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## Baseline Review of Estonian Municipal Solid Waste Management System

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REPUBLIC OF ESTONIA  
MINISTRY OF THE ENVIRONMENT



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## Abbreviations

AD	Anaerobic Digestion
C&D	Construction and Demolition
DRS	Deposit Refund System
EC	European Commission
EPR	Extended Producer Responsibility
EU	European Union
MoE	Ministry of Environment
MSW	Municipal solid waste
NWMP	National Waste Management Plan
PET	Polyethylene terephthalate
PRO	Producer Responsibility Organization
RDF	Refuse-Derived Fuel
RVM	Reverse Vending Machine
SUP	Single-use plastic
SWM	Solid Waste Management
WEEE	Waste Electrical and Electronic Equipment
WFD	Waste Framework Directive
WMP	Waste Management Plan

## Executive Summary

### Current Situation

**Estonia has made substantial progress on waste management over the past 20 years but continues to lag relative to some European Union targets.** Estonia was issued an Early Warning Report by the European Commission in 2018 and is considered at risk of missing the 2020 target for preparation for re-use/recycling of municipal waste and subsequent targets. Through DG REFORM funding, the World Bank is supporting the Ministry of Environment in Estonia in assessing the current municipal solid waste management system, analyzing potential scenario options, proposing policy recommendations, and developing an action plan to improve the effectiveness and circularity of the system.

**Estonia's reported waste generation per capita has increased, rising from 280 kg/capita in 2012 to 405 kg in 2018, still below the EU average of 492 kg/capita.** Estonia's municipal waste recycling rate of 28% is below the EU average of 46%, and well below the 50% target for 2020. For packaging waste specifically, the present targets require 60% recovery and 55% recycling rates. At the EU level, Estonia is committed to achieving a 55% municipal waste re-use and recycling rate by 2025 and respectively 60% by 2030. Higher re-use and recycling rates of 65% and landfilling less than 10% by weight of the municipal waste must be achieved by 2035.

**The 2004 Waste Act is the central piece of legislation governing waste management in Estonia, and three cycles of National Waste Management Plans since 2002 have provided overall policy direction with an increasing emphasis on recovery and circularity.** Responsibility for waste management is split across levels of governance, with local governments responsible for municipal waste operations and local regulations, and the Ministry of Environment in charge of national issues such as permitting, auditing, data management and legislation. Local governments organize mixed municipal collection, transportation and processing, while producer responsibility organizations (PRO) collect packaging waste and other products of concern. Recent reforms have consolidated the number of municipalities, but this has not yet had a significant impact on coordination between localities.

**Waste management operations are driven by legislative requirements that municipal waste collection and transport should be privatized, with varying levels of user fees, separation and minimum service requirements.** Packaging waste is collected both through municipal systems and via a network of bring sites organized by PROs. Collection frequency varies across the country with limited pickups in low density areas. Local governments have the right to determine treatment and disposal methods, but private providers are often not subject to those constraints in practice. Despite permissive legislation and the presence of municipal-owned facilities, there is little interest in intermunicipal cooperation. In 2018, around 21.5% of municipal waste is landfilled, 3.7% composted, 24.3% recycled, and with the majority of waste being incinerated; an incineration tax has been considered to incentivize recycling but has not been introduced. There is an increase of municipal waste quantities landfilled in comparison to period 2013 – 2016, due to landfilling being more cost-effective for mixed municipal waste compared to incineration. Given Estonia's small size and lack of recycling capacity, the majority of recyclable waste is exported for

processing abroad. Construction and demolition waste is largely regulated locally and is currently exceeding related recovery targets as a result of backfilling and high landfill gate fees.

**Financing of the waste management system generally occurs as designed.** Municipal waste services are largely funded by user fees paid directly to private contractors, with differential pricing for waste container size and waste streams to incentivize source separation. The user fees vary significantly across the country. Additionally, the Environmental Investment Center has financed nearly 500 waste management projects since 2009, channeling funding from the national government and the EU.

**Estonia has an extended producer responsibility (EPR) system in place for packaging and five other products of concern, with PROs set up for packaging waste, tires, WEEE, and batteries and accumulators.** Estonia has a well-functioning deposit refund scheme for beverage containers, but supervision and reporting in the broader packaging PRO system is not capturing all activities. There are sometimes challenges in cooperation between PROs and local governments, and even between local governments, which has resulted in a suboptimal network of collection sites. The model is evolving to move closer to the user. An additional challenge for the EPR system is the increase in e-commerce which is difficult to monitor and enforce.

**While there is a centralized data system for waste management issues, local governments do not have a reporting role and only around one-third of reports from operators are reviewed.** Waste operators and PROs are responsible for reporting regularly to the MoE, but there are general concerns around the quality of self-reported data.

**Efforts have been made to raise public awareness; however, their reach has been limited and campaigns have generally been uncoordinated.** Packaging PROs are mandated to spend 1% of their expenditures on public awareness campaigns and local governments are not obligated to designate funds for communications.

Some of the key issues identified in this report are:

- lack of accountability for achieving recycling targets;
- limited local integration of parallel and differing waste collection and EPR systems accompanied by low public awareness;
- limited data and reporting as a means to understand material flow and transparent management of waste through both the waste collection and EPR systems; and
- legislative limitations for the application of several widely used approaches in the EU such as i) the right to organize waste collection and transportation through the preferred local method such as in-house, a municipally owned company, or through the private sector, or ii) the ability for local governments to set and collect payments for waste management services (further limiting tools and incentives for local collaboration).

### Proposed Areas for Improvement

**There are opportunities to improve the integrated municipal waste management system on multiple fronts in order to move towards achieving EU recycling targets and a greater circular approach.** These

can be considered under a number of aggregated headings, and only a high-level summary of recommendations is provided here:

- a. **Legislation and institutional arrangements:** the delegation of responsibility to achieve recycling targets and related rights should be with an entity with the authority to act accordingly to improve accountability, coordination mechanisms (such as the Packaging Committee) should become functional, and the use of available enforcement mechanisms should be improved;
- b. **Waste management operations:** municipal responsibility should be aligned with the appropriate authority and rights, incentives towards greater intermunicipal cooperation could allow for economies of scale, the size of service areas and frequency of service could be reviewed to allow for greater local flexibility (and potentially efficiency), fee structures in support of recycling should be reviewed, and biowaste separation and treatment requires specific focus if recycling targets are to be met;
- c. **Financing of waste management services:** a greater understanding of the full cost structure of municipal waste is required for more efficient planning, and investment priorities should be agreed and inform a coordinated investment approach;
- d. **Extended producer responsibility:** the packaging EPR system requires a review and adjustment to ensure optimal functioning including a review of minimum technical requirements towards separate collection and sorting, clarifying and standardizing responsibilities between PRO's and municipalities, and improving transparency and reporting standards;
- e. **Data management and reporting:** a disaggregated view of data (down to local government level and across multiple collection channels) is required in order to improve management towards achieving recycling targets,
- f. **Communications:** a significant increase in public awareness expenditure and greater coordination of activities across all role players is required to achieve higher rates of separate collection and prevent mismanagement of waste.

## 1. Introduction

**The municipal waste management system in Estonia is lagging relative to some European Union waste related targets.** Estonia, together with 13 other member states, has been identified by the European Commission (EC) as being at risk of failing to meet the 2020 target of 50% preparation for re-use and recycling of household and similar waste set out in Article 11(2)(a) of EU Waste Framework Directive 2008/98/EC (WFD). In 2018, the achieved municipal waste recycling rate in Estonia was 28% and has remained relatively consistent over the past 5 years. The figure is considerably below the European Union (EU) average of 46%. The achieved recycling rate in 2018 for recyclable waste fractions of household waste comprising of paper and cardboard, plastics, glass and metal was 49%<sup>1</sup> that represent reduction of 4% compared to previous two years. To meet the more stringent targets for recycling of municipal waste for 2025 and beyond, the waste management system in Estonia needs to be improved.

**The assessment that underpins the Early Warning Report issued by the EC<sup>2</sup> concludes that structural problems in Estonia are contributing to slow progress on recycling.** These structural problems include regulatory barriers that cause uncertainty and the lack of effective instruments in place to force municipalities to comply with the recycling targets. Separate collection is not yet being carried out efficiently, the extended producer responsibility (EPR) schemes for packaging are not sufficiently integrated with municipal collection services, and there are insufficient incentives for households to separate waste. In addition, the sector faces multiple challenges including inefficient waste collection and an increase in landfilling, lack of technical support for municipalities, and scattered responsibilities for management of packaging waste between municipalities and producer responsibility organizations (PRO).

**Estonia intends to adopt a new National Waste Management Plan (NWMP) by the end of 2022<sup>3</sup> and has requested support from the World Bank in preparation.** Particularly, the World Bank is expected to provide support in order to better to understand current bottlenecks in the waste management system preventing the country from meeting the EU targets in terms of recycling and waste reduction, and propose improvements to the system to align with the EU targets.

**The World Bank has agreed to assess the current municipal solid waste management system, analyze the potential options, propose policy recommendations, and develop an action plan to improve the effectiveness and circularity of the solid waste management system in Estonia.** This will include a review of the system in an integrated and holistic manner, considering waste management operations, the legal framework, institutional arrangements, technical solutions, communications, data management and reporting, and financing. This report is the first in an agreed series of deliverables, providing a baseline

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<sup>1</sup> The calculation based on Method 1, Commission Decision 2011/753/EU establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC). Four methods of calculating the municipal recycling rate are accepted by the EC. Until 2025, Member States can measure and report according to their method of preference. From 2025 onwards it will be required to report according to Method 4 which is the most difficult to achieve. Method 1 is the recycling rate of paper, metal, plastic and glass household waste. Method 2 is the recycling rate of paper, metal, plastic, glass household waste and other single types of household waste or of similar waste from other origins. Method 3 is the recycling rate of household waste. Method 4 is the recycling rate of municipal waste.

<sup>2</sup> Report available at: [https://ec.europa.eu/environment/waste/pdf/early\\_warning\\_report\\_EE.pdf](https://ec.europa.eu/environment/waste/pdf/early_warning_report_EE.pdf)

<sup>3</sup> The present NWMP expires in 2020 and a new plan was supposed to be developed for the period 2021 -2026. The MoE has requested an extension of 2 years in order to align with the broader environmental strategy being developed.

assessment, initial key findings and recommended areas for improvement for consideration by the Ministry of Environment (MoE).

## 2. Overview of the Municipal Waste Management System and EU Targets

### Key Findings

- Waste management is an assigned function to local governments, responsible for organizing mixed municipal waste collection, transport and processing, while PRO's collect packaging waste and other specific products of concern.
- Recent administrative reforms have consolidated and reduced the number of municipalities in Estonia, but this has not yet had a significant impact on greater coordination of waste management activities between localities.
- Municipal waste has been increasing on a per capita basis over the past 5 years, but at 405 kg per capita remains under the EU average.
- Estonia's municipal waste recycling rate of 28% is below the EU average of 46%. While the National Waste Act clearly places responsibility for all municipal waste activities with local government, there is no official assignment of reuse and recycling targets to the local level.

### a) Overview of Estonia's local government and administrative structure for SWM

**Local authorities have been consolidated to 79 local government units in Estonia with 15 cities and 64 rural municipalities.**<sup>4</sup> Estonia has a one-tier local government system where all local governments units have equal legal status, make decisions independently, and are responsible for the same tasks and service provision. For further decentralization of service delivery and authority, local authorities may form rural municipality or city districts with limited authority - currently there are city districts in Tallinn and Hiiumaa. Local authorities may also form different cooperation units, including for municipal waste management, to solve the common tasks in a more centralized, efficient and competent way. Despite the relatively small size of the country, the various regions of Estonia differ from one another in terms of geography, economy, history and culture. The territory of Estonia is divided into 15 counties, which are state administrative units (not local governments) without separately elected representative bodies or any other significant independent competence.

**Estonia's population (of around 1,3 million people) are concentrated in two main agglomerations (Tallinn and Tartu), and the average density is far below the EU average.** The aim of the administrative reform of 2017 was to establish municipalities where the number of inhabitants would not be lower than 5000 individuals, with the exception of some islands. This was a significant reform: prior to 2017 rural municipalities had on average 1500 or less inhabitants. The population of Estonia is concentrated in a few main locations, with Tallinn and neighboring municipalities accounting for around 40% of the population and Tartu and its neighboring municipalities for a further 10% of the population. All other localities outside of these two main agglomerations have recorded a decline in population over the past decades.

<sup>4</sup> <https://www.rahandusministeerium.ee/en/local-governments-and-administrative-territorial-reform>



to increase coordination and efficiency in delivering waste collection services but is first important step, as lack of resources for municipalities was historically a key problem.

## b) General waste trends

Based on a review of data provided by the Environment Agency for the period 2014 to 2018, the following trends can be summarized:

- Total waste generation in 2018 was over **23 million tonnes**. The majority (81% by mass) of this comprises oil-shale sector waste, with municipal waste comprising **535,494 tonnes** as reported to Eurostat.
- Total waste generation since 2014 has increased slightly, from **22,088,148** to **23,516,751** tonnes but this trend has not been consistent. Waste quantities dropped by approximately **1.7** million tonnes between 2017 and 2018, which could be associated to decline of the oil-shale industry.
- In the period 2014 – 2018 overall recovery of waste has increased by approximately **1.49 million tonnes**, whilst landfill of waste has decreased from **13.6 Million tonnes** to **13.2 Million tonnes** over the same period.
- Quantities of hazardous waste have increased slightly, from **10,484,249** to **10,974,223** tonnes. Approximately 97% of Estonia's hazardous waste is generated in the oil-shale industry. The proportion of hazardous waste recovered has dropped from **14%** in 2014 to **9%** in 2018.

## c) Municipal waste generation, composition, and management

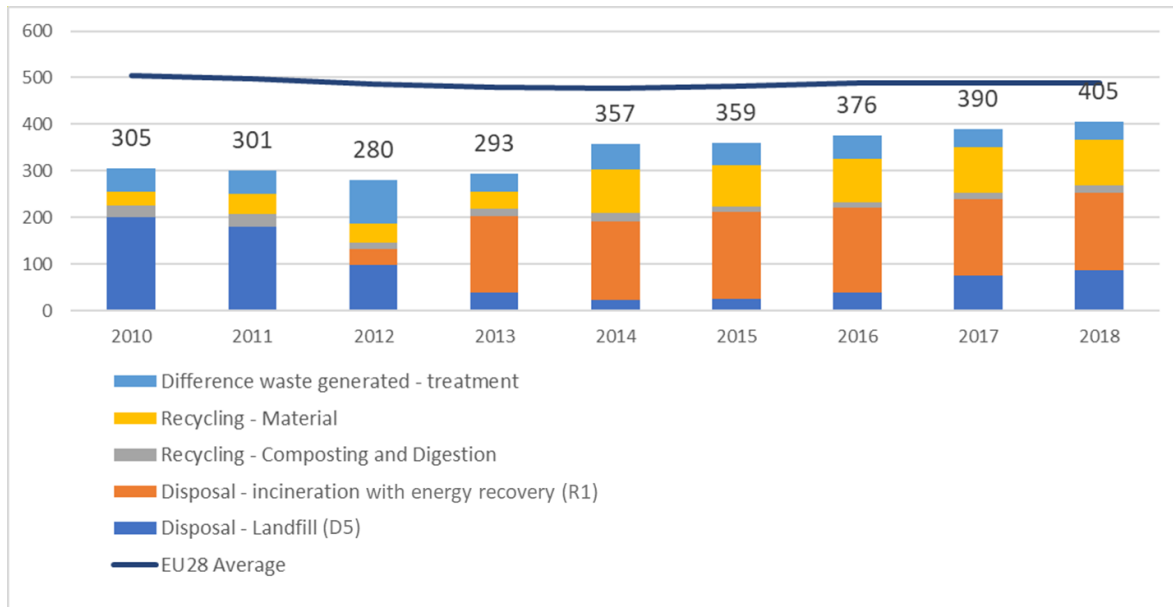
**On a per capita basis, the amount of municipal waste generated in Estonia continues to increase, from 280 kg per capita in 2012 to 405 kg per capita in 2018.** However, this remains below the EU average of **492 kg/capita/year**. The jump could be due to changes in reporting rather than an actual increase of 125 kg/capita over the six years. The generation rate varies significantly across different municipalities, from 480 kg generated per capita per year in Tallinn to below 200 kg generated in several rural municipalities.

**For 2018, a total of 535 thousand tonnes of municipal waste were generated.** Volumes per type of waste treatment were reported as follows: 130 thousand tonnes (24.3%) were materially recycled, 20 thousand tonnes (3.7%) were composted, 221 thousand tonnes (41.3%) were energetically recovered (incinerated), and 115 thousand tonnes (21.5%) were landfilled<sup>6</sup>. Landfilling of municipal waste, which constituted 19% of treatment in 2017, is still below the EU average of around 24%.

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<sup>6</sup> The difference of 9.2% to 100% is supposed to be treatment losses in MBT.

**Figure 1: Municipal waste by treatment in Estonia (2001 - 2018), kg per capita**



Source: WB produced from Eurostat data

SEI Tallinn completed a national waste composition study in 2020. The main conclusions are that the composition of mixed municipal waste did not change significantly over the past ten years. Compared to the 2012 study, the biowaste fraction remains similar. The percentage content of plastics, and paper and cardboard increased. The share of packaging waste in mixed municipal waste is 32%, compared to 29% in the 2012 survey. Plastic packaging accounted for about half of that. Biowaste in mixed municipal waste is 32% on average with the majority of it being kitchen and food waste.

Within separately collected paper and cardboard waste from separate containers at buildings, the proportion of paper and cardboard packaging versus waste paper are 56% and 44%, likely reflecting the downward trend in printed newspapers and magazines. The share of other unsuitable waste is about 7%, similar to the 2012 study.

When looking at separately collected mixed packaging, packaging waste accounts for about 72% of the waste collected and plastic packaging is the majority of that. The remaining waste consists primarily of mixed municipal waste and waste paper. Within the collected mixed packaging waste, 46% is plastic packaging, 27% is paper and cardboard packaging, 21% is glass packaging, and 7% is metal packaging.

#### d) Targets for recycling of municipal waste

**At the EU level, the Waste Framework Directive (WFD), sets the following targets which are expected to be transposed in local legislation:**

1. By 2025, 55 % of the total amount of municipal waste must be recycled.
2. By 2030 and 2035, respectively 60% and 65% by weight of the municipal waste should be re-used and recycled.

**The Landfill Directive imposes the following additional objectives targets:**

1. as of 2030, all waste suitable for recycling or other recovery, in particular in municipal waste, shall not be accepted in a landfill with the exception of waste for which landfilling delivers the best environmental outcome;
2. by 2035 the amount of municipal waste landfilled is reduced to 10 % or less of the total amount of municipal waste generated (by weight)<sup>7</sup>.

**These directives are reflected in the Waste Act, in particular § 136<sup>3</sup>, par. 1, stating that from 1 January 2020:** the paper, metal, plastic and glass waste originating from households and other waste collected by type originating from households and similar waste originating from other sources, except for production waste and waste originating from agricultural production or forestry, must be recovered by way of preparation for reuse or recycling – at least 50 percent of the total weight of such waste per calendar year.

