Interreg NEXT Black Sea Basin

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Go2 Recycling

3R GUIDE

FOR DECISION-MAKERS, POLICYMAKERS, AND LOCAL COMMUNITIES TO IMPLEMENT AND REPLICATE SUCCESSFUL INITIATIVES

Go2Recycling BSB00027

"Transnational Cooperation for Sustainable Waste Management and Recycling Practices in the Black Sea Basin"

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INTRODUCTION

1 WASTE MANAGEMENT

1.WASTE MANAGEMENT

The increasing global population, industrialization, and changing consumption habits are leading to a significant rise in both the quantity and variety of waste. This situation results in the rapid depletion of natural resources, increased environmental pollution, and the deepening of global challenges such as climate change. For a sustainable future, it is of great importance to implement fundamental changes in waste management and to promote widespread awareness of environmental protection.

The concept of 3R, which forms the foundation of sustainable waste management, refers to the principles of "Reduce, Reuse, Recycle." These principles aim to minimize waste generation, use existing resources in the most efficient way, and contribute to the preservation of natural resources by repurposing waste.

- Reduce: Involves reevaluating consumption habits to prevent unnecessary use; choosing products with less packaging; conserving energy and water; and opting for durable, long-lasting products instead of single-use items.
- Reuse: Refers to using items multiple times; repairing old goods or repurposing them for different uses; choosing second-hand products; and reusing packaging materials.
- Recycle: Entails using waste materials as raw materials for new products; sending materials such as glass, paper, metal, and plastic to recycling facilities; and composting organic waste to be used as fertilizer.

"Through recycling, we protect both nature and our resources."

3R practices provide numerous benefits in terms of environmental protection, economic development, and social well-being:

Environmental Protection:

- Preservation of natural resources;
- Reduction of waste volume and prevention of environmental pollution;
- Reduction of greenhouse gas emissions and contribution to the fight against climate change.

Economic Development:

- Creation of new job opportunities in the recycling sector;
- Reduction in raw material costs;
- Achievement of energy savings.

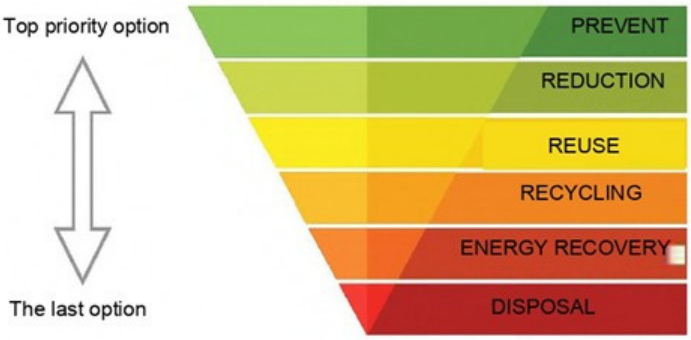
Social Well-being:

- Opportunity to live in a cleaner and healthier environment;
- Increased environmental awareness in society;
- Shared responsibility for building a sustainable future.

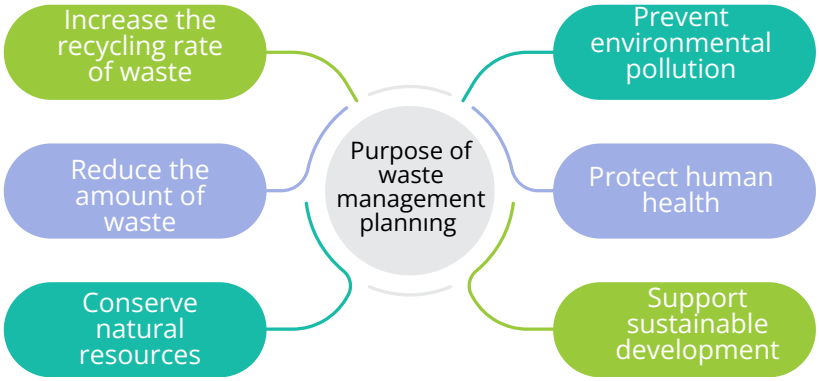
This guide aims to support local authorities in promoting 3R practices and developing successful projects for sustainable waste management.

