- Review implementation at least twice a year in coordination with DUA/ LSGD
- Monitor environmental standards and adherence to conditions specified in the rules
- Issue authorization to a local body or an operator of a facility within 60 days, stipulating compliance criteria and environmental standards
- Monitor the compliance of standards prescribed for treatment technology
- Give directions to local bodies on safe handling and disposal of domestic hazardous waste
- Regulate the inter-state movement of waste.
- Health Department Officials;
- Enforcing and monitoring waste management regulations
- Ensure waste management practices are public health protection
- Conducting health impact assessments
- Develop educational and awareness campaigns
- Collecting and analysing health data
- Collaborating with local health departments
- Providing training and guidance to healthcare facilities

KSWMP team

Monitoring and Evaluation expert;

- Develop and roll-out data collection formats and tools
- Provide oversight on ULBs for data collections, data transmittal and submission of progress reports
- Prepare progress and monitoring reports
- Provide administrative support to SPMU and other capacity building agencies as hired by SPMU, in conducting training and capacity building workshops/seminars/

FGDs etc. at various ULBs and/or other locations as may be decided by SPMU in the respective districts

Finance expert;

- Coordinate with ULBs in their preparation of grant utilisation reports
- Check the AT compliance of the participating ULBs for SPMU.
- Coordinate with ULBs on their external audit compliances to ensure the audits are done in time.

Environmental Engineer/ Social and Communication experts;

- Undertake a monthly visit to subprojects to ensure compliance with ESMPs, TDP-SMPRAP and guide and support PIUs/ TSC/Contractors to oversee safeguards management including compliance of labour laws
- Review monthly progress reports by PIUs to resolve any issues
- Screening and categorization of the sub project using the screening tools
- Prepare quarterly progress reports on ESMF implementation
- Collect and provide data and reports for impact evaluation to the M&E wing
- Attend field visits as part of the monitoring of the subprojects
- Provide administrative support to SPMU in conducting IEC and capacity building activities in the respective districts.

SWM Engineer/ DyDC;

- Develop project concept notes, project design and drawings, Bill of Quantities(BoQs) with appropriate cost estimates, site selections, DPRs etc.
- Assist the Project Managers in conducting citizen engagement and stakeholder consultations, project due diligence and in providing project approvals.
- Periodically visit the project and operating sites, measure quantities of work, record measurements
- Supervise the commissioning of project facilities constructed under the Project
- Maintain project records, monitor project progress
- Prepare the periodical progress reports for the SM and the Project Steering Committee.
- Assist the Project Managers and FM Expert in budget preparation and implementation.
- Provide administrative support for projects by collecting data, providing project documentation, training staff, or performing other general administrative duties.
- Prepare site specific health and safety protocols required for collection, transportation and treatment of all types of waste.
- Assist the Procurement Specialists in project procurements and contract management

PIU Engineer;

- Prepare 5-year and Annual SWM Plans, obtain approval from the Secretary and the

Municipal Council

- Ensure the SWM plan is integrated into ULB annual plan and submitted to DPC for approvals
- Conduct the citizen engagement and stakeholder consultations including Ward Sabha meetings, for 5 year and Annual plan exercises and obtain their respective consents.
- Prioritise the projects identified in the 5-year and Annual plans
- Ensure appropriate approvals are obtained from SPMU/SM as per Project Approval Process.
- Inspect the project and operational sites for monitoring of project progress and operation of sites and provide necessary technical advice as needed
- Advise, as needed, the project contractors to prepare site specific health and safety protocols required for collection, transportation, and treatment of all types of waste as may be needed.
- Coordinate with district level PMC teams and SPMU/SPMC for execution of necessary tasks/activities in case of regional projects, where the ULB may be participating in any manner.

1.3. DOMAINS COVERED

- The TNA response forms are structured into various sections covering the following domains.

1.3.1. Elected Representatives

- Knowledge of punishments and penalties in the rules and regulations pertaining to SWM
- Knowledge regarding the actions and interventions that ULBs can undertake in the domain of waste management in accordance with the Kerala State Policy on Solid Waste Management, 2018.
- Knowledge regarding the governance of waste management projects
- Knowledge of mechanisms for collection and storage of non-biodegradable waste (NBDW) and the management of these mechanisms
- Knowledge of institutions involved in the sales/trade of NBDW.
- Knowledge regarding the adverse effects of burning NBDW, knowledge of waste management businesses, the importance of segregation of waste, knowledge regarding the environmental impact of waste or waste management project and the know-how to mitigate it, knowledge of procedures involved in the collection and transportation of waste, knowledge regarding HKS, and knowledge about the alternatives of single-use plastic.
- Experiences in involving the private sector in SWM
- Awareness regarding best practices in SWM
- Priorities in training mode and training duration.
- Preferred activities of respondents, to take up after training

1.3.2. Officials from ULBs

- General Profile of respondents
- Knowledge of punishments and penalties in the rules and regulations pertaining to SWM
- Knowledge regarding the actions and interventions that ULBs can undertake in the domain of waste management in accordance with the Kerala State Policy on Solid Waste Management, 2018.
- Knowledge regarding the governance of waste management projects
- Knowledge of mechanisms for collection and storage of non-biodegradable waste (NBDW) and the management of these mechanisms
- Knowledge of institutions involved in the sales/trade of NBDW.
- Knowledge regarding the adverse effects of burning NBDW, knowledge of waste management businesses, importance of segregation of waste, knowledge regarding the environmental impact of waste and the know-how to mitigate it, knowledge of procedures involved in the collection and transportation of waste, knowledge regarding HKS, and knowledge about the alternatives of single-use plastic.
- Experiences in involving the private sector in SWM
- Awareness regarding best practices in SWM
- Experience in dealing with the SWM projects of international concerns, Capacity to manage long-term SWM projects efficiently, and Capacity to ensure beneficial involvement of the communities.
- Knowledge regarding the environmental and public health impacts of different types of waste
- Knowledge regarding the rules, norms, procedures, benchmarks, systems of waste management, powers of ULBs, and the ability to prepare detailed project reports for waste management.
- Knowledge about various funds related to waste management, their management, methods of accounting and reporting, monitoring practices, capacity to respond to audit queries, and skills to prepare detailed plan documents and by-laws.
- Priorities in training mode and training duration.
- Preferred activities of respondents, to take up after training

1.3.3. Community Based Organisations

- General Profile of respondents
- Knowledge of punishments and penalties in the rules and regulations pertaining to SWM
- Knowledge regarding the environmental and public health impacts of waste, awareness about the necessary precautions while handling waste, the importance of waste reduction and methods of mitigation, knowledge regarding the management of waste at the source and the methods of the green protocol.

- Knowledge of mechanisms for collection and storage of waste and the management of these mechanisms, the rights of HKS members and other employees and staff involved in waste management, knowledge about the importance of meaningful community participation, and awareness of methods to collect hazardous waste.
- Awareness about recyclable NBDW, nature-based methods to substitute plastic, knowledge about the impacts of burning plastic, public health impacts of waste, information about own interventions, and facilities to manage waste, and details of waste generated.
- Priorities in training mode and training duration.
- Preferred activities of respondents, to take up after training

1.3.4. Workers involved in Waste Collection and Management

- General Profile of respondents
- Experience in waste collection and management
- Information about the nature of their work and grievances
- Information about the perception and attitude of the general public towards waste management
- Knowledge regarding the environmental and public health impacts of waste, awareness about the necessary precautions while handling waste.
- Knowledge about the domain of work, rules and regulations, capacity to convince the public about the domain of work, knowledge about the importance of meaningful community participation, and awareness of methods to collect hazardous waste.
- Knowledge of punishments and penalties in the rules and regulations pertaining to SWM
- Perception about waste management in the concerned ULB.
- Priorities in training mode and training duration.
- Preferred activities of respondents, to take up after training

1.3.5. State-level Officials

- General Profile of respondents
- Rules and regulations pertaining to SWM
- Punishments and penalties in the rules and regulations pertaining to SWM
- The role of various government institutions stipulated in the Kerala State Policy on Solid Waste Management, 2018.
- the methods of management of waste at source and the awareness about the importance of waste reduction.
- Methods of green protocol
- Biowaste management at institutional level
- Nature based methods to substitute plastic

- The impacts of burning plastic
- Public health impacts of waste
- Management of hazardous waste
- The rights of HKS members and other employees and staff involved in waste management
- Various funds related to waste management, their management, methods of accounting and reporting
- The rules, norms, procedures, benchmarks, systems of waste management
- Importance of social and environmental safeguards
- Procedures for landfilling the NBDW materials.
- Priorities in training mode and training duration.
- Preferred activities of respondents, to take up after training

1.3.6. KSWMP Team

- General Profile of respondents
- Knowledge of punishments and penalties in the rules and regulations pertaining to SWM
- Knowledge regarding the actions and interventions that ULBs can undertake in the domain of waste management in accordance with the Kerala State Policy on Solid Waste Management, 2018.
- Knowledge regarding the governance of waste management projects
- Knowledge of mechanisms for collection and storage of non-biodegradable waste (NBDW) and the management of these mechanisms
- Knowledge of institutions involved in the sales/trade of NBDW.
- Knowledge of safety measures and social environmental impact
- The role of various government institutions stipulated in the Kerala State Policy on Solid Waste Management, 2018.
- The methods of management of waste at source and the awareness.
- Knowledge regarding the rules, norms, procedures, benchmarks, systems of waste management, powers of ULBs, and the ability to prepare detailed project reports for waste management.
- Knowledge about various funds related to waste management, their management, methods of accounting and reporting, monitoring practices, capacity to respond to audit queries, and skills to prepare detailed plan documents and by-laws.
- Priorities in training mode and training duration.
- Preferred activities of respondents, to take up after training

The survey questionnaires are provided in Appendix B.

2 METHODOLOGY AND PROCESS OF CONDUCTING TNA

A comprehensive methodology was followed in conducting TNA by incorporating the processes to identify the training requirements of various stakeholders related to the KSWMP project. Major stakeholders of KSWMP Programs have been divided into three groups for the sake of conducting TNA. Hence TNA was conducted in three faces by covering different groups. They are ULB Level stakeholders, district-level officials of departments and state agencies affiliated to waste management, a team of KSWMP Project, and different departments and agencies affiliated to the project at the state level. The TNA process was conducted in three stages whereas the

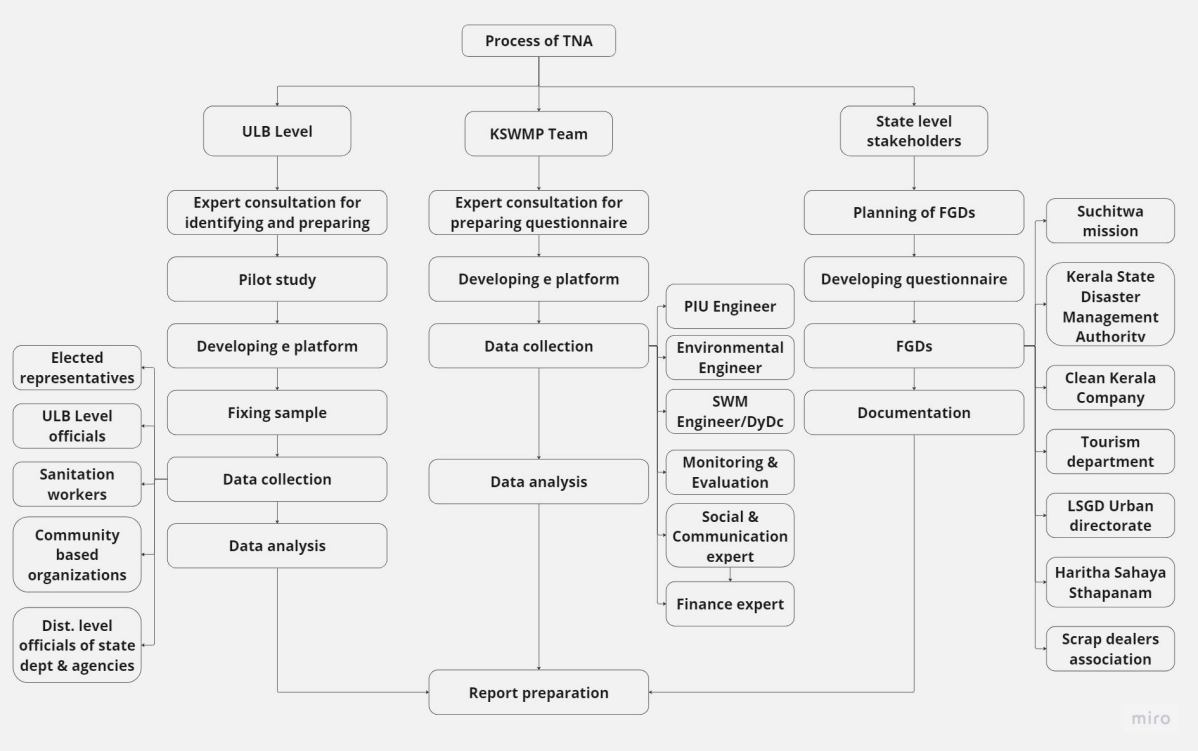


Figure 2.1: Methodology and Process of Conducting TNA

ULB level TNA and quantitative survey from district-level officials were conducted between June 2022 to August 2022, the other two levels were conducted between August 2023 to October 2023.

2.1. TNA FOR ULB LEVEL TEAM AND DISTRICT LEVEL OFFICIALS OF DEPARTMENTS AND AGENCIES

As an initial face of TNA, a comprehensive assessment was done among different stakeholders of ULBs. 22 out of 93 ULBs were selected as samples of the assessment. Different stakeholder groups such as elected representatives, ULB Officials, Sanitation workers, Haritha karma sena, Community-based organisations, and bulk waste generators were covered at the ULB level. It was ensured that all the stakeholder groups were included in the TNA. Detailed and separate questionnaires have been prepared and circulated among different stakeholder groups to extract the targeted information from each category. Along with this, a questionnaire covering the different elements of solid waste management has been circulated to district-level officials of state departments and agencies affiliated to waste management for extracting their training needs. This was applied among officials of Haritha Kerala Mission, Suchitwa Mission, the pollution control board, and the health department.

2.2. EXPERT CONSULTATIONS FOR PHASE 1

Two workshops were conducted as part of the TNA process in which experts from KSWMP-SPMU, SPMC, and KILA participated. These workshops were conducted to finalise the TNA process including stakeholder mapping, role mapping, and questionnaire design for different stakeholders such as state officials, elected representatives, ULB officials, community-based organisations, and sanitation workers. In addition to that, various rounds of online discussions were also conducted before finalising the survey instrument. All the survey instruments were coded to computer-assisted personal interview format and were administered in paperless mode. An open data kit was used to convert paper-based questionnaires to digital format. Data validation and checks were built into the design and live monitoring dashboards were also designed using the Kobo toolbox.

2.3. CONSULTATIONS FOR PHASE 2 AND 3

Detailed discussions were conducted with the KSWMP team for designing questionnaires for the second and third phases. Initial discussions were conducted with the state project management unit at the end of July 2023 and draft questionnaires were developed for different categories under the KSWMP team such as Environmental Engineers, Monitoring and Evaluation experts, Social and Environmental experts, Finance experts, SWM Engineer/ DyDC and PIU Engineer. These questionnaires were circulated among the state experts and made corrections by following their suggestions. Questionnaires were converted into online form using Kobo Toolbox and circulated among all district and state-level staff under KSWMP projects.

A detailed discussion with the SPMU team was conducted on 5th September to enlist the points for the third phase. It was discussed that separate Focus group discussions can be conducted to identify the training needs of different stakeholders at the state level. It is also decided that gaps in the first 2 phases can also be covered in the third phase. The tools for

FGD were developed based on this.

2.4. PILOT STUDY

As part of the TNA process, a pilot study was also conducted in one of the (Irinjalakuda) ULBs to pre-test the instruments to fine-tune the questions and ensure coverage of the stakeholders involved in Solid waste management. The pilot TNA indicated that the survey instruments need supportive explanations and arguments to bring more clarity to the questions, especially when administered to elected representatives and waste collectors. Accordingly, the mode of administration of survey instruments to these categories was changed to a hybrid mode. Trained resource persons were supporting a group of respondents in a hybrid mode to bring more clarity to the questions, while the respondents were using their smartphones to complete the survey. The survey questionnaires were finalised based on this field test.

2.5. SAMPLING FOR TNA

The sample frame for TNA consists of all 87 municipalities and 6 corporations in the state. In order to draw a representative sample from the sample frame, the 6th State Finance Commission Fund devolution shares were taken as the criteria. Since the SFC's fund devolution is calculated based on a comprehensive set of parameters which includes, geographical area, population, environmental vulnerability, and deprivation index SFC's devolution share acts as an effective stratification variable that captures the developmental stage, financial status, socio-demographic factors of each urban local body (ULB). Based on the SFC fund shares for all the ULBs were divided into five strata. Proportional stratified random sampling was conducted so that at least 20% of the municipalities and 50% of corporations are covered in the final sample. Based on these criteria, from each stratum ULBs were sampled proportionally so that the entire sample frame is represented. For corporations, based on the SFC shares, three strata were formed and one corporation was randomly sampled from each of the three stratums. The selection consists of 22 municipalities and 3 corporations.

For state-level TNA of Suchitwa Mission, SPCB, HKS, and district officials of the health department. We have circulated questionnaires through their state machinery and collected data through the Kobo toolbox. Following are the no.of responses gathered through this process.

Table 2.1: Sample ULBs and stratification Bins of the ULBs

Code	Name	Devolution index	Bin
C010100	Thiruvananthapuram	1.0396	
C080100	Thrissur	0.0952	
C130100	Kannur	0.4615	
M020400	Kottarakkara	0.0674	2
M030200	Thiruvalla	0.3695	5
M040200	Mavelikara	0.0518	1
M050300	Changanassery	0.1089	3

M050500	Ettumanoor	0.1766	4
M070400	Tripunithura	0.1672	4
M070500	Muvattupuzha	0.0811	2
M070600	N.Paravur	0.0508	1
M071200	Piravom	0.1274	3
M080200	Chavakkad	0.0687	2
M080300	Kodungallur	0.1632	4
M080400	Chalakudy	0.1378	3
M080500	Irinjalakuda	0.3502	5
M080700	Vadakkancherry	0.2724	5
M090200	Shornur	0.3205	5
M100200	Ponnani	0.1083	3
M100400	Tirur	0.0106	1
M100600	Nilambur	0.0882	2
M100900	Tanur	0.0833	2
M101100	Valanchery	0.0809	2
M120100	Kalpetta	0.0437	1
M130800	Iritty	0.0939	2
M140100	Kanhangad	0.1129	3

The second phase of TNA among the KSWMP team was conducted through circulating questionnaires among all the relevant stakeholders in a census manner. The questionnaires were circulated through the SPMU team and data were collected through the Kobo Toolbox.

We have conducted the third phase of TNA through FGDs among state-level officials of different departments and agencies such as the Director Urban LSGD, Joint Directors of LSGD, Suchitwa mission, Clean Kerala Company Limited, Tourism Department, KSDMA, HSS and Scrap dealers. In order to fill the gaps in the first and second phases we have also conducted an FGD of Secretaries of selected ULBs.

2.6. ADMINISTRATION OF TNA

In order to conduct the first phase of TNA two resource persons were selected from each sample ULB to administer the survey. These resource persons were given online training about the questions, and protocols of conducting surveys and reporting during May 2022. Based on the pilot study it was decided to administer the questionnaire to stakeholder groups

of each ULB. Meetings of stakeholder groups were conducted with the help of the ULB chairperson and secretary to fill out the questionnaire. An overview of the project was given to the trained resource persons along with the idea of purpose and nature of the questionnaire. The resource persons also provided technical training to handhold the respondents to fill out the questionnaire in case faced any difficulty. The questionnaires were open for a response during the period between 17 June 2022 and 03 August 2022. This handholding process by the resource persons at the ULB level has helped to avoid the complexity of questions for the respondents and to answer them properly.

Various domains of information pertaining to the respondents are evaluated separately to devise a suitable method of training. The respondents consist of elected representatives from the sample ULBs, officials from the sample ULBs, state-level officials associated with waste management, community-based organisations involved with waste management, and workers involved in the collection and management of waste. A separate analysis was prepared for each category of the respondents. The knowledge and awareness of the respondents were assessed with a ten-point Likert scale where 1 represented the lowest level of knowledge and 10 the highest level of knowledge. Dichotomous questions were included to assess the knowledge of the stakeholders regarding specific interventions and areas. The profile analysis of the respondents and the assessment of their training preferences were performed using pie diagrams showing percentage values corresponding to each category. For the analysis of knowledge levels measured on the Likert scale, an average of the Likert scores were taken for the analysis. Bar graphs were used in the analysis of knowledge levels. All analyses were performed using 'R version 4.2.1' and its user interface 'RStudio'.

For the TNA of the project staff of KSWMP, the questionnaire was designed based on the roles and responsibilities mentioned in the project implementation manual. While designing the questionnaire a special emphasis was given to the roles and responsibilities of the stakeholder and specific questions regarding their expected knowledge in their domain areas were incorporated into the questionnaire. The analysis of the data collected from the questionnaire was done based on a 5-point Likert scale. One shows the least knowledge of the respondent about the topic while 5 show a high level of knowledge. A separate analysis was done for each category within KSWMP staff to understand their training requirements.

Nine stakeholder categories were identified for the Focus Group Discussion in the third phase of TNA. The discussions encompassed stakeholder groups such as the Suchitwa Mission, LSGD, District Planning office, Directorate of LSGD Urban, Clean Kerala Company Limited, KSDMA, Tourism Department, Haritha Sahaya Sthapanam(agencies appointed by the government to appoint government of Kerala), Scrap Dealers Association, etc., spanning four days from September 13 to September 16, 2023. The FGD with the Procurement and Finance team of SPMU, DPMU and PIU of the KSWMP team were conducted on November 11, 2023, The procurement training needs were identified in this FGD.A detailed schedule of these discussions is provided in Appendix D.

Each FGD was allocated a duration of 1.5 to 2 hours. Participants were invited to the Focus Group Discussion via email and phone calls. To facilitate these discussions, pre-prepared presentations covering various subject areas were shared with the respective stakeholder groups through email and WhatsApp ahead of the scheduled discussions. The

discussions were conducted based on the content of these presentations, with each topic area introduced and subsequently discussed. Based on the content analysis of the FGD major points were prepared in a report format and preferred training areas were listed based on these reports.

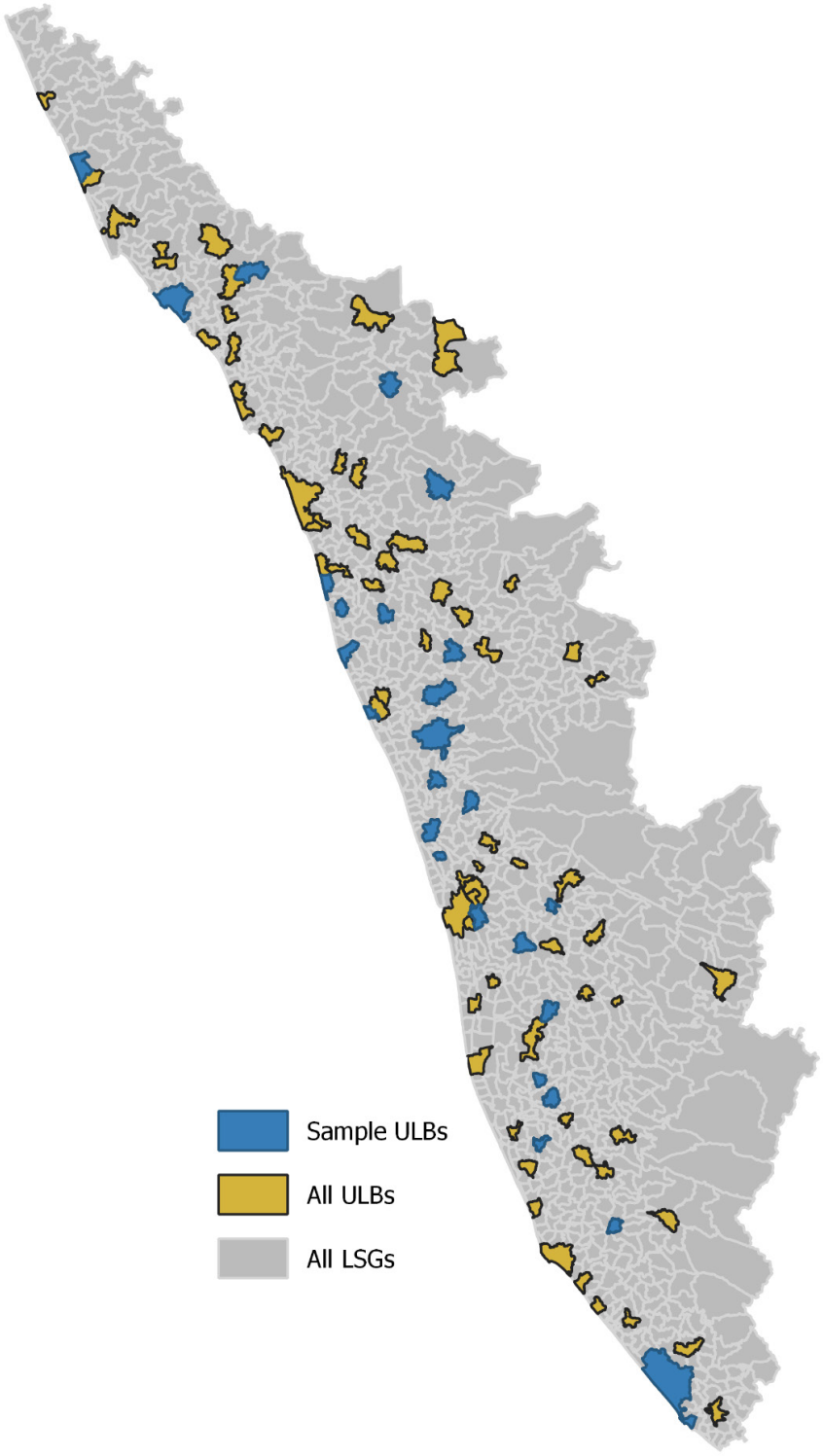


Figure 2.2: Location of the sample ULBs

3 PROFILE OF THE RESPONDENTS

This section analyses the profile of the respondents. Three variables, designation or affiliation, region, education level, and gender, are used for the analysis of the respondents' profiles. A detailed analysis of the responses is provided below;

3.1. ELECTED REPRESENTATIVES FROM THE ULBS

Overall, 603 elected representatives(ER) participated in the survey representing the sample ULBs. As seen in Table 3.1, the majority of the respondents in this category were women (60.2%). Figure 3.1, Designation-wise distribution of elected representatives shows their designation-wise distribution. Among ER 2.82 percent of the respondents are chairpersons of the respective ULBs while 2.65 percent are Vice Chairpersons and 13.27 percent are Chairpersons of the various Standing Committees of the respective ULBs. 81.26 percent of the sample respondents are councillors. Region-wise distribution (Figure 3.2) of the respondents suggest that 43 percent of the respondents are from the Central Kerala region, 31.5 percent of the respondents are from South Kerala, and the remaining 25.4 percent are from North Kerala. The Central Kerala region consists of ULBs from Idukki, Ernakulam, Thrissur, and Palakkad districts, the South Kerala region includes ULBs from Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, and Kottayam districts, and the North Kerala region consists of ULBs from Malappuram, Kozhikode, Wayanad, Kannur and Kasaragod districts.

The educational qualifications of the representatives are represented in Figure 3.3.

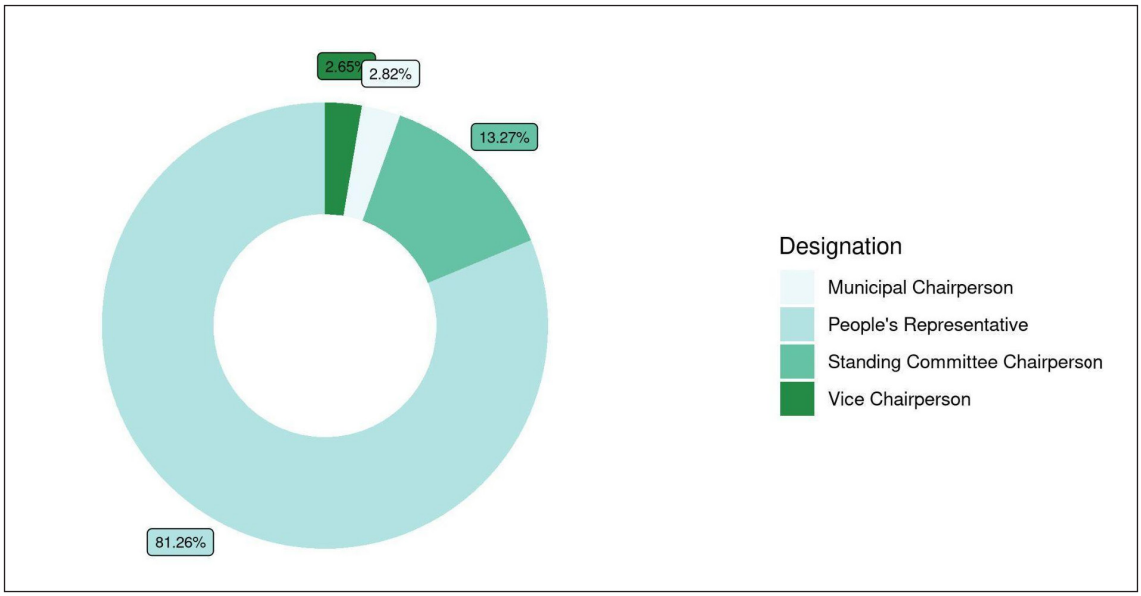


Figure 3.1 Designation-wise distribution of elected representatives

Table 3.1: Gender of elected representatives

Designation	Female	Male	Grand Total
Municipal Chairperson	8	9	17
Councillor	301	189	490
Standing Committee Chairperson	45	35	80
Vice Chairperson	9	7	16
Grand Total	**363**	**240**	**603**

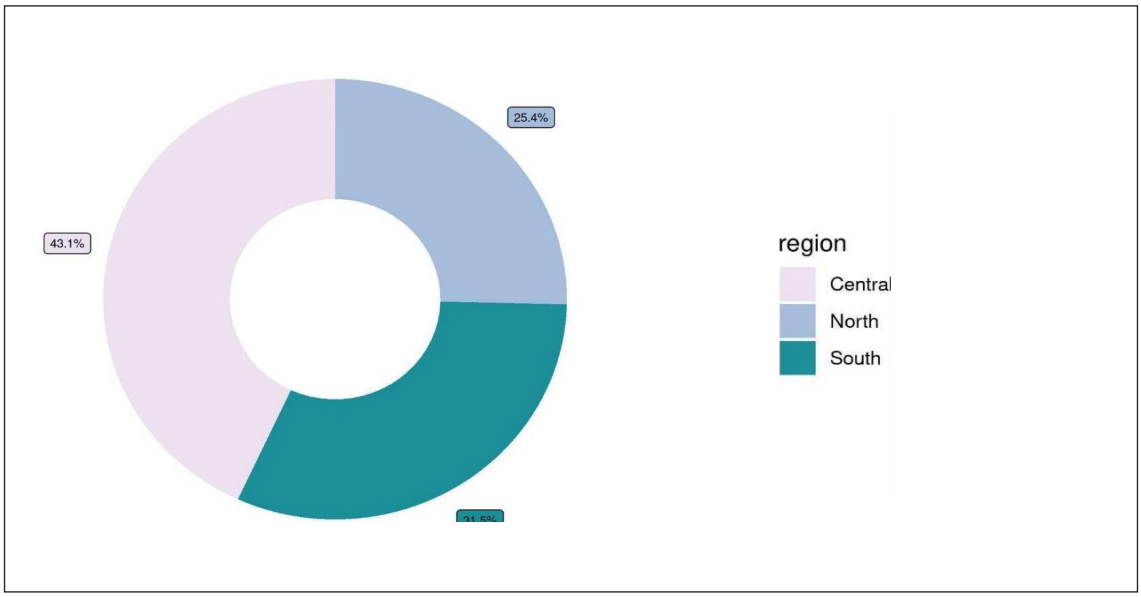


Figure 3.2 Region-wise distribution of elected representatives

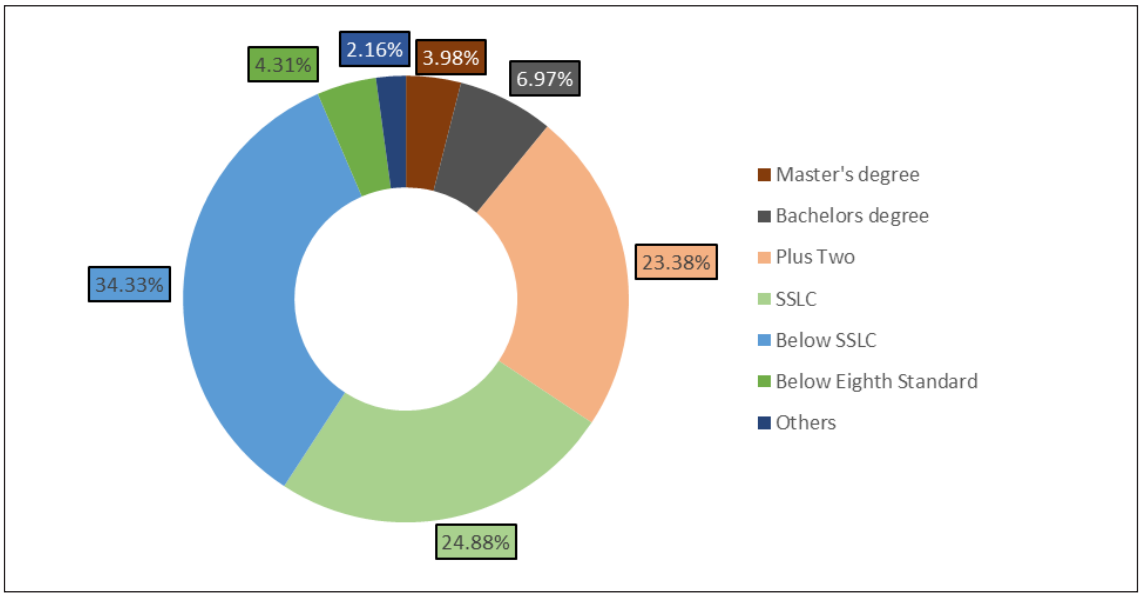


Figure 3.3: Educational qualifications of the elected representatives

Gender distribution (Table 3.1) of ERs shows that there is a larger participation of female ERs in the TNA. As represented by Figure 3.3 and Table 3.2, the educational qualifications of the elected representatives are spread over the options provided in the questionnaire. Out of the 603 sample respondents, 34.33 percent of the representatives did not qualify SSLC whereas nearly 25 percent of them qualified this. 23.38% of the ER qualified Higher Secondary education, whereas only 4% of sampled ER were below 8th grade. The share of representatives having higher education is fairly low in the sample. However, it is worth mentioning that 6.97 percent of the respondents have a qualified undergraduate degree and nearly 4 percent have a postgraduate degree.

Table 3.2: Educational qualification of elected representatives

Designation	Bachelor's Degree	Below Eighth Standard	Below SSLC	Master's Degree	Others	Plus Two	SSLC	Grand Total
Municipal Chairperson	1		3	4		6	3	17
People's Representative	34	22	176	16	12	108	122	490
Standing Committee Chairperson	6	3	23	2	1	23	22	80
Vice Chairperson	1	1	5	2		4	3	16
Grand Total	**42**	**26**	**207**	**24**	**13**	**141**	**150**	**603**

The profile data of ER show that the share of elected representatives with secondary or higher education is relatively very less in the sample. It suggests that the training should be imparted using methods and materials that can effectively communicate with people having school level education. This also highlights the need for simple training strategies for ER to

ensure effective communication.

3.2. OFFICIALS FROM THE ULBS

Among various levels of officials associated with the management of waste in the sample ULBs, two twenty-six officials belonging to various regions, designations, and educational qualifications have responded to the questionnaire of TNA. Out questionnaire of the first phase of TNA majority of the respondents were women(117) (Table 3.3). 31.42 percent of the sample respondents are Health Inspectors (HI), 25.66 percent are employees from the Engineering wings of the ULBs, 23.01 percent belong to the other workers of the ULBs involved in the management of waste, and 12.39 percent are health workers other than Health Inspectors. The employees from accounts and administrative wings related to waste management also participated in the survey. Figure 3.4 shows the designation-wise distribution of the respondents from the sample ULBs

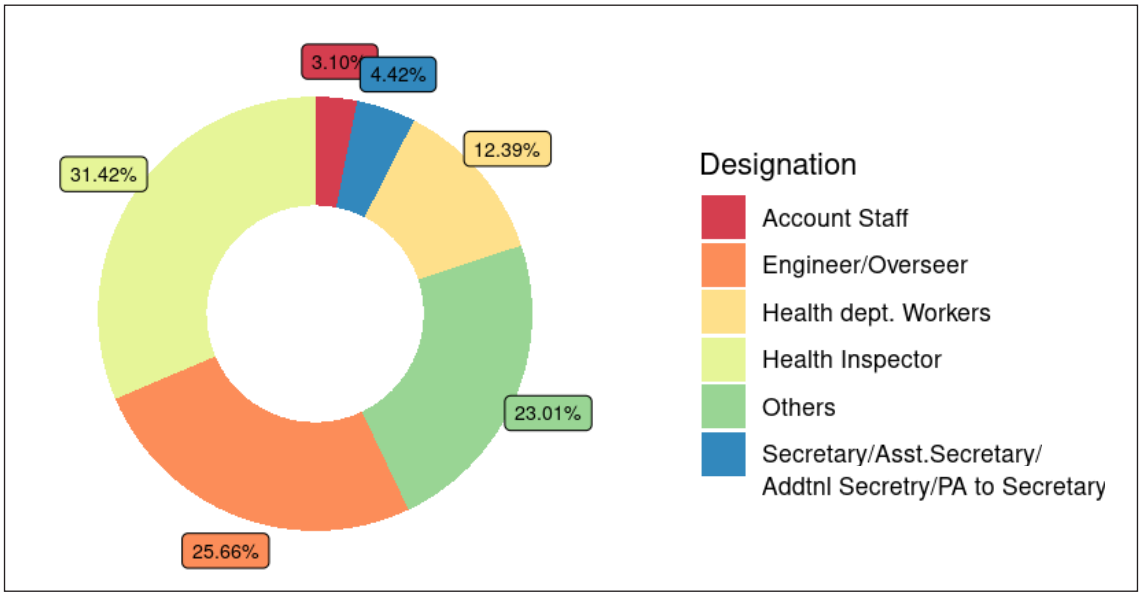


Figure 3.4: Designation-wise distribution of officials from ULBs

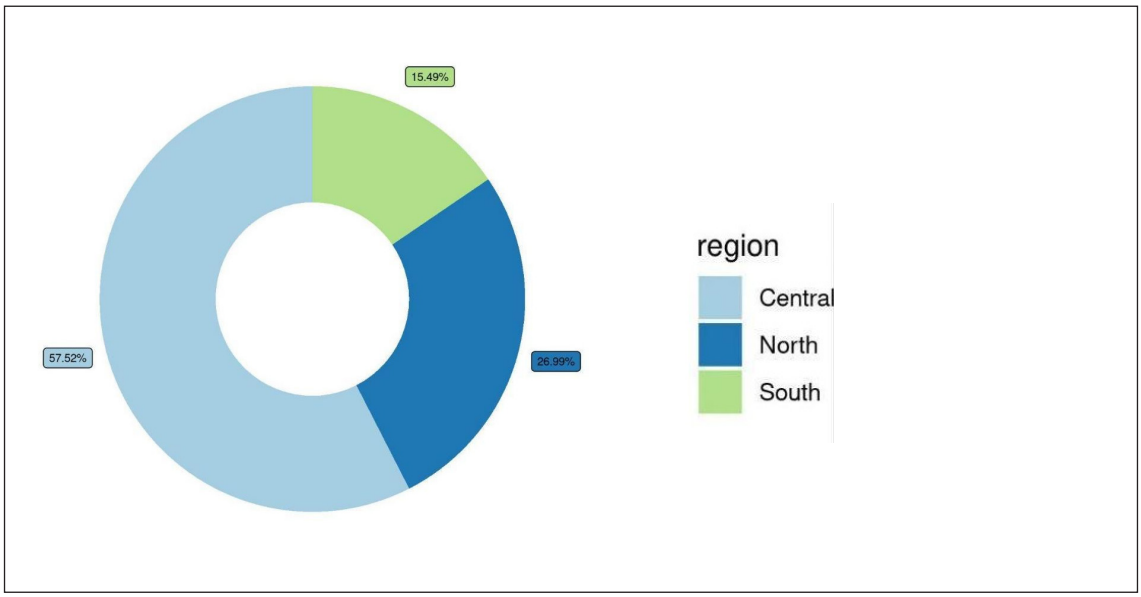


Figure 3.5: Region wise distribution of the officials of the sample ULBs

Table 3.3: Gender-wise distribution of ULB officials

Designation	Female	Male	Grand Total
Accounts Staff	7		7
Engineer/Overseer	33	25	58
Health dept. Workers	17	16	33
Health Inspector	30	36	66
Others	32	20	52
Secretary/Asst. Secretary/Additional Secretary/ PA to Secretary		10	10
Grand Total	**119**	**107**	**226**

In the case of region wise distribution of ULB officials, the concentration of respondents from Central Kerala is high in the Sample (Figure 3.5).

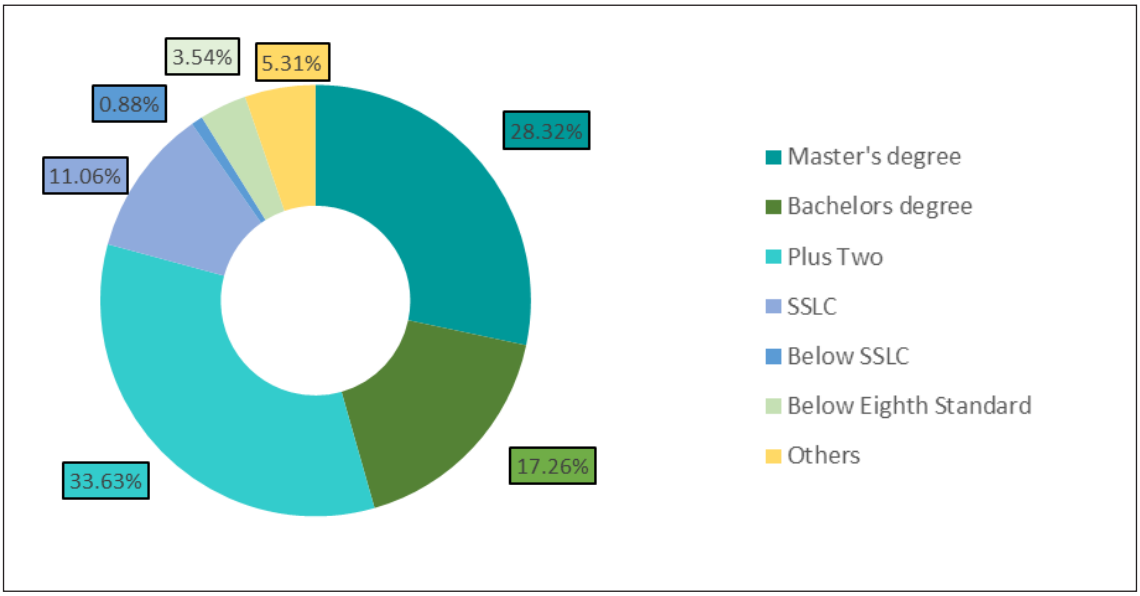


Figure 3.6: Educational qualifications of the ULB officials

Table 3.4: Educational qualification of ULB officials

Designation	Bachelor's Degree	Below Eighth Standard	Below SSLC	Master's Degree	Others	Plus Two	SSLC	Grand Total
Account Staff	4			1		2		7
Engineer/ Overseer	7			40		10	1	58
Health dept. Workers	2		5	5	5	11	5	33
Health Inspector	5			11	5	34	11	66

Others	17	2	3	6	1	15	8	52
Secretary/ Asst. Secretary/ Addtnl Secretary/ PA to Secretary	4			1	1	4		10
Grand Total	**39**	**2**	**8**	**64**	**12**	**76**	**25**	**226**

Figure 3.6 and Table 3.4 shows the educational qualifications of the ULB officials. 33 percent of the ULB officials have acquired higher secondary education. It is important to note that 28 percent of the sample respondents have postgraduate degrees whereas 17 percent of the officials have a bachelor's degree. The share of people with education levels below SSLC and below 8th standard is relatively negligible.

An analysis of the profile of ULB officials suggests that they are fairly distributed over different designations and hence the responses will have a more representative nature relevant to the training needs. The educational qualifications of the ULB official show that the majority of them are fairly well qualified. Hence the training session can be prepared by incorporating in -depth levels of comprehensive contents.

3.3. COMMUNITY-BASED ORGANISATIONS

There are 527 responses from community-based organisations in different areas of waste management (Figure 3.7). 63.2 percent of the sample respondents are affiliated to Kudumbashree, the poverty eradication and women empowerment mission of Government of Kerala. Nearly 15.9 percent belonged to bulk waste generators of waste such as community halls, convention centres, hotels etc. Around 8.7 percent belonged to residence associations in the sample ULBs, nearly 6.5 percent were from merchant's associations and the remaining

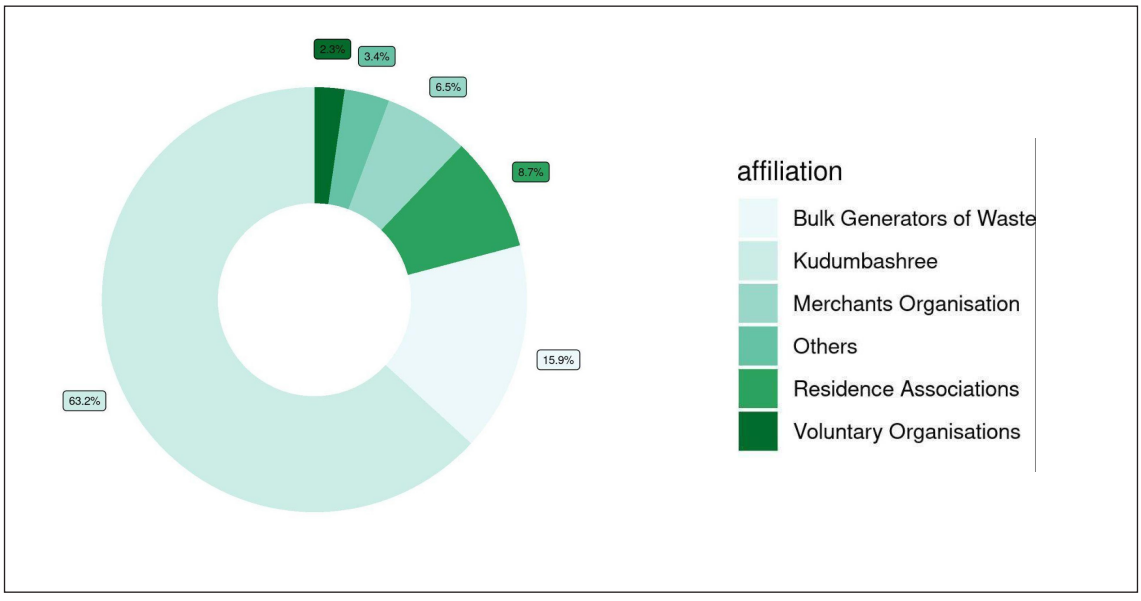


Figure 3.7: Affiliation of sample respondents from community-based organisations

5.7 percent were from voluntary organisations and other micro level organisations associated with waste management.

The figure 3.8 and table 3.5 shows their educational qualification of CBO representatives. As illustrated in the figure, 39 percent of the sample respondents in this category have qualifications below SSLC. However, nearly 24 percent of the respondents have qualified SSLC and another 23 percent has Plus Two. 8.16 percent of the respondents are graduates and around 3 percent are post graduates. This category of respondents has the experience of working with various Non Governmental Organisations in the field of waste management. While a majority of them belong to Kudumbashree, there are fair representations from other organisations as well. Likewise the case of ER majority of the CBO representatives falls the educational qualification of SSLC or below. This has a higher implication in training content and strategy. This indicates that more simplified and practical oriented training would be advisable for the CBOs. Regarding education, there is a fair distribution of samples across different categories of education (Figure 3.8). However, their experiences in participating organisational forms in the field of waste management needs to be considered while deciding their training requirements. It is noted that many of the CBO like Kudumbasree do not have direct exposure to the waste management initiatives. In this context sessions for providing basic understanding on different kinds of waste and their management strategy could be advisable in their training.

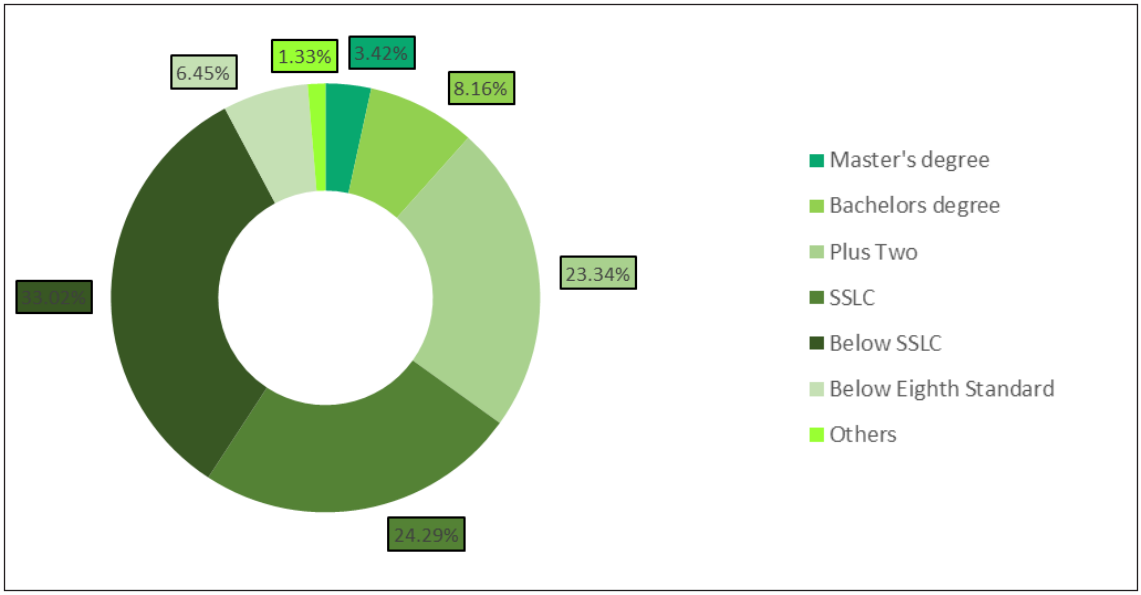


Figure 3.8: Educational qualifications of respondents from CBOs and NGOs

Table 3.5: Educational qualifications of members of CBOs

Affiliation	Degree	Others	Plus Two	Post graduate Degree	SSLC	Technical Education	Up to SSLC	Grand Total
Bulk Generators of Waste	30		13	21	14	3	1	**82**
Kudumbashree	62	4	87	12	117	6	24	**312**

Merchants Organisation	4		10		14	2	3	**33**
Others	3		6	2	5	1		**17**
Residence Associations	18	1	7	8	7	5		**46**
Voluntary Organisations	2		3		6	1		**12**
Grand Total	**119**	**5**	**126**	**43**	**163**	**18**	**28**	**502**

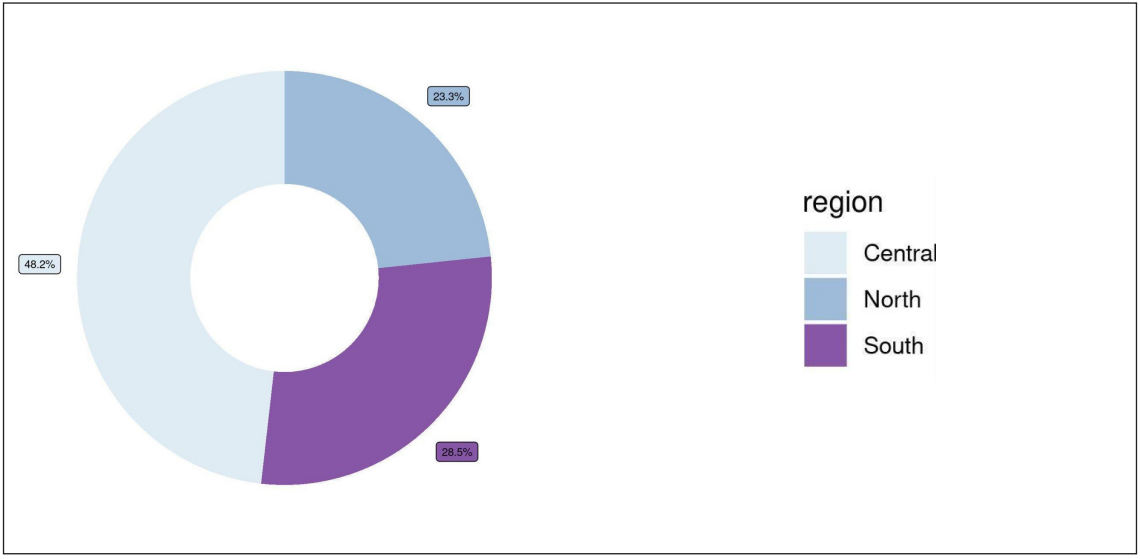


Figure 3.9: Region wise distribution of sample respondents

3.4. WORKERS INVOLVED IN THE PROCESS OF WASTE COLLECTION AND MANAGEMENT

This category has the largest response count among different stakeholders. There are 933 responses from different categories of workers involved in waste management. As shown in Figure 3.10 and Table 3.6, 61.34 percent of the sample respondents belonged to Haritha Karma Sena, a group selected by the local bodies to collect non-biodegradable waste from houses and establishments. 30.89 percent of the respondents are sanitation workers engaged in the sample ULBs. In the remaining 8 percent, there are waste management workers (4.21%), ragpickers (0.76%), recycling workers (0.11%), waste collection agencies (0.32%), waste transporters (0.65%), and other categories (1.73%) of workers associated with waste management.

Table 3.6: Educational qualifications of sanitation workers

Designation	Below eighth standard	SSLC	Below SSLC	Plus two	Bachelor's Degree	Masters' Degree	Others	Technical education	Total
Waste transporters		2	2	1				1	6
Ragpickers	1	5	1						7
Recycling workers					1				1

Others		1		5	7	2	1	1	17
Waste management workers	8	16	11	5					40
Sanitation workers	28	169	23	50	14	3		1	288
Waste collection agencies	1	1	1	1					4
Haritha Karma Sena	100	312	71	62	16	3	2	4	570
Grand Total	**138**	**506**	**109**	**124**	**38**	**8**	**3**	**7**	**933**

Nearly half of these respondents (46.8%) are from the Central zone of Kerala (Figure 3.11 and Table 3.7). As illustrated by the figure, the remaining share of responses is from both South Kerala (29.2%) and North Kerala (24.1%). Here also, the pattern of an increased concentration from the ULBs in Central Kerala is clearly visible.

