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Ministerstvo životního prostředí



# Waste Management Plan of the Czech Republic for the Period 2025– 2035

Ministry of the Environment

2025



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# 1 Introduction

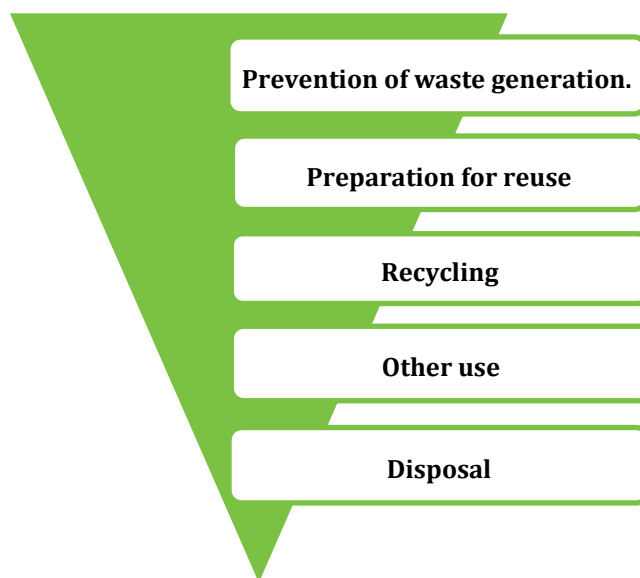
The Waste Management Plan of the Czech Republic (hereinafter also the “WMP CR” or the “Plan”) constitutes the **fundamental strategic document** in the field of waste management and the circular economy. Responsibility for its preparation is, pursuant to Act No. 541/2020 Sb., on Waste (hereinafter also the “Waste Act”), entrusted to the Ministry of the Environment (hereinafter also the “MoE”).

The WMP CR is prepared with the aim of creating conditions for waste prevention and waste management in accordance with the Waste Act.<sup>1</sup> It formulates a long-term perspective and a conceptual framework for the effective administration of waste in the country, with a time horizon up to 2035. The Plan sets out objectives, principles and measures intended to influence the behaviour of consumers, waste holders, facility operators and other actors in waste management.

The basis for the preparation of the WMP CR lies in the principles of sustainable development and the circular economy. The Plan follows the principle of the **waste management hierarchy**, which provides a framework for waste policy with an emphasis on waste prevention and the optimisation of waste recovery.

Given that waste is also an important source of raw materials, the objectives, principles and measures in the WMP CR are focused in particular on the Strategic Framework for the Circular Economy of the Czech Republic 2040<sup>2</sup> and the Secondary Raw Materials Policy of the Czech Republic.<sup>3</sup> The WMP CR also takes into account other important policies of the Czech Republic (hereinafter also the “CR”) which relate to the field of waste management.

Figure 1: Waste Management Hierarchy



Source: own processing

## 1.1 Scope and Validity of the Waste Management Plan of the Czech Republic

The Waste Management Plan of the Czech Republic for the Period 2025–2035 establishes, in accordance with the principles of sustainable development and the circular economy, **objectives, principles and measures for waste management within the territory of the Czech Republic.** It

<sup>1</sup>The WMP CR also incorporates the Waste Prevention Programme.

<sup>2</sup>The Strategic Framework for the Circular Economy of the Czech Republic 2040 (“Circular Czechia 2040”) was prepared by the Ministry of the Environment in 2018–2021, with an implementation period of 2021–2040. The document is available [here](#).

<sup>3</sup>The Secondary Raw Materials Policy of the Czech Republic was prepared by the Ministry of Industry and Trade and is the first document of the Czech Republic to create a strategic framework for the efficient use of secondary raw materials. The Secondary Raw Materials Policy was approved by Government Resolution of 15 September 2014 No. 755, and by Government Resolution of 28 January 2019 No. 73, the Update of the Secondary Raw Materials Policy of the Czech Republic for the period 2019–2022 was approved, available [here](#).

applies to the management of all waste with the exception of waste listed in Section 2(1) and (2) of the Waste Act.

The binding part of the WMP CR, including its amendments, constitutes a **binding basis** for the preparation of regional waste management plans and a basis for the preparation of spatial planning documentation.

The WMP CR is prepared for the **period 2025 to 2035**, i.e. with a validity of 11 years. Following any substantial change in the conditions on the basis of which it was prepared, it shall be updated (for example, a new extensive legislative framework in the field of waste management that would fundamentally influence waste management strategy, including the setting of new objectives or amendments to existing objectives, etc.).

This Waste Management Plan of the Czech Republic, approved by the Government of the Czech Republic, shall remain valid and effective until the issuance of a new Waste Management Plan of the Czech Republic for the subsequent period.

## 1.2 Structure and Content of the Waste Management Plan of the Czech Republic

The structure and content of the WMP CR are based on the requirements of Sections 97, 98 and 99 of the Waste Act, in connection with the relevant related legal regulations of the Czech Republic, applicable directives and regulations of the European Union (hereinafter the “EU”), as well as the methodological recommendations of the European Commission (hereinafter the “EC”). The Waste Management Plan of the Czech Republic consists of an analytical part, a binding part and a guideline part, the content of which is presented below.

1.	<b>Introduction</b>	<ul style="list-style-type: none"> <li>▪ Basic information on the scope, structure and content of the WMP CR.</li> <li>▪ Characteristics of the main actors in waste management and the circular economy.</li> </ul>
2.	<b>Analytical Part</b>	<ul style="list-style-type: none"> <li>▪ The status and development of waste management in the Czech Republic in terms of waste generation and treatment methods, including:             <ul style="list-style-type: none"> <li>- the area of waste prevention, including the evaluation of instruments and measures that may be used to prevent waste generation;</li> <li>- an overview of the types, quantities and sources of waste generated and an assessment of trends in their generation and treatment, including cross-border waste shipments;</li> <li>- an evaluation of existing systems for the separate collection and treatment of waste in the territory of the Czech Republic, at least for municipal waste, mixed municipal waste, biodegradable waste, packaging waste, hazardous waste, construction and demolition waste, end-of-life products, including the separate collection of materially recoverable waste components;</li> <li>- an assessment of the network of facilities intended for waste management in the territory of the Czech Republic, including an evaluation of capacities for individual treatment methods, an assessment of necessary changes and additions to systems for the separate collection and treatment of waste and end-of-life</li> </ul> </li> </ul>

		<p>products, with a view to improving them in accordance with the principles of self-sufficiency and proximity;</p> <ul style="list-style-type: none"> <li>- background materials for obtaining information necessary to establish criteria for the location and capacity of waste management facilities supported from public sources, where this is necessary in order to achieve the established targets.</li> </ul>
3.	<b>Binding Part</b>	<ul style="list-style-type: none"> <li>▪ The establishment of objectives, principles and measures for waste prevention and for selected waste groups that are of fundamental importance for waste management in terms of their generation or characteristics.</li> <li>▪ The determination of waste management objectives and principles, and of measures to achieve them, including preferred waste treatment methods. The binding part addresses: <ul style="list-style-type: none"> <li>- management of municipal waste, in particular mixed municipal waste, food waste and biodegradable waste;</li> <li>- management of construction and demolition waste;</li> <li>- management of packaging waste;</li> <li>- management of end-of-life products;</li> <li>- management of waste containing significant amounts of critical raw materials;</li> <li>- management of hazardous waste and other waste;</li> <li>- preparation for reuse, recycling, recovery and disposal of waste in a manner that minimises adverse impacts on the environment;</li> <li>- reduction of the amount of waste landfilled, in relation to biodegradable waste and the achievement of the objectives for limiting the landfilling of municipal waste;</li> <li>- reduction of the share of the biodegradable fraction in mixed municipal waste;</li> <li>- reduction of pollution from waste concentrated outside designated sites.</li> </ul> </li> <li>▪ Definition of a system of indicators for evaluating the fulfilment of the objectives of the WMP CR.</li> </ul>
4.	<b>Guideline Part</b>	<ul style="list-style-type: none"> <li>▪ List of instruments for achieving the established objectives of the WMP CR.</li> <li>▪ Criteria for evaluating changes in the conditions on the basis of which the Plan was prepared.</li> <li>▪ Information necessary for drawing up criteria for the location and capacities of facilities intended for waste management supported from public funds, where this is necessary for meeting the established objectives.</li> <li>▪ Proposals for necessary facilities intended for waste management of supra-regional importance, where this is necessary for meeting the established objectives.</li> </ul>

The *Waste Management Plan of the Czech Republic for the period 2025–2035* was prepared on the basis of analytical documents referenced in the sources.

## 1.3 Strategic Context and Current Political Environment

The WMP CR is firmly embedded within existing strategic documents and policies both at EU level and at the national level. Waste management is comprehensively interconnected with various dimensions of specialised strategies. This section of the document provides a summary of key policies and strategies.

The functioning of these policies and strategic intentions is defined by legal regulations, which are generally either directly applicable or transposed from European legislation into Czech legislation. The regulations governing the functioning of waste management in the Czech Republic and the EU are set out in Annex No. 3 – Legal Regulations and Standards in the Field of Waste Management of the Czech Republic and the EU.

### 1.3.1 EU Policies

Waste management, as one of the main areas of the environment, is regulated by a number of EU policies. These are primarily focused on waste prevention, re-use, recycling and landfilling. Selected policies also target specific sectors of waste management or particular materials and their comprehensive use. A list of selected policies is provided below.

#### European Green Deal (2019)

The European Green Deal represents an ambitious and highly prioritised political initiative adopted by the EU in December 2019. This innovative strategy creates a comprehensive framework for transforming the European economy towards sustainability and environmental protection. The main objective of the Green Deal is to achieve climate neutrality in the EU by 2050, thereby supporting ecological transformation, sustainable development and the protection of natural resources for future generations. This ambitious plan promises to transform the economy and society with regard to environmental considerations and to strengthen Europe's position as a global leader in sustainability.

The strategy covers a wide range of environmental topics, from biodiversity to the management of waste batteries. The main chapters of the Green Deal include the transformation of the economy, the integration of sustainability into all EU policies, the mobilisation of research and the support of innovation, and strengthening the EU's role as a global leader in the field of the environment.

Figure 2: Objectives of the European Green Deal



Source: European Commission, 2019.

Waste management within the framework of the European Green Deal falls under the broader plan to achieve climate neutrality, as it plays a crucial role in the objective of achieving more sustainable and efficient resource consumption. Efforts to reduce waste generation and to promote recycling contribute to the overall reduction of greenhouse gas emissions, which is a key step towards mitigating the impacts of climate change. The Green Deal also emphasises the circular economy, which is intended to minimise waste and maximise the re-use and recycling of raw materials. The EC has set specific targets

in the field of waste, such as reducing the landfilling of hazardous waste and increasing the recycling of plastics. Emphasis is also placed on supporting innovation in recycling technologies and on supporting sectors that focus on the sustainability and renewability of materials.

In March 2018, the European Commission presented the Action Plan: Financing Sustainable Growth COM (2018) 97. This Action Plan highlights the role of the financial system, which is essential in linking financing issues with the specific needs of the European economy. The Action Plan addresses the financing of sustainability and the transition to a low-carbon circular economy and is followed by a number of further legislative acts, in particular the EU Taxonomy (Regulation (EU) 2020/852 of the European Parliament and of the Council).

The EU Taxonomy is a unified classification system which, through consistent and objective technical criteria, provides uniform definitions of environmentally sustainable economic activities. These uniform definitions create certainty for investors. The EU Taxonomy reduces market fragmentation and supports businesses in their efforts to become sustainable.

### EU Circular Economy Action Plan (2020)

Another document that is fundamental for the field of waste management is the EU Circular Economy Action Plan, prepared by the EC in 2020. The EU Action Plan responded to new legislation, in particular directives in the field of municipal waste recycling.

The EU Action Plan is not focused solely on the end of the product life cycle (waste) but addresses the entire life cycle in a systemic way. The measures include aspects of production, packaging, product durability and the materials used. The Action Plan establishes the framework of a sustainable product policy, which includes the design of sustainable products, strengthening the position of consumers and public procurers, and the observance of the principle of circularity in production processes. The EC emphasises the importance of supporting recycling through instruments such as tax incentives in the form of VAT relief, green public procurement with the support of recycled products, and other support mechanisms.

The EU Action Plan defines **seven key areas** essential for achieving a circular economy, covering electronics and information and communication technologies (hereinafter “ICT”), batteries and vehicles, packaging, plastics, textiles, construction and buildings, and finally food, water and nutrients. Each of these areas presents its own challenges and opportunities, and therefore specific objectives and measures are set for each of them. The aim is not only to reduce the amount of waste, but also to maximise the re-use of raw materials and to minimise negative environmental impacts throughout the entire product life cycle.

*Table 1: Seven Key Areas of the Action Plan*

#### Electronics and ICT



Electrical and electronic equipment represent one of the fastest growing categories of waste (2% per year). The EC has planned to address this area through initiatives for electronics in the circular economy, focusing on the updating of obsolete software, regulatory measures for chargers, and improvements in the processes of separate collection and treatment of waste electronic equipment. Electronics and ICT are designated as a priority sector for the application of the “right to repair”, for regulatory measures concerning chargers for mobile phones and similar devices, and for improvements in the separate collection and treatment of waste electrical and electronic equipment.



### Batteries and Vehicles

Sustainability in the value chain of batteries and vehicles plays a key role in the future of mobility. For this purpose, a new regulatory framework for batteries was presented, based on the evaluation of the Batteries Directive, the outcomes of the European Battery Alliance, and the recast of legislation on end-of-life vehicles. Further efforts have focused on the development of a comprehensive European strategy for sustainable and smart mobility, which supported measures to reduce material consumption, promote sustainable fuels, optimise infrastructure and vehicles, increase efficiency of use, and eliminate waste and pollution.



### Packaging

In 2017, the amount of packaging waste in the EU reached a record level of 173 kg per person. With the aim of ensuring the sustainability and recyclability of all packaging, a revision of Directive 94/62/EC<sup>4</sup> was planned to strengthen the mandatory essential requirements for packaging materials that may be placed on the EU market. At the same time, additional measures were introduced with an emphasis on reducing (excessive) packaging and packaging waste, design taking into account re-use and recyclability of packaging, and reducing the complexity of packaging materials.



### Plastics

With regard to plastics, the EC set a target to increase the use of recycled plastics, by means of regulations imposing mandatory requirements for recycled content and reducing waste for key products such as packaging materials, construction materials and vehicles. It also focused on addressing the presence of microplastics in the environment, new challenges in the field of sustainability, and the timely implementation of the new Directive on single-use plastic products and fishing gear<sup>5</sup>.



### Textile Products

Textile products represent a significant burden on the environment, and less than 1% of products worldwide are recycled. The EU is planning a comprehensive set of measures in this field, including the application of the new framework for sustainable products, improvement of the business and regulatory environment, achievement of a high level of separate collection of textile waste, and support for sorting, re-use and recycling of textile products.



### Construction and Buildings

The construction sector alone generates more than 35% of total waste production in the EU. Greenhouse gas emissions associated with the extraction of materials, the manufacture of construction products, and the construction and renovation of buildings are estimated to represent a further 5–12% of total national greenhouse gas emissions. It

<sup>4</sup> Directive 94/62/EC of the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste.

<sup>5</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.

is estimated that greater material efficiency could save up to 80% of these emissions. For this reason, the EC is planning a new comprehensive strategy for the sustainability of the built environment and will promote the principles of the circular economy throughout the entire life cycle of buildings.

### Food, Water and Nutrients



The food value chain exerts a significant impact on resources and the environment. According to estimates, up to 20% of the total amount of food in the EU is spoiled or discarded. In this area, measures are envisaged to increase the sustainability of food distribution and consumption, to promote a circular approach to the re-use of water in agriculture and in industrial processes. In addition, an integrated nutrient management plan will be developed.

Source: Based on the EU Circular Economy Action Plan (2020).

The EC places great emphasis on waste reduction and sets the objective of halving overall waste generation and the amount of non-recycled municipal waste by 2030. These objectives are linked with the development of waste/circular economies in individual Member States. The document also highlights the need for further investment in technologies. Overall, it constitutes a comprehensive strategy to support the circular economy in Europe.

### New Industrial Strategy for Europe (2020)

The need for transition to a circular economy is also emphasised by the European Industrial Strategy, the objective of which is to strengthen the competitiveness of EU industry and to support a more sustainable, resilient and more digital economy that creates jobs. European industry plays a crucial role in the ecological transformation towards a circular economy, which means reducing the carbon and material footprint and embedding circularity throughout the economy. The Strategy identifies the principle of the circular economy as one of seven key areas that should deliver a cleaner and more competitive industry, reduce the negative impact on the environment and lower production costs.

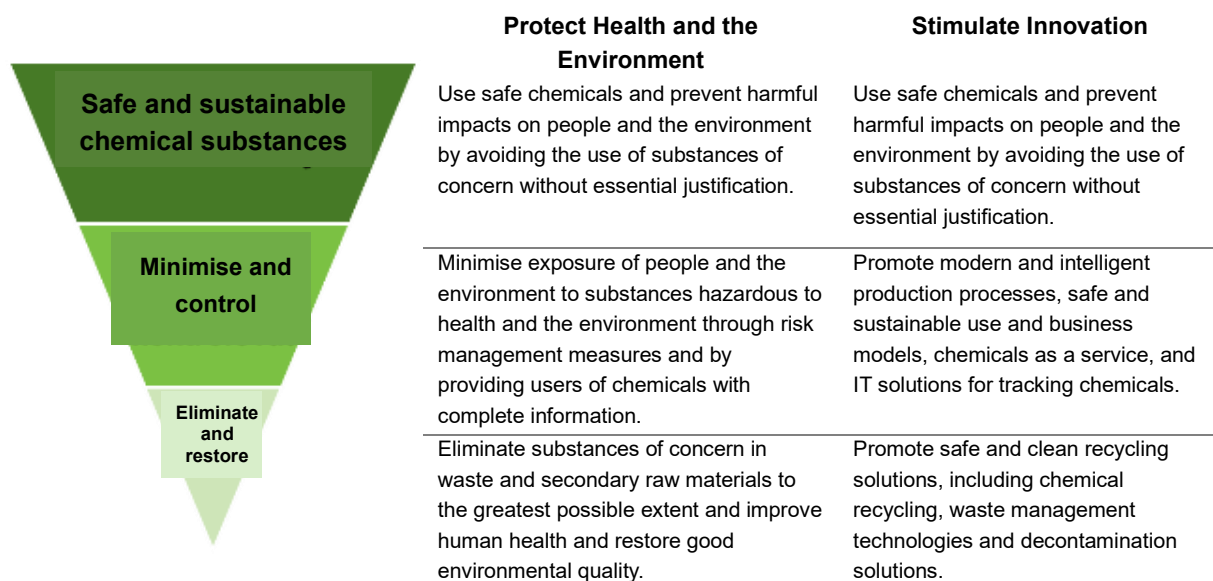
The EU intends to move away from the traditional model of extracting raw materials, producing, using and disposing of products, and to transition to a circular model. This means giving back more than is taken, thereby reducing the ecological footprint. In terms of measures to achieve the target state, the Strategy refers to the EU Circular Economy Action Plan. Among the specific steps it lists are the new regulatory framework for sustainable batteries, the EU Strategy for Textiles, the initiative for electronics in the circular economy, and strengthening the position of consumers so that they can play an active role in the circular economy through better information about products and enhanced consumer rights.

### EU Chemicals Strategy for Sustainability (2021)

The Chemicals Strategy plays a key role within the European Green Deal and contributes to achieving the zero pollution ambition. This Strategy is also an important part of the recovery plan following the COVID-19 crisis. Its aim is to achieve more sustainable use of chemicals, minimising negative impacts on the environment and on human health. The Strategy addresses chemicals such as endocrine disruptors, substances that impair the immune and respiratory systems, and persistent substances such as per- and polyfluoroalkyl substances (PFAS).

The Strategy proposes a new hierarchy in the field of chemical management with a stronger emphasis on the prevention of hazardous waste generation. The basic principles of this hierarchy can be integrated into broader strategies for sustainable industry and environmental protection.

Figure 3: Non-toxic Hierarchy – new hierarchy in the field of chemical management



Source: European Commission, 2020

One of the elements of the Chemicals Strategy is the introduction of the concept of **“One Substance, One Assessment”**. For each chemical substance, there will be only a single, comprehensive assessment of hazards and risks, without unnecessary duplication or fragmentation of responsibility among different authorities and procedures. To this end, coordination across public authorities, expert groups and EC coordination mechanisms will be strengthened.

The EU Chemicals Strategy emphasises the need for innovation for safe and sustainable chemicals. Innovation is intended to provide solutions for the transition to a non-toxic material cycle and to support clean recycling. The aim is to ensure that substances of concern are minimised in products and in recycled materials. Innovation should also support the shift from traditional manufacture and use of chemicals towards the concept of “chemicals as a service”. This concept includes the leasing of chemicals, but also the leasing of services such as logistics, the development of specific chemical processes and applications, and waste management.

Finally, the EC highlights the direction towards a global approach to addressing the challenges associated with chemicals and waste. The aim is to integrate strategies concerning the life cycle of chemicals into global biodiversity objectives.

### EU Strategy for Sustainable and Circular Textiles (2023)

The aim of the Strategy is to create a comprehensive framework and vision for the transformation of the textile sector. Textile products will have a long lifespan, be recyclable, largely made from recycled fibres, free of hazardous substances, and produced with regard to social rights and the environment.

### European Strategy for Plastics in a Circular Economy (2018)

The main vision of the Strategy is an intelligent, innovative and sustainable plastics sector, in which design and production fully respect the requirements of re-use, repair and recycling. Plastics and

plastic-containing products are to be designed to allow for greater durability, re-use and high-quality recycling.

### **EU Methane Strategy (2020)**

The EU Methane Strategy is a key document that affects a number of sectors, including waste management. Methane is a powerful greenhouse gas, with emissions often originating from waste (approximately 26%), specifically from landfills, biodegradable waste and wastewater treatment plants. Within this Strategy, targeted support is planned to accelerate the development of the market for biogas from sustainable sources, including an initiative for the implementation of pilot projects intended for rural and agricultural communities. The Strategy calls for a review and potential amendments to several key EU legislative acts, including the Landfill Directive, the Urban Waste Water Treatment Directive and the Sewage Sludge Directive, which significantly affect waste management and current practice in this field.

The Strategy also includes potential new legislation concerning methane venting and flaring, as well as new standards for the entire supply chain. In addition, the Strategy supports the World Bank's global initiative "Zero Flaring", which is aimed at eliminating methane flaring in the extractive industry.

### **EU Action Plan Towards Zero Pollution (2021)**

The EU Action Plan Towards Zero Pollution focuses on reducing pollution of air, water and soil and affects a number of sectors, including waste management. The document addresses the improvement of water quality, including the reduction of waste in seas and oceans. Its objective is to reduce marine plastic waste by 50% and to cut the amount of microplastics released into the environment by 30%. In addition, the Plan emphasises a significant reduction in waste generation and sets the goal of reducing the volume of residual municipal waste by 50%.

To achieve these objectives, the EU Action Plan Towards Zero Pollution includes several key measures aimed at improving the state of the environment. One of these is the effort to reduce marine pollution caused by waste by setting specific threshold values at EU level, to be established under the Marine Strategy Framework Directive. This Plan also encourages operators from both the public and private sectors to commit to "zero pollution". Furthermore, in ensuring better monitoring and management of international trade, the initiatives highlighted include those targeting waste originating from electrical and electronic equipment and batteries.

### **Farm to Fork Strategy (2020)**

The "Farm to Fork" Strategy represents the European Union's innovative approach to food production and consumption, with an emphasis on sustainability and pollution reduction. This Strategy also has an impact on waste management.

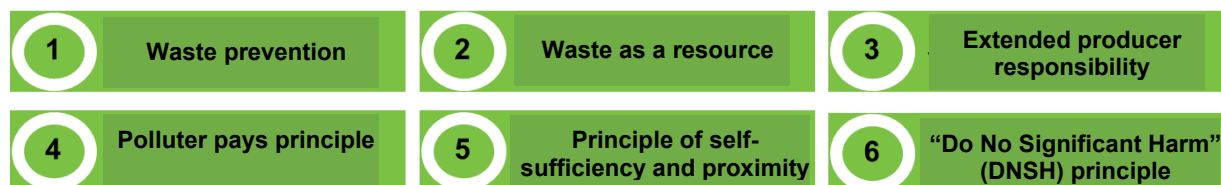
One of its key points is the **promotion of sustainable food production**. This includes encouraging farmers to seize opportunities to reduce methane emissions from livestock breeding through the use of renewable energy sources and the implementation of biogas production technologies from waste and residues from livestock farming. Other key points include supporting the application of precision fertilisation techniques and sustainable farming practices, particularly in areas with intensive livestock breeding, and recycling organic waste back into the ecosystem in the form of ecological fertilisers. These objectives are to be implemented through measures to be incorporated by Member States into their strategic plans within the framework of the European Union's Common Agricultural Policy.

The Strategy also places strong emphasis on **reducing food loss and food waste**. The European Commission has committed to the ambitious goal of halving food waste by 2030 at the level of retailers and consumers. This means that Member States, including the Czech Republic, will have to implement effective measures to achieve this objective. Under the newly developed methodology for measuring

food waste, and on the basis of data collected from EU Member States for 2022, a baseline will be established and binding targets for reducing food waste across the EU will be proposed. The EC will also assess what food losses occur at the production stage and how they can be minimised. Transnational coordination at EU level will reinforce the measures of individual states to address food loss and food waste within the EU and will serve as a guiding benchmark for all stakeholders.

### 1.3.2 National Policies

Waste and circular economy policy at the national level reflects European legislation and strategic documents and is based on the general principles applied in waste and circular economy management, namely:



Given that waste management is closely linked with a wide spectrum of economic sectors, the WMP CR also responds to the corresponding strategic materials. The following overview presents the key policies of the Czech Republic that are related to the Plan. Some of these policies are of a long-term nature and influence the entire duration of the Plan, while others focus on its initial phase of effectiveness. This ensures that the WMP CR will be firmly embedded in the strategic context of the country and will effectively correspond to the dynamics of waste management, which plays a key role in the social and economic framework of the Czech Republic.

#### State Environmental Policy of the Czech Republic 2030 with an Outlook to 2050 (MoE)

The Policy defines the main areas of environmental threats in the Czech Republic and, on this basis, sets strategic and specific objectives with possible measures aimed at effective protection and improvement of the state of the environment. Under Strategic Objective 2.2 “The circular economy ensures efficient management of raw materials, products and waste in the Czech Republic”, the specific objectives include:

- “The material intensity of the economy is decreasing.”
- “Waste generation is maximally prevented.”
- “The waste management hierarchy is respected.”

#### Strategic Framework Czech Republic 2030 (MoE)

This Strategy defines the direction of sustainable development of the Czech Republic up to 2030. Its main orientation is to increase quality of life and economic development, while at the same time ensuring sustainability in social, economic and ecological terms. The Strategy sets objectives that the Czech Republic should achieve in the fields of resource management, social development, economy, development of municipalities and regions, ecosystem protection, good governance and international interconnectedness. The Strategy identifies the circular economy as one of the solutions to the limited availability of resources. Within the Czech Republic, the **waste management hierarchy** should be observed, where waste prevention is prioritised, followed by recycling, which is preferred over energy recovery or disposal.

The Czech Republic aims to reduce dependence on primary raw materials and to strengthen resilience to disruptions of supply chains, thereby also increasing the strategic autonomy of the Czech Republic.

#### Strategic Framework for the Circular Economy of the Czech Republic 2040 (MoE)

Circular Czechia 2040 is a strategic framework that promotes the principles of the circular economy and highlights the importance of the circular economy in the Czech Republic. The Framework formulates assumptions, objectives and measures to ensure that the Czech Republic, through the circular economy, becomes more resilient to future environmental threats, including climate change, and that a sustainable social system is developed.

The Strategic Framework focuses on 10 priority areas:

- 1) Products and design;
- 2) Consumption and consumers;
- 3) Waste management;
- 4) Industry, raw materials, construction, energy;
- 5) Bioeconomy and food;
- 6) Circular cities and infrastructure;
- 7) Water;
- 8) Research, development and innovation;
- 9) Education and knowledge; and
- 10) Economic instruments.

The aim of the Strategic Framework is to achieve a state in which the circular economy will bring substantial environmental, economic and social benefits to the Czech Republic. Within the adopted measures, the Czech Republic supports the circular economy as a model for improving environmental protection, strengthening competitiveness and technological advancement, creating new jobs, increasing resource security and developing new skills among the population.

An **Action Plan “Circular Czechia 2040”** for the period 2022–2027 has also been prepared in relation to the Strategic Framework, setting out in detail the implementation of the strategic objectives, specific objectives and standard measures of Circular Czechia 2040 in the form of activities and tasks, thereby defining the method of their fulfilment.

### **Raw Materials Policy of the Czech Republic in the Field of Mineral Resources and Their Sources (MPO)**

The document responds to economic developments in Europe and worldwide, as well as to changes in the global market for mineral resources. The most significant part of the transformation of the raw materials industry is the shift towards modern high-tech raw materials, which are essential for electronics and other advanced sectors. This development reflects the need for industrial modernisation and adaptation to new technological requirements. The State Raw Materials Policy is based on the principles of the European integrated strategy, the Raw Materials Initiative, which was created in response to the growing importance of raw material security in EU Member States. The Raw Materials Policy is interconnected with the State Energy Policy, which provides a framework for meeting energy objectives with the corresponding raw material background.

The established objective is to ensure the raw material security of the Czech Republic and to guarantee stable, safe and economically advantageous access to mineral resources for the sustainable development of society as a whole. One of the main approaches to ensuring this security is to support the **use of secondary sources**, including mixed municipal waste, separated components of municipal waste, solid recovered fuels, sewage sludge, tyres and others.

At present, in the Czech Republic there is no possibility of obtaining mineral resources for the production of steel, cast iron and non-ferrous metals from domestic primary sources. The key option is **recycling**, which offers an opportunity for the recovery of ore, metallic and critical raw materials. Metal scrap, especially from end-of-life electrical and electronic equipment, is a valuable source of secondary raw

materials. Electronics can provide basic and precious metals and their alloys, semiconductors/semi-metals, plastics and glass.

A trend of the past decade in the Czech Republic is the **recycling of construction raw materials**, particularly aggregates. Recycled construction material represents approximately 15% of natural stone extraction in the country. One of the objectives is to at least partially replace depleted deposits of construction raw materials by increasing self-sufficiency in raw material sources through the use of secondary raw materials. However, there are certain challenges in the use of recyclates, as the price of natural resources (crushed stone, sands, gravels) is often lower than that of recyclates. When using recyclates in construction, it is also necessary to maintain stricter technological discipline compared to the use of natural aggregates, which entails additional costs.

### **Secondary Raw Materials Policy of the Czech Republic for the Period 2019–2022 (MPO)**

The Raw Materials Policy of the Czech Republic is closely linked with the Secondary Raw Materials Policy of the Czech Republic for the period 2019–2022, whose strategic objectives are derived from five fundamental areas aimed at supporting the circular economy. These strategic objectives are formulated so as to remain relevant in the long term and to correspond with the main objective of the circular economy, namely closing the resource loop by replacing primary raw materials with secondary sources. This formulation has been maintained since the first Secondary Raw Materials Policy of the Czech Republic of 2014, in order to reflect the long-term perspective and continuity in efforts to achieve a more sustainable approach to resources. These objectives include in particular:

- Increasing the self-sufficiency of the Czech Republic in raw material sources by substituting primary sources with secondary raw materials.
- Supporting innovation to ensure the recovery of secondary raw materials in a quality suitable for further use in industry.
- Supporting the use of secondary raw materials as a tool for reducing the energy and material intensity of industrial production while at the same time eliminating negative impacts on the environment and human health.

The objective of the updated policy is to continue the trend of increasing the share of returned raw materials in the overall consumption of raw materials within the Czech economy. For this reason, 19 tasks were defined, focused on continuing the support of innovative technologies for the recovery of secondary raw materials as a tool for reducing the material and energy intensity of industrial production, addressing material eco-design, and also continuing the support of education and awareness-raising in the field of the circular economy, which are essential for ensuring the acceptance and implementation of new directions and changes in industry, the services sector and the economy of the Czech Republic as a whole. The MIT is preparing a new Secondary Raw Materials Policy of the Czech Republic for the period up to 2035.

### **National Reform Programme of the Czech Republic 2023 (Office of the Government of the Czech Republic)**

The National Reform Programme is a document created as part of the coordination of EU economic policies. One of the topics to which it has long been devoted is the transition to a circular economy. An ongoing reform in this field is the implementation of the new Czech waste management legislation and the adopted Circular Czechia 2040 strategy. The Reform Programme specifically mentions investments in recycling infrastructure, the use of secondary raw materials in enterprises, and the reduction of water consumption in production processes.

### **State Energy Policy of the Czech Republic (MPO, update in progress)**

This strategic document sets out the State's objectives in energy management in accordance with the principles of sustainable development, ensuring security of energy supply, competitiveness of the economy and social acceptability for the population. The law further defines this Policy as a basis for spatial development policy and the spatial development plan, and at the regional level it is followed by regional energy policies. The currently valid State Energy Policy of the Czech Republic was adopted by the Government in May 2015 and formulates three overarching strategic objectives: security, competitiveness and sustainability. In relation to waste management, its priorities include in particular the maximisation of energy recovery from secondary energy sources, including suitable industrial and municipal waste, while respecting the waste management hierarchy after the separation of recyclable components; support for the direct (thermal) recovery of non-recyclable waste for cogeneration heating systems, in line with environmental protection, especially air protection; and support for research and development of new technologies for energy recovery from secondary raw materials and waste that cannot be materially recovered. The Government's Policy Statement contains a commitment to prepare, by the end of 2023, an update of the State Energy Policy of the Czech Republic in view of the EU's energy and climate objectives, which is also closely linked to the update of the Czech Republic's National Energy and Climate Plan and the Climate Protection Policy of the Czech Republic.

### **Bioeconomy Concept in the Czech Republic from the Perspective of the Ministry of Agriculture for the Years 2019–2024 (MoA)**

The aim of the Concept is to promote the development of the bioeconomy and to ensure sustainable management of natural resources in areas such as agriculture, forestry, water management and aquaculture. It also seeks to achieve sustainable production of food and feed, to strengthen the role of primary producers and their integration into the bioeconomy value chain. On the forestry side, emphasis is placed on involving the entire value chain and related industries.

In the context of waste management, the Concept focuses on the recycling of biological waste and its subsequent use, for example as fertiliser, mulching material, biogas or advanced biofuels for transport purposes. It also addresses the processing of secondary raw materials and waste from food production and the more efficient recovery of waste streams.

A Bioeconomy Strategy for the Czech Republic is expected to be prepared in the coming years.

### **Regional Development Strategy of the Czech Republic 2021+ (MoRD)**

This Strategy defines the main objectives of the State's regional policy for the period 2021–2027, with an emphasis on supporting dynamic, balanced and sustainable territorial development. Within the action plans of the Strategy, it recommends preventing waste generation and applying the principles of the circular economy. In waste management, the hierarchy will be enforced and waste recovery such as composting and anaerobic digestion will be preferred. Based on the Strategy, the development of environmental awareness of the population in the field of waste management is planned, with a focus on zero-waste technologies in industrial sectors. The preparation of the Bioeconomy Strategy in the Czech Republic is expected in the coming years.

### **National Policy for Research, Development and Innovation of the Czech Republic 2021+ (Office of the Government of the Czech Republic)**

The National Policy for Research, Development and Innovation is a strategic document serving as a foundation for the development of a society focused on the creation and utilisation of knowledge. Support for research and development of innovative technologies is one of the key factors in maintaining

and enhancing the international competitiveness of the Czech Republic. In connection with the WMP CR, the development of new technologies plays an important role in waste management.

### **National Recovery Plan (MPO)**

The National Recovery Plan is based on key strategic documents and takes into account the situation of the Czech economy and long-term trends. Waste and circular economy issues are addressed under Component 2.7 “Circular Economy, Recycling and Industrial Water”, which falls within the remit of the MoE and the MIT. Investments of the MoE linked to the National Recovery Plan focus on comprehensive support for the development of the circular economy in the field of biodegradable waste (BDW) management. Investments of the MIT are focused on supporting the use of secondary raw materials as substitutes for primary raw materials and on increasing the efficiency of water use in technological processes.

### **Economic Strategy of the Czech Republic 2020–2030 (MPO)**

The main objective of the Strategy is to achieve long-term sustainable growth of the Czech economy, based on competitiveness and high added value. A measurable objective of the Economic Strategy is to place among the top ten EU countries in terms of gross domestic product per capita in purchasing power parity.

According to the Strategy, the Czech Republic must in the coming years support the shift away from landfilling and create conditions for the transition to a circular economy and for strengthening material recovery of waste, for example through the development of a technologically advanced recycling industry. The document also mentions potential threats in the field of waste management, such as an increase in waste batteries as a result of the development of electromobility, or insufficient capacities of advanced recycling facilities and the outflow of recyclable waste for processing outside the Czech Republic.

With a growing population, demands are increasing for support of the circular economy and sustainable use of raw material resources. Emphasis is also placed on increased use of renewable energy sources and the implementation of smart technologies in agriculture. The Czech Republic will also need to actively engage in supporting the transition away from landfilling of waste and in creating conditions for the development of alternative waste management methods, including strengthening the recycling industry, which is not yet sufficiently developed in this field. A key aspect for the Czech Republic will also be a smooth transition towards an increased share of nuclear energy and renewable energy sources.

### **Climate Protection Policy in the Czech Republic (MoE, update in progress)**

The Climate Protection Policy was adopted by the Government in March 2017 and is based on international and European commitments. These include the targets set within the European Green Deal, the EU commitments under the Paris Agreement, the European Climate Law (2021) and the Fit for 55 package. The Policy represents a long-term strategy for the low-carbon development of the Czech Republic. Its objective is to achieve cost-effective measures leading to the reduction of greenhouse gas emissions. Efficient waste management is one of the areas of action contributing to emission reductions, as waste is responsible for approximately 4.5% of the emissions of the Czech Republic (CHMI, 2023).

The Government’s Policy Statement includes a commitment to revise the Climate Protection Policy in the Czech Republic by the end of 2023, in connection with the update of the National Energy and Climate Plan of the Czech Republic and the State Energy Policy of the Czech Republic. These documents form a comprehensive framework approach to issues of energy, climate and environmental protection in the Czech Republic.

### **Environmental Security Concept 2021–2030 with an Outlook to 2050 (MoE)**

The Environmental Security Concept 2021–2030 with an Outlook to 2050 is a strategic document focusing on environmental protection and the prevention of risks in the field of environmental security in the Czech Republic. The functioning of waste management can be significantly affected by the consequences of environmental disasters of both anthropogenic and natural origin. Protection against these risks and preparedness for addressing their consequences are key elements of the environmental security strategy in the Czech Republic.

### **Transport Sector Strategy, Phase 3, for the Period 2024–2030 (MoT)**

The Transport Sector Strategy, Phase 3, for the period 2024–2030 (hereinafter “TSS 2024–2030”), builds on the Transport Policy of the Czech Republic for the period 2021–2027 with an outlook to 2050. This conceptual document of the Ministry of Transport sets out priorities and objectives in the field of transport and transport infrastructure development. Within the implementation of the TSS 2024–2030, a negative impact is expected in connection with the generation of construction and demolition waste, consisting mainly of excavated soil, construction rubble and demolished concrete (plain concrete and reinforced concrete). However, the Strategy also provides opportunities to mitigate this burden on waste management, for example by adhering to the “Do No Significant Harm” principle (DNSH) and by shifting part of road transport to rail.

### **Other Strategies and Policies**

- Transport Policy 2021–2027 with an Outlook to 2050 (MoT),
- Industry 4.0 Initiative (MIT),
- Innovation Strategy of the Czech Republic 2019–2030 (OG CR),
- Concept of Research, Development and Innovation of the Ministry of Agriculture for the Years 2023–2032 (MoA),
- National Concept for the Implementation of Cohesion Policy in the Czech Republic after 2020 (MoRD),
- Food and Nutrition Security Strategy 2030 (MoA),
- Strategy for the Prevention and Combating of Waste-Related Crime for the Period 2021–2023 (MoI),
- National Emission Reduction Programme of the Czech Republic (MoE),
- The State Programme of Environmental Education, Training and Awareness-Raising and Environmental Counselling for the years 2016–2025 (MoE),
- Climate Change Adaptation Strategy in the Conditions of the Czech Republic (MoE),
- Education Policy Strategy of the Czech Republic 2030+ (Ministry of Education, Youth and Sports),
- National Energy and Climate Plan of the Czech Republic (MIT/MoE),
- Health 2030 – Strategic Framework for the Development of Healthcare in the Czech Republic until 2030 (MoH),
- National Implementation Plan of the Minamata Convention on Mercury in the Czech Republic – under preparation,
- National Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants.

All national strategies focus on several key priorities in the field of waste and circular economy management, including activities for waste prevention, minimisation of negative impacts on the environment and human health, maximisation of waste utilisation, reintegration of resources back into the economic cycle, and support for the use of waste as alternative sources of natural materials and energy.

## 1.4 Institutional Framework and Actors in Waste Management Plan

Public administration in the field of waste management is defined by the applicable laws of the Czech Republic. The organisational structure of waste management corresponds to the model and organisation of Czech public administration. From a vertical perspective, waste management public administration can be divided into **state administration** and territorial **self-government**. From a horizontal perspective, it is divided into individual public administration institutions in the field of waste management, corresponding to territorial jurisdiction and the hierarchy associated with it. The institutional framework of waste management itself is determined by the powers and competences, which are to a large extent defined in the Waste Act, the End-of-Life Products Act, the Packaging Act<sup>6</sup> and the Act on the Reduction of the Impact of Certain Plastic Products on the Environment<sup>7</sup>.

A wide range of other actors (e.g. associations, organisations, etc.) also play a role in waste management.

### 1.4.1 Performance of State Administration in Waste Management

The description below mentions only those activities and tasks that relate to the waste management agenda.

#### Ministry of the Environment

The Ministry of the Environment (hereinafter also the “MoE”) is the central body of state administration in the field of waste management. Its task is, in particular, to establish legal regulation, coordination and management of waste management with an emphasis on effective waste handling and environmental protection in the Czech Republic. Its activities include:

- **Exercise of state administration** The MoE is the central administrative authority in the field of waste prevention and waste management, including the prevention of waste from selected products, packaging and certain plastic products, as well as the management of end-of-life products, packaging waste and waste from selected plastic products. It exercises supervision in the field of state administration carried out under the laws governing waste management and monitors how the administrative authorities exercising state administration in the field of waste management comply with the provisions of these laws and the regulations issued for their implementation. The MoE also decides on appeals against decisions of the Czech Environmental Inspectorate (hereinafter also the “CEI”) and Regional Authorities (hereinafter also the “RA”). It approves inspection plans for waste shipments and issues decisions pursuant to Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste.

It decides on applications for authorisation to provide collective compliance under the Packaging Act and on applications for authorisation to operate a collective system under the End-of-Life Products Act and the Act on the Reduction of the Impact of Certain Plastic Products on the Environment. It supervises the activities of authorised packaging companies and operators of collective systems and, in the event of identified deficiencies, imposes corrective measures. It issues a Unified Environmental Opinion (hereinafter also the “UEO”), which replaces the binding opinion under Section 146(3)(a) and the statements under Section 146(3)(b) and (c), where the MoE is competent to issue the UEO.

<sup>6</sup> Act No. 541/2020 Sb., on Waste, Act No. 542/2020 Sb., on End-of-Life Products, Act No. 477/2001 Sb., on Packaging and on Amendments to Certain Acts, as amended.

<sup>7</sup> Act No. 243/2022 Sb., on the Reduction of the Impact of Certain Plastic Products on the Environment.

**Recording, Data Processing and Information Provision** The MoE records and processes data on waste management, on the quantity, types and handling of waste, and other information in the field of waste management within the Waste Management Information System (hereinafter also the “WMIS”), which is an information system of public administration. The WMIS is a modern agenda information system that unifies all waste management agendas defined by legislation (the Waste Act, the End-of-Life Products Act, the Packaging Act, the Act on the Reduction of the Impact of Certain Single-Use Plastic Products on the Environment, including implementing regulations and European legislation). The system provides functionalities to support process management and data control across the entire public administration. The system is integrated with shared eGovernment services. In the future, the system will also be connected to European Union systems.

- The MoE is the professional guarantor and administrator of the Waste Management Information System, collects and processes the data entered into it, and carries out comprehensive analysis and reporting. This includes data on declared waste and waste handling; on the shipment of hazardous waste; on facilities intended for waste management; on persons submitting reports under this Act; on waste holders; on waste traders, intermediaries and carriers; on the register of polychlorinated biphenyls, equipment containing polychlorinated biphenyls and equipment that may contain polychlorinated biphenyls; on wastes containing persistent organic pollutants; on landfill reserves, available landfill capacity, landfill charges including settlement; on transboundary shipments of waste; on decisions issued by Regional Authorities and municipal authorities of municipalities with extended competence under the Waste Act, the End-of-Life Products Act, and on assessments of hazardous waste properties carried out.

The MoE publishes summary information on waste and waste handling; the list of facilities intended for waste management, waste traders, intermediaries and carriers; up-to-date information on the operation of waste management facilities and on the activities of waste traders, intermediaries and carriers; information under the End-of-Life Products Act; and the list of persons authorised to assess the hazardous properties of waste. It also publishes the locations for product take-back or the level of municipal costs for operating the take-back system for packaging waste for different categories of municipalities.

The MoE also maintains the Register of Persons under the Packaging Act and the list of decisions on authorisation under the Packaging Act, decisions on the amendment or cancellation of such authorisations, and makes it public. The MoE keeps the prescribed records of packaging and packaging waste under the Packaging Act, and the summary record of packaging and packaging waste management. It also keeps and publishes the list of decisions on granting authorisation to operate a collective system under the End-of-Life Products Act and the Act on the Reduction of the Impact of Certain Plastic Products on the Environment, as well as decisions on their amendments or cancellations. It collects and processes the information contained in applications for authorisation to operate a collective system and applications for amendments to such authorisations.

In addition, the MoE records information submitted by producers concerning responsibility for waste management, information from collective system operators from annual reports on selected plastic products and on end-of-life products. The MoE administers the Register of Producers, the Register of Take-Back Locations, and the Information System for managing information on end-of-life vehicles pursuant to the End-of-Life Products Act.

The Ministry makes available to the Czech Statistical Office the data reported under the Waste Act and provides it with cooperation in evaluating the quality of the data made available.

Furthermore, the Ministry provides information to the institutions of the European Union, in particular the European Commission, the Organisation for Economic Co-operation and Development

(OECD), the European Environment Agency (EEA), the United Nations (UN) and other bodies established under international treaties in the field of waste management by which the Czech Republic is bound.

The MoE provides and evaluates information on the state of waste management, data on waste handling, packaging and packaging waste, data on selected plastic products and waste from selected plastic products, data on take-back and handling of end-of-life products and waste from the processing of end-of-life products.

- **Preparation and Drafting of Legislation** The MoE is responsible for the adaptation, implementation, creation and updating of legislation relating to waste management, i.e. EU regulations and directives, other implementing acts and delegated acts of the European Union, as well as laws and implementing regulations of the Czech Republic. The legislation sets the rules for separate collection, processing and handling of various types of waste.
- **Development of Waste Policy** The MoE prepares strategic plans and policies relating to waste management. These documents define the objectives and direction of waste management. It is also the issuing authority of the Waste Management Plan of the Czech Republic.
- **Methodological Activities** The MoE provides methodological guidance for other public administration authorities in the field of waste management.
- **Support for Recycling and Waste Management** The MoE supports and finances programmes and projects aimed at improving waste management, including promoting recycling and waste minimisation. It is also the managing authority of grant funding and redistribution of subsidies together with the State Environmental Fund (hereinafter also the “SEF”).
- **International Cooperation** The MoE cooperates with international organisations and partners worldwide in addressing global environmental issues and exchanging experience in the field of waste management. It acts as the contact point for the Basel Convention. It also acts as the competent authority and contact body for transboundary shipments of waste, as the competent authority for ship recycling facilities, and as the contact body for waste containing persistent organic pollutants under the Stockholm Convention.
- **Education and Awareness-Raising** The MoE organises and develops educational and awareness-raising activities for the public, businesses and local authorities in order to raise awareness about proper waste management and the environmental aspects of waste management. In addition, the MoE publishes relevant documents and guidelines in this field on its website.

### Ministry of Industry and Trade

The Ministry of Industry and Trade (hereinafter also the “MIT”) plays a role in waste management mainly in the field of economic and industrial aspects. Its main activities include:

- **Submission of Expert Opinions** The MIT issues statements in proceedings on applications for permits confirming that a material ceases to be waste under the Waste Act, and in proceedings on amendments or cancellations of such permits. The MIT provides expert opinions to the MoE in proceedings on applications for authorisation to operate a collective system, amendments to decisions granting such authorisations, revocation of such authorisations, or granting consent to the transformation of a collective system operator or the transfer, lease or pledge of its business establishment, both under the End-of-Life Products Act and under the Act on the Reduction of the Impact of Certain Plastic Products on the Environment.
- **Preparation of Opinions** The MIT issues opinions for the MoE in proceedings concerning authorisation decisions under the Packaging Act.

## Ministry of Agriculture

The Ministry of Agriculture of the Czech Republic (hereinafter also the “MoA”) coordinates the implementation of inspections of compliance with obligations regarding the use of treated sludge on agricultural land and decides on appeals against decisions of the Central Institute for Supervising and Testing in Agriculture.

## Central Institute for Supervising and Testing in Agriculture

The Central Institute for Supervising and Testing in Agriculture (hereinafter also the “CISTA”) is responsible for carrying out inspection and testing activities in the field of agriculture and food production. It decides on the approval of sludge-use programmes and monitors whether sludge is applied on the basis of and in compliance with an approved sludge-use programme. It registers fertilisers produced from waste under Act No. 156/1998 Sb., on Fertilisers, and monitors whether producers of fertilisers from waste and agricultural entrepreneurs comply with certain obligations under the Waste Act and Act No. 156/1998 Sb., on Fertilisers.

## The Ministry of Health

The Ministry of Health (hereinafter also the “MoH”) authorises persons to assess the hazardous properties of waste. It exercises control in the field of public health protection in waste management; it monitors how administrative authorities exercising state administration in the field of waste management comply with the provisions of the Waste Act and the regulations issued for its implementation in the area of public health protection in waste management.

## Regional Public Health Authorities

The Regional Public Health Authorities (hereinafter also the “RPHA”) ensure supervision of the safe handling of waste, monitoring of public health, and compliance with environmental and hygiene regulations. Their activities focus in particular on the following areas:

- **Proceedings on the granting of a permit to operate a waste management facility:** The RPHA issues a binding opinion in proceedings on the granting of a permit to operate a facility under the Waste Act, and in proceedings on amendments or cancellations of such permits, whenever the change or reason for cancellation concerns public health protection. In its binding opinion, it may stipulate conditions to ensure the protection of human health.
- **Proceedings on the granting of a permit that a movable item ceases to be waste:** The RPHA issues a binding opinion in proceedings on the granting of a permit that a movable item ceases to be waste under the Waste Act, and in proceedings on amendments or cancellations of such permits, whenever the change or reason for cancellation concerns public health protection. In its binding opinion, it may stipulate conditions to ensure the protection of human health.
- **Inspection of Waste Management Facilities:** The RPHA inspects the operation of waste management facilities in terms of compliance with operational conditions related to the protection of human health and the minimisation of health risks specified in the operating rules.
- **Cooperation:** The RPHA cooperates with other administrative authorities in the field of public health protection in waste management.
- **Packaging:** Under the Packaging Act, the RPHA monitors compliance with obligations relating to prevention, placing packaging on the market or into circulation, its labelling and reuse in the case of packaging for cosmetic products.
- **Selected Plastic Products:** The RPHA monitors compliance with the ban on placing certain selected plastic products on the market or into circulation and also monitors whether the labelling obligations for certain selected plastic products are fulfilled.