**Estonia is applying Method 1 to calculate the 2020 preparation for re-use and recycling targets for household and similar waste<sup>8</sup>.** This method assumes the target is limited to recyclable fractions of household waste only; however, a provision in the Waste Act now includes similar waste. Separating household waste from similar waste is difficult given mixed-use buildings and the reporting system is not aligned since there is not separate reporting by PROs for different waste channels. Information about the generated and recycled fractions of paper and cardboard, plastics, glass and metal fractions in household waste and the achieved recycling rate in 2018, according to Method 1 of Commission Decision 2011/753/EU is presented in the following tables.

**Table 1: Recyclable waste fractions in generated household waste in 2018, tonnes**

Waste material	Waste code in accordance with Commission Decision 2000/532/EC	Separately collected fractions 20 01 (70%)	Materials contained in mixed waste 20 03 01 (226 719 t)	Household packaging 15 01	Total
Paper and cardboard	20 01 01, 15 01 01 (household packaging 70% of total)	21,670	30,607	37,407	89,684
Metals	20 01 40, 15 01 04 (household packaging 40% of total)	5,681	10,656	4,084	20,421
Plastic	20 01 39, 15 01 02 (household packaging 70% of total)	1,206	41,036	20,090	62,332
Glass	20 01 02, 15 01 07 (household packaging 100% of total)	4,083	11,789	28,816	44,688
<b>Total generated</b>		<b>32,638</b>	<b>94,088</b>	<b>90,397</b>	<b>217,124</b>

<sup>7</sup> This target was already achieved in Estonia in 2014-2015 and is therefore not the principal challenge being faced in the waste system

<sup>8</sup> Commission Decision 2011/753/EU establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council

**Table 2: Recycled waste fractions of household waste in 2018 and achieved recycling rates**

Waste material	Waste code in accordance with Commission Decision 2000/532/EC	Recycling 20 01 (70%)	Export 20 01 (70%)	Recycling 15 01 household	Export 15 01 household	Total recycling	Recycling rate %
Paper and cardboard	20 01 01, 15 01 01 (household packaging 70% of total)	804	19,734	4,830	28,645	54,012	60%
Metals	20 01 40, 15 01 04 (household packaging 40% of total)	8,137	1,414	2,109	1,876	13,536	66%
Plastic	20 01 39, 15 01 02 (household packaging 70% of total)	247	0	5,418	8,739	14,405	23%
Glass	20 01 02, 15 01 07 (household packaging 100% of total)	17	0	9,851	14,373	24,241	54%
<b>Total recycled</b>		<b>9,205</b>	<b>21,148</b>	<b>22,208</b>	<b>53,633</b>	<b>106,194</b>	<b>49%</b>

Source: Estonian Environmental Agency

**The achieved recycling rate of 49% in 2018 is a little lower than recycling rates achieved in previous years: 2017 (52%), 2016 (52%), 2015 (52%) and 2014 (55%).** It shall be noted that Method 1 for calculation of preparation for re-use and recycling targets, based only on recyclable waste fractions contained in household waste could apply until 2025. The 2025 and later recycling targets will be calculated towards the total amount of municipal waste generated, or Method 4.

**While the National Waste Act clearly places responsibility for all municipal waste activities with local government, there is no official assignment of reuse and recycling targets to the local level.** There is a disconnect between national ambitions and local execution. Source separation is generally poorly executed, and waste management companies often opt for the least cost treatment options of incineration and landfilling without enough local supervision. For example, biowaste containers are placed in most towns and settlements, as well as at multi-storied apartment buildings, but these are not used much by the general population. This is the case even where published local regulations require separate biowaste containers and do not allow households to place biowaste in mixed municipal waste containers.

#### e) Targets for recovery and recycling of packaging waste

**Packaging waste from commercial establishments is not regarded as similar to household waste and thus not included in the definition of municipal waste. Separate targets for the recycling and recovery of packaging waste apply.** These present targets correspond to the Directive 94/62/EU on packaging and packaging waste and require recovery of a minimum of 60% of the total packaging waste generated, including recycling of at least 55%. Specific recycling targets apply for the different packaging materials like paper and cardboard (60%), glass (60%), plastic (22.5%), metal (50%) and wood (15%). The material specific recovery targets applied in Estonia as of 1 January 2009, according to §36 PA are slightly higher than the minimum specified in the Packaging Directive:

- 70 percent of the total mass of glass waste by way of recycling;

- 70 percent of the total mass of paper and cardboard waste, whereas 60 percent of the total mass by way of recycling;
- 60 percent of the total mass of metal waste by way of recycling;
- 55 percent of the total mass of plastic waste, whereas 45 percent of the total mass of plastic waste by way of recycling and 22.5 percent of the total mass of plastic waste by way of reprocessing into plastic;
- 45 percent of the total mass of wood waste, whereas 20 percent of the total mass by way of recycling.
- other packaging material shall be recovered in as large quantities as possible in accordance with the existing technical means and economic justification.

**These targets for packaging waste to a large extent overlap with the 2020 targets for recycling of household and similar waste, as packaging has the main share in the recyclable waste fractions like paper, cardboard, plastics and glass.<sup>9</sup>** The targets will increase by 2025 and 2030 according to the provisions in the Packaging and Packaging Waste Directive. Responsibility for achievement of recycling and recovery targets for packaging waste belongs to economic operators placing packaged goods on the market or the producers of packaging. The data show that Estonia achieved the recycling and recovery targets for packaging waste in 2018 and the highest recycling rate of almost 88% is for paper and cardboard as well as metal. 24% of total recycled packaging waste is done in the country while the rest is exported outside Estonia.

Information about the packaging quantities placed on the market by type of material and the amount of packaging waste recycled and recovered in 2018 is presented in the table below.

**Table 3: Packaging placed on the market in Estonia, recycled and recovered packaging waste, 2018**

Packaging waste material	Generation	Recycled in Estonia	Recycled in other EU countries	Recycled outside the EU	Recycling total	Recycling rate	Energy recovery	Other recovery	Recovery rate
Plastic	52,075	7,709	11,674	1,518	20,902	40.1%	21742		81.9%
Wood	27,846	5,444	175	77	5,695	20.5%	20422		93.8%
Metal	15,368		1,701	11,814	13,515	87.9%			87.9%
Glass	35,977	9,851	10,523	3,989	24,363	67.7%		2,955	75.9%
Paper and cardboard	70,498	7,411	41,753	12,692	61,856	87.7%	5625		95.7%
Other									
<b>Total</b>	<b>201,764</b>	<b>30,415</b>	<b>65,826</b>	<b>30,090</b>	<b>126,331</b>	<b>62.6%</b>	<b>47788</b>	<b>2,955</b>	<b>87.8%</b>

Source: Estonian Environmental Agency, EUROSTAT

<sup>9</sup> The overlap in targets originates from the EU level

### 3. Waste Management Legislation and Institutional Responsibilities

#### Key Findings

- The 2004 Waste Act is the central piece of legislation governing waste management and specifies obligations of the main actors, establishes procedures and penalties and establishes EPR schemes. Key principles from the EU Waste Framework Directive, such as the proximity principle and waste hierarchy, are transposed in the Act
- Since 2002, three cycles of National Waste Management Plans have provided overall policy direction, while each local government is required to develop a Local Waste Management Plan and adopt local regulations to govern waste management activities.
- The Ministry of Environment is the central institution responsible for policy and the regulatory framework for waste management. Two other key players, the Environmental Board and Environmental Inspectorate are set to merge on 1 January 2021, bringing into a single entity the activities relating to administration of permitting and environmental charges and the enforcement of measures for environmental protection. The Environmental Board also currently collects waste data for reporting at national level.
- The Environmental Investment Center plays a key role in financing of waste related infrastructure through the Operational Programme Environment and also via revenues from the collected environmental taxes.

**Joining the European Union in 2004 has brought significant changes to Estonia’s legal and policy framework for waste management.** These comprise new standards for waste facilities, including landfills, as well as ambitious targets for recycling. National waste policies make it a priority to achieve the EU objectives of reducing landfilling of municipal solid waste (MSW) and to increase the country’s recycling and composting.<sup>10</sup>

#### a) Waste Management Legislation and Regulations

##### Waste Act

**Estonia's 2004 Waste Act is the central piece of legislation governing waste management, with the most recent updated published under RT I, 21.12.2019, 1 and in force from January 1, 2020.** The act specifies obligations for the main actors involved in waste management, establishes procedures for waste permits and includes provisions for fines and other penalties. The Waste Act also establishes EPR schemes for specific waste streams and provides a legal framework for the establishment of PROs. It transposes the EU Waste Framework Directive (2008/98/EC) and its principles, including the “proximity principle” (recovery and disposal of mixed municipal waste should occur as close as possible to the source) and the “waste hierarchy” (priority to prevention, then reuse, recycling, other recovery and disposal).<sup>11</sup>

<sup>10</sup> OECD. 2017. OECD Environmental Performance Reviews: Estonia 2017. OECD Publishing, Paris, <https://doi.org/10.1787/9789264268241-en>.

<sup>11</sup> Ibid

Landfills are also governed by the Waste Act and a 2004 Regulation of the Minister of Environment, which transpose the EU's Landfill Directive (1999/31/EC).

Various regulations and ordinances under the Waste Act further expand on portions of the Waste Act, listed in the table below.

**Table 4: Supporting regulations promulgated under the Waste Act**

<b>Title of the Ordinance under the Waste Act</b>	<b>Link to 'State Courier' (Riigi Teataja)</b>	<b>Remarks</b>
Requirements for the recovery or disposal at the place of generation of certain types and quantities of non-hazardous waste for which a waste permit is not required	<a href="https://www.riigiteataja.ee/akt/129072020003">https://www.riigiteataja.ee/akt/129072020003</a>	
Specified list of wastes from products of concern	<a href="https://www.riigiteataja.ee/akt/127062020002">https://www.riigiteataja.ee/akt/127062020002</a>	
Requirements for digestion residues from the production of biogas from biodegradable waste	<a href="https://www.riigiteataja.ee/akt/126052020006">https://www.riigiteataja.ee/akt/126052020006</a>	End-of-Waste (EoW) criteria for digestate
Training and competence requirements for the person responsible for the management of hazardous waste, landfill or waste storage	<a href="https://www.riigiteataja.ee/akt/119032020009">https://www.riigiteataja.ee/akt/119032020009</a>	
Requirements for compost from biodegradable waste	<a href="https://www.riigiteataja.ee/akt/118022020007">https://www.riigiteataja.ee/akt/118022020007</a>	EoW criteria for compost
Requirements for the manufacture of a compost as product from sewage sludge	<a href="https://www.riigiteataja.ee/akt/118022020005">https://www.riigiteataja.ee/akt/118022020005</a>	EoW criteria for sewage sludge compost
Data composition of the waste report and procedure for submission of the report	<a href="https://www.riigiteataja.ee/akt/128012020010">https://www.riigiteataja.ee/akt/128012020010</a>	
Waste classification procedure and waste list	<a href="https://www.riigiteataja.ee/akt/113122019010">https://www.riigiteataja.ee/akt/113122019010</a>	
Statutes of the Register of the Products of Concern	<a href="https://www.riigiteataja.ee/akt/112122019010">https://www.riigiteataja.ee/akt/112122019010</a>	
Handling requirements End-of-life vehicles	<a href="https://www.riigiteataja.ee/akt/120122019017">https://www.riigiteataja.ee/akt/120122019017</a>	
Requirements for the construction, operation and closure of a landfill	<a href="https://www.riigiteataja.ee/akt/123122019016">https://www.riigiteataja.ee/akt/123122019016</a>	
Requirements and Procedures for the Collection, Return to the Producer and Recovery or Disposal of Waste Electrical and Electronic Equipment (WEEE) and Targets and Deadlines for Achieving Targets	<a href="https://www.riigiteataja.ee/akt/102072019012">https://www.riigiteataja.ee/akt/102072019012</a>	
Time limits for the implementation of prohibitions and restrictions imposed on products of concern and maximum levels for dangerous substances in products of concern	<a href="https://www.riigiteataja.ee/akt/131052019003">https://www.riigiteataja.ee/akt/131052019003</a>	
End-of-waste criteria for oily wastes	<a href="https://www.riigiteataja.ee/akt/131052019004">https://www.riigiteataja.ee/akt/131052019004</a>	EoW criteria for oily waste

Requirements for chipped tires to be added to the shale oil production process	<a href="https://www.riigiteataja.ee/akt/109102018018">https://www.riigiteataja.ee/akt/109102018018</a>	EoW criteria for chipped tires, if added to the oil-shale oil production process
Hazardous waste consignment note form and procedure for preparation, transmission and registration of consignment note	<a href="https://www.riigiteataja.ee/akt/120012017009">https://www.riigiteataja.ee/akt/120012017009</a>	
Establishment of a database of consignments of hazardous waste and statutes of the database	<a href="https://www.riigiteataja.ee/akt/129122016045">https://www.riigiteataja.ee/akt/129122016045</a>	
Detailed list of scrap metal	<a href="https://www.riigiteataja.ee/akt/123082016009">https://www.riigiteataja.ee/akt/123082016009</a>	
Lists of waste recovery and disposal operations	<a href="https://www.riigiteataja.ee/akt/121062016036">https://www.riigiteataja.ee/akt/121062016036</a>	
Requirements for sorting municipal waste and bases for classification of sorted waste	<a href="https://www.riigiteataja.ee/akt/119122015005">https://www.riigiteataja.ee/akt/119122015005</a>	Detailed requirements for Municipalities on organization of the source separation of the MSW etc.
Requirements for the treatment of asbestos - containing waste	<a href="https://www.riigiteataja.ee/akt/119122015002">https://www.riigiteataja.ee/akt/119122015002</a>	
Procedure for Labeling of Hazardous Waste and Its Packaging	<a href="https://www.riigiteataja.ee/akt/119122015004">https://www.riigiteataja.ee/akt/119122015004</a>	
Procedures for the management of extractive waste	<a href="https://www.riigiteataja.ee/akt/119122015006">https://www.riigiteataja.ee/akt/119122015006</a>	
Requirements for the production of fuel additives from oil shale mining and enrichment waste	<a href="https://www.riigiteataja.ee/akt/104112015005">https://www.riigiteataja.ee/akt/104112015005</a>	EoW criteria for low-quality oil-shale, separated from the old mining waste
Requirements for the re-use of WEEE	<a href="https://www.riigiteataja.ee/akt/115072014001">https://www.riigiteataja.ee/akt/115072014001</a>	
Requirements and procedures for the collection, return to the manufacturer and recovery or disposal of waste tires	<a href="https://www.riigiteataja.ee/akt/117062014013">https://www.riigiteataja.ee/akt/117062014013</a>	
Requirements for the treatment of waste electrical and electronic equipment (WEEE)	<a href="https://www.riigiteataja.ee/akt/125042014009">https://www.riigiteataja.ee/akt/125042014009</a>	
Requirements and procedures for the collection, return to the manufacturer and recovery or disposal of waste from end-of-life vehicles and their parts, and targets and deadlines for achieving targets	<a href="https://www.riigiteataja.ee/akt/115102013004">https://www.riigiteataja.ee/akt/115102013004</a>	
Requirements and procedures for the collection, return to the manufacturer and recovery or disposal of waste batteries and accumulators and targets and deadlines for achieving targets	<a href="https://www.riigiteataja.ee/akt/115102013005">https://www.riigiteataja.ee/akt/115102013005</a>	
List of information to be made available to the user of the products of concern and ways and means of providing the information	<a href="https://www.riigiteataja.ee/akt/125072013004">https://www.riigiteataja.ee/akt/125072013004</a>	

Requirements for the management of waste containing polychlorinated biphenyls (PCB) and polychlorinated terphenyls (PCT)	<a href="https://www.riigiteataja.ee/akt/104062013011">https://www.riigiteataja.ee/akt/104062013011</a>	
Requirements and Procedures for the Collection, Return to the Producer and Recovery or Disposal of Agricultural Plastic Waste and Targets and Deadlines for Achieving Targets	<a href="https://www.riigiteataja.ee/akt/119022013013">https://www.riigiteataja.ee/akt/119022013013</a>	
Requirements for marking of electrical and electronic equipment	<a href="https://www.riigiteataja.ee/akt/104102012014">https://www.riigiteataja.ee/akt/104102012014</a>	
Requirements for marking of motor vehicle parts	<a href="https://www.riigiteataja.ee/akt/119102012002">https://www.riigiteataja.ee/akt/119102012002</a>	
Requirements for marking batteries and accumulators	<a href="https://www.riigiteataja.ee/akt/101092011003">https://www.riigiteataja.ee/akt/101092011003</a>	
Authorization to set deadlines for the implementation of prohibitions and restrictions imposed on problematic products and maximum levels for hazardous substances in problematic products	<a href="https://www.riigiteataja.ee/akt/102052011003">https://www.riigiteataja.ee/akt/102052011003</a>	
Detailed list of deadlines for the submission of information by category of electrical and electronic equipment	<a href="https://www.riigiteataja.ee/akt/112042011007">https://www.riigiteataja.ee/akt/112042011007</a>	
Requirements for the disposal of used batteries and accumulators	<a href="https://www.riigiteataja.ee/akt/12910878">https://www.riigiteataja.ee/akt/12910878</a>	

**There is just one ordinance which deals specifically with the municipal waste, namely “Requirements for sorting municipal waste and bases for classification of sorted waste”.** The regulation establishes the procedure for sorting municipal waste, the basis for classification of sorted waste and the organization for sorting of municipal waste, in order to increase the amount of municipal waste to be reused, especially prepared for re-use and recycled, to meet the targets specified in clause 136<sup>3</sup> (1) of the Waste Act and to reduce the amount of municipal waste, including biodegradable waste, deposited in landfills. While an enabling regulatory environment exists to support the pursuit of recycling targets and waste reduction, implementation and enforcement has been lagging in practice.

### Packaging related Acts

Two acts establish the main requirements for packaging waste: the 2004 Packaging Act and the 1996 Packaging Excise Duty Act. The two together transpose the EU Directive on Packaging and Packaging Waste (94/62/EC).

**Table 5: Supporting regulations promulgated under the Packaging Act**

<b>Ordinances under the Packaging Act</b>	
Statutes of the Packaging Register	<a href="https://www.riigiteataja.ee/akt/110082018001">https://www.riigiteataja.ee/akt/110082018001</a>
Package deposit amount	<a href="https://www.riigiteataja.ee/akt/116012015009">https://www.riigiteataja.ee/akt/116012015009</a>
Packaging deposit marks	<a href="https://www.riigiteataja.ee/akt/121112014023">https://www.riigiteataja.ee/akt/121112014023</a>

## Local regulations for Municipal waste management

**Precise waste handling rules for organizing waste management within a local government area are meant to be established through local regulations.** The content for such regulation is set out in § 71 of the Waste Act. Municipalities are expected to include organization of waste handling and storage, measures to prevent environmental and human harm, and minimum regular removal of municipal waste every 4 weeks in dense areas and every 12 weeks in low-density areas. However, this may be modified to every 12 weeks in densely populated areas, if composting of biowaste is ensured on site. The regulations also mandate the establishment of composting, waste collection in low-density areas, list of areas where organized transport is required, requirements for handling of non-collected waste, procedure for hazardous and healthcare waste collection and management from households. Finally, procedures for the management of uncollected construction and demolition waste, selection of sites for containers and for transfer of waste, supervision of waste handling, requirements for aftercare of waste management facilities excluding landfills, requirements for separate collection and sorting of waste, and collection sites for bulky waste within 15 km of waste generators, which means in fact ‘waste stations’ (public amenity site).