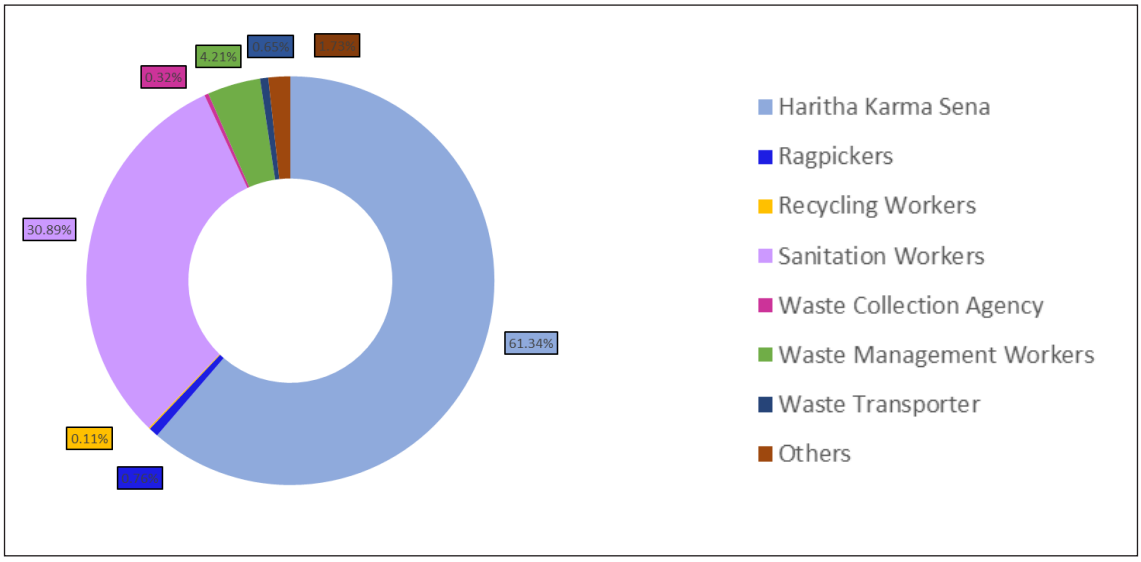


Figure 3.10: Different categories of workers involved in waste management

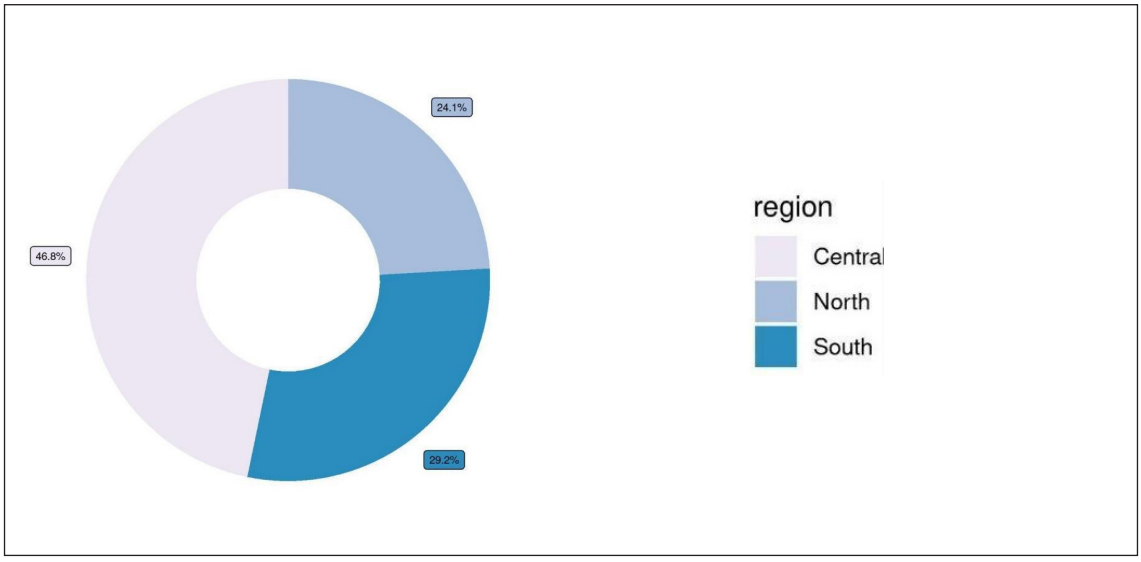


Figure 3.11: Region-wise distribution of workers involved with waste collection

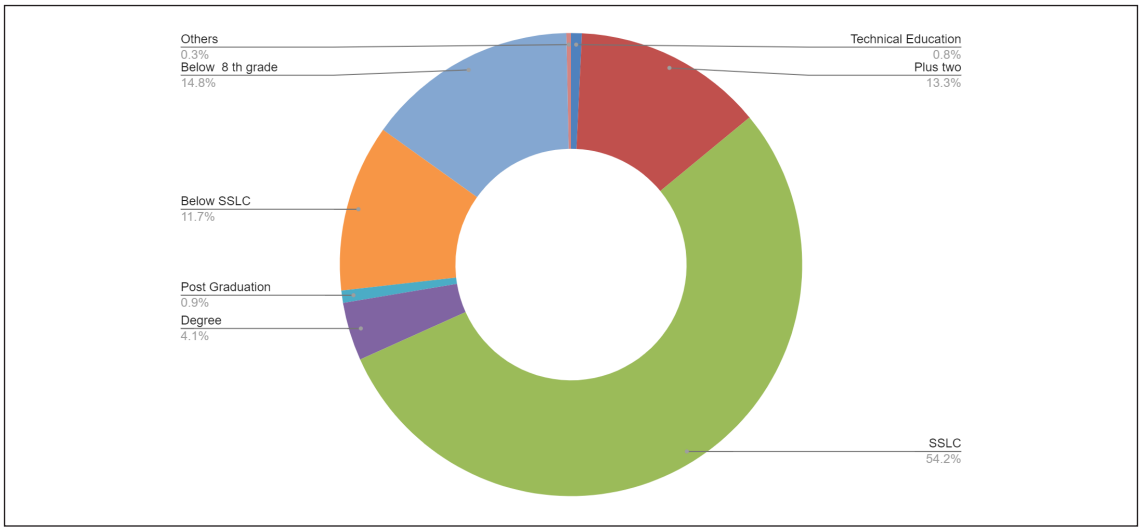


Figure 3.12: Educational qualifications of workers involved in the waste collection

The Figure 3.12 shows the education qualification of the workers involved in waste collection and segregation across the sample ULBs. The figure suggests that there are workers having different educational backgrounds in the sample ULBs. Majority of them (54.2%) have SSLC qualification. The share of workers who did not complete the eighth standard is around 14.8% and 11.7% of them are between below SSLC and eighth standard. This together comes around 26.5 percent. 13 percent have qualified Plus two, and 4 percent have qualified graduation status. Technical education and postgraduates together constitute nearly 2 percent. The education qualification of the sanitation workers show that around one fourth of them qualified below SSLC and majority of them are SSLC qualification. This underscores the relevance of simplified and practical oriented training to the sanitation workers.

Table 3.7: Region-wise distribution of sanitation workers

Position	Central	North	South	Grand Total
Waste transporters	3		3	6
Ragpickers	5	1	1	7
Recycling workers		1		1
Others	4	3	10	17
Waste management workers	6	1	33	40
sanitation workers	153	66	69	288
Waste collection agencies	3	1		4
Haritha Karma Sena	259	155	156	570
Grand Total	**433**	**228**	**272**	**933**

The composition of workers suggests that the majority of them are from Haritha Karma Sena or other workers associated with the collection and segregation of waste. There is a fairly large concentration from the ULBs in Central Kerala and the educational levels of respondents in

this category is relatively very low compared to other categories of respondents. The training modules shall be designed accordingly.

3.5. DISTRICT LEVEL OFFICIALS OF STATE AGENCIES AND DEPARTMENT

The absolute number of responses from state-level officials associated with waste management is relatively small. The survey received only 40 responses.

The state-level officials are fairly spread out across different organisations. Nearly 35 percent of them are affiliated to Suchitwa Mission - the Technical Support Group (TSG) in the Waste Management sector. 27.5 percent belong to Haritha Keralam Mission which targets the redemption of effective waste management, soil and water conservation, and agricultural development focusing on organic farming. There is 12.5 percent representation from the Kerala State Pollution Control Board (KSPCB) and 25 percent from the health department.

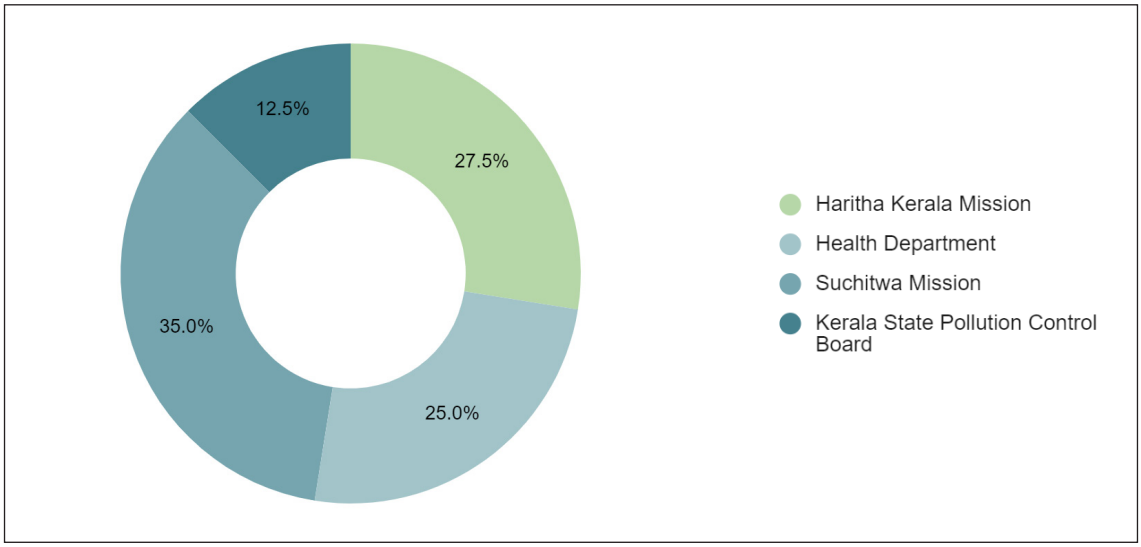


Figure 3.13 : Designation-wise distribution of state officials

Table 3.8: shows the educational qualifications of state level officials associated with waste management.

Designation	Haritha Kerala Mission	Health Department	Suchitwa Mission	Kerala State Pollution Control Board	Total
District coordinator	11		1		12
Environmental Engineer				5	5
Health Department Officials		10			10
Programme officer			10		10
Technical Consultant			3		3
Grand Total	**11**	**10**	**14**	**5**	**40**

Table 3.9: Educational qualification of state officials

Designation	Bachelor' Degree	Masters' Degree	Technical Education	Total
District coordinator	5	4	3	12
Environmental Engineer		3	2	5
Health Department Officials	8	2		10
Programme officer	2	7	1	10
Technical Consultant		3		3
Grand Total	**15**	**19**	**6**	**40**

An overview of the educational qualifications of these officials (Figure 3.15 and Table 3.9) suggests that nearly half of them are graduates and around 33 percent are post-graduates.

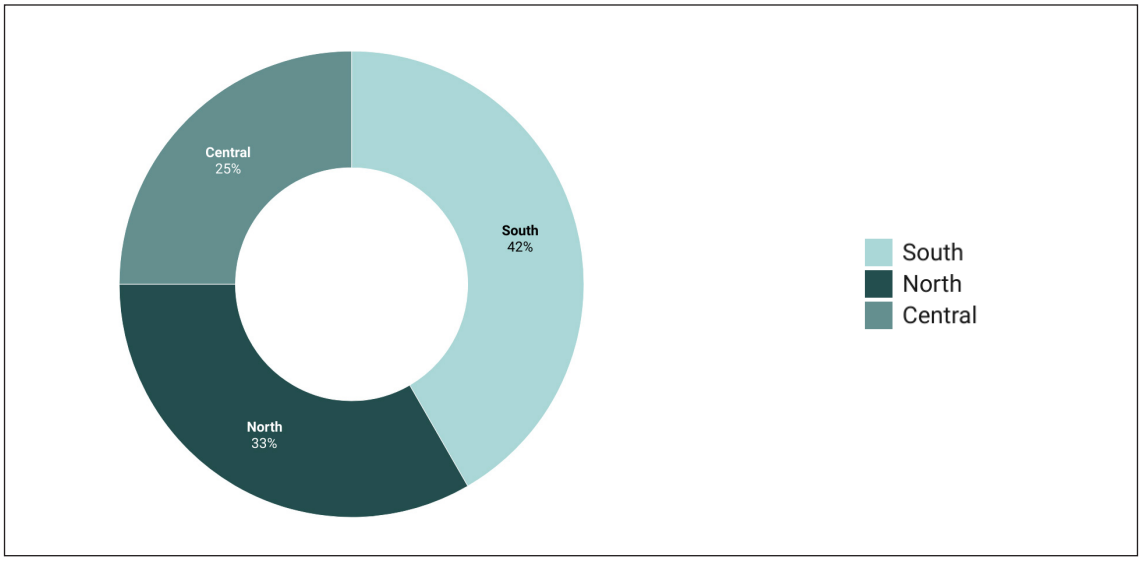


Figure 3.14: Region wise distribution of state-level officials

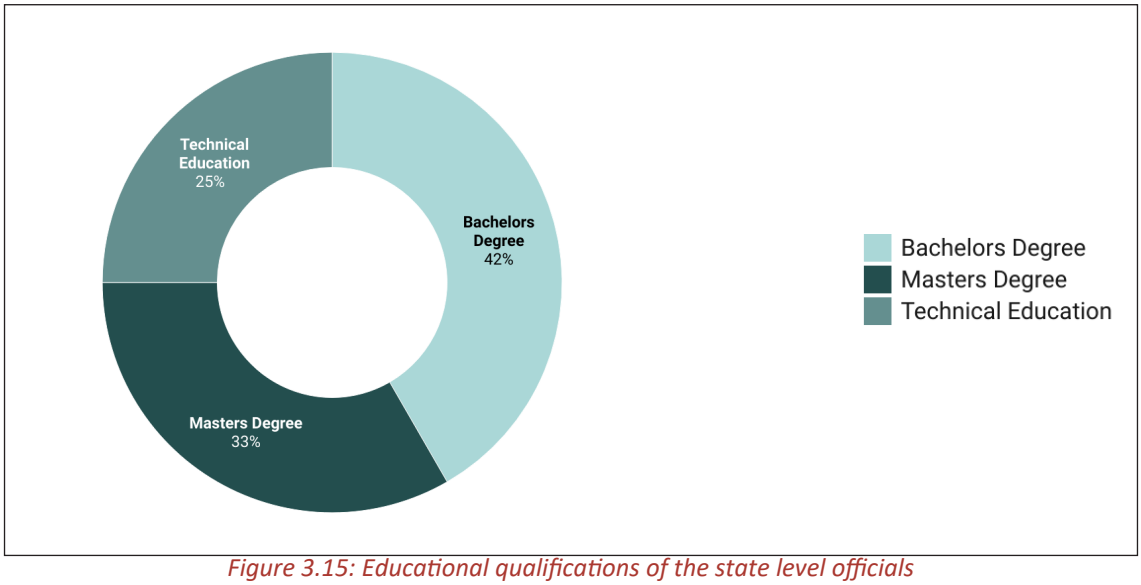


Figure 3.15: Educational qualifications of the state level officials

42 percent have qualified their Bachelors degree the remaining 25 percent have qualified technical education. As for their educational qualification, these officials are well educated with nearly 60 percent having either graduation or post graduate degrees (Figure 3.15). The training of this group can be provided with a higher level of technical knowledge required for the smooth implementation of the project.

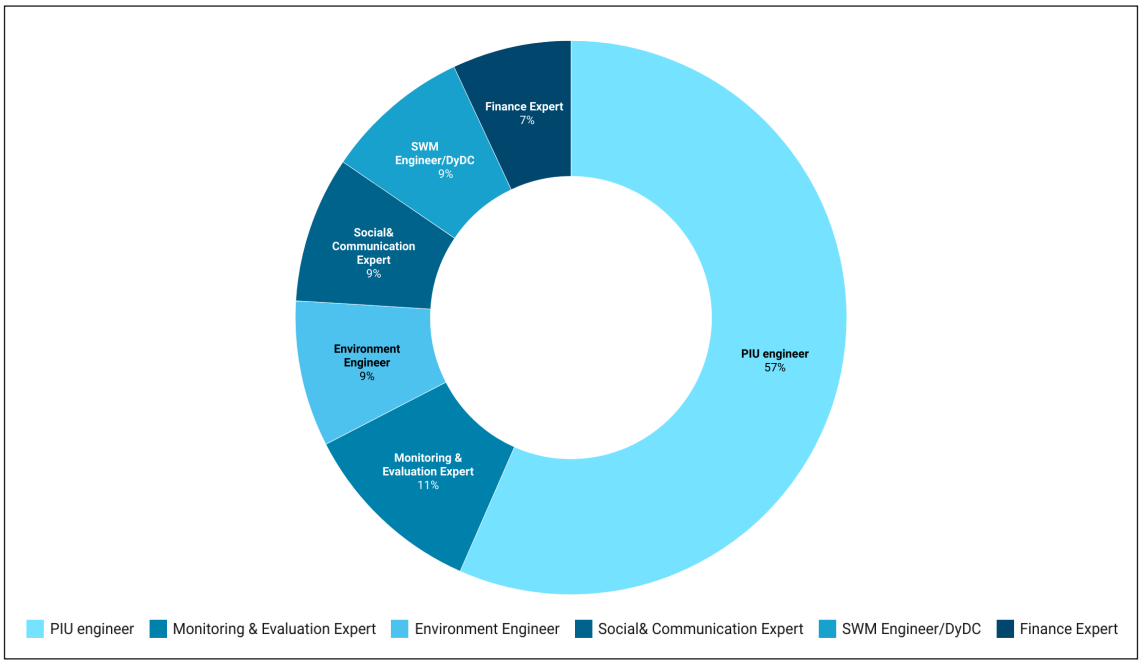
3.6. PROFILE OF KSWMP TEAM INCLUDED IN TNA

A total of 130 respondents participated in the training need assessment. Data regarding their representation in TNA is given below;

Table 3.10 : Targeted vs Actual responses received in the Second phase

Participants	Actual response	Targeted Response	Percent Response
Environmental Engineers	11	14	79.00%
PIU Engineers	73	87	84.00%
Finance Expert	9	14	64.00%
Monitoring and Evaluation expert	14	15	93.00%
SWM Engineer/DyDC	11	15	73.00%
Social and Communication expert	11	15	73.00%

The table shows that fairly good representation has ensured all categories of KSWMP staff.



3.16: Designation-wise distribution of KSWMP staff

*Note: *Since 'others' group had only one respondent, it is not considered for data visualisation*

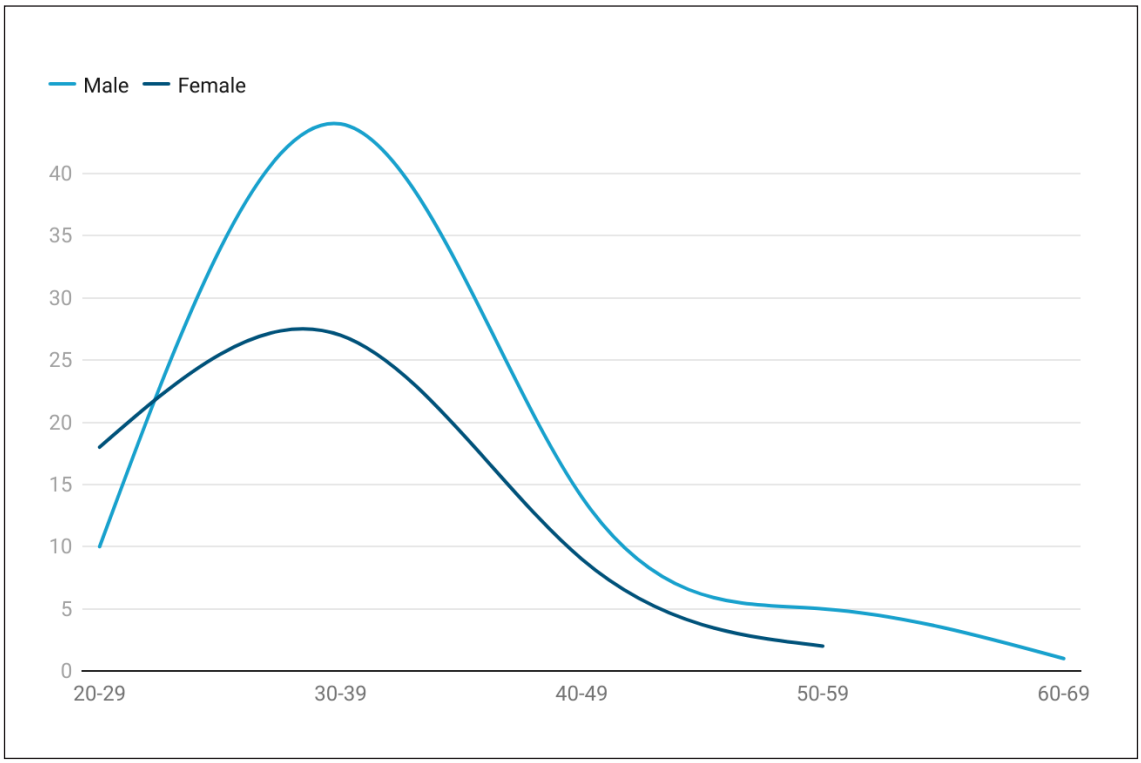


Figure 3.17: Gender distribution of the respondents

Table 3.11: Age and Gender distribution of the respondents

Age Group	Male	Female	Total
20-29	10	18	28
30-39	44	27	71
40-49	14	9	23
50-59	5	2	7
60-69	1		1
Total	**74**	**56**	**130**

Among the total of 130 respondents, 74 of them are male and 56 of them are female. Majority of the respondents belong to the age group of 30-39, of which 44 are males and 27 are female, totalling to 71. This age profile of the respondents indicate that the majority of them are below the 40 age group(76%). This indicates the possibility of using participatory and more dynamic training methods while delivering training. It is followed by the age group of 20-29 and 40-49 respectively with almost similar frequency. 60-69 age group has the least number of respondents

3.7. DETAILS OF THE DIFFERENT CATEGORIES OF PARTICIPANTS IN FGD

The participation details of the discussions are included in the below table;

Table 3.12: Participation details of the FGDs

Agency/ Institution/ Organisation represented	Participants	Actual response	Targeted Response	Percent Response
Suchitwa Mission	SWM Director, District Programme Officer, District Mission Coordinators, Technical Consultants, Selected Young Professionals	48	52	92.00%
LSGD, Urban directorate, District Planning Office	Joint Director(Urban directorate), Joint Director(LSGD), District Planning Officer	38	42	91.00%
CKCL	District Manager	14	14	100.00%
KSDMA-KILA	Hazard analyst, Disaster management plan coordinators from districts	19	27	70.00%
Haritha Sahaya Sthapanam (HSS)	Representatives	18	20	90.00%
Tourism	DTPC representative, Responsible tourism representative	22	28	79.00%
Scrap Dealers Association	Kerala Scrap Dealers Association(KSDA), Kerala Scrap Merchant Association(KSMA), Independent Scrap Merchant Association(ISMA) representatives	10	15	67.00%
Selected Urban Local Bodies	Secretary	20	28	71.00%
Experts	Procurement Experts	6	9	67.00%
Total		**195**	**235**	

The above table shows that the participation of targeted stakeholders in FGDs is fairly high. We have conducted separate FGDs of each category, a total of 195 persons attended in 9 FGDs. Along with the state level stakeholders one FGD was specifically conducted for municipal and corporation secretaries to fill the gap in the first and second phases of TNA.

4 KNOWLEDGE AND CAPACITY LEVELS OF STAKEHOLDERS

4.1. ELECTED REPRESENTATIVES (ER)

4.1.1. COUNCILORS

The below graph illustrates the need for training in various themes for the councillors in elected representatives. Thematically, and considering the standard measure of performance, councillors have shown an average performance in all the areas of expertise required.

Among these, entrepreneurship and private sector participation have obtained the lowest mean score of 5.4. Councillors had obtained a mean score of 6.6, for illustrating the ability to solve issues related to waste and waste management, which falls the highest for the respective group. Even within entrepreneurship and private sector participation, scores range between 5.1 to 5.8. On a scale of 10, domains that scored less than 5, are prioritised for training. However, the group can be provided training according to the relative needs and mean scores obtained.

Figure 4.1: Mean scores of councillors

4.1.2. MUNICIPAL CHAIRMAN/ CHAIRPERSON

Municipal Chairperson has shown high proficiency in the domains of environmental and social safeguards, sustainable waste management practices and participatory approaches and social management principles, with a score of more than 8. However, they have performed comparatively weak in the effectiveness of the existing system of management (6.3). Notwithstanding the highest and lowest scores, municipal chairpersons have shown a good performance, in all of the domains assigned to them. The group has demonstrated fair knowledge in most of the queries under each category, obtaining a mean score of more than 7.

Figure 4.2: Mean scores of Municipal Chairman/ Chairperson

4.1.3. STANDING COMMITTEE CHAIRPERSON/ CHAIRMAN

The figure shows that the standing committee chairperson under elected representatives, has managed to give average performance in most of the domains, mean scores ranging from 6 to 6.8, scoring the least in entrepreneurship and private sector participation. On the other

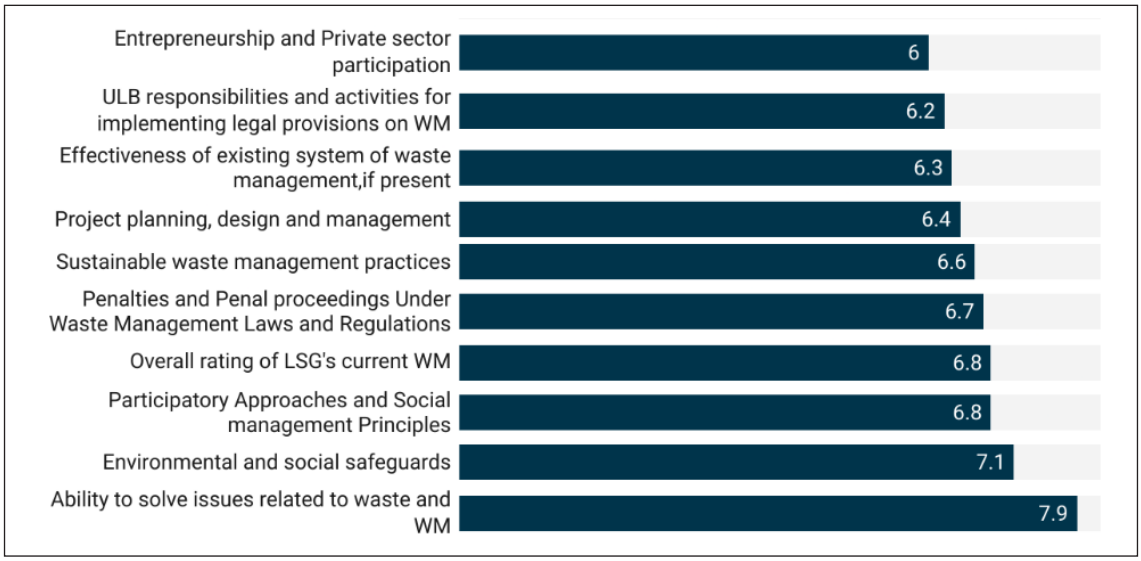


Figure 4.3: Mean scores of Standing committee Chairman/ Chairperson

hand, they have shown a good performance in environment and social safeguards (7.1) and in the ability to solve issues related to waste and waste management(7.9).

4.1.4. VICE CHAIRMAN/ CHAIRPERSON

The figure represents that vice chairpersons have demonstrated fair knowledge in Environmental and social safeguards, effectiveness of existing systems of waste management, and sustainable waste management practices, with an outcome of an equal mean score of 7.1 and has shown a better knowledge in penalties and penal proceedings under waste management laws and regulations of score 7.8.

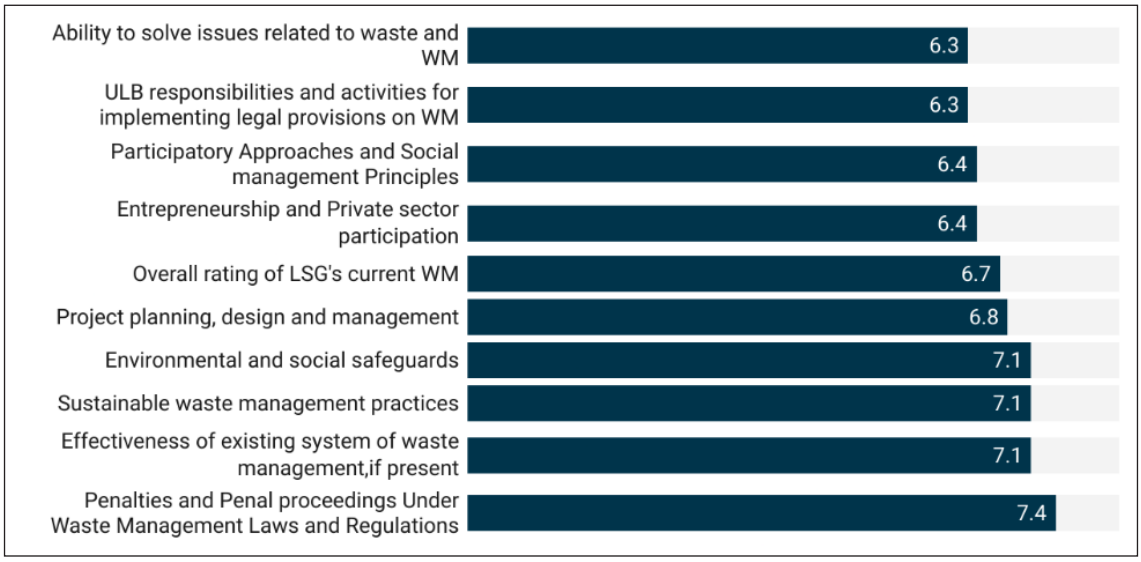


Figure 4.4: Mean scores of Vice Chairman/ Chairperson

4.2. ULB OFFICIALS

4.2.1. ACCOUNTS STAFF

The graph demonstrates the knowledge of accountants among the LSG officials in various domains. The group has only shown average performance in all of the domains. Moreover,

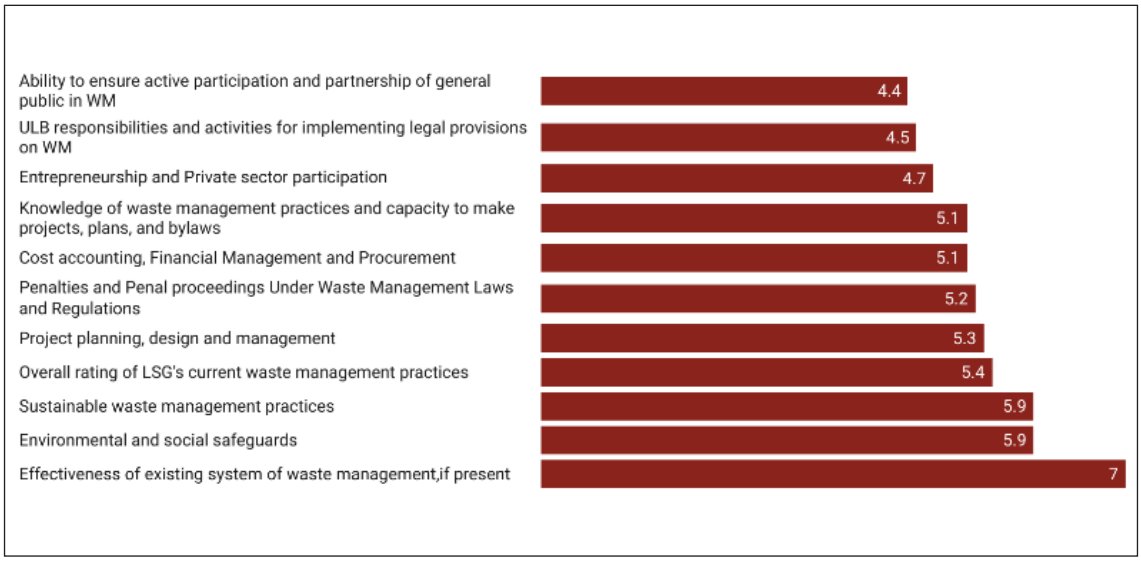


Figure 4.5: Mean scores of Accounts staff

the scores lie between 4.4 and 5.9, except for scoring 7, the highest for the proficiency of the effectiveness of the existing system of waste management. On a scale of 10, domains which scored less than 5, are prioritised for training. Ability to ensure active participation and partnership of the general public in waste management(4.4), ULB responsibilities and activities for implementing legal provisions(4.5) and entrepreneur and private sector participation(4.7) are such categories. However, the group can be provided training according to the relative needs and mean scores obtained.

4.2.2. ENGINEER/OVERSEER

The graph depicts the proficiency of the engineers among the LSG officials,in various themes. Compared to other groups of officials, the engineers have average knowledge in all of the concerned domains. Moreover, the mean scores obtained in all the domains are lower than other groups have obtained. With a score of 5, as the highest in overall rating of LSGs current waste management practices, engineers only managed to score between the range of 3 and 3.7 in most of the themes.On the scale of 10, domains which scored less than 5, are prioritised for training. Considering this criteria, the group requires preferential training in all of the categories.

Figure 4.6: Mean scores of Engineer/Overseer

4.2.3. HEALTH DEPT. WORKERS

Health Department Staff have the lowest score in the knowledge of the responsibilities of health department staff in the effective management of waste (5.9).The group has demonstrated average performance in most of the categories and relatively better performance in effectiveness of existing system of waste management (7) and Penalties and penal proceedings under waste management laws and regulations (7.5).The group can be provided training according to the relative needs and mean scores obtained.

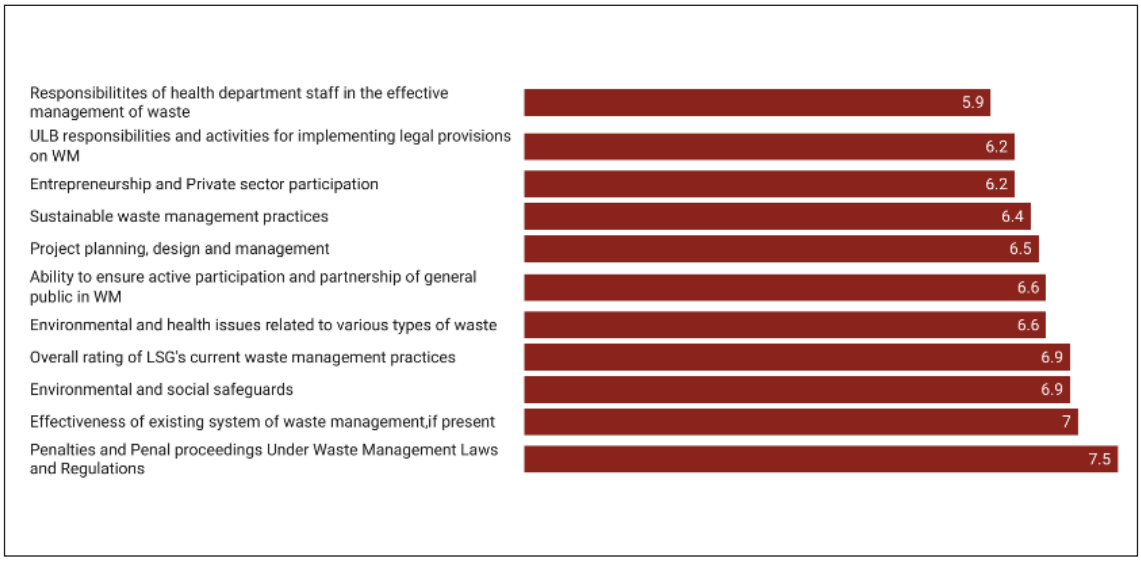


Figure 4.7: Mean scores of health department workers

4.2.4. HEALTH INSPECTOR

Health Inspectors have demonstrated comparatively good performance in various domains obtaining greater than a mean score of 7. However, health inspectors have only managed to obtain a score of 6.2, regarding the knowledge in responsibilities of health department staff in the effective management of waste.However, the group can be provided training according to the relative needs and mean scores obtained.

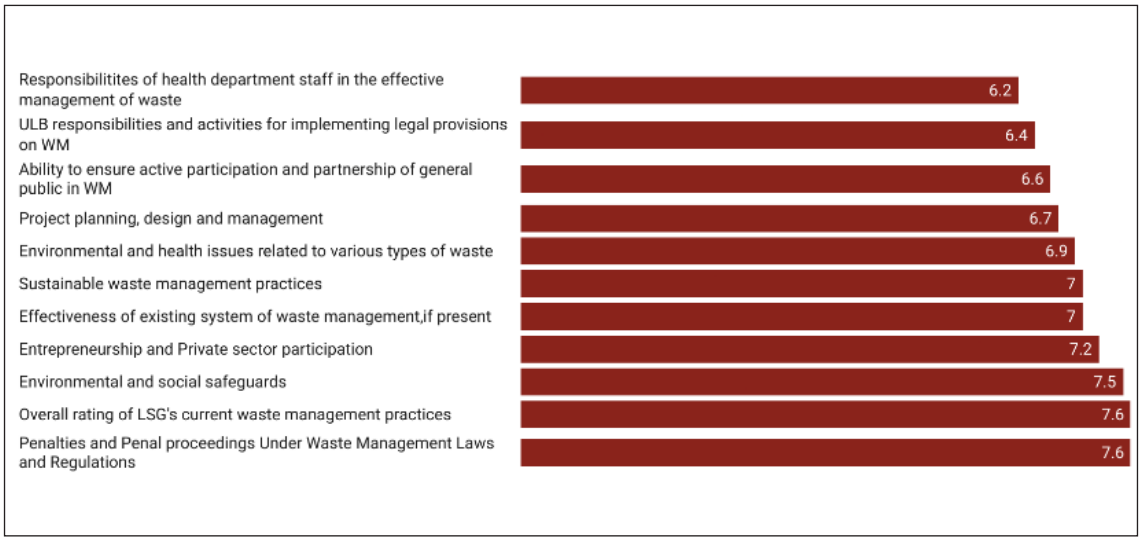


Figure 4.8: Mean scores of health inspectors

4.2.5. SECRETARY/ASST. SECRETARY/ADDITIONAL SECRETARY/PA TO SECRETARY

Secretaries in LSG officials have performed quite remarkably in all of their areas of expertise. They have obtained scores between 8.2 to 9.2 on the scale of 10, scoring the lowest in ability to ensure active participation and partnership of general public waste management and the highest in penalties and penal proceedings under waste management laws and regulations. The group can be provided training according to the relative needs and mean scores obtained.

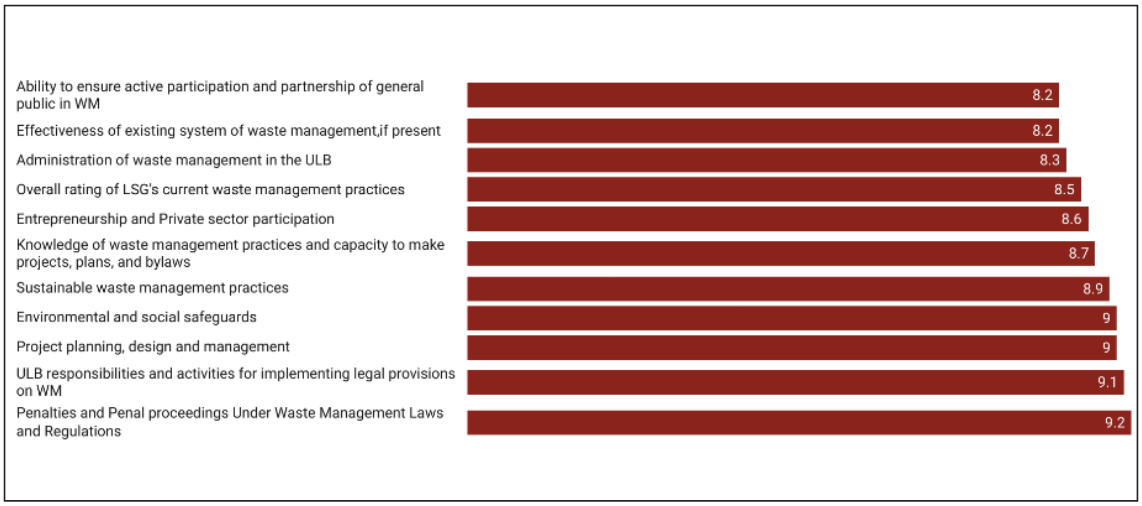


Figure 4.9: Mean scores of Secretary/Asst. Secretary/Additional Secretary/PA to Secretary

4.2.6. OTHERS

The above graph depicts the mean scores obtained by Others among the LSG officials. The respondents have obtained the mean scores within average range of performance. The lowest score obtained for ULB responsibilities and activities for implementing legal provisions on waste management is 4.2 and the highest for overall rating of LSGs current waste management practices, with a score of 6.7. Scores less than 5 for ULB responsibilities and activities for implementing legal provisions on waste management, entrepreneurship and private sector participation reflects the need for substantial training in these categories for the engineers.

Figure 4.10: Mean scores of Other category

4.3. COMMUNITY BASED ORGANIZATIONS

4.3.1. BULK WASTE GENERATORS (BWG)

BGW has demonstrated comparatively weak knowledge in most of the domains, scoring the highest of 5.5 in the ability to ensure active participation and partnership of the general public in waste management and lowest with a mean score of 3.9 in penalties and penal proceedings under waste management laws and regulations. On the prescribed measure of

score 5, less than that indicates that these areas require more focused training.

Figure 4.11: Mean scores of bulk waste generators

4.3.2. KUDUMBASREE

Kudumbasree has illustrated average level of knowledge in all of their respective required categories.it requires training on rules and regulations of solid waste management and penalties and penal proceedings under waste management laws and regulations, as the categories obtained mean scores less than 5.

Figure 4.12: Mean scores of Kudumbasree

4.3.3. MERCHANTS ORGANISATIONS

The mean scores obtained by Merchant Organisations, lies below 5 and it reflects the need to provide training in all thematic categories.On the measure of performance, the group has demonstrated considerable poor knowledge regarding rules and regulations of solid waste management, with a mean score of 2.6.The rest of the respective categories, has illustrated an average knowledge.The highest average score obtained is 4.8, for overall rating of LSGs current waste management practices.

Figure 4.13: Mean scores of merchants organisations

4.3.4. RESIDENCE ASSOCIATION

The RA among the community based organisations requires training in rules and regulations of solid waste management (4.8) and penalties and penal proceedings under waste management laws and regulations(5). The group has demonstrated average performances in the rest of their respective categories, obtaining a highest score of 6.8 in environmental and social safeguards. Most of the Residence Association (RA) respondents have good educational qualifications.

Figure 4.14: Mean scores of residence association

4.3.5. VOLUNTARY ORGANISATION

Voluntary Organisations among the community based organisations, requires training in rules and regulations of solid waste management (3.8) and penalties and penal proceedings under waste management laws and regulations(4.3). The group has demonstrated average performances in the rest of their respective categories, obtaining a highest score of 6.2 in ability to ensure active participation and partnership of the general public in waste management.

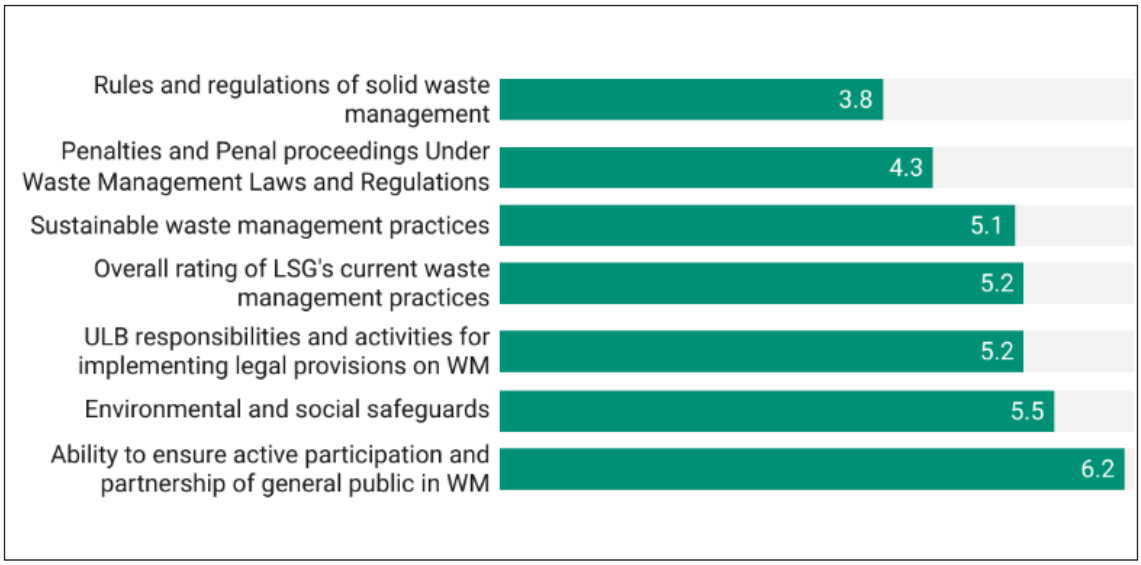


Figure 4.15: Mean scores of voluntary organisation

4.3.6. OTHERS

The above figure shows the particular group requires training in rules and regulations as the mean score obtained is 4.2. The group has comparatively demonstrated knowledge in awareness about environmental and social safeguards, with an average score of 7.4. However, the group can be provided training in other categories, which have relatively less scores, according to the needs.

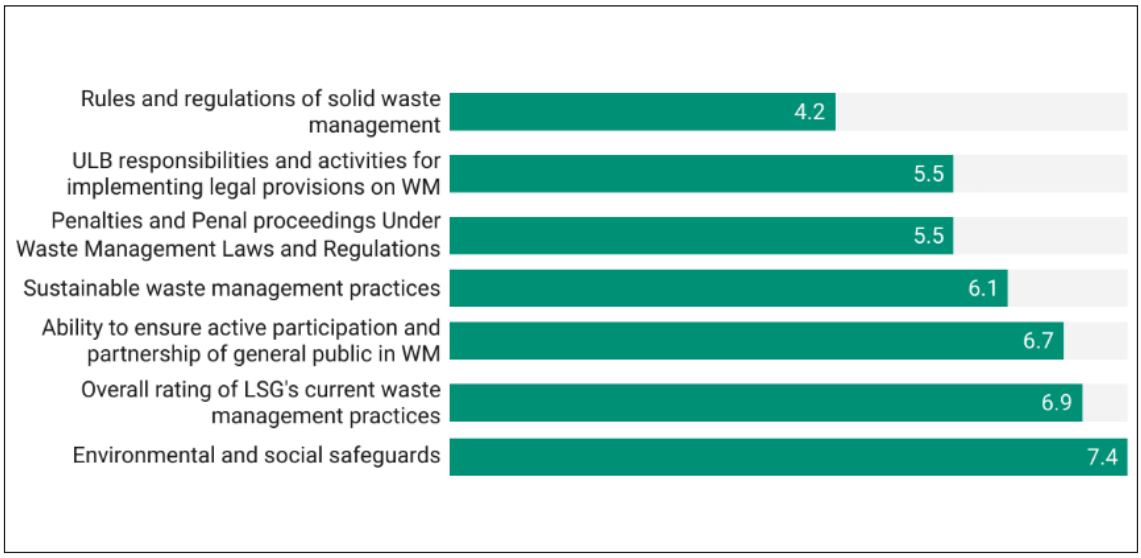


Figure 4.16: Mean scores of other categories

4.4. SANITATION WORKERS INVOLVED IN THE WASTE MANAGEMENT

4.4.1. WASTE TRANSPORTERS

Waste Transportation Workers among the sanitation workers have obtained the mean score between 6.5 and 8.3 with lowest for ability to ensure active participation and partnership of the general public in waste management and highest for overall rating of LSGs current

waste management practices.Even though, they have scores more than 5, they can be with provided appropriate training according to the scores reflected and other needs.

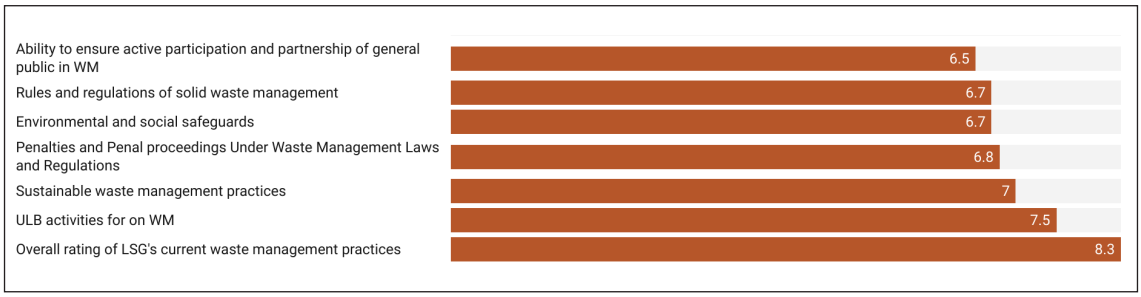


Figure 4.17: Mean scores of waste transporters

4.4.2. RAGPICKERS

Rag pickers among the sanitation workers have obtained the mean score between 5.8 and 7.9 with lowest for sustainable waste management practices and highest for overall rating of LSGs current waste management practices,respectively.Even though, they have scores more than 5, they can be with provided appropriate training according to the scores reflected and other needs.

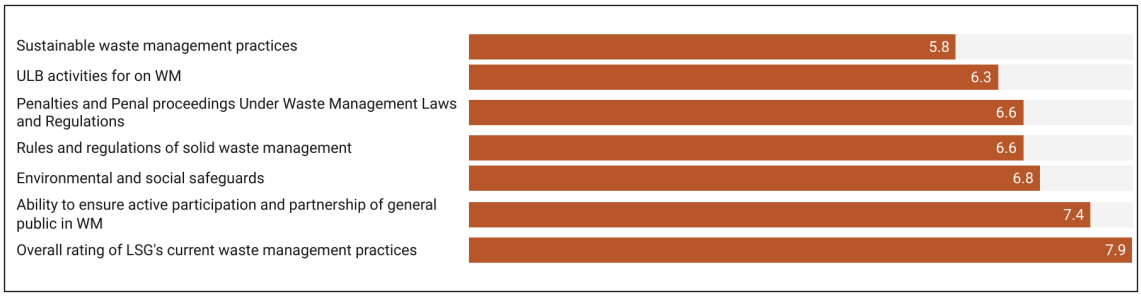


Figure 4.18: Mean scores of rag pickers

4.4.3. RECYCLING WORKERS

Recycling workers have scored the highest of 5.5 in the ability to ensure active participation and partnership of the general public in waste management.They have score less than 5.5, for the rest of the categories directing the need to provide prioritised training in all categories. The lowest score obtained in in overall rating of LSGs current waste management practices.

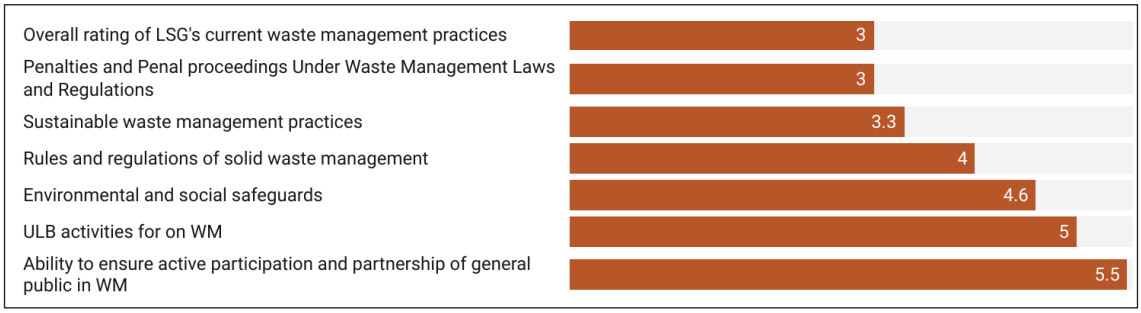


Figure 4.19: Mean scores of recycling workers

4.4.4. WASTE MANAGEMENT WORKERS

Waste Management Workers have illustrated average levels of knowledge in almost all of their respective required categories, obtaining a mean score between 3.9 and 7.5, regarding

knowledge about sustainable waste management practices and awareness about overall rating of LSGs current waste management practices. The group requires training on the sustainable waste management practices, penalties and penal proceedings under waste management laws and regulations,and environmental and social safeguards as the categories obtained mean scores less than 5. Other appropriate training according to the scores reflected and other needs, can be provided.

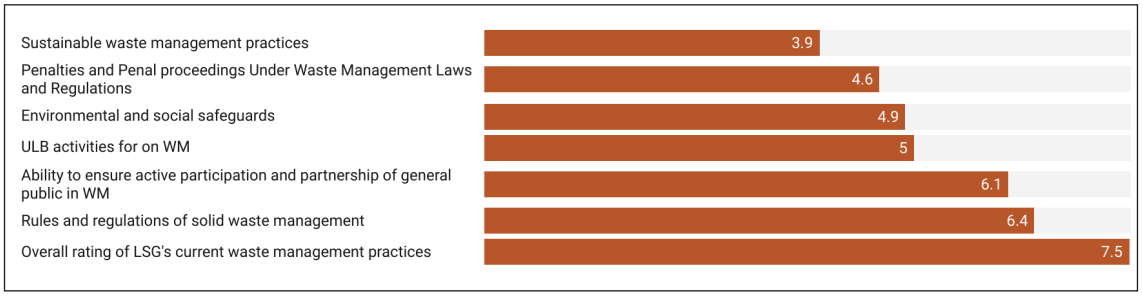


Figure 4.20: Mean scores of waste management workers

4.4.5. SANITATION WORKERS

Sanitation Workers has obtained a 5.1 as the lowest score for penalties and penal proceedings under waste management laws and regulations and the highest score of 7.5 for rules and regulations of solid waste management.Even though, they have scores more than 5, they can be with provided appropriate training according to the scores reflected and other needs.

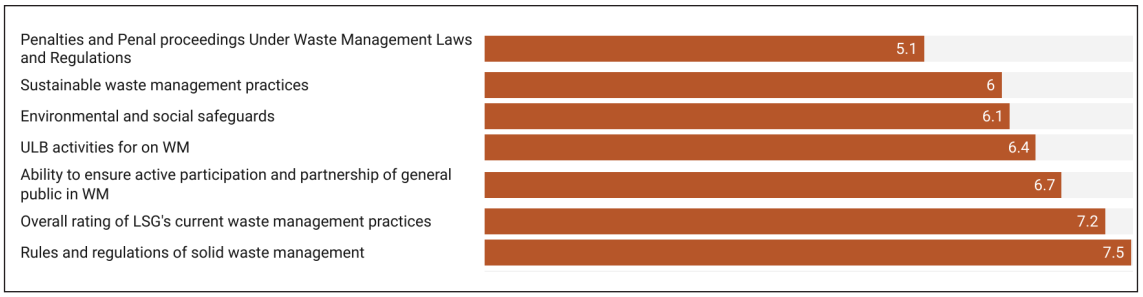


Figure 4.21: Mean scores of sanitation workers

4.4.6. WASTE COLLECTION AGENCIES

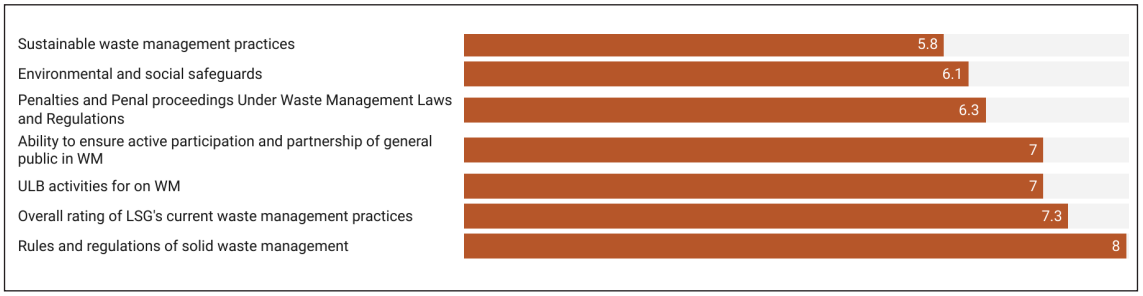


Figure 4.22: Mean scores of waste collection agencies

Waste collection agencies among the sanitation workers have obtained the mean score between 5.8 and 8 with lowest for sustainable waste management practices and highest for rules and regulations of solid waste management.Even though, they have scores more than 5, they can be provided appropriate training according to the scores reflected and other needs.

4.4.7. HARITHA KARMA SENA

Haritha Karma Sena among the sanitation workers has obtained a 5.6 as the lowest score for penalties and penal proceedings under waste management laws and regulations and the highest score of 7 for rules and regulations of solid waste management.Even though, they have scores more than 5, they can be with provided appropriate training according to the scores reflected and other needs

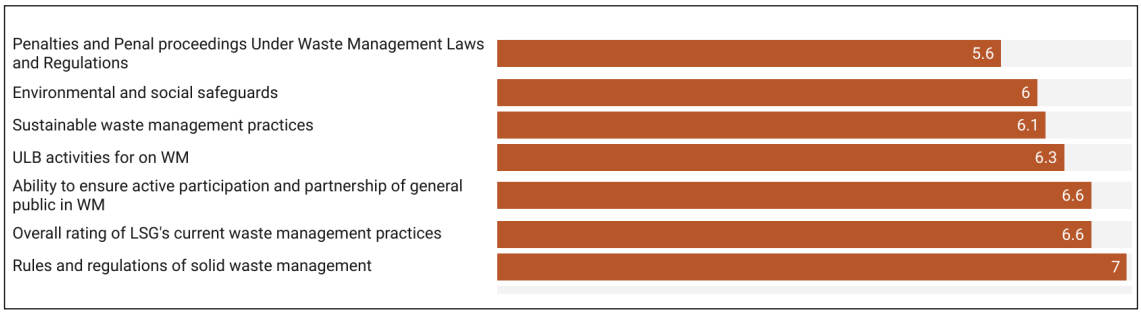


Figure 4.23: Mean scores of haritha karma sena

4.5. DISTRICT LEVEL OFFICIALS OF STATE AGENCIES AND DEPARTMENTS

4.5.1. HARITHA KERALA MISSION

Haritha Kerala Mission among the state officials have obtained the mean score between 5.2 and 7.9 with lowest for rules and regulations of solid waste management and highest for Importance of meaningful community participation, respectively .Even though, they have scores more than 5, they can be provided appropriate training according to the scores reflected and other needs.