## Czech Environmental Inspectorate

The Czech Environmental Inspectorate (hereinafter also the “CEI”) plays a key role in monitoring and supervising waste management in the Czech Republic. Its tasks and competences in relation to waste management include the following:

- **Inspection of Waste Management** The CEI monitors whether legal entities, self-employed persons and municipalities comply with the provisions of legal regulations, including directly applicable EU regulations and decisions of administrative authorities, in all areas governed by the Waste Act. It checks compliance with waste management obligations established by the Waste Act. It inspects waste holders (municipalities, companies, enterprises, authorities, sole traders), facilities intended for waste management, facilities for waste collection and treatment, carriers, intermediaries and traders. Every year it inspects scrap yards, sorting lines, landfills, incinerators and waste-to-energy facilities. In cases of violation of the Waste Act, it imposes sanctions. The CEI enforces the fundamental principles of the circular economy, environmental protection and human health protection in waste management.
- **Inspection of Waste Holders** The CEI inspects waste holders, and at least once a year it also monitors how waste holders from titanium dioxide production comply with the provisions of legal regulations and the decisions of the MoE and other administrative authorities in the field of waste management.
- **Inspection of Waste Shipments** The CEI monitors compliance with the conditions for transboundary shipments of waste laid down by Regulation (EC) No. 1013/2006 of the European Parliament and of the Council and by the Waste Act. It also prepares inspection plans for waste shipments pursuant to Regulation (EC) No. 1013/2006 of the European Parliament and of the Council.
- **Inspection of Compliance with Obligations Relating to Packaging and Packaging Waste** The CEI monitors compliance with the obligations regarding take-back and recovery of packaging waste, awareness-raising activities, payment of costs for the clean-up of selected packaging waste, mandatory recycled plastic content in packaging, appointment of an authorised representative, verification of data by authorised packaging companies, and transfer of financial resources in the event of termination of an authorisation decision.
- **Inspection of Compliance with Obligations Relating to Selected Products and End-of-Life Products** The CEI monitors how legal entities, self-employed persons and municipalities comply with the provisions of legal regulations and the decisions of administrative authorities in all areas covered by the End-of-Life Products Act, except in areas where the Czech Trade Inspection Authority is competent.
- **Inspection of Compliance with Obligations Relating to Selected Plastic Products and Waste from Them** The CEI monitors how legal entities and self-employed persons comply with the provisions of legal regulations and the decisions of administrative authorities in all areas governed by the Act on the Reduction of the Impact of Certain Plastic Products on the Environment, except in areas where the Czech Trade Inspection Authority, the Czech Agriculture and Food Inspection Authority, the Regional Public Health Authorities or the Customs Administration are competent.

## State Environmental Fund of the Czech Republic

The State Environmental Fund of the Czech Republic (hereinafter also the “SEF”) is the administrator of the landfill levy and, together with the MoE, acts as the authority for grant funding and redistribution of subsidies.

## General Directorate of Customs and Customs Offices

The General Directorate of Customs provides, upon request, to the MoE and the CEI information on waste that has been exported from the Czech Republic to a non-EU country or imported into the Czech Republic from such a country. The General Directorate of Customs also provides the MoE, the CEI or the Czech Trade Inspection Authority with information on selected products that have been exported from or imported into the Czech Republic.

The customs offices perform the following tasks:

- **Inspection of Waste Shipments:** The customs offices inspect waste shipments, both domestic and transboundary, and submit reports to the MoE for further action pursuant to Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste. The customs offices also check whether the conditions for the shipment of used electrical equipment, tyres or vehicles are met in transboundary shipments of such used products.
- **Inspection of Compliance with Obligations of Producers of Selected Products:** Under the End-of-Life Products Act, the customs offices check compliance with the obligations of producers of selected products, in particular whether producers are registered in the Register of Producers (monitoring of so-called free-riding).
- **Inspection of Compliance with Requirements for Transported Packaging:** Under the Packaging Act, the customs offices are authorised to check whether packaging or packaging materials imported into the Czech Republic or transported from EU Member States into the Czech Republic comply with the requirements of this Act.
- **Inspection of Compliance with the Ban on Placing Certain Selected Plastic Products on the Market:** Under the Act on the Reduction of the Impact of Certain Plastic Products on the Environment, the authorities of the Czech Customs Administration check whether imports violate the ban on placing certain selected plastic products on the market and whether such products are labelled in accordance with the requirements of this Act.

### Police of the Czech Republic

The Police of the Czech Republic record and document suspicious events and circumstances indicating illegal transboundary shipments of waste. The Police cooperate and, within the framework of mutual assistance, provide expert support and adequate conditions for the exercise of powers under the Waste Act by the CEI, Regional Authorities and customs offices. It also provides assistance in obtaining the necessary information in cases of suspected breaches of legal regulations in the field of waste management.

### Czech Trade Inspection Authority

The Czech Trade Inspection Authority (hereinafter also the “CTIA”) protects consumers and supervises compliance with consumer rights, in particular in the following areas:

- **Batteries, Electrical Equipment and Tyres:** On the basis of the End-of-Life Products Act, the CTIA supervises compliance with obligations concerning the conditions for placing batteries on the market, labelling of batteries and electrical equipment, fulfilment of requirements for easy and safe removal of batteries built into products, separate indication of the costs of take-back and handling of waste electrical equipment or tyres when selling electrical equipment or tyres, and compliance with the obligations of final sellers of selected products relating to take-back (informing end-users, ensuring take-back of waste electrical equipment or portable batteries, marking of take-back points). Czech Trade Inspection Authority
- **Packaging:** The CTIA monitors compliance with obligations relating to prevention, placing packaging on the market or into circulation, their labelling and reuse, with the exception of packaging for cosmetic products, packaging coming into direct contact with food, packaging of

medicinal products and packaging of raw materials for the preparation of medicinal products for human use. It also checks that take-back is ensured by persons who place packaging on the market or into circulation by sale to consumers. It also monitors compliance with the obligation to ensure the sale of beverages in refundable deposit packaging by legal entities or self-employed persons who place packaged beverages on the market or into circulation by sale to consumers. In cases of non-compliance, it imposes corrective measures under the Market Surveillance of Products Act or administrative penalties.

- **Selected Plastic Products:** The CTIA checks compliance with obligations relating to the ban on placing certain selected plastic products, oxo-degradable plastic products, on the market or into circulation, and with obligations relating to the labelling of certain selected plastic products.

### **Czech Agriculture and Food Inspection Authority**

The Czech Agriculture and Food Inspection Authority (hereinafter also the “CAFIA”) plays a limited but important role in relation to waste management in the Czech Republic. It monitors compliance with obligations relating to prevention, placing packaging on the market or into circulation, their labelling and reuse in the case of packaging coming into direct contact with food. In cases of non-compliance, it imposes corrective measures under the Market Surveillance of Products Act or administrative penalties. Furthermore, the CAFIA checks how legal entities and self-employed persons comply with the provisions of the Act on the Reduction of the Impact of Certain Plastic Products on the Environment regarding the labelling requirements of certain selected plastic products (tobacco products with filters and filters placed on the market for use in combination with tobacco products).

### **State Institute for Drug Control**

The State Institute for Drug Control (hereinafter also the “SIDC”) monitors compliance with obligations relating to prevention, placing packaging on the market or into circulation, their labelling and reuse in the case of packaging of medicinal products for human use and packaging of raw materials for the preparation of medicinal products for human use. In cases of non-compliance, it imposes corrective measures under the Market Surveillance of Products Act or administrative penalties.

### **Institute for State Control of Veterinary Biologicals and Medicines**

The Institute for State Control of Veterinary Biologicals and Medicines (hereinafter also the “ISCVBM”), in accordance with the Packaging Act, monitors compliance with obligations relating to prevention, placing packaging on the market or into circulation, their labelling and reuse in the case of packaging of veterinary medicinal products and packaging of raw materials for the preparation of veterinary medicinal products. In cases of non-compliance, it imposes corrective measures under the Market Surveillance of Products Act or administrative penalties.

### **Regional Authorities**

The Regional Authorities (hereinafter also the “RA”) perform a wide range of important duties and functions in the exercise of state administration in the field of waste management. Their territorial competence is defined by the boundaries of the regions, which are higher territorial self-governing units. From the perspective of state administration in waste management, the Regional Authorities perform tasks in the following areas:

- **Granting of Permits:** The RA grant permits for the operation of waste management facilities and permits to derogate from separate collection of waste in waste management facilities. They may also authorise the mixing of hazardous waste with other hazardous waste or with other types of waste in facilities for treatment, recovery or disposal. The RA also issue permits for waste trading

and permits that waste may be recycled or otherwise recovered in a recovery facility, thereby ceasing to be classified as waste.

- **Supervision and Restrictive Measures** The RA supervise facilities and monitor their activities and compliance with legal regulations. If the conditions decisive for granting a waste trading permit change, if a waste trader fails to ensure environmental or human health protection conditions, repeatedly breaches statutory obligations, or repeatedly fails to comply with the conditions set out in the permit, the RA may amend or revoke the relevant permit. The RA may suspend or restrict the operation of facilities for the storage, collection, treatment, recovery or disposal of waste if the operator of such facilities fails to comply with obligations laid down by law or by a decision issued pursuant to law, and if such failure could result in serious adverse impacts on the environment or human health. The RA also have the authority to amend or revoke a facility operating permit if the conditions decisive for granting the permit change, if environmental or human health protection conditions are not ensured, if obligations under the Waste Act or the End-of-Life Products Act are repeatedly breached, or if the conditions set out in the permit are repeatedly not met. The RA may suspend or revoke a certificate of exclusion of hazardous properties of waste.
- **Checks:** The RA monitor and process reports from operators of waste management facilities, waste carriers, waste traders and intermediaries. They also maintain and process records of permits and other decisions they have issued under the Waste Act. They monitor compliance with the requirements of the End-of-Life Products Act in relation to the collection or treatment of end-of-life vehicles by legal entities or self-employed persons. The RA also monitor how legal entities and self-employed persons comply with the provisions of legal regulations and decisions of administrative authorities in areas governed by the Waste Act. Furthermore, they supervise compliance with the requirements of the End-of-Life Products Act in relation to the collection or treatment of end-of-life vehicles by legal entities or self-employed persons.
- **Record-Keeping:** The RA maintain and process records of permits and other decisions they issue under the Waste Act.
- **Issuing of Opinions:** The RA issue the Unified Environmental Opinion (UEO), which replaces the binding opinion under § 146(3)(a) and the statements under § 146(3)(b) and (c) of the Waste Act, where the RA is the competent authority for issuing the UEO.
- **Regional Waste Management Plan** The RA, in cooperation with the competent public administration authorities and the public, prepare the Regional Waste Management Plan for the territory of the region and its amendments pursuant to the Environmental Impact Assessment Act.
- **Cooperation with Municipalities** The RA decide on appeals against decisions of municipal authorities and municipal authorities of municipalities with extended competence. They also provide methodological support for municipalities and their municipal authorities.

### **Municipal Authorities of Municipalities with Extended Competence**

The municipalities with extended competence (hereinafter also the “MEC”) are entrusted with the exercise of delegated powers of state administration in the field of waste management. Their main activities include:

- **Issuing of Permits:** The locally competent Municipal Authority of MEC issues permits to waste holders for the separate collection of waste. It also issues consent for the operation of small facilities and may revoke such consent if the facility operator repeatedly breaches obligations under the Waste Act or repeatedly fails to comply with the conditions attached to the consent.
- **Inspection:** The Municipal Authority of MEC monitors and processes waste reports from holders, facility operators and traders, as well as reports on plant residues from community composting facilities. It supervises compliance with the provisions of legal regulations and decisions of administrative authorities in all areas governed by the Waste Act, except in areas where another

municipal authority is competent for inspection. It also verifies whether authorised persons comply with the prescribed method of assessment of hazardous waste properties. The Municipal Authority of MEC supervises compliance with obligations laid down by the End-of-Life Products Act for natural persons and may impose corrective measures and set deadlines for remediation.

- **Record-Keeping:** The Municipal Authority of MEC maintain and process records of consents and other decisions they issue under the Waste Act.
- **Restrictive Measures:** The Municipal Authority of MEC address illegally accumulated waste within their administrative district. It may secure waste that threatens or harms human health or the environment against the release of harmful substances into the surroundings, or ensure the removal of such waste, including its transfer to a waste management facility, at the expense of the responsible person. It may prohibit a waste holder from carrying out an activity that generates waste if the holder has not arranged for the acceptance of the waste it generates by a person authorised to accept that type and category of waste, and if the waste generated as a result of the continuation of this activity could cause harm to the environment or human health. It handles administrative offences and impose sanctions for breaches of obligations defined by the Waste Act or by an issued decision.
- **Issuing of Opinions:** The Municipal Authority of MEC issues the Unified Environmental Opinion (UEO), which replaces the binding opinion under Sec. 146(3)(a) and the statements under Sec. 146(3)(b) and (c) of the Waste Act, where the MEC is the competent authority for issuing the UEO.
- **Administration of the Emission Fee:** The Municipal Authority of MEC administer the emission fee and record its payment in the road vehicle register.

### Municipal Authorities

The municipal authorities monitor whether legal entities and self-employed persons use the municipal system solely on the basis of a written contract with the municipality and in accordance with it, and whether natural persons not engaged in business handle municipal waste in compliance with the Waste Act, ensuring the acceptance of waste which they do not process themselves in line with this Act. They also deal with administrative offences and impose sanctions for breaches of obligations defined by the Waste Act. On the basis of the End-of-Life Products Act, they are authorised, within delegated competence and following prior notice, to remove so-called abandoned vehicles (end-of-life vehicles located outside public roads).

## 1.4.2 Performance of Local Self-Government

### Self-Government of Municipalities

According to the Waste Act, every municipality has the status of holder of all municipal waste generated by the activities of natural persons not engaged in business within its territory. The handling of waste in the role of waste holders falls within the self-governing competence of towns and municipalities. In this context, every municipality or town establishes within its territory a municipal system for the separate collection, transport and further management of municipal waste, which may be regulated by a generally binding ordinance.

If a municipality establishes the municipal system by a generally binding ordinance, it may also specify by this ordinance the locations where, within the municipal system, it will accept:

- a) construction and demolition waste generated within the territory of the municipality by the activities of non-business natural persons,
- b) movable items within the framework of waste prevention,

- c) municipal waste generated within the municipality by legal entities and self-employed persons who participate in the municipal system on the basis of a written contract,
- d) end-of-life products if they are accepted as part of a service provided for producers under the End-of-Life Products Act, or
- e) plant residues from the maintenance of greenery, gardens and households for processing into compost within community composting.

The municipality is obliged to accept all municipal waste generated within its territory by the activities of natural persons not engaged in business (hereinafter referred to as “residents”). Municipalities designate places for the separate collection of municipal waste (referred to as “separate collection”), including at least hazardous waste, paper, plastics, glass, metals, biodegradable waste, edible oils and fats, and as of 1 January 2025 also textiles. A municipality may also fulfil its waste management obligations through a voluntary association of municipalities under a contract concluded with another municipality.

According to the Waste Act, municipalities are required to increase the proportion of separately collected waste in the coming years and should therefore motivate their residents to separate it. Separately collected recyclable fractions of municipal waste should constitute at least 60% of the total amount of municipal waste generated by the municipality in the calendar year 2025 and subsequent years, at least 65% in the calendar year 2030 and subsequent years, and at least 70% in the calendar year 2035 and subsequent years.

Municipalities also have the statutory duty to inform, at least once a year in a manner allowing remote access, about the methods and scope of separate collection of municipal waste, the recovery and disposal of municipal waste, and about the possibilities of prevention and minimisation of municipal waste generation. At least once a year, municipalities should publish, in a manner allowing remote access, the quantified results of municipal waste management, including the costs of operating the municipal system.

### **Self-Government of Regions**

Regions, within their independent competence, play a key role in implementing waste policy at the regional level and contribute to achieving objectives relating to recycling, sorting and proper waste management within their territory. In the field of waste management, they adopt and approve documents and strategies.

## **1.4.3 Stakeholders in Waste Management**

Stakeholders in waste management include individual companies engaged in waste management, their industry associations, clusters and unions (representing the interests of their members), associations and unions of local self-governments (representing the interests of their members), and non-profit organisations (representing the interests of the public).

### **Associations, Clusters and Company Unions**

They bring together significant business entities in the fields of recovery, disposal, collection, transport and recycling of waste. These include, for example:

- Association for the Recycling of Used Textiles
- Association of the Textile, Clothing and Leather Industry
- Czech Waste Management Association
- Czech Circular Economy Association
- Czech Association for Asbestos Removal

- Composters Association,
- Chamber of Commerce,
- Plastics Cluster,
- Union of Industry and Transport.

### Associations and Unions of Local Self-Governments

They participate in the preparation of legislation and other measures related to municipal waste management. They defend and promote the interests of their members. These include, for example:

- Union of Towns and Municipalities,
- Association of Local Governments of the Czech Republic,
- Association of Regions.

### Non-Profit Organisations

In the Czech Republic, there are a number of non-profit organisations and initiatives that fight for the protection and improvement of the environment or create various activities to support waste and circular economy. These include, for example:

- Arnika
- Friends of the Earth Czech Republic (DUHA Movement)
- Green Circle (Zelený kruh)
- Save Food (Zachraň jídlo)
- Czech Federation of Furniture Banks and Re-Use Centres
- Institute of Circular Economy

## 1.4.4 Consultation Process for the Preparation of the WMP CR

The Ministry of the Environment (MoE) worked for two years on preparing the strategy for the new Waste Management Plan of the Czech Republic (WMP CR). Expert inputs were commissioned and prepared by a team of specialists in data analysis, waste management and waste management economics, in cooperation with the MoE's Department of Circular Economy and Waste, to ensure a proper assessment of the state of waste management and the establishment of projections to achieve the defined objectives. Expert consultations were carried out continuously with interest associations and unions from the field of waste management. The contributory organisation of the MoE, the Czech Environmental Information Agency (CENIA), was also involved in preparing the background materials. The WMP CR was also consulted and peer-reviewed by the regions. Both the general and professional public were given the opportunity to comment on the draft WMP CR through a public consultation process.

The WMP CR was repeatedly presented to the Waste Management Council <sup>8</sup> (hereinafter referred to as "the Council") and consulted with the members of the Council. The draft WMP CR was submitted to the intra-ministerial and inter-ministerial comment procedures, and the comments raised were duly addressed.

The WMP CR was submitted to the environmental impact assessment (EIA) procedure under Act No. 100/2001 Sb., on Environmental Impact Assessment, as amended. According to the conclusion of the screening procedure, Ref. No. MZP/2024/710/4670 of 11 November 2024, it was stated that *"the draft concept 'Waste Management Plan of the Czech Republic for the period 2025–2035' does not establish a framework for future project authorisations pursuant to Annex No. 1 to the Act on Environmental*

<sup>8</sup>The Council is an inter-ministerial advisory body.

*Impact Assessment within the meaning of Section 10a(2) of the Act, and therefore is not subject to strategic environmental assessment under the above-mentioned Act.”*

The WMP CR was submitted to the Government of the Czech Republic for approval in July 2025.

## 2 Evaluation of Waste Management in the Czech Republic – Analytical Part

Waste management is a key element of the current economic system, in which sustainability and the efficient use of limited resources are gaining increasing importance. Given that this area affects all sectors of the economy, it is essential to define a solid conceptual framework for its further direction, which is precisely the objective of the WMP CR.

The creation of such a framework requires detailed analytical data, which are the subject of this chapter. An in-depth analysis will provide a detailed view of the current state of waste management in the Czech Republic and thus offer a better understanding of the challenges and prospects posed by this field. The chapter will focus on identifying key factors, presenting socio-economic data, monitoring waste flows, evaluating waste management practices and assessing the role of the public and private sectors in the organisation of waste management.

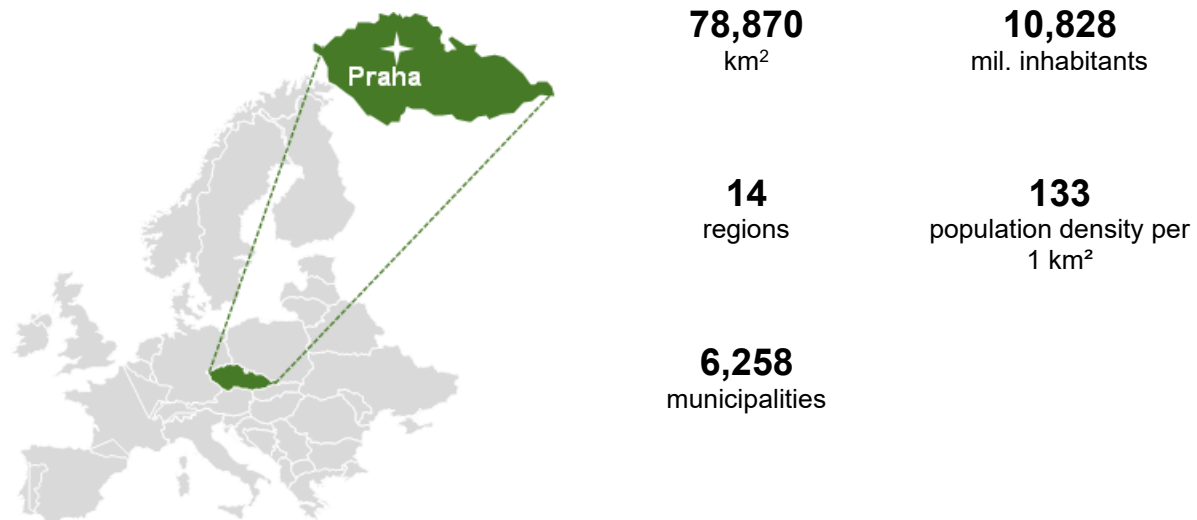
### 2.1 Basic Characteristics of the CR in Relation to Waste Management

#### 2.1.1 Geographical Characteristics of the CR in Relation to Waste Management

The geographical characteristics of the Czech Republic play an important role in its waste management. The country is located in Central Europe and **has a varied relief with mountains, valleys and watercourses**, which affects in particular the suitability of sites for waste technologies and recycling facilities.

The Czech Republic, with an area of 78,871 km<sup>2</sup>, is located in the temperate zone of the northern hemisphere in Central Europe. Of the total area, **the majority is arable land (37 %), forest land (34 %)** and permanent grassland (13 %). The population density across the entire territory reaches 133 inhabitants/km<sup>2</sup> (Czech Statistical Office, 2023).

*Figure 4: Location of the Czech Republic within Europe*

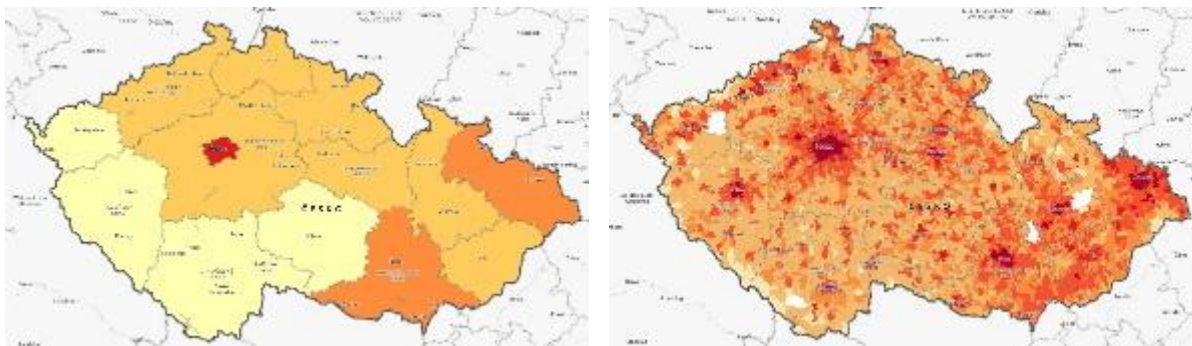


Source: own elaboration based on CSO (2021, 2023)

The territory of the Czech Republic **is traversed by the main European watershed**, which separates the **catchment areas of the North Sea, the Baltic Sea and the Black Sea**. The central position of the Czech Republic in Europe also ensures **good transport connections with neighbouring states**. This may influence the trade in waste and recyclable materials (CENIA, 2022).

The Czech Republic is characterised by a **large number of municipalities (6,258)** (CSO, 2023b), which is reflected in the considerable segmentation of the waste management market. In the settlement structure, municipalities **with fewer than 3,000 inhabitants currently predominate** (93 % or 5,799), which fall into the rural category. There are 459 towns (municipalities with 3,000 or more inhabitants) in the Czech Republic, six of which have populations exceeding 100,000 (CSO, 2023c). The most populous city has long been the Capital City of Prague with 1,259,413 inhabitants (in 2021). Other population centres include Brno (379 thousand), Ostrava (280 thousand), Plzeň (169 thousand), Liberec (103 thousand) and Olomouc (101 thousand). Higher population density in urban centres generates a significantly increased production of municipal waste, which requires an efficient system of separate collection, sorting and waste treatment. **The rate of urbanisation is still rising**, and with it the demands

*Figure5: Population Density per 1 km<sup>2</sup> in Regions and Municipalities*  
on urban waste management, which means the need to invest in waste management infrastructure.



Source: CSO, 2021.

Waste management must be sensitive to these geographical characteristics and take into account environmental protection and sustainability in the planning and implementation of waste policies and projects. It must also be prepared for natural disasters, such as floods, and ensure the safety of waste facilities in view of geographical risks.

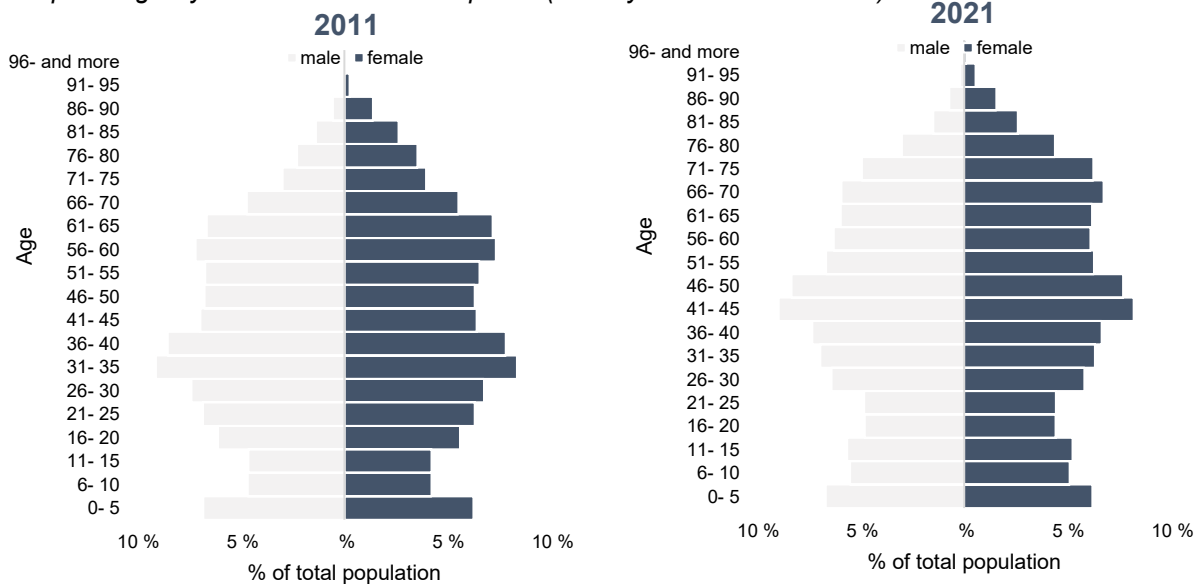
## 2.1.2 Demographic Characteristics of the CR in Relation to Waste Management

The demographic characteristics of the Czech Republic play a key role in shaping and managing its waste management. These characteristics influence the composition of waste. Older residents usually generate more healthcare waste, which requires separate collection, and in the case of healthcare waste that presents a health risk, such as infectious or toxic waste, blood samples, unused medicines, etc., it must be disposed of in waste incineration plants. On the other hand, the younger population generally shows greater interest in recycling and sustainable products, which may influence consumer preferences and the demand for recycling services. Considering these characteristics is appropriate in the planning and management of waste management. It must be adapted to the current needs of the population but also anticipate future changes and challenges. This includes investment in infrastructure, educating the population on waste separation, and the implementation of policies that support sustainable waste management practices. Demographic aspects thus play a crucial role in the Czech Republic's efforts towards effective and sustainable waste management in the future.

During 2022, the **population of the Czech Republic increased** by 310.8 thousand, with the total number rising from 10.517 million to 10.828 million.<sup>9</sup> This increase was mainly due to the influx of people from Ukraine affected by the war conflict. The composition of the population of the Czech Republic in terms of the share of men and women does not change significantly over time. Traditionally, there has been a **slight predominance of women**, and at the end of 2022 the female part of the population accounted for 51.0 % (5.52 million inhabitants), while the male part was 49.0 % (5.31 million persons) (CSO, 2023d).

From the perspective of the age structure of the population, **the most numerous generation consists of persons born in the 1970s**, specifically between 1973 and 1979. In 2022 these persons reached the age of 43 to 49 years. Another significant group consists of persons born after the Second World War and in the mid-1950s, who in 2022 reached the age of 66 to 76 years. The least numerous generation consists of persons born in the second half of the 1990s and at the beginning of the 21st century, who in 2022 reached the age of 19 to 24 years. In comparison with previous cohorts, in 2022 the number of persons aged 60–64 years was also lower. **The child component of the population (0–14 years) has been gradually increasing**, with children under 15 years of age accounting for 16.2 % of the total population at the end of 2022. The year-on-year growth of the child component reached 3.4 % in 2022, which was the most significant increase since the end of the Second World War, caused by the migration wave from Ukraine (CSO, 2023d).

Graph 1: Age Pyramid of the Czech Republic (in the years 2011 and 2021)



Source: Own elaboration based on CSO, 2021.

A long-term demographic trend observed in the Czech Republic is **population ageing**. The ageing index, which compares the number of senior citizens with the child component of the population, has been continuously increasing since the mid-1980s. From an initial level of 50 seniors per 100 children in 2006, it gradually rose, reaching a value of 128 seniors per 100 children in 2021. As a result of the immigration wave from Ukraine, which increased the number of children aged 0–14 years, the ageing index fell to 126 seniors per 100 children by the end of 2022. Regardless of the age structure of the population, however, there is a clear link between waste generation and population growth. A larger population means a greater volume of waste. Whether the pace of population and waste growth will be

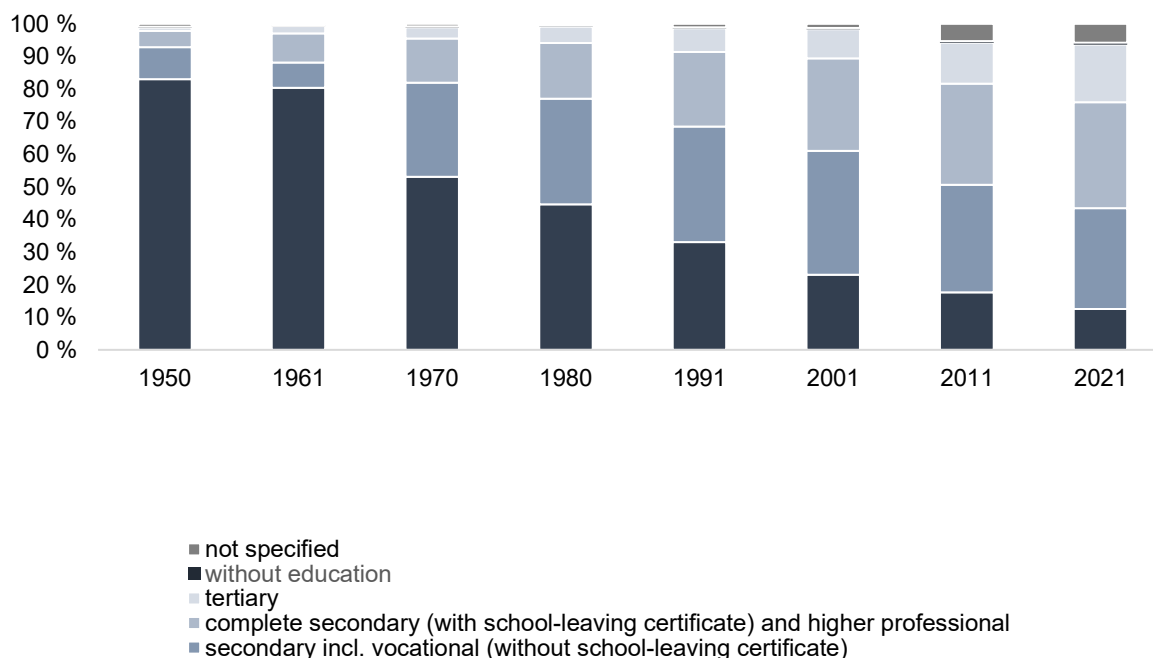
<sup>9</sup>For all analytical calculations in all parts of the WMP CR, the available value of 10,517,000 inhabitants was used.

linear depends on the availability of waste management infrastructure, the awareness of the population and the economic capacity of the inhabitants (CSO, 2023d).

**The economic dependency ratio is also on the rise;** it compares the numerical relationship between the non-productive population (aged 0–19 and 65+) and the economically productive population (aged 20–64). It gradually increased from 2013 to 2022, from 57 to 72 persons outside the productive age per 100 persons of productive age. This increase was mainly a reflection of the **growth of the senior component**, which within this relation rose from 26 to 35 persons aged 65 and over per 100 persons aged 20–64 (an increase of 32 %). Although the number of persons aged 0–19 per 100 persons of productive age increased by 5.6 persons, the pre-productive component of the population contributed to the growth of economic dependency more slowly than the senior component. The exception was the year 2022, when the overall increase in the economic dependency ratio was primarily due to the increase in persons of pre-productive age, while the relative decline in the senior population helped to mitigate this economic burden (CSO, 2023d).

In addition to the age structure, changes are also taking place in other structures of the population, for example in the **educational structure**. The graph below shows a **long-term trend of increasing educational attainment**. In recent decades there has been a significant increase in the proportion of persons with completed tertiary education, which in 2011 accounted for 12 % of the population aged 15 and over. These changes in the structure of education may have implications for municipal waste generation in connection with the behaviour and attitudes of the population towards waste management issues (CSO, 2021).

*Graph 2: Population aged 15 and over by highest level of education attained*



Source: CSO, 2021.

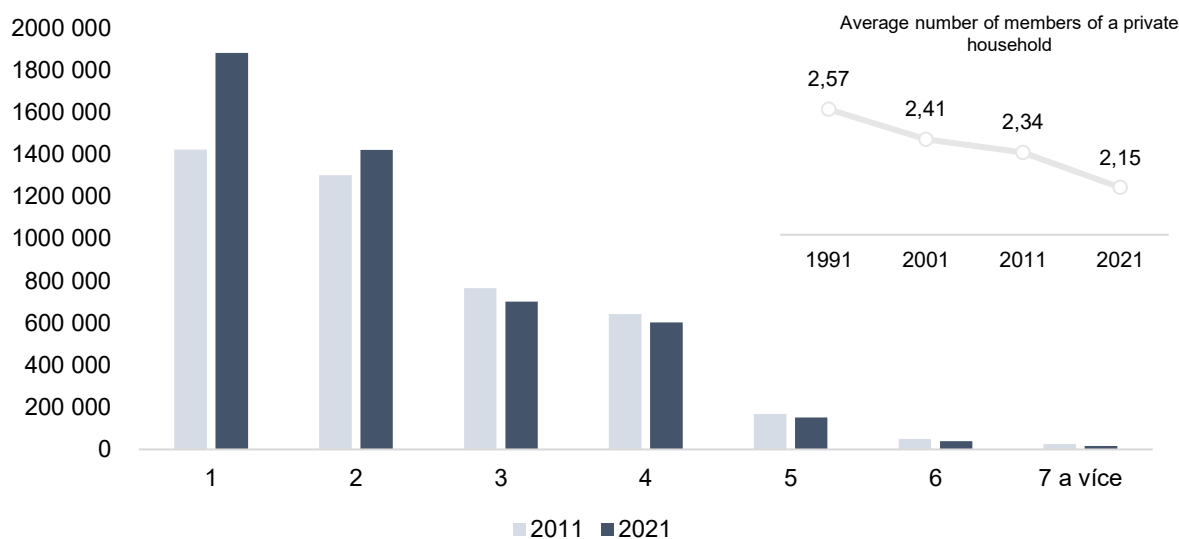
In the context of waste management, **household size** also plays an important role, as it can significantly influence the generation of municipal waste and its specific components. Different household sizes may generate different amounts of waste and also vary in the types of materials produced. Most studies confirm that there is a significant negative relationship between average municipal waste generation

per capita and the number of household members. Studies <sup>10</sup> emphasise that as the number of household members decreases, waste generation per capita increases.

In the Czech Republic, **the average number of persons in households managing their own household economy is 2.15**. Almost 68 % of these households have one or two members. More than 95 % of households have four or fewer members. Only 4 % are households with five or more members. Households with 7 or more members are rare, accounting for less than half a percent of all households. The total number of persons living in these managing households amounts to 10,359,900, which corresponds to 98 % of the population of the Czech Republic (CSO, 2022).

The rising trend points to an **increase in the number of smaller households**, which may result in the distribution of generated waste across a larger geographical area. Specifically in the Capital City of Prague, where the average household size reaches the lowest value (1.95 compared to the national average of 2.15), this phenomenon is more evident (CSO, 2022). The dynamics of declining household size will in future be further reinforced, especially by the growing senior population, who often live alone. This development has the potential to affect the organisation and efficiency of systems for separate collection and waste management.

Graph 3: Private households by number of household members



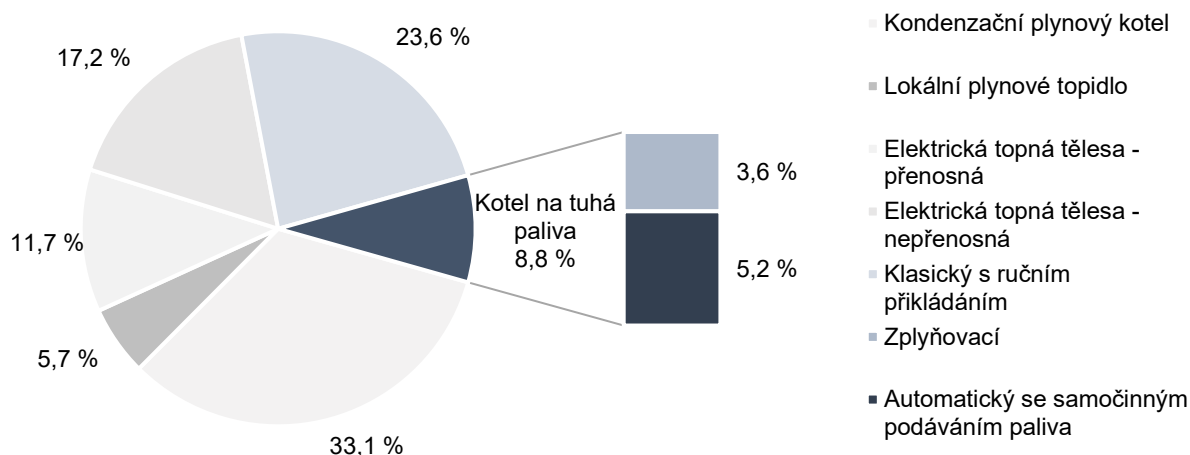
Source: own elaboration based on CSO, 2021. Population and Housing Census. Available here.

The **method of heating a house** or flat also plays a role in explaining the generation of municipal waste. The results concerning the relationship between heating method and municipal waste generation are inconclusive. Some studies<sup>11</sup> suggest that households with a solid-fuel boiler generate less municipal waste, while other findings indicate a negative impact, which may be linked to higher quantities of ash produced. In the Czech context, a reduction in the equipment of households with solid-fuel boilers can be observed between 2015 and 2021, by 19 %. In view of legislative requirements, it can be assumed that this trend will continue (ČSÚ, 2022).

<sup>10</sup>For example, Beigl (2004), Dennison et al. (1996), Johnstone and Labonne (2001), Khan et al. (2016) and Lebersorger and Beigl (2011).

<sup>11</sup>See, for example, Lebersorger and Beigl (2011) or Dennison et al. (1996).

Graph 4: Households by Heating Equipment (2021)



Source: own elaboration based on CSO, 2021.

In this context, an interesting trend of the last decade can be observed, namely a **significant shift from the use of coal to renewable energy sources**. While in 2010 natural gas was the most widely used energy source, today the share of energy from renewable sources, especially fuelwood, is increasing considerably. This trend is accompanied by **growing interest in the installation of photovoltaic panels and heat pumps** in an ever-increasing number of households. Most of the energy used by households is now obtained from renewable sources, with the share of these sources amounting to slightly over 30 %. Natural gas ranks second with a share of approximately 26 %, while electricity accounts for just under 20 %. Purchased heat from external sources contributes roughly 13 % to the total household energy consumption, while solid fuels represent 9 %. In view of subsidy policy, it can be expected that this trend will continue (ČSÚ, 2022).

It is also necessary to take into account the **economic situation of the population**, since different socio-economic groups have different consumption patterns and thus a different impact on waste management. Higher income is associated<sup>12</sup> with more intensive consumer behaviour and thus with a greater volume of waste.

### 2.1.3 Economic Characteristics of the CR in Relation to Waste Management

The Czech economy is small and open, with a **strong dependence on foreign trade** and close trade and ownership ties to EU countries. In 2022, 80 % of the total volume of goods exports went to EU Member States, with Germany as the most important trading partner (30 % of the total volume) (ČSÚ, 2023e). Exports of goods are predominantly linked to industrial production, which leads to increased waste generation from manufacturing (MoT, 2023).

The Czech Republic is traditionally an **industrial country** and within the EU still ranks among the states with a high share of industry in the overall economy and in gross value added. During the first quarter of 2023, industry as a whole contributed 28.1 % to the creation of total value added (MoT, 2023). Important sectors of Czech industry include the automotive, electrical engineering and chemical sectors. These areas generate significant amounts of industrial and electronic waste, which require specialised treatment and recycling.

<sup>12</sup>See, for example, Gellynck et al. (2011), Hoffmeister and Gellenbeck (2009), Benitez et al. (2008).

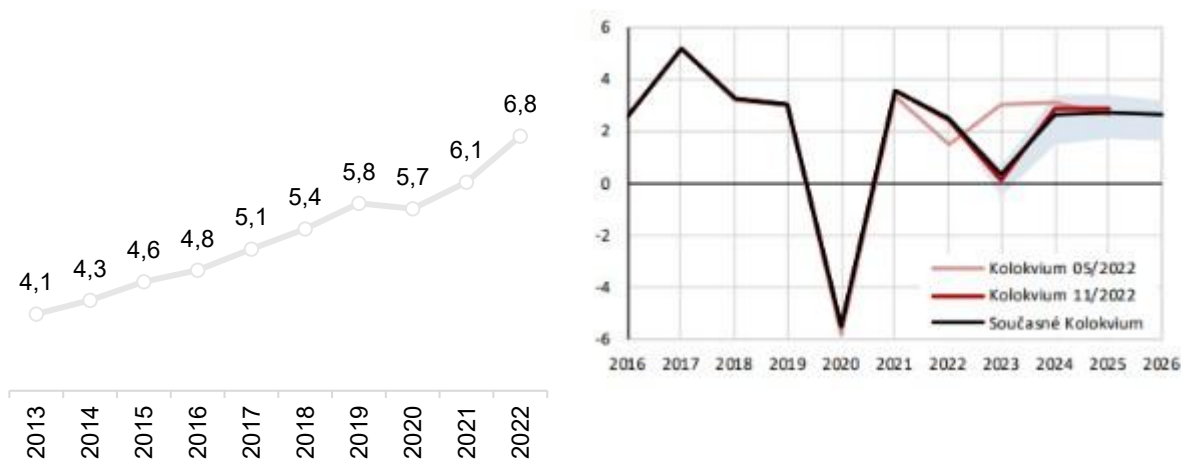
The Czech Republic has traditionally been one of the countries with the **lowest unemployment rate** in Europe, which is around 3 %. However, more than a year of economic stagnation in the Czech Republic has begun to affect the situation on the labour market. In the 3rd quarter of 2023, a partial cooling of this market was evident, manifested by a decline in employment, a slight increase in unemployment and a small decrease in the number of job vacancies. In various sectors of the economy, the number of companies identifying a shortage of employees as an obstacle to their growth decreased (CSO, 2023e). At the same time, the size of the potential labour reserve increased, but this reserve remains limited, which may also have a negative impact on the functioning of waste management in the form of insufficient human resources.

Waste management in the Czech Republic is also influenced by the **public debt and the state budget** of the country. **The low level of public indebtedness in the CR** provides the government with a certain room for manoeuvre in financing public investments, including those in waste management infrastructure. On the other hand, if the state budget operates with a significant deficit, these investments may be constrained. The CR is generally among the states with the lowest public indebtedness within the EU. Nevertheless, for the fourth time in a row, the budget has been running a deep deficit. However, the deficit in 2023 was the lowest in this comparison and declined year-on-year by one third, reaching CZK 215.4 billion. This improvement in the summer months was mainly due to the expected substantial increase in state budget revenues, particularly from dividends and taxes on extraordinary income. An important role was also played by the inclusion of financial resources from the National Recovery Plan, which from June significantly increased total EU revenues (CSO, 2023e).

As regards **currency**, the exchange rate of the Czech koruna against the euro and the dollar operates under a free-floating exchange rate regime. The koruna showed stronger values than the previous year against both the euro and the dollar, but during the third quarter of 2023 it gradually weakened. At the beginning of 2023, a slight weakening of the koruna's exchange rate could also be expected, caused by the gradual narrowing of the interest rate differential compared to the euro area. The subsequent renewed slight shift towards strengthening of the koruna will mainly reflect the recovery of foreign demand and the related restart of the domestic economy and its export performance (CNB, 2023a).

The exchange rate of the Czech koruna has an impact on waste management, particularly in connection with the import and export of waste and recyclable materials. It also affects the costs of waste treatment technologies, which are often imported. Changes in exchange rate relations may influence business conditions in the field of waste management and have an impact on the costs and revenues associated with trade in raw materials and recycling technologies.

Graph 6: GDP Development (CZK billion, current) Graph 5: Real GDP growth (%)



Source: own elaboration based on CSO, 2023b.

Source: Ministry of Finance, 2023.

In general, there is an almost **linear relationship between economic development and waste generation**. In the case of economic growth, waste generation increases. Conversely, in the event of a decline, the pace of waste generation growth may slow down. After fiscal reforms and austerity measures at the beginning of the decade, the Czech economy grew. In 2020, there was a significant slowdown in economic activity as a result of the Covid-19 pandemic, which led to a fall in GDP. However, in subsequent years, thanks to the gradual management of the pandemic and the recovery of world trade, the Czech economy began to revive again. In 2022, GDP amounted to just under CZK 7 trillion (CNB, 2023b).

Expected macroeconomic trends for the CR in 2024 indicate a sharp slowdown in economic growth this year to only 0.3 %. The increase in living costs will lead to a decline in real household consumption of 2.4 %, while government consumption is expected to grow by 1.6 %. For 2024, growth is forecast to accelerate to 2.6 %, supported by real household consumption rising by 3.5 %. Inflation is expected to fall this year to 3.0 % (compared to 10.9 % in 2023). Wages and salaries are expected to grow, particularly this year, when they should rise by almost 9 %. Weak economic dynamics will continue in 2025–2026, when GDP growth is expected to stagnate, with the rate fluctuating slightly around 2.6 %. Weakening inflationary pressures will persist, leading to an increase in household consumption. Nevertheless, this positive effect will be weakened by a significantly slower rate of wage growth (Ministry of Finance, 2023).

Global economic growth is constrained by restrictive monetary policy and increased political instability. International trade is limited by ongoing armed conflicts, resulting in longer delivery times. In the coming years, no significant improvement can be expected in these areas.

Specifically, the Czech economy stagnated in 2023, as its gross domestic product fell by 0.1 %. For 2024, however, it should increase by 1.1 %. Year-on-year inflation for 2024 is expected to be around 2 %. Real gross domestic product, adjusted for seasonal and calendar effects, is estimated by the CSO to increase by 0.3 % in the 3rd quarter of 2024 and by 1.3 % year-on-year. Gross domestic product is projected to increase by 1.1 % in 2024, mainly due to household consumption.

In the labour market in 2024, imbalances related to labour shortages persisted. Nevertheless, despite low economic growth, the unemployment rate in 2024 is expected to be around 2.6 %. (Macroeconomic Forecast of the Ministry of Finance of the CR, November 2024)

### Domestic Material Consumption (DMC)

In order for the economy to produce services and goods to meet human needs, it must absorb substances from the surrounding environment. This socio-economic metabolism<sup>13</sup>, , i.e. the transformation of inputs into outputs, is inseparably linked to waste generation, which represents a burden on the environment. Historically, economic growth and environmental burden were closely connected, with an increase in the standard of living leading to a growing burden. However, within the effort to achieve sustainable development, the priority has become the separation of the curves of economic performance and environmental pressure, the so-called “decoupling”<sup>14</sup>.