1.1.WASTE MANAGEMENT PLANNING

Waste management planning is a systematic process designed to manage waste without harming the environment or human health. This planning includes various stages such as waste prevention, separate collection, recycling, and disposal.



1.2. PURPOSE OF WASTE MANAGEMENT PLANNING



For a Livable World:
DON'T THROW IT AWAY, REPURPOSE IT!

1.3.STAGES OF WASTE MANAGEMENT

1.3.1. Formation of the Working Team

The formation of the waste management planning working team is critical for ensuring that waste management processes are carried out effectively and efficiently. This team is responsible for the preparation, implementation, monitoring, and evaluation of the waste management plan.

Factors to Consider When Forming the Working Team

- Diversity: The team should include individuals from different disciplines and areas of expertise. For example, environmental engineers, chemists, public health experts, communication specialists, and managers can be part of the team.
- Competence: Team members should have knowledge and experience in waste management.
- Collaboration: The team should be capable of collaborating with various stakeholders (public institutions, local authorities, private sector, non-governmental organizations, citizens).
- Communication: The team should possess effective communication skills.
- Responsibility: Team members must take responsibility for fulfilling their tasks.

Duties of the Working Team

- Preparation of the waste management plan
- Coordination of waste management practices
- Collection and analysis of waste management data
- Monitoring and evaluation of waste management performance
- Organization of training and awareness-raising activities on waste management
- Collaboration with stakeholders on waste management
- Reporting on waste management activities

1.3.2. Planning

Waste management planning is a systematic process designed to manage waste without harming the environment or human health. This planning includes stages such as preventing waste generation, separate collection of waste, recycling, and disposal.

1.3.2.1. Current situation analysis

In waste management planning, the current situation analysis involves a comprehensive evaluation of all processes, from waste generation to disposal. This analysis forms the foundation for determining future waste management strategies

Identification of Waste Generation Sources:

- Industrial facilities
- Households
- Commercial businesses
- Hospitals
- Schools
- Construction and demolition activities
- Agricultural activities
- Others (mining, energy production, etc.)

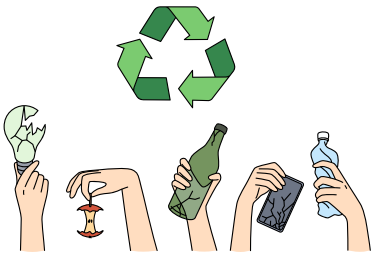
Identification of Waste Types:

- Household waste (organic, paper, plastic, glass, metal, etc.)
- Industrial waste (hazardous, non-hazardous)
- Medical waste
- Construction and demolition waste
- Agricultural waste
- Packaging waste
- Waste batteries and accumulators
- Waste electrical and electronic equipment (WEEE)
- End-of-life vehicles
- Other (waste oils, waste tires, etc.)

Determination of Waste Quantities:

- Waste quantities by type (tons/year, kg/person/day, etc.)
- Seasonal variations in waste
- Trends in waste generation rates

Analysis of Current Waste Management Practices:



- Waste collection systems (containers, bags, underground containers, etc.)
- Waste transportation methods (vehicles, routes, frequency, etc.)
- Waste recycling facilities (capacity, technology, efficiency, etc.)
- Waste disposal facilities (landfills, incineration, composting, etc.)
- Compliance with waste management regulations
- Waste management costs and financial resources
- Training and awareness-raising activities related to waste management

Utilization of Current Situation Analysis Results:

- Setting the goals for the waste management plan
- Developing waste reduction, recycling, and disposal strategies
- Making investment decisions to improve waste management infrastructure
- Updating waste management regulations
- Monitoring and evaluating waste management performance

1.3.2.2. Target Setting

In waste management planning, the current situation analysis involves a comprehensive evaluation of all processes, from waste generation to disposal. This analysis forms the foundation for determining future waste management strategies

Identification of Waste Generation Sources and Types:

- The sources from which specific types of waste are generated are determined.
- For example, if it is found that organic waste constitutes a high percentage of household waste, priority can be given to projects like composting for organic waste recycling.
- If hazardous waste is found to be prevalent in industrial waste, stricter measures for hazardous waste management can be targeted.

Determination of Waste Quantities:

- The total waste quantity and quantities by type are identified.
- If a high volume of waste is identified, waste reduction targets can be set.
- Seasonal variations in waste quantity are analyzed to ensure that the waste management system adapts to seasonal changes.

Analysis of Current Waste Management Practices:

- The capacities and efficiencies of waste collection, transportation, recycling, and disposal facilities are analyzed.
- If recycling facility capacities are insufficient or recycling rates are low, the goal is to increase recycling rates.
- The environmental impacts of waste disposal facilities are assessed, with the aim of transitioning to more sustainable disposal methods.
- Inefficiencies in waste collection systems are identified, with the goal of improving waste collection efficiency.

Stakeholder Analysis:

- The views and expectations of all stakeholders affected by waste management (public institutions, private sector, non-governmental organizations, local communities, etc.) are evaluated.
- Waste management objectives are set in collaboration with stakeholders.

Environmental and Social Impact Assessment:

- The environmental and social impacts of waste management activities are evaluated, and objectives are set in line with sustainability principles.

SWOT Analysis:

- The strengths and weaknesses, as well as the opportunities and threats of the current waste management system, are identified.
- Based on the results of the SWOT analysis, objectives are set by leveraging strengths and improving weaknesses.

Examples of Setting Targets

- If the current recycling rate is 15%, the goal could be to increase this rate to 30% within 5 years.
- If a high volume of organic waste is identified, the goal could be to compost 50% of organic waste within 3 years.
- If the recycling rate of packaging waste is found to be low, the goal could be to increase the recycling rate of packaging waste by 20% within 2 years.

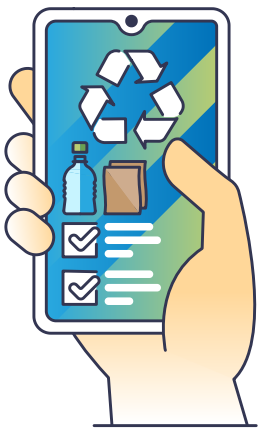
1.3.2.3. Strategy development

Developing waste reduction, recycling, and disposal strategies to achieve the targets forms the foundation of a sustainable waste management system. These strategies should be based on the results of the current situation analysis, taking into account local conditions, stakeholder opinions, and legal regulations.

Waste Reduction Strategies

Source Reduction:

- Using technologies in production processes that generate less waste.
- Designing products to be more durable and repairable.
- Preventing excessive use of packaging.
- Encouraging conscious consumption and changing consumption habits.



Reuse:

- Repairing or refurbishing used products for reuse.
- Promoting the buying and selling of second-hand products.
- Implementing deposit systems.

Education and Awareness:

- Organizing campaigns to raise public awareness about waste reduction.
- Providing waste management education in schools and workplaces.
- Showcasing successful waste reduction practices as examples.

Recycling Strategies:

- **Developing Separate Collection Systems:** Using separate collection containers for different types of waste. Encouraging the separation of recyclable waste at the source. Establishing mobile waste collection centers.
- **Increasing Recycling Facility Capacity:** Modernizing existing recycling facilities and increasing their capacities. Establishing new recycling facilities. Improving the quality of recycled materials.
- **Developing the Recycling Market:** Encouraging the use of recycled materials. Providing support to businesses in the recycling sector. Developing legal regulations related to recycling.

Disposal Strategies:

- **Developing Separate Collection Systems:** Using separate collection containers for different types of waste. Encouraging the separation of recyclable waste at the source. Establishing mobile waste collection centers.
- **Increasing Recycling Facility Capacity:** Modernizing existing recycling facilities and increasing their capacities. Establishing new recycling facilities. Improving the quality of recycled materials.
- **Developing the Recycling Market:** Encouraging the use of recycled materials. Providing support to businesses in the recycling sector. Developing legal regulations related to recycling.

Considerations for Implementing Strategies:

- Strategies should be developed according to local conditions and needs.
- Stakeholder participation should be ensured, and the ownership of the strategies should be encouraged.
- Necessary financial resources and human resources should be provided for the implementation of the strategies.
- The implementation of the strategies should be regularly monitored and evaluated.
- Management plans should be created and adhered to.

1.3.2.4. Preparation of implementation plan

A detailed implementation plan is critical for the successful application of waste management strategies. This plan outlines the necessary steps, timeline, responsibilities, and resources required for the strategies to be put into action.

Goals and Indicators:

- Concrete and measurable goals that the implementation plan aims to achieve are determined.
- Performance indicators are established to monitor whether the goals are being met.

Action Steps:

- The necessary action steps for the implementation of each strategy are detailed.
- The sequence and interrelationships of the action steps are determined.

Timeline:

- The start and end dates for each action step are established to create a timeline.
- The timeline includes milestones and delivery dates for the different phases of the project.

Responsibilities:

- The individuals or organizations responsible for each action step are identified.
- A responsibility matrix is created to clarify task distribution.

Resources:

- The individuals or organizations responsible for each action step are identified.
- A responsibility matrix is created to clarify task distribution.

Stakeholder Participation:

- The involvement of stakeholders (public institutions, private sector, NGOs, local communities, etc.) in the implementation process is determined.
- Communication and collaboration mechanisms are established to ensure stakeholder participation.

Risk Management:

- Potential risks that may arise during the implementation process are identified, and risk management strategies are developed.
- Risks are prioritized by assessing their likelihood and impact.

Monitoring and Evaluation:

- The progress of the implementation plan is regularly monitored and evaluated.
- Performance indicators are used to track whether the objectives are being met.
- Modifications to the implementation plan are made if necessary.

Example of an Implementation Plan for waste management:

Action Step	Responsible person/ institution	Start Date	End Date	Resoruces	Performance Indıcator
Establishing separate collection systems	Municipalities, recycling companies	01.01.2024	31.12.2024	Financial sources, vehicles, containers	Amount of waste collected separately
Increasing the capacity of recycling facilities	Recycling companies, investors	01.03.2024	31.12.2025	Financial sources, technologies	Recycling rate
Organizing waste reduction campaigns	Municipalities, NGOs	01.06.2024	Ongoing	Financial sources, human resources	Amount of waste generated

1.3.2.5. Implementation

For the successful implementation of the waste management plan, the steps outlined in the application plan must be carefully followed, and necessary precautions should be taken. This process requires careful management at every stage of the plan and continuous monitoring.

Resource Allocation:

- Ensure that the financial, human, and technical resources specified in the implementation plan are allocated on time and in sufficient amounts.
- Take necessary measures to ensure the effective and efficient use of resources

Fulfillment of Responsibilities:

- Ensure that each person or organization responsible for specific action steps within the plan completes their tasks fully and on time.
- Carry out activities according to the task distribution outlined in the responsibility matrix.

Stakeholder Participation:

- Maintain regular communication and collaboration with stakeholders during the implementation process.
- Organize meetings, workshops, and training sessions to encourage stakeholder participation.
- Make necessary adjustments to the plan based on feedback received from stakeholders

Adherence to the Timeline:

- Ensure that activities are carried out according to the timeline specified in the implementation plan.
- Take necessary measures to prevent delays and minimize potential delays.

Risk Management:

- Continuously monitor and assess potential risks that may arise during the implementation process.
- Implement risk management strategies to minimize the negative impacts of risks.

Monitoring and Evaluation:

- The progress of the implementation plan is regularly monitored and evaluated.
- Performance indicators are used to track whether the goals are being achieved.
- Necessary adjustments are made to the plan based on the monitoring and evaluation results.
- Feedback mechanisms are established to identify disruptions and improvement areas.

Training and Awareness Activities:

- During the implementation process, training and awareness activities are organized to educate the public and relevant institutions.
- Campaigns and events are organized to raise awareness about waste management.

Training and Awareness Activities:

- Full compliance with all legal regulations related to waste management is ensured.
- Legal changes are monitored, and necessary updates are made to the plan accordingly.

1.3.2.6. Monitoring and Evaluation

Regular monitoring and evaluation of the waste management plan's effectiveness is crucial for determining the level of achievement of the plan's goals, identifying potential issues, and making necessary improvements. This process is essential to ensure the sustainability of the waste management system and to promote a culture of continuous improvement.

Stages of the Monitoring and Evaluation process:

Determining Performance Indicators:

- Concrete and measurable performance indicators are set to assess the level of achievement of waste reduction, recycling, and disposal goals.
- For example, indicators such as recycling rate, waste collection efficiency, and waste disposal costs can be used.

Data Collection and Analysis:

- Data is regularly collected for the identified performance indicators.
- The collected data is analyzed to determine the level of goal achievement and identify any deviations.
- Technological tools and software can be used in data collection and analysis processes

Reporting and Feedback:

- Monitoring and evaluation results are regularly reported.
- Reports are shared with stakeholders (public institutions, private sector, NGOs, local communities, etc.).
- Necessary adjustments to the plan are made based on feedback received from stakeholders.

Improvement Activities:

- Improvement activities are identified and implemented based on monitoring and evaluation results.
- Improvement activities may aim to increase the efficiency and effectiveness of the waste management system.
- Resources and responsibilities for improvement activities are determined.

Periodic Evaluation:

- The effectiveness of the waste management plan is comprehensively evaluated periodically (e.g., annually, every 5 years).
- Necessary revisions to the plan are made based on evaluation results.
- The evaluation process considers best practices and technological advancements in waste management.

Considerations in the Monitoring and Evaluation Process

- **Transparency and Accountability:** The monitoring and evaluation process should be conducted in a transparent and accountable manner.
- **Participation:** Stakeholder involvement should be encouraged to ensure ownership of the monitoring and evaluation process.
- **Continuous Improvement:** Monitoring and evaluation results should be used to continuously improve the waste management system.
- **Data Reliability:** The reliability and accuracy of the data used in data collection and analysis processes should be ensured.
- **Technological Tools:** Technological tools and software should be used in data collection, analysis, and reporting processes to enhance efficiency.

1.3.2.6. Monitoring and Evaluation

Continuous improvement of the waste management plan is critical for enhancing its effectiveness and adapting to changing conditions. The results of monitoring and evaluation help identify the plan's strengths and weaknesses, providing insights into areas for improvement. This process ensures that the plan remains relevant and efficient in achieving its waste management goals over time.

Identification of Areas for Improvement:

- Based on the results of monitoring and evaluation, the weaknesses of the plan and areas requiring improvement are identified.
- Feedback from stakeholders is considered to expand the areas for improvement.

Development of Improvement Strategies:

- Concrete and actionable improvement strategies are developed for the identified areas of improvement.
- The improvement strategies are created by considering best practices and technological advancements in the field of waste management.

Updating the Plan:

- The developed improvement strategies are integrated into the plan, and the plan is updated accordingly.
- During the update process, stakeholder participation is encouraged to ensure ownership of the plan.

Implementation and Monitoring:

- Necessary steps are taken to implement the updated plan, and the implementation process is closely monitored.
- The effectiveness of improvement activities is regularly evaluated, and additional improvements are made when necessary.

Continuous Improvement Cycle:

- The improvement process becomes a cycle for the continuous enhancement of the waste management system.
- The plan is periodically evaluated and updated.
- Improvement activities are continuously reviewed, taking into account new developments and changing conditions in waste management.

Continuous Improvement Cycle:

- **Increasing Recycling Rates:** If the monitoring and evaluation results show low recycling rates, improvement strategies may include expanding separate collection systems and increasing the capacity of recycling facilities.
- **Increasing Waste Collection Efficiency:** If the monitoring and evaluation results show low waste collection efficiency, strategies such as optimizing collection routes and modernizing collection vehicles may be developed.
- **Reducing Waste Disposal Costs:** If high disposal costs are identified, strategies such as exploring alternative disposal methods and converting waste into energy could be implemented.
- **Raising Public Awareness:** If the monitoring and evaluation results indicate that the public is not sufficiently aware of waste management, improvement strategies may include intensifying education and awareness campaigns.

Key Considerations in the Improvement Process:

- **Data-Driven Focus:** Improvement decisions should be based on concrete data and analysis.
- **Participation:** Stakeholder participation should be encouraged to ensure ownership of the improvement process.
- **Flexibility:** The plan should be flexible enough to adapt to changing conditions and new developments.
- **Innovation:** New technologies and best practices in waste management should be followed and integrated into the improvement process.
- **Sustainability:** Improvement activities should be carried out in line with the principles of environmental, social, and economic sustainability.

Key Considerations in Waste Management Planning:

- **Compliance with Legal Regulations:** Waste management activities should be conducted in accordance with existing legal regulations and guidelines.
- **Stakeholder Participation:** The participation of all relevant stakeholders (public institutions, local governments, private sector, NGOs, citizens) should be ensured in waste management processes.
- **Utilization of Technology:** Efficiency should be increased by leveraging technology in waste management processes.
- **Training and Awareness:** Emphasis should be placed on training and awareness-raising activities related to waste management.

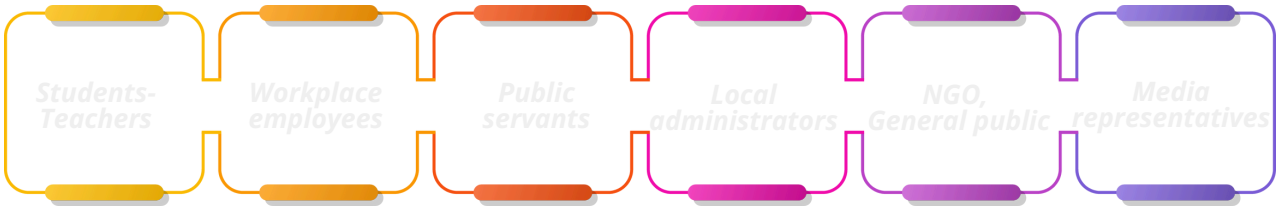
1.4. AWARENESS -RISING ACTIVITIES

Waste management awareness is the process of informing and educating the public about the proper management of waste. This process is carried out with the aim of managing waste in a way that does not harm the environment or human health, conserving natural resources, and ensuring sustainable development.

Waste Management Awareness Activities

- **Training Programs:** Waste management education sessions are organized in schools, workplaces, and other community spaces.
- **Campaigns:** Brochures, posters, videos, and social media campaigns are created to raise awareness about waste management.
- **Events:** Activities like waste collection events, recycling workshops, and exhibitions are organized.
- **Media:** Informative broadcasts on waste management are made through media channels such as television, radio, and the internet.
- **Stakeholder Collaboration:** Joint projects are developed through collaboration with public institutions, local governments, private sector entities, and civil society organizations.

Waste Management Awareness Target Audience



Waste management awareness is an ongoing process that involves all segments of society. In this process, the public's awareness of waste management should be increased through accurate information and effective communication methods.

1.5. MONITORING

Waste management monitoring is a critical process for evaluating the effectiveness of the waste management system and making improvements. This process includes monitoring the implementation of the waste management plan, collecting and analyzing waste management data, evaluating performance indicators, and reporting.

- **Performance Evaluation:** Performance indicators are tracked to determine whether the waste management system has achieved its goals.
- **Improvement Opportunities:** Monitoring results reveal gaps and opportunities for improvement within the waste management system.
- **Resource Efficiency:** Monitoring shows whether resources (time, money, human resources) are being used efficiently in waste management processes.
- **Legal Compliance:** Monitoring is carried out to ensure compliance with existing waste management laws and regulations.
- **Stakeholder Participation:** Monitoring results are shared with stakeholders (public institutions, local governments, private sector, civil society organizations, citizens), and their feedback is collected.

Waste Management Awareness Target Audience

- **Data Collection:** Data on waste types, quantities, collection frequency, recycling rates, and disposal methods are collected.
- **Performance Indicators:** Performance indicators such as waste reduction rate, recycling rate, disposal cost, and waste collection efficiency are defined and monitored.
- **Inspections:** Waste management facilities and practices are regularly inspected.
- **Surveys and Feedback:** Stakeholder satisfaction with waste management services is measured through surveys, and feedback is collected.
- **Reporting:** Monitoring results are regularly reported and shared with relevant stakeholders.

Waste Management Monitoring Responsibilities:

- **Local Governments:** Monitoring waste collection, recycling, and disposal services.
- **Businesses:** Monitoring waste reduction, recycling, and disposal practices.
- **Public Institutions:** Monitoring waste management policies and practices.
- **Civil Society Organizations:** Contributing to awareness-raising and monitoring activities on waste management.
- **Citizens:** Taking responsibility for sorting their waste correctly and sending it for recycling.

2 WASTE COLLECTION CENTERS

2. WASTE COLLECTION CENTERS

Waste collection centers, which municipalities are required to establish, are a crucial part of modern waste management. These centers aim to increase recycling rates, prevent environmental pollution, and protect public health by enabling the separation of various types of waste at the source.

Basic Functions of Waste Collection Centers:

Collection of Various Waste Types:

- These centers ensure the collection of household waste types such as paper-cardboard, plastics, glass, metal, wood, textiles, waste electrical and electronic goods, bulky waste, expired tires, used cooking oils, pharmaceutical waste, batteries, and accumulators.
- They also enable the safe collection and disposal of hazardous wastes that require special processing.

Separation of Waste at the Source:

- Encourages citizens to separate their waste at home, which increases the efficiency of recycling processes.
- Separated waste is sent to recycling facilities in a cleaner and higher quality state.

Protection of the Environment and Public Health:

- Prevents harmful substances, such as waste pharmaceuticals and hazardous waste, from contaminating the environment.
- Reduces soil, water, and air pollution, thereby safeguarding public health.

Increasing Recycling Rates:

- Facilitates the collection of recyclable waste, which increases recycling rates.
- Helps preserve natural resources and extends the lifespan of waste disposal areas

Awareness and Education:

- Raises awareness and educates citizens about waste management.
- Creates awareness on waste separation, recycling, and environmental protection.

Establishment and Operation of Waste Collection Centers:

Location and Accessibility:

- Should be established in easily accessible central locations for citizens.
- Easy access via public transportation and pedestrian routes should be ensured.

Promotion and Information:

- A comprehensive public awareness campaign should be conducted to inform citizens about the presence and operation of the centers.
- Public participation should be encouraged through informational materials and campaigns.

Logistical Support:

- Logistical support should be provided for the transportation of bulky waste.
- Waste collection services should be offered via mobile collection vehicles for households.

Storage and Transport of Waste:

- Separate collection equipment should be used for different types of waste.
- Once waste reaches a certain quantity, it should be sent to licensed recovery/disposal facilities.

Management of Pharmaceutical Waste:

- Pharmaceutical waste should be collected in specialized equipment and managed separately.
- It should be disposed of without causing environmental harm.

Key Considerations:

- The effectiveness of waste collection centers is directly proportional to public participation and awareness.
- Municipalities must continuously monitor and improve these centers.
- Technological advancements and new waste management methods should be followed to ensure the modernization of the centers.

3 BEST PRACTICES – EXAMPLE APPLICATIONS

3. BEST PRACTICES – EXAMPLE APPLICATIONS

Recycling is less costly than production. Therefore, recycling, whether on a large scale or at the household level, can address significant environmental and economic issues.
There are many organizations and institutions that generate significant economic benefits and create employment through recycling. Looking at the situation in various countries:
Countries such as Slovenia, Switzerland, Austria, Germany, Belgium, and the Netherlands are among those with the best practices in waste recycling. Slovenia has Europe's largest and most modern recycling facilities. In Germany, Belgium, and Austria, the proportion of waste produced is over 55%. In Switzerland, the country's recycling performance rapidly improved with a policy aimed at increasing the recycling rate of household waste. According to this policy, recycling household waste is very cheap or free, while throwing it directly into the trash costs money. As a result, in Switzerland, the proportion of household waste sent for recycling is 54%. This is twice the general European average, which is around 28% (URL-27). The recycling rate in the Netherlands is 51%. With various applications developed in different areas (such as road construction, urban furniture, etc.) for the reuse of recycled plastic, they contribute to reducing the ecological footprint. Additionally, the Netherlands has some of the best environmental policies in the world for water management.

Examples of waste prevention/reduction practices by country.

COUNTRY	FEATURED APPLICATIONS
GERMANY	• A recycling program is implemented under the brand name "Green Dot" to collect packaging waste from homes and businesses, and is financed by the industry on a producer-pays basis. • Dry recyclable materials and biowaste are collected separately. • There are legal regulations restricting single-use products. • Disposal of non-durable goods not sold in the trade bloc is prohibited.
AUSTRIA	• It is forbidden to store materials with carbon emissions over 5%. • A recycling program is implemented that operates under the responsibility of the producer. • Source separation is included in the education curriculum. • The use, trade and import of plastic bags is prohibited.
SOUTH KOREA	• A system is implemented where recycling companies collect waste and sell it for scrap metal, and the state provides financial aid to recycling companies. • Importation of plastic and paper is prohibited. • Policies are implemented to ban colored plastic bottles and PVCs. • Plastic waste is collected separately from other recyclable waste.
WALES	• There are legal regulations restricting single-use products. • Dry recyclable materials and biowaste are collected separately. • Some materials are prohibited from being stored or burned.
SWITZERLAND	• A waste collection system is implemented where households and businesses pay for the non-recyclable waste they produce. • Garbage bags used for storage are taxed. • Recycling points are widely used in supermarkets across the country where recyclable waste is collected and refunded.

Global Recycling Rates by Country (2024–2025)
Top Performers in Municipal Waste Recycling

Country	Recycling Rate (% of Municipal Waste)	Notes
Austria	%59	Tied for highest global municipal waste recycling efforts
Wales	%59	Matches Austria in leading recycling efforts
Taiwan	%53	Notably high plastic packaging recycling rate at 97%
Germany	%52	Among the top recyclers in Europe
Belgium	%52	Strong recycling infrastructure
Netherlands	%51	Consistent recycling performance
Denmark	%51	Effective wate management systems
Slovenia	%50	Leading among Central Europe nations
Northern Ireland	%45	Shows significant progress in recycling
South Korea	%45	Advanced recycling technologies and policies

Global Averages and EU Benchmarks
European Union (EU-27): In 2022, the average recycling rate for municipal waste was 49%, with packaging waste at 65% and e-waste at 32%.

Global Plastic Recycling: As of 2024, global plastic recycling rates remain below 10%, indicating a significant challenge in managing plastic waste.

Countries with Lower Recycling Rates
Turkey: Recycles approximately 47 kg of waste per capita, with a significant portion (176 kg per capita) disposed of in an uncontrolled manner.

CONCLUSION

Waste management, disposal, and recycling are among the biggest global issues that need to be addressed in this century. We are living in a world characterized by excessive consumption, which leads to increased waste production and harmful consequences for the environment.

In this context, changing consumption habits is an essential part of finding solutions to environmental problems. Consumer education and awareness are key. When selecting products or services, price should not be the only consideration. Conscious consumption involves purchasing a product or service by considering its entire life cycle, from production to disposal, including its social and environmental impact. Demanding sustainability throughout the production chain should be our individual and collective responsibility. Governments should develop policies that raise awareness and encourage people to change their daily habits (such as food, clothing, energy use, water consumption, etc.).

Knowing the importance of recycling is one of the best ways to motivate people to do it. Reduce, Reuse, Recycle (3R) are crucial actions that should be encouraged in homes and schools to fight against the planet's pollution. By promoting these ecological practices in homes, workplaces, among friends and colleagues, it is essential to never forget the significance of these actions that create a real ecological conscience. Adopting this lifestyle, which requires minimal effort, will significantly reduce the amount of waste that is currently polluting the planet.

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