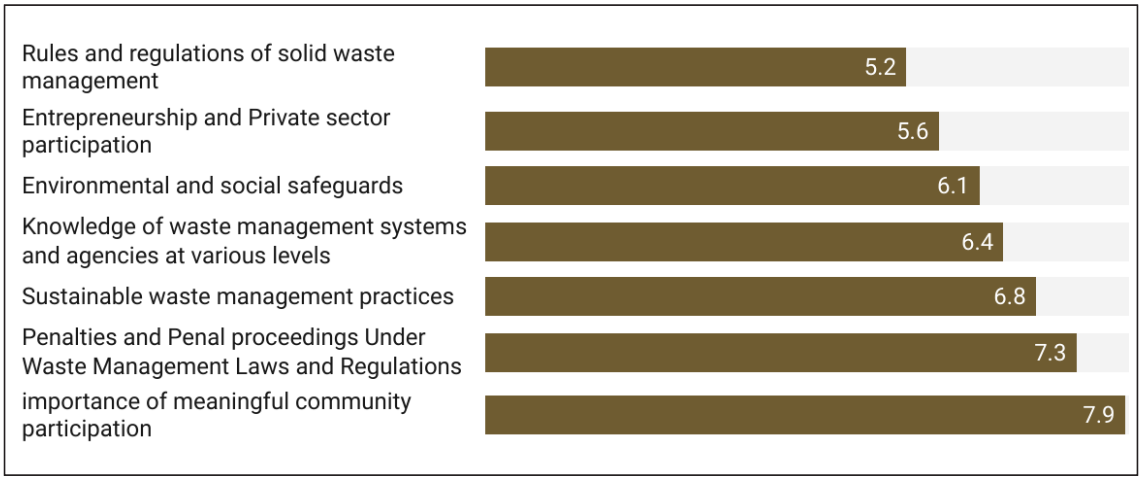


Figure 4.24: Mean scores of Haritha Kerala Mission

4.5.2. SUCHITWA MISSION

Suchitwa Mission in state officials officials have also performed considerably well in all of their areas of expertise.They have obtained scores between 6.4 to 8.3 on the scale of 10, scoring the lowest in rules and regulations of solid waste management and the highest in Importance of meaningful community participation, respectively.The group can be provided training according to the relative needs and mean scores obtained.

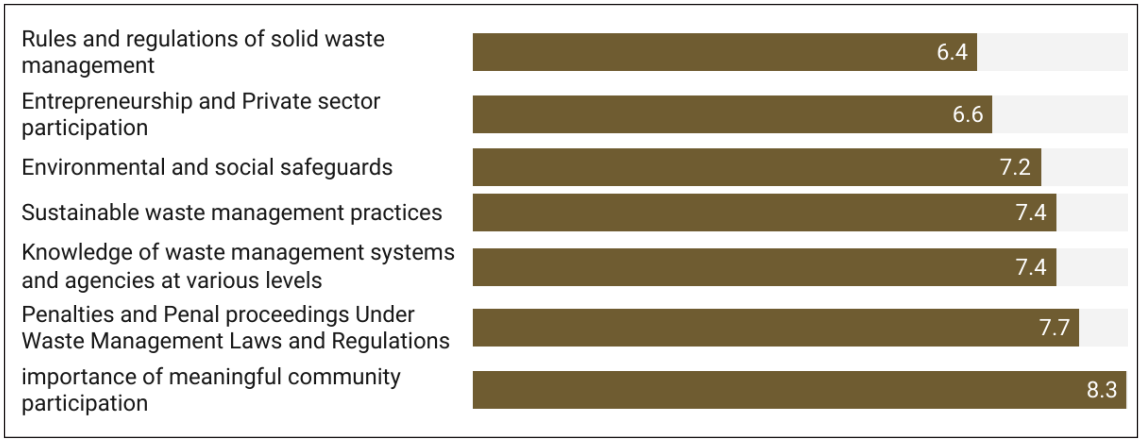


Figure 4.25: Mean scores of Suchitwa Mission

4.5.3. KERALA STATE POLLUTION CONTROL BOARD

KSPCB in state officials officials have performed considerably well in all of their areas of expertise.They have obtained scores between 7 to 8.6 on the scale of 10, scoring the lowest in entrepreneurship and private sector participation and the highest in Importance of meaningful community participation, respectively.The group can be provided training according to the relative needs and mean scores obtained.

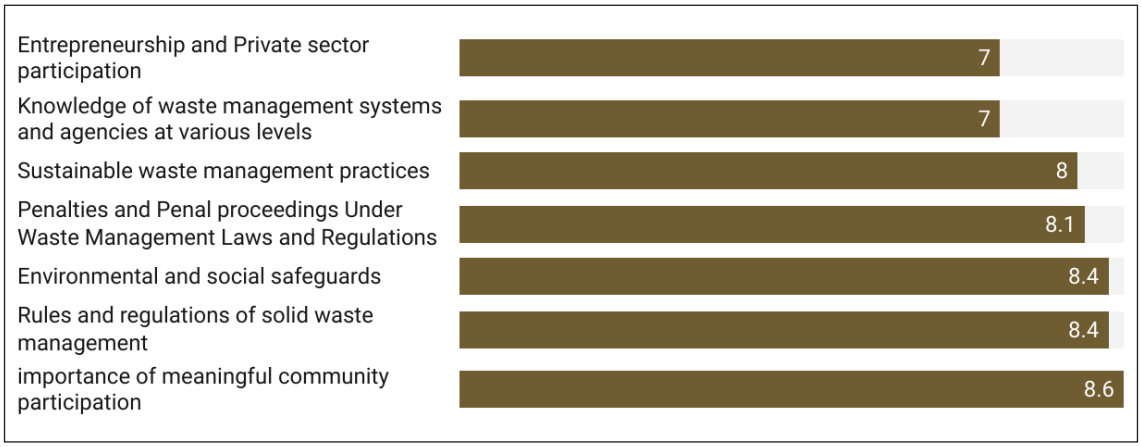


Figure 4.26: Mean scores of Kerala State Pollution Control Board

4.5.4. HEALTH DEPARTMENT OFFICIALS

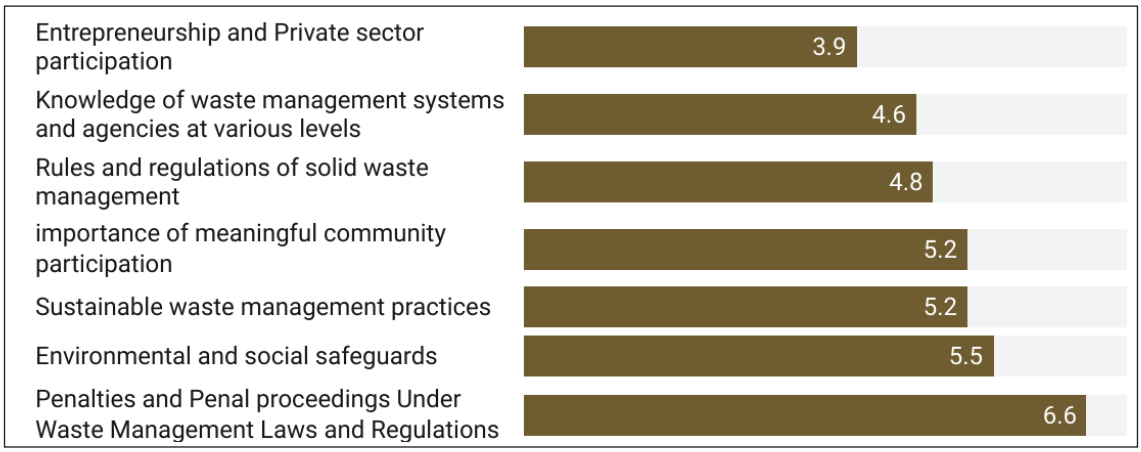


Figure 4.27: Mean scores of Health Department Officials

The mean scores obtained by the Health Department Officials, ranges between 3.9 to 6.6, where the lowest score is for entrepreneurship and private sector participation and highest for penalties and penal proceedings under waste management laws. The training is highly preferred for entrepreneurship and private sector participation, knowledge of waste management systems and agencies at various levels and knowledge regarding the rules and regulations of solid waste management, as the score lies below 5.

4.6. TRAINING REQUIREMENTS OF KSWMP STAFF

The following figure shows the mean knowledge of respondents in various categories of training areas. Among these categories, analysis shows the need to impart knowledge on various topics amenable to all categories. Knowledge level is poor on public grievances, latest technologies in solid waste management, regarding laws and regulations associated with waste management, entrepreneurship and private sector participation, as their mean scores are considerably low. On the other hand, respondents have shown greater knowledge in waste collection and segregation, database and MIS Management. There are certain categories in the questionnaire focused on specifically to particular respondent groups like cost accounting, financial management and procurement, which is largely dealt with

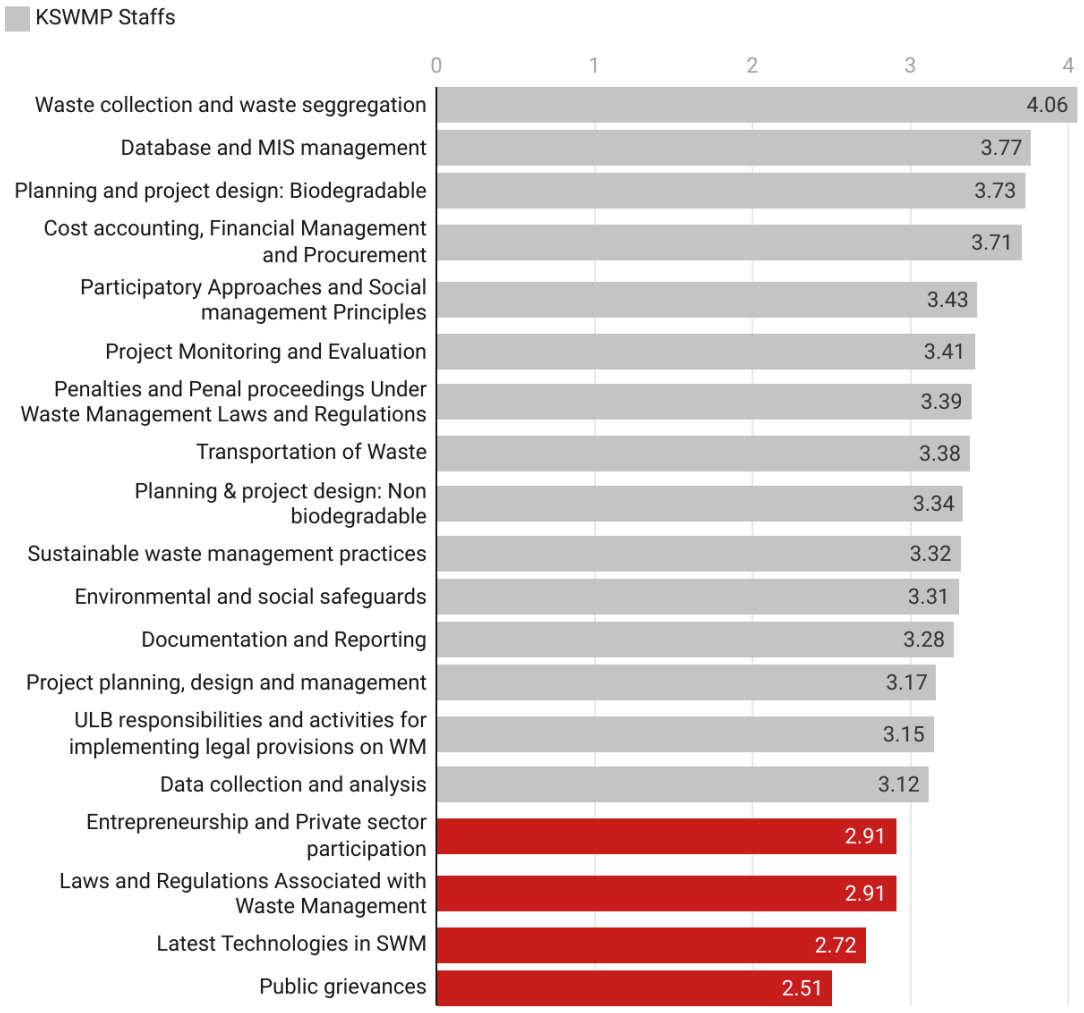


Figure 4.28: Mean scores of KSWMP staff

by finance experts.There are certain questions applicable for all experts, whereas a set of questions in each questionnaire is targeted to a special category. Reading the data, through a larger lens, reflects the training need for all categories, considering the scores earned are significantly low for all groups on the scale of 5. Among these we consider the mean score of 3 and below out of 5 as a low knowledge level which requires high preference for training.

4.6.1. CATEGORY-WISE DISTRIBUTION OF ENVIRONMENTAL ENGINEERS

The below figure shows the mean knowledge of environmental engineers in various categories of training areas. Among these categories, analysis produces the need to impart knowledge on various topics. Majority of them have low knowledge level in the areas of public grievances (2.27), Project Monitoring and Evaluation (2.73) and Urban Local Body responsibilities and activities for implementing legal provisions on waste management (2.93) as the mean scores are considerably low in these domains. Therefore environment engineers can be given training by giving preference to these areas.

Environment engineers have illustrated better proficiency in the domains including planning and project design of biodegradable wastes, waste collection and segregation and environmental and social safeguards, which are inclined to the expertise of the group. However, scores on the scale of 5, reflects the need for substantial training in all categories for the engineers.

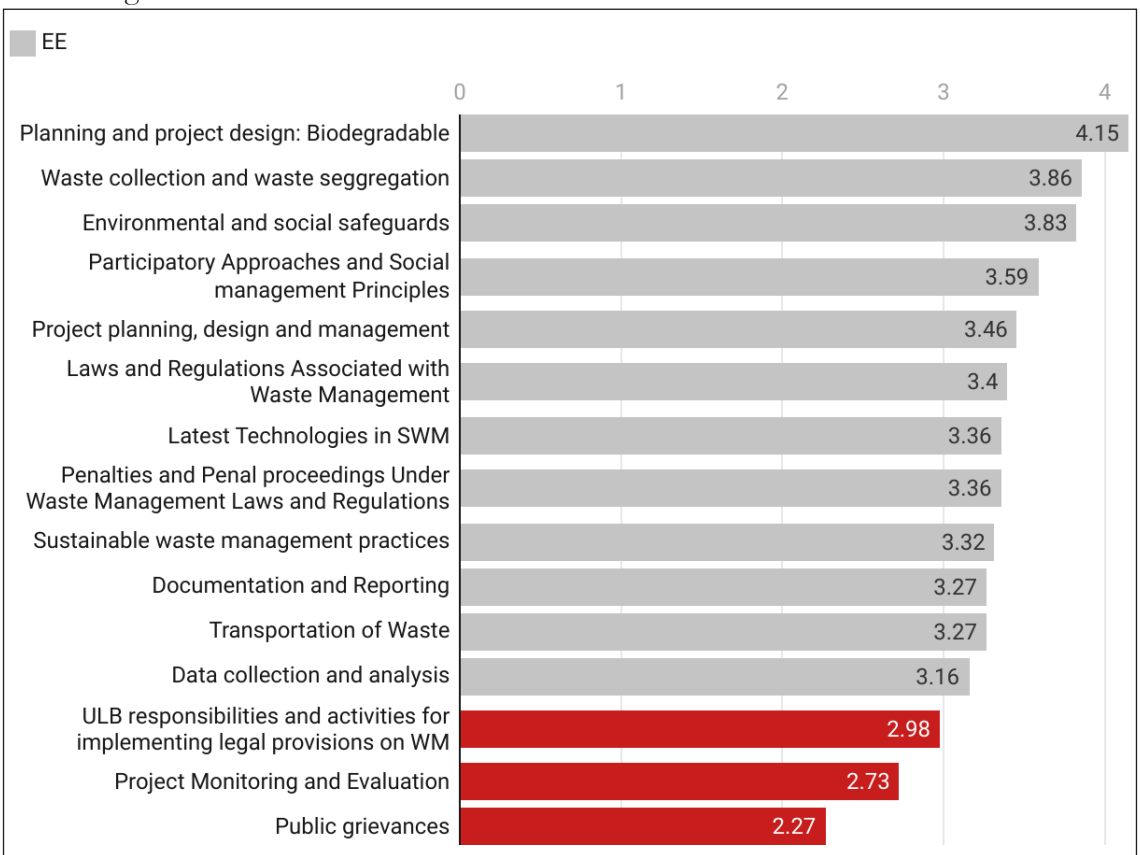


Figure 4.29: Mean scores of Environmental Engineers

4.6.2. CATEGORY WISE DISTRIBUTION OF FINANCE EXPERT

Financial Experts have shown proficiency in the domains of cost accounting, financial management and procurement (4.24) and Project Monitoring and Evaluation (3.89). However,

responsibilities of ULBs and private entrepreneurship are the two areas they have shown low level of knowledge from their side. Hence these areas can be given more preference. Along with this a core responsibility of their terrain that can be given a general training on financial management, Procurement and Cost accounting.

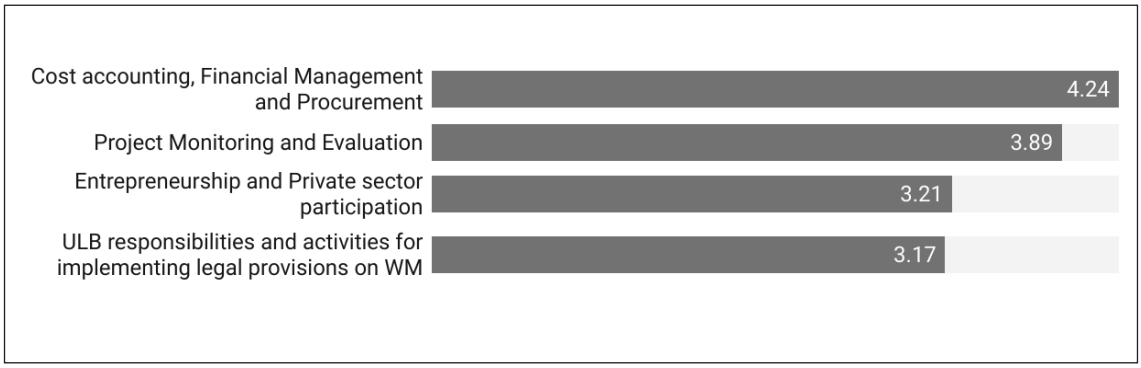


Figure 4.30: Mean scores of Finance experts

4.6.3. CATEGORY WISE DISTRIBUTION OF MONITORING AND EVALUATION EXPERT

The below figure shows that the Monitoring and Evaluation experts have only managed to score in the range between greater than 2 and less than 4. Among least scored, ULB responsibilities and activities for implementing legal provisions on WM(2.63) and Project planning and design(2.96) lies below the score of 3. This indicates that these areas require more focused training in this category.

The group has illustrated better knowledge in waste collection and segregation(3.83) and have shown slightly better proficiency in their field of expertise, which majorly focuses on participatory approaches and social management principles (3.13) and Database and MIS Management (3.77). The areas which have marked below 4 also can be given further preference.

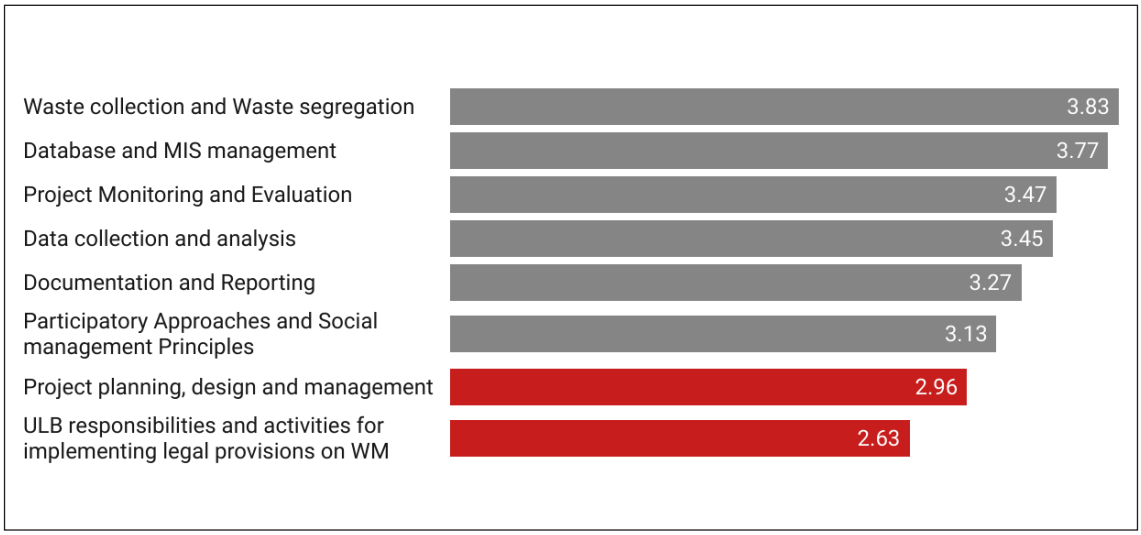


Figure 4.31: Mean scores of Monitoring & Evaluation experts

4.6.4. CATEGORY WISE DISTRIBUTION OF SOCIAL AND COMMUNICATION EXPERTS

Social and Communication Experts have shown most proficiency in participatory approaches and social management principles(4.54), which seems to be a high score. Waste collection and segregation (4.31) is the other category that managed to score above 4.

Knowledge about laws and regulations associated with waste management (2.82), Environmental and social safeguards (2.79), project planning, design and management (2.51), Data collection and analysis (2.28) and Public grievances (2.15) scores less than 3.It indicates that high preference has to be given to these areas while planning the training.

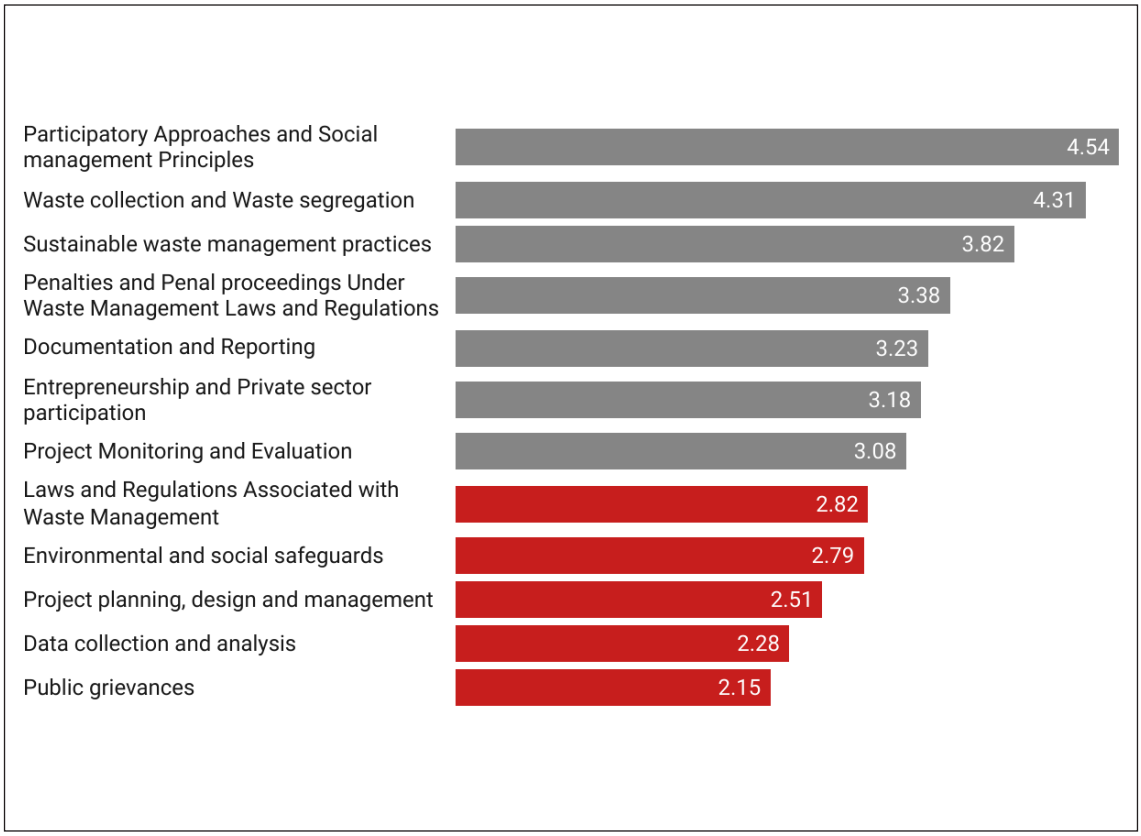


Figure 4.33: Mean scores of Social & Communication Experts

4.6.5. CATEGORY WISE DISTRIBUTION OF SWM ENGINEER/DYDC

The below figure shows that the SWM Engineer/DyDC have managed to score in the range between greater than 2 and less than 4, with a highest score in waste collection and segregation(3.89) and following Planning and project design of biodegradable waste (3.87) among the categories. However, a medium a level preference while planning the training.

The group scored least in Entrepreneurship and private sector participation (2.76) and Public grievances (2.38). These are the two areas which have to be given higher preference in the training. Apart from PIU experts, SWM Engineer/DyDC also have mostly scored between the range of 3 to 4.

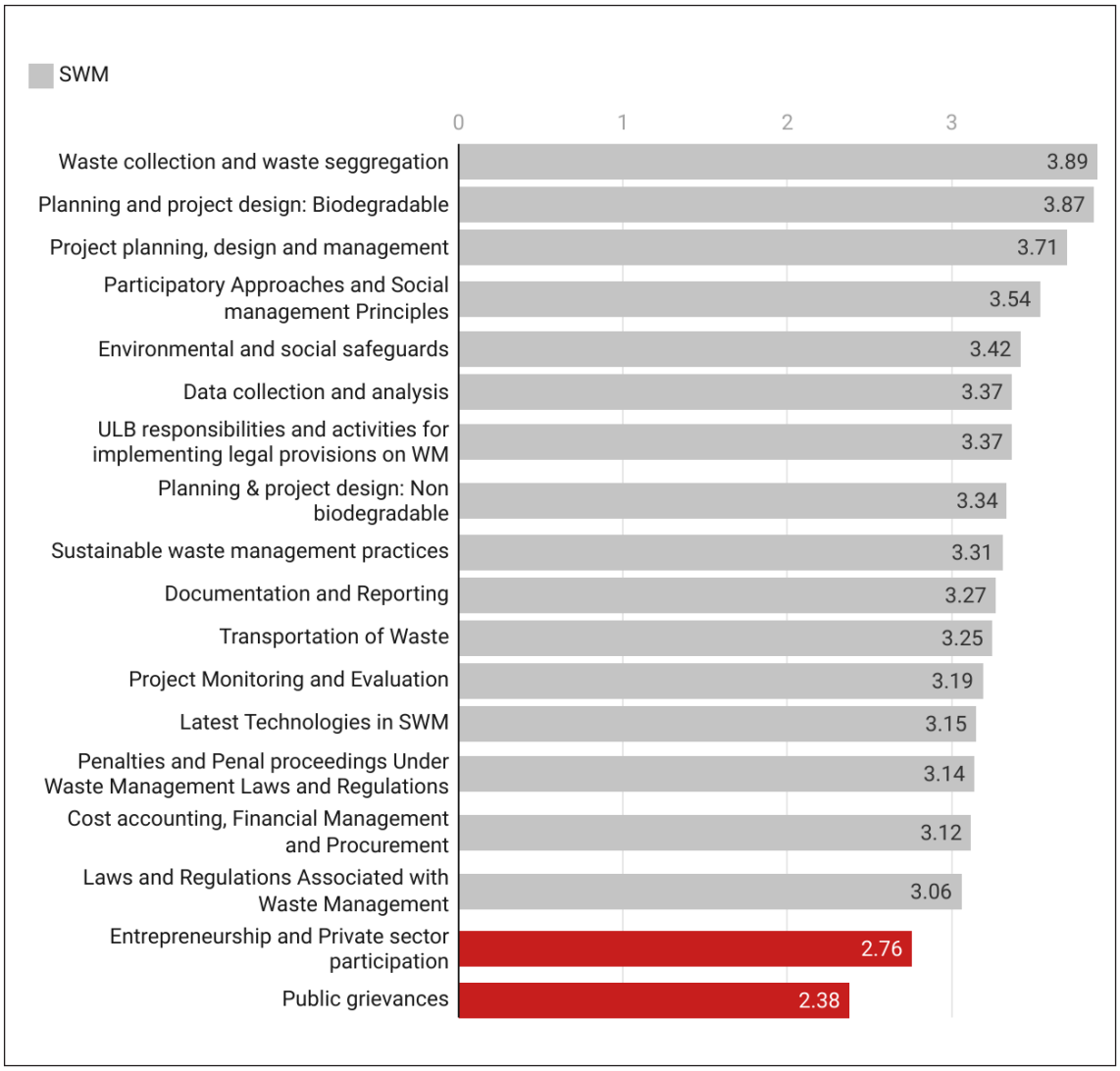


Figure 4.34: Mean scores of SWM Engineer/DyDC

4.6.6. CATEGORY WISE DISTRIBUTION OF PIU ENGINEERS

The below graph represents the knowledge of PIU Engineers in all ULBs. The group has scored good proficiency in the areas of waste collection, segregation, project planning, and project design of biodegradable waste. And scored less than 3 mean scores in the areas of Laws and regulations associated with the waste management(2.98) and Public grievances(2.29). There are some areas shown with a medium level of knowledge that is between mean scores of 3 and 4. That is; Project monitoring and Evaluation(3.13), Private entrepreneurship (3.03), Cost accounting, financial management, Procurement(3.27), Latest technologies in SWM(3.32), Environmental and Social Safeguards(3.36), Penalties and Penal proceedings(3.36), Data collection and analysis(3.37), Participatory approaches in WM(3.46), sustainable waste management practices(3.54), Documentation and reporting(3.58), transportation of waste(3.59), ULB responsibilities(3.59), and Project planning and design(3.74). PIU Experts have mostly scored between the range of 3 to 4. In comparison with other expert groups, PIU experts have shown better proficiency in most categories. However the areas between 3 and 4 can be considered for a general training.

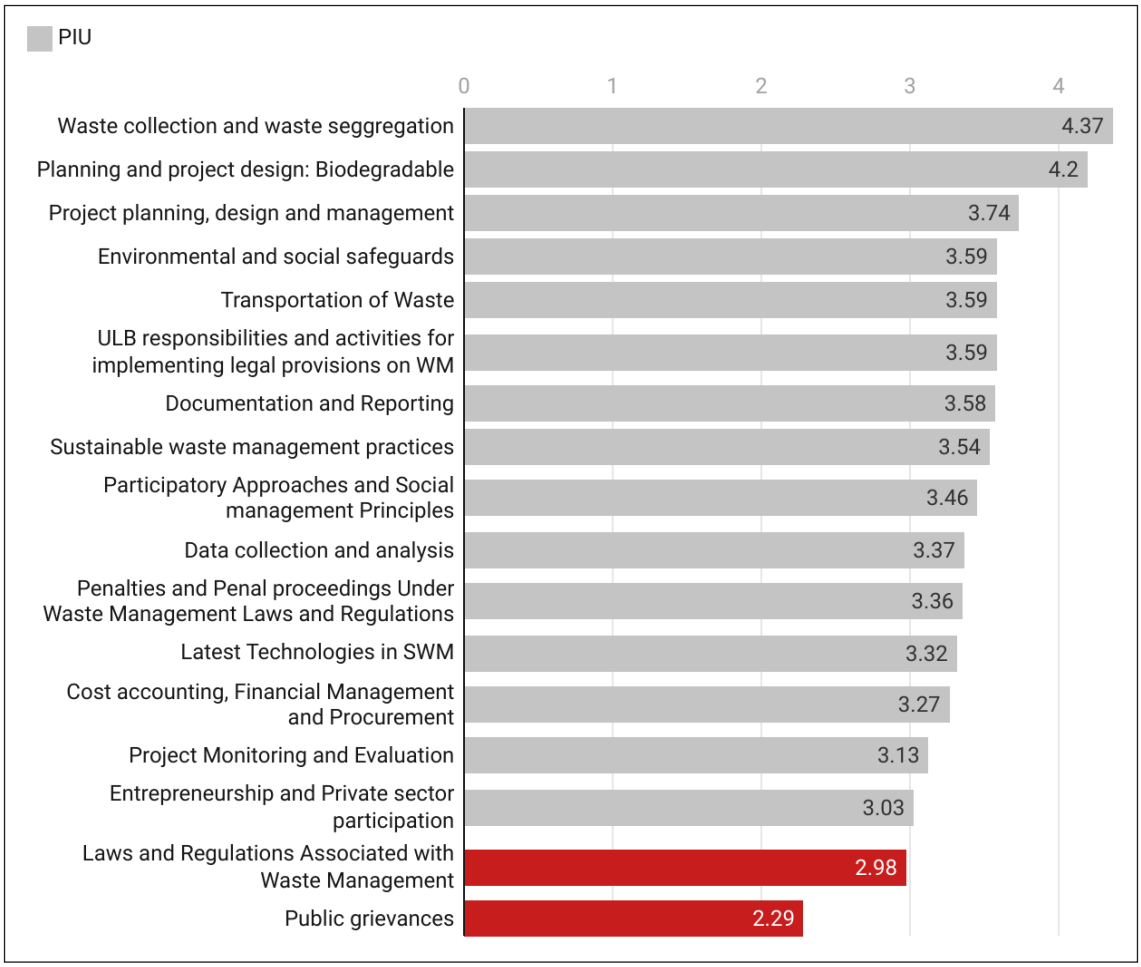


Figure 4.32: Mean scores of PIU Engineers

4.7. CONSULTATION PROCESS OF STATE LEVEL STAKEHOLDERS FOR TNA

As we have discussed in the previous chapter TNA has been conducted in Three phases. The first phase was targeted on ULB level stakeholders and quantitative feedback has also been taken from some state level stakeholders. The second phase was targeted on KSWMP staff. However the third phase was focused on different stakeholder agencies, institutions and organisations affiliated to waste management at state level. The TNA team has conducted 9 FGDs during the period of 13 September 2023 to 11 November 2023. This was done to identify the preferential training areas at state level agencies. And to understand their perspective regarding ULB level training. Results of these discussions are described below.

4.7.1. ISSUES FLAGGED AND TRAINING AREAS PROPOSED IN FGDS

1. Suchitwa Mission

1. No proper operation and maintenance of waste management projects after implementation
2. Issues in segregation and transportation of waste after collected by HKS

3. Lack of support from Representatives
4. Problems in the establishment and operation of MCFs
5. Reluctance of household to provide user fee to HKS
6. Lack of professionalism in managing MCF and RRF
7. Issues in the collection of hazardous and sanitary wastes
8. Safety issues of the HKS member in the case of collection of hazardous waste

The Suchitwa mission team has identified new technologies in waste management, legal provisions, the protocols of legal proceedings, social and environmental safeguards, and protocols for procurement are the major areas proposed for training.

2. Joint Directors LSGD, Urban Directorate, District Planning Officers

1. Training has to focused on the why the waste management programs are not properly working
2. Assessment of gaps in the existing projects in addressing the requirements of project has to be conducted
3. The legal Framework should address the rights of the sanitation workers
4. Professional trainings has been imparted to the Operation and Maintenance team of waste management projects
5. Dearth of Engineers is an obstacle in the proper implementation of SWM projects

They have proposed Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Procurement, Monitoring and Evaluation Framework and Finance Management as preferential areas for training.

3. Clean Kerala Company Limited

1. Issues in operation and management of MCF and RRF
2. Insufficient capacity of MCF, RRF
3. Necessity of improved technology in existing WM systems
4. More efficient facilities for HKS members (during collection, segregation, and transportation)
5. Awareness of proper safety measures for HKS members while collecting and transporting waste
6. Incentive for HKS
7. Willingness of ULBs to make proper payment for inert materials
8. Controlling of unlicensed private entrepreneurs in the area of WM

They have proposed Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Entrepreneurship and waste reduction strategies as major areas of training.

4. Hazard analyst under KSDMA and Disaster Management District Coordinator

1. Compulsory training required in the areas of Bio-Waste and E-Waste Management

2. Requirement of training in recycling and upcycling of waste
3. Trainings for ULBs are required in the areas of hazard waste management, Sanitary waste management
4. Disaster management training is required to sanitation workers
5. Sanitation workers has to been trained management protocols of MCF and RRFs
6. Need training of disaster warning system

They have proposed Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Monitoring and Evaluation Framework are the core areas for training.

5. Haritha Sahaya Sthapanam

1. Absence of clarity in the role of each agency and their power
2. Issues with the assessment of per capita waste collection
3. Lack of transparency in the segregation of waste which has an impact on transportation and management.
4. Necessity of basic safety precautions for those who work within the MCFs and RRFs
5. Health check-up of HKS members
6. Upgrade the technical quality of the tenders
7. Requirement of training on new entrepreneurship prospects
8. Complications with user fees (variation in the revenue earning pattern in different HKS groups)
9. Need of compulsory internal and external audits under the leadership of Kudumbasree

HSS representatives demanded training in the areas such as Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Procurement, Monitoring and Evaluation Framework, Finance Management, Entrepreneurship and waste reduction strategies, and Social Behavioral Change Communication.

6. Tourism Department

1. Requirement of training for grassroots units in scientific waste management
2. Lack of waste management facilities near tourist destinations
3. Implementation of scientific methods for waste disposal
4. Lack of technical knowledge in small units workers
5. Issues caused by industries near tourist destinations
6. Noise pollution caused by industries affects tourist destinations
7. Lack of compulsory fine and penalty systems in tourist destinations
8. Tourist destinations should introduce advanced waste bins for effective usage
9. Need to develop a effective monitoring system

Project Management, Technical Framework, Legal Framework, Social and Environmental

safeguards, Entrepreneurship and waste reduction strategies, and Handling and transfer of waste major areas demanded by the tourism department.

7. Scrap Dealers Association

1. Scrap collection centres should be acknowledged as MCF
2. Requirement of knowledge in e-waste collection
3. Training in segregation of non-bio waste
4. There is a need for an official approval and licensing mechanism for Scrap dealers.
5. Liaison to scrap dealers can be considered as a recognised agency for waste collection
6. There can be some specific protocol for handling of hazardous waste
7. There is a need of system for collection and management of inert waste

Protocols for handling various kinds of waste, Handling hazardous waste, Processing systems for inert wastes, and legal provisions regarding waste management are the preferential areas proposed for training.

8. Secretaries of Urban Local Body

1. Challenges in management of biodegradable waste at households and institutions
2. Requirement of proper training to HKS to monitor biodegradable waste management systems at different levels
3. Introduction of biomining and smart waste management system (control room, Artificial Intelligence system, etc.)
4. Issues with the management of C&D waste
5. Requirement of pre and post social and environmental studies before and after implementing the projects
6. Systems for insurance protection to HKS members

Since ULB secretaries are primarily responsible for waste management. They have demanded training in almost all terrains of waste management. They are, Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, procurement, Monitoring and Evaluation Framework, Finance Management, and Entrepreneurship and waste reduction strategies.

9. Procurement/Finance Experts

1. Inadequate knowledge and skills related to the e-tender portal and process, hindering efficient and effective use
2. Training on World Bank guidelines versus state government guidelines is needed for the concerned officials to avoid potential conflicts and ensure compliance.
3. Delays in procurement processes due to lengthy and complicated procedures necessity for training to streamline and expedite procurement activities.
4. Stakeholders for training: PIU level- secretary, plan clerk, Municipal Engineer/ Assistant Engineer, Account Officer, and implementing officers (Health Inspector/ HS)- District level- DPMU require the same training content,

5. Stakeholders for training at the PIU level include the secretary, plan clerk, Municipal Engineer/Assistant Engineer, Account Officer, and implementing officers (Health Inspector/HS). Similarly, at the District level, DPMU requires the same training content
6. Lack of understanding of standardised procurement procedures

Identified stakeholders are primarily responsible for procurement, the preferential areas proposed for training include:Overview: Procurement Process, World Bank Framework vs. State Framework, STEP, PRICE 3.0, Tender Portals like E-tender, Bid Document Preparation and Evaluation.

5 TRAINING PREFERENCES OF STAKEHOLDERS

Training preferences of different categories of respondents will be different in accordance with their designations and qualifications. This includes the questions regarding training preferences where covering the areas such as duration of training, mode of training, training location and their preferred areas for follow ups. This information was extracted through questionnaires in the first and second phases, whereas the third phase was aware through FGDs. Multiple choice questions were used in many of these categories.

5.1. TRAINING PREFERENCES OF ELECTED REPRESENTATIVES

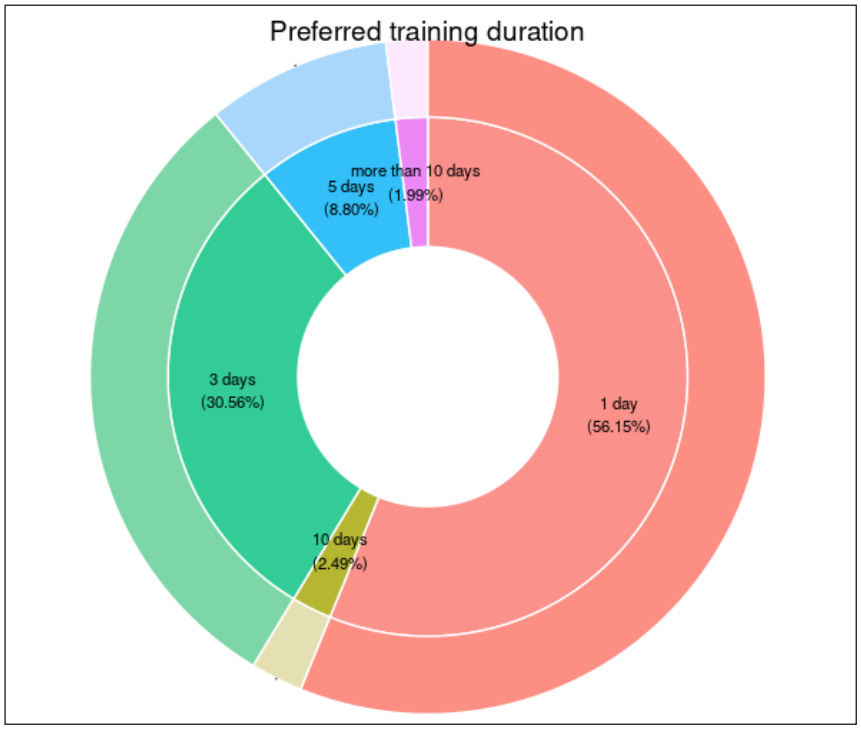


Figure 5.1: Preferred training duration by the elected representatives

Figure 5.1 shows the preferred training duration by the elected representatives. Most of them preferred (more than 50 percent) 1 day training. Around 31 percent prefer 3 days of training. Nearly 9 percent prefer 5 day training. Only 3 percent preferred for 10 day training and the remaining 2 percent preferred for more than 10 days training. From this it is clear that it's better to design a 1 day training or a 3 day training as most of them preferred the same.

Figure 5.2 shows the preferred training location and mode of training of the elected representatives. Around 75 percent of the elected representatives prefer training within the district. Around 15 percent suggest training within the state. Remaining 10 percent prefer National or International training. While discussing the mode of training around 57 percent prefer offline training mode. Approximately 23 percent prefer hybrid mode and around 21 percent prefer online mode of training. The data indicates that district level or regional training would be preferable for elected representatives. There's a chance for national or international training for a group of ER who have shown willingness to attend this.

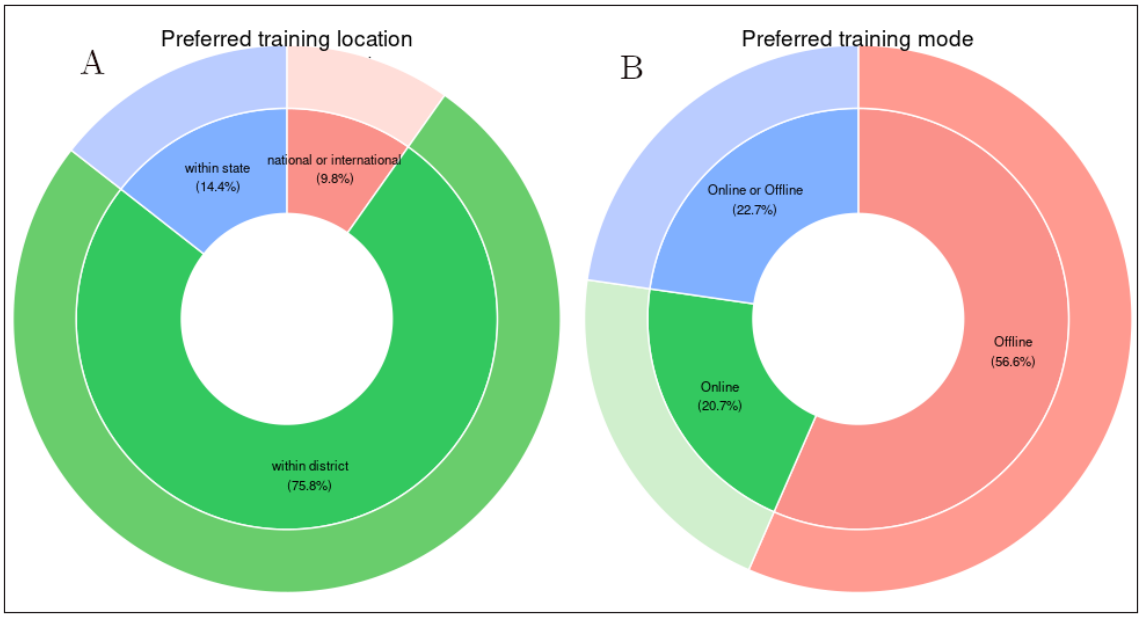


Figure 5.2: Preferred training location and mode of training by the elected

Table 5.1: Preferred Method of training: Elected Representative

The table regarding the preferable method of training of ER shows that one third of them preferred class room training. While one fifth or them preferred group discussions and almost another one fifth of them preferred training with field visits. From this it can be inferred that a mixed method of lecture sessions along with group discussion and field visits would be advisable for ER training. Aling with videos can be used as a method to generate discussions.

Preferred method	Percentage
All methods except question answer sessions	0.35%
Class room and field visits with videos	0.35%
Class room, field visits, and question answers sessions	0.35%
Field visits with question answer sessions	0.35%

Group discussions, field visits, and question answer sessions	0.35%
Group discussions, question answer sessions, and videos	0.35%
Question answer sessions with videos	0.35%
Class room and question answer sessions	0.53%
Field visits with videos	0.53%
All methods except videos	0.70%
Class room with group discussions and question answer sessions	0.70%
Class room and group discussions with videos	0.88%
Group discussions and videos	0.88%
Group discussions and question answer sessions	1.05%
Question answer sessions	1.40%
Group discussions and field visits	1.93%
Class room and field visits with group discussions	2.10%
Class room and videos	2.10%
All methods	4.03%
Class room and field visits	4.03%
Class room with group discussions	5.60%
Field visits	18.56%
Group discussions	20.67%
Class room	31.87%

Table 5.2: Preferred areas of intervention: ER

Preferred areas of intervention	Percentage
All areas of waste management except community awareness	0.18%
Collection and treatment of bio-waste and NBD waste, community awareness, and project preparation	0.18%
Waste collection in general, collection and treatment of NBD waste	0.18%
All areas of waste management except project preparation and management	0.35%
Waste collection in general, collection and treatment of NBD waste, and project preparation	0.35%
Waste collection, bio-waste treatment, and community awareness	0.35%
Collection and treatment of bio-waste and NBD waste	0.53%
Collection and treatment of NBD waste and project preparation	0.53%
Treatment of bio-waste and community awareness	0.53%
Treatment of bio-waste and project preparation	0.53%
Waste collection in general, collection and treatment of NBD waste, project preparation and community awareness	0.53%
Waste collection, community awareness	0.53%
Collection and treatment of NBD waste, community awareness	0.70%
Waste collection and bio-waste treatment	0.70%
Treatment of bio-waste, project preparation, and community awareness	0.88%

Waste collection, bio-waste treatment, and project preparation	0.88%
Waste collection in general, project preparation, and community awareness	1.23%
All areas of waste management	3.15%
Collection and treatment of NBD waste	3.50%
Waste collection in general and project preparation	3.68%
Treatment of bio-waste	5.95%
Project preparation, community awareness	7.53%
Waste collection	10.51%
Community awareness	26.62%
Project preparation	29.95%

It is noted that around one third of them preferred to engage in the follow up activities of project preparation(29.95%), community awareness creation(26.62%) and waste collection(10.51). Hence better to carry out followup activities in these domains.

5.2. ULB OFFICIALS

Figure 5.3 shows the preferred training duration by ULB Officials. Here around 50 percent preferred one day training. Around 25 percent prefer 3 days of training. Around 10 percent prefer 5 days of training. Only 7 percent prefer 10 days of training and the remaining 6 percent prefer more than 10 days training. From this it is clear that it is better to design a one day training or a 3 days training as most of them prefer for that.

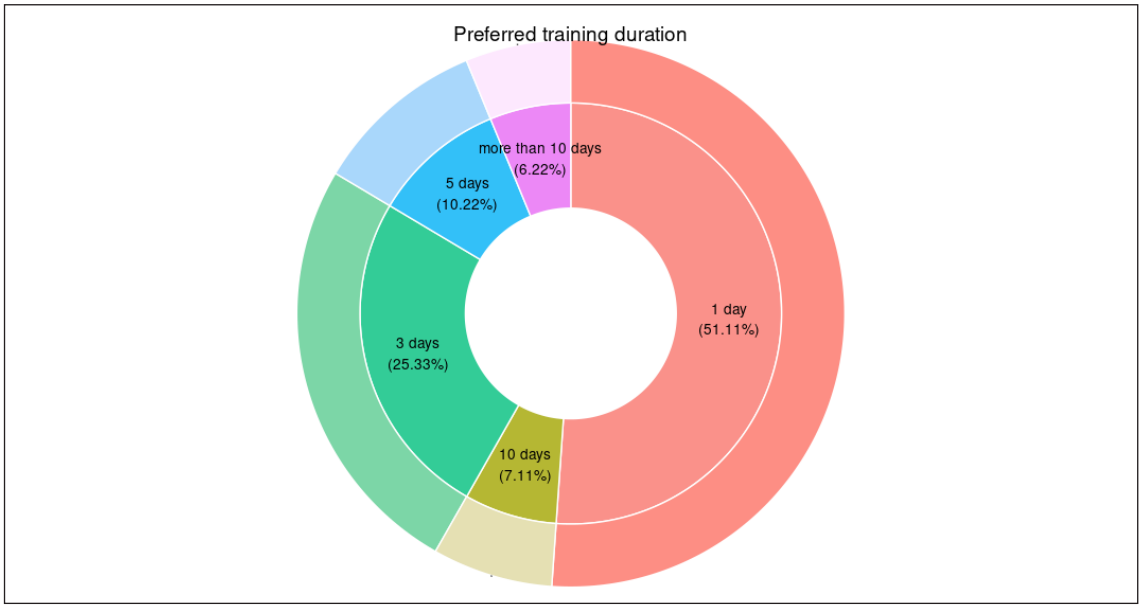


Figure 5.3: Preferred training duration: Officials

Figure 5.4 shows the preferred training location and mode of training by the ULB Officials. Here around 75 percent prefer training within the district. Nearly 15 percent prefer training within state and only 11 percent prefer National or International training. In this backdrop it is better to plan district or regional level training for officials whereas there is a possibility for national level training for a priority. Approximately 40 percent prefer offline mode of training. More than 33 percent prefer online mode of training and 27 percent prefer either online or offline mode. This indicates offline mode should be a preferable mode of training to a greater part of participants whereas hybrid mode would be the next preferable option.

The data on mode of training preference indicates that around one third of them (28.76%) prefer classroom mode of training and around one fifth of them prefer field visits(19.47%). Hence it is advisable to have a mix of field visits and group discussion for effective delivery of training.

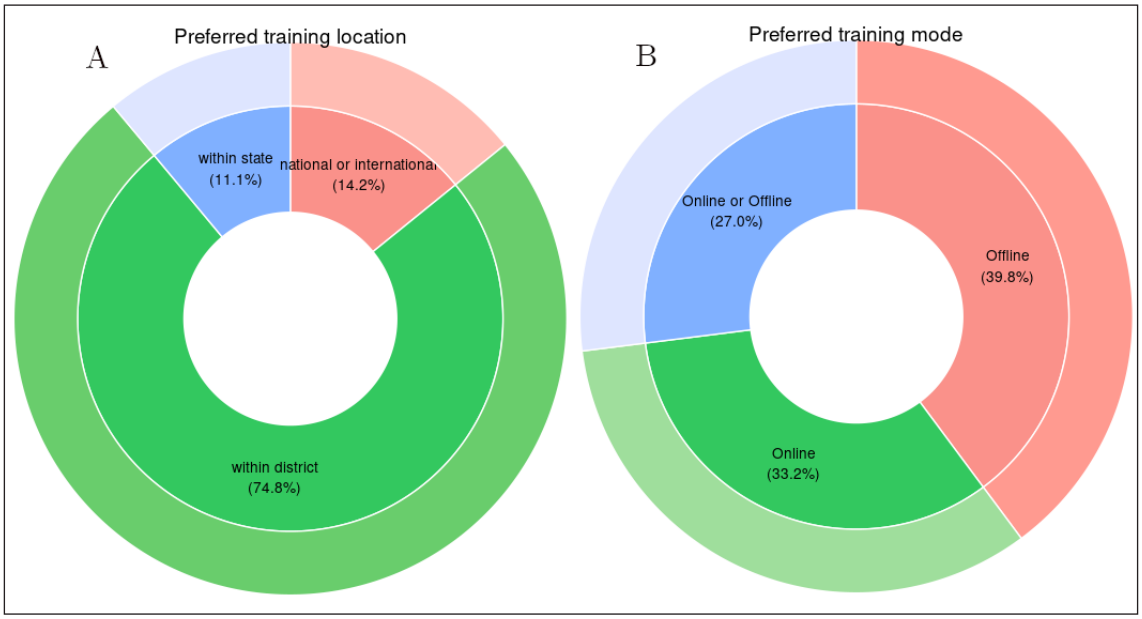


Figure 5.4: Preference for training location and training mode- Officials

Table 5.3: Preferred Method of training: Officials

Preferred method	Percentage
All methods except class room	0.44%
Class room and field visits with group discussions	0.44%
Class room and group discussions with videos	0.44%
Class room with group discussions	0.44%
Field visits with question answer sessions	0.44%
Field visits with question answer sessions and videos	0.44%
Group discussions and field visits	0.44%
All methods except field visits	0.88%
Class room and field visits with videos	0.88%
Class room and videos	0.88%
Group discussions and videos	0.88%
Question answer sessions	0.88%
All methods except videos	1.33%
Class room and question answer sessions	1.33%
Field visits with videos	1.33%
Group discussions, field visits, and videos	1.33%
All methods except question answer sessions	1.77%
Class room and field visits	2.65%

All methods	5.75%
Group discussions	7.96%
Field visits	19.47%
Class room	28.76%

Table 5.4 : Preferred areas of intervention: Officials

Preferred areas of intervention	Percentage
Treatment of bio-waste and project preparation	0.44%
All areas of waste management except community awareness	0.88%
Collection and treatment of bio-waste and NBD waste, and project preparation	0.88%
Collection and treatment of bio-waste and NBD waste, community awareness, and project preparation	0.88%
Collection and treatment of NBD waste, and project preparation	0.88%
Collection and treatment of NBD waste, project preparation and community awareness	0.88%
Waste collection and bio-waste treatment	0.88%
Collection and treatment of bio-waste and NBD waste	1.77%
Waste collection in general, collection and treatment of bio-waste and NBD waste	1.77%
All areas of waste management	2.21%
Collection and treatment of NBD waste, community awareness	2.21%
Project preparation, community awareness	3.54%
Waste collection	7.96%
Treatment of bio-waste	8.41%
Collection and treatment of NBD waste	10.18%
Community awareness	18.58%
Project preparation	37.17%

The data on preferred areas of follow up indicate that one third of them prefer project preparation as the main area of training, one fifth of them prefer community awareness as their major area. And another 10 percent prefer collection and treatment of biodegradable waste as their area for intervention. Hence the followup areas of interventions in the areas can be designed accordingly.