At the global level, the issue of reducing consumption is addressed by the UN Development Programme for the 15-year period (2015–2030), where among the seventeen adopted Sustainable Development Goals (SDGs) we find Goal No. 12: Responsible consumption and production, with the following sub-

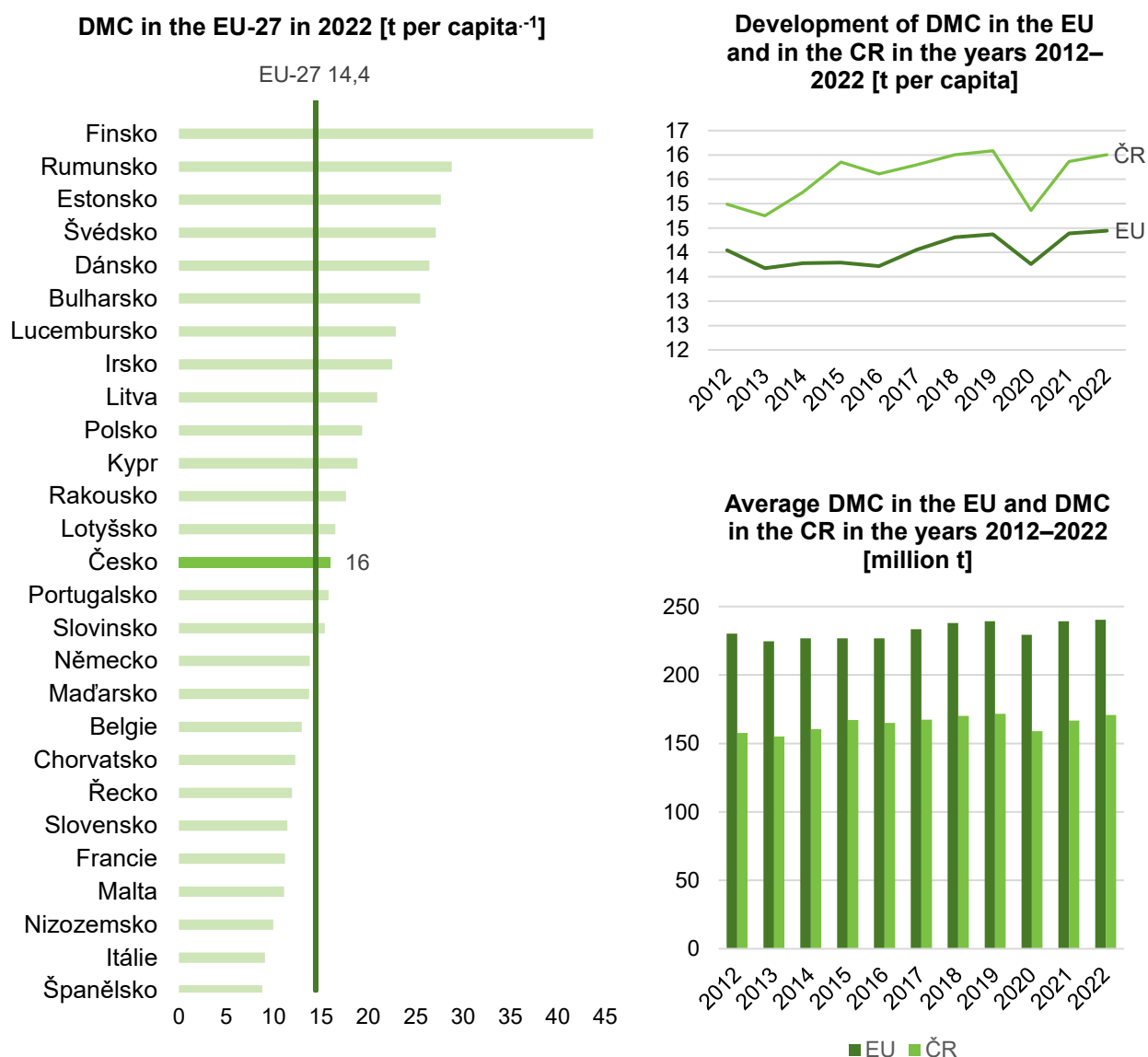
<sup>13</sup>See, for example, Baccini and Brunner, 1991 or Fischer-Kowalski and Haberl, 1993.

<sup>14</sup>The concept is a shortened version of the English expression “decoupling of environmental pressure from economic performance” (OECD, 2002).

targets: 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse; 12.2 By 2030, achieve sustainable management and efficient use of natural resources.

The results of the energy-material balance of the entire economy can be monitored using the aggregated environmental indicator **DMC (Domestic Material Consumption)**. The indicator monitors the total amount of materials used by the economy in a given year. **Between 2020 and 2022, domestic material consumption (DMC) increased**, rising on average by 2.8% and reaching **168 million tonnes in 2022**, compared with 166 million tonnes in 2020. Per capita, **domestic material consumption amounted to 15.9 tonnes per capita<sup>-1</sup> in 2021 and 16 tonnes per capita<sup>-1</sup> in 2022**. **The Czech Republic has long recorded above-average values of DMC per capita compared with other European states**. In 2022, it ranked 14th among the EU-27 Member States.

Graph 7: DMC in EU-27 countries

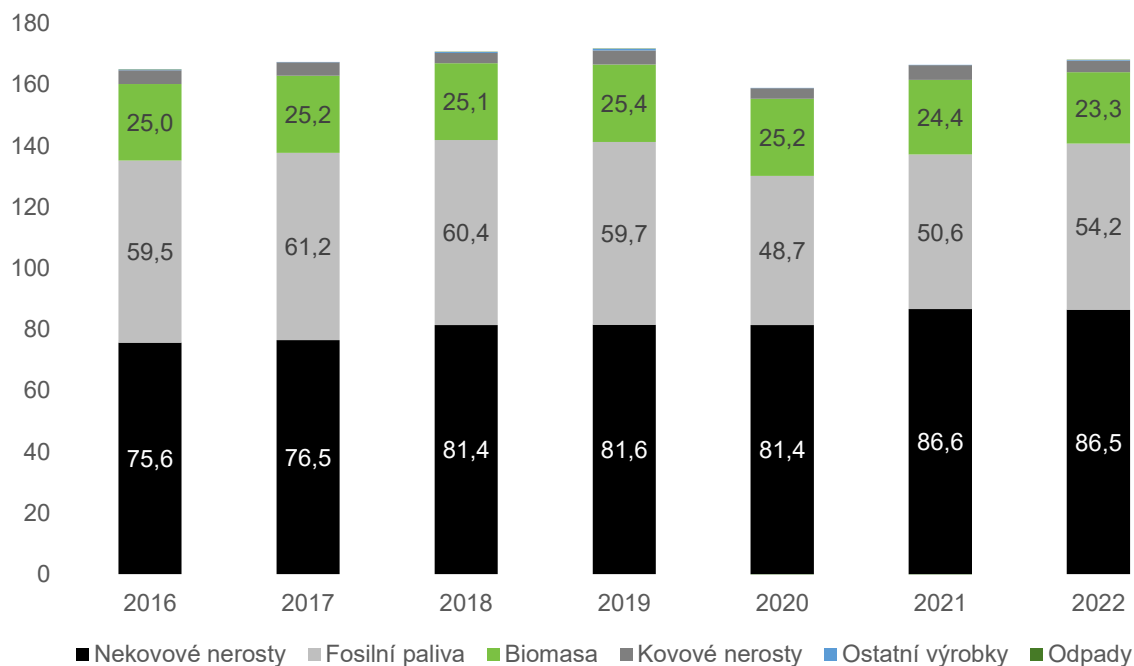


Source: own elaboration based on CSO, 2023.

**The largest share of domestic material consumption** in the CR has long been held by **non-metallic minerals**. Their DMC has been increasing in recent years and in 2022 was 14.4 % higher compared to 2016. In absolute terms, the DMC of non-metallic minerals reached 86 million tonnes, corresponding to 51.5 % of total DMC. Another significant flow is fossil fuels, which in 2022 accounted for 32.3 % of DMC (54.2 million tonnes). However, their share has been gradually declining and compared to 2016 the

DMC of fossil fuels in 2022 was 9 % lower. Biomass accounted for just under 14 % of DMC in 2022 (23.3 million tonnes). This component of material consumption causes lower environmental burdens than the consumption of non-renewable resources; however, in the CR its contribution to DMC ranks among the lowest in the EU (CSO, 2022c; CENIA, 2021b).

Graph 8: Domestic Material Consumption by Material Categories [million t]



Source: CSO, 2022c.

### Material Intensity (DMC/GDP)

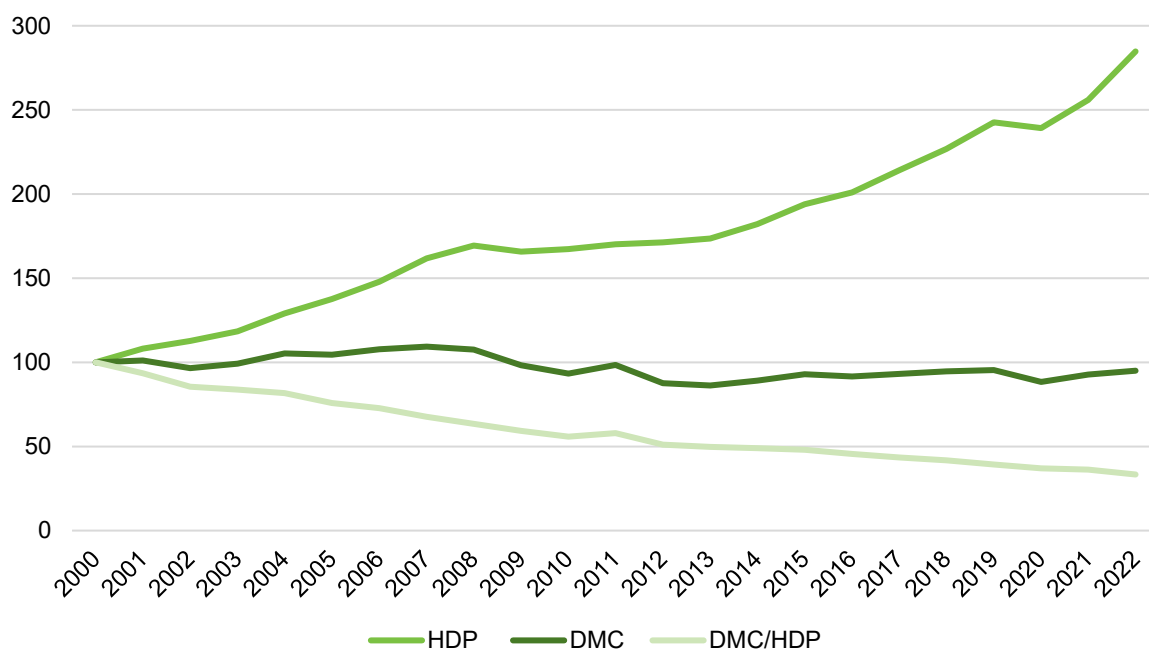
DMC is usually related to GDP, which provides information on the efficiency with which materials entering the economic system are transformed into economic output expressed in monetary units. This specific indicator is referred to as the **material intensity of the economy**.

**The material intensity of the Czech economy recorded a long-term decline**, amounting to 44.6 % over the period 2000-2021. In the years 2020–2022, material intensity fluctuated around 32 CZK/kg (31.71 CZK/kg in 2020, 32.12 CZK/kg in 2021 and 31.63 CZK/kg in 2022). The year-on-year comparison for 2020/2021 was affected by the Covid-19 pandemic, and due to the adopted anti-epidemiological measures no decoupling occurred (CENIA, 2023). Nevertheless, **between 2021/22 the value of material intensity returned to the pre-pandemic level** and even recorded a 1.5 % decrease. **The overall trend is therefore positive and indicates that the economy is achieving higher efficiency in the use of raw materials and resources for creating economic performance.**

A number of factors have contributed to the significant decoupling of economic growth from environmental burden in the Czech Republic. Firstly, **structural changes in the economy after 1989 led to greater efficiency in resource use and a reduction in the impact of industry on the environment.** Another key factor was **accession to the EU, which resulted in the implementation of a number of environmental regulations and the development of a legislative framework in this field.** The gradual shift away from fossil energy sources and the increasing focus on the **development of renewable energy sources also contributed to the resulting decoupling.** In the last three years, a number of institutional, legislative and economic measures have been recorded which have contributed to reducing the impact of the economy on the environment. Strategic

documents, such as the Strategic Framework Czech Republic 2030 and the Strategic Framework of the Circular Economy of the CR 2040, have created a strong political framework for environmental measures in the country. At the same time, the **decarbonisation of the economy has become a technological opportunity and a key element in addressing climate change**. An important contribution was investment in the transition of the CR to a low-carbon economy. A significant role was played here by the European Structural and Investment Funds, which in the previous programming period accounted for half of all capital expenditure in the Czech Republic aimed at supporting improvements in energy efficiency across sectors.

Graph 9: Development of Material Intensity of the Economy, Domestic Material Consumption and GDP (current prices) in the CR (index, 2000 = 100)



Source: own elaboration based on CSO, 2023; CNB, 2023c.

At the global level, the issue of reducing consumption is addressed by the UN Development Programme for the following 15 years (2015–2030), where among the adopted Sustainable Development Goals (SDGs) there is also the goal for responsible production and consumption.

### Circular Material Use (Waste) (CMU)

The Czech Republic monitors the circular use of waste — how waste enters the circular economy and how it is used as raw material. How waste enters the circular economy and how it is used as a raw material. CMU remained at 12 % in 2021 and 2022 (source WMIS, MoE).

## 2.1.4 PESTE analysis

Waste management in the CR is influenced by many factors, the development of which can help minimise waste and increase sustainability. The following PESTE analysis maps the most important of these.

### POLITICAL



- Political stability
- Government support
- Legislative environment
- Ambitious EU priorities
- Green Deal
- Regulations on Cross-Border Shipments of Waste
- Emphasis on Environmental Protection and Recycling
- Waste management hierarchy

### ECONOMIC



- Economic Cycles
- Supplier–Customer Relations
- Imports of Cheap Primary Raw Materials
- Rising costs of landfilling
- Availability of funding sources
- Large number of small waste holders
- Extended Producer Responsibility (EPR)
- General Increase in Price Levels

### SOCIAL



- Demographic Development of the Population
- Labour Mobility
- Level of Education
- Healthcare
- Lifestyle
- Motivation to Separate Waste
- Knowledge and Attitudes of People towards the Environment and Waste Separation
- Active Participation of Consumers in the Waste Management System
- Approach of Business Entities to Waste Management

### TECHNOLOGICAL



- Technological Progress Influencing Waste Generation
- Innovations for Waste Minimisation
- Capacities of Final Treatment Facilities
- Change in Waste Composition

### ECOLOGICAL



- Environmental Protection
- Climate Change and Adaptation Measures

## POLITICAL FACTORS

### Political stability

The political situation in the Czech Republic is generally stable, which creates a favourable environment for the further development of waste management. Nevertheless, for this area certain risks may exist in connection with changes in political leadership. Potential changes may lead to shifts in the political agenda and decision-making.

### Government support

**Environmental protection and waste minimisation**, through the transition to a circular economy, are among the priorities of the current government set out in its policy statement.<sup>15</sup> This effort includes support for the development of technologies for waste separation, reuse and recycling, including support for recycling hubs, composting of BDW and the recovery of catering waste. Furthermore, the aim is to limit the use of single-use packaging. The current government also supports the introduction of sustainability requirements in public procurement and in the purchasing of the state administration and local self-government as a means of preventing waste generation and reducing its volume. The intention is also to ensure conditions for research and development aimed at higher material efficiency in all production processes, which are essential for greater material self-sufficiency.

Individual aspects of waste management are covered by a number of strategic documents (see Chapter 1.3 for details), which as a whole should contribute to meeting the set objectives in this area. The fundamental strategic document is the WMP CR.

Another important document is the Strategic Framework of the Circular Economy of the CR 2040 – Circular Czechia 2040. The global objective of this framework (see box on the right) reflects the effort to reduce waste while at the same time increasing the value generated within the economy.



**Less Waste and More Value for the CR.**

### Legislative environment

The key instrument aimed at achieving the set objectives in the field of waste management is the Waste Act. **This legislative regulation is becoming the driving force in the transformation of the waste sector, with an emphasis on sustainable principles and efficient waste management.**

Another important act related to waste management is **Act No. 542/2020 Sb., on End-of-Life Products**. This act introduces measures concerning Extended Producer Responsibility, which means that producers are obliged to bear responsibility for the consequences and costs associated with the management of products at the end of their life cycle; more on this concept can be found in the next section of this chapter. In addition, the act contains provisions on the control and supervision of waste management, including sanctions for breaches of the established rules.

The area of packaging, which forms an inseparable part of many products, is regulated by **Act No. 477/2001 Sb., on Packaging**. This regulation sets out the rights and obligations of business legal and natural persons when placing packaging on the market or into circulation, establishes take-back of packaging and the amounts of packaging waste that must be recycled or recovered. The MoE has prepared and submitted an amendment to this act, which focuses on the deposit system for PET bottles and cans. Thanks to the planned changes, **more than 2.5 billion beverage containers should be**

<sup>15</sup> Policy Statement of the Government of the Czech Republic approved on 6 January 2022 Policy Statement (revised version approved by the Cabinet on 1 March 2023).

**recycled annually, which would further reduce the volume of unrecovered waste** and protect nature from pollution. **The deposit system is expected to be launched from 2027.**

In recent years, **emphasis has also been placed on reducing the use of single-use plastics.** In 2022, the Act on the Reduction of the Environmental Impact of Certain Plastic Products entered into force, which includes several types of measures. These are in particular the complete ban on specific single-use plastic products (e.g. plastic cotton buds, plastic cutlery, plates, straws), the gradual restriction of the consumption of others, or the obligation of producers to inform buyers about the proper handling of such waste.

### **Ambitious EU priorities**

The Czech Republic, as a Member State of the EU, must also reflect developments at the European level. Alongside the emphasis on technological development, there is a growing call for the **implementation of the European green agenda**, which resulted in the adoption of the European Green Deal. The CR must also take measures to meet a number of ambitious targets, such as **achieving a 65 % recycling rate of municipal waste** by the end of 2035, which is linked to a significant **reduction in landfilling.**

### **Green Deal**

The European Green Deal is a set of policy initiatives designed to **lead the EU towards an ecological transformation with the objective of achieving climate neutrality by 2050.** The Green Deal includes measures across various sectors, including energy, industry, agriculture, transport and education, with an emphasis on linking economic growth with environmental sustainability. This approach is expected to **support more efficient waste management, increase recycling and reduce landfilling**, although the specific impacts will depend on the implementation of policies and initiatives at both EU and national level.<sup>16</sup>

### **Regulations on Cross-Border Shipments of Waste**

Regulation of cross-border shipments of waste (imports of waste into the CR, exports of waste from the CR and transit of waste through the CR) is based, due to its international character, on uniform rules laid down by European Community legislation. The directly applicable legal regulation is Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste. The Regulation defines three control regimes for cross-border shipments of waste. The first regime allows shipments of waste with the required information, without the need to notify the authorities of the states concerned and wait for their approval. The second regime requires notification and approval of the competent authorities of the states concerned prior to the shipment of waste. The third regime prohibits waste shipments and does not allow them to be carried out under any circumstances. **The shipment of waste for disposal into the Czech Republic is prohibited**, but from the Czech Republic to other EU Member States it is allowed only if no suitable facility for waste disposal is available in the Czech Republic. Conversely, **the shipment of waste for disposal to non-EU states is prohibited.** These measures aim to regulate and control the movement of waste across borders with regard to the environment and in an effort to minimise negative impacts.

### **Emphasis on Environmental Protection and Recycling**

**The growing emphasis on environmental protection and recycling** reflects the current interests and priorities also set at the international level. States, within international institutions, sign conventions and agree on commitments that affect corporate obligations in the field of sustainability and

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<sup>16</sup>European Green Deal.

environmental responsibility. Political decisions at international level, such as emission limits, recycling quotas or support for renewable energy sources, have a significant impact on waste management actors and waste management itself in the Czech Republic.

### Waste Management Hierarchy

The hierarchy determines the order of preferred methods of waste management, aimed at minimising its negative impact on the environment. **Waste management actors should seek to move upwards in the hierarchy, for example by giving greater priority to recycling and reducing the volume of waste disposed of in landfills.** A higher recycling rate would support the production and consumption of environmentally friendly products.

## ECONOMIC FACTORS

### Economic Cycles

**Economic factors have a significant impact on the further development of waste management,** as they may motivate waste holders to reduce waste generation or to engage in greater separation and recycling. During a recession, for example, demand decreases, which can lead to reduced production and lower economic growth as well as lower waste generation. On the other hand, when economic growth resumes, consumption and production may increase, which in the long term could mean increased waste generation and a greater burden on the environment. The economics of operating technologies may thus be subject to these fluctuations.

### Supplier–Customer Relations

**Another factor** that significantly affects waste management **is the establishment of supplier–customer relations.** In waste management, municipalities commonly launch public tenders for waste collection for several years. In the case of in-house contracts, waste supply agreements are usually concluded for a long period of time, which brings stability to investment economics, but the consequence of this approach may be limited competition and higher costs of waste management. With regard to the landfill ban, a key factor is ensuring a strategy for municipal waste management.

Supplier–customer relations may also be crucial in the process of handling waste that exhibits at least one hazardous property under the applicable legislation <sup>17</sup> (e.g. toxicity, infectiousness). If a manufacturer or supplier uses hazardous chemicals in its processes, it is essential that the customer be informed of this fact accurately and in a timely manner. It follows that the customer must have at their disposal thoroughly developed procedures and appropriate means for the proper and safe handling of such hazardous chemical waste, including its disposal.

### Imports of Cheap Primary Raw Materials

**Imports of cheap primary materials may have a negative impact on waste management in the Czech Republic.** This issue is linked to globalisation and open markets, where certain input raw materials are imported from other countries into the Czech Republic at low prices, which may adversely affect recycling and waste separation in the CR.

Imported cheap primary raw materials may represent competition for domestic secondary raw materials, which may lead to a decline in demand for the processing of domestic waste. This may also negatively affect the number of jobs in waste management, which could result in a growing trend of landfilling and increased environmental burden. Moreover, **imported primary materials may be of lower quality and therefore more difficult to sort or recycle,** which may complicate the waste management process

<sup>17</sup> Annex to Commission Regulation (EU) No. 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste.

and increase processing costs. This may also reduce the quality of waste processing and recycling and lead to a greater amount of waste disposed of in landfills.

Recyclates enter the market environment, where they may or may not have a price advantage compared to primary raw materials (for example, when oil prices are high). These conditions change over time depending on many factors. When purchasing raw materials or recyclates, both price and environmental considerations are decisive.

### Rising costs of landfilling

The new Waste Act, in line with European objectives, introduces a gradual increase in the fee for landfilling recoverable and recyclable waste. From the original CZK 500 per tonne of municipal waste, the fee increased to CZK 800 in 2021, then to CZK 1,000 in 2023, CZK 1,500 in 2025, and up to CZK 1,850 in 2029. **It can be expected that the increase in costs associated with the fee for landfilling waste will lead to the diversion of waste from landfills and strengthen the further development of the recycling industry.**

### Availability of Financing

Another important economic factor is the **availability of financing**, which becomes a pressing issue in periods of consolidation of public finances. Even though financial resources at national level are limited, **it is possible to draw additional funds from EU funds**. This option includes the Operational Programme Environment and the Operational Programme Technology and Applications for Competitiveness, as well as the National Recovery Plan, the Modernisation Fund and various directly managed programmes such as Horizon Europe, LIFE or Interreg.

### Large number of small waste holders

**The CR is characterised by a high number of small municipalities that generate small amounts of waste.** These quantities must be transported to treatment facilities. Each waste holder usually has their own contractual relationship with an authorised person for waste management. There are cases where several waste holders are linked under a single contract. On the market, companies with different ownership structures (for example, commercial professional entities, joint ventures of commercial and municipal owners, municipal public services, waste service providers managed by voluntary associations of municipalities, self-employed persons) and of different sizes operate side by side. A final facility with a large capacity is suitable only in locations where a certain volume of input waste is ensured. Waste streams are best addressed at a higher territorial level.<sup>24</sup> Within micro-regions or voluntary associations of municipalities, a sufficient volume of individual waste streams may already arise for treatment technology.

### Extended Producer Responsibility (EPR)

EPR represents a set of measures aimed at ensuring that **producers bear financial or organisational responsibility for a product throughout its life cycle, even after it becomes waste**. EPR makes use of financial incentives to encourage producers to design products that are environmentally friendly. The basis of EPR lies in the fact that producers have key control over the design and marketing of their products and are therefore the most capable and responsible for reducing toxicity and minimising waste.

Transferring responsibility to the producer, who is also the polluter, is not only a matter of environmental policy but also the most effective measure for achieving higher environmental standards in product development.<sup>24</sup> At the same time, producers tend to pass on the increased costs to product prices, which may discourage some customers and indirectly contribute to reducing waste volumes. EPR involves producers in the management of waste from products. However, EPR may also have negative impacts

in the form of increased administrative burden. Measures should therefore be appropriately set in the context of the functioning of the market of the given commodity.

### General Increase in Price Levels

The general increase in price levels may, in the economic context, have far-reaching impacts on the field of waste management and consumer behaviour, which has a fundamental influence on the overall dynamics of the waste sector. **In the context of rising prices, costs related to handling, recycling and further waste management may be significantly affected.** This can have far-reaching consequences for the economic sustainability of waste management, and thus also for its efficiency.

Inflation may also have a significant effect on consumer behaviour. With rising prices of products and services, consumers tend to adapt their behaviour in order to minimise their expenditures. This may lead to changes in the handling of products and waste materials, reflecting consumer efforts towards their more optimal use. Such a change in consumer behaviour may have a fundamental impact on the total volume and composition of waste generated in the given economy. Changes may occur in the structural composition of waste, which may significantly influence strategies and procedures for its further treatment and recycling.

## SOCIAL FACTORS

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### Demographic Development of the Population

**Population ageing in the Czech Republic may in the future have a negative impact on waste management**, especially if the number of workers in this field becomes limited. Waste sorting and recycling are labour-intensive activities that require qualified workers who specialise in this area. If the trend of population ageing and the shortage of qualified workers continues, it may lead to problems, deterioration in the quality of waste management and higher costs of waste management.

Moreover, **population ageing may also affect product consumption and waste generation.** With a growing number of senior citizens, the average age of households increases and the number of persons per household decreases. This may result in a lower volume of municipal waste generated per person but may also lead to a greater amount of healthcare waste caused by the more frequent occurrence of health problems in the senior population.

### Labour Mobility

**Urbanisation and the migration of people from rural areas to cities could have a positive impact on waste management** in the Czech Republic, as cities generally have more efficient waste management systems.

**Cities usually have better waste management systems** and are able to process larger volumes of waste per unit of inhabited area. Waste companies in cities may be better equipped with modern technologies for recycling and composting, which can lead to larger quantities of recycled materials and a reduction in the amount of waste disposed of in landfills.

A larger population, along with greater consumption and industrial activity in urban areas, may result in increased waste generation and thus higher waste management costs. Moreover, urbanisation is also associated with high resource consumption, which may lead to a further increase in the volume of waste.

### Level of Education

**Increased demand for qualified workers in technical fields as a result of technological progress and digitalisation** may have a significant impact on waste management in the Czech Republic. Waste production, sorting and recycling are fields that require qualified workers with specialised engineering education.

If there were a shortage of qualified workers in this sector, it could jeopardise proper waste management and reduce the quality of waste handling and recycling. A lack of qualified workers could lead to inadequately trained personnel in the waste management sector, which could increase the risk of environmental disasters.

However, **increased interest in technical fields and education is a positive trend for sectors** such as waste management. High demand for qualified workers can highlight the importance of these fields and help attract more people to waste management. In addition, universities and educational institutions may respond to this increase in interest and provide students with relevant education and opportunities to gain practical experience.

### Healthcare

The quality of healthcare plays a certain role in waste management. **Healthcare for employees has a direct effect on their productivity, performance and morale at work**, which may influence the overall atmosphere in the working environment. Workers in the waste management sector are exposed to risks such as injuries, poisoning and infections. It is therefore important that health services and prevention are ensured for employees. Workers must be trained in occupational safety and health protection and must be equipped with appropriate protective equipment.

**The availability and coverage of healthcare in the Czech Republic are among the highest within the OECD.** (National Health Information Portal, 2023).

### Lifestyle

Lifestyle influences the amount of waste generated by individuals and households, and thus the total amount of waste produced by society. The general increase in price levels affects the accessibility and costs of waste management for individuals and businesses.

**There has been a gradual change in people's attitudes towards waste, with higher levels of separation and active home composting, which leads to a reduction in mixed municipal waste.** Changes are also evident in the approach to packaging, where consumers prefer products with less packaging material, and new initiatives such as **zero-waste shops** are emerging. At the same time, the popularity of second-hand shops **is increasing, which reduces the amount of textile waste.** Rising food and product prices are encouraging lower consumption. If these trends continue, the volume of municipal waste may decrease and inputs into waste facilities may decline.

### Motivation to Separate Waste

**The growing political and social pressure to separate waste increases citizens' motivation to sort**, which may be supported by economic incentives, such as PAYT (Pay As You Throw). The PAYT system is a system of municipal waste collection and payment in which citizens pay for the actual amount of waste they produce. In practice, this involves assigning each household its own waste containers, with the collection vehicle, for example, being equipped with a weighing system that measures the weight of the collected waste. Subsequently, the citizen is charged only for the actual amount of waste, measured in kilograms. This system motivates citizens to reduce the amount of mixed municipal waste in particular and to engage in more intensive separation. Opponents of this system, however, express concerns about possible circumvention of the system, for example by the creation of illegal dumps.

Waste separation leads to better use of materials, which has a positive impact on the environment. It also supports the recycling economy. **The growing trend of waste separation in the CR may affect inputs into waste facilities**, which is an important component of waste management. Motivated citizen

separation also enables more effective planning and implementation of waste policies and programmes aimed at sustainability and minimisation of negative environmental impacts.

### **Knowledge and Attitudes of People towards the Environment and Waste Separation**

At present, it can be observed that **citizens of the Czech Republic show increased interest in environmental issues**. The latest survey by the Public Opinion Research Centre showed that “living in a healthy environment” ranks among the most important social values and placed third in order (with 95 % of respondents rating it “very” or “rather important”) (CVVM 2023). The **trend of waste separation** has become a common part of life, with 75 % of the population separating waste in 2022 (EKO-KOM, 2023). However, there is still a section of the population that is unwilling to restrict itself significantly in favour of the environment.

### **Active Participation of Consumers in the Waste Management System**

Active consumer participation is essential for effective waste management. This includes the responsible disposal of waste at specific sites such as collection yards, recycling centres or containers. Without the willingness and ability of residents to handle their waste properly and in an environmentally friendly manner, the entire system would lose its functionality.

### **Approach of Business Entities to Waste Management**

The approach of companies to waste is influenced both by statutory obligations and by the practical enforcement of these rules. Self-employed persons who conduct business from their place of residence have statutory obligations in waste management as waste holders. To fulfil their obligations, they may also, on the basis of a contract with the municipality in which they operate, make use of the municipal system for the collection and management of waste. In practice, however, a certain proportion of self-employed persons use the municipal waste management system intended for households unlawfully, which may result in the non-payment of the relevant fees and disproportionate use of this system. This **situation could be improved by greater awareness and education of business persons** about their obligations concerning their waste.

In the case of legal persons or self-employed individuals, in most cases at least a small amount of waste will be generated. In cases where legal persons or self-employed individuals conduct their activities predominantly electronically, waste may arise, for example, from minor administrative tasks; however, with greater digitalisation it may be accepted that in the course of their activity no waste need be generated. Even at present there are cases of legal persons and self-employed individuals who indeed carry out even administrative activities electronically and conduct business from their place of residence (e.g. professions such as programmer, lecturer, translator, accountant, designer, planner, etc.), where there is a strong presumption that they spend breaks and rest periods in their households, where they generate waste which is then classified as municipal waste produced within the household. In such cases, they may not have contractually secured the transfer of waste, including municipal waste.

Legal persons, large companies, are often producers of industrial waste and face the challenge of managing and treating this waste, which often contains hazardous substances. The diversity of industrial sectors requires specific procedures for waste management, with safety and environmental responsibility being key aspects. In the field of industrial waste, **effective regulation and management of waste in accordance with legislation and environmental standards are essential**.

## **TECHNOLOGICAL FACTORS**

### **Technological Progress Influencing Waste Generation**

With continuous technological progress, new types of waste are emerging, particularly in the field of electronics. An increasingly significant segment of electronic waste consists of wearable electronic products. The inhabitants of the Czech Republic are **characterised as consumers of modern technological innovations and seek out new products**. For example, between 2000 and 2015, the number of mobile phones in Czech households increased nearly fivefold. Approximately 11,000 smart devices are sold daily on the Czech market, of which 8,500 are mobile phones. In addition to the products themselves, the material composition of products is also changing. This requires **adaptation of recycling or final facilities for handling products when they become waste**.

### Innovations for Waste Minimisation

At the same time, technological development brings innovative approaches to efficient waste processing and recycling. These innovations include, in particular, advanced waste sorting methods, for example focusing on hard-to-recycle waste such as mixed plastics or specific industrial waste streams. Currently, **innovative thermochemical technologies** are being developed, aimed at the production of recycled polymers **through chemical recycling**. Opportunities are also provided by the **involvement of digital technologies**, which are applied, for example, to increase efficiency and optimise the value chain by means of AI or blockchain. Such innovations contribute to more sustainable waste management and to reducing environmental impact.

### Capacities of Final Treatment Facilities

The availability of capacities for handling different waste streams varies. In particular, capacities in final treatment facilities **for hazardous waste are insufficient**. Qualitatively, capacities are insufficient in the area of mixed municipal waste management and in recycling. These deficiencies are **caused by the NIMBY effect** as well as the economics of operating such facilities, including supplier–customer relations. **The state of capacities of technological facilities may be a limiting factor for the development of waste management in the desired direction**.

### Change in Waste Composition

Significant changes in waste composition may in many cases lead to the need to adapt waste technologies and infrastructure, which may be costly and time-consuming. In recent years, **the share of packaging materials in waste has increased, mainly plastics and composite packaging**. This trend may have a significant impact on waste management, as **plastics are costly to recycle** and may also negatively affect the environment.

Another important change in recent years is the **increasing amount of electronic waste**, which again brings the need for further development and use of technologies for its recycling. Electronic waste contains many rare metals, and its recycling is therefore very important and may be beneficial both for the economy and for environmental protection.

Changes in legislation, European regulations, the implementation of EPR systems and producer initiatives regarding material streams, particularly in the area of PET and cans, together with changing consumer behaviour, may lead to restrictions on the production of certain plastic materials and their replacement by even more recyclable and more stable alternatives.

## ECOLOGICAL FACTORS

### Environmental Protection

A well-functioning waste management system is crucial for reducing the burden arising from economic activity. Efforts to protect the environment may support initiatives for recycling and waste minimisation.

The sustainability of waste management is also supported by reuse and recovery, for example the recovery of waste heat and the use of biomass.

### Climate Change and Adaptation Measures

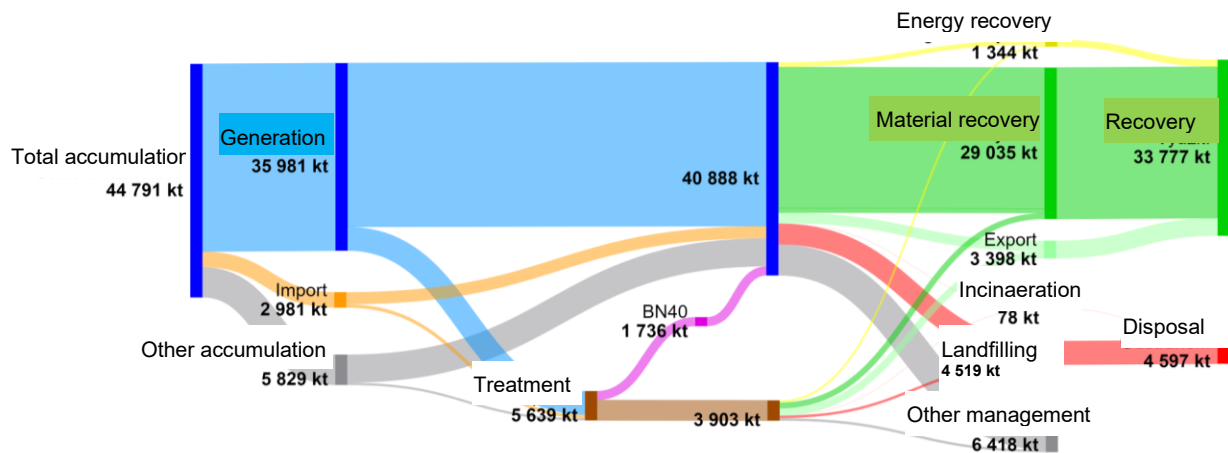
Climate change brings an increased likelihood of extraordinary events, with an expected rise in the intensity and frequency of extreme meteorological phenomena and long-term drought. This climatic variability may cause floods, landslides and forest fires, which **have the potential to affect waste systems and infrastructure**. The growing frequency and intensity of such phenomena may also pose a threat to the energy system and waste management infrastructure. Last but not least, such events usually generate large amounts of demolition waste or often even hazardous waste. This waste must be handled in the best possible way within a relatively short period of time. In this context, the **adoption of adaptation measures aimed at minimising risks and strengthening infrastructure resilience is a key element**. Such measures are essential for maintaining the functionality of waste management in times of increasing climatic variability and extraordinary events.

## 2.2 State and Development of Waste Management

### 2.2.1 State of Waste Management in the CR

The state of waste management in the CR is very good. The network of facilities is well developed and enables the safe management of all waste. A basic visualisation of the flow of all waste from generation to management is presented in the graph Graph 10. The import of all waste compared to total generation is negligible. More significant is the volume that is processed in a given year but was generated in the previous year. Most waste that is managed is recycled. Recycling in 2022 reached 83 %. The CR also uses waste for energy recovery; four facilities for energy recovery of waste (FERW) are in operation, with a total treatment capacity of 858 thousand tonnes. The share of energy recovery in 2022 amounted to only 3 % of all waste, with municipal waste in particular being used for energy recovery (see below). A total of 13 % of all waste is landfilled. The CR has an extensive network of modern landfills designed for the disposal of inert, hazardous and other waste. Waste management in the CR is undergoing significant changes towards more sustainable practices.

Graph 10: Illustration of Waste Flows in the CR in 2022 – Total Waste Generation



Note: The amount of generation includes only primary generation.

Source: processed on the basis of WMIS

In 2021, new legislation entered into force, placing greater emphasis on recycling and on reducing the volume of waste disposed of in landfills. As a result of the introduction of various measures, technological development and investment support, as well as education and awareness-raising, recycling is increasing, but challenges remain in waste management, particularly in relation to municipal waste. The Czech Republic is also seeking to invest more in modern waste treatment technologies. New legislation, which from 2030 introduces a ban on the landfilling of recoverable municipal waste, has also accelerated the preparation of new projects for energy recovery of waste. In its report of June 2023,<sup>18</sup> the European Commission assessed that the CR is among the nine states that are on track to meet the municipal waste management targets for 2025. Overall, waste management in the CR is moving towards greater sustainability and efficiency, but the path to optimal results remains a matter of long-term effort.

The following text presents the main information on waste generation in the CR and the development of waste management. In Chapter 2.3 more detailed data are subsequently provided on the individual waste streams that make up the total generated volume.

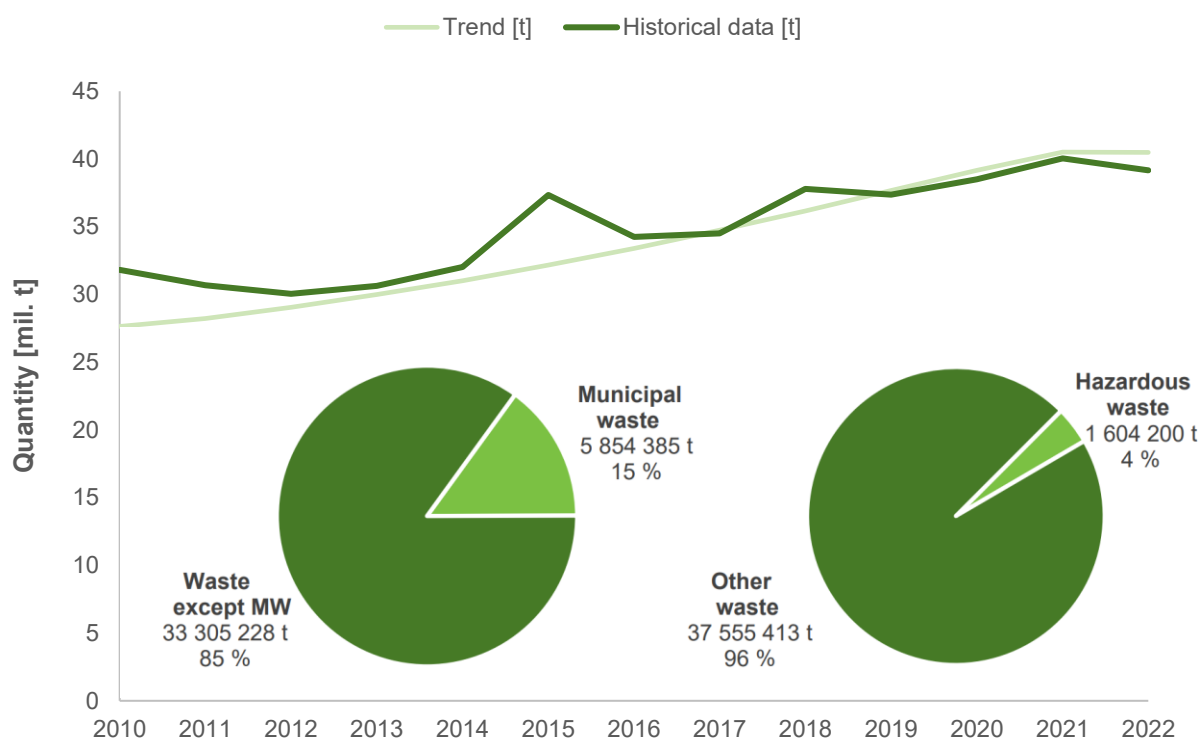
Waste generation can be divided into primary and secondary generation. Secondary generation is, in simplified terms, classified as waste from waste treatment. When assessing the volume of generation, both groups – primary and secondary generation – are considered; in the case of waste management, however, only primary generation is taken into account at the input, since secondary generation arises during the course of treatment.

**The generation of all waste** increased from 2012 to a value of 39.2 million tonnes in 2022. *Waste generation in the CR has therefore been steadily rising in the long term* (Graph 11), however, in 2022 there was a slight decline in generation, which may indicate the beginning of a positive change in the trend. When comparing the development of GDP and waste generation, it can be stated that between 2013 and 2022 GDP increased by 66 % (see Chapter 2.1.3, while waste generation increased by only 23 %. At the same time, since 2015 waste generation per unit of GDP has also been decreasing. In 2022, the figure was 5.78 million tonnes of waste per CZK 1 trillion.

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<sup>18</sup> REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS identifying Member States at risk of not meeting the targets for the preparation for re-use and recycling of municipal waste by 2025, the target for recycling of packaging waste by 2025, and the target for reducing landfilling of municipal waste by 2035. Available [here](#).

Graph 11: Development of Total Waste Generation in the CR



Source: processed on the basis of WMIS and Tiramiso

Table 2: Waste Generation and Management (relative to generation in the CR) in 2018–2022

Year	Generation [mil. t]	Recovery [%]	Of which material recovery [%]	Of which energy recovery [%]	Disposed [%]	Of which landfilled [%]	Other Management t [%]
2018	37.8	86	83	3	9	9	5
2019	37.4	88	84.5	3.5	9.5	9.5	2.5
2020	38.5	90	86	4	10	10	0
2021	40	87	84	3	13	13	0
2022	39.2	86	83	3	13	13	1

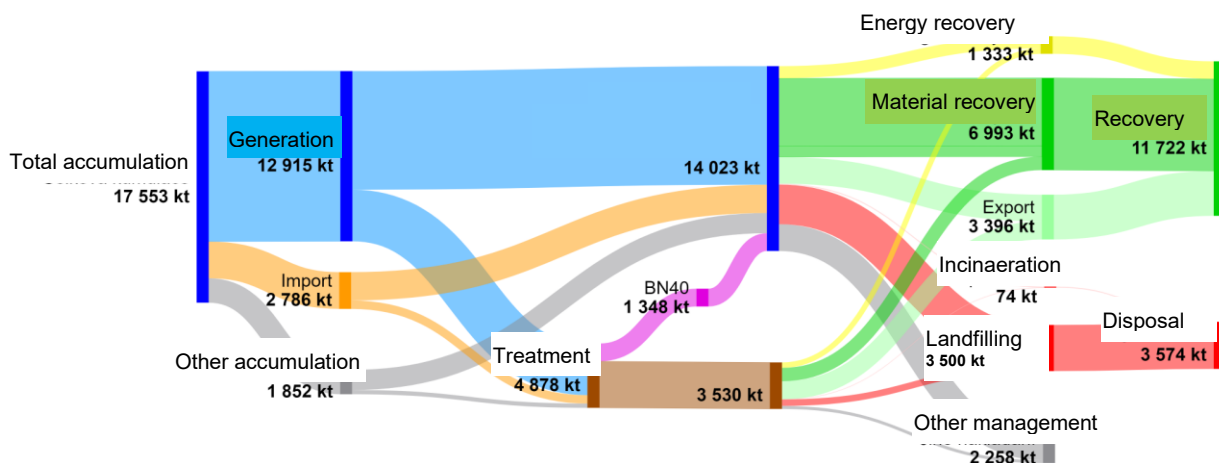
Source: WMIS, MoE 2024

Note: The data are processed in accordance with the valid MoE methodology for the Waste Management Indicator System of the CR (for the given year).

### Generation excluding Mineral Waste

Waste generation and management can be assessed in more detail from different perspectives. A significant waste stream is mineral waste, whose generation in 2022 amounted to 23 million tonnes, of which 95 % was recovered. It is therefore appropriate to also analyse the generation of all waste excluding mineral waste (Graph 12). The generation of all waste excluding mineral waste in 2022 amounted to approximately 13 million tonnes, and in recent years generation has been slightly decreasing. Approximately half of this stream was materially recovered. Energy recovery and disposal are also significant.

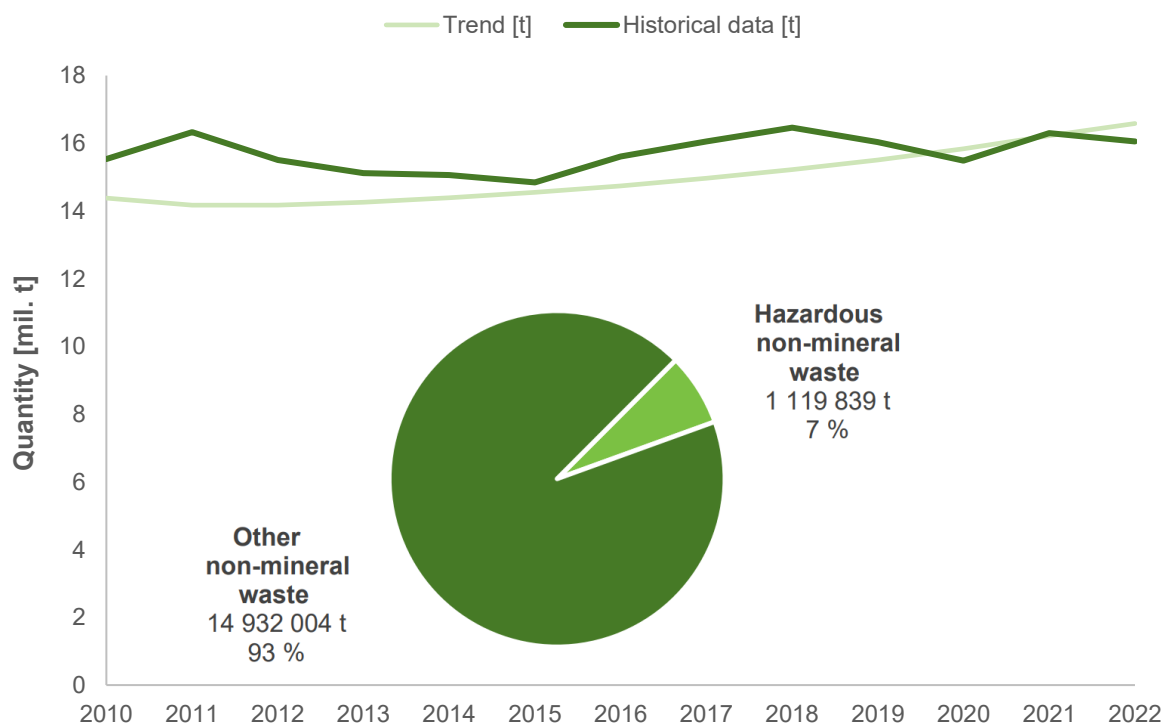
Graph 12: Illustration of Waste Flows in the CR in 2022 – Total Waste Generation Excluding Mineral Waste



Note: The amount of generation includes only primary generation.

Source: processed on the basis of WMIS

Graph 13: Development of the Generation of All Non-Mineral Waste in the CR



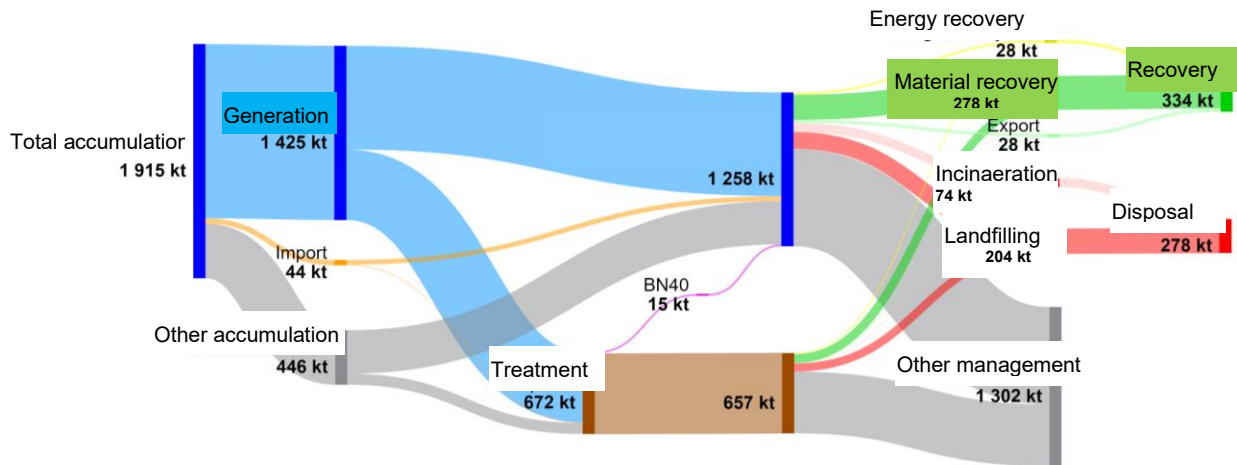
Source: processed on the basis of WMIS and Tiramiso

The key conclusions on generation and management are further summarised, broken down by category of total generation into non-hazardous/hazardous waste, with the conclusions presented for hazardous waste, and by waste holder into municipal/other waste, with conclusions presented for municipal waste. For the assessment of the development of waste management, flows and sub-flows were further defined. Summaries of these are presented in Chapter 2.3.

**Hazardous Waste**

Although in 2022 waste classified as non-hazardous accounted for a significant share (96 %) of total generation, hazardous waste nevertheless represents an important stream due to its potential impacts on the environment and the population. In the CR, there is an established system of assessment of hazardous properties carried out by authorised persons. The CR also has a developed system of collection of hazardous waste by municipalities through civic amenity sites and mobile collection in municipalities, often built using EU funding programmes. The generation of hazardous waste fluctuates in waves. In 2021 and 2022 generation declined to 1.6 million tonnes. Over the longer period 2012–2022, this likewise represents a decrease. Part of this generation is represented by hazardous waste arising from the treatment of other hazardous waste. The primary generation of hazardous waste in 2022 was 1.4 million tonnes. Rules are in place for the collection of waste from healthcare and veterinary care. Technologies for the removal of hazardous properties of waste (physical-chemical treatment, decontamination) are being developed. Hazardous waste in the CR is managed in compliance with legislation. 21 % of hazardous waste is recovered, and only 5.2 % is incinerated in specialised facilities. In the management of hazardous waste, the dominant practice is “other management”, which includes various pre-treatment methods prior to recovery or disposal.

