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LOCAL GOVERNMENT, ELECTIONS & RURAL DEVELOPMENT DEPARTMENT GOVERNMENT OF KHYBER PAKHTUNKHWA



It is with profound enthusiasm that I introduce this training handbook, meticulously crafted to guide participants through the Solid Waste Management (SWM) Model Byelaws. This manual is designed to bolster the capabilities of local council service staff across the Tehsil Municipal Administrations (TMA) in Khyber Pakhtunkhwa, in alignment with the Khyber Pakhtunkhwa Local Government Act 2013 and the Tehsil/City Local Government Rules of Business, 2022.

The Provincial Government of Khyber Pakhtunkhwa places a high priority on solid waste management, recognizing its pivotal role in ensuring a clean and healthy environment for both urban and rural communities. This period of significant transition underscores the need for robust and effective solid waste management systems.

This workshop is tailored to equip TMA officers with the essential knowledge and tools to aid their respective Tehsil governments in developing and implementing SWM byelaws. Our goal is to cultivate a cohort of well-informed and adept officials who can effectively advance the agenda of sustainable and responsible waste management.

The development of this handbook has been a collaborative effort. I extend my deepest gratitude to our partners at the German Development Cooperation, particularly the Support to Good Governance Programme facilitated by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Their invaluable support in crafting this training handbook and conducting training sessions for master trainers has substantially broadened the scope and impact of our initiatives. Furthermore, I express my appreciation to the Centre for Governance and Public Accountability (CGPA) for their technical support and diligent oversight of the module design and Training of Trainers (TOT) process.

Special thanks are also due to Shahnaz Kapadia Rahat, CEO of Mera Maan Pvt Ltd, who has expertly developed and designed this Handbook. Her contributions have ensured that the material is accessible, logically organized, and complemented by a trainer manual, PowerPoint presentations, assessment tools, and comprehensive training evaluation forms.

I would also like to acknowledge the dedicated efforts of our review team, whose insightful feedback and meticulous attention to detail have greatly enhanced the quality of our training materials.

I invite all stakeholders and participants to deeply engage with this material and join us in our continuous efforts to elevate the quality of municipal services. Together, we are poised to make significant strides towards fostering sustainable communities and enhancing the quality of life for all our citizens.

Barkat Ullah Khan Durrani Director, Local Governance School Local Government, Elections and Rural Development Department Government of Khyber Pakhtunkhwa

Session-1:Launching the Journey: Understanding the Importance of Solid Waste Management

- Waste to Wisdom: An Introduction to Solid Waste and its Management
- Legal Framework for Solid Waste Management in Local Governments
- Importance and Impact of Solid Waste Management & Model Byelaws

Session-2: The Legal Backbone of SWM Byelaws 2024 Explained

- Khyber Pakhtunkhwa SWM Byelaws 2024-An Overview
- Waste Wise Match the Words to Definitions
- Fundamental Principles of Solid Waste Management
- Solid Waste Management Lifecycle
- Journey of Waste: From Generation to Disposal
- Mastering the Waste Management Hierarchy: Key Strategies for Sustainable Communities
- Promoting the 3Rs: Reduce, Reuse and Recycle

Session-3:Municipal Waste Management Services

- What is Municipal Waste?
- Distinguishing between "Recyclable" and "Reusable"
- Provision and Responsibility for Municipal Waste Services
- Municipal Waste Management Procedures and Standards
- Innovative Methods of Municipal Waste Collection
- Identifying Non-Compliant Behaviors in Municipal Waste Management
- RECEPTACLES: Designing Waste Receptacles for Easy Input and Retrieval
- Mishandled Waste Segregation in Tehsil Gharan
- Turning Garden Waste into Gold: Composting for Sustainable Waste Management
- Quiz on Advanced Waste Management Technologies

32 Session-4: Commercial Waste Management Services

- Section-1: Storage, collection and disposal of bulky waste
- Section-2: Storage, collection and disposal of Construction Waste
- Section-3: Storage, collection and disposal of Industrial, Hazardous, and Hospital Waste





 Solid Waste Management: Revenue and Expense Matrix

Session-9Action Plan Where Do We Go From Here?



Session-1

Launching the Journey Understanding the Importance of Solid Waste Management

2-day workshop on

Transforming Urban Life Solid Waste Management for a Healthier Tomorrow

By the end of the training, the participants will be able to:

- Describe the definition, importance, and key principles of Solid Waste Management (SWM) as highlighted in the SWM Model Byelaws-2024, and understand the legal framework and regulatory requirements, including licenses, permits, and the roles of authorized officers.
- Differentiate between municipal and commercial waste services, identify types of solid waste based on sources and components, and describe the functional elements of the SWM system as defined in the Byelaws.

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Learning Objectives

- Conceptualize and develop practical strategies for waste management, including door-to-door collection, waste segregation, resource recovery, recycling, and composting, with reference to the Byelaws.
- Explore innovative approaches such as Public-Private Partnerships and social entrepreneurship, and present advocacy and community engagement strategies to promote SWM, focusing on inclusivity, gender sensitivity, landfill management, and environmental impact, in accordance with the Byelaws.
- Present effective monitoring and financial management mechanisms that will support their SWM function.



Waste to Wisdom: An Introduction to Solid Waste and its Management



What is Waste?

Waste means any undesirable or superfluous matter, material, by-product or residue of any process or activity that has been discarded, accumulated, or stored for the purpose of treatment, discarding or recycling and may be solid or semi-solid, and may originate from domestic, commercial, construction, agricultural, slaughterhouse, medical or industrial or other activities, but does not include any liquid, gas, or gaseous product.

What is Solid Waste?

Solid Waste refers to any discarded material that exists in a solid state. This includes a wide range of waste materials from various sources such as households, commercial establishments, institutions, and industries. Solid waste can be categorized based on its origin and type.

What is Solid Waste Management?

Solid Waste Management (SWM) is the systematic control of the generation, collection, storage, segregation, transfer, transport, processing, and disposal of solid wastes in a manner that protects public health and the environment. It incorporates principles of public health, economics, engineering, conservation, and environmental sustainability, while being responsive to public attitudes and behaviors.

Legal Framework for Solid Waste Management in Local Governments

Constitution of Local Governments

As per Section 5 of the LG Act, the local governments constituted under the Act shall be:

- City Local Government
- Tehsil Local Government for a Tehsil
- Village Council for a village in the rural areas
- A Neighborhood Council for a Neighbourhood in areas with urban characteristics



Waste Management: Your Legal Reference Guide

- Section 2(r) of the LG Act 2013 lists municipal services including conservancy, removal and disposal of sullage, refuse, garbage and solid waste.
- Section 29(1) (ii) of the LG Act 2013 (Functions of VC/NC)
 'Carry out village level sanitation and conservancy functions in village councils only'
- Appendix A (ii) Planning, Infrastructure, Architectural and Services, (Serial No.4) of the Khyber-Pakhtunkhwa City/Tehsil Local Government Rules of Business, 2022,

'Sanitation and solid waste management including solid waste collection and sanitary disposal of solid, liquid, industrial and hospital wastes.'

Framing of Bylaws: Section – 113.(1) A local council may, in their ambit of responsibilities, make bye -laws to carry out the purposes of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such bye-laws may provide for all or any of the matters specified in Part-II of the Seventh Schedule: Provided that the Government may make model bye-laws on any, some or all of relevant subjects for the sake of uniformity.

Outsourcing of functions: Section – 115 (A) of the Local Government Act 2013. Government may, by notification, exclude any of the functions assigned to the [City Local Government or Tehsil Local Government] as the case may be, and outsource these functions to any authority, firm or company on such terms and conditions as it may determine in accordance with the existing laws or rules in force in the province. E.g. SAMA agreements for Water Supply and Sanitation Companies (WSSCs) for Divisional Headquarters.



Importance and Impact of Solid Waste Management & Model Byelaws

Effective solid waste management is crucial for:



Provides consistency and standardization, and clear guidelines



Environmental Protection

Prevents pollution, protects water resources from pollution, and mitigates climate change.



Community Engagement

Facilitates public participation and behavioral change



Ensures authority and accountability and sets the foundation for systematic waste management



Climate Change Mitigation

Reduces greenhouse gas emissions, minimizes waste's contribution to climate change



Aesthetic and Social Benefits

Maintains clean streets, parks, and public spaces, enhancing community pride, quality of life and social responsibility.



Reduces disease transmission, improves hygiene, and enhances overall well-being



Economic Benefits

Creates jobs, stimulates innovation, attracts investments and leads to cost savings



Conserves natural resources, reduces waste, and promotes sustainable practices.

Session-1





Khyber Pakhtunkhwa SWM Byelaws – 2024-An Overview

C	hapter-I:	Introduction			
1	Short Title	and Commencement	Ch	apter-II:	Principles and Objectives
2	Definitions	S Defined	4	Principles	s for Solid Waste Management and
	hantor III.	Municipal Wests Convises	E	Waste Ma	anagement Hierarchy
		Municipal waste Services	5	Objective	s of Solid Waste Management
0	Waste Ser	vices	Cha	apter-IV:	Commercial Waste Services
7 8 9 10 11 12	Sweeping Storage of Methods of Obligation Segregation Compostin Liability to Services	, Collection, Segregation and f Municipal Waste of Municipal Waste Collection as of Municipal Waste Generators on of Waste ng and Disposal of Garden Waste pay for the Municipal Waste	Co 13 14 15 16	mmercial Provision Waste Se Storage o Collection Storage, Parks Wa Waste	Waste and Responsibility of Commercial rvices of Commercial Waste n and Disposal of Commercial Waste Collection and Disposal of Public aste or Bulky Garden Waste/Bulky
С	hapter-V:	Transportation and Disposal		nstruction Provision	Waste
23	Transporta	ation of Waste	18	Storage o	of Construction Waste
24 25	Disposal c Constructi	of Waste on and Management of a Waste	19	Collectio Waste	n and Disposal of Construction
	Disposal F	acility	Ind	lustrial, Ha	azardous and Hospital Waste
C	hapter-VI:	Accumulating Waste, Littering, Dumping and Abandoned Article	20	Provision Waste Ho	for Industrial Waste, Hazardous
26	Accumula	ting Waste	21	Storage o	f Industrial Waste, Hazardous Waste,
27 28	Duty to Fa Prohibitior	cilitate for Disposal of Litter n of Littering	22	or Hospita Collection	al Waste n and Disposal of Industrial Waste,
29	Prohibition	n of Dumping and Abandoning of		Hazardou	us Waste, or Hospital Waste
Ch	Articles	Authorized Officer	Cha	apter-VII:	License/Permits
35	Identificati	on Documents	30 21	License/F	Permit Requirement
36	Power of A	Authorized Officer	32	Suspensi	on and Revocation of License/Permit
37	Supervision	on of Operator, License/Permit	33 34	Renewal Prohibite	of License/Permit d Conduct
C	hapter-IX:	Fee, Fines and Penalties	Ch	apter-X:	Safety and Inclusion
38	Financial A	Arrangements for Solid Waste	40	Personal	Protective Equipment (PPE) for
39	Managem Fines and	ent Penalties	44	Sanitary \	Norkers
C	hapter-XI:	Monitoring and Supervision	41	Managen	nent Services
42	Establishn	nent of Monitoring Committee for	Cha	apter-XII:	Miscellaneous
43	SWM Functions	and Responsibilities of the	45	Ownersh	ip
	Monitoring	g Committee	46 47	Serving o	nt Document In on Waste Handling
44	Functions Municipal	and Responsibilities of the Tehsil Officer	Cha	pter-XIII:	Appeal
			48	Appeal	
			49	Relaxatio	n of Byelaws

Waste Wise Match the Words to Definitions

Instructions

Terms are crucial for understanding the legal and operational frameworks of waste management in the context of the SWM model byelaws. Match the words to the given definitions.







Waste Wise Match the Words to Definitions

Terms that are crucial for understanding the legal and operational frameworks of waste management in the context of these byelaws:

- **a** Means charges for unloading or disposal of municipal waste at a sanitary landfill site, transfer station, incinerator, or recycling facility.
- **b** Means the use, re-use, or reclamation of material so that it re-enters an industrial process, rather than becoming waste.
- **C** Means a facility where waste is unloaded from collection vehicles and briefly held, while it is reloaded onto larger, long-distance transport vehicles for shipment to landfills or other treatment or disposal facilities.
- **d** Means discharge, deposit, dumping, spilling, leaking, or placing of any municipal waste in a designated disposal site.
- **e** Means placing the waste anywhere other than an approved receptacle, or a place designated as a waste handling facility or a waste disposal facility such as recycling centers, transfer stations etc.
- **f** Means the waste as defined in the Khyber Pakhtunkhwa Environment Protection Act ,2014.
- **9** Means any object or matter which is discarded by a person at any place except in an approved receptacle provided for that purpose or at a waste handling facility or waste disposal facility.
- **h** Means the controlled decomposition of organic matter by micro-organisms, mainly bacteria and fungi, into a humus-like product.
- **i** Means landfill site, incineration facility, recycling facility or treatment facility.
- **j** Means extraction and utilization of material and energy from municipal waste.
- **k** Includes electronic waste, healthcare/medical waste, tire, oil, wet battery, sewage sludge and slaughterhouse waste.
- Means minimization of quantity of municipal waste generated at the source.
- **m** Means the sorting of different material in municipal waste.
- **n** Means any process that changes the characteristics of a waste to make it less of an environmental threat.

Fundamental Principles of Solid Waste Management

Principle 1: Value for Money



Efficient use of resources

Example: The TMA implements a waste collection schedule that reduces fuel consumption and labor costs by optimizing routes. They use GPS tracking to ensure trucks follow the most efficient paths, avoiding traffic congestion and reducing travel time. By doing so, the TMA saves money on fuel and maintenance, which can be redirected to other essential services or improvements in waste management infrastructure.

Principle 2: Social Acceptability



Services should be acceptable to the community

Example: The TMA conducts regular community meetings to gather feedback on waste management services. They involve local residents in decision-making processes, ensuring that the services provided align with the community's preferences and needs. For instance, in areas where people prefer door-to-door waste collection over communal collection points, the TMA adjusts its services accordingly. This approach fosters community trust and cooperation, leading to higher participation rates in waste segregation and recycling programs.

Principle 3: Sustainable Services



Long-term viability & environmental sustainability

Example: The TMA invests in a composting facility to process organic waste collected from households and markets. By turning organic waste into compost, they reduce the volume of waste sent to landfills and provide local farmers with a valuable soil conditioner. This initiative not only extends the life of the landfill but also promotes environmental sustainability by recycling nutrients back into the soil. Additionally, the TMA educates residents on composting practices, encouraging them to manage organic waste at the household level.

Solid Waste Management Lifecycle



Session-2

Journey of Waste: From Generation to Disposal



Impact of Each Stage of the SWM Lifecycle

Instructions

Brainstorm in the plenary the actions that can be taken at each stage to minimize environment impact and ensue public health and safety.



	Stages of	Action you will take to			
#	the SWM Lifecycle	1 Minimize Environmental impact	2 Ensure public health and safety		
1	Waste generation				
2	Collection				
3	Segregation				
4	Resource Recovery				
5	Transportation				
6	Treatment and Disposal				

Mastering the Waste Management Hierarchy Key Strategies for Sustainable Communities

Introduction to Waste Management Hierarchy

Understanding the waste management hierarchy is crucial for developing sustainable waste management strategies that prioritize reducing waste generation, maximizing resource recovery, and minimizing environmental impact. This hierarchy provides a framework for communities to manage waste effectively and responsibly.



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Avoidance, Waste Minimization, and Reduction:

Reduce the volume and toxicity of waste generated at the source.

Reuse:

Using materials more than once in their original form instead of discarding them after each use.

Recycling, Reprocessing, and Treatment:

Processing used materials into new products to prevent the waste of potentially useful materials.

Disposal:

It involves methods like landfilling and incineration without energy recovery.



Instructions Promoting the 3Rs – Reduce, Reuse and Recycle

Scenario: A community is struggling with increasing amounts of waste and limited landfill space. The local government has decided to implement a new waste management plan based on the waste management hierarchy. In order to ensure that the least amount of waste is disposed of in landfills, they need to focus on the three Rs, i.e., reduce, reuse and recycle:

- Reduce the amount of waste generated.
- Increase reuse and recycling efforts.
- Properly manage and minimize the waste sent to landfills.

Questions:

- 1. What strategies can the community implement to reduce waste at the source?
- 2. How can the community promote and facilitate the reuse of materials?
- 3. What infrastructure and programs are needed to enhance recycling and reprocessing efforts?



Promoting the 3Rs Reduce, Reuse and Recycle

Concerted efforts are needed to promote the 3Rs in any Tehsil Municipal Administration. Some ideas are as follows:

1	What s	trategies can the community implement to REDUCE waste at the source? Public Awareness Campaigns			
		Eco-Friendly Product Design			
		Incentives for Minimal Packaging			
		Legislation and Policies			
		Community Events - zero-waste challenges			
2	How c	an the community promote and facilitate the REUSE of materials? Reuse Centers (donate and pick-up)			
		Repair Workshops			
		Second-Hand Markets			
		Partnerships with NGOs			
		Reusable Products Promotion			
		Educational Programs (school and community events)			
3	What infrastructure and programs are needed to enhance RECYCLING and reprocessing efforts?				
		Recycling Facilities			
		Curbside Recycling Programs			
		Recycling Bins and Drop-Off Points			
		Education and Outreach			
		Incentive Programs			
		Collaboration with Private Sector			
4	How c in land	an the community ensure that the LEAST AMOUNT OF WASTE is disposed of dfills?			
		Composting Programs			
		Waste-to-Energy Projects			
		Strict Waste Segregation			
		Regular Audits and Feedback			
		Enhanced Collection Services			

15

Landfill Diversion Targets

Session-2





What is Municipal Waste?

Municipal wastes, for the purposes of these Byelaws, include:



- Electronic waste (sma office equipment, computers)
- Packaging materials

Street Sweeping Waste

Where it comes from:

- Streets
- Sidewalks
- Public Roads

What does it include:

- Dust and dirt
- Leaves
- Small plastic items (bottles, wrappers)
- Paper
- Small pieces of glass
- Organic matter (leaves, small branches)
 General litter





Animal Waste (animal manure, dead animal body, bedding and feed, etc.)

Where it comes from:

- Livestock farms
- Dairy farms
- Poultry farms
- Urban livestock keepers

What does it include:

- Animal manure
- Dead animal bodies
- Bedding materials (straw, sawdust, etc.)
- Feed remains
- Animal bones and feathers

6 Garden Waste (excluding green waste from public parks and gardens, bulky garden waste such as tree cutting, etc.)

Where it comes from:

- Private gardens
- Residential yards
- Small community gardens

What does it include:

- Grass clippings
- Leaves
- Flowers
- Small branches and twigs Weeds
 - Pruned plant materials





Wastes from Small Open Drains

Where it comes from:

- Urban drains
- Sidewalks
- Streets

What does it include:

- Sediments and sludge
- Leaves and organic matter
- Plastic waste
- Paper and cardboard
- Small debris
- Food waste
 - General litter

Transforming TMA Malgari: An Integrated Approach to SWM

Instructions

10-steps were taken to transform TMA Malgari with regard to their issues in solid waste management. In your groups, discuss as follows:

- 1. What was one innovative action taken at each of the steps?
- 2. Were the procedures suggested in the Module Byelaws followed?
- 3. Which of the steps are missing in your current SWM program?



In Tehsil Malgari, waste management had long been a persistent challenge. Overflowing bins and poorly managed waste collection points marred the beauty of the area and posed significant health risks. Amidst this chaos, a visionary named Ahsan decided to tackle the problem head-on. Ahsan, a passionate environmentalist, believed in the power of community-driven solutions. He founded a social enterprise, the Green Future Initiative, with a mission to revolutionize waste management in the Tehsil. His plan was simple yet ambitious. He implemented an end-to-end waste management model that followed a comprehensive framework based on the SWM principles, lifecycle and hierarchy.



Waste Generation

Ahsan started by conducting a waste characterization study to understand the types and volumes of waste generated in the tehsil. This study revealed that the majority of waste came from households, markets, and institutions.



Waste Reduction and Minimization

To tackle the issue at its source, Ahsan launched an awareness campaign promoting waste reduction behaviors. The campaign encouraged residents to use reusable items, reduce single-use plastics, and adopt minimal packaging. Workshops were held to educate the community on waste reduction techniques.



Collection

Ahsan and his team implemented a systematic waste collection service. They trained a group of dedicated sanitary workers and introduced door-to-door waste collection. Each household was given a schedule for waste collection to ensure consistency and reliability.



Segregation

Once collected, the waste was transported to the newly established Integrated Resource Recovery Centre (IRRC). At the IRRC, the waste was segregated into three main categories: organic waste, recyclable materials, and non-recyclable waste. Color-coded bins and sorting tables were provided to make the process efficient.



Resource Recovery

Ahsan introduced innovative technologies at the IRRC to enhance resource recovery. Anaerobic digestion was used to process organic waste, generating biogas for energy. Mechanical-biological treatment was applied to recover valuable materials from the waste.



Reuse

The Green Future Initiative set up reuse centers where items in good condition could be repaired and sold at low prices. Community members were encouraged to donate items they no longer needed, fostering a culture of reuse.



Recycling

Recyclable materials collected at the IRRC were processed and sold to industries. Ahsan partnered with local factories to create a steady market for recycled goods. Community recycling programs were established, incentivizing residents to participate actively.



Composting

Organic waste was composted at the IRRC using aerobic composting methods. The resulting compost was nutrient-rich and sold to local farmers. Ahsan also promoted backyard composting, providing compost bins and training to households.



Disposal

Non-recyclable and non-compostable waste was disposed of in an environmentally friendly manner. Ahsan ensured that the landfill site was properly managed, with leachate and gas management systems in place to minimize environmental impact.



Public Awareness and Education

Ahsan recognized the importance of public involvement. He launched a comprehensive public awareness and education campaign. Schools, mosques, and community centers were involved in spreading key messages about waste management. Regular workshops and information sessions were held to keep the community engaged and informed.

The Impact

- Environmental Benefits: Streets once littered with waste became clean and inviting. Waste sent to landfills was significantly reduced, and greenhouse gas emissions from decomposing organic waste were minimized.
- **Economic Benefits:** The initiative created jobs and generated revenue. The sale of recyclable materials and compost provided a steady income stream for the IRRC. It also reduced waste transportation costs by minimizing trips to the landfill.
- **Social Benefits:** The community felt renewed pride and ownership. Mrs. Farah, initially a skeptic, became a strong advocate, even starting a small garden with the compost. The initiative showed that effective waste management could be both sustainable and economically viable.

Challenges and Solutions: Initially, convincing residents to pay for door-to-door collection was difficult. Ahsan's team tackled this by temporarily halting the service, which made residents realize its importance. The service's return was met with overwhelming support and willingness to pay. Community involvement was crucial. Local leaders, including the Tehsil Chairman, played a pivotal role in engaging residents and promoting the benefits of the new waste management system.

Distinguishing between "Recyclable" and "Reusable"



REUSE

Reusable items are products that can be used multiple times for the same or a different purpose without undergoing significant processing. The concept emphasizes extending the lifespan of products by reusing them in their current form.

Benefits

- Reduces the demand for new products.
- Minimizes waste generation.
- Conserves resources by extending the life of products.
- Often more cost-effective over time.

Examples

- Containers and Packaging: Glass jars, plastic containers, cloth bags.
- Household Items: Towels, utensils, furniture.
- Industrial Products: Pallets, shipping containers.



Recyclable materials are items that can be processed and transformed into new products after their initial use. Recycling involves collecting, sorting, processing, and converting waste materials into new raw materials or products.

Benefits

- Reduces the need for virgin raw materials.
- Saves energy compared to producing new products from scratch.
- Decreases landfill waste.
- Lowers greenhouse gas emissions.

Examples

- Plastics: Water bottles, packaging materials.
- Metals: Aluminum cans, steel products.
- Paper and Cardboard: Newspapers, cardboard boxes.
- Glass: Beverage bottles, jars.

Provision and Responsibility for Municipal Waste Services



Responsibility of Local Government

To provide efficient, affordable municipal waste services to residents for a fee.



Waste Characterization Study

To conduct a waste characterization study every two years to assess the composition and relative quantities of various types of waste.



The local government can contract or license private operators for municipal waste services and establish waste segregation or recovery units.



Differentiation of Fees and Service Standards

To set different fees and standards for various users, buildings, and areas, where residential fees may range from: 100-300 rupees/month or 10 rupees/day.



Factors for Ensuring Access to Services

To consider several factors to ensure access to municipal waste services, including efficient use of resources, affordability, operational efficiency and environmental protection.

22



Community Awareness and Education

To increase community awareness on waste management and user fees through media channels like mosques, newspapers, social media, radio, TV, council meetings, and educational sessions.

Municipal Waste Management Procedures and Standards



Innovative Methods of Municipal Waste Collection



Implement and clearly communicate a door-to-door waste collection schedule through community meetings and announcements.



Engagement Inform communities about the collection schedule

through announcements in religious places and social gatherings, and disseminate information via community meetings with elders.



Transporting Waste

Ensure waste collectors transport the collected waste from the residential premises to the storage point aligned with the route plan of the solid waste fleet.

Chinghi Driver Initiative: A Model for Low-cost Waste Collection

Meet Ahmed, a resourceful chinghi (motorized rickshaw) driver from Tehsil Khostan. Struggling to make ends meet, Ahmed came up with a brilliant idea to start a waste collection business that not only provides him with a steady income but also benefits his community.

Implementation:

Service Offer: Ahmed offers door-to-door waste collection services to households in his neighborhood, charging a small, affordable fee. With a friendly smile and reliable service, he quickly gains the trust of the residents.



- Waste Segregation: Ahmed educates households on the importance of waste segregation. He provides them with separate bins for recyclables and non-recyclables, making the process easy and convenient.
- Resource Recovery: Every morning, Ahmed collects the segregated waste and transports it to the local Integrated Resource Recovery Center (IRRC). Here, recyclables are processed and sold to recycling companies, while non-recyclables are responsibly managed.

Outcome:

- **Reliable Income Source:** Ahmed's initiative provides him with a steady and reliable income, allowing him to support his family and improve his quality of life.
- Community Cleanliness and Recycling Rates: The neighborhood becomes noticeably cleaner, and recycling rates increase as more residents participate in the program. Ahmed's efforts inspire others to take better care of their waste.
- Reduced Waste to Landfills: The volume of waste sent to landfills decreases significantly, contributing to a healthier environment and more sustainable community practices.

Identifying Non-Compliant Behaviors in Municipal Waste Management

Instructions

Scenario: In a neighborhood of TMA Zama, several community members and businesses have been observed violating the Byelaws. The local government has received multiple complaints about the following issues:

Questions:

- 1. What specific violations of the waste management Byelaws can you identify in each case?
- 2. Which sections of the Byelaws are being breached? What are the potential consequences of these non-compliant behaviors for public health, the environment, and the efficiency of waste management services?
- 3. What actions should the local government take to address each of these non-compliant behaviors?





Household A

Regularly places hot ash in the waste receptacle, causing damage and potential injury to the waste collection staff.

Business B:

Disposes of liquid chemicals in the municipal waste bins, making it difficult for waste collectors to handle.

Household C:

Frequently dumps waste outside the designated receptacles, leading to litter and an unhygienic environment.

Household D:

Does not place their waste receptacle outside the entrance before the specified collection time, resulting in missed collections.

Business E:

Uses the approved waste receptacle for storing construction materials and other non-waste items, causing confusion and inefficiency.

Community Park:

Does not provide adequate space for waste receptacles, making it difficult for waste collection vehicles to access and collect the waste efficiently.

RECEPTACLES

Designing Waste Receptacles for Easy Input and Retrieval



Easy Input

- Wide Openings: Ensure openings are large enough for various waste sizes, reducing the effort needed to insert waste.
- Ergonomic Height: Place openings at an accessible height to accommodate all users, including children and those with disabilities.
- Touchless Operation: Incorporate sensor-activated or foot pedal-operated lids to enhance hygiene and ease of use.
- Clear Labeling and Color-Coding: Use labels and color-coding to indicate the type of waste each receptacle is meant for, aiding in proper segregation.
- Anti-Jamming Features: Design interiors to prevent waste from getting stuck, ensuring smooth operation.

Easy Retrieval

- Removable Liners: Use liners that can be easily lifted out and replaced, minimizing direct contact with waste.
- Access Doors and Panels: Incorporate side doors or panels for easy access to waste without needing to lift heavy loads from the top.
- Smooth Surfaces and Handles: Ensure interiors are smooth to prevent waste from sticking, and include sturdy handles for easy transport.
- Wheels and Mobility: Add wheels to larger receptacles for easy movement, with brakes to secure them in place when not in use.
- Durable and Easy-to-Clean Materials: Use materials like high-density polyethylene (HDPE) or stainless steel, which are durable and easy to clean.
- Non-Corrosive: Ensure materials are non-corrosive to withstand various weather conditions and types of waste.
- Ventilation: Integrate air holes or ventilation features to prevent vacuum seals inside liners, making removal easier.

Mishandled Waste Segregation in Tehsil Gharan

In Tehsil Gharan, a residential community has recently adopted a waste segregation initiative to align with the new municipal byelaws. However, despite the local government's efforts to educate residents, several mistakes are being made, leading to inefficient waste management and increased environmental hazards.

Community Waste Segregation Issues:



Household A:

The family places greasy pizza boxes and plastic bags into the recycling bin. They also dump leftover food directly into the bin without a compostable liner.



Household B:

Instead of separating electronic waste, they throw old batteries and broken electronic gadgets into the regular trash bin.



Household C:

This household mixes hazardous waste, such as used paint cans and chemical cleaners, with general waste.



Household D:

Members of this household do not rinse food containers before placing them in the recycling bin, causing contamination.



Household E:

They overuse compostable plastic bags, placing them in the regular waste bin without understanding that these bags need specific conditions to decompose.

Instructions

In your small group, review the household designated to you, and identify the mistake made by that household in terms of waste segregation. Discuss the following:

- 1. What specific mistakes did the household make according to the byelaws?
- 2. What are the potential impacts of this mistake on waste management efficiency, environmental health, and community safety?
- 3. Suggest corrective measures for how the household may align their waste segregation practices with the byelaws.





Examples of Innovative Practices

Effective Waste Segregation: Plastic Bank in Haiti

Plastic Bank establishes a social enterprise that transforms plastic waste into a currency, incentivizing waste collection and segregation in impoverished communities.

Implementation

- Incentive System: Community members collect and deliver plastic waste to designated collection points, receiving money, goods, or services in return.
- **Recycling Process:** The collected plastic is processed into raw materials for reuse in manufacturing.
- **Community Benefits:** Participants access essential goods and services, enhancing their quality of life.

Creative Reuse Initiative in Hajiabad

Kulsoom, a skilled crafts worker from Village Hajiabad-II in Peshawar, is now passionate about the concept of reuse. She attended 3Rs awareness sessions by LIFE-II and was inspired to upcycle waste products into useful goods.

Implementation

- **Crafting Wall Hangings:** Using plastic waste, Kulsoom creates beautiful wall hangings.
- Making Portable Fans: She cuts out paperboard packaging material to weave hand-held portable fans (pankha) for domestic use and business.
- **Creating Hanging Planters:** Kulsoom and other women of Hajiabad are recycling plastic soda bottles by making hanging planters out of them.

Outcome

Community Engagement: Women and children in the community are actively involved in collecting materials and creating products.

Economic Empowerment: The initiative provides economic opportunities for women through the sale of handmade products. Environmental Benefits: Reduces waste by giving new life to discarded items.

EcoAct in Tanzania: A Creative Example of Recycling

EcoAct transforms plastic waste into durable construction materials, such as bricks and tiles.

Implementation

- **Collection:** Plastic waste is collected from various sources, including households, businesses, and dumpsites.
- **Processing:** The plastic waste is cleaned, shredded, and processed into construction materials.
- **Product Sales:** The products are sold to builders and developers, generating revenue and reducing plastic pollution.

Outcome

- Provides a sustainable solution to plastic waste.
- Creates jobs and economic opportunities.
- Produces affordable and durable construction materials.



Outcome

- Dramatic reduction in plastic pollution.
- Economic empowerment of local communities.
- Development of a sustainable recycling ecosystem.



Turning Garden Waste into Gold Composting for Sustainable Waste Management

What is Composting?

Definition

Composting is the natural process of decomposition and recycling of organic material into a humusrich soil amendment known as compost.

Components

- **Organic Waste:** Includes kitchen scraps, garden debris, and leaves.
- Microorganisms: Bacteria and fungi break down the organic matter.
- Water and Air: Essential for the composting process.
- **Carbon Dioxide and Heat:** By-products of decomposition.

Why Compost?



Improves Soil Health Compost adds essential nutr

Compost adds essential nutrients to the soil, promoting healthy plant growth.



Reduces Waste Decreases the amount of organic waste sent to landfills.



Environmental Protection Minimizes greenhouse gas emissions from decomposing organic waste.



Cost Savings

Reduces the need for chemical fertilizers.



Economic Opportunities Can create jobs and support local businesses through compost sales.



Community Engagement Encourages sustainable practices

and community involvement in waste management.

Zero Waste Scotland: Community Composting in Action

29

Zero Waste Scotland collaborates with local councils to implement community composting programs.

Implementation

- Community Involvement: Residents are encouraged to bring organic waste to community composting sites.
- **Training Programs:** Provides training on composting techniques and benefits.
- **Compost Use:** The compost produced is used in local parks, gardens, and farms, promoting sustainable agriculture.

Outcome

• Reduces organic waste sent to landfills.

- Produces nutrient-rich compost for local use.
- Promotes community engagement and sustainable practices.

Quiz on Advanced Waste Management Technologies

Waste-to-Energy (WtE) Plants			Anaerobic Digestion (AD)	
1	What is its primary function?	2	What does AD produce?	
a) b) c) d)	To convert waste into compost To burn waste to produce electricity or heat To sort waste into recyclables and non- recyclables To bury waste in landfills	a) b) c) d)	Compost and electricity Biogas and digestate Recyclable materials and ash Heat and light	
M	echanical-Biological Treatment (MBT)		Advanced Waste-to-Energy (WtE) Technologies	
М З	echanical-Biological Treatment (MBT) What are the main components	4	Advanced Waste-to-Energy (WtE) Technologies Why use WtE plants?	

Simple and Smart Waste Management Technologies

- **1** Turning Trash into Energy (WtE)
 - What it is: Converts waste into energy, like electricity or heat.
 - **How it works:** Burns waste to produce steam that powers a turbine to generate electricity.
 - Why it is good: Reduces landfill waste, creates renewable energy, and offers a steady energy source.

2 Making Biogas from Waste (Anaerobic Digestion)

- What it is: Breaks down organic matter without oxygen to make biogas and a nutrientrich substance.
- **How it works:** Microorganisms decompose waste in a sealed space, producing biogas and valuable digestate.
- Why it is good: Creates renewable energy, lowers greenhouse gas emissions, and makes useful fertilizer.

3 Smart Sorting and Treating (Mechanical and Biological Treatment)

- What it is: Uses mechanical and biological treatment to treat mixed waste, recover materials, and produce energy.
- **How it works:** First, waste is sorted to remove recyclables. Then, the remaining waste is treated to stabilize it and produce biogas or compost.
- Why it is good: Boosts recycling, reduces landfill use, and minimizes environmental impact.




Session-4

Commercial Waste Management Services

As per the SWM Byelaws 2024, Commercial Waste Service means any service, excluding the municipal waste service, relating to, or connected with accumulating, collecting, managing, recycling, sorting, storing, treating, transporting, disposing, buying, or selling of waste or any other manner of handling commercial waste. Before we proceed with the Session, attempt the following quick quiz:

Managing Commercial Waste		
1	What must be ensured for the storage of commercial waste?	2 How should bulky garden waste be managed?
a) b) c)	It is stored in open bins. It is stored in approved receptacles without causing nuisances. It is left outside on the street.	 a) It can be left on the lawn indefinitely. b) It must be composted or collected and disposed of promptly. c) It should be mixed with regular household waste.
3 a)	What is required before generating industrial, hazardous, or hospital waste? No special requirements.	 How should construction waste be handled if it must be stored on public spaces? a) No need for permission.
b)	Approval from the local government and proper documentation.	b) Seek permission from the local government and pay any applicable fees.
Cj	government.	c) Just leave it on the sidewalk.

General Provisions and Responsibilities of Commercial Waste Services

1 Contractual Arrangements

Local governments may contract and issue licenses to private operators for commercial waste services.



2 Licensed Operators

Ensure the operator collecting the waste is licensed for the specific category of waste.



3 Designated Facilities

No disposal of commercial waste at non-designated facilities.



5 Collection and Disposal

Ensure designated collection points, and timely collection within a reasonable time.



4 Storage

Ensure commercial waste is stored in approved receptacles without causing nuisances or health risks.



Section-1: Storage, collection and disposal of bulky waste

Instructions

Your group has been assigned a scenario. The task is to identify non-compliant behaviors and suggest corrective measures. As per the SWM Byelaws 2024. Your responses will be discussed in the plenary.

Bulky Garden Waste



Scenario 1



Situation: Mr. Ali, who lives in a suburban area, generates a large amount of garden waste after trimming his hedges and mowing the lawn. He decides to compost the waste on his property but places it too close to his neighbor's house, causing a foul smell and attracting pests.

Questions:

- 1. What is non-compliant about Mr. Ali's method of composting garden waste?
- 2. What corrective measures should Mr. Ali take to comply with the byelaws?

Scenario 2 Public Park Waste



Situation: The local park generates a significant amount of waste during a community event. The waste includes large tree branches and picnic debris. The park management fails to collect and dispose of the waste within a reasonable time, leading to complaints from park visitors.

Questions:

- 1. Identify the non-compliance in the handling of the public park waste.
- 2. What steps should the park management take to rectify the situation and comply with the byelaws?

Scenario 3 Request for Bulky Waste Receptacle

33



Situation: Ms. Fatima, who runs a community garden, requests an approved receptacle from the local government to store the bulky garden waste generated from a seasonal cleanup. The request is not followed up on promptly, resulting in the waste being left in an open area.

Questions:

- 1. What are the obligations of the local government in response to Ms. Fatima's request?
- 2. How should the local government have handled this situation to ensure compliance with the byelaws?

Scenario 4 Mismanagement of Bulky Waste



Situation: A commercial building undergoes renovation, producing bulky waste like old furniture and large cardboard boxes. The building management leaves the bulky waste in a public alleyway, blocking pedestrian access and causing inconvenience to the community.

Questions:

- 1. What aspects of this situation are non-compliant with the byelaws?
- 2. What actions should the building management take to manage bulky waste appropriately?

Scenario 5 Removal of Bulky Waste



Situation: A residential area experiences a delay in the removal of bulky waste due to a miscommunication between the residents and the local waste management service. The waste piles up in the designated area, causing a health risk and nuisance to the residents.

Questions:

- 1. What should have been done to prevent this non-compliance?
- 2. What steps can the local waste management service take to resolve the issue and prevent future occurrences?

General Provisions for Compliance for Bulky Waste



On-Site Composting Ensure composting of garden waste does not cause nuisances or health risks.



Timely Collection Collect and dispose of garden and park waste within a reasonable time.



Receptacles for Bulky Waste Provide approved receptacles for storing bulky waste upon request.



Proper Disposal Ensure bulky waste is placed in approved receptacles and removed as part of the municipal service.



Avoid Inconvenience Manage the collection schedule to avoid causing inconvenience to the community.

Section-2: Storage, collection and disposal of Construction Waste

Instructions

Your group has been assigned a scenario. The task is to identify non-compliant behaviors and suggest corrective measures. As per the SWM Byelaws 2024. Your responses will be discussed in the plenary.



Scenario 1



1 On-Site Construction Waste Management

Situation: Mr. Khan is renovating his home and generates a significant amount of construction waste, including old bricks, concrete, and wood scraps. He stores the waste in a pile on the sidewalk, causing an obstruction for pedestrians and creating an unsightly mess.

Questions:

- 1. What non-compliant behaviors can you identify in this scenario?
- 2. What corrective measures should Mr. Khan take to comply with the byelaws?

Scenario 2 Storage of Construction Waste on Public Spaces



Situation: Due to limited space on his property, Mr. Ahmed is storing construction waste on the road. He has not sought permission from the local government and the waste has been there for more than a week, causing traffic disruptions.

Questions:

- 1. What are the non-compliance issues in this scenario?
- 2. What steps should Mr. Ahmed take to rectify the situation and comply with the byelaws?

Scenario 3 Disposal of Construction Waste



Situation: A construction company completes a building project and leaves the construction waste in an open field nearby, instead of disposing it at a designated waste disposal facility. The waste includes hazardous materials that pose a risk to the environment and public health.

Questions:

1. Identify the non-compliant behaviors in this scenario.

35

2. What actions should the construction company take to comply with the byelaws?

Scenario 4

Containment of Construction Waste



Situation: During a building renovation, construction waste is left uncontained on the premises, and some of it gets blown off the site into neighboring properties, causing a nuisance.

2

Questions:

- 1. What non-compliance issues can you identify in this scenario?
- 2. What measures should be taken to comply with the byelaws?

General Provisions for Compliance for Construction Waste

Proper Storage

Ensure construction waste is stored within the premises and does not obstruct public spaces.

Permission for Public Space

Obtain permission from the local government for storing waste on public spaces and pay any applicable fees.



36

Designated Disposal

Dispose of construction waste at designated facilities unless otherwise permitted.

3

Containment and Cleanliness

Contain construction waste to prevent it from becoming unsightly or causing obstructions, and promptly retrieve any waste that escapes.

Section-3: Storage, collection and disposal of Industrial, Hazardous, and Hospital Waste

Instructions

Your group has been assigned a scenario. The task is to identify non-compliant behaviors and suggest corrective measures. As per the SWM Byelaws 2024. Your responses will be discussed in the plenary.



Scenario 1 Industrial Waste Management



Situation: A manufacturing plant in Tehsil Karyad, produces a significant amount of industrial waste, including metal scraps and chemical residues. The plant has not obtained approval from the local government for generating such waste and has been storing the waste in open containers outside the facility, causing environmental pollution and health risks.

Questions:

- 1. What non-compliant behaviors can you identify in this scenario?
- 2. What corrective measures should the manufacturing plant take to comply with the byelaws?

Scenario 2 Hazardous Waste Management



Situation: A chemical factory in Tehsil Hargam generates hazardous waste, including toxic chemicals and solvents. The factory stores the waste in inadequate containers, which have started leaking, posing a serious threat to the surrounding community and environment. The factory has not informed the local government about the hazardous waste.

Questions:

- 1. What non-compliant behaviors can you identify in this scenario?
- 2. What steps should the chemical factory take to rectify the situation and comply with the byelaws?

Scenario 3 Hospital Waste Management



Situation: A hospital in Tehsil Larrabad generates medical waste, including used syringes, bandages, and biological waste. The hospital mixes medical waste with municipal waste and disposes of it in the regular trash bins. This practice poses a significant health risk to waste collectors and the public.

Questions:

1. What non-compliant behaviors can you identify in this scenario?

37

2. What measures should the hospital take to comply with the byelaws?

General Provisions for Compliance Industrial, Hazardous, and Hospital Waste



Approval Requirement Obtain approval from the local government before generating industrial, hazardous, or medical waste.



Certified Data and Notification Provide certified data on

waste management and notify any changes in waste generation or disposal.



Proper Storage Store waste in approved receptacles on the premises, ensuring it does not cause environmental pollution or health risks.



Separate Collection Keep waste separate from municipal waste and arrange collection by an authorized operator.



Designated Disposal Dispose of waste at designated waste disposal facilities or as permitted by the local government



Transportation, Disposal, Environmental Considerations

Troubles on the Road: Navigating Waste Transportation Compliance in Tehsil Naran



In Tehsil Naran, the local government has been receiving multiple complaints regarding the transportation of waste by a contracted waste management company, QuickClean Waste Management, which has been tasked with transporting various types of waste, including municipal and hazardous waste.

A recent audit has revealed the following areas of non-compliance with the SWM Byelaws.

1 Inappropriate Vehicle Use and Condition:

Vehicles for municipal and hazardous waste are old, poorly maintained, uncovered, and not modified for safety, causing frequent spillage.

2 Non-Compliance with Safety Measures:

Drivers and handlers lack safety training, causing accidents and spills. Emergency response plans are inadequate or ignored, risking community and environment.

3 Lack of Monitoring and Tracking:

Absence of GPS tracking and route optimization results in inefficient routes, delays, and higher fuel consumption. No documentation system exists, reducing transparency and accountability.

4

Violation of Local and National Regulations:

QuickClean Waste Management uses unregistered vehicles and fails to meet sanitary conditions, violating local and national transportation regulations.

Instructions

In the plenary, understand the case scenario, and discuss the given questions:

- 1. What are the potential environmental, health, and community impacts of the identified non-compliance issues?
- 2. Based on the SWM Byelaws, what steps should QuickClean Waste Management take to comply with the regulations?



Ensuring Safe and Efficient Waste Transportation A Guide for Local Governments

As per SWM Byelaws 2024

For safe and regulated transportation consider:

Regulations and Standards

- Vehicle Standards: Use appropriately sized vehicles, maintained in a clean & sanitary condition.
- Covered Containers: Transport waste in covered containers to prevent spillage.
- Regulatory Compliance: Adhere to local and national transportation regulations.

Types of Vehicles

- **Specialized Vehicles:** Use different vehicles for various waste types (e.g., compactors for municipal waste, specialized trucks for hazardous waste).
- GPS Technology: Utilize GPS for route optimization and monitoring.

Safety Measures

- Vehicle Maintenance: Regular maintenance and inspection of vehicles.
- Driver Training: Train drivers and handlers on safety protocols.
- Emergency Plans: Develop emergency response plans for accidents or spills.

Monitoring and Tracking

- Technology Use: Implement technology to monitor waste during transportation.
- Documentation: Maintain documentation and reporting for transparency and accountability.

Ensure the following:

Vehicle Requirements



Adequate size and construction for the wastetype.

Only approved vehicles by the local government or its entity.

Covering Loose Waste



Cover loose waste with a tarpaulin or suitable net to prevent detachment or spillage.



Vehicle Maintenance

Maintain vehicles in a clean, sanitary, and roadworthy condition.

Prevention of Waste Spillage



Ensure waste does not become detached, leak, or fall off except at designated disposal facilities.

The local government should follow these Operational Guidelines:



Locally Fabricated Vehicles

Prefer using locally fabricated municipal waste collection vehicles.



Route Planning and Optimization

- Design and allocate economical routes based on a time and motion study.
- Avoid waste transportation during peak traffic hours.



Use of Technology

Utilize GPS for monitoring vehicle movement and efficiency.



Preventive Maintenance

Implement a periodic maintenance schedule for waste transportation assets.



Performance-Based Mechanism

Promote performance-based mechanisms to improve collection efficiency and effectiveness.

Example

Recykal in India

Recykal, a pioneering digital technology company, partners with local governments across India to enhance the efficiency and effectiveness of waste transportation and recycling processes.



Implementation

- Digital Platform: Recykal provides a digital platform that connects waste generators with recyclers and logistics providers.
- Efficient Transportation: The platform optimizes transportation routes, reducing costs and environmental impact.
- **Real-Time Tracking:** Users can track the status of their waste in real-time, ensuring transparency and accountability.

Outcome

- Improved efficiency in waste transportation and recycling.
- Reduced operational costs and carbon footprint.
- Enhanced transparency in the waste management process.

Session-5



Disposal of Waste

The Essentials of Proper Waste Disposal

Proper waste disposal is crucial for maintaining a clean and healthy environment. Understanding and implementing effective waste disposal practices helps reduce pollution, conserve resources, and support community well-being. Here are key guiding points:



Why Proper Waste Disposal is Important:

- Reduces pollution and conserves natural resources.
- Prevents health hazards and supports community well-being.
- Promotes sustainable waste management.



Approved Waste Disposal Methods:

- **Recycling:** Converting waste materials into new products.
- Composting: Biological breakdown of organic waste into compost.
- Incineration: Controlled burning of waste to reduce volume.
 - Sanitary Landfills: Safely engineered sites to contain waste.



Prohibited Practices:

- **Open Dumping:** Illegal and harmful to the environment and health.
- **Open Burning:** Releases toxic pollutants and is strictly prohibited.



Compliance and Regulations:

- Follow local and national regulations for waste disposal.
- Dispose of waste only in designated and approved facilities.
- Obtain necessary permits and report practices to authorities.



Best Practices:

- Conduct waste audits and segregate waste at the source.
- Use appropriate containers and educate the community.

43

Implement waste reduction programs and monitor disposal practices.



Community Engagement:

- Promote public awareness and participation in waste management.
- Engage community leaders and organizations to improve practices.

The Perils of Open Dumping and Open Burning



Understanding Open Dumping

Definition:

Uncontrolled, illegal disposal of waste in open areas, leading to severe environmental and health risks.

Key Points:

- Unregulated Waste Disposal:
 - Waste discarded without planning or regulatory oversight.

Environmental Degradation:

- Causes soil, water, and air pollution; attracts pests.
- Health Hazards:
 - Significant risks to nearby communities.

Lack of Infrastructure:

 No systems to manage environmental impacts, unlike sanitary landfills.



Understanding Open Burning

Definition:

Burning waste materials in open areas without control or containment, releasing toxic pollutants.

Key Points:

Uncontrolled Waste Disposal:

- Burning plastics, papers, and organic waste without regulatory oversight.
- Air Pollution:
 - Releases thick black smoke and toxic pollutants, degrading air quality and causing respiratory issues.
- Environmental Damage:
 - Leads to scorched earth, damaged vegetation, and soil contamination; risk of forest fires.
- Health Hazards:
 - Inhalation of smoke poses serious health risks, including respiratory infections and chronic illnesses.

Understanding Landfills Discussion and Quiz

Instructions

In your small groups, undertake two activities as follows:



Discussion in Groups Step 1 1 **Definition and Purpose:** 2 **Advantages** What is a landfill? What are some advantages of using landfills for waste disposal? Why are landfills necessary? How can the gases from landfills be used beneficially? 3 4 **Future Use Disadvantages** What are the potential What happens to a landfill site environmental and health risks once it's filled? associated with landfills? How can we reduce the reliance How can these risks be mitigated? on landfills for waste disposal? Step 2 **Quick Quiz**

45

Definition and Purpose

Why a landfill? A) To incinerate waste B) To isolate waste from the environment

- C) To recycle waste
- D) To bury hazardous materials

Advantages

2 Benefit of landfills?

- A) High cost of disposal
- B) Limited types of waste can be disposed of
- C) Creation of local jobs
- D) Immediate environmental impact

Environmental Impact

4 Landfills contribution to global warming?

- A) By isolating waste
- B) By generating toxic gases
- C) By recycling waste
- D) By covering waste with soil

Disadvantages

3 Disadvantage of landfills?

- A) Generates no power
- B) Causes groundwater contamination
- C) Reduces air pollution
- D) Is highly aesthetic

Landfill: Definition, Purpose, Advantages, and Disadvantages

Definition and Purpose

A landfill is a designated area where waste is isolated from the environment until it is safe. Waste is is dumped into disused quarries, mining voids, or borrow pits. Landfill is the most common method of organized waste disposal, designed to protect human health and the environment by containing waste in a controlled manner. Modern landfills are engineered to minimize environmental impact and maximize safety. Compacted waste is covered with soil. Decomposing waste generates gases that can be burnt to produce power.

Advantages

- Cost-effective disposal option for local councils.
- Creates local jobs.
- Can accommodate various types of waste.
- Gases from waste can be used to generate power.

Disadvantages

- Landfill sites look unattractive during use.
- Releases dangerous gases, contributing to local air pollution and global warming.
- Potential for local streams to be polluted by toxins.
- Post-closure, sites may be unsuitable for redevelopment due to pollution.
- Environmental impacts include groundwater contamination and air pollution.

Incineration: Turning Waste into Energy

Definition and Purpose

Incineration is a waste treatment process that involves the combustion of solid waste at high temperatures (1000°C). This process converts waste materials into ash, flue gas, and heat, which can be used to generate electric power. Ash is primarily inorganic, while gases result from organic waste. Heat generated is used to produce electric power.

Advantages

- Requires minimal land compared to other disposal methods.
- Reduces waste weight to 25% of its original amount.
- No risk of polluting local streams or groundwater.
- Can be located near residential areas.
- Gases produced can be used for power generation.

Disadvantages

- Expensive to operate.
- Requires skilled labor.
- Releases strong pollutants that can harm the ozone layer.
- High energy requirement.

Compaction: Maximizing Waste Management Efficiency

Compaction involves compressing waste to reduce its volume, breaking up large or fragile items in the process. This method is commonly used in garbage collection vehicles to enhance waste management efficiency and control.

Key Points

- Waste is compressed to reduce volume.
- Breaks up large or fragile waste items.
- Commonly used at the back end of garbage collection vehicles.
- Depositing refuse at the bottom of a slope ensures better compaction and control of blowing litter.

Evaluating a Proposed Landfill Site

Situation: Aman Valley, a rapidly growing suburban area, is facing significant waste management challenges. The local government has proposed a new landfill site to manage the increasing waste volume. The proposed site is located some distance from the nearest residential area, adjacent to a small river, and on land previously used for agriculture. Preliminary assessments indicate a mix of sandy and clay soils, with some concerns about water table levels.

Instructions

In your groups, discuss the following:

- 1. Listed below are some questions/criteria that you must explore before finalizing the above as a landfill site. Please discuss why these questions are individually important.
- 2. Why is it important to thoroughly evaluate all criteria before finalizing a landfill site?
- 3. What could be some adverse impacts of inadequate site selection?

Key Considerations for Finalizing a Landfill Site



Distance from Residential Areas

- Evaluate potential impacts on residents (odor, noise, visual).
- Ensure adequate buffer zones.



Proximity to Water Bodies:

Activity 13

20

linutes

- Assess risks of water contamination.
- Implement protective measures like liners and leachate collection systems.



Soil Stability and Geology:

- Ensure soil stability for construction.
- Evaluate soil suitability for preventing groundwater contamination.



Accessibility and Transportation Routes:

- Ensure ease of waste transport.
- Assess potential traffic impacts.



Environmental Impact Assessment (EIA):

- Conduct comprehensive EIA to address all environmental impacts.
- Include assessments on local wildlife, vegetation, and air quality.



Community Acceptance and Social Impact:

- Engage the community and address their concerns.
- Develop strategies for community involvement in decision-making processes.

Successful Case Studies in Landfill Management

Sanitary Landfills in the United States

Fresh Kills Landfill, New York: Once the world's largest landfill, Fresh Kills was closed in 2001 and is now being

Implementation

- **Closure and Post-Closure Plan:** Comprehensive planning for landfill closure, including capping and environmental restoration.
- Leachate and Gas Management: Installation of advanced leachate treatment and gas collection systems.
- **Public Engagement:** Involving the community in the planning process for the site's future use.



Transformation into a sustainable urban park, highlighting successful land reclamation and environmental management.

Integrated Waste Management in Sweden

The Högbytorp Landfill, Stockholm: Sweden has one of the lowest landfill rates in the world due to its integrated waste management approach.

Implementation

- **Waste-to-Energy:** Utilizing incineration plants to convert waste to energy, significantly reducing landfill volumes.
- **Recycling Programs:** High recycling rates due to strong government policies and public awareness campaigns.
- **Strict Regulations:** Stringent landfill regulations that require pretreatment of waste to reduce its environmental impact.'



Outcome

Minimal waste sent to landfills, high energy recovery rates, and a circular economy model.

Community-Based Waste Management in Brazil

Curitiba's Green Exchange Program: Curitiba implemented a program where residents can exchange recyclable waste for fresh produce.

Implementation

- **Community Participation:** Encouraging public involvement in waste segregation and recycling.
- **Incentives:** Providing tangible benefits (fresh produce) in exchange for waste, motivating residents to participate.
- **Education:** Continuous public education on the importance of waste segregation and environmental sustainability.



Outcome

48

Increased recycling rates, reduced landfill waste, and improved community health and nutrition.

Environmental Measures in Solid Waste Management

SWM Model Byelaws-2024, Chapter X, 39(2)

From Waste to Wonder: Transforming a Landfill into a Community Park

A local landfill site has been a significant source of environmental pollution and health problems for nearby residents. In response, TMA Shamak has decided to close the landfill and transform it into a public park. To ensure a successful transformation, consultants from the supporting organization have provided the following checklist for the TMA, seeking detailed responses. As part of the planning team, you are tasked with providing comprehensive answers to facilitate this transformation. In your groups, discuss and develop responses to the following questions:



Environmental Mitigation:

- What specific environmental assessments would you conduct before starting the transformation process?
- How would you address soil and groundwater contamination at the landfill site?

Design and Planning:

- What are the key elements to consider in the design and planning phase of the park?
- How would you ensure that the park design incorporates community input and meets local needs?

Health and Safety:

- What health and safety measures should be implemented for workers during the transformation process?
- How can you ensure long-term health monitoring for the local community?

Community Engagement:

- What strategies would you use to engage the community in the transformation process?
- How can you maintain transparency and communication with the community throughout the project?

Funding and Sustainability:

- What potential funding sources could you explore for the project?
- How would you ensure the long-term sustainability and maintenance of the park?

Long-Term Management and Sustainability

- What strategies should be adopted to keep the park clean and functional?
- What native plants, renewable energy, and recycling should be included in the park?

Enhancing Landfill Operations Best Practices for Environmental and Community Health

Reference: Key Guidelines to Improve Landfill Sites Extract from the Sub-National Governance (SNG-II) Programme - January, 2024

Effective landfill management is crucial for mitigating environmental and health issues. These guidelines enhance landfill operations, reduce pollution, and protect community well-being.

Key Guidelines

1 Location and Accessibility Residential Distance: Position landfills far from residential areas to minimize health risks. **Transportation Networks:** Ensure sites have good access to transportation and electricity. **2** Environmental Impact Assessment (EIA) Conduct EIAs to evaluate effects on air and water quality, soil, and wildlife. **3** Environmental Enhancements Plant trees around landfills to improve environmental conditions. **4** Waste Reduction and Segregation Reduction Strategy: Implement waste reduction plans. **Segregation**: • Green Waste: Organic materials for composting or animal feed. • Recyclables: Plastic, paper, glass, cloth, etc. Non-Recyclables: Non-reusable or recyclable waste. Establish central segregation points if door-to-door segregation isn't feasible. **5** Sanitary Workers and Segregation Assign 60% of sanitary workers to door-to-door collection and segregation **6** Utilization of Segregated Waste **Green Waste:** Use as animal feed, and convert into compost via static pile or vermicomposting. **Recyclables:** Sell to third parties or scrap dealers. **Non-Recyclables:** Dispose of at landfill sites. **7** Composting at Landfill Sites Dedicate 5%-10% of landfill space for composting activities. 8 Daily Operations **Cover Waste:** Use soil or other materials daily to reduce odors and pests. Leachate Management: Construct drains or liners to collect leachate, preventing groundwater contamination. • Provide leachate from green waste to farmers as liquid manure.

9 Partnerships with Scavenger Community

Establish formal partnerships with scavengers for waste collection and segregation.

50

Regulate scavenging activities to registered individuals only.

Gender Sensitivity and Inclusivity in SWM

Gender equity, equality, and inclusion are essential for achieving inclusive and sustainable development in Solid Waste Management (SWM). It ensure accessibility of services to all community members regardless of gender, age, disability, socio-economic status, or geographic location.

Understanding Gender

Refers to the roles, behaviors, activities, expectations, and societal norms that a society considers appropriate for men, women, and other gender identities.

It is a social construct that influences how individuals perceive themselves and interact with others.

Understanding Gender Equity and Equality

Gender Equity

- Fair treatment based on respective needs.
- Providing resources and opportunities to address gender-specific challenges.
- Recognizing that men and women have different starting points and may require different support to achieve similar outcomes.



- **Protective Gear and Facilities:** Provide female waste workers with appropriate gear and separate sanitation facilities for safety.
- **Training and Education:** Offer training on managing sanitary waste and recycling initiatives.
- **Community Outreach:** Engage women in programs on recycling and creating reusable products.
- Support Services: Provide childcare and support services to increase women's participation.
- Health and Safety Measures: Implement harassment prevention and ensure safe working conditions for female workers.

Gender Equality

- Ensuring equal opportunities and rights for all genders.
- Promoting balanced participation in decision-making processes.
- Eliminating gender-based discrimination in all SWM activities.



- **Equal Pay:** Ensure male and female workers receive equal pay for equal work to promote fairness and motivation.
- Leadership Roles: Promote women's representation in leadership and decisionmaking roles to consider their perspectives in planning.
- Inclusive Policies: Develop policies to prevent gender-based discrimination in recruitment, promotion, and working conditions.

Session-6

Understanding Inclusion

- Ensuring that SWM services are accessible to all, including women, children, elderly, disabled, and marginalized groups.
- Promoting participation of all community members in planning and implementation of SWM initiatives.
- Addressing barriers that prevent equitable access to SWM services.



Examples in SWM:

- Accessible Collection Points: Design waste collection points accessible to people with disabilities, ensuring pathways are navigable for wheelchair users and bins are placed at accessible heights.
- Education and Awareness: Engage marginalized communities in SWM education campaigns by translating materials into local languages and using culturally relevant examples. Include special orientation and training for children in schools to foster effective SWM habits from a young age.
- **Community Involvement:** Create platforms for vulnerable groups to voice their concerns and contribute to SWM strategies, ensuring their needs and perspectives are included in decision-making.
- Inclusive Participation in Recycling Programs:
 - Men and Boys: Involve men and boys in reuse and recycling programs to ensure their active participation and support.
 - **Women and Girls:** Encourage women and girls to work with various recyclable materials like rubber, glass, wood, plastic, and concrete.
 - **Retired and Aged:** Engage retired and elderly individuals to support SWM initiatives through mentorship, advocacy, and community projects.
- **Support Services:** Provide support services such as childcare facilities to enable more women to participate in SWM activities.

One Woman's Push for Change in Shad Bagh



Ms. Komariya, with support from her community, spearheaded a movement to improve health and sanitation in her village in Shad Bagh. By promoting safe and inclusive Water, Sanitation, and Hygiene (WASH) practices through interfaith harmony, she has inspired significant changes in her community.

A 'Water for Women' project works directly in Peshawar and through partners in Buner and Swat, engaging Transformation Facilitators (TFs), Inclusive WASH Jirgas, and community opinion leaders to achieve its goals. In total, 154 TFs (including men, women, and transgender individuals) are involved, with 50 solely in Peshawar.

Komariya, from a village in Peshawar, has taken a leadership role in her predominantly Christian community. Despite being marginalized and often overlooked for WASH improvements, she organized a female group representing all families in the community. She approached IRC to collaborate with her village, leading to its selection as a target area for the project.

Komariya organized monthly meetings, bringing women from both faiths together to discuss common issues, including solid waste disposal. Motivated by these discussions, she led the inclusive WASH Jirga to launch a Solid Waste Collection and Village Cleaning Campaign. She also sought assistance from the Tehsil Municipal Administration (TMA) to clean village drains.

On June 9, 2022, women from the village gathered with proper equipment, assigned areas, and began collecting and dumping waste at a designated point. Inspired by the initiative, men joined in the cleanup effort. The next day, TMA staff transported the waste to designated dumping sites and helped clear wastewater drains.

The villagers agreed to make this a monthly event, designating the last Friday of each month for the cleanliness campaign. Shad Bagh is now a cleaner, more cooperative community, thanks to Komariya's leadership. As one resident said, "Ms. Komariya has changed the village's fortune by triggering change in our thinking; she is our leader now."

Komariya's story highlights how women can drive change in their communities, promoting health, sanitation, and inclusivity through dedication and collaborative efforts.

Equity in Action: Case Scenarios on Gender and Inclusion in Waste Management

Instructions

In your groups, discuss the assigned case scenario and answer the given discussion questions.



Scenario 1

Ensuring Safe Interactions Between Waste Collectors and Household Women



Situation: In a certain community, household women have reported safety issues such as harassment by waste collectors during door-to-door waste collection. These issues are causing discomfort and fear among household women, leading to a decrease in their willingness to participate in waste segregation and collection activities. Additionally, there is no established complaint mechanism for addressing these concerns.

Questions:

- 1. What specific measures can the TMA implement to ensure safe interactions between waste collectors and household women?
- 2. What training and resources are necessary to support waste collectors in ensuring safe interactions with household women?
- 3. How can the TMA establish an effective complaint mechanism for household women to report issues with waste collectors?

Scenario 2 Enhancing Inclusivity in Community Recycling Programs



Situation: TMA Safa has launched a community recycling program, but participation from various groups, including elderly residents, men, male youth, boys, and women interested in industrial waste management, is very low. Many elderly people find the current system too complex and physically demanding.

Questions:

- 1. How can TMA Safa engage men and boys, and older community members, in recycling programs?
- 2. How can the TMA orient and upskill women to work with industrial waste?
- 3. How can the TMA ensure that all community members feel included and valued in the community recycling program?

Scenario 3

Women in SWM Committees and Task Forces



Situation: TMA Sabat's SWM monitoring committee and the task force for overseeing waste management do not have any women members. There is a need to encourage women's participation at both the tehsil and village levels.

Questions:

- 1. Is it important to have women on SWM committees and task forces?
- 2. How can the TMA ensure that women are actively involved in these roles?
- 3. What strategies can be implemented to encourage more women-led SWM committees at the village level?
- Scenario 4

Economic Opportunities in SWM for Women



Situation: Social enterprises such as "trash to cash" offer numerous economic opportunities, yet women in TMA Khostan remain underrepresented in these initiatives.

Questions:

- 1. What economic opportunities exist in SWM that women can benefit from?
- 2. How can the TMA Khostan support women in setting up and running SWM-related social enterprises (kamai and bhalai) that can directly promote the SWM agenda?



Equitable Waste Management Practices A Checklist for TMAs

1 General Inclusivity

- 1. Ensure Accessibility: Verify that all solid waste management services are accessible to everyone regardless of gender, age, disability, socio-economic status, or geographic location.
- **2. Respect Cultural Norms:** Develop and communicate waste management systems that respect the cultural norms and values of all community members.
- **3.** Inclusive Awareness Campaigns: Conduct community-wide awareness campaigns that educate on proper waste management practices, ensuring the roles and responsibilities of all community members are clearly communicated.

2 Gender Responsiveness

- **4.** Conduct Gender Analysis: Regularly perform gender analyses to understand how waste management practices impact men, women, and transgender individuals differently.
- **5. Promote Female Participation:** Encourage the active participation of women in all aspects of waste management, including leadership roles, decision-making processes, and operational activities.
- 6. Create Equitable Employment Opportunities: Ensure safe working conditions and equitable employment opportunities in the solid waste management sector, focusing on professional development for women.
- 7. Gender-Sensitive Training: Implement gender-sensitive training and capacity-building programs for all TMA and contractor staff, focusing on gender equality, non-discrimination, and women's empowerment.

3 Community Engagement and Safety

- 8. Diverse Community Representation: Include representatives from various community groups, such as women, persons with disabilities, and marginalized communities in decision-making processes.
- **9. Encourage Active Participation and Consultations:** Foster active community participation in the planning, implementation, and monitoring of solid waste management activities, and organize regular consultations.
- **10.** Community Collaborations: Collaborate with local organizations, schools, religious institutions, and other groups to promote sustainable waste management practices.
- **11. Support Community Initiatives:** Support and fund community-led initiatives aimed at improving local waste management, such as neighborhood clean-ups, recycling programs, and composting projects.
- **12.** Accessible Information: Provide waste management information and educational materials in multiple languages and formats to cater to the diverse linguistic needs of the community.
- **13.** Feedback Mechanisms and Complaint Handling: Establish and maintain accessible feedback mechanisms to allow community members to express concerns, suggestions, and complaints. Ensure there are clear protocols for addressing grievances, particularly those related to harassment or discrimination.
- **14.** Harassment Prevention in Service Delivery: Implement strict policies and training modules focused on preventing harassment during door-to-door collection and other direct service interactions. Regularly review and update these policies to ensure they remain effective and comprehensive.

Strategies for Effective Community Engagement and Awareness in SWM





Educational Workshops and Trainings:

- Community Workshops
- Training of Trainers (ToT)



Use of Technology and Digital Platforms

- Mobile Apps
- Social Media Campaigns



Community-Based Resource Recovery Centers

- Establishing Centers:
- Social Entrepreneurship

Session-6







Common Diseases Resulting from **Poor Solid Waste Management**

Diseases from Diseases from Human Waste Cholera Leptospirosis Typhoid Fever Anthrax Hepatitis A Salmonellosis **Diseases from**

Contaminated **Soil and Water**



- Hookworm Infection
- Giardiasis
- E. coli Infection



Airborne Diseases Due to Poor Waste Management Practices)



Tuberculosis

Hantavirus



Vector-Borne Diseases



Dengue Fever

- Malaria
- Plague

Diseases from Poor Hygiene and Sanitation Practices



Scabies

Trachoma

A Call for Action Addressing Health Hazards for Waste Handlers

Instructions

In your groups, discuss the assigned case scenario and answer the given discussion questions.





Situation: In Tehsil Loya, the Tehsil Municipal Officer (TMO) has been receiving numerous complaints regarding the health and safety conditions of solid waste handlers. Workers have reported frequent injuries, respiratory problems, and disease incidence. Over the past two years, a significant number of sanitation workers have left their jobs before retirement, and several deaths have also been reported. Additionally, there are concerns about the safety of the vehicles used for waste collection and the conditions at the waste disposal sites.

Questions:

- 1. What specific measures should the TMA implement to ensure the health and safety of solid waste handlers?
- 2. How can the TMA address the concerns about the safety of waste collection vehicles and disposal sites?

Health and Safety Measures for Solid Waste Handlers

References: Byelaws, Chapter X, 39(1)(g), 39(1)(h), 39(1)(l), 39(1)(j), 39(3)

Protective Gear and Facilities

1 Types of Essential Protective Gear for Waste Handlers

- Gloves: Protect hands from cuts, infections, and harmful substances.
- **Face Masks:** Prevent inhalation of harmful dust and pathogens.
- Safety Boots: Protect feet from punctures, heavy objects, and contaminants.
- **High-Visibility Vests:** Ensure visibility to avoid accidents, especially in low-light conditions.
- **Eye Protection:** Prevents injury from splashes and debris.

2 Ensuring Consistent Use of Protective Gear

- Training and Awareness: Conduct regular training sessions to highlight the importance of using protective gear.
- Provision of Gear: Ensure all waste handlers are provided with high-quality protective gear.
- Supervision and Enforcement: Implement supervisory checks to ensure compliance and provide reminders.
- Replacement and Maintenance: Regularly replace worn-out gear and maintain in good condition.

3 Improving Sanitation Facilities for Waste Handlers

- Accessible Toilets: Provide clean and accessible toilets at all waste collection points.
- Handwashing Stations: Ensure availability of handwashing stations with soap and water.
- Rest Areas: Establish clean rest areas where waste handlers can take breaks safely.
- Periodic Maintenance: Regularly clean and maintain all sanitation facilities.

Training and Education

1 Essential Training Programs for Waste Handlers

- Safety Practices: Educate on proper handling and disposal of different types of waste.
- **Use of Protective Gear:** Training on the correct use of personal protective equipment (PPE).
- Emergency Procedures: Train on emergency response protocols for accidents and injuries, including first aid.
- Health and Hygiene: Promote personal hygiene and health practices to prevent infections.

2 Ensuring Consistent Use of Protective Gear

- Feedback Sessions: Conduct regular feedback sessions with waste handlers to identify training needs.
- Participatory Workshops: Organize workshops where waste handlers can contribute to the development of training materials.
- Pilot Programs: Implement pilot training programs and refine based on handler feedback.
- Continuous Improvement: Regularly update training programs based on new insights and feedback.







Vehicle Safety and Maintenance

1 Ensuring Safe and Sanitary Waste Collection Vehicles

- Regular Cleaning: Daily cleaning of vehicles to prevent the buildup of waste and contaminants.
- **Sanitization:** Frequent sanitization of the vehicle interior and exterior.
- **Safety Features:** Equip vehicles with safety features such as GPS, cameras, and alarms.
- Hand Signals: Use agreed-upon hand signals for communication.
- Fuel Use: Minimize diesel-powered vehicles; use unleaded gasoline (petrol) powered vehicles instead.
- **Exhaust Systems:** Ensure exhaust pipes do not discharge into the workers' breathing zone.
- Route Design: Design collection routes to minimize crossing traffic going in opposite directions.

2 Implementing a Preventive Maintenance Schedule

- Routine Inspections: Conduct daily and weekly inspections to identify and address potential issues.
- Scheduled Servicing: Follow a preventive maintenance schedule for regular servicing of vehicles.
- **Record Keeping:** Maintain detailed records of all maintenance activities.
- Driver Training: Train drivers on safe driving practices and basic vehicle maintenance.

Health Monitoring and Vaccination Programs

Health Monitoring Programs for Waste Handlers

- Regular Health Check-ups: Schedule periodic health check-ups to monitor the health status of waste handlers.
- Health Records: Maintain comprehensive health records for all waste handlers.
- Occupational Health Services: Provide access to occupational health services and support.

2 Crucial Vaccinations for Waste Handlers

- **Tetanus:** Prevents infection from cuts and puncture wounds.
- Hepatitis A and B: Protects against liver infections.
- **Typhoid:** Prevents bacterial infection from contaminated food and water.
- Influenza: Reduces the risk of respiratory infections.

3 Ensuring Vaccination Compliance

- Vaccination Drives: Organize regular vaccination drives in collaboration with health authorities.
- Incentives: Offer incentives for waste handlers who complete their vaccination schedules.
- Awareness Campaigns: Conduct awareness campaigns on the importance of vaccinations.

Session-7





Safety at Waste Disposal Sites

1 Improving Safety at Waste Disposal Sites

- Clear Signage: Install clear signage indicating high-risk areas and
- safety protocols.
- Protective Barriers: Erect barriers to restrict access to hazardous zones.
- **Safety Training:** Regularly train all personnel on site-specific safety protocols.

2 Restricting Access to High-Risk Areas

- Authorized Personnel Only: Ensure only trained and authorized personnel can access highrisk areas.
- Access Control Systems: Implement access control systems to monitor and regulate entry.
- Emergency Protocols: Establish and practice emergency protocols for accidents and incidents.

Community Involvement

Supporting Health and Safety of Waste Handlers

- Community Clean-Up Drives: Organize community clean-up drives to reduce waste and hazards.
- Support Networks: Establish community support networks for waste handlers.
- Education Campaigns: Conduct campaigns to educate the public on proper waste disposal and respect for waste handlers.

Role of Local Leaders and Organizations

- Advocacy: Local leaders can advocate for better working conditions and resources for waste handlers.
- Partnerships: Form partnerships with local organizations to support waste management initiatives.
- Community Meetings: Hold regular community meetings to discuss and address issues faced by waste handlers.

Additional Safety Protocols – Management of SW Workers



Prohibit Child Labor Children should be prohibited from waste picking activities.



Register Adult Pickers Properly register adult waste pickers and ensure they receive vaccinations and annual medical check-ups.



 Image: Constraint of the second se







allowing only trained personnel with protective gear.

Use of Protective Gear

Ensure all workers wear appropriate protective gear, hardsoled safety shoes, ear protection, eyeglasses, and respiratory protection.



Regulatory Framework, Authorized Officer And Financial Aspect



Section-1: Authorized Officers

Authorized Officers

Authorized officer' means any officer of the concerned local government who has been authorized by it to administer, implement, and enforce the provisions of these by laws.

Powers of Authorized Officer

1. Information Disclosure

Officers can demand information disclosure from operators or individuals, orally or in writing, and may require it under oath or affirmation.

2. Review of Application

- Review applications for SWM licenses and permits. Ensure all required documentation is provided and applicants meet the necessary criteria.
- Grant, suspend, or revoke licenses and permits based on compliance with regulations.

3. Inspections and Compliance Checks

- Conduct regular inspections of waste management facilities and operations.
- Verify adherence to waste management standards, including waste segregation, storage, handling, and disposal. Enter and inspect any premises involved in SWM activities to ensure compliance.

4. Enforcement of Regulations

- Enforce SWM byelaws and regulations.
- Issue warnings, fines, or penalties for non-compliance.
- Suspend or revoke permits for repeated violations or serious breaches of

5. Access for Inspection

 Operators and license/permit holders are required to grant access to authorized officers for inspections.

6. Provision of Data

Operators and license/permit holders must periodically provide data on collected waste and its composition as agreed with the authorized officer.

7. Compliance Certificates

- Post-inspection, if compliant, officers issue certificates to operators/license/permit holders.
- Content: Certificates must include name, residential, and postal address of the operator/license/permit holder; address of inspected workplace, plant, vehicle, equipment, or machinery; time, date, and scope of inspection; any relevant remarks by the authorized officer.

8. Non-Compliance Consequences

Failing to obtain compliance certificates in three consecutive inspections can lead to recommendations for contract/license/permit review. The local government/entity may suspend or revoke the contract/license/permit if there are reasonable grounds.

9. Record Keeping

Authorized officers must keep a register of all inspections conducted.

10. Sealing of Operations

Authorized officers have the authority to seal operations or workplaces, if necessary, under the Byelaws, the Act, or other applicable laws.

Section-2: Accumulating Waste, Littering, Dumping, and Abandoned Articles

1. Responsibility for Clean Premises

• Occupiers must keep their premises clean and free from harmful waste.

2. Provision and Maintenance of Receptacles

Local Government's Role: Ensure sufficient receptacles in public areas. Receptacles must be well-maintained, ssuitable weight and anchored, wweatherproof and animal proof, aappropriately sized, conveniently placed and regularly emptied

3. Littering Regulations

There is a prohibition of littering, sweeping waste into public spaces, and disturbing waste in receptacles. Local government and private landowners must promptly remove litter to prevent nuisances.

4. Dumping Regulations

Depositing waste without following byelaws and abandoning articles are prohibited. Local government can remove and dispose of abandoned articles, with specific provisions for items of significant financial value.

Scenario

Prohibition of Dumping and Abandoning Articles

Instructions

Discuss the assigned case scenario and answer the given discussion questions.





A local business owner has been reported for allegedly dumping waste on a vacant lot adjacent to their property. Upon investigation, the local government discovers several abandoned items, including old furniture and construction debris.

Questions:

- What specific byelaw provisions are being violated in this scenario? Refer to Byelaw 29 (1) - (6) to determine the proper procedures for removing and disposing of the abandoned items.
- 2. How does the byelaw define dumping and abandonment of articles?
- 3. What immediate steps should the local government take to address the dumping issue?
- 4. How should the local government handle the abandoned items found on the lot?



Steps to Deal with Abandoned Items



Initial Investigation and Documentation:

- Document the scene with photographs and a detailed report of the items found.
- Interview nearby residents or businesses to gather information about the dumping.



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Immediate Clean-up and Enforcement:

- Remove the waste and abandoned items following the provisions of Byelaw 29 (4) and (5).
- Issue a notice to the business owner and other potential violators about the prohibition of dumping and abandonment under Byelaw 29 (1).



Public Notice for Valuable Items:

- If any items are deemed to have significant financial value, publish a notice in a local newspaper as per Byelaw 29 (6).
- Include a description of the items, the intention to



4 Preventive Measures:

- Install signage in the area indicating the prohibition of dumping and the penalties for violations.
- Increase patrols and surveillance in the area to deter illegal dumping.
- Organize community awareness campaigns to educate residents and businesses about proper waste disposal practices.
Section-3: Licenses and Permits



2. Considerations for Approval

- Compliance with Byelaws, the Act, and other relevant legislation.
- Applicant's environmental, health, and safety record.
- The nature of the commercial service to be provided.
- Applicant's professional and financial capacity.

Suspension and Revocation of License / Permit

3. Grounds for Suspension/Revocation

- Failure to comply with Byelaws and the Act.
- Failure to comply with relevant legislation regulating waste collection, transportation, or disposal.
- Non-compliance with license/permit conditions.
- Other fair and reasonable grounds deemed relevant by the local government.

4. Procedure

- Decisions on suspension or revocation are made after providing an opportunity for the license/permit holder to be heard.
- Decisions are made following the procedure specified in the Act or relevant legislation.

Renewal of License / Permit

5. Renewal Process

Licenses/permits may be renewed according to the procedure specified by the local government.

Prohibited Conduct

6. Restrictions on License/Permit Holders

- Operating in violation of license/permit conditions.
- Failing or refusing to provide required information.
- Providing false or misleading information.
- Failing to prevent Byelaws violations by workers.
- Collecting or transporting waste in improperly constructed or non-watertight vehicles or containers, depending on the waste stream.

Licensing Challenges: Real-World Scenarios

Instructions

Identify the key issues in the scenario and propose solutions according to the SWM bylaws.





Case Scenario 1:

A small business wants to start a recycling operation in your TMA. They need to obtain a license to collect and transport recyclable waste. They intend to submit their application but they do not know about the required documents required for necessary for obtaining license. Under the byelaws which documents are required for granting the license?



Case Scenario 2:

A medical facility applies for a renewal of its permit to dispose of medical waste. The facility has a history of compliance but with the passage of time the concerned area near the facility has been converted into a residential area causing concerns among the residents. The authorized officer must decide whether to renew the permit or otherwise

Section-4: Fee, Fines, and Penalties

Financial Enforcement in Waste Management Structuring Fees, Fines and Penalties

Instructions

Each group has been assigned a set of questions with regard to fees, fines or penalties. The group task is to discuss the questions assigned to them, while referring to the SWM bylaws.

Group-1: Collection Fees

- 1. What types of waste generators are required to pay collection fees?
- 2. How can the local government ensure that these fees are collected efficiently?
- 3. What could be the potential challenges in implementing collection fees for industrial and medical waste?

Group-2: Tipping Fees

- 1. What are tipping fees, and for what types of waste are they charged?
- 2. How can the local government determine the appropriate tipping fee rates?
- 3. What measures can be taken to ensure compliance with tipping fee regulations?

Group-3: Commercial and Institutional Fees

- 1. Which establishments are required to pay commercial and institutional fees?
- 2. How can the local government manage and monitor the collection of these fees?
- 3. Discuss the potential impact of these fees on commercial and institutional establishments.

Group-4: User Charges

- 1. How are user charges for residential and non-residential entities structured?
- 2. What methods can be used to collect these fees effectively?
- 3. Discuss the benefits and challenges of implementing user fees for waste management.

Group-5: Fines and Penalties

- 1. What types of municipal violations can result in fines and penalties?
- 2. How should the local government enforce fines and penalties to ensure compliance with waste management regulations?
- 3. Discuss the potential consequences of non-compliance for businesses and the community.



Financial Arrangements for Solid Waste Management

1. 2. **Tipping Fees Collection Fees** Fees will be charged for the disposal of: The local government or its entity can levy collection fees for providing communal Construction and demolition waste waste containers to generators of: Other treated waste by private persons Industrial waste or organizations at waste disposal Medical waste facilities Construction and demolition waste Special waste (hazardous, etc) 4. **Fines and Penalties: About** 3. **Commercial and Institutional Fees Municipal Violations** Collection and tipping fees will be charged from commercial establishments and public The local government may take action against institutions such as municipal violations and impose penalties and Schools fines as per the prescribed manner under sections 66, and 68, and the Third, Fourth, Universities Fifth, and Sixth Schedules of the Act. Hotels Restaurants.

5. User Fees for Waste Management

User charges will be levied on the public to cover the expenditures for municipal waste services. **Residential Fees:** Monthly fee range: 100-300 for residential houses

Non-Residential Fees: Monthly fee range: 200-500 for:

- Market shops
- Banks and insurance offices
- Restaurants, cafes, sweet shops, etc.

Fee Collection Process: The local government will collect the user fee on a monthly basis. A printed slip will be issued to each user for the payment of the fee as listed in section 38 (e).



Section-5: Monitoring and Supervision

Establishment of Task Force and Monitoring Committee for Solid Waste Management

TASK FORCE

Standing Committee at Tehsil level section 25 (1)(e)

Formation

Composition

A local government or its entity shall constitute a 'waste management task force' for the successful implementation of the SWM Bye laws.

- Chairman
- TMO (Tehsil Municipal Officer)
- Two elected members of the Tehsil Council
- One civil society member

MONITORING COMMITTEE

Monitoring by VC/NC and Tehsil Council Committees Monitoring Committee at VC Level Section 29 (1) (ix)

Formation

The Chairman or Mayor of the Tehsil or City Local Government shall establish a Monitoring Committee for Solid Waste Management.

Composition

- Chairperson: One Member of Tehsil or City Council
 - Members:
 - □ One Member on Women Reserved Seats
 - One Member on Minority Reserved Seats
 - Two Members on General Seats
- Secretary: One Official of respective TMA

Functions and Responsibilities of the Monitoring Committee

1. Oversight and Compliance

- Ensure adherence to solid waste management byelaws.
- Regularly monitor and evaluate cleanliness, waste collection, and disposal processes for compliance with the byelaws.
- Organize inspections and audits to assess compliance with the byelaws.

2. Review and Improvement

- Review the effectiveness of existing waste management arrangements and suggest improvements.
- Develop and use gender-sensitive indicators to evaluate the impact of waste management practices.

3. Community Engagement and Awareness

- Engage with communities to promote awareness, participation, and ownership in waste management.
- Facilitate regular community meetings to gather feedback and suggestions from underrepresented groups.

4. Inclusivity and Representation

Ensure waste management initiatives include input from diverse community groups, including women, children, the elderly, and people with disabilities.

5. Feedback and Complaint Handling

- Review complaints and suggestions from the community and verify actions taken in response.
- Inquire about the status and quality of waste management services from sanitary supervisors and workers.

6. Due Deligence

- The committee shall meet at least once every month.
- The committee shall submit a report to the Chairman or Mayor with recommendations for improving waste management services.

Scenario

Community Watch: Enforcing Accountability in Waste Management

Discuss the assigned case scenario and answer the given discussion questions.





Situation: The Solid Waste Monitoring Committee of TMA Chamkani, established under Section 41 of the Model Byelaws on SWM 2024, held a meeting with the community to gather feedback, as required by Section 42 of the Byelaws. During this meeting, the community raised a complaint about Build-Master, a construction company renovating a large commercial building. Instead of using the designated site provided by TMA Chamkani, the company contractor found it cheaper to dump the construction debris in an abandoned lot nearby.

The Monitoring Committee referred the case to Mr. Shaukat Khan, the Authorized Officer/Enforcement Officer, for legal action under the LG Act 2013 and Model Byelaws on SWM 2024. Upon visiting the site, Mr. Shaukat Khan confirmed the complaint and validated that the dumping was indeed taking place as reported.

Discussion Questions for the Participants

- 1. As per the SWM Byelaws 2024, what specific actions should the Authorized Officer take against Build-Master for the improper disposal of construction debris?
- 2. What would be the potential results or consequences of the actions taken by the Authorized Officer?

Section-6: Own Source Revenue Generation

Relevant Sections of the LG Act 2013

- Section 30 (2) (c) of the LG Act 2013
 "The proceeds of taxes levied by a local government under this act"
- Section 30 (2)(h) of the LG Act 2013
 "Fines imposed and recovered under this Act"
- Third Schedule of the LG Act 2013 (Serial No.7)
 "Fee for licenses or permits and penalties or fines for violations"
- Third Schedule of the LG Act 2013 (Serial No.15)
 - " Charges for execution and maintenance of works of public utility like lighting of public places, drainage, conservancy and water supply operated and maintained by Tehsil Local Government"



Innovative Revenue Generation Approaches

- **1. Resource Recovery:** Programs to recover valuable materials from waste streams, such as recycling initiatives, and sale of recyclable materials to generate additional revenue.
- 2. Public-Private Partnerships (PPPs): Collaborations with private companies to enhance waste management services, and joint ventures for building and operating waste treatment and recycling facilities.
- **3. Community-Based Initiatives:** Involvement of local communities in waste management projects, and incentives for communities to participate in recycling and composting programs.

Experiential Activity: Developing a Business Model

Instructions

In the plenary, discuss the following questions:

- 1. What types of fees and fines has your TMA implemented with regard to SWM?
- 2. What strategies have you adopted for effective collection of fees?
- 3. Have you adopted any innovative revenue generation approaches (e.g., resource recovery, PPPs)? Please share.
- 4. If you had to develop a business model for own source revenue in SWM, what would be the combination of fees, fines, penalty and resource generation? Why?
- 5. Use the given SWM Revenue and Expense Matrix to note your assumptions.

Source for Revenue Generation -1

- **Fees:** Implementation of tiered waste collection fees for residential, commercial, and industrial sectors.
- **Impact:** Increased revenue for SWM infrastructure and improved compliance through public awareness campaigns.
- **Types of Fees:** What types of waste collection fees could you implement for different sectors (residential, commercial, industrial)?

Source for Revenue Generation -2

- **Fines:** Introduction of fines for illegal dumping and non-compliance with waste segregation rules.
- **Impact:** Significant reduction in illegal dumping incidents and higher community participation in waste segregation.
- **Enforcement of Fines and Penalties:** How would you enforce fines and penalties for non-compliance?

Source for Revenue Generation -3

- **Resource Recovery:** Establishment of a recycling services by the TMA or other entities.
- **Impact:** Enhanced recycling rates, reduced landfill usage, and additional revenue through the sale of recyclables.
- **Opportunities for Resource Recovery and Recycling:** What opportunities do you see for resource recovery and recycling in your area?

Source for Revenue Generation -4

- Enhancing other Services: Grant or PPP for other services.
- **Impact:** Additional revenue through leveraging other services with social entrepreneurs, local NGOs/CBOs.
- **Public-Private Partnerships:** Could public-private partnerships enhance your waste management services and also contribute to revenue generation? How?



Solid Waste Management Revenue and Expense Matrix

Use the following matrix to think through your potential revenue sources, direct costs and operational costs for Solid Waste Management related activities.

#	Description	Revenue	Expenses	Total
1	Revenue Sources			
i)	Collection Fees			
;;)	Tinning Ecos			
"'				
	•			
iii)	Fines & Penalties			
iv)				
,				
V)	Public-Private Partnerships 			
	Total Receipts (a)			
2	Direct Costs			
	Total Direct Cost (b)			
	Gross Profit/Loss			
3	Operational Expenses			
	•			
	Net Profit (a-(b+c))			



Action Plan Where Do We Go From Here?

Instructions

- Carefully examine the case study as a model to create a practical and tailored action plan for improving solid waste management within your own Tehsil Municipal Administrations (TMAs). Pay special attention to the strategies and key action points outlined, which helped transform waste management in a suburban area facing significant challenges.
- Once you have reflected on the steps taken in the case study, consider how these steps can be adapted or directly applied to the solid waste management challenges in your TMA.
- Outline each step you plan to implement within your jurisdiction. Ensure each step is clearly defined and actionable. For each step in your action plan, assign responsibilities, establish realistic timelines, estimate the resources required and consider how you will secure these resources, whether through local government funding, partnerships, or other means. Also identify potential challenges you might face in implementing your action plan. These could include community resistance, financial constraints, or logistical issues.
- Document your action plan in a clear format. Be prepared to share your plan with the workshop group for feedback and further refinement.



Case Study: Transforming Solid Waste Management

Introduction

In a rapidly growing suburban area, the local government faced significant waste management challenges, including overflowing bins and environmental hazards. A strategic initiative, led by the Tehsil Municipal Administration (TMA) in collaboration with a local NGO, was launched to overhaul these practices, emphasizing efficiency, community involvement, and sustainability.



Initial Challenges

The project initially encountered several obstacles, including inadequate infrastructure for waste collection and segregation, low community awareness, and limited resources. Cultural norms also posed significant barriers, necessitating innovative approaches and robust community mobilization.

Strategic Vision and Objectives

The initiative aimed to establish a sustainable waste management system that could serve as a model for other regions. Key objectives included enhancing waste collection and segregation, promoting recycling and composting, and boosting community engagement. The ultimate goals were to minimize the environmental impact, spur economic opportunities through resource recovery, and improve the quality of life for residents.





Action Plan

Nar	ne of TMA			Date						
IJ	Expected Challenges What obstacles or challenges could you face, and what measures will you take to mitigate such obstacles or issue?									itions of place, equipment,
4	Resources What resources will be needed – financial and other*), and from where will these be gathered?									ary time, free inputs or donc
m	Timeline By when will this activity be completed? (Date/Month)									ts and connections, volunt
7	Responsibilities Who will be responsible for undertaking this activity?									echnical expertise, contac , etc)
Ţ	Activities What will we do?									Resources may include to sols, machinery, training,
	Steps	~	7	m	4	വ	9	7	00	*

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Session-9

Session-9