**Draft local government waste handling rules are submitted to the Environmental Board for an opinion which is, by nature, only advisory.** At the national level, the Association of Estonian Cities and Municipalities is the representative organization on behalf of local authorities that participates in consultations for the development of national legislation and policy documents.

### b) National Waste Management Plan

**Since 2002, Estonia has gone through three cycles of waste management plans, which provide the overall policy direction, beginning with** the first National Waste Management Plan for 2003-07. It sought primarily to organize “environmentally safe, flexible, institutionally granted and economically justified waste management on all levels”. The plan started a major transformation of Estonia’s waste sector, particularly in light of the country’s accession to the EU. The transposition and implementation of EU waste legislation was a major focus of this plan (MoE, 2002) which identified waste prevention and waste recycling as broad goals. It did also deal with practical issues such as the establishment of new landfills and closing of old ones, around 150 sites in 2001.

**The main objectives of the second NWMP (MoE, 2008b), which covered 2008-13, were to reduce the amount of waste disposed in landfills, increase the recovery of waste and reduce negative impacts on the environment.** In pursuing these objectives, the second plan sought to implement the EU “waste hierarchy” – promoting waste prevention, recycling and recovery, and then reducing the amount of waste deposited in landfills. A further broad objective was to decouple environmental impacts from economic growth: from a practical perspective, this translated to a focus on waste-to-energy and MBT solutions.

**The third NWMP plan runs from 2014 to 2020 and contains three strategic objectives.** One objective is to increase waste recycling and reuse: here, the NWMP sets out a series of targets linked to those established in EU legislation. Another objective is to reduce environmental risks from waste, including via improvements in monitoring and enforcement: priority areas include completing closure work for 17 remaining landfills and reducing illegal waste disposal. A third broad objective is to promote waste prevention and reduction, as well as to reduce both the level of hazard of waste and greenhouse gas (GHG) emissions from waste disposal. The NWMP 2014-20 contains Estonia’s Waste Prevention

Programme, which sets a broad objective of decoupling economic growth and waste generation, it was further supported by an implementation plan which included activities and cost estimates.

**Estonia is currently developing a new National Waste Management Plan for the period after 2022, which will promote a circular economy transition in Estonia.** The waste hierarchy will remain a foundational concept in the NWMP, and it will be framed around 4 pillars as follows:

1. Sustainable and conscious production and consumption
2. Promoting waste prevention and reuse
3. Increasing safe circulation of materials
4. Consideration of the impact of waste management on both the human and the natural environment

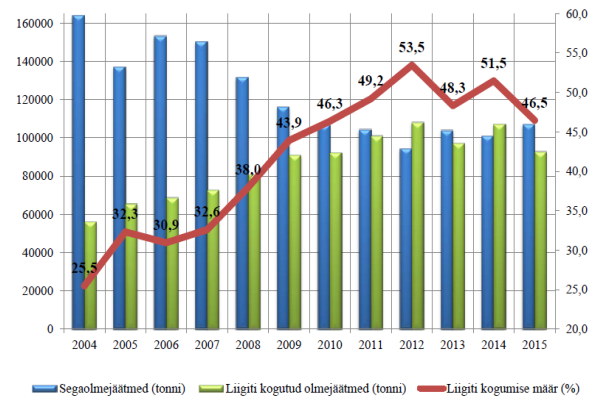
### c) Local Waste Management Plans

**According to § 39, 42 and 43 of the Waste Management Act, waste handling shall be developed based on sectoral and local government waste management plans.** The local government waste management plan should examine the situation of waste handling in the local government, the objectives for the organization and enhancement of waste handling and measures to achieve the objectives. The provisions of the National Waste Management Plan should be accounted for in local waste management plans and the local plans should be adopted by the local government council (§ 59 WA). While it remains uncommon in practice, multiple local governments are permitted to prepare a joint waste management plan.

**§ 39 of the Waste Act stipulates the content of local government waste management plans** Some of the key requirements for inclusion in the plans include: information concerning the type, quantity and origin of the waste generated on the territory covered by the plan and evaluation of the future development of waste flows; a description of the existing waste collection systems and overview of major disposal and recovery facilities; a description of general waste handling policies, including overview of planned waste handling technologies or

#### BOX: An example of a local waste management plan: Tallinn

Tallinn collected waste generation and management data and had an extensive planning exercise to enable evidence-based planning. The plan is designed to address the main challenges the city is facing regarding high density and packaging waste collection.



Source separation of municipal waste is an important responsibility of the municipality and has improved over 2004-2015 (Tallinn WMP 2017-2021).

The Tallinn WMP is well aligned with the NWMP and supported by local regulations. It has three strategic goals:

- to avoid and reduce the generation of waste, including reducing its hazardousness;
- to recycle waste or recover it to the maximum in any other manner; and
- to reduce the environmental risk arising from waste by increasing the effectiveness of monitoring and supervision, among.

The plan outlines several activities prioritized to achieve these goals, as well as a detailed implementation plan, including cost per activity, possible sources of funding, and improved supervision. These activities are not all within direct control of the local government and require collaboration with multiple partners.

Plan available here: <https://www.tallinn.ee/est/keskkond/jaاتمekavad>

policies; overview of organizational aspects related to waste handling, establishment of waste transport activities and separate collection facilities as well as information on communications campaigns and financing of waste handling. Even with common regulations, there is some variability in the content and quality of local waste management plans. Tallinn's recently produced plan serves as an example of a comprehensive and well-prepared document.

#### d) Key institutions and roles in waste management

**The Ministry of Environment is the central institution responsible for the policy and regulatory framework for waste management.** The MoE elaborates national strategies and plans, and prepares the legislation. It also takes prime responsibility for material management and resource efficiency. Outside of the MoE, other key national ministries designated with some specific functions related to waste management are:

- The **Ministry of Justice** holds local authorities accountable and enforces administrative acts.
- The **Ministry of Finance** manages finances for urban development and manages an excise tax and packaging waste finances.

The functions of Ministry of Environment at national level are supported through several executive bodies, outlined below.

**The Environmental Board under the MoE has a wide range of decision-making authority, set out in Acts and in various regulations.** The main areas of focus are permitting and environmental charges. The Board is also responsible for providing opinions on several municipal draft documents (including local waste regulations, local waste management plans and tender documents), participating in the Environmental Impact Evaluation processes etc. The latter function is that of providing an opinion, which the local municipality could consider, i.e. it is not legally obliged to incorporate. Opinions could be enforced by the Ministry of Justice through the relevant administrative acts, but clearly the current practice leaves the Board in a weak position in terms of enforcement of opinions.

**The Environmental Inspectorate, under MoE, supervises all areas of environmental protection.** It coordinates and executes supervision regarding the use of natural resources and the protection of the environment by applying the state's coercive measures on the basis and to the extent specified by law. The Environmental Inspectorate assesses environmental violations and since September 1st, 2011 has also carried out investigations in criminal cases. While the Inspectorate supervises different permits for waste management companies, local authorities retain the right to supervision at the local level. The Inspectorate currently has 15 – 17 inspectors dealing with waste, with regular inspections as part of a work plan and largely informed by a risk analysis. Inspectors can conduct unannounced visits based on complaints, and usually must deal with issues such as the unlawful handling of hazardous waste, landfill standards and the enforcement of waste treatment regulations. The Inspectorate further enforces the submission of annual waste reports and works with PROs to counter free rider problems in the system.

**Recently<sup>12</sup> the Riigikogu (Parliament of Estonia) passed changes to the law that will result in the merger of the Environmental Board and the Environmental Inspectorate on 1 January 2021.** The merged agency will go by the name of the Environmental Board. The merger forms part of a wider program of

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<sup>12</sup> <https://www.kki.ee/en/news/riigikogu-approves-merger-environmental-board-and-environmental-inspectorate>

governmental reforms and is aimed at both cost saving and reduction in bureaucracy for citizens needing to engage with government.

**Environmental Agency's waste unit gathers, processes and analyzes data about waste generated and handled across waste types, capacities as well as areas of activity and fields of production.** Waste data is collected and processed in several information systems and registers administered by the Environment Agency. The primary system is the Waste Data Management System (JATS), in which basic information on the production and handling of waste is collected and processed. This information gathered directly from role players (service providers and operators for collection, transporting, and disposal of waste and PROs provide an annual report to the relevant registry). The data, checked by the Environmental Board,<sup>13</sup> is the foundation of waste data that allows the country to monitor the movement of waste flows through possible multiple steps from the producers or waste to the final waste handler. A user-friendly query system allows any interested person to retrieve consolidated information based on a variety of markers. The obligations of the above institutions are set out in the following acts:

- Government of the Republic Act (RT I 1995, 94, 1628);
- Statutes of the Ministry of the Environment (RT I 2009, 63, 412);
- Statutes of the Environmental Board (RT I, 05.12.2012, 11); and
- Statutes of the Environmental Agency (RT I, 29.05.2013, 2).

**Environmental Investment Center (EIC)<sup>14</sup> uses revenue from environmental taxes to fund investment projects, including those for waste management.** The EIC also manages Operational Programmes under the EU Cohesion Policy which have supported investments in waste management and, in the 2014-20 programming period, in resource efficiency. Based on different regulations and programs, the EIC can provide grants or loans to a range of actors (municipalities, NGOs, private entities) for a variety of activities relating to waste, the circular economy, water management, etc.<sup>15</sup>

**As already discussed in Section 2, the local government is the main responsible level of government for the actual delivery of waste management services to residents.** In an important ruling in 2015, the Administrative Chamber of the Supreme Court reinforced this by confirming that a local government is responsible for organization of the whole municipal waste management, including the recovery or disposal of waste through waste transport activities. The Supreme Court stated that this is one of the 'key-obligations' of the municipalities and that municipal waste belongs to municipalities, hence they have a right to prescribe where it should be delivered after collection. This means that even after the shipment, the details of the waste treatment could be decided by the local authority, not the waste carrier. When preparing a public procurement of waste transport, the local government must determine the destination of waste transport, the facility where the waste must be transported. The local government must regulate the legal relationship between itself and the further processor of waste in addition to the transport of waste, taking into account the requirements arising from the Administrative Cooperation Act and the Public Procurement Act.

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<sup>13</sup> The Environmental Board has been stepping away from activities relating to the control of data collection, expecting that all future activities will be conducted by the Environmental Agency. This resulted in a weaker data quality control system in general and there have been some delays in publishing of recent data, with data for 2019 not published at the time of drafting of this report.

<sup>14</sup> <https://kik.ee/en>

<sup>15</sup> Full list of activities available on the website: <https://kik.ee/en/supported-activities>

**Intermunicipal cooperation is legally permissible but limited in practice.** Cooperation is possible in the common provision of services, issuing of joint tenders, waste management plans and regulations and for the establishment and operation of common treatment and disposal infrastructure. There are however only limited examples in practice, and these tend to not reach long term maturity. For example, Harju County initially had 11 – 12 members; however, some merged and several have withdrawn from the arrangement, with only 4 active members today. Such collaborations are often incentivized and mandated in other EU countries as a pre-condition to access EU funds. Another hurdle to cooperation may be that the collection of fees through an inter-municipal structure is not legally allowed (making such structures reliant on transfers from municipalities for their revenue streams). Previous attempts to ensure larger scale, collaborative investments from the ‘Environmental program’, through the Estonian Environmental Charges based grants, were heavily criticized. These required at least 3 municipalities submit joint applications. While the imperative for greater cooperation may be clear at the national level, current incentives and regulations which, for example, does not specify minimum required capacity for treatment facilities and volumes for waste operations are not resulting in changes towards a more efficient, coordinated system.

**The private sector plays an important role in waste management.** As noted above, municipalities contract private waste management companies for MSW collection and transport. As of late 2015, mainly private waste companies provided MSW collection and transport services. Private and municipally owned companies have built and own key treatment facilities for MSW, including mechanical-biological treatment (MBT) facilities and landfills. Private companies also own or operate key facilities for hazardous and industrial waste. Other facilities are owned by municipalities, although many are operated by waste companies (both private and municipally owned). Some of Tallinn’s recycling centers are operated by a non-profit organization set up by the municipal government.

Given the landscape of responsibilities and institutions, the key functions to be performed in the waste management system is summarized in the table below.

*Table 6: Roles and responsibilities in waste management system summarized*

Activity/Role	Responsible institutions	Description
MSW Collection and treatment	Municipality, private companies	Municipality has to establish a ‘register of the waste holders’, set the practical requirements for waste sorting and collection and pick up the collection company by tender. The collection company is obliged to collect waste in a given area based on their contract with the municipality. In most cases municipalities do not regulate the destination of the waste, hence it has become practice for the collection company to decide.
Registration and permitting - Landfill sites - Transport operators	Environmental Board, Municipalities	Landfill sites are to be selected based on the Planning Act (public hearing etc.), but the permit for landfill operations, as any other waste management operation, is issued by the Environmental Board.

		On some limited cases, where a waste permit is not required, but registration of waste management entities is, it could be done by the municipality.
Enforcement and compliance monitoring <ul style="list-style-type: none"> <li>- Local activities</li> <li>- National level activities</li> <li>- Transboundary movement</li> </ul>	Environmental Inspectorate (from 2021 as part of the Environmental Board), Local municipality or co-operation structure of the municipalities.	Environmental Inspectorate is the basic entity for supervision and enforcement, working together, if needed with the police, customs, tax department, etc. Municipalities are generally responsible for implementation and supervision of the local Council waste regulations.
Data collection and reporting	Environmental Board Environmental Agency	Until recently the Environmental Board had the obligation to provide 'first tier control' on waste reports (compliance with permits etc.), but this is now being migrated to under the Environmental Agency.
Infrastructure investment funding	EIC Municipalities Private companies	State is offering investment support, both based on Estonia's Environmental Charges, but also on EU finances (and other EFTA Countries contributions). Municipalities and private WM companies are expected to apply for those grants and develop projects, first of all for separate collection, reuse and recycling.
Waste Prevention (Communication, etc.)	State authorities, NGOs, PROs, private companies	All stakeholders have some role to play, but only limited amounts of funds are set aside for this purpose and there is no nationally coordinated effort in this regard.

## 4. Waste Management Operations

### Key Findings

- Waste collection and transport services are provided mainly by private companies selected through public tenders. For households, fees for collection are relatively low, typically less than the internationally accepted affordability threshold of 1-1.5% of disposable income, and collection frequency varies significantly between dense urban centers and less populated rural areas.
- Separate collection of waste (biowaste, paper and some packaging) is included in contracts with service providers, with public amenity sites commonly operated for garden waste, bulky waste, C&D and household hazardous waste.
- Packaging waste collection is regulated through the Packaging Act and is the responsibility of recovery organizations who agree the location of collection sites with municipalities. There seem to be a shortage of collection sites in dense urban areas currently.
- Waste disposal is also the responsibility of local government (through the tender system) and the Waste Act requires sorting of residual waste aiming at maximizing waste recovery.
- Waste treatment facilities are usually linked to landfills and owned by local governments and one waste incineration plant in the country is operated by a wholly owned government entity. While the separate collection of biowaste is widely required by local regulations, the volumes of composted municipal waste remains very low. Anaerobic Digestion facilities are widely used for animal manure and agricultural waste.
- The target for diversion of municipal biodegradable waste according to Article 5, paragraph 2c of EU Waste Landfill Directive is being met. However, the target in Estonia's Waste Act regarding the percentage of biodegradable waste in the total amount by weight of municipal waste landfilled is not being met.
- The majority of municipalities included provisions for recycling in their local waste plans, despite lacking control of achievement of those targets. Due to the small local market, most of the collected recyclables are exported for processing.

#### a) Waste collection

**Under Chapter 4 (§ 66 onwards) of the Waste Act, municipalities are obliged to contract out waste collection and transport to private companies through a competitive tendering process (compulsory for all municipalities with more than 1500 inhabitants, which is the vast majority following the 2017 reforms).**<sup>16</sup> At present the collection of residual municipal waste from households and similar waste from legal entities, as well as separate waste collection is included in the same contract and provided by a single, usually private, operator. Fees for households are relatively low: an average of EUR 4-6 per month. The frequency of collection can vary greatly: from more than once a week in large cities (in dwelling houses) to a minimum of once every four weeks in small towns. In rural areas, but also in settlements and towns, if the bio-waste composting is organized on property, collection can even be once every three months. Nonetheless, the waste collection rate has clearly improved. The MoE estimates that waste was

<sup>16</sup> As set out in detail under Chapter 4 of the Waste Act. "Organised Waste Transport is defined as collection and transport of municipal waste from a designated area to a specific waste management facility or facilities by an undertaking chosen by way of a competition organised by the local government.

not collected from about 20% of households in the early 2000s; by 2015, this rate had fallen to under 5%. The most common problems identified by municipalities are that a) sorting at source is not a common practice; b) some littering occurs around packaging waste collection points (in some instances up to 1/3 of the mixed municipal waste is also brought to public packaging waste containers) and c) the practice of burning of waste is often observed in rural areas.

**The requirements for local government contracting of organized waste transport is set out in detail in § 67 of the Waste Act.** This include provision for administrative territories of cooperating local governments to form a single transport area, taking account of the number of residents in the area. The service area shall be determined by the local government council on the basis of the estimated waste quantities, the specific character of the built-up area and the road and street network and as a general rule should not exceed more than 30,000 residents. As examples, Saaremaa municipality is divided into 3 service areas and 2 operators are providing services, while Lääne-Harju municipality is divided to 5 different service areas. Some of these divisions stem from the historic boundaries of administrations.

**The public procurement documentation for a waste transport services concession contract shall set out service provision requirements in detail.** This includes requirements to stipulate quantities of waste, the waste treatment facility to be used, and number of houses and apartments to be served, amongst others. The draft public procurement documentation shall be presented before commencement of the public procurement to the Environmental Board for obtaining an opinion. The term of a public contract for organized waste transport shall be up to five years. While reporting requirements should be included in service contracts, there is currently no common practice of applying penalties in service contracts should performance standards not be met.

**A waste holder<sup>17</sup> is considered to have subscribed to the organized waste transport services provided in the waste transport area of the place of residence or business of the waste holder.** The waste holder is deemed to have subscribed to the organized waste transport services as of the entry into force of the registration for organized waste transport issued by the local government or of a local regulation.

**The door-to-door collection system is a common standard, with standard Euro containers and bins with wheels in use.** The obligation to provide waste bins/containers is assigned to the waste generator/holder and is the responsibility of the property owner. The property owner should either buy the necessary bins/containers or rent them from the service provider. If container is broken, the service provider will tell household to fix it or get new one. Municipalities are not responsible for the condition of containers used. The volumes of containers vary from 140 liters to 1100 liters. Large volume containers of 2.5 - 4.5 cu meters and roll-on containers are used for in shopping center areas.

**The minimum collection frequency for single family house is once per month.** For multi-story buildings the minimum collection frequency is once per week, but as often up to six times per week in Tallinn and a handful of other large cities. For businesses it is once per week. For comparison, in Saaremaa municipality, the collection occurs once per month in densely populated areas. In sparsely populated

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<sup>17</sup> "Waste holder" means also an apartment association or, in the absence thereof, the owner of the immovable property where a summer house, dwelling or business premises are situated.

areas according to legal requirements the minimum collection frequency could be once per 3 months, if there is confirmed separate handling of biowaste.