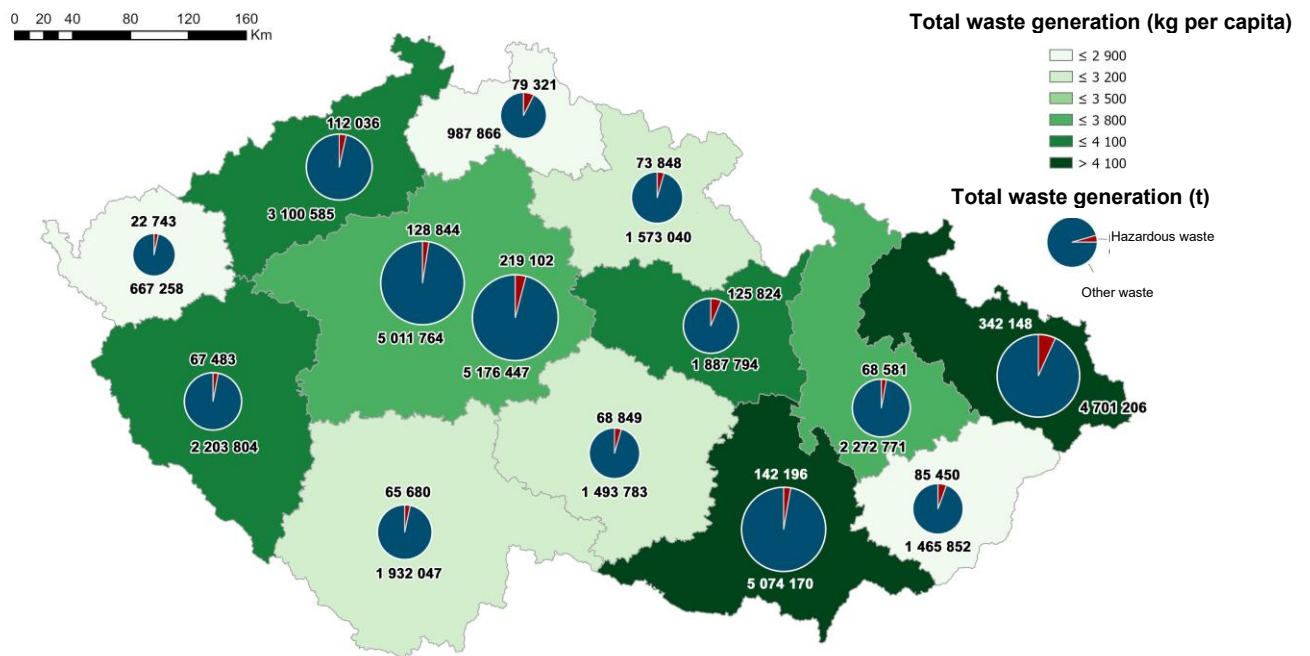
Graph 14: Illustration of Waste Flows in the CR in 2022 – Hazardous Waste



Note: The amount of generation includes only primary generation.

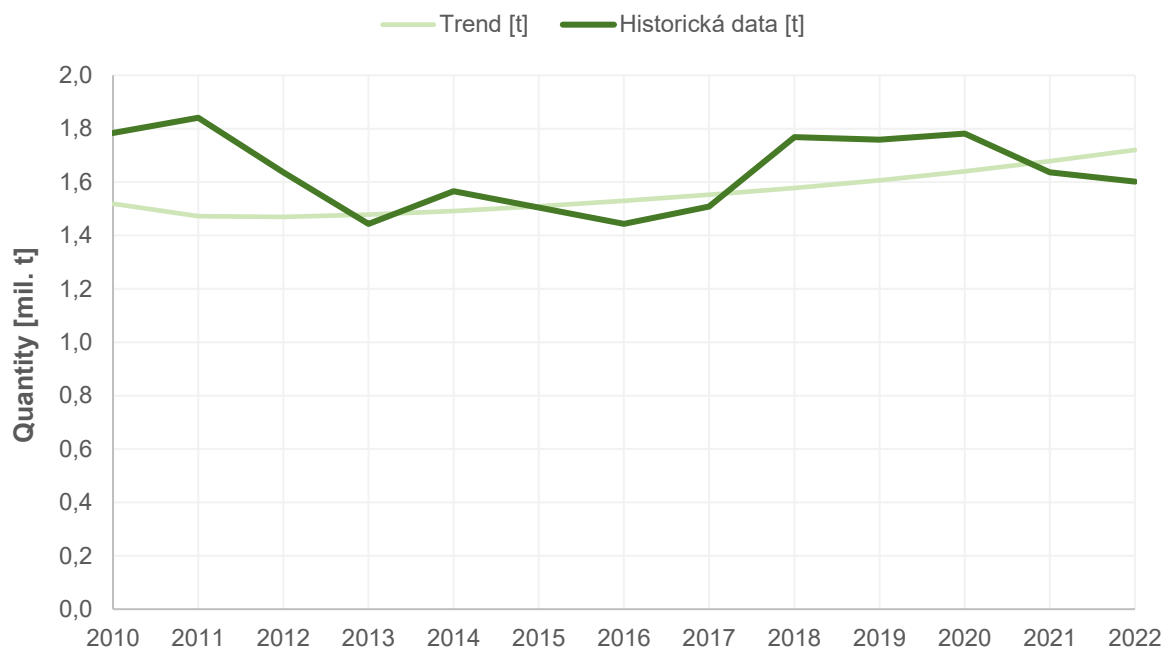
Source: processed on the basis of WMIS

Figure 6: Generation of Non-Hazardous and Hazardous Waste by Region in 2022



Source: processed on the basis of WMIS

Graph 15: Development of Hazardous Waste Generation in the CR

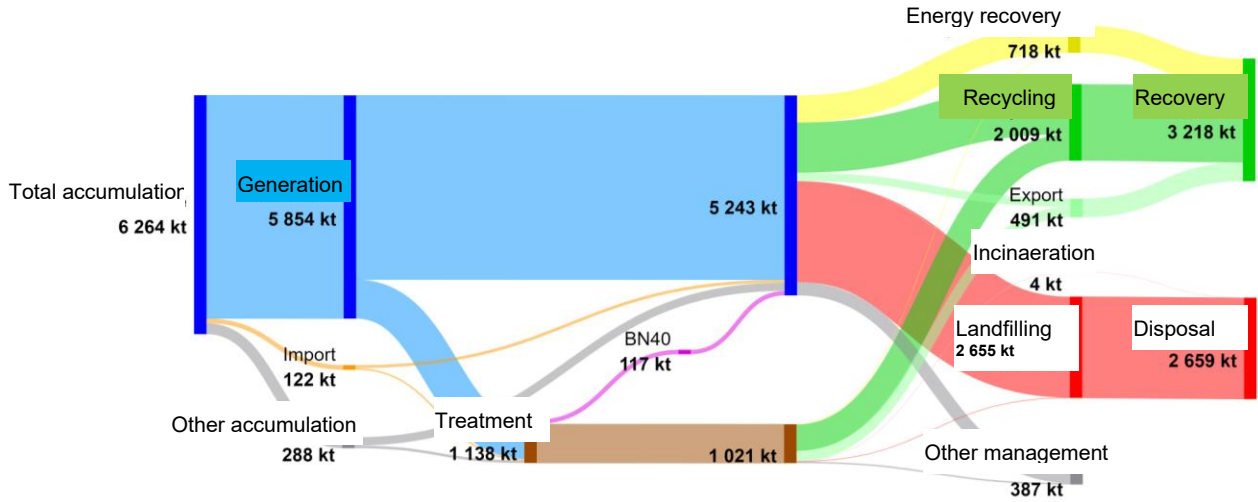


Source: processed on the basis of WMIS and Tiramiso

### Municipal Waste

Municipal waste generation in the monitored period between 2012 and 2022 also increased by 11.5 % to 5.8 million tonnes in 2022. In 2022, municipal waste generation amounted to 553 kg per capita. The existing trend of growth in specific municipal waste generation continues. This is caused in particular by the increasing generation of biodegradable municipal waste due to the intensification of its collection in municipalities. The share of municipal waste generation in the total volume of waste generated still remains around 15 % (14.8 % in 2022). In the individual regions of the CR, total waste generation (including per capita) and also the ratio between non-hazardous and hazardous waste generation differ, reflecting the different economic focus of each region. The recycling rate of municipal waste is 41 %, 13 % of municipal waste is used for energy recovery, and 45 % is landfilled. Although municipal waste recycling is also gradually increasing, analyses of mixed municipal waste, which are systematically carried out, show that there is still potential for a more efficient system of separate collection and sorting of municipal waste.

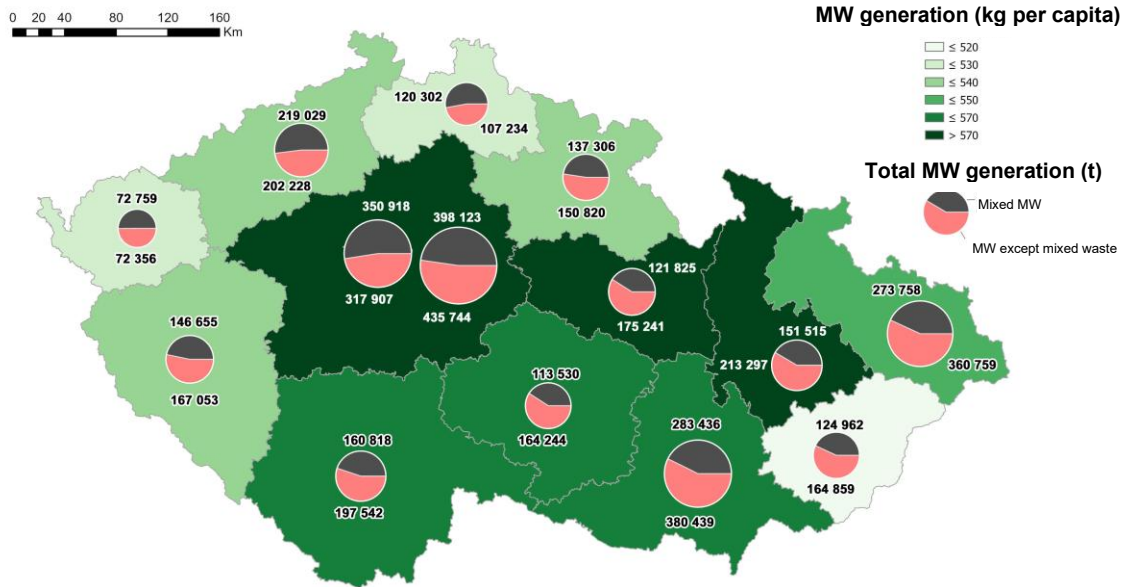
Graph 16: Illustration of Waste Flows in the CR in 2022 – Municipal Waste



Note: The amount of generation includes only primary generation.

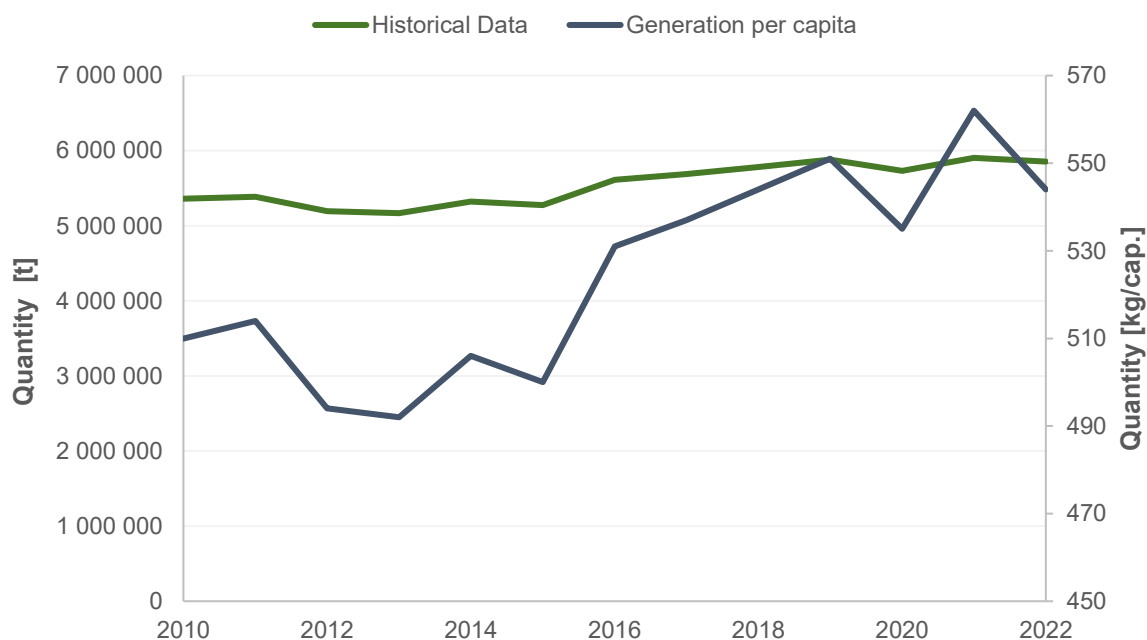
Source: processed on the basis of WMIS

Figure 7: Generation of Municipal Waste and Mixed Municipal Waste by Region in 2022



Source: processed on the basis of WMIS

Graph 17: Development of Municipal Waste Generation in the CR



Source: processed on the basis of WMIS and Tiramiso

Table 3: Municipal Waste and Mixed Municipal Waste Generation in the Period 2018–2022

Year	Generation of municipal waste [t]	Generation of municipal waste per capita [kg/cap.]	Generation of mixed municipal waste [t]	Generation of mixed municipal waste per capita [kg/cap.]
2018	5,782,066	544	2,807,422	264
2019	5,879,163	551	2,787,356	261
2020	5,729,917	535	2,780,347	260
2021	5,904,434	562	2,755,893	262
2022	5,854,385	553	2,679,347	254

Source: WMIS, MoE

Note: The data are processed in accordance with the valid MoE methodology for the Waste Management Indicator System of the CR (for the given year).

Table 4: Municipal Waste Generation and Management (relative to municipal waste generation)

Year	Generation of [mil. t]	Recovery [%]	Of which material recovery [%]	Of which energy Recovery [%]	Disposed [%]	Of which landfilled [%]	Other Management [%]
2018	5.8	51	39	12	46	46	3
2019	5.9	53	41	12	46	46	1
2020	5.7	51	39	12	48	48	1
2021	5.9	52	40	12	47	47	1
2022	5.8	53	41	12	45	45	2

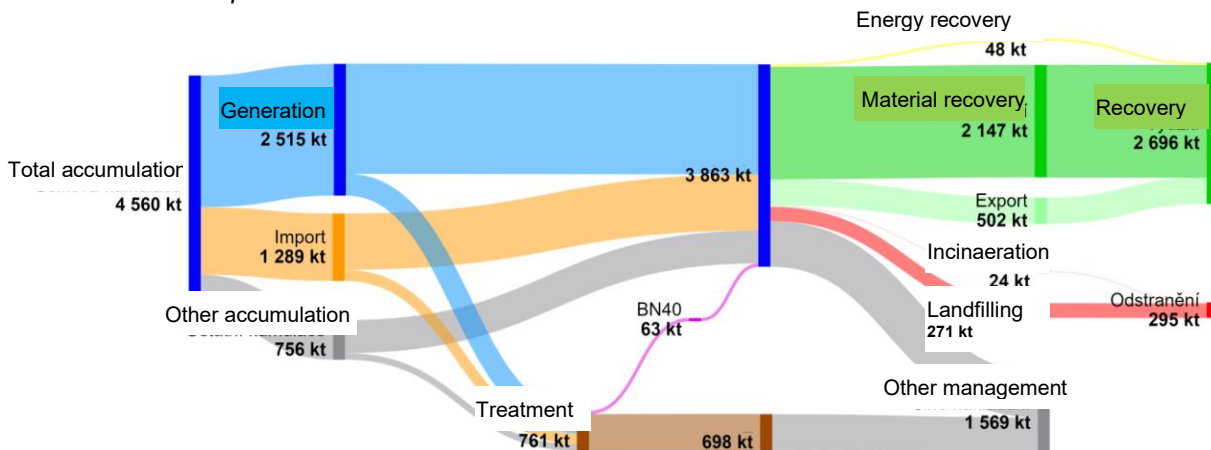
Source: WMIS, MoE 2024

Note: The data are processed in accordance with the valid MoE methodology for the Waste Management Indicator System of the CR (for the given year).

### Industrial waste

An important stream apart from municipal waste is industrial waste. The industrial waste stream includes waste reported in groups 03 to 14 of the Waste Catalogue. The generation of industrial waste has been steadily decreasing. In 2022, it amounted to 2.5 million tonnes. Approximately 21% of industrial waste generation is classified as hazardous. Hazardous industrial waste thus accounts for 37 % of the generation of all hazardous waste. In the management of industrial waste, material recovery predominates (56 %), with recycling constituting the majority of this preferred form of management. Industrial waste is almost not used for energy recovery. Approximately 11% of industrial waste generation was landfilled. The management of industrial waste differs depending on the waste category, with better recycling performance achieved for waste classified as “Other”. Graph 18 illustrates the flow of industrial waste.

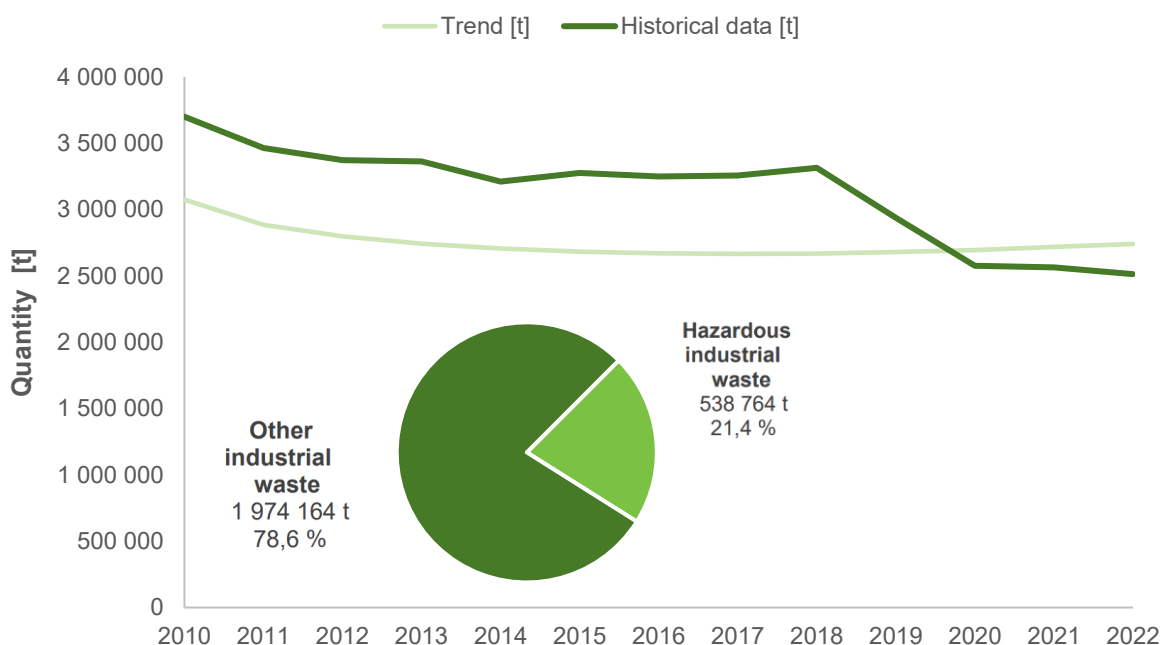
Graph 18: Illustration of Waste Flows in the CR in 2022 – Industrial Waste



Note: The amount of generation includes only primary generation.

Source: processed on the basis of WMIS

Graph 19: Total Generation of Industrial Waste



Source: processed on the basis of WMIS

## Packaging

From 2021 to 2022, the total volume of packaging waste decreased slightly from 1,437 thousand tonnes to 1,405 thousand tonnes, i.e. by approximately 32 thousand tonnes. From 2020 to 2021, the total volume of packaging waste in the commodity glass increased by approximately 12 thousand tonnes, from 222 thousand tonnes in 2020 to 234 thousand tonnes in 2021. From 2021 to 2022, the development was reversed, and the total volume of packaging waste in this commodity again decreased by 12 thousand tonnes to just under 223 thousand tonnes. In the case of the commodity plastic, there was also a slight decrease in 2022. The total volume of packaging waste in the commodity plastic in 2020 was approximately 264 thousand tonnes; in 2021 it was about 20 thousand tonnes higher (284 thousand tonnes), and in 2022 the total volume decreased slightly by about 6 thousand tonnes to 278 thousand tonnes. The total volume of packaging waste in the commodity paper/cardboard increased from 2020 to 2021 by approximately 50 thousand tonnes, from 549 thousand tonnes in 2020 to 599 thousand tonnes in 2021. Between 2021 and 2022, the growth was less pronounced and amounted to approximately 4 thousand tonnes (to 603 thousand tonnes). From 2020 to 2021, the total volume of packaging waste in the commodity metal also increased; the growth was approximately 8 thousand tonnes, reaching 88 thousand tonnes in 2021. In 2022, the total volume of packaging waste in this commodity decreased slightly, specifically by about 2 thousand tonnes to 86 thousand tonnes. From 2020 to 2021, the total volume of packaging waste in the commodity wood also increased, specifically by about 45 thousand tonnes to 222 thousand tonnes in 2021. In 2022, this commodity then recorded a slight decrease of about 14 thousand tonnes to 208 thousand tonnes.

**Between 2021 and 2022, the share of recycled glass packaging waste increased significantly, which had already met in 2019 the required recycling rate set by Act No. 477/2001 Sb., on Packaging, of 75 %. In 2021, the share of recycled packaging waste in the commodity glass was 81.4 %, and in 2022 it was 84.6 %.**

**The Czech Republic also complied, in the case of the commodity paper/cardboard, with the required recycling target set by Act No. 477/2001 Sb., on Packaging, of 75 % in both 2021 and 2022. In 2021, the share of recycled packaging waste in the commodity paper/cardboard was 88.4 %, and in 2022 it was 91.2 %. The Czech Republic would therefore already have met, as of 2021, the threshold of 85 %, which is only to be set as of 2035.**

**In 2021 and 2022, the Czech Republic also complied with the required recycling target set by Act No. 477/2001 Sb., on Packaging, of 15 % in the case of the commodity wood. In 2021, the share of recycled packaging waste in the commodity wood was 38.4 %, and in 2022 it was 41.3 %. The Czech Republic would therefore already have met, as of 2021, the threshold of 30 %, which is only to be set as of 2035.**

**In the case of ferrous packaging waste, the Czech Republic also complied with the statutory threshold of the required recycling rate, which has been set at 55 % since 2021. In the case of this commodity, the Czech Republic complied with the threshold with a margin, as in 2021 the share of recycling of all such packaging waste in the Czech Republic was 82.7 %, and in 2022 it was 86.1 %.**

**Only in the case of plastic packaging did the Czech Republic not meet the required recycling target set by Act No. 477/2001 Sb., on Packaging, of 50 % in 2021 and 2022. In 2021, the Czech Republic's recycling rate for plastic packaging was 45.1 %, and in 2022 it was 47.2 %. Nevertheless, since 2020 the share of recycled plastic packaging has been gradually increasing (by 5.4**

% between 2020 and 2022), and it is therefore very likely that the Czech Republic will be able to comply with this target in the coming years.

**In 2021, the Czech Republic did not meet the threshold for the overall recycling of packaging waste set by Act No. 477/2001 Sb., on Packaging, of 70 % by the end of 2024.** From 2024 onwards, this threshold is set at 75 %. In 2021, the Czech Republic achieved an overall recycling rate of all packaging waste of 69.4 %. **In 2022, the Czech Republic complied with this threshold, achieving an overall recycling rate of all packaging waste of 71.6 %.** This upward trend is positive, and it is therefore likely that the Czech Republic will also meet the targets set from 2024 onwards.

**Between 2021 and 2022, the Czech Republic complied with the threshold for the overall recovery of packaging waste set by Act No. 477/2001 Sb., on Packaging, of 75 %. In 2021, the Czech Republic achieved an overall recovery rate of packaging waste of 82 %, and in 2022 of 79.9 %.**

In 2022, Act No. 244/2022 Sb., amending certain Acts in connection with the adoption of the Act on the Reduction of the Environmental Impact of Certain Plastic Products, entered into force in the Czech Republic. On the basis of this Act, persons placing single-use plastic packaging listed in the Annex to the Act on the market are obliged to place such packaging on the market only in such a way that the cap or lid made of plastic remains attached to the container throughout the intended use of the product. The said Act also amended the original Act No. 477/2001 Sb., on Packaging. It now stipulates that, as from 2025, persons placing on the market single-use plastic products (beverage bottles) are required in each subsequent calendar year to achieve a minimum level of take-back of waste from such products of 77 % by weight of such packaging; from 2029 this level is increased to 90 %. Furthermore, under the Act, persons placing on the market single-use plastic products are required to ensure that, as from 2025, beverage bottles manufactured from polyethylene terephthalate (PET) as the main component contain at least 25 % recycled plastics.

## End-of-Life Products

### Electrical and Electronic Equipment (EEE)

The quantity of electrical and electronic equipment placed on the market increased between 2021 and 2022, as had been the case in previous years. In 2021, more than 301 thousand tonnes of EEE were placed on the Czech market, while in 2022 this was just under 322 thousand tonnes. In 2021, just under 106 thousand tonnes of waste EEE were collected (57.5 %), and in 2022 approximately 99 thousand tonnes (57.0 %). Although the level of collection of waste EEE decreased slightly between 2021 and 2022, in the long term this level has been increasing. **Nevertheless, the Czech Republic did not manage to achieve the mandatory minimum collection rate of waste EEE of 65 % in 2022.** Given the upward trend in the collection rate of waste EEE, however, the Czech Republic is on track to achieve this level in the coming years.

Since 2021, Act No. 542/2020 Sb., on End-of-Life Products, has established a minimum collection target not only for waste EEE as a whole, but also separately for groups of waste EEE 1, 2 and 3, likewise at the level of 65 %. **In 2022, the Czech Republic managed to meet this minimum collection rate for Group 1 (66.5 %) and Group 3 (75.5 %). For Group 2, however, the minimum collection target was not met, as only 56.5 % was achieved.** The year 2021 was not assessed in either case, since the current categorisation of EEE has only been valid since 2019. As the collection rate is calculated under Act No. 542/2020 Sb. on a three-year basis, it was only possible to evaluate these levels for the first time in 2022.

In 2021, the recovery rate of waste EEE in Group 1 was 91.4 %, in Group 2 it was 99.0 %, in Group 4 it was 98.0 %, in Group 5 it was 94.0 %, and in Group 6 it was 105.4 %. In 2022, the recovery rate of waste EEE in Group 1 was 95.3 %, in Group 2 100.2 %, in Group 4 93.6 %, in Group 5 88.3 %, and in

Group 6 94.8 %. **In both 2021 and 2022, therefore, the statutory recycling and preparation-for-reuse rate of waste EEE, which is set individually for each group, was achieved. It can also be noted that, with the exception of Group 6, the recovery rate of waste EEE increased between 2021 and 2022 in all the groups mentioned.**

In 2021, the recycling and preparation for re-use rate of waste EEE in Group 1 was 90.3 %, in Group 2 98.4 %, in Group 3 94.6 %, in Group 4 96.8 %, in Group 5 89.4 %, and in Group 6 101.9 %. In 2022, the recycling and preparation for re-use rate of waste EEE in Group 1 was 94.7 %, in Group 2 100.1 %, in Group 3 84.2 %, in Group 4 93.5 %, in Group 5 86.6 %, and in Group 6 91.5 %. **In both 2021 and 2022, therefore, the statutory recycling and preparation-for-reuse rate of waste EEE, which is set individually for each group, was achieved. The recycling rate increased between 2021 and 2022 for Groups 1, 2 and 5, while for Groups 3, 4 and 6 it decreased slightly.**

The most common method of managing waste EEE in the Czech Republic between 2021 and 2022 was material recovery (approximately 70 %), while part was exported for processing to EU Member States (approximately 20 %).

### Batteries

Between 2021 and 2022, the quantity of batteries placed on the Czech market increased. In 2021, more than 41 thousand tonnes of batteries were placed on the market; in 2022 this figure exceeded 46 thousand tonnes. In 2021, just under 24 thousand tonnes of automotive batteries, just under 13 thousand tonnes of industrial batteries, and more than 5 thousand tonnes of portable batteries were placed on the Czech market. In 2022, the quantity of automotive batteries decreased slightly (by almost 3 thousand tonnes) to more than 21 thousand tonnes, while the quantity of industrial batteries increased (by just under 7 thousand tonnes) to almost 20 thousand tonnes. The quantity of portable batteries remained roughly the same, at more than 5 thousand tonnes.

In 2021, just under 2.5 thousand tonnes of industrial batteries were collected in the Czech Republic. The take-back collection rate of waste industrial batteries thus reached 22.9%. In 2022, just under 2.4 thousand tonnes of industrial batteries were collected, corresponding to a collection rate of 17.6 %. The take-back collection rate in 2022 therefore amounted to 17.6%. The overall decline in the collection rate year-on-year was mainly due to the increased number of industrial batteries placed on the market (there are approximately 750 manufacturers of industrial batteries on the market). Around 70 % of these manufacturers meet their collection obligations through ECOBAT, s.r.o., which remains the only collective system in the CR authorised for industrial batteries. The remaining manufacturers fulfil their obligations individually.

In the past, a major problem was the lack of processing capacity for waste industrial batteries. In recent years, however, significant changes have occurred and new recycling lines are gradually being built across Europe. In the Czech Republic, unfortunately, there is currently only one recycling line, with an annual capacity of 250 tonnes. In the future, it will be necessary to build new capacities for the processing (recycling) of waste industrial batteries, as higher generation can be expected due to the expansion of photovoltaic power plants and electromobility. Another option is the re-use of used industrial batteries in equipment that does not require such a high output. There are currently four companies in the Czech Republic engaged in transforming industrial batteries into energy storage systems.

In the coming decade, an increase in lithium batteries is expected. These constitute a major source of secondary critical raw materials and will be a key factor for electromobility, energy, and other industrial sectors.

**In both 2021 and 2022, the Czech Republic achieved the required collection rate for portable batteries set by the Act on End-of-Life Products at 45 %. In 2021, the collection rate of waste portable batteries was 50.5 %, and in 2022 it was 50.2 %.**

**Between 2021 and 2022, the Czech Republic also met the minimum recycling efficiency target for lead-acid batteries, which has been set at 65 % since 2020.** In 2021, the minimum recycling efficiency for lead-acid batteries in the Czech Republic was 82.95 %, and in 2022 it was 83.83 %. Although recycling efficiency for this type of battery declined slightly in 2021, in 2022 it reached the highest level in the period, and the recycling target was therefore met with a margin of 18.83 %.

**Between 2021 and 2022, the Czech Republic also met the minimum recycling efficiency target for nickel-cadmium batteries, which has been set at 75 % since 2020.** In 2021, the minimum recycling efficiency for nickel-cadmium batteries in the Czech Republic was 93.95 %, and in 2022 it was 93.64 %. Although recycling efficiency for this type of battery decreased slightly in the period, in 2022 it remained at a high level, and the recycling target was therefore met with a margin of 18.64 %.

**For other batteries, too, the Czech Republic achieved the minimum recycling efficiency target, which has been set at 50 % since 2020.** In 2021, the minimum recycling efficiency for other batteries in the Czech Republic was 64.59 %, and in 2022 it was 65.06 %. For this category of batteries, recycling efficiency increased each year in the period, and in 2022 the recycling target was met with a margin of 15.06 %.

### **Tyres**

Between 2021 and 2022, the quantity of tyres placed on the Czech market increased slightly: in 2021 just under 107 thousand tonnes were placed on the market, compared with just under 109 thousand tonnes in 2022.

In 2021, the minimum collection rate for waste tyres was set at 70 %, and from 2022 onwards at 80 %. **The Czech Republic complied with the minimum collection rate for waste tyres in both 2021 and 2022. In 2021, the level achieved was 81.9 %, and in 2022 it was 83.6 %.**

**In 2021, the Czech Republic met the recycling and re-use target for waste tyres set by Act No. 542/2020 Sb, on End-of-Life Products, of 10 %, achieving a level of 65 %.** However, in that year it did not meet the target for the recovery of waste tyres set at 100 %, as it reached only 99.4 %.

**In 2022, the Czech Republic also met the recycling and re-use target for waste tyres set at 15 %, achieving a level of 68.5 %.** Nevertheless, in 2022 the Czech Republic again did not meet the recovery target for waste tyres of 100 %, as it achieved a level 1 % lower than in 2021, namely 98.4 %. **Although the recovery rate for waste tyres declined slightly between 2021 and 2022, the rate has long been high, and the Czech Republic is on track to meet these targets in future years.**

### **End-of-Life Vehicles**

Between 2021 and 2022, the number of end-of-life vehicles recorded in the MAISOH system (the End-of-Life Vehicle Module of the Waste Management Information System, in which end-of-life vehicles have been recorded since 2009) declined slightly. In 2021, just under 177 thousand vehicles were registered in the system, compared with more than 162 thousand in 2022. This declining trend is the result of a variety of factors, including economic conditions, environmental measures, and changes in social behaviour.

The short-term fall between 2019 and 2022 was in particular due to the COVID-19 pandemic.

**In 2021, the Czech Republic met the target for re-use and recovery of end-of-life vehicles set by Decree No. 345/2021 Sb.<sup>19</sup> at 95 % and also met the target for re-use and recycling set by the same Decree, at 85 %.** In 2021, the Czech Republic achieved a re-use and recovery rate for end-of-life vehicles of 96.13 %, and a re-use and recycling rate of 91.19 %.

**In 2022, the Czech Republic did not meet the target for re-use and recovery of 95 %, but it did achieve the target for re-use and recycling of 85 %.** In 2022, the Czech Republic reached a re-use and recovery rate of waste from selected end-of-life vehicles of 94.34 % (0.66 % below the threshold) and a re-use and recycling rate of 89.49 % (4.49 % above the threshold). **In the case of non-compliance with the minimum level of re-use and recovery, the shortfall amounted to only a fraction of a percentage point, and it can therefore be assumed that in the coming years the Czech Republic will once again achieve this target, as it did, for example, in 2021.**

In relation to the management of end-of-life products such as electrical equipment, waste batteries, tyres or vehicles, and, last but not least, packaging and packaging waste, a positive trend can be observed in the Czech Republic. There has been an increase in the rate of material recovery of these products, indicating a more efficient approach to waste processing and recycling. The targets set for the recycling of selected products are, in most cases, being met and often even exceeded.

## 2.2.2 Basic Data Sources

For the preparation of the Waste Management Plan of the Czech Republic (POH CR), data from the sectoral information system ISOH of the Ministry of the Environment were used. The primary source of the data applied is the working database WMIS (hereinafter “WDWMIS”). WDWMIS represents a nationwide database on waste generation and waste management. WMIS arises from the annual reports on waste generation and management pursuant to the Waste Act No. 541/2020 Sb. From the primary recorded data, WDWMIS is created through a series of adjustments, which include the calculation of sub-threshold entities not subject to the reporting obligation; the treatment of duplicates for entities involved in the municipal system of separate waste collection; the recalculation of dry matter in sludge; and similar modifications. Data control at the national level for the MoE is carried out by CENIA.

### Other Utilised Data

The source of socio-economic, demographic and other data in the Czech Republic, which may have a link to waste management, is the Czech Statistical Office (CZSO). Other sources of information included, for example, the Reports on the State of the Environment issued by the MoE, the supporting documents for the area of waste and circular economy support as part of the Programming Document in the Operational Programme Environment 2021-2027, the Implementation Study for the realisation of the EKO-KOM system strategy “Strategy 21+”, and data provided by the authorised packaging company EKO-KOM.

## 2.2.3 Sources of Waste

Generation may be monitored from different perspectives. A traditional approach is the classification of waste into types, sub-groups and groups of waste, the definitions of which are set out in Decree No. 8/2021 Sb. (hereinafter the “Catalogue of Waste”). An overview of production in individual groups and their share

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<sup>19</sup>Decree No. 345/2021 Sb, on detailed arrangements for the management of end-of-life vehicles.

in the total production is presented in table 5. The last column contains a brief commentary on the development of the flow in recent years.

**Table 5: Waste Generation in 2022 Broken Down by Groups of Waste in Accordance with the Catalogue of Waste**

Group	Name of Group	Generation [t]	[%]	Comment on Trend
01	Waste from mineral exploration, mining, quarrying, and physical and chemical treatment of minerals	60,243	0.2	Since 2013 a significant decline to stagnation in recent years
02	Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	214,824	0.5	Slight decline since 2015
03	Waste from wood processing and the production of panels, furniture, pulp, paper and cardboard	180,011	0.5	Growth since 2013; in 2020 and 2021 steep increase followed by a drop in 2022
04	Waste from the leather, fur and textile industries	69,874	0.2	Significant decline since 2016
05	Waste from petroleum refining, natural gas purification and pyrolytic treatment of coal	6,610	0.0	Stagnation since 2012, sharp increase in 2020 followed by a steep decline
06	Waste from inorganic chemical processes	12,779	0.0	Dramatic decline until 2012, followed by stagnation with minor fluctuations
07	Waste from organic chemical processes	146,665	0.4	Stable growth, stagnating since 2019
08	Waste from the manufacture, formulation, supply and use of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	51,015	0.1	Slightly increasing trend, stagnation in recent years
09	Waste from the photographic industry	1,263	0.0	Long-term declining trend, with stagnation since 2018.
10	Waste from Thermal Processes	1,088,496	2.8	Declining trend, significant decrease between 2018 and 2020, subsequent stabilisation of generation.
11	Waste from chemical surface treatment, coating of metals and other materials and from non-ferrous hydrometallurgy	86,840	0.2	Long-term slightly increasing trend, but generation has been decreasing since 2018
12	Waste from shaping and from physical and mechanical surface treatment of metals and plastics	718,816	1.8	Constant production with a slight negative fluctuation in 2020
13	Waste oils and waste liquid fuels (except edible oils and wastes listed in groups 05, 12 and 19)	149,151	0.4	Long-term slightly increasing trend, decline since 2019

Group	Name of Group	Generation [t]	[%]	Comment on Trend
14	Waste organic solvents, refrigerants and propellants (except those in groups 07 and 08)	3,334	0.0	Long-term slightly declining trend, more pronounced decrease between 2019 and 2020
15	Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	984,756	2.5	Long-term slightly increasing trend, slight decline since 2018
16	Waste not otherwise specified in this catalogue	775,502	2.3	Declining trend until 2015, subsequently increasing
17	Construction and demolition waste (including excavated soil from contaminated sites)	25,135 537	64.0	Long-term increasing trend with a positive fluctuation in 2015
18	Waste from human or animal health care and/or related research (except kitchen and catering waste not arising directly from health care)	48,189	0.1	Long-term slightly increasing trend without significant fluctuations
19	Waste from waste treatment facilities (recovery and disposal), from wastewater treatment plants outside the site of generation and from the production of water for human consumption and water for industrial use	3,530 456	8.9	Long-term increasing trend, stagnation in recent years
20	Municipal waste (household waste and similar commercial, industrial and institutional waste), including separately collected fractions	5,895 254	15.1	Long-term slightly increasing trend without significant fluctuations
	<b>Total</b>	<b>39,159 613</b>	100	Long-term slightly increasing trend

Source: processed on the basis of WMIS

Another perspective is provided by production broken down according to CZ-NACE activity codes. Information on the classification of economic entities (holders) according to CZ-NACE in the submission of annual reports on waste generation is available in the WMIS for the first time for data for 2022.

Table 6: Waste Production Broken Down by Sections of CZ-NACE

Section (CZ-NACE)	Name of Section	Generation [t]	[%]
F	Construction	17,441,508	44.5
E	Water supply; sewerage, waste management and remediation activities	6,196,163	15.8
C	Manufacturing industry	4,825,417	12.3
O	Public administration and defence; compulsory social security	4,415,668	11.3

Section (CZ-NACE)	Name of Section	Generation [t]	[%]
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	2,582,620	6.6
H	Transport and storage	1,266,421	3.2
M	Professional, scientific and technical activities	500,968	1.3
D	Electricity, gas, steam and air conditioning supply	387,670	1.0
A	Agriculture, forestry and fishing	379,825	1.0
L	Real estate activities	288,927	0.7
N	Administrative and support service activities	225,828	0.6
B	Mining and quarrying	173,746	0.4
Q	Human health and social work activities	143,557	0.4
I	Accommodation and food service activities	140,205	0.4
P	Education	73,306	0.2
R	Arts, entertainment and recreation	45,529	0.1
J	Information and communication activities	29,010	0.1
S	Other activities	27,652	0.1
K	Financial and insurance activities	13,720	0.0
U	Activities of extraterritorial organisations and bodies	147	0.0
N/A	Not specified	1,727	0.0
<b>Total</b>		<b>39,159 613</b>	<b>100</b>

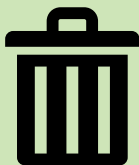
Source: processed on the basis of WMIS

The waste group with the highest production in the CR is Group 17 Construction and demolition waste (including contaminated soil), with a production of 25.1 million tonnes, representing 64% of total production. The dominant producers of construction and demolition waste are self-employed individuals. Municipalities are also producers, but only to a negligible extent. From the sectoral perspective (CZ-NACE), production is dominated by Section F Civil engineering, Construction of buildings and Specialised construction activities, and to a lesser extent by the sector Collection, treatment and disposal of waste; materials recovery in Section E.

The second most significant group is Group 20 Municipal waste with a production of 5.9 million tonnes (15.1%). In this group, the producers are the public sector, Section O under CZ-NACE, as well as Section E and Section G.

The third most significant group is Group 19 waste, accounting for 8.9%. These are secondary wastes from the treatment of waste in facilities authorised for waste management. The producers correspondingly belong to Section E under CZ-NACE.

Other groups do not exceed a production share of 5% and will therefore not be further mentioned. However, they are included in the waste streams defined for the purpose of monitoring the status and development of waste management. A summary of the main information for the dominant streams can be found in Chapter 2.3. A detailed analysis of all streams can be found in other separate documents (analytical materials).



CZ-NACE

The 2022 data made it possible for the first time to analyse information on waste generation according to the classification of economic entities into groups, sections and divisions of CZ-NACE.

Almost half of waste generation in the CR consists of construction and demolition waste. Therefore, 44% of production is associated with **Section F** Construction, Civil engineering, Construction of buildings and Specialised construction activities. Other significant producers are **Section E** Water supply; sewerage, waste management and remediation activities (15.9%), **Section C** Manufacturing (12.3%) and **Section O** Public administration and defence; compulsory social security (11.2%).

## 2.2.4 Assessment of the Role of the Public and Private Sector, Organisation of Waste Management

In the Czech waste management system, municipalities are the holders and owners of municipal waste. It falls fully within their competences to establish systems for the separate collection of paper, plastics, glass, metals and other waste. The active participation of municipalities in the separate collection of municipal waste brings numerous benefits for the overall operation of waste management in the Czech Republic. At the same time, this procedure is indispensable for achieving national and European objectives in the field of waste management. Municipalities are in a better position to effectively manage and coordinate processes of separate collection of waste at the local level, which contributes to the proper functioning of the system. It also enables municipalities to respond better to local needs and specific circumstances, thereby enhancing the efficiency of waste management.

The public network of municipal separate collection of waste, i.e. bins and containers placed at public collection points, is highly developed in the CR and ranks among the best in Europe. A positive trend is also the reduction in the walking distance residents need to reach the nearest colour-coded containers for sorted waste. In 2022, the estimated walking distance decreased to an average of 87 metres, which is below the acceptable threshold citizens are willing to undertake (EKO-KOM, 2023).

Approximately 40% of towns with more than 10,000 inhabitants have already reached above-average density of the collection network. The estimated walking distance to collection bins is thus below 100 metres. Nevertheless, intensification of the collection network is still desirable for a considerable number of municipalities. In particular, smaller municipalities face financial challenges, as waste management costs are high and financial resources limited. Each municipality has its own contractual arrangements for the handling of separately collected waste, which places additional demands on coordination, on transfer stations, and increases the costs of transporting waste from the holders to processors.

In Czech practice, municipalities often hire collection companies to provide comprehensive waste management services.

### ENTITIES OPERATING IN THE WASTE MANAGEMENT MARKET

The waste management market is influenced not only by waste itself, but also by the companies handling it. Entities can be divided according to ownership structure and the size of the catchment area in which they operate. These entities may be characterised as organisations that take over waste from holders and manage it. They include operators of facilities designated for the management of certain types and categories of waste, as well as waste traders authorised for specific types and categories of waste.

## Locally Operating Public

Locally operating public entities are typically characterised by a majority ownership structure on the part of municipalities or other public bodies. Most often, these are municipal companies established for the purpose of managing municipal property, including (or solely) waste management. The most typical example is the so-called technical services. Locally operating public bodies The sole shareholder or co-owner of such a company is usually the given municipality.

Technical services generally operate within the territory of the municipality. From the municipality's dominant use of its technical services follows the advantage of being able to award contracts on an in-house basis, i.e. without tendering under the Public Procurement Act, provided that the conditions set out in the Act are met.

For this reason, technical services do not operate across wider catchment areas but only in the immediate vicinity of the municipality concerned. Another type of locally operating publicly owned entity are companies established by voluntary associations of municipalities. Their mode of operation is similar to that of technical services. The difference lies in the number of owners, and therefore in the size of the catchment area. The amount of waste managed by locally operating public entities varies. It depends on the number of inhabitants and the size of the catchment area. Thus, the volume of waste may range from a few hundred tonnes to thousands or tens of thousands of tonnes per year. The most common type of waste handled by locally operating companies is municipal waste. Locally operating public entities often also operate collection yards and collection points. They therefore also handle other waste streams (hazardous waste, metals, construction waste and others). However, these wastes are usually transferred to another authorised person. The impact on the market environment differs according to the size of the company yet is generally small or less significant.

Within the chain of activities, these entities usually focus on waste collection and aggregation, possibly on transfer of waste or operation of small, local waste management facilities. Historically, these include, for example, landfills or simple sorting lines.

In the Czech Republic, there are several companies owned by one or more municipalities which process a significant amount of mixed municipal waste and separately collected waste. In terms of ownership structure, they are identical to locally operating public entities. Their catchment area is likewise of local importance. A substantial difference, however, is in the amount of waste they handle. While locally operating companies manage hundreds to thousands of tonnes, the group of major municipal companies manages tens to hundreds of thousands of tonnes of waste annually. These companies operate in the largest cities of the Czech Republic or in the vicinity of larger agglomerations. The catchment area for collection (primarily mixed municipal waste and separately collected waste) is defined primarily by the municipality or agglomeration. The waste treatment technologies (sorting and re-sorting lines, composting plants, incinerators, energy recovery facilities) cover even catchment areas the size of a region or larger than the single region in which the company operates.

The amount of waste at the disposal of these companies predestines them to significantly influence supplier-customer relations within the catchment area and also market power. Owing to the volumes they manage, they also constitute an important stakeholder in the waste management market. These companies usually own facilities for the treatment of tens of thousands of tonnes of waste per year. The cumulative capacity of these facilities covers a significant part of the Czech Republic. The companies are able to create conditions for handling waste generated even by more distant holders. The impact on market share is therefore substantial.

## Locally Operating Private Entities

Locally operating private entities operate within a smaller territory. A typical catchment area is a town, several municipalities, or the territory of an association of municipalities, a micro-region, etc. These companies cannot obtain contracts in-house, as they are not owned by the contracting authority. They therefore participate in tenders through public procurement procedures of individual municipalities. Given the size of these companies and the capacity of their facilities, it is not economically sustainable for them to operate across the entire country. They therefore concentrate only in the vicinity of their processing facilities. The volume of waste processed by companies in this category may range from a few hundred tonnes to tens of thousands of tonnes per year. The impact on the market environment is not significant in the case of mixed municipal waste and separately collected waste. The impact may, however, be significant for specific types of waste.

In addition to municipalities, locally operating private entities often serve business operators. Some companies may also act as authorised persons for the management of a specific waste stream and link their activities to those of locally operating public entities. The waste handled by these companies is again mixed municipal waste and separately collected waste. Nevertheless, private companies may also have other specific technologies in their portfolios. These include, for example, technologies for the management of hazardous waste, dismantling of electrical equipment, bulky waste management, recycling of construction and demolition waste, and in some cases also the management of kitchen waste, catering waste and others. Some companies may also act as authorised persons for the management of a specific waste stream and link their activities to locally operating public bodies.

### **Supra-Regional Private Companies**

The last category includes companies operating throughout the entire territory of the Czech Republic, or in a substantial part thereof. At the same time, these are very often companies with highly developed know-how in the field of waste management and in the setting of processes. These companies own end facilities for various types of waste (landfills for municipal waste, landfills for hazardous waste, composting plants, hazardous waste incinerators, sorting and re-sorting lines, recycling technologies and others). Supra-regional private companies generally have the resources, know-how and technologies to ensure the functioning of the entire chain of waste management activities. The typical stream is mixed municipal waste and separately collected waste. However, these companies also manage other waste streams (e.g. hazardous waste, waste water treatment plant sludge, biowaste). Companies in this group provide waste management in the form of collection of waste from holders and transport to the final processing facility.

For separately collected waste, these companies build on the primary sorting directly at the holders. The pre-sorted fractions are collected and transported to re-sorting lines for secondary sorting. Subsequently, usable fractions are handed over for material or, where appropriate, energy recovery. Unusable fractions are sent to landfills.

The amount of waste managed is significant. It ranges from tens to hundreds of thousands of tonnes per year. The capacities of processing facilities range from tens of thousands to hundreds of thousands of tonnes per year. Thanks to a relatively extensive network of technologies, know-how and financial strength, these companies are able to influence a large part of the waste market.






### **Specialised Processors with a Narrow Market Niche**

In the field of material recovery or hazardous waste treatment, there are specialised companies engaged in waste recovery or hazardous waste disposal. These companies focus on a narrower market segment. Since this involves smaller quantities of waste or more specialised activities, the services cover a geographically larger area, but at the same time only a narrow market segment of waste management. Their market power is proportional to the narrower focus of the companies.

## 2.3 Status of Waste Streams

This chapter contains concise summaries of the status of the principal waste streams within the waste management system of the Czech Republic. For each stream, essential information is provided concerning waste generation, its management, the network or facilities for handling it, and, where significant, its import and export. For each stream, an overview of the development of management indicators is presented, prepared on the basis of the MoE methodology<sup>20</sup>. Given that the specifics of individual waste streams differ, the structure of their summaries may also vary. Greater attention has been paid to the more significant streams, such as Municipal Waste and Construction and Demolition Waste. Where significantly different management of a given stream occurs also at the level of the Regions, map outputs are included. Map outputs are also used for visualising the management of the most significant streams in terms of tonnage. Selected essential information is mentioned, which is subsequently used for setting scenarios of waste development in Chapter 2.13. A detailed analysis of all streams can be found in other separate documents (analytical materials).