5.3. COMMUNITY BASED ORGANISATIONS

Figure 5.5 shows the preferred training duration by Community Based Organisations. Around 56 percent prefer one day training. Around 30 percent prefer 3 days of training. Around 8 percent prefer 5 days of training. Around 4 percent prefer more than 10 days of training. 3 percent prefer 10 days of training and only less than 1 percent prefer 2 days of training. This indicates that one day or three days training would be preferred for the majority of them.

Figure 5.6 indicates that more than 90 percent of Community Based Organisations prefer training within the district. Around 7 percent prefer training within the state and 2.5 percent prefer National or International training. Around 43 percent prefer offline mode of training. Around 34 percent prefer online mode of training and approximately 24 percent prefer either online or offline.

The data show that districts or regional level training would be ideal to the officials while

offline or hybrid mode the ideal mode of training to them.

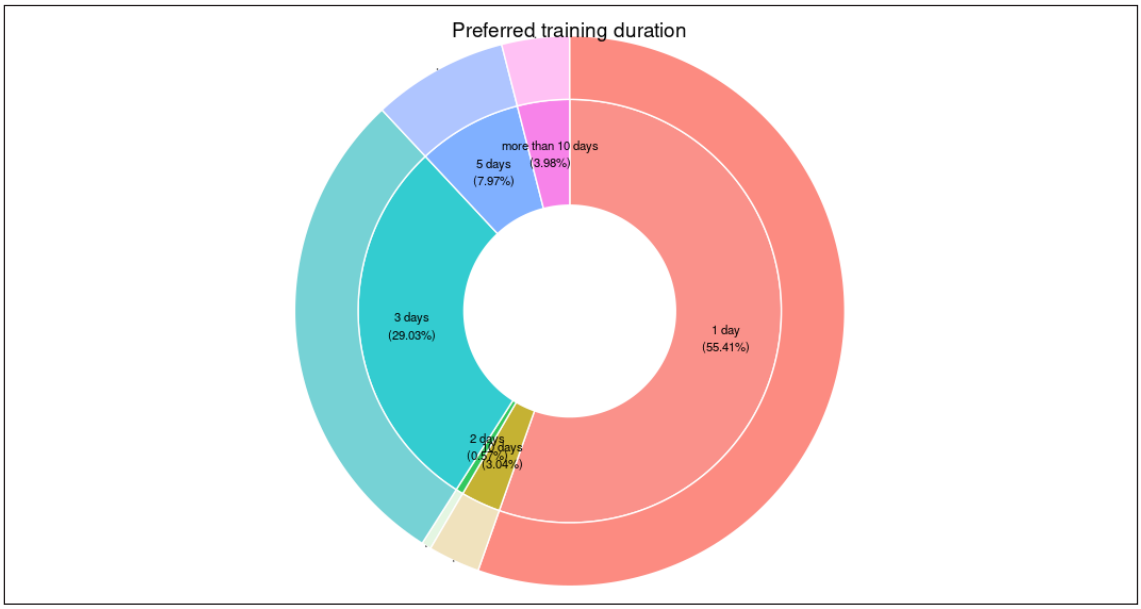


Figure 5.5: Preferred training duration by Community Based Organisations

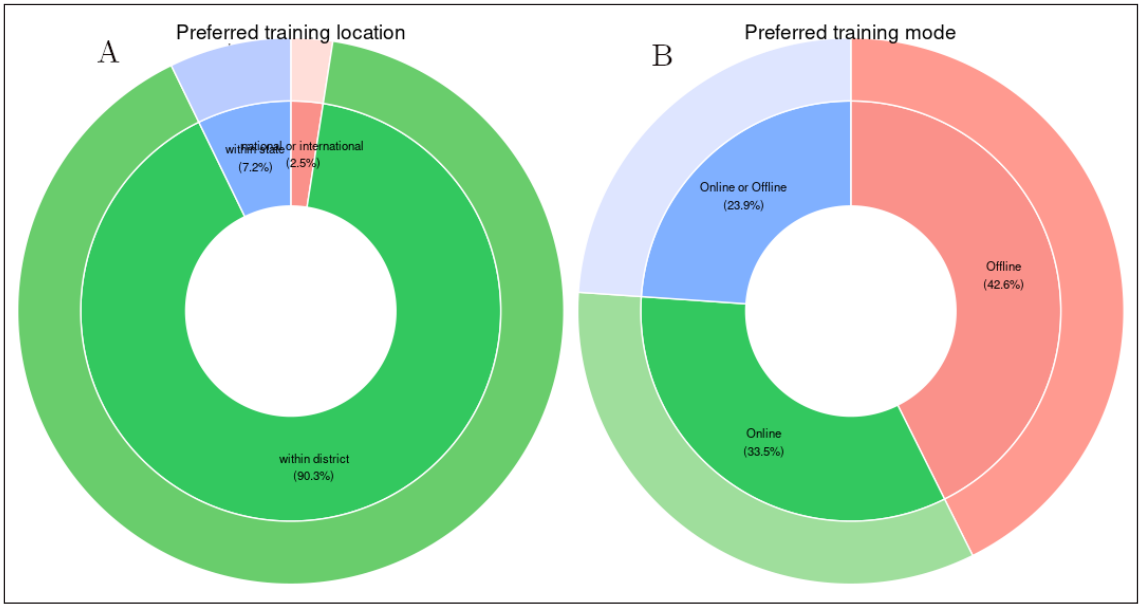


Figure 5.6: Location and mode of training preference: CBO

The data show that around one third of them prefer classroom training and around one fifth of them group discussions and few other preferred field visits. Hence training sessions by incorporating lecture sessions and field visits and group discussions are the ideal mode of training.

The data on preferred areas of training indicates that around one third of them prefer community awareness of major areas of follow up while 14 percent for project preparation and 9 percent of them each have equally opted for project management and waste collection. Hence it is advisable to focus on these areas for follow ups.

Table 5.5: Preferred method of training: CBO

Preferred method	Percentage
All methods except group discussions	0.19%
All methods except videos	0.19%
Class room and field visits with videos	0.19%
Field visits with question answer sessions	0.19%
Group discussions, field visits, and videos	0.19%
Group discussions, question answer sessions, and videos	0.19%
All methods except class room	0.38%
All methods except question answer sessions	0.38%
Class room and question answer sessions	0.38%
All methods except field visits	0.57%
Class room with group discussions and question answer sessions	0.57%
Group discussions and question answer sessions	0.57%
Class room and group discussions with videos	0.76%
Group discussions and videos	0.95%
Group discussions, field visits, and question answer sessions	0.95%
Group discussions and field visits	1.14%
Class room and videos	1.33%
All methods	3.04%
Class room and field visits with group discussions	3.23%
Class room and field visits	4.17%
Class room with group discussions	4.17%
Field visits	7.97%
Group discussions	17.46%
Class room	28.65%

Table 5.6: Preferred Area of intervention: CBO

Preferred areas of intervention	Percentage
All areas of waste management except project preparation and management	0.19%
Collection and treatment of bio-waste and NBD waste, and project preparation	0.19%
Collection and treatment of NBD waste, community awareness	0.19%
Collection and treatment of NBD waste, community awareness, and household level interventions	0.19%
Collection and treatment of NBD waste, project preparation and community awareness	0.19%
Collection and treatment of NBD waste, project preparation and management, community awareness	0.19%
Community awareness, institutional interventions	0.19%
Project management and household interventions	0.19%
Project preparation and management, community awareness and institutional interventions	0.19%
Treatment of bio-waste and Institutional interventions	0.19%
Treatment of bio-waste, project preparation and management	0.19%
Waste collection in general, collection and treatment of NBD waste and community awareness	0.19%
Waste collection in general, project preparation, and management of waste treatment projects	0.19%
Waste collection, bio-waste treatment, and interventions at institutional levels	0.19%
Waste collection, community awareness, and interventions at household level	0.19%
All areas of waste management	0.38%
All areas of waste management including interventions at household level	0.38%
Collection and treatment of bio-waste and NBD waste, community awareness, and project preparation	0.38%
Treatment of bio-waste and project management	0.38%

Treatment of bio-waste and project preparation	0.38%
Treatment of bio-waste, project preparation and management, community awareness	0.38%
Waste collection in general, collection and treatment of NBD waste	0.38%
Waste collection, bio-waste treatment, and management of waste treatment projects	0.38%
Waste collection, bio-waste treatment, and project preparation	0.38%
Project preparation and management	0.57%
Treatment of bio-waste, project preparation, and community awareness	0.57%
Waste collection in general, collection and treatment of bio-waste and NBD waste	0.57%
Waste collection, bio-waste treatment, and community awareness	0.57%
Waste collection, community awareness	0.57%
Waste collection, community awareness, and management of waste treatment projects	0.57%
Collection and treatment of bio-waste and NBD waste	0.76%
Waste collection and bio-waste treatment	0.76%
Treatment of bio-waste and community awareness	0.95%
Project preparation and management, community awareness	1.90%
Community awareness and Project management	2.09%
Household level and institutional interventions	2.47%
Project preparation, community awareness	2.47%
Collection and treatment of NBD waste	3.61%
Treatment of bio-waste	8.35%
Waste collection	9.30%
Project management	9.87%
Project preparation	14.42%
Community awareness	32.83%

5.4. SANITATION WORKERS

Data on the preferred training days shows that the majority of them preferred either one day(39.1%) or two day(22.6%) training. Hence it is advisable to design short training programs for sanitation workers. Multiple sessions with 2 days maximum in one session.

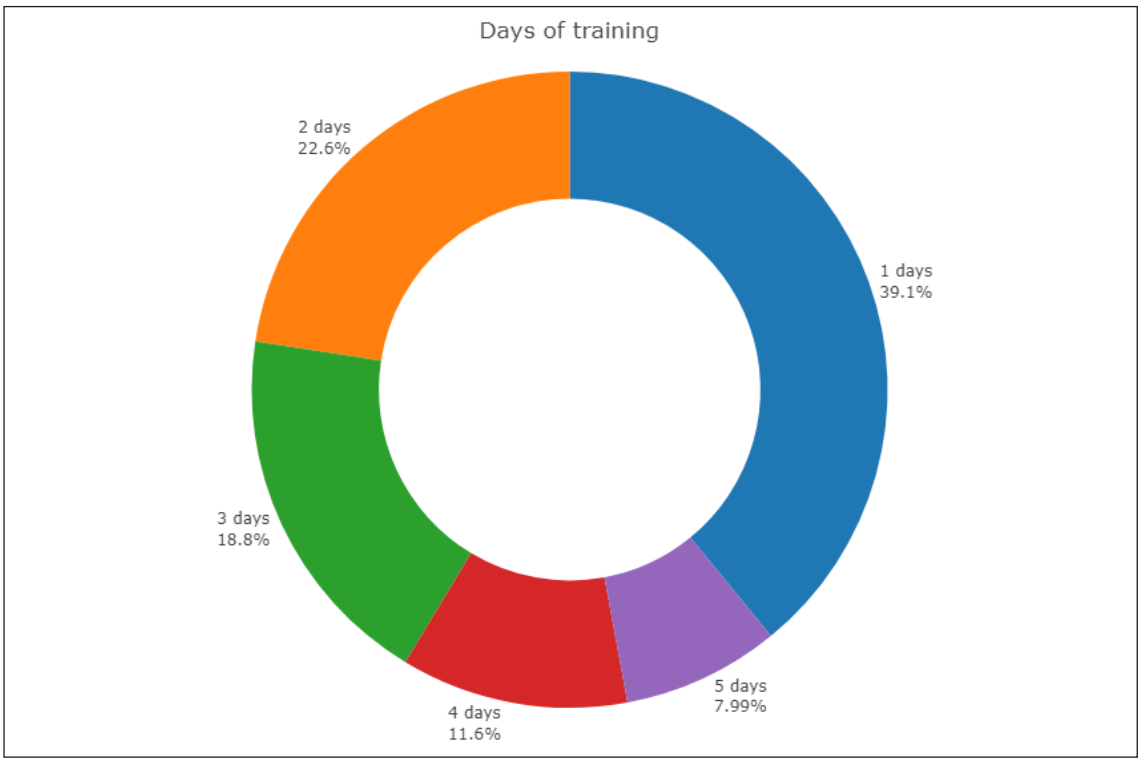


Figure 5.7 : Preferred training duration of sanitation workers

Majority (around 60%) of the sanitation workers selected their preferred mode of training as offline. Rest of the respondents preferred online (20%) and hybrid mode (20%). Hence it is advisable to have offline training to the sanitation workers.

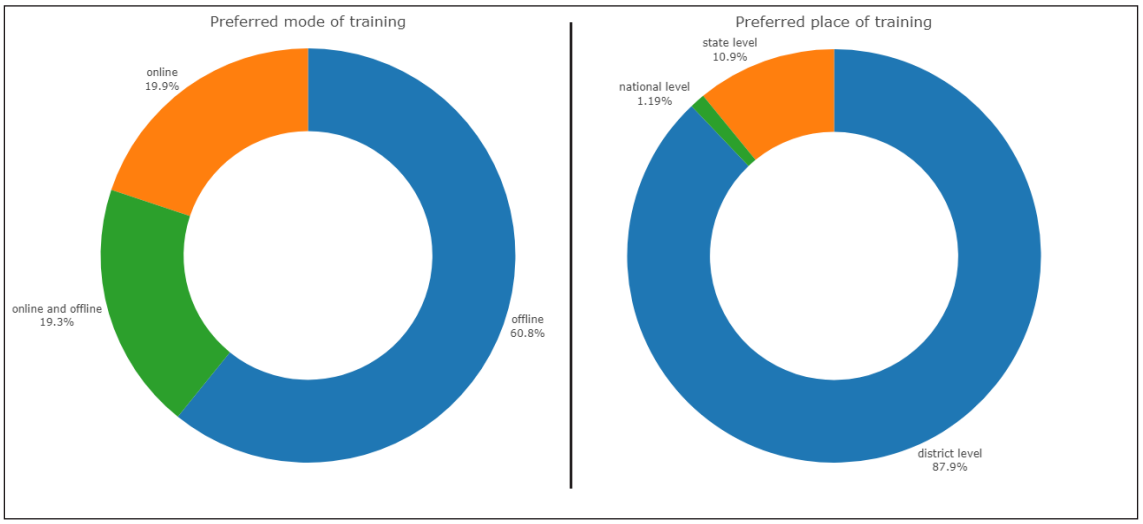


Figure 5.8: Location and mode of training preference: sanitation workers

The data also show that for most sanitation workers the most preferred place for training is within their districts (88%).

5.5. STATE OFFICIALS

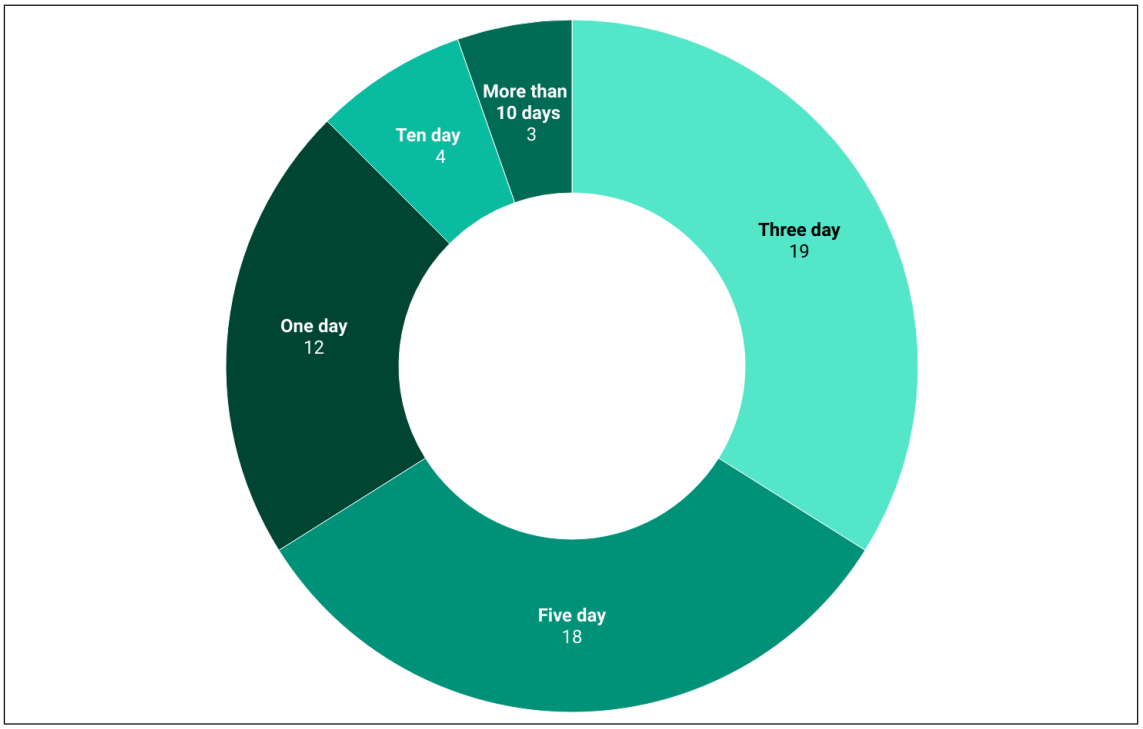


Figure 5.9:Preferred training duration of state officials

Data shows that most of them responded to either one or 5-day training. This indicates that the majority of them prefer one to five days of training.

45 percent prefer offline mode of training. 37.5 percent prefer either online or offline mode of training. Remaining 17.5 percent prefer online mode of training. Hence it is preferable to follow offline and hybrid modes of training for the state officials.

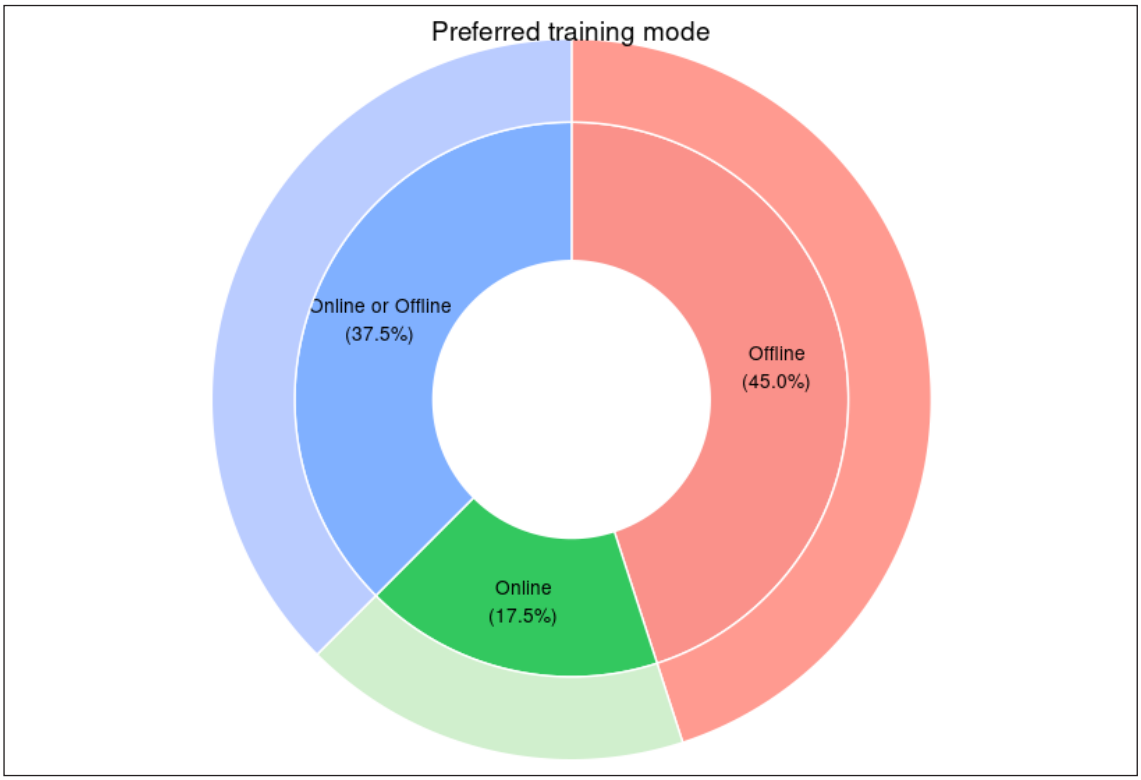


Figure 5.10 : Preferred training mode

Around 43 percent prefer training within the district. Approximately 35 percent prefer National or International training. Around 23 percent prefer training within the state. Hence it is advisable to do regional level training for state officials. However there can be a national and international training programme by targeting around one third of them.

Figure 5.11: Preferred training location

82% of State Officials prefer all training methods. 9% prefer methods except question answer sessions and the remaining 9% prefer methods except class room. Hence it is advisable to prefer a mixed training method for state level officials.

Figure 5.12: Preferred training method: state officials

5.6. KSWMP TEAM

The data on days of training of different categories of KSWMP staff shows that the majority of them preferred 3 days of training except the one day preference for financial and environmental experts. However, the second preference of majority of them are 1 day training except environment and SWM engineers. Who prefers 5 days as the second option. Hence three day training would be the preferable option for the majority of the respondents. By considering the job role short training in different periods would be advisable to KSWMP staff. Which can be spanned around 1 to 3 days in a stretch.

Table 5.7: Duration preference of respondents

Groups	1 day (in %)	3 days (in %)	5 days (in %)	10 days (in %)
Environmental Engineer	6	50	26	18
Finance Expert	36	43	14	7
Monitoring & Evaluation	48	26	19	6
Social & Communication Expert	21	53	14	12
SWM Engineer/DyDC	6	46	29	19
PIU Engineer	22	49	19	10
Others	20	20	20	40

The data on mode of training indicated that the majority of the staff opted for offline training while hybrid mode the second option. However, in only one category , SWM engineers have given equal preference to offline mode and hybrid mode of training.

Table 5.8: Mode of training preference of respondents

Groups	Online (in %)	Offline (in %)	Hybrid (in %)
Environmental Engineer	9	73	27
Finance Expert	22	89	44
Monitoring & Evaluation	33	67	47
Social & Communication Expert	31	77	15
SWM Engineer/DyDC	31	46	42
PIU Engineer	35	54	37
Others	25	100	50

The data on preference of training location of KSWMP staff indicates that the majority of them have almost equal preference within the district and within the state. This indicates that a regional training should be preferable for them.

Table 5.9: Location preference of respondents

Groups	Within District (in %)	Within State (in %)	National/ International (in %)
Environmental Engineer	39	39	22
Finance Expert	38	38	25
Monitoring & Evaluation	35	39	25
Social & Communication Expert	34	34	31
SWM Engineer/DyDC	44	32	24
PIU Engineer	42	28	23
Others	33	33	33

5.7. FGD

As we have discussed above, the following are the details regarding preference of various categories of FGD participants.

Table 5.10: Preference of various categories of FGD participants

Agency/ Institution/ Organisation represented	Preference of Duration	Preference of location	Preference of training mode
Suchitwa Mission	3 days	Within the state, National	Offline, Hybrid
LSGD, Urban directorate, District Planning Office	1 day trainings in different stretches	Within the state, National	Offline, Hybrid
CKCL	2 days	Within the state	Offline, Hybrid
KSDMA-KILA	2 day	Within the state	Offline, Hybrid
Haritha Sahaya Sthapanam (HSS)	2 to 3 days	Within the state, National	Offline, Hybrid
Tourism	1 day trainings in different stretches	Within the state	Offline, Hybrid
Scrap Dealers Association	1 day trainings in different stretches	Within the district and state	Offline

6 FINDINGS, RECOMMENDATIONS AND SUMMARY OF TRAINING PREFERENCES

6.1. FINDINGS

6.1.1. ELECTED REPRESENTATIVES

- Six hundred and three elected representatives from 22 sample ULBs in the state participated in the assessment. It is noted that most of the ER are holding the qualification of SSLC or below (64%). The share of elected representatives with secondary or higher education is relatively very less in the sample.
- Broadly, the knowledge levels of elected representatives vary substantially among designations such that separate training is required for each category. Chairpersons of the sample ULBs claim to have a better knowledge of various categories of knowledge required for waste management whereas the knowledge of ward councillors is less.
- Broadly, the course from the assessment suggests that Entrepreneurship and private sector participation, ULB responsibilities on SWM, Effectiveness of existing systems and ability to solve waste management related issues are the medium scored thematic areas by them. Micro areas of each of these themes are mentioned above. However, there are no areas identified as domains with poor knowledge by the elected representatives. Since they have recorded a medium knowledge level in most of the subjects. Training can be needed for almost all the areas they recorded a medium level of knowledge. Since ER, particularly the health standing committee is responsible for the effective implementation of the waste management program they can be given a basic training on monitoring and evaluation of waste management practice and projects as well. Effective cost recovery and revenue generation are

pivotal components of financial management. Hence a generic training on financial management is also required to the elected representatives.

- Effective financial management is of equal importance since, implementing a sustainable solid waste management function would need to ensure that there is adequate cost recovery and revenue generation.
- While we analyse the job role which is pertinent to mention that providing training to the elected representatives in the areas of Ability to solve issues related to waste and WM (Educating the public about waste reduction and proper disposal method, Encouraging community participation in waste management initiatives), Effectiveness of existing system of waste management (Prioritising projects based on local needs and available resources, Developing contingency plans for waste management during emergencies, Monitoring and Evaluation), Entrepreneurship and Private sector participation(Engaging stakeholders for insights and partnerships in waste management),Environmental and social safeguards (Enforcing waste management regulations and overseeing compliance), Knowledge of stakeholders on LSGs current waste management practices (Developing and enforcing by-laws for waste management, Planning, constructing, and maintaining waste treatment facilities, recycling centres, composting sites, and landfills).
- The study indicates that elected representatives require more knowledge on the details of institutions and agencies that purchase various kinds of non-biodegradable waste within and outside the state.
- They are less aware of the inclusion of private players in waste management, waste management-based ventures. They also need detailed training on the functioning of CKCL and its potential in handling various kinds of non-biodegradable wastes. They also require training in better management of waste management projects.
- Majority of the elected representatives prefer one-to-3-day training. They prefer offline training within their respective districts. Classroom training and group discussion are the preferred training methods. Project preparation and community awareness are the major areas which elected representatives wish to engage after training. A few preferred waste collections as well.
- The regional wise analysis of ER shows that representatives from the North zone lag behind those from the South and Central zones in terms of knowledge. Hence the deeper training would be advisable to the ER from the northern region.

6.1.2. ULB OFFICIALS

- 226 officials belonging to various designations participated in the survey. The educational qualifications of the respondents and their respective distribution across affiliations are fairly sufficient to learn the technical contents to be incorporated in the training. Hence there is a high possibility for imparting technical and professional contents to the training of urban officials. Accordingly, such knowledge can be imparted among this category of respondents. Among the respondents, Secretary/ Asst. Secretary/Adl. Secretary/PA to Secretary fetched higher scores compared to those of other respondents.

- The scores of engineering and accounts staff are visibly low for most of the queries related to waste management. The scores of Health Inspectors and Health Department Staff stood at moderate levels compared to the other two categories of officials. Here also, separate training is recommended for each category to address the disparities in knowledge levels with respect to the duties that these officials are supposed to perform. Deeper training on waste management is required to engineering staff and health officials for improving their performance in this sector.
- While we do the thematic analysis it is noted that training preference has to be given in the areas of Ability to ensure active participation and partnership of the general public in waste management, ULB responsibilities and activities for implementing legal provisions, Procurement, entrepreneurship and private sector participation, sustainable waste management practices, legal provisions of waste management, project planning, design, environmental and social safeguards, and responsibilities of health department staff in the effective management of waste. Since the health officials, engineers and ULB secretaries have the responsibility of monitoring & evaluation of waste management projects. These thematic areas can also be incorporated in their training. Since finance management is a relevant subject to all ULB officials a special training in this area is also proposed. The focus group discussion of ULB secretaries and Joint directors of LSGD has highlighted that even though they have sufficient knowledge regarding the procurement procedures of Government of Kerala, they are not well aware about the specific procurement of World bank and KSWMP project. This underscores the relevance of a specific training to the ULB and LSGD district officials for improving the efficiency of procurements of ULB under KSWMP project. Being ULB Secretaries are the officials responsible for overall implementation of the SWM projects. Hence they would have to be trained in the aspect of environmental and social management framework covering the sub areas of environmental and social safeguards.
- Most of the ULB officials preferred one to 3 days of training. Majority of them wish to have training within their respective districts. Though most of them prefer offline training, the share of those who prefer online training is also not much low. ULB officials mostly prefer class room and field visits for training. Most of them wish to engage in project preparation and community awareness while a few preferred collection and treatment of non-biodegradable waste and treatment of biowaste as their areas of engagement after training.

6.1.3. COMMUNITY ORGANISATIONS INVOLVED IN WASTE MANAGEMENT

- A total of 527 respondents from various organisations and stakeholder categories responded to the survey. Majority of them belong to Kudumbashree, whereas fair representation is there from other organisations as well. Regarding education qualification, there is a fair distribution of samples across different educational backgrounds.
- Among the respondents from community-based organisations, the members of residence associations have the highest knowledge pertaining to the queries in the

assessment. They are closely followed by other organisations and the representatives from Kudumbashree. Among the sample respondents from community-based organisations, the knowledge levels of respondents from merchant associations are the lowest.

- The data indicates that training preference has to be given in the thematic areas of penalties and penal proceedings under waste management laws and regulations, rules and regulations under waste management, ULB responsibilities under waste management, sustainable waste management practices, environmental and social safeguards, and ability to ensure active participation while providing training to the CBOs.
- Most of the respondents community-based organisations preferred one-to-three-day training. The Majority of them wish to have training within their respective districts. Though most of them prefer offline training and hybrid mode of training. They mostly prefer classroom and field visits for training. Most of them wish to engage in community awareness, project preparation, and project management while a few prefer waste collection as their areas of engagement after training.

6.1.4. SANITATION WORKERS

- A total of 933 workers associated with various stages of waste management participated in the assessment. The Majority are from Haritha Karma Sena or other institutional mechanisms associated with the area of waste management. The educational qualification of respondents in this category is relatively low compared to other categories of respondents.
- The analysis of their knowledge levels suggests that the knowledge levels of recycling workers is the lowest among all sanitation workers. In many cases waste management workers' scores are closer to that of recycling workers. Knowledge levels are highest for the waste transportation workers and all other categories are located in between these three.
- In general, the scores of all categories of respondents irrespective of their affiliation and region stay between 5 and 7 on a scale of 10. This indicates the scope of considerable improvement among the sanitation workers. Specifically, their awareness regarding the rules and regulations related to solid waste management, capabilities to create awareness among the public, the knowledge required to manage waste at source, green protocol practices, knowledge of biowaste management, the knowledge required to handle hazardous waste materials, and the knowledge required to transport waste materials safely require specific emphasis. Data shows that penalties and penal proceedings under waste management laws and regulations, rules and regulations under waste management, ULB responsibilities under waste management, health and safety of workers, sustainable waste management practices, environmental and social safeguards can be the preferential training areas for sanitation workers.
- Most of the respondents from sanitation workers preferred one day training. The majority of them wish to have training within their respective districts. Most of them prefer offline training. They also prefer class room and field visits for training.

6.1.5. STATE LEVEL OFFICIALS

- Data on the education qualification of officials indicates that most of them are highly qualified. Hence there is a high possibility to impart training with sufficient technical content to improve the overall performance of the agency in the tasks related to waste management.
- There is a visible disparity among the state officials in the knowledge levels on various domains. In many sections, the officials of LSGD scored the least and their scores were well below the average values. KSPCB officials scored higher in many sections. Apart from LSGD officials, the representatives from Haritha Kerala Mission also require deeper training sessions to fill the knowledge gap.
- **Haritha Kerala Mission**: The training needs for the Haritha Kerala Mission include a balanced focus on several aspects of waste management. These include entrepreneurship and private sector participation, environmental and social safeguards, community participation, legal considerations, sustainable waste management practices, and adherence to waste management rules and regulations.
- **Kerala State Pollution Control Board**: The training needs for the KSPCB can be summarised into two main categories: Entrepreneurship and Private Sector Participation, and the development of comprehensive knowledge in waste management systems, agencies, and related topics at various administrative levels.
- **Health department officials**: The training needs for health department officials in waste management in various areas. These include fostering entrepreneurship and private sector participation, emphasising the importance of community involvement, understanding environmental and social safeguards, and gaining knowledge about waste management systems and agencies at different levels. Additionally, there is a need for training on legal aspects, penalties, and proceedings related to waste management laws, as well as a thorough understanding of rules and regulations governing solid waste management. Sustainable waste management practices, including awareness of green practices and emerging technologies, also form a crucial part of the training requirements. Overall, a comprehensive training program should cover a spectrum of topics ranging from private sector engagement to legal frameworks and sustainable practices, empowering health department officials to effectively contribute to waste management initiatives.
- Most of the State officials preferred 3 to 5 days of training. They preferred mixed methods of training in the training delivery. Most of them preferred offline and hybrid modes of training. Within the district, national and international are the locations preferred by the state officials.

6.1.6. KSWMP TEAM

One thirty KSWMP PIU, district and state level staff participated in the TNA process. Their educational profiles are comparatively high since their appointments are based on educational qualifications and experience. There is a high possibility of imparting professional technical training among this group in their corresponding domains.

The specific responses of each category are given below;

6.1.6.1 Environmental engineer

- Eleven environmental engineers have responded to the survey.
- Project Monitoring and Evaluation, Public grievances, and ULB responsibilities and activities for implementing legal provisions on SWM are the preferential areas of training for environmental engineers. Since their job roles are closely associated with environmental and social safeguards in these areas, training to them can also be focused on this area.
- Most of them preferred 3 days of training and the majority opted for district and state level training. A large number of them opted for an offline and hybrid mode of training.

6.1.6.2 Finance Expert

- Nine finance experts participated in this survey.
- Project Monitoring and Evaluation, ULB responsibilities and activities for implementing legal provisions on SWM, procurement procedures and guidelines, Entrepreneurship and Private sector participation are the low knowledge level areas of finance experts. This indicates the need for deeper training in those areas.
- Most of them preferred one to three days training, and offline mode training. A large number of respondents opted for the location for training as training within the district and within the state.

6.1.6.3 Monitoring and Evaluation Expert

- Fourteen M&E experts have responded to the questionnaire.
- The survey feedback indicates that M&E experts have comparatively low knowledge in the areas of ULB responsibilities and activities for implementing legal provisions on SWM and Project planning and design. Since M&E experts require the knowledge to assess the environmental and social safeguards in this area, training can be provided to them focusing on this topic.
- Majority of them opted for offline training spanning over one day. Most of their preferences were centred on the district and state.

6.1.6.4 Social and Communication Expert

- Eleven social and communication experts have participated in the survey.
- The survey data indicate they have comparatively low knowledge in the areas of laws and regulations associated with waste management, Environmental and social safeguards, project planning, design and management, Data collection and analysis and public grievances.
- Most of them opted for 3-day training and the majority of their preferences were for offline training within district and state

6.1.6.5 SWM Engineer/DyDC

- Eleven SWM engineers working at the district level participated in the TNA.
- The survey indicates that their preferential areas of training are entrepreneurship and private sector participation and Public grievances. Since SWM Engineers are

responsible for planning and designing of SWM projects.They should also be aware of environmental and social safeguards. Hence it is proposed to provide training to them in this category.

- Most of them preferred 3-day training within the district or state. The majority of them demanded offline training and a hybrid mode of training.

6.1.6.6 PIU Engineer

- Seventy-three PIU engineers have responded to the questionnaire.
- The study indicates that they have comparatively low knowledge in the areas of Laws and regulations associated with the waste management, Public grievances, Project Monitoring and Evaluation, Private entrepreneurship, Cost accounting, financial management, Procurement, Latest technologies in SWM, Environmental and Social Safeguards, Penalties and Penal proceedings, Data collection and analysis, Participatory approaches in SWM, sustainable waste management practices, Documentation and reporting, transportation of waste, ULB responsibilities, and Project planning and design.
- Most of them preferred training in 3 days training and preferred in offline mode. Majority opted for the district and state as location for training.
- The questions regarding procurement have been asked to three categories under KSWMP staff such as finance expert, SWM Engineer and PIU Engineer. A discussion has also been conducted with the SPMU Team at the KSWMP team and majority of them raised the need of training on procurement.

6.1.7. FINDINGS FROM STATE LEVEL CONSULTATIONS

We have conducted FGDs of 8 stakeholders groups to identify the issues in waste management sectors to extract the training requirements of different agencies and institutions. Total189196 has participated in this process.

Various stakeholders flagged the following issues as hurdles in the sector of SWM.

Table 6.1: Issues flagged as hurdles in the sector of WM

Lack of proper operation and maintenance of SWM projects	**Absence of scientific segregation of waste**
Lack of support from ER, Lack of professionalism in managing MCFs	**Absence of systems for sanitary waste management**
Issues in proper collection of user fees	**Systems for insurance protection to Haritha karma sena members, Safety issues of HKS**
Lack of systems for scientific gap assessment	**Dearth of engineers in ULBs**
Limited capacity of MCFs	**Need of improved technologies**
Professionalisation of HKS	**Controlling of unlicensed waste collectors**

Improper implementation of green protocols	**Disaster management training to sanitation workers**
Clarity in the role of Haritha Sahaya Sthapanam	**Lack of effective monitoring mechanisms**
Poor knowledge in e-waste management	**Application of innovative systems of information technology**

The training preferences of state level stakeholders are given below;

Suchitwa Mission

- Suchitwa Mission officials preferred the training duration of 3 days, with mode of training being either offline or hybrid modes. They show a preference for training locations within their respective districts or at the state or national level.
- The discussion indicates that training preference has been given in the thematic areas of new technologies in waste management, legal provisions, the protocols of legal proceedings, social and environmental safeguards, and protocols for procurement, while providing training to the Suchitwa mission officials.

Joint Directors LSGD, Urban Directorate, District Planning Officers

- Majority of the respondents prefer one day training in different stretches. They prefer either offline or hybrid mode of training within their respective districts or state or national level.
- Discussion indicated that Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Procurement, Monitoring and Evaluation Framework and Finance Management as preferential training areas.

Clean Kerala Company Limited

- Most of the CKCL officials preferred 2-day training. The majority of them wish to have training within the state. Though most of them prefer offline training, the share of those who prefer online training is also not small.
- Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Entrepreneurship, and waste reduction strategies are the preferential areas of training for environmental engineers.

Hazard analyst under KSDMA and Disaster Management District Coordinator

- Majority of them opted for offline and hybrid mode of training spanning over two days. Most of their location preferences for training were centred in the state.
- The discussion feedback indicates that Project and Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Monitoring and Evaluation Framework are the core areas for training.

Haritha Sahaya Sthapanam

- Most of them preferred training in two to three days and preferred in offline and hybrid mode. The majority opted for the state and national level as locations for training.
- Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Procurement, Monitoring and Evaluation Framework,

Finance Management, Entrepreneurship and waste reduction strategies, and Social Behavioral Change Communication are the preferred training areas of HSS representatives.

Tourism Department

- Most of the respondents from the tourism department preferred one day training in different stretches. Majority of them wish to have training within the state. Most of them prefer offline training and hybrid mode of training.
- The discussion indicates that their preferential areas of training are Project Management, Technical Framework, Legal Framework, Social and Environmental safeguards, Entrepreneurship and waste reduction strategies, and Handling and transfer of waste.

ULB Secretaries

- ULB Secretaries are preferred short-term training in different stretches. They preferred a mix of offline and hybrid mode of training and also preferred the training within the district. They also highlighted the need of visiting model project at national level
- The survey indicates that their preferential areas of training are Project Management, Innovative technologies, Technical Framework, Legal Framework, provisions for enforcement, Social and Environmental safeguard, Entrepreneurship and waste reduction strategies

Scrap Dealers Association

- Most of them preferred one day training in different stretches, and offline mode training. And the respondents opted for the location for training within the district and within the state.
- Protocols for handling various kinds of waste, handling hazardous waste, Processing systems for inert wastes, and legal provisions regarding waste management are the preferential areas for training.

Procurement Experts

- All preferred offline mode of training. And the respondents opted for the location for training within the district and within the state.
- The preferential areas for training include:Overview: Procurement and Process, World Bank Framework vs. State Framework, STEP, PRICE, Tender Portals, E-tender, Bid Document Preparation and Evaluation.
- The same training content is suggested by the expert team for Suchitwa Mission officials, LSGD Urban Directorate officials, ULB Secretaries, HSS Representatives, SPMU Staff, DPMU Staff, PIU Staff, and Implementing Officers.

6.2. SUMMARY AND RECOMMENDATIONS

Training Need Assessment throws light into the various dimensions of capacity building required to different stakeholders associated with waste management initiatives of ULBs. Following are the major recommendations proposed out of the findings of TNA.

Need of differential training strategies to different stakeholder groups

TNA indicates that the education levels and experiences of different stakeholders are

significantly different. This is highly reflected in the case of elected representatives and sanitation workers when comparing with officials of ULBs and other state level officials. The qualifications of KSWMP staff are fixed in accordance with their job roles. Hence training strategies to these groups can also be different from other officials who carries general education qualifications irrespective of their job roles. This underscores the need of simplified training strategies to the categories such as elected representatives, sanitation workers, HKS members, and community-based organisations. However, a mix of simple and professional training strategies and methods can be applied to ULB and state level officials, whereas high end professional strategies can be applied to the KSWMP team.

It is also noted that a mix of classroom lecture sessions, and group activities along with field visits would be advisable to elected representatives and community-based organisations, while more practical oriented sessions would be advisable to HKS, sanitation workers and other workers engaged in waste management. Video content that reflects the situations from the field along with videos of best practices is also advisable for these groups. Sessions with data analysis from the field, group discussions to reflect on the situations and to explore the pathways to overcome the existing challenges along with live or video sessions on best practices can be followed in the case of ULB and state officials. Exposure visits to the best national model sites would be better to include in the training programs for ULB heads, secretaries, and state officials.

TRAINING CONTENT

Training targeted to state level agencies and institutions can be focused on their areas of interventions on SWM, rather than delivering the general contents. For instance, waste collection, processing, transportation, business potentials, and legal frameworks can be the focus of training for CKCL. Likewise innovative technologies can be the major focus of the Suchitwa mission team. Managerial efficiency and leadership can be the major component training for ULB of secretaries. As discussed in the case of training strategies, training content can also be restricted by considering their preferential areas of training mentioned in TNA, and also by considering their job roles. Medium of training is also important in the case of elected representatives, sanitation workers, Community-based organisations, HKS members and general ULB officials. Considering their educational qualification, the training delivery can be through the medium of Malayalam, while a mix of English and Malayalam can be used in the case of state level officials.

TRAINING DURATION

TNA findings underscore the fact that most of the stakeholders prefer one to three days of training, whereas most of them avoided the preference of long-term training. This has a higher implication in fixing training duration. If continuous training is required for any category of stakeholder the training can be planned in different stretches by dividing the whole curriculum into multiple sessions by limiting the single session days from one to three.

TRAINING MODE

The TNA findings emphasise that most of the stakeholders preferred either offline or hybrid mode of training. However, an online strategy would be advisable for short sessions

or continuous courses. E-course strategies can be developed to address these contexts. E-learning platforms are preferable to deliver such training. The generation of videos and visual content are the best strategy for delivering online training. Since waste management is an area that requires a larger change in the behavioural pattern of different stakeholders, affiliated continuous orientation through cartoons, animations and short videos are more relevant than formal training modes.

TRAINING LOCATION

Training location is an important factor in the effective delivery of training. Since 93 ULBs are located in 14 districts, the convenience of stakeholders has to be considered while organising training. As per the feedback in TNA, training of the elected representatives, sanitation workers, HKS members, and community-based organisations can be conducted at district level itself. This can be organised at the subdistrict level by clustering ULBs. ULB officials training can be organised at district level while training of state level officials, and KSWMP officials can be organised either at the regional or state level.

THEMATIC VS STAKEHOLDER APPROACH IN TRAININGS

The knowledge level assessment of different stakeholders indicates that many of the stakeholder groups training are lying in different themes. There are some groups of stakeholders who require a mix of themes in general training such as elected representatives, and community-based organisations.

However, there are many stakeholder categories that require detailed training in different themes. ULB secretaries, DyDCs, PIU engineers, LSGD urban team, Joint directors of LSGD and Suchitwa mission officials are included in these categories. Hence, thematic based short trainings can be organised to them in different time frames. There are some other groups who require training in specified thematic areas in accordance with their job role. Different thematic experts of KSWMP, health officials and engineers of ULBs are included in these categories. Thematic training can be organised to them in two or three stretches in different time frames. Courses in the online platform can be provided to the groups who require continuous training in special and different themes.

6.3. SUMMARY OF TRAINING PREFERENCES

The following tables summarise the training preferences of various stakeholders, which were determined through questionnaire surveys. A 10-point Likert scale was utilised for Elected Representatives, ULB Officials, CBOs, Sanitation Workers, and State Officials. Scores falling at 5 or below are categorised as high-priority training themes, those between 5 and 8 denote medium importance, while scores above 8 indicate low preference. For KSWMP staff, a 5-point Likert scale is used. Scores of 3 or below indicate high preference, scores from 3 to 4 signify medium preference, and scores above 4 denote low preference. Additionally, the table summarises the training preferences identified by analysing the stakeholders' job roles. This analysis employs a categorization into direct and indirect roles, distinguishing roles that have a more immediate impact on a task (direct roles) from those with a supportive function (indirect roles). The roles and responsibilities of each stakeholder category have been detailed in the introduction chapter.

6.3.1. TRAINING THEME PREFERENCES

Table 6.2: Training priority based on scores and job role of Elected Representatives

Sl no.	Thematic area	Sub theme	Training preference	
			Score	Job role
1	Ability to solve issues related to waste and WM	Ability to solve issues related to waste and WM Total	Medium	
2	Ability to ensure active participation and partnership of general public in WM	Importance of Meaningful Participation of Community Members in Waste Management Programs		Direct
3	Effectiveness of existing system of waste management	Effectiveness of existing system of waste management	Medium	
4	Entrepreneurship and Private sector participation	E-waste	Medium	
		Glass	Medium	
		Importance of inclusion of private players in waste management	Medium	
		Metal	Medium	
		Others	Medium	
		Plastic	Medium	
		Waste management based ventures, Creating livelihood opportunities	Medium	
5	Environmental and social safeguards	Adverse effects of plastic burning	Medium	
		Importance of waste segregation	Medium	
		Protocols in waste transportation	Medium	
		Environmental and social effect of waste and its mitigation	Medium	
		Understanding about safety precautions for waste management staff	Medium	
		Waste transportation vehicles	Medium	
		Ensure environmental safety		Direct
		Environmental safety ensure health security and safety of waste collection staff		Direct
		Gender rights of SWM staff		Direct
6	Participatory Approaches and Social management Principles	Ability to ensure active participation and partnership of general public in WM	Medium	Direct
		Social Behavioural change communication for better SWM		Direct

7	Penalties and Penal proceedings Under Waste Management Laws and Regulations	Dumping in water bodies	Medium	
		Plastic Burning	Medium	
		Public Dumping	Medium	
		Selling banned plastic items	Medium	
		Solid waste management laws	Medium	
		Enforcing waste management regulations and ensuring its compliance		Indirect
8	Project planning, design and management	Bailing units	High	
		Biodegradable waste treatment plant	Medium	Indirect
		Household/LSG level BD waste disposal practices	Medium	Indirect
		Material Collection Facility	Medium	Indirect
		Material Recovery Facility	Medium	Indirect
		Non-biodegradable waste collection centre	Medium	
		Plastic Shredding Unit	Medium	
		Prioritising SWM projects		Direct
9	Sustainable waste management practices	Alternatives of single-use plastics	Medium	
		Green protocol methods to followed at Household level	Medium	
		Green protocol methods to followed at Institutions	Medium	
		Green protocol methods to followed at Public events/ programmes	Medium	
10	ULB responsibilities and activities on WM	Ability to prepare MSWM programme	Medium	
		Preparation of programme for MSWM	Medium	
		State level programmes	Medium	
		Building collaborations for SWM initiatives		Direct
		Developing and implementing contingency plans in emergencies		Indirect
11	Cost accounting, Financial Management and Procurement	Allocating funds for waste management projects		Direct
12	Knowledge of waste management practices and capacity to make projects, plans, and bylaws	Developing and enforcing ULB level SWM by-laws		Direct
13	Monitoring and Evaluation	Monitoring and Evaluation of SWM programs		Direct

Table 6.3 : Training priority based on scores and job role of ULB officials

Sl no.	Thematic area	Sub theme	Stakeholder category							
			Accounts staff		Engineering staff		Health dept Staff		Secretary	
			Score	Job role	Score	Job role	Score	Job role	Score	Job role
1	Ability to ensure active participation and partnership of general public in WM	Importance of Meaningful Participation of Community Members in Waste Management Programs	High		High		Medium		Low	
2	Effectiveness of existing system of waste management	Effectiveness of existing system of waste management	Medium		High		Medium		Low	
3	Entrepreneurship and Private sector participation	E-waste	High		High		Medium		Low	
		Glass	High		High		Medium		Low	
		Metal	High		High		Medium		Low	
		Others	High		High		Medium		Low	
		Plastic	Medium		High		Medium		Low	
		Waste management based ventures, Creating livelihood opportunities	Medium		High		Medium		Low	
		Bailing unit			High		Medium		Low	
		MCF			High		Medium		Low	
		MRF			High		Medium		Low	
		Plastic Shredding Unit			High		Medium		Low	
4	Environmental and social safeguards	Adverse effects of plastic burning	Medium		Medium		Medium		Low	

		Importance of waste segregation	Medium		Medium		Medium		Low	
		Protocols in waste transportation	Medium		High		Medium		Low	
		Socio-environmental effect of waste and its mitigation	Medium		High		Medium		Low	
		Understanding about safety precautions for waste management staff	Medium		High		Medium		Low	
		Waste transportation vehicles	Medium							
		Need for proper Waste transportation vehicles			Medium		Medium		Low	
		Alternatives of single-use plastics			High		Medium		Low	
		Health Issues and Precautions in Handling Waste						Direct		
		Health Issues of Unscientific Waste Disposal						Direct		
		Ensure environmental safety						Direct		
		Conducting environmental impact assessments				Direct				Direct
		Ensuring measures for environmental security in SWM project sites				Direct				
		Environmental safety ensure health security and safety of waste collection staff						Direct		
		Gender rights of SWM staff						Direct		Indirect

		Assessing and addressing the potential health impacts of SWM projects						Direct		
5	Participatory Approaches and Social management Principles	Ability to ensure active participation and partnership of general public in WM								Indirect
		Conducting public awareness campaigns, Community Education on SWM practices						Direct		Indirect
6	Penalties and Penal proceedings Under Waste Management Laws and Regulations	Dumping in water bodies	Medium		High		Medium		Low	
		Plastic Burning	High		High		Medium		Low	
		Public Dumping	Medium		High		Medium		Low	
		Selling banned plastic items	Medium		High		Medium		Low	
		Enforcing waste management regulations and ensuring its compliance						Direct		
7	Project planning, design and management	Bailing units				Direct				
		Biodegradable waste treatment plant	Medium		High	Direct	Medium		Low	
		Household/LSG level BD waste disposal practices	Medium		High		Medium		Low	
		Material Collection Facility				Direct				
		Material Recovery Facility				Direct				
		Non-biodegradable waste collection centre	High		High	Direct	Medium		Low	
		Plastic Shredding Unit				Direct				

		Comprehensive waste management plans at municipality level			High		Medium			
		Ability of municipality to make a solid waste management project			High		Medium			
		Possibility to have waste management programmes linked to Amrit-2.SBM-2			High		Medium			
		Collection and management of hazardous and sanitary waste(like disposal of waste which may spread diseases like COVID)			High		Medium			
		Managing and maintaining waste management facilities				Direct				
8	Sustainable waste management practices	Alternatives of single-use plastics								
		Green protocol methods to followed at Household level	Medium		High		Medium		Low	
		Green protocol methods to followed at Institutions	High		High		Medium		Low	
		Green protocol methods to followed at Public events/ programmes	Medium		High		Medium		Low	
		Recent innovations in the field of non biodegradable waste management			High	Direct	Medium		Low	

9	ULB responsibilities and activities on WM	Solid waste management rules	High		High		Medium		Low	
		Plastic waste management	Medium		High		Medium		Low	
		Construction waste management	High		High		Medium		Low	
		Bio-medical waste management	Medium		High		Medium		Low	
		E-waste management	High		High		Medium		Low	
		Ability to make waste disposal by law			High					
		Building collaborations for SWM initiatives								Direct
		Developing and implementing contingency plans in emergencies						Direct		Direct
		Collecting and maintaining data on waste management						Indirect		Direct
		Developing social inclusive plan for SWM projects								Direct
		Implementing labour welfare programme for WM workers								Indirect
10	Finance management-Cost accounting, Financial Management and Procurement	Funds available for waste management and their conditions for use	Medium							
		Accounting and reporting of various funds for waste management	Medium							
		Ability to check the accounts for waste management initiative	Medium							

		Ability to answer enquiries on Auditing of waste management programmes	Medium							
		Ability to prepare budgets for waste management programmes	High	Direct						
		Allocating funds for waste management projects		Direct						Direct
		Processing invoices of service providers and vendors		Direct						
		Preparing financial statements and reports		Direct						
		Managing grants and other financial resources		Direct						
		Ensuring contracts complaints		Direct						
		Creating and maintaining assets records		Direct						
		Cost-benefit analyses of projects and programs		Direct						
		Maintaining financial data and records		Direct						
		Facilitating financial and performance audits		Direct						
		Evolving strategies for financial sustainability of SWM projects		Indirect						Direct

11	Knowledge of waste management practices and capacity to make projects, plans, and bylaws	Ability to make comprehensive waste management plan at municipality level	Medium						Low	Direct
		Ability of municipality to make a solid waste management project	Medium						Low	Direct
		Ability to make waste disposal by law	Medium						Low	Direct
		Possibility to have waste management programmes linked to Amrit-2.SBM-2	High						Low	
		Collection and management of hazardous and sanitary waste(like disposal of waste which may spread diseases like COVID)	High						Low	
		Developing and enforcing ULB level SWM by-laws								Direct
12	Technical, legal, and scientific knowledge about waste management	Framing provisions for biodegradable waste non-biodegradable waste Construction and Demolition (C&D) waste, and Bio-Medical Waste (BMW)			High					

		Scientific and technical conditions to be followed in constructing waste treatment centres			High						
		Scientific and technical system of preventing environmental pollution from waste treatment centres			High						
		Preparing detailed project report of waste management programmes			High						
		Designing, operating and maintaining material collection facility			High						
		Designing, operating and maintaining resource recovery facility			High						
		Designing operating and maintaining shredding units			High						
		Designing operating and maintaining bailing units			High						
13	Environmental and health issues related to various types of waste	Biodegradable waste					Medium				
		Plastic waste					Medium				
		Bio-medical waste					Medium				
		C&D					Medium				
		E-Waste					Medium				
		Hazardous waste					Medium				

14	Health department staff in the effective management of waste	Steps to implement green protocol					Medium			
		Health precautions when operating a landfill					Medium			
		Health precautions to be followed at waste disposal or treatment centres - Biodegradable waste					Medium			
		Health precautions to be followed at waste disposal or treatment centres - Non-Biodegradable waste					Medium			
		Actions to be taken against selling of banned plastic items					Medium			
		National level service benchmark for waste management					Medium			
		Capacity-building trainings for health and SWM workers						Indirect		
15	Administration of waste management in the ULB	Ability to prepare waste management plans							Medium	
		Ability to prepare by law for waste management							Medium	
		Ability to prepare detailed project report							Medium	
		Funds related to waste management and the conditions for its usage							Medium	

		National level service benchmark for waste management(s16)							Medium	
		Methods for monitoring waste management program							Medium	
16	Monitoring and Evaluation	Monitoring and Evaluation of SWM programs		Direct						Direct
		Monitoring and regulating the spending on SWM projects		Direct						
		Monitoring and regulating the disposal of waste						Direct		
		Regular inspections of waste management facilities						Direct		
		Entering and monitoring contractual SWM projects								Direct
		Financial monitoring of SWM projects								Indirect

Table 6.4: Training priority based on scores and job role of Community Based Organisations

Sl no.	Thematic area	Sub theme	Stakeholder Category									
			Bulk waste generators		Kudumbashree		Merchants organisation		Residence Association		Voluntary organisation	
			Score	Job role	Score	Job role	Score	Job role	Score	Job role	Score	Job role
1	Ability to ensure active participation and partnership of general public in WM	Importance of Meaningful Participation of Community Members in Waste Management Programs	Medium		Medium		High		Medium		Medium	
2	Entrepreneurship and Private sector participation	Waste management based ventures, Creating livelihood opportunities				Indirect						
3	Environmental and social safeguards	Adverse effects of plastic burning	Medium		Medium		Medium		Medium		Medium	
		Health Issues and Precautions in Handling Waste	Medium		Medium		High		Medium		Medium	
		Importance of Grievance Redressal Mechanisms in Waste Management	High		Medium		Medium		Medium		Medium	
		Methods of Collecting biomedical, hazardous, and sanitary waste	High						Medium			

		Rights of HKS members and Others Involved in Cleaning	High		Medium		High		Medium		High	
		Waste Segregation Methods and their Importance	Medium		Medium		High		Medium		Medium	
		Ensure environmental safety		Indirect								
		Gender rights of SWM staff				Direct						
4	Participatory Approaches and Social management Principles	Ability to ensure active participation and partnership of general public in WM				Indirect						
		Social Behavioural change communication for better SWM				Indirect						Direct
		Conducting public awareness campaigns, Community Education on SWM practices				Direct		Direct		Direct		Direct
		Participating or initiating recycling programs		Direct		Direct						
		Encouraging community composting				Direct				Direct		
		Organising periodic clean-up drives				Indirect						Direct
		Social audits of SWM programs and projects				Indirect						

5	Penalties and Penal proceedings Under Waste Management Laws and Regulations	Punishments and Penalties under Waste Management Rules	High		High		High		Medium		High	
		Reporting legal violations on SWM				Indirect				Direct		
6	Sustainable waste management practices	Alternatives of single-use plastics	Medium		Medium		High		Medium		Medium	
		Recent innovations in the field of non biodegradable waste management						Indirect				
		Green Protocol Practices	Medium		Medium		High		Medium		Medium	
		Importance of Waste Reduction	Medium	Direct	Medium		High		Medium	Direct	Medium	Direct
		Knowledge of Reusable NBDW like Plastic	High	Direct	Medium		High		Medium		Medium	
		Methods to Treat Waste at Source	High		Medium		High	Direct	Medium	Direct	High	Direct
		Methods of Collecting biomedical, hazardous, and sanitary waste			High		High	Indirect	Medium		High	
		Implementing environmentally responsible waste management practices		Direct								

		Handing over non bio waste to the approved agencies or systems		Direct				Direct				
		Follow waste reduction strategies		Direct		Direct		Direct		Direct		Direct
7	ULB responsibilities and activities on WM	Common Facilities of Waste Management to be Provided by the ULB	High		Medium		High		Medium		Medium	
		Mechanisms of Waste Treatment at ULB level	High		Medium		High		Medium		Medium	
8	Cost accounting, Financial Management and Procurement	Conducting waste audits		Direct								
9	Knowledge of waste management practices and capacity to make projects, plans, and bylaws	Collection and management of hazardous and sanitary waste (like disposal of waste which may spread diseases like COVID)						Direct				
10	Rules and regulations of solid waste management	Biomedical Waste Management Rules	High		High		High		High		High	

		Demolition Waste Management Rules	High		High		High		High		High	
		E-waste Management Rules	High		High		High		High		High	
		Plastic Waste Management Rules	Medium		Medium		High		Medium		High	
		Solid Waste Management Rules	High		High		High		High		High	
11	Monitoring and Evaluation	Providing proper data to ULB		Direct				Direct				

Table 6.4: Training priority based on scores and job role of Sanitation workers

Sl no.	Thematic area	Sub theme	Stakeholder Category									
			HKS		Rag-pickers, Recycling workers		Sanitation workers		Waste collecting agencies		Waste Collection, Management, Transportation Workers	
			Score	Job role	Score	Job role	Score	Job role	Score	Job role	Score	Job role
1	Ability to ensure active participation and partnership of general public in WM	Importance of Meaningful Participation of Community Members in Waste Management Programs	Medium		Medium		Medium		Medium		Medium	

2	Environmental and social safeguards	Importance of waste segregation		Direct								
		Understanding about safety precautions for waste management staff		Direct								
		Waste transportation vehicles						Direct		Direct		Direct
		Need for proper Waste transportation vehicles						Direct		Direct		Direct
		Alternatives of single-use plastics		Direct								
		Health Issues and Precautions in Handling Waste	Medium		Medium		Medium		Medium		Medium	
		Importance of Grievance Redressal Mechanisms in Waste Management	Medium		Medium		Medium		Medium		Medium	
		Methods of Collecting biomedical, hazardous, and sanitary waste	Medium	Direct	Medium		Medium		Medium		Medium	
		Rights of HKS members and Others Involved in Cleaning		Direct								

		Waste Segregation Methods and their Importance	Medium	Direct	Medium		Medium	Direct	Medium	Direct	Low	Direct
		Awareness about sanitary and special WM	Medium		Medium		Medium		Medium		Medium	
		SWM Protocol	Medium		Medium		Medium		Medium		Medium	
		Transportation protocol	Medium	Direct	Medium		Medium	Direct	Medium	Direct	Medium	Direct
		Ensure environmental safety		Direct				Direct		Direct		Direct
		Environmental safety ensure health security and safety of waste collection staff		Direct				Direct		Direct		Direct
		Gender rights of SWM staff						Direct				
3	Participatory Approaches and Social management Principles	Conducting public awareness campaigns, Community Education on SWM practices		Direct								
4	Penalties and Penal proceedings Under Waste Management Laws and Regulations	Punishments and Penalties under Waste Management Rules	Medium		Medium		Medium		Medium		Medium	

		Reporting legal violations on SWM		Indirect								
5	Sustainable waste management practices	Green Protocol Practices	Medium		Medium		Medium		Medium		Medium	
		Importance of Waste Reduction	Medium		Medium		Medium		Medium		Medium	
		Methods to Treat Waste at Source						Direct		Direct		Direct
		Handing over non bio waste to the approved agencies or systems		Direct								
6	ULB responsibilities and activities on WM	Plastic waste management		Direct								
		Mechanisms of Waste Treatment at ULB level	Medium	Direct	Medium		Medium		Medium		Medium	
7	Cost accounting, Financial Management and Procurement	Earning income through the sale of collected recyclable materials		Direct								
8	Knowledge of waste management practices and capacity to make projects, plans, and bylaws	Collection and management of hazardous and sanitary waste(like disposal of waste which may spread diseases like COVID)		Direct								

		Efficiently navigating assigned collection routes		Direct				Direct		Direct		
		Managing landfill sites										Direct
		Using compaction equipment to reduce the volume of waste						Direct				
		Maintaining and servicing collection and disposal equipments						Direct				
9	Rules and regulations of solid waste management	Knowledge about duties	Medium		Medium		Medium		Medium		Medium	
10	Monitoring and Evaluation	Maintaining records on waste movement		Direct		Direct		Direct		Direct		Direct

Table 6.5: Training priority based on scores and job role of KSWMP Staff

Sl no.	Thematic area	Sub theme	Training priority based on scores and job role of KSWMP Staff											
			Environmental Engineers		Finance Expert		M & E expert		S & C expert		DyDC		PIU Engineers	
			Score	Job role	Score	Job role	Score	Job role	Score	Job role	Score	Job role	Score	Job role
1	Data collection and analysis	Capacity to use monitoring systems of the production and management of waste (quantified). Quantification of waste	Medium				Medium	Direct			Medium	Direct	Medium	
		Data Collection Method	Medium						Medium		Medium		Medium	
		Monitoring system of the production and management of waste (quantified). Quantification of waste	Medium						Medium		Medium		Medium	
		Technical knowledge about methods of quantification of waste. Quantification of waste	Medium								Medium		Medium	

		Conducting SWM survey					Medium							
		Data visualisation techniques					Medium							
		Data analysis (tools, technology)					Medium							
		Data Collection Method					Medium							
		Data collection techniques					Medium							
		Monitoring system of the production and management of waste (quantified). Quantification of waste					Medium							
		Prepare reports using data					Medium							
		Preparing questionnaires					Medium							
		Technical knowledge about methods of quantification of waste. Quantification of waste					High							

2	Documentation and Reporting	Database usage: Waste Production and Management	Medium				Medium	Direct	Medium		Medium	Direct	Medium	
		Report writing						Direct				Direct	Medium	
		Prepare quarterly progress reports on ESMF implementation		Direct						Direct				
3	Environmental and social safeguards	EMP preparation	Medium											
		Environmental Pollution in Waste Management and processing Centers	Medium								Medium		Medium	Indirect
		Health measures and preventive methods to be undertaken in waste management / waste processing units : Biodegradable Waste Mgmt Units	Medium						Medium		Medium		Medium	
		Health measures and preventive methods to be undertaken in waste management / waste processing units : Non-Biodegradable Waste Mgmt Units	Medium						Medium		Medium		Medium	

		Health measures to be undertaken while land filling	Medium						High		Medium		High	
		Pollution Control Board regulations	Medium						High		Medium		Medium	
		Safety Measures to be adopted by Waste Management Workers	Low						Medium		Medium		Medium	
		Screening, analysis and categorisation of projects and sub-projects under ESMF.	Low	Direct						Direct				
		Social screening and social management plan including various action plans(Gender, social inclusion, labour) : Preparation and implementation	Medium											

		Undertake a monthly visit to subprojects to ensure compliance with ESMPs, TDP-SMP ,RAP and guide and support PIUs/ TSC/ Support Organization/ Contractors to oversee safeguards management including compliance of labour laws		Direct						Direct				
		Bio-medical waste	Low								Medium		Medium	
		Biodegradable waste	Low								Medium		Low	
		Burning of plastic waste	Low										Low	
		Construction Debris	Medium								Medium		Medium	
		CRZ and buffer zone	Medium											
		E-waste	Medium								Medium		Medium	

		Environmental impact assessment: Air	Medium											
		Environmental impact assessment: Soil	Medium											
		Environmental impact assessment: Water	Medium											
		Indicator development for impact assessment	Medium											
		Plastic Waste	Low								Medium		Low	
		Preparing Environmental assessments Social Impact assessments	Medium	Direct						Direct				
		Sanitary waste	Low								Medium		Medium	
		Water soil and air pollution	Low								Medium		Medium	
4	Latest Technologies in SWM	Bio-mining methods	Medium											
		Latest Technologies in Non-biodegradable WM	Medium								Medium		Medium	
5	Laws and Regulations Associated with Waste Management	Biomedical Waste Management	Medium						High		Medium		High	

		Construction Debris Management	Medium						High		Medium		High	
		E-Waste Management	Medium						High		High		High	
		National level Service Level Benchmarking	High						High		High		High	
		Plastic Waste Management	Low						Medium		Medium		Medium	
		Solid Waste Management Laws	Medium						Medium		High		Medium	
6	Participatory Approaches and Social management Principles	Community mobilisation					High		Low		Medium		Medium	Direct
		Training and awareness programs for municipalities regarding safety measure in waste management	Medium											
		Citizen feedback					Medium							
		Participatory methods and tools					High							
		Expertise in conflict management					High						Medium	
		Skill in communication					High						Medium	
		Stakeholder consultation					High							

		SBCC								Direct				
7	Penalties and Penal proceedings Under Waste Management Laws and Regulations	Plastic burning	Medium						Medium		Medium		Medium	
		Sale of Prohibited Plastic Product	High						Medium		Medium		Medium	
		Waste Disposal in Public Spaces	Medium						Medium		Medium		Medium	
		Waste Disposal in Water Bodies	Medium						Medium		High		Medium	
8	Planning and project design: Biodegradable	Organic waste management in households and institutions at source	Low										Low	
		Organic Waste Management in Local Self-Government Institutions	Low										Low	
		Organic Waste Treatment Plant	Low										Low	
9	Project Monitoring and Evaluation	Ability to respond to the queries based on audit inferences of waste management / waste processing schemes	High		Low									

		Knowledge about internal and external audit?			Low									
		Monitoring methods of WM plans			High		Medium		Medium		Medium		Medium	Indirect
		Attend field visits as part of the monitoring of the subprojects		Direct						Direct				
		Coordinate with ULBs on their external audit compliances to ensure the audits are done in time				Direct								
10	Project planning, design and management	Baling Units	Medium				Medium				Medium	Direct	Low	Indirect
		Design of biodegradable waste processing units	Medium				High				Medium		Medium	
		DPR preparation	Medium				High		High		Medium		Medium	
		MRF (Material Recovery Facility)	Low				Medium		Low		Low		Low	
		Plastic Shredding Units	Medium				Medium		Medium		Medium		Medium	
		Preparation of Waste Management Plans					High		Medium		Medium		Medium	

		Project planning and management	Medium				Medium						Medium	
		RDF (Refuse-Derived Fuel)	Medium				Medium		Low		Low		Low	
		Sustainability of waste management/ processing schemes	Medium				High		Medium		Medium		Medium	
		Technical Specifications to be Maintained in the Construction of Waste Management plants	Medium				High				Medium		Medium	
		Waste flow tracking					High							
11	Public grievances	Experience in grievance redressals regarding waste management	High						High		High		High	
12	Sustainable waste management practices	Green protocol	Medium						Medium		Medium		Medium	
		Management of Hazardous and Sanitary Waste	Medium						High		Medium		Medium	
		Single-Use Plastics and Alternatives	Medium						Medium		Medium		Medium	
		WM at household level	Medium						Low		Medium		Medium	

		WM in Public Events	Medium						Low		Medium		Medium	
		WM in Public institutions	Medium						Low		Medium		Medium	
13	Transportation of Waste	Procedures and Measures Regarding the Collection and Transportation of Waste	Medium								Medium		Medium	
		Vehicles for the Collection and Transfer of Waste	Medium								Medium		Medium	
14	ULB responsibilities and activities for implementing legal provisions on WM	Comprehensive Plan for Municipal Waste Management	Medium		Medium		High				Medium		Medium	
		Knowledge about Opportunities Related to Waste Management in Amrit-2, SBM-2	High		High		High				Medium		Medium	
		Municipal Corporation Solid Waste Management Projects	Medium		Low		Medium				Medium		Low	
		Municipal Waste Recycling Bye-law	High		High		High				Medium		Medium	
		Role of ULB in WM	High		Medium		High				Medium		Medium	

		Waste management bylaws	High		High		High				High		High	
15	Waste collection and waste segregation	HKS	Medium				Medium		High		Medium		Low	
		Waste segregation	Low				Medium		High		Low		Low	
16	Cost accounting, Financial Management and Procurement	Accumulation and regulation of funds for waste management			Medium									
		Auditing of waste management enterprises			Low									
		Bank's prior and post reviews			Low									
		Methods of accounting and reporting of Funds			Low									
		Preparation of budgets of WM schemes			Low									
		Preparation of Utilisation certificates			Low									
		Preparation of Works Requirements, BoQs, review of bid document			Low									

		Terms and Conditions in utilisation of funds			Medium						Medium		Medium	
		Grant utilisation report				Direct								
17	Entrepreneur-ship and Private sector participation	Collaboration with Private Sector			Medium				Medium		High		Medium	
		Sale of Non-Biodegradable Waste: E-Waste			High				Medium		High		High	
		Sale of Non-Biodegradable Waste: Glass			Medium				High		High		High	
		Sale of Non-Biodegradable Waste: Metal			High				High		High		High	
		Sale of Non-Biodegradable Waste: Others			High				High		High		High	
		Sale of Non-Biodegradable Waste: Plastic			Medium				Medium		Medium		Medium	
		WM public enterprises			Medium				Medium		High		Medium	

18	Database and MIS management	Data Management					Medium							
		Management Information System					Medium							
19	Planning & project design: Non biodegradable	Bailing Unit									Medium			
		MCF									Medium			
		MRF (Material Recovery Facility)									Medium			
		Shredding Unit									Medium			

Table 6.6: Training priority based on scores and job role of state level Stakeholders

Sl no.	Thematic area	Sub theme	Training priority based on scores and job role of state level Stakeholders							
			HKM		SM		KSPCB		Health dept officials	
			Score	Job role	Score	Job role	Score	Job role	Score	Job role
1	Entrepreneurship and Private sector participation	Waste management based ventures	Medium		Medium		Medium		High	
		Importance of engaging private sector into WM	Medium		Medium		Medium		High	
		Knowledge of operation and management for SWM	Medium		Medium		Medium		High	
		Knowledge of waste-based ventures	Medium		Medium		Medium		High	
2	Environmental and social safeguards	Knowledge of safety measures for collecting waste	Medium		Medium		Low		Medium	

		Knowledge of safety measures for transferring bio waste	Medium		Medium		Low		Medium	
		Knowledge of safety measures for transferring NBDW	Medium		Medium		Low		Medium	
		Knowledge of Vehicles required to transport waste	Medium		Medium		Low		Medium	
		Socio-environmental impact of pollution	Medium		Medium		Low		Medium	
		Collecting and analysing health data								Direct
		Collaborating with local health departments								Direct
		Providing training and guidance to healthcare facilities								Direct
		Ensure waste management practices are public health protection								Direct
		Conducting health impact assessments								Direct
3	Importance of meaningful community participation	Importance of meaningful community participation	Medium		Low		Low		Medium	

		Organising IEC campaigns and Capacity Building activities in Sanitation and Waste Management				Direct				Direct
		Assist in achieving total sanitation coverage by LSGIs				Direct				
4	Knowledge of waste management systems and agencies at various levels	Actions taken by agencies and mission	Low		Medium		Medium		High	
		Actions taken by government machineries	Medium		Medium		Medium		High	
		Action taken by LSGs	Low		Low		Medium		Medium	
		Coordination possibilities of different agencies involved in WM	Medium	Direct	Medium		Medium		High	
		Agencies within and outside the state	Medium		Medium		Medium		High	
		Collection and management of hazardous waste	Medium		Medium		Low		Medium	
		Financial resources relevant schemes and procedures	Medium		Low		High		High	
		Institution level bio waste management practices	Medium		Low		Low		Medium	
		Guidance to prepare SWM plan and related projects	Medium		Medium		Medium		High	

		Overview of local level WM in the state	Medium		Medium		Medium		Medium	
		Pollution measures of KSPCB	High		Medium		Low		High	
		State and district level systems of WM	Medium		Medium		Medium		High	
		Evaluate the SWM activities based on reports received from the districts		Direct						
		Assisting ULBs in finding suitable locations for setting up RRFs in association with CKCL		Direct						
		Empanelment of agencies for waste management and organic vegetable farming		Direct						
		Assist ULBs in concluding contracts with Clean Kerala Company Limited (CKCL) for taking over the non-biodegradable waste from MCFs run by ULBs		Direct						
		Providing policy, strategy, planning, implementation and monitoring support Waste Management				Direct				

		Technical support group for LSGIs in the waste management				Direct				
		Give directions to local bodies on safe handling and disposal of domestic hazardous waste						Direct		
		Collaborating with local health departments								Direct
5	Penalties and Penal proceedings Under Waste Management Laws and Regulations	Selling banned plastics	Medium		Medium		Low		Medium	
		Waste disposal in public places	Medium		Medium		Medium		Medium	
		Waste disposal in water bodies	Medium		Medium		Low		Medium	
6	Rules and regulations of solid waste management	Biomedical Waste Management Rules	High		Medium		Low		High	
		Demolition Waste Management Rules	High		Medium		Low		High	
		E-waste Management Rules	Medium		Medium		Low		High	
		Plastic Waste Management Rules	Medium		Medium		Low		Medium	
		SWM Policy 2018	Medium		Medium		Medium		High	
		Solid Waste Management Rules	Medium		Medium		Low		High	
		Enforcement of rules in the State through local bodies						Direct		Direct

7	Sustainable waste management practices	Awareness regarding the importance of waste mitigation	Low		Low		Low		Medium	
		GP methods for household level	Low		Low	Direct	Low		Medium	
		GP methods for public functions	Low		Low	Direct	Low		Medium	
		GP methods for public institutions	Low		Low	Direct	Low		Medium	
		Waste management methods at the source	Low		Low		Low		Medium	
		Nature Based Alternatives to Plastic	Medium		Medium		Low		Medium	
		Recent initiates and technologies for biowaste management	Medium		Medium		Medium		High	
		Recent initiates and technologies for sanitary and hazardous waste	Medium		Medium		Low		High	
		Recent initiates and technologies for recycling and reuse of NBD waste	Medium		Medium		Medium		High	
		Recent initiates and technologies for recycling and reuse of plastic waste	Medium		Medium		Medium		High	
		Recent initiates and technologies for the management e waste	High		Medium		Medium		High	

		Selection and deployment of HSS		Direct						
8	Monitor & Evaluation	Monitor environmental standards and adherence to conditions specified in the rules						Direct		
		Monitor the compliance of standards prescribed for treatment technology						Direct		
		Review implementation at least twice a year in coordination with DUA/ LSGD						Direct		

6.3.2. Training preferences

Table 6.7: Training preferences of different stakeholders involved in waste management

Sl no.	Stakeholder category	Preferred training duration	Preferred mode of training	Preferred training location
1	Elected Representatives	1 to 3 days	Within the district	Offline
2	ULB Officials	1 to 3 days	Within the district	Offline, Hybrid
3	Community Based Organisations	1 to 3 days	Within the district	Offline, Hybrid
4	Sanitation workers	1 day	Within the district	Offline
5	State officials	3 to 5 days	Within the district, National and International	Offline, Hybrid
6	Environmental Engineers	3 days	Within district,Within state	Offline
7	Finance Expert	1 to 3 days	Within district,Within state	Offline

8	Monitoring & Evaluation Expert	1 day	Within district,Within state	Offline
9	PIU Engineer	3 days	Within the district	Offline
10	Social & Communication Expert	3 days	Within district,Within state	Offline
11	SWM Engineer/DyDC	3 to 5 days	Within the district	Offline, Hybrid
12	Suchitwa Mission	3 days	Within the state, National	Offline, Hybrid
13	LSGD, Urban directorate, District Planning Office	1 day trainings in different stretches	Within the state, National	Offline, Hybrid
14	CKCL	2 days	Within the state	Offline, Hybrid
15	KSDMA-KILA	2 day	Within the state	Offline, Hybrid
16	Haritha Sahaya Sthapanam (HSS)	2 to 3 days	Within the state, National	Offline, Hybrid
17	Tourism	1 day trainings in different stretches	Within the state	Offline, Hybrid
18	Scrap Dealers Association	1 day trainings in different stretches	Within the district and state	Offline

6.3.3. Training preferences of state level consultations

Table 6.8: Training preferences of state level consultations

Sl no.	Thematic Area	Contents to be covered	Target Group
1	Project Management	Running /management of bio and Non - Bio waste systems Waste Management related problem solving Household/Institutional/Local Self Government level system for processing Bio waste/ Non bio waste Preparation of Detailed project report, Waste Management Plans, and Bylaws Management Protocol and practices of MCF, RRF Streamlining the management of MSW Revenue generating activities for HKS	Suchitwa Mission officials LSGD Urban directorate officials ULB Secretaries CKCL Officials KSDMA Officials HSS Representatives Tourism Officials
2	Technical Framework	Collection, Segregation & Transportation Updated technologies for bio -waste management Updated technologies for processing & recycling of non- bio waste Sanitary waste & sanitary landfill Technologies and processing of C&D Waste, E-Waste, Bio medical waste Management mechanism for storage systems for non biowaste Modern system to handling inert materials Management mechanism for Storage systems fo non bio waste (MCF, RRF) Marketing potentials, Channels different kinds of non bio waste Processing methods:(Plastic, glass, E waste, Cloths, Rubber, Metals, Tyre, Hair, CNG) Facilities to ensure MCF, RRF Innovative designs of MCF, RRF Modern system to handle inert materials Procedures and Protocols for transporting materials from RRF to Processing centres and selling points Recycling park Management of MSW (hazardous & medical waste) during Disaster Management of Bulk waste generators	Suchitwa Mission officials LSGD Urban directorate officials ULB Secretaries CKCL Officials KSDMA Officials HSS Representatives Tourism Officials Scrap dealers association

3	Legal Framework	SWM rules 2016 Provisions in Kerala Municipal act regarding WM NGT orders and Legal bindings Legal measures to implement Green Protocol Penal proceedings & penalties under WM rules Rights of Harita karma Sena Members and & Sanitation workers DM Act in the context of WM related disasters Protocols of handling and transporting of hazardous waste Grievance redressal mechanism in waste management Projects Grievance redressal mechanism in waste management Services Extended Producer Responsibility Act (EPR) Unification of Enforcement Use of DM Act in in the context of waste management related disasters Welfare schemes and social security measures for HKS members Legal bindings of bulk generators Protocol for disposal of rejected waste Dismantle and segregate scrap items according to value	Suchitwa Mission officials LSGD Urban directorate officials ULB Secretaries CKCL Officials KSDMA Officials HSS Representatives Tourism Officials Scrap dealers association
4	Social and Environmental safeguards	Health & safety precautions for at WM/ treatment facilities: Organic WM Centres Health & safety precautions for WM/ treatment facilities: Inorganic WM Centres Health risks associated with inadequate management of MSW during emergencies. Disaster mitigation related to waste management Insurance for waste collecting unit members (HKS) Availability of safety equipments during disaster Safety precautions in MCFs Impacts on Water, Soil, Sound and Air Environmental impact of various kinds of wastes Impact assessment methods of various WM Projects Precautions for the waste collectors during collection, segregation, & transportation Precautions while performing landfill Technical systems to avoid environmental pollution in waste treatment facilities Environmental impact of various kinds of wastes (Plastic, glass, Methodology for environmental and epidemical document reparation E waste, Cloths, Rubber, Metals, Tyre, Hair, CNG) Measures to be adopted to prevent environmental depletion during disasters Impact assessment methodology Segregation of waste from source places Socio health study of project implementation place	Suchitwa Mission officials LSGD Urban directorate officials ULB Secretaries CKCL Officials KSDMA Officials HSS Representatives Tourism Officials

5	Procurement	Bidding and Procurement practices of WM under International standards Procurement procedures for machineries SWM process under International standards Preparation of Works Requirements, BoQs, review of bid document Overview: Procurement and Process World Bank Framework vs. State Framework STEP, PRICE, Tender Portals, E-tender Bid Document Preparation and Evaluation.	Suchitwa Mission officials LSGD Urban directorate officials ULB Secretaries HSS Representatives SPMU Staff DPMU Staff PIU Staff Implementing officers
6	Monitoring and Evaluation Framework	Waste quantification methods Data Collection and management system of WM Monitoring and evaluation methods of WM Plan	Suchitwa Mission officials LSGD Urban directorate officials ULB Secretaries KSDMA Officials HSS Representatives
7	Finance Management	Available funds for waste management and their terms & conditions Respond to audit observations Prepare budgets for waste management Projects Accounting & reporting methods for various types funds Verify documents for waste management initiatives Internal and external audit Preparation of Utilisation certificates Systems to understand market of various kinds of wastes and their updation Wage determination of workers and profit sharing strategies Effective sale of various types of waste Kerala treasury code and Kerala Finance code	ULB Secretaries LSGD Urban directorate officials HSS Representatives SPMU Staff DPMU Staff PIU Staff
8	Entrepreneur-ship and waste reduction strategies	Waste based Entrepreneurship & it marketing potential Green Protocol Strategies Nature - based alternatives to plastic Upcycling entrepreneurship potential in different kinds waste management technologies (Plastic, glass, E waste, Cloths, Rubber, Metals, Tyre, Hair, CNG) Marketing methods:(Plastic, glass, E waste, Cloths, Rubber, Metals, Tyre, Hair, CNG) Knowledge about value chain Potential for HKS members to increase their income	ULB Secretaries CKCL Officials HSS Representatives Tourism Officials
9	Handling and transfer of waste	Agencies dealing with bio and non bio waste Government agencies working in the terrain on waste management Existing systems to handover non bio waste Roles and functions of HKS Roles and functions of CKCL	Tourism Officials
10	Social Behavioral Change Communication	Importance of ensuring active, meaningful mass participation in programs related to waste management Knowledge in communication strategies to various groups Conflict management among HKS members, HKS and households	HSS Representatives

7 CONCLUSION

The Training Needs Assessment conducted by the Kerala Institute of Local Administration on behalf of the Kerala Solid Waste Management Project has provided valuable insights into the knowledge levels and training requirements of various stakeholders involved in solid waste management across the state. The findings reveal the diverse educational backgrounds and experiences of these stakeholders, underscoring the need for tailored training strategies.

The report highlights several training priorities, determined by the survey scores and respective job roles, which include considerations for content specificity, duration, and location to ensure effective capacity building. By aligning training programs with the identified needs and preferences of different stakeholder groups, the Kerala Solid Waste Management Project can significantly enhance the capabilities of those involved in solid waste management. This strategic approach is crucial for contributing to the project's overall success and fostering sustainable solid waste management practices in Kerala. The comprehensive understanding gained through this Training Needs Assessment will serve as a foundation for targeted and impactful training initiatives, ultimately advancing the goals of the Kerala Solid Waste Management Project.

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APPENDIX A: FINAL LIST OF SELECTED MUNICIPALITIES AND THE RESPECTIVE DISTRICTS

Urban Local Body	District
Thiruvananthapuram Corporation	Thiruvananthapuram
Kottarakkara Municipality	Kollam
Piravom Municipality	Ernakulam
Chavakkad Municipality	Thrissur
Ponnani Municipality	Malappuram
Ettumanoor Municipality	Kottayam
Thanoor Municipality	Malappuram
Thiruvalla Municipality	Kottayam
Valanchery Municipality	Malappuram
Wadakkanchery Municipality	Thrissur
Kannur Corporation	Kannur
Tirur Municipality	Malappuram
Thrissur Corporation	Thrissur
Shornur Municipality	Palakkad
Kalpetta Municipality	Wayanad
Chalakudy Municipality	Thrissur
Nilambur Municipality	Malappuram
North Paravur Municipality	Ernakulam
Changanassery Municipality	Kottayam
Muvattupuzha Municipality	Ernakulam
Tripunithura Municipality	Ernakulam
Mavelikkara Municipality	Alappuzha

APPENDIX B: QUESTIONNAIRE

APPENDIX B1. QUESTIONNAIRE FOR ELECTED REPRESENTATIVES

1. District
    1. *Thiruvananthapuram*
    2. *Kollam*
    3. *Pathanamthitta*
    4. *Alappuzha*
    5. *Kottayam*
    6. *Idukki*
    7. *Ernakulam*
    8. *Thrissur*
    9. *Palakkad*
    10. *Malappuram*
    11. *Kozhikode*
    12. *Wayanad*
    13. *Kannur*
    14. *Kasaragod*
2. Name of Municipality
3. Name of respondent
4. Designation
    1. *Municipal Chairperson*
    2. *Standing committee chairperson*
    3. *Vice-chairperson*
    4. *Elected representative*
5. Educational Qualification
    1. *Below SSLC*
    2. *SSLC*
    3. *Plus Two*
    4. *Bachelor's degree*
    5. *Masters degree*
    6. *Technical education*
    7. *Oth*ers
6. Age

7. Gender

1. *Female*
2. *Male*
3. *Transgender*

8. Knowledge of Penal proceedings and penalties applicable under waste management rules (Rank the questions 0 to 10; 0 is the least knowledge and 10 is the maximum knowledge)

1. *Plastic burning*
2. *Littering in public places*
3. *Dumping of waste in water bodies*
4. *Sale of prohibited plastic products*
5. *Knowledge of various laws and regulations related to solid waste management*

9. Knowledge of measures to be taken by municipalities related to waste management as per Kerala Waste Management Policy

1. *Preparation of municipal solid waste management plan*
2. *Capacity to prepare municipal-level plans for waste management*
3. *Knowledge of central schemes related to waste management*
4. *Knowledge of municipal waste management bylaws*

10. Knowledge of maintaining waste management projects:

1. *Organic waste treatment plant*
2. *Storage facilities for inorganic waste*
3. *Methods of organic waste management at household / LSG levels*

11. Knowledge of inorganic waste storage systems/ their management

1. *MCF*
2. *MRF*
3. *Plastic shredding units*
4. *Baling units*

12. Knowledge of establishments that can sell inorganic waste to the municipality:

1. *Plastic*
2. *Glass*
3. *Metals*
4. *E-Waste*
5. *Others*

13. Knowledge about the harmful effects of burning plastic waste

14. Knowledge of waste-based initiatives

15. Importance of segregation of waste

16. Knowledge of the socio-environmental (water, soil, and air pollution) impact of waste and ways to mitigate it

17. Collection of waste from one place to another (transportation), Knowledge of procedures to be followed in the collection

18. Knowledge of suitable vehicles used to transport collected waste from one place to another

19. Is Harita Karma Sena working in all wards?

20. Knowledge of alternatives to single-use plastic products

21. Have any waste management plans been prepared in collaboration with the private sector?

22. Importance of involving the private sector in waste management activities

23. Is Harita Karma Sena working in all wards?

1. *Public functions*
2. *Institutions*
3. *Household-level*

24. Knowledge about safety measures to be taken by waste management workers

25. Is there any data collection system available on waste generation and management?

26. Is there any system (quantification) for monitoring waste generation and management?

27. Is there a grievance Redressal mechanism in place at the LSG level regarding waste management?

1. *If available, the Effectiveness of the system*

28. Do waste management projects have the capacity to sustainably move forward?

29. Capacity to ensure active, meaningful mass participation in programs related to waste management?

30. Assess your capacity in waste management -related problem solving

31. How the LSG level waste management is assessed as a whole

32. How many days are you willing to spend on training?

1. *1 day*
2. *3 days*
3. *5 days*
4. *10 days*
5. *Above 10 days*

33. Preferred training method

1. *Online*
2. *Offline*

3. *Both online and offline*

34. Which place is suitable for attending training?

1. *Within the district*
2. *In other districts within the state*
3. *Nationally / Internationally*

35. Which is the preferred training method?

1. *Classroom*
2. *Group discussion*
3. *Field study*
4. *Question and Answer Sessions*
5. *Videos*

36. Which areas are you interested to work on after completing the training

37. Waste Collection

38. Organic waste treatment

39. Inorganic waste collection and treatment

40. Prepare plans for waste management

41. Public Education

APPENDIX B2. QUESTIONNAIRE FOR ULB OFFICIALS

1. District

1. *Thiruvananthapuram*
2. *Kollam*
3. *Pathanamthitta*
4. *Alappuzha*
5. *Kottayam*
6. *Idukki*
7. *Ernakulam*
8. *Thrissur*
9. *Palakkad*
10. *Malappuram*
11. *Kozhikode*
12. *Wayanad*
13. *Kannur*
14. *Kasaragod*

2. Name of Municipality

3. Name of respondent

4. Designation

    1. *Health Inspector*
    2. *Health department staff*
    3. *Secretary / Assistant Secretary / Additional Secretary / PA to Secretary*
    4. *Engineer / Overseer*
    5. *Accounts Officer*
    6. *Others*

5. Educational Qualification

    1. *Below SSLC*
    2. *SSLC*
    3. *Plus Two*
    4. *Bachelor's degree*
    5. *Master's degree*
    6. *Technical education*
    7. *Others*

6. Age

7. Gender

    1. *Female*
    2. *Male*
    3. *Trans Gender*

8. Knowledge of Penal proceedings and penalties applicable under waste management rules (Rank the questions 0 to 10; 0 is the least knowledge and 10 is the maximum knowledge)

    1. *Plastic burning*
    2. *Littering in public places*
    3. *Dumping of waste in water bodies*
    4. *Sale of prohibited plastic products*

9. Knowledge of various laws and regulations related to solid waste management

    1. *Solid waste management rules*
    2. *Plastic waste management rules*
    3. *Construction and Demolition waste management*
    4. *Biomedical waste treatment*
    5. *E-waste treatment*

6. *Kerala Solid waste management rule 2018*

10. Knowledge of measures to be taken by municipalities related to waste management
    1. *Does the municipality have a solid waste management bylaw?*
    2. *Capacity to prepare municipal-level plans for waste management*
    3. *Preparation of municipal solid waste management plan*
    4. *Capacity to prepare bylaw for waste management*
    5. *Knowledge of waste management project possibilities in Amrit 2, and SBM 2*
    6. *Knowledge of the collection and management of hazardous and sanitary waste at local level (knowledge of special waste disposal methods including those generated by pandemics such as Covid-19)*
11. Knowledge of maintaining waste management projects:
    1. *Organic waste treatment plant*
    2. *Storage facilities for inorganic waste*
    3. *Methods of organic waste management at household / LSG levels*
12. Knowledge of inorganic waste storage systems/ their management
    1. *MCF*
    2. *MRF*
    3. *Plastic shredding units*
    4. *Baling units*
13. Knowledge of establishments that can sell inorganic waste to the municipality:
    1. *Plastic*
    2. *Glass*
    3. *Metals*
    4. *E-Waste*
    5. *Others*
14. Safety measures and social environmental impact
    1. *Knowledge about the harmful effects of burning plastic waste*
    2. *Knowledge of the socio-environmental (water, soil, and air pollution) impact of waste and ways to mitigate it*
    3. *Knowledge about safety measures to be taken by waste management workers*
    4. *Knowledge of suitable vehicles used to transport collected waste from one place to another*
    5. *Collection of waste from one place to another (transportation), Knowledge of procedures to be followed in the collection*
15. Segregation, Treatment and Reduction

1. *Are there any source treatment methods available in municipalities for household/ institutional level organic waste management?*
2. *Is Harita Karma Sena working in all wards?*
3. *Importance of segregation of waste*
4. *Knowledge of alternatives to single-use plastic products*
5. *Knowledge of new technologies and models in the field of inorganic waste management (glass, plastic and metal)*

16. Knowledge of Green Protocol practices at various levels
    1. *Public functions*
    2. *Public Institutions*
    3. *Household level*
17. Entrepreneurship
    1. *Knowledge of waste based Entrepreneurship*
    2. *Have any waste management plans been prepared in collaboration with the private sector?*
18. Data Collection and Grievance Redressal Mechanism
    1. *Is there any data collection system available on waste generation and management?*
    2. *Is there any system (quantification) for monitoring waste generation and management?*
    3. *Is there a grievance redressal mechanism in place at the LSG level regarding waste management?*
19. Do you have experience in implementing waste management plans for international organisations?
20. Do waste management projects have the capacity to sustainably move forward?
21. Capacity of ensuring active, meaningful mass participation in programs related to waste management
22. How the LSG level waste management is assessed as a whole
23. Knowledge of different types of health and environmental problems that of from waste
    1. *Organic waste*
    2. *Plastic waste*
    3. *Biomedical waste*
    4. *E-waste*
24. Knowledge of legal measures to be taken to implement Green Protocol
25. Knowledge of health precautions to be taken while performing landfill
26. Knowledge of health and safety precautions to be followed at waste management/ treatment facilities: Organic waste treatment centres

27. Knowledge of health and safety precautions to be followed at waste management/ treatment facilities : Inorganic waste treatment centres

28. Knowledge of Kerala Pollution Control Board's pollution metrics?

29. Knowledge of measures to be taken against sale of banned plastic items

30. Knowledge of national level service benchmarks related to waste management

31. Knowledge of designing organic waste management systems

32. Knowledge of technical specifications to be followed in the construction of waste treatment facilities

33. Knowledge of technical systems to avoid environmental pollution in waste treatment facilities

34. Ability to prepare detailed project report of waste management projects

35. Ability to design inorganic waste storage facilities

1. *MCF*
2. *RRF*
3. *Shredding units*
4. *Baling units*

36. Knowledge of available funds for waste management and their terms and conditions

37. Knowledge of various types of accounting and reporting methods in waste management

38. Ability to review estimates of waste management initiatives

39. Ability to provide responses to audit observations that may arise in relation to the Waste Management Plan

40. Ability to prepare budgets for waste management projects

41. Ability to prepare waste management plans

42. Ability to prepare bylaws

43. Ability to prepare detailed project report

44. Knowledge of funds related to waste management and their terms of use

45. Knowledge of national level service benchmarks related to waste management

46. Knowledge of monitoring methods of waste management plan

47. How many days are you willing to spend on training?

1. *1 day*
2. *3 days*
3. *5 days*
4. *10 days*
5. *Above 10 days*

48. Preferred training method

1. *Online*
2. *Offline*
3. *Both online and offline*

49. Which place is suitable for attending training?

1. *Within the district*
2. *In other districts within the state*
3. *Nationally / Internationally*

50. Which is the preferred training method?

1. *Classroom*
2. *Group discussion*
3. *Field study*
4. *Question and Answer Sessions*
5. *Videos*

51. Which areas are you interested to work on after completing the training

1. *Waste Collection*
2. *Organic waste treatment*
3. *Inorganic waste collection and treatment*
4. *Prepare plans for waste management*
5. *Public Education*

APPENDIX B3: QUESTIONNAIRE FOR COMMUNITY-BASED ORGANISATIONS

1. District

1. *Thiruvananthapuram*
2. *Kollam*
3. *Pathanamthitta*
4. *Alappuzha*
5. *Kottayam*
6. *Idukki*
7. *Ernakulam*
8. *Thrissur*
9. *Palakkad*
10. *Malappuram*

11. *Kozhikode*
12. *Wayanad*
13. *Kannur*
14. *Kasaragod*

2. Name of Local body

3. Name of respondent

4. Designation

5. Educational Qualification
    1. *Below SSLC*
    2. *SSLC*
    3. *Plus Two*
    4. *Bachelor's degree*
    5. *Masters degree*
    6. *Technical education*
    7. *Others*

6. Type of respondent organisation
    1. *Residence association*
    2. *Voluntary organisation*
    3. *Kudumbashree*
    4. *Merchant industry organisation*
    5. *Bulk waste generators such as wedding halls, hotels, hospitals, schools, and other public facilities*
    6. *Others*

7. Type of bulk waste generators
    1. *Wedding halls*
    2. *Hotels*
    3. *Hospitals*
    4. *Schools*
    5. *Other public systems*
    6. *Name of organisation*

9. Knowledge of existing laws and regulations related to solid waste management
    1. *Solid waste management rules*
    2. *Plastic waste management rules*
    3. *Construction and Demolition waste management*

4. *Biomedical waste treatment*
5. *E-waste treatment*

10. Knowledge of health and safety measures to be taken while handling waste and health problems that may arise if they are not taken

11. Knowledge of the socio-environmental (water, soil, and air pollution) impact of waste and ways to mitigate it

12. Knowledge of Penal proceedings and penalties applicable under waste management rules

13. Knowledge of source waste management practices

14. Knowledge of the importance of waste reduction

15. Knowledge of Green Protocol practices

16. Is green protocol followed at events held within the association?

17. Have you implemented any social education programs related to your Residents Association?

18. Knowledge of the general system to be prepared by the municipality for waste management

19. Knowledge of waste treatment systems at the LSG level

20. Knowledge of the methods and importance of waste segregation

21. Knowledge of the rights of Harita Karma Sena members and sanitation workers

22. How the LSG level waste management is assessed as a whole

23. Importance of ensuring active, meaningful mass participation in programs related to waste management

24. Knowledge of methods for the collection of household-level biomedical wastes and other hazardous wastes and sanitary wastes

25. Do you have any source treatment facility available for organic waste management for households and institutions within your organisation?

26. Knowledge of inorganic wastes such as plastic and other recyclables

27. Knowledge of nature-based alternatives to plastic

28. Knowledge about the harmful effects of burning plastic waste

29. Knowledge of the health problems caused by littering, dumping in water bodies, etc.

30. Importance of grievance redressal mechanism in the waste management system

31. As an organisation, have you raised any complaints related to waste management?

32. Quantity of organic waste generated per day (in kg)

1. *0 to 5 kg*
2. *6 to 10 kg*
3. *11 to 25 kg*
4. *25 to 50 kg*

5. *50 to 75 kg*
6. *75 to 100 kg*
7. *Above 100 kg*
8. *Don't know*
9. *Not recorded*

33. Quantity of inorganic waste generated per day (in kg)

1. *0 to 5 kg*
2. *6 to 10 kg*
3. *11 to 25 kg*
4. *25 to 50 kg*
5. *50 to 75 kg*
6. *75 to 100 kg*
7. *Above 100 kg*
8. *Don't know*
9. *Not recorded*

34. Is there any system to treat organic waste at the source?

35. Is inorganic waste segregated and collected?

36. Are the municipalities collecting inorganic waste properly?

37. Does your organisation follow green protocol?

38. How many days are you willing to spend on training?

1. *1 day*
2. *3 days*
3. *5 days*
4. *10 days*
5. *Above 10 days*

39. Preferred training method

1. *Online*
2. *Offline*
3. *Both online and offline*

40. Which place is suitable for attending training?

1. *Within the district*
2. *In other districts within the state*
3. *Nationally / Internationally*

41. Which is the preferred training method?

1. *Classroom*
2. *Group discussion*
3. *Field study*
4. *Question and Answer Sessions*
5. *Videos*

42. Which areas are you interested to work on after completing the training

1. *Waste Collection*
2. *Organic waste treatment*
3. *Inorganic waste collection and treatment*
4. *Prepare plans for waste management*
5. *Public Education*
6. *Management of waste management projects*
7. *Others*

APPENDIX B4: QUESTIONNAIRE FOR SANITATION WORKERS

1. District

1. *Thiruvananthapuram*
2. *Kollam*
3. *Pathanamthitta*
4. *Alappuzha*
5. *Kottayam*
6. *Idukki*
7. *Ernakulam*
8. *Thrissur*
9. *Palakkad*
10. *Malappuram*
11. *Kozhikode*
12. *Wayanad*
13. *Kannur*
14. *Kasaragod*

2. Name of Local body

3. Designation

1. *Waste collector*
2. *Harita Karma Sena member*
3. *Waste collectors as enterprises*
4. *Cleaning worker*
5. *5. Recyclers*
6. *Waste treatment plant employees*
7. *Carry waste from one place to another*
8. *Others*

4. Educational Qualification
   1. *Below SSLC*
   2. *SSLC*
   3. *Plus Two*
   4. *Bachelor's degree*
   5. *Masters degree*
   6. *Technical education*
   7. *Others*

5. Work experience in this field

6. At present, are you part of any LGS-level waste management system
   1. *Yes*
   2. *No*
   3. *Don't know*

7. Are you facing any difficulties at work?
   1. *Yes*
   2. *No*
   3. *Don't know*
   4. *If the answer is Yes; Mention what are the difficulties*
      5. Peoples approach
      6. Lack of support from the municipality
      7. Physical problems
      8. Wage issue
      9. Difficulty in obtaining user fees
      10. Difficulty in segregating waste types
      11. Others

8. How many days were you working on last month?

9. Average working time per day

10. Salary received last month

11. General public's approach to the waste collection process?

1. *Full cooperation*
2. *Partial cooperation*
3. *non-cooperation*
4. *Bad approach*

12. General public's approach to waste-collecting workers?

1. *Respectful interaction*
2. *Bad interaction*
3. *Very bad interaction*

13. Knowledge of health and safety measures to be taken while handling waste and health problems that may arise if they are not taken

14. Have you recorded the amount of waste handled?

1. *Yes*
2. *No*
3. *Don't know*

15. Do you have the ability to convince the public about the importance of your services?

16. Knowledge of responsibilities related to your area of work

17. Knowledge of existing laws and regulations related to solid waste management

18. Knowledge of Penal proceedings and penalties applicable under waste management rules

19. Knowledge of source waste management practices

20. Knowledge of the importance of waste reduction

21. Knowledge of Green Protocol practices

22. Knowledge of how waste can be segregated and disposed

23. Importance of ensuring active, meaningful mass participation in programs related to waste management

24. Knowledge of waste management systems at the LSG level

25. Collection of waste from one place to another (transportation), Knowledge of procedures to be followed in the collection

26. Knowledge of the collection and management of hazardous and sanitary waste at the local level (knowledge of special waste disposal methods including those generated by pandemics such as Covid-19)

27. Knowledge of methods for the collection of household/institutional level biomedical

wastes and other hazardous wastes and sanitary wastes

28. Assess your capacity in waste-related problem solving

29. How the LSG level waste management is assessed as a whole

30. How many days are you willing to spend on training?

1. *1 day*
2. *2 days*
3. *3 days*
4. *4 days*
5. *Above 4 days*

31. Preferred training method

1. *Online*
2. *Offline*
3. *Both online and offline*

32. Which place is suitable for attending training?

1. *Within the district*
2. *In other districts within the state*
3. *Nationally / Internationally*

33. Which is the preferred training method?

1. *Classroom*
2. *Group discussion*
3. *Field study*
4. *Question and Answer Sessions*
5. *Videos*

APPENDIX B5: QUESTIONNAIRE FOR STATE OFFICIALS

1. In which district are you currently working?

1. *Thiruvananthapuram*
6. *Kollam*
7. *Pathanamthitta*
8. *Alappuzha*
9. *Kottayam*
10. *Idukki*
11. *Ernakulam*
12. *Thrissur*

13. *Palakkad*
14. *Malappuram*
15. *Kozhikode*
16. *Wayanad*
17. *Kannur*
18. *Kasaragod*

2. Name of respondent

3. Department / Representing Institution

4. Designation

5. Educational Qualification

1. *Below SSLC*
2. *SSLC*
3. *Plus Two*
4. *Bachelor's degree*
5. *Masters degree*
6. *Technical education*
7. *Others*

6. Age

7. Knowledge of existing laws and regulations related to solid waste management

1. *Solid waste management rules*
2. *Plastic waste management rules*
3. *Construction and Demolition waste management*
4. *Biomedical waste treatment*
5. *E-waste treatment*
6. *Kerala Solid waste management rule 2018*
7. *Knowledge of Kerala Pollution Control Board's pollution metrics?*
8. *Which area should be given priority in waste management?*
    1. *Waste reduction*
    2. *Recycling*
    3. *Source treatment*
    4. *Enforcing laws*

8. Knowledge of measures to be taken by various levels of government bodies related to waste management as per Kerala Waste Management Policy

1. *Various government departments*

2. *State Agencies/Missions for Waste Management*
3. *Local Self-Government*

9. Knowledge of Penal proceedings and penalties applicable under waste management rules
    1. *Littering in public places*
    2. *Dumping of waste in water bodies*
    3. *Sale of prohibited plastic products*
    4. *Plastic burning*
10. Knowledge of methods used for source waste treatment
11. Awareness of the importance of waste reduction
12. Knowledge of Green Protocol practices at various levels
    1. *Public functions*
    2. *Public Institutions*
    3. *Household level*
13. Knowledge of availability of nature-based alternatives and feasibility of technologies to replace plastic use
14. Knowledge of the socio-environmental (water, soil, and air pollution) impact of waste and ways to mitigate it
15. Knowledge of organic waste management practices at institutional levels
16. Knowledge of inorganic waste management practices at institutional levels
17. Knowledge of the collection and management of hazardous and sanitary waste at local level (knowledge of special waste disposal methods including those generated by pandemics such as Covid-19)
18. Knowledge of new technologies and models at international and national levels
    1. *New technologies and models in organic waste treatment*
    2. *New methods/models related to plastic recycling, and new product development*
    3. *Management of domestic sanitary wastes and hazardous wastes*
    4. *Reuse and recycling of inorganic waste (paper, metals, glass), new product development and related new methods/models*
    5. *New technologies and models in the field of e-waste management*
    6. *Private sector and entrepreneurship*
19. Knowledge of waste-based initiatives
    1. *Capacity to prepare entrepreneurial projects related to waste management*
    2. *Importance of involving the private sector in waste management activities*
20. Knowledge of operation & management related to solid waste management?
21. Knowledge to provide technical guidance for the preparation of solid waste management

plan (SWM plan), and project documents etc

22. Importance of ensuring active, meaningful mass participation in programs related to waste management

23. How the state local level waste management is assessed as a whole

24. Knowledge of safety measures to be taken while transporting waste from one place to another: Organic waste

25. Knowledge of safety measures to be taken while transporting waste from one place to another: Inorganic waste

26. Knowledge of suitable vehicles used to transport collected waste from one place to another

27. Knowledge of safety measures to be taken while collecting waste

28. Knowledge of various state/district level systems working in waste management

29. Knowledge of coordination possibilities of various agencies working in waste management

30. Knowledge of available financial resources for waste management schemes and procedures to be followed by reliable schemes?

31. Knowledge of organisations specialising in waste management within and outside Kerala

32. Knowledge of social education methods related to waste management

33. Knowledge of Grievance Redressal Mechanism in Waste Management Sector

34. Knowledge of procedures to be followed when landfilling non-recyclable waste

35. How many days are you willing to spend on training?

1. *1 day*
2. *3 days*
3. *5 days*
4. *10 days*
5. *Above 10 days*

36. Preferred training method

1. *Online*
2. *Offline*
3. *Both online and offline*

37. Which place is suitable for attending training?

1. *Within the district*
2. *In other districts within the state*
3. *Nationally / Internationally*

38. Which is the preferred training method?

1. *Classroom*

2. *Group discussion*
3. *Field study*
4. *Question and Answer Sessions*
5. *Videos*

39. Which areas are you interested to work on after completing the training

1. *Waste Collection*
2. *Organic waste treatment*
3. *Inorganic waste collection and treatment*
4. *Prepare plans for waste management*
5. *Public Education*
6. *Management of waste management projects*
7. *Others*

APPENDIX B6: QUESTIONNAIRE FOR KSWMP TEAM

1. In which district are you currently working?

a. Thiruvananthapuram
b. Kollam
c. Pathanamthitta
d. Alappuzha
e. Kottayam
f. Idukki
g. Ernakulam
h. Thrissur
i. Palakkad
j. Malappuram
k. Kozhikode
l. Wayanad
m. Kannur
n. Kasaragod

2. Designation

a. Monitoring & Evaluation Expert
b. Environment Engineer
c. Social & Communication Expert
d. SWM Engineer/DyDC

e. Finance Expert

f. PIU engineer

g. Others

3. Name of respondent

4. Phone number (Whatsapp Number)

5. Age

6. Gender

a. Male

b. Female

c. Trans gender

7. Knowledge of Penal proceedings and penalties applicable under waste management rules

a. Plastic burning

b. Littering in public places

c. Dumping of waste in water bodies

d. Sale of prohibited plastic products

8. Knowledge of various laws and regulations related to solid waste management

a. Solid waste management rules

b. Plastic waste management rules

c. Construction and Demolition waste management

d. Biomedical waste treatment

e. E-waste treatment

9. Knowledge of measures to be taken by municipalities related to waste management

a. Municipal waste management bylaw

b. Comprehensive waste management plan at the municipal level

c. Municipal SWM Projects

d. Project feasibility related to waste management in Amrit - 2 and SBM 2

e. Collection and management of hazardous and sanitary waste(waste management practices for pandemics such as Covid-19)

10. Knowledge of Organic Waste Treatment

a. Organic waste treatment plant

b. Organic Waste Management at Local Self-Government Levels

c. Source organic waste treatment in households and institutions

11. Knowledge of inorganic waste storage systems/ their management

a. MCF

b. MRF

c. Plastic shredding units

d. Baling units

12. Knowledge of establishments that can sell inorganic waste to the municipality:

a. Plastic

b. Glass

c. Metals

d. E-Waste

e. Others

13. Safety measures and social environmental impact

a. Knowledge about the harmful effects of burning plastic waste

b. Knowledge of the socio-environmental (water, soil, and air pollution) impact of waste and ways to mitigate it

c. Knowledge about safety measures to be taken by waste management workers

d. Knowledge of suitable vehicles used to transport collected waste from one place to another

e. Collection of waste from one place to another (transportation), Knowledge of procedures to be followed in the collection

14. Segregation, Treatment and Reduction

a. Is Harita Karma Sena working in all wards?

b. Importance of segregation of waste

c. Knowledge of alternatives to single-use plastic products

d. Knowledge of new technologies and models in the field of inorganic waste management (glass, plastic and metal)

15. Knowledge of Green Protocol practices at various levels

a. Public functions

b. Public Institutions

c. Household level

16. Entrepreneurship

a. Knowledge of waste based Entrepreneurship

b. Have any waste management plans been prepared in collaboration with the private sector?

17. Information Collection and Grievance Redressal Mechanism

a. Preparation of data collection systems regarding waste generation and management?

b. Preparation of a system (quantification) to monitor waste generation and management?

c. Capacity to use information collection systems related to waste generation and management?

d. Capacity to use a system (scale) to monitor waste generation and management?

e. Is there any previous experience of implementing a grievance redressal system related to waste management?

18. Do you have a track record of implementing a waste management plan for international organisations?

19. Capacity to sustainably move forward with waste management projects?

20. Capacity to ensure active/meaningful mass participation in programs related to waste management?

21. How the waste management of the local government is assessed as a whole

22. Knowledge of health and environmental issues that different types of waste can create:

a. Organic waste

b. Plastic waste

c. Biomedical wastes

d. E-waste

e. Sanitary waste

f. C&D waste

23. Knowledge of legal measures to be taken to implement Green Protocol

24. Knowledge of health precautions to be taken while performing landfill

25. Knowledge of health and safety precautions to be followed at waste management/ treatment facilities: Organic waste treatment centres

26. Knowledge of health and safety precautions to be followed at waste management/ treatment facilities : Inorganic waste treatment centres

27. Knowledge of Kerala Pollution Control Board's pollution metrics?

28. Knowledge of national level service benchmarks related to waste management

29. Knowledge of designing organic waste management systems

30. Knowledge of technical specifications to be followed in the construction of waste treatment facilities

31. Knowledge of technical systems to avoid environmental pollution in waste treatment facilities

32. Ability to prepare detailed project report of waste management projects

33. Knowledge of waste quantification technology?

34. Knowledge of measures to be taken against sale of banned plastic items

35. Knowledge of designing organic waste management systems

36. Knowledge of technical specifications to be followed in the construction of waste

treatment facilities

37. Knowledge of technical systems to avoid environmental pollution in waste treatment facilities

38. Ability to prepare detailed project report of waste management projects

39. Record your knowledge in the following areas

a. Conduct survey related to waste generation and treatment

b. Knowledge of "Waste Flow Tracking".

c. Knowledge of management information system usage

d. Knowledge of Grievance Redressal Mechanism

e. Knowledge of methods of obtaining "Citizen feedback".

f. Knowledge of labour laws and labour influx management plan

g. Ability to prepare questionnaires

h. Capacity to collect information

i. Knowledge of data management

j. Knowledge of data analysis (tools and technology)

k. Data visualisation techniques

l. Preparation of reports using data

m. Prepare IEC documents

n. Gender action plan

o. Stakeholder consultations

p. Participatory methods and tools

q. ESMF Social framework and updation

r. Social screening and social management plan

s. " Social and environmental safeguards instruments ": knowledge for preparation and implementation

t. "Social/environmental Impact Assessment": Knowledge of preparation and implementation

u. "Impact assessment" : Ability to develop indicators

v. Capacity to educate municipalities on waste related safety standards/conduct awareness programs and assist

w. Capacity to screen, analyse and classify projects and subprojects as per ESMF (Environmental and Social Management Framework)

x. Knowledge about CRZ and buffer zone

y. Environmental impact assessment of soil

z. Environmental impact assessment of water

aa. Environmental impact assessment of air

bb. Bio-mining methods

cc. Preparation of Environment Management Plan

dd. Prepare IEC documents

ee. Conduct campaigns

ff. social Institutional mapping

gg. Preparation of case studies

hh. Organization of ward sabhas

ii. Social management plan preparation

jj. DPR preparation

40. Ability to design inorganic waste storage facilities

a. M.C.F

b. R.R.F

c. Shredding units

d. Baling units

41. Knowledge of various types of funds available for waste management and their terms and conditions

42. Knowledge of accounting and reporting methods for various types of funds

43. Ability to verify documents for waste management initiatives

44. Ability to respond to audit observations

45. Ability to prepare budgets for waste management projects

46. Knowledge about internal and external audit?

47. Knowledge about Preparation of Utilisation certificates?

48. Knowledge about Preparation of Works Requirements, BoQs, review of bid document?

49. Knowledge about implementation of risk mitigation measures?

50. Knowledge about Bank's prior and post reviews?

51. Knowledge in project planning and management

52. Expertise in conflict management

53. Skill in communication

54. Knowledge in report writing and report preparation

55. Knowledge in project planning and management

56. Expertise in conflict management

57. Skill in communication

58. Knowledge in report writing and report preparation

59. Ability to prepare waste management plans
60. Ability to prepare bye-laws
61. Ability to prepare detailed project report
62. Knowledge of funds related to waste management and their terms of use
63. Knowledge of national level service benchmarks related to waste management
64. Knowledge of monitoring methods of waste management plan
65. How many days are you willing to spend on training?
    a. 1 day
    b. 3 days
    c. 5 days
    d. 10 days
    e. Above 10 days
66. Preferred training method
    a. Online
    b. Offline
    c. Both online and offline
67. Which place is suitable for attending training?
    a. Within the district
    b. In other districts within the state
    c. Nationally / Internationally
68. Which is the preferred training method?
    a. Classroom
    b. Group discussion
    c. Field study
    d. Question and Answer Sessions
    e. Videos

APPENDIX C: SCORE OF ULB LEVEL, DISTRICT LEVEL AND STATE LEVEL STAKEHOLDERS

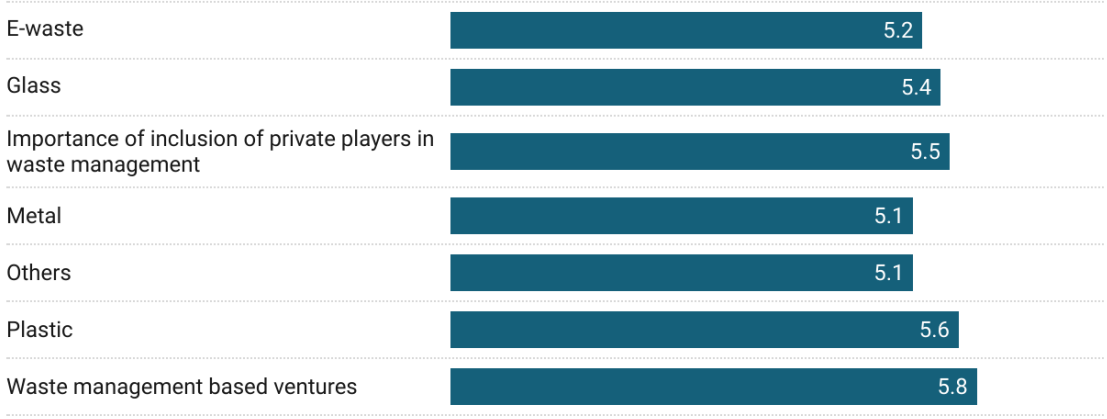
APPENDIX C1: ELECTED REPRESENTATIVES (ER)

1. Councilors

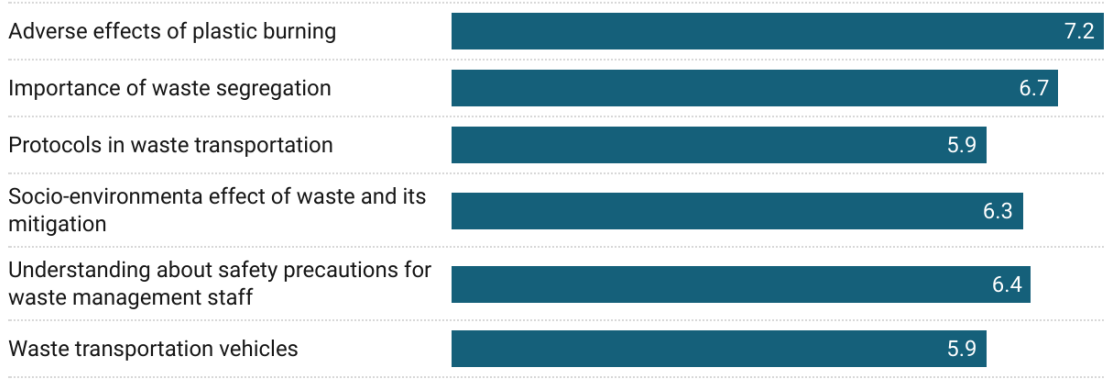
Ability to solve issues related to waste and WM`

Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



Environmental and social safeguards

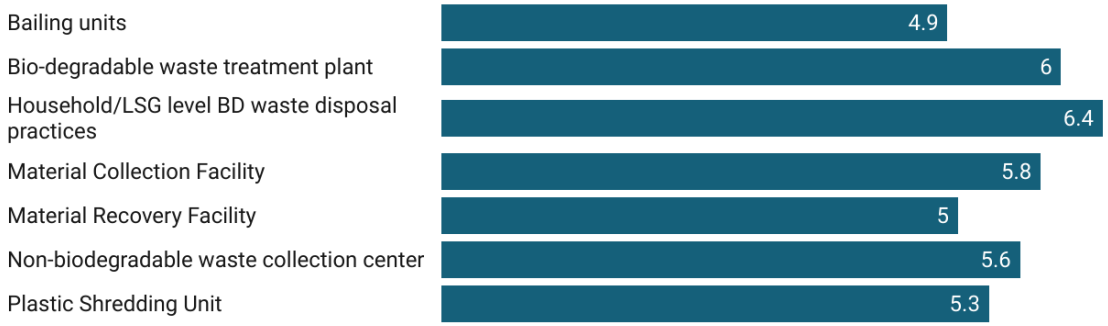


Overall rating of LSG's current WM

Participatory Approaches and Social management Principles

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Sustainable waste management practices

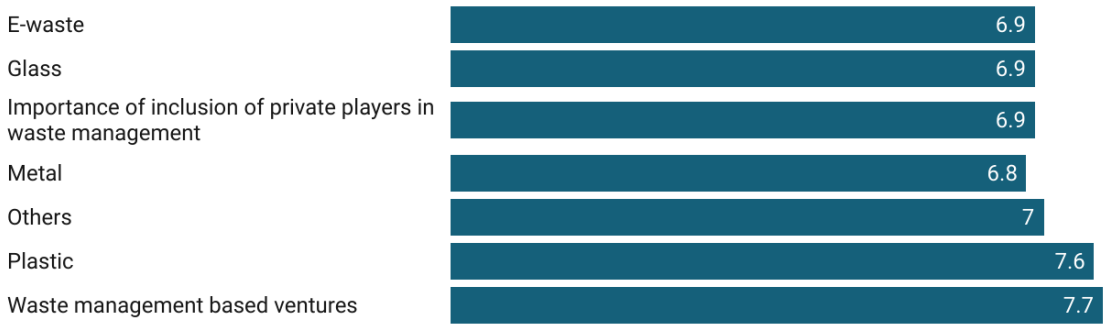
ULB responsibilities and activities for implementing legal provisions on WM

2. Municipal Chairman/ Chairperson

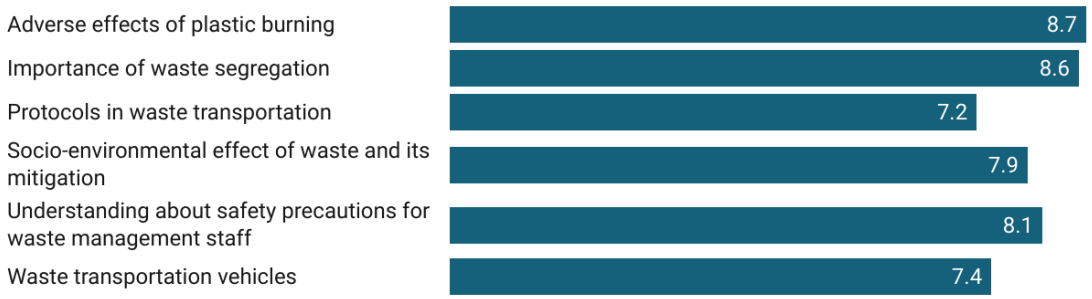
Ability to solve issues related to waste and WM

Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



Environmental and social safeguards

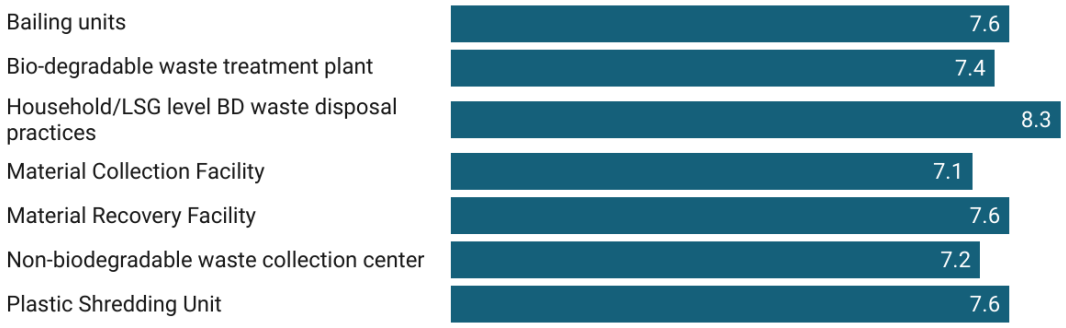


Overall rating of LSG's current WM

Participatory Approaches and Social management Principles

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Sustainable waste management practices

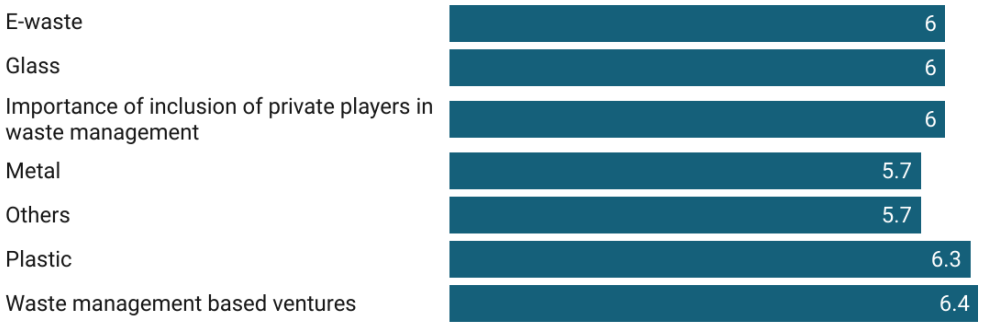
ULB responsibilities and activities for implementing legal provisions on WM

3. Standing Committee Chairperson/ Chairman

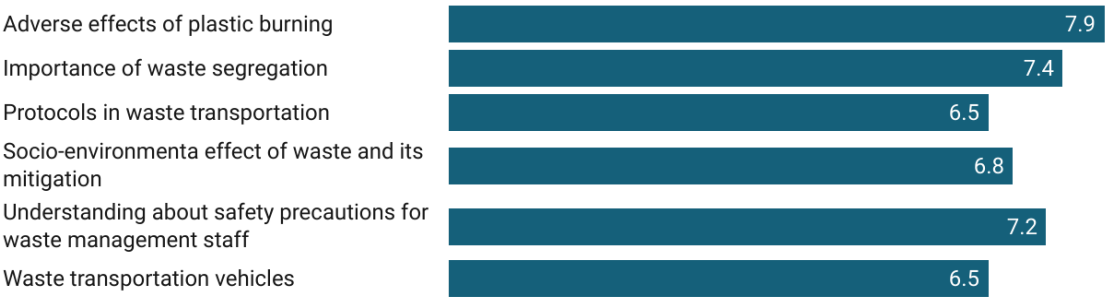
Ability to solve issues related to waste and WM

Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



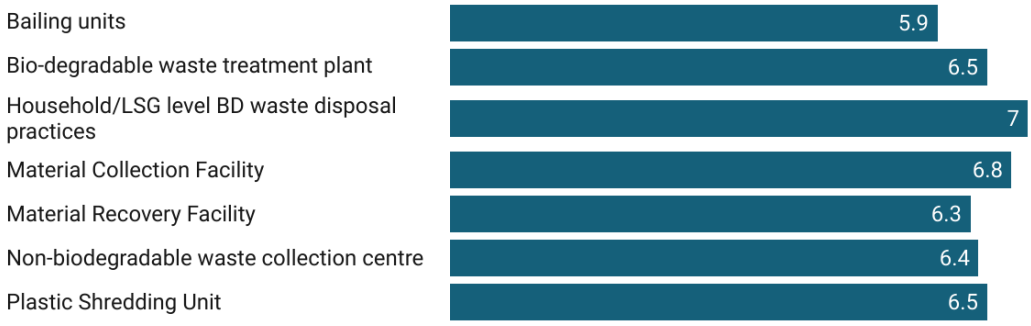
Environmental and social safeguards



Participatory Approaches and Social management Principles

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Sustainable waste management practices

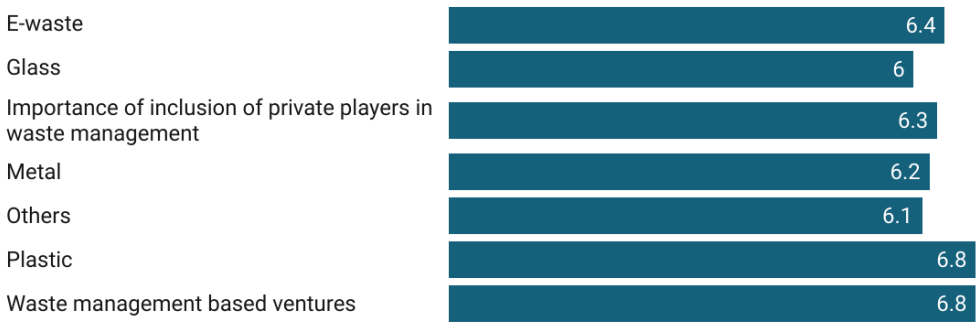
ULB responsibilities and activities for implementing legal provisions on WM

4. Vice Chairman/ Chairperson

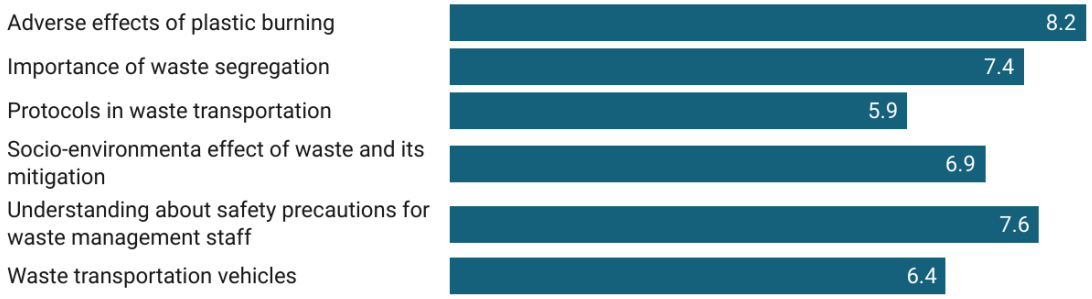
Ability to solve issues related to waste and WM

Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



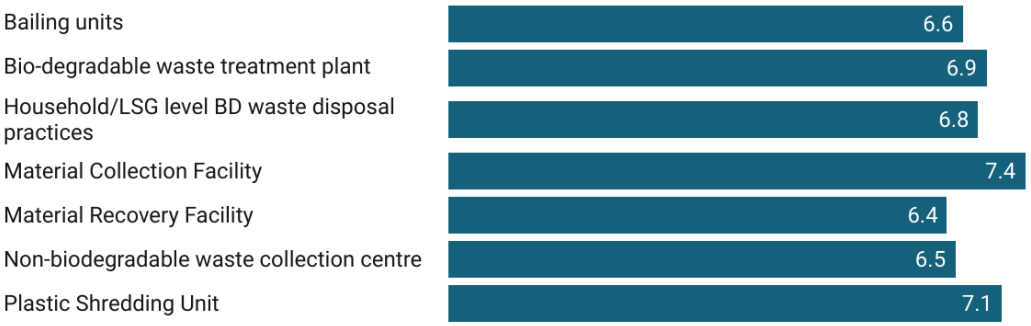
Environmental and social safeguards



Participatory Approaches and Social management Principles

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Sustainable waste management practices

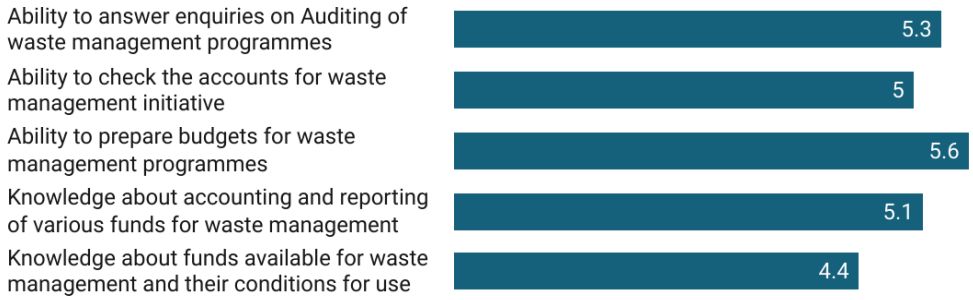
ULB responsibilities and activities for implementing legal provisions on WM

APPENDIX C2: ULB OFFICIALS

1. Accounts Staff

Ability to ensure active participation and partnership of general public in WM

Cost accounting, Financial Management and Procurement

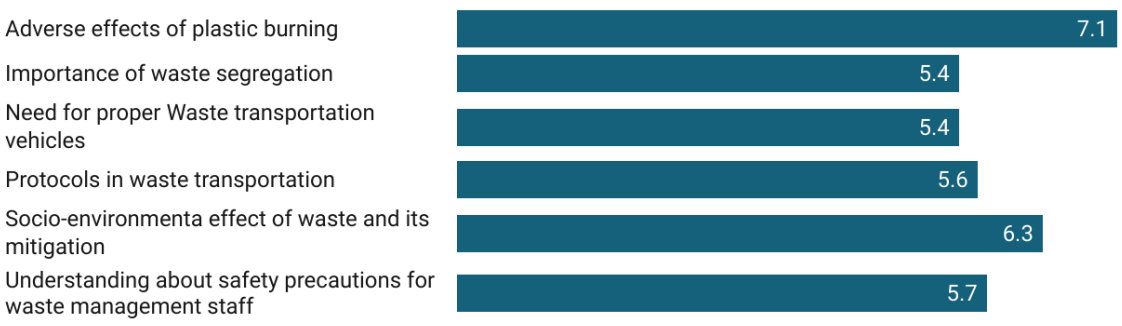


Effectiveness of existing system of waste management,if present

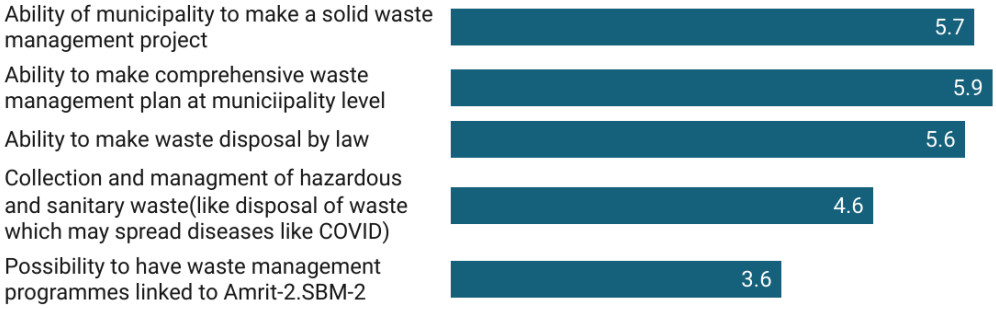
Overall rating of LSG's current waste management practices

Entrepreneurship and Private sector participation

Environmental and social safeguards



Knowledge of waste management practices and capacity to make projects, plans, and bylaws



Penalties and Penal proceedings Under Waste Management Laws and Regulations

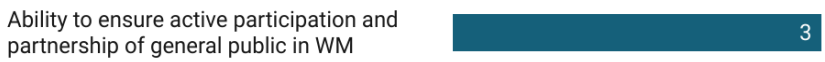
Project planning, design and management

Sustainable waste management practices

ULB responsibilities and activities for implementing legal provisions on WM

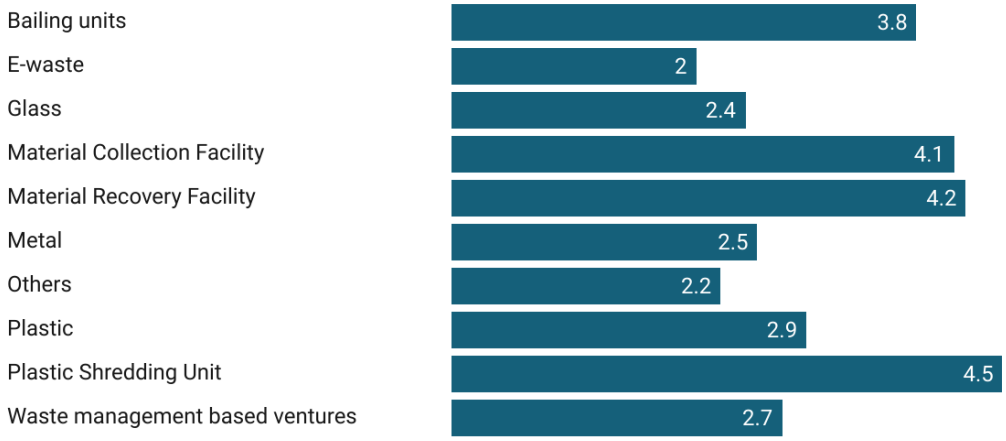
2. Engineer/Overseer

Ability to ensure active participation and partnership of general public in WM

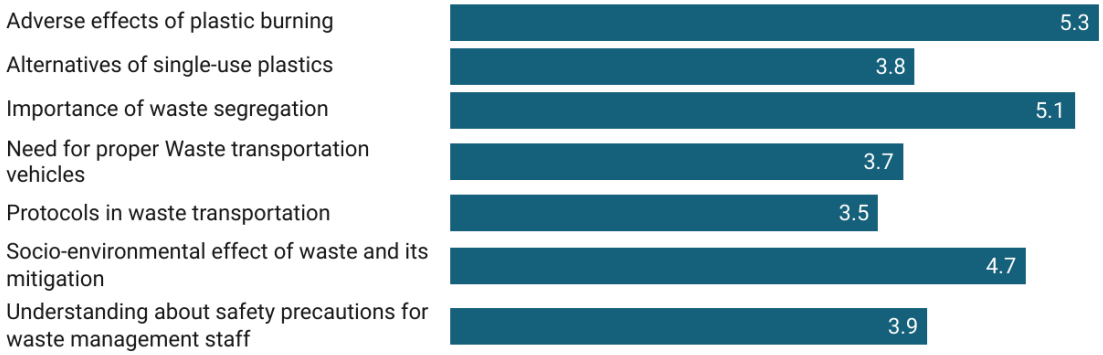


Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



Environmental and social safeguards

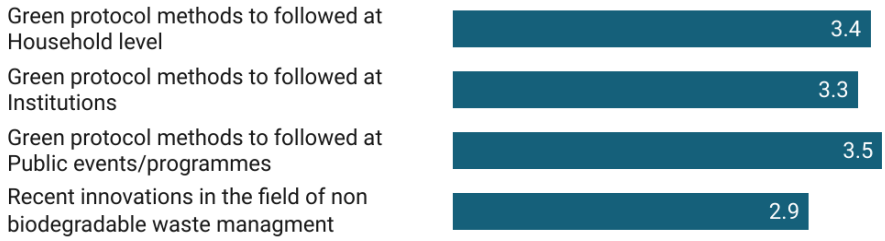


Overall rating of LSG's current waste management practices

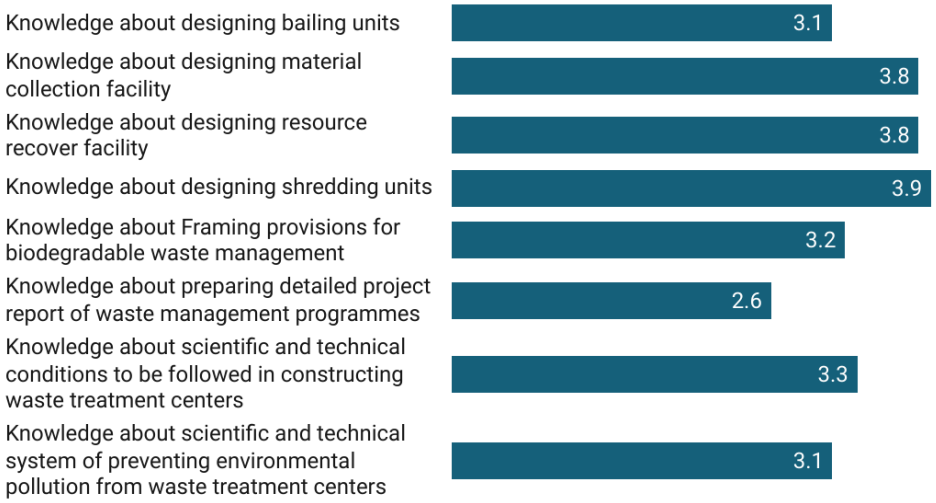
Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management

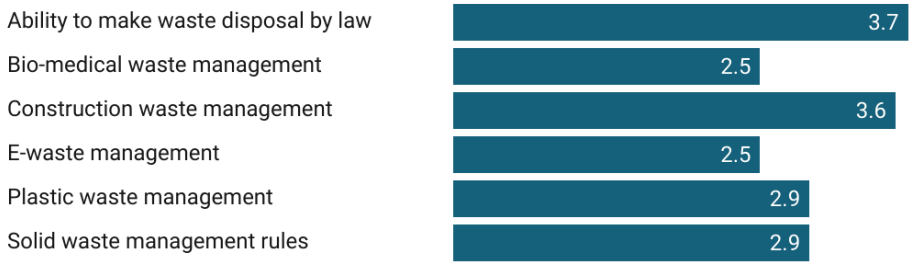
Sustainable waste management practices



Technical, legal, and scientific knowledge about waste management



ULB responsibilities and activities for implementing legal provisions on WM

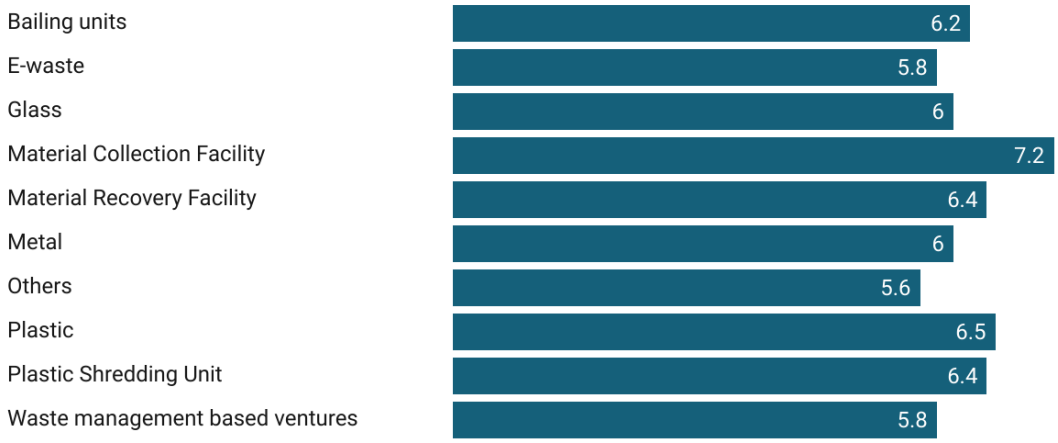


3. Health dept. Workers

Ability to ensure active participation and partnership of general public in WM

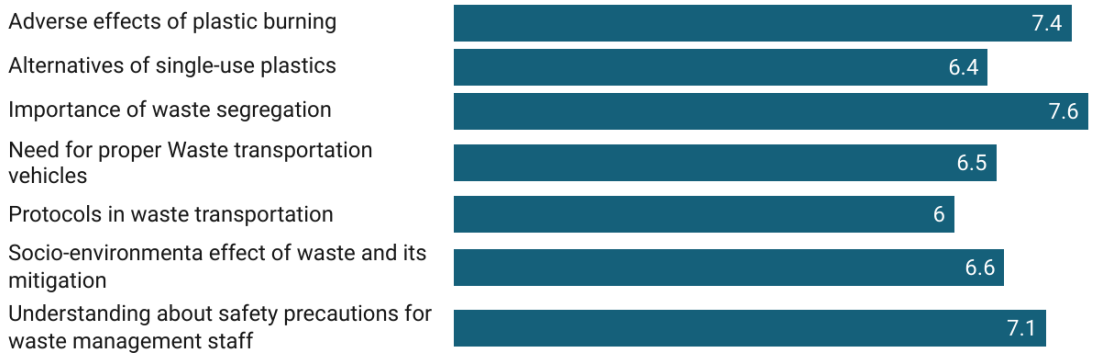
Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



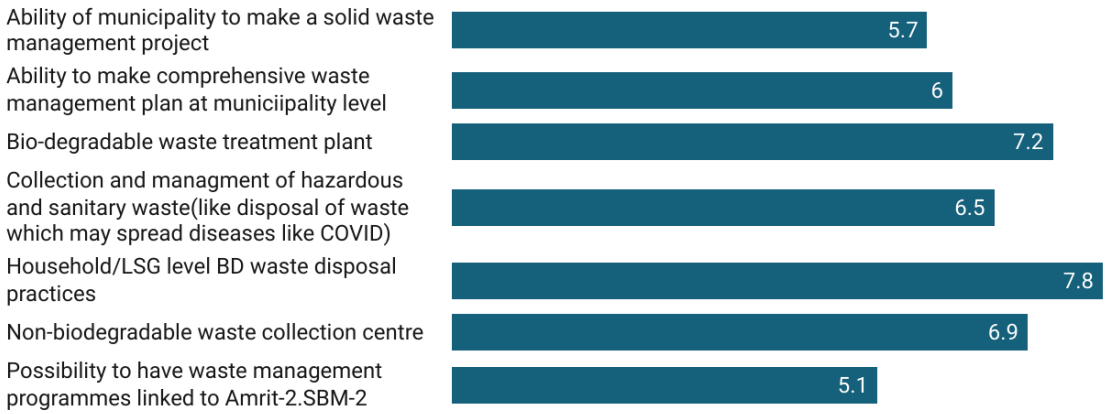
Environmental and health issues related to various types of waste

Environmental and social safeguards

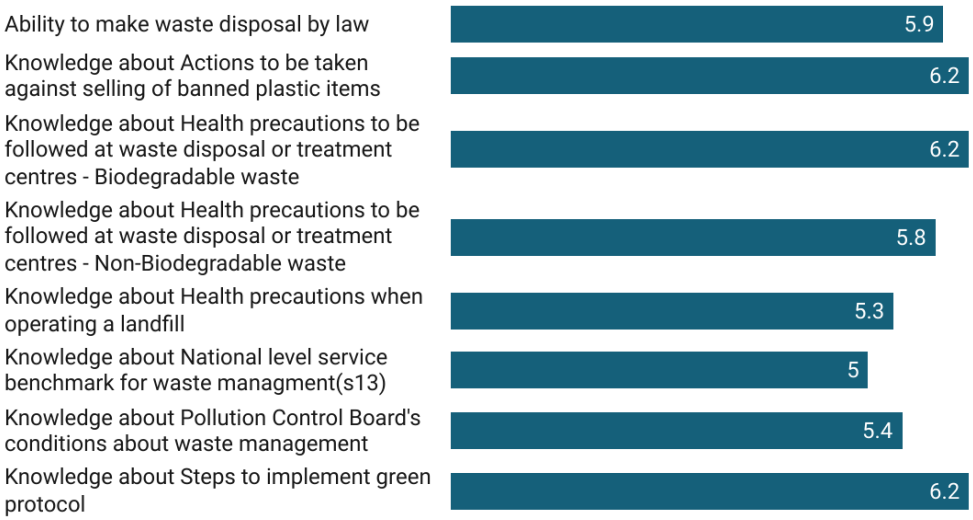


Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Responsibilities of health department staff in the effective management of waste



Sustainable waste management practices

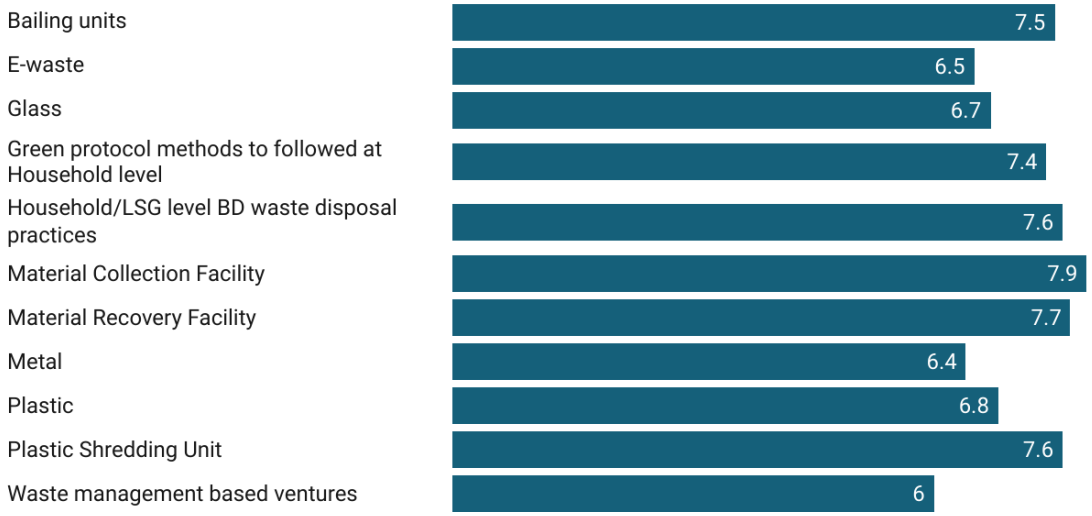
ULB responsibilities and activities for implementing legal provisions on WM

4. Health Inspector

Ability to ensure active participation and partnership of general public in WM

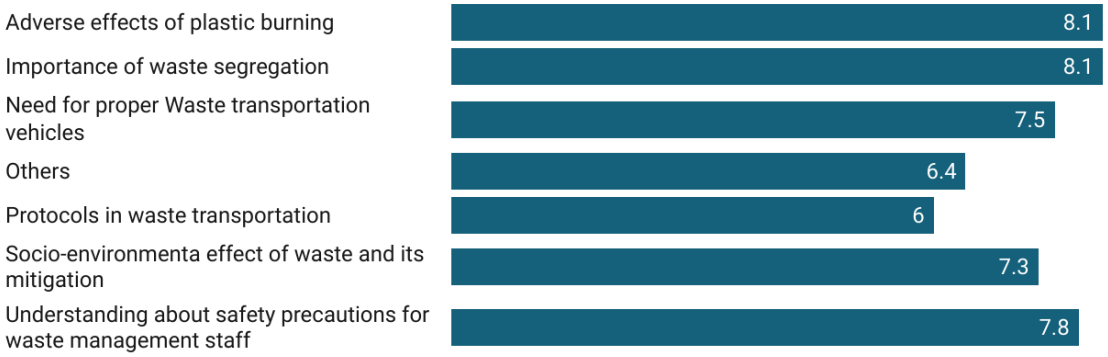
Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



Environmental and health issues related to various types of waste

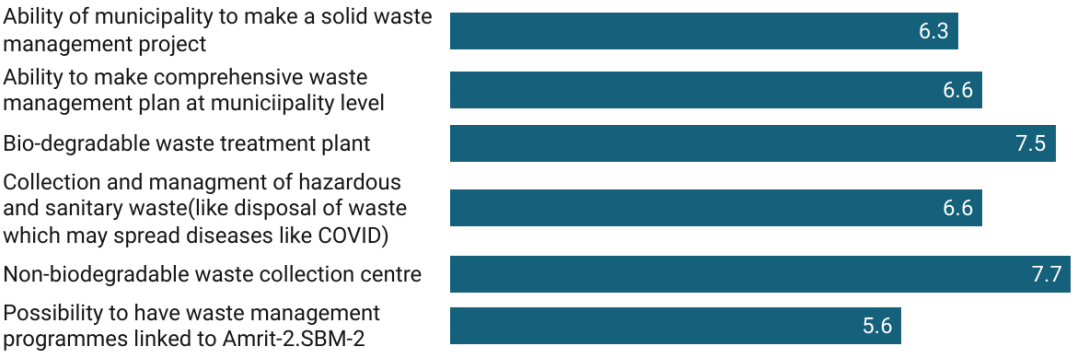
Environmental and social safeguards



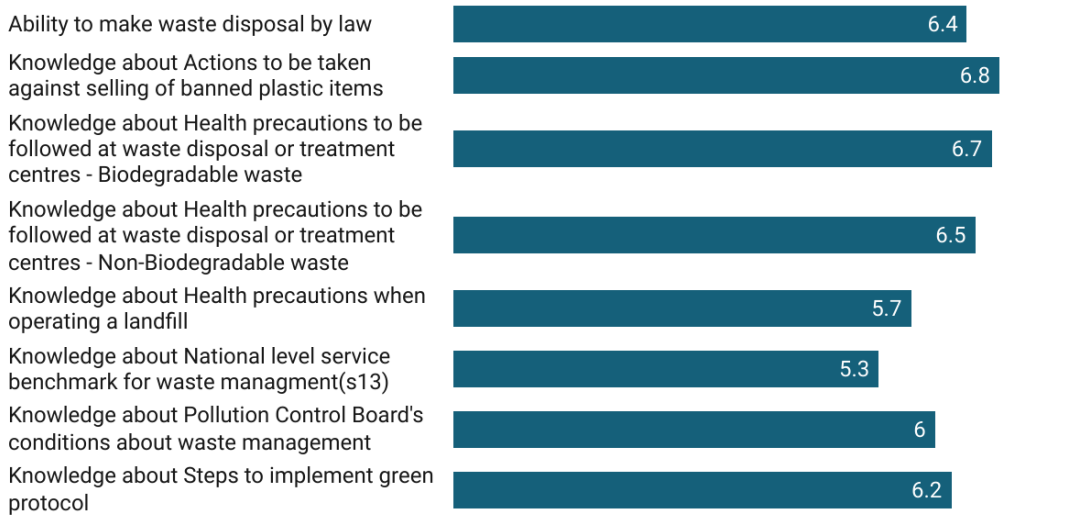
Overall rating of LSG's current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Responsibilities of health department staff in the effective management of waste



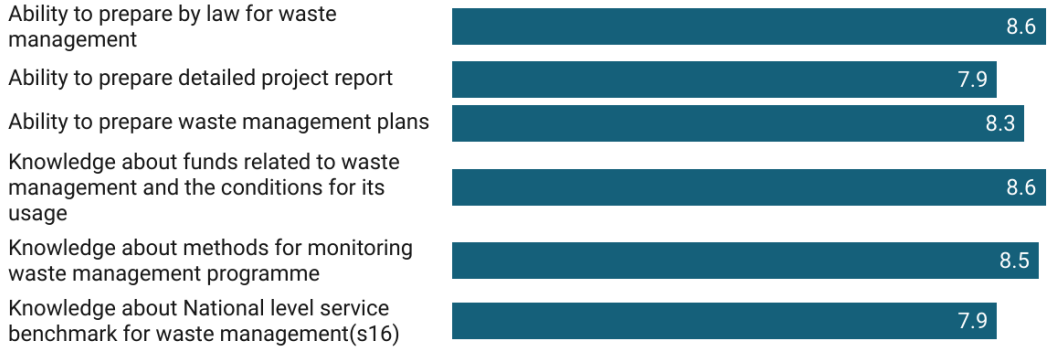
Sustainable waste management practices

ULB responsibilities and activities for implementing legal provisions on WM

5. Secretary/Asst. Secretary/Additional Secretary/PA to Secretary

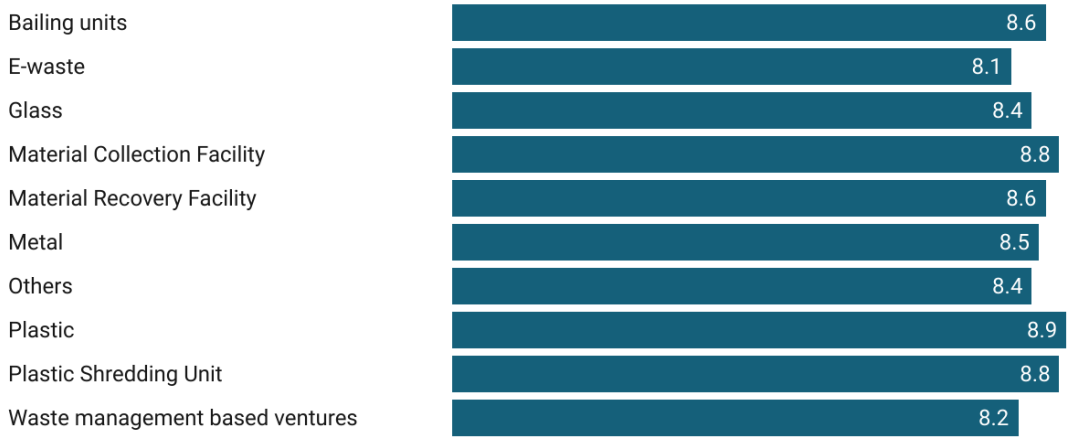
Ability to ensure active participation and partnership of general public in WM

Administration of waste management in the ULB

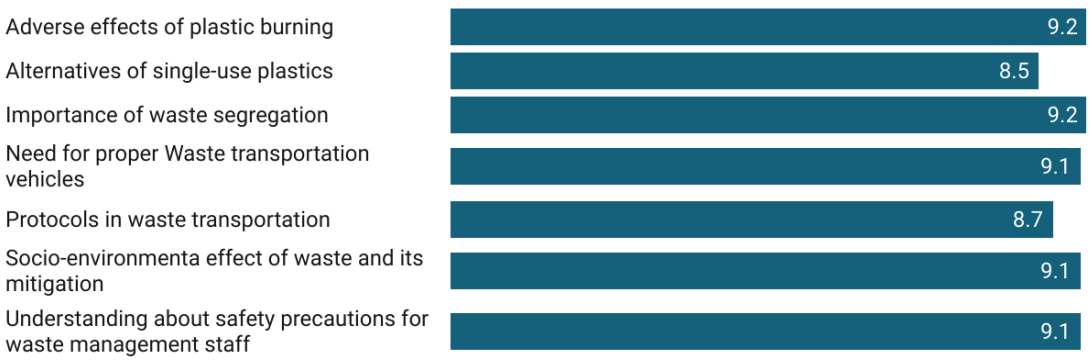


Effectiveness of existing system of waste management,if present

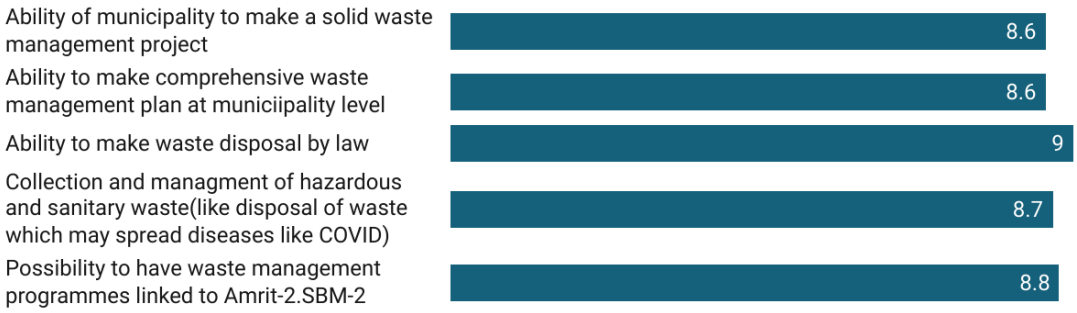
Entrepreneurship and Private sector participation



Environmental and social safeguards



Knowledge of waste management practices and capacity to make projects, plans, and bylaws



Overall rating of LSG's current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management

Sustainable waste management practices

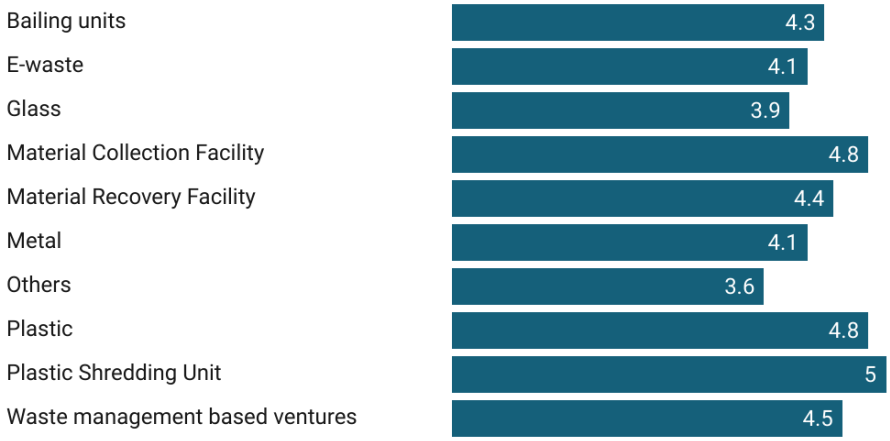
ULB responsibilities and activities for implementing legal provisions on WM

6. Others

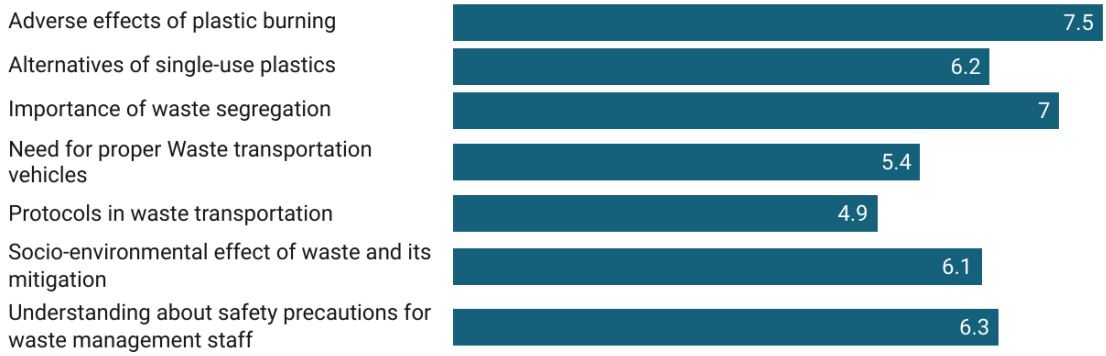
Ability to ensure active participation and partnership of general public in WM

Effectiveness of existing system of waste management,if present

Entrepreneurship and Private sector participation



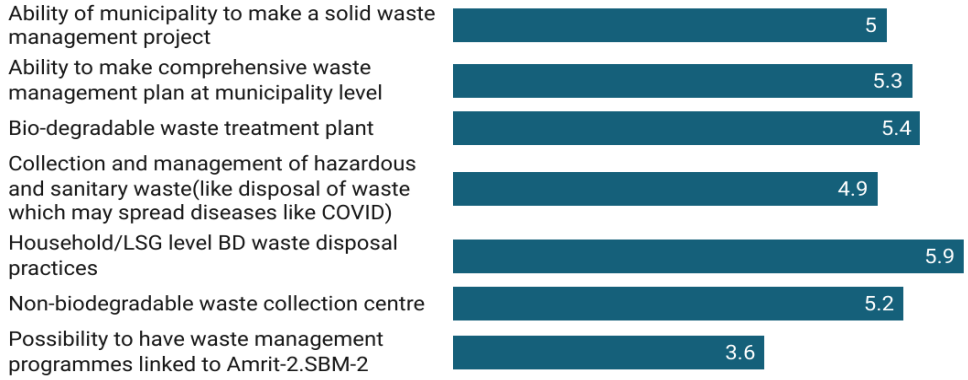
Environmental and social safeguards



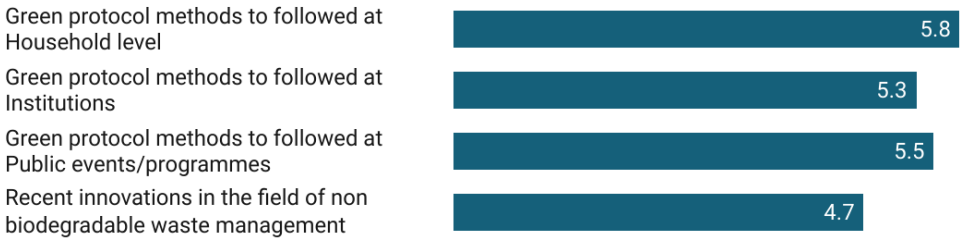
Overall rating of LSG's current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Project planning, design and management



Sustainable waste management practices



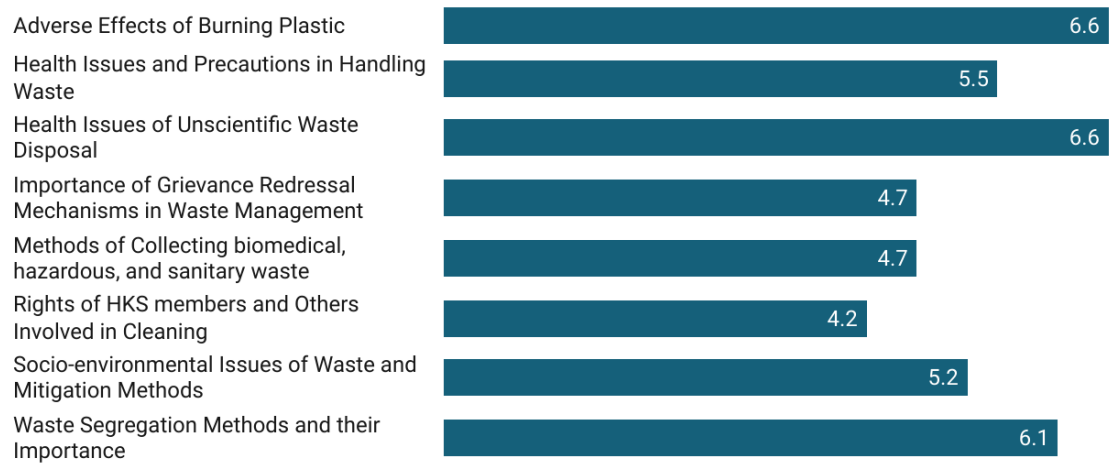
ULB responsibilities and activities for implementing legal provisions on WM

Appendix C3: Community Based Organizations

1. Bulk Waste generators

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards

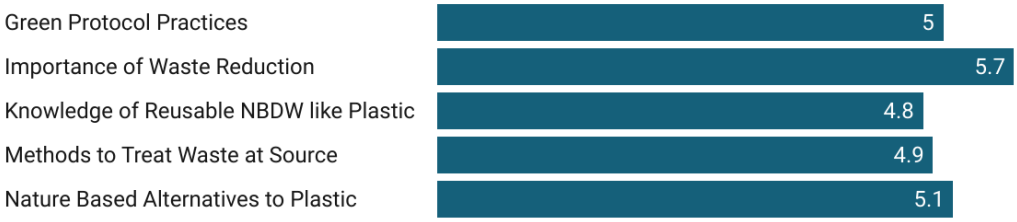


Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

Sustainable waste management practices

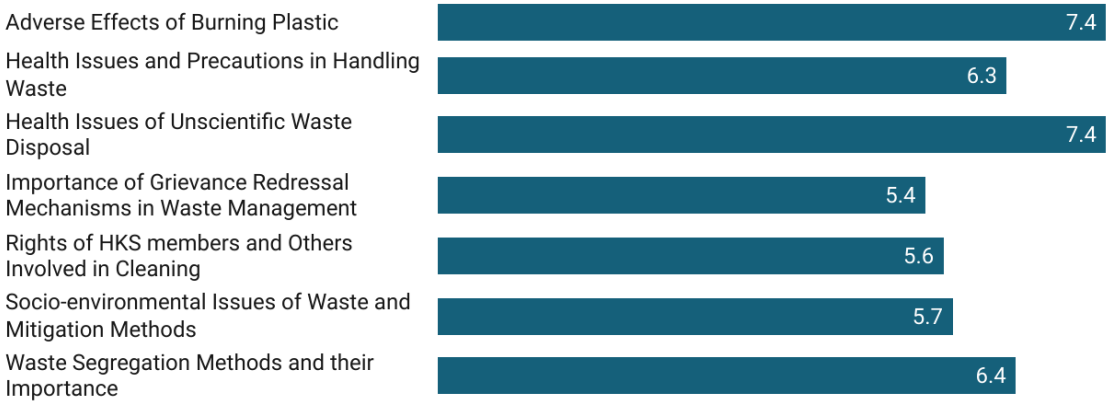


ULB responsibilities and activities for implementing legal provisions on WM

2. Kudumbasree

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards

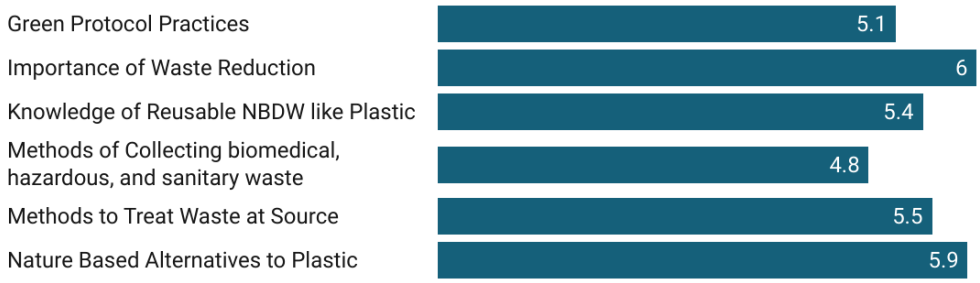


Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

Sustainable waste management practices

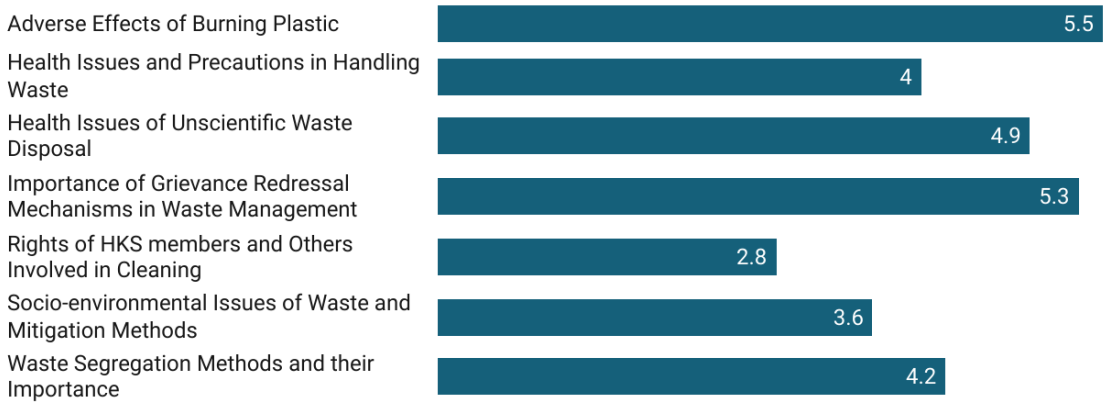


ULB responsibilities and activities for implementing legal provisions on WM

3. Merchants Organisations

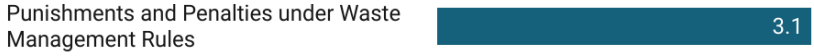
Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards

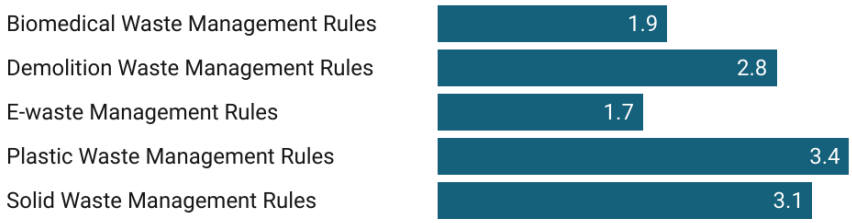


Overall rating of LSGs current waste management practices

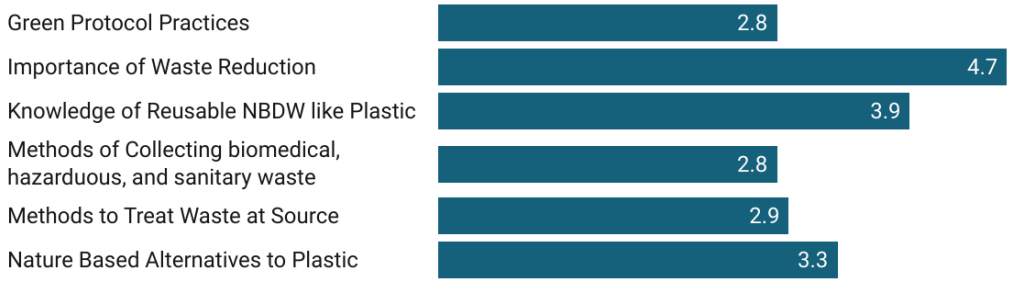
Penalties and Penal proceedings Under Waste Management Laws and Regulations



Rules and regulations of solid waste management



Sustainable waste management practices

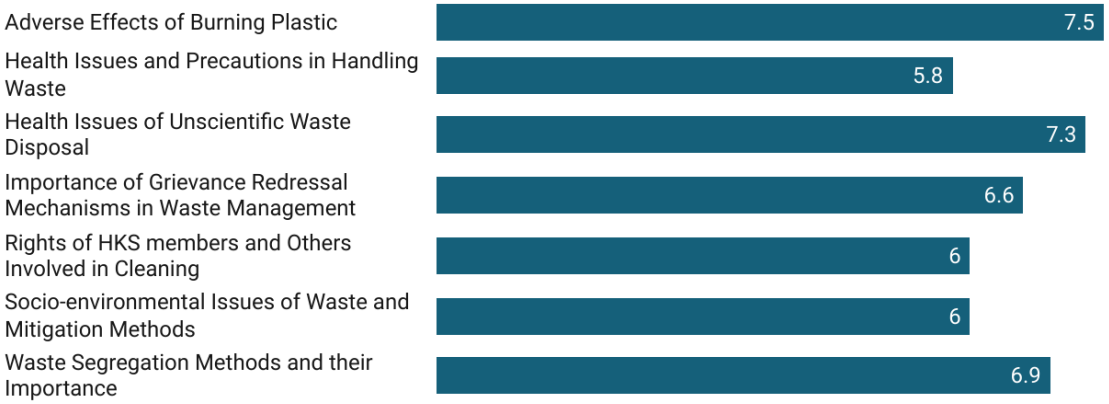


ULB responsibilities and activities for implementing legal provisions on WM

4. Residence Association

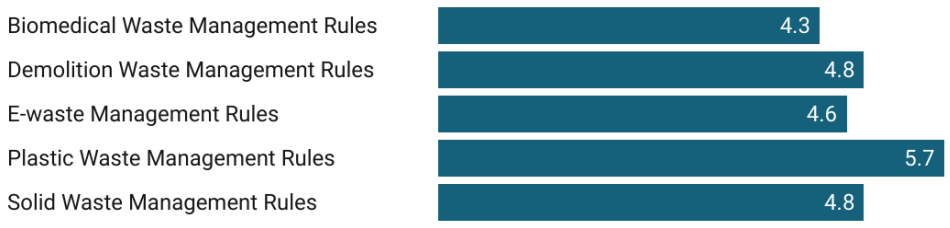
Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards

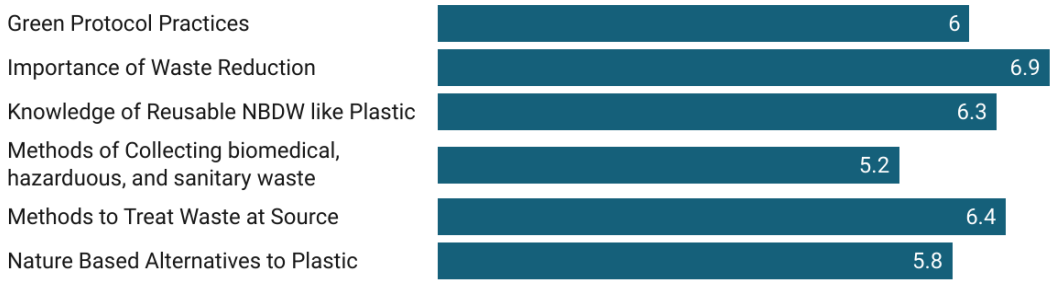


Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management



Sustainable waste management practices



ULB responsibilities and activities for implementing legal provisions on WM

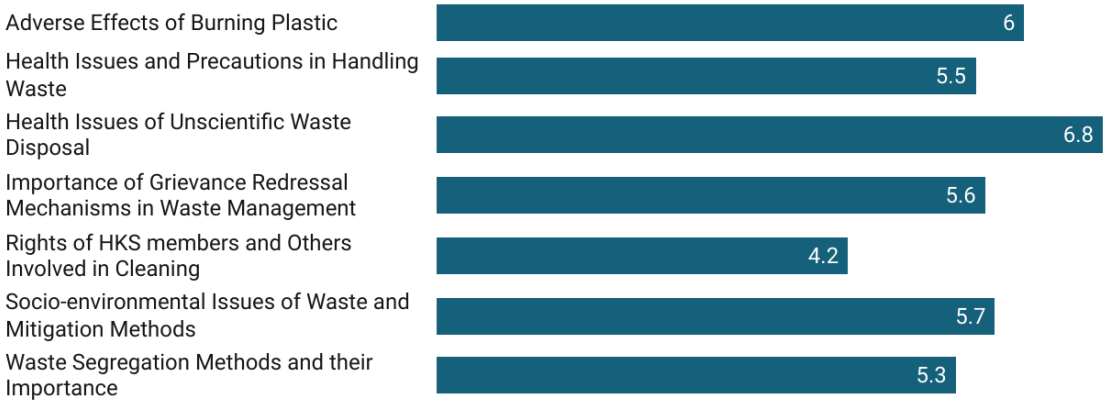
5. Voluntary Organisation

Ability to ensure active participation and partnership of general public in WM

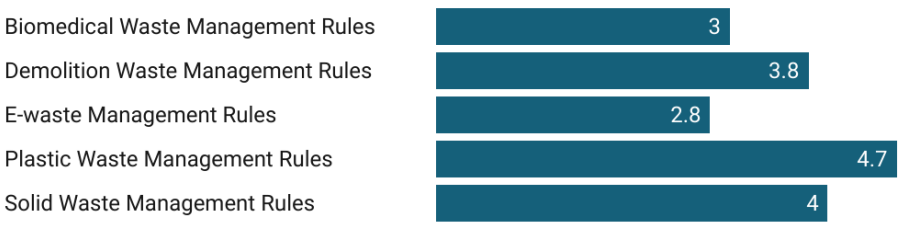
Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

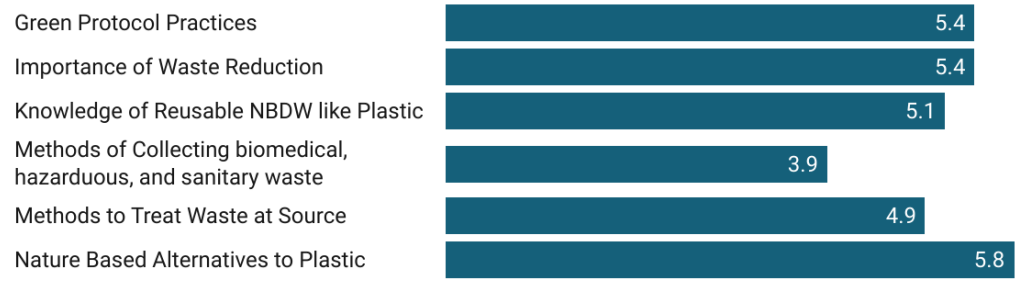
Environmental and social safeguards



Rules and regulations of solid waste management



Sustainable waste management practices

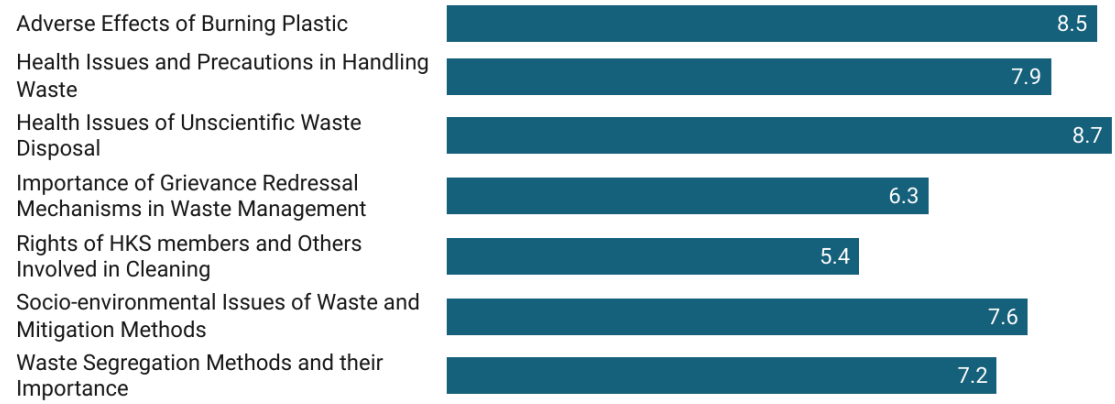


ULB responsibilities and activities for implementing legal provisions on WM

6. Others

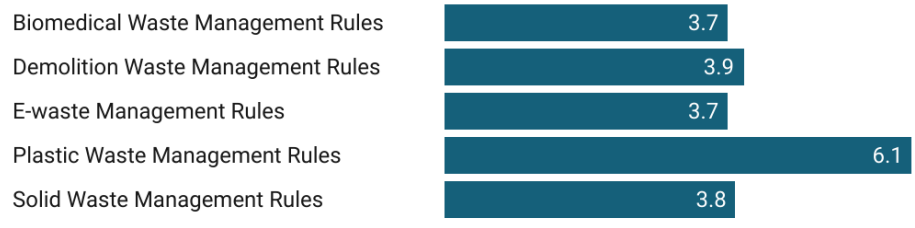
Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards

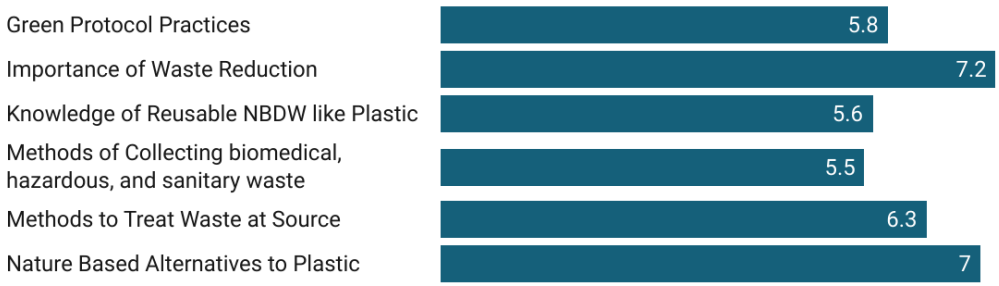


Penalties and Penal proceedings Under Waste Management Laws and Regulations

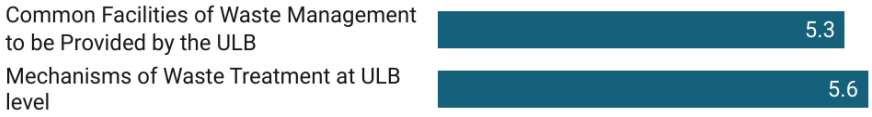
Rules and regulations of solid waste management



Sustainable waste management practices



ULB responsibilities and activities for implementing legal provisions on WM

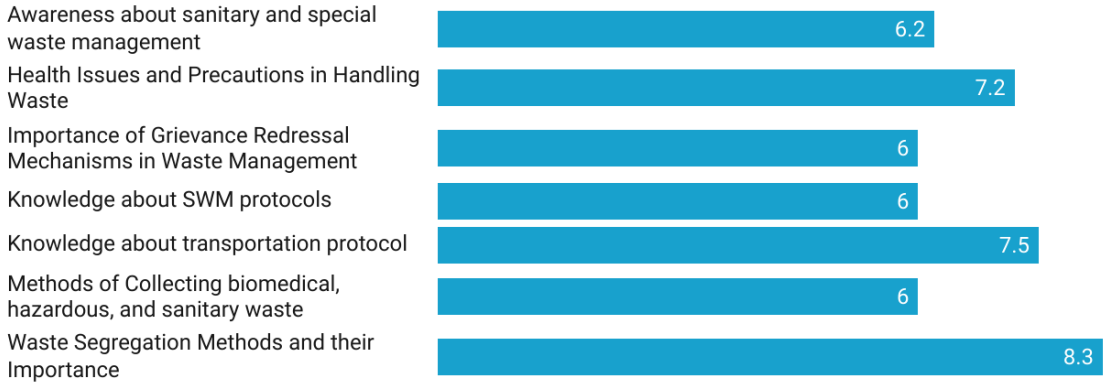


APPENDIX C4: SANITATION WORKERS INVOLVED IN THE WASTE MANAGEMENT

1. Waste transporters

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards



Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

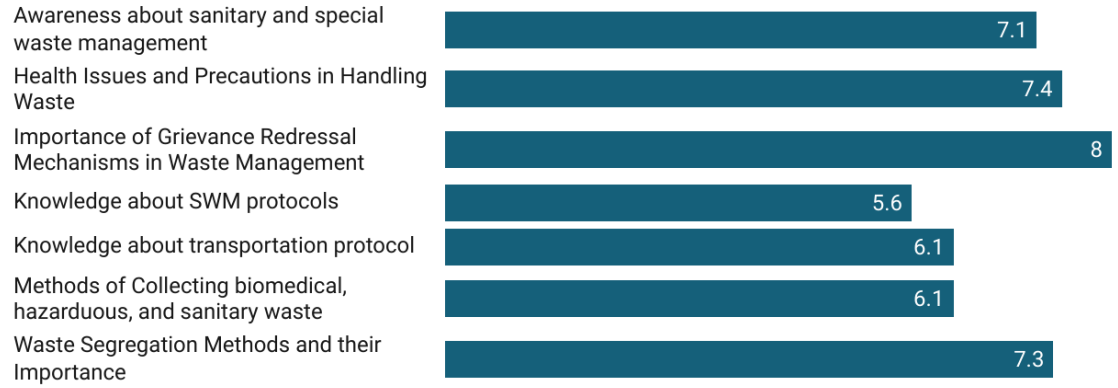
Sustainable waste management practices

ULB activities for on WM

2. Ragpickers

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards



Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

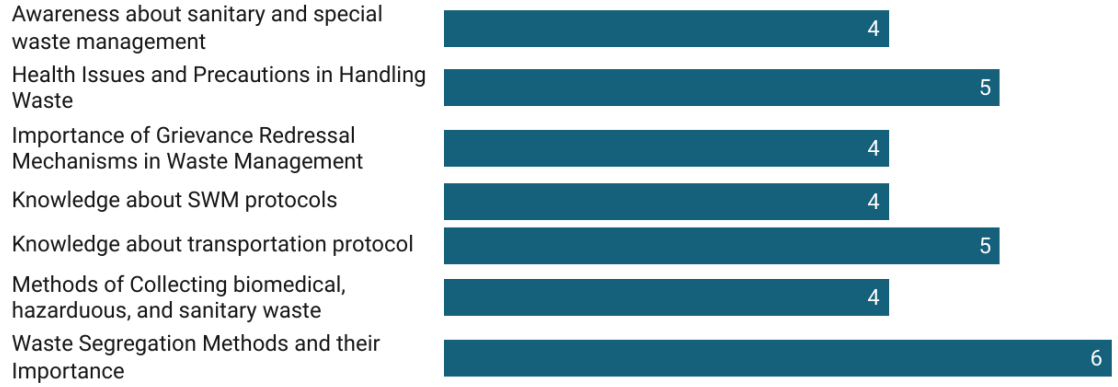
Sustainable waste management practices

ULB activities for on WM

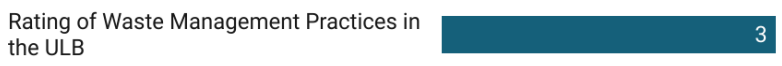
3. Recycling workers

Ability to ensure active participation and partnership of general public in WM

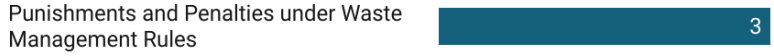
Environmental and social safeguards



Overall rating of LSGs current waste management practices



Penalties and Penal proceedings Under Waste Management Laws and Regulations



Rules and regulations of solid waste management

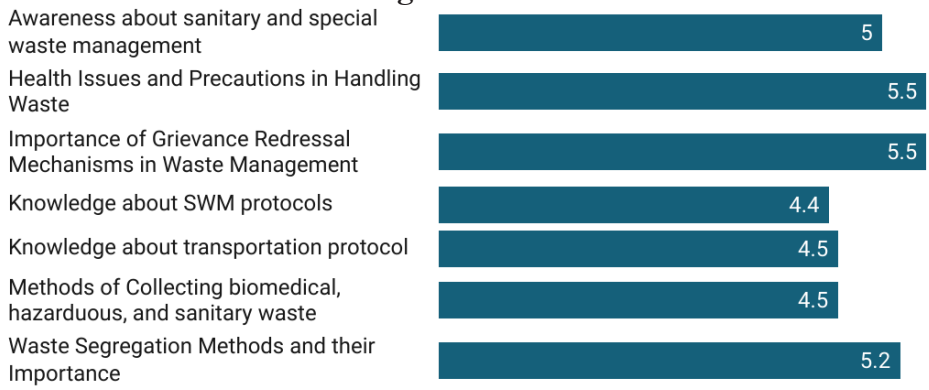
Sustainable waste management practices

ULB activities for on WM

4. Waste management workers

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards



Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

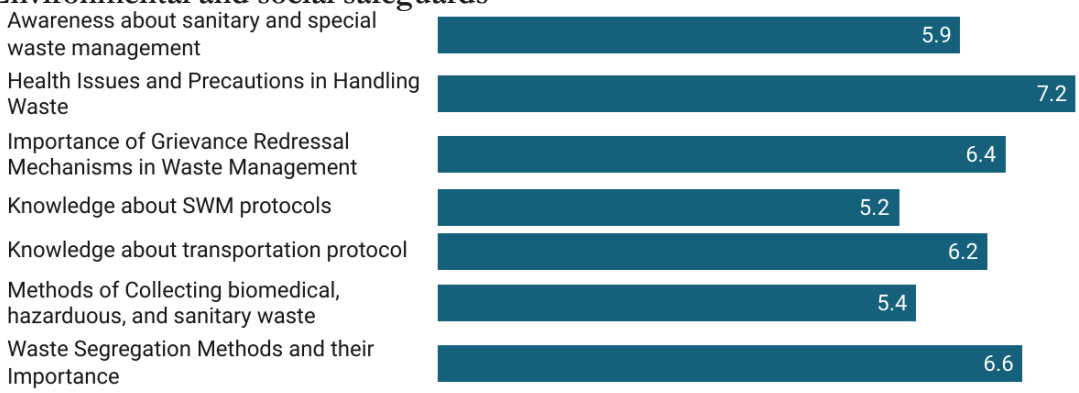
Sustainable waste management practices

ULB activities for on WM

5. Sanitation workers

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards



Overall rating of LS's current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

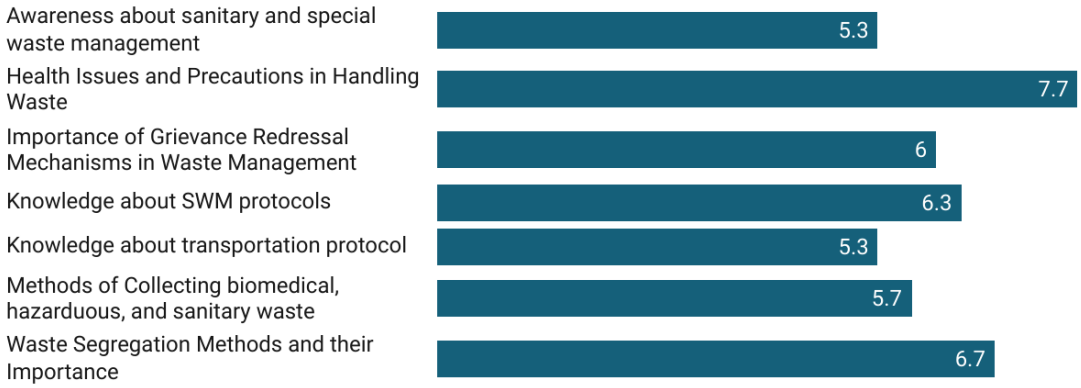
Sustainable waste management practices

ULB activities for on WM

6. Waste collection agencies

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards



Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

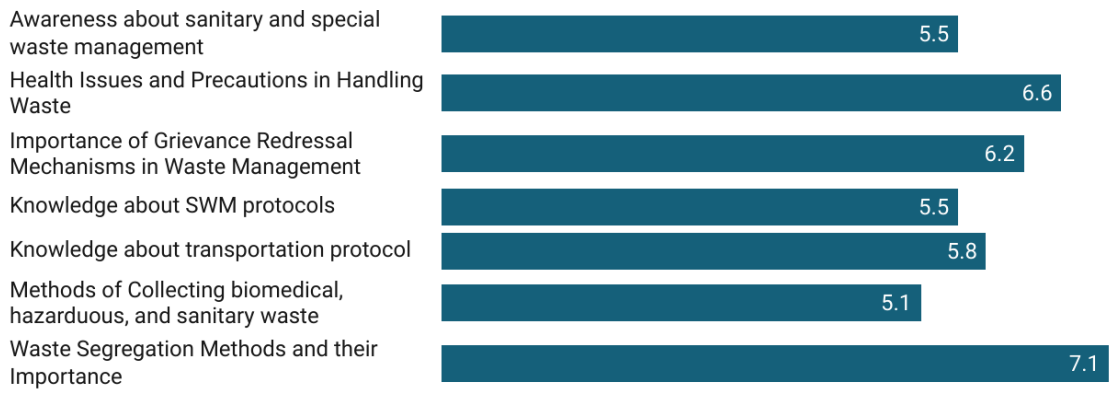
Sustainable waste management practices

ULB activities for on WM

7. Haritha Karma Sena

Ability to ensure active participation and partnership of general public in WM

Environmental and social safeguards



Overall rating of LSGs current waste management practices

Penalties and Penal proceedings Under Waste Management Laws and Regulations

Rules and regulations of solid waste management

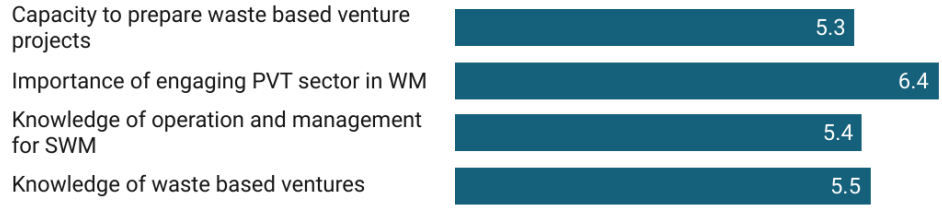
Sustainable waste management practices

ULB activities for on WM

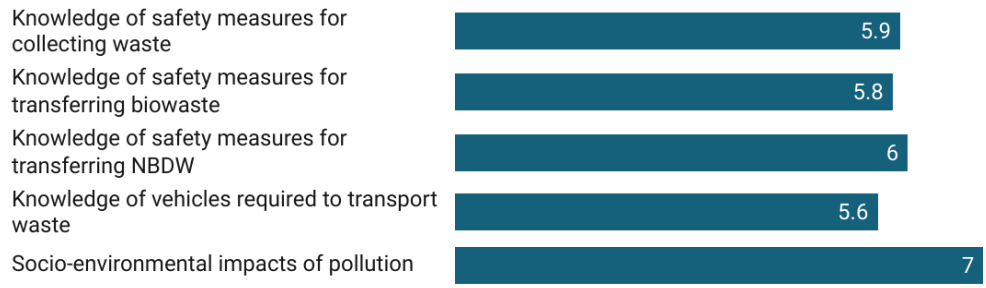
APPENDIX C5: DISTRICT LEVEL OFFICIALS OF STATE AGENCIES AND DEPARTMENTS

1. Haritha Kerala Mission

Entrepreneurship and Private sector participation

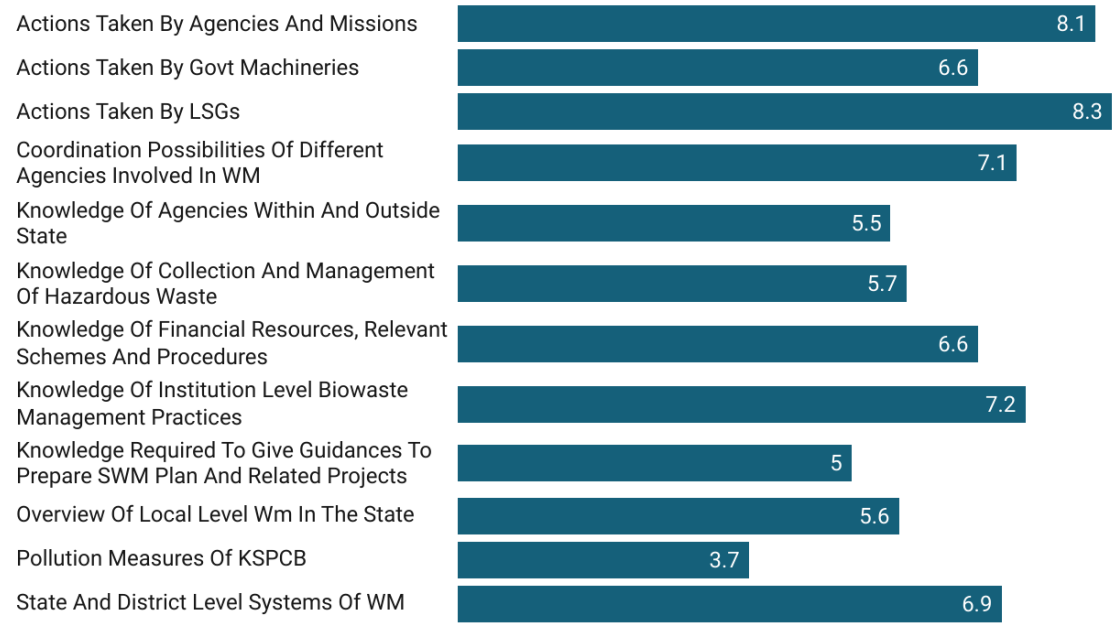


Environmental and social safeguards



Importance of meaningful community participation

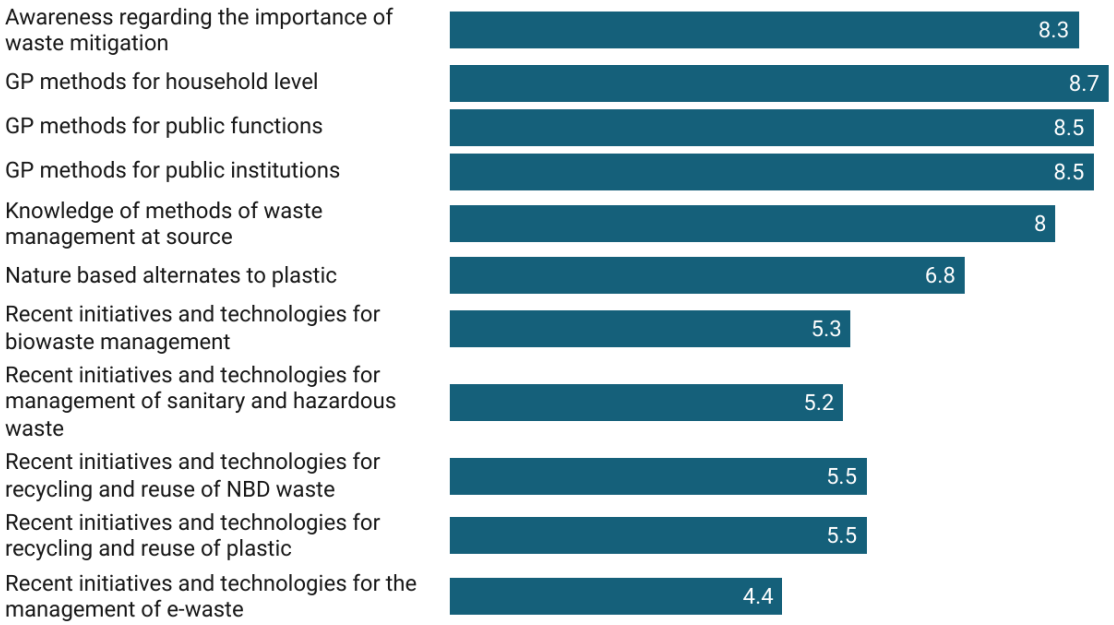
Knowledge of waste management systems and agencies at various levels



Penalties and Penal proceedings Under Waste Management Laws and Regulations

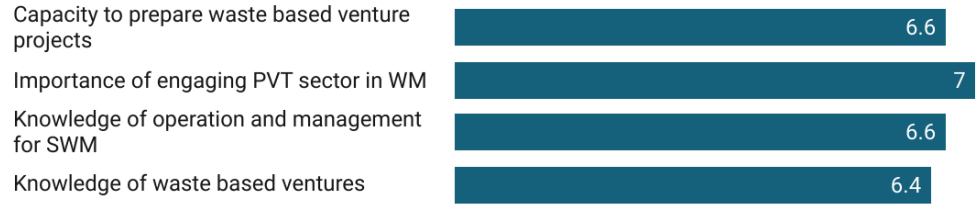
Rules and regulations of solid waste management

Sustainable waste management practices

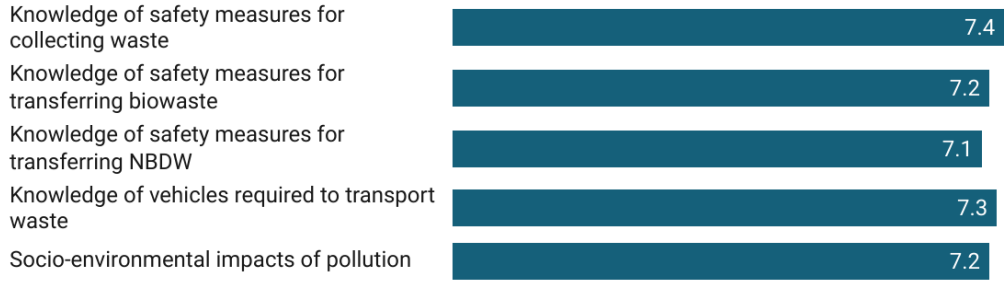


2. Suchitwa Mission

Entrepreneurship and Private sector participation

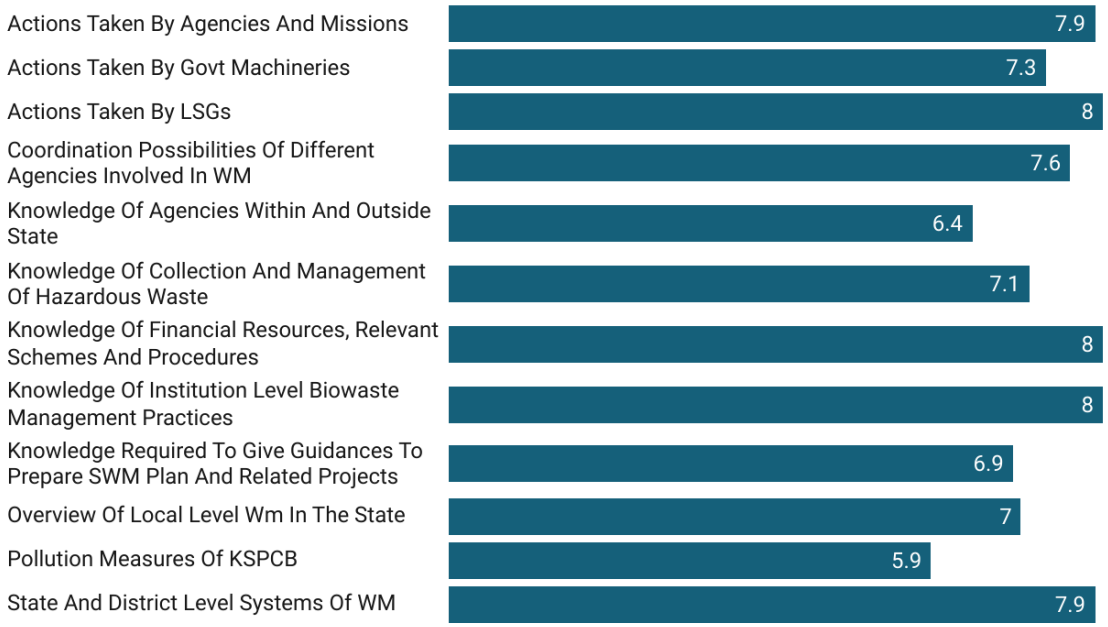


Environmental and social safeguards



Importance of meaningful community participation

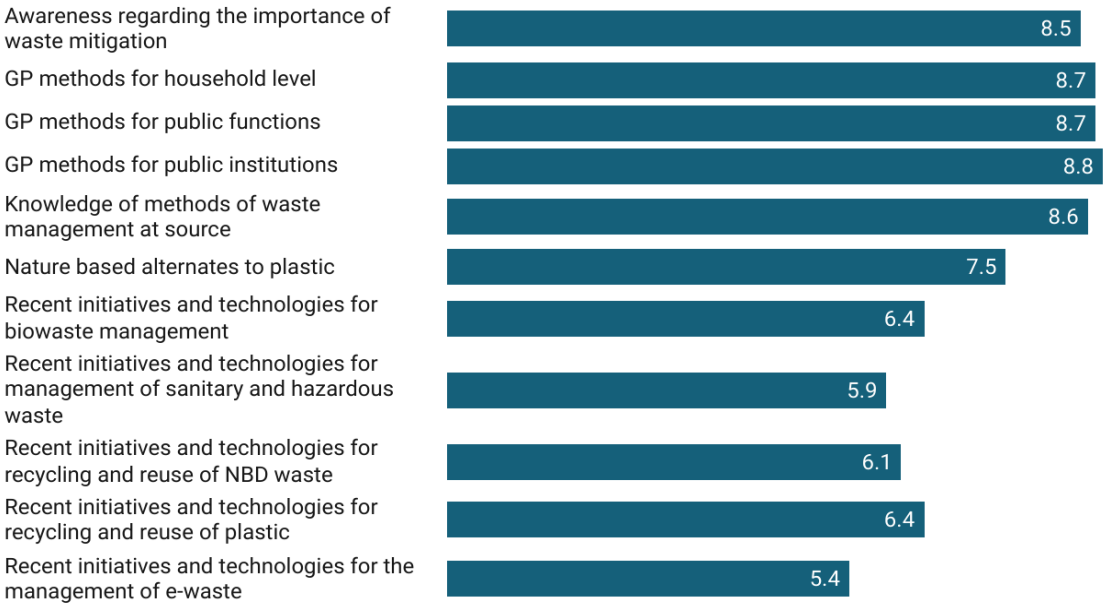
Knowledge of waste management systems and agencies at various levels



Penalties and Penal proceedings Under Waste Management Laws and Regulations

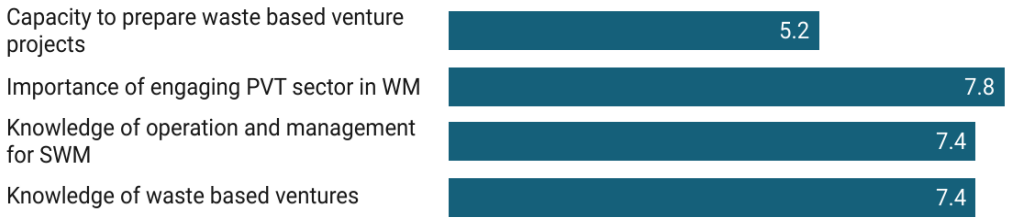
Rules and regulations of solid waste management

Sustainable waste management practices

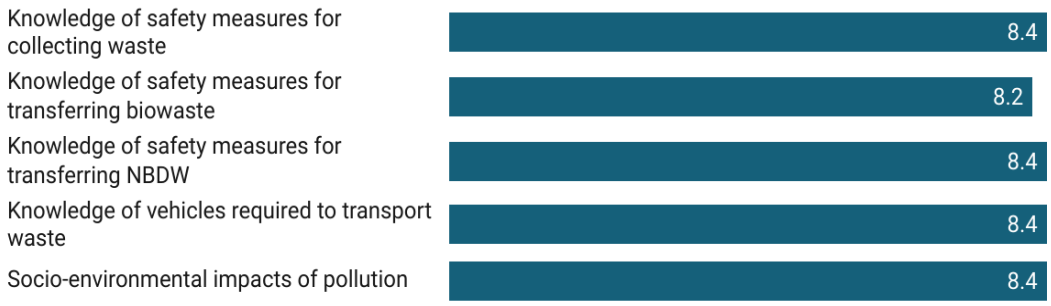


3. Kerala State Pollution Control Board

Entrepreneurship and Private sector participation

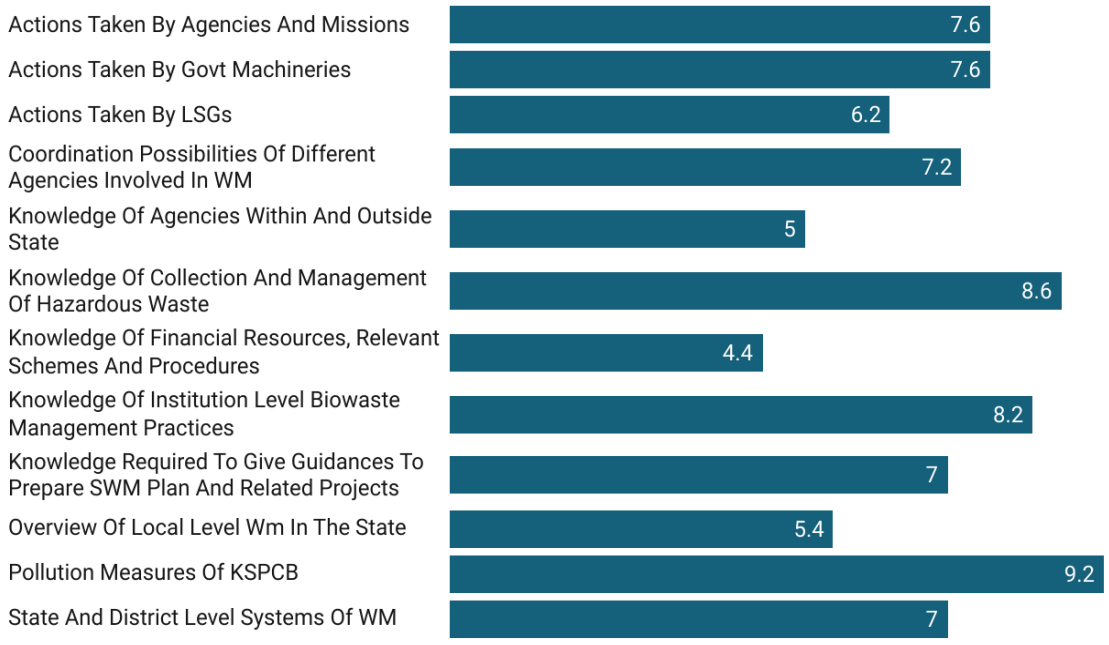


Environmental and social safeguards



Importance of meaningful community participation

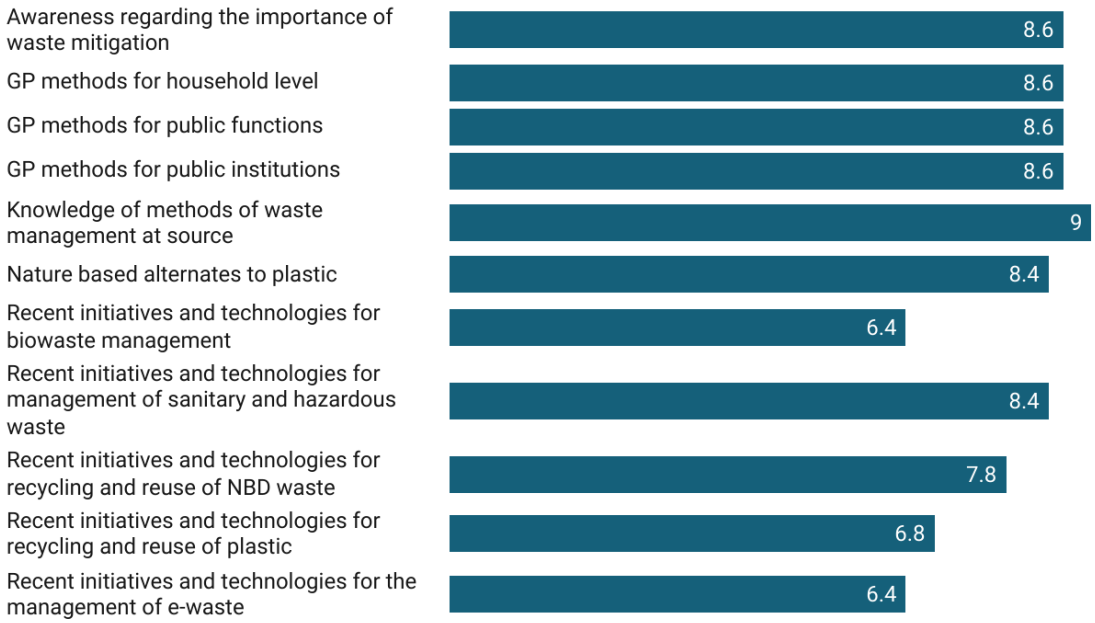
Knowledge of waste management systems and agencies at various levels



Penalties and Penal proceedings Under Waste Management Laws and Regulations

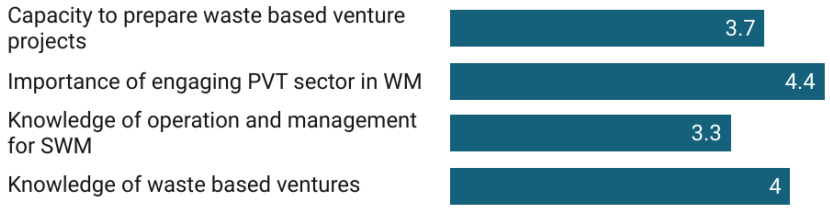
Rules and regulations of solid waste management

Sustainable waste management practices

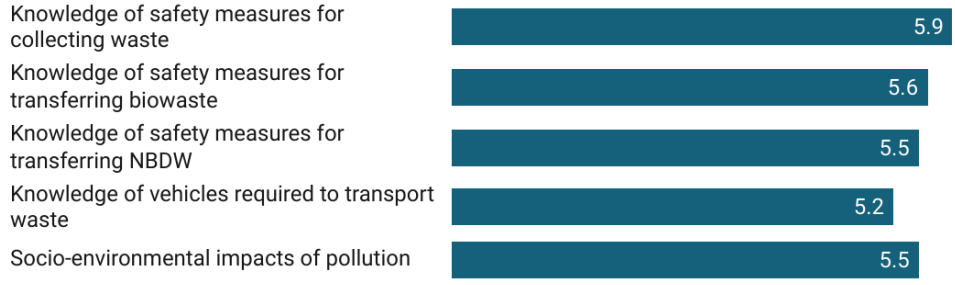


4. Health Department Officials

Entrepreneurship and Private sector participation

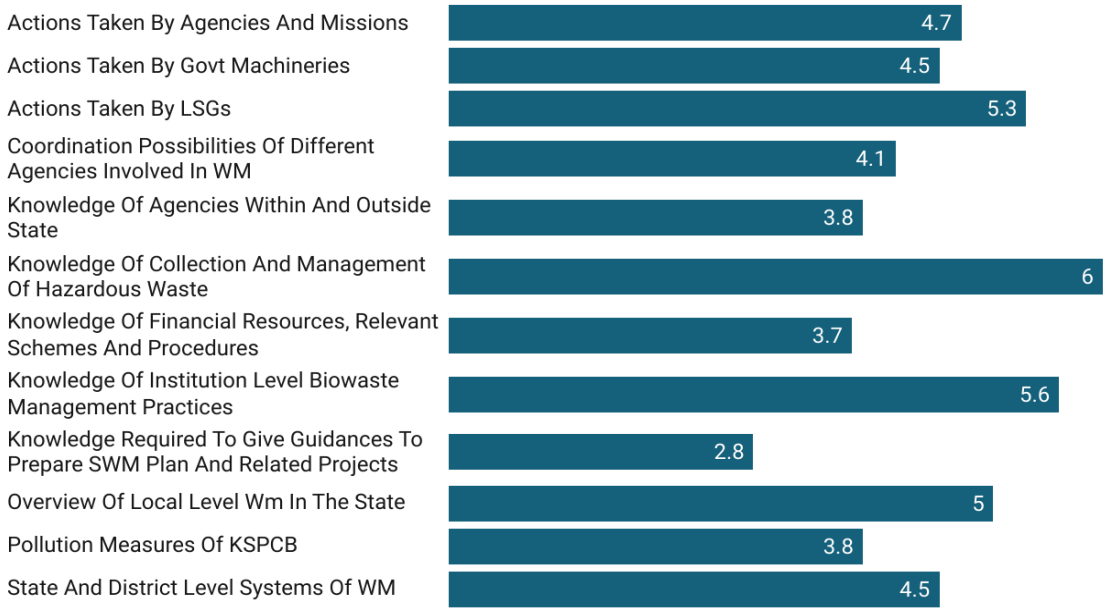


Environmental and social safeguards



Importance of meaningful community participation

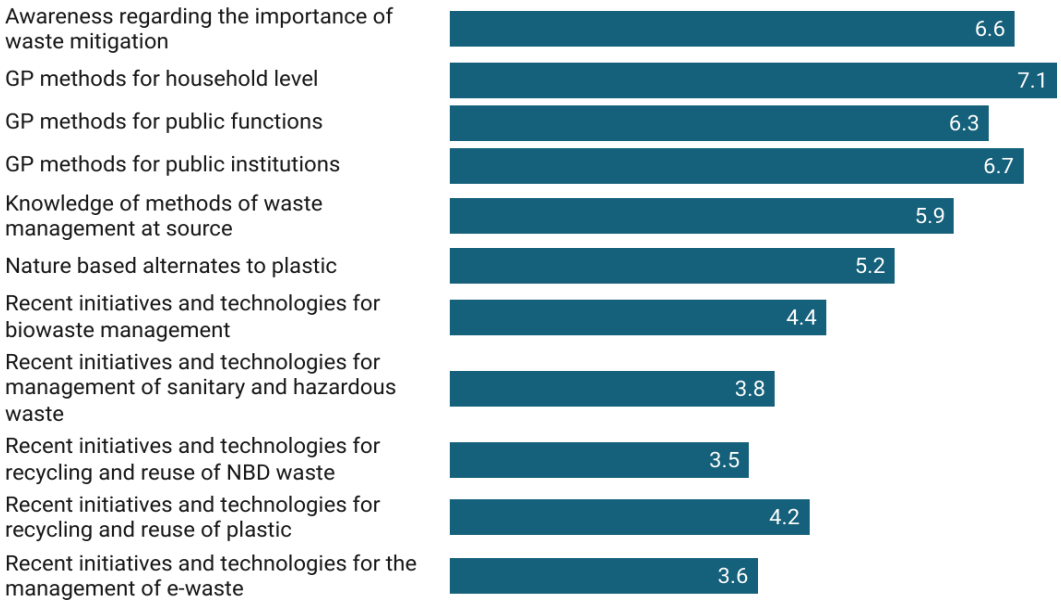
Knowledge of waste management systems and agencies at various levels



Penalties and Penal proceedings Under Waste Management Laws and Regulations

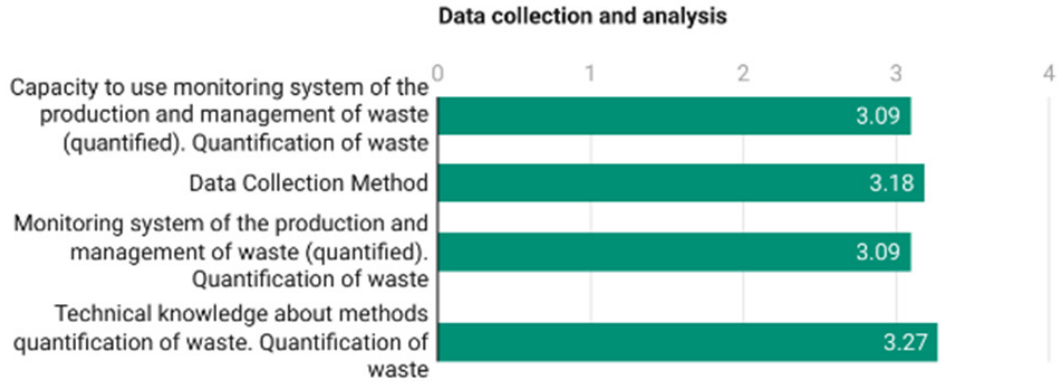
Rules and regulations of solid waste management

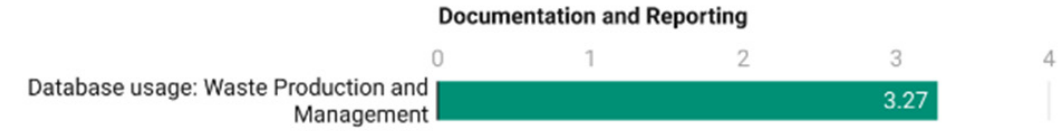
Sustainable waste management practices

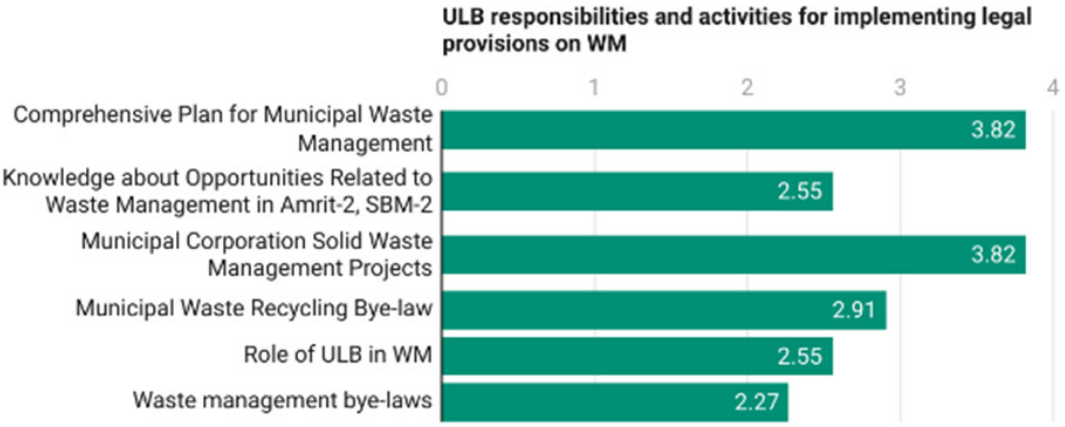


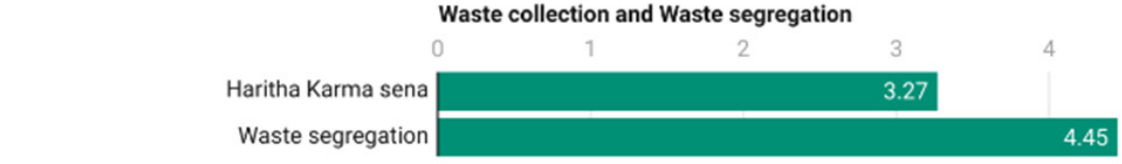
APPENDIX D: SCORES FOR KSWMP STAFF IN VARIOUS CATEGORIES

APPENDIX D1 : SCORES FOR ENVIRONMENTAL ENGINEERS

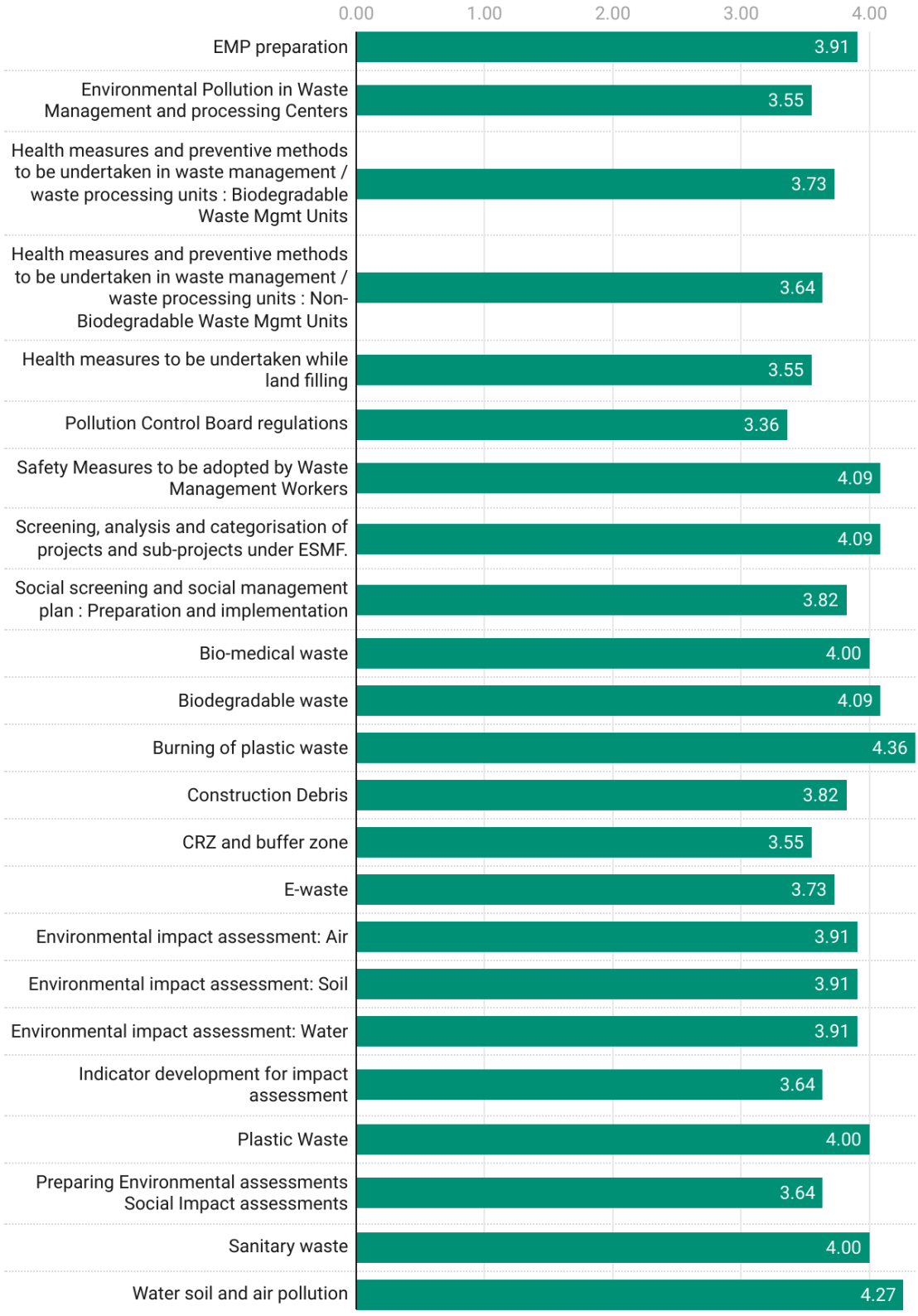


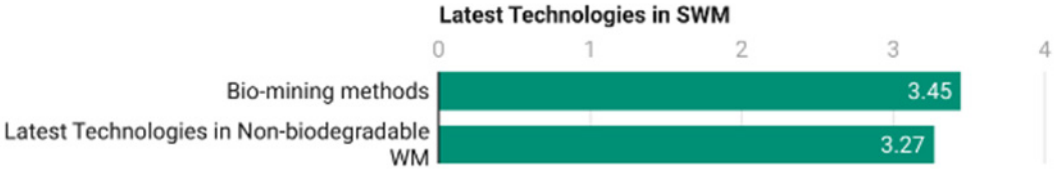




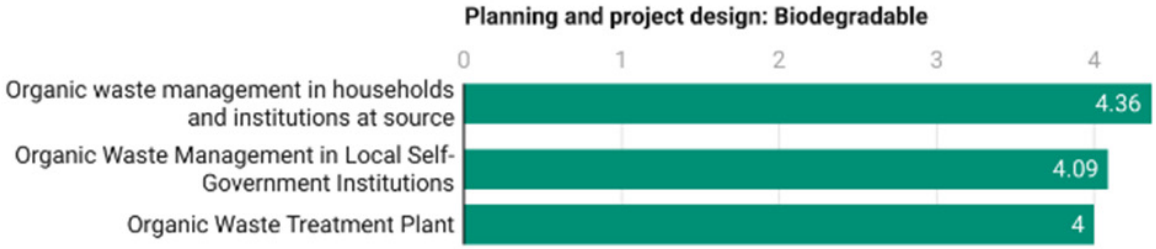


Environmental and Social Safeguards

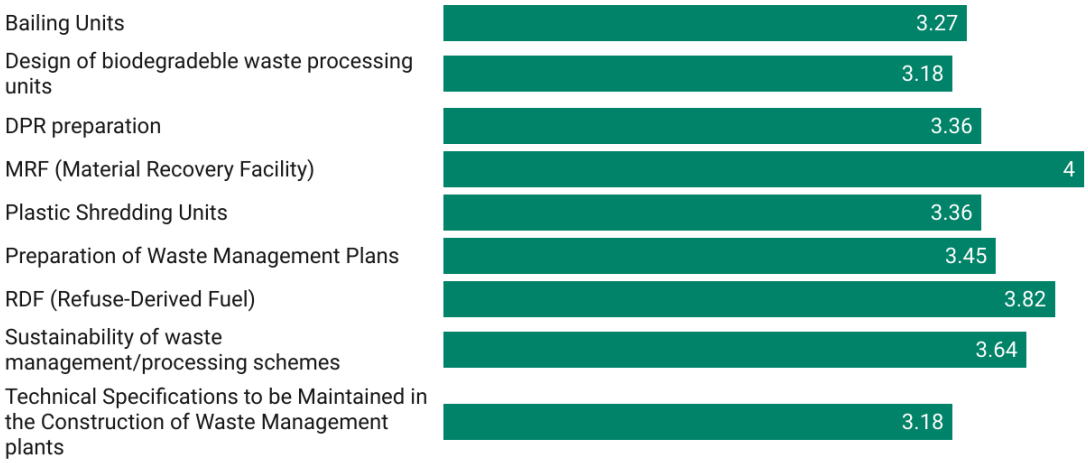


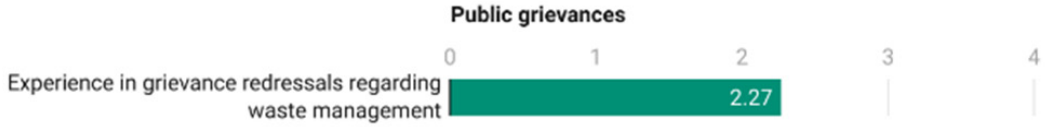


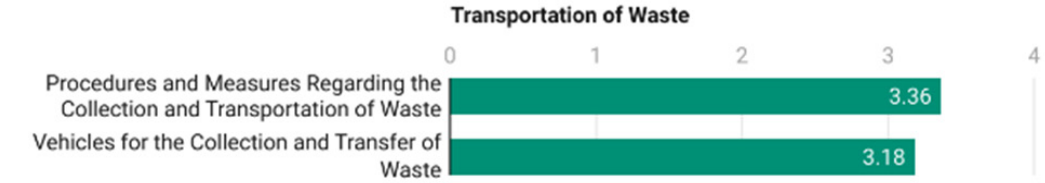
Participatory Approaches and Social management Principles



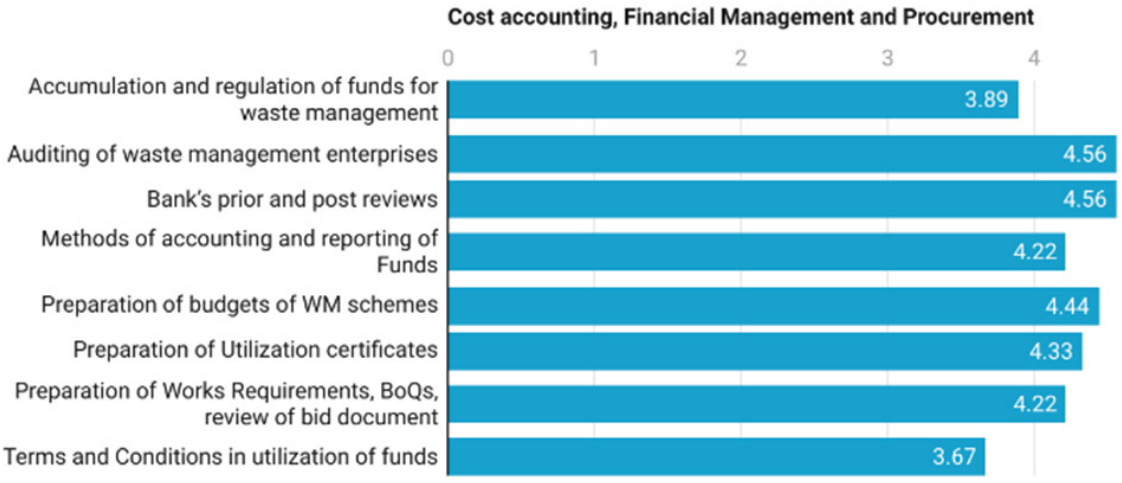
Project planning, design and management

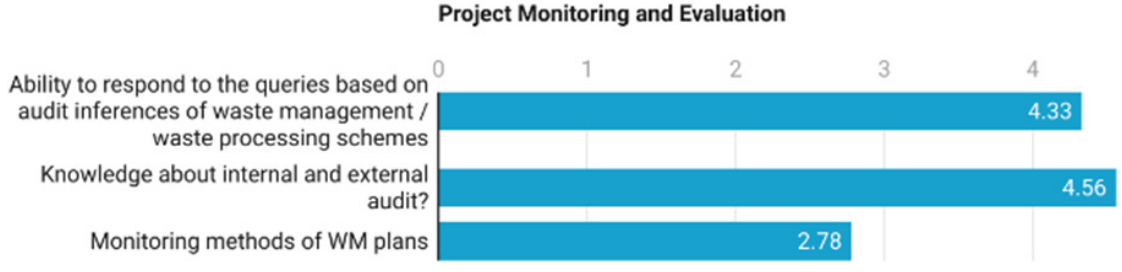


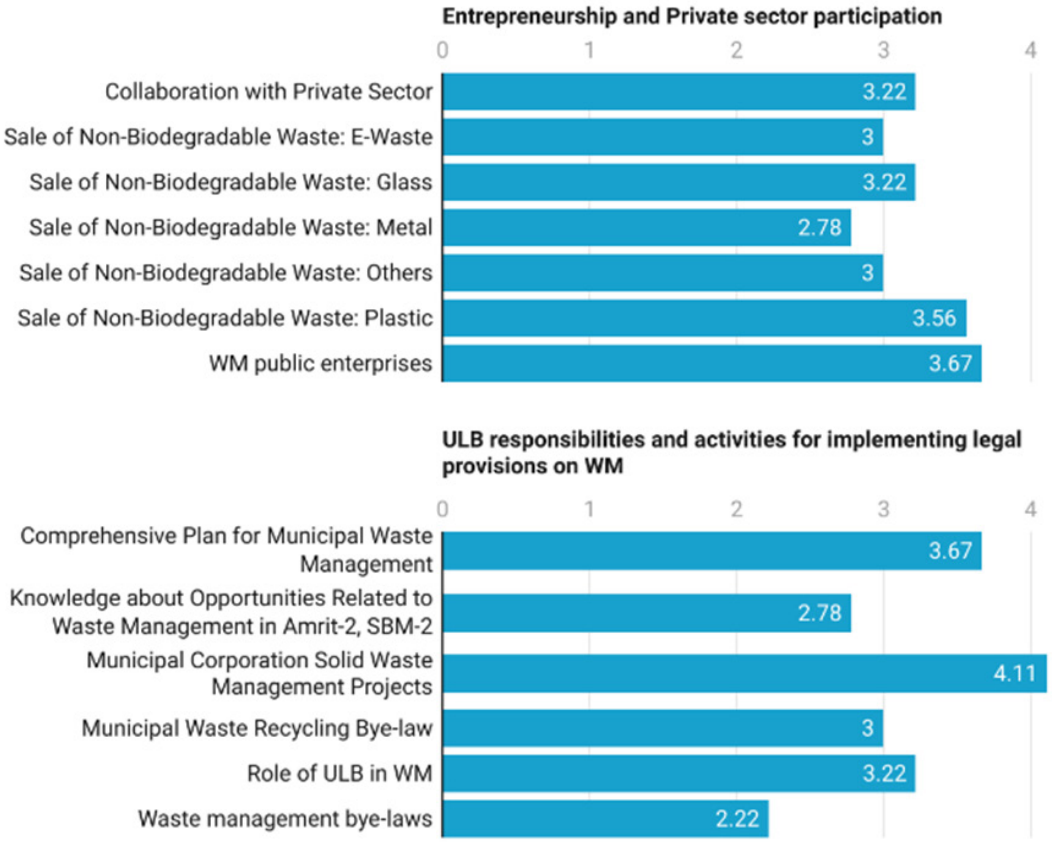




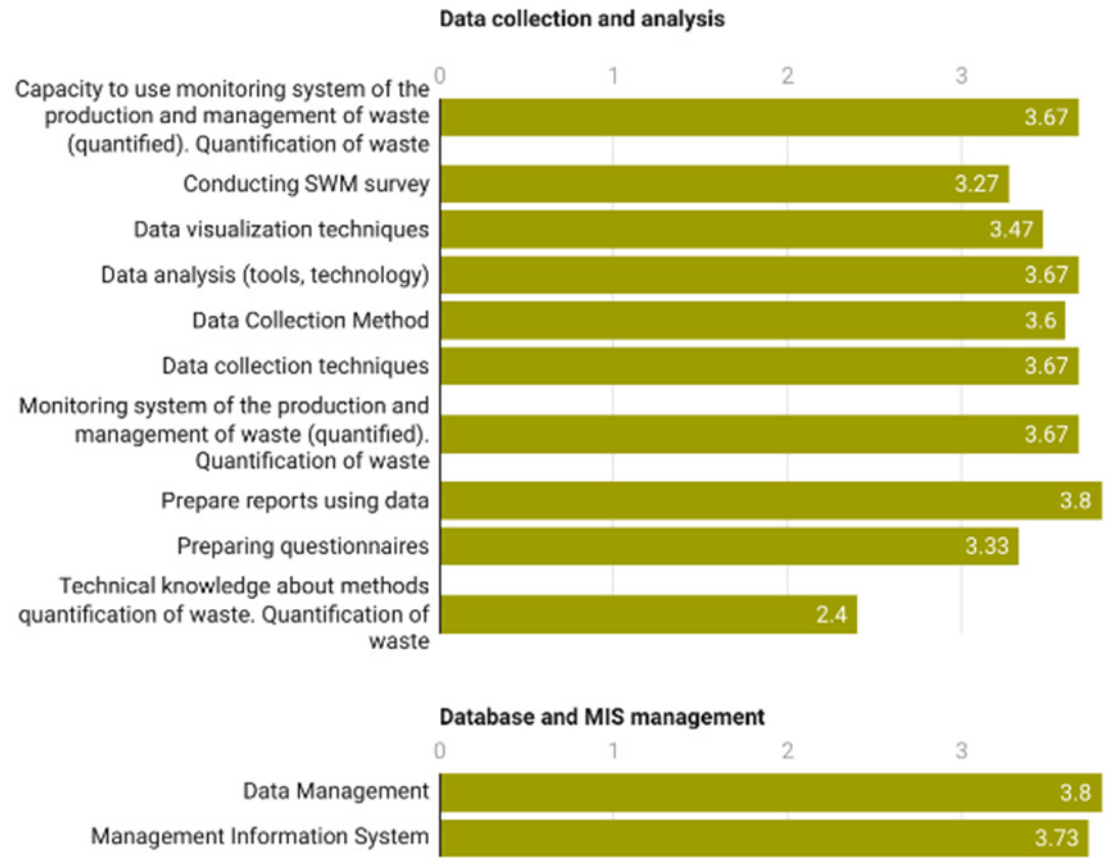
Appendix D2: Scores of Financial experts





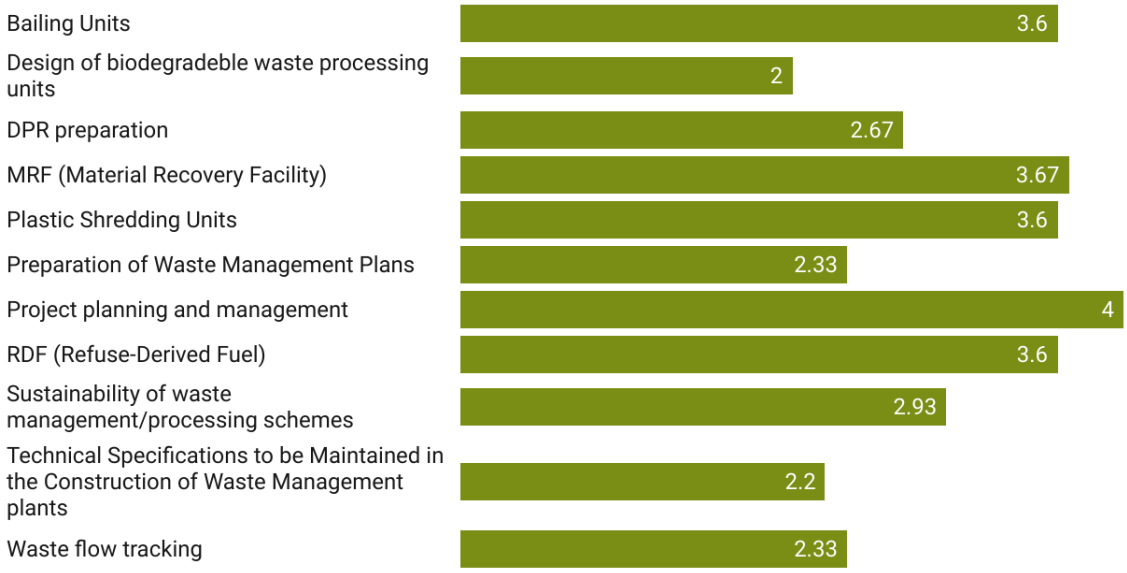


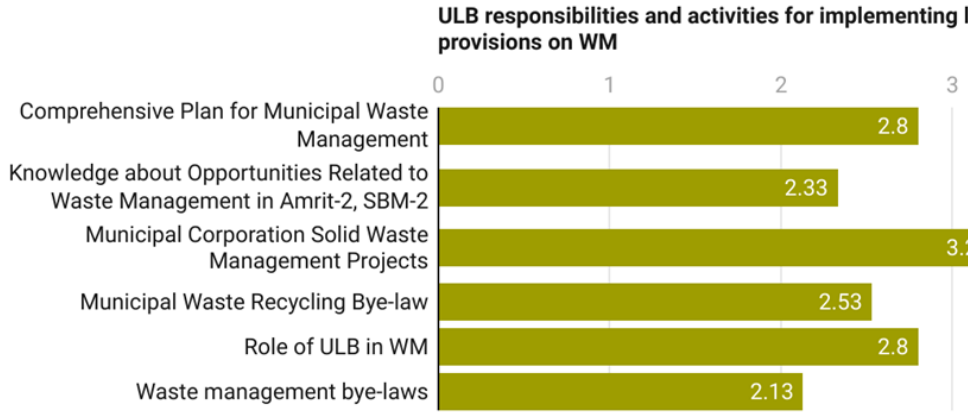
Appendix D3 : Scores of Monitoring & Evaluation experts

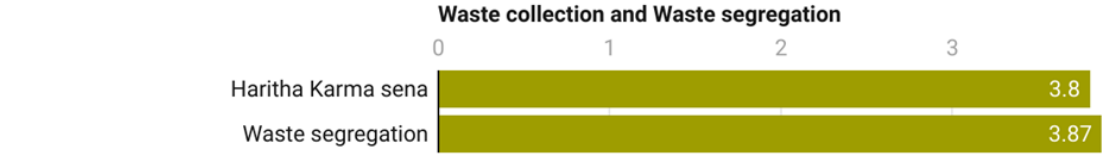


Participatory approaches and Social management principles

Project planning, design and management

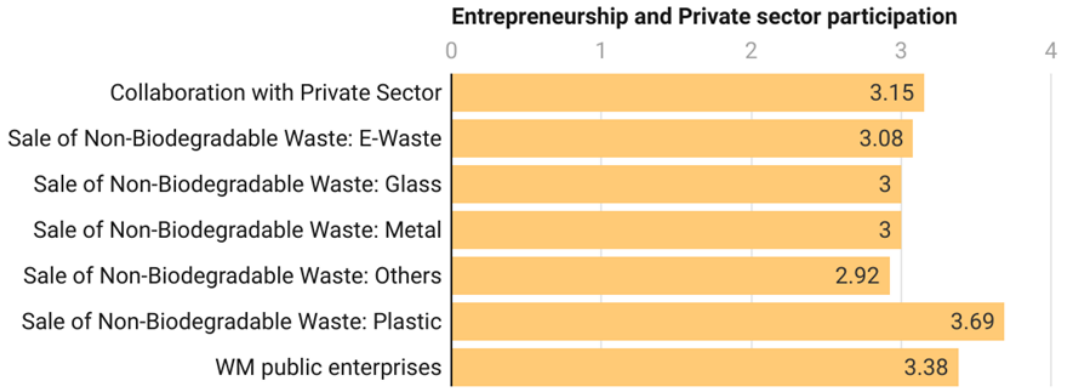


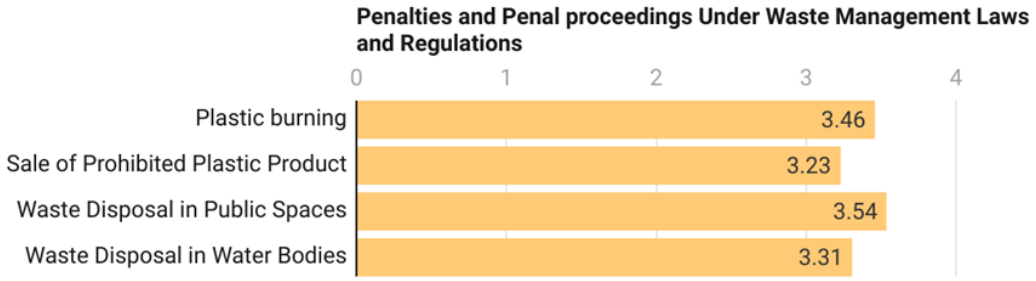


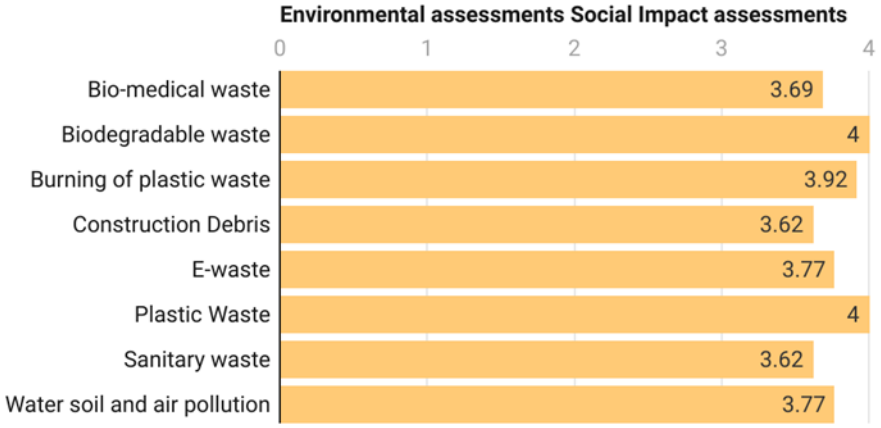


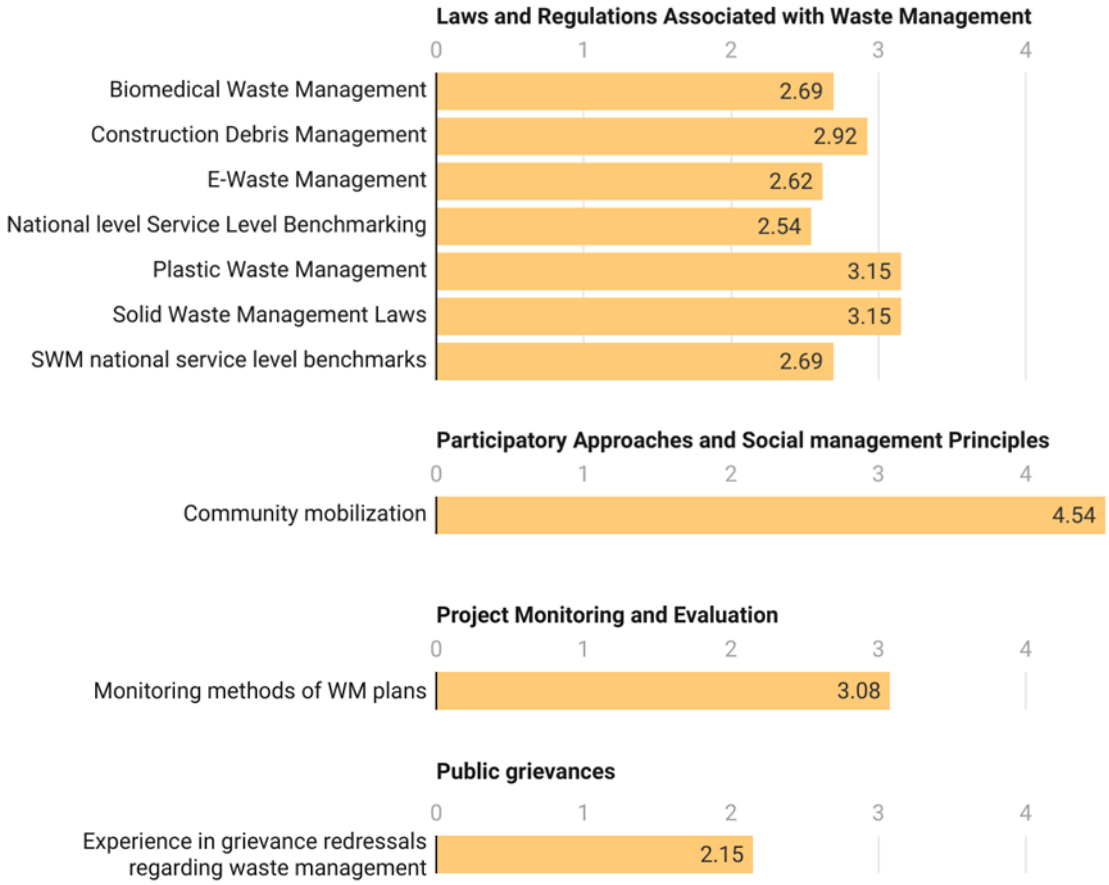
Appendix D4: Scores for Social and Communication Experts

Data collection and analysis

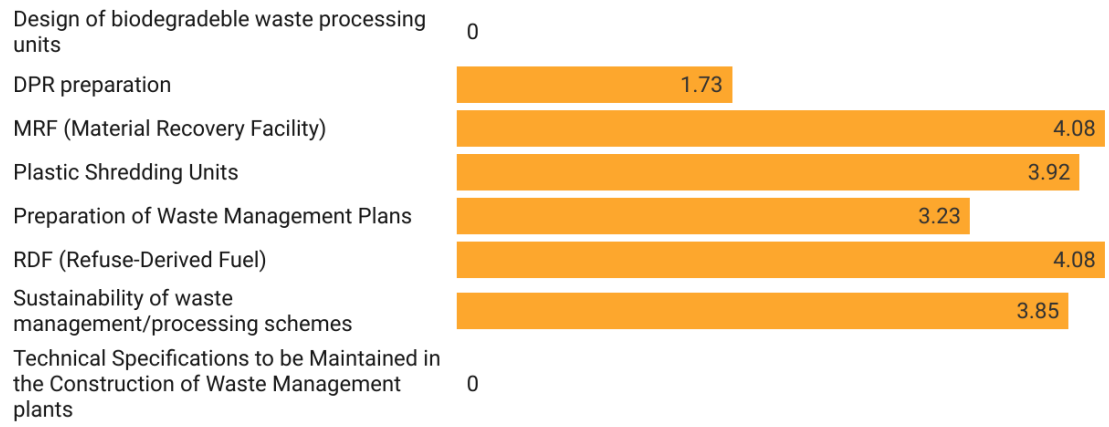


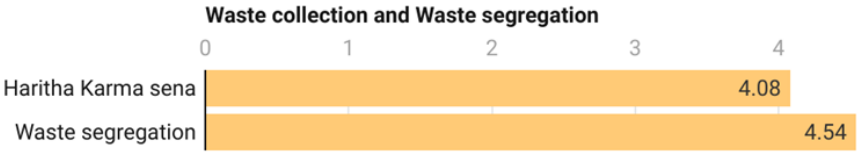




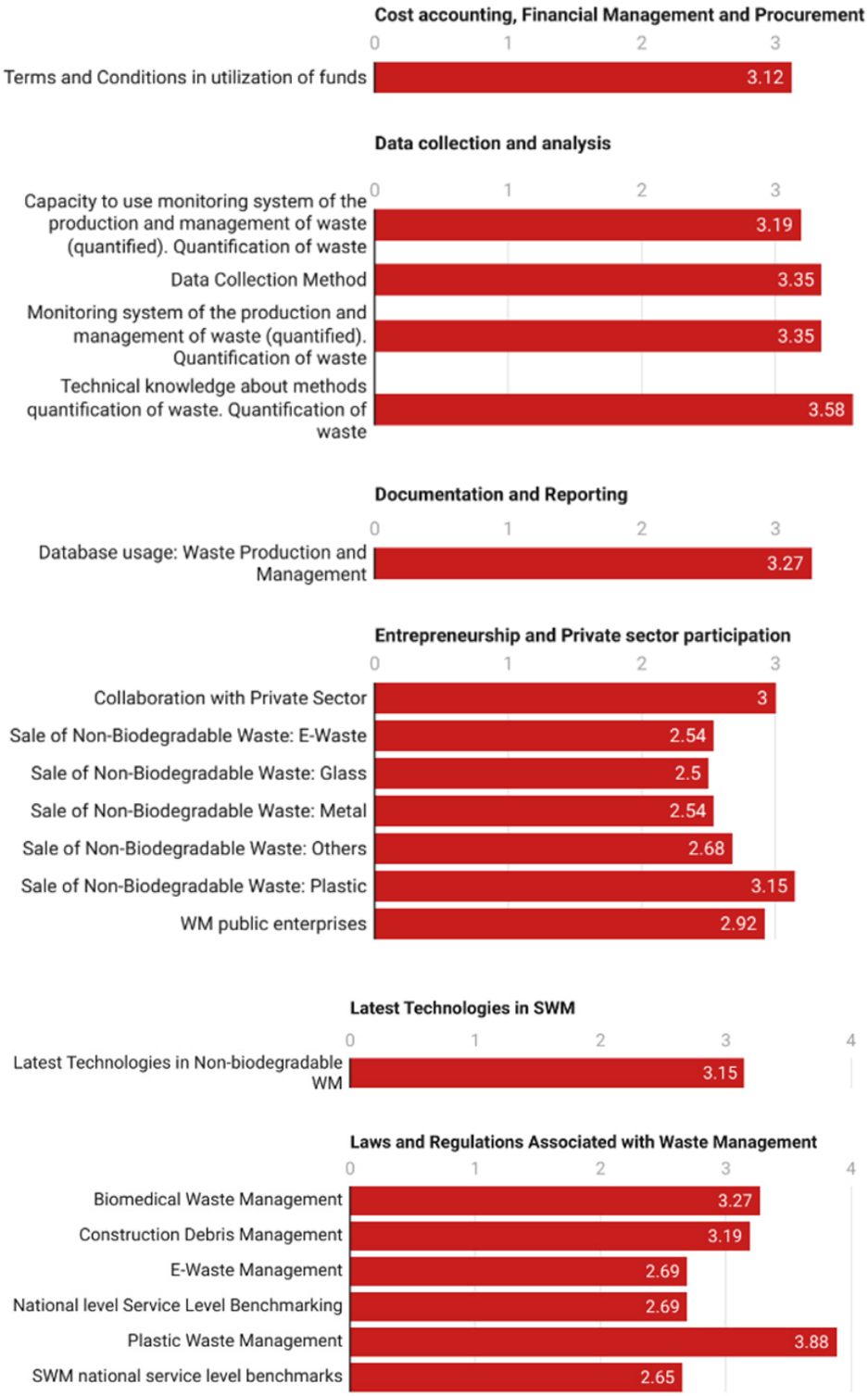


Project planning, design and management

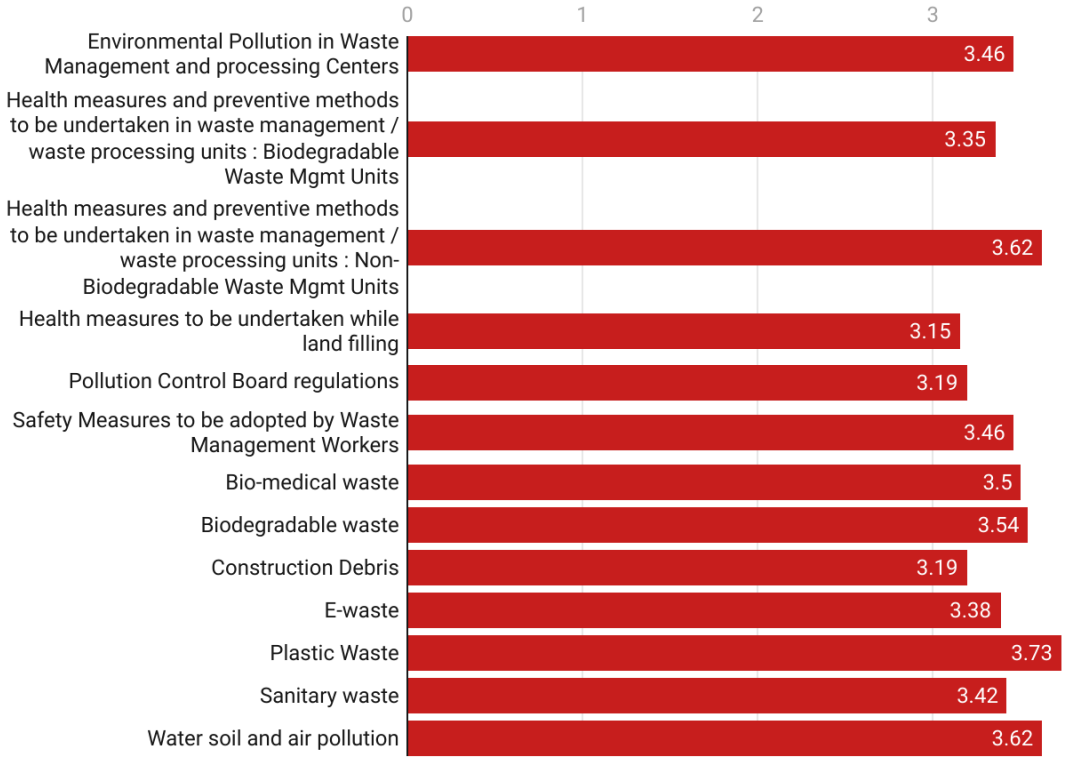


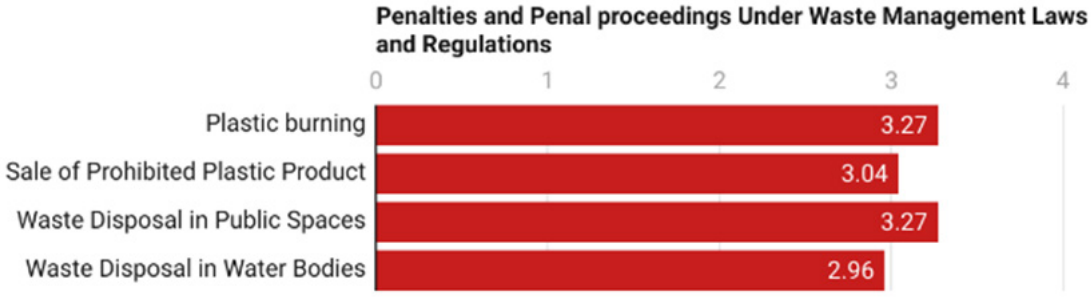


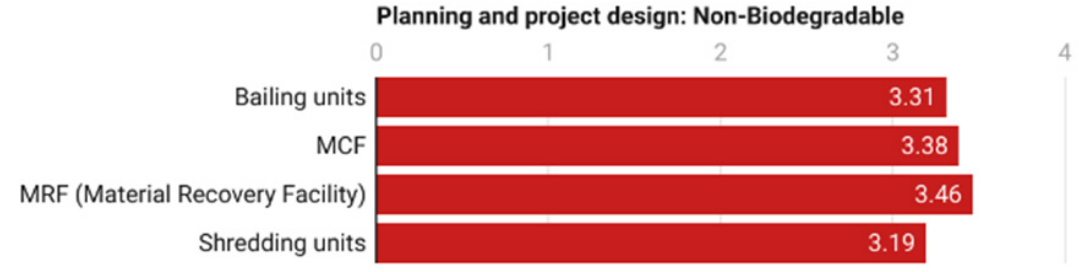
Appendix D5 : Scores for SWM Engineer/DyDC



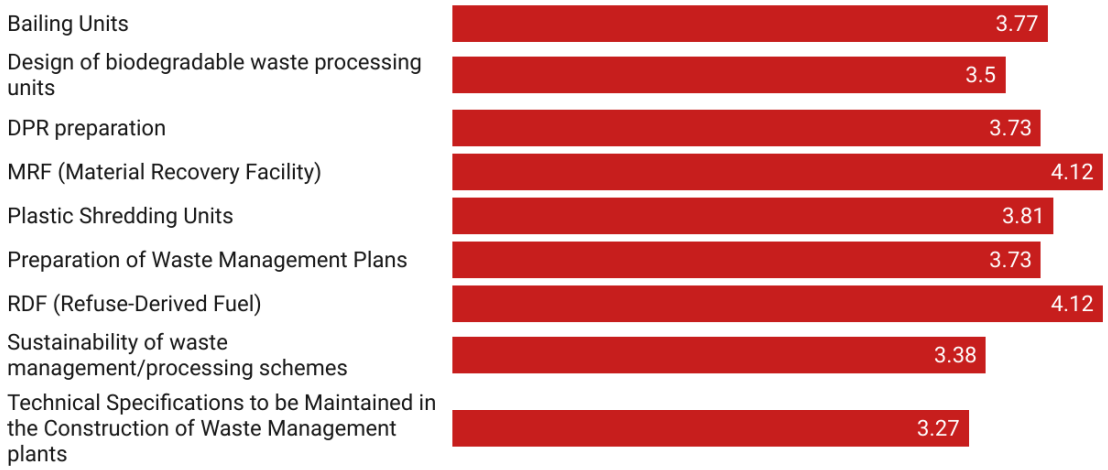
Environmental and Social safeguard

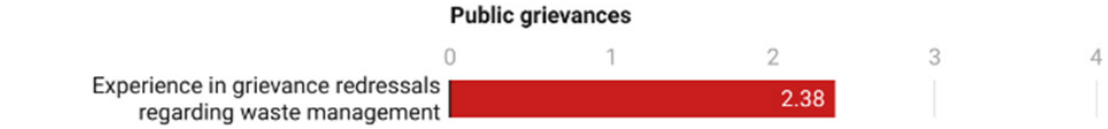


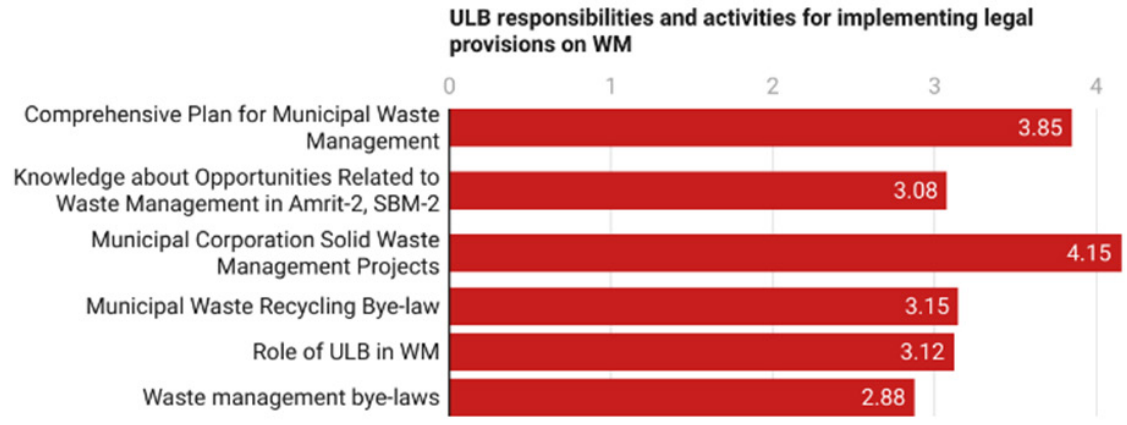


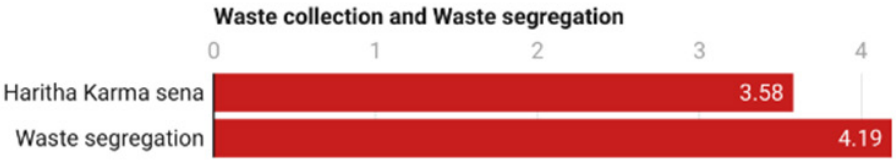


Project planning, design and management

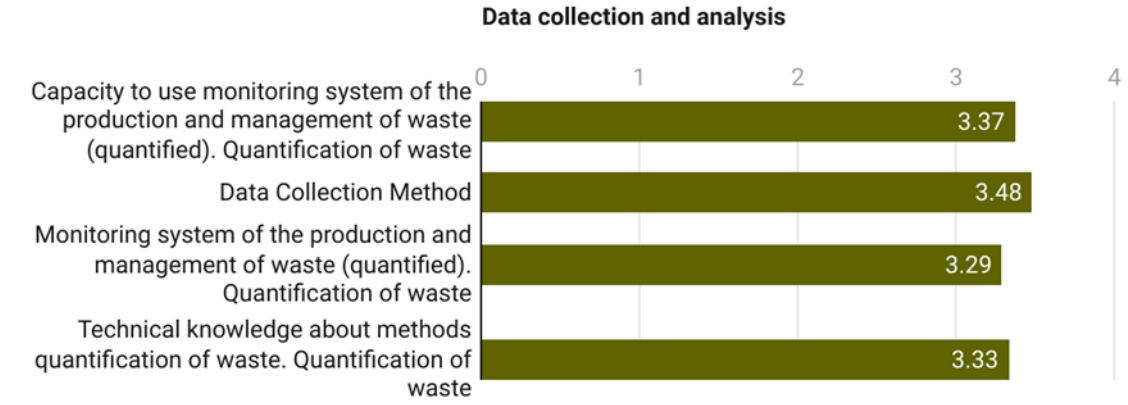




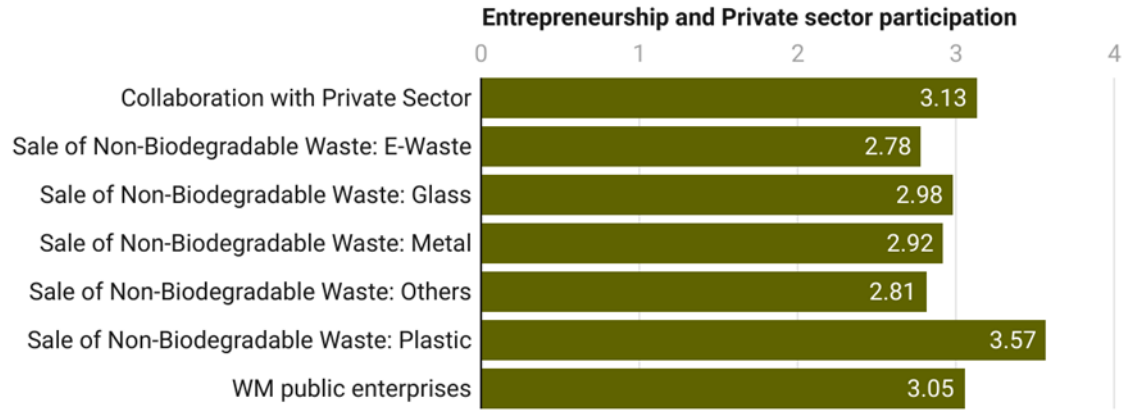




Appendix D6 : scores of PIU Engineers

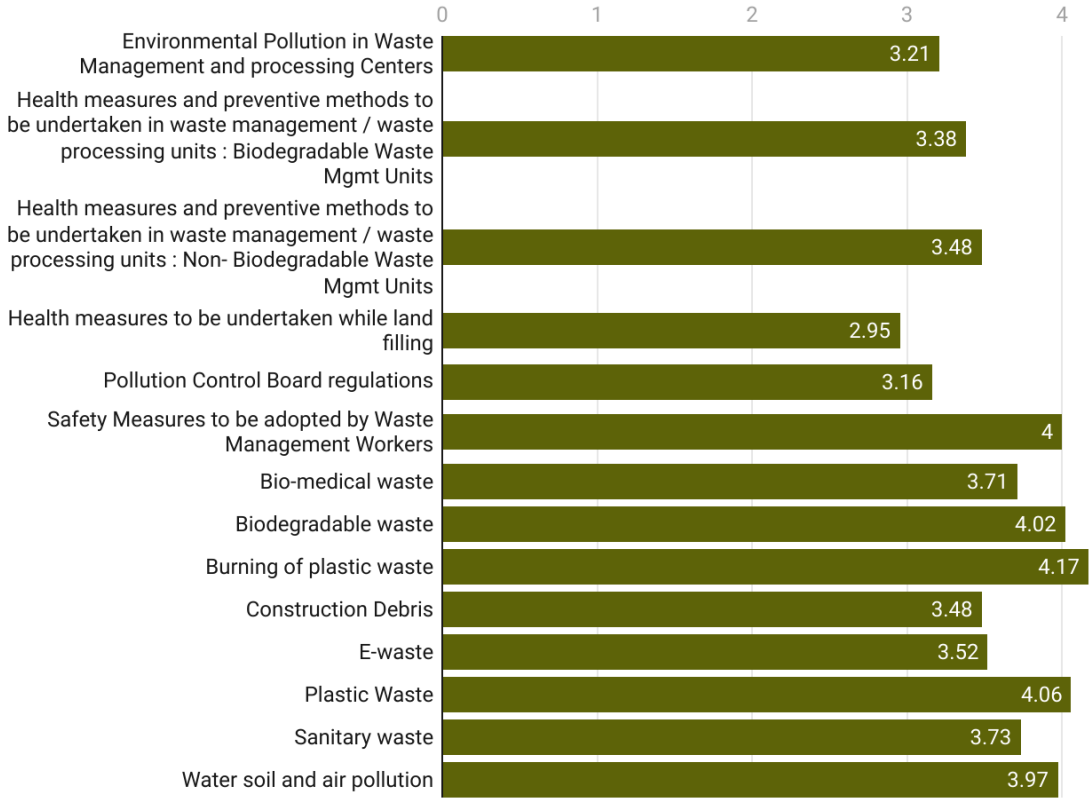


Documentation and reporting



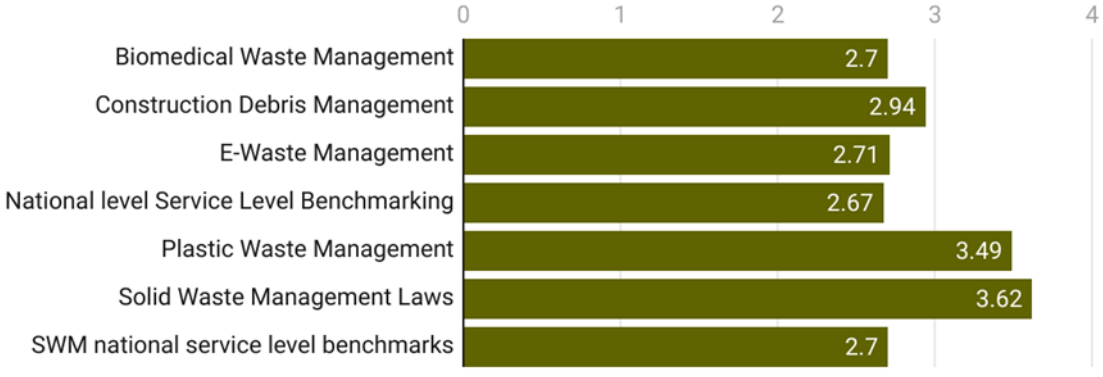
Participatory approaches and social management principles

Environmental and Social safeguards

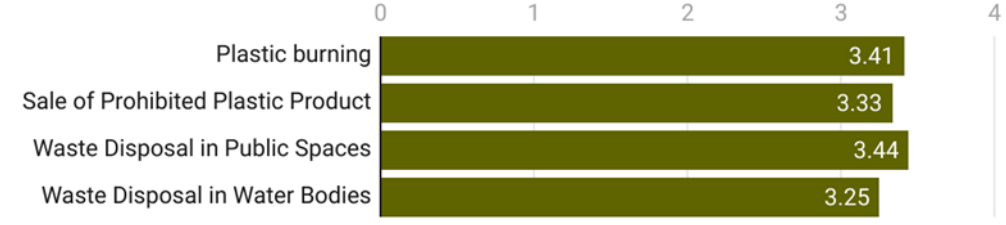


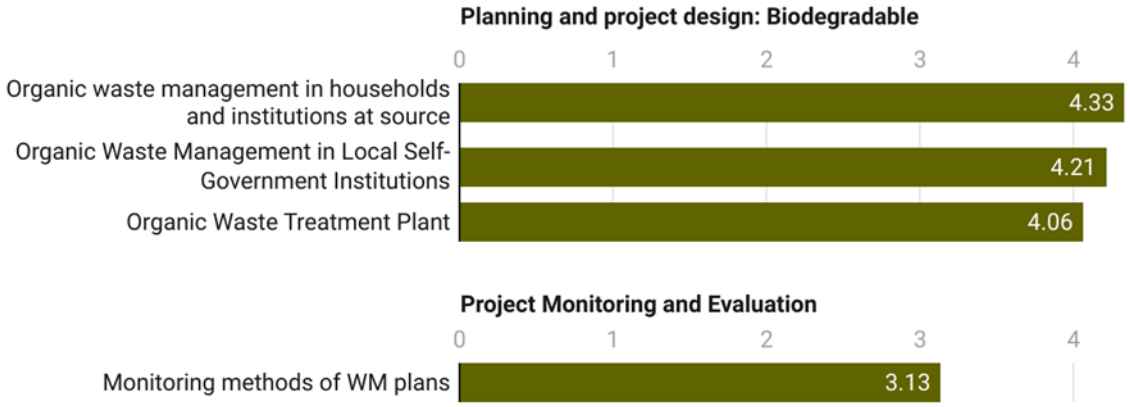
Latest Technologies in SWM

Laws and Regulations Associated with Waste Management

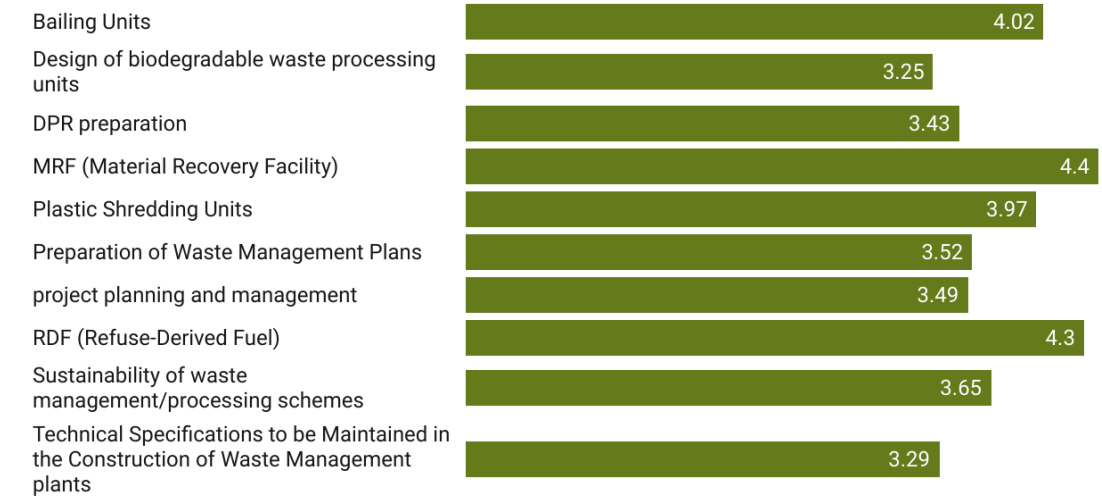


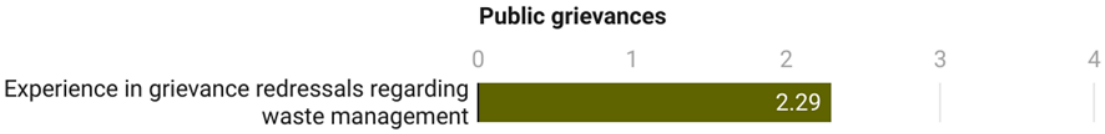
Penalties and Penal proceedings Under Waste Management Laws and Regulations

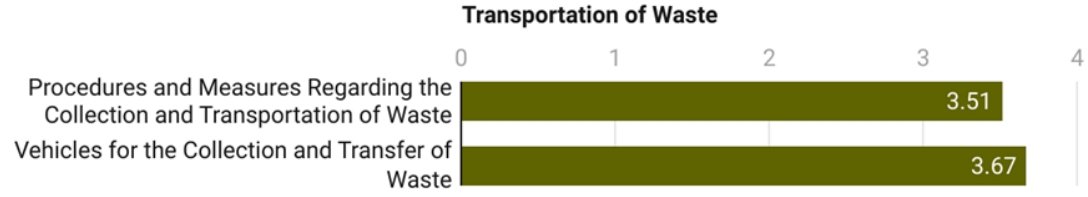


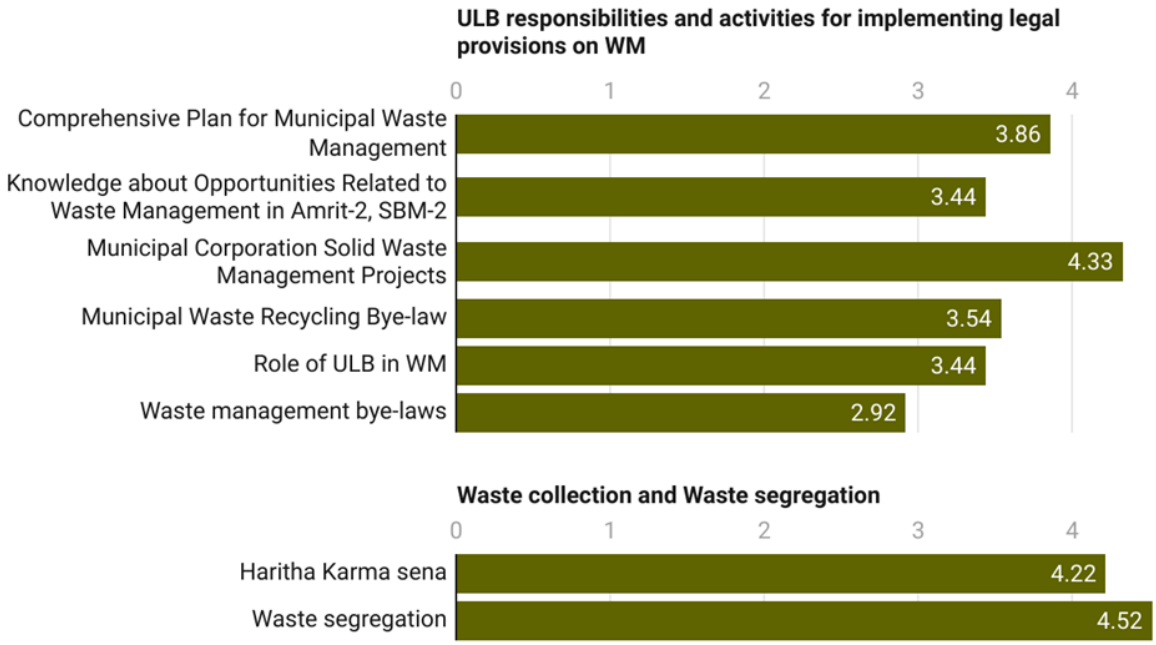


Project planning, design and management









APPENDIX E: SCHEDULE OF FGDS

Sl no.	Date	Time	Organisations	Target Group
1	13-09-2023	11.00 - 01.00	Suchitwa Mission	SWM Director District Programme Officer District Mission Coordinators Technical Consultants Young Professionals
2	13-09-2023	02.00 - 04.00	LSGD	Joint Director
			Dist.Planning office	District Planning Officer
			Urban Directorate	Joint Director
3	14-09-2023	10.00 - 12.00	CKCL	District Manager
4	14-09-2023	2.00 - 04.00	KSDMA	Hazard Analyst DM Coordinators
5	15-09-2023	10.00 - 11.30	Haritha Sahaya Sthapanam	HSS representative
6	15-09-2023	02.00 - 03.30	Tourism	DTPC representative Responsible Tourism representative
7	15-09-2023	04.00 - 05.30	Scrap Dealers Association	KSDA (Kerala Scrap Dealers Association) Representatives KSMA(Kerala Scrap Merchant Association) Representatives ISMA(Independent Scrap Merchant Association) Representatives
8	16-09-2023	11.30 - 01.30	Urban Local Bodies	Secretary
9	11-11-2023	10.30 - 11.30	KSWMP Staff	Procurement experts of SPMU, DPMU and PIU