**The collection of bulky waste is usually organized through door-to-door in some bigger cities, but more often the municipality provides households the option to bring their bulky waste to civic amenity sites.**

In Tallinn the fee rate for door-to-door collection is 14 Euros/cubic meter and 10 Euros/cubic meter at the civic amenity site. Citizens can bring construction and demolition (C&D) concrete waste to the civic community sites free of charge but must pay for mixed C&D waste. In addition to organized collection of municipal waste the municipality typically organizes periodic public cleanups.

#### b) Separate collection of municipal waste

**Separate collection of biowaste, wastepaper and in some cases packaging waste is organized by municipalities and included into contracts with service providers.** Common practice is that apartment buildings have a closed container for biowaste and a container for paper and cardboard. In addition, separate collection of packaging waste, WEEE, batteries and accumulators are implemented through producer responsibility schemes and organized by the respective PROs. A deposit refund system is also functioning for beverage containers (see section 6). Considering that the municipal systems collect waste paper and PROs simultaneously collect paper packaging through their bring system, there is limited information on how the packaging waste is separated from non-packaging waste for reporting purposes.

**The municipalities also organize public amenity sites for the collection of various waste fractions like garden waste, bulky waste, C&D waste, household hazardous waste, and other specific waste types.**

For example, Tallinn operates four civic amenity sites where households can bring their waste; the City is considering establishment of two additional sites in two other districts. Some municipalities also organize collection rounds for old furniture and some collection points (bring banks) are established for textile waste. The collection of the separately collected municipal waste fractions, listed in ordinance of the MoE from 2007, amended 2015, on 'Municipal waste sorting'<sup>18</sup> is compulsory for municipalities as from 2016 'on first occasion', i.e. if the valid collection contract ends, any new tender and contract should contain the respective provisions. In practice, in several cases municipalities have neglected to fulfill the requirements of this ordinance.

**The requirements for packaging waste collection sites are defined in Packaging Act.** The recovery organization shall ensure that the density of the collection sites per each recovery organization would be as follows:

- if, in a densely populated area, population density is more than 1,000 residents per square kilometer – at least one collection site within 500 meters from the waste holder;
- if, in a densely populated area, population density is more than 500 residents per square kilometer – at least one collection site within 1,000 meters from the waste holder;
- if population density is less than 500 residents per square kilometer – in settlements in the territory of the local government such that there is one collection site per 500 residents.

**Only collection sites which are intended for and available to the general public for the delivery of packaging waste are considered to meet these targets and their locations must be agreed with the**

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<sup>18</sup> <https://www.riigiteataja.ee/akt/119122015005>

**municipality in writing**<sup>19</sup>. This requirement enables local government to hold the recovery organizations to compliance with the conditions around density of collection sites. This also means that the number and capacities of collection containers prescribed for collection may be reduced with the consent of the local government. Upon agreement with the local government, the collection of packaging waste may also be organized as collection at the point of generation of waste. Door-to-door separate collection of packaging waste is implemented by a few municipalities independently from PROs.

**Some interviewed local authorities indicate that the current number of collection sites for packaging waste is not enough.** For example, in Tallinn only 300 collection sites are installed and the actual number according to the municipal administration must be increased to 500. However, even this higher figure may be an underestimate when benchmarked against other countries, and when considering the minimum density of collection sites required by the Packaging Act. In other countries applying this collection system the container sites serve approximately 350 – 600 residents. For a city with a population like Tallinn, the minimum number of container sites should be around 1,000. Nevertheless, considering the relatively large total number of container sites installed by PROs all over the country supposes very different densities of installed sites in different municipalities. The issue of having an insufficient number of sites exists in a limited number of municipalities.

### c) Waste treatment and disposal

**As per § 70 of the Waste Act, local government shall organize recovery or disposal of the waste subject to organized waste transport.** Legally, local governments should decide where the collected waste will be designated for treatment; however, the practice has been to date that local government usually does not specify the treatment facilities and private service providers are free to decide what to do with the collected waste. This has been the subject of much legal debate, clarified most recently in the 2015 court ruling (see section 3 e).<sup>20</sup> Historically municipalities in Estonia had the option to organize municipal waste management services through their own public service providers. Waste management in Tallinn for example is still functioning across two different systems - the City is divided into 13 areas and in 9 areas services are currently provided by the Tallinn Waste Center, which is owned by Tallinn Municipality. Tallinn Waste Center collects fees within their service areas, and then pays contracted collection service providers. In the 4 areas with directly awarded contracts, service fees are collected by the service providers directly. When contracts with Tallinn Waste Center expire, those areas will also be similarly tendered.

**Section § 36 of the Waste Act requires sorting of residual waste prior landfilling aiming the recovery of municipal waste to the highest possible extent.** This is further expanded on in the published regulations: *Procedures for sorting municipal waste and the basis for classifying sorted waste* (RT I, 19.12.2015, 5). Municipalities have the option to choose from 'collection on property' (or door-to-door), public collections points and public amenity sites. This regulation gives detailed requirements for municipalities around which waste materials they have to issue local solutions on collection, i.e. which waste types shall be collected on property, which in public collection points (as typically packaging waste and used clothes), which in public amenity sites. Those provisions should be taken into account, while compiling local Waste

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<sup>19</sup> The usual container colors used are blue for paper/cardboard, yellow for plastics, metals, green for glass, brown containers for biowaste, black for mixed.

<sup>20</sup> See: <https://www.riigikohus.ee/et/uudiste-arhiiv/riigikohus-selgitas-kov-i-oigusijaatmeveo-korraldamisel>

management plans- and regulations, but also to be a base for conditions on tender to find a collection service provider.

**There seem to be limited interest in developing and operating common waste treatment infrastructure across municipalities.** The current regulatory environment is permissive but may not provide sufficient incentives for collaboration. Issues such as intermunicipal cooperation agencies not being able to collect fees and taxes might make the option to establish such an entity less attractive. There are also no minimum size and volume requirements set for waste treatment facilities, resulting in multiple small operations which might not be optimally cost efficient when the larger national picture is considered.

**In general, the municipalities have limited involvement in developing new waste treatment capacities and the establishment and operation of such facilities is mainly seen as a private sector undertaking.** Despite available financial support, mainly through EU funds, there is little interest in municipalities to develop and apply for the financing of waste treatment investment projects. The private waste management operators are also eligible to apply for up to 50% grant financing of investments in waste treatment and recycling facilities. Nevertheless, there is also very limited interest in the private sector to apply for investment support and most likely reasons are short service contracting periods of 5 years which are insufficient to pay back investments, uncertainty around the consistency and quality of input material streams, and a lack of guarantee regarding supplies. Insufficient enforcement of the current requirements has also not motivated development of new, needed capacity for treatment.

This section will now further consider the means of treatment and disposal, including incineration, mechanical biological treatment (MBT), composting and anaerobic digestion, landfilling and recycling.

### Incineration

**The only municipal waste incineration plant in Estonia, with a capacity of 250,000 tonnes/year, is operated by Eesti Energia AS.** This is a public limited energy company, wholly owned by the Government of Estonia and headquartered in Tallinn. The company operates internationally with activities in Lithuania, Finland, Sweden, Poland. The current plant operates with approximately 200,000 tonnes/year of municipal waste originating from Estonia and up to 50,000 tonnes of waste are imported from Finland and previously also from UK. The incineration with energy recovery is supported through preferential tariffs for co-generation and for production of electricity from biomass according to Electricity Market Act. The incineration plant is charging a gate fee for the received waste, which recently increased from 30 – 35 EUR/ton initially to 55-60 EUR/ton<sup>21</sup>.

**The Environmental Board has a formal right not to allow import of mixed municipal waste for incineration of municipal waste and has used these powers in the past.** Incineration companies do not think imports of waste hamper the recovery of waste originating from the country due to the voluntary agreement that such imports cannot be beyond 20% of the required volume for operation. There are some arguments being made to justify the import of waste with a higher calorific value to balance the quality of the available local supply.

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<sup>21</sup> Conditions allowing to increase the gate fee have been among of others, decline of the MBT capacities' due to the closure of cement factory, import of mixed municipal waste directly to incineration, partly also C&D waste for treatment yields some fraction to incinerate – all together this created a situation where incineration is virtually the only recovery facility for most part of the MSW, with the alternative only disposal.

**The single cement factory in Estonia, being the only offset point for Refuse-Derived Fuel (RDF), ceased operations in May 2020.** This closure is expected to have a negative impact on the activities of waste treatment facilities (sorting, MBT), but also for the thermal treatment of some hazardous waste (oils, paints, solvents etc.), with a capacity of 20,000-25,000 tonnes/year. As an alternative, the incineration plant is considered capable of accepting RDF, the volume of which will depend on calorific value needs as determined by the incinerator operator.

**A waste incineration tax in support of waste recycling has been under consideration over the past few years but has not been introduced.** The waste incineration tax is also recommended in the EU Early Warning Report and supported by the Estonian Circular Economy Industries Association. The increase of incineration gate fees over the last years, which arguably have comparable cost effects as an additional tax, did not result in an increase of waste quantities separately collected and recycled. Additionally, materials separately collected, such as packaging waste, are not being recycled more despite the increase in incineration costs.

#### Other treatment of residual waste

**Waste treatment facilities are usually linked to landfills and the Mechanical biological treatment (MBT) capacity in Estonia is technically approximately 250,000 tonnes, comprised of two relatively big plants (both located in Tallinn) and other smaller facilities.** One large plant, with a capacity of 100,000 tonnes/year<sup>22</sup> is operated by Tallinn Waste Recycling Centre. This plant was initially constructed as a Public Private Partnership (PPP) project following the construction of Tallinn landfill in 2003. The Tallinn municipality bought the share of Veolia in 2013 and the plant is therefore wholly owned by the municipality. The second plant with a capacity of 120,000 tonnes is operated by Ragn-Sells Estonia (part of Swedish Ragn-Sells Group) is also situated in Tallinn. The site was recently closed, following big fire in 2018 and its future operation is uncertain. Other small facilities operate in the North-Eastern part of Estonia with a capacity of 20-30,000 tonnes/year, but these face a number of operating challenges, including difficulty to cover operating costs.

**There is also a sensor-based automated sorting facility near Pärnu, owned by Pärnu municipality, which has been used to sort through mixed municipal waste with the intention to separate materials for recycling.** The plant ceased operations due to lack of financial viability. Most of the above mentioned MBT facilities have in common that the input stream was sorted out for metals for recycling, in Pärnu this was also done for plastic and cardboard, but the basic intention was to produce RDF (not in Pärnu). The treatment of the leftover fraction was done by closed aerated tunnels in the Ragn-Sells facility, but more like 'open-windrow' type treatment in others. The result of such treatment is MBT compost-like output, which can be used as landfill cover and counted as 'recovery'. The use of the MBT compost-like output must be in accordance with the landfill closure project, approved within the environmental impact assessment, and in the integrated environmental permit issued for the respective facility.

#### Composting and anaerobic digestion

**The separate collection of biowaste is widely introduced by most municipalities in Estonia.** In Tallinn it was introduced as obligatory requirement starting from 2007 and later was followed by other local authorities. The lower service tariffs for collection of biowaste are considered an incentive for households to separate at source. Biowaste from households tend to be collected in a single container, with no clear

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<sup>22</sup> The capacity is determined for 1 shift operation and if necessary, the mechanical part is capable to receive bigger quantities

directives to separate food waste and garden waste. Most of the requirements for biowaste are set by treatment plants (i.e. what type of mix of biowaste will be accepted).<sup>23</sup> In larger municipalities the biowaste separately collected from households is designated to composting, with wood waste (i.e. large branches and trunks) usually delivered for energy recovery and smaller branches diverted to composting. The gate fees charged by composting plants are in the range are 40-50 EUR/tonne.

**Despite available collection infrastructure and legal requirements the collected quantities are relatively low.** In 2018 the total quantity of composted municipal waste reported to EUROSTAT was 20,000 tonnes. Park and garden waste do not seem to be reported by smaller municipalities. There are support programs for home composting implemented by some municipalities, including parts of Tallinn, where dedicated small containers are offered for biowaste collection in kitchens. However, data is not available on the number of households involved and the achieved participation rates. In densely populated areas home composting is implemented through closed vessels, while in rural areas open composting is an acceptable practice. Some municipalities are implementing seasonal programs for collection of leaves through for example providing plastic bags and collection services free of charge (although the material is rarely utilized for composting due to the large quantities that arise over a short time, making it difficult for facilities to accept these). The low overall composted quantities are a function of low numbers of households participating in the collection schemes, the lack of enforcement measures and insufficient communication by local authorities and service providers.

**Anaerobic Digestion (AD) facilities are widely used for animal manure and agriculture waste, but mostly all other biowaste (food waste) is designated for composting.** There are three end-of-waste regulations defining the operations of biowaste treatment facilities and quality requirements for the final products. Separate requirements are defined for compost, sewage sludge compost and digestate. Eesti Keskkonnateenused OÜ (Estonian Environmental Services Ltd.) are recently planning to establish a 20,000-tonne AD plant for biowaste near Tallinn. One rendering factory, Vireen, is certified to accept animal by-products including carcasses and animal parts.

**There has been recent interest from energy companies in acquiring AD facilities, highlighting the revenue potential from specifically pre-treated waste streams (either manure-based or from wastewater treatment plants).** This is supported by the first recently issued certificates for end-of-waste digestate. The utilization of existing AD capacities in other sectors will require investments in pre-treatment of collected biowaste for separation of impurities prior feeding the respective installations.

### Landfilling

**The EU Landfill Directive requirements are implemented in Estonia and the country managed to achieve the landfill diversion targets for biodegradable waste.** The quantities of municipal waste designated for landfilling reported in 2013 - 2014 were less than 10%, but recently a growth in volumes has been observed. Landfills are partly owned by municipalities and civic amenity sites are typically owned by municipalities but contracted to waste management companies for operation. A landfill tax of 30 EUR/tonne applies.

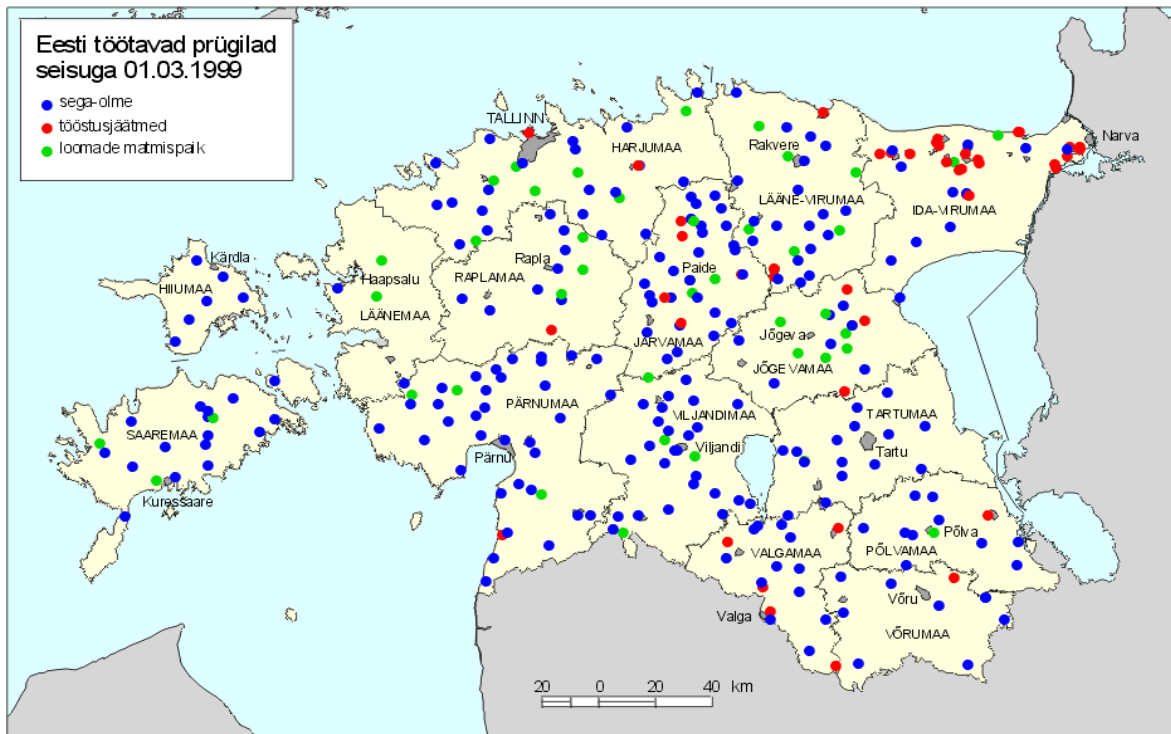
**According § 134 WA, the percentage of biodegradable waste in the total amount by weight of municipal waste deposited in a landfill shall not exceed: 1) 45% by 16 July 2010; 2) 30% by 16 July 2013; and 3)**

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<sup>23</sup> In a long-term coordination of collection system with the planned treatment capacities will be required considering the limitations of certain technologies to accept food waste and especially meat and bones, the different costs/gate fees, etc.

**20% by 16 July 2020.** Although exact recent analyzes are not available on mixed municipal waste content it is clear from observations in practice that this limit is not followed in some municipalities. One option for influencing source-separation rates would be to enforce this requirement, which is likely to also positively influence the recycling target and further reduce landfilling.

**Map 2: Location of Landfills (active, closed, rehabilitated) in Estonia (data from early 2000's)**



**This map is extracted from the 'National Waste Management Plan 2002-2007' and shows roughly all landfills, which were closed and cultivated 2000-2015.** Many local 'village dumping sites' were closed already in the 1990-s and not counted later under the Landfill Ordinance as landfills. The 'blue dots' are landfills permitted to be operated in 1999, prior to the implementation of the Landfill Ordinance (June 2001), which transposed EU Landfill Directive 1999/31 into Estonian law. 'Red dots' are industrial waste landfills, and 'green dots' are animal carcass burial places (prior to the rendering facility, which was opened 2003). The previous industrial pollution or closure of old dump sites is not considered a significant issue for the state and local authorities at present. The most problematic contaminated sites were already cleaned up with the support of EU and state funds. The five non-hazardous landfill sites, depicted in the map below, are currently operational.

Map 3: Non-hazardous waste landfills (2010)



Table 7: Comparison of landfilling gate fees across locations

Waste code	Name of waste	Landfill gate fee €/ton (incl. 30 €/t landfill tax) with 20 % of VAT				
		Väätsa	Paikre	Uikala	Tallinna JTK	Torma
15 01 01	Paper and cardboard packaging	42	0	84	84.6	0
15 01 02	Plastic packaging	66	0	84	84.4	20
15 01 02	Plastic packaging (big-bag, penoplast)	90	93	NA	NA	20
15 01 03	Wooden packaging (unprocessed)	18	24	NA	10.2	20
15 01 04	Metal packaging	42	NA	NA	84.6	0
15 01 06	Mixed packaging	72	74.4	84	84.6	0
15 01 07	Glass packaging	42	0	NA	84.6	0
16 01 03	Tyres <sup>24</sup> (car tyres of private persons up to 8 pcs/year)	0	360	NA	NA	300
16 01 03	Tyres <sup>25</sup>	420	420	NA	NA	350
17 01 01	Concrete (pre-sorted)	18	10.6	66	84.6	10
17 01 02	Bricks (pre-sorted)	18	10.6	NA	42.6	10

<sup>24</sup> The landfilling of tyres is forbidden by the EU Landfill Directive

<sup>25</sup> The landfilling of tyres is forbidden by the EU Landfill Directive

17 01 07	Mixtures of concrete, brick, plate or ceramic products (pre-sorted)	18	10.6	NA	42.6	10
17 02 01	Wood pre-sorted (unprocessed)	18	26.8	114	10.2	20
17 02 01	Wood pre-sorted (treated)	24	74.4	114	NA	NA
17 02 02	Glass (glass package, insulated)	94.8	NA	114	NA	NA
17 02 02	Glass (pre-sorted flat glass)	24	23.8	114	42.6	95
17 06 01*	Insulating materials containing asbestos	94.8	81	84	63.6	50
17 06 05*	Building materials containing asbestos	94.8	81	84	63.6	50
17 09 04	Construction and demolition debris	94.8	78.1	126	84.6	95
19 08 05	Wastewater treatment sludges	60	93	102	84.6	40
<b>20 01</b>	<b>Wastes picked out or collected by type from municipal waste (excluding those referred to in subdivision 15 01)</b>					
20 01 01	Paper and cardboard	42	0	84	84.6	75
20 01 08	Biodegradable kitchen and canteen waste	48	74.4	102	37.8	40
20 01 10	Clothing	94.8	74.4	NA	84.6	95
20 01 39	Plastics	94.8	26,8	NA	84.6	95
<b>20 02</b>	<b>Garden and green waste (including cemetery waste)</b>					
20 02 01	Biodegradable waste	48	36	102	37.8	20
<b>20 03</b>	<b>Other municipal waste</b>					
20 03 01	Rubbish (mixed municipal waste)	94.8	93	114	84.6	95
20 03 03	Street pylons	94.8	93	114	84.6	95
20 03 07	Bulky waste	106.8	93	126	84.6	95

## Recycling

**Even without obligatory recycling targets imposed at local government level the majority of municipalities are focused on increasing recycling and specific provisions are included in the respective local waste management plans.** In Tallinn, approximately 50-55% of waste is separately collected and designated for recycling, while in 2017 the recycling rate was 47%. Saaremaa Municipality, through the service contracts, made it mandatory for the waste management operators to recycle at least 50 percent of collected municipal waste. Collection of packaging waste has been included in Saaremaa's tendering of waste management services since 2005 and is an anomaly from other municipalities.

**Estonia is a relatively small market and as a result there is no significant recycling capacity in the country - the majority of collected recyclable waste is exported for processing abroad.** Transparent packaging glass is recycled in a facility in Järvakandi, 80km from Tallinn, with 80% sorting efficiency for colored or mixed glass. Glass from DRS is already well-sorted. The colored or mixed glass is exported or recycled occasionally locally as substitute for sand and gravel on production of the pavement stones. Scrap metals are nearly entirely exported because there are no metallurgy processing capabilities, with the exception of a recycling facility of lead-acid batteries in Sillamäe. The capacity of this facility is approximately 20,000 tonnes/year, of which 4,000-5,000 tonnes/year is collected from Estonia. Additionally, there are tentative plans for a local glass-foam facility with capacity of 10,000 tonnes. In 2018, out of 51,490 tonnes of waste

glass generated, 5,382 tons were collected through civic amenity sites, 28,816 tons were collected through public containers and 16,842 tonnes were through mixed municipal waste.

**Paper and cardboard are mostly exported with limited capacities available for reprocessing paper to insulations materials, some cardboard products and packages.** The existing pulp-and paper factory in Kehra has plans to establish a recycling option for around 20,000 tonnes to produce soft tissue paper, but the project has not been implemented and there are no known plans currently to establish any large paper productions facilities. Plastic recycling facilities were initially developed by smaller companies, but the pattern changed quickly as several local recyclers also now treat imported waste. While there is some technological readiness, there is still a lag in plastic recycling capabilities in the country.

**Finally, in terms of biowaste, used cooking oil is mostly collected for export to produce biofuel.** The main treatment method for all other bio-waste has been composting, with the expectation, that AD will continue to find traction through emphasis in the most recent NWMP.

#### d) Cooperation with neighboring countries in waste treatment and disposal

**There are some nascent discussions and engagements around the possibility of regional cooperation between the Baltic States (Estonia, Latvia and Lithuania) in terms of waste treatment and disposal.** Stockholm Environmental Institute Tallinn is currently leading an initiative focused on improving knowledge and capacity around collection, reuse and recycling of textiles in the Baltic region. The initiative is titled “towards a Nordic-Baltic circular textile system” and is in response to the Baltic region being the main destination for used textiles from the Nordic region.<sup>26</sup> There are also discussions around a potential joint packaging system or DRS with Latvia, which would involve the possibility of packaging sold in one country being returned in another. It is unclear how this initiative would be financed or what the time period for implementation would be.

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<sup>26</sup> For more information see: <https://www.sei.org/projects-and-tools/projects/towards-a-nordic-baltic-circular-textile-system/>

## 5. Financing of Municipal Waste Services

### Key Findings

- The main source of financings for municipal waste services is user fees derived from transport and collection services (paid directly to the service provider). Fees are established during the tender process through market competition and varies greatly across the country.
- Fees for separately collected waste fractions are observed to be lower than that for residual waste, indicating an internal cross subsidization by operators not able to fully cover cost for separately collected waste.
- Other income and expenditure relating to public amenity sites, landfill operations, public cleaning campaigns, etc. is covered through the municipal budget.
- A more comprehensive picture of the costs and fees in the waste management system in a locality is required in order to determine if the system is indeed operating at full cost recovery as intended in the Waste Act. This would include a consideration of user tariffs, licensing fees, landfill gate fees, littering penalties, subsidies, etc.
- In the 2021-2027 EU Programming period the focus will be strongly on the circular economy, with an acknowledgement that to achieve the country's ambitions in this regard efficient and effective waste management needs to be developed, including a higher separate collection rate and the development of suitable recycling capacities

**The major source of financing of municipal waste services are the user fees charged by the respective service providers.** The households pay their service fee directly to the service company. In some limited cases, based on an option in the Waste Act which was revoked in 2015, households pay directly to the municipalities. This will be phased out by the end of 2020 unless the Waste Act is amended. The practice where municipalities set and collect tariffs is common in most EU countries. Municipalities have to cover all other related costs such as operation of the public amenity sites, public awareness campaigns, and also service of public containers for clothes, paper and other materials, from their general budget.

**During a short period from 2016 – 2018 direct financial budgetary support was available to municipalities at 2.5 Euros per inhabitant to cover costs related to municipal waste management.** The support was initially linked to some general conditions such as a valid solid waste management plan, establishment of a local waste management regulation and implementation of a tender-based collection system. In 2019 this support scheme for municipalities was revoked and replaced with amendments around the division of income tax from the state budget to municipal budgets, resulting in municipalities receiving the same budgets but without any conditionality and earmarking.

#### a) Municipal waste fees and taxes

**Section 66 of the Waste Act (focused on organized waste transport) includes provisions that waste transport fees should be established by regulation of the local government and should be sufficient to cover waste transfer and management costs.** There is however not a specific methodology for calculation of waste fees and local governments tend to set only broad percentages in their procurement documents such as that biowaste management cannot cost more than 20% of mixed municipal waste management. The price for service is set by offer in the tender and fixed in the contract. It cannot be changed without

agreement of the municipality and the prices often use cross-subsidy between different waste streams to motivate source-separation. The tariffs are subject to a 20% VAT. Following legal changes in 2015, fees were charged directly by the respective service provider, although this was the main practice before also for households and legal entities in the service zone. The non-payment of waste service fees by households is not considered an issue.

**The fees per container charged by the service providers vary significantly across the country.** For example, in Tallinn, the fee per lifting of a 600 liter container is 5.40 EUR/lifting (4.50 EUR excluding VAT). In Harku Municipality the fee for the same container size is 10 EUR/lifting, while in Saaremaa Municipality it is between 17-29 Euros depending on the location. It is partly explained by the fact that waste goes through a transfer station in Saaremaa, where there is also a gate fee set by the municipality. After that, there is another 200 km of transport for incineration and recycling in Tallinn. In Tallinn transfers stations are not needed and the main facilities are within 10-20 km. In Rae municipality fees are charged only for residual waste, so there is great variability across municipalities. The municipalities typically define the minimum service requirement by volume and pick-up frequency. For example, in Saaremaa, the minimum service that a household could select is to pay 2 – 3.5 Euros, depending on location, for an 80-liter container to be collected once every three months. A comparable lifting of an 80-liter container in Tallinn is around 1 EUR.

**The fees for separately collected waste fractions included in the municipal waste management system are considerably lower than fees for residual waste to incentivize source separation.** In Tallinn, the fees for collection of biowaste represent approximately 50% of fees for residual waste. In Saaremaa, the fees for separate collection of materials is set as a fraction of the mixed waste fees. Their wastepaper fee is 20% of mixed waste fees, the biowaste is 30% and packaging waste is 25%. These lower fees indicate an internal cross-subsidization by operators since there would not be full cost recovery on the separately collected waste. Households are also typically billed for a single amount for waste management, and not a split rate between mixed waste and source separated waste. Lower fees for separately collected fractions are supposed to provide an incentive for households to sort waste at source; however, this is not the case due to bills containing only the total amount.

**The current Packaging Act requires the PROs to set up and service public container systems and every person is entitled by law to use this service free of charge.** The costs for door-to-door collection of packaging waste are not currently covered or reimbursed by PROs. The new extended producer responsibility requirements following the latest revisions in the WFD, supposing obliged producers to cover the full implementation costs, is expected to be transposed and implemented in Estonian law by January 2023. As an example, in Kuressaare, PROs provide door-to-door service free of charge. Households have to make a contract with one PRO if they want packaging collection free of charge. However, in small towns and villages in Saaremaa without local collection services, packaging can also be handed over for a small fee. In the future, considering provisions in EU legislation, the PROs are supposed to contribute financially for the separate collection of packaging waste organized by municipalities.

**Table 8: Examples of collection fees by Ragn-Sells AS in three different municipalities**

Lifting Fee for Collection, €
Municipality

	Volume of collection bag or container	Kohila	Toila	Saaremaa
<b>Mixed Municipal Waste</b>	Bag until 20 l	0.36		
	Container 80 l	1.44	1.18	2.62
	Container 140 l	2.52	2.03	4.58
	Container 240 l	4.31	3.53	7.87
	Container 370 l	6.65	5.4	12.13
	Container 660 l	10.78	8.82	21.65
	Container 800 l	14.38	11.76	26.24
	Container 1100 l	19.76	16.18	36.08
	Container 1500 l	26.95	22.02	49.2
	Container 2500 l	44.92	36.76	82
	Container 4500 l	80.84	66.16	147.6
	<b>Paper and Cardboard</b>	Container 240 l	0	0.01
Container 370 l		0	0.01	2.42
Container 400		0	0.01	
<b>Biowaste</b>	Container 80 l	0	-	1.31
	Container 140 l	0	-	2.3
	Container 240 l	0	-	3.94

**Tallinn City Waste Center is one of the few examples, where waste holders pay their service fees to the municipal entity.** The entity then pays to collection and treatment companies, which are contracted via tenders. The average cost distribution in those fees is roughly 40% for collection and transport, 40% treatment and 20% for awareness raising, databases, and invoicing clients<sup>27</sup>.

**Transfer stations are established first to optimize transport costs, where wastes are destined for longer distance, for landfilling, incineration or on some cases also after-sorting for recycling etc.** If the municipal and packaging waste is collected with a typical waste truck (load usually 7-8 tonnes), larger containers will be used from transfer stations onward for economic viability. In some cases transport will be up to 250 km and costs of the transport are estimated to be roughly 1 €/km.

**Table 9: Examples of the gate fees in transfer stations (€/t incl. 20% VAT)**

		Kudjape (Saaremaa)	Võru	Rakvere
Waste code	Name of waste			
20 02	Garden and green waste (incl. cemetery waste)			
20 02 01	Biodegradable waste	107	NA	36
20 03	Other municipal waste			

<sup>27</sup> Information from Kristjan Mark, Tallinn City Waste Centre

20 03 01	Rubbish (mixed municipal waste)	214	162	120
20 03 03	Street pylons	214	162	NA
20 03 07	Bulky waste	214	186	82.2

**While the tender system prescribed in the Waste Act aims to ensure market competition and thus competitive pricing, it seems that authorities do not currently have the full picture of costs and revenue breakdowns of waste management services.** A more comprehensive picture of user tariffs, licensing fees, tipping fees, littering penalties, subsidies, etc. could help in understanding whether the holistic municipal waste management system in a locality is in fact operating on a full cost recovery basis as is intended in the Waste Act.

## b) National Funding

### Environmental Investment Center

**Environmental charges are used to fund a national program for environmental investments and support schemes, in addition to EU and bilateral financing measures, which are also managed by the EIC.** These charges were introduced in Estonia approximately 30 years ago and later included in legislation. From the outset, the approach was for a majority of the charges to be paid to the Environmental Investment Center (EIC), governed by a council led by the Minister of the Environment.

**EIC has financed 493 waste management projects since 2009 with over 127 M€ from different funding sources including EU Funds and the Estonian Environmental program.**<sup>28</sup> The program is split into subprograms, where investments support capital and occasionally operational costs. Each such subprogram, one being a Waste Program later renamed to a Circular Economy Program, have detailed conditions and rules to evaluate such programs due to the high demand for financing. Financing was around 1 M€/y and during some years it has also included support for the demolition of obsolete Soviet-era buildings. During recent years, there has been lower funding available through the EIC due to a decline of oil-shale processing. This sector had been paying the majority of the environmental charges for many years.

**The EIC also manages EU funds for waste management during different financial periods.** These funds have been critical to solving numerous waste management problems such as closure of landfills, re-cultivation of old landfills including old oil-shale industries' hazardous waste landfills, clean-up of the contaminated sites, and development of infrastructure including landfills, sorting centers, and local public amenity sites. Financing also supported recycling projects developed by private companies as well as additional recycling capacity. However, in recent years there has been low readiness to absorb financial support for building recycling capacity.

<sup>28</sup> <https://kik.ee/et/rahastatud-projektid#edit-field-maakond-tid-i18n%3Dnull%26edit-field-taotlusvoor-value%3D%26edit-field-rahastusallikas-tid-i18n%3Dnull%26edit-field-valdkonnagrupp-tid-i18n%3D248%26edit-title%3D%26edit-field-toetuse-saaja-nimi-value%3D%26edit-field-aasta-tid-i18n%3Dnull%26edit-field-with-research-value-i18n-1%3D1%26edit-field-with-research-value-i18n%3Don%26edit-sort-by%3Dtitle%26edit-sort-order%3DDESC>

### c) External Funding

#### EU Operating Programme Environment (2014 – 2020)

**The EU Operating Programme Environment includes priority areas including circular economy, waste management, and resource efficiency.** The initial allocation for waste projects amounts to € 12 Million, with own financing of the applicant at least 50%. Some limited finances are still available as some projects, for which financing was confirmed earlier, were interrupted, those sums are planned to provide for some new projects. Projects can be implemented up to 2023, and the list of approved projects is included below. These are primarily for public amenity sites, containers, collection vehicles with multiple compartments, and other small-scale activities and private companies are eligible to apply for project funding.

**Table 10: List of waste management projects with adopted financing by EIC from EU- ERDF fund 2014-2020**

Title of the project	Beneficiary	Total cost of the project	Adopted investment support from ERDF	Supported activity	County /Region
Glass-foam production	Gravels Investeeringud OÜ (private company)	5 382 364,00 €	<b>3 767 654,80 €</b>	Support for recycling	Country-wide project
Saku public amenity site	Saku Municipality	252 467,89 €	<b>171 189,60 €</b>	Support for recycling	Harju County
Rakke public amenity site	Väike-Maarja Municipality	133 896,00 €	<b>100 422,00 €</b>	Support for recycling	Lääne-Viru County
Raasiku public amenity site	Raasiku Municipality	134 397,60 €	<b>94 078,32 €</b>	Support for recycling	Harju County
Improvement of collection of the agricultural plastics	PAIKRE OÜ (Municipal WM company)	86 712,00 €	<b>65 034,00 €</b>	Support for recycling	Country-wide project
Equipment for after-sorting facility in Pärnu	PAIKRE OÜ (Municipal WM company)	26 940,56 €	<b>20 205,42 €</b>	Support for recycling	Pärnu County
Equipment for public amenity site in Paikuse	PAIKRE (Municipal WM company)	29 369,44 €	<b>22 027,08 €</b>	Support for recycling	Pärnu County
Keila public amenity site	Keila Town	202 965,29 €	<b>148 934,39 €</b>	Support for recycling	Harju County
Kanepi public-amenity site	Kanepi Municipality	262 849,91 €	<b>197 137,43 €</b>	Support for recycling	Põlva County
Improvements of recycling options for C&D waste in Lääne-Viru County	Lääne-Viru County Waste Center (Inter-municipal)	258 127,44 €	<b>193 595,58 €</b>	Support for recycling	Lääne-Viru County

AD facility of source-separated bio-waste	Eesti Keskkonnateenused AS (private WM company)	7 791 500,00 €	<b>3 851 678,00 €</b>	Support for recycling	Country-wide project
Anija public amenity site	Anija Municipality	145 502,39 €	<b>101 851,67 €</b>	Support for recycling	Harju County
Alatskivi public amenity site	Peipsiääre Municipality	225 038,16 €	<b>168 777,67 €</b>	Support for recycling	Tartu County
Preparation of the elastic layer of the base of sports fields for re-use	Advanced Sports Installations Europe AS (private company)	182 700,00 €	<b>137 025,00 €</b>	Support for preparation for reuse	Country-wide project

**In addition to EU Funds, there is opened new financial support measure for municipalities, based on the Atmospheric Air Protection Act §161, which uses revenues from the CO<sub>2</sub> emissions trade auctions<sup>29</sup>.** This measure provides investment support in total 2,855 M€, where one project can apply up to 200,000 €, with own financing at least 10 %.

#### Expected EU Operating Programme Environment (2021 -2027)

**Estonia has officially voiced its support to the European Green deal, which is set to support ambitions through an action plan to make the EU climate neutral by 2050.** Broadly the Green Deal aims to boost the efficient use of resources by moving to a clean, circular economy, restore biodiversity and cut pollution. For the 2021 – 2027 programming period, the Cohesion Policy, the EU’s main investment policy for regional development will also strong support environmental actions under its priority objective 2 – towards a greener and carbon free Europe.

**For Estonia, the specific objective to promote the transition to a circular economy is a particular priority and strongly features a focus on waste management in the draft documents prepared to date.** One goal is to adopt a circular economy strategic document and action plan by 2021 and to apply an entrepreneurship model based on circular economy by 2035. Circular economy based production and consumption models, promotion of eco-design, improved energy and resource efficiency of enterprises are the main focus areas for interventions for the new period. It is acknowledged in the program design that waste management needs additional investments to reach goals in the NWMP and, in particular, municipal waste recycling targets. The program acknowledges that efficient and effective waste management needs to be developed, including a higher separate collection rate and availability of suitable recycling capacities. The interventions proposed to support separate waste collection infrastructure, recycling and activities of municipalities align with that objective.

#### Bilateral programs/projects

**The European Economic Area Program, which mainly entails grants from Norway, to support circular economy policies, will be implemented 2021-2023.** As a result of circular economy activities, the public and private sector will have more opportunities and measures to follow circular economy principles,

<sup>29</sup> <https://kik.ee/et/toetatav-tegevus/jaatmete-liigiti-kogumise-lahenduste-toetamine-kohalikes-omavalitsustes>

improve awareness and utilize opportunities of voluntary means that are systematically related to environmental management but also benefit the economy. Open call is scheduled in 2021.

#### d) Other economic instruments to support recycling

**Various economic instruments to support recycling have been discussed in the preceding sections, including product taxes (as it relates to packaging material), user fees, landfill gate fees, etc.** Other taxes, aimed at raising disposal costs in order to incentivize waste reduction, which could be considered include an additional landfill tax and incineration tax. These options will require public and political support as well as more granular data analysis around the total cost drivers of the waste system to determine the potential efficiency of these to support recycling.

## 6. Role of Extended Producer Responsibility Schemes in Municipal Waste Management

### Key Findings

- Estonia has required EPR for five other types of “products of concern” (as defined in the Waste Act). PROs have been set up for four of these product types, namely packaging waste, tires, waste electrical and electronic equipment (WEEE), and batteries and accumulators.
- In terms of packaging waste, there are currently three (3) general packaging PROs and one (1) beverage container entity operating a deposit refund system (DRS).
- EPR schemes for packaging are not sufficiently integrated with municipal collection services, and there are insufficient incentives for households to separate waste. There is significant potential in the functioning of packaging waste EPR scheme to support improved separate collection and improve recycling rates.
- PRO activity reports currently contain limited information on how the separate collection and sorting is actually organized and implemented and how the targets were achieved. The system is reliant on self-reporting and does not always result in the intended quality and performance of the packaging recovery system.
- PROs have the responsibility for raising public awareness and are required to utilize at least 1% of their annual revenue for this purpose. However, there is a greater need for more and better coordinated public awareness campaigns due to limited results.
- Estonia has a well-functioning DRS for beverage containers, covering single-use and refillable beverage packages, including plastics (mainly polyethylene terephthalate or PET), cans (both aluminum and steel), and glass.
- In terms of Waste Electrical and Electronic Equipment (WEEE), the main challenge is growing online purchases, where consumers do not pay the required recycling fee as is the case for in-person retail shopping. Also, the lack of cooperation between localities is resulting in a large number of required collection sites.

**In EPR systems, “a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle”, and thus to its end-of-life environmental impact.**<sup>30</sup> To meet EPR requirements set out in several pieces of EU and Estonian legislation, producers often forward their responsibilities to collect, recover and recycle their waste to a collective compliance scheme. The EPR schemes for packaging waste are considered a main policy instrument to develop an efficient system for separate collection, sorting and recycling of packaging waste and respectively present a key element to support the achievement of targets for recycling of municipal waste.

**In addition to packaging waste, Estonia requires EPR for five other types of “products of concern” (as defined in the Waste Act): waste electrical and electronic equipment (WEEE), used end-of-life vehicles and their parts, used tires, waste agricultural plastic, and batteries and accumulators.** Collective

<sup>30</sup> OECD (2001), *Extended Producer Responsibility: A Guidance Manual for Governments*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264189867-en>.

compliance schemes have been set up for three of these product types and none have been established for end-of life vehicles or plastics in agricultural use.

This section has a detailed focus on the EPR system for packaging waste, given the size and maturity of the system as well as the potential impact on reaching recycling targets. The unique nature of the Deposit Refund System also requires separate consideration.

#### a) Packaging Waste Management

**The economic operators putting packaging and packed products on the market in Estonia, packaging undertakings,<sup>31</sup> 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 transferring responsibility to a collective compliance scheme called Producer Responsibility Organization<sup>32</sup> based on a written contract.

Packaging undertakings who place goods on the market with plastic packaging of a weight less than 100 kilograms per year or in other packaging material with a weight less than 200 kilograms per year are exempted from the obligations.

**The obligations of PROs are outlined in the Packaging Act (§ 17) and the main aim of these entities are to ensure collection of packaging and packaging waste on a national level and organization of re-use and recovery of the collected packaging waste.** The PRO must provide access to all packaging undertakings to its services and guarantee equal treatment to all companies who have signed contracts for transferring their obligations. The activities of PROs are financed through service fees paid by obliged companies placing packed goods on the market in Estonia based on the weight of packaging placed on the market. PROs must operate on a not-for-profit basis and are not allowed to distribute profit among the members, partners or shareholders.

**There are three PROs that focus on general packaging and a fourth entity for a deposit refund system for beverage containers specifically.** The market share of PROs and packaging quantities are presented in the table below.<sup>33</sup> While it is acknowledged there are free riders, there is little information available about which entities these might be. Internet sales are a significant challenge in this regard since companies do not provide information regarding e-commerce sales and packaging across borders. The size of the problem is unclear, but PROs noted the need for better monitoring of e-commerce. There is a difference of around 15% between total packaging volumes declared by PROs to the Packaging Registry and what is calculated from waste reports. It is difficult to attribute exact volumes to undeclared packaging from e-commerce, under reporting from bigger companies, or local free riders who do not declare anything.

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<sup>31</sup> Packaging undertaking means any person who packages, imports or sells packaged goods within their economic or professional activities. (§ 10 PA)

<sup>32</sup> The term used in Packaging Act is “recovery organization”. Recovery organization means a legal person which founders and members are packaging undertakings or legal persons formed by packaging undertakings which members, partners or shareholders are packaging undertakings. (§ 101 PA)

The function of a recovery organization is to organize, on the national level, the collection and recovery of packaging waste of packaging undertakings who have transferred their obligations thereto and to develop the recovery system for ensuring the recovery of packaging waste at least to the extent of the recovery targets.

<sup>33</sup> The quantities of packaging and packaging waste covered by DRS are not included

**Table 11: 2018 packaging quantities and market share of three PROs for packaging waste in Estonia**

	OÜ Eesti Pakendiringlus	MTÜ Eesti Taaskasutus-organisatsioon (ETO)	Tootjavesituse-organisatsioon OÜ (TVO)	Total
Packaging, tonnes	72,770	44,510.24	39,208	<b>156,488</b>
Recycled/recovered packaging waste, tonnes	45,780	28,366	27,348	<b>101,494</b>
Contracts	1944	991	1,007	<b>3,942</b>
Annual revenues, million EUR	5.86	3.80	2.78	<b>12.44</b>
Market share	46.5%	28.4%	25.1%	
Collection Points	2000 <sup>34</sup>	1200	1,648 <sup>35</sup>	<b>4848</b>

**Despite uncertainties, the share of packaging designated to free riders is estimated to be less than in other EU countries.** Estonia has an obligatory registration for all packaging producers that is not common for other EU countries. The indicative quantity of packaging consumed/packaging waste per capita in 2019, according to Ministry of Environment is 170<sup>36</sup> kilograms per capita per year or more than 220,000 tonnes of packaging placed on the market.

**A PRO shall hold an activity license issued by the Ministry of Environment, issued based on an activity plan prepared by the entity.** PROs must submit an annual activity report to the MoE, but there is no requirement that this be audited. The PROs report the amount put on the market to the packaging registry and their financial reporting is to the business registry, which should be audited. The preliminary assessment of some of these reports shows that information contained in the annual activity reports tends to be limited to total quantities of packaging placed on the market, quantities of packaging waste recycled and recovered per category of material, the achieved recycling and recovery targets, number of collection points installed, annual revenues from licensing fees and expenditures for public awareness. The activity reports contain limited information on how the separate collection and sorting is actually organized and implemented and how the targets were achieved.

#### Collection system for household packaging waste

**The standard implemented across Estonia is that of a bring collection system where different colored collection containers are installed at public sites.** The total number of collection points (4,848) seems to be sufficient as it corresponds to 273 residents per collection point on average. However, the distribution of collection points in different municipalities varies with only 300 collection points installed in Tallinn

<sup>34</sup> Containers installed. The 2019 activity report refers to '2150 public containers and 300 at the dwelling houses, which are counted as 'not-public'. (<https://www.saaremaavald.ee/documents/17113760/21000459/Hinnad+Kuressaare.pdf/16824704-7fc6-4e41-865a-3cb528e89bb0> )

<sup>35</sup> Containers installed

<sup>36</sup> There are two separate reporting methods. One is through PROs (Packaging Register under the Environmental Agency) on what has been put on the market and the second is calculated based on waste reports for separately collected materials and the reported total amount of mixed municipal waste. The latter is typically higher than what is declared through PROs. According to 2018 annual reports of PROs the calculated average quantity of packaging is 118.3 kg per capita per year.

with 438 thousand residents (average 1,458 residents per site). Identifying and commissioning appropriate container sites in densely populated areas seems challenging.

**The Packaging Act requires municipalities to support PROs in achieving the minimum requirements for density of container sites.** PROs are interpreting this provision as that municipalities must guarantee or provide container sites; however, municipalities do not have such an obligation. They should aim to enter into an agreement to select sites for PRO containers. Each officially registered PRO is required to have a contract with every local government, which is not always enforced, resulting in each local government having 3 contracts in the case of packaging waste. *Eesti Pakendiringlus* is trying to promote a separate collection model using two containers – one for dry recyclables and one for glass, while the other PROs use a three-container system. Often it ends up being one container for ‘mixed packaging waste’ in low density rural areas. The collection frequency varies depending on the site location. The PROs are trying to address the challenge of overflowing containers by changing collection schedules or installing additional containers.

**PRO-managed container sites suffer from contamination, littering and disputes with local governments.** The PROs face challenges with the quality of separately collected waste, such as packaging contaminated with biowaste in the packaging container, which also contaminates other packaging, and therefore reduces the volume of material that can be recycled. There is also other unsuitable waste, and informational stickers have not helped.<sup>37</sup> Roughly 30% of containers have waste other than packaging and often PROs bear the cost processing those materials. Littering of container sites is a significant problem and cleaning of sites creates disputes between PROs and the local governments. Legally PROs cannot be held responsible for non-packaging waste placed outside containers and municipalities are focusing on ways to reduce littering and options to cover the cost for cleaning services.

**Each PRO owns their own collection system and covers all costs.** Everything that is in the container typically belongs to the PRO whose container it is. Each PRO is counting the materials collected in their own container sites for the achievement of recycling and recovery targets. The material ownership over separately collected waste is agreed according to the contract signed between the PRO and service provider. Common practice is that material is owned and sold on behalf of the waste management company. Recycling certificates need to be provided to the waste management companies. Revenues from sold recyclables are said to have declined over the last few years. While it is difficult to find markets for some plastic commodities, it has also been reported that recycling targets have been filled with relatively unchanged producers’ fees over the past decade.

**In addition to the bring systems using separate collection container sites, the PROs organize alternative collection services in areas where high volumes of packaging waste are generated.** For example, in 2018, *TVO* provided 1271 free packaging containers for apartment buildings in 39 local governments and bore the respective collection costs. Additionally, door-to-door separate collection of packaging waste with plastic bags was organized for 8631 households in 33 municipalities. *Eesti Pakendiringlus* noted that the results were better when collecting from a packaging bag or apartment complexes with a dedicated container. However, such collection systems are limited and are being implemented at a pilot scale. Their share and role are expected to grow in the future.

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<sup>37</sup> According to *Eesti Pakendiringlus*’ 2018 Activity Report

**Collected materials are delivered to sorting stations and the materials separated for recycling are sold all over Europe, with the remainder incinerated.** Particular recommendations for the packaging producers to design packaging easier for recycling was also announced by PROs.

**Careful reading of legal provisions means that all PROs shall have contracts with all local authorities and install the same collection infrastructure all over Estonia.** The requirement is not strictly enforced as different market shares and respective revenues of PROs will not allow all of them to cover comparable collection costs. Some municipalities do not sign contracts with all organizations. Some municipalities divide collection points between organizations in different territories rather than distributing them equally between organizations. Increasing density of collection sites and strong enforcement of requirements is supposed to consolidate the activities of organizations and establish one national scheme all over Estonia. PROs would be open to the possibility of dividing the national territory between them which they could serve exclusively.

#### Collection system for other packaging waste

**The consumer (household) packaging and commercial (group, transport) packaging make up 70% and 30% of packaging respectively according to PROs. Packaging undertakings are obliged to accept the return of transport packaging and group packaging of their goods free of charge.** The collection of transport and group packaging waste is mostly organized directly with business entities such as production facilities, storage facilities, retailers' shops, and restaurants. Depending on the material type and volume, simple or large press containers are installed. The use of press containers in large retail shops allows compact packing of some materials such as cardboard and plastic film and direct delivery to a recycling facility without needing further sorting or processing.

**In terms of hazardous waste, a packaging undertaking is obliged to provide the end user and consumer with the opportunity to return their packaging and packaging waste, taking into account the requirements for handling established by the Waste Act and the Chemicals Act and subsequent legislation.** The Packaging Act supposes responsibility of packaging undertakings and respectively PROs for organizing separate collection and recovery/disposal of packaging waste contaminated with hazardous substances. It also provides a basis for municipalities to claim for reimbursement of collection costs associated with household hazardous waste packaging.

#### Service contracts

**The collection, sorting and final recovery of packaging waste is organized through contracts with waste management companies, selected based on competitive tender.**

**The achievement of recycling targets is proven with evidence provided by the waste management companies** (e.g. delivery notes, invoices for quantities delivered at the recycling plant, exported). As stated in their annual report, the packaging waste collected and recycled through the collection network of OÜ Eesti Pakendiringlus has been resold by the respective waste handler and thus OÜ Eesti Pakendiringlus does not have an accurate overview of the prices at which waste management companies resell these materials to domestic or foreign recyclers. The PRO also does not have an overview of changes in purchase prices of recyclables. The prices do not affect fees charged by the PROs, which is atypical compared to what happens in other countries.

## Reporting and record keeping requirements

**Section 24 of the Packaging Act stipulates in detail the responsibilities for record keeping of a range of entities that might place packaging material in the market.** PROs must provide relevant authorities with information on behalf of obliged packaging undertakings about quantities of packaging placed on the market and information about quantities of packaging waste collected, re-used, recycled and recovered. The entities are also obliged to provide information to the general public and consumers about requirements for returning packaging and packaging waste. A packaging undertaking who places packaged goods on the market and has not transferred its obligations to a PRO is obliged to submit the following verified data each calendar year by type of packaging and packaging material, for the purpose of entry in the packaging register<sup>38</sup>:

- the weight of reusable packaging,
- the weight of packaging of the goods placed on the market, and
- data on the recovery of packaging waste.

**The Packaging Register is a database concerning the packaging of packaged goods placed on the market (as fully defined in the Packaging Act) and is under the authority of the MoE.** The data submitted by the packaging register shall be verified by an independent auditor to assess data accuracy. The audit requirements apply to all packaging undertakings placing more than 5 tonnes of packaging per year on the market<sup>39</sup>. The relevant authorities have the right to examine the source documents of records and the consolidated data prepared.

**In addition to the Packaging Register, PROs must also submit annual activity reports to the MoE and publish their annual report and financials on their website.** In addition to the annual reports, PROs are obliged to provide relevant information upon request from the MoE. There is no requirement for these annual activity reports to be audited, but the following information should be included:

- the packaging waste collected at the place of generation of waste and collected and recovered through the public container network;
- the agreements with local authorities for organizing collection services at national level;
- information about installed packaging waste collection sites; and
- the packaging recovery service charges and changes in the purchase prices of packaging material from the previous calendar year.

**An assessment of activity reports showed that the reports are at a high-level on the total quantities of packaging placed on the market and quantities of packaging waste recycled and recovered by category of material.** The reports contain limited information about the structure and operational functioning of the separate collection and sorting system. In the 2018 reports, only Eesti Pakendiringlus presented information broken down by packaging waste collected at the place of generation<sup>40</sup> versus through the public container network<sup>41</sup>. Understanding the breakdown in packaging waste quantities collected via different collection channels and divided between households and commercial/industrial sources is

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<sup>38</sup> A packaging undertaking who has transferred its obligations to a PRO submits the data to the PRO.

<sup>39</sup> The audit requirement has greatly supported efforts to reduce gaps between reported materials put to market and calculated waste totals. During consultations for drafting this report, officials from MoE indicated that the audit requirement for reporting may be removed in the near future.

<sup>40</sup> Meaning of “*packaging waste collected at the place of generation*” is not clear. It supposes door-to-door collection in case of household waste that has very limited scope at present. Most likely the quantities reported under this category refer mainly to commercial/industrial packaging waste collected and recycled.

<sup>41</sup> The reported quantities for collected packaging waste are actually recycled quantities.

necessary since the fee structure of PROs also differs for consumer packaging and for group and transport packaging. It is not clear how the reported data are verified.

**The current reporting system for PROs does not align with the selected method for calculation of preparation for re-use and recycling targets for household waste.** The reason is that PROs do not report separately on the quantities of recycled household packaging waste. The quantities of non-household packaging waste at source reported by PROs shall not be taken into account when calculating targets for household waste. It is unclear to understand the sources of materials going to public containers to distinguish between households and other generators such as commercial sources.

#### Coordination and control mechanisms

**The Packaging Act envisages the Packaging Committee to serve as an advisory body to the MoE; however, this platform has not been functioning in recent years.** The Act prescribes the members of the committee and envisions this as a high-level platform to coordinate achievement of national goals and advise the MoE on policy in this area. At an operational level, there is no coordination regarding distribution of responsibilities between PROs.

**State supervision over compliance with various provisions in the Packaging Act is exercised by the Environmental Inspectorate, the Consumer Protection and Technical Regulatory Authority, the Tax and Customs Board, the Veterinary and Food Board, and rural municipality and city governments.** The Environmental Inspectorate is obliged to inspect the compliance of the activities of PROs with the requirements provided by the Waste Act at least once annually. Such control should cover the contracts with municipalities, the number of container sites and containers, and the quantities of packaging waste collected according to documentary evidences provided by service operators. The current supervision system is not resulting in the intended quality and performance of the packaging recovery system.

#### Financing of the EPR system

**The main source of revenue in the EPR system are fees paid by the obliged companies (producers and importers of packed goods) to PROs.** PROs cover the implementation costs for the separate collection and sorting of packaging waste while the costs for non-packaging waste should be covered through the municipal waste fees paid by the users of waste management services. Information about service fees charged by PROs is provided in table below, and prices are consistent between the three PROs for the main categories of packaging material. The fees are considerably below the excise tax on packaging when targets are not achieved (refer to final column in table below). The 2018 data is presented to be consistent with other data in the report.

**The service price is meant to be a key competitive advantage; however, several issues about the functioning of the market have arisen:**

- the existence of a market agreement between PROs that is against antimonopoly rules
- provision of same services for the same fees with multiple PROs
- not for profit orientation of PROs
- independence of PROs from waste management companies as required by law

**Table 12: Service fees charged by PROs in 2018**

Material	OÜ Eesti Pakendiringlus	ETO	TVO	Excise tax on packaging in case of non-achievement <sup>42</sup>
<i>Sales packaging</i>				
Glass and ceramics		102.00 €/t		0.6 €/kg
Paper and cardboard		105.00 €/t		1.2 €/kg
Plastics		409.00 €/t		2.5 €/kg
Metal		255.60 €/t		2.5 €/kg
Wood		40.90 €/t		1.2 €/kg
Other material	409.00 €/t			
Beverage cartons	105.00 €/t			
<i>Transport and group packaging</i>				
Paper and cardboard		92.67 €/t		1.2 €/kg
Plastics		108.60 €/t		2.5 €/kg
Metal		127.80 €/t		2.5 €/kg
Wood		40.90 €/t		1.2 €/kg

**Table 13: Average revenues of PROs per tonne of packaging placed on the market in 2018**

	OÜ Eesti Pakendiringlus	ETO	TVO
Packaging	72,770 t	44,510.24 t	39,208 t
Annual revenues	€5.86 M	€3.8 M	€2.78 M
Average revenue per tonne of packaging	80.53 €/t	85.37 €/t	70.90 €/t
Average revenue per tonne of packaging waste recycled	128.00 €/t	133.96 €/t	101.65 €/t

#### b) Deposit Refund System for beverage containers

The Packaging Act in 2004<sup>43</sup> introduced the beverage packages deposit system for the first time and made its creation and management mandatory for producers/importers as well as retailers. The Estonian DRS started its activities May 1, 2005 based on the Packaging Act. Amendments to the Packaging Excise Duty Act<sup>44</sup> supported implementation with financial motivation to implement a deposit system.

<sup>42</sup> The excise duty is a penalty if recycling targets for a particular material are not achieved. The penalty is for the quantity of packaging waste below the target.

<sup>43</sup> <https://www.riigiteataja.ee/en/eli/ee/Riigikogu/act/507012019009/consolide>

<sup>44</sup> <https://www.riigiteataja.ee/en/eli/ee/Riigikogu/act/504072017009/consolide>

**There are several factors which contributed to the legislation introducing a deposit refund system in Estonia.** One driving force was the EU accession process over 1997 – 2003 which included the adoption and transposition of directives such as the Packaging Directive. 2004 onwards there was an adoption of waste hierarchy principles and implementation of actions to meet the Packaging Directive recovery targets. The existing market-driven refund system (with a 60% recovery target) was very difficult to monitor and left large parts of rural Estonia with no collection.<sup>45</sup> There was also a concern at the time that citizens were consumption-oriented rather than environmentally oriented. There was a strong cultural norm among consumers to return and reuse glass packaging under “deposit like” return systems. This led to the successful implementation of a DRS which was then entrenched in law.

**According to the Packaging Act, a packaging undertaking shall ensure that the established deposit is added to the price of packaged goods during the entire sales cycle of the goods with the accounts settled upon each return transaction.** For a short period of time, the deposit value is added to the price of packaging and the consumer gets it back when the packaging is returned to the collection point. The packaging law considers retailers as “polluters” and, therefore, retailers, who are selling beverage packages are subject to a deposit also and must organize their collection. This collection requirement is regulated by the Act based on the size of the sales premise, with no obligation to accept returns if the sales premise is smaller than 20 square meters in a densely populated area.

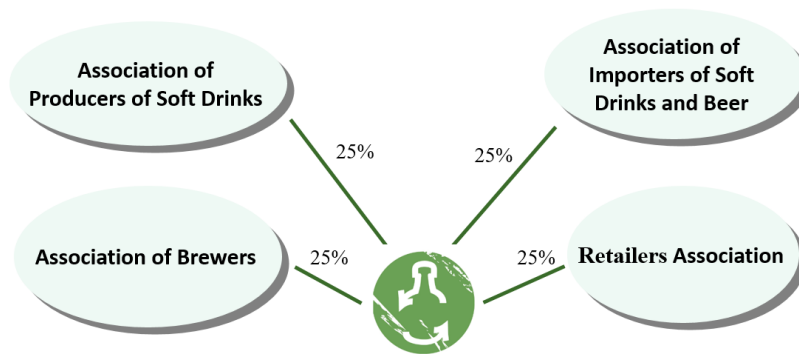
**The Estonian DRS covers single-use and refillable beverage packages, including plastics (mainly PET), cans (both aluminum and steel), and glass.** Beverage packages sized 0.1 – 3 liters are subject to deposit by law. Beer, soft drinks such as lemonade or energy drinks, water, low-ethanol alcoholic beverages, juices, and nectars are defined as deposit beverages. Since 2015, all the material deposit values were streamlined to EUR 0.10.

**Ownership and organization of collection of DRS beverage packages is shared between producers and retailers, with producers taking the lead in the process.** Ownership of the Estonian deposit system is divided between producers and retailers based on their representative organizations’ share of the industry (figure 2). The Estonian DRS currently has around 350 producer/importer clients with over 16,000 different products registered in the central deposit organization packages register which is annually reported to the state according to register. The number of active packages entering the market and collected daily is 5500. As for retailers, there are over 350 contracts with around 820 retail shops connected to the collection infrastructure of Estonia DRS.

**Figure 2: Estonian deposit refund scheme central organization ownership**

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<sup>45</sup> Ministry of Environment of Estonia, Mr Peeter Eek <https://issuu.com/pazaliuok/docs/p-EEK-deposit-est-pres-riga-8-12>



Source: Estonian Deposit System, [www.eestipandipakend.ee](http://www.eestipandipakend.ee)

The DRS is a centralized system with a “return to retail model”, resulting in consumers benefitting from a clear, simple system with minimal effort relating to retail activities. Retailers may take back deposit packages through manual collection or Reverse Vending Machines (RVM). 2019 statistics show 94% of collection was via RVM. Retailers primarily use in-store collection points, which are convenient for the consumer, with a small upfront investment and running cost to the retailer. Where this is not possible, RVM kiosks are usually set up in parking lots outside shops. Volumes of single-use package return rates are in the table below.

**Table 14: Return rates for 2018 and 2019 Estonian DRS**

Single-Use Package	2018	2019	Minimum requirement by excise law
Sales, million pieces	277	299	
Returns, million pieces	240	252	
PET returns	85.6%	87.1%	85%
Can returns	97.4%	89.0%	50%
Single-use glass returns	92.2%	88.5%	85%

Source: Eesti Pandipakend (<https://eestipandipakend.ee/en/>)

**80% of the total volume of single-use deposit packages, PET and cans, are compacted in retail shops.** From collection points at retailers, the packages are sent to the central DRS organization handling center in Tallinn for counting, sorting and preparation for recycling. All packages received from manual collection points are counted and deposit payments are made to the retailers based on the counting procedures. All RVM collection packages compacted at the retailer are received and sorted by material type so steel cans are separated from aluminum ones and PET is sorted into clear and mixed categories. Prepared materials are then sent to recycling partners for processing. Single-use glass and cans are melted and reused, and PET bottles are processed into flakes.

Key characteristics of the Estonian DRS are:

- **Producer responsibility organization** – acts upon extended producer responsibility
- **Non-profit principle** – profits cannot be paid out to owners, and can only be reinvested for system stability and development
- **Mandatory** – required by law, enforced by packaging excise tax penalty

- **Centralized** – centralized model where deposit company sets and collects the deposit fee and “producer fee”, pays “take-back compensation” to the retailers, and owns the collected materials and unredeemed deposits as part of cost coverage for the DRS operator. In addition, it has its own packages handling centers and it sets and controls all related processes.
- **Ministry accreditation** – accredited by the Ministry of Environment and controlled at least once per year by the Estonian Environmental Inspectorate. Controlling involves reviewing the activity reports and monitoring activities.

Estonian DRS notable strengths are:

- **Sophisticated IT solutions** – high-end central information technology system together with analytical tools, a web solution for producers, a server solution for RVM data clearing, and various interfaces
- **Differentiated barcoding logic for products** – it is a two-coded system with a financial incentive, so the central DRS allows both international and domestic barcodes to be used in the system. It is up to the producer or importer to decide. However, this creates an incentive towards domestic-based barcodes through differentiated industry fees with a higher fee for international coding and a lower fee for domestic coding.
- **Controlling** – fraud is a potential weak point of any DRS with deposit packages as assets. The Estonian DRS was the pioneer in establishing full controlling measures with a well-functioning two-sided (sales and return) controlling unit

**In Estonia, deposit packaging constitutes around 10% of all packaging and 15% of recycling totals.** This points to a very successful program, both in terms of volume and to address materials often littered. The transparent and effective producer responsibility system has been used as a case study by various European countries and replicated for Lithuania.

#### c) Waste Electrical and Electronic Equipment (WEEE)

**Procedures for collection, return to producer and recovery of WEEE is controlled under regulations passed under subsections 26 (3) and 8 of the Waste Act.** Three PROs are operating on the WEEE market in Estonia. EES-Ringlus (75 – 80% market share) and Eesti Elektroonikaromu (20 – 25% market share) deal with all WEEE categories. The third PRO, Ekogaisma, is specialized in management of lamps and currently represents more than 90% of producers (or 90% of lamps put on the market). Cooperation with local authorities is required by law and a minimum number of collection points are required around the country, approximately 75 collection points. Shops selling electrical and electronic equipment are obliged to accept WEEE with purchases of new products and bigger shops have to provide the option to return small WEEE items which are less than 25cm on each side.

**PROs tend to contract out both transport and waste management activities by public tender regularly.** WEEE requires mandatory standards for treatment to prevent mistreatment and illegal exports from the EU. This means that there are limited recycling partners available locally resulting in some of the waste being sent to neighboring countries, such as Finland and Lithuania. Specific WEEE components can be difficult to handle, even with these cross-border arrangements, such as TV kinescopes or the recycling of glass from luminescent lamps containing mercury.

**Some of the common challenges mentioned by the PROs include** high transportation costs particularly in areas with low volume, challenges to coverage in rural areas, and the lack of cooperation between local governments which means a much larger number of required collection points.

## 7. Other Circular Economy Initiatives

### Key Findings

- The Circular Economy will be a strong focus area in the next EU Programming period, with Estonia fully endorsing and adopting the EU priorities. There is likely to be funding prioritized for a greater focus on prevention and reduction of waste generation and re-use of products and particularly for capacity building to establish a strong system to support the achievement of targets.

**Estonia has fully endorsed and will be adopting EU circular economy ambitions in the 2021 – 2027 Programming period, including a commitment to a specific objective under Objective 2 (a greener Europe) (see Section 5).** An inter-ministerial advisory board has been constituted and is likely to meet 2 – 3 times per annum. A Circular Economy action plan is being developed by 2021. The planned interventions for the EU programming period include: i) prevention and reduction of waste generation and packaging, and reuse of products; ii) circular economy based production and consumption models, including industrial synergies and reduction of damage from raw material sourcing, and training of relevant experts; iii) energy and resource efficiency of the industrial and service sectors including small and medium enterprises, and conducting of resource efficiency audits; iv) separate collection infrastructure; and v) safe waste recycling. There will likely be a strong focus on capacity building, including for resource efficiency and circular economy auditors and support for industrial synergies such as through business-to-business collaborations.

**Estonia must transpose the requirements of the EU Directive on single-use plastics (SUP)<sup>46</sup> into national legislation and a study on the subject has been recently completed.** The study provided and estimated the quantity of SUP placed on the market in Estonia and provided recommendations on implementation of the Directive's provisions with regard to the affected plastic products. The new legislation will also introduce restrictions for market placement for certain SUP like cotton bud sticks, plastic cutlery and plates, straws, beverage stirrers, certain food containers made of expanded polystyrene and similar. Some key future decisions will be needed on national consumption reduction targets for plastic cups and certain categories of food containers as well as whether a voluntary agreement with the retail sector or an obligatory EPR scheme is optimal. Some localities, such as Tallinn, has already initiated a ban on the SUP.

**Establishment of extended producer responsibility requirements will be considered for new categories of plastic products like wet wipes, tobacco products with filters and others.** In the future, an introduction of litter monitoring and separate reporting of waste collected from public bins could be required in this regard. Recently, the preliminary estimate is that 1.2% of municipal waste is collected from public street bins and SUP waste forms approximately one-third of waste in litter bins. Sharing costs for littering measures by SUP is supposed to be on a per tonne basis. The present costs are approximately 170 EUR/tonne of litter collected from urban areas and 350 EUR/tonne if collected from nature. SUP producers typically also partially cover the costs for the waste bins.

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<sup>46</sup> DIRECTIVE (EU) 2019/904 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 June 2019 on the reduction of the impact of certain plastic products on the environment

**The existing DRS could support the achievement of high recycling targets of 90% for PET bottles.** DRS is considered to be a tool to promote reusable packaging and indirectly supports plastic reduction while simultaneously reducing litter. The requirement for minimum recycled content in PET containers is also not expected to have a significant impact on existing businesses. There is no production of PET pre-forms in Estonia. The beverages market is relatively small and is expected to follow the general trends in EU. Biodegradable plastics are not considered as a practical option due to higher costs relative to conventional plastics and potential difficulties for sorting and contamination of other plastic materials.

## 8. Construction and Demolition Waste

### Key Findings

- C&D waste is largely regulated through local regulations, which tend to assign responsibilities to local developers and with little or no waste sorting requirements
- A combination of counting backfill and landfill gate fees have resulted in general achievement of recycling targets for C&D

**C&D waste is defined, and targets are set, in the Waste Act (§ 136, par. 2)<sup>47</sup> and backfilling operations and the landfill gate fees have enabled the 70 % recovery rate target to be exceeded.** There are no specific national regulations around C&D waste, and at local level this is regulated through municipal waste regulations. Based on such local requirements in some municipalities, companies or projects generating more than 10 tonnes C&D waste are obliged to prepare waste management plans. In practice, construction companies do not sort construction waste, and buildings are usually demolished as they are. There are no specific requirements for selective demolishing. Despite that collection and treatment of C&D waste is relatively well established, the illegal dumping or handling of C&D waste is considered to be a particular issue in some municipalities.

**There a potential to improve C&D waste with extensive consultations and involvement of the construction industry and material producers.** There is currently not a market for recycled C&D materials, recycled materials are not required for public construction projects, and it is difficult for residents to discard large amounts of C&D waste in some areas. Collection upon request with large containers or through an industrial transport bag are options that are available across the country. Small amounts of C&D waste can also be taken to public amenity sites.

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<sup>47</sup>At 70% of construction and destruction waste by weight, except for such natural substances as stones and soil as well as stones and soil containing hazardous substances, should be prepared for reuse, recycling, or recovery in another manner, including for backfilling, instead of other substances.

## 9. Data Management and Reporting

### Key Findings

- Estonia has a centralized data system where information is consolidated at the national level, under the authority of the Environmental Agency. However, there are concerns about data quality and particularly the input of raw data into the reporting system. Only around one-third of reports submitted by local operators are currently reviewed.
- Local governments do not have a data reporting role in the current system, and without data collection or aggregation at local level, disaggregated figures and reports at local level is virtually non-existent.
- In addition to the centralized data management system, periodic surveys of municipal waste composition are organized every five years at the national level.

**Chapter 10 (§ 116 – 118) of the Waste Act deals with maintenance of records and reporting, and various other sections deal with specific reports in relation to waste permits, PROs, etc.** Environmental supervision agencies and the controller and processor of the environmental decisions information system have the right to have access to source documents for records and to consolidated data. The Environmental Board can request reports from entities producing certain quantities of waste that does not require an environmental protection license or permit. The Act further states that statistical works related to waste shall be organized according to the procedure provided by the Official Statistics Act. The Statistical Office reports to Eurostat based on data provided by the Environmental Agency.

**Service providers and operators for collection, transportation, and disposal of waste provide information to the Environmental Agency.** Companies transporting waste report the type of waste transported, the quantity, the exact locality and the company to which the waste was handed over. Landfills report four times per year on the type of waste landfilled, who the waste is received from, how it is managed, and the storage at various points throughout the year. This is consolidated into a single annual report. Waste treatment facilities report once per year covering waste type, quantities, operations, and stored quantities at the end of year.

**The obliged companies under the legislation on extended producer responsibility and the PROs provide annual reports about the quantities and types of products and packaging.** The obliged companies report to the relevant register directly, such as producers of agriculture plastic films, or reporting is done by PROs on behalf of companies who transferred their obligations based on contract. In addition PROs provide annual activity reports to the Estonian Environmental Agency.

**There is a centralized data system<sup>48 49</sup> where data on waste management permits and other relevant information is consolidated at the national level.** The system was gradually improved over recent years and in addition to electronic reporting, it presently provides electronic permit application functionality. Aggregated data is shared by landfill operators, collection companies and transportation companies centrally. Local collectors may share data with local governments, but local governments do not receive

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<sup>48</sup> Query option from the waste report data: <https://jats.keskkonnainfo.ee/main.php?page=statquery2public>

<sup>49</sup> Consolidated reports by years <https://jats.keskkonnainfo.ee/main.php?page=content&content=summary>

other data and are not accountable to report any data. There are national registers for transportation, waste management sites, hazardous waste<sup>50 51</sup>, packaging and products of concern.

**Periodic surveys of municipal waste composition** are organized every five years at the national level, based on a public tender. There is currently no official methodology to conduct a waste composition study and the approach is proposed by each individual bidder during tendering. The most recent municipal waste composition survey was completed by Stockholm Environmental Institute of Tallinn in 2020.<sup>52</sup>

**Data is self-reported and approximately one-third of reports submitted are reviewed.** There are some concerns around the quality of reported data, particularly the input of raw data into the centralized system. Entities might code waste differently which could result in inaccurate aggregated data. Additional inconsistencies are observed in different handover waste volumes reported by partner companies in case of waste transfer or wrongly reported data (both unintentionally and intentionally) between a company and its subsidiaries. Summarized and aggregated data is made public and data at the individual company or entity level is not disclosed. Despite that waste generation data provided by waste management service operators is disaggregated to the level of municipality, **the information about quantities of waste generated, collected and treated at individual local authorities is incomplete.**

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<sup>50</sup> For hazardous waste every transfer is reported.

<sup>51</sup> <http://register.keskkonnainfo.ee/envreg/main#HTTPkaXm2A0MnwloFPyt9Hq7kZL8bKlbAm>

<sup>52</sup> The survey findings are available here: [https://www.envir.ee/sites/default/files/sortimisuuringu\\_lopparuanne.pdf](https://www.envir.ee/sites/default/files/sortimisuuringu_lopparuanne.pdf) .

## 10. Communications

### Key Findings

- Some public awareness and communications take place across national and local levels, but the expenditure for this activity is generally low and efforts are uncoordinated.

**In 2016 only around 53% of the population had seen or heard a campaign, advertisement or message about waste sorting or management.** The report from the National Audit office concluded that while the state has set general environmental awareness goals, it has no clear, consistent vision to influence behavior change in waste management.<sup>53</sup> Low awareness among waste producers had been previously cited as a strong underlying factor hindering separate collection in 2014.<sup>54</sup> Prior and current endeavors have been made under the Waste Prevention Programme of the Waste Management Plan, which includes activities for raising awareness of waste prevention among businesses, consumers and legal authorities. Further awareness campaigns are being included under the Circular Economy strategic document and action plan.<sup>55</sup>

**Public awareness and communications campaigns are implemented at national and municipal levels by the government and to a limited extent by the private sector.** On a state level, there are campaigns for sorting of waste and the MoE has developed visual materials including unified color codes with clear guidelines for sorting by waste type (**Figure 3**). The MoE also conducts awareness campaigns on specific issues, such as invisible waste, as part of the annual European Week for Waste Reduction.<sup>56</sup> Other targeted campaigns have been launched on food waste reduction and the retirement of end-of-life vehicles. Activities undertaken in these campaigns include the development of visual informational materials, factsheets, tips, studies, conferences, and free removal of end-of-life vehicles over a specified timeframe through partnerships with relevant associations and private sector actors.

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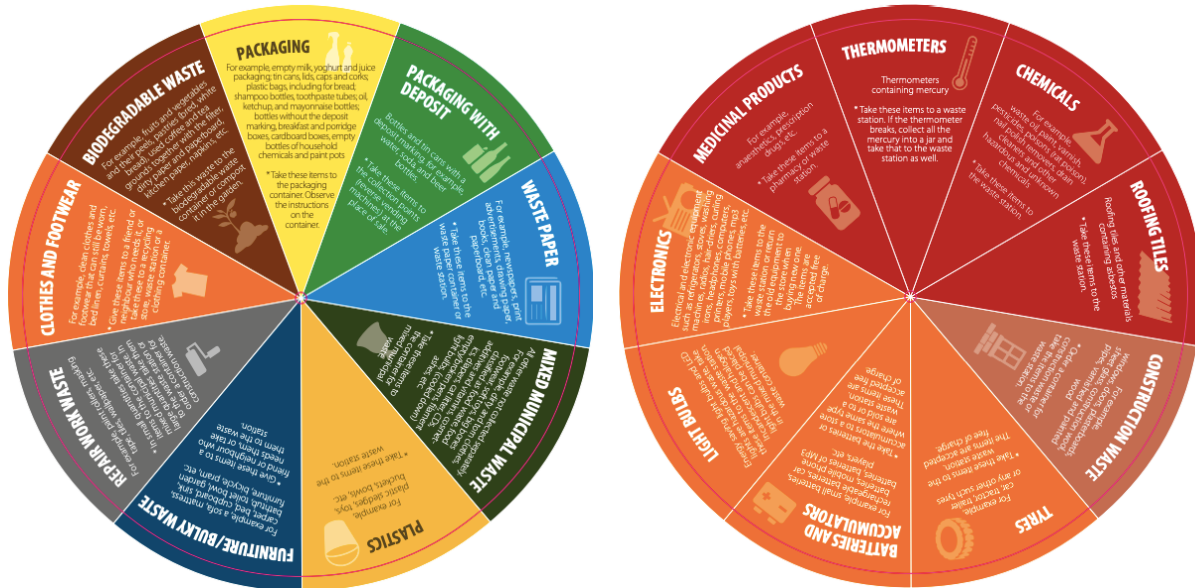
<sup>53</sup> Report of the National Audit Office to the Riigikogu. Activity of the state and local governments in the collection and recovery of municipal waste. Is household waste recycled? Tallin, 12 December 2016.

<sup>54</sup> Waste Management Plan. <https://www.eea.europa.eu/themes/waste/waste-prevention/countries/estonia-waste-prevention-fact-sheet>

<sup>55</sup> [https://www.eionet.europa.eu/etcs/etc-wmge/products/b-country-profile-estonia\\_finalised.pdf](https://www.eionet.europa.eu/etcs/etc-wmge/products/b-country-profile-estonia_finalised.pdf)

<sup>56</sup> <https://www.envir.ee/et/eesmargid-tegevused/jaatmed/jaatmetekke-vahendamine>

Figure 3: Waste sorting color wheel



Source: Ministry of Environment, [https://www.envir.ee/sites/default/files/jaatmeratas\\_eng.pdf](https://www.envir.ee/sites/default/files/jaatmeratas_eng.pdf)

**The MoE maintains a general focus on increasing environmental education through partnerships and support to other ministries, agencies and non-formal educational centers, though with limited success.** Education for Sustainable Development has become horizontally embedded in national curricula, yet implementation of activities has lagged due to limited funding.<sup>57</sup> Moreover, studies find that a disconnect persists between knowledge and environmental action among Estonians. The MoE also reviews applications for schemes supported by the Environmental Investment Centre which aim to increase environmental awareness and waste prevention under the umbrella of circular economy initiatives.<sup>58 59</sup>

**Public awareness and communications campaigns vary across municipalities according to financial resources.** In Tallinn, there are annual campaigns with an extra emphasis on the youth and particularly focused on the ban of SUP (effective from October 2019). In the nonprofit space, the main player is the foundation “Let’s Do It” which organizes regular cleanups with an influence that spans a global scale: in 2020, its annual World Cleanup Day mobilized 11 million volunteers from 165 countries. There are also several nonprofit organizations active in Estonia’s second-hand sector. Two of the largest of these are namely Humana, which focuses on the collection and resale of clothing, and Uuskasutuskeskus, which aims to ensure that any reusable item returns into circulation. Both organizations have several collection centers and stores throughout the country.

**The role of collection companies in implementing dedicated awareness raising campaigns is limited so far.** Such communication is mainly focused on following the rules for separation at source and waste collection in the respective area. If households produce more waste than the container they selected or they do not follow the rules for sorting, the waste management company often charges more without

<sup>57</sup> <https://www.hm.ee/en/news/ten-years-education-sustainable-development-estonia>

<sup>58</sup> <https://www.envir.ee/en/environmental-education>

<sup>59</sup> <https://kik.ee/en/supported-activity/circular-economy-programme>

providing an explanation. The issue is partly due to municipalities not mandating that waste collections companies to communicate with waste holders directly.

**From a private sector perspective, producers of certain products are required to conduct information campaigns, and the law requires that 1% of a PRO's revenue must be spent on public campaigning.** For certain products such as batteries, mandatory public campaigns are subject to a number of informational requirements. Producers are obliged to inform consumers of i) the effects on the environment and human health; ii) the desirability of separation; iii) available collection and recycling schemes; iv) consumer roles in contributing to recycling; and v) the meaning of symbols used in packaging. Typically, producers and PROs' public campaigns are organized annually, towards the end of the calendar year. There are general campaigns in newspapers and electronic media such as television, radio, and YouTube. PROs are further obligated to report what public campaigns were provided. There are other entities raising awareness but on a small scale with limited results.

*Table 15: Expenditure towards public awareness by PROs and DRS for packaging waste*

	OÜ Eesti Pakendiringlus	ETO	TVO	Eesti Pandipakend OÜ
Public awareness costs, EUR	73,000	43,317	44,355	65,614 <sup>60</sup>

<sup>60</sup> 2018 data. Annual Report. <https://eestipandipakend.ee/wp-content/uploads/2020/06/EPP-aastaruanne-2018.pdf>

## Examples of public awareness campaigns and materials

Public awareness campaigns span educational programs, infographics, videos, radio marketing, and television campaigns



Some links to resources:

Sorting infographic by ETO:

[https://www.eto.ee/wp-content/uploads/Pakendij%C3%A4%C3%A4tmete\\_sorteerimisjuhend.pdf](https://www.eto.ee/wp-content/uploads/Pakendij%C3%A4%C3%A4tmete_sorteerimisjuhend.pdf)

Eesti Pandipakend's video on 'Journey of the metal can':

<https://www.youtube.com/watch?v=EhVJJGOE1Jk>

Study materials for children by Tallinn: <https://www.tallinn.ee/est/keskkond/Oppematerjalid-4>

## 11. Identified Areas for Improvement of Municipal Waste Management

**Throughout the report several challenges to the efficient organization of municipal waste management has been highlighted.** Some of the issues include: a) lack of accountability for achieving recycling targets; b) limited local integration of parallel and differing waste collection and EPR systems accompanied by low public awareness; c) limited data and reporting as a means to understand material flow and transparent management of waste through both the waste collection and EPR systems; and d) legislative limitations for the application of several widely used approaches in the EU such as i) the right to organize waste collection and transportation through the preferred local method such as in-house, a municipally owned company, or through the private sector, or ii) the ability for local governments to set and collect payments for waste management services (further limiting tools and incentives for local collaboration).

Based on the baseline assessment outlined in this report, the following key areas for improvement of municipal waste management have been identified, with a specific focus on measures that will support the achievement of Estonia's recycling and re-use commitments:

### a) Legislation and Institutional Arrangements

**Assigning the responsibility for achieving re-use and recycling targets of household and similar waste to a specific addressee at the national level could improve accountability.** Having targets defined only at the national level, while waste operations are assigned as an explicit local government function poses a risk for the achievement of long-term targets. While local governments sometimes include recycling targets in local waste management plans, they lack control over the achievement with current operational arrangements, and their role regarding the achievement of targets needs to be clarified. The designation of responsibility should be aligned with the authority to implement, the ability to report data and financial incentives to achieve higher recycling rates.

**Coordination structures, whether a new entity or reactivation of an existing structure such as the Packaging Committee, should be capacitated to play the envisioned role of improved coordination and consultation in the recyclable waste chain.** Coordination between local government, between local and national government, between local governments and PRO's and between different PRO's need to improve in general. Greater clarity on responsibility for targets (as recommended above), supported by greater transparency and coordination in reporting are foundational steps towards a better functioning recycling system.

**Enforcement mechanisms are in place through legislation and regulation, but the enforcement of these could be improved.** This could include actions to build capacity of local officials in the area of waste management to better enforce local regulations and ensuring more and dedicated human resources for enforcement in the relevant agencies. Other recommendations on the overall improvement of waste management practices and any reallocation of responsibilities should also be supported with appropriate and effective enforcement mechanisms. This will require aligning the powers, procedures and capacities of competent authorities at the national and local levels to support the separate collection systems, improve evidence-based planning and management of services, strengthen contract management, improve comprehensiveness and transparency of reporting and verification, and stimulate investments in the sector.

## b) Waste Management Operations

### Operational Model

**Municipalities responsibilities should be aligned with their implementation authority and rights.** Performance and financial incentives could be better aligned so incentivize municipalities to implement according to their rights. The Amendments in the Waste Act have prohibited collection of municipal fees and taxes which limits flexibility of local authorities to implement the waste management system. Additionally, municipalities are required to tender out waste collection and transportation services and do not have the option for in-house service provision. However, municipalities still have waste management costs related to the establishment of public amenity sites, collection of street waste, and organizing collection of specific waste streams. Waste management facilities can be selected by an in-house method or by a tender. Also, municipalities have the right to determine the treatment facility for waste management companies to deliver the collected waste to but often this is not carried out in practice or monitored.

**Contracting constraints and lack of incentives prevent cooperation for greater efficiency in municipal waste management.** While intermunicipal cooperation is allowed and is being practice in some cases, the contracting restrictions are compounded by a lack of incentives and guidance to pursue this approach. Removing present barriers for contracting across municipalities without population restrictions and incentivizing development of public waste treatment infrastructure could support economies of scale. The demonstration and learning effect of a pilot project in this regard could be very valuable (i.e. national support to pilot a cross-border municipal waste operation).

### Waste Collection and Separation

**Revising the maximum number of residents (30,000) per waste collection area as well as the minimum collection frequencies could improve efficiency and convenience of the service to citizens.** While this could support a competitive market and provide access to small and medium sized companies, right sizing operations based on local conditions could also unlock the potential to take advantage of economies of scales when services are organized for larger areas and stimulate intermunicipal cooperation. The required minimum collection frequencies for residual waste of once per four weeks in urban areas and once per twelve weeks in rural areas, settlements, are considered below norms from a hygienic and sanitary perspective. The accepted collection frequency threshold is typically at least once per two weeks.

**The waste fee structure (from household fees to gate and landfill fees) needs to support recycling ambitions.** While it would be expected that there would be increased separation of waste as final disposal costs increase, the recycling rate has been relatively unchanged over recent years. Increased gate fees for landfills and incineration over recent years do not seem to be positively affecting recycling and source separation. Issues around free-riding households seem to manifest in observed actions such as illegal dumping, burning, and depositing of residual waste in PRO containers. Whether this relates to households purchasing incorrectly sized containers, fee avoidance or inadequate collection frequencies has to be investigated.

## Biowaste Management

**A concerted effort is needed to increase overall participation levels in existing separate biowaste collection as well as to focus on the clean separation of biowaste without contamination.** The achievement of 2025 and later recycling targets for municipal waste will be virtually impossible without a strong focus on biowaste. While legislation allows municipalities to mandate separate collection of biowaste, not all municipalities implement or enforce this. Some municipalities implement separate biowaste collection through preferential service charging. Biowaste management coverage would need to expand across the country and would require support through focused communication and public awareness measures, supportive enforcement mechanisms and additional incentives.

**The increased quantities of collected biowaste waste will require development of new pre-treatment or treatment processing capacities based on anaerobic digestion, composting and/or appropriate co-management facilities, such as with animal manure.** Source separation is not always enforced by municipalities and waste management companies often make the final decision about the treatment facility used, thus not guaranteeing the treatment. The present practice does not incentivize investment in waste treatment and disposal facilities. The private sector has a maximum of 5-year collection contracts, causing uncertainty regarding potential investments. Municipalities are also not incentivized to develop waste treatment infrastructure for biowaste due to not being held accountable and their limited financial capacities and restrictions to collect taxes and fees. Municipalities could play an important role in establishment of additional treatment capacities with the support of EU financing provided within the Operating Programme Environment 2021 – 2027.

### c) Financing of Waste Management Services

**There is a need to understand the actual cost as well as the flow of fees and revenues across the waste management system as a whole and per locality.** There does not seem to currently be a holistic understanding of the full cost to operate the waste management system, and it is not clear that full cost recovery is taking place, as is prescribed in law. A holistic view could support financial and evidence-based planning and benchmarking for local authorities, PROs, and service providers. It could result in reconsidering how financing and cost recovery should occur with any updated institutional arrangements or responsibilities and the expanded system. For example, prohibiting municipalities from directly collecting fees limits flexibility on how the system is organized broadly, and on how they fund recurring costs. It also impacts potential intermunicipal cooperation, and interest in developing additional waste treatment and disposal capacity. The current approach limits the interest of both the public and private sectors to apply for the available financing through the Operating Programme Environment 2014 – 2020. However, **costs for the overall system will increase with the expansion of biowaste management and recycling to achieve the EU targets and will require increased operational financing.**

**Priority areas for coordinated and sequenced investment to stimulate recycling should be identified and agreed for implementation within the financing envelopes of the Environmental Investment Centre.** Future EU funding (2021 – 2027) in the sector is expected to be allocated to activities and equipment likely to deliver the results that are urgently needed such as, more dry recyclables captured through collection systems and lower subsequent loss rates, as well as better management of biowaste. An alignment of priority investment areas between the new NWMP and these funding options are likely to yield significant efficiencies and accelerate investment. This effort needs to go beyond a laundry list of

projects and might require a consideration and analysis of the sector's experience from the previous EU funded projects.

#### d) Extended Producer Responsibility

**The EPR system for packaging waste and WEEE requires a comprehensive review and some adjustments to ensure optimal functioning.** There is a disconnect between the current bring system for separate collection of paper and cardboard, plastic, glass and metal packaging and the door-to-door collection of residual waste and other separately collected fractions organized by municipalities. The number of installed bring sites for separate collection is insufficient or not serviced frequently enough, resulting in illegal dumping at times. The materials are often not separated properly, and in some municipalities the number of sites is below the minimum requirements defined in the legislation. There are increasingly small-scale efforts for localized containers at multi-story buildings and use of bags which have been effective and indicate that the system seems to be moving closer to households.

To optimize the EPR system, operational arrangements are critical to detail further including: (i) the responsibility of municipalities to organize the waste management services in their territories, including separate collection, (ii) the responsibility of PROs to cover the full implementation costs for separate collection and sorting of packaging waste, the costs for public awareness and if necessary the administrative cost, (iii) the contracts between PROs and local authorities, and (iv) the ownership of PROs and independence from waste management companies. Some concrete recommendations to consider include:

- **A review of minimum technical requirements towards separate collection and sorting** should be reconsidered, based on the variability of housing, geography, containerization, and existing residual waste collection systems in localities (this aligns with a previous recommendation around right-sizing operations for municipal waste collection in general).
- **Further clarify and standardize responsibilities of PROs and local authorities and between PROs** in order to support a more efficient system. Currently agreements and performance standards vary and are between PROs and individual municipalities. Some standardization could improve collection of all types of waste as well as securing financing for both capital and operational expenditures. More clear requirements for distribution of responsibilities between PROs operating on the market could also support an efficient system.
- **Improve transparency and standardization in data reporting and verification.** Evidence should be documented at all stages, including collection and sorting, rather than being limited to evidence for export and recycling of packaging waste. While quantitative information is provided, there is limited information on organization of separate collection and sorting, implementation, and how targets were achieved. There is an approximately 15% difference between total packaging amounts declared by PROs and calculations from waste reports. Quantities of separately collected waste from different collection channels should be reported separately to help with clarity in material flow and calculating targets. Some packaging waste is counted under recycling but is actually sent to landfills or incinerators. Also, the scale of free riding by PROs is unclear and could be resulting from multiple sources including underreporting by large companies, lack of declaration by small companies, or reporting challenges for packaging and electronic due to e-commerce and cross-boundary purchase.

- **Improve existing requirements for the licensing and operations of PROs, their independence from waste companies, and their ownership to ensure transparency, effective monitoring, and competition.** The role of PROs is crucial for the establishment of an efficient system for packaging waste management and for a separate collection and recycling system for household waste. An optimal balance between competition and economies of scale should be analyzed, and their licensing and operations should consider timebound, performance-based conditions.
- **Further development and strengthening of the separate collection system for different categories of WEEE and packaging.** Some challenges around the status of online sales and imported goods could be addressed, and a more collaborative collection system for lower density areas across large geographical areas could be explored.

#### e) Data Management and Reporting

**Information management systems for waste related data should be aligned, transparent and offer reliable verified information at a more granular geographic and administrative level.** The current system for documentation, data reporting, and data processing provides aggregated data at the national level and meets the EU reporting requirements. However, there is no unified data management system at the local level and little information is available at the local level that could support improved planning. There should be standard performance indicators for stakeholders at all levels to allow for improved benchmarking, planning, and reporting. The information management system should be aligned with new legal requirements adopted at the EU level and with roles and responsibilities of stakeholders, especially municipalities, PROs, and service providers. To the extent possible, the cross-boundary product and material flows within the EU should be considered.

#### f) Communications

**A significant improvement in expenditure and coordination of public awareness campaigns is crucial to improving recycling rates.** The support and active involvement of citizens is necessary to achieve higher recycling rates for both improved source separation of materials and also to support any new production and consumption models. The separation of biowaste in particular will require significant citizen engagement. Communication measures have to be carefully planned, financially secured and well-coordinated. The requirement for allocation of 1% of PROs' annual revenue has not resulted in increased separation rates over recent years and the resources needed for public awareness need to be analyzed.

## 12. Conclusion

**This report represents a baseline assessment of the current municipal solid waste management system in Estonia.** It reflects a review of the system in an integrated and holistic manner, considering waste management operations, the legal framework, institutional arrangements, technical solutions, communications, data management and reporting, and financing. Findings from this baseline assessment are expected to inform policy recommendations and an action plan to improve the effectiveness and circularity of the solid waste management system in the country, with the aim to progress towards achieving recycling targets. Several key constraints and challenges, preventing the country from meeting the EU targets in terms of recycling and waste reduction, were outlined and recommendations for improvement presented.

As Estonia embarks on improving its waste management system and achieving a more circular approach, there could be significant changes including moving towards a more expensive waste management system, integrated collection and separation systems, improved and standardized reporting, alignment of responsibilities and incentives for action, and improved communications. The World Bank will provide further technical assistance to support decision making in these key areas. In addition to this initial baseline assessment, the World Bank will provide support through: (i) analysis and recommendations for priority areas including plastic and bio-waste management and extended-producer responsibility schemes; and (ii) a proposed action plan and policy recommendations on national and local level actions to improve the effectiveness of the solid waste management system and make it more circular. This will also include support for implementing a unified information management system and a high-level communications strategy.