### 2.3.1 Municipal Waste

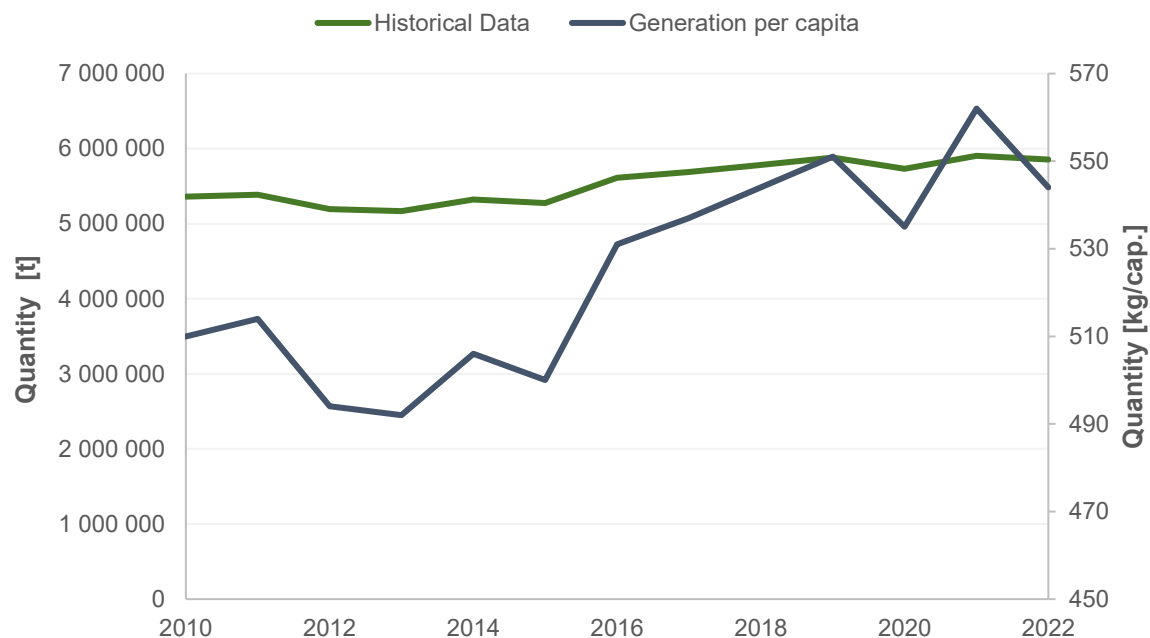
Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
5.9 million tonnes 553 kg per capita	Recycling (41%) Landfilling (45 %)	Exports 207 thousand tonnes Imports 114 thousand tonnes	Insufficient in the case of facilities for energy recovery of waste (FERW), plastic re-sorting, mechanical sorting of mixed municipal waste, biogas plants, composting plants (in future), collection infrastructure and efficient transport	Transfer stations: CZK 1.6–3.2 billion Sorting lines: CZK 2.1–8.1 billion Bulky waste treatment: CZK 1.1–1.5 billion Facilities for energy recovery of waste (FERW): CZK 23.8–44.3 billion

<sup>20</sup> MoE Methodology – System of Waste Management Indicators of the CR (2023). Available [here](#).

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				Production of RDF from waste: CZK 3.9–8.2 billion by 2035

Municipal waste accounted for about 15% of all waste generated in 2022, thus representing a significant share. In 2022, its generation amounted to 5,854,385 tonnes. The trend in generation is slightly increasing, although a slight decrease was recorded in 2022. Graph 20 shows the trend in municipal waste generation, including per capita generation. It is evident that per capita **generation has been steadily increasing, by approximately 2% per year on average. In 2022, 544 kg of municipal waste per capita was generated.**

Graph 20: Municipal waste generation



Source: processed on the basis of WMIS and Tiramiso

Graph 21 presents the development of generation of the three subgroups of municipal waste. The prerequisite for material recovery of municipal waste is its effective separate collection. The relative share of waste generation in subgroups 20 01, 20 02 and 20 03 is used as a quick indicator of the development of separate collection of waste (20 01 and 20 02) and of the generation of so-called residual, materially difficult-to-recover waste (20 03). Details are given in further chapters.

Subgroup 20 01 includes the generation of fractions from separate collection, including separately collected hazardous waste. Historically, packaging waste classified under subgroup 15 01, where the municipality was the holder, was also included in the municipal waste stream. With the entry into force of Decree No. 8/2021 Sb., the occurrence of this should be significantly reduced, but in the 2022 data production in 15 01 from municipalities still appears. In processing historical data, production in 15 01, where the holder is a municipality, is considered as municipal waste and transferred to the relevant types within subgroup 20 01.

Subgroup 20 02 *Waste from gardens and parks (including cemetery waste)*, in which item No. 20 02 01 is important in terms of quantity and significance for meeting future objectives in municipal waste management. In subgroup 20 02, a significant increase in generation can be observed between 2010 and 2016, after which generation stabilised again. In the most important subgroup 20 03 Other municipal waste, a decline was recorded between 2010 and 2013; since then, its generation has been slightly increasing. In 2021, a slight decline occurred, which intensified in 2022. Subgroups 20 01 and 20 02 contain waste that is already being materially recovered today or has the potential to be recycled in the future. By contrast, subgroup 20 03 contains residual waste, i.e. such waste whose potential for recycling has been exhausted and which is prioritised for energy recovery. Given the insufficient capacity of energy recovery facilities, this waste is currently being landfilled.

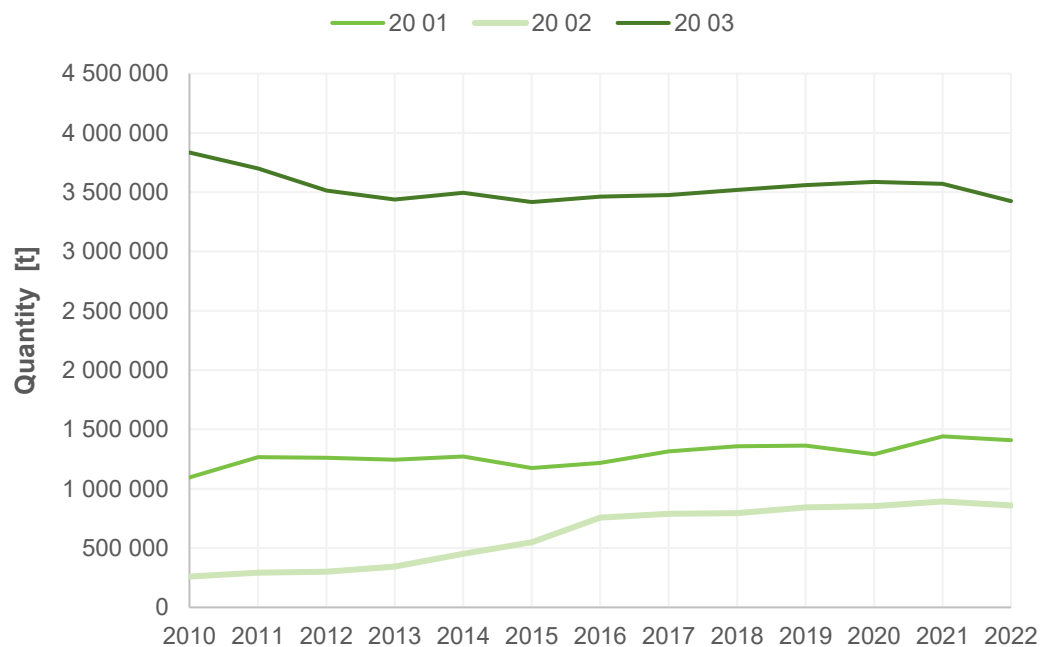
From 21 it is evident that achieving an increase in the ratio between the total generation of subgroups 20 01 and 20 02 versus 20 03 represents a fundamental challenge for waste management in the CR in the coming period. The increase in separate collection is a prerequisite for meeting future waste management targets. In the future it will be necessary to ensure a shift of waste from subgroup 20 03 to 20 01, or to 20 02. Therefore, the current legislation sets a so-called sorting target of 70% by 2035 for waste generated in municipalities. Higher levels of sorting will also occur in the case of municipal waste from other holders, to whom the obligations of separate collection enshrined in the Act likewise apply.



Municipal  
Waste

**Effective separate collection of municipal waste (both within municipal systems and from other holders) is a fundamental prerequisite for further increasing the recycling of municipal waste. Recycling of municipal waste in 2022 amounted to 41%. In the coming years it will be necessary to ensure an increase in the generation of recyclable and recoverable fractions from separate collection (subgroup 20 01) and the generation of biodegradable waste from gardens and parks, item No. 20 02 01. As a consequence of sorting, the generation of mixed municipal waste (item No. 20 03 01) and also bulky waste (item No. 20 03 07) will decrease, particularly after the separation of wood.**

*Graph 21: Development of generation of the subgroups of municipal waste*



Source: processed on the basis of WMIS

Table 77 summarises the total generation and the specific generation per capita for individual subgroups. Furthermore, generation is presented broken down by sub-streams of municipal waste. The sub-streams are described in greater detail in subsequent subchapters.

Table 7: Generation of Subgroups and Sub-streams of Municipal Waste in 2022


Stream / Sub-stream	Generation [t]	Generation [kg/cap]
<b>Municipal waste total</b>	5,854,385	544
<b>Subgroups</b>		
20 01 (incl. 15 01)	1,477,636	137
20 02	921,788	86
20 03	3,454,961	321
<b>Sub-streams</b>		
Plastics	205,920	19
Paper	466,454	43
Glass	171,084	16
Metals	441,751	41
Wood	79,187	7.4
Textiles	35,855	3.3
BDW gardens	845,876	79
BDW kitchens	42,776	4.0
Mixed municipal waste (MMW)	2,674,934	249
Bulky waste	634,822	59
Hazardous 20 02	406	0.04
Remaining	255,320	24

Source: processed on the basis of WMIS

Municipal waste is subject to both import and export. Imports remain at a relatively constant level; in 2022, 114.3 thousand tonnes of waste were imported. Exports decreased by 29% between 2018 and 2020 and in 2022 amounted to 207.5 thousand tonnes. The majority of imports (98.9%) in 2022 consisted of subgroup 20 01, particularly item No. 20 01 25 (*Edible oil and fat* – 42.1 thousand tonnes) and item No. 20 01 01 (*Paper and cardboard* – 34.7 thousand tonnes). From the perspective of countries from which municipal waste is imported, Slovakia dominates (27.2 thousand tonnes), followed by Germany (21.0 thousand tonnes), Poland (16.0 thousand tonnes), the Netherlands (11.9 thousand tonnes) and Switzerland (10.6 thousand tonnes). From the perspective of exports, subgroup 20 01 also ranks first, where, however, most of the exported municipal waste is accounted for by item No. 20 01 01 (*Paper and cardboard* – 189.3 thousand tonnes). This item thus represents 91.2% of all exported municipal waste. In second place is item No. 20 01 10 (*Clothing* – 10.0 thousand tonnes).

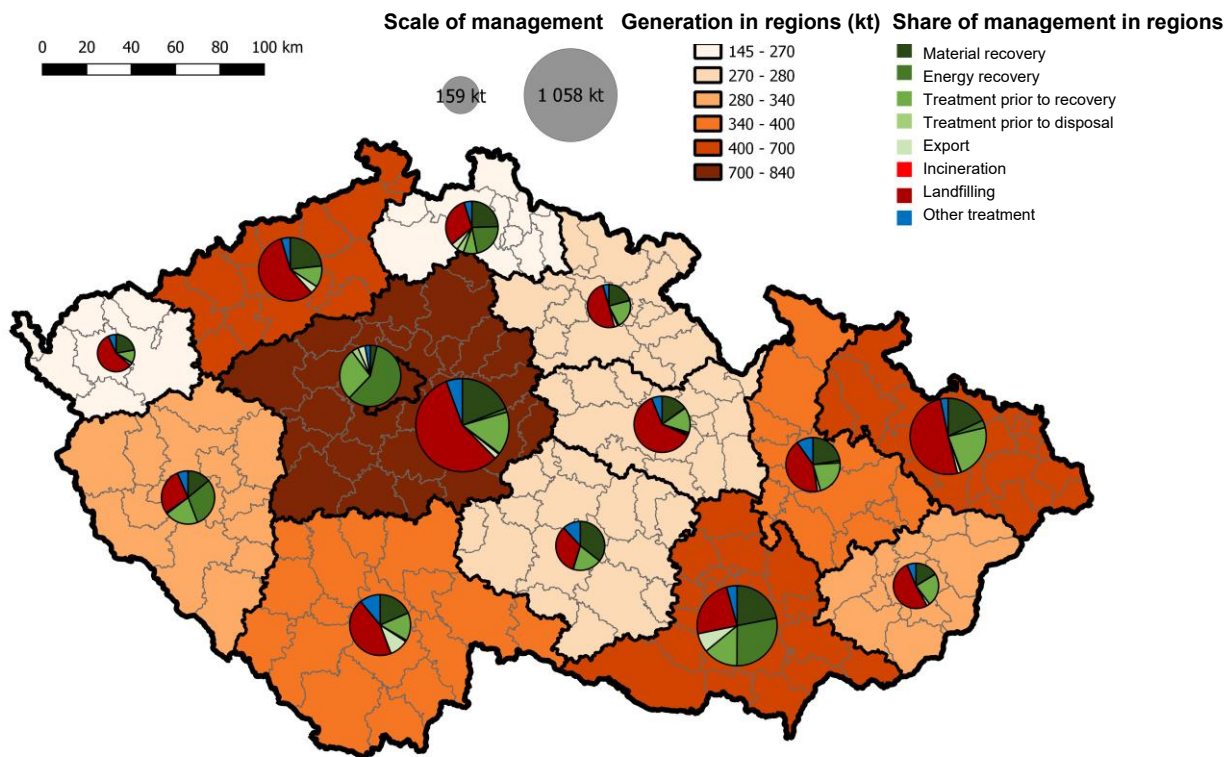
The destination countries in this case are Austria (73.0 thousand tonnes), Germany (70.0 thousand tonnes), Poland (28.2 thousand tonnes), Slovakia (8.9 thousand tonnes) and Croatia (8.4 thousand tonnes).

In total, 53% of municipal waste was recovered in 2022, of which 41% was recycled. Energy recovery accounted for around 12%, and a slightly increasing trend can be observed. Conversely, in the case of disposal, a declining trend can be identified, reaching 45% in 2022.

 <p><b>Municipal Waste</b></p>	<p><b>The generation of municipal waste in the CR has been steadily increasing, by approximately 2% per year on average.</b></p> <p><b>In 2022, 5.9 million tonnes were generated, corresponding to 553 kg per capita.</b></p> <p><b>A total of 53% of municipal waste was recovered, of which 41% was recycled. Energy recovery accounted for around 12%.</b></p>
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Municipal waste is a stream that will have to undergo a significant change in management in order to meet the targets for 2030 and 2035. Meeting these targets requires a change in citizens' behaviour – a change in consumption habits (waste prevention, preference for sustainable products and easily recyclable packaging) aimed at reducing waste generation. Where waste is generated, it is necessary to further increase the level of citizens' involvement in proper waste management, where the effectiveness of primary sorting of waste, i.e. sorting by citizens, plays an important role.

Figure 8: Map of Municipal Waste Generation and Share of Management by Regions in 2022



Source: processed on the basis of WMIS

Note: In the following tables, the abbreviation PP is used to express the share in total generation of the given waste in the CR, and PN to express the share in total management of the given waste in the CR. (SG – share in generation in the CR, SM – share in management in the CR)

Table 8: Generation and Management 2018–2022 – Municipal Waste

Year	Generati on of	Energy Recovery			Recycling			Recovery			Landfilling			Incineration		
		Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)
2018	5,741	703	11.9	12.6	2,163	40.9	38.9	2,865	52.8	51.5	2,675	46.6	48.1	5	0.1	0.1
2019	5,842	713	11.8	12.6	2,183	40.3	38.7	2,896	52.2	51.4	2,719	46.5	48.2	5	0.1	0.1
2020	5,814	747	12.5	12.9	2,264	41.0	39.0	3,010	53.5	51.9	2,768	47.6	47.7	5	0.1	0.1
2021	6,016	730	11.9	12.5	2,232	39.6	38.4	2,962	51.5	50.9	2,841	47.2	48.8	4	0.1	0.1
2022	5,854	737	12.2	13.2	2,177	40.5	39.0	2,915	52.7	52.2	2,655	45.4	47.5	4	0.1	0.1

Source: processed on the basis of WMIS

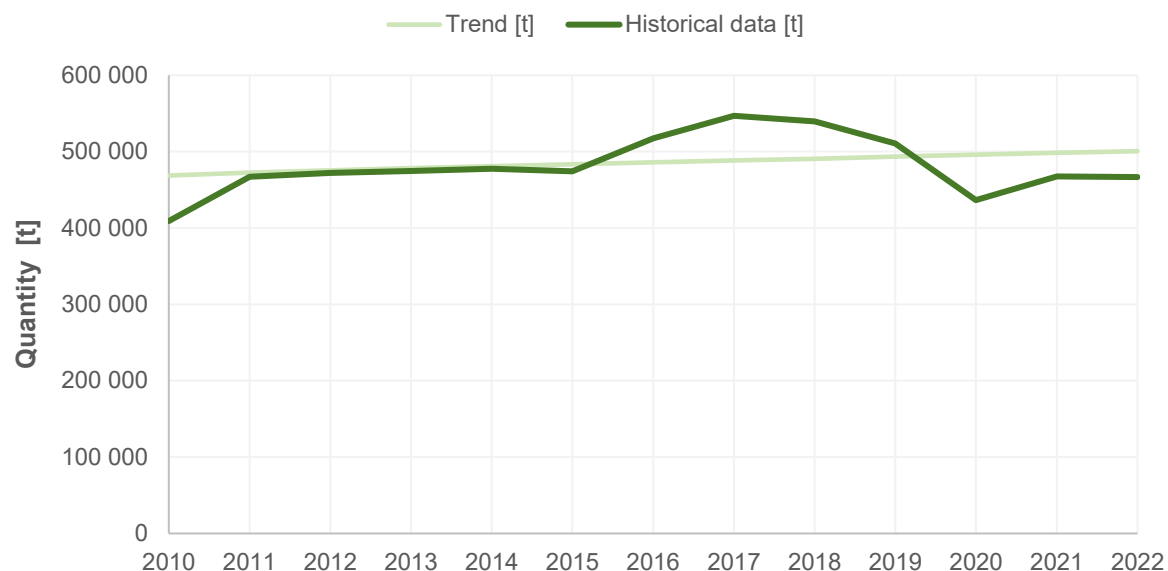
### 2.3.1.1 Fractions from Separate Collection

An important subgroup of municipal waste is fractions from separate collection (20 01). This subgroup includes 30 types (catalogue numbers) of waste according to the MoE methodology. By number of catalogue numbers, hazardous municipal waste is significant. The following subchapters provide a summary for the most important sub-streams in terms of their generation.

### 2.3.1.2 Paper from Separate Collection

The generation of separately collected paper shows a very slightly increasing trend, with generation remaining at around 500 thousand tonnes per year. Higher generation was achieved in the years 2016 to 2019, peaking in 2017 (547 thousand tonnes). The lowest generation in the past ten years was recorded in 2020 (437 thousand tonnes). In 2021, generation reached 468 thousand tonnes, and in 2022 it was 466 thousand tonnes. Generation of separately collected paper within group 20 accounts for approximately 40% of total waste paper generation. As mentioned above, paper makes up a substantial share of municipal waste imports (45%) and dominates municipal waste exports (91%). Since separately collected paper is managed in the same way as the overall paper stream, which also includes paper generated in industry, its management is described below in Chapter 2.3.2

Graph 22: Generation of Paper from Separate Collection



Source: processed on the basis of WMIS

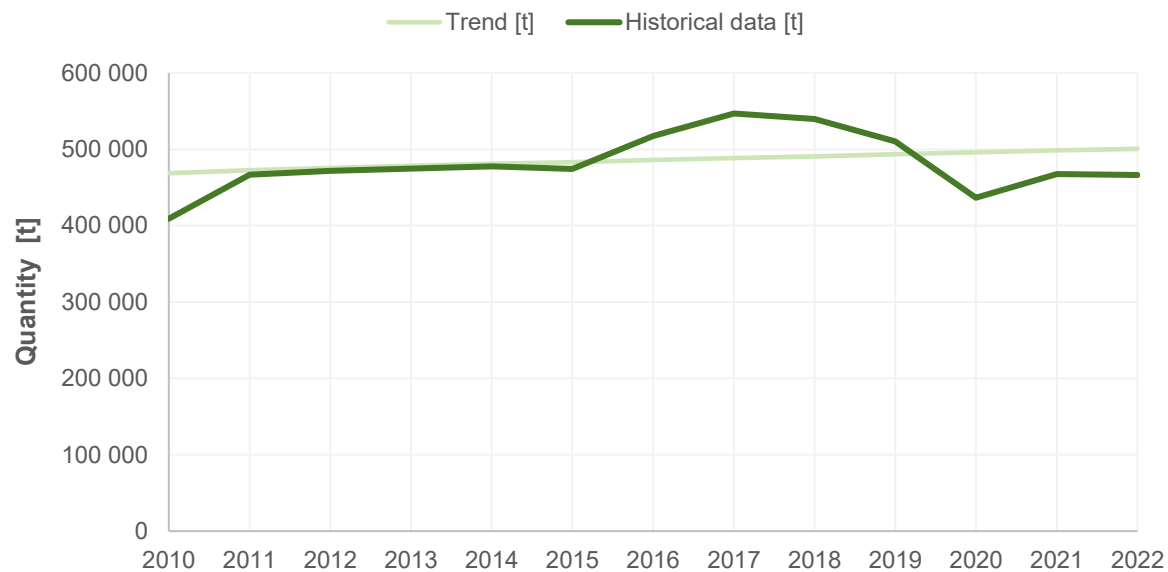
In general, the Czech Republic has a deficit of facilities for managing separately collected paper. For catalogue number 20 01 01 *Paper and cardboard*, this deficit in 2022 was highest in the South Moravian Region (47 thousand tonnes), the Capital City of Prague (35 thousand tonnes), and the South Bohemian Region (20 thousand tonnes). The total deficit of facilities for management in 2022 for this catalogue number (20 01 01) was approximately 162 thousand tonnes. For catalogue number 15 01 01 *Paper and cardboard packaging*, in 2022 the highest deficit of facilities was in the Central Bohemian Region (80 thousand tonnes) and the South Moravian Region (41 thousand tonnes). The total deficit of facilities in 2022 for this catalogue number (15 01 01) amounted to just under 201 thousand tonnes.

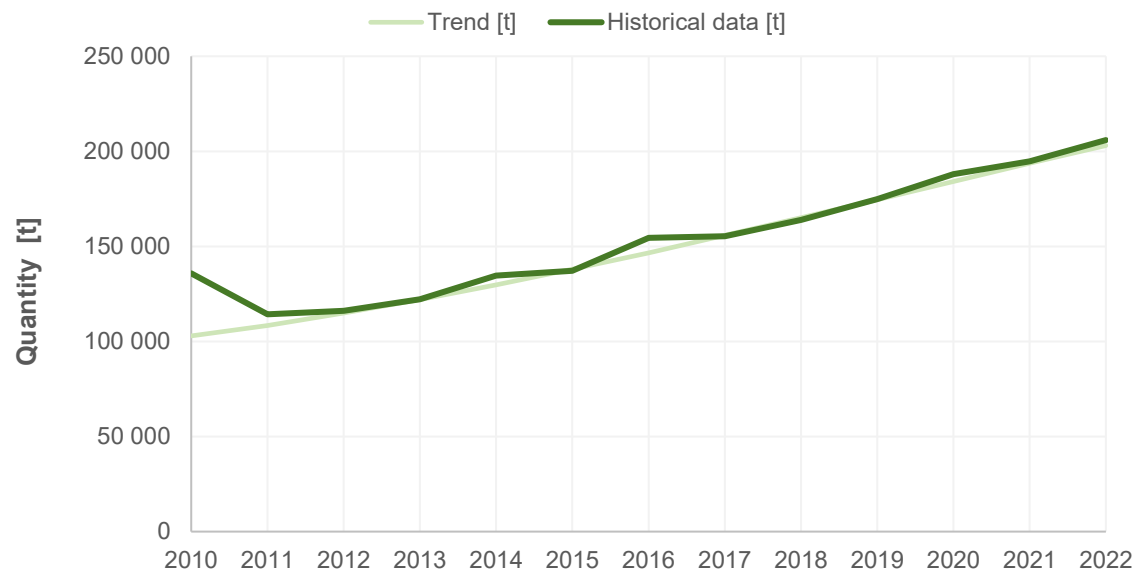
### 2.3.1.3 Plastics from Separate Collection

The total generation of plastic waste shows an increasing trend. A significant share (41%) is represented by plastics from separate collection, whose generation shows a distinctly increasing trend. The lowest generation was recorded in 2011 (114 thousand tonnes), and since then it has increased every year up to the current value in 2022 (206 thousand tonnes). Plastics collected from municipalities are sorted in re-sorting lines, the network of which is relatively dense in the CR. For plastic sorting, approximately 100 facilities are in operation, mostly with manual sorting. This stream is therefore handled primarily in the preferred

manner, i.e. through material recovery or their treatment. Analysis of actual flows shows that 77% of plastics from separate collection were recovered (43% recycling, 34% energy recovery), and approximately 21.5% were disposed of without use (generally, this volume may also contain non-plastic materials that were incorrectly deposited with plastics).

Graph 23: Generation of Plastics from Separate Collection





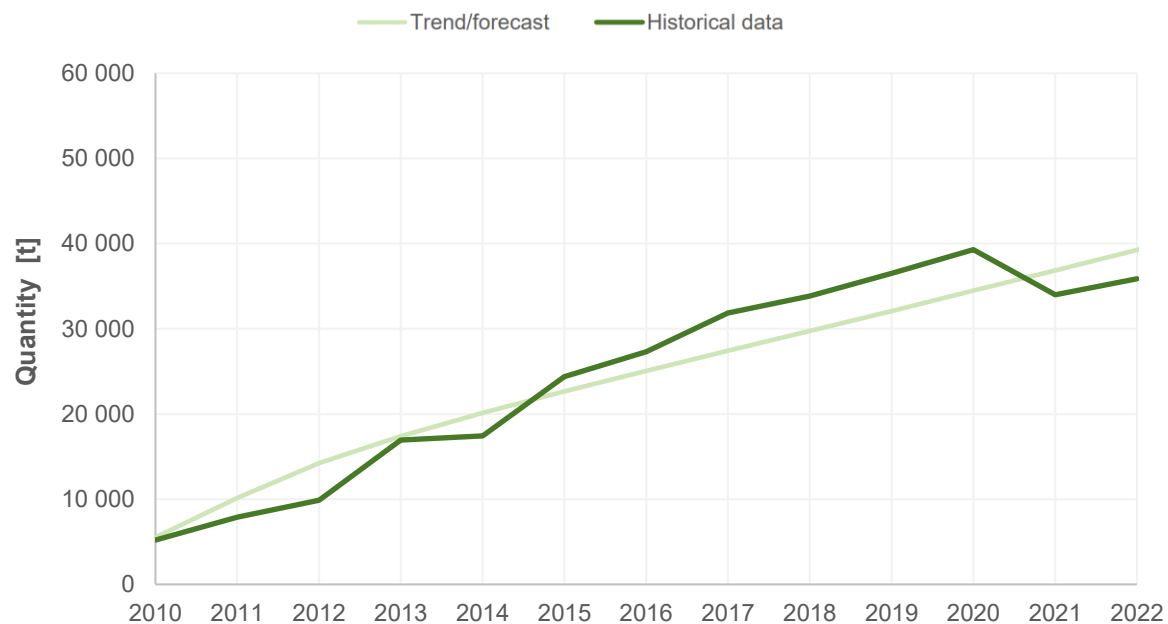
Source: processed on the basis of WMIS

In general, the Czech Republic has a slight deficit of facility capacities for managing separately collected plastics. For catalogue number *20 01 39 Plastics*, this deficit in 2022 was highest in the Capital City of Prague (6 thousand tonnes) and the Karlovy Vary Region (4 thousand tonnes). Overall, in 2022 the Czech Republic had a surplus of capacities for managing this waste (20 01 39) amounting to just under 2 thousand tonnes. For catalogue number *15 01 02 Plastic packaging*, in 2022 the highest facility deficit was in the South Moravian Region (6 thousand tonnes). The total facility deficit in 2022 for this catalogue number (15 01 02) reached 9 thousand tonnes.

#### 2.3.1.4 Textile Waste from Separate Collection

The dominant group within the textile waste stream in 2022 was municipal textile waste, with generation amounting to 36 thousand tonnes (34 thousand tonnes in 2021 and 39 thousand tonnes in 2020). This consists of separately collected textiles, predominantly catalogue number 20 01 10 (Clothing). Municipal textile waste accounted for more than one-third of all waste generated within the textile waste stream (see Chapter 2.3.7). Catalogue number 20 01 11 (*Textile materials*), which accounted for approximately one-quarter of generation, was another source. For these group 20 wastes, the dominant producers are municipalities, which accounted for 88.5% of the generation. Management of this waste stream is described in greater detail in Chapter 2.3.7

Graph 24: Development of Textile Generation from Separate Collection (Group 20)

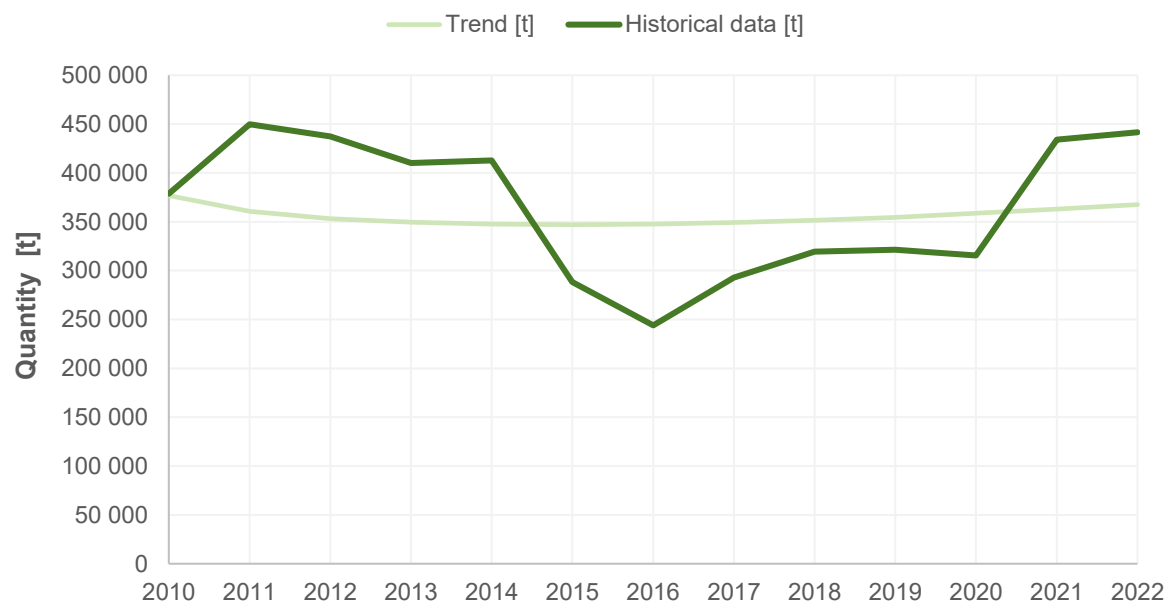


Source: processed on the basis of WMIS

### 2.3.1.5 Metal Waste (Ferrous and Non-Ferrous) from Separate Collection

The total generation of all ferrous and non-ferrous waste shows a long-term slightly declining trend, which in recent years has rather stabilised at around 4 million tonnes per year. The generation of recyclable metals from separate collection within the municipal systems (i.e. part of municipal waste) represents only about 10–11% of the total generation of all metal waste. The generation of separately collected metals shows a more or less stagnating trend, which has very slightly increased in recent years. Annual generation is highly variable, ranging from 250 to 450 thousand tonnes. The lowest generation was recorded in 2016 (244 thousand tonnes), from which year generation has risen in most years up to the current level. The highest recorded values come from 2011 (450 thousand tonnes) and from the current year 2022 (442 thousand tonnes). Since metals from separate collection are managed in a similar way as the overall metal stream, management is described further below under the Metals stream (Chapter 2.3.4).

Graph 25: Generation of Metals from Separate Collection



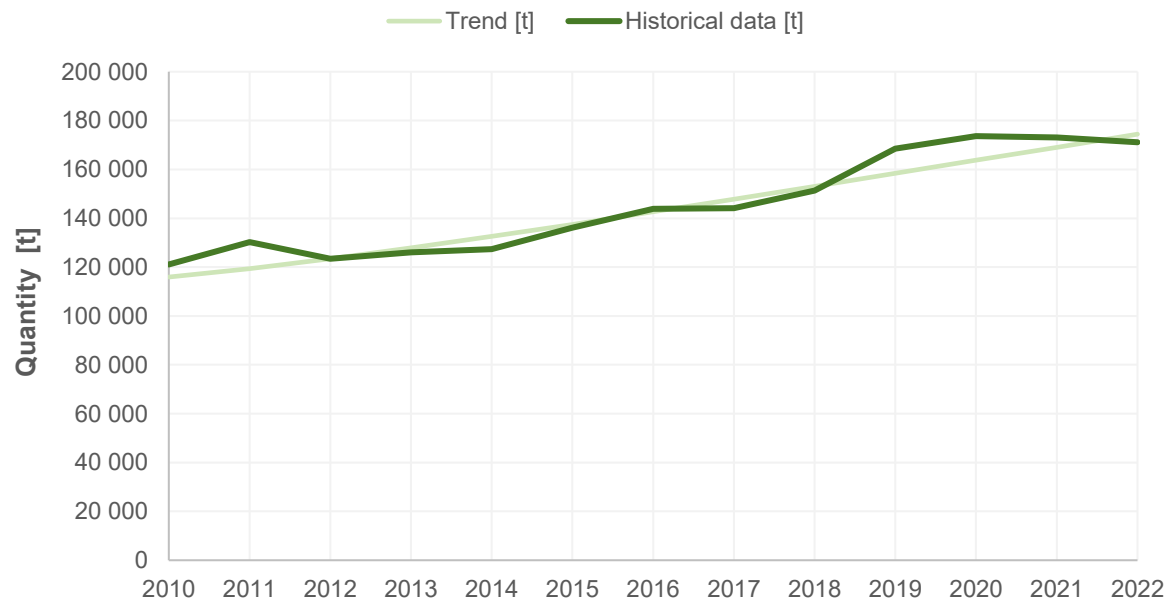
Source: processed on the basis of WMIS

In general, the Czech Republic has a slight deficit of facility capacities for managing separately collected metals. For catalogue number 20 01 40 *Metals*, the highest deficit in 2022 was in the Olomouc Region (11 thousand tonnes). The total facility deficit for this catalogue number (20 01 40) in 2022 was approximately 39 thousand tonnes. For catalogue number 15 01 04 *Metallic packaging*, in 2022 the highest facility deficit was in the Capital City of Prague (130 tonnes). In general, for this catalogue number (15 01 04) the Czech Republic in 2022 had a surplus of capacities amounting to 463 tonnes. The Czech Republic has a high deficit in capacities for managing Other ferrous waste; the total deficit in 2022 amounted to just under 924 thousand tonnes. The highest deficits in that year were in the Central Bohemian Region (273 thousand tonnes) and the South Moravian Region (209 thousand tonnes), while a surplus of capacities was recorded in the Moravian-Silesian Region (386 thousand tonnes).

### 2.3.1.6 Glass from Separate Collection

The generation of separately collected recyclable glass shows an increasing trend. The lowest generation was recorded in 2010 (114 thousand tonnes), since when it has grown almost every year until 2020 (174 thousand tonnes). In recent years, generation has stagnated, with the current 2022 level at 171 thousand tonnes. Although the generation of glass waste is already dominated by separate collection, management is assessed jointly for the entire Glass stream below (see Chapter 2.3.5).

Graph 26: Generation of Glass from Separate Collection



Source: processed on the basis of WMIS

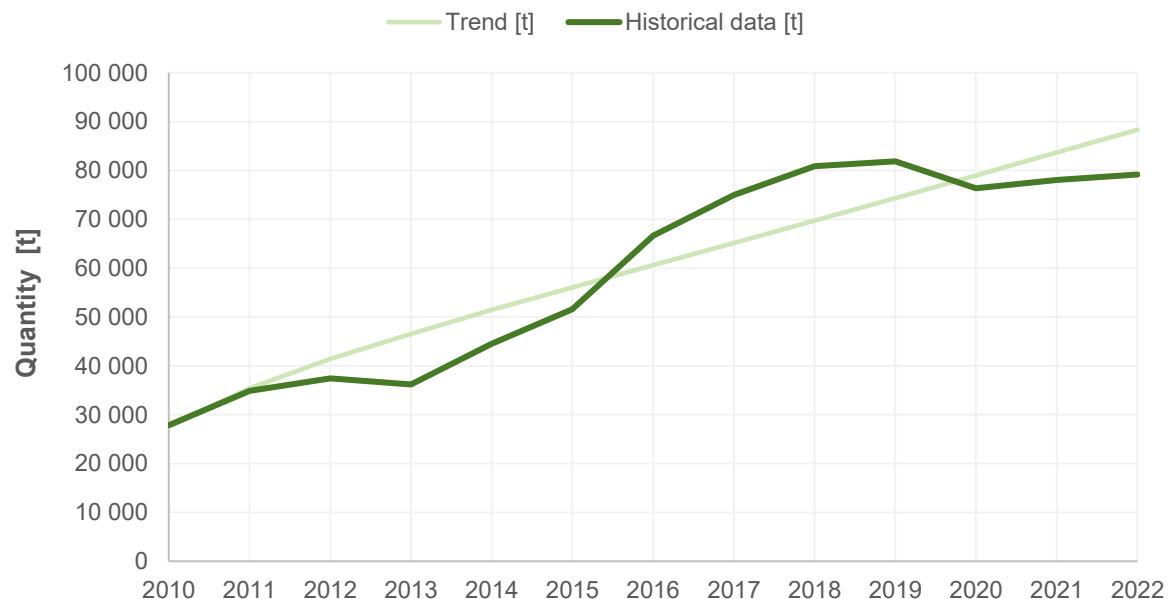
In general, the Czech Republic has a deficit of facilities for managing separately collected glass. For catalogue number *20 01 02 Glass*, this deficit in 2022 was highest in the Capital City of Prague (18 thousand tonnes) and in the Central Bohemian (14 thousand tonnes), South Bohemian (10 thousand tonnes), Olomouc (9 thousand tonnes) and Hradec Králové Regions (9 thousand tonnes). The total facility deficit for this catalogue number (20 01 02) in 2022 was approximately 18 thousand tonnes. For catalogue number *15 01 07 Glass packaging*, in 2022 the highest facility deficit was in the Moravian-Silesian Region (16 thousand tonnes). Overall, however, in 2022 the Czech Republic had a surplus of capacities for managing this waste (15 01 07) amounting to 1 thousand tonnes.

### 2.3.1.7 Wood from Separate Collection

The generation of materially recoverable wood from separate collection has been growing steadily over the long term, which is also related to the significant expansion of collection yards. With generation of around 80 thousand tonnes, it accounts for approximately 30% of total waste wood generation. The lowest generation was recorded in 2010 (27.8 thousand tonnes), after which it gradually increased to the highest recorded level in 2019 (81.9 thousand tonnes). In 2020, generation slightly decreased to 76.3 thousand tonnes, with the current 2022 level at 79.2 thousand tonnes.

Wood is also separately collected under catalogue number 20 01 37 (*Wood containing hazardous substances*), which is categorised as hazardous waste and is therefore not included in Graph 27. Its generation is, however, very low compared with item No. 20 01 38, specifically ranging from 33 tonnes (2016, lowest recorded value) to 281 tonnes (2022, highest recorded value).

Graph 27: Generation of Materially Recoverable Wood from Separate Collection (item No. 20 01 38)



Source: processed on the basis of WMIS

In general, the Czech Republic has a slight deficit of facility capacities for managing separately collected wood. For catalogue numbers 20 01 37\* *Wood containing hazardous substances* and 20 01 38 *Wood not specified under 20 01 37*, this deficit in 2022 was highest in the Capital City of Prague (14 thousand

tonnes), while a large surplus of capacities was recorded in the Vysočina Region (19 thousand tonnes). The total facility deficit in 2022 for these catalogue numbers (20 01 37 and 20 01 38) was approximately 5 thousand tonnes. For catalogue number *15 01 03 Wooden packaging*, in 2022 the highest facility deficit was in the Central Bohemian Region (7 thousand tonnes) and the Moravian-Silesian Region (6 thousand tonnes). A surplus of capacities in that year was recorded in the Vysočina Region (11 thousand tonnes) and in the Capital City of Prague (9 thousand tonnes). The total facility deficit in 2022 for this catalogue number (15 01 03) amounted to 404 tonnes.

Given the low share of wood in group 20 in the total generation of waste wood, more information is provided below in Chapter 2.3.6.

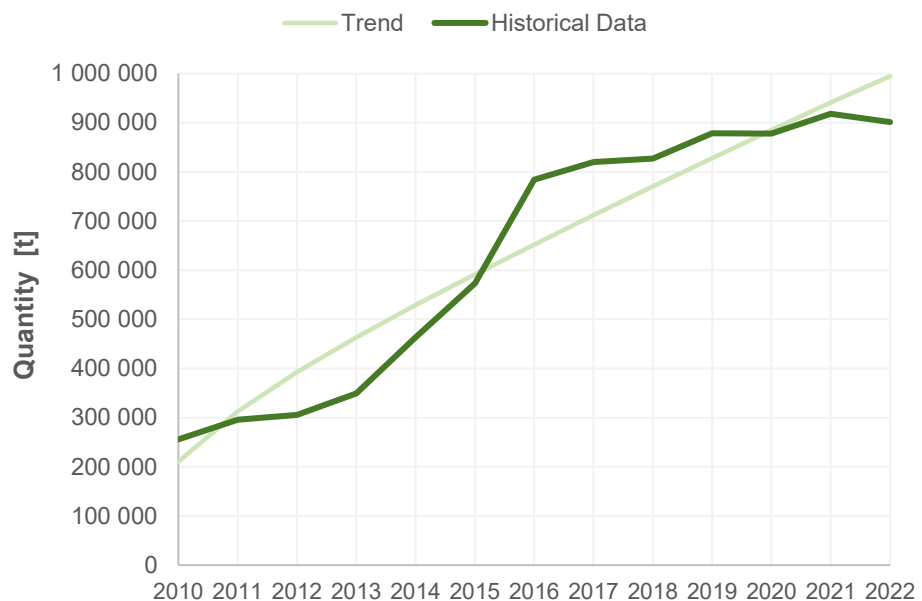
### 2.3.1.8 Biological Waste (BIO)

Biological waste (hereinafter also “BIO”) is defined in Act No. 541/2020 Sb., on Waste, and in Directive 2008/98/EC of the European Parliament and of the Council on waste, as biodegradable waste from gardens and parks, food and kitchen waste from households, restaurants, catering and retail premises. According to the MoE methodology, it includes three catalogue numbers and is predominantly represented by biological waste from gardens and parks. The generation of biological waste is increasing significantly. Over the past 10 years (2012–2022), generation has tripled. Since 2017, however, the growth has been more gradual than in the period 2013–2016. Generation in 2022 amounted to 901,349 tonnes. The trend continues to follow an upward path, i.e. it is significantly increasing. Since biological waste is an important stream in terms of generation as well as for achieving future municipal waste management targets, more details are provided below on per capita generation and the distribution of this generation in municipalities. These data are important for the preparation of the forecast later in the WMP CR document. Biological waste was analysed in detail in the Study on Biological Waste Management for Optimising Support from OP Environment 2021–2027<sup>21</sup>.

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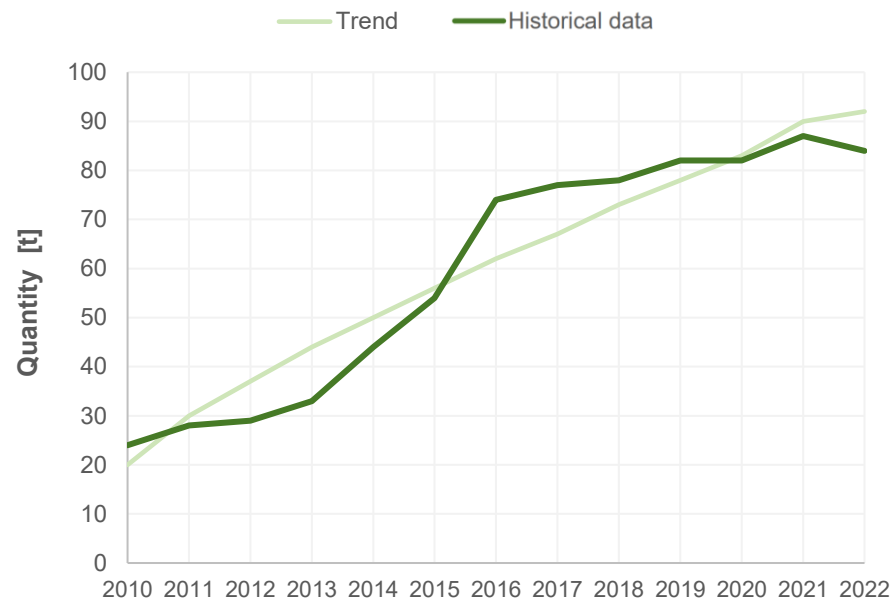
<sup>21</sup> Study on Biological Waste Management for Optimising Support from OP Environment 2021–2027, Stage 1. Available [here](#).

Graph 28: Generation of the Biological Waste Stream – Absolute Figures



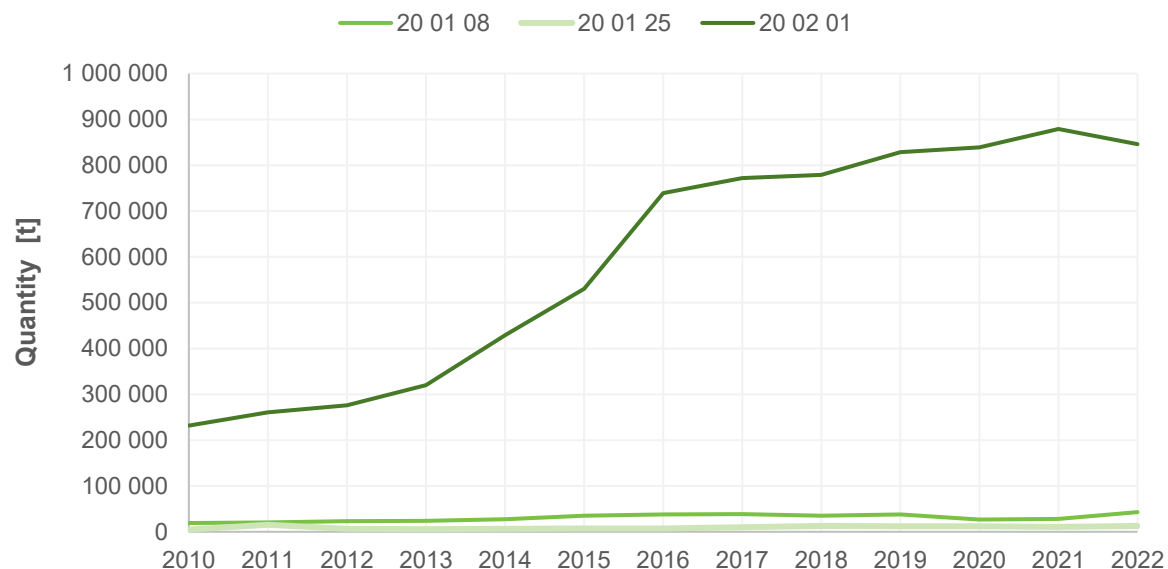
Source: processed on the basis of WMIS and Tiramiso

Graph 29: Generation of the Biological Waste Stream – Per Capita Generation



Source: processed on the basis of WMIS and Tiramiso

Graph 30: Development of the Biological Waste Stream by Catalogue Numbers

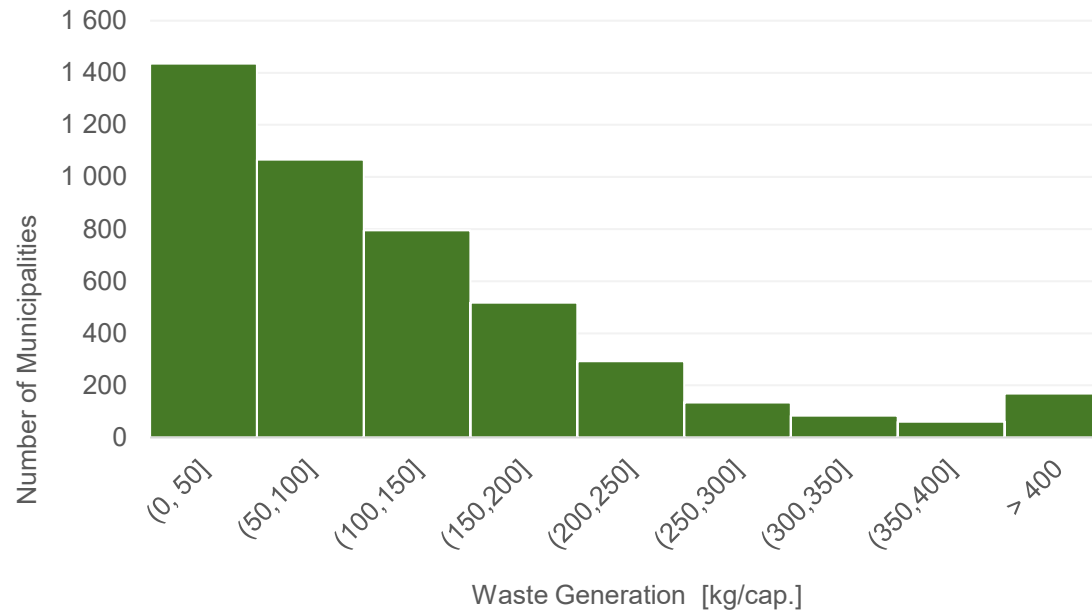


Source: processed on the basis of WMIS

The most represented waste is item No. 20 02 01 *Biodegradable waste* (from gardens and parks), with a generation of 845,992 tonnes in 2022 and a share of almost 94% of BIO generation. This is followed by item No. 20 01 08 *Biodegradable waste from kitchens and canteens*, with generation of 42,919 tonnes in 2022 (a share of 4.8%), and the third most represented item was No. 20 01 25 *Edible oil and fat*, with generation of 12,438 tonnes and a share of only 1.4%.

In 2022, a total of 730,450 tonnes of item No. 20 02 01 was generated by municipalities, which represented 81% of the generation of the Biological waste stream and 86% of the generation of this item. An important indicator is generation per capita. Graph 31 shows a histogram presenting the distribution of generation in municipalities. The histogram does not include municipalities with zero generation. In 2022, generation was recorded in 4,554 municipalities out of a total of 6,254 municipalities. The average generation in 2022 was 123 kg per capita, the median was 88 kg per capita.

