

# SOLID WASTE MANAGEMENT DEEP DIVE



**Bulgaria, Croatia, Poland and Romania**

**Sustainable Cities  
Implementation Framework**

December 2021

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Two barges full of metal waste in Romania captured by border authorities at Murfatlar, before being sent back to Bulgaria. Photo: © Garda de Mediu (Romania environmental watch group). Source: <https://www.rferl.org/a/romania-garbage-asia-european-union/31429822.html>

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## ABBREVIATIONS AND ACRONYMS

9DBs	9 development bands conceptual framework
ARS	Association of Solid Waste Management
ATU	Administrative territorial unit
AZO	Croatian Environment Agency
BDO	Waste Database
CBA	Cost-benefit analyses
CO <sub>2</sub>	Carbon dioxide
DB	Development Band
EA	Environmental Assessment
EC	European Commission
EIA	Environmental Impact Assessment
EPEEF	Environmental Protection and Energy Efficiency Fund
EPR	Extended Producer Responsibility
ERDF	European Regional Development Fund
EU	European Union
EUROSTAT	Statistical office of the European Union
GDP	Gross domestic product
IDA	Intercommunal Development Association
ISWM	Integrated Sustainable Waste Management
JASPERS	Joint Assistance to Support Projects in European Regions
LEPA	Local Environmental Protection Agencies
LPAs	Local public authorities
LSGU	Local self-governing units
MAI	Ministry of Internal Affairs
MFF	Multiannual Financial Framework
MoE	Ministry of Energy
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
MWSCC	Municipal Waste Selective Collection Center
NGEU	Next Generation Recovery EU
NGO	Non-Governmental Organizations
NIMBY	Not in my backyard
NWMP	National Waste Management Plan
NWMS	National Waste Management Strategy
PPP	Public-Private Partnership
PPWD	Packaging and packaging waste Directive (94/62/EC)
PRO	Producer responsibility organization
PSP	Private Sector Participation
RRV	Resource recovery vehicles
SDG	Sustainable Development Goal of the 2030 Agenda for Sustainable Development
SUPD	Single-Use Plastic Directive (2019/904/EU)
WaRM	Waste and Resource Management
WB	World Bank
WFD	Waste Framework Directive
WaCT	Waste Wise Cities Tool
WaRM	Waste and resource management
WB	World Bank

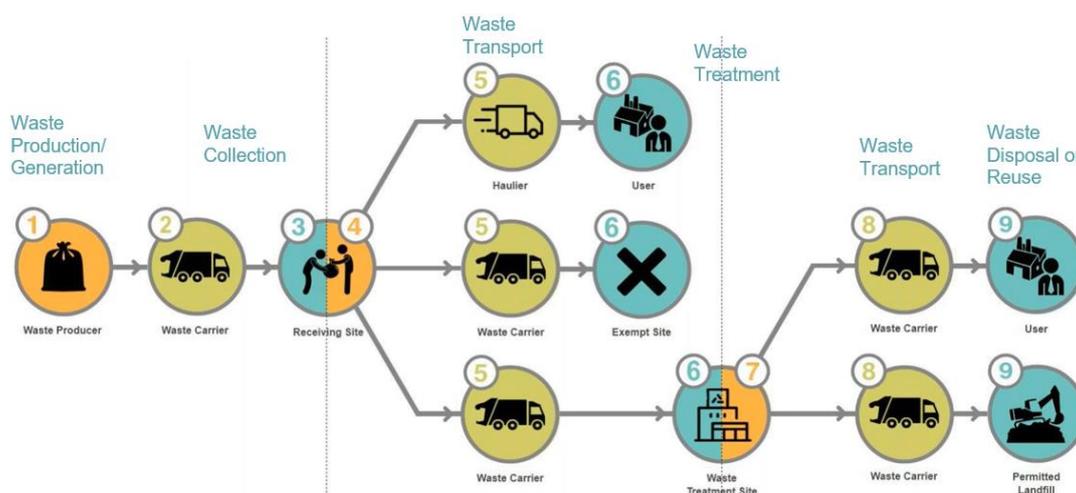
WEEED	Waste Electrical and Electronic Equipment Directive (2012/19/EU)
WFD	Waste Framework Directive (2008/98/EC)
WHO	World Health Organization
WMC	Waste management centers

## CONTEXT

By 2050, in a business-as-usual scenario, the world is projected to generate 73 percent more municipal solid waste than in 2020.<sup>1</sup> This trend is driven largely by increased economic development, urbanization and population growth, which drives up consumption patterns and the volume of waste.<sup>2</sup> Deficiencies in waste management services and infrastructure have large environmental impacts and pose direct risks for human health. For example, waste burning is a significant source of air pollution, and open dumping can lead to soil contamination and the pollution of rivers, lakes, underground water, and human living environments. Waste that is not properly managed can block drainage systems, creating risks for flooding and breeding grounds for disease - not to mention the risks associated with landslides and fires at landfills and larger dump sites. The consequences of poor waste management can also negatively affect tourism, local economic development, and poverty reduction.<sup>3</sup>

While the national level usually sets the governing framework, strategies and targets for managing waste, the implementation of on-the-ground waste management services typically falls to the local government level. Locally generated waste, or Municipal Solid Waste (MSW), refers to what is commonly called household or household-like “trash” or “garbage.” The composition of MSW typically includes durable goods (e.g., furniture, mattresses), non-durable goods (e.g., paper, plastic plates/cups), containers and packaging (e.g., milk cartons, plastic wrap), and other wastes (e.g., yard waste, food). MSW also includes office and retail waste, but excludes industrial, hazardous, and construction wastes.<sup>4</sup>

Figure 1. Generalized Waste Value Chain



Source: Anthesis Group, 2021<sup>5</sup>.

**Municipal Solid Waste Management (MSWM), or the system by which waste is managed broadly deals with how waste is generated, collected, transported, treated, and eventually disposed or reused.** Figure 1 provides a generalized value chain framework for understanding the key functions of MSWM. However, the organizational models for MSWM vary based on the local context, national & municipal objectives, opportunities for regional collaboration, technical options, etc.

<sup>1</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>2</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>3</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>4</sup> University of Michigan. Municipal Solid Waste Factsheet. 2021.

<sup>5</sup> Anthesis. Vastum: Digital Waste Tracking System. 2021.

The most widely adopted principle for improving MSWM is the ‘waste hierarchy’, which offers a guiding framework for the development and long-term planning of the waste management sector. Waste disposal in a landfill is the least desirable option on the ‘waste hierarchy’, while recycling and re-using waste and eventually preventing waste altogether are the most preferred measures. The ultimate aspiration is for municipalities to transition the waste sector towards resource efficiency, which yields better human and environmental health outcomes.

*Figure 2. Waste Hierarchy*



Source: EU, 2021<sup>6</sup>.

**While many national governments have set ambitious targets for advancing up the ‘waste hierarchy’ by increasing the recovery and recycling of waste; actual performance and achievement of national targets and objectives remains limited.**<sup>7</sup> This largely comes down to a weak enabling environment for municipalities, cities or local authorities who have the primary responsibility for providing on-the-ground services and for ensuring the controlled management of solid waste.<sup>8</sup> For municipalities to be empowered to deliver on ambitious waste management targets, a few key elements need to be in place: an institutional framework that clearly defines roles and responsibilities, strong technical and operational MSWM capacities, good engagement with sector stakeholders so that they understand their role in the system, and the ability to design and deliver affordable and financially sustainable waste management services.

<sup>6</sup> European Commission. Environment: Waste Framework Directive. Accessed in 2021

<sup>7</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>8</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

# INTRODUCTION

## Box 1. How does the EU define Municipal Solid Waste (MSW)?

MSW is defined by the EU as “mixed waste and separately collected waste from households, including paper and cardboard, glass, metals, plastics, bio-waste, wood, textiles, packaging, waste electrical and electronic equipment, waste batteries and accumulators, and bulky waste, including mattresses and furniture” and “mixed waste and separately collected waste from other sources, where such waste is similar in nature and composition to waste from households.” MSW does not include waste from production, agriculture, forestry, fishing, septic tanks, sewage networks, and treatment, including sewage sludge, end-of-life vehicles or construction and demolition waste.”

Source: European Council Directive 2008/98/EC on Waste,

The EU has an ambitious European Green Deal<sup>9</sup> that aims to transform the EU into a modern, resource-efficient and competitive economy. A key component of achieving this agenda is ensuring that MSWM in the EU moves up the ‘waste hierarchy’ with municipalities increasingly following the principles of the circular economy to prevent and reduce the negative effects of using primary resources on the environment and society.<sup>10</sup> Recycling is one of the main ways to reduce the consumption of primary resources, by replacing them with secondary materials made from recycled waste. This is the desired approach to achieving sustainability, material self-sufficiency and the other benefits of a circular economy.<sup>11</sup>

The EU waste policy provides a framework for Member States to manage waste in an environmentally sound

manner and make better use of the secondary material it contains.<sup>12</sup> It sets forth several objectives to help Member States transition towards a circular economy: a) improve waste management, b) stimulate innovation in recycling, and c) limit landfilling.<sup>13</sup> To measure progress against these objectives, EU legislation includes more than 30 binding targets for Member States between 2015-2030. This report will focus on the Waste Framework Directive (see Table 1), which includes targets for the recycling and preparing for reuse of municipal waste.

Table 1. EU Waste Framework Directive Targets

Waste Management Targets	Target Deadline
Preparing for re-use and the recycling of waste materials (such as paper, metal, plastic and glass) from households shall be increased to a minimum of overall 50 % by weight	2020
Preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 % by weight by 2025	2025
Preparing for re-use and the recycling of municipal waste shall be increased to a minimum 60% by weight by 2030	2030
Preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 65% by weight by 2035	2035

Source: EU Waste Framework Directive.

This report will examine the MSWM performance in Romania, Croatia, Poland and Bulgaria as these countries are not on track to meet upcoming EU Waste Framework Directive Targets. All four countries received early warning reports from the European Commission in 2018 for being at risk of missing the 2020 target of 50% preparation for re-use / recycling for municipal waste, with the next series of reports due to be published in 2022. In these countries of study, most collected waste is unseparated and ends up in uncontrolled dumps. Yet none of the four countries has developed plans to tackle this absolutely critical issue. The consequences of not meeting EU Waste Framework Directive targets can include fines, being taken to the European Court of Justice,

<sup>9</sup> European Commission. A European Green Deal: Striving to be the first climate-neutral continent. Accessed in 2021.

<sup>10</sup> European Environment Agency. Waste Recycling in Europe. Accessed in 2021.

<sup>11</sup> European Environment Agency. Waste Recycling in Europe. Accessed in 2021.

<sup>12</sup> European Commission. Environment: Waste and Recycling. Accessed in 2021.

<sup>13</sup> European Commission. Environment: Waste and Recycling. Accessed in 2021.

risk of losing EU membership status, and more EU oversight and monitoring over the national implementation of waste management.<sup>14</sup> Beyond these administrative and financial consequences, waste that is left unmanaged, dumped or burned harms human health, hurts the environment, contributes to climate change and hinders economic growth.<sup>15</sup> See Table 2 for a breakdown of some of the major shortcomings on MSWM and areas of intervention in the countries of study.

**Table 2. Major MSWM Performance Shortcomings and Possible Areas of Intervention<sup>16</sup>**

Country	Sector challenges	Investment needs	Technical Assistance needs
Romania	Weak local project preparation and implementation capacity Overlapping responsibilities at county (regional) level Limited central level supervision and project management capacity Underdeveloped recycling and composting market	EUR870 million overall funding gap EUR230 million co-financing needs	Local and regional management Central level project management PPP advice Recyclables Market Development
Bulgaria	Deficient landfill site selections Weak regional associations and lack of local ownership Very low enforcement capacity Long-term financial sustainability Limited data availability	EUR55 million co-financing needs	Sector optimization Financial sustainability Enforcement Landfill site selection
Poland	Persistent lack of data Fragmented institutional framework and weak enforcement capacity Waste ownership and local incentive structure Very slow project preparation and weak local capacity Weak public consultation and strong local opposition High share of illegal dumping	EUR550 million funding gap	Landfill site selection Public consultation Regional strategy and planning
Croatia	Weak landfill site selection procedures and strong local opposition Lack of regional project management capacity Island waste collection during tourist season Lack of PPP experience	EUR350 million overall funding needs	PPP advice Landfill site selection Regional management

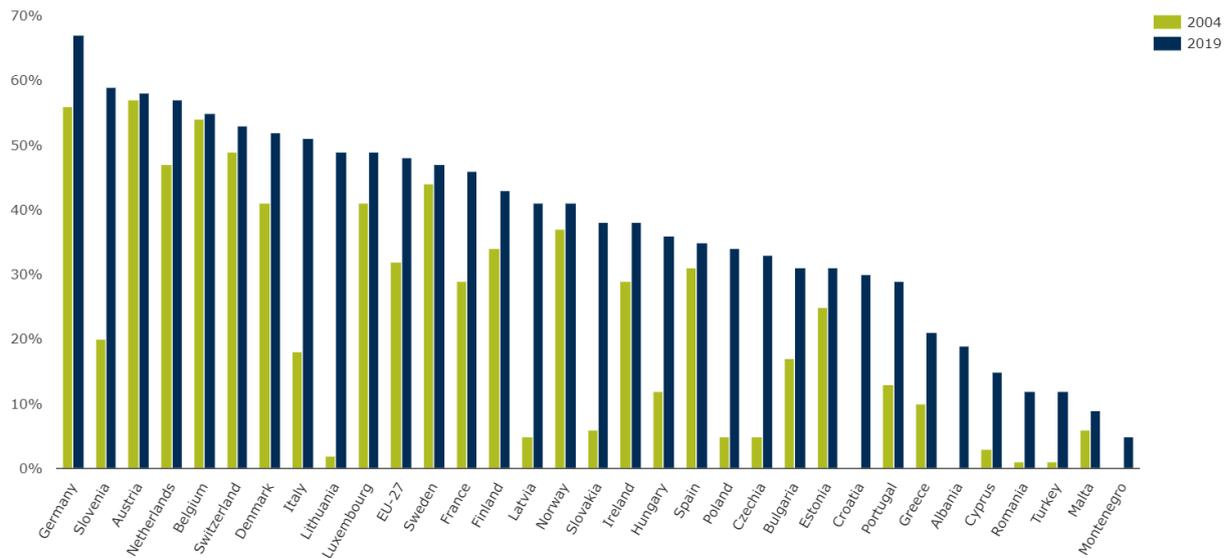
**Nevertheless, these countries have each made significant progress towards mainstreaming the collection of waste and improving their rates of municipal recycling.** Figure 3 highlights the progress EU Member States have made towards increasing their recycling rates since 2004 up until 2019, with the four countries of study having made significant progress. This points to important improvements in MSWM in these countries. However, when examining the percentage of treated waste that is recycled in proportion to the waste that is disposed of in a landfill (see Figure 4), it is clear that more progress is needed. Landfilling is still the favored approach in Romania and Bulgaria, yet Croatia and Poland have made substantial progress towards increasing their rates of recycling.

<sup>14</sup> European Parliament. Waste Management in Europe: Main Problems Identified in EU Petitions and Best Practices (Updated Version). 2018.

<sup>15</sup> World Bank. What a Waste: An Updated Look into the Future of Solid Waste Management. 2018.

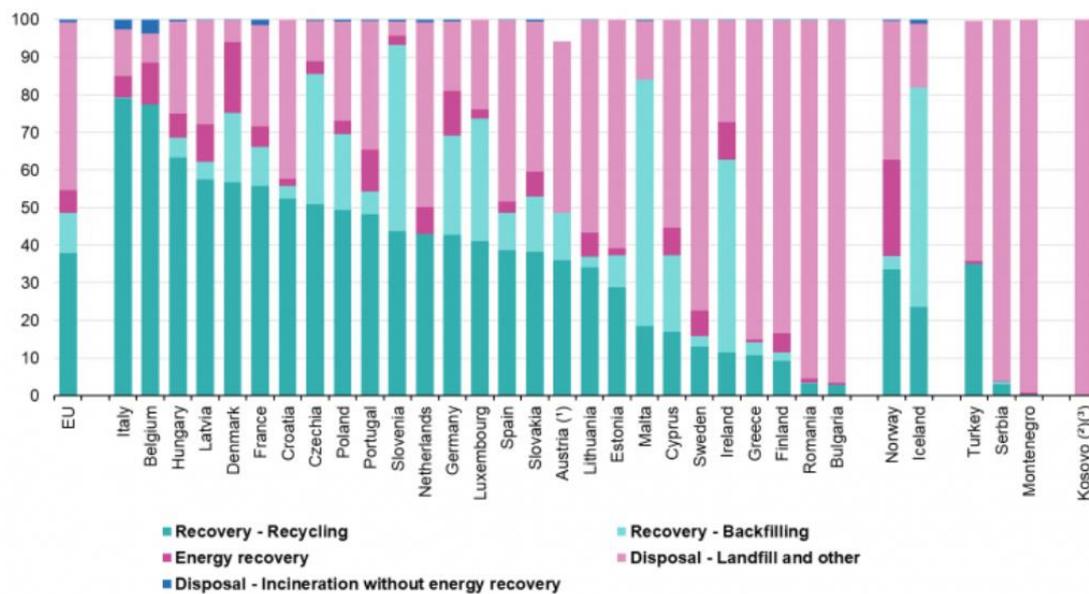
<sup>16</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

Figure 3. Municipal waste recycling rates in Europe by country



Source: European Environment Agency. Waste Recycling in Europe. Accessed in 2021.

Figure 4. Waste Treatment by Type of Recovery and Disposal in the EU, 2018 (% of total treatment)



(\*) No data available for energy recovery and incineration without energy recovery.  
 (\*\*) No data available for incineration without energy recovery.  
 (\*\*\*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo Declaration of Independence.



Source: Eurostat Statistics. Waste Statistics. Accessed in 2021.

Enabling the MSWM to perform at the desired level requires integrated waste management systems across all levels of government with clearly assigned institutional responsibilities, roles and functions; adequate policies and economic incentives and financing; local capacities for service provision; and proactive inclusion of community, public and private stakeholders.<sup>17</sup> Central authorities often do not see solid waste management as within their remit, yet the central government has the primary responsibility for setting the overall institutional, policy, and legislative framework. Meanwhile, the achievement of national waste management

<sup>17</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

targets and objectives is largely dependent on the ability of sub-national authorities to provide on-the-ground services and ensure the controlled management of solid waste.<sup>18</sup>

**In the EU, while Member States are held liable for national waste management performance, the implementation of solid waste management is generally the responsibility of municipalities.** This is the case in Romania, Croatia, Bulgaria and Poland. The disconnection between the aspirations of the central government on waste management and the ability of the local level to meet these aspirations through their local waste management services reflects a gap in institutional frameworks and enabling environment in these countries. To this end, some of the key gaps in the waste management enabling environment that have been identified in Romania, Croatia, Bulgaria and Poland include:

- Legal and Institutional Enabling Environment:
  - Weak legal mandate and policy guidance for municipalities
  - Lack of coherent roles and responsibilities across different levels of government (e.g., for planning and implementation of waste management plans)
- Financing and Economic Incentives
  - Economic sustainability and cost recovery for solid waste operations is insufficient
  - Private sector is not incentivized to participate in the solid waste sector
- Data and Monitoring & Evaluation Framework
  - Waste management performance monitoring and data collection are limited
  - Enforcement capacity on environmental standards is low
  - Scarcity of reliable data
- Public participation and stakeholder engagement
  - Public feedback and complaint mechanisms are not yet widely institutionalized<sup>19</sup>

**The main reason for the performance gap in Romania, Croatia, Poland and Bulgaria is a weak enabling environment across a number of critical dimensions.** As such, this report will provide a high-level assessment of the current legal and institutional enabling environment, financial capacities & economic incentives, and local operational environment that contribute to underperforming MSWM. Based on this analysis the report will highlight some of the opportunities that exist to transform the delivery of waste management services in a Romania, Croatia, Bulgaria and Poland to move up the waste hierarchy and deliver on the EU Waste Directives.

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<sup>18</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>19</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

## FRAMEWORK FOR MUNICIPAL SOLID WASTE MANAGEMENT REFORM

**For MSWM to perform at the desired levels in Romania, Croatia, Poland and Bulgaria will require a range of institutional, economic, and social reforms.** To support this reform process, a novel conceptual guiding framework for transitioning MSWM towards a circular economy has been developed, which categorizes MSWM systems into nine development bands (DB). The '9DBs Conceptual Framework' captures the typical evolution and historical journey of MSWM systems in high-income countries towards more waste and resource efficiency (see Figure 5).<sup>20</sup> The framework offers a helpful lens to benchmark MSWM system performance in any given country against the UN's Sustainable Development Indicator 11.6.1: Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities.<sup>21</sup> For the countries of study, the framework offers a mechanism to frame the current status of their MSWM and the interventions that should be prioritized to advance towards more environmentally sound MSWM.

**The countries of study broadly sit at DB5, meaning they are meeting the UN SDG 11.6.1 indicator for universal collection and management in controlled facilities.** Poland and Croatia are more well-established in meeting this indicator while Romania and Bulgaria are on the cusp of or nearly meeting it. All of these countries have made strides towards improving the level of facility standards and collection services provided and are in a prime position to for providing greater environmentally sound MSWM.

**The challenges with the DB5 stage of development are to integrate recycling systems and extend separation at source while keeping costs under control.** Historical precedent demonstrates that costs of services can spiral upwards, sometimes with little visible result at this stage. This is often because the costs of services increase as collection reaches more difficult to service urban, peri-urban and rural areas, and environmental standards for waste recovery and disposal increase. At the DB5 stage, the key pressure points to mitigate spiraling costs are revenue collection for MSWM services and the implementation of the 'polluter pays principle' and diversifying revenue sources (e.g., Extended Producer Responsibility Schemes). Sound financial regulation is key to ensuring the revenues entering the sector deliver quality services and are not diverted for other purposes or used to generate excessive profit margins by the private sector. Another way to minimize costs while increasing recycling rates and diversion from landfill disposal, is changing people's behaviors to normalize the separation of different waste materials at the household level. This opens up opportunities for existing recyclers to receive better quality materials and recover the clean organic fraction as high-quality compost suitable for use on food crops, all of which creates more and better jobs that contribute to sustainable livelihoods.<sup>22</sup>

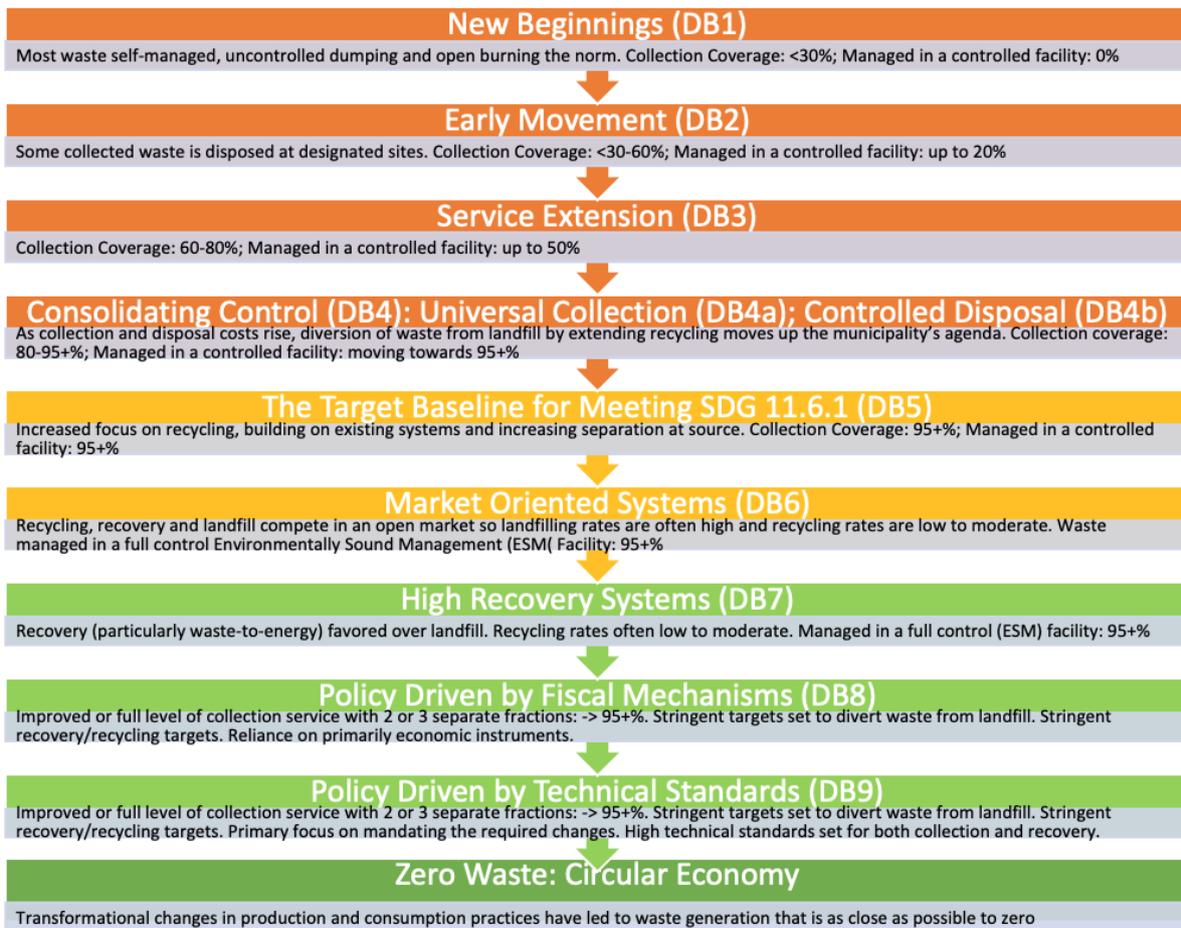
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<sup>20</sup> Whiteman, A.; Webster, M.; Wilson, D. The Night Development Bands: A conceptual framework and global theory for waste and development. 2021.

<sup>21</sup> Indicator 11.6.1 falls under UN SDG Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management. This target falls under UN SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

<sup>22</sup> Whiteman, A.; Webster, M.; Wilson, D. The Night Development Bands: A conceptual framework and global theory for waste and development. 2021.

Figure 5. The 9 Development Bands Conceptual Framework for MSWM Reform<sup>23</sup>

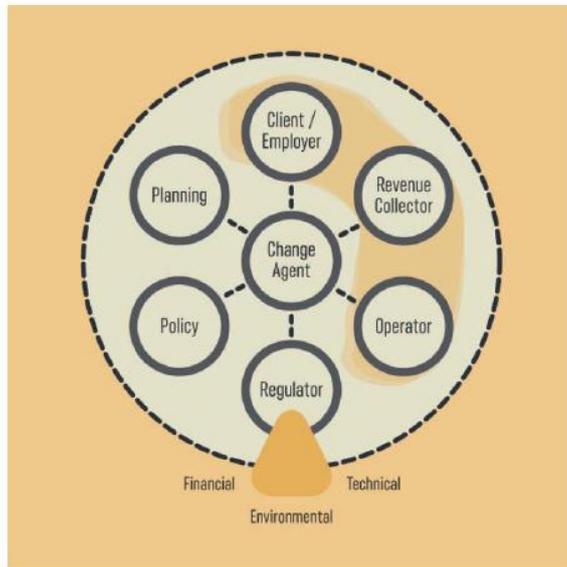


Source: Whiteman, et al (2021).

For Romania, Croatia, Poland and Bulgaria to advance up the ‘waste hierarchy’ towards a circular economy, a number of reforms will be needed to improve the enabling environment for existing MSWM systems to scale up their recovery of waste and make the shift away from landfilling. To pursue the necessary reforms, it is first helpful to scope out the critical functions needed to enable desired MSWM performance. The ‘9 DBs Conceptual Framework’ provides 9 institutional actors and functions with their ideal responsibilities for achieving environmentally sound MSWM (see Figure 6). These functions help define the landscape and key elements of environmentally sound MSWM from which to systematically identify gaps and pursue appropriate reform measures.

<sup>23</sup> Whiteman, A.; Webster, M.; Wilson, D. The 9 Development Bands: A conceptual framework and global theory for waste and development. 2021.

Figure 6. Institutional Functions and Responsibilities for Environmentally Sound MSWM<sup>24</sup>



KEY: Responsibilities of each function

**Framework**

**Policy:** the framework set at national or state/provincial level and implemented at regional and local levels, within which SWM is delivered

**Planning:** responsibility for strategic and operational planning and general programming and control

**Change Agent:** a state or non-state actor charged with, or influential in, implementation of WaRM Strategy; making a 'step change' in the WaRM system happen in practice

**Operator model**

**Client/Employer:** ensure provision of MSWM services meeting the required standards; supervise the Operator

**Operator:** day-to-day delivery of MSWM services

**Revenue Collector:** collection of revenue to pay for MSWM services

**Regulator**

**Environmental:** monitors and assures compliance with legal standards for environmental protection.

**Technical:** monitors and assures compliance with technical standards for MSWM services and facilities

**Financial:** monitors and assures compliance with financial requirements for MSWM services and facilities

Source: Whiteman, et al. (2021)

<sup>24</sup> Whiteman, A.; Webster, M.; Wilson, D. The Night Development Bands: A conceptual framework and global theory for waste and development. 2021.

## Box 2. MSWM Wales Case Study

Wales is a global leader in recycling and materials recovery. In 2010, the Welsh government set statutory recycling targets of 70% by 2025 for its 22 local authorities in an effort to shift the waste management paradigm towards a circular economy. In 2020, Wales' national municipal waste recycling performance was 65%, amongst the highest in the world. Recycling targets have played a key role in achieving high recycling rates in Wales. The success of the Welsh waste management system has resulted in local councils making big efficiency savings through streamlined waste management operations and enabled them to obtain higher prices for their high-quality recycling materials. In fact, companies are increasingly looking to invest in Wales due to the high-quality materials that are delivered through the domestic waste collection system. A range of factors contribute to the success of the Welsh MSWM model:

### Institutional and Policy Framework

- Welsh national level policies and strategies on source separation and waste recycling targets are supported by local level tools, such as the 'Collections Blueprint', which sets out the recommended methods of waste and recycling collection to ensure the provision of consistent and high-quality services across local authorities. The Welsh Government uses financial incentives to encourage local authorities to adopt the 'Collections Blueprint', which is not technically mandatory. This has resulted in local authorities achieving greater consistency of waste services across Wales and delivering on the ambitious targets set out in Wales' 'Towards Zero Waste' Strategy.

### Strong local level implementation

- Wales' 22 local authorities introduced measures that have helped households increase their recycling, including: a) reducing the size of general waste bins, which has incentivized households to sort more waste in recycling containers, b) providing separate containers for households to sort food waste, paper, plastic bottles & glass, and electronic materials, c) using "resource recovery vehicles" (RRVs) to collect most recyclable materials in one go, which facilitates their sorting at source. RRV's are less than half the capital cost of most conventional refuse collection vehicles, which removes the need for a costly Materials Recovery Facility (MRF) and leads to the collection of higher quality materials with lower contamination levels and better prices for recycled materials.

### Financing and Economic Incentives

- A significant proportion of investment in recycling infrastructure is funded through government grants. Therefore, the Welsh Government is keen to ensure these resources are being used to their greatest efficiency, which has resulted in the publication of annual finance reports on waste management. The annual finance reports allow for greater comparison between local authorities, the sharing of best practices, and enabling gaps to be identified to drive greater service improvements and efficiencies.

### Data and Monitoring & Evaluation Framework

- The Welsh government publishes an annual statistical report on the municipal waste management of local authorities against the targets set out in the 'Towards Zero Waste' Strategy. The Welsh government uses an online reporting system for waste data called 'Waste Data Flow' (WDF), which is managed by Natural Resources Wales and the Waste Strategy Branch of the Welsh Government. The WDF provides transparent data on waste flows at various stages of the waste value chain, providing an understanding of movements of recyclables, including exports for reprocessing outside Wales and the UK.

### Community Engagement and Communications

- The "Collections Blueprint" was supported by a national communications campaign, which helped households to clearly see their role as the guardians of high-quality materials in domestic collections.

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## OVERVIEW OF THE ENABLING ENVIRONMENT GAPS IN ROMANIA, CROATIA, POLAND, AND BULGARIA

For MSWM to achieve the desired performance levels in Romania, Croatia, Poland, and Bulgaria, several critical functions must be in place, including the policy-maker, planner, regulator, service provider, and financing role. A World Bank report, *Bridging the Gap in Solid Waste Management: Governance Requirements for Results* articulates what each of these functions should entail:

### The policy-maker role

The policy maker role is responsible for formulating, defining and coordinating a coherent policy direction for the sector and setting the overarching legislative framework for its implementation. Critical functions and issues that need to be addressed under this role include:

- Waste management is almost universally a local authority responsibility, which needs to be identified as a priority by the *national level* (e.g. through the allocation of sufficient administrative resources within the competent waste management authorities at different levels).
- A clearly assigned institutional leader at the *national level* should be assigned with responsibility for waste management that is adequately resourced (e.g. because waste management is a cross-cutting issue, it is important to designate a single ministry or government department as the clear institutional lead for leading reforms, driving change, providing direction and galvanizing the sector).
- A streamlined legislative framework and supporting regulatory system is needed and should be established to support the overarching policy objectives for the sector at the *national level* (e.g. setting up recycling targets for certain waste streams).
- Local policies to help achieve national priorities and local regulations are needed to spell out the requirements for organizing the services and assigning responsibilities at the *local level*. Local regulations enable local service provision and are an effective way for local authorities to achieve the specific requirements set out in a national policy (e.g. local regulations that outline the roles and responsibilities of the local authority, service providers, and waste generators, including households).<sup>25</sup>

### The planner role

The planner role is to formulate and coordinate the preparation of strategic plans for municipal waste management that conform with government policy and legislation, and for ensuring effective coordination of the implementation of strategic plans across all tiers of government, including performance monitoring and data collection. Critical functions and issues that need to be addressed include:

- Establishing a clear framework for waste management planning at the *national level* planning.
  - Planning should relate to the entire waste management cycle, starting from collection and transportation of waste and all pre-treatment and recovery operations through to its final disposal in sanitary landfills. Planning is a cyclical process that involves all tiers of government and offers a basis for engagement with other stakeholders. A planning framework must be established to determine the types of plans needed at each tier of government, ensuring coordination and alignment of inputs and objectives. Often the requirement to develop a

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<sup>25</sup> World Bank. *Bridging the Gap in Solid Waste Management: Governance Requirements for Results*. 2021.

strategic plan will be mandated by central government and will include specific requirements and frequencies. Implementation plans defined through the planning process should include priorities, targets and objectives for the sector, and describe a roadmap and timeline for them to be achieved. A national level framework is a key mechanism for ensuring that sub-national government planning is aligned with national policies and priorities.<sup>26</sup>

- Adopting a long-term implementation plan for the sector at the *national and regional levels*.
  - It is important to develop and adopt a long-term strategic plan for waste management that sets realistic objectives and targets that are consistent with baseline conditions, reflecting a thorough analysis of development options and identifying credible financing sources. The national government has overall responsibility for strategic planning of waste management to meet national policy objectives. This role relates closely to the waste management policy making role and is often undertaken by the same government unit or body. National government's strategic planning processes also serve to make sure that waste management sector policy complements other sector policies, instruments, and initiatives. It is important that strategic plans are realistic in terms of what can be achieved over the given timeline, taking account of the given baseline conditions, the necessary institutional and legal changes, the ability to finance investments and cover operational costs, and the potential to secure public participation and support. Where plans are overly optimistic, setting unrealistic objectives and targets, there is a high probability that they may not be achieved and that actions taken to implement them may fail. It is common to engage external technical specialists and research institutions to help develop the strategy and plans at key points during the strategic planning cycle.<sup>27</sup>
- Waste management planning at *local authority level*.
  - Effective long-term planning is an essential function of local authorities but is one that is often overlooked due to their primary focus on operations. It is necessary to ensure that sufficient infrastructure is put in place to provide and improve services over the longer term. Long-term planning is necessary to define the specific need for improvements, to program future waste infrastructure capacity requirements and to identify other initiatives needed to support implementation of the plan the long term, including capacity building, public awareness raising and communications campaigns. The plan might also specifically identify the locations of new infrastructure, although this can be left as a subsequent step to be decided during the actual implementation plan. The plans should be prepared at the local level but, if regional waste management plans provide a sufficient level of detail, the need to develop local waste management plans could be avoided or plans could be simplified significantly and based primarily on action planning.
- Aligning local plans with national plans and policy objectives.
  - A planning process is needed to align municipal and regional waste management plans with national plans. Individual municipalities should be encouraged to follow the national plan, especially when building new infrastructure and facilities, to ensure that development of the sector is consistent and properly coordinated across the country and makes efficient use of public resources. For example, the National Waste Management Plan for the period to 2025 adopted in Romania requires all 41 counties and Bucharest municipality to develop regional waste management plans for establishing waste management technical infrastructure and for developing institutional and financial models for achieving the long-term waste management

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<sup>26</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>27</sup> Ibid

objectives. In principle, planning of waste facilities and operations depends on having appropriate administrative structures and capacities which allow investment projects to be identified, formulated and developed.<sup>28</sup>

- Establishing a data management framework at the *national level* and data collection and reporting mechanisms at the *local level*.
  - Strategic planning must be based on good data. This is essential to allow robust analysis of development scenarios for the sector. It supports monitoring of progress against targets set out in the plan and provides the basis for on-going strategic planning. It can also be used for creating incentives (or penalties) for sub-national authorities to meet local targets on the path towards meeting national policy objectives. The overall requirement for collecting and reporting data is normally set by the national government. Data collection and reporting requirements should be defined and standardized across data entry points (service providers, operators, and local authorities) to ensure consistency and allow data amalgamation. Cross checking and verification processes should also be put in place. Data depository systems are typically placed with agencies on behalf of the national government, examples being the national statistics service, etc.<sup>29</sup>
- Ensuring sufficient capacity at all levels.
  - One key, often overlooked, element of the strategic planning process is the need to carefully consider capacity needs in terms of technical skills and human resources. As the responsibilities local authorities have for waste management evolve and grow over time as the system develops, so do capacity requirements. However, whilst this issue is most acute at the local authority level where responsibility for service delivery sits and capacities are often the weakest, it is prevalent also at the national and intermediary levels of government. It is unlikely that an ambitious national strategy will be achieved without ensuring that the skills and resources are in place to deliver it. As such, the strategic planning process should include consideration of the capacity needs of each tier of government and include adequate provision and mechanisms to enable them to develop. In the context of a situation whereby a step change in waste management service provision has been successfully achieved, change has often been accompanied by a wide range of support initiatives and accompanying incentives.<sup>30</sup>

### **The regulator role**

The regulator is responsible for formulating standards and procedures pertaining to the permitting, monitoring and regulatory enforcement of municipal waste management facilities and operations and for supervising their effective application and enforcement. Critical functions and issues that need to be addressed include:

- Permitting of waste management facilities and operations, primarily at the *national and regional levels*.
  - The responsibilities of approving environmental impact assessments, issuing environmental permits, performing environmental monitoring of waste management facilities and of industrial waste generators are typically also functions of the national and regional tiers of government. At the national level, these functions may be split between the responsible ministry and separate executive agencies engaged specifically in permitting, monitoring and regulatory enforcement. For example, in Ghana, the Environmental Protection Agency (EPA) under the Ministry of Environment and Science acts as the regulatory authority, supervising

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<sup>28</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>29</sup> Ibid

<sup>30</sup> Ibid

and monitoring the activities of service providers within the metropolitan, municipal, and district authorities. The EPA is also responsible for the management of hazardous waste and issuing permits for waste treatment and disposal facilities.<sup>31</sup>

- Control and enforcement of legal requirements, primarily at the *national and regional levels*.
  - Monitoring and enforcement are often split between tiers of government. A common division of activities is that the local authority focuses on taking enforcement activity against waste generators (i.e. for littering or illegal dumping) whilst central and intermediary levels of government focus on enforcing compliance of facilities' operations (i.e. discharge or emission limits). For example, in England waste management operations, such as landfill operations, are regulated by the national environmental regulator, the Environment Agency. The Environment Agency also takes enforcement action against large scale illegal dumping and illegal activities involving hazardous waste. However, enforcement against small scale dumping of waste and littering is conducted by local authority enforcement officers. National authorities should consider establishing appropriate coordination and enforcement mechanisms to support the compliance at local level. For example, these can include reporting obligations for local authorities, procedures for consultation, and approval and monitoring of the implementation of local waste management plans. Such enforcement mechanisms should also be combined with guidance, training, and financial support to local authorities.
- Contract administration and inspection, primarily at the *local level*.
  - At the local level, the 'regulator' role is required to assure control and follow-up to the activities of all third-party service providers, and to follow up on the general implementation of local waste-related and cleanliness ordinances. Administering or enforcing the terms of contracts signed by a municipality with waste management facility operators or service providers is typically a local authority function. The contracts administration role addresses the waste management projects development and tendering, contacts management and contractor payment and penalty control of the project cycle. The associated technical inspection function normally has the responsibility for monitoring compliance with facility construction works and thereafter operational requirements in contractual and associated local regulatory documents. It is important that the regulatory function is separated within the municipal administration from the waste management services or activities which must be overseen and regulated. This is fundamental, as it must avoid any real or perceived conflict of interest between those regulating a service and those providing it.<sup>32</sup>

### **The service provider role**

The service provider is responsible for the actual delivery or assurance of delivery of the waste management services and facility operations. Critical functions that need to be fulfilled include:

- *Local level* operational planning, operations and maintenance of waste management services and infrastructure.
  - Local authorities are typically solely responsible for operational planning, operation and maintenance of waste collection and transportation. Treatment and disposal planning can also be their responsibility but may be transferred to the intermediate tier. Operations and maintenance of such facilities may similarly be done entirely by local authorities or be

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<sup>31</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>32</sup> Ibid

transferred to the intermediate tier or to an intermunicipal entity on behalf of the local authority.<sup>33</sup>

- Operational plans need to provide ample detail on how the service will be organized and financed. Various models exist and the authorities need to determine the horizontal split (zoning or a single service area), vertical split (single or multiple providers along the service chain from collection through disposal), interface arrangements (when waste changes hands between, for example, primary and secondary collectors or secondary collection and transfer point), service levels (in high-rise and sparsely populated areas) and method of collection (comingled or separated waste), thresholds for serving generators, waste diversion level and treatment methods.
- Operational planning also includes budgeting where projected costs, revenues and financing sources must be identified. Costs need to comprise direct operational, amortization, and overhead costs, and be based on an accounting system identifying the cost components separately for each type of activity from street cleaning and collection through treatment and landfilling. Realistic financing sources need to be identified for both operating expenses and capital investments. Financing is ideally based on the principles of polluter pays, affordability, full cost recovery, and economic efficiency.<sup>34</sup>
- Dividing client and operator functions in service delivery and operation of facilities, concerning mostly the *local and regional levels*.
  - The operational plan will typically determine where private sector participation will be sought as a source of additional capital, technical expertise (especially for treatment facility operations), and efficiency gains. When the private sector is engaged to deliver public services, the client local authority is expected to have capacity to carry out tendering procedures and perform contract management functions. Key metrics and performance indicators should be included in the contracts. Where the local authority is both the client (i.e. the body that sets the scope and standards for the service and ensures that it is delivered to the required standard) and the operator (i.e. the service provider), the separation of these two functions within the institution is important. This could be achieved by establishing a public company with separate local budget financial statements or by ring-fencing the activities of the service unit and possibly its accounting systems for dedicated cost allocation.<sup>35</sup>
- Communication and awareness-raising at the *local level*.
  - Communications need to be tailored to local cultures and contexts. As such, local authorities are typically charged with leading on communicating with waste generators. At a basic level, communication might simply focus on informing householders of the nature of waste management services and the cost. However, it is likely that the local authority will need to engage with generators on behavior change issues, encouraging generators to reduce waste generation and to participate in recycling schemes. This is a critical, and often overlooked, element of waste management service provision. Without positive engagement from the households, businesses and institutions generating waste, the waste management system is likely to encounter challenges, often with widespread dumping and burning of waste, limited engagement in recycling initiatives and lost opportunities to reduce waste.
  - Communication campaigns need to be carried out on a continuous basis. Local authorities should ensure they have specialized staff and a dedicated yearly budget allocation for this activity. Alternatively, the communication activities could be delegated to the waste management company or could be a required function of the industry under EPR schemes. There are considerable benefits associated with support on communications issues coming

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<sup>33</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>34</sup> Ibid

<sup>35</sup> Ibid

from national or regional levels of government. If there is a consistent message on waste management coming from all tiers of government, then it is easier for the local authority to establish a 'social contract' with generators, thus encourage positive behaviors in waste management. This ensures consistency is more economic where awareness-raising materials and radio or television campaigns for instance can be created much more efficiently, with a local authority able to tailor materials for local use.

- Local authority's key role in engaging with the informal sector at the *local level*.
  - The informal sector plays a significant role in waste recycling and diversion. Many countries have no formal separation at source or recycling system in place yet still achieve good recycling rates and diversion through the informal sector. Integrating informal workers with the rest of the waste chain improves the interface between operators, reduces competition among collectors and may reduce litter and secondary dumping. It promotes social inclusion and better health and safety conditions. Local government has the lead role in engaging with the informal sector when planning and providing the service. Many and diverse schemes exist for organizing community-based organizations and social enterprises and they are highly dependent on local culture, tradition, socio-economic conditions. Often these schemes differ greatly not just within a single country but within large cities. Local government could actively research, document and promote successful models in terms of defining the service zones for primary collection, zone boundary modification and expansion over time, setting and collecting service charges, incentives for service expansion into low-income and slum areas, monitoring and enforcement of residual waste disposal, examples of intermediary associations/non-governmental organizations (NGOs) to facilitate the dialogue between informal workers and local administrations.<sup>36</sup>

### **The financing role**

The institutional structure in charge with financing is responsible for all financial aspects of preparing and delivering affordable and financially sustainable municipal waste management service and facilities. Critical functions and issues that need to be addressed include:

- Defining an affordable and financially sustainable waste management service.
  - Responsibility for financing municipal waste management rests primarily with then local authorities. Responsibility for formulating tariff policy, legislation and related guidelines falls typically to national government. National government, and sometimes regional government, also have a key role to play in determining the amount and conditions of any grant support which may be provided to a municipality, particularly if it is to be from national or international sources. Under these circumstances, preparing the funding for a waste management project should ideally be a collaborative process between the municipality and the national government (and the regional level if appropriate).
  - National legislation typically sets the requirements or mechanisms for levying waste management fees and taxes consistent with national policy and strategy on the user (polluter) pays principle. It may also define thresholds for affordability analysis and the conditions to apply on providing income-based support to low income and vulnerable households (possible based on population deciles). The actual fee and tax rates are generally determined from local authorities' unit rates and established in local ordinances following approval by local councils.<sup>37</sup>
- Maximizing revenue collection

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<sup>36</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>37</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

- The types of administrative structure and procedures needed for revenue collection vary between the types of charging mechanisms used. For example, raising revenues through local taxation depends on the local administration having the capacity to collect taxes from residents and to manage budgets across the breadth of services within its remit, including waste management. Adding a municipal charge to a pre-existing taxation system should require only limited additional administrative capacity, especially if it is already linked to an appropriate property or population register.
- Establishing capacities for developing large-scale investment projects and for applying for financing
  - At the local authority level, additional administrative capacity is needed to attract investment finance for the development of local or regional waste treatment and disposal facilities. For this it is important to have staff with the skills needed both successfully to apply for funding and to manage large investment projects. This requires knowledge of international procurement rules and of internationally recognized framework contracting procedures, such as the International Federation of Consulting Engineers (FIDIC).<sup>38</sup>

**These five core functions MSWM (policy-making, planning, regulation, service provision, and financing) need to function well to enable more environmentally sound MSWM.** With these well-understood, the following sub-sections will situate these five functions within four cross-cutting enabling environments, including Legal and Institutional Enabling Environment, Financing and Incentives, Data and Monitoring & Evaluation Framework, and Public Participation and Stakeholder Engagement. These cross-cutting enabling environments will be the basis for evaluating the performance MSWM systems in Romania, Croatia, Poland, and Bulgaria and proposing corresponding recommendations.

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<sup>38</sup> Ibid

## LEGAL AND INSTITUTIONAL ENABLING ENVIRONMENT

### *EU Situational Context*

In Romania, Croatia, Bulgaria and Poland, the legal framework and institutional set-up in the solid waste management sector is influenced by EU practice and is therefore similar in all four countries. European Union (EU) policies are key drivers of solid waste management policies in the Member States and the allocation of substantial grant funding for implementation of such policies is of particular relevance in the new Member States.<sup>39</sup> The European Commission is charged with the task to set clear environmental targets and standards for Member States and to monitor that they adopt and enforce EU directives. The EU waste management policy calls for long-term systematic approaches, including investing in a regional system for waste collection, recycling, and disposal, and closure of non-compliant waste disposal sites and incinerators.<sup>40</sup>

**Box 3. How does the Waste Framework Directive define waste and waste management?**

In the WFD, waste is defined as “any substance or object which the holder discards or is required to discard, and waste management as the collection, transport, recovery, and disposal of waste, including the supervision of such operations and after-care of disposal sites”.

*Source: The EU*

**Various EU directives establish the legal framework for solid waste management and provide the specifics and timetable for implementation.** There is, however, no single directive dedicated to municipal waste management only, although general provisions on waste management apply to municipal waste and almost all waste directives have specific provisions on municipal waste (e.g. household waste). The Waste Framework Directive (WFD) provides guiding principles outlining the rules and requirements to be fulfilled by all member countries in solid waste management. The implementation of such requirements varies by countries; there is a shorter time horizon for the more advanced countries such as Poland, and a longer one for Romania, Bulgaria, and EU candidate Croatia.

**The EU places a strong emphasis on the principles of sustainable waste management.** For example, the EU encourages that the costs of waste management should be borne by the waste producer (or the current or previous waste holder), in accordance with the polluter-pays-principle, and Member States should have the appropriate institutional framework in place to ensure that waste is treated by the waste producer (or holder), or by a hired broker or dealer. Additionally, the EU encourages the establishment of a network of disposal facilities throughout the country that serve all communities and their respective waste management needs, according to the principles of self-sufficiency and proximity. Furthermore, every country is required to have a waste management plan, and they are expected to establish waste prevention programs no later than four years after the Directive enters effect. Waste prevention programs can be part of the waste management plan, or they can function separately.

<sup>39</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>40</sup> Ibid

## NATIONAL POLICY-MAKING AND LEGAL FRAMEWORK

**Policy formulation is primarily the responsibility of the Ministry of Environment or a similar agency while municipalities bear the legal responsibility for solid waste management and must be the main driver for good service provision.** In the countries of study, other government agencies with varying degrees of executive power and mandated responsibilities are also involved in regulating the sector, enforcing environmental standards, promoting regional coordination for solid waste management, reviewing and issuing permits, and identifying capital investment priorities. National Waste Management Plans (NWMPs) outline each country's policies and set sector strategy. Local-level responsibility for implementing solid waste management, which is generally decentralized to municipalities to carry out NWMP-mandated tasks.<sup>41</sup>

**All countries have mandated municipalities to ensure regular domestic waste collection and transport to disposal or treatment facilities.** Local authorities have incentives and knowledge to provide good services to citizens. However, in some countries, competencies are unclear in the legal framework. In Poland, waste generators own the waste and can contract waste collection services to private operators who compete *within* and not *for* this lucrative market, leaving public utilities only with financially non-viable routes. In this arrangement, almost unique to Western Europe, municipalities cannot enforce local waste management plans, including routing of waste collection services, and are stripped of a vital source of municipal revenues.<sup>42</sup>

## WASTE MANAGEMENT STRATEGIES

**Bulgaria, Croatia, Poland, and Romania have drafted national waste management strategies (NWMSs); however, they are not always consistent across government levels.** Most strategies include central government policy guidelines developed by the Ministry of Environment (MoE). All strategies include comprehensive approaches that translate EU policies on solid waste management into national approaches and adopted key EU guidelines—polluter-pays, priority waste reduction and recycling, and regional approaches to integrated solid waste management. However, in the countries of focus, waste management strategies are not always consistent across government levels with the roles and responsibilities between regions, counties, and ministries of regional development unclear. For example, Poland's institutional framework conveys substantial discretion to the 16 regional governments (Voivodships) to manage their waste strategies. Often, priorities differ among Voivodships, and a lack of coherence among different government levels leads to a lack of clear sector policy guidelines for municipalities. Additionally, the Ministry of Regional Development has lead responsibility to prioritize capital investments for solid waste management, while the Ministry of Environment is responsible for sector policy, with multiple inconsistencies. These inconsistencies undermine cost efficiency, which depends on integrated systems and robust regional arrangements.<sup>43</sup>

**National plans can establish overall strategy, but since the system relies on regional disposal and treatment facilities, planning must include inter-municipal or regional governing bodies** because successful results require local stakeholder ownership and support. Most countries have recognized this. Regional-level governments, counties in Croatia, and Voivodships in Poland, have legal responsibilities and obligations. In Romania, the Environmental Protection Agencies develop regional waste management plans, and in Bulgaria, regional associations are supposed to lead the planning process. However, regional plans require strengthening and ownership in all four countries. Effective plans require operational champions, and regional- or inter-municipal-level implementation capacity. Voivodships should predominate in Polish regional waste management planning, but few inter-municipal associations have been set up to take on the task. Bulgaria devolves planning authority to the regional level through Regional Associations, and Romania through Regional Environmental Protection Authorities, but in practice no real ownership yet exists for solid waste management

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<sup>41</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>42</sup> Ibid

<sup>43</sup> Ibid

planning at that level. National authorities should encourage regional- and municipal-level planning and ensure coherence and consistency across national, regional, and local plans.<sup>44</sup>

**The National Waste Management Plans (NWMPs) are often comprehensive in scope but isolated from local realities.** Although, in principal, subsidiary planning is good practice, the quality and coherence of waste management plans vary widely, which can translate into NWMPs having varying quality and coherence, leading to uneven results on the ground. All four countries have National Waste Management Plans, usually spanning four years. Plans translate strategic priorities into actions, specify sector fund allocation to regions, outline treatment technology preferences, and identify preferred locations for final disposal. Regional plans exist only to a limited degree. Some municipalities develop their own plans, in particular bigger cities and affluent urban metropolitan areas. However, smaller, poorer, and rural municipalities typically have no waste management plans.<sup>45</sup>

## REGIONAL ARRANGEMENTS

**Integrated systems should rely on robust regional arrangements.** Regional sanitary landfills and treatment facilities are the backbone of integrated, environmentally sound, and financially viable solid waste management. To address the institutional challenge of developing integrated regional-level systems, the legal framework should provide for strong, functioning inter-municipal entities, such as associations, to establish or contract operators; or, as in Croatia, convey solid waste management legal obligations to regional authorities (counties). In Bulgaria, regional associations were intended to lead regional waste management planning and administration, but the regional associations were created at the national level, and the associations are weak, barely operational, and face strong opposition from local authorities. In Poland, regional self-governments have substantial discretion, including legislative power, but in practice this has led to overlap of responsibilities leaving municipalities and regional associations reluctant to act to fulfil their roles. Complexity is multiplied by numerous other stakeholders, including the private sector, and NGOs.<sup>46</sup>

## REGULATION AND ENFORCEMENT

**National-level enforcement is critical for sector compliance.** Municipalities acting alone cannot enforce required environmental standards. Typically, strong, independent regional and national institutions should be responsible for enforcement. Regulatory regimes in all four countries appear fully in line with EU requirements. Environment ministries set sectoral standards, establish a licensing system, and issue permits; although the EC reports that environmental authorization procedures generally proceed slowly in the four countries. De-concentrated, sometimes independent regional directorates or environmental inspectorates support MoEs in supervision and enforcement; they assess applications and verify compliance through field visits to disposal and treatment facilities.<sup>47</sup>

**Strong enforcement is key to successful MSWM compliance.** Bulgaria, Croatia, Poland, and Romania have good regulatory regimes, but enforcement capacity remains too low. Typically, the problem lies with regional directorates, vital to enforce sector regulations, but still lacking sufficient staff and skills to cope with the overwhelming volume of supervision activities, much less to forcefully implement sanctions for non-compliance. In Bulgaria, 16 regional environmental inspectorates supervise 55 waste management regions and report to the Department of Waste Management at the Ministry of Environment, which employs only 17 people to supervise compliance with the EU framework directive on landfills. By end-July 2009, Bulgaria was facing an insurmountable task: to enforce closure of more than 200 non-compliant landfills, to ensure that waste dumped at those sites would be transported to one of the 27 functioning regional sanitary landfills, many of which are

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<sup>44</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>45</sup> Ibid

<sup>46</sup> Ibid

<sup>47</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

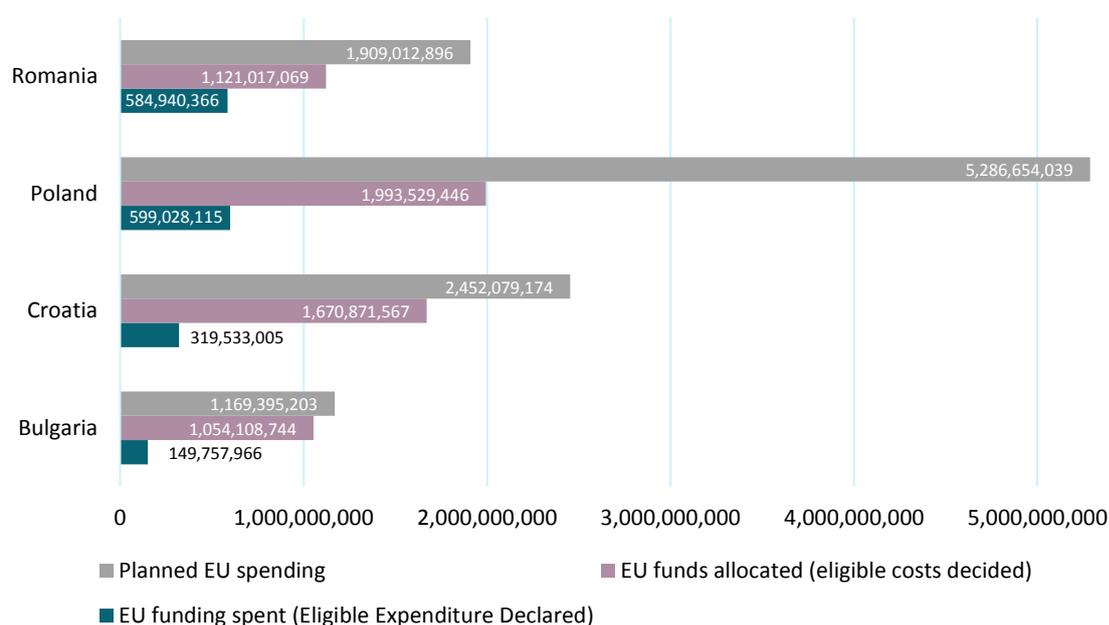
distant and unprepared to accept waste from other locations, and to accomplish all of this with very limited enforcement capacity.<sup>48</sup>

**Institutional fragmentation undermines enforcement.** Regional enforcement structures are hampered by institutional fragmentation of responsibilities, in addition to suffering from limited capacity. In Romania, the Ministry of Environment through regional offices, and the Ministry of Administration and Interior through the National Regulatory Authority for Community Services and Public Utilities, share county supervision responsibilities; this leads to gaps, overlaps, unclear responsibilities, and weakened enforcement.<sup>49</sup>

## FINANCIAL SUSTAINABILITY ENABLING ENVIRONMENT

Romania, Croatia, Poland and Bulgaria have been allocated significant funding for capital investments from the EU; yet this funding is finite and must not be over relied upon. Between 2007-2013, EUR 2.45 billion of EU grants were allocated for Waste Management investments in Bulgaria, Poland, Croatia and Romania, while another EUR 10.82 billion planned for 2014-2021, of which only EUR 5.8 million were allocated towards eligible costs and EUR 1.65 billion spent (Figure 7). Most current investments are funded by the EU through ERDF or cohesion funds, or various donor funds, but funding usually covers only the first phase of investments for maybe five years. However, when international grant funding becomes scarce, large tariff increases or unsustainable borrowing will be inevitable in the countries of study, since it is unlikely that donors would provide more grant funding for landfill capacity expansion after financing the initial upgrade from a dump site to a compliant landfill. This overreliance on EU funding is indicative of some of the constraints in the financing and cost-recovery enabling environment in Romania, Croatia, Poland, and Bulgaria.<sup>50</sup>

Figure 7. 2014-2021 ERDF/CF investments in waste treatment<sup>51</sup>



<sup>48</sup> Ibid

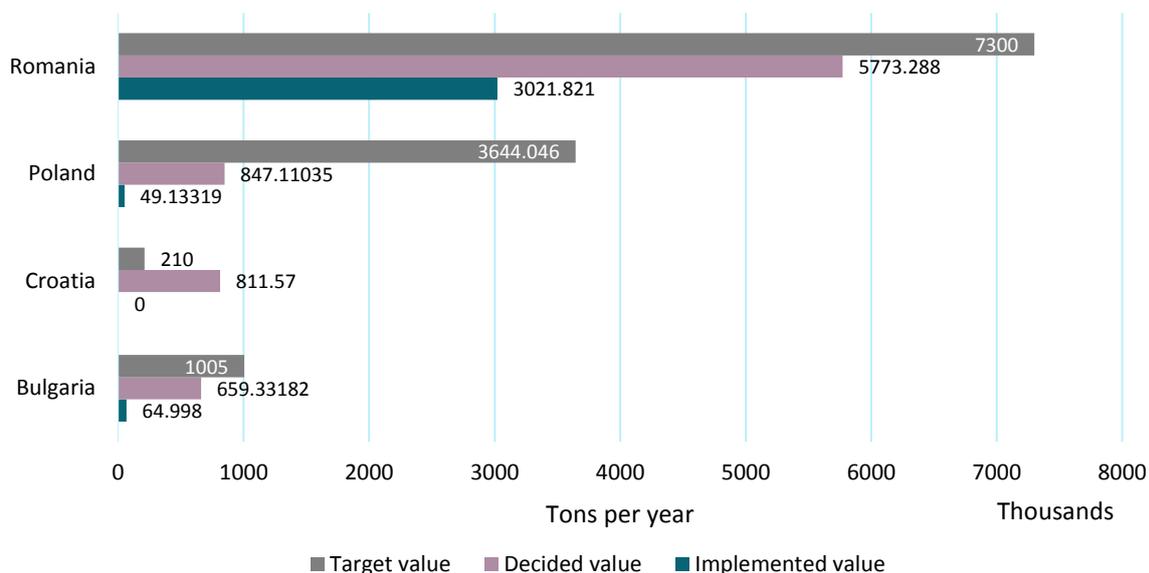
<sup>49</sup> Ibid

<sup>50</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>51</sup> EC, 2022. In profile: EU support to waste management. <https://cohesiondata.ec.europa.eu/stories/s/in-profile-EU-support-to-waste-management/xqec-t5kv>

**A key concern in assessing the financial sustainability enabling environment is ultimately linking financing to results.** One common indicator was defined for the period 2014-2020 to measure the "annual capacity of newly built waste recycling facilities" (including the extension of existing facilities). The chart below shows the overall evolution of the target values, decided values and implemented values in recycling capacity over the 2014-2020 financing period. The expectation is that the bulk of the waste recycling capacity will be built later in the period (in common with most large infrastructure that takes several years to plan, procure, build and commission).

**Figure 8. Linking financing to results: 2014-2021: Improved waste recycling capacity through ERDF/CF<sup>52</sup>**



### SUB-OPTIMAL USE OF EU FUNDING

**One of the most important challenges facing these countries is a short-term focus on capturing grant resources for “hard” investments, which results in sub-optimal use of resources.** While this strategy can maximize resource inflows into the local economy, it also provides incentives for economically sub-optimal investment size. According to EU officials, in Bulgaria almost half the 23 regional landfill systems established to date serve fewer than 100,000 people—much lower than generally seen as economic minimum; and many of the 55 landfills planned will not exceed that average. By constructing more landfills than necessary, Bulgaria avoids difficult inter-municipal negotiations around site selection, but incurs higher than necessary future operating costs. In 5 to 10 years, reinvesting in additional cells without the benefit of structural grants will likely be unaffordable and this approach will need to be revised.<sup>53</sup>

**The focus on EU grant absorption in the countries of study skews incentives towards larger investments with higher expenses for operations and maintenance at the cost of long-term sustainability of these investments.** All investments in solid waste infrastructure with support from EU assistance are prepared based on cost-benefit analyses (CBA), which are mandatory to apply for EU structural grants. The CBA methodology establishes, in net present value, the portion of the system’s total cost comprising both investment and operation that cannot be covered by generated revenues. This uncovered portion is the funding gap of which an agreed percentage, usually 80-85 percent, will be financed by EU grant funds. Assuming that revenues from users cannot be raised above a certain socially acceptable level, an affordability analysis determines the maximum tariff level to be used for the funding gap calculation. This affordability analysis is based on national parameters, which are often very low, such as in the example of Romania where the lowest income decile was used as reference point. Then, the financing percentage is applied to the funding gap, not to exceed the total amount of eligible costs, which in

<sup>52</sup> EC, 2022. In profile: EU support to waste management. <https://cohesiondata.ec.europa.eu/stories/s/In-profile-EU-support-to-waste-management/xqec-t5kv>

<sup>53</sup> Ibid

practice include almost only investment costs. Since funding gaps are usually large, the greater the initial investment, the greater the grant, which means investments are not necessarily prioritized for their long-term economic and environmental sustainability.<sup>54</sup>

## REVENUE GENERATION AND COST-RECOVERY

**Another critical challenge is that Romania, Croatia, Poland and Bulgaria are not sufficiently generating revenue to recover the costs to operate their MSWM systems.** Waste management is a net cost activity which must ultimately be paid for – in one form or another – by residents. It follows that the services provided should be affordable to most users. This is a critical objective which provides a focus for decision making on the scope of the services that can realistically be provided and funded on a sustainable basis. In preparation for making this decision, it is necessary for a municipality to undertake a high level of detailed technical analysis. Countries need to realistically define the full costs of the services, while balancing the opposing constraints of affordability and financial viability. For example, adequately scoping out the sources of finance that can be used to fund investments in waste management services and the annual revenue required to cover the full costs of municipal waste service. Considering that true costs are often hidden among other non-waste related services or are simply unknown, identifying costs fully and transparently is key to organizing services in a cost-efficient manner. Therefore, to define an affordable service entails undertaking a thorough technical and financial feasibility assessment of project options, calculating indicative tariffs based on recovering costs in full, comparing these with tariffs calculated through a separate household incomes and affordability assessment, and identifying a preferred technical option.<sup>55</sup>

**Thus far, none of the four countries have developed plans to gradually increase revenues to cost-recovery levels for their MSWM systems.** For example, in Romania it was agreed that the tariff level used to compute the funding gap for the CBA (i.e., the affordability analysis) would be set as 1.8 percent of the average household income in the lowest income decile, the poorest 10 percent. This was translated into mostly flat tariffs. Existing plans would need to switch to affordability mechanisms that target subsidies to the poor, while maximizing revenues from users who can afford to pay, instead of sharing scarce public funds equally among the whole population. The current use of affordability limits does not permit such differentiation.<sup>56</sup>

**Current revenues for waste collection and landfilling should cover all cost for operation and maintenance, including the cost for landfill closure and re-cultivation.** Yet, while all four countries have applied the polluter-pays principle, most tariffs are too low to reach cost-recovery levels. Typically, tariffs are set at the local level, but municipal councils resist increasing fees due to low willingness to pay in the population. Potential for cost reduction have not been fully explored, and potential efficiency gains from private sector participation are not yet fully leveraged. In Poland, the unresolved issue of waste ownership under prevailing legislation diminishes sector financial sustainability because private operators pocket earnings from waste collection in profitable areas, while public municipal companies mostly serve the less profitable routes. Private operators, where they exist, usually collect sufficient revenues to cover current operations, but rarely enough for investment because most PPP contracts included an upfront subsidy to cover initial investments, but no reserve mechanisms for future investments. For landfills, the up-front subsidy from IPA or other pre-accession funds typically covered the first cell or two, but after these cells are full, the future of the landfill is unknown. Thus, operating costs appear to be covered but in many cases they are not.<sup>57</sup>

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<sup>54</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>55</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

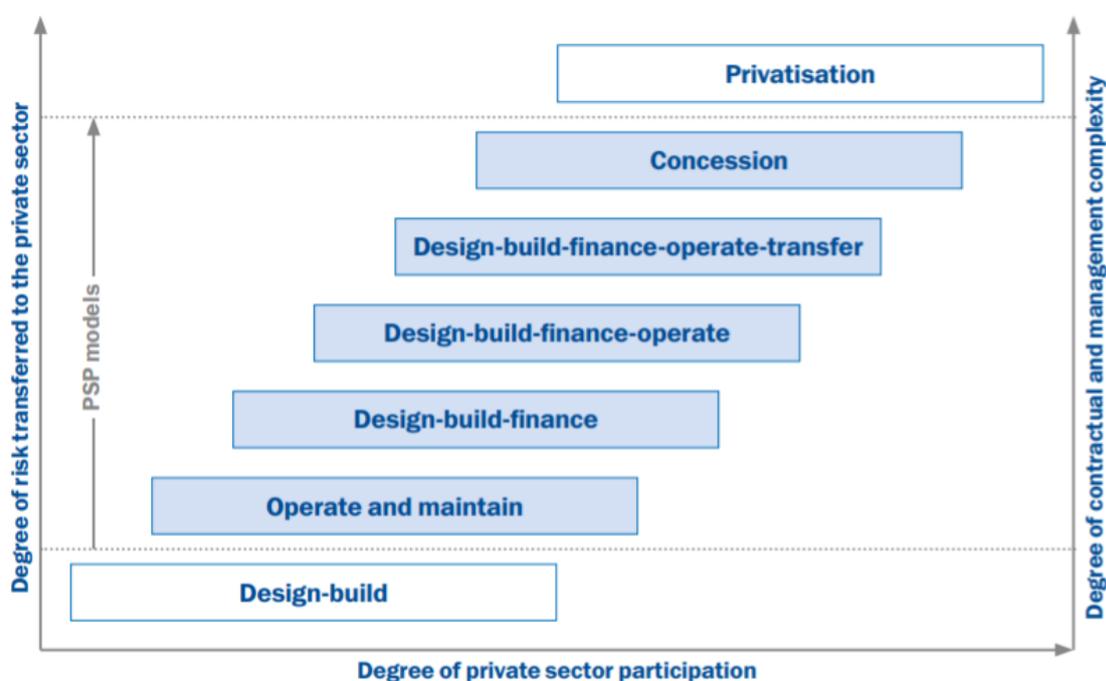
<sup>56</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>57</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

## PRIVATE SECTOR INVOLVEMENT

**EU involvement has paradoxically dampened the initial growth in the use of private sector participation.** There is a fundamental problem in trying to mix Private-Public Partnerships, which help attract private sector investment for infrastructure, and can help bring down costs, with the use of EU funds. EU grants usually finance initial investments and have to be fully disbursed within a short time frame, while PPP model payment cover services delivered in the operation phase. The challenge thus becomes to combine payment for inputs (investment) with payment for services.<sup>58</sup> Therefore, the municipalities in the countries of study would benefit from support on how to tackle this mix to best create an enabling environment for private sector participation that helps achieve to achieve financial sustainability for MSWM. This includes fostering the appropriate policy, legal and institutional framework as well as establishing a competitive environment.<sup>59</sup> Please see Figure 7 for some common models for private sector participation. In Greece, several PPP waste management projects have been initiated, whereby bidders compete mostly on the gate fee (the charge applied for waste management at a facility), adherence to environmental standards, and on minimizing the burden to citizens. The private partner bears the burden of obtaining the environmental permit for the proposed solution before signing the contract and arranging financing. In the event, the private sector partner fails in this respect, the state would not be liable for any compensation and the runner-up would take the place of the preferred bidder. The system is based on a Design-Build-Finance-Operate-Maintain model and integrates the region's existing waste management system, which is compatible with the EU's environmental strategy. Payments are performance-based where the private sector is assessed against the agreed requirements for delivering services before disbursement.<sup>60</sup>

*Figure 9. Some common models for private sector participation in sustainable waste management*



Source: EBRD, 2018.

**In general, systems that generate revenues attract financing.** PPPs are being considered by some countries in an opportunistic manner, depending on the local market, as a way to attract financing. However, governments

<sup>58</sup> Ibid

<sup>59</sup> European Bank for Reconstruction and Development. From waste to resources: mobilizing the private sector to deliver sustainable waste management: Policy paper on infrastructure. 2018.

<sup>60</sup> World Bank. Blog: Waste not, want not: PPPs lead to better waste management in Greece. 2017.

must work on reducing investment risks in their solid waste sector. A key starting point for this would be to make very basic technical improvements such as collecting accurate information to increase knowledge and predictability of waste flows. Further reforms would be needed to aim at reducing financial and regulatory risks.<sup>61</sup>

**Solid waste management services generate revenues and have broad potential for private sector participation (PSP) at each step: collection, transfer, recycling, treatment, and disposal.** Across the four countries, private operators are contracted for some or all of these services. Some service provision is strictly public, strictly private, or a mixture. All countries have forms of private recycling markets; Bulgaria has the most active recycling industry with six private operators. Many cities and bigger municipalities contract out collection and transport services to the private sector; but many municipalities have public utility companies that collect and transfer waste. Public utilities operate most landfills, despite private sector interest where profits are possible. Incineration plants and other waste-to-energy facilities are almost exclusively PSP-run, because the technology requires specific expertise and significant up-front investment.<sup>62</sup>

**Procurement contracts should be designed to shape service delivery performance.** Service contracts specify performance standards, risk allocation, and revenue-sharing agreements for public or private contracted operators. Service contract specifications determine whether private operators are interested, and whether service delivery levels satisfy users. Successful service contracts require high-level knowledge and expertise at the contracting authority, which highlights the importance of strong capacity at the service administration level. Policymakers typically have ambitious plans to leverage private finance and expertise but tend to overestimate private sector interest. If risk perception is high and revenue potential is low, private operators cannot be mobilized.<sup>63</sup>

#### Extended Producer Responsibility (EPR) Schemes

**It is becoming increasingly questioned why the municipality, and the public, should be expected to pay all the costs when much MSW comprises lots of single-use packaging and other end-of-life products;** extended producer responsibility (EPR) is increasingly used in developing as well as developed countries to pass some or all costs back to the producer and supply chain.<sup>64</sup> EPR can also help address affordability by diversifying revenue sources, which can involve producers working directly with informal sector recyclers as well as supporting local residual waste collections.

## DATA AND MONITORING & EVALUATION FRAMEWORK

**The national government level sets the framework for collecting and managing waste management monitoring data and may also coordinate data collection at the national level.** Meanwhile, data collection is typically undertaken at the local level with the regional level typically playing a key role in coordinating data collection and managing waste management data.<sup>65</sup>

**In Romania, Croatia, Poland and Bulgaria there is almost no reliable data are available at the national level, which undermines enforcement and informed governance decision-making.** Limited data collection and monitoring & evaluation of that data from which to adjust MSWM practice in an informed manner hamper enforcement. Across all countries, operators are obligated to report to the municipal or regional contracting authority, which transmits data to the Ministry of Environment (Bulgaria and Romania), or an Environmental Protection Agency (Croatia). Often, national statistical institutes store and process the data. However, MSWM efforts in all countries suffer from lack of reliable data, particularly Poland. Reporting obligations, data collection,

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<sup>61</sup> Ibid

<sup>62</sup> Ibid

<sup>63</sup> Ibid

<sup>64</sup> Whiteman, A.; Webster, M.; Wilson, D. The Night Development Bands: A conceptual framework and global theory for waste and development. 2021.

<sup>65</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

and data processing are neglected. Access to data remains poor, and public debates are not based on reliable information. For example, most landfills operate without weigh scales and therefore cannot report accurately on waste streams.<sup>66</sup>

**In particular, no reliable data are available on costs and revenues, a basic requirement to organize a national transition to EU compliance.** Enforcement of environmental norms, monitoring, and data collection is limited, in part because it was never recognized that a municipal solid waste management regulator was needed, unlike other services such as water supply, sewage, or electricity. Typically, environment agencies do not collect waste data, but if they do, no clear standards exist to unify collected data. On the revenue side, fees for waste collection can be part of local taxation, such as in Bulgaria; or fees can be collected directly by a private operator, as in Romania and Poland; or sometimes fees are included in general local taxes. When municipalities provide waste services directly, costs are often untraceable within municipal accounts that lack cost center accounting and include un-reconciled arrears. Private operators, in turn, rarely disclose revenues. Available cost and revenue estimates vary widely across the countries of study. According to a study that conducted site visits, tipping fees, fees paid by anyone who disposes of waste in a landfill, range from a few Euros per ton, e.g., in Gorna Malitsa (Bulgaria), a town of 15,000 on the periphery of Sofia, to about 40 EUR in Zagreb (Croatia).<sup>67</sup>

## PUBLIC PARTICIPATION AND STAKEHOLDER ENGAGEMENT

**Waste management systems are much more successful in contexts in which core stakeholders engage in and support waste policies and services.** Where the public accepts and participates in waste management by abiding to guidelines in handling waste and by paying for services, waste management operations can excel. In contrast, when users or operators are disengaged or even opposed to the waste management system, performance suffers.<sup>68</sup>

**Waste management involves a diverse range of stakeholders and local authorities must take them into account in designing an effective waste management system.** Their perspectives can not only help foster positive behaviors that allow the system to function smoothly, but also help local authorities build a more equitable and just public service that is sustainable in the long-term. By ensuring that the waste management system serves all stakeholders, local authorities may nurture a widespread sense of ‘ownership’ of the waste management system that leads to positive social, environmental, and economic outcomes.<sup>69</sup>

**Public participation in waste management is especially important when it comes to proper waste placement, source separation, waste minimization, and siting of infrastructure.** Gaining public buy-in requires on-going and financially backed communications and awareness-raising activities that are sometimes overlooked but essential to successful waste management systems. Public communication programs in waste management are most effective when they focus not only on informing users of basic rules and processes, but also on citizen empowerment, feedback generation, and collective ownership.<sup>70</sup>

**In the countries of study, public feedback and complaint mechanisms are not yet widely institutionalized.** Siting regional sanitary landfills heavily depends on proactive public consultation and information; and reducing landfill waste can only be achieved with public education campaigns to promote the individual and collective benefits of sorting and recycling. However, in the countries of study, the opportunity to reduce political risk through informed public debates during siting and operation of regional landfills is insufficiently recognized. Instead, industry active in the more profitable part of waste recycling appears to be the main driver of public communication campaigns to extol the benefits of sorting and separating waste. Some Environment ministries

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<sup>66</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>67</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>68</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>69</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

<sup>70</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

lead national public communication campaigns, but environmental funds, where they exist and are functional, such as the Environmental Protection and Energy Efficiency Fund (EPEEF) in Croatia, are more prominent in public education.<sup>71</sup>

**Site selection for regional landfills remains biggest obstacle to implementing planned investments.** Public consultations require deeper engagement than has been observed in these four countries. Successful regional implementation of solid waste management requires thorough planning, technically sound EIAs, and extensive public consultation and outreach to counteract NIMBY-related<sup>72</sup> delays. There is enormous potential to improve public involvement in planning and landfill siting required for solid waste management. Typically, local communities are reluctant to accept outside waste, but inter-municipal systems for waste management require a regional landfill site. Although all four countries have established procedures for public engagement, primarily at the regional level, it is unclear how these are applied in practice, and to what degree the public gets actively involved in the landfill siting process.<sup>73</sup>

**Weak landfill site selection procedures result in substantial amounts of public opposition, lost time and financial resources.** For example, local communities have opposed almost all proposed waste management sites, according to reports in the Croatian press. Bulgarian and Romania officials reported substantial public resistance to regionalized investments. Officials from DG Regional Policy reported significant problems during contract tendering due to environmental permit shortcomings, questionable Environmental Impact Assessment quality, and securing legal title to land. Local government developers report frustration with the “chicken and egg” dilemma: deciding how far to proceed with site selection that might be derailed—by strong opposition from local citizens, or by the instability of local politics and a constantly changing cast of public officials engaged in decision making. Often, landfill site selection is perceived to require first a “political” solution, and second, a technically sound iterative siting process. However, political cycles are short compared to solid waste investment planning cycles, so developing strong support among key local stakeholders should be integral to each step of the iterative siting process, to reduce the risk of solid waste investment planning delays.<sup>74</sup>

**Carefully scheduled, inclusive, transparent and often time intensive consultations are required that inform all stakeholders of benefits and risks and involve the public in planning procedures and decision-making are needed.** In Poland and Croatia, initiatives have started to develop waste-to-energy schemes based on incineration, yet these are largely opposed by the public meaning broader and more intensive consultations are needed to meaningfully communicate the benefits of such an intervention. Site selection for waste infrastructure is a key but often contentious element of the planning process. Waste infrastructure is often unpopular with local communities due to concerns over potential pollution, odor, noise and disruption. This commonly causes significant challenges and delays in developing appropriate waste infrastructure in appropriate places. Waste-to-energy schemes, including incineration technologies are widely used in other EU member states and high standards of environmental control have developed a proven technology. However, there is strong public opposition in the countries of study to these solutions as perceptions are often based on past experience with poorly performing incinerators and anxiety about negative environmental impacts, particularly emissions to air. Proactive and sustained community engagement is essential to ensure that the

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<sup>71</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>72</sup> The term “NIMBY” is used prolifically in both academic literature and general public discourse to describe a locally based action group protesting against a proposed development. Source: McClymont, K. & O'Hare. P. (2008) 'We're not NIMBYS! Contrasting local protest groups with idealised conceptions of sustainable communities', *Local Environment*, 13(4), 1-15.

<sup>73</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>74</sup> Ibid

need for waste infrastructure is clearly demonstrated and understood, and that waste infrastructure is developed in ways that mitigate negative impacts as far as possible and provide positive community benefits.<sup>75</sup>

**Finally, another key area for public engagement is around changing the behavior of waste generators, which takes time.** Therefore, it is important that planning processes provide the basis for this long-term engagement with the public in this regard. Planning is an opportunity to positively engage with and gain the support of other stakeholders, including communities and the informal and private sectors.

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<sup>75</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

# **COUNTRY PROFILES**

# POLAND

## Box 4. Highlights in MSWM - Poland

### HIGHLIGHTS

In recent years, Poland has made stable investments in the waste management sector, which supports the country to better meet its recycling targets. Poland is especially putting an emphasis on waste-to-energy in collaboration with the private sector.

Performance:

- Municipal waste treatment and disposal infrastructure progressed in the last year, especially through private funding, European funds and interjurisdictional cooperation
- During the last year, a trend for “waste-to-energy” emerged, helping in complying with recycling targets
- Despite the progress, illegal dumping is still an issue at the scale of the country, coupled with illegal import of waste from other countries

Legal & Institutional Environment

- Administrative Territorial Units (ATUs) have a central responsibility in complying with the standards established at the central level, but a large part of the funding responsibility stays with the regional authorities (Marshall’s offices)

Financial & Economic Incentives

- Important investments were undertaken, both with the help of national funding and with the help of private investments and European funds
- There is a tendency for unsegregated waste to have a higher cost at the level of the consumer, thus providing incentives for segregated collection at the source

Data & Reporting

- Statistical capacity needs to be consolidated for providing a clear picture, and more efforts should be done for unaccounted solid waste

Public Engagement

- There are efforts undertaken by the authorities for rising awareness at the level of the population with regards to selective collection

*Source: Authors, based on data collected analyzed within the project*

## MSWM CONTEXT IN POLAND

Poland is a central European country, measuring approximately 312,685 km<sup>2</sup>. The country is formally split into a three-layer administrative system, formed by the central government, 16 voivodships (*województwa*) and 380 counties (*powiat*). From the perspective of decentralization, as well as for funding purposes, Poland is structured into 7 macroregions (NUTS 1 level), 17 regions (NUTS 2 level) homologue to voivodships, except for Mazovian voivodship, split in two NUTS 2 regions, and 37 subregions (NUTS 3 level). The country has 2477 municipalities (*gminy*) acting as self-governed communities.

Over the last years, Poland has undertaken significant efforts to aligning its national policy in the field of solid waste management with European standards, namely on **(i) endorsing and including European and international best practices at the national level, (ii) increase reuse, including treatment of solid waste for energy generation and (iii) tackling systemic issues**, such as simplifying administrative procedures and dealing with illegal landfills.

The main changes of Poland's SWM system during the last years emphasize its transformational approach, especially in regeneration strategies, while still striving for reforms in segregated collection and treatment of solid waste. While the SWM situation has improved, Poland still needs to undertake a series of measures in order to improve its performance against European targets in the field of solid waste management and curb phenomena such as illegal landfilling.

Table 3. Poland: basic solid waste indicators

PRODUCTION	COLLECTION AND TREATMENT
Municipal Waste Generated: 2862 thousand tons (2018)	Settlements served by municipal waste collection systems: 4723
Share of population served by municipal waste collection: 99.8% (2019)	Delivered for recycling municipal waste: 1813 tons (2018)
Municipal waste generated per capita: 407 kg/capita vs. 502 kg/capita (EU-27)	Land Consumption Rate: 1% (2012-2018)

### MSWM SECTOR OVERVIEW

Solid Waste Management System

- The **solid waste management system** is regulated at the central level and implemented at the local level (voivodship and municipal), with a two-tier central and voivodship-level verification system, compliant to the standards in the matter at the level of the European Union;
- The **Strategic Framework of the country** in the field of municipal solid waste management is provided through the National Waste Management Plan 2022, adopted in 2016. Poland has a flexible solid waste legislation, based mainly on the revised Act on the waste of 2012.

## HISTORICAL OVERVIEW

Until the fall of the communist regime, the system of environmental protection was scarcely developed in Poland, similar to other countries from the communist bloc. The "ultimate storage facilities", mainly landfills and dumps, functioned under the oversight of the municipal authorities, and municipal solid waste was not classified separately from industrial waste. As early as the 1980s, Poland introduced several provisions regarding

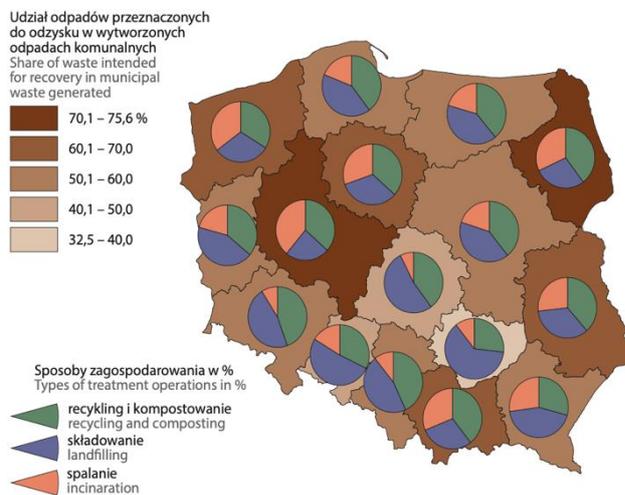
the protection of the environment, adjacent to the 1980 Environmental Protection Act, as well as possible sanctions in the case of illegal landfilling, pertaining to the penal legislation<sup>76</sup>.

**Poland started to align with European standards earlier than other countries in the former Communist bloc,** even before the fall of the Communist regime, when several standards and best practices regarding waste management were endorsed in the national legislation. This endeavor continued after Poland's formal decision to access the European Union, in 1991, and after the start of the formal negotiation process in 1993. Most of the early changes were related to the field of environment protection, and gradually transformed into measures addressing solid waste management, mostly for aligning the national landscape to the European standards in the matter. The Act on Wastes from 1997 provided a key alignment with the European legislative provisions, enshrining a new classification based on the European Waste Catalogue and European Waste Classification. In a

**Figure 10. Municipal waste generated by treatment operation in 2020**

**Odpady komunalne wytworzone według sposobów zagospodarowania w 2020 r.**

Municipal waste generated by treatment operation in 2020



**Source: Atlas of Environment, Statistics Poland, Warsaw, 2021**

similar manner, the legislation in the field of environment protection evolved, and the Act of 1996 on tidiness in municipalities provided clear criterion for waste collection, deposit, and treatment, but the country needed to face the situation of a large number of illegal dumps. In accordance with the practice at the level of the European Union, the 2001 Act on Waste introduced an obligation for municipalities to develop waste management plans, updated at least every four years.

**A large part of the transformational development regarding the municipal solid waste management processes stemmed from the adjustment of the national legislation to the European legislation, as part of Poland's accession to the European Union, in 2004.** From the point of view of waste management, the main changes took place with the implementation of the Directives 1999/31/EC<sup>77</sup> (Landfill Directive) and 2008/98/EC<sup>78</sup> (Waste Framework Directive), which translated into an obligation on the

community to organize the waste collection plans, with a possibility of extending it at the municipal level.<sup>79</sup>

<sup>76</sup> Witold, W. Evolution of environmental impact assessment in Poland: problems and prospects, Impact Assessment and Project Appraisal. 2004.

<sup>77</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31999L0031>

<sup>78</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance), available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>

<sup>79</sup> Przydatek, G. Assessment of changes in the municipal waste accumulation in Poland. Environ Sci Pollut Res 27, 25766–25773 (2020). <https://doi.org/10.1007/s11356-020-08943-6>

## SYSTEMIC VIEW OF THE MSWM SYSTEM

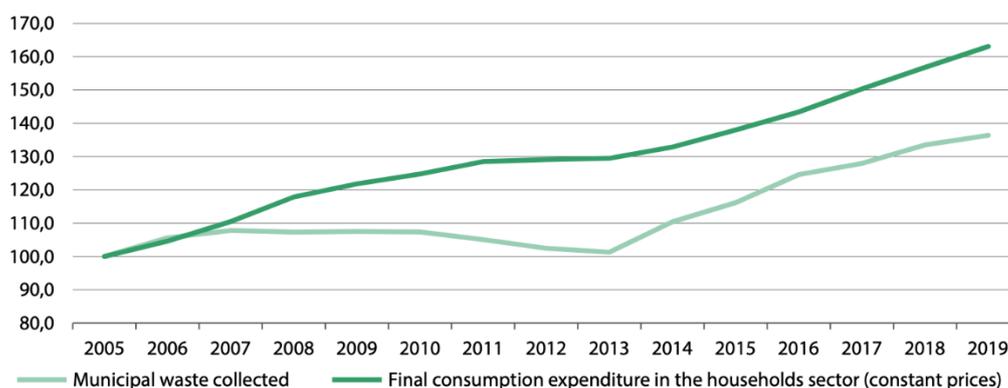
### STRUCTURE OF THE SOLID WASTE MANAGEMENT SYSTEM

**At the local level, the waste management system is conducted by local public authorities, at municipal and county-level.** Municipal waste collection and transport is operated in Poland by private companies contracted by authorities, institutions, and individuals. The technicalities related to waste collection (such as frequency of collection) are established by law and by contractual clauses with clients.

**From the point of view of the taxation, there is a landfill fee established by decision of the national government,** more precisely through the Regulation of the Council of Ministers of 22<sup>nd</sup> December 2017 on rates of environmental fees, and they depend on the type of landfilled waste. Based on the implementation of the principle of local autonomy at the level of Poland, the municipalities are autonomous from the point of view of the decisional process, but they cannot impose taxes on their own. The taxes decided at the central level for municipal solid waste management are hence implemented at the level of the municipal councils, based on the number of inhabitants of the municipality, as well as on the volume of waste produced. Based on the existing offers on the market, there are significant price differences between the different municipalities, as well as at regional level, varying from approximately 0.65 EUR (3 polish zloty)/household/person/monthly), to approximately 4.35 EUR for the same conditions.<sup>80</sup> This difference is established by the private operators contracted for collecting the municipal solid waste and is related to a certain extent to the existing competition at the regional level.

**As the contracts are concluded directly by the individuals, the tariffs are diverse and tend to be higher in the case of wasted collected non-segregated.** This type of taxation can be regarded as a mean of incentivizing the consumers for disposing wastes in a segregated manner, in opposition to other countries where the taxation is established based on the weight and volume of the waste. It may also occur that some households do not subscribe at all for the waste disposal service. The taxation of the municipal waste management includes all the stages adjacent to the process of waste disposal, including collection, transport, recovery, and disposal of municipal waste. The cost also takes into account the need for creation and maintenance of collection points for municipal waste and for the operational costs of these units.

**Figure 11. Municipal Waste Collected and Final Consumption Expenditure in Households (2005=100)**



a Final consumption expenditure in the households sector for 2019 – preliminary data.

Source: Green economy indicators in Poland 2020, Statistics Poland, Statistical Office in Białystok, Warszawa, Białystok 2020 available at <https://stat.gov.pl/en/topics/environment-energy/environment/green-economy-indicators-in-poland-2020,3,4.html>.

<sup>80</sup> BioEnergy Consultant: Powering a Greener Future. Municipal Waste Management in Poland. 2020.

The collection system is regulated by the law, which enshrines modalities similar to the existing regulations at the European level. The standard waste containers are color-coded and assigned to a specific waste group.

**Since 2019, new waste segregation and management rules have been introduced. The aim of these measures is to improve the national waste collection rate and management, to increase compliance with EU regulations, and to provide harmonization for waste segregation at the national level.** The waste segregation is assigned to the resident-level and is separated in five fractions: blue containers (paper), green containers (glass), yellow containers (metal and plastic), brown (bio-waste) and black containers for mixed waste.

**This new system breaks with the former three-fraction system and is intended for providing both a better collection level and a better re-use of waste.** At the household level, the waste bag system is used, in which families obtain specific type of waste bags for collecting different types of waste, and promotional materials promoting segregated collection and explaining technical details adjacent to collection, as well as a waste container system, used at neighborhood level (for multiple residential buildings) where the aforementioned containers are provided based on the number of residents.

## INSTITUTIONAL FRAMEWORK FOR MUNICIPAL SOLID WASTE MANAGEMENT

**In Poland, the institutional framework related to municipal waste management is divided between several institutions and at several administrative layers, in a similar manner to other European countries.**

**At the national level, the Ministry of Environment holds responsibility for the national waste strategic framework,** including for formulation and implementation of strategies related to the reduction of waste production, increase of recycling rates and a better rate of recycling and transformation of waste-to-energy. In this regard, in the final years Poland focused on adopting a comprehensive approach towards the transformation of the Municipal Solid Waste management towards circular economy. The technical standards for waste disposal and treatment of municipal solid waste are formulated at the level of the Ministry of Economy, institution responsible with both utilization of solid waste and waste processing. This is because waste is treated, at the national level, as a potential renewable resource and a potential vector for energy production. The Ministry of Health is the competent authority in the field of environmental regulation regarding waste production, as well as with the component related to disposal of waste from the point of view of public health and for reducing health hazards.

**The verification mechanism related to solid waste management is also split between several institutions, charged with the establishment of environmental quality standards and with the establishment of regulations afferent to environmental oversight.** Hence, environmental protection-related issues are verified by a complex system of inspection, with assigned authorities, such as the Chief Environmental Inspector, the National Environment Protection Inspection, and the Environmental Protection Department. These authorities are also responsible for the supervision of activities related to environment protection, but also with performing the environmental impact assessment process.

**Regional government plays an important role in solid waste management in Poland.** The Marshal Offices, self-government administrations adjacent to the voivods of the 16 voivodships oversee the preparation of the waste management plans at the regional level and provide permits for operations in the field of waste treatment. This power can also be applied at the level of the powiats. The regional governments equally play an important role in the field of inter-jurisdictional cooperation.

**The National Waste Management Plan 2022, adopted in 2016, provides the main strategic framework for municipal solid waste management.** This plan offers a common framework for the creation of voivodship level waste management plans, for the 16 voivodships of the country. The voivodship level waste management plans create a more comprehensive and cohesive approach, with waste management regions and a list of municipal waste treatment facilities and contingency alternatives in the event of the malfunctioning of the installations in these areas. Since 2013, the municipal public authorities are obliged to submit reports on an annual basis with regard to the implementation of tasks in the field of municipal waste management, breaking up with the system of bi-annual reporting that was previously used as a part of communal level plans.<sup>81</sup> Most of the assumptions formulated within the plan were sustained in this period between 2016, when the document was adopted by the Government, and 2021. The National Waste Management Plan identified, through a stakeholder analysis and a public consultation process, a vast array of issues linked to waste management, thus proving that the current situation is known and acknowledged at the national level. These issues, reported at the level of the year 2016, when the National Waste Management Plan was produced, are<sup>82</sup>:

1. *too low share of waste selectively collected at source, which translates into too low progress in waste recycling;*
2. *improper quality of collected waste resulting from the absence of uniform national standards in terms of selective collection of municipal waste;*
3. *possibility of flat-rate settlement of the company collecting municipal waste from inhabitants, which makes it difficult for municipalities to control a stream of municipal waste;*
4. *limited supervision of municipalities of the proper handling of municipal waste caused by the choice of a combined tendering procedure for waste collection and management;*
5. *too large share of landfilled municipal waste in relation to generated waste;*
6. *too high share of mixed municipal waste in a stream of collected municipal waste, which in turn leads to the excessive weight of residues of mechanical-biological treatment of mixed municipal waste to be landfilled;*
7. *insufficient number of the stationary MWSCC;*
8. *current system of the fees for landfilling waste still is insufficiently motivating for municipalities and other entities participating in the municipal waste management system to manage waste using methods other than landfilling;*
9. *landfilling selectively collected biodegradable waste despite the prohibition of such activity;*
10. *occurrence of cases of landfilling mixed municipal waste without treatment;*
11. *insufficient education on waste management caused by too low involvement of municipalities in the widely understood information and educational measures addressed to various target groups;*
12. *too little awareness and knowledge of the majority of the society on reasonable municipal waste management, inter alia, striving for reducing waste generation at source, selective collection of waste;*
13. *reduced values of the achieved levels of recovery and recycling of raw materials in some regions of the country as a consequence of transferring some raw materials to the production of alternative fuels from waste;*
14. *large number of illegal dumping sites (at the end of 2014, in Poland there were 2,371 illegal dumping sites, i.e. by 15% less than in the previous year);*
15. *no functioning monitoring system for municipal waste management based on the WDB;*
16. *inadequate solutions allowing to monitor and control of handling the fraction of municipal waste sorted out from a stream of mixed municipal waste and not intended for landfilling (fraction 19 12 12);*
17. *no due balancing the functioning of the municipal waste management system in the light of the existing prohibition on landfilling specific fractions of municipal waste and coming from treatment of municipal*

<sup>81</sup> Przydatek, G. Assessment of changes in the municipal waste accumulation in Poland. 2020.

<sup>82</sup> Polish National Waste Management Plan 2022 – Annex to the Resolution No. 88 of the Council of ministers of 1 July 2016.

waste, including waste with the content of total organic carbon above 5% dry weight and with the heat of combustion of more than 6 MJ/kg dry weight, since 1 January 2016;

18. no current studies with regard to municipal waste management, including studies on analyzing the morphological composition of waste and the physico-chemical properties of waste, in the individual voivodeships;

19. too low market prices of some secondary raw materials, and therefore obtained resources do not allow to reduce the rate of the fee.

**Also, the plan has an adjacent monitoring and evaluation framework.** The indicators of the strategic framework are established in close coordination with the legal framework, more precisely of the Waste Act, ensuring that the strategic objectives are compliant with the legal provisions. The plan is also providing a chapter linked to the identification of contractors and financing methods for the implementation of the tasks, as well as an introduction in the strategic environmental impact assessment and on the means for evaluation the applied measures in the field of waste prevention.

## LEGISLATIVE FRAMEWORK FOR MSWM

**Currently, the country has a complex legislative landscape in the field of solid waste management.** The main legislative framework treats both transversal and sectoral issues, and was updated and completed on several occasions, in order to adapt it to the existing needs at the national level and changing status quo. The current legislative framework includes special laws, such as the Act on the waste of 2012, updated in 2019 as the Act on the waste and certain other acts and the Act on maintaining cleanliness and order in communes and certain other acts of 2011, amended in 2019, 2020 and 2021, as well as a collection of tertiary legislation intended for responding to sectoral needs, such as regulations and ordinances on waste categories, and criteria and specific conditions for admission of waste to specific categories of landfills.

**The most important legislative acts in the field are the Waste Act and the Act on maintaining cleanliness and order in communes and certain other acts of 2011.** The Waste Act was adopted in 2012 for transposing at the national level the provisions of the Directive 2008/98/EC of the European Parliament and of the Council of waste and a number of other specific directive on the waste management. This document provides a country-level definition of municipal waste: “waste produced in households, excluding end-of-life vehicles, as well as waste containing no hazardous waste from the other waste producers, which, due to its nature or composition, is similar to waste produced in households; non-segregated (mixed) municipal waste remains as non-segregated (mixed) municipal waste even if processed, which did not change its properties significantly”.

**This package benefitted from a complex reformation process in 2020 and subsequently in 2021, through a package dubbed as “Cleanliness Plus”,** that came from the need of transposing in the national legislation several Directives issued by the European Commission which were already out of the transposition period<sup>83</sup>.

**The package was split, at the national level, in two different pieces of legislation,** one containing the most pressing issues, and the second one with several innovative elements. The first part of this package was ratified by the President of Poland in December 2020 and entered into force at the end of 2020.<sup>84</sup> The first of the two legislative acts, amending and completing the aforementioned law, has three main goals:

- The first one concerns the achievement of the statutory municipal recycling levels, and for fostering the re-use of the municipal waste.
- The second one concerns the reduction of operation costs and improvement of municipal waste management systems.
- The third aspect dealt with in this legislative act concerns the facilitation to the access to waste treatment facilities. The second draft law was amended in the Parliament and subsequently

<sup>83</sup> Polish Government. <https://www.senat.gov.pl/aktualnoscilista/art,13383,4-lutego-2021-r-.html>

<sup>84</sup> Polish Government. <https://www.gov.pl/web/climate/president-signed-an-amendment-to-the-act-on-maintaining-cleanliness-and-order-in-municipalities>

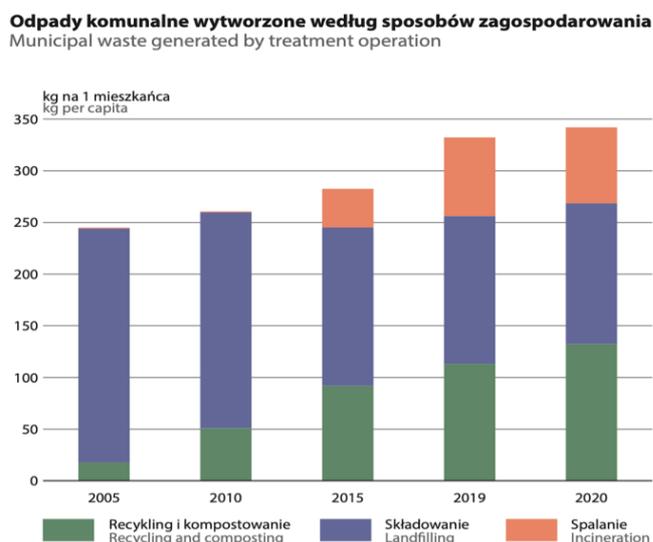
promulgated by the President in August 2021.<sup>85</sup> This legislative package aims, *inter alia*, the primary responsibility of the municipal level (communes) in the preparation for recycling of solid waste coming from segregated collection.

Another important point, from the follow-up legislative package, is constituted by the obligation of housing buildings to recur to segregated collection, as a mean for incentivizing segregated collection at the source in order to reduce the burden of selection at the commune and regional (plant) level.

## PERFORMANCE AGAINST EUROPEAN TARGETS

**The performance against European targets significantly improved, but more efforts are to be done in order to produce a change of paradigm.** It is noted that, in the last years, the Polish authorities are shifting, in line with the revised European package of the Waste Framework Directive<sup>86</sup>, towards a recycling target of at least 55% of the municipal waste by the year 2025 and 65% by the year 2035, while also fostering regulations for stricter conditions ensuring separate collection of waste streams, with the target of collecting the integrality of bio-waste by 2023 and used textiles by 2025. In 2019, 34% of municipal waste was recycled, well below the EU average of 43%.<sup>87</sup>

**Figure 12. Municipal waste generated by treatment operation (time series)**



Source: Atlas of Environment, Statistics Poland, Warsaw, 2021

**The EU Environmental Implementation Review provides important information with regard to the lack of compliance to the 2020 recycling targets, and, more precisely, with the fact that the country missed the respective established targets.** Despite the significant steps towards an improved management of solid waste management, the recycling rate remains low, at 34%, and the biggest share of solid waste was disposed through landfilling. The EU Environmental Implementation also shows that Poland is in need of a better implementation of separate collection system, given that Poland was still in the transposition period of the Waste Framework Directive in the national legislation, except for the Directive 850/2018<sup>88</sup> on landfill of waste, already transposed in the national legislation.

<sup>85</sup> Polish Government. <https://www.sejm.gov.pl/sejm9.nsf/PrzebiegProc.xsp?nr=1275>

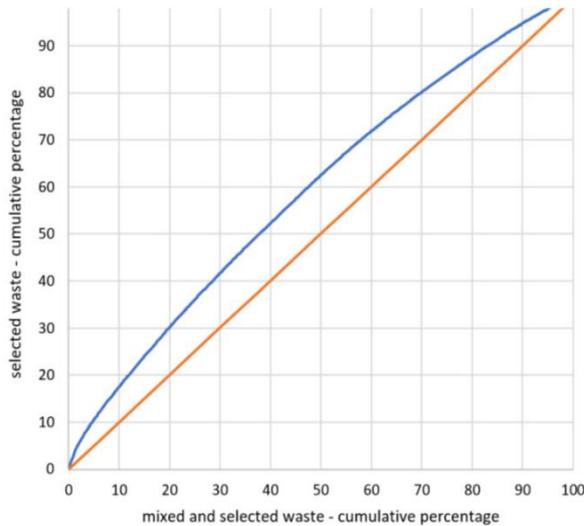
<sup>86</sup> Polish Government.

[https://www.interregeurope.eu/fileadmin/user\\_upload/plp\\_uploads/policy\\_briefs/Policy\\_brief\\_on\\_waste\\_management.pdf](https://www.interregeurope.eu/fileadmin/user_upload/plp_uploads/policy_briefs/Policy_brief_on_waste_management.pdf)

<sup>87</sup> Polish Government. <https://www.politico.eu/article/poland-waste-management-environment/>

<sup>88</sup> Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste, available at [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L\\_.2018.150.01.0100.01.ENG&toc=OJ%3AL%3A2018%3A150%3ATOC](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.150.01.0100.01.ENG&toc=OJ%3AL%3A2018%3A150%3ATOC)

**Figure 13. The curve of the spatial concentration of selected waste in comparison with all municipal waste in all counties in Poland**



**Source: Krzywnicka, Pawlewicz and Setra, 2020.**

In 2019, Poland generated 336 kilograms/year/capita<sup>89</sup>, well below the EU-27 average of 502 kg/y/capita. Nevertheless, this value is the highest registered since 2010, and the increasing tendency was steadily increasing before this moment.<sup>90</sup> **There are significant disparities in waste collection at the regional level**, and data at the local level is scarce, incomplete, or, in some cases, missing due to low collection.<sup>91</sup> These data are not updated automatically, and, often, they are updated for reporting to funding authorities.

**The existing processing facilities need refurbishment, for complying with the existing legislation in the field of climate and environmental protection.** At the end of 2019, 286 regular landfills and 1868 wild dumps were existent in Poland, which signals the lack of proportionality between the respect of the regulations in force and the

reality in the field.<sup>92</sup> Some sources are quoting that up to 3 million tons of waste may be unaccounted for, and there is insufficient capacity at the treatment facilities for approximately 1.9 million tons of combustible waste.<sup>93</sup>

**This issue related to illegal or unofficial landfilling is doubled by a grey market in the waste sector, that has been aggravated by the SARS-CoV-2 pandemic<sup>94</sup>.** The import of waste kept a steady pace, and this was acknowledged as an issue that is undermining Poland’s efforts in transitioning from landfilling to other types of treatment of municipal solid waste. Moreover, a large part of the imported waste is posing supplementary problems for Poland, as it is not accounted in the national system for waste management.

**In order to counter this phenomenon, a Waste Database (BDO)<sup>95</sup> was created in Poland in 2018** for keeping track of the waste producers amongst the entrepreneurs and companies and for easing the auditing process. In theory, this process should also help accounting for imported waste which is not tracked and pulling down the targets in the field of recycling.

**The BDO can help curbing the illegal waste practices that used to produce uncontrolled waste treatment**, thus easing the task of public authorities, and leading to an improvement of the recycling rates for fulfilling the 55% target in 2025 and 60% in 2030 and 65% in 2035. As of 2019, Poland had a rate of 31% of separate collection

<sup>89</sup> Eurostat.2021. Municipal waste by waste management operations, Data for 2019, available at [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_wasmun&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wasmun&lang=en)

<sup>90</sup> Jakubus M., Stejskal B., Municipal Solid Waste Management Systems in Poland and the Czech Republic. A comparative study, Environment Protection Engineering, Vol. 46, No.3 2020

<sup>91</sup> Krzywnicka I, Pawlewicz K, Senetra A. The Evaluation of Municipal Waste in Counties in Poland with the Use of the Theory of Phenomena Spatial Concentration. Int J Environ Res Public Health. 2020;17(23):9107. Published 2020 Dec 6. doi:10.3390/ijerph17239107

<sup>92</sup> Poland. <https://waste-management-world.com/a/recycling-poland-is-slowly-catching-up>

<sup>93</sup> Pikoń ,K.;Poranek,N.; Czajkowski, A.; Łaż niewska-Piekarczyk, B. Poland’s Proposal for a Safe Solution of Waste Treatment during the COVID-19 Pandemic and Circular Economy Connection. Appl. Sci. 2021, 11, 3939. <https://doi.org/10.3390/app11093939>

<sup>94</sup> Pikoń ,K.;Poranek,N.; Czajkowski, A.; Łaż niewska-Piekarczyk, B. Poland’s Proposal for a Safe Solution of Waste Treatment during the COVID-19 Pandemic and Circular Economy Connection. Appl. Sci. 2021, 11, 3939. <https://doi.org/10.3390/app11093939>

<sup>95</sup> Poland. <https://bdo.mos.gov.pl/>

rate (in other sources, this rate is quoted at 33.8%), well below the average of the European Union at 46.4%. The recycling rate for packaging was recycled at 58.5% while steel packaging was around 90%, with 53% for aluminum, 62% for glass, and only 30% for wood and textile materials.<sup>96</sup>

**The has situation improved, especially given the waste-to-energy plants developed in Poland with the help of private companies, but also with European funding completed by funding of municipal authorities.** Currently, 10 waste-to-energy plants are functioning in Poland, and some of them like the one in Poznan, was done through Public-Private Partnership (PPP). This type of collaboration can foster innovation in the sector and can produce positive effects in generating waste treatment up to standards and in avoiding and curbing illegal landfilling.

**At the national level, in 2019 in Poland 286 landfills were functioning up to the standards and 1868 illegal landfills.** The current situation, coupled with the fact that the share of landfilling represents half of all the waste collection and treatment in Poland are showing that such initiatives can provide momentum for a change in the way in which solid waste management is managed at the level of Poland, due to innovative methods, stronger regulatory measures, and consistent and coherent funding strategies, both private and from European funds.

## POLAND'S STANDING ON THE 9 DEVELOPMENT BANDS FRAMEWORK

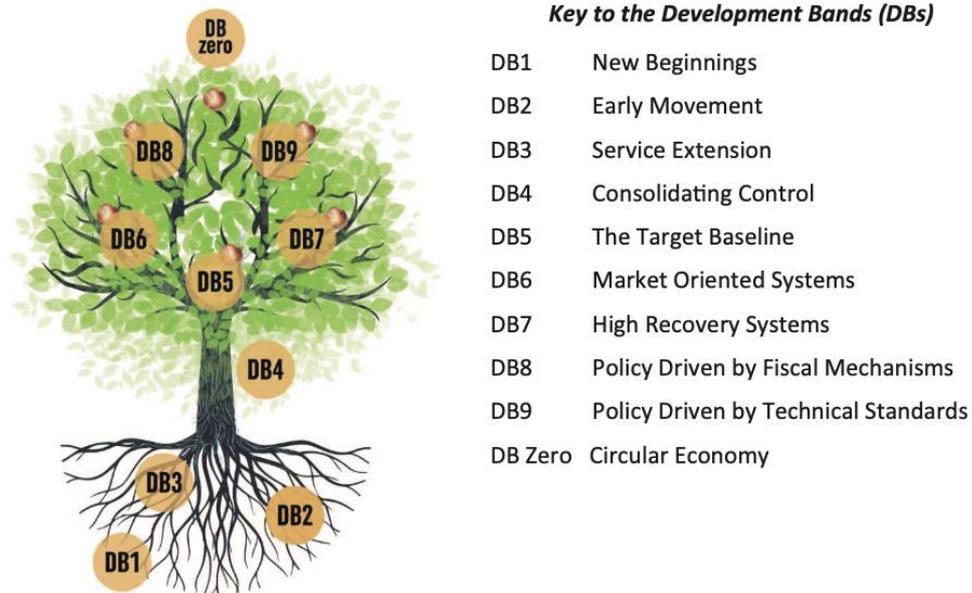
**The 9 Development bands (9DBs) is a new conceptual framework for the development of the new waste and resource management (WaRM) systems at the global level, developed in accordance with the Sustainable Development Goal 11.6.1 and with the objective of achieving circular economy.** The framework was developed by Andrew Whiteman, Mike Webster and David C Wilson<sup>97</sup> for providing a newly conceptualized frame for breaking WaRM systems into one of the 9 bands and to locate cities or countries into one of these bands. The authors of the framework admit that waste and resource management cannot be regarded as even at the level of a country and should therefore regarded as a large correlation between the level of development of these systems for practical purposes. The framework is built on several analytical frameworks that were already used separately for measuring purposes, such as the Integrated Sustainable Waste Management (ISWM) framework, or the Waste Wise Cities Tool (WaCT). The progression of WaRM systems from one development band to the other can be regarded as an expression of the economic and social development.

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<sup>96</sup> Poland. <https://waste-management-world.com/a/recycling-poland-is-slowly-catching-up>

<sup>97</sup> Whiteman, A.; Webster, M.; Wilson, D. The Night Development Bands: A conceptual framework and global theory for waste and development. 2021.

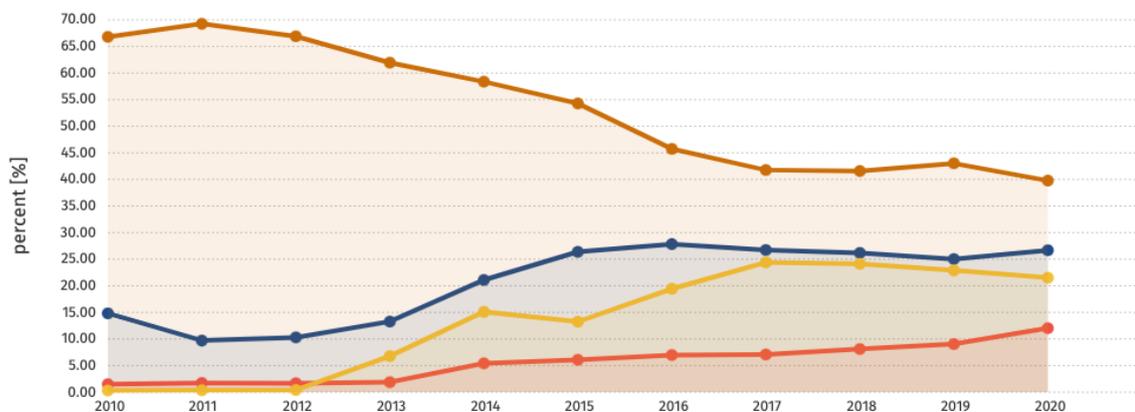
Figure 14. The 9 development bands framework



Source: Andrew Whiteman, et al 2021.

Poland improved its recycling capacity and developed a forward-looking framework oriented towards circular economy. However, an important share of its municipal waste is still landfilled, but the compliance along SDG indicator 11.6.1 remains with a high level of landfilling. Also, the municipal prices at the level of Poland can vary greatly, due to the different practices of the operators, and the treatment plants developed by joint ventures based on inter-jurisdictional cooperation is scarcely developed on a regional basis. Based on this reasoning, Poland could be included on Development Band 6 – Market Oriented Systems, a position where the country (or the city) prioritizes keeping costs relatively low in order to make recovery and disposal compete in the open market, with the risk of having fluctuating prices and a high-dependence rate on landfilling.

Figure 15. Performance of Poland against indicator 11.6.1 - Proportion of municipal waste generated according to the treatment operation to the total municipal generated

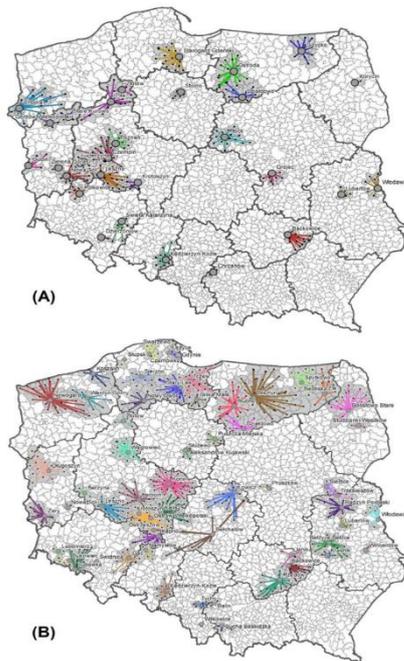


Source: Statistics Poland, National Reporting Platform SDG, available at [https://sdg.gov.pl/en/statistics\\_glob/11-6-1/](https://sdg.gov.pl/en/statistics_glob/11-6-1/)

## INTER-JURISDICTIONAL COOPERATION AS A POSSIBLE SOLUTION FOR IMPROVED MUNICIPAL SOLID WASTE MANAGEMENT

**Interjurisdictional cooperation presents a possible solution to improving municipal solid waste management in Poland.** Inter-jurisdictional cooperation between several municipalities for provision of public services represents a prerogative provided by the Constitution of Poland.<sup>98</sup> These powers to cooperate as inter-municipal associations are explained in more detail in the Communal Self-Government Act of 1990, providing clear grounds for cooperation between neighboring municipalities. Since 2016, a new type of association exists, more precisely interjurisdictional cooperation at the level of metropolitan areas, but, so far, no such association was created in the field of municipal solid waste management.

**Figure 16. Inter-municipal bodies involved in waste management in Poland. Waste collection (A) and Waste**



**Source: Kofsut B., 2016. Inter-municipal cooperation in waste management: The case of Poland, p. 94**

municipal cooperation in the field of solid waste. The regional government is responsible, in Poland, for the delimitation of the waste-management regions, the areas in which the collection, deposit and treatment of solid waste management is performed. These areas are also important in the establishment of project based on European funding and for proposing solutions based on investments. Thus, this provides an important indicator in relation to the fact that creative and sustainable solutions are also provided at the regional level, helping to avoid a duplication of efforts, but also to gather funding and a coherent approach in developing common projects.<sup>100</sup>

Even though this type of cooperation is highly developed in Poland, in a comparable way with the international best practices in this field, it is hard to provide a clear assessment of the results of the inter-jurisdictional cooperation processes, due to the scarcity or lack of data. At this point, according to the existing data, there are 94 inter-municipal bodies in the field of solid waste management, covering over 35% of Poland's municipalities (874 municipalities involved in processes of inter-jurisdictional cooperation in the field of solid waste management).

**These ventures of inter-jurisdictional cooperation are both in the field of collection and transport of municipal waste, and networks for management and building of solid waste management facilities.** An in-depth study<sup>99</sup> based on the existing information shows that the inter-jurisdictional cooperation processes are usually based at the voivodship level, and that this distribution is not equal at the level of the country, but is more developed in the wealthier regions, this is to say in the North and West of Poland, compared to the less developed regions in the South and East. Also, the concentration at the county level, at the level of the voivodships, also shows an important role played by the regional government in fostering inter-jurisdictional

<sup>98</sup> Article 17.2 of the Constitution of Poland - <https://www.sejm.gov.pl/prawo/konst/angielski/kon1.htm>

<sup>99</sup> Kofsut, Bartłomiej. "Inter-Municipal Cooperation in Waste Management: The Case of Poland" *Quaestiones Geographicae*, vol.35, no.2, 2016, pp.91-104. <https://doi.org/10.1515/quageo-2016-0018>

<sup>100</sup> Julia Szulecka & Kacper Szulecki (2019) Between domestic politics and ecological crises: (De)legitimization of Polish environmentalism, *Environmental Politics*, DOI: 10.1080/09644016.2019.1674541

# BULGARIA

## Box 5. Highlights in MSWM - Bulgaria

### HIGHLIGHTS

Bulgaria has made important strides towards environmentally sound MSWM, including the development of a Circular Economy strategy. In 2021, Bulgaria was #2 in the EU for plastics recycling due to the country's extended producer responsibility (EPR) system.

Performance:

- The entire territory of Bulgaria (99.8%) is covered by waste management infrastructures, but additional efforts are required for achieving the long-term recycling targets and the improvement of the overall recycling capacity.
- Landfilling is still an important issue, but the situation is being addressed by the authorities, especially with infrastructure created through European funds
- Illegal dumping and import of waste represent systemic issues that need to be addressed
- Lack of segregated collection and low levels of recycling compared to the landfilled quantity.

Legal & Institutional Environment

- The National Waste Management Plan for the period 2021-2028, and aims both at solving the current issues of the solid waste management system and at aiming towards circular economy, and the synchronization with the 2021-2027 Multiannual Financial Framework of the European Union could provide extensive funding opportunities for

Financial & Economic Incentives

- There are important differences between the estimated costs and the actual operational costs, especially in the case of the state-owned municipal companies
- A lot of recent investments, mainly based on private investments, and, in some cases on European funds, are stemming a trend towards recycling and waste-to-energy treatments.

Data & Reporting

- Granular city-data level is scarce, and further aggregated data is needed for ensuring a proper measurement of the compliance with the targets

Public Engagement

- Public engagement on separate collection is very low

**Source: World Bank, Bulgaria Solid Waste Management Report**

## MSWM CONTEXT IN BULGARIA

The Republic of Bulgaria is a country in southern Europe measuring approximately 110.994 km<sup>2</sup>. Bulgaria is split into 28 provinces (*области – oblasti*), subdivided into 256 self-governed municipalities (*общини – obshtini*). The capital city of Sofia serves at the same time as the center of the Sofia province and the Sofia City Province. At the regional level, Bulgaria is split into 6 NUTS 2 regions, with non-administrative status. At the level of the provinces, the government system is centered around a district governor, a servant appointed by the Council of Ministers who is responsible for representing the interests of the government in the territory.

Since its accession to the European Union in 2007, Bulgaria has undertaken multiple efforts for improving its municipal solid waste practice, but also to reduce landfilling and to propose a future-oriented strategic framework. The most important changes in the field of solid waste management are: **creation of facilities for recycling and reduction of waste (i), curbing illegal landfilling (ii) and extend steps towards circular economy (iii)**. The analysis of the current situation shows that, despite significant issues, Bulgaria has a huge potential in improving municipal solid waste management and undertakes efforts in this regard.

*Table 4. Bulgaria: Basic demographic and spatial indicators*

PRODUCTION	COLLECTION AND TREATMENT
Municipal Waste Generated: 2862 thousand tons (2018)	Settlements served by municipal waste collection systems: 4723
Share of population served by municipal waste collection: 99.8% (2019)	Delivered for recycling municipal waste: 1813 tons (2018)
Municipal waste generated per capita: 407 kg/capita vs. 502 kg/capita (EU-27)	Recycling rate: 34.6% (2019)

### MWSM SECTOR OVERVIEW

#### Solid waste management system

- **The municipal solid waste management system is regulated at the central level and the municipal level plays a central role in implementing the provisions, establishing fees, and performing investments for improvement of capacities.** The strategic framework of the country was recently adopted, the National Waste Management Plan for the period 2021-2028, and aims both at solving the current issues of the solid waste management system and at aiming towards circular economy. The synchronization of the strategic framework with the Multiannual Financial Framework could provide funding opportunities for addressing pressing issues. The institutional framework is split between several entities, centered around the Ministry of Environment and Water, and an important role is played by the Executive Environment Agency.

## HISTORICAL OVERVIEW

Waste management was already an important topic since the Communist Era, when, during the 1970s, it became a policy directed at the state level, through the Spatial Planning Act, which imposed an obligation of introducing waste disposal sites spatial planning documents. This was followed by the design of a comprehensive concept concerning the collection transport and disposal, applied at the level of the entire country. This project proposed the construction of 40-45 regional landfills and more than a dozen incinerators

for larger urban agglomerations, but the project faced the opposition of the local population, especially in relation to the establishment of the landfills.<sup>101</sup>

After the fall of the communist regime, the country traversed a period of uncertainty, in the 1990s, due to facing the reality of the impossibility of sustaining the large-scale plans created in the centralized era. In Bulgaria, this period showed, however, some positive developments, especially linked to the development of a future-oriented regulatory framework, with a strong activity at the level of the 16 Inspectorates for Environment and Waste established at the regional level. It is important to mention that, in the same period, Bulgaria joined the Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal (Basel Convention).

At the same time, this transitional period, coupled with the endorsement of the international documents, marked an improvement of the national legislative framework, with the adoption of the National Policy for Waste Management, in 1996, which aligned the national priorities with the existing standards in the matter, such as the waste management principles, including waste hierarchy and regionalization of the landfill sites. These principles will be used, at a later phase, for aligning with the existing regulations at the level of the European Union. Bulgaria designed a national plan for addressing landfilling in line with the Council Directive 1999/31/EC on Landfilling and for construction of regional landfills. This conducted to the establishment of the 55 regions for establishing regional systems in the field of solid waste management, financing landfills through the ISPA, the Operational Program Environment 2007-2013, which led to the constructions of regional solid waste management centers and with funds from the national budget.

The development of a national policy produced an important number of effects in the national legislation, such as the development of the Law on Limiting the Harmful Impact of Waste on the Environment, in 1997, and the National Waste Management program (1998-2002), which constituted an alignment to the European targets in the field of solid waste management, especially for funding purposes, such as the funding available in the Phare (Pre-accession assistance instruments for the countries of Central and Eastern Europe to join the EU) and the ISPA instrument (EU Instrument for Structural Policies for Pre-Accession).

**Bulgaria joined the European Union in 2007, at the same time with Romania.** Technically, the two countries are part the same fifth accession wave (the 2004 enlargement of the European Union), with the former communist countries from the Baltic States and Central Europe, that joined the block in 2004, but Romania and Bulgaria needed further progress and eventually joined the Union in 2007.

**In the preparation and in the aftermath of its accession, Bulgaria made significant efforts in order to align its national standards with the European system.** Similarly to Romania or Poland, it needed to transpose in its national legislation a European Directive concerning the field of solid waste, the Waste Framework Directive<sup>102</sup> (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives). When the new Waste Management Act was created in 2012, the European Court of Justice had a file against Bulgaria for the lack of transposition of the aforementioned Directive 2009/98/EC. The file was eventually dropped due to the adoption of the act.

Despite innovative solutions based on serious reforms and a gradual process of synchronization with the European standards in the matter, a series of problems persist, specifically with regard to the import of solid waste from other European countries and illegal landfilling<sup>103</sup>.

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<sup>101</sup> World Bank - Tokyo Development Learning Center (TDLC) Program, 2018. Municipal Solid Waste Management – A Roadmap for Reform for Policymakers, <https://openknowledge.worldbank.org/bitstream/handle/10986/30434/130055-WP-P162603-WasteManagement-PUBLIC.pdf?sequence=1&isAllowed=y>

<sup>102</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

<sup>103</sup> National Assembly of the Republic of Bulgaria. <https://www.parliament.bg/en/news/ID/5296>

## SYSTEMIC VIEW OF THE MSWM

### STRUCTURE OF THE SOLID WASTE MANAGEMENT SYSTEM

**The organization of the waste system in Bulgaria is provided for by the law, enshrining that the municipalities are responsible for the solid waste collection.** The system of collection is operated either by companies owned by local public authorities, or, in some cases, by private companies contracted by local public authorities. Waste is collected by either bring points, in a door-to-door system in some sub-municipalities and by request in all municipalities. The collection method depends on the neighborhood, from every to once weekly. The current legislation provides a flexible framework for taxation, where the fees are established based on the quantity of waste collected. Nevertheless, the law also provides exceptions for cases when the quantity cannot be properly measured. In this case, the tax is established per user or on a proportional basis, by decision of the Municipal Council.

**Usually, the contracts are signed between the clients and the existing company on the market, with little competitiveness at the level of municipalities.** There are important price variations between the different contractors, and, at the municipal level, a flat-rate is usually chosen over a “pay-as-you-throw” system. From the point of view of taxation, the tariffs vary from municipality to municipality, depending if the system is owned by the municipality or if it is contracted by a private company. Since 2017, a municipal tax can be imposed by municipalities, based on waste volume, number of persons at household level or composite calculations based on consumption of water and electricity. There is a per ton landfill tax, established on a progressive increasing level since 2013, from 15 leva in 2013 (approximately 7.6 euros) to 95 leva in 2020 (approximately 48.5 euros). As a measure for curbing illegal landfilling, the landfill tax is doubled if the waste is landfilled in landfills that are not compliant with the regulations in force. The correlation shows that the in-house services are underestimated from the point of view of the costs by almost a third, with private companies offering providing closely to the expectation and foresighted values.<sup>104</sup>

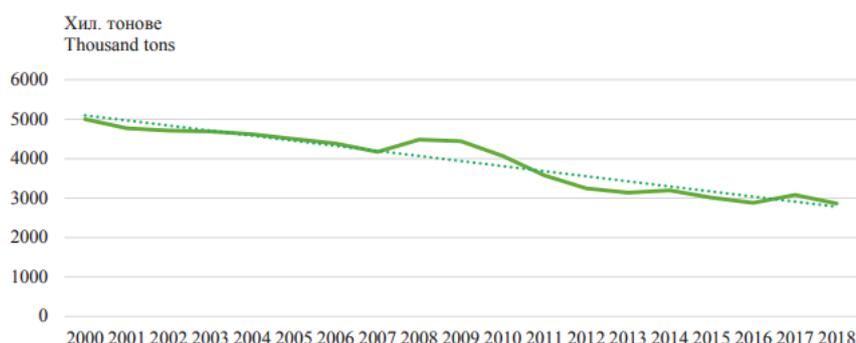
**Figure 17. Estimated and actual costs for in-house and outsourced waste services in Bulgaria**



Source: World Bank, Bulgaria spending review, p. 25 – World Bank staff estimates based on data from questionnaire

<sup>104</sup> World Bank, Bulgaria spending review, 2016, p. 25

Figure 18. Municipal waste generated in Bulgaria 2000-2018 (thousand tons)



Source: National Statistical Institute, Bulgaria, Environment 2019

## INSTITUTIONAL FRAMEWORK FOR MUNICIPAL SOLID WASTE MANAGEMENT

**The institutional context is split between different agencies on subject-matter basis.** In this regard, the Ministry of Environment and Water, the Ministry of Regional Development and the Ministry of Health play an important role in creating a comprehensive institutional framework but also for issuing sectoral legislation. The Ministry of Environment and Water is the leading institution in the field of solid waste management, playing a central role in coordinating the actors and in verification and compliance control.

**The verification mechanism is done through the Executive Environmental Agency, a specialized body at the governmental level, and through a system of Regional Inspectorates for Environment and Water, at the county level.** The verification system is regulated by the Waste Management Act, as stipulated in the Waste Management Act. The 16 Regional Environmental Inspectorates and Regional Municipal Associations ensure the waste management in Bulgaria are mandated to ensure the compliance with the environmental standards of the 55 waste management regions under their supervision. However, the Inspectorates have limited enforcement capacity, a problematic aspect, especially regarding the closing the approximately 200 non-compliant dumps. Regional Associations are formally responsible with provision of service for daily administration of solid waste management, including procurement tasks and issuing contracts, although in practice, their role appears to be ambiguous.

Figure 19. Municipal Waste in Bulgaria

	2016	2017	2018	2019
Total generated municipal wastes <sup>1</sup> - thousand tons	2881	3080	2862	.
Generated municipal waste per capita - kg/year	406	435	407	.
Settlements served by municipal waste collection systems - in numbers	4616	4642	4698	4723
Share of population served by municipal waste collection systems - %	99.7	99.7	99.8	99.8
Landfill sites and installation for treatment of municipal waste - in numbers	125	104	72	69
Municipal waste landfilled - thousand tons	1383	1142	834	.
Delivered for recycling municipal waste <sup>2</sup> - thousand tons	1418	1789	1813	.
Submitted for preliminary treatment <sup>2</sup> - thousand tons	81	149	215	.

<sup>1</sup> Data are resulting from statistical estimate. Calculation does not include the temporary stored municipal waste. Data from administrative sources on recycled waste are included.

<sup>2</sup> Data from administrative source - Executive Environmental Agency.

Source: Statistical Reference Book 2021, National Statistical Institute, Bulgaria, 2021.

**An important role is played by the local government, as the municipalities are responsive for the organization, transport, and treatment of the waste on their territory.** Also, municipalities bear the responsibility of organizing segregated collection systems (3 fractions) and for ensuring the proper installations for segregated collection in all the settlements over 5000 inhabitants and touristic areas. Since 2014, municipalities need to provide proper conditions for deposition of wasted collected in a segregated manner in all municipalities over 10.000 inhabitants. The Regional

Inspectorates for Environment and Water perform controls on the municipalities regarding the compliance to the legislation in force in the field of solid waste management. A large part of these responsibilities is often delegated to private contractors through public procurement tendering procedures.

**Since 2009, a system of inter-jurisdictional cooperation has been established, concerning the building and use of regional landfills or waste treatment plants with regional scope.**<sup>105</sup> In this system, the municipalities using this type of regional facilities are establishing regional association under the legal provisions in the field of inter-municipal cooperation or establish ad-hoc agreements, on a case-by-case reasoning, for cooperation at the regional level on solid waste management. The largest municipality in the region also acts as the owner of the regional facility, without possibility of joint venture.

## STRATEGIC FRAMEWORK FOR MUNICIPAL SOLID WASTE MANAGEMENT

**At the strategic level, Bulgaria recently adopted a New National Waste Management Plan, covering the 2021-2028 period.**<sup>106</sup> The plan was adopted, by Bulgaria, since 2003, in the context of aligning the national strategic framework with the regulations of the European Union. Since then, every 7 years, the National Waste Management Plan is updated, and a tendency of adopting more ambitious goals can be observed with every iteration of the document. The first plan adopted after Bulgaria's accession, in 2008, established the waste management hierarchy, the proximity principle and the use of the producer responsibility and "polluter pays" principles. Recently, the Bulgarian Ministry of Environment and Water published the methodological guidelines related to the implementation of the Municipal Waste Management Plans adjacent to the 2021-2027 National Waste Management Plan.<sup>107</sup>

**The plan is structured under 3 strategic goals, designed for addressing the systemic issues of the municipal solid waste system.** The first goal aims at the reduction of the harmful impact of waste through preventing its transformation and encouraging its reuse. Under this goal stands a National Waste Prevention Program, with a sub program for the prevention of food waste. The second strategic goal is linked to increasing the amount of recycled and recovered waste. Under this strategic goal three programs are proposed, linked to: achieving the objectives for preparation for re-use and for recycling of household waste (1), achieving the goals for recycling and utilization of construction and demolition waste (2) and achieving the goals for recycling and utilization of "widespread waste" (3), the third one with a specific sub-program for managing packing and packing waste. The third strategic goal is linked to reducing the amount of landfilled waste as well as to the prevention of the risk of landfilled municipal waste, with a dedicated program in this regard.

**After the adoption of the strategic framework for 2021-2028, Bulgaria is expected to adopt a framework for circular economy in 2022.** The context of the new National Waste Management Plan coincides with the new Multiannual Financial Framework of the European Union for 2021-2027. The Regional Operational Programmes might provide important funding opportunities with regard to the necessary funding for continuing the reform process, and the Bulgarian authorities stated that they intend to absorb the entirety of the funds intended for municipal solid waste management in the course of the following financing period.

**The financial dimensions of the Plan amount to 1.428 billion BGN (approximately 725 billion euros).** The construction of infrastructure for waste pre-treatment for landfilling and treatment of biodegradable waste investment measures are the main investment measures. Another important financed area is the expansion of the systems for separate waste collection. In this regard, 260 million BGN are foreseen for the completion of regional waste management systems, 40 million BGN for construction of waste recycling through financial instruments, 145 million BGN for construction of new and expansion of existing systems for separate collection

<sup>105</sup> Ivanov, I. (2020). A Regional Aspect Of Municipal Waste Management Disparities: The Case Of Bulgaria. Sofia: Surveying Geology & Mining Ecology Management (SGEM). doi: <http://dx.doi.org/10.5593/sgem2020/5.2/s21.002>

<sup>106</sup> Ministry of Environment and Water Bulgaria. 2021. National Waste Management Plan 2021-2028. [www.moew.government.bg/Static/Media/Fups/Ftiny/25D0%25A3%25D0%259E%25D0%259E%25D0%259F%25D0%259D%25D0%259F%25D0%25A3%25D0%259E-2021-2028%2FNPUO\\_2021-2028.pdf&clen=2884377&chunk=true](http://www.moew.government.bg/Static/Media/Fups/Ftiny/25D0%25A3%25D0%259E%25D0%259E%25D0%259F%25D0%259D%25D0%259F%25D0%25A3%25D0%259E-2021-2028%2FNPUO_2021-2028.pdf&clen=2884377&chunk=true) (available in Bulgarian)

<sup>107</sup> Government of Bulgaria. <https://www.moew.government.bg/bg/otpaduci/bitovi-otpaduci/>

of municipal waste, 100 million BGN for preparation and implementation of projects for closure and reclamation of municipal landfills for household waste, and - 174 million BGN for construction of landfills or additional cells for municipal waste.<sup>108</sup>

**The adoption of the National Waste Management Plan constitutes a firm argument for Bulgaria in responding to the ongoing infringement procedure for non-compliance with landfilling objectives and practices.**<sup>109</sup> The document also contains mechanisms for enabling flexible determination of the regime of waste imports, including imports for incineration on the territory of Bulgaria. The import rate will be calculated in relation with Bulgaria's compliance to the European standards.

**The mechanism introduced in 2009 regulates that the funds for regional investments in the regional systems are allocated by decisions at the central level.** Capital investments are financed by pooled EU and national funds. Co-financing is made either by direct allocation from the national budget, or through funds from the Environmental Protection Enterprise, an entity associated with the Ministry of Environment for collecting fees and co-financing environmental projects.

**Private sector has also become an increasing relevant actor in this field. Significant solid waste management services, particularly waste collection and transport in bigger cities, and recycling, which became a more active market, are among the services provided by the Bulgarian private sector.** While the private sector also manages some landfills, most remain operated by public companies from the municipality hosting the landfill. Municipalities are responsible with monitoring service delivery within their jurisdiction and operators are assumed to report with regularity. A lack of feedback mechanism has been observed, as no mechanism for collecting consumer complaints or receiving feedback is in place, while the two-way consumer communication varies by municipality.

## LEGISLATIVE FRAMEWORK FOR MUNICIPAL SOLID WASTE MANAGEMENT

**The legislative framework in the field of solid waste management is similar with homologue regulations from other European countries and is mainly based on the Waste Framework Directive (2008/98/EC), the Landfill Directive and the Packaging Directive.** The new Waste Management Act, adopted in 2012, is the main legislative regulation in the field of solid waste management at the level of Bulgaria: this text transposed into the national legislation of Bulgaria the Waste Framework Directive of the European Union and established the obligations of municipalities with regard to waste collection, depositing and recycling. In this regard, the Waste management Act establishes a series of conditionalities for improving waste management in Bulgaria for health-related and environmental concerns, as well as for increasing the national level of recycled and recovered material, since the collection level of the country was already at a high level since the centralized communist system.

**The 2012 law preserves some of the regulation already existing in the 2003 Waste Management Act, while providing a series of new regulations in the matter, including a more important role for local authorities and the local public administration.** In this context, the mayors of localities with more than 10,000 inhabitants are obliged to provide sites where households can deposit the individually collected waste, without any charge. Also, the act grants private operators the right to develop landfill sites and to manage them, upon compliance with certain conditions.

**Bulgaria's Waste Management Act proposed a series of targets for 2020, such as waste collection facilities covering at least 6 million people in Bulgaria, all settlements above 5000 residents and all touristic resorts.** It also included objectives related to the collection of paper, plastic, and glass (three fractions), requirements related to the recycling of bio-waste and waste from constructions, and a gradual introduction of systems for

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<sup>108</sup> Statement by the Minister of Environment and Water Asen Lichev in relation to the National Waste Management Plan for the period 2021-2028 adopted by the government, available at <https://www.moew.government.bg/en/minister-lichev-a-national-waste-management-plan-is-not-enough-it-is-necessary-that-the-entire-society-follows-it/#:~:text=This%20is%20the%20National%20Waste,a%20resource%3B%20and%20thirdly%2C%20as>

<sup>109</sup> European Commission, 2021, October infringements package: key decisions, available at [https://ec.europa.eu/commission/presscorner/detail/en/inf\\_21\\_5342](https://ec.europa.eu/commission/presscorner/detail/en/inf_21_5342)

segregated collection, recycling, and re-use of household waste, with a recycling rate of at least 50% of the household waste. The Waste Act has also introduced higher penalties for non-compliance with the regulations in the field of disposal of waste.

Bulgaria also undertook efforts to update its framework on waste management, both because of the alignment with the legislation at the level of the European Union but also for having a future-oriented framework, compliant with the New Waste Management Strategy and enabling in transforming its targets in concrete results.

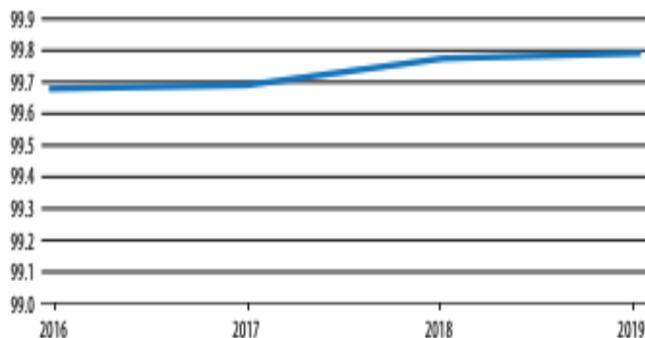
**In this regard, the last amendments to the Waste Management Act, up to this date, were provided through a tertiary act, more precisely through the Ordinance of Packaging and Packaging Waste.** The amendments bring important provisions regarding the increase of the recycling targets for packaging waste and a phase implementation process to the horizon 2030, with a maximum level of 70% of the packaging waste, in accordance with the provisions established at the European level throughout the consolidate Packaging Directive. Also, the new legislative act repeals a provision exonerating from liability certain persons generating, in their activity, packaging waste, thus reinforcing the idea that recycling is taking a whole-of-society approach in the new strategic framework adopted by Bulgaria.

## PERFORMANCE AGAINST EUROPEAN TARGETS

In Bulgaria, the total amount of municipal waste includes both household waste from administrative buildings, but also from businesses and other public utility places. Since 2000, and especially since 2007, there has been a general tendency of decrease in municipal waste in Bulgaria.

**The country has made significant efforts in decreasing the number of landfills, from 125 registered landfills, in 2016, to 69 landfills in 2019.** The introduction of the organized waste collection system in more municipalities also led to an increase of the share of the population covered by these services, from 99.7% in 2016 to 99.8% in 2019.

**Figure 20. Share of population of Bulgaria served by systems for organized waste collection**



Source: Statistical Reference Book 2021, National Statistical Institute, Bulgaria, 2021.

The total amount of municipal waste includes household waste and similar waste from administrative buildings, retail outlets, schools and other public places. Since 2000, there has been a trend of decreasing of municipal waste in Bulgaria. In 2018 the generated municipal waste decrease to 2.9 million tons.

**The number of registered landfills for municipal waste decreases - from 125 (2016) to 69 (2019).** At the same time, the introduction of organized waste collection systems in more settlements leads to an increase in the relative share of the population covered by these services from 99.7% (2016) to 99.8% (2019).

**The 2019 EU Environmental Implementation Review acknowledges the important steps that Bulgaria made, especially in closing non-compliant landfills and in providing a good coverage of municipal waste services on the entirety of its territory.** Nevertheless, the comprehensive document underlined that the country still needs to make important progresses, especially in the treatment of waste and in recycling for fulfilling the targets imposed at the level of the Union.



# ROMANIA

## Box 6. Highlights in MSWM - Romania

### HIGHLIGHTS

**Solid waste management is considered to be Romania's most pressing environmental issue.** Uptake of recycling and reusing practices are much lower than EU averages, though they have increased over the past two years. Romania is on an incremental path towards advancing a circular economy (CE), including the development of a national CE strategy as well as implementing fiscal measures to incentivize green business. For example, the Buzau municipality has a local CE strategy until 2030 and the largest integrated recycling park in Europe. However, progress in meeting EU targets under the Waste Framework Directive has been low. Even if there is a gradually improving trend in waste management practices, the burdensome regulatory framework, lack of administrative capacity to carry out more complex projects, and the overall lack of ambition and vision in terms of environmental and socio-economic development policies are key barriers to the transition to a circular economy. The improvement of governance, better enforcement of public policies, and improved capacities in the public administration are urgently needed to make progress.

#### Performance:

- Municipal waste treatment and disposal infrastructure are insufficient to guarantee the achievement of long-term recycling targets (e.g. 2025 and beyond)
- Separate collection service, including for bio-waste, is not being sufficiently implemented with most waste is going to landfills (70%)
- Illegal dumping is declining but still an issue
- Separate collection and sorting of recyclable waste from households is not well developed

#### Legal & Institutional Environment

- Administrative Territorial Units (ATUs) are responsible for achieving recycling targets but in practice their role has been considerably downsized

#### Financial & Economic Incentives

- There are not enough economic incentives to move away from disposal
- More investment is needed in projects higher up the waste hierarchy (e.g. recycling) that go beyond treatment of residual waste

#### Data & Reporting

- Romanian authorities do not include commercial packaging waste into recycling municipal waste, leading to misleadingly higher rates of recycled packaging waste
- There is no centralized data regarding collection & separation of waste

#### Public and Private Sector Engagement

- Public engagement on separate collection is very low, and preference for low-cost models drives among

## MSWM CONTEXT IN ROMANIA

Romania is structured in several administrative layers, with 41 counties (*județe*) plus the municipality of Bucharest that has 6 districts (*sectoare*), each with its own city hall in addition to the overarching City Hall of Bucharest Municipality. In July 2020, the 8 Regional Development Agencies (*Agenții de Dezvoltare Regională*) experienced an increase in their attributions regarding the management of European Funds, becoming designated Management Authorities for the Regional Operational Programme.

This process of *de facto* regionalization intends to provide regions with the capacity to better respond to evolving financing needs. It is based on the experience of joint management of the Regional Operational Programme in the 2014-2020 planning period by the Ministry of Public Works, Development and Administration (former Ministry of Regional Development, Public Administration and European Funds) and the eight Regional Development Agencies. However, decreased institutional capacity has significant impacts both on the absorption of funds and management of local finances, but also on the implementation of solutions that could improve the overall sustainability of Romanian cities.

Table 5. Romania: basic solid waste indicators

PRODUCTION	COLLECTION AND TREATMENT
Municipal Waste Generated: 5.5 million tons (2020)	Landfill rate: 74%
Share of urban population served by municipal waste collection: 90% (2019)	Delivered for recycling municipal waste: tons (2018)
Municipal waste generated per capita: 287 kg/capita vs. 505 kg/capita (EU-27) in 2020	Municipal recycling rate: 12% (2019)

### MSWM SECTOR OVERVIEW

Romania has made significant progress in solid waste management, but challenges remain: primarily weak capacity to implement and manage projects. Over the last decade, Romania has been in the process of reforming its waste management sector, aiming to (i) provide quality collection services, (ii) increase reuse, recycling and recovery of waste through separation at source and development of appropriate treatment and recycling infrastructure, and (iii) reduce risks for the environment caused by the landfills by supporting safe disposal.<sup>112</sup>

As the economy develops and consumption expands, waste volumes grow steadily but landfill expansion has not kept pace. In 2020, Romania generated about 5.5 million tons of municipal waste - around 287 kg/person, a 25% decrease from 383 kg/person in 2005. After multiple referrals for non-conforming landfills, the country still has 42 non-conforming municipal landfills as of 2021.<sup>113</sup> Municipal recycling rates have increased from 1% in 2005 to 12% in 2019 yet remain far below EU targets (55% by 2025). Around 90 percent of urban residents have access to organized solid waste management services.<sup>114</sup>

Many areas lack adequate MSWM infrastructure, particularly remote rural areas, and even where infrastructure exists, success has been elusive. For example, household recycling adoption rates have been low even in the largest urban centers so reaching waste recycling targets will be challenging. Improving on this will require comprehensive public awareness and communication efforts in addition to improvements in infrastructure. Overall, both the markets for extraction and sales of recyclables and compost need further

<sup>112</sup> Romania: Enabling Conditions for Increasing Municipal Waste Recycling – World Bank, March 2020

<sup>113</sup> European Commission, 2021. Landfills: Commission refers ROMANIA to the Court of Justice of the European Union over its failure to comply with the Court judgment. [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_21\\_5354](https://ec.europa.eu/commission/presscorner/detail/en/ip_21_5354)

<sup>114</sup> Romania: Enabling Conditions for Increasing Municipal Waste Recycling – World Bank, March 2020

development. For example, the waste plans at county level include initiatives for composting, mainly composting plants in urban areas and heap composting in rural areas, but markets to absorb this material have hardly established yet.<sup>115</sup>

**In general, strong political will exists to promote sound MSWM practices; waste management is among Romania's crucial environmental challenges.** However, the institutional framework has yet to mature sufficiently to fully implement the National Waste Management Strategy, in particular, finding solutions for economies-of-scale among small scattered rural settlements. Some municipalities formed compacts and managed to engage private companies at reasonable rates. However, most still dump waste in non-compliant landfills.<sup>116</sup>

**While enforcement of sound MSWM practices has not been very strong in Romania, enforcement cannot become more stringent without appropriate infrastructure in place.** However, infrastructure implementation is slow due to economic, social, and political bottlenecks. For example, landfill site selection is delayed by prolonged community and political resistance. At some sites, selection procedures have taken four years or more. Politically appointed County Councils draft regional SWM plans, so municipalities aligned with other political parties resist Council decisions. Government changes often translate into policy changes, and projects begun by the previous administration are dropped. These cycles impede long-term MSWM planning.<sup>117</sup>

## SYSTEMIC VIEW OF THE MSWM SYSTEM

### STRATEGIC FRAMEWORK FOR MUNICIPAL SOLID WASTE MANAGEMENT

**The 2017 National Waste Management Plan (NWMP) and the National Waste Prevention Plan are the main documents that provide the regulatory framework for solid waste management and circular economy related actions in Romania.** The National Waste Management Plan (NWMP) in 2017 set the target to reach 50% recycling of municipal waste by 2020, and reduce the biodegradable municipal waste going to landfills to 35% (in line with EU targets, both unachieved). The NWMP is to be implemented through county waste management plans: each county will have an integrated MSWM system and county councils will devise plans for municipal waste management. County strategies were still under preparation in autumn 2019 (European Commission, 2019b), and while there is still no aggregate view on their finalization, the draft final versions of some county level plans were under public consultation in spring 2020.<sup>118</sup>

**The Waste Management Plan lays out actions for introducing separate waste collection and improving recycling and composting rates.** The 2019 EC Environmental Policy Implementation Review highlights several issues surrounding the NWMP's implementation. These include, among others, the lack of financing instruments matching the activities foreseen, unfinished legal frameworks for the plan's implementation (e.g. the county-level waste management plans), lack of instruments to avoid landfilling, or incomplete projects for integrated waste management that could support a higher waste hierarchy.<sup>119</sup>

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<sup>115</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>116</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>117</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>118</sup> Roman, Laura. 2020. "Eco-innovation in Romania: EIO Country Profile 2018-2019." [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_romania.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_romania.pdf)

<sup>119</sup> EC, 2019. Environmental Policy Implementation Report.

## National Legal Framework

**At the national level, there are three types of legislation regulating the municipal waste management sector:**

(i) waste management legislation transposing the EU requirements in the field (the main act is Law no. 211/2011 on the waste regime and Law no. 249/2015 on the management of packaging and packaging waste with subsequent regulations), (ii) legislation on public sanitation services (mainly Law no. 101/2006 and subsequent orders of ANRCS President), and (iii) legal acts defining the functions and responsibilities of the Environmental Fund (GEO no. 196/2005 on the Environmental Fund with subsequent regulations).

The National Plan for Waste Management published on January 2018 references mandatory schemes for extended liability of producers for all packaging by 2024. Considering food waste, the Law 217/2016 establishes the general legal framework for prevention of food waste and seven sets of measures for prevention, without setting any quantitative targets.

**Romania has taken steps to introduce a deposit refund system into its legislation.**<sup>120</sup> As of 1 October 2022, Romanian consumers will have to pay a mandatory deposit of RON 0.50 (approx. ten EUR cents) for each bottled beverage they buy. Part of the recently introduced deposit-return system ("DRS"), this amount will be added to the shelf price of the respective beverage and will be distinctly marked on receipts. The deposit will be applicable to non-refillable primary packaging made of glass, plastic or metal, with volumes between 0.1l and 3l inclusive, containing water, juice or alcoholic beverages.

## RESPONSIBILITIES FOR ORGANIZING MSWM

**In Romania, the Administrative Territorial Units (ATUs), an intermediate level of government between the national level and local administrative level (e.g. towns and municipalities)**<sup>121</sup>, **has the responsibility for both organizing municipal solid waste collection in their territories and municipal treatment and disposal.** The ATUs responsibilities include organizing separate collection for at least paper, metal, plastic and glass waste, providing containers necessary for the purpose, as well as for informing the population about the separate collection system that has been implemented. The responsibility for achievement of recycling targets belongs to administrative territorial units (ATU). Due to a national regionalization process, role of the ATU's has been considerably downsized. Yet, the ATUs remain officially responsible for the sanitation services on their territories and for the achievement of recycling targets; however, in the new regional systems their role is limited to awareness raising, control over provided services, complaints handling and in some cases collection of service taxes.<sup>122</sup>

**There are 13 organizations in the country tasked with implementing the extended manufacturer liability policy for packaging placed on the Romanian market, known as OIREPs.**<sup>123</sup> OIREPs work with Intercommunity Development Associations (ADIs); there are currently 39 ADI organizations established in Romania for integrated waste management at county level. In most counties, ADIs are set up by the county councils and town halls, the institutions dealing with waste management in their respective areas. County councils are the beneficiaries of Integrated Waste Management System (SMID) projects, while ADI manage project implementation. At the country level, 32 integrated waste management projects have been approved to finance prevention, separate collection, recovery, recycling, waste treatment and disposal, in parallel with the closure of non-compliant landfills.

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<sup>120</sup> This legislative novelty has been introduced by Government Decision No. 1074/2021 on the establishment of a deposit-return system on single-use packaging ("GD 1074/2021").

<sup>121</sup> European Committee of the Regions. Romania. Accessed in 2021.

<sup>122</sup> Romania: Enabling Conditions for Increasing Municipal Waste Recycling – World Bank, March 2020

<sup>123</sup> Cristea, Mihai-Alexandru. "The state of waste management in Romania: Plenty of work remains to be done." Business Review. <https://business-review.eu/greenrestart/the-state-of-waste-management-in-romania-plenty-of-work-remains-to-be-done-212632>

## LEGAL AND REGULATORY FRAMEWORK & INSTITUTIONAL ENVIRONMENT

### INSTITUTIONAL ARRANGEMENTS

**Romania relies on agencies at three levels to manage waste: the Ministry of Environment, Waster, and Forests (MoEWF) and Ministry of Administration and Interior (MAI); the County Councils; and municipalities**, which must ensure that all non-complying landfills and illegal dumps are closed, existing municipal landfills rehabilitated or extended, and new landfills constructed where needed. Eight Regional Environmental Protection Agencies (regional EPAs) prepare Regional Plans for Waste Management; County Councils prepare county-level Waste Management plans. Regional associations that comprise of municipalities and the County Council are responsible for managing final disposal facilities and transfer stations. This function is delegated to the County Council, including contracting for investments and operation. In small towns and rural areas, where solid waste management infrastructure is difficult to sustain, the County Council may also carry out procurement and other administrative functions. Larger landfills near bigger urban areas accommodate waste produced in the entire county; and transfer stations near large urban centers collect waste generated in surrounding regions.

**Solid waste management services may be carried out by municipalities, private operators, or public private partnerships.** Local authorities are legally mandated to organize waste collection and transportation, which can be carried out by a single sanitary company in small towns, or several companies in larger cities. In most rural areas, however, service delivery is mostly inadequate unless near an urban center. The MAI, through the county councils, ensures that most inhabitants or municipal waste producers are connected to regional solid waste management infrastructure.

**The MoEWF established a system for monitoring municipal waste management operations according to EU reporting requirements and is obliged to perform annual inspections of sanitary services.** Data are collected by landfill operators; processed and stored by the National Statistics Institute (NSI) and analyzed by the Romanian Association of Solid Waste Management (ARS). Some data are made public in MoEWF or ARS reports, or NSI publications.

## FINANCIAL SUSTAINABILITY ENABLING ENVIRONMENT

### MSWM INVESTMENT NEEDS

**Over 2008-2015, Romana's MSWM sector had estimated costs of EUR 762 million.** A clear systemic overview of investment needs is necessary to identify and coordinate investment. Over 2014 to 2021, Romania invested approximately one third of the planned funds in waste treatment from ERDF and Cohesion Funds (EUR 585 million invested of the EUR 1.9 billion planned).<sup>124</sup> At national level, the Environmental Fund is the main instrument that supports environmental projects and the range of programs has grown in 2020 compared to previous years.<sup>125</sup> Over the years, some investments towards integrated solid waste systems have also been realized through external co-financing in the form of loans and grants, such as those from the EBRD.

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<sup>124</sup> EC, 2022. In profile: EU support to waste management. <https://cohesiondata.ec.europa.eu/stories/s/In-profile-EU-support-to-waste-management/xqec-t5kv>

<sup>125</sup> Roman, Laura. 2020. "Eco-innovation in Romania: EIO Country Profile 2018-2019." [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_romania.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_romania.pdf)

Table 6. Estimates of MSWM Costs in Romania over 2008-2015<sup>126</sup>

	COLLECTION/ TRANSPORTATION	TREATMENT AND RECOVERY PLANS	NEW LANDFILLS	CLOSURE OF EXISTING LANDFILLS	TOTAL
REGION 1 – NE	41,257,000	23,400,000	43,524,000	11,910,000	120,091,000
REGION 2 – SE	30,075,000	4,843,000	40,395,000	4,410,000	79,723,000
REGION 3 – SOUTH MUNTENIA	30,464,000	9,980,000	4,557,000	6,488,000	51,498,000
REGION 4 – SOUTH	29,965,000	49,433,000	39,969,000	8,775,000	129,142,000
REGION 5 – WEST	24,796,000	45,436,000	38,169,000	21,333,000	130,534,000
REGION 6 – NORTH - WEST	7,221,000	23,200,000	44,640,000	21,750,000	96,811,000
REGION 7 – CENTER	10,798,000	18,999,000	51,150,000	20,400,000	101,347,000
REGION 8 – BUCHAREST – ILFOV	10,422,000	29,615,000	7,500,000	5,950,000	53,492,000
<b>TOTAL</b>	<b>184,998,000</b>	<b>204,906,000</b>	<b>264,904,000</b>	<b>102,821,000</b>	<b>762,629,000</b>

Table 7 presents the existing capacity of waste treatment facilities as of 2020. The EIR notes that there is minimal infrastructure for separate collection of recycling from domestic sources, with all current infrastructure based around the ‘bring to site’ approach.

Table 7. Number and capacities of waste treatment facilities (2020)

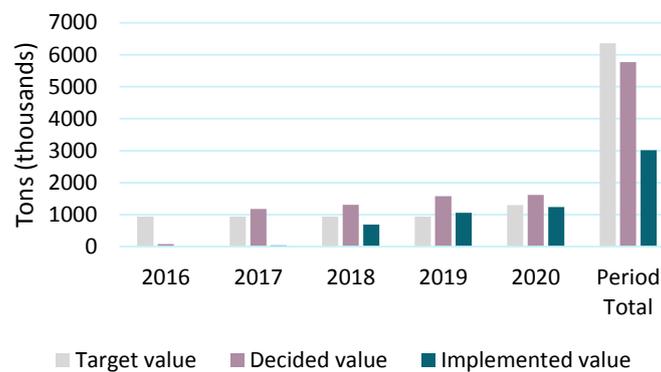
	ENERGY RECOVERY R1		DISPOSAL - INCINERATION		RECOVERY - RECYCLING	RECOVERY - BACKFILLING
	Number	Capacity (tons/year)	Number	Capacity (tons/year)	Number	Number
<b>MACROREGION ONE</b>	<b>75</b>	<b>1933026</b>	<b>1</b>	<b>1750</b>	<b>26</b>	<b>19</b>
NORTH-WEST	51	636501	1	1750	15	10
CENTER	24	1296525	0	0	11	9
<b>MACROREGION TWO</b>	<b>96</b>	<b>3816872</b>	<b>7</b>	<b>44540</b>	<b>41</b>	<b>19</b>
NORTH EAST	69	3037861	5	24460	23	1
SOUTH EAST	27	779011	2	20080	18	18
<b>MACROREGION THREE</b>	<b>39</b>	<b>695942</b>	<b>6</b>	<b>133783</b>	<b>45</b>	<b>29</b>
SOUTH MUNTENIA	39	695942	4	123378	37	17
BUCUREȘTI-ILFOV	0	0	2	10405	8	12
<b>MACROREGION FOUR</b>	<b>34</b>	<b>690751</b>	<b>6</b>	<b>73110</b>	<b>32</b>	<b>9</b>
SOUTH-WEST OLTENIA	20	294953	5	69860	22	2
WEST	14	395798	1	3250	10	7

<sup>126</sup> Atudoreri, Alexei. “INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT IN ROMANIA. CASE STUDY – REGION 8 – BUCHAREST – ILFOV”. Scientific Secretary of Romanian Association for Solid Waste Management (ARS). [DRESDEN2008 \(rmcl.ee\)](http://DRESDEN2008.rmcl.ee)

Source: ANPM, 2022.

Romania has increased its recycling capacity by an additional 3 million tons of new or improved recycling capacity through investments in infrastructure since 2016. However, this figure is still far below the foreseen target value of 6.3 million tons through the use of ERDF/Cohesion Funds. In the 2021-2027 funding cycle, is uncertain that EU funds can be fully absorbed in Romania since there are too few finance-ready projects due to weak municipal institutional capacity to prepare them. Experience with pre-accession programs as well as in the prior cycle has shown that absorption capacity levels are below available funding. Raising counterpart contributions is often difficult.

Figure 21. New or improved recycling capacity in Romania, ERDF/CF (2016-2020)



Source: EC, 2022. In profile: EU support to waste management.

## MUNICIPAL WASTE FEES AND TAXES

The Romanian legislation provides two possibilities for charging for municipal waste services. The most common practice is direct charging by service provider to households and legal entities based on approved tariff and individual contracts. The tariffs are charged in RON per person per month and are uniform for the entire collection zone. The tariffs are subject to 19% VAT. Alternatively, ATUs could introduce and collect municipal waste tax. Mixed system might include taxes from households collected by the ATU and tariffs from CII entities collected by the operator on basis of individual contracts.

Service fees (tariffs) and taxes are based on cost calculations prepared by the service providers (which are private operators). The cost calculations include capital costs (depreciation) and operating costs for collection, transport/transfer, treatment and disposal of municipal waste, including costs for landfill closure and payments for the circular economy (landfill tax). The ATU is paying a fixed amount per inhabitant as membership fee to IDA (for example 1.5 RON/inhabitant /year in Timis). The companies contracted to provide waste management services have to pay 0.12% of their revenue to ANRSC and these costs are also calculated in the tariffs. The final tariff is approved by the ATU.

Tariffs can be adjusted and modified in specific cases defined in service contract, usually based on increase of specific costs items like fuel or labor costs above specified threshold level/percentage. In practice cost/tariff adjustments are calculated by the operators, submitted to IDA and to County Council for verification and proposed to the ATU for final approval. This can be a cumbersome procedure taking some months as ATU's might question the tariff increase even if proposed increase is in line with legal requirements (e.g., elected Mayor not favoring an increase). This affects the operations as the collector is missing income.

In some counties the municipal waste management is underfinanced due to the low rates of contract signing and revenue collection. Tariff level varies per municipality or per zone for Counties having an IDA. For example,

in Ilfov County without an IWMS the average household tariff varies between 2.9-9.8 RON/person/month with a median average of about 6 RON/person/month while in Timis County having an IWMS the average household tariff is about 6.25 RON/person/month.

**Separate costs for collection and delivery at the transfer station are not reported but could be estimated on basis of tariff analysis sheets (2016) of Retim company at 113 RON/ton.** The present tariffs represent 0.60-0.76% of average household income in urban areas and respectively 0.36-0.43% in rural areas. If internationally recognized affordability threshold corresponding to 1% of average household income applies, the maximum tariffs in urban areas can increase to 14.13 RON/person/month in urban areas and 9.72 RON/person/month in rural areas. The average affordable tariff for Romania is even higher estimated to 16.82 RON/person/month.

**Investment projects in Romania are prepared using a low affordability threshold of 1.8% of the income of the poorest population decile instead of average figures of the middle decile.** Applying low affordability threshold artificially reduces the tariffs for municipal waste management services. The direct consequences are that waste management system is underfinanced and demand for significant EU grant financing is created in order to cover the gap between the actual costs and expected revenues from the tariffs.

## PRIVATE SECTOR ENGAGEMENT

**Romania's private sector demonstrates a low level of environmental awareness and engagement.** A major barrier to developing the circular economy is the Romanian companies' general orientation towards a competitiveness model based on low-cost considerations.<sup>127</sup> <sup>128</sup> This signals low demand for eco-innovation and circular economy products and services and a key sign of the need for the business community to become more aware of the opportunities of the circular economy.<sup>129</sup> Further, this position influences investment decisions and could explain why cost is considered a barrier to resource efficiency measures by one in three Romanian companies.<sup>130</sup> However, while the interest to invest in eco-innovative measures, due to cost considerations, there seems to be increasing interest to invest in resource efficiency and waste minimizing measures.<sup>131</sup>

### EPR Schemes

**The first EPR requirements for packaging waste were legally introduced in 2004 and have been periodically revised.** The economic operators putting packaging and packed products on the market in Romania are responsible for ensuring the management of packaging waste on the national territory, including the achievement of recycling and recovery targets. These responsibilities can be carried out individually, or by means of transfer of responsibility to a collective compliance scheme called Producer Responsibility Organization (PRO).

**Currently, the activities of PRO are financed through service fees paid by obliged companies placing packed goods on the market in Romania.** In order to guarantee the achievement of recycling and recovery targets the PRO supports the collection and sorting of household and commercial packaging waste. The PROs are not owners of collected and/or sorted material. The achievement of recycling targets is proved with evidence provided by the waste management companies (e.g., delivery notes, invoices for quantities delivered at the recycling plant, exported). The Romanian institutions were not satisfied with the results achieved so far by PROs and in July 2018 and subsequently initiated changes in legislation intended to establish a kind of shared responsibility model. The PROs are not anymore allowed to have direct contracts for collection of household packaging waste with waste collection and recycling companies. Instead, the PROs have to sign contracts with ATUs/IDAs and pay financial contribution per ton of recycled household packaging waste resulting from the separate collection and sorting systems organized by the local authorities. Following the recent changes in legislation, with regard to household

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<sup>127</sup> EC, 2019. Environmental Policy Implementation Report.

<sup>128</sup> Roman, Laura. 2020. "Eco-innovation in Romania: EIO Country Profile 2018-2019." [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_romania.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_romania.pdf)

<sup>129</sup> EC, 2019. Environmental Policy Implementation Report.

<sup>130</sup> EC, 2017. Flash Eurobarometer.

<sup>131</sup> EC, 2017. Flash Eurobarometer.

packaging, the PROs have only financial responsibility as collection shall be organized and implemented by local authorities. Such financial contribution is the same for the different recyclable waste. Since collection and sorting cost are different for the different materials this approach will result in cross-material subsidies.

**In general, it can be assumed that PROs shall cover the implementation costs for the separate collection and sorting of packaging waste** while the costs for non-packaging waste shall be covered through the municipal waste charges and taxes paid by the users of waste management services. Establishment of exact border between the costs covered by PROs and through municipal waste tariffs is difficult and will require developing clear guidance based on consultations with different stakeholders. The size of the financial contribution seems to be very high compared to the estimated costs and the results in other countries. Considering that the size of the financial contribution is significantly higher than the market prices of the majority of recyclable waste commodities there is a potential risk some of the operators to start deluding the system. Appropriate mechanisms to guarantee that recyclable waste with commercial origin or separated from residual waste are not reported as separately collected household packaging and applying for financial compensation by PROs need to be established. The PROs sign direct contracts with waste management and recycling companies only for commercial/industrial packaging waste.

**Extended producer responsibility schemes for packaging are not efficient and do not fully cover the costs of separate collection.** For Romania to improve its EPR system, the EC recommends the establishment and enforcement of a national packaging clearing house system in line with the principles set out in the revised Waste Framework Directive as general minimum requirements for extended producer responsibility (EPR). Duties to be assigned to such an authority would include:

- collecting and reporting national data on production and recycling/recovery of packaging;
- monitoring and auditing packaging EPR schemes;
- setting market shares and obligations for individual EPR schemes;
- tracking the activities of any producers that are not part of an EPR scheme.

The clearing house would create and manage a national registry for producers, importers and traders – thereby tackling free riders. Auditing the EPR schemes would also allow the clearing house to check whether recycling quotas are being met.

## DATA AND REPORTING

**The data collection system regarding the quantities of municipal waste collected and treated is based on the annual reporting of sanitation operators to Local Environmental Protection Agencies (LEPA).** The reported data is further centralized and validated at the national level. At county level, the centralized data is presented in the Annual Environmental Report, section VII Material resources and waste. LEPA also generates monthly reports, but the information in these reports is not always standardized. The municipal waste quantity generated is always determined based on the reported collected quantity (weighed), the sanitation service cover rate in that county (% served population urban/rural), and generation indexes (for the period of time covered by this report 0.9 respectively 0.4 kg/inhabitant/day).

**With regard to separate collection systems, there is no centralized data at national level, and the only available data is the one provided by some LEPAs, in a non-unitary system, in the Annual Environmental Report.** According to the legal provisions in force, the economic operators releasing packaging and packed products on the market, producer responsibility organizations (PROs), companies collecting, recycling and/or recovering waste, as well as local public authorities (LPAs) must report annually, to LEPAs, depending on each case, the data regarding the amount of packaging put on the market, and the amount of managed packaging waste per type of material. The data are centralized at national level by NEPA based on transmitted reports from LEPAs. Furthermore, the economic operators releasing packaging and packed products on the market must report monthly the quantity of packaging placed on market and annually the recovery/recycling targets to the National Environmental Fund. The reported data is kept in a national database organized at NEPA's and NEF's level.

**Sanitation operators dealing with waste collection, transfer, treatment and disposal of municipal waste are authorized by Local Environmental Protection Agency (LEPA),** to whom they send annual reports about quantities of collected/treated waste, equipment used, ATUs/served inhabitants. Besides the environmental permit, collection and transport operators together with landfill operators are also obliged to hold a license issued by ANRSC, to whom they must also report about waste quantities and tariffs. ANRSC, in collaboration with its regional structures, is responsible for controlling both operators and ATUs.

## PUBLIC AWARENESS AND ENGAGEMENT

**Public awareness and participation on municipal solid waste management remain low, though some momentum toward circular economy has been growing in civil society.** In 2017, the Coalition for a Circular Economy was founded, with a mission to accelerate Romania's transition to more circular ways of production and consumption.<sup>132</sup> The increasing presence of climate innovators in the civil society and business sector is an encouraging sign, however, they need to be supported by a better regulatory framework and public incentives. Separation at household level will depend on the understanding and commitment to separate waste. This will require substantial and continuous communication and information between ATU and inhabitants, which is broadly lacking. ATU's should engage specialized staff and allocate dedicated budget. Regular surveys and hearings have recommended the MoEWF collaborates with the Ministry of Internal Affairs (MAI), local administrations, professional associations, and NGOs to elaborate communication and education plans at all levels, using mass media, Web publishing, audits, and public information campaigns and awareness activities.

There have also been developments in terms of recycling, with Environ association launching an app mapping the locations where citizens can deposit WEEE type of waste and batteries. Environ bundles the main WEEE producers and importers in Romania as members based on the Extended Producer Responsibility principles. One of its member companies, Greenwee International has also launched the process for recycling flat screens from computers and TVs in 2019 (Green Report, 2020). This is the first of its kind in Central and Eastern Europe (ibid). a local waste collector launched a mobile app for companies to notify when garbage collection is needed. The latter apps have, however, been reported as not functional by the users, which points to the weaknesses in the public sectors' capacity to adopt innovative solutions.

## PERFORMANCE AGAINST EU DIRECTIVES

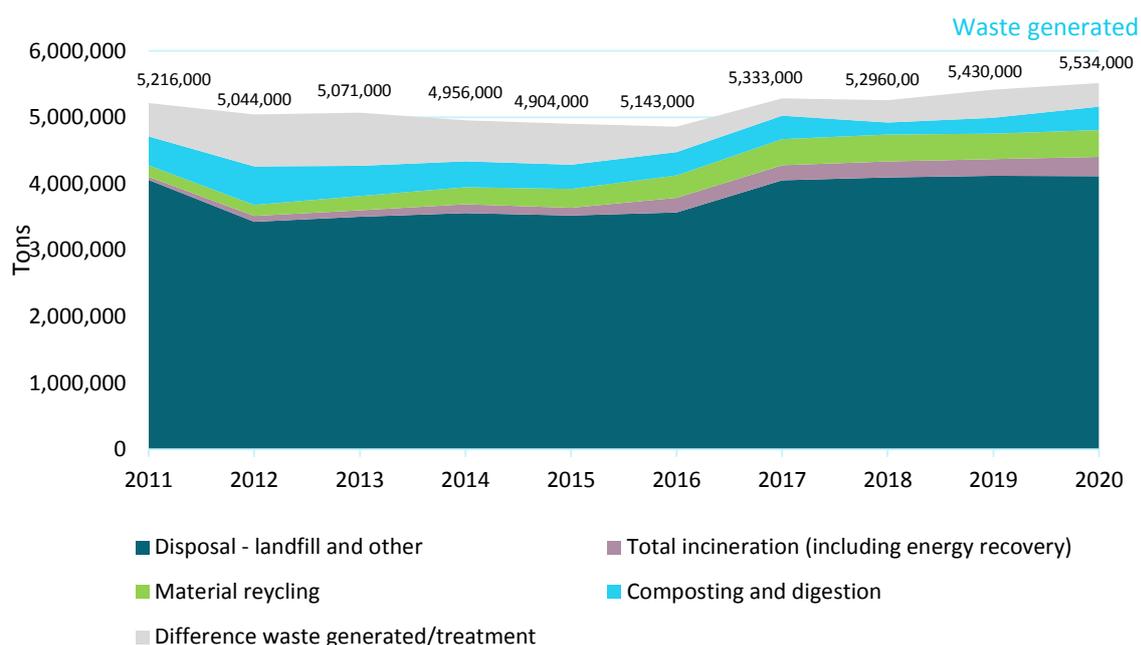
**Despite the significant investments in the sector to date, there is not universal waste collection and illegal dumping is a concern.** According to the National Environmental Protection Agency (NEPA), in 2016, 86% of the population was provided with waste collection services (95% in urban areas and 76% in rural areas). 34 out of 41 counties established centralized municipal waste treatment and disposal infrastructure mainly with the support of EU grant financing. These integrated facilities usually include mechanical biological treatment (MBT) plant or sorting plants, regional waste landfills and in some cases composting plants. These facilities are generally regarded as insufficient to guarantee the achievement of long-term recycling targets for municipal waste for 2025 and later years. The short-term recycling target of 2020 would have been achievable by optimizing the current system but future targets of 2025, 2030 and 2035 will be unattainable without significant changes to the waste collection and treatment infrastructure along with improvements in the enabling environment and incentives within the system.<sup>133</sup> The achievement of long-term targets will require significant investments in separate collection and treatment infrastructure and due to additional costs will lead to substantial increase in tariffs for waste management services.

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<sup>132</sup> Roman, Laura. 2020. "Eco-innovation in Romania: EIO Country Profile 2018-2019." [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_romania.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_romania.pdf)

<sup>133</sup> Romania: Enabling Conditions for Increasing Municipal Waste Recycling – World Bank, March 2020.

Figure 22. MSW generation and treatment type in Romania



Source: Eurostat data (ENV\_WASMUN)

Over 2011 to 2015, the level of municipal waste generation remained fairly constant, with a modest increase from 2015 to 2020 (12.8%). Disposal by landfill and other means has been steady, averaging approximately 70%, while recycling (materials and composting) and recovery rates have been gaining modestly, reaching 12% and 6% of waste generated in 2020.

Since Romania is behind on the landfill construction schedule, the EC has referred Romania twice (in 2009 and 2021) to the Court of Justice of the European Union for failing to fully to meet its obligations under the Landfill Directive (Directive 1999/31/EC).<sup>134</sup> According to this judgment, by 16 July 2009, Romania was obliged to close and rehabilitate all landfills that did not obtain a permit to operate. The Court found that Romania had failed to comply with this obligation with respect to 68 landfills. Most penalty costs must be borne by cash-strapped local authorities, although a 1.5-year grace period is possible.<sup>135</sup> According to the MoEWF, there are 12 municipal landfills that still need to be closed as of 2020.<sup>136</sup> Ten administrative-territorial units (UATs) have requested funding to shut down their landfills through the designated program, which is managed by the Environmental Fund Administration (AFM), and all these applications have already been approved.

In 2018, the total amount of packaging placed on the market in Romania was reported to the amount of 1,567 thousand tons with 57.8% of this quantity being recycled (940.2 thousand tons). The highest recycling rate was achieved for paper and cardboard packaging (98.9%), followed by glass (61.1%) and plastic packaging (43.0%). Recycling rates of packaging waste broadly increased from 33% in 2018 to 57.8% in 2018. In terms of growth trends, paper and cardboard recycling increased the most, over the time period. The recycling rates of most other types of materials peaked around 2012 and have flattened out since. The recycling rate of glass grew from 35% to 66% over 2008 to 2012 and has fluctuated to 61% in 2018. The recycling rate of plastics increased sharply

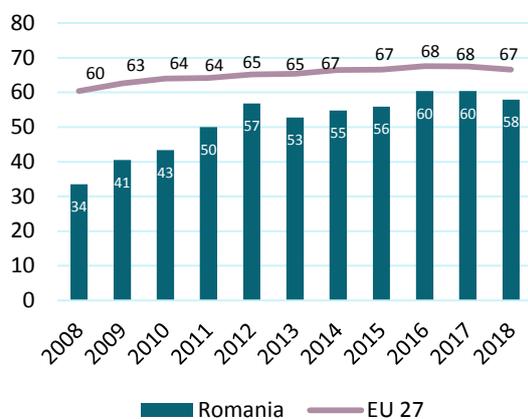
<sup>134</sup> European Commission, 2021. Landfills: Commission refers ROMANIA to the Court of Justice of the European Union over its failure to comply with the Court judgment. [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_21\\_5354](https://ec.europa.eu/commission/presscorner/detail/en/ip_21_5354)

<sup>135</sup> World Bank. Solid Waste Management in Bulgaria, Croatia, Poland, and Romania: A cross-country analysis of sector challenges towards EU harmonization. 2011.

<sup>136</sup> Cristea, Mihai-Alexandru. "The state of waste management in Romania: Plenty of work remains to be done." Business Review. <https://business-review.eu/greenrestart/the-state-of-waste-management-in-romania-plenty-of-work-remains-to-be-done-212632>

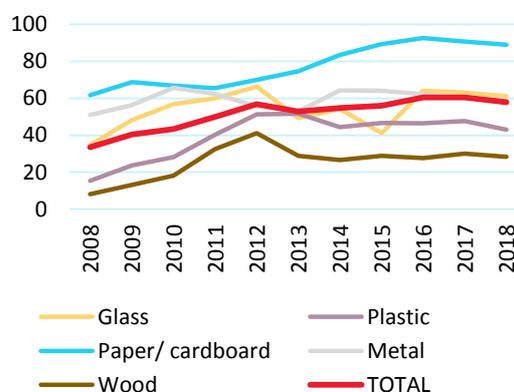
from 15% to 52% in 2013, but has been on a declining trend since, falling to 43% in 2018. Likewise, the recycling rate of wood grew dramatically from 8% in 2008 to 41% in 2012 and has since dropped to an average of 30%.

**Figure 23. Overall recycling rate of packaging: Romania vs. EU**



Source: Eurostat.

**Figure 24. Recycling rates of packaging waste in Romania, by type of material, 2008-2018**



Source: ANPM, 2020.

**Separate collection and sorting of recyclable waste from households is not well developed.** The number of installed separate collection containers for household waste is not sufficient. One reason for this is the lack of common minimum requirements, whereby each municipality has its own system design without guarantees on the number of residents served, quantities of waste collected, efficiency and costs which leaves waste operators with few incentives to expand and improve the system of household waste separation at the source<sup>137</sup> EPR schemes for packaging waste should be a main financing and policy instrument to develop further for an efficient system for separate collection to function properly.

## ROMANIA'S STANDING ON THE 9 DEVELOPMENT BANDS FRAMEWORK

**When considering the current context of a strong institutional framework, a certain level of modernization and progress in some infrastructure related aspects of MSWM with a continued concern over high levels of landfilling Romania is assessed as falling within DB5 - "The target baseline".** DB5 is where broadly most of the more recent EU Member States would be classified currently. A country or city at this level is encouraged to increase the focus on recycling, building on the parts of the existing system that is functioning well and specifically to increase separation at source. DB5 is also used for recent EU Member States looking for an improvement of their level of facility standards.

## OPPORTUNITIES AND RECOMMENDATIONS FOR ROMANIA

Romania's challenges in reforming its MSWM to achieve a circular economy are broadly characterized by a lack of clarity in governance, local capacity, insufficient infrastructure, financial disincentives, and low awareness and engagement of the private sector and public. The main challenges in Romania's MSWM are summarized in Table 8.

<sup>137</sup> Romania: Enabling Conditions for Increasing Municipal Waste Recycling – World Bank, March 2020 (pg. 2)

**Table 8. Summary of Romania's MSWM challenges**

<ul style="list-style-type: none"> <li>• Separate collection and sorting systems for household waste are not adequately developed from infrastructure, behavioral, and regulatory perspectives.</li> </ul>
<ul style="list-style-type: none"> <li>• Recyclables are captured mostly from the commercial and institutional sector whereas separation of household waste remains poorly organized. Operators do not have sufficient incentives to expand and improve the system of household waste separation at source.</li> </ul>
<ul style="list-style-type: none"> <li>• Performance indicators and information management need to span along the waste management value chain. Data availability is a significant issue.</li> </ul>
<ul style="list-style-type: none"> <li>• Financial penalties are lower than the cost of implementation of separate collection and sorting, providing a disincentive for performance.</li> </ul>
<ul style="list-style-type: none"> <li>• Roles and responsibilities at the ATU and IDA levels need to be clarified and there needs to be improved capacity for operation.</li> </ul>
<ul style="list-style-type: none"> <li>• Awareness regarding waste management is low with citizens and local authorities.</li> </ul>
<ul style="list-style-type: none"> <li>• The EPR system does not create an efficient system for separate collection, sorting and recycling.</li> </ul>
<ul style="list-style-type: none"> <li>• The NWMP does not provide clear guidance to achieve the longer-term recycling targets.</li> </ul>
<ul style="list-style-type: none"> <li>• The existing infrastructure for treatment of municipal waste is not sufficient to meet the recycling and landfill diversion targets of 2025, 2030 and 2035. Required new infrastructure will require significant investment, will have significant incremental costs, and require substantial increase of the service tariffs.</li> </ul>

To both improve the current system and allow fulfillment of longer-term targets, the review of the National Waste Management Plan and extending the planning horizon till 2030 – 2035 is strongly recommended, starting with detailed and careful planning at the county level. This will allow the government to:

- (i) take stock of actual vs. planned implementation performance and the reasons for it, and
- (ii) provide clear guidance on the achievement of long-term targets including the provision of reliable estimates of the required additional waste collection, treatment and recovery infrastructure, the projected implementation costs and sources of their financing.

Other recommendations include:

- (i) the formulation of measures related to circular economy and waste recycling to be included in the next Operating Programme Environment for the period 2021-2027;
- (ii) identification of priority areas where financing from the Environmental Fund could support recycling; and
- (iii) develop and implement deposit refund schemes for beverage containers.

# CROATIA

## Box 7. Highlights in MSWM - Croatia

### HIGHLIGHTS

Croatia has made progress in reforming its waste management sector over the years, though it still falls significantly behind EU targets. The waste management system does not entirely meet the required EU standards: waste is not pretreated, and recyclable and biodegradable waste are not separated. This results in non-compliance with the waste hierarchy and substantial greenhouse gas emissions. New waste management systems have been implemented in Zadar and Lika-Senj counties that help ensure significantly less household, recyclable, and biodegradable waste is taken to landfills. Croatia is currently undergoing revision of its National Waste Management Plan to integrate the Circular Economy aspects in waste management, in line with the European Green Deal and its Circular Economy Action Plan.

#### Performance:

- The collection process is made at the local level and services nearly the entire population (99% coverage), with over 200 companies covering the entirety of the country
- A relatively small proportion of solid waste is recycled (34%), well below the EU 2020 target value of 50%
- Landfilling is still the main modality of disposing of waste, but few “green yards” developed, and a large proportion of the illegal landfills were either closed or in the process of closure

#### Legal & Institutional Environment

- Significant difficulties in establishing new technologies in waste management, mainly due to public opposition and to an inflexible institutional framework

#### Financial & Economic Environment

- Little capacity to develop and manage projects in municipal companies
- State budget and local (regional) budgets are limited for the funding of NWMP projects
- European funding available through the cohesion policy (ERDF and CF) and funds from the new instrument Next Generation EU
- Croatia will need to consider and other sources of financing NWMP projects like: EPEEF, Croatian Waters, loans and private investments

#### Data & Reporting

- There is a scarcity of data, and uneven reporting that gradually improved in the process of accession to the European Union
- The development of efficient and cost-effective waste infrastructure needs to be informed by reliable and realistic planning, taking into account produced waste quantities, existing waste treatment capacities as well needed capacities, marked demand, etc.

#### Public Engagement

- Public engagement on separate collection is very low; there is a need for communication campaigns with the interested public / citizens / civil society groups to increase the level of confidence of citizens in institutions and spur the successful transition to circularity in waste management.

*Source: Authors, based on collected data analyzed within the project.*

## MSWM CONTEXT IN CROATIA

Croatia's subnational governance is comprised of 20 counties (*županije*), with the capital city of Zagreb bearing special administrative status. At the regional level, Croatia was previously split into 2 non-administrative regions: Adriatic Croatia and Continental Croatia, with no administrative functions. Recently, the Government of Croatia decided upon a homogenization of regions for the new financial programming period of the European Union<sup>138</sup> in order to counter absorption issues encountered in former financial exercises. These regions will be Pannonian Croatia, North Croatia, Adriatic Croatia and the City of Zagreb. This reorganization is intended to counter the bias in European funds absorption caused by regions below the EU development average that were in different statistical entities.

Croatia is in the process of reforming its waste management sector. The country generated an estimated 1.7 million tons per year of municipal solid waste in 2020,<sup>139</sup> equivalent to 418 kg per capita annually for 4.4 million inhabitants, or an average of 0.90 kg per capita per day. There are 556 LGUs in Croatia, with an average 6,000 inhabitants each (excluding the city of Zagreb). As of 2020, nearly all (99 percent) of the population is covered by organized municipal waste collection and all LGUs conducted organized collection of municipal waste. More than 200 companies are contracted to deal with municipal waste. Croatia's waste profile varies seasonally and geographically due to tourism and can be as high as 1.9 kg per tourist per day in some coastal areas.

Systems of separated waste collection have developed gradually in Croatia for paper, cardboard, packaging waste (glass, PET and metal), green waste, used batteries, medicines, oils, car tires, bulky metals, and construction materials; some recycling yards and "green islands" have been established. Croatia has introduced various environmental taxes on certain waste types including packaging, which has encouraged recycling and reuse. Tax revenues are an important source of funding for the Environmental Protection and Energy Efficiency Fund (EPEEF), and an incentive to return to solid waste investments.

A large share of generated MSW is disposed in landfills (56%) according to data from 2020, though the intent has been to reduce the level to 25 percent by 2022.<sup>140</sup> Most official landfills are non-sanitary although some EU-standard sanitary landfills are operational or under construction. Landfill restoration and closure began in 2004 and will continue for the foreseeable future since closures must be coordinated with new landfills constructed to EU standards. Many old landfill sites will become transfer stations and recycling yards; the rest will close within five years. In addition, over 3000 illegal dump sites have begun remediation and closure.

*Table 9. Croatia: Basic demographic and spatial indicators*

PRODUCTION	COLLECTION AND TREATMENT
Municipal Waste Generated: 1,693 thousand tons (2020) (decrease of 6.5% from 2019).	Landfill rate: 56% in 2020.
Share of population served by municipal waste collection: 99% (2020)	Waste separation rate: 41% (2020).
Municipal waste generated per capita: 418 kg/capita vs. 502 kg/capita (EU-27)	Recycling rate: 34% (2020) <sup>141</sup> vs. 50% EU 2020 target

<sup>138</sup> <https://vlada.gov.hr/news/gov-t-launches-changes-to-country-s-statistical-subdivision/25178?big=0>

<sup>139</sup> This is a decrease of 6.5% from 2019 and it is mostly due to reduced activity in the service sector as a result of the pandemic which stalled tourism.

<sup>140</sup> Croatia report on municipal waste for 2020.

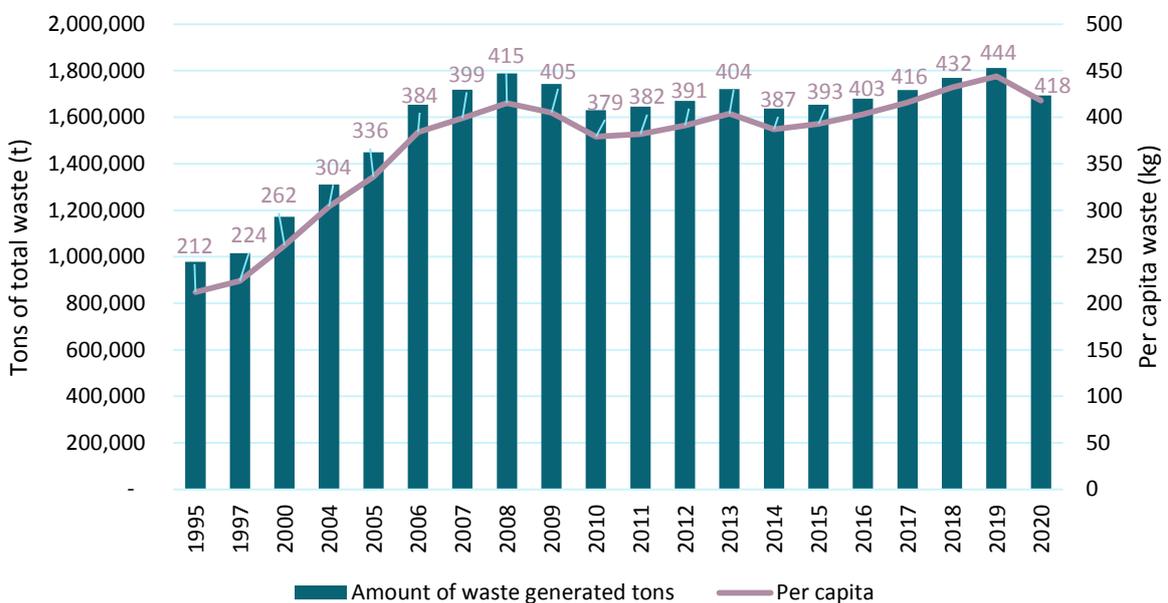
<sup>141</sup> Croatia report on municipal waste for 2020.

Solid waste management system

- The municipal solid waste management system is regulated at the central level and the municipal level plays a central role in implementing the provisions, establishing fees, and performing investments for improvement of capacities.

The generation of general municipal waste in Croatia grew rapidly over 1995 to 2008, with a decrease to 2010, trend broadly grew once more to peak once more in 2019 and fell sharply in 2020. The decreases in the waste generation rate over 2008 to the 2010 can be attributable to the economic crisis, while the fall in 2020 could be driven by the decline in tourism and services due to Covid-19. According to the National Waste Management Plan for the period 2017-2022, Croatia’s goal was to reduce municipal waste by 5% compared to 2015, or 1,571,300 tons, and the target for 2020 was 1,587,840 tons.

Figure 25. Annual quantities of generated municipal waste in the Republic of Croatia



Source: Data from MoESD, 2021. Municipal Waste Report for 2020. [Izvješće o komunalnom otpadu za 2020 \(haop.hr\)](http://izvješće_o_komunalnom_otpadu_za_2020_haop.hr)

Figure 26. Annual waste from tourism in Croatia



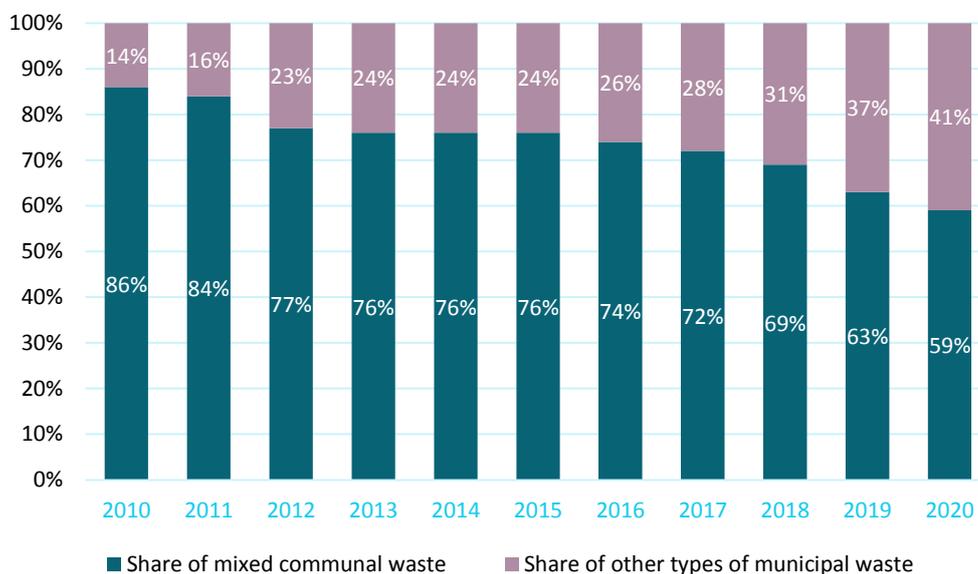
Source: MoESD, 2021. Municipal Waste Report for 2020. [Izvješće o komunalnom otpadu za 2020 \(haop.hr\)](http://izvješće_o_komunalnom_otpadu_za_2020_haop.hr)

Tourism comprises a significant share of Croatia’s municipal waste. Over the 2014 to 2019 period, the amount of municipal waste generated in tourism increased by 93% as a result of the increase in the number of tourist overnight stays. In 2020, this figure fell drastically as consequence of the significant decline in tourist overnight stays due to the COVID-19 pandemic, with tourism-related waste levels falling below those recorded in 2014.

Separate collection of waste in Croatia has been on the rise over the past decade, though it remains far below the EU target value. The proportion of separately collected

municipal waste (including mixed waste such as bulky waste, street cleaning waste, etc.) amounted to 41% in 2020.<sup>142</sup> The largest increase in separate collection of municipal waste compared to the previous year was recorded for municipal biowaste, namely biodegradable waste from kitchens and canteens collected in organization of local self-government in the continental part of Croatia. There is also a slightly more significant increase the amount of separate collection also for metal waste, wood waste, bulky waste and plastic waste.

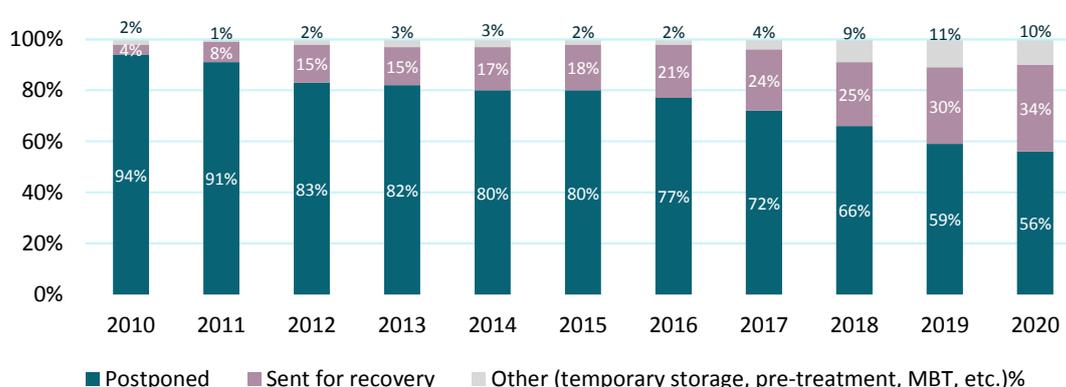
**Figure 27. Rate of separate and mixed collection of waste in Croatia (2010-2020)**



Source: MoESD, 2021. Municipal Waste Report for 2020. [Izvešće o komunalnom otpadu za 2020 \(haop.hr\)](https://haop.hr)

Between 2010 and 2020, the share of municipal waste sent directly to recovery increased from 4% to 34%, while municipal waste disposal decreased from 94% to 56% (). As of 2020, 941,285 tons of municipal waste were disposed of in landfills. Only 11% of LSGUs monitor the amount of biodegradable waste in mixed municipal waste. In 2020, there was an increase in the number of municipal units where there is a separate collection of biowaste from municipal waste. The number of local authorities increased from 172 to 192 to reach a share of 35%. The biowaste collected mainly originates from kitchens, canteens, gardens, and parks. The amount of separately collected biowaste from municipal waste in 2020 amounted to 24 percent of the total generated municipal biowaste, increasing from 22 percent compared to 2019, but below the target of 30 percent for 2020.

**Figure 28. Share of municipal waste in the Republic of Croatia by treatment procedures, 2010-2020**



Source: MoESD, 2021. Municipal Waste Report for 2020. [Izvešće o komunalnom otpadu za 2020 \(haop.hr\)](https://haop.hr)

<sup>142</sup> MoESD, 2021. Croatia Municipal Waste report for 2020.

The recycling target for 2020 was 50 percent while the achieved rate was 34 percent. Municipal infrastructure in waste collection experiences its largest increase in the recycling sector, with a rise in the construction of recycling yards from 4,713 in 2012 to 34,214 in 2019.

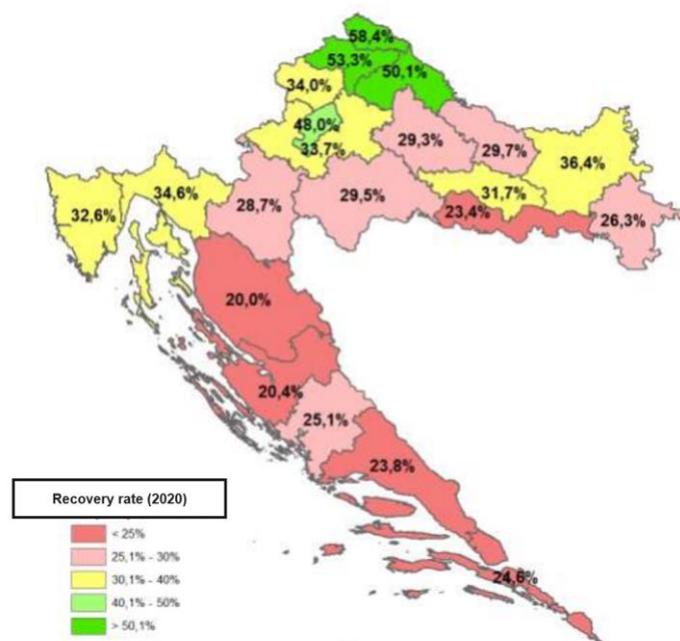
Figure 29. Number of recycling yards registered and reported quantities of municipal waste collected through recycling yards (2015 to 2020)



Source: MoESD, 2021. Municipal Waste Report for 2020. [Izvješće o komunalnom otpadu za 2020 \(haop.hr\)](http://izvješće_o_komunalnom_otpadu_za_2020_(haop.hr))

The recovery rate increased from 4 percent to 34 percent since 2010. However, recovery rates vary greatly by county, with those in the North strongly outperforming coastal cities.

Figure 30. Municipal waste recovery rate in Croatia by counties with additionally determined quantities in 2020.



Source: MoESD, 2021. Municipal Waste Report for 2020. [Izvješće o komunalnom otpadu za 2020 \(haop.hr\)](http://izvješće_o_komunalnom_otpadu_za_2020_(haop.hr))

## SYSTEMIC VIEW OF THE MSWM

### LEGAL AND REGULATORY FRAMEWORK & INSTITUTIONAL ENVIRONMENT

#### NATIONAL STRATEGY AND REGULATORY FRAMEWORK

**Several strategic policy documents have been adopted in Croatia**, including the National Environmental Strategy and Action Plan in 2002; the Waste Management Strategy of Croatia in 2005; and the 2007 National Waste Management Plan (NWMP), which sets key sector reforms. Key initiatives highlighted in the NWMP include the following:

- (i) Establish county or regional Waste Management Centers (WMC) across Croatia.
- (ii) Develop local waste management plans targeting integrated waste management solutions and waste minimization.
- (iii) Establish a financing plan for project implementation, including private financing sources and public-private partnership (PPP) structures.

In the post-2020 period, Croatia's National Waste Management Plan (NWMP) is being updated with technical assistance from the World Bank in order to incorporate circular economy approaches in line with EU Directives and the Circular Economy Package. WB analysis to support the revision of the NWMP suggests that policy development in a timely manner still represents a great challenge for Croatia: preparation of the current NWMP was initiated in 2014, three different versions of the plan have been prepared and have undergone a public consultation process before adopting final version in 2017.<sup>143</sup>

#### LEGISLATIVE FRAMEWORK

**Croatia's primary legislation governing waste management is the Waste Act, updated in 2004, 2006, and 2008, to ensure iterative harmonization with the EU Waste Framework Directive.** Alignment of Croatian with EU waste legislation is implemented by adoption of new waste management act and by-laws. The 2008 version promotes avoiding waste generation and increasing separated waste collection to recycle and recover materials. Over 23 different pieces of secondary waste-related Ordinances, Regulations, and Government Decisions underpin the Waste Act. At end-2008, a new Public Private Partnership Law and a new Concession Law were adopted that define and regulate PPP arrangements, including those for the solid waste sector.

**Regulation on municipal waste was prepared and adopted in 2017, and** subsequent amendments have led to the repeal of some provisions by the Constitutional Court, specifically those which define the structure of price for public waste collection service and the methodology of determining the price. The provision that stipulates the calculation and payment of fee for the reduction of the quantity of mixed municipal waste have been repealed, too, but with start September 15, 2021. Provisions regarding the price are repealed in January 2020.

**Croatia has been lagging behind in the transposition of European waste legislation: it is currently in the process of alignment of its national waste legislation with EU legislative requirements derived from the 2015 Circular Economy Action Plan known as "waste package" along with new Single-Use Plastics Directive (SUPD).**<sup>144</sup> The new ordinance on waste management implementing the waste management plan set out the priorities for infrastructure planning, including support for separate collection and composting. It also introduced a waste tax

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<sup>143</sup> World Bank, 2021. Croatia: Circular Economy Approaches in Solid Waste Management Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision.

<sup>144</sup> Four directives adopted in May 2018 and should have been transposed into national legislation by 5 July 2020: 1. Directive (EU) 2018/851 amending Waste Framework Directive (WFD), 2. Directive (EU) 2018/850 amending Landfill Directive (LD), 3. Directive (EU) 2018/852 amending Directive on Packaging and Packaging Waste (PPWD), 4. Directive (EU) 2018/849 amending Directive on End of Life Vehicles (ELV), Waste Electrical and Electronic Equipment (WEEE) Directive and Batteries Directive (BATT). In June 2019, the Single-Use Plastic Directive 2019/904/EU was adopted. This new Directive should have been transposed into national legislation by 3 July 2021.

on landfilling. Croatian municipalities will have to meet landfill diversion targets and set up ‘pay-as-you-throw’ schemes.<sup>145</sup>

**Currently, Croatia’s legislation has two different sets of waste targets in force:** one set of targets is derived from the EU and by-laws, while the other group of quantitative targets, not defined at EU level, is defined specifically for Croatia in the NWMP for the period of the NWMP (2017-2022). NWMP targets are interlinked with EU ones. Recent analysis by the WB to support the revision of the NWMP suggests that having one set of quantitative targets – the same as EU ones – will make monitoring more efficient, especially because adequate indicators for measuring progress and success of these targets are developed at EU level. Source: World Bank 2021. Croatia: Circular Economy Approaches in Solid Waste Management Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision.

Progress in updating the legislative framework to align with the EU has been lagging. Quality and categorizing criteria for compost and digestate are not developed, and preparation and adoption of Regulation on determining the status of landfills and the amount of disposed waste is missing. Moreover, changes of regulations have been frequent (for example, the Ordinance on Packaging and Packaging Waste was changed 10 times in 12 years) and sometimes made without required planning and preparation (e.g., merging CAEN with MoESD). The WB’s technical assessment on governance highlighted four main challenges as regards the legal and regulatory environment affecting the MSWM sector in Croatia:<sup>146</sup>

- **Institutional fragmentation of responsibilities** contributes to slow implementation of the NWMP.
- **Partial application of waste legislation and conflict between key implementing documents** in many areas – the national WMP and the Implementation Decision on WMP.
- **There is a need to improve the competencies and clarify the responsibilities of institutions** so that there is alignment with their implementing mandate (administrative, organizational, and financial).
- **There is a need for capacity-building at policy, institutional, and technical levels** (including capacity building for public procurement). LGUs, who are key implementers of WMP, lack the capacity to meet their obligations. For example, the availability and reliability of data needs to be implemented in the interest of fostering greater transparency and public engagement.

## INSTITUTIONAL ARRANGEMENTS

**The main central government stakeholders are the Ministry of Environment and Sustainable Development (MoESD); Ministry of Regional Development and EU Funds (MRDEUF); the Environmental Protection and Energy Efficiency Fund (EPEEF); and Croatian Environment Agency for Environment and Nature.** The MoESD governs waste management laws, strategies and sector plans; MRDEUF sets priorities, and prepares strategic and operational documents for use of EU funds; EPEEF is a central source for collecting and investing extra-budgetary resources into programs and projects that protect nature and the environment. Relevant input data and feedback on specific parts of the NWMP is also provided by other stakeholders responsible for implementation of certain NWMP measures: Environmental Protection and Energy Efficiency Fund, Ministry of Agriculture, Ministry of Physical Planning, Construction and State Assets, and the Croatian Chamber of Economy.

**Implementation of waste management is decentralized in Croatia, taking place predominantly with local government units (LGUs), while regional government units (RGUs) have a role in planning of the Waste Management Centers (WMC).** Government relies on three agencies for solid waste management: County Administrative Offices approve county-level waste management plans; Municipalities approve local waste management plans; and the Environmental Inspectorate issue and verify licenses and permits. In addition, the private Croatian Environment Agency (AZO) collects data according to the Waste Act and sub-laws, develops and

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<sup>145</sup> European Commission, 2019. The Environmental Implementation Review: Croatia Country Factsheet.

<sup>146</sup> World Bank, Croatia Solid Waste Sector Review. Technical studies – summaries.

<https://documents1.worldbank.org/curated/en/401731562928106241/pdf/Croatia-Solid-Waste-Sector-Review-Technical-Studies-Summaries.pdf>

maintains the national waste information system, prepares indicators and reports on waste management, and promotes public access to information.<sup>147</sup>

## IMPLEMENTATION OF THE NWMP

The results of implementation progress analyses of the measures and activities defined by NWMP and NWMP ID indicate that the best implementation progress has been made on waste prevention, primarily in "soft measures" like conducting awareness raising campaigns and distribution of home-composters. Construction of recycling yards and procurement of equipment, vehicles and vessels for separate collection has also progressed significantly, at a realization rate of 77% (out of 150 planned recycling yards, 116 of them were constructed in the period 2017-2020). Satisfactory progress has also been achieved in measures for improvement of waste management information system and administrative procedures in waste management. Procurement activities for equipment, vehicles and vessels for separate collection (municipal paper/cardboard, glass, plastic, metal, biowaste) are carried out in significant share and increasing.

Slower progress is recorded regarding improvement of waste treatment infrastructure. In the mentioned period 5 additional composting plants are established. From 29 active biogas plants, only 6 of them in 2019 received municipal waste for treatment while the other ones received nonmunicipal waste types like manure and plant tissues. For the treatment of residual municipal waste, there are active three (3) MBT plants. One of them, with capacity of 95.000 ton/year, is operated by private owner. Assessment of available sorting and recycling capacities for dry recyclables still is missing.

However, delays are recorded for the implementation of infrastructural measures and activities which are decisive for the transition to a circular economy and the achievement of EU waste targets, like development of re-use and repair network and establishment of re-use centers, construction of sorting plants for dry recyclables, constructing of new recycling facilities and /or capacity increase of existing recycling plants for dry recyclables, facilities for bio-waste treatment, projects preparation and construction of WMC etc. Activities for ensuring additional recycling capacities, deployment of recycling market, introduction of waste policy that will enhance shift from landfilling to re-use and recycling (e.g. introduction of landfill tax) have not started yet. Croatia's progress in implementing its NWMP targets, which are interlinked with those set out by EU, is presented in Table 10.

*Table 10. Croatia's progress in implementation of NWMP measures*

No.	Target	Sub-Target	Sub-target name	Progress of NWMP ID activities
1	Improvement of municipal waste management system	Sub-target 1.1	Reduce total quantity of produced municipal waste by 5%	>50%
		Sub-target 1.2	Separately collect 60% by weight of the produced municipal waste (primarily paper, glass, plastics, metal, bio-waste, etc.);	<50%
		Sub-target 1.3	Separately collect 40% by weight of the produced municipal biowaste	<50%
		Sub-target 1.4	Dispose at landfills less than 25% of produced municipal waste	<50%
2	Improvement of the system for management with special waste categories	Sub-target 2.1	Separately collect, by weight, 75% of the produced construction waste	0%
		Sub-target 2.2	Establish system for sludge waste management from waste water treatment plants	50%
		Sub-target 2.3	Improve the packaging waste management system	0%
		Sub-target 2.4	Establish waste management system for marine litter	50%

<sup>147</sup> <http://envi.azo.hr/>

No.	Target	Sub-Target	Sub-target name	Progress of NWMP ID activities
		Sub-target 2.5	Establish waste management system for waste ships, wrecks and sunken things on the seabed	<50%
		Sub-target 2.6	Improve the packaging waste management system	0%
3	Improvement of hazardous waste management system	Sub-target is not defined by NWMP		0%
4	Remediate sites contaminated with waste	Sub-target is not defined by NWMP		<50%
5	Continuously carry out educative-informative activities	Sub-target is not defined by NWMP		>50%
6	Improve the waste management information system	Sub-target is not defined by NWMP		>50%
7	Improve supervision of waste management	Sub-target is not defined by NWMP		50%
8	Improve administrative procedures in waste management	Sub-target is not defined by NWMP		100%

Source: World Bank, 2021. Croatia: Circular Economy Approaches in Solid Waste Management Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision

## MSWM INVESTMENT NEEDS

The MSWM system in Croatia is heavily reliant on public funding and the role of markets is limited. Within the NWMP and NWMP ID, 67 percent of investments are to come from the EU, 21 percent from central and local budgets, 9 percent from EPEEF (all adding to a total public investment of 98 percent), and only 2 percent comes from private investments.<sup>148</sup>

Table 11. Croatia's waste management infrastructure<sup>149 150</sup>

Waste infrastructure	Number	Capacity
Recycling yards	221 stationary	
	121 mobile	
Active landfills	107 (for municipal waste)	10334224 (rest capacity)
Composting plants	13	108596 t/year
Biogas plants	29	1264763 t/year
MBT plants	3	289000 t/year
Sorting facilities	Two public (Krk and Čakovec), plus some private material recovery facilities.	Data not available
Recycling facilities	Data not available	Data not available
Thermal treatment	None (Up until 2005 a small hazwaste incinerator was operated in Zagreb.)	

As part of the World Bank's Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision, seven priority investment areas for SWM in Croatia have been identified:

- i. strengthening waste prevention,
- ii. improvement of preparation for re-use and recycling,
- iii. establishment system for marine litter,
- iv. ensuring economically and environmentally sound management for residual waste,
- v. improvement of hazardous waste management system,
- vi. remediation of waste polluted sites,
- vii. improvement of waste management information system.

Current estimated investment needs for the NWMP are EUR 1 billion, and World Bank cost re-estimation for measures necessary to achieve the NWMP indicate a significant funding gap between planned and re-estimated costs (up to EUR 650 million).<sup>151</sup> Investment needs in recycling yards are estimated at EUR 63.6 million, EUR 104.5 million for separate collection; EUR 10.6 million for home composting; 126 million in sorting facilities; EUR 26.5 million in separate collection of bio-waste; and EUR 81.9 million for the construction of facilities for biological treatment of separately collected bio-waste. A main challenge in mapping investment

<sup>148</sup> "Solid Waste Sector Review -Catching up and getting ahead", World Bank.

<sup>149</sup> World Bank, 2021. Croatia: Circular Economy Approaches in Solid Waste Management Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision.

<sup>150</sup> European Commission, 2017. Waste Framework Directive Factsheet: Croatia.

<sup>151</sup> World Bank, 2021. Croatia: Circular Economy Approaches in Solid Waste Management Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision.

needs remains the lack of reliable data on infrastructure and operations: this hinders the clear assessment of capacity needs and estimation of necessary investments in infrastructure and service development.

**The SWM system in Croatia is heavily reliant on public funding (mostly EU) and the role of markets is limited.**

Within the NWMP and NWMP ID, 67 percent of investments are to come from EU funding; 21 percent from central and local budget; 9 percent from EPEEF (all adding to a total public investment of 98 percent), and only 2 percent comes from private investments.<sup>152</sup> The framework for financing projects in the field of environmental protection, and thus the projects envisaged by NWMP, will be the Operational Programme Competitiveness and Cohesion 2021-2027. Funds from the MFF will be available from the European Regional Development Fund and the Cohesion Fund. In addition to above mentioned funds, funds from the Next Generation EU will also be available for financing NWMP projects.

**Other potential public sources of funding are the state budget, the budgets of L(R)SGUs, funds of public service providers and funds of water service providers owned by LSGUs,** which have very limited possibilities for financing projects in the field of waste management. Given the mentioned limitations of the state budget and the budget and capacity faced by local (regional) authorities, as well as great needs for investments in the field of waste management, funding from private sources should certainly be envisaged. Additionally, it is possible to use loans from banks such as the World Bank, the European Bank for Reconstruction and Development, the European Investment Bank, etc., which provide loans at more favorable interest rates than commercial banks.

## ENGAGEMENT OF THE PRIVATE SECTOR

**Croatia's waste strategy promotes public private partnerships and equal public subsidy from different sources, for county-level and higher waste management centers.** A new Agency for PPP was established under the new Law and allocated the entire spectrum of responsibilities including establishing a PPP projects register. County or multi-county level Waste Management Companies administer project preparation, including contracts for feasibility studies and technical designs; companies deliver services primarily through inter-county and inter-municipal agreements. A mix of public and private service providers collect, transfer, sort, recycle, and carry out pre- and final treatment of waste.

**However, the role of the private sector is hindered as the current regulatory framework does not support to a sufficient extent the involvement of the private sector in waste management; investment planning does not take into account existing private infrastructure; and there is considerable unpredictability in the legal and financial environment which hinders investment.**<sup>153</sup> The Waste Act's implementing regulations favor public bodies over private entities (in terms of conditions to be met, VAT rate, regarding the EPR scheme, access to finance/use of EU funds, and more) and favor the limited existing market participants over new entrants.<sup>154</sup> Meanwhile legislation and regulations (Law, national WMP, Implementing Decision, local WMPs, implementing regulations) are frequently changed, impacting the waste financing and the system of fees, which in turn affect estimates concerning possible costs and revenues and thus increase investment risk.

**As indicated in prior WB technical studies, significant potential for expanding business opportunities in waste management, especially in the transition towards the circular economy model, lies ahead.** However, in order to realize this, the institutional setup, market structure, and regulatory framework need to be made more amenable to supporting the development of business opportunities. There is a need for greater clarity between the domain of public service and private utilities. Competition is limited, and a significant share of companies are owned by LGUs. Private companies are inter-connected, and the Competition Agency has limited control in the area. In addition, EPEEF competes in the relevant waste market, while simultaneously exercising public

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<sup>152</sup> "Solid Waste Sector Review -Catching up and getting ahead", World Bank.

<sup>153</sup> World Bank, 2021. Croatia: Circular Economy Approaches in Solid Waste Management. Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision.

<sup>154</sup> World Bank, Croatia Solid Waste Sector Review. Technical studies – summaries.

<https://documents1.worldbank.org/curated/en/401731562928106241/pdf/Croatia-Solid-Waste-Sector-Review-Technical-Studies-Summaries.pdf>

authority. This may need to change in the future with creation of greater market opportunities for the private sector.

## DATA AND REPORTING

**Inadequate waste flow and composition data further deters private sector operators and hinders the assessment of new infrastructural needs.** The closure of small unequipped landfills and continuous introduction of scales to existing landfills has increased the accuracy of reported data regarding the amount of waste generated. However, there is no reliable data on the number of sorting and recycling capacities and centers currently active in Croatia, as well as on inter-county transport of mixed municipal waste for disposal and the total area of the dumpsites. To attract the private sector and leverage financing, many operators will require guarantees for minimum waste volumes and composition in their agreements. In addition, sensitive karstic geology over a large part of the territory requires much higher levels of environmental protection and controls, and therefore higher costs for landfills.

## PERFORMANCE AGAINST NATIONAL AND EU TARGETS

**Croatia is lagging behind in meeting the existing EU waste targets necessary for transitioning towards circular economy.** As of 2019, Croatia had missed a number of targets set by EU Directives, especially as regards packaging and packaging waste, batteries, landfills, and recycling. Of the EU targets, Croatia lags behind the most in meeting the targets of Packaging and Packaging Waste Directive (94/62/EC); this is closely linked to the municipal waste targets, since packaging waste makes 37% of municipal waste.<sup>155</sup>

The following provides some key highlights in terms of Croatia’s MSWM performance against the EU Waste Management Directives:

- 34% of municipal waste is being recycled at national level. Croatia needs to greatly increase the recycling of municipal waste in order to meet the EU recycling target by 2030 (70%) and facilitate the transition to a more circular economy together with the improvement of resource efficiency and eco-innovation.
- 83% of municipal waste is placed in landfills (while the EU average in 2014 was 28%). During 2020, a total of 941.3 thousand tons or 56 percent of the total generated municipal waste ended up in landfills. In addition to 56 percent of municipal waste being sent for disposal and 34 percent sent for recovery, 9 percent of municipal waste was sent to mechanical-biological waste treatment plants (MBO plants), while the remaining 1 percent went to some other pre-treatment procedures.
- Already weak waste management is affecting the water quality values of marine areas as well as the aesthetic environment<sup>156</sup>

**Table 12. Performance against NWMP targets<sup>157</sup>**

NWMP target	Target	Reference year	Rate	Indicator
<b>NWMP target 1.1</b>	Reduce total quantity of produced municipal waste by 5% (1.571.222 t)	2019	1.811.617 t (15.3% more than targeted)	Risk of failure due December 2022
<b>NWMP target 1.2</b>	Separately collect 60% by weight of the produced municipal waste (primarily paper, glass, plastics, metal, bio-waste, etc.)	2019	37%	Risk of failure due December 2022

<sup>155</sup> MoESD, Report on municipal waste 2019.

<sup>156</sup> World Bank. The Republic of Croatia Systematic Country Diagnostic. 2018.

<sup>157</sup> World Bank, 2021. Croatia: Circular Economy Approaches in Solid Waste Management. Support to Revision of National Waste Management Plan (2017-2022) and Implementation Decision.

<b>NWMP target 1.3</b>	Separately collect 40% by weight of the produced municipal biowaste	2019	19%	Risk of failure due December 2022
<b>NWMP target 2.1</b>	Separately collect 75% by weight of the produced construction waste	2019	67%	On track due December 2022
<b>NWMP target 1.4</b>	Dispose at landfill less than 25% of produced municipal waste	2019	59%	Risk of failure due December 2022

## CROATIA'S STANDING ON THE 9 DEVELOPMENT BANDS FRAMEWORK

When considering the current context of a strong institutional framework, a certain level of modernization and progress in some infrastructure related aspects of MSWM with a continued concern over high levels of landfilling and lack of pre-treatment Croatia is assessed as falling within DB5 - "The target baseline". DB5 is where broadly most of the more recent EU Member States would be classified currently. A country or city at this level is encouraged to increase the focus on recycling, building on the parts of the existing system that is functioning well and specifically to increase separation at source. DB5 is also used for recent EU Member States looking for an improvement of their level of facility standards.

## OPPORTUNITIES AND RECOMMENDATIONS FOR CROATIA

There is a need better quality planning of the entire waste management system and the implementation of analytical studies. Intensify activities of preparation studies for determination of existing recycling capacities and need for additional capacities which present pre-condition step in the process of sizing waste management system. Conduct determination of national municipal waste composition on the basis of field conducted sorting analysis considering regional concept, which is necessary for successful dimensioning of municipal waste management and the important tool for monitoring waste management system establishment progress and its effectiveness. More reliable investment planning is needed, as indicated by cost evaluation exercises. Encourage private sector involvement and investment in the infrastructural measures of MSWM systems.

Another policy instrument that is strongly recommended to be adopted and implemented by the end of this planning period is introduction of a landfill fee, which is only partially implemented. Municipal waste management depend on regional and local self-government units and introducing a landfill fee could intensify willingness and cooperation between them, consequently speeding up implementation of measures necessary to move toward a recycling regime. The revenues could be used to finance investments in the waste sector.

## CONCLUSIONS AND POLICY RECOMMENDATIONS / ROADMAP FORWARD

Based on the country deep dives and the proposed reform framework, the following recommendations emerge across a few key domains:

### DIMENSION 1: IMPROVE THE INSTITUTIONAL ARRANGEMENTS

**Build strong enforcement capacities.** Compliance with the prevailing environmental legislation is usually best enforced through legally independent bodies that may act on their own initiative and take appropriate enforcement actions through fees and other sanctions, including prosecution. Enforcement has the clear objective to avoid possibly high fines as a result of EU infringement procedures for non-compliance; but in addition, effective enforcement is essential to set the right incentives for the responsible authorities and their contracted operators to plan, implement, and maintain an integrated solid waste management system. Also, it provides to the public a mechanism to deal with complaints from citizens; and in the long run increases acceptance for final disposal and other waste treatment solutions.

**Increase local ownership.** Ambitious national waste management plans have not yet been fully translated into regional and local plans. Local authorities, the main drivers for implementation, have yet to assume the level of ownership required for ambitious plans that include significant infrastructure investments, politically sensitive landfill site selection, and tariff increases. Building municipal-level momentum will require additional incentives for better performers, and increasing sanctions for non-compliance and worse performers; but also better public communication and outreach campaigns to engage the local population.

**Allocate more time and resources for site selection procedures.** Good practice in integrating Strategic EA at early stages and EIA at later stages throughout the site selection process for landfills or other waste management facilities has been developed and is practiced today in Ireland following many years of difficult lessons learned from a system that once relied heavily on the political process. A landmark landfill site selection case in Dublin was a wake-up call for officials to recognize that the process of site selection must be de-politicized. As a result, Parliament removed authority for solid waste site selection decisions from local level politicians and transferred it to higher-level technical authorities. Ireland also implemented national good practice guidelines for sequencing technical studies to assess landfill site options in conjunction with SEA: conduct a robust EIA that provides an 'alternatives analysis' on short-listed sites with strong public involvement; and conduct a site-specific EIA with public involvement linked to the environmental permitting process. These national guidelines emphasize the importance of a technically sound iterative process that incorporates public involvement at each step. Higher up-front costs and a longer time frame ultimately pay off because the decision-making process moves forward and does not get reversed. Waste incineration schemes can be particularly challenging in this respect, as their development faces strong public opposition. Planning process and consultation procedures should be carefully designed and may take considerable time.

**Establish a data management framework at the national level and data collection and reporting mechanisms at the local level.** Strategic planning must be based on good data. This is essential to allow robust analysis of development scenarios for the sector. It supports monitoring of progress against targets set out in the plan and provides the basis for on-going strategic planning. It can also be used for creating incentives (or penalties) for sub-national authorities to meet local targets on the path towards meeting national policy objectives. The overall requirement for collecting and reporting data is normally set by the national government. Data collection and reporting requirements should be defined and standardized across data entry points (service providers, operators, and local authorities) to ensure consistency and allow data amalgamation. Cross checking and verification processes should also be put in place. Data depository systems are typically placed with agencies on

behalf of the national government, examples being the national statistics service, etc.<sup>158</sup> Wales is a global leader in recycling and materials recovery. A part of the Welsh Government's success is partly due to the robust monitoring & evaluation framework they have in place. Local Welsh Authorities report on their progress against the targets set out in the 'Towards Zero Waste' National strategy through an online reporting system for waste data called 'Waste Data Flow'. Waste data is published in an annual statistical report that enables greater comparison between local authorities, the sharing of best practices, and enabling gaps to be identified for greater service improvements to be achieved.

## DIMENSION 2: OPERATIONALIZE THE NATIONAL WASTE MANAGEMENT PLANS

**Increase central-level implementation capacity.** Dramatic improvements required by EU targets need a strong top-down push in the form of adequate program management, planning, and incentives, but central-level capacity is insufficient to operationalize national strategies. Central ministries require enough staff to operate effectively, with realistic plans, measurable targets, and intermediate deadlines. However, building central-level capacity does not mean a return to old-style central planning. For example, in Bulgaria, during the first phase of implementing the national waste management plan, fund absorption was slow, so during the second phase, Government opted to allocate funds for regional sanitary landfills at the national level and the Ministry of Environment even participated in landfill site selection. While this may assist municipalities during the preparation phase, lack of local ownership will likely delay implementation and may cause future issues with the local population, whose support will be needed when landfills begin to accept larger waste volumes from other regions.

**Strengthen inter-municipal entities for regional waste management.** Integrated solid waste management depends on effective regional-level implementation and coordination. International experience demonstrates that strong inter-municipal entities are crucial for regional planning and service administration. They require a solid institutional, technical, and financial operational base, and often operate through a regional public company that has sufficient autonomy and resources, supervised by the founding municipalities. Assistance is needed to establish strong, negotiated inter-municipal agreements as the 'institutional backbone' of regional integrated solid waste management systems. These agreements need to specify responsibilities, distribute risks, and share benefits among signing parties.

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<sup>158</sup> World Bank. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. 2021.

### DIMENSION 3: PROGRESS TOWARDS MEDIUM-TERM ECONOMIC AND FINANCIAL SUSTAINABILITY

**Increase the share and improve the conditions of private participation in service provision.** Participation of private providers in waste management services can benefit the system as a whole. Public budgets are spared necessary investments in SWM systems, private enterprises can bring innovations and good management expertise into play, they decrease the possibility of patronage politics, and they make the provider directly accountable to the clients—especially in situations in which the government offers no subsidies for service provision. Well written contracts with adequate risk apportionment that are tendered through transparent mechanisms, can also greatly contribute to improving the cost-efficiency of the system as a whole.

**Where possible, link service level improvements to tariffs increase.** Governments often subsidize service provision through low tariffs to ensure access to affordable services for low-income groups. However, by doing so, they can make waste management unattractive to private enterprises that do not want to be at the whim of the public sector; and providers often end up being accountable to policy makers rather than to their clients. Since politicians often keep waste management fees below recovery costs for short-term political gain, they can make service providers dependent on central government grants and/or on un-penalized service cutbacks. At the same time, it becomes even more difficult to adjust tariffs at a later stage when they cannot be justified with improvements in the quality of the service. Further sources of additional revenues or cost reductions can also be sought by improving the recycling levels. Although all four countries have a vibrant recycling sector, stronger public education and outreach is required to reach targets.

**Seek additional revenue sources or cost reductions by improving recycling levels.** Bulgaria, Croatia, Poland, and Romania have a private recycling sector, but stronger public education and outreach is required to reach targets.

✓ **Define clear affordability limits.** In many countries, lower income groups bear a disproportionate share of inefficient services, and they tend to pay higher prices than more affluent households. Since they often do not benefit from economies of scale and network externalities (e.g. in rural areas), and are often taken advantage of by individual providers (especially when one provider has the service monopoly in the area), they not only have to spend a higher share of their budget on services, but they also tend to receive poorer services. Central or regional governments can help poor jurisdictions to solve this problem by bringing them together and helping them form a common front for negotiating with individual providers.

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