REPUBLIC OF TÜRKİYE
MINISTRY OF ENVIRONMENT, URBANIZATION AND CLIMATE CHANGE
GENERAL DIRECTORATE OF ENVIRONMENTAL MANAGEMENT

UNDP

ZERO WASTE MANAGEMENT SYSTEM IMPLEMENTATION GUIDELINE

GUIDELINES FOR SHOPPING MALLS, BUSINESS CENTRES, COMMERCIAL ENTERPRISES, AND PLAZAS

ZERO WASTE

PREFACE

The amount of waste has been increasing gradually in our country as a result of population growth, increased purchasing power, and technological developments from past to present. This increase necessitates sustainable and integrated waste management through a Zero Waste Management approach.

Direct disposal of waste without applying recycling and/or recovery processes results in loss of both material and energy resources. Based on its multifaceted relations with technical, economic, and social disciplines, sustainable waste management entails zero waste management in the framework of integrated waste management hierarchy with a focus on waste prevention, reduction, reuse, recycling, and recovery.

To ensure the protection and improvement of our natural resources and ecosystems, and the creation of a healthy and liveable environment for the current and next generations within the scope of the responsibilities of our Ministry to generate plans, develop policies, and set targets regarding the zero waste management system, 11 implementation guidelines have been prepared with due regard to the sustainability principles, international norms and national priorities in order to include various stages such as waste prevention, waste minimization at source, sorting by types, collection, transportation, temporary storage, reuse, and recovery. The guidelines are as the following: Guideline for Local Administrations, Guideline for Organized Industrial Zones and Industrial Facilities, Guideline for Airports and Terminals, Guideline for Shopping Malls, Business Centres, Commercial Enterprises and Plazas, Guideline for Educational Institutions and Dormitories, Guideline for Healthcare Organizations, Guideline for Tourism Facilities, Guideline for Rural Areas, Guideline for Institutions and Organizations, Guideline for Households and Housing Estates, and Zero Waste Blue Guideline.

Zero Waste Implementation Guideline has been developed to determine design and planning criteria, assessment factors, and implementing principles of the Zero Waste management system in terms of administrative, financial, and technical aspects as well as to lead target audiences for the development, improvement, and promotion of the Zero Waste Management system.

The Zero Waste approach should be implemented with utmost care and precision based on a common objective and language set by the relevant stakeholders in order to realize high-quality practices, prevent waste generation, and ensure cost-efficiency.

Prepared in line with the purposes of making sure that the principles of zero waste approach is understood, establishing the baseline, ensuring the progressive promotion and sustainability of the system, and drawing a roadmap for zero waste management aimed at all the related stakeholders, I wish that the Guideline will be auspicious to all relevant parties, and our country.

I also take this opportunity to thank all the institutions, organizations, and our staff that contributed to the development of this Guideline

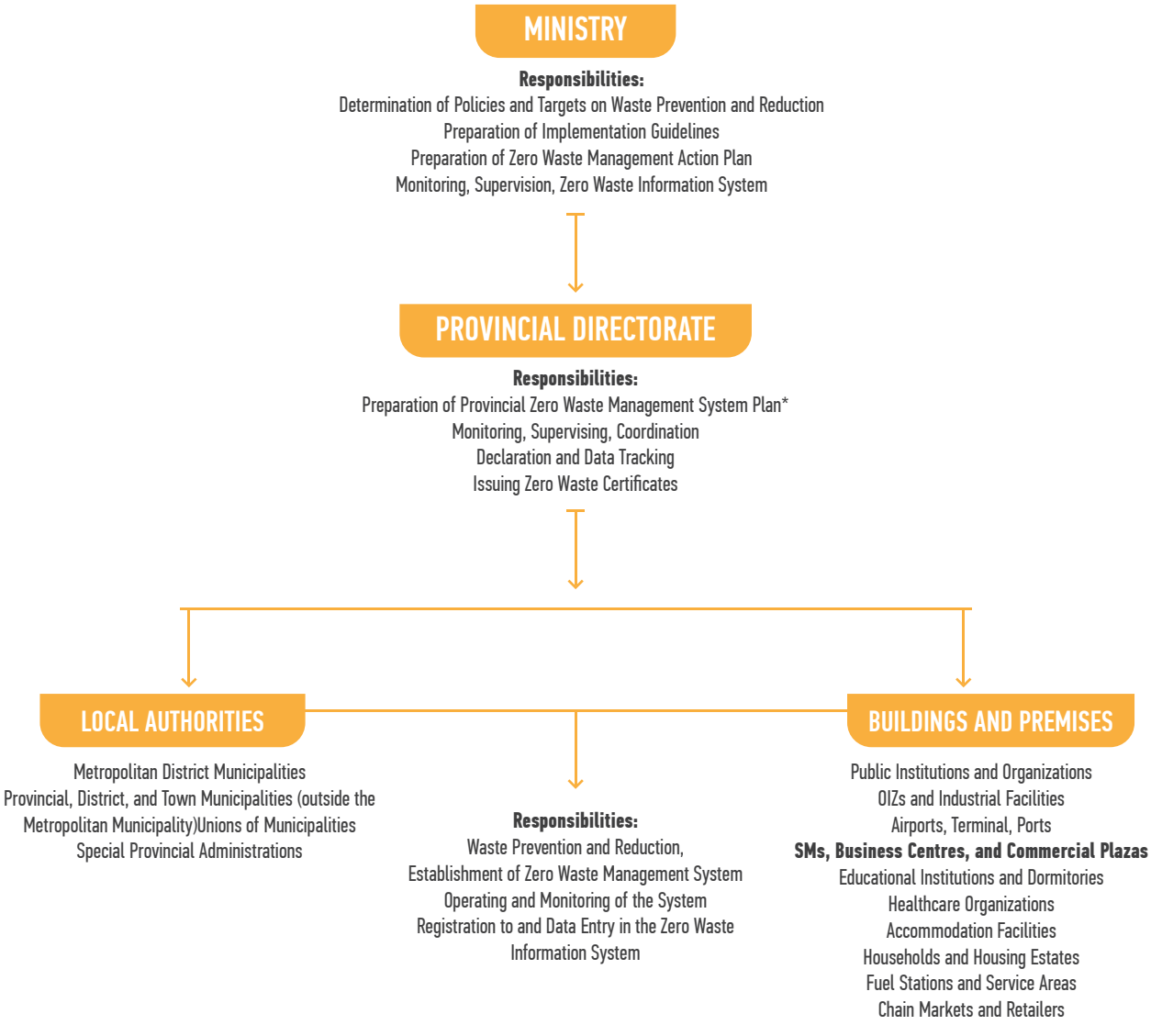
Murat KURUM
Minister of the Environment, Urbanization and Climate Change

CONTENTS

GUIDELINES FOR THE IMPLEMENTATION OF THE ZERO WASTE SYSTEM AT SHOPPING MALLS (SMs), BUSINESS CENTRES, COMMERCIAL ENTERPRISES, AND PLAZAS

This guideline covers general information, activities and plannings as well as principles on monitoring and improvement with regard to zero waste management (ZWM). In Türkiye, ZWM is realized mainly in 2 branches: Local authorities, and buildings-premises. Responsibilities of each implementer are presented below. Provincial ZWM plans are prepared and implemented by a commission designated by the Local Environmental Board under the coordination of the Governorship. ZWM plans require implementers to carry out the necessary activities in accordance with the recommendations given in this guideline, to accomplish waste prevention, reduction and separate collection through the completion of essential infrastructure works, and to provide the acquired data in the Zero Waste Information system.

Table1. Responsibility distributions in ZWM

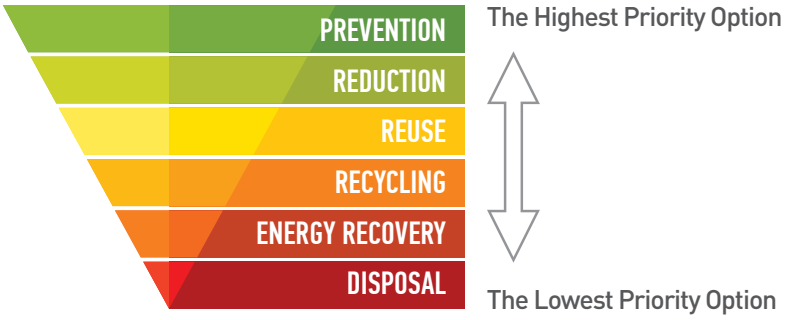


**To provide local environmental boards with agenda and technical support in the preparation of Provincial Zero Waste Management System Plan*

WHAT IS ZERO WASTE?

"Zero Waste", which ecological design criteria lay the foundation of, is a waste management philosophy that covers waste prevention, efficient use of resources, prevention or reduction of waste generation, and separate waste collection at source, and waste recovery as well as it is an approach that considers lifecycle of waste in order to ensure cultural, economic, and social development.

Table 2. Waste management hierarchy



In ZWM, it is essential to reuse products, extend their lifetime, avoid or reduce the use of hazardous substances in production, and manufacture recyclable products.

Waste management hierarchy (Table 2) lays the foundation of ZWM system. Accordingly, waste prevention, waste reduction, and waste reuse are among the steps of ZWM system. Waste that cannot be reused or recycled must be utilized through material or energy recovery applications. Establishment of ZWM system is also important in order to reduce the costs that will be required for environmental pollution treatment facilities.

To achieve a successful management model, ZWM system should be included in design phase of any living arrangements such as housing estates, buildings, neighbourhoods, streets, public squares, schools, plazas, shopping malls (SMs), airports, market places, and educational, healthcare and tourism facilities.

It is ideal for buildings and living arrangements to be constructed in compliance with ZWM by preparing plans in the design phase. If it is impossible to achieve the ideal, one can get the result by following the implementation steps, which consist of 4 (Table 3), to establish ZWM system.

Table 3. Implementation steps of the ZWM system

1. DESIGNATION OF A WORKING TEAM

A working team should be organized by designating people who will be responsible for process management starting from establishment of the system to its implementation and control.

Table 4.Determination of ZWM system working team

**Working team may be expanded or diversified according to the needs of institutions.*

The zero waste team should undertake the following main tasks for a successful implementation.

- Specify what needs to be realized in order to prevent and reduce waste,
- Supply the necessary equipment/units for waste separation and transportation, and ensure the waste delivery to be done to the licenced facilities,
- Inform and train the support staff,
- Record all the activities carried out, and report their environmental, social, and economic impacts along with the related data to authorized people and/or departments
- Organize awareness-raising activities, such as introductory films, events, etc., to increase the success of the ZWM system.

2. PLANNING

Planning is the most significant step for an effective waste management. At this step, a baseline analysis will be carried out; principles with respect to waste prevention and reduction will be determined, and needs will be analysed.

2.1. Baseline Assessment:

The main purpose of baseline assessment is to identify waste types, and in what quantity and frequency they are generated, the results of which will shape further planning practices. Baseline assessment specifies the following data:

Regarding the institution/organization:

- Number of employees (in total and by sub-units)
- Mobile population (planning can be done through separate daily/weekly/seasonal assessments)

Regarding to waste stream(s):

- Source and quantity,
- Types and characteristics,
- Reasons of generation[1],
- Competences of the personnel in both quantity and quality,
- Waste collection, and transportation methods,
- Temporary waste storage areas,
- Waste collection system of recipient municipalities/recycling facilities.

Table 5 presents the types of waste that may be generated at SMs, Business Centres, Commercial Enterprises, and Plazas. Please add to the table if you think there are any extra types of waste and areas.

Table 5. Units that generate/may generate waste

Units	Waste types
Shops/Markets	Paper, plastics, glass, metal waste
Administrative buildings and offices	Paper, plastics, glass, metal waste, waste batteries, waste electrical and electronic equipment, such as computer, telephone, lamp
Food Preparation Section and Dining Halls / Restaurant / Cafeteria	Bio-degradable waste, waste vegetable oil, paper, plastics, glass, metal waste, wet wipes, napkins etc.
IT-Maintenance-Repair Units	Toner-cartridge, waste batteries, waste accumulators, lighting equipment, dust filters of air conditioning / ventilators, oil filters of generators, contaminated packaging, etc.
Infirmary	Medical waste (such as infected, hypodermic needle), drugs, paper, plastics, glass, metal waste, etc.
Tailor, Dry Cleaning, Hairdresser, etc.	Fabric pieces, clothes, contaminated packaging, etc.
Lavatories	Mostly napkins, hygienic materials
Car wash	Waste oil, lubrication oil, oil filters, contaminated waste, contaminated packaging, waste solvents, etc.
Parks & Gardens	Biodegradable waste such grass, leaves, tree, bush, etc.
Other units	----

1 It is important identify sources and causes of waste generation so that feasible options for waste prevention and reduction can be applied.

At certain intervals, the quantity of generated waste, at each unit, should be measured and recorded (Table 6) to see the general picture.

Table 6. Generated waste by type and quantity (kg)

	Paper	Metal	Plastics	Glass	Food waste	Waste vegetable oil	Battery	Toner cartridge	E-waste	Medical Waste
Administrative buildings and offices										
Food Preparation Section and										
Dining Halls / Restaurant / Cafeteria										
Shops / Markets										
IT-Maintenance-Repair Units										
Tailor, Dry Cleaning, Hairdresser, etc.										
Lavatories										
Infirmary										
Car wash										
Other units										

On the purpose of ensuring the best use of resources, to take inventory of the equipment already in use is also considered very beneficial and effective.

2.2. Waste Prevention and Reduction

Waste prevention and reduction are the most prioritized steps in the integrated waste management hierarchy. Waste prevention can be both qualitative and quantitative; for instance, preferring a product containing no, or less hazardous substances and subsequently reducing its potential to pollute is a type of qualitative waste prevention method with this approach, the hot spots where waste prevention and reduction are possible to be realized will be determined. Following examples and further preventive opportunities may be implemented. Additionally, in order to achieve success, it is encouraged to share the details regarding the implementation process with all the relevant stakeholders through posters and similar advertisement channels, and you can achieve success by delivering training to your employees.

Table 7. Examples of waste prevention / reduction practices

Unit	Waste Type	Waste Prevention / Reduction Measures
Administrative Buildings and Offices 	Paper	• Making all correspondence electronically • Adjusting all computers and photocopy machines for double-side printing • Using shared printers rather than individual ones • Using one-side printed papers as worksheets • Minimizing the number of printed brochures, catalogues, etc., and ensuring access via internet if possible • Requesting reports and papers in electronic media rather than printed copies
	Plastics	• Opting for reusable products instead of single-use plastic plates, cups, etc. • Opting for water dispensers on floors rather than plastic bottled water, ensuring staff use their own cups or the cups in the kitchen • Reducing the use of plastic files and presentation files
	Toner-cartridge	• Obtaining refillable cartridges • Making correspondence in electronic media • Taking printouts in the “draft” mode instead of high resolution • Adjusting printers’ features to black&white mode and taking coloured printouts only when it is necessary • Taking printouts with economical fonts
IT-Maintenance-Repair Units 	Toner-cartridge, waste batteries, waste accumulators, lighting equipment, dust filters of air conditioners / ventilators, oil filters of generators, contaminated packaging, etc.	• Purchasing the essential service rather than controlling the waste generated thereafter by purchasing the product using the “purchase the illumination, not the lamp” approach” • Opting for repairable and reusable products • Providing periodic maintenance without any delay to extend the lifecycle of products • Opting for rechargeable batteries to reduce waste batteries

Dining Halls, Restaurant, Cafeteria 	Food waste	• Asking for the preference of customers (whether they want side dishes with main dish they order) • Providing smaller service plates for open buffets • Portioning • If customers leave a packable food on their plates, offering them take away services by using packing materials that will protect the hygiene of food • Making food donations, delivering surplus food materials to whom are in need • Ensuring the leftovers are used for the production of animal feed • Compost production from food waste separated properly at source
	Plastics	• Opting for reusable products instead of single-use plastic plates, cups, forks and spoons • Avoiding the usage composite (plastics-paper) products, such as beverage coasters, table mats • Using hygienic dispenser machines for drinks, such as water, soft drinks, and serving them with reusable glasses, or alternatively, choosing products included in the deposit system • Avoiding offering pipettes • Supplying and offering products like bread, cube sugar without packaging • Avoiding offering products such as ketchup, mayonnaise, honey, jam, butter, etc., in small-weight, singular packages • Offering brewed tea and coffee rather than single-use packaged tea and coffee
	Glass, Metal	• Using hygienic dispenser machines and glass cups for drinks, such as water, soft drinks, or alternatively, choosing products included in the deposit system
	Wet Wipes, Napkins	• Offering customers washable wet towels rather than wet wipes • Avoiding to present napkin and wet wipes on service tables to prevent excessive usage
	Take-away foods waste	• Avoiding to use such products as wet wipes, toothpicks, salt, spice, napkins, single-use forks and spoons, pipettes, or providing them in limited number upon request of customers, or charging customers for such products • Serving customers with washable, reusable, returnable boxes
Lavatories	Napkins	• Providing toilet papers in fixed and locked boxes to prevent excessive usage • Installing hand dryer devices instead of paper towels

To ensure efficiency in the implementation process, employees of the institution and all relevant parties must be informed in detail about how to reduce and make use of waste according to the sources of generation.

Sales points within SMs must also fulfill their obligations in line with the principle of Extended Producer Responsibility

2.3. Needs Assessment

By taking each unit into consideration, all required equipment must be determined, listed, and procured before the implementation process. The required equipment for each unit, such data as dimension, volume, number of equipment, and the areas where they will be placed should be determined.

Placement of Waste Collection Bins

Waste collection bins must be sufficient in terms of the number of employees/daily visitor capacity and waste types and quantity as well as be placed at easily accessible areas. To ensure user friendly and systematic planning, needs should be analysed on a building/block basis and thereafter on a floor/corridor basis by also considering the structure of each floor/corridor, the number of people on that floor/corridor, the length of the corridor, the walking distance for people to waste collection bins, easy access for disabled personnel. After such assessment, a pilot study may be carried out only on one or two floors to evaluate the efficiency of the planning.

Excess amount of waste collection bins should be avoided. Once generated, such waste can be taken directly to the area allocated for temporary storage, ensuring to be collected according to the waste codes.

Waste must be collected in the collection bins located in the corridors with care. There must be no dustbins “under desks” or within “rooms” in administrative and technical offices, for example. As a result, such equipment must not be included in the needs list during the needs assessment.

Determining Collection Equipment

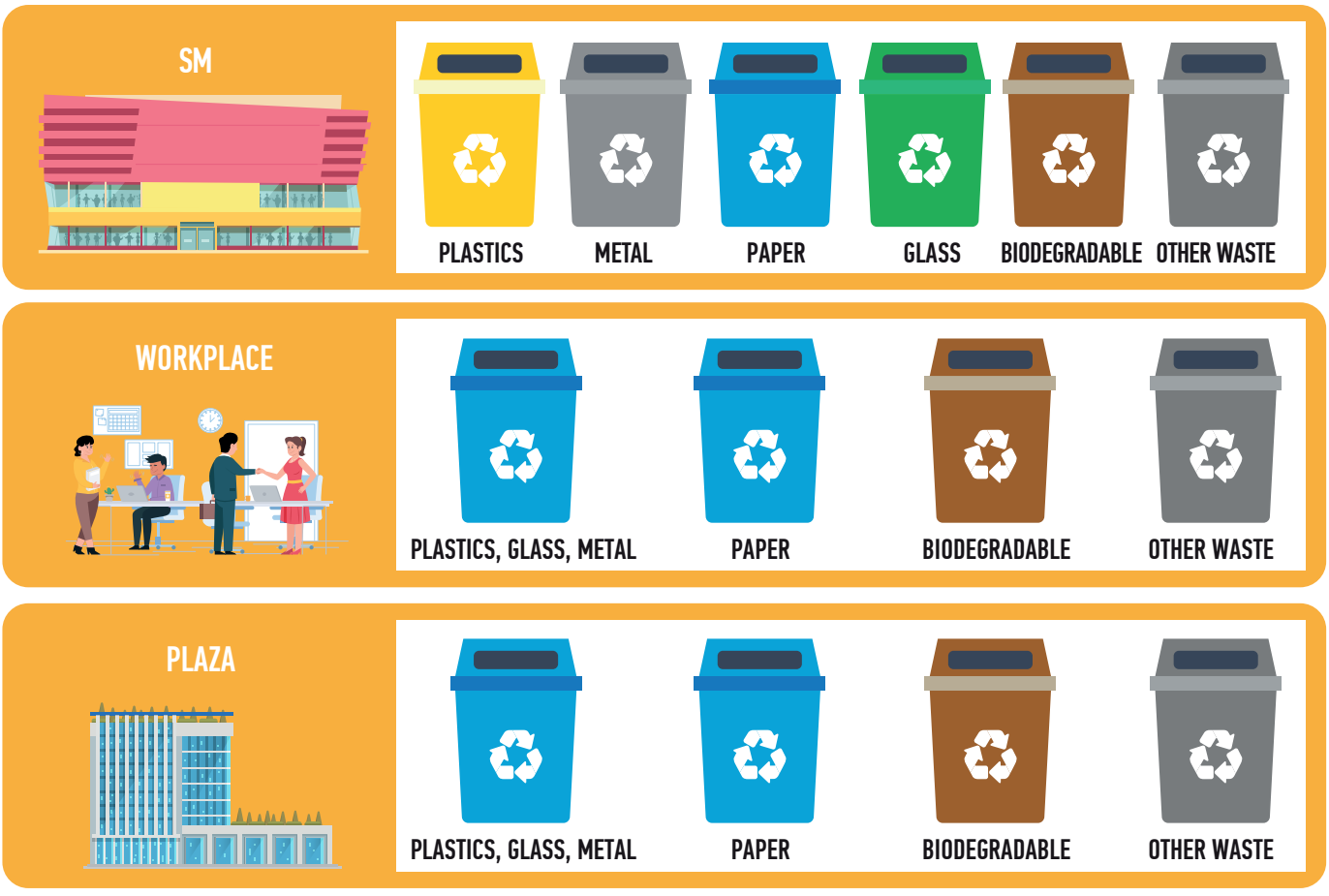
It must be ensured that recyclable waste such as paper, glass, plastics, and metal is collected in a proper manner, that is, without mixing it with other types of waste. The needs for equipment required for recyclable waste, biodegradable waste (organic waste), and other types of waste should be assessed by taking all units into consideration. The number, size, and type of equipment based on the data obtained from the baseline analysis should be decided.

Pursuant to the legislation, there should be at least dual collection bins (for recyclable waste and other waste). Paper, glass, metal, and plastics waste can be collected in a single piece of equipment, or separately by waste type. According to the collection system of a municipality, more than one type of waste can be collected in the same waste collection bin. Please visit https://sifiratik.gov.tr/kutuphane/kurumsal-kimlik to see colours and labels to be applied on waste collection bins.

One basic principle of the ZWM approach is to use existing equipment rather than purchasing new equipment. The important point regarding the collection equipment is not that it is old or used or what material it is made of or what colour it is, but that it is labelled in a colour in compliance with the ZWM system. If there is suitable equipment to be used in waste collection, it can be used after being labelled and/or coloured (any used plastic or metal barrel or container).

For such areas as tea stands/shops and dining halls, where biodegradable waste is generated, pedal and covered storage equipment can be used to collect these wastes separately. For dining halls, where waste vegetable oil is generated, clamped bins should be used for the storage of such waste, which should be delivered to waste treatment facilities or municipalities.

Table 8. Models for separate collection



Needs assessment should be finalized after filling the table below regarding collection points and equipment.

Table 9. Assessment of needs for the recycle bins and containers, identification of collection points

Point	Collection system								
	Dual			Triple			Quadruple		
	With / without plastic bag	X litre Fixed / Wheeled	Pieces	With / without plastic bag	X litre Fixed / Wheeled	Pieces	With / without plastic bag	X litre Fixed / Wheeled	Pieces
Administrative buildings and offices									
Food Preparation Section and Dining Halls / Restaurant / Cafeteria									
Shops / Markets									
IT-Maintenance-Repair Units									
Tailor, Dry Cleaning, Hairdresser, etc.									
Lavatories									
Infirmary									
Car wash									
Parks & Gardens									
Other units									

The size (volume), number, and location of waste collection equipment are determined based on the type and amount of waste generated. The frequency of discharging also affects the volume to be determined.

In general, the volume of waste collection bins used indoor and outdoor areas varies from 3 to 120 litres. Waste collection bins can be covered or uncovered, with or without a pedal, and bins over 80 litres can be produced with wheels. Waste collection bins are made of metal (stainless steel, aluminium, galvanized sheet), plastic, or wood. When opting for the material, it is important to consider the sustainability of equipment in terms of economic aspects. You can also use/convert your existing equipment for this purpose. Waste collection bins can be placed at appropriate points in corridors on floors, near public gathering areas and elevators.

Placement of waste collection bins on each floor is dependent on the needs. Common equipment can be used for a few floors or corridors depending on the amount of waste generated. Likewise, capacities and numbers of transport containers are also directly related to the amount of waste generated. Using resources at a minimum level should be considered as the core of ZWM.

There may be a need to supply containers for transportation of collected waste from waste bins to the Temporary Storage Area. In general, containers with a volume of 120 – 1,100 lt are used in such cases. Such equipment can be produced pedal, covered, and wheeled.

Establishing Temporary Storage Area

A Temporary Waste Storage Area is used to store the waste collected until the delivery to be done to the licenced waste treatment facilities. A temporary waste storage area should be established by taking into consideration the frequency of collection / transportation in a district, and the amount of waste generated.

Temporary storage areas must be established in accordance with the legislation after determining an appropriate place. If you have a place that complies with the legislation in technical terms, it would be sufficient to arrange such a place without any need to establish a new temporary storage area. Types and amount of waste to be collected must be taken into consideration when establishing/arranging this area. Take the pedestrian traffic and vehicular traffic into account when planning the transportation of waste to be collected to the temporary storage area.

The size of the area must be determined based on the number of chambers in the area and the amount of waste to be stored, considering the model to be implemented for the zero waste management system. Dimensions of the chambers must be determined based on the volume and number of containers to be placed, and the necessary room for movement.

The principles regarding the temporary storage of waste are stipulated in Article 13 of the Turkish Regulation on Waste Management, and the technical specifications that must be fulfilled by temporary storage areas for hazardous and non-hazardous waste are published on https://cygm.csb.gov.tr/atik-yonetimi-i-83468.

NOTE: In the case that the amount of waste to be stored is less or if there is a problem withfinding an appropriate area, storage may be occured in proper ways in more restricted areas. For example, space-saving solutions can be developed through the procurement of containers to be used for storage in a way that such containers will have compartments in which several types of waste can be stored.

Temporary storage areas must have a capacity to store various types of waste given in Table 5, such as packaging that contains hazardous material, cleaning chemicals, etc., toner cartridges, waste electrical and electronic equipment, drug waste, etc.

Table 10. Need assessment for a temporary storage area

Equipment / Structure	Placement / Installation Location	Size	Chamber	Need

Medical waste should be collected with due regard to the issues specified in the Turkish Regulation on Medical Waste Control published in the Official Gazette of 25.12.2017 issue 29959 and be transported separately from other waste by personnel assigned with the management of medical waste

Mobile Civic Amenity Centre (CAC)

Mobile civic amenity centres are waste collection vehicles that used to serve different points within certain periods, with portable features that can be changed when necessary, and used depending on the waste collection points and/or civic amenity centers where more than one collection equipment is located in order to collect different types of waste separately.

In these areas, you can place separate collection equipment for paper-cardboard waste, plastic waste, metal waste, glass waste, waste batteries, and at least two different waste groups (wood waste, textile waste, waste electrical and electronic equipment, and waste vegetable oil) to be sorted. The type of waste must be indicated in writing on collection equipment. The opening of collection equipment must be wide enough so that waste can be thrown into the equipment.

By preparing brochures, posters, and similar materials and by providing written/visual information, you can raise awareness of the public so that such types of waste are brought/left to the civic amenity centre without mixing them with other wastes.

After the collection of a certain amount of waste in civic amenity centres, waste delivery to be done to the licenced waste treatment facilities

3. TRAINING/PUBLIC AWARENESS-RAISING ACTIVITIES AND TAKING ACTION

Before the implementation process, it is important to organize training and awareness-raising activities aimed at target audience with regards to informing the staff, shopkeepers, store managers, customers and visitors, encouraging them to participate in the process, and getting the highest efficiency. Training and awareness-raising activities should be prioritized for the purpose of increasing awareness concerning waste prevention, reduction, reuse, separation at source, and recycle. Therefore, structure of such activities in terms of target audience, participants (experts, speakers, etc.), and topics to be emphasized should be planned.

Particularly, explaining the waste prevention practices to the target audience and informing them periodically in this regard are of great importance. For example, ending the use of pet bottles may get a reaction from people at first, but informing them about the amount of plastic waste prevented through this practice will have a positive effect on their recognition of the effectiveness of the practice.

Targeted audience may include all employees, particularly including cleaning staff, maintenance-repair staff, staff in charge of temporary waste storage areas, etc.. For administrative personnel, cleaning staff, and all the other employees to receive the necessary training through the instrument of visuals and posters, and various kinds of incentives is of vital importance in the realization of ZWM system.

The brochures and posters* to be prepared and the activities to be carried out will allow implementers to ensure that the system is better understood and adopted. Witnessing the environmental, economic, and social benefits of the system is a factor that will support participation. For example, recovering of 1-ton of plastics means a saving equal to 16 barrels of petroleum. Recovering 1 ton of paper from recycling prevents cutting of 17 trees. Waste meter can be accessed at https://sifiratik.gov.tr/sifir-atik/atik-sayaci and be used to calculate the savings achieved after transition to the ZWM system.

Training activities must be carried out by the authorized people who have participated in the training events organized by the Ministry of Environment, Urbanization and Climate Change and/or Provincial Directorates of Environment, Urbanization and Climate Change. Training events must be repeated and not be for one time only.

*https://sifiratik.gov.tr/kutuphane/kurumsal-kimlik

4. MONITORING, RECORD- KEEPING, AND IMPROVEMENT

The working team monitors the effectiveness of the practice at certain intervals for assessment purposes and determines problematic points, deficiencies or the points to be improved to take measures accordingly.

Providing access to data obtained from the implementation will ensure a more efficient participation in the implementation. Those in charge of the ZWM system enter in the Ministry's Online System the information on equipment regarding zero waste management system, types and amounts of waste collected, delivery information, and documents for waste delivered.

Monthly data relating to the waste collected is submitted to the Zero Waste Information System by the 15th of the following month, and the data controls through the year will be completed by the end of March in the following year. Requirements must be met considering the deadlines for transition to ZWM system, and those concerned must apply through the Zero Waste Information System to receive a ZWM certificate. Zero waste certificates are given by the Provincial Directorate of Environment, Urbanization and Climate Change of the relevant province.

Through the high-quality documentation process, sustainability reports are prepared to include the activities carried out within the scope of ZWM system, practices, innovations inspired by the system, achievements, and future objectives.

REPUBLIC OF TÜRKİYE
MINISTRY OF ENVIRONMENT, URBANIZATION AND CLIMATE CHANGE
GENERAL DIRECTORATE OF ENVIRONMENTAL MANAGEMENT

ZERO WASTE

ZERO WASTE MANAGEMENT SYSTEM IMPLEMENTATION GUIDELINE

This Guideline is prepared by the Ministry of Environment, Urbanization and Climate Change with contribution from UNDP and relevant institutions and organizations, Local Authorities and NGOs based on the consultation and design stages completed as part of the Project for Recovery of Solid Waste for Economy, Revision of National Waste Management and Action Plan (2016-2023) and Preparation of National Waste Management Plan (2023-2035).

FSC