Graph 31: Distribution of Generation of 20 02 01 Biodegradable Waste from Gardens and Parks per Capita in Municipalities

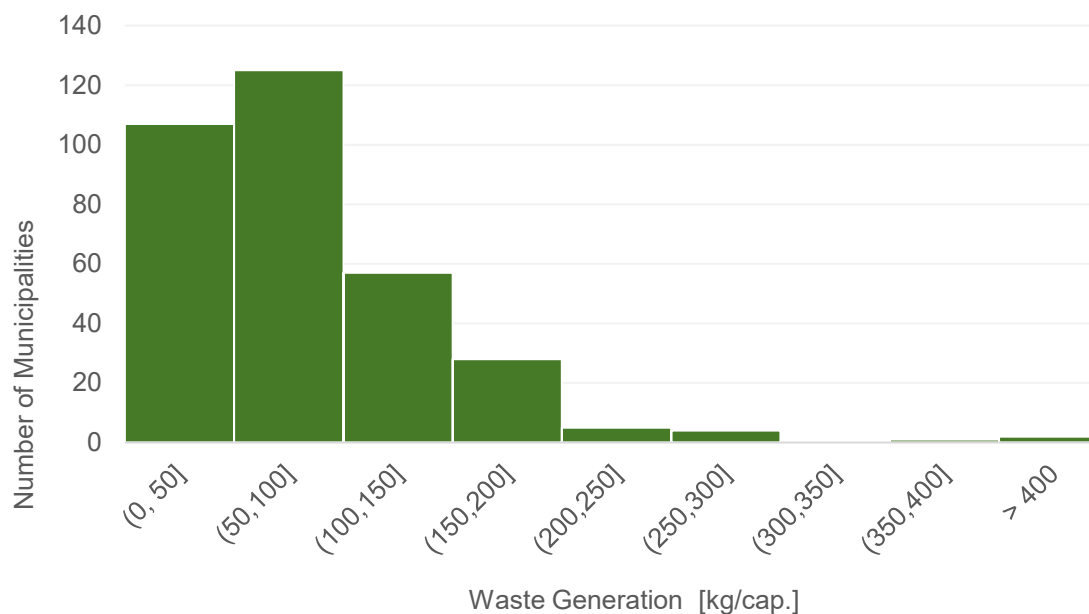


Source: processed on the basis of WMIS, MoE and CSO

Municipalities can also be divided according to population – rural municipalities and smaller towns versus larger and major towns. The dividing line was set at 4,000 inhabitants. For municipalities with up to 4,000 inhabitants, generation was recorded in 4,125 out of 5,909 municipalities. The average generation in 2022 was 127 kg per capita, the median was 89 kg per capita. The distribution is similar to that in graph 31.

In the case of larger towns, i.e. municipalities with more than 4,000 inhabitants, the distribution of generation is different, mostly at lower values, see graph 32. Generation in 2022 was recorded in 329 out of 345 municipalities, with an average generation of only 83 kg per capita, and a median of 71 kg per capita.

Graph 32: Distribution of Generation of Biodegradable Waste from Gardens and Parks per Capita in Municipalities with More Than 4,000 Inhabitants



Source: processed on the basis of WMIS, MoE and CSO

In the context of the development of separate collection of waste, the need for developing individual collection networks (door to door) is emphasised. An analysis of data from municipalities operating an individual collection network showed that in 2022 the average generation was 87 kg per capita, the median was 83 kg per capita. The introduction of a door to door system does not necessarily mean an increase in the generation of biowaste. The effect can also be explained by the fact that municipalities that have adopted a door to door system also promote biowaste prevention in the form of home composters. The analysis illustrates how significant the effect of prevention can be in terms of the generation of separately collected biowaste.

In 2022, only 7 thousand tonnes of waste falling under the stream of Animal by-holders and biodegradable waste from kitchens and canteens generated by municipalities was generated, which represented 13% of the generation of this item (7.7% of the Biological waste stream). It is thus evident that most of the generation came from other holders. In 2022, the generation of animal by-products and biodegradable waste from kitchens and canteens was recorded in only 70 municipalities out of a total of 6,254 municipalities. The share of municipalities providing separate collection of this stream increased from 0.83% in 2021 to 1.12% in 2022. Nevertheless, the share of municipalities is still very small. The average generation in 2022 was 9.6 kg per capita, the median was 0.6 kg per capita. This stream is significant in terms of achieving the targets for sorting in municipalities and for recycling of municipal waste by 2035. In its supporting

documents<sup>2223</sup>, the Ministry of the Environment clearly declares the importance of this waste stream and the need for education and awareness-raising that will lead to the expansion of the separate collection of household kitchen waste, its treatment with a preference for subsequent use in biogas plants (expanded agricultural facilities or newly constructed waste treatment facilities).

The Biological waste stream was handled exclusively in the preferred manner. No non-preferred management of this stream was recorded. Its dominant share was material recovery (77%). Within the scope of preferred management, minor shares were accounted for by pre-treatment before recovery or by energy recovery. Biological waste is not subject to export or import. The key type of facility for handling this stream is composting plants, in which almost all of the stream's generation was processed. Approximately 40% of stream 20 01 08 (17 thousand tonnes) was treated by anaerobic digestion in biogas plants. Since this stream is managed in the preferred manner, it can be stated that current facility capacity is sufficient for current generation. However, in view of the expected increase in generation, the facility network will also need to be adapted to this growth.

*Table 9: Generation and Management 2018–2022 – Biological Waste I*

Year	Generation of	Energy Recovery			Recycling and Composting			Composting		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	827	42	5.0	5.2	751	90.2	94.2	718	86.3	90.2
<b>2019</b>	878	43	4.9	4.8	850	93.2	94.7	803	90.5	89.5
<b>2020</b>	878	40	4.6	4.3	884	97.4	95.2	826	93.0	89.0
<b>2021</b>	919	32	3.5	3.5	900	94.3	96.3	841	90.7	89.9
<b>2022</b>	901	36	3.9	3.8	900	95.1	96.0	826	90.4	88.1

Source: processed on the basis of WMIS

<sup>22</sup> Examples of Good Practice in Biowaste Management – Kitchen Waste from Households (MoE). Available [here](#).

<sup>23</sup> Improvement of Household Kitchen Waste Collection (MoE). Available [here](#).

Table 10: Generation and Management 2018–2022 – Municipal Waste II

Year	Landfilling			Incineration		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	3.4	0.4	0.4	0.2	0.0	0.0
2019	2.9	0.3	0.3	0.3	0.0	0.0
2020	1.8	0.2	0.2	0.3	0.0	0.0
2021	1.2	0.1	0.1	0.3	0.0	0.0
2022	0.5	0.1	0.1	0.3	0.0	0.0

Source: processed on the basis of WMIS

In general, the Czech Republic has a deficit of facilities for managing separately collected biological waste.

From the perspective of biological waste, the facility capacity deficit for waste management in the Czech Republic is largest for catalogue number 20 02 01 *Biodegradable waste* (from gardens and parks), which in total amounted to 55 thousand tonnes. The highest capacity deficits were in the Capital City of Prague (42 thousand tonnes) and in the South Moravian Region (15 thousand tonnes). By contrast, a significant capacity surplus was recorded in the Central Bohemian Region (30 thousand tonnes).

For catalogue number 20 01 08 *Biodegradable waste from kitchens and canteens*, there is a slight facility capacity deficit for waste management, which in total amounted to 1.7 thousand tonnes. The highest deficits are in the Capital City of Prague (10 thousand tonnes) and in the South Moravian Region (8 thousand tonnes). Surpluses were recorded in the Central Bohemian Region (8 thousand tonnes) and the Zlín Region (5 thousand tonnes).

A surplus of facility capacities exists for catalogue number 20 01 25 *Edible oil and fat*, which in 2022 reached 2.5 thousand tonnes. The deficit in facility capacities is primarily in the South Moravian Region (1.8 thousand tonnes). The largest surpluses were recorded in the Moravian-Silesian Region (3.8 thousand tonnes) and the Ústí nad Labem Region (1.8 thousand tonnes).

### 2.3.1.9 Bulky Waste (OBJ)

Bulky waste (item No. 20 03 07) accounts for about 1.6% of waste generation in the CR, with 635 thousand tonnes generated in 2022, compared with only 518 thousand tonnes in 2010. Apart from declines between 2010 and 2014 and between 2021 and 2022, generation in the CR shows a rising trend. Over the past 10 years, generation has increased by 25%, reaching a maximum in 2021 of 713 thousand tonnes. Only 0.04% (0.24 thousand tonnes in 2022) of bulky waste

is classified as hazardous waste; the vast majority of the stream therefore falls under the category of other waste. Bulky waste represents a significant stream of municipal waste, yet currently a generally low level of recovery (15%) is achieved. Material recovery is negligible.

This is a highly heterogeneous stream, where the material composition varies considerably according to the product that became waste. Bulky waste generated within the municipal system was, until the end of 2022, considered to be treated for the purpose of landfill disposal also in cases where separate collection of recoverable fractions of municipal waste had been ensured to the extent required by law. In historical data on management, landfilling dominates. At some landfills, recoverable fractions were sorted out of bulky waste. During landfilling, the volume is reduced by mechanisation at the landfill body. In the case of energy recovery, which is another significant form of management, bulky waste is commonly shredded in large shredders to ensure an acceptable size and slight homogenisation of the waste.

At present, for waste item No. 20 03 07, treatment prior to landfill disposal is considered to be met if the waste holder, ensured that at least metals, plastics and large-sized wood were sorted out during collection. The Waste Act therefore requires intensive sorting of bulky waste into individual material groups, which in the future will increase its recycling.

Data analysis also revealed a fundamental deficit in the preferred management of bulky waste. The reduction of bulky waste landfilling is also necessary if the landfilling of municipal waste as a whole is to fall below 10% or even 5%. The total capacity deficit for the CR, with current generation of 635 thousand tonnes, amounts to 550 thousand tonnes.

Today's common practice, where bulky waste is reported as item No. 20 03 07, collected and subsequently landfilled or energy recovered, will have to change. Future generation scenarios must take into account the fact that sorting of bulky waste at source will be required, and part of bulky waste will therefore not arise at all. By sorting and re-sorting bulky waste, the generation of recyclable and recoverable fractions, particularly wood, will increase.

*Table 11: Generation and Management 2018–2022 – Bulky Waste*

Year	Generation of Quantity (thous. t)	Energy Recovery			Recycling			Recovery			Landfilling			Incineration		
		Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	613	37	6.0	6.0	115	18.8	18.8	152	24.7	24.8	459	74.9	75.2	0.	0.0	0.0
2019	669	39	5.8	5.8	115	17.2	17.2	154	23.0	23.0	514	76.9	77.0	0.	0.0	0.0
2020	709	45	6.4	6.4	118	16.7	16.7	164	23.1	23.1	546	77.1	76.9	0	0.0	0.0
2021	714	49	6.9	6.8	60	8.4	8.3	109	15.2	15.1	609	85.4	84.9	0	0.0	0.0
2022	635	40	6.3	6.3	55	8.6	8.7	94	14.9	15.0	536	84.3	85.0	0	0.0	0.0

Source: processed on the basis of WMIS

In 2022, a slight overall deficit of facility capacities for the management of bulky waste was recorded in the Czech Republic, amounting to a total of 5 thousand tonnes. A very high deficit of capacities for managing bulky waste was recorded in 2022 in the Capital City of Prague (64 thousand tonnes), while a surplus of capacities was recorded in the Central Bohemian Region (59 thousand tonnes).

### 2.3.1.10 Mixed Municipal Waste (MMW)

Mixed municipal waste is currently the most significant municipal waste in terms of quantity. In 2022, 2,672 thousand tonnes of mixed municipal waste were generated in the CR, representing approximately 6.4% of all waste generated and 47% of municipal waste. Thanks to the increasing rate of sorting by citizens, the generation of mixed municipal waste has been showing a long-term slight downward trend. Over the past 10 years, the generation of mixed municipal waste has decreased by about 8.8% (from 2,933 thousand tonnes in 2011 to 2,672 thousand tonnes in 2022). Generation has consistently declined, apart from a slight jump in 2014. In 2022, a steeper decline can be observed. Given the strong dependence of mixed municipal waste generation on population, it is common to assess its specific generation expressed per capita. Between 2010 and 2013, specific generation of mixed municipal waste fell from 299 kg per capita to 272 kg per capita. In 2014, it increased to 279 kg per capita and then continued on a downward trend, reaching 254 kg per capita in 2022. Over the past 10 years, specific generation of mixed municipal waste has therefore fallen by about 9%.

Mixed municipal waste is highly heterogeneous, varying significantly by location and over time. Its generation strongly correlates with the number of inhabitants in a given area. Generation is distributed across the entire territory of the CR, with the highest generation in agglomerations with large populations (regional capitals, Central Bohemian Region).

The dominant system of mixed municipal waste collection is the door-to-door system, which is implemented in all municipalities of the CR. For detached houses, collection containers of up to 120 litres are used, while for apartment buildings containers of up to 1,100 litres are used.

The ratio of mixed municipal waste holders (municipality/company) remained stable between 2010 and 2022, at around 75% in favour of mixed municipal waste generated by municipalities. In 2022, approximately 75.7% of mixed municipal waste came from municipal systems, while the remaining 24.3% came from companies.

Although mixed municipal waste represents a major municipal waste stream, the overall level of its energy recovery is low – in 2022 it was 23%. Energy recovery takes place in four existing facilities for energy recovery of waste (FERW).

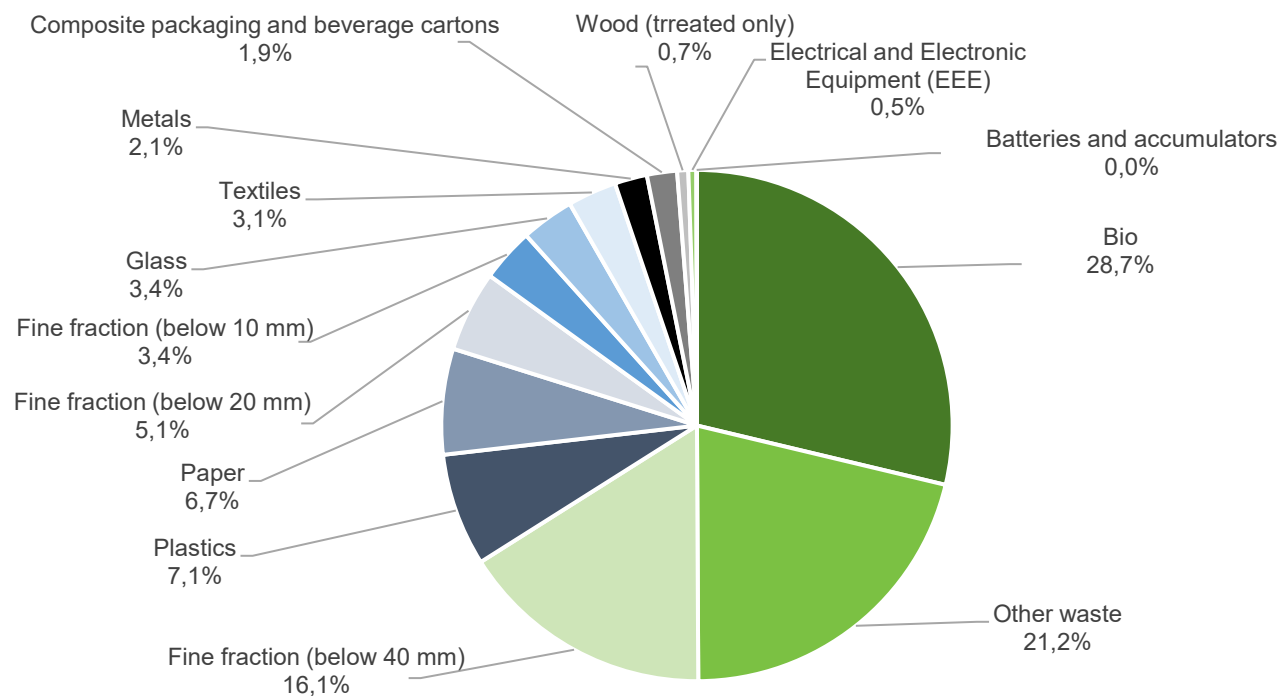
With current mixed municipal waste generation of 2,672 thousand tonnes, 2,047 thousand tonnes are landfilled. Mixed municipal waste thus makes a fundamental contribution to the landfilling of municipal waste. The achievement of future targets related to municipal waste will be significantly influenced by the management of mixed municipal waste. These targets are in particular:

- To reduce by 2035 the amount of municipal waste landfilled to 10 % (by weight) or less of the total amount of municipal waste generated.

It is clear that by 2030, a fundamental change in the management of mixed municipal waste will have to occur.

Based on MoE analyses of mixed municipal waste (TIRSMZP19)<sup>24</sup> the average residual content of materially recoverable fractions in mixed municipal waste can be estimated. The average composition is presented on the MoE website. The content of materially recoverable fractions in mixed municipal waste simultaneously represents the theoretical potential for their future shift to separate collection. A similar composition of mixed municipal waste is also presented by the EPR system EKO-KOM<sup>25</sup>, which has been monitoring the composition of mixed municipal waste over the long term.

*Graph 33: Average Composition of MMW in the CR, values given in % by weight.<sup>24</sup>*



Source: MoE

<sup>24</sup> MoE Summary Report – Results of the Average Composition of Mixed Municipal Waste in the CR (2022, Brno University of Technology). Available [here](#).

<sup>25</sup> Results of Analyses of Mixed Municipal Waste from Municipalities in 2022 (2023, EKO-KOM). Available [here](#).

A key factor for the management of mixed municipal waste will be to ensure an increase in capacities for its energy recovery.

Table 12: Generation and Management 2018–2022 – Mixed Municipal Waste

Year	Generation of	Energy Recovery			Recycling			Recovery			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	2,807	588	20.9	20.8	115	4.1	4.1	703	25.1	24.8	2,128	75.8	75.2	0.2	0.0	0.0
2019	2,787	596	21.4	21.3	87	3.1	3.1	683	24.5	24.5	2,111	75.7	75.5	0.1	0.0	0.0
2020	2,780	619	22.3	22.2	40	1.4	1.4	659	23.7	23.6	2,129	76.6	76.4	0.1	0.0	0.0
2021	2,775	615	22.2	22.2	12	0.4	0.4	627	22.6	22.6	2,146	77.3	77.4	0.1	0.0	0.0
2022	2,672	619	23.1	23.1	12	0.4	0.4	631	23.6	23.6	2,047	76.4	76.4	0.1	0.0	0.0

Source: processed on the basis of WMIS

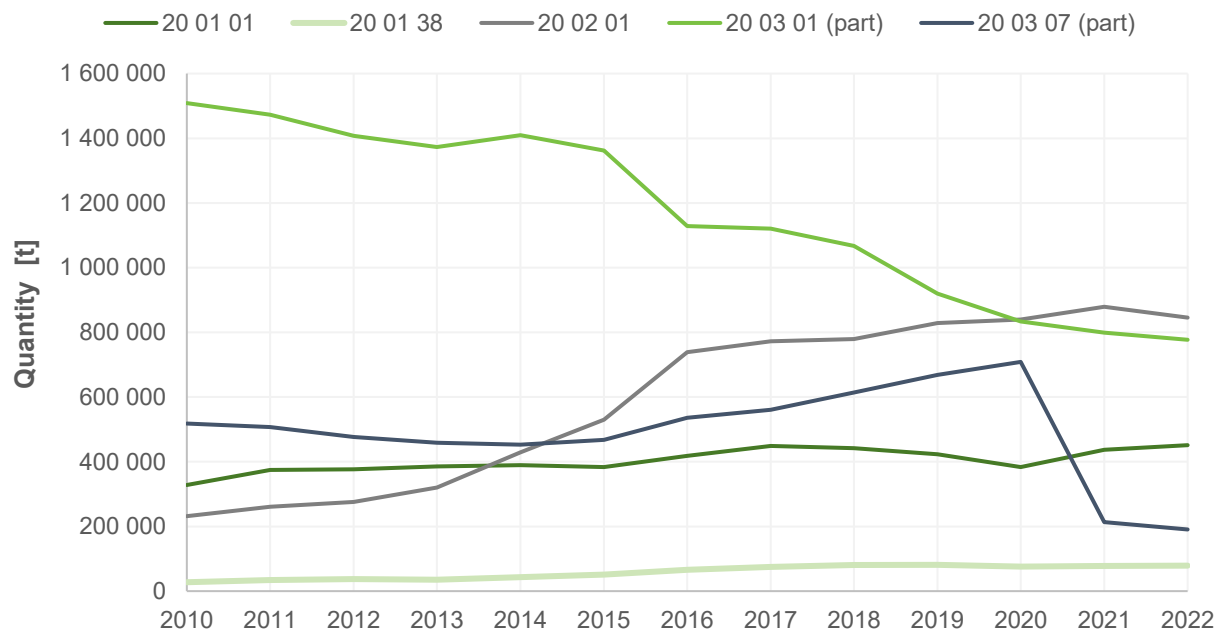
In 2022, a slight overall deficit of facility capacities for managing mixed municipal waste was recorded in the Czech Republic, amounting to 4 thousand tonnes in total. However, there are significant differences between individual regions.

A very high deficit of capacities for managing mixed municipal waste was recorded in 2022 in the Capital City of Prague (81 thousand tonnes), the Hradec Králové Region (45 thousand tonnes), the Vysočina Region (32 thousand tonnes) and the Zlín Region (30 thousand tonnes). Conversely, large capacity surpluses for management were recorded in 2022 in the Pardubice Region (80 thousand tonnes), the Central Bohemian Region (49 thousand tonnes), the South Moravian Region (31 thousand tonnes), the Liberec Region (25 thousand tonnes) and the Moravian-Silesian Region (21 thousand tonnes).

### 2.3.1.11 Biodegradable Municipal Waste (BMW)

The stream of Biodegradable municipal waste (BMW), according to the MoE methodology, includes 11 selected types of biodegradable waste from group 20 (paper and cardboard, biodegradable waste from kitchens and canteens, clothing, textile materials, edible oil and fat, wood, biodegradable waste, mixed municipal waste, market waste, street sweepings, bulky waste). In addition to the wastes included in the Biological waste stream (see above), biodegradable municipal waste also includes the biodegradable fraction of mixed municipal waste (item No. 20 03 01) and bulky waste (item No. 20 03 07) (see “fraction” in 34). The proportion of the biodegradable fraction in these wastes is continuously revised on the basis of expertise and waste analyses. The generation of biodegradable municipal waste has been increasing since 2014, but since 2018 a decrease has been observed. In 2022, generation reached 2,424 thousand tonnes. This corresponds to a value of 225 kg per capita. The main contributors to the generation of this stream are: item No. 20 02 01 *Biowaste from gardens and parks*, item No. 20 03 01 *Mixed municipal waste*, item No. 20 01 01 *Paper and cardboard from separate collection*, and item No. 20 03 07 *Bulky waste*.

Graph 34: Development of the Generation of Biodegradable Municipal Waste – Contributions of the Most Significant Catalogue Numbers



Source: processed on the basis of WMIS

In 2020, the target of reducing the landfilled quantity of biodegradable municipal waste to 50% of the 1995 generation was achieved. The objective of the MoE is to continue reducing the landfilled quantity of BMW. In 2022, this quantity decreased from 818 thousand tonnes in 2021 to 762 thousand tonnes in 2022. The main source of biodegradable municipal waste that is landfilled is mixed municipal waste. With the development of biowaste sorting and the increasing energy recovery of mixed municipal waste, the share of landfilled biodegradable municipal waste will continue to decline.

Table 13: Generation and Management 2018–2022 – Biodegradable Municipal Waste

Year	Generati on of	Energy Recovery			Recycling and Composting			Recovery			Landfilling			Composting		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	2,372	234	9.7	10.7	1,170	57.0	53.8	1,404	66.7	64.5	769	32.4	35.3	959	35.7	44.1
2019	2,417	239	9.7	10.7	1,214	56.2	54.3	1,452	65.9	64.9	781	32.3	34.9	1,016	38.0	45.4
2020	2,382	250	10.3	10.9	1,248	57.7	54.3	1,497	68.0	65.2	796	33.4	34.6	1,033	39.0	45.0
2021	2,479	238	9.5	10.4	1,235	56.0	53.8	1,473	65.5	64.2	818	33.0	35.7	1,033	38.1	45.0
2022	2,404	238	9.7	10.9	1,180	57.3	54.1	1,418	67.0	65.0	762	31.5	34.9	994	38.3	45.5

Source: processed on the basis of WMIS

Note: For 2021 and the preceding years, the same coefficients of biodegradable content valid for 2022 were applied in the table.






In 2022, a relatively high deficit of capacities for managing biodegradable municipal waste was recorded in the Czech Republic, specifically for catalogue numbers 20 01 01 *Paper and cardboard* and 20 01 38 *Wood not specified* under 20 01 37, amounting in total to 167 thousand tonnes. The highest deficit for these catalogue numbers was recorded in 2022 in the Capital City of Prague (49 thousand tonnes), the South Moravian Region (46 thousand tonnes) and the South Bohemian Region (21 thousand tonnes). Conversely, a high capacity surplus was recorded in the Vysočina Region (19 thousand tonnes).

A relatively high deficit for managing biodegradable municipal waste was also recorded in the Czech Republic in 2022 for BMW falling under catalogue number 20 02 01 *Biodegradable waste*, specifically amounting to 55 thousand tonnes. The highest deficit was recorded in the Capital City of Prague (42 thousand tonnes), while the highest surplus of capacities was recorded in the Central Bohemian Region (30 thousand tonnes).

A slight capacity deficit for managing these wastes was also recorded for BMW falling under catalogue numbers 20 03 01 *Mixed municipal waste* and 20 03 07 *Bulky waste*, totalling only 149 tonnes, although there are large differences in capacities between individual regions. The highest deficit in 2022 was recorded in the Capital City of Prague (43 thousand tonnes), while the highest surpluses were recorded in the Central Bohemian Region (32 thousand tonnes) and the Pardubice Region (27 thousand tonnes).

For other biodegradable municipal wastes (catalogue numbers 20 01 08, 20 01 25, 20 01 10, 20 01 11, 20 03 02 and 20 03 03), the deficit or surplus of capacities was in the lower thousands of tonnes.

## 2.3.2 Paper

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
1.1 million tonnes	Recycling (96%)	Exports 470 thousand tonnes (including secondary paper waste, total exports approximately 700 thousand tonnes)	Insufficient – paper recycling capacity within the territory of CR; investment in paper-making machines in CR is required.	Re-sorting lines: CZK 2.8–3.0 billion by 2035 Recycling technology: 45 billion by 2035

The total generation of materially recoverable paper shows a slightly increasing trend. Since 2016 it has ranged between 1.1 and 1.2 million tonnes per year. Paper is a commodity that is significantly exported (approximately 0.7 million tonnes in 2022). Exports include both primary waste paper and secondary waste as an output from waste treatment facilities (19 12 01). Imports of paper are negligible (63 thousand tonnes). The remaining quantity processed in the Czech Republic was managed predominantly in the preferred manner, i.e. the paper was recycled. The share of non-preferred management was negligible. Recycling has the largest share, reaching 96%. A small part of the waste was also used for energy recovery, although this type of processing has been in a declining trend in recent years. Disposal of paper has fluctuated in recent years but has not exceeded 1%.

Paper is predominantly generated in the category “Other”. The share of the “Hazardous” category is negligible (0.006%). If hazardous waste is generated, it is mainly incinerated, which is the preferred method of management for this category.

Final management of paper is carried out mainly in stationary facilities. Mobile facilities are used primarily for paper collection. Paper collected in this way is transferred for further management to stationary facilities (328,104 tonnes in 2022). Part of the waste paper is processed in sorting or re-sorting facilities. However, approximately 80% of the transferred waste was not subject to any pre-treatment.

For the whole Czech Republic, a deficit of capacities was identified for all catalogue numbers 20 01 01, 15 01 01, 03 03 08 and 19 12 01 (secondary waste), amounting in total to more than 700 thousand tonnes, which approximately corresponds to the net balance of transboundary shipment of waste paper from the Czech Republic. Only in the Ústí nad Labem Region is there sufficient capacity for managing waste paper at current generation levels. Current generation in

2022 amounted to a total of 1.1 million tonnes. The scenarios created assume future growth of waste paper generation to levels of around 1.4 million tonnes by 2035. The overall capacity deficit for paper is therefore at the level of 1 million tonnes.

For more information on paper, see Chapter 2.3.1.2.

*Table 14: Generation and Management 2018–2022 – Paper*

Year	Generation of Quantity (thous. t)	Energy Recovery			Recycling			Recovery			Landfilling			Incineration		
		Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	1,188	21	0.8	4.3	453	100.6	92.8	474	101.5	97.3	11	0.9	2.3	0.3	0.1	0.1
2019	1,159	24	0.9	5.9	363	93.1	90.4	388	94.0	96.5	11	1.0	2.8	0.7	0.1	0.2
2020	1,111	25	1.0	5.7	403	98.7	90.8	429	99.7	96.6	14	1.2	3.1	0.4	0.0	0.1
2021	1,170	23	0.8	5.1	416	97.6	92.3	439	98.4	97.4	10	0.9	2.3	0.4	0.0	0.1
2022	1,118	16	0.9	3.9	371	95.8	93.4	387	96.7	97.4	9	0.8	2.3	0.6	0.0	0.1





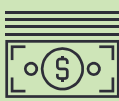
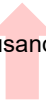
Source: processed on the basis of WMIS



#### Waste paper

The total generation of material waste paper shows a slightly increasing trend. Since 2016 it has ranged between 1.1 and 1.2 million tonnes per year. The CR is a net exporter of waste paper in the amount of approximately 700 thousand tonnes, which is more than half of total generation in the CR. The reason is the absence of recycling technologies in paper production plants. Investments in recent years have focused on improving quality and capacity based on primary cellulose from softwood. Paper is a well-tradable commodity, and sufficient capacities for its processing exist in neighbouring countries.

### 2.3.3 Plastics

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
494 thousand tonnes 	Recycling (52%)	Exports 34 thousand tonnes	Sufficient for re-sorting, but modernisation is necessary to ensure high-quality recycling. Recycling capacities for certain polymers are lacking in the CR.	Treatment and Recycling: CZK 10.3 – 11.1 billion by 2035

The generation of plastic waste has been steadily increasing since 2012. In 2022, generation reached 494 thousand tonnes. This increase is largely driven by the significant rise in recyclable and recoverable plastics from separate collection in the municipal system, the dominant component of which is plastic packaging, whose generation has almost doubled since 2012 and in 2022 accounted for 42% of plastic waste generation. By contrast, the generation of recyclable and recoverable plastics outside group 20 has been rather declining since 2017. The quantity of plastic packaging placed on the market is also increasing, which is reflected in the amount of packaging waste reported in subgroup 15 01 (from companies) and in group 20 (from the municipal system). Plastic packaging waste thus accounts for approximately 280 thousand tonnes, i.e. 56% of the total generation of this stream. The share of the “Hazardous” category in total plastic generation is negligible (4%).

Plastic waste is also the subject of intensive transboundary shipment. Primarily exported and imported are plastic packaging wastes from other holders (15 01 02) and plastics from industrial production (07 02 13). The overall balance of the Czech Republic is negative, i.e. 9 thousand tonnes more are imported than exported. From the import perspective, plastic wastes from production slightly predominate. The main exports are plastic packaging wastes (15 01 02).

Plastic waste is mostly managed in the preferred manner, where recovery predominates. In total, 73% of plastic waste generation is utilised, of which recycling accounts for 51.9% and energy recovery for 20.3%. Non-preferred management of plastics in 2022 was mainly landfilling (32%). Recycling is carried out throughout the Czech Republic.

Overall, the Czech Republic shows a deficit in preferred treatment of 85 thousand tonnes. This deficit does not relate to wastes under item No. 20 01 39, but mainly to the management of packaging under item No. 15 01 02 and other plastic wastes included in the stream in accordance with its definition. Only the Pardubice Region shows sufficient treatment capacities. All other regions are in deficit.





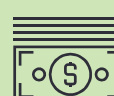
For more information on Plastics, see Chapter 2.3.1.3.





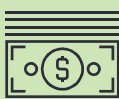
Table 15: Generation and Management 2018–2022 – Plastics

Year	Generati on of	Energy Recovery			Recycling			Recovery			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	457	136	13.1	19	379	65.8	52.9	523	79.8	72.9	171	37.4	23.9	0.7	0.1	0.1
2019	470	154	13.6	23.4	294	55.0	44.5	461	70.2	69.8	175	37.3	26.7	0.7	0.2	0.1
2020	463	161	13.8	23.5	310	52.7	45.1	476	67.0	69.3	195	42.1	28.6	1.6	0.3	0.2
2021	484	173	16.9	26.1	314	53.0	47.2	492	70.7	74.0	163	33.6	24.5	0.5	0.1	0.1
2022	485	195	20.3	29.1	311	51.9	46.5	509	72.7	76.0	153	31.6	22.8	0.1	0.0	0.0

Source: processed on the basis of WMIS

## 2.3.4 Metals

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
3.9 million tonnes	Recycling (96%)	Exports 1.44 thousand tonnes	Insufficient – investment in furnaces, ideally hybrid ones, is required.	Recycling technology: 11.9 billion by 2035

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
		(including secondary production, exports amount to 2.37 million tonnes)		

The generation of recyclable metals has shown a slightly declining trend in the long term, which in recent years has rather shifted towards stagnation. Generation in individual years oscillates around the level of 4 million tonnes/year. Metals are predominantly generated in the category Other. The share of the Hazardous category is negligible (0.4%). If hazardous waste is generated, it is managed in the preferred manner, undergoing treatment prior to recovery or being directly recycled.

The generation of separately collected recyclable metals (from municipalities) has increased very steeply since 2016. From 250 thousand tonnes in 2016 to 400 thousand tonnes in 2022. The generation of recyclable metals from separate collection within the municipal system accounts for only approximately 10% of the total generation of this stream. Ferrous metallic waste is subject to import and export. Exports strongly predominate, with imports of roughly 700 thousand tonnes annually and exports of around 2.4 million tonnes (primary and secondary metallic waste). The remaining quantity, which is processed in the Czech Republic, is predominantly managed in the preferred manner, i.e. recycled. The share of non-preferred management in 2022 was negligible. The management of metals takes place mainly in stationary facilities. Collection and subsequent transfer of metals for processing or for export was also carried out by the majority of stationary facilities (approx. 2,600 facilities). A group of about 280 stationary facilities dealt primarily with the final processing of metals. The predominant quantity of metals was treated and recycled in facilities. Only a minor part of this waste was further transferred within the Czech Republic or exported abroad. For more information on Plastics, see Chapter 2.3.1.5.

For the entire Czech Republic, a deficit in end-processing capacities for metallic waste (both primary and secondary) amounting to almost 1.7 million tonnes has been identified, which corresponds to the balance of cross-border shipments. The current generation of metals from separate collection in the Czech Republic in 2022 amounted to 388 thousand tonnes. The scenarios created anticipate a future increase in the generation of waste metal to values around 480 thousand tonnes in 2035, which further increases the need for processing capacities by roughly 100 thousand tonnes. If generation were to be covered solely by domestic facilities, the total **deficit in capacity for the processing of metal waste in 2035 is estimated at 1.8 million tonnes.**

The capacity deficit concerns primarily industrial metallic waste. The management of separately collected municipal waste is, from the perspective of the Czech Republic, nearly balanced. Thanks to the installation of modern automated re-sorting line technologies capable of separating aluminium packaging from plastic

waste, an increase in the separation of metals can be expected. An increase in the efficiency of sorting ferrous and non-ferrous metals from slag after energy recovery of waste in FERW can also be expected. For the recycling of industrial metallic waste, significant capacity is lacking in all regions with the exception of the Moravian-Silesian Region (status reflecting data for 2022), where capacity is concentrated within two major metallurgical operations.

In March 2025, the European Commission presented the Action Plan for Steel. The document identifies the problems of European steelmaking and proposes possible legislative measures. It describes the situation of the steel industry, where representatives of the sector find themselves in a difficult position due to cheaper products from China, US tariffs on imports of steel and aluminium, and high energy prices resulting from the EU's efforts to achieve carbon neutrality. At the same time, the steel industry is linked to a number of other sectors, including automotive and defence. The main objective of the plan is to address the crisis in steelmaking, to introduce mechanisms protecting European steelmakers, and to ensure the competitiveness of European industry.

Table 16: Generation and Management 2018–2022 – Ferrous Metals

Year	Generatio n of	Energy Recovery			Recycling			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	3,781	12	0.2	0.5	2,122	98.3	92.4	28	0.7	1.2	0.3	0.0	0.0
2019	3,642	14	0.2	0.7	1,812	95.0	91.9	31	0.9	1.6	0.3	0.0	0.0
2020	3,363	15	0.2	0.7	1,896	102.0	93.1	38	1.1	1.8	0.1	0.0	0.0
2021	3,831	15	0.2	0.7	2,126	99.0	94.0	134	0.9	1.5	0.2	0.0	0.0
2022	3,583	15	0.2	0.7	1,961	96.1	94.5	24	0.7	1.1	0.4	0.0	0.0

Source: processed on the basis of WMIS

Table 17: Generation and Management 2018–2022 – Non-Ferrous Metals

Year	Generatio n of	Energy Recovery			Recycling			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	236	0.2	0.0	0.1	238	97.6	95.6	139	0.1	0.1	0.6	0.0	0.0
2019	230	0.3	0.0	0.1	198	88.9	98.8	143	0.1	0.2	0.7	0.0	0.0
2020	203	0.3	0.0	0.1	199	98.7	96.5	194	0.2	0.2	1.4	0.0	0.0
2021	230	0.3	0.0	0.1	201	105.6	97.4	132	0.1	0.1	0.5	0.0	0.0
2022	223	0.8	0.1	0.4	198	90.9	96.1	122	0.3	0.4	0.1	0.0	0.0

Source: processed on the basis of WMIS



Scrap metal

**For the entire Czech Republic, a deficit in end-processing capacities for metallic waste amounting to 1.8 million tonnes has been identified. The capacity deficit concerns primarily industrial metallic waste. The management of separately collected municipal waste is, from the perspective of the Czech Republic, nearly balanced. For the recycling of industrial metallic waste, significant capacity is lacking in all regions with the exception of the Moravian-Silesian Region (status reflecting data for 2022), where capacity is concentrated within two metallurgical operations.**

### 2.3.5 Glass

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
286 thousand tonnes	Recycling (94%)	Exports 23 thousand tonnes	Currently sufficient; however, modernisation of technologies is required in response to qualitative requirements and to improve re-sorting efficiency, as well as additional treatment and re-sorting capacities to accommodate the expected increase in waste generation.	Recycling technology: 0.1 billion by 2035

The overall generation of this waste stream shows a slightly increasing trend. In 2022, generation declined to 286 thousand tonnes. The majority of waste glass is managed in the preferred manner. For this stream, it is significant that mobile facilities play a major role in management, with almost 140 thousand tonnes processed through them. The other part of the quantity was concentrated in stationary facilities. From mobile facilities and collection points, waste glass is mostly transferred for further processing directly to end facilities. Glass is almost exclusively recycled, with only a minimal quantity landfilled. Recycling dominates in the South Moravian Region, where approximately 50% of the glass generated in the Czech Republic was recovered. More significant recovery

then occurs in the Liberec, Karlovy Vary, Central Bohemian and Ústí Regions. These very regions (except the Central Bohemian) also demonstrate self-sufficiency or a slight surplus of processing over current demand in the region. In the South Moravian Region, capacity is almost double. Overall, a missing capacity for the CR of around 25 thousand tonnes has been identified at the current level of generation. Given the high glass content in mixed municipal waste, by 2035 greater participation of citizens and company employees in sorting is expected, and thus an increase in the quantity of separately collected glass by approximately 70 thousand tonnes. This will further increase the deficit in material recovery of glass up to a value of 100 thousand tonnes.

In the Czech Republic in 2022 there are several technologies for the treatment and processing of glass and manufacturing plants producing glass-based products which at the same time serve as waste management facilities. According to the Register of Facilities, their annual processing capacity in total exceeds 500 thousand tonnes, which constitutes sufficient capacity for the processing of waste glass. However, from the Register of Facilities it cannot be determined whether part of this capacity is not allocated to other types of waste.

For more information on Glass, see Chapter 2.3.1.6.

*Table 18: Generation and Management 2018–2022 – Glass*

Year	Generation of	Energy Recovery			Recycling			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	295	0.3	0.1	0.1	327	93.8	90.0	27	9.2	7.4	0.1	0.0	0.0
2019	315	0.4	0.1	0.1	340	93.8	90.3	28	9.0	7.6	0.1	0.0	0.0
2020	313	0.4	0.1	0.1	381	98.0	92.1	26	8.3	6.3	0	0.0	0.0
2021	322	0.5	0.1	0.1	392	101.4	93.1	21	6.6	5.0	0	0.0	0.0
2022	286	2	0.2	0.5	342	94.0	91.4	24	8.4	6.4	0.1	0.0	0.0

Source: processed on the basis of WMIS



Glass

**In the Czech Republic, there are several technologies for the treatment and processing of glass, as well as manufacturing plants producing glass-based products, which at the same time serve as waste management facilities. Their annual processing capacity in total exceeds 500 thousand tonnes, which constitutes sufficient capacity for the processing of waste glass generated in the Czech Republic.**

### 2.3.6 Wood

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
269 thousand tonnes	Recycling (94%)	Exports 688 tonnes	Sufficient; however, there is only one dominant processor in the Czech Republic.	Treatment and Sorting of Bulky Waste: CZK 1 – 1.5 billion by 2035

The generation of wood waste in the Czech Republic has been steadily increasing since 2012. From 2018 it stagnated at levels around 320 thousand tonnes. In 2022 it declined significantly to 269 thousand tonnes. The share of the Hazardous category is negligible (0.2%). In contrast, the generation of materially recoverable wood from separate collection has been steadily increasing as well, also with the marked development of collection yards. With generation of around 80 thousand tonnes, it accounts for roughly 30% of the generation of wood waste. The quantity of wooden packaging placed on the market is increasing significantly, which is reflected in the quantity of packaging waste reported mainly in subgroup 15 01 (Waste from other holders). Packaging waste made of wood therefore amounts to approximately 200 thousand tonnes, representing 75% of the total generation of this stream. Group 20 and subgroup 15 01 dominate the generation of the stream. Another significant group is wood from construction and demolition activities (subgroup 17 02). Approximately 54 thousand tonnes of wood waste are imported into the Czech Republic for recovery. Imports concern specifically subgroup 17 02. The export of wood waste is negligible.

The stream is predominantly managed in the preferred manner, namely in the form of recycling (93.5%). To a lesser extent, wood is used for energy recovery. Non-preferred management is negligible.

The high recycling rate of wood is derived from actually recorded data on wood waste (generation, i.e. recorded quantities). It must be borne in mind that a considerable part of wood is not separated from bulky waste. The reported value of wood recycling may also be influenced by a certain uncertainty entering into the calculations. With regard to the unbalanced mass balance or actual management of recycled wood chips, recycling of the recorded generation may be at the lower limit of uncertainty, i.e. up to 10% lower, with a corresponding increase in energy recovery.

The recycling of wood contained in municipal waste is currently around 25%.

Around 300 mobile facilities are involved in the management of wood. In these types of facilities, waste was not only concentrated for subsequent transfer for further processing but also treated (21 thousand tonnes) and recycled (60 thousand tonnes). Over 700 stationary facilities with a predominant collection function processed 160 thousand tonnes of wood, and a further 40 thousand tonnes approximately passed through another 82 facilities, where wood was already treated or recycled. Final recycling (175 thousand tonnes) however takes place in 430 end facilities, with more than 100 thousand tonnes processed in the Vysočina Region. More significant recycling at stationary facilities also took place in the Moravian-Silesian, Pardubice and Ústí Regions. Overall, the Czech Republic reported a deficit in the preferred processing of wood waste amounting to approximately 13 thousand tonnes, with sufficient processing capacities reported only in the Vysočina and Pardubice Regions. Other regions are in deficit or have a balanced capacity.

For more information on Wood, see Chapter 2.3.1.7.

*Table 19: Generation and Management 2018–2022 – Wood*





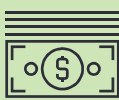
Year	Generation of	Energy Recovery			Recycling			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	321	26	6.9	4.6	528	89.0	92.4	15	4.6	2.6	0.2	0.1	0.0
2019	326	25	6.5	4.7	492	92.6	91.4	19	5.8	3.5	0.2	0.1	0.0
2020	315	29	7.7	5.3	482	92.3	89.9	24	7.5	4.4	0.3	0.1	0.1
2021	318	33	8.5	6.5	451	89.6	89.4	19	6.1	3.8	0.2	0.1	0.0
2022	269	25	7.4	6.1	369	93.5	91.4	8	3.1	2.1	0.1	0.0	0.0

Source: processed on the basis of WMIS

**Wood**

**The generation of wood waste in the Czech Republic has been steadily increasing since 2012. The generation of wooden packaging is also increasing. Although the Czech Republic has only a slight deficit in the preferred management of wood waste, its recycling is dominated by facilities located in only a few regions, in particular the Vysočina Region. The untapped potential of wood is hidden in bulky waste. The sorting of bulky waste will lead to an increase in wood waste, and thus also to the need to develop collection capacities, treatment, and logistics of wood waste prior to its recycling.**

## 2.3.7 Textiles

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
59 thousand tonnes	Recycling (52%) Landfilling (19 %)	Exports 11 thousand tonnes	Insufficient – collection network, treatment technologies, and final processing.	Recycling technology: CZK 1 billion by 2035

According to the MoE methodology, the textile waste stream consists of five catalogue waste codes – *04 01 Waste from the leather and fur industry, 04 02 Waste from the textile industry, 15 01 09 Textile packaging, 20 01 11 Textile materials, and 20 01 10 Clothing*. Textile products in waste status can be divided into three main groups – industrial textiles, household clothing and non-clothing textiles, and other textile items.

The generation of textile waste showed a pronounced increasing trend between 2010 and 2016, with production rising on average by 6.8 thousand tonnes (approximately 13.5% annually), reaching a level of 76.6 thousand tonnes in 2016. Since 2016, the overall generation of textile waste has shown a markedly declining trend, mainly due to the reduction of waste from industrial textile production. In contrast, the generation of separately collected textiles from the municipal system has been steadily increasing (with the exception of a one-off drop in 2021, explained by changes in population behaviour during the covid-19 epidemic). The generation of textile waste amounted to approximately 61 thousand tonnes in 2021 and approximately 59 thousand tonnes in 2022, thus a year-on-year decline of around 2 thousand tonnes.

Roughly 18% of textile waste is imported, and approximately 16% of generation is exported. The balance of cross-border shipments is approximately even, relating to Group 20, and does not significantly affect capacities for textile management. Textiles are predominantly exported from the Czech Republic from the Liberec Region (without prior significant treatment) and further from the Pardubice Region. Textiles were predominantly managed in the preferred manner, and the share of non-preferred management in the form of landfilling stands at 19%. Recycling is high, reaching 51.5% in 2022, although recycling has been declining in recent years. Approximately 10% of textiles were also subject to energy recovery; however, this method of management showed a stagnating trend in previous years, with an increase recorded in 2022. The landfilling of textiles is slightly decreasing. Mobile facilities play a more significant role in the management of textile waste, performing a collection function and transferring the concentrated quantities for further processing. Their activities are mainly recorded in three regions: the Capital City of Prague, the Hradec Králové Region and the Plzeň Region, i.e. in regions where major operators of textile collection

and processing are based. The management of textiles in facilities in 2022 was divided among only a few regions, and dominant processing varies depending on the type of waste processed. Waste with cat. no. *20 01 10 Clothing* is processed predominantly in the South Moravian Region, and more significantly also in the Pardubice and Plzeň Regions. Waste with cat. no. *20 01 11 Textile materials* is processed in the Karlovy Vary, Plzeň and Ústí Regions. All regions except the South Moravian Region have a deficit in the treatment of waste under category No. *20 01 10 Clothing*. The South Moravian, Hradec Králové and Central Bohemian Regions have a deficit in the processing of waste with cat. no. *20 01 11 Textile materials*.

Textiles are predominantly generated in the Other category. The share of the Hazardous category is negligible (0.02%). If hazardous waste is generated, it is incinerated, which is the preferred method of management for this category.

*Table 20: Generation and Management 2018–2022 – Textiles I*

Year	Generation of	Energy Recovery			Recycling		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	75	8	5.9	9.2	59	69.6	69.9
<b>2019</b>	69	8	5.9	10.7	55	73.3	70.0
<b>2020</b>	66	8	5.9	12.0	47	70.4	67.8
<b>2021</b>	61	9	7.0	12.7	45	73.0	66.2
<b>2022</b>	59	14	16.9	24.9	30	51.5	54.1

Source: processed on the basis of WMIS

*Table 21: Generation and Management 2018–2022 – Textiles II*

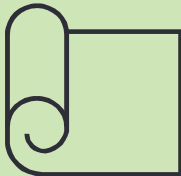
Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	17	23.2	20.6	0.1	0.1	0.1	0.1	0.1	0.1
<b>2019</b>	15	21.6	19.1	0.1	0.2	0.1	0.0	0.0	0.0
<b>2020</b>	14	20.9	19.9	0.1	0.2	0.2	0.1	0.1	0.1

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2021	14	23.1	20.8	0.1	0.2	0.2	0.1	0.2	0.2
2022	11	19.2	20.6	0.2	0.3	0.3	0.1	0.1	0.1





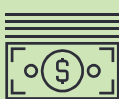
Source: processed on the basis of WMIS

In the Czech Republic in 2022, a deficit of facility capacities for the management of textile waste under catalogue number *20 01 10 Clothing* was recorded, amounting in total to 6 thousand tonnes. The capacity deficit was observed in all regions of the Czech Republic except the South Moravian Region (surplus of 6 thousand tonnes). The highest deficit was recorded in the Central Bohemian (3 thousand tonnes), Plzeň (2 thousand tonnes), Olomouc (2 thousand tonnes), Liberec (2 thousand tonnes), Moravian-Silesian (2 thousand tonnes), Hradec Králové (1 thousand tonnes), Zlín (1 thousand tonnes) and Vysočina Regions (1 thousand tonnes).

A capacity deficit for management was also recorded in 2022 for textile waste under catalogue number *20 01 11 Textile materials*, amounting in total to 8 thousand tonnes. The highest deficit that year was recorded in the South Moravian Region (8 thousand tonnes) and the Hradec Králové Region (2 thousand tonnes), while conversely a slight surplus of capacities was recorded in the Ústí Region (2 thousand tonnes).

 <p>Textiles</p>	<p><b>The generation of textile waste increased up to 2016. Since 2016 it has been declining, mainly due to the downturn of the textile industry. The generation of textiles from separate collection is steadily increasing and already dominates within the stream. Approximately half of textiles are recycled. The remaining quantity is predominantly subject to energy recovery or landfilling. The complexity of textile products (clothing), the use of fibre blends, complicates sorting and recycling under the current state of knowledge.</b></p>
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## 2.3.8 Food Waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
1,081 thousand tonnes	Landfilling (46 %) Material recovery (25%) Energy recovery (21%)	Exports 1,838 tonnes	Insufficient collection and recovery technologies (hygienisation and biogas plants).	Hygienisation facilities, biogas plants, composting plants: CZK 7- 7.5 billion by 2035

Food waste is usually defined as the non-food parts of food or the food itself that are lost or discarded during the production, distribution, trading, preparation or consumption of food. Act No. 541/2020 Sb. on Waste (hereinafter referred to as the "Waste Act") means food waste as defined in Article 2 of Regulation (EC) No. 178/2002 of the European Parliament and of the Council<sup>26</sup>, which have become waste.

The generation of food waste has shown a positive trend in recent years, and, within the framework of waste prevention, it has been possible to reduce the quantities of waste. This development is thus in line with the targets set. The generation of food waste can be broken down into the individual stages of the food chain, as shown in Table 22. The largest part of food waste generation is represented by households with a share of 60%. Restaurants and catering services (17%) and processing and production (15%) also make a significant contribution. Retail trade (6%) and primary production (1%) represent the smallest shares.

Table 22: Generation of Food Waste in the Individual Stages of the Food Chain in 2022

Stage of the Food Chain	Generation [t]
Primary production	14,670
Processing and production	165,414
Retail and other food distribution	67,296
Restaurant and catering services	180,773
Households	652,455

<sup>26</sup> Regulation (EC) No. 178/2002 of the European Parliament and of the Council of 28 January 2002, laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

Source: MoE, WMIS

The generation and subsequent management is to a large extent influenced by mixed municipal waste, and as a result food waste is almost half landfilled. Subsequently, food waste is materially (30%) or energetically (22%) recovered. This corresponds to the network of facilities for management, where landfills are significantly represented, and therefore from the perspective of preferred capacities the current network of facilities cannot be considered sufficient. From the development of indicators, however, a growing trend in the case of energy recovery can be observed, which, in view of further planned projects, will continue to grow in the future at the expense of landfilling. Within the framework of preferred capacities, composting plants, biogas plants and the aforementioned facilities for energy recovery of waste are significantly represented.

Cross-border shipments represented in 2022 a negligible part of the total quantity. Specifically, in the case of exports this involved 1.8 thousand tonnes of waste, while imports amounted to 49 thousand tonnes with a dominance of waste cat. no. 20 01 25 *Edible oil and fat*. It can thus be stated that within the processing of food waste the Czech Republic is self-sufficient, and in addition is able to process waste from neighbouring states, which was exclusively materially recovered.

Table 23: Generation and Management 2018–2022 – Food Waste I

Year	Generation of	Energy Recovery			Material Recovery			Landfilling		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	1,146	214	18.7	20.6	298	25.8	28.6	524	45.8	50.4
2019	1,146	219	19.0	20.6	318	25.5	29.9	519	45.3	48.8
2020	1,112	222	19.9	21.1	300	25.0	28.6	522	46.9	49.8
2021	1,138	228	20.0	21.4	299	23.7	28.1	526	46.2	49.5
2022	1,081	231	21.2	22.1	312	24.8	29.9	498	45.8	47.5

Source: processed on the basis of WMIS

Table 24: Generation and Management 2018–2022 – Food Waste II

Year	Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	0.8	0.1	0.1	3	0.3	0.3
2019	0.7	0.1	0.1	7	0.6	0.6
2020	0.9	0.1	0.1	4	0.4	0.4
2021	1	0.1	0.1	10	0.9	0.9
2022	0.8	0.1	0.1	5	0.4	0.4

Source: processed on the basis of WMIS

In the Czech Republic in 2022, the following deficits/surpluses of capacities for the management of food waste under catalogue numbers were recorded: *02 01 03 Waste plant tissue* – total surplus of 3 thousand tonnes, *02 03 01 Sludges from washing, cleaning, peeling, centrifuging and separation* – total deficit of 3 thousand tonnes, *02 03 04 Materials unsuitable for consumption or processing* – total deficit of 10 thousand tonnes, *20 01 08 Biodegradable kitchen and catering waste* – total deficit of 6 thousand tonnes, *20 01 25 Edible oil and fat* – total surplus of 1 thousand tonnes, *20 02 01 Biodegradable waste* – total deficit of 20 thousand tonnes, *20 03 01 Mixed municipal waste* – total deficit of 63 thousand tonnes.

For food waste under catalogue number 02 01 03, the highest deficit of processing capacities in the Czech Republic in 2022 was recorded in the Olomouc Region (4 thousand tonnes). Conversely, the highest surplus of facility capacities in 2022 was recorded in the Vysočina Region (2 thousand tonnes).

For food waste under catalogue number 02 03 01, the highest deficit of processing capacities in the Czech Republic in 2022 was recorded in the Hradec Králové Region (3 thousand tonnes). The level of facility surplus for this catalogue number is negligible.


For food waste under catalogue number 02 03 04, the highest deficit of processing capacities in the Czech Republic in 2022 was recorded in the Capital City of Prague (6 thousand tonnes) and the Vysočina Region (4 thousand tonnes). Conversely, the highest surplus of facility capacities in 2022 was recorded in the Central Bohemian Region (6 thousand tonnes).

For food waste under catalogue number 20 01 08, the highest deficit of processing capacities in the Czech Republic in 2022 was recorded in the Capital City of Prague (11 thousand tonnes) and the South Moravian Region (9 thousand tonnes). Conversely, the highest surplus of facility capacities in 2022 was recorded in the Central Bohemian (8 thousand tonnes) and Zlín Regions (5 thousand tonnes).





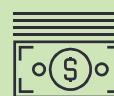

For food waste under catalogue number 20 01 25, the highest deficit of processing capacities in the Czech Republic in 2022 was recorded in the South Moravian Region (2 thousand tonnes). Conversely, the highest surplus of facility capacities in 2022 was recorded in the Moravian-Silesian (4 thousand tonnes) and Ústí (2 thousand tonnes) Regions.

For food waste under catalogue number 20 02 01, the highest deficit of processing capacities in the Czech Republic in 2022 was recorded in the Capital City of Prague (7 thousand tonnes) and the South Moravian Region (3 thousand tonnes). Conversely, the highest surplus of facility capacities in 2022 was recorded in the Central Bohemian Region (2 thousand tonnes).

There is also significant potential in the Czech Republic for the production of biomethane within waste biogas plants and agricultural biogas plants. This segment is developing intensively; in 2024 the installed capacity of biomethane production amounted to approximately 10 million m<sup>3</sup>. Part of the facilities was shut down due to economic disadvantage, and biomethane production reached only 1.2 million m<sup>3</sup>.

 <b>Food Waste</b>	<p>The generation of food waste has been slightly decreasing in recent years. 60% of food waste arises in households and forms part of mixed municipal waste. Since the majority of mixed municipal waste is landfilled, almost half of food waste is also landfilled.</p>
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### 2.3.9 Construction and Demolition Waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
9.2 million tonnes 	Material recovery (93%)	Exports 992 thousand tonnes Imports 689 thousand tonnes	Sufficient at current generation	Processing of C&DW: CZK 1.7 billion by 2035

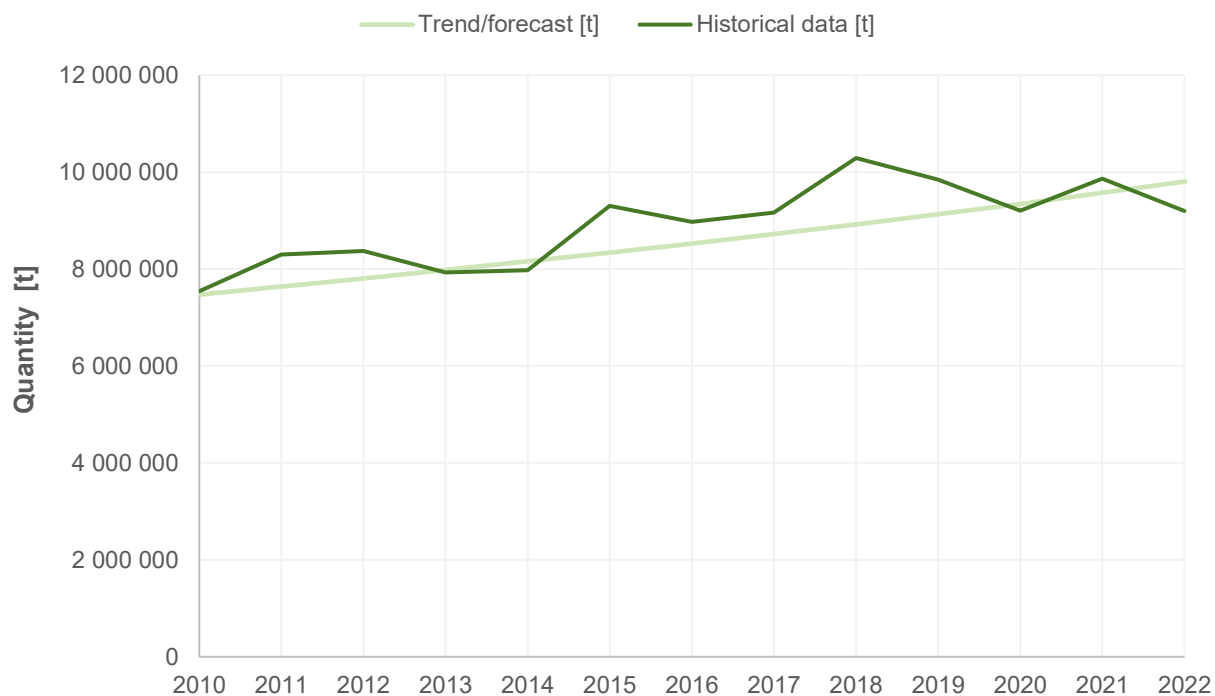
Construction and Demolition Waste (C&DW) is, pursuant to Act No. 541/2020 Sb. on Waste, understood as waste generated during construction and demolition activities. Construction and demolition waste represents a significant stream of generated waste in the Czech Republic. Construction and demolition waste includes catalogue numbers of Group 17 with the exception of several catalogue numbers of Subgroup 17 05 (Soil and stones, dredging spoil).

The generation of this waste accounts for 23.5% of the generation of all waste. In view of its significance, it is therefore described in greater detail.

The dominant producers of construction and demolition waste are self-employed individuals. Municipalities are also producers, but only to a negligible extent. The generation of construction and demolition waste is not directly dependent on demographic growth; it depends significantly on the economic cycle, which influences construction activities of infrastructural projects and the construction and reconstruction of production and storage premises. Construction activity aimed at the construction and reconstruction of housing stock combines the influence of demographic development (ensuring the availability of housing and accommodation infrastructure, including accommodation and care for senior citizens) with the development of the economy (availability of mortgages, postponement of construction).

The generation of construction and demolition waste in the Czech Republic has shown a long-term increasing trend, which in recent years has rather shifted into a slight decline. The forecast expects a continuation of the increasing trend in the coming years and is in line with expectations that the economy of the Czech Republic will grow in the coming years, and, in connection with that, construction activity will also continue.

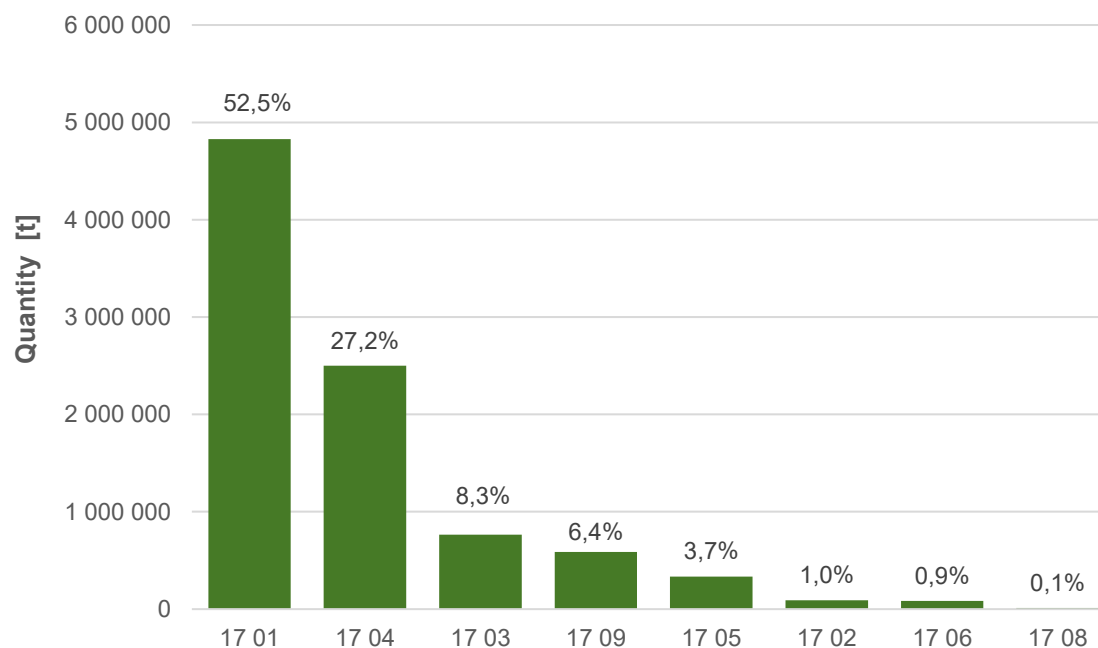
Graph 35: Generation of construction and demolition waste



Source: processed on the basis of WMIS

The generation of construction and demolition waste varies over time and regionally, and generation is linked to the intensity of construction activities (construction and reconstruction of houses, implementation of infrastructural projects). The following chart shows the share of each subgroup in the production of construction and demolition waste (Graph 36).

Graph 36: Generation of Construction and Demolition Waste by Individual Subgroups in 2022



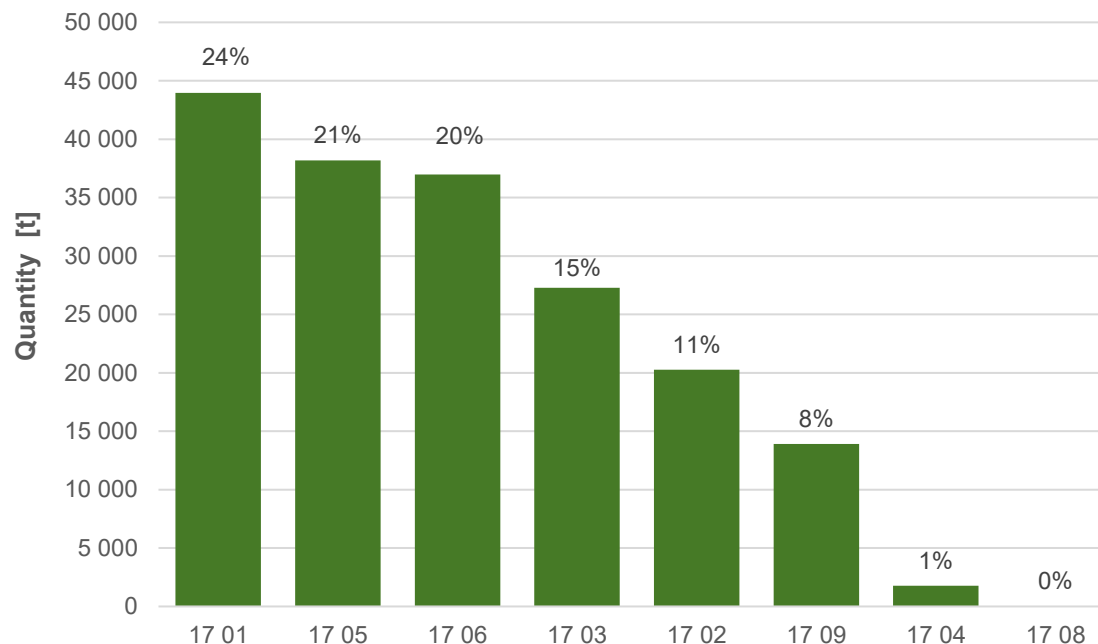
Source: processed on the basis of WMIS

Subgroup 17 01 (Concrete, bricks, tiles and ceramics) is the most significant subgroup of construction and demolition waste. The second most significant is Subgroup 17 04 (Metals including their alloys). The share of the others is negligible. From the perspective of individual catalogue numbers, generation is dominated by No. 17 04 05 (Iron and steel) together with cat. no. 17 01 07 (Mixtures of, or separate fractions of, concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06) and 17 01 01 (Concrete). Subgroup 17 04 is also important in terms of imports and exports.

Subgroups 17 01 (Concrete, bricks, tiles and ceramics), 17 02 (Wood, glass and plastics), 17 03 (Bituminous mixtures, coal tar and tarred products) and 17 05 (Soil, stones, dredging spoil and track ballast) show an increasing trend. The generation of Subgroup 17 04 (Metals) is considerably influenced by raw material prices. Subgroup 17 06 (Insulation materials and construction materials containing asbestos) recorded a significant increase from 2017 (rise of 75%). In 2022, however, there was a marked decrease of almost 30%. Subgroup 17 08 (Construction materials based on gypsum) has been gradually declining since 2017 – a long-term change in trend will only be demonstrated with data from subsequent years. The last Subgroup 17 09 (Other construction and demolition waste) shows greater variability of data, but the long-term trend is rather constant.

Just as the entire construction and demolition waste stream shows a growing trend, so too does the trend in the generation of construction and demolition waste in the Hazardous category. Since 2020 there has been a pronounced, almost constant decline, which also affects the slowing of trend growth. In 2022, the generation of construction and demolition waste in the Hazardous category amounted to 182,346 tonnes, which represented a 2% share of the entire construction and demolition waste stream.

Graph 37: Generation of C&DW-N by individual subgroups in 2022



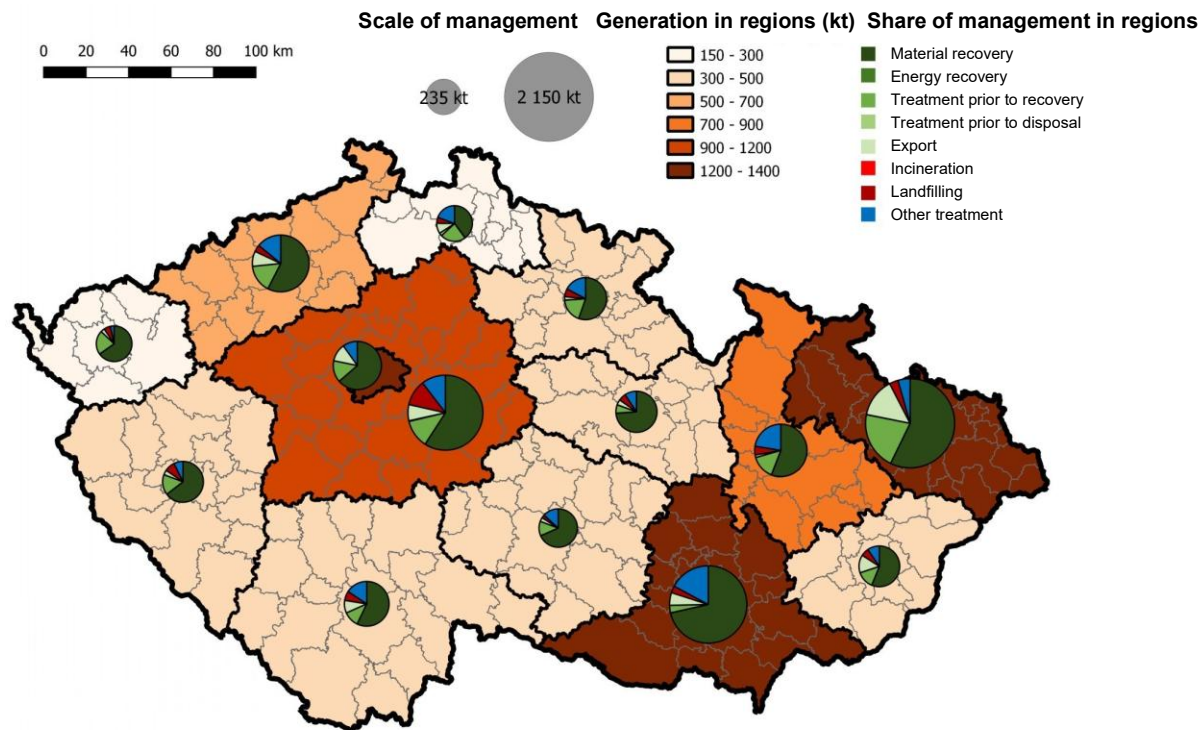
Source: processed on the basis of WMIS

Within each subgroup, there is always one dominant catalogue number of waste. Among the most represented catalogue numbers are 17 01 06 (Mixtures of, or separate fractions of, concrete, bricks, tiles and ceramics containing hazardous substances), 17 02 04 (Glass, plastic and wood containing or contaminated with hazardous substances), 17 05 07 (Track ballast containing hazardous substances), 17 06 05 (Construction materials containing asbestos) and 17 09 03 (Other construction and demolition waste (including mixed construction and demolition waste) containing hazardous substances). Their ranking changes over time; however, these catalogue numbers have long determined the volume of hazardous construction and demolition waste generation.

Construction and demolition waste is predominantly recovered and recycled. The recycling rate of construction and demolition waste in 2022 was 80%. The recycling rate of construction and demolition waste has in recent years been stable, fluctuating within a narrow range between 80% and 81.3%. The second most widespread method of construction and demolition waste management is landfilling, which accounted for 7.4% of generation. Waste which is currently landfilled and from 2023 is prohibited from being landfilled amounted in 2022 to a total of 260,444 tonnes. Data analysis shows that this quantity has been almost constant in recent years. In previous years it ranged between 220 thousand and 292 thousand tonnes.

The current capacities of recycling lines for construction and demolition waste appear sufficient in view of current generation. In the context of achieving the recycling targets for construction and demolition waste in 2030 and especially 2035, when it will be necessary to increase the amount of recycled construction and demolition waste by approximately 600 thousand tonnes, it will be necessary to expand processing capacities. The analysis revealed a fundamental deficit in technologies for the recovery of metals from construction and demolition waste (Subgroup 17 04). For the Czech Republic as a whole, this deficit amounts to 600 thousand tonnes. Significant capacity is only available in the Moravian-Silesian Region; in other regions the balance is in deficit. A large quantity of metals is therefore exported. Construction and demolition waste also contains critical raw materials such as copper, aluminium and possibly other metals.

Figure9: Map of generation and share of management in the regions for C&DW of the Other category in 2022




Source: processed on the basis of WMIS

Hazardous construction waste is included in the Chapter 2.3.13 Hazardous Waste, and likewise in the document Construction and Demolition Waste.





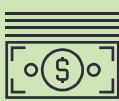
Table 25: Generation and Management 2018–2022 – Construction and Demolition Waste

Year	Generation of	Energy Recovery			Recycling			Material Recovery			Landfilling			Incineration		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	10,291	4	0.0	0.0	7,517	80.6	78.0	9,035	94.9	93.9	584	5.7	6.1	1	0.0	0.0
2019	9,843	4	0.0	0.0	6,716	77.3	77.1	8,392	94.0	93.7	627	6.4	6.2	1	0.0	0.0
2020	9,205	4	0.0	0.0	6,767	81.3	74.6	8,366	98.1	92.3	688	7.5	7.6	1	0.0	0.0
2021	9,894	10	0.1	0.1	6,800	77.8	75.5	8,220	91.8	91.2	781	7.9	8.7	1	0.0	0.0
2022	9,201	16	0.1	0.2	6,656	80.0	77.5	7,890	92.9	91.8	684	7.4	8.0	2	0.0	0.0

Source: processed on the basis of WMIS

 <p><b>Construction and Demolition Waste</b></p>	<p><b>Construction and demolition waste (excluding excavated soil) represents a significant stream of generated waste in the Czech Republic. Its generation accounts for 23.5% of the generation of all waste. This waste is predominantly recycled. The recycling rate in 2022 was 80%. Nevertheless, there are approximately 262 thousand tonnes of construction waste which are currently landfilled and which will not be permitted to be landfilled in the future.</b></p>
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### 2.3.10 Industrial waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
2.5 million tonnes	Material recovery (57%)	Exports 502 thousand tonnes Import 1.3 thousand tonnes	Sufficient	-

The industrial waste stream includes waste reported in groups 03 to 14 of the Waste Catalogue. Industrial waste represents a significant stream primarily due to its origin, as its generation is linked to specific industrial activities. In the long term it accounts for less than 10% of the total waste generation in the Czech Republic; specifically, in 2022 it represented 6.4% by weight. The generation of industrial waste across the Czech Republic declined slightly between 2010 and 2014; in the following period 2014 to 2018 it was more or less stable at around 3.2 to 3.3 million t/year. Between 2018 and 2020 generation declined to just above 2.5 million t/year and has remained stable since then. In the current year 2022, generation was 2.513 million t/year. The generation is predominantly accounted for by Catalogue Group 10 (Wastes from thermal processes, 1,088 thousand tonnes in 2022) and Catalogue Group 12 (Wastes from shaping and physical and mechanical surface treatment of metals and plastics, 719 thousand tonnes in 2022). These two groups together represented almost three quarters of generation in 2022. The development of overall industrial waste generation is primarily influenced by Catalogue Group 10, whose historical trend corresponds to the trend of overall industrial waste generation (stable period 2014 to 2018, significant decline in 2018 to 2020).

The share of hazardous industrial waste in most monitored years is around 20% by weight; between 2012 and 2014 the share dropped to 15%. In 2020 and 2021 the share of hazardous waste was at the level of 22.5%, representing the highest recorded values; in the current year 2022 the share was 21.4%. Certain catalogue groups consist predominantly of hazardous wastes (Catalogue Groups 05, 06, 08, 09, 11, 13 and 14). Industry is the dominant source of certain sub-streams of hazardous waste.

In the management of industrial waste, material recovery predominates (57 %), with recycling constituting the majority of this preferred form of management. Industrial waste is almost not used for energy recovery. Approximately 11% of industrial waste generation was landfilled. The management of industrial waste differs according to waste category, with higher recycling rates being achieved for non-hazardous waste. Recycling was mainly contributed by the recycling/recovery of other inorganic materials in Group 10 (Wastes from thermal processes, 1.3 million tonnes), the recycling/recovery of metals and metal compounds in Group 10 (178 thousand tonnes) and in Group 12 (Wastes from shaping and physical and mechanical surface treatment of metals and plastics,

110 thousand tonnes), the recovery/regeneration of organic substances in Group 03 (Wastes from wood processing and the production of panels, furniture, pulp, paper and cardboard, 96 thousand tonnes) and Group 07 (Wastes from organic chemical processes, 41 thousand tonnes). Treatment prior to recovery was also represented (8%), especially in Group 12 (180 thousand tonnes). Non-preferred management of industrial waste in the Other category accounted for only 6%, and this was represented solely by landfilling. Very frequent is also the transfer of waste into the following period. This management is considered other management (19%). Exports (12%) concern in particular Group 12.

Industrial waste of the Hazardous category is managed in the preferred manner. Of the total of 538 thousand tonnes, 336 thousand tonnes underwent treatment prior to disposal and 58 thousand tonnes treatment prior to recovery.

In 2022, approximately 100 thousand tonnes of waste classified in the industrial waste stream were landfilled, the landfilling of which will be restricted under current legislation, as this concerns waste which, at the current state of scientific and technical progress, can be effectively recycled. These are primarily the aforementioned wastes of Group 10, which account for 86 thousand tonnes/year of landfilling. Specifically, these are types 10 09 08, 10 10 08, 10 01 01, 10 09 03, 10 13 14 and a number of others with generation of lower units of thousand tonnes or hundreds of tonnes.

A deficit of industrial waste processing capacities is evident for all waste groups, in units of lower thousand tonnes. Crucial is the deficit for the management of Group 10 and Group 12. A deficit in tens of thousand tonnes is evident in all regions except the South Bohemian Region for Group 10 and the Zlín Region for Group 12. The deficit would be further exacerbated if only preferred management (i.e. without disposal) were required. For the Czech Republic as a whole, the deficit would be almost 800 thousand tonnes.

Table 26: Generation and Management 2018–2022 – Industrial Waste I

Year	Generation of	Energy Recovery			Recycling			Material Recovery		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	3,314	50	1.2	1.4	1,914	53.4	52.9	2,554	72.2	70.6
2019	2,937	54	1.5	1.6	1,951	57.5	58.6	2,343	70.2	70.4
2020	2,576	103	3.4	3.6	1,579	53.4	55.3	1,894	65.5	66.3
2021	2,555	83	2.4	2.5	1,995	55.2	61.5	2,234	64.4	68.9
2022	2,515	48	1.8	1.5	1,918	47.6	60.2	2,147	56.5	67.4

Source: processed on the basis of WMIS

Table 27: Generation and Management 2018–2022 – Industrial Waste II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	271	8.2	7.5	32	1.0	0.9	708	19.9	19.6
2019	257	8.8	7.7	29	1.0	0.9	645	20.5	19.4
2020	239	9.3	8.4	28	1.1	1.0	592	21.2	20.7
2021	271	10.6	8.3	28	1.1	0.9	628	22.5	19.4
2022	271	10.8	8.5	24	1.0	0.8	698	25.4	21.9

Source: processed on the basis of WMIS

In 2022, a relatively high deficit of facility capacities for the management of industrial waste under Group 12 *Wastes from shaping and physical and mechanical surface treatment of metals and plastics* was recorded in the Czech Republic, amounting in total to 312 thousand tonnes. The highest deficit for this Group 12 was recorded in the Central Bohemian Region (64 thousand tonnes), the Vysočina Region (44 thousand tonnes), the Plzeň Region (35 thousand tonnes) and the Olomouc Region (27 thousand tonnes).

Nevertheless, a capacity deficit was recorded in all regions of the Czech Republic except the Zlín Region (surplus of 3 thousand tonnes). A high deficit of facility capacities for the management of industrial waste was also recorded in 2022 for industrial waste under Group 10 *Wastes from thermal processes*, amounting in total to 140 thousand tonnes. The highest capacity deficit was recorded in the Olomouc Region (32 thousand tonnes) and the Vysočina Region (32 thousand tonnes). Nevertheless, a capacity deficit was recorded in all regions of the Czech Republic except the South Bohemian Region (13 thousand tonnes) and the Moravian-Silesian Region (surplus of 349 tonnes).



### Industrial waste

**Industrial waste constitutes a significant waste stream – in the long term it represents less than 10% of total waste generation. The majority (56%) of industrial waste is materially recovered. Facility capacities are sufficient, with capacity deficits for all waste groups amounting to lower units of thousand tonnes. A greater shortage (almost 800 thousand tonnes, i.e. 32% of generation) would arise only if exclusively preferred management (i.e. without disposal) were required.**

## 2.3.11 Mining Waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
81 thousand tonnes	Material recovery (63%) Landfilling (38 %)	-	Insufficient	-

Mining waste can generally be considered as materials generated from the mining industry which no longer have further use. This waste stream includes Group 01 *Wastes from mineral exploration, mining, quarrying, and physical and chemical treatment of minerals*, and two catalogue numbers from Group 17 *Construction and Demolition Waste* (17 05 05\* and 17 05 06). Mining waste can further be divided into mining waste (direct waste from mining), treatment waste (waste generated during the processing of mined ores or materials), and excavated spoil and gangue (waste arising mainly during construction activities – utility networks or transport infrastructure).

The generation of mining waste is highly variable, as it depends largely on the implementation of large infrastructural projects. In 2022, the generation of this waste amounted to 80,758 tonnes. The largest part of this waste (75%) fell under Group 01, with the remainder under Group 17 (25%). The largest share of waste was Subgroup 01 04 *Wastes from physical and chemical processing of non-metalliferous minerals*, which in 2022 accounted for almost 66%. Within catalogue numbers, in 2022 the most represented was cat. no. 01 04 13 (*Waste from cutting and sawing of stone other than those mentioned in 01 04 07*), with

generation of 32,978 tonnes and a share of 41%. The second most represented was cat. no. 17 05 06 (Excavated spoil and gangue other than those mentioned in 17 05 05), with generation of 20,500 tonnes and a share of 25%.

Mining waste is included under catalogue numbers 01 01 01 Wastes from mineral-metal mining and 01 01 02 Wastes from non-metalliferous mineral mining. Generation of waste under catalogue number 01 01 01 has been almost zero since 2015, while generation of waste under catalogue number 01 01 02 has been gradually decreasing since 2011 and in 2022 amounted to only 1,676 tonnes.

Wastes from treatment fall under catalogue numbers 01 03 (Wastes from physical and chemical processing of metalliferous minerals), 01 04 (Wastes from physical and chemical processing of non-metalliferous minerals) and 01 05 (Drilling muds and other drilling wastes). The largest share within treatment wastes is represented by wastes under catalogue number 01 04 (90.9%), of which more than 53 thousand tonnes were generated in 2022. The main contributors to this total were waste under catalogue number 01 04 13 (Waste from cutting and sawing of stone other than those mentioned in 01 04 07) with 32,978 tonnes, and waste under catalogue number 01 04 10 (Dust and powder other than those mentioned in 01 04 07) with 10,797 tonnes.

The generation of excavated spoil and gangue (catalogue numbers 17 05 05\* and 17 05 06) in 2022 amounted in total to 20,514 tonnes, almost exclusively waste under catalogue number 17 05 06 (Excavated spoil and gangue other than those mentioned in 17 05 05) (20,500 tonnes). This type of waste is highly dependent on the implementation of large infrastructural projects, as in the past generation reached hundreds of thousands of tonnes (for example, 1.69 million tonnes in 2010 during the construction of the Blanka tunnel).

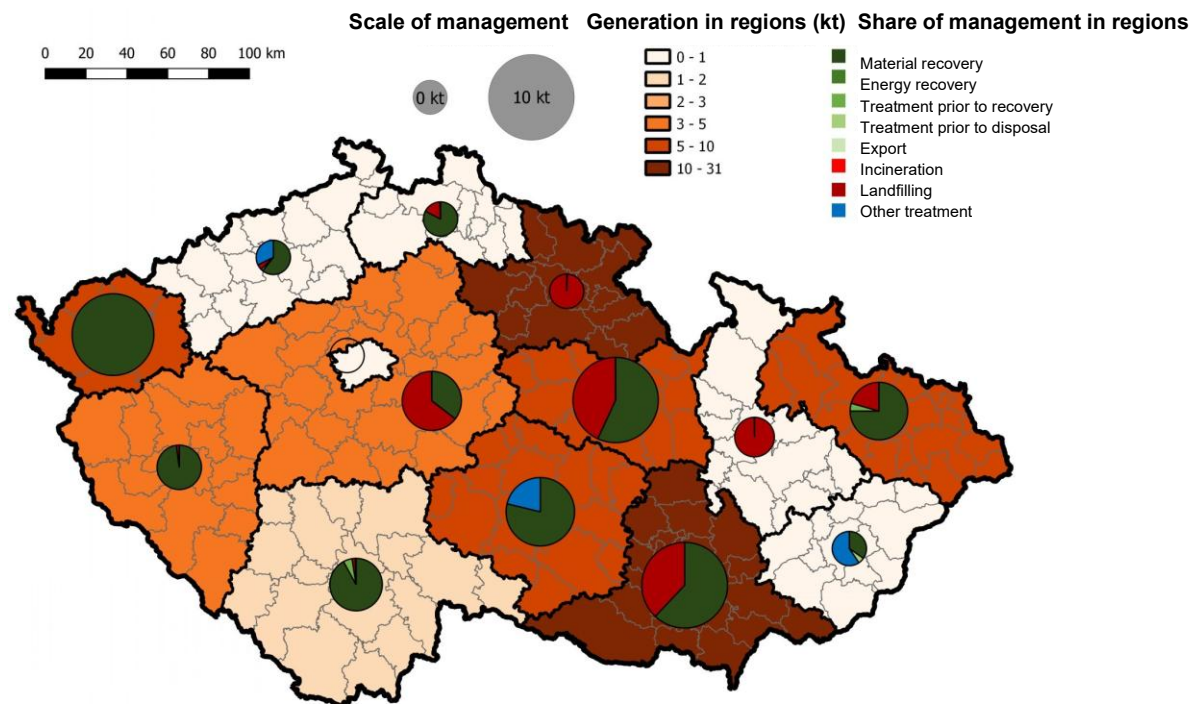
At the regional level, in 2022 the largest producers were the Hradec Králové Region (30,717 tonnes), the South Moravian Region (14,213 tonnes) and the Karlovy Vary Region (8,376 tonnes). In general, in most regions generation is usually minimal, almost zero, with significant increases only in certain years. The exception is the Central Bohemian Region, where generation of mining waste, although fluctuating, remains above 10 thousand tonnes annually (the exceptions being 2017 and a significant decline in 2022). Another notable case is the Hradec Králové Region, where generation has been increasing in the long term.

In 2022, mining waste was most frequently managed by material recovery. The second most preferred method was landfilling. The generation of mining waste classified as Hazardous was negligible in 2022, amounting to only 243 tonnes. Most mining waste was managed in the South Moravian; Karlovy Vary and Pardubice Regions. The Karlovy Vary Region recorded exclusively material recovery, whereas in the South Moravian and Pardubice Regions approximately one third of waste was landfilled. Except for the Hradec Králové Region, it can be stated that higher generation also resulted in higher management, i.e. waste most likely remained in the vicinity of its place of origin.

Positively, mining waste is predominantly recovered in the Czech Republic, although a large share is still landfilled, and in the case of recovery it is mainly for backfilling. An opportunity in the field of mining waste is, for example, the use of part of the wastes under catalogue number 17 05 06 (Excavated spoil and gangue) as a substitute for certain primary mineral raw materials. Mining waste from mineral extraction may also be a source of critical raw materials. The current capacities of recycling lines for construction and demolition waste appear, in the light of current generation, to be slightly insufficient; specifically, in the case of wastes under catalogue number 01 04, a capacity deficit of approximately 5 thousand tonnes was recorded in 2022. The largest share of this deficit was in the Hradec Králové Region (approximately –27 thousand tonnes). This situation can be partly addressed by available capacities in the neighbouring

Pardubice Region (13 thousand tonnes), or in the Central Bohemian Region (just under 12 thousand tonnes). In the future, it will therefore be necessary to increase processing capacities to eliminate the overall deficit of mining waste, ideally in a strategically advantageous location, since larger volumes of mining waste may arise in the coming years in various places, for example depending on major infrastructural projects. In the case of wastes under catalogue number 17 05, there are, conversely, slightly surplus capacities in the Czech Republic, specifically amounting to 2.2 thousand tonnes in 2022.

Figure 10: Map of generation and share of management in the regions for mining waste of the Other category in 2022



Source: processed on the basis of WMIS

Table 28: Generation and Management 2018–2022 – Mining Waste I


Year	Generation of	Energy Recovery			Recycling			Material Recovery		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	102	0.08	0.1	0.1	35	34.4	33.2	92	90.2	87.3
2019	117	0.11	0.1	0.1	47	39.6	32.7	118	100.2	82.7
2020	130	0.11	0.1	0.1	39	30.1	30.1	113	87	86.8
2021	154	0.14	0.1	0.1	112	72.6	64.1	153	99.5	87.9
2022	82	0.04	0.1	0.1	19	23.1	22.7	52	63.1	62

Source: processed on the basis of WMIS





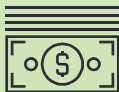
Table 29: Generation and Management 2018–2022 – Mining Waste II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	9	8.8	8.60	0	0	0	4	4.1	4
2019	20	17	14.00	0	0	0	5	3.9	3.2
2020	15	11.7	11.70	0	0	0	2	1.3	1.3
2021	19	12.4	11.00	0	0	0	2	1.1	1
2022	31	37.7	37.00	0	0	0	1	1	0.9

Source: processed on the basis of WMIS

 <b>Mining Waste</b>	<p><b>Mining waste represents a negligible share of waste generation in the Czech Republic, totalling 81 thousand tonnes annually. The majority of this waste is materially recovered (most often for backfilling), while the remaining part of mining waste is landfilled. Insufficient processing capacity for mining waste is evident in particular in the Hradec Králové Region. This shortfall is partly compensated by facility capacities in the Pardubice and Central Bohemian Regions.</b></p>
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### 2.3.12 Mineral Waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
 23.1 million tonnes	 Material recovery (95%)	 -	 Sufficient	 -

Mineral waste (waste of mineral origin) consists of solid wastes based on substances generated by natural inorganic processes. The vast majority of this waste falls under the category of construction and demolition waste (see 2.3.9), consisting mainly of soil and stones, as well as mineral-origin waste from demolition works (concrete, bricks, tiles and ceramics). To a lesser extent, mineral waste also includes selected catalogue numbers from a further twelve groups; of the total 100 catalogue numbers, 39 fall within hazardous waste.

Mineral waste represents a significant part of waste generation, which in 2022 constituted roughly 59% of Czech Republic generation, corresponding to 23.1 million tonnes. This is a stream with a high degree of material recovery and considerable potential for further increasing this rate in the coming years and is therefore a priority stream. The vast majority of mineral waste (97.7%) falls within Group 17 (Construction and Demolition Waste). The generation of mineral waste is strongly linked to construction and demolition activity. For this reason, the representation of individual wastes may vary year-on-year both in terms of generation volumes and, above all, their regional distribution in individual regions or municipalities with extended competence. In the long term, however, the representation of the main catalogue numbers does not change significantly.

The generation of this stream is strongly dominated by Subgroup 17 05 Soil, including excavated soil from contaminated sites, stones, excavated spoil and gangue with a share of 70.4%, followed by Subgroup 17 01 Concrete, bricks, tiles and ceramics with 20.9%, Subgroup 17 03 Bituminous mixtures, coal tar and tarred products with 3.3%, and Subgroup 17 09 Other construction and demolition waste with 2.5%. From the perspective of individual catalogue numbers, generation is dominated by waste under catalogue number 17 05 04 (Soil and stones other than those mentioned in 17 05 03), which accounted for 67.8% of total mineral waste generation, corresponding to just under 16 million tonnes. Other significant catalogue numbers include 17 01 07 (Mixtures of, or separate fractions of, concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06) with 2022 generation of 2.13 million tonnes (9.2% of the stream), and 17 01 01 (Concrete) with generation of 2 million tonnes (8.7% of the stream).

For the management of the mineral waste stream, the conclusions applicable to the construction and demolition waste stream largely apply. The material recovery of mineral waste is higher (almost 95%) due to the fact that selected wastes of Subgroup 17 05, which are not included in the construction and demolition waste stream, are recovered for land improvement within facilities (or more precisely, sites) designated for backfilling.

*Table 30: Generation and Management 2018–2022 – Mineral Waste I*

Year	Generation of	Energy Recovery			Recycling			Material Recovery		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	21,323	0.7	0.0	0.0	10,485	48.4	48.0	20,580	95.5	94.3
<b>2019</b>	21,328	1	0.0	0.0	9,918	45.9	46.7	20,056	93.3	94.5
<b>2020</b>	22,985	1	0.0	0.0	12,183	52.3	49.4	23,281	100.3	94.3
<b>2021</b>	23,589	5	0.0	0.0	11,760	49.2	49.1	22,629	95.1	94.5
<b>2022</b>	23,066	11	0.0	0.0	12,561	53.8	53.6	22,049	94.8	94.1

Source: processed on the basis of WMIS

Table 31: Generation and Management 2018–2022 – Mineral Waste II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	1,036	4.9	4.7	1	0.0	0.0	150	0.7	0.7
2019	923	4.3	4.3	1	0.0	0.0	197	0.9	0.9
2020	1,026	4.5	4.2	1	0.0	0.0	321	1.4	1.3
2021	1,086	4.6	4.5	2	0.0	0.0	188	0.8	0.8
2022	1,019	4.4	4.4	4	0.0	0.0	309	1.3	1.3

Source: processed on the basis of WMIS




In 2022, a high deficit of facility capacities for the management of mineral waste under Group 17 *Construction and Demolition Waste (including excavated soil from contaminated sites)* was recorded in the Czech Republic, amounting in total to 628 thousand tonnes. The highest deficit in 2022 was recorded in the Capital City of Prague (2,595 thousand tonnes), the Olomouc Region (195 thousand tonnes), the Hradec Králové Region (184 thousand tonnes) and the Vysočina Region (176 thousand tonnes). The highest surpluses of facility capacities for the management of mineral waste in 2022 were recorded in the Central Bohemian Region (2,000 thousand tonnes).



Mineral Waste

The generation of this stream is tied to the generation of waste in Group 17. The majority of the stream is materially recovered, with backfilling being very widespread for soils in Subgroup 17 05 alongside recycling.

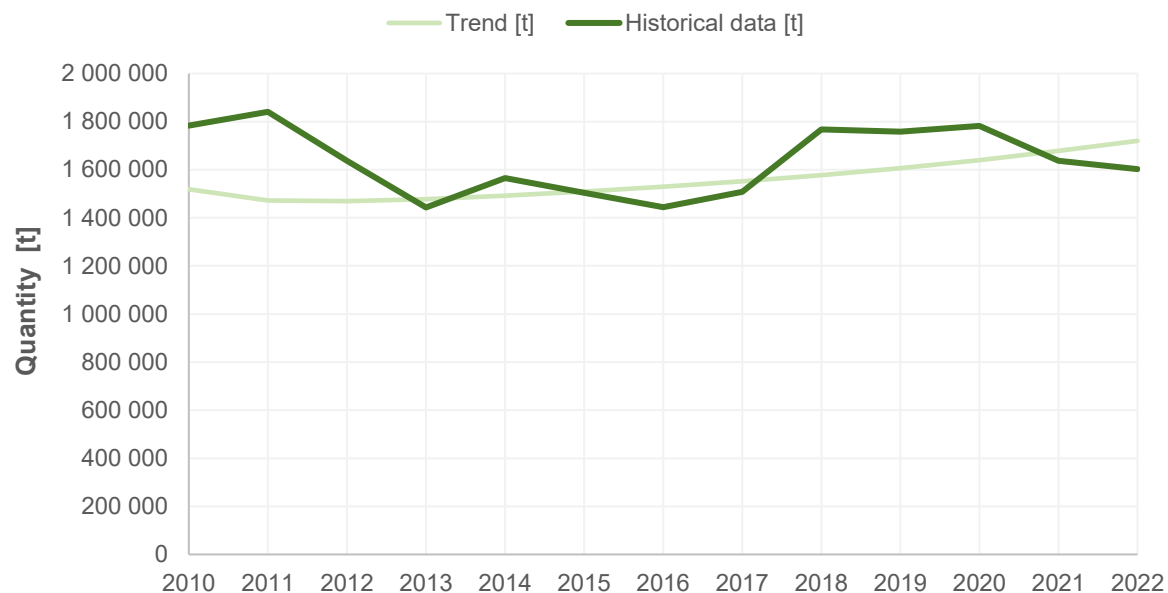
### 2.3.13 Hazardous waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
1.6 million tonnes 	Other Management (57 %) Material recovery (19%)	Negligible	Insufficient, particularly in the area of hazardous waste incineration facilities and technologies for the decontamination and treatment of hazardous waste	Hazardous waste treatment, hazardous waste incineration plants, stabilisation and biodegradation: CZK 12.3 billion by 2035

Hazardous waste, due to its nature and potential harmfulness to humans, organisms and the environment, represents a stream that requires adequate processing capacities. The generation of hazardous waste is influenced predominantly by industrial sectors, but also by the remediation of historical environmental burdens. It is precisely the remediation of historical environmental burdens that has long caused year-on-year fluctuations in hazardous waste generation in individual regions. In some cases, the generation of hazardous waste may also be influenced by construction and demolition activities.

Generation of hazardous waste throughout the Czech Republic (see graph 38) showed a rather declining trend until 2016. However, between 2016 and 2018 an increasing trend in hazardous waste generation is evident, followed by stagnation between 2018 and 2020. The most recent data show a slight decrease in generation in 2022 compared to 2020. Generation in 2022 amounted to 1,602 thousand tonnes, accounted for by 425 catalogue numbers according to the MoE methodology. In the case of 98 catalogue numbers defined as *Other waste*, instances occurred where they exhibited hazardous properties and were subsequently recorded as hazardous waste. This concerned a total of 31,124 tonnes of waste. Conversely, in the case of 38 catalogue numbers defined as hazardous waste, instances occurred where they did not exhibit hazardous properties and were recorded as *Other waste* (309,947 tonnes).

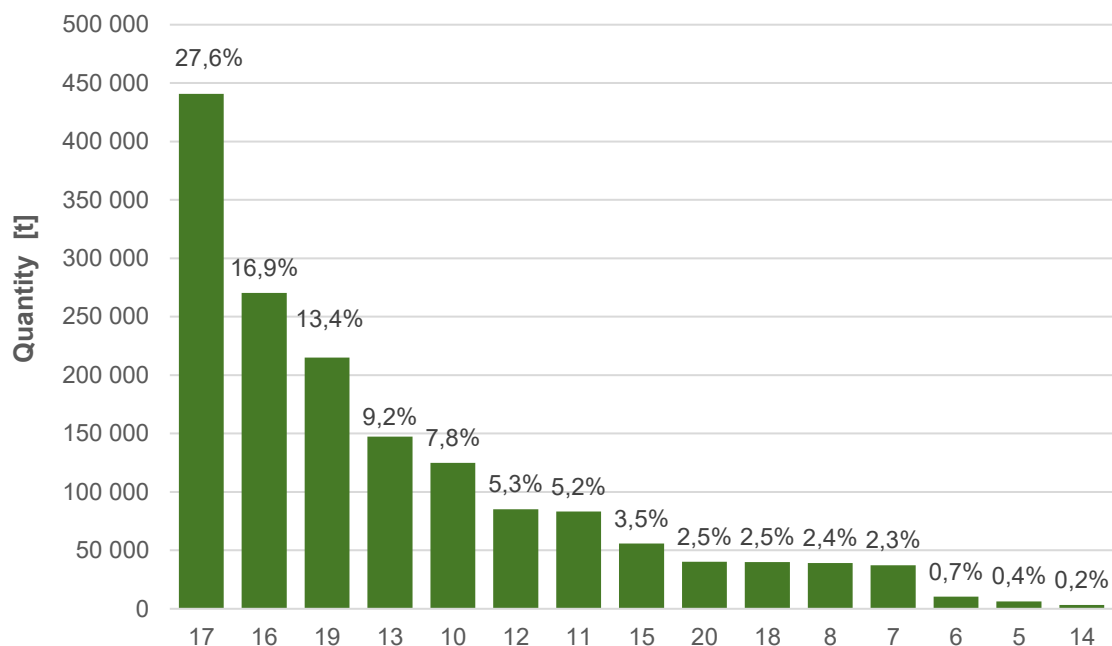
Graph 38: Generation of Hazardous Waste



Source: processed on the basis of WMIS and Tiramiso

In the total generation of hazardous waste, several groups of catalogue numbers dominate. The most significant are waste of group 17 (27.6 %), group 16 (16.9 %), or group 19 (13.4 %) (graph 39).

Graph 39: Groups of the Waste Catalogue Represented in Hazardous Waste in 2022 – top 15



Source: processed on the basis of WMIS

The management of the hazardous waste stream as a whole was mentioned in Chapter 2.2.1. Given the diversity of hazardous waste, it is appropriate to monitor its generation and the network of facilities for its management by subdividing into sub-streams according to their physical-chemical properties, which determine the type of facility required for their processing.

Wastes identified as wastes that should be processed at de-emulsification stations are also processed there (treatment prior to disposal predominates). These wastes are processed in the preferred manner. The capacity of de-emulsification stations is almost sufficient for current generation; however, it is unevenly distributed.

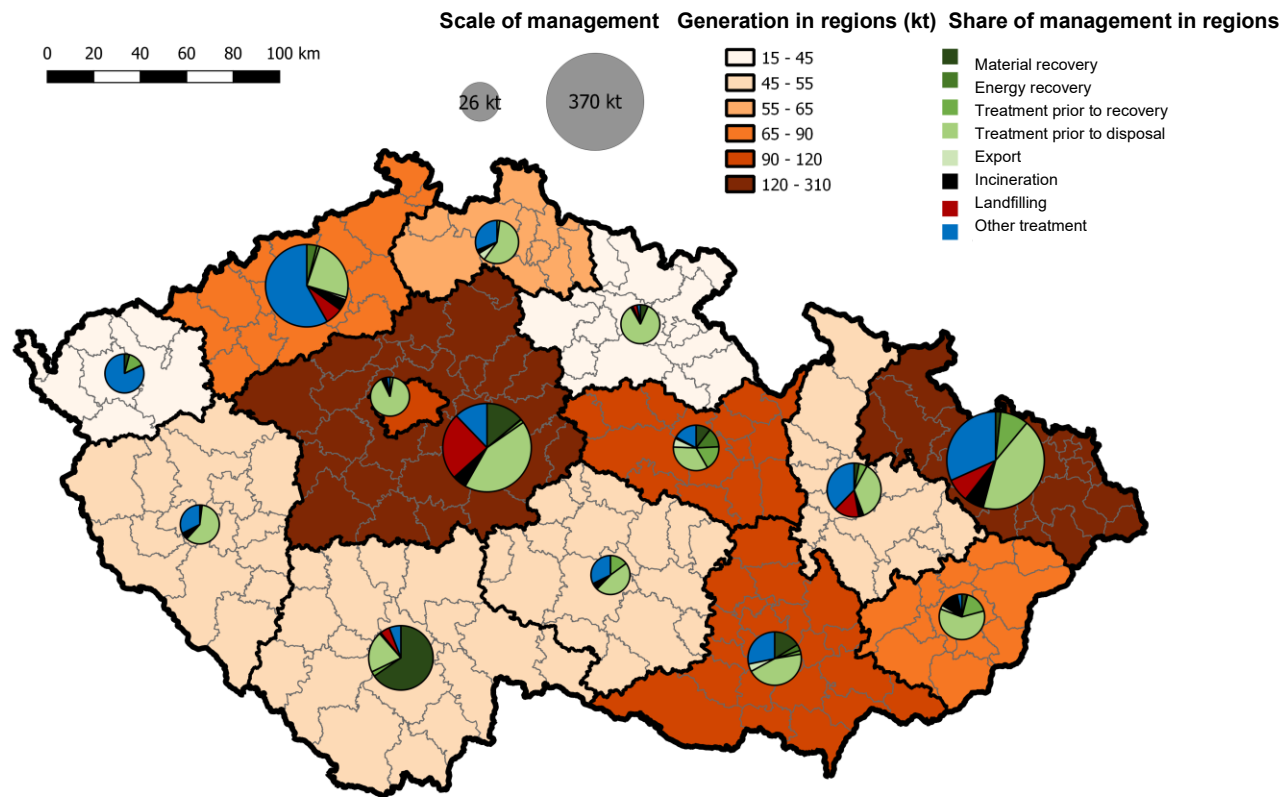
Wastes identified as wastes that should be processed at neutralisation stations are processed in the preferred manner. The capacity of neutralisation stations is sufficient for current generation. The network of neutralisation stations is uneven, as is the case with de-emulsification stations. A capacity deficit is present in the Vysočina, Liberec, Olomouc and Plzeň Regions.

Wastes classified in the sub-stream of wastes exclusively for biodegradation or suitable for biodegradation are managed predominantly in the preferred manner. Key is the generation of the sub-stream suitable for biodegradation, given the negligible generation of the sub-stream exclusively for biodegradation. Non-preferred management amounts to approximately 13% of generation, consisting of the use of waste as technological material for landfill cover. Given the overall high generation of this sub-stream of over 500 thousand tonnes, this 13% results in a capacity deficit of up to 80 thousand tonnes. The capacity of biodegradation areas is not sufficiently distributed across the territory of the Czech Republic. Surplus capacities exist only in the Central Bohemian and South Bohemian Regions, and partly in the Zlín Region.

Wastes classified in the sub-stream of wastes that should end exclusively at stabilisation lines are managed in 80% of cases in the preferred manner. In the future, non-preferred management will be dominated by the use of waste as technological material for landfill cover. The utilisation of stabilisation lines, in view of the current generation of hazardous waste, is insufficient and from a nationwide perspective there is a deficit of 25 to 30 thousand tonnes. Sufficient stabilisation line capacity in view of future generation appears in the South Bohemian and Olomouc Regions. A significant deficit exists in the South Moravian and Zlín Regions. In the other regions the balance is approximately even, but in meeting the forecast capacities should be strengthened.

Incinerators for hazardous waste are a key technology for the safe management of combustible hazardous waste. With current hazardous waste generation, there is a shortfall of incineration capacity of roughly 45 thousand tonnes. The quantity of this waste is still increasing. At the same time, almost 16% of this waste is managed in a non-preferred manner (landfilling and the use of technological material for landfill cover). Sufficient capacity for preferred management of combustible waste is shown in the South Bohemian, Pardubice and Karlovy Vary Regions. Although hazardous waste incineration capacities in these regions are not significant or are non-existent (Karlovy Vary Region), the balance is positive due to high material recovery of hazardous waste (South Bohemian, Karlovy Vary) or the treatment of this waste for its subsequent energy recovery (Pardubice Region).

Figure 11: Map of generation and share of management in the regions with hazardous waste in 2022



Source: processed on the basis of WMIS

Table 32: Generation and Management 2018–2022 – Hazardous Waste I

Year	Generation of	Energy Recovery			Recycling			Material Recovery		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	1,573	35	2.2	2.3	200	12.0	13.5	357	21.9	24.0
<b>2019</b>	1,625	44	2.7	2.8	208	11.9	13.5	404	23.7	26.3
<b>2020</b>	1,626	61	3.7	3.9	276	16.8	17.4	345	21.0	21.8
<b>2021</b>	1,497	25	1.5	1.7	304	19.8	20.7	349	22.7	23.7
<b>2022</b>	1,425	28	1.9	2.0	252	17.3	18.0	277	19.1	19.9

Source: processed on the basis of WMIS

Table 33: Generation and Management 2018–2022 – Hazardous Waste II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	103	6.6	6.9	90	5.7	6.0	903	57.4	60.7
<b>2019</b>	112	6.9	7.3	87	5.3	5.6	892	54.9	58.0
<b>2020</b>	171	10.5	10.8	84	5.2	5.3	923	56.7	58.3
<b>2021</b>	223	14.9	15.2	81	5.4	5.5	791	52.8	53.8
<b>2022</b>	204	14.3	14.6	74	5.2	5.3	812	57.0	58.2

Source: processed on the basis of WMIS

In 2022, the following deficits or surpluses of facility capacities for the management of hazardous waste were identified in the Czech Republic:

- HW suitable for de-emulsification – total deficit 5 thousand tonnes, deficit without landfilling 5 thousand tonnes.
- HW suitable for de-emulsification or stabilisation – total surplus 5 thousand tonnes, surplus without landfilling 4 thousand tonnes.

- HW exclusively for de-emulsification – total deficit 13 tonnes, deficit without landfilling 13 tonnes.
- HW suitable for neutralisation – total deficit 466 tonnes, deficit without landfilling 466 tonnes.
- HW suitable for biodegradation – total deficit 13 thousand tonnes, deficit without landfilling 81 thousand tonnes.
- HW suitable for biodegradation or stabilisation – total deficit 16 thousand tonnes, deficit without landfilling 37 thousand tonnes.
- HW exclusively for biodegradation – total surplus 104 tonnes, surplus without landfilling 75 tonnes.
- HW suitable for incineration – total deficit 18 thousand tonnes, deficit without landfilling 72 thousand tonnes.
- HW suitable for incineration or stabilisation – total deficit 8 thousand tonnes, deficit without landfilling 10 thousand tonnes.
- HW exclusively for incineration – total deficit 25 thousand tonnes, deficit without landfilling 43 thousand tonnes.
- HW exclusively for stabilisation – total surplus 1 thousand tonnes, surplus without landfilling 25 thousand tonnes.

The highest deficits in the Czech Republic in 2022 were recorded for hazardous waste **suitable for biodegradation** in the Pardubice Region (55 thousand tonnes), the Moravian-Silesian Region (51 thousand tonnes) and the Capital City of Prague (32 thousand tonnes). Surpluses of facility capacities for this type of waste in 2022 were identified in the Central Bohemian Region (76 thousand tonnes) and the South Bohemian Region (68 thousand tonnes).

The highest deficits in the Czech Republic in 2022 were recorded for hazardous waste **suitable for biodegradation or stabilisation** in the Pardubice Region (57 thousand tonnes), the Moravian-Silesian Region (55 thousand tonnes) and the Capital City of Prague (26 thousand tonnes). Surpluses of facility capacities for this type of waste in 2022 were identified in the Central Bohemian Region (73 thousand tonnes) and the South Bohemian Region (64 thousand tonnes).

The highest deficits in the Czech Republic in 2022 were recorded for hazardous waste **designated exclusively for incineration** in the Capital City of Prague (32 thousand tonnes). Surpluses of facility capacities for this type of waste in 2022 were identified in the Central Bohemian Region (76 thousand tonnes) and the South Bohemian Region (68 thousand tonnes).

The highest deficits in the Czech Republic in 2022 were recorded for hazardous waste **designated exclusively for stabilisation** in the South Moravian Region (24 thousand tonnes) and the Zlín Region (13 thousand tonnes). Surpluses of facility capacities for this type of waste in 2022 were identified in the Central Bohemian Region (19 thousand tonnes), the South Bohemian Region (12 thousand tonnes) and the Olomouc Region (12 thousand tonnes).



### Hazardous Waste

**The generation of hazardous waste has been showing a slight long-term increase. In the management of hazardous waste, various forms of hazardous waste treatment predominate. In 2022, more than 200 thousand tonnes of hazardous waste were landfilled, among other reasons due to the lack of capacity in hazardous waste incinerators and biodegradation areas.**

## 2.3.14 End-of-Life Products

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

The total quantity of electrical and electronic equipment placed on the Czech market has been increasing annually; in 2021 approximately 302 thousand tonnes were placed on the market, and in 2022 approximately 322 thousand tonnes of such equipment. Alongside the growing quantity of equipment placed on the market, the quantity of WEEE collected has also been rising – in 2021 almost 106 thousand tonnes were collected, and in 2022 more than 99 thousand tonnes. The level of the collection rate between 2020 and 2022 rather stagnated – in 2020 it reached 57%, in 2021 it was 57.5%, and in 2022 it again returned to the level of 57%. This means that the Czech Republic did not achieve in 2021 and 2022 the minimum required collection rate of 65% set out by Act No. 542/2020 Sb. on End-of-Life Products. Assuming a similar development as so far, the Czech Republic should achieve the required collection rate of 65% by 2025 at the latest. The following graph shows the development of WEEE collection, including the minimum collection rate threshold of 65% set out by Act No. 542/2020 Sb. (Graph 40).

Graph 40: Development of the WEEE Collection Rate in the Czech Republic between 2006 and 2022



Source: processed on the basis of MoE.

The following table (Table 34) shows the development of the quantity of tyres placed on the market and the results of WEEE collection in the Czech Republic between 2016 and 2022.

*Table 34: Quantity of Electrical and Electronic Equipment Placed on the Market and Results of WEEE Collection in the Czech Republic between 2016 and 2022*

Period	Total quantity of EEE placed on the market [t]	WEEE Take-Back Collection [t]	Collection [t]	Total (WEEE Take-Back Collection + Collection) [t]	Take-back Collection and Separate Collection Rate of WEEE [%]
2018	196,918	83,142	9,941	93,083	51.1
2019	236,297	89,338	11,981	101,319	54.2
2020	263,202	98,498	19,817	118,316	57.0
2021	301,537	105,935	27,486	133,421	57.5
2022	321,888	99,019	53,054	152,073	57.0

Source: processed on the basis of MoE.

In the Czech Republic, the largest quantity of electrical and electronic equipment placed on the market is of type 4a – *Large equipment, any external dimension of which exceeds 40 cm*, excluding photovoltaic panels, of which approximately 123 thousand tonnes were placed on the market in 2022, with more than 78 thousand tonnes collected through separate collection or take-back collection. Furthermore, large quantities of type 5 equipment – *Small equipment, none of the external dimensions of which exceeds 50 cm* (over 75 thousand tonnes in 2022), type 1 – *Temperature exchange equipment* (over 56 thousand tonnes in 2022), and type 4b – Photovoltaic panels (over 42 thousand tonnes in 2022) are placed on the Czech market. On the basis of Directive (EU) 2024/884 of the European Parliament and of the Council, products categorised under the so-called open scope have been placed on the market only since 15 August 2018, and their return is expected only after 8–10 years following the end of their service life. The quantities of electrical and electronic equipment placed on the market and the results of take-back collection and separate collection by equipment groups in 2022 are shown in the following table (Table 35).

**Table 35: Quantity of Electrical and Electronic Equipment Placed on the Market and Results of Take-back Collection of Electrical and Electronic Equipment by Groups and Subgroups in the Czech Republic in 2022**

Group of electrical and electronic equipment	EEE Placed on the Market [t]	Total Take-back Collection + Separate Collection of WEEE [t]	Take-back Collection of EEE [t]	Separate Collection of WEEE [t]
1	56,124	31,212	23,468	7,744
2	13,423	8,902	8,853	49
3	1,855	1,270	988	282
4a	122,534	78,242	40,992	37,250
4b	42,528	139	112	27
5	75,255	25,702	19,710	5,992
6	10 1969	6,606	4,896	1,710

Source: processed on the basis of MoE.

In 2022, approximately one fifth of all take-back collected WEEE (just under 29 thousand tonnes) was exported from the Czech Republic, primarily for material recovery (98.3%). This mainly concerned type 1 equipment – *Temperature exchange equipment* (9 thousand tonnes), type 4a – *Large equipment, any external dimension of which exceeds 40 cm, excluding photovoltaic panels* (8.4 thousand tonnes), and type 5 – *Small equipment, none of the external dimensions of which exceeds 50 cm* (7.2 thousand tonnes). WEEE of various groups and their components are an important source of critical raw materials.

In 2023, 6,047 producers of electrical and electronic equipment were registered on the Czech market in the List of EEE Producers within the Waste Management Information System VISOH2, of which 6,011 fulfilled their statutory take-back obligations through 13 collective systems (7 of which manage only historical photovoltaic panels), with the remaining producers fulfilling their obligations individually. Within all these collective systems, in 2022 just under 322 thousand WEEE were taken back (or separately collected), with the largest shares of this value represented by the collective systems ELEKTROWIN, a.s. (36.0%) and ASEKOL, a.s. (32.6%).

In 2022, the Czech Republic achieved a high recovery rate as well as a recycling rate, and thus across all groups of WEEE met the required recovery and recycling rates set out by Act No. 542/2020 Sb. The following table (Table 36) shows an overview of the achieved recovery values of WEEE in 2022, from which it is evident that the Czech Republic met the required recovery and recycling rates for all groups.

Table 36: Overview of Achieved Recovery Values of WEEE in the Czech Republic in 2022

Group of electrical and electronic equipment	Total Take-back Collection [t]	Recovery [t]*	Recovery Rate [%]	Required Recovery Rate (EU) [%]	Recycling [t]**	Recycling Rate [%]**	Required Recycling Rate (EU)* [%]**
1	31,212	29,751	95.3	85	29,569	94.7	80
2	8,902	8,917	100.2	80	8,908	100.1	70
3	1,270	x	x	x	1,070	84.2	80
4a	78,242	73,211	x	x	73,133	x	x
4b	139	159	x	x	159	x	x
4	78,381	73,370	93.6	85	73,292	93.5	80
5	25,702	22,682	88.3	75	22,246	86.6	55
6	6,606	6,260	94.8	75	6,043	91.5	55

Source: processed on the basis of MoE.

In 2022, more than 155 thousand tonnes of WEEE were managed. The most common method of management was material recovery, with just under 106 thousand tonnes treated in this way (69.1%). The second most common method of management was export to EU Member States, which accounted for more than 29 thousand tonnes (18.8%).

The Czech Republic has a relatively well-functioning WEEE take-back collection system and a robust collection network; most producers of electrical and electronic equipment on the Czech market are involved in collective systems and do not avoid fulfilling their obligations. Most WEEE is also processed and recycled directly in the Czech Republic. The quality of WEEE processing has been ensured through the introduction of mandatory certification of WEEE processors. A large share of citizens are aware that WEEE must be sorted and handed over separately.

A specific area within WEEE is WEEE with integrated batteries (telephones, power tools, electronic cigarettes), which place higher demands on disassembly and recycling. These devices, when properly managed, are a source of critical raw materials. A problem that arises in practice is that, contrary to obligations,

rechargeable lithium batteries are often not easily removable from electronic devices and thus reach processors together with WEEE, which significantly endangers safety. During processing, fire may easily occur. The safe management of used lithium batteries is a priority, so as to prevent threats to property, human health and the environment. Batteries must always be removed from WEEE and responsible proper management ensured, in order to minimise negative impacts.

A shortcoming in this area is the low frequency of inspections of producers and collective systems due to insufficient personnel capacities of the inspection authorities. The aim for the future should be the recycling of the maximum possible quantity of WEEE within the Czech Republic, which would bring greater resource independence, as well as ensuring the effective operation of collective systems for selected long-life equipment (e.g. photovoltaic panels) and continuing education of both citizens and companies in the field of take-back collection. Given the increasing quantity of electrical and electronic equipment placed on the market, it is also appropriate to modernise and expand the recycling capacities for WEEE in the Czech Republic, and to support processing capacities for the recovery of fractions from the treatment of such equipment.

### 2.3.14.2 Waste Batteries

The total quantity of batteries placed on the Czech market fluctuates annually but shows an overall increase. In 2021, approximately 5.2 thousand tonnes of portable batteries, more than 12 thousand tonnes of industrial batteries, and more than 23 thousand tonnes of automotive batteries were placed on the market in the Czech Republic (a total of more than 41 thousand tonnes of batteries). In 2022, more than 5.2 thousand tonnes of portable batteries, nearly 20 thousand tonnes of industrial batteries, and more than 21 thousand tonnes of automotive batteries were placed on the market (a total of more than 46 thousand tonnes of batteries). The development of take-back collection of portable batteries has been slightly increasing since 2017, and since 2016 it has consistently remained above the level of 45%, i.e. the minimum threshold set until 2016 by Directive 2006/66/EC,<sup>27</sup> and since 2021 by Act No. 542/2020 Sb. on End-of-Life Products. Specifically, the take-back collection rate of waste portable batteries in the Czech Republic was 50.5% in 2021 and 50.2% in 2022..

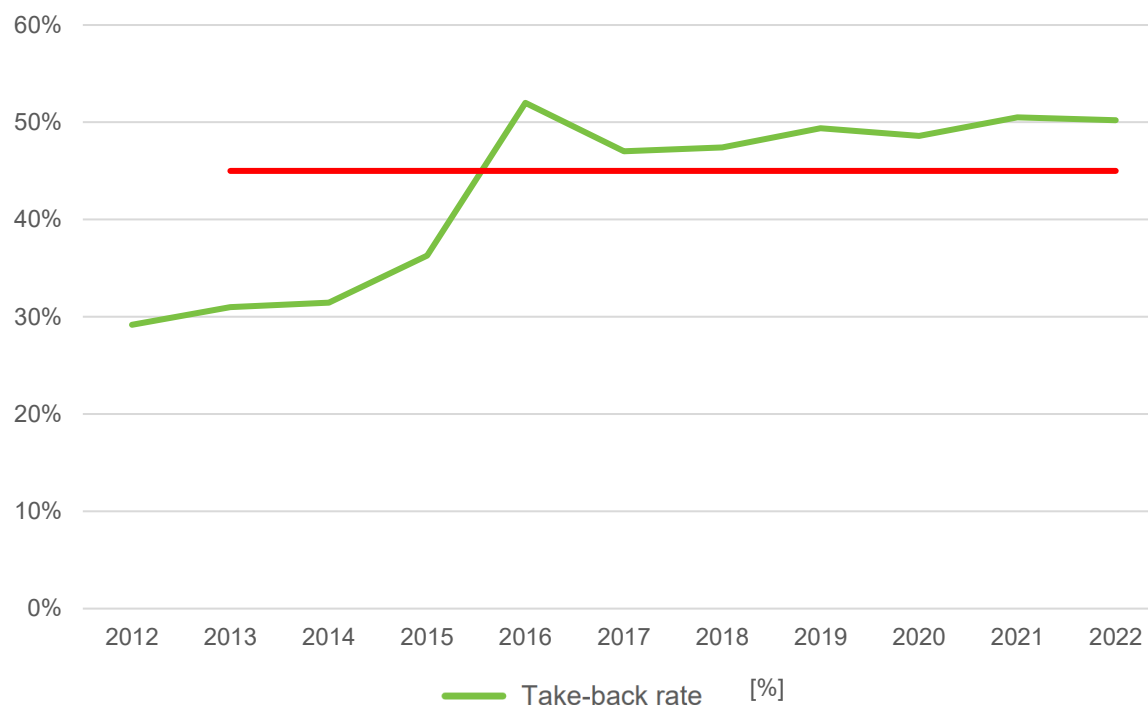
The number of take-back collection points for portable batteries currently in the Czech Republic amounts to 1,094 (source: WMIS, MoE).

The following graph (Graph 41) shows the development of take-back collection of waste portable batteries, including the minimum collection rate threshold of 45% set out by Act No. 542/2020 Sb.

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<sup>27</sup> Directive 2006/66/EC of the European Parliament and of the Council on batteries and accumulators and waste batteries and accumulators.

Graph 41: Development of the Take-back Collection Rate of Waste Portable Batteries in the Czech Republic between 2012 and 2022



Source: processed on the basis of MoE.

In 2021, 12.7 thousand tonnes of industrial batteries were placed on the market in the Czech Republic, of which just under 2.5 thousand tonnes were taken back. The take-back collection rate of waste industrial batteries thus reached 22.9%. In 2022, more than 19.7 thousand tonnes of industrial batteries were placed on the market, with just under 2.4 thousand tonnes taken back. The take-back collection rate in 2022 therefore amounted to 17.6%. The overall take-back collection rate decreased year-on-year mainly due to the increased number of industrial batteries placed on the market (there are approximately 750 producers of industrial batteries and accumulators on the market). Around 70 % of these manufacturers meet their collection obligations through ECOBAT, s.r.o., which remains the only collective system in the CR authorised for industrial batteries. The remaining manufacturers fulfil their obligations individually.

The company Kovohutě Příbram recycled a total of 22.6 thousand tonnes of automotive batteries from the Czech Republic in 2022. Of this, 18.3 thousand tonnes were in the take-back regime and 4.3 thousand tonnes in the waste regime. The collection efficiency of automotive batteries is at the level of 100%.

As for portable batteries, 5.2 thousand tonnes were placed on the market, with 2.5 thousand tonnes taken back. The largest share of take-back collection in 2022 was accounted for by automotive batteries, of which 21 thousand tonnes were placed on the market and just under 19 thousand tonnes were taken back (Table 37). In the long term, the curve of take-back collection of portable batteries shows a slight increase, while for industrial batteries it rather decreases or stagnates. The take-back collection curve increased until 2021, and since 2021 it has been declining at a rate similar to the increase in the quantity of this type of battery placed on the market.

*Table 37: Quantity of Batteries Placed on the Market and Taken Back in the Czech Republic in 2022 by Groups*

Group	Quantity of Products Placed on the Market [t]	Quantity of Products Taken Back [t]
Portable batteries	5,209	2,571
Industrial batteries	19,666	2,391
Automotive batteries	21,359	18,938
<b>Total</b>	<b>46,234</b>	<b>24,900</b>

Source: compiled on the basis of Annual Reports data, MoE

The most widespread electrochemical type of batteries placed on the Czech market in 2022 were lead batteries (67.3%), followed by batteries classified in the category Other (31.7%). Nickel-cadmium cells accounted for a marginal share of the number of batteries placed on the market (1%) (Table 38).

*Table 38: Quantity of All Batteries Placed on the Czech Market in 2022 by Electrochemical Types*

Electrochemical Type of Batteries	Total Placed on the Czech Market	Total Placed on the Czech Market [%]
Lead	31,084	67.3
Nickel-Cadmium	465	1.0
Other	14,685	31.7
<b>Total</b>	<b>46,234</b>	<b>100</b>

Source: compiled on the basis of Annual Reports data, MoE

On the Czech market, primary cells of portable batteries have long held the largest share compared to secondary ones (in 2022 a total of 61.6% primary cells), specifically alkaline and zinc-chloride and zinc-carbon cells, i.e. cells with the fastest turnover. Between 2021 and 2022, the share of alkaline primary cells increased (from 70.6% to 72.3%) at the expense of zinc cells (from 24.9% to 19.2%), which consumers are losing interest in. Secondary cells, which can be recharged, are considered more suitable. The share of secondary cells has been rising year-on-year; from 2020 to 2022, this share of the total quantity of portable batteries increased by 3.3% (from 35.1% to 38.4%). Within secondary cells, Li-Ion/Li-Pol batteries have long had the largest share (79.7% in 2022). Waste batteries of various compositions are an important source of critical raw materials. In the coming decade, an increase in lithium batteries is expected, which, due to their high content of critical raw materials, will be a key factor for the development of electromobility, energy, and other industrial sectors.

According to the estimate of the AKUBAT association, as at 31 December 2024, battery storage facilities with a capacity of 2 GWh are installed in the Czech Republic, representing approximately 20,000 tonnes of batteries. The very roughly estimated costs of meeting the obligation of take-back collection and recycling at current prices amount to CZK 1.44 billion. Of this, household installations (photovoltaics) account for 86%, i.e. 1.72 GWh, which represents approximately 17,200 tonnes of batteries and estimated costs of approximately CZK 1.29 billion.

In the past, a major problem throughout the European Union was the lack of processing capacities for the management of waste industrial batteries. In recent years, however, significant changes have occurred and new recycling lines are gradually being built across Europe. In the Czech Republic, unfortunately, there is currently only one recycling line, with an annual capacity of 250 tonnes. In the future, it will be necessary to build new capacities for the processing (recycling) of waste industrial batteries, as higher generation can be expected due to the expansion of photovoltaic power plants and electromobility. Another option is the re-use of used industrial batteries in equipment that does not require such a high output. There are currently four companies in the Czech Republic engaged in transforming industrial batteries into energy storage systems.

As of 1 January 2024, there were 1,701 take-back collection points in the Czech Republic where automotive or industrial batteries could be handed in. On the same date, a total of 3,114 battery producers were registered in the Czech Republic. Of these, 2,598 dealt with portable batteries, 620 with industrial batteries, and 193 with automotive batteries. There are only two collective systems of battery producers operating on the Czech market – ECOBAT s.r.o. and REMA Battery s.r.o. In 2022, there were a total of 2,489 producers of portable batteries on the Czech market, with annual reports submitted for 1,399 of them by the collective system ECOBAT s.r.o. (56.2%), and for the remaining 1,090 by the collective system REMA Battery s.r.o. (43.8%). Industrial and automotive batteries were reported in 2022 exclusively through individual systems.

In 2022, less than 19 thousand tonnes of automotive waste batteries, 2.5 thousand tonnes of portable batteries, and less than 2.4 thousand tonnes of industrial batteries were managed in the Czech Republic. The entire quantity (100%) of automotive batteries was recycled, and the majority of industrial batteries were also recycled (92.9%). Approximately half of the portable batteries were recycled (51.2%), with another part exported to EU Member States (38.5%).

A large part of the population in the Czech Republic is conscientious and sorts waste batteries, handing them over separately into the system for recovery. A problem that arises in practice is that, contrary to obligations, rechargeable lithium batteries are often not easily removable from electronic devices and thus

reach processors together with WEEE, which significantly endangers safety. During processing, fire may easily occur. The safe management of used lithium batteries is a priority, so as to prevent threats to property, human health and the environment. Batteries must always be removed from WEEE and responsible proper management ensured, in order to minimise negative impacts.

The Czech Republic has sufficient capacity for the processing of lead and nickel-cadmium batteries.

According to the assessment, the state of processing capacities in the Czech Republic is as follows: Pb batteries – capacity fully sufficient (for 100%), NiCd industrial batteries – capacity fully sufficient (for 100%), although this concerns treatment, final recycling takes place outside the EU, NiCd portable batteries – capacity completely insufficient (0%), NiMH batteries – capacity completely insufficient (0%), ZnC and alkaline batteries – capacity partially sufficient (for 50%), Li primary – capacity completely insufficient (0%), Li-ion batteries – capacity insufficient (up to 20%).

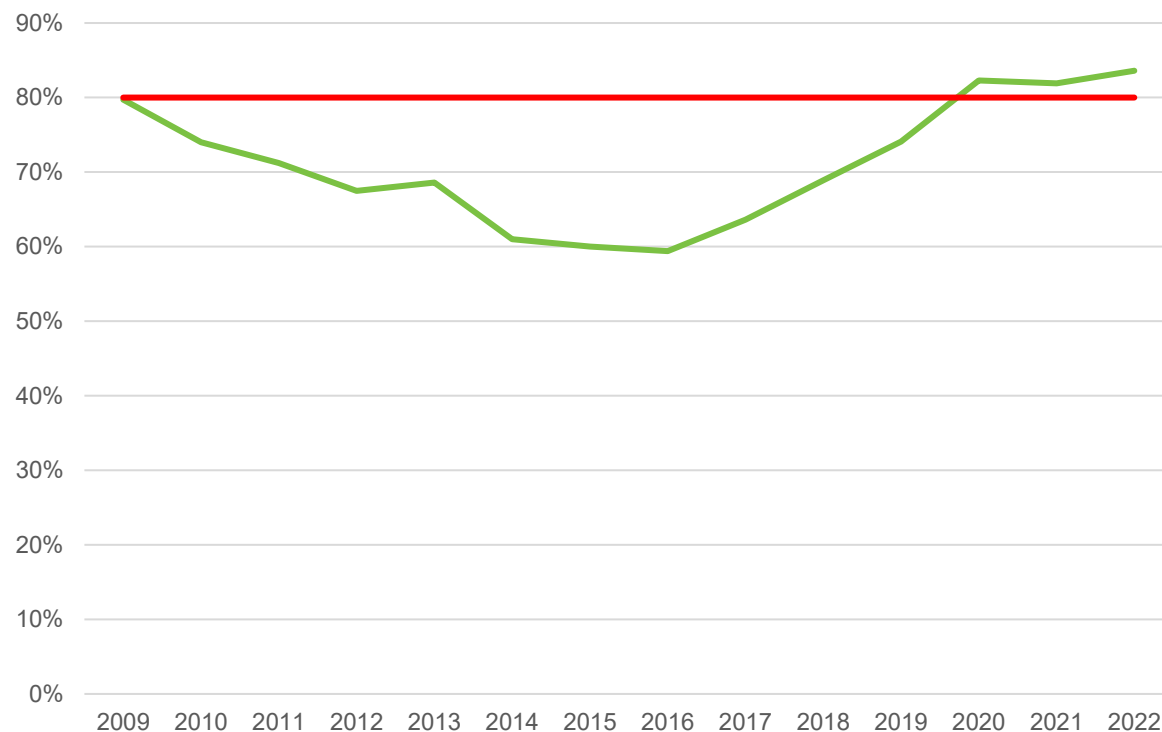
The Czech Republic has also long been meeting the targets set by European legislation, thanks also to having a sufficient collection network capacity and functioning systems operated by collective systems. The weak point is the take-back collection of industrial and automotive batteries, which should start to increase. Thanks to their parallel occurrence in the waste regime, the return rate of automotive waste batteries approaches 100%. The take-back collection of lithium batteries is expected to become challenging in the coming years, as extremely high quantities of Li-ion industrial batteries have been placed on the market in connection with photovoltaics. A major problem could be the so-called old photovoltaic systems, where according to some estimates recycling costs could reach amounts as high as hundreds of millions or even up to one billion CZK.

The primary objectives in the field of waste batteries should be continued awareness-raising (especially for industrial batteries towards companies and for automotive batteries), support for the construction of processing facilities, and an increase in inspection activities to reduce the level of free-riding.

### 2.3.14.3 Waste Tyres

The total quantity of tyres placed on the Czech market increases every year: in 2020, more than 89 thousand tonnes of tyres were placed on the market, in 2021 more than 106 thousand tonnes, and in 2022 more than 108 thousand tonnes. Together with the quantity of tyres placed on the market, the level of take-back collection has also increased, quite significantly until 2016. The take-back collection rate of waste tyres reached 81.9% in 2021 and 83.6% in 2022. Thus, in both 2021 and 2022, the Czech Republic achieved the required minimum take-back collection rate of 70% set out by Act No. 542/2020 Sb. on End-of-Life Products until 2021, as well as the threshold of 80% set by the same Act after 2022. The following graph (Graph 42) shows the development of take-back collection of waste tyres, including the minimum take-back collection rate threshold of 80% set out by Act No. 542/2020 Sb.

Graph 42: Development of the Take-back Collection Rate of Waste Tyres in the Czech Republic between 2009 and 2022



Source: compiled on the basis of Annual Reports data, MoE

The following table (Table 39) shows the development of the quantity of tyres placed on the market and the results of WEEE collection in the Czech Republic between 2016 and 2022. The quantity of tyres placed on the market in 2020 can be explained by the suspension of industrial production and the lockdown resulting from the COVID-19 pandemic.

*Table 39: Quantity of Tyres Placed on the Market and Taken Back in the Czech Republic between 2015 and 2022*

Year	Quantity of Tyres Placed on the Czech Market [t]	Quantity of Tyres Taken Back [t]	Take-back rate [%]
2018	93,448	64,339	68.9
2019	94,694	70,202	74.1
2020	89,446	73,590	82.3
2021	106,631	79,400	81.9
2022	108,681	84,975	83.6

Source: compiled on the basis of Annual Reports data, MoE

In 2022, just under 86 thousand tonnes of waste tyres were taken back, the largest quantity of these tyres being taken back from retail (84.3%), followed by industry (8.9%), while the smallest share came from waste tyres collected within municipalities (6.9%). The share of waste tyres taken back within municipalities has been increasing: in 2015, 713 tonnes were taken back by municipalities, whereas in 2022 it was 5,822 tonnes.

In 2022, just under 85 thousand tonnes of waste tyres were managed in the Czech Republic, with the largest part of these tyres materially recovered (67.4%), a smaller part used for energy recovery (29.5%), and other management methods being marginal. Between 2015 and 2022, the energy recovery of tyres decreased by almost half (from 51% to 29.5%), while material recovery more than doubled (from 32.7% to 67.4%).

There is one collective system in the Czech Republic dealing with waste tyres – ELT Management Company Czech Republic, s.r.o. Through this collective system, a total of 243 tyre producers fulfilled their take-back obligations in the first quarter of 2024, while the remaining 117 producers fulfilled their take-back obligations individually.

The Czech Republic has a sufficient number of take-back collection points for waste tyres, as well as high public interest in handing waste tyres over at these points. Municipalities are also increasingly interested in joining the take-back collection system. The recovery of waste tyres in the Czech Republic is also high, particularly in terms of material recovery. The biggest problems in the field of waste tyres are free-riding in connection with tyre imports from the European Union and from third countries, including via digital platforms mediating tyre sales (marketplaces), high collection logistics costs, and insufficient uptake of recyclates from waste tyres. The general aim should be to further increase the take-back collection rate of waste tyres in the Czech Republic through information and awareness campaigns, expansion of the network of take-back points, and simplification of tyre collection logistics, as well as by preventing situations where

collection points refuse to take back waste tyres. Given the increasing quantity of tyres placed on the market, it is also appropriate to support the construction of logistics centres to optimise transport and the construction of new recycling facilities.

#### 2.3.14.4 End-of-Life Vehicles

End-of-life vehicles (ELVs) are recorded in the Czech Republic within the End-of-Life Vehicles Module of the Waste Management Information System (MA WMIS), in which more than 2.2 million ELVs were registered as of 1 January 2024. The number of ELVs recorded in this system grew steadily until 2019, when it reached its peak (178,401). Since then, it has rather declined, with the exception of 2021, when it returned to a similar level as in 2019. In 2021, 176,664 ELVs were recorded within MA WMIS, in 2022 the figure was 162,240 ELVs, and in 2023 it was 158,204 ELVs (Table 40). The declining trend is the result of various factors, including economic conditions (price increases), environmental measures, and changes in consumer behaviour.

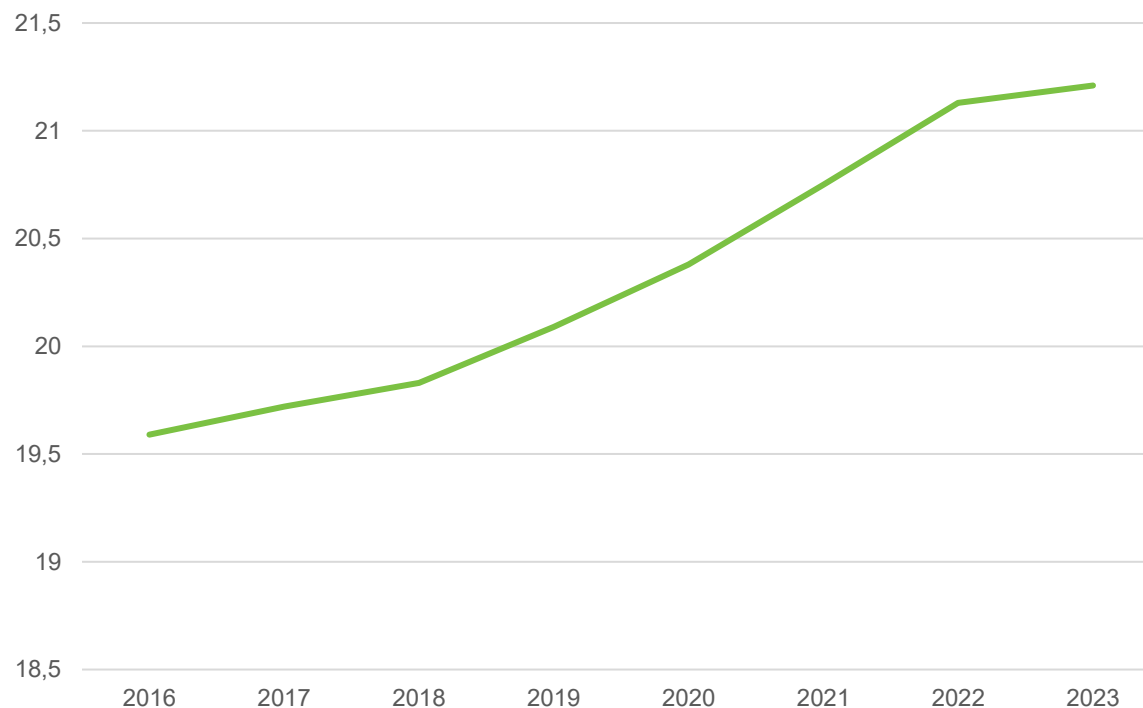
*Table 40: Number of End-of-life Vehicles Recorded in MA WMIS between 2016 and 2023*

Year	Total
2018	171,618
2019	178,401
2020	169,623
2021	176,664
2022	162,240
2023	158,204

Source: compiled on the basis of MA WMIS data

The average weight of end-of-life vehicles in the Czech Republic is also increasing every year (Graph 43). It was 0.96 tonnes in 2015 and 1.13 tonnes in 2021. The age of the Czech vehicle fleet is also increasing: while in 2015 the average age of a vehicle was 19.42 years, by 2024 it had risen to 21.77 years. A particularly significant increase occurred in 2020, when the average age rose by 0.66 years compared to the previous year. This jump may again be attributed to various factors, including the impacts of the coronavirus pandemic on the car market and consumer behaviour.

Graph 43: Development of the Average Age of End-of-life Vehicles in MA WMIS between 2016 and 2023



Source: compiled on the basis of MA WMIS data

In 2022, according to MA WMIS, a total of 158,189 end-of-life vehicles (ELVs) were received and recorded in the Czech Republic, with a total weight of just under 181 thousand tonnes. Of this, more than 77 thousand tonnes were processed in shredders, with the majority of this waste materially recovered (90.9%) and a smaller part disposed of (2.4%). A larger part of the waste generated from selected ELVs, more than 86 thousand tonnes, was treated outside shredders. The majority of this waste was materially recovered (94.1%), and a smaller part was used for energy recovery (4.2%). In that year, the Czech Republic partially met the targets for reuse, recovery and recycling, which are set at 95% for reuse and recovery, and 85% for reuse and recycling. In 2020, the Czech Republic failed to meet the target for the reuse and recovery rate of ELVs: the reuse and recovery rate that year reached 94.83%, i.e. 0.17% below the threshold. In 2021, the Czech Republic did meet this threshold, with a reuse and recovery rate of 96.13%. In 2022, the Czech Republic again failed to reach the 95% threshold, achieving a reuse and recovery rate of 94.34%, i.e. 0.66% below the threshold. The Czech Republic achieved the recycling and reuse targets in all

years between 2020 and 2022. In 2020, this rate reached 90.16%, in 2021 it was 91.19%, and in 2022 it was 89.49%. End-of-life vehicles (ELVs) and their components are a significant source of critical raw materials (aluminium, magnesium and others).

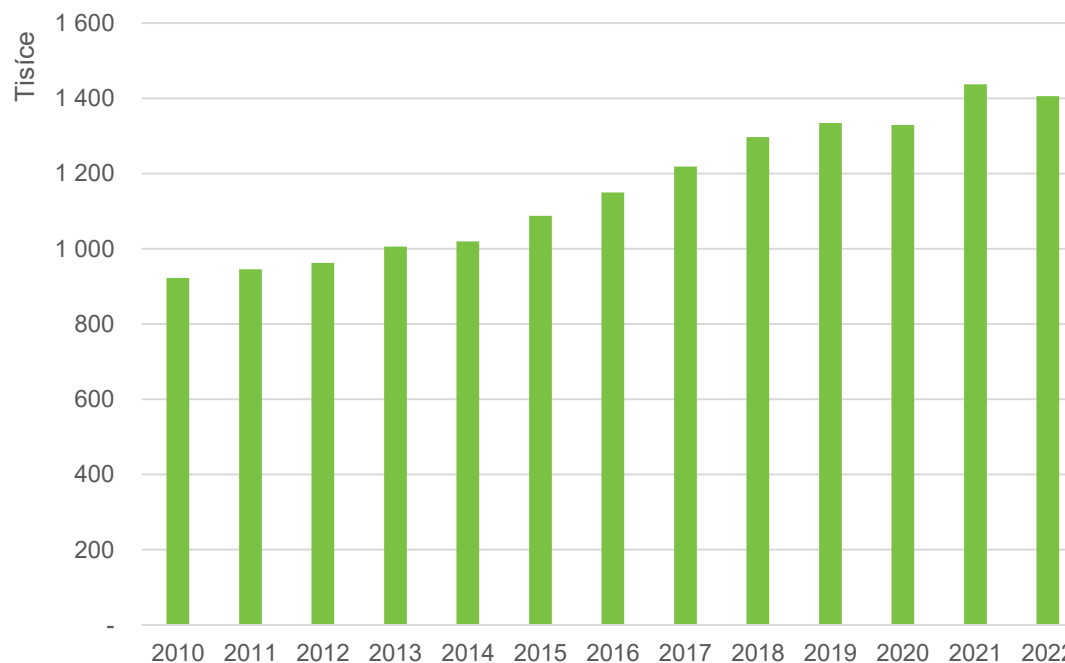
Although the number of active facilities receiving ELVs has been decreasing each year, it still remains relatively high. While in 2019 there were 505 such facilities in the Czech Republic, by 2023 the number had decreased to 466. As of 1 January 2024, the largest numbers of these facilities were located in the Central Bohemian Region (56), the Pardubice Region (42), and the South Moravian Region (41). The largest share of the total number of facilities (207) in 2023 processed on average between 101 and 500 ELVs per year, while the second largest group, rather smaller facilities (113), processed fewer than 50 ELVs per year on average.

The Czech Republic has a sufficient capacity of processing facilities (ELV shredders with subsequent recycling) and a sufficiently dense collection network for ELVs. Among the biggest problems are the storage of ELVs on sites lacking water management safeguards and the illegal dismantling of ELVs. The aim of the Czech Republic should continue to be to achieve a high recovery rate in the processing of ELVs, as well as to set standards for the collection and processing of ELVs and standards for the reuse of vehicle parts.

### **2.3.15 Packaging And Packaging Waste**

The quantity of packaging waste in the Czech Republic has been increasing year-on-year, with the average annual growth since 2010 amounting to approximately 40 thousand tonnes of such waste. From 2020 to 2021, the total quantity of packaging waste increased by about 109 thousand tonnes, from 1,328 thousand tonnes to 1,437 thousand tonnes. From 2021 to 2022, the total quantity of packaging waste, on the contrary, decreased slightly from 1,437 thousand tonnes to 1,405 thousand tonnes, i.e. by approximately 32 thousand tonnes. In 2022, the total quantity of packaging waste generated in the Czech Republic amounted to 1,405.3 thousand tonnes, which is roughly 483 thousand tonnes more than in 2010 (Graph 44).

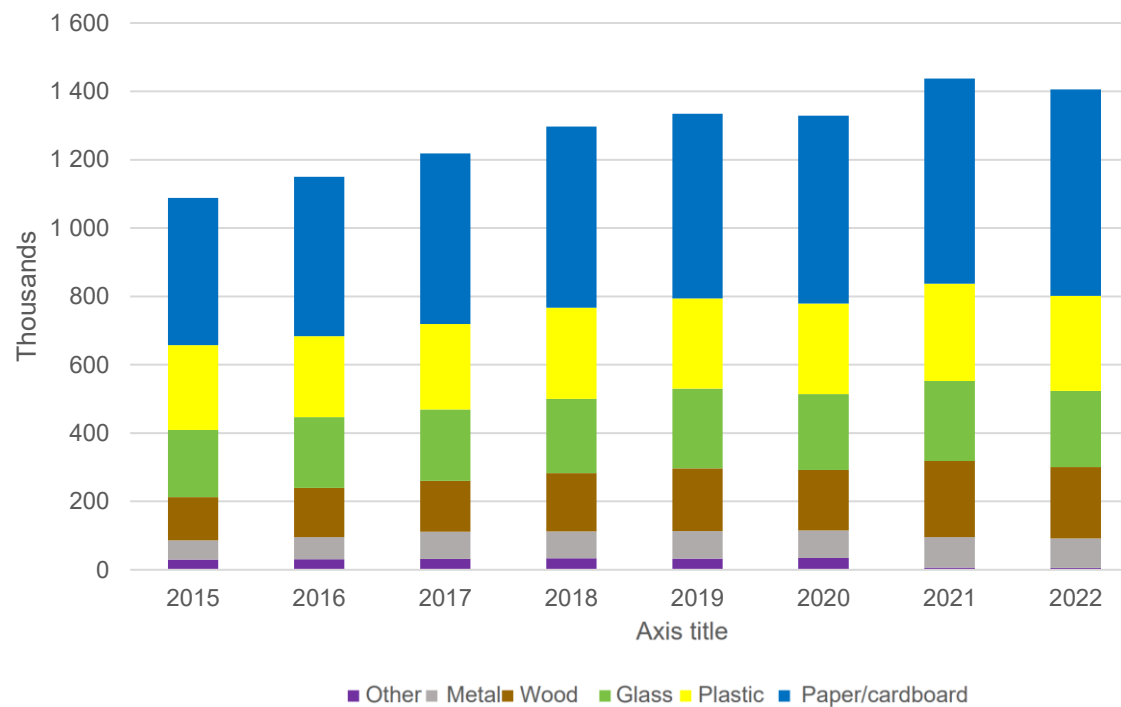
*Graph 44: Total quantity of packaging waste generated in the Czech Republic between 2010 and 2022 in thousand tonnes:*



Source: processed on the basis of MoE.

In the long term, the commodity with the largest share of the total quantity of packaging waste is paper/cardboard, which was also the case in 2022, when just under 604 thousand tonnes of this waste were generated. The second most represented commodity in 2022 was plastics (278 thousand tonnes), followed by glass (just under 223 thousand tonnes), wood (just under 209 thousand tonnes), metals (86 thousand tonnes), and packaging waste classified as Other (5.5 thousand tonnes). The following graph (Graph 45) shows the total quantity of packaging waste generated between 2015 and 2022 in the Czech Republic by commodity.

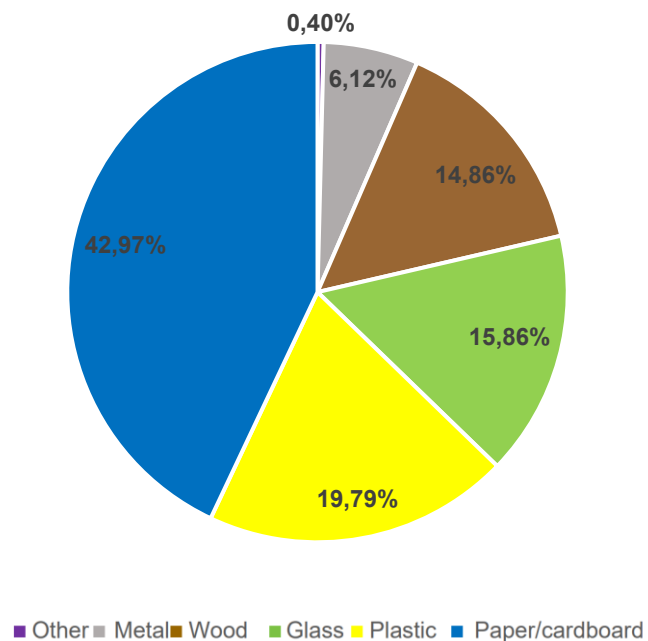
Graph 45: Total quantity of packaging waste generated in the Czech Republic between 2015 and 2022 by commodity



Source: processed on the basis of MoE.

The next graph (Graph 46) provides a clearer overview of the distribution of packaging waste generated in 2022 in the Czech Republic by commodity.

Graph 46: Percentage distribution of packaging waste generated in the Czech Republic in 2022 by commodity



Source: processed on the basis of MoE.

The year-on-year growth in the paper/cardboard commodity has been slightly increasing since 2015, and between 2015 and 2022 the quantity of this waste increased by more than 173 thousand tonnes (604 thousand tonnes in 2022). The year-on-year growth of plastic waste recorded a number of fluctuations between 2015 and 2022, with the total quantity increasing by more than 31 thousand tonnes during this period (278 thousand tonnes in 2022). The total quantity of glass packaging waste increased until 2019; between 2019 and 2021 the quantity fluctuated, and after 2022 it decreased rather significantly. Between 2015 and 2022, the total quantity of this waste increased by more than 26 thousand tonnes (223 thousand tonnes in 2022). In the case of metal packaging waste, the quantity of non-ferrous metal packaging waste increased slightly between 2015 and 2022. The quantity of ferrous metals increased until 2017, then stagnated until 2021, and after this year even decreased. Overall, the quantity of metal packaging waste increased by more than 30 thousand tonnes in the period between 2015 and 2022. The quantity of wood packaging waste also more or less increased over the whole period between 2015 and 2022 (with a fluctuation between 2019 and 2022 and after 2021). Nevertheless, during this period the quantity of this waste increased by more than 82 thousand tonnes.

The only authorised packaging company in the field of packaging waste in the Czech Republic is the authorised company EKO-KOM, a.s. As of 1 February 2024, a total of 579 entities were listed on the Register of Entities pursuant to Act No. 477/2001 Sb., on Packaging. On the same date, 21,200 companies placing packaged goods on the Czech market were involved in the EKO-KOM system. Through the EKO-KOM system, companies cooperated with 6,176 municipalities of the Czech Republic, inhabited by 10,553,339 residents of the Czech Republic (99% of the population), as well as with other entities ensuring the management of packaging waste.

In 2021 and 2022, the Czech Republic fulfilled the share of recycled packaging waste in almost all of the aforementioned commodities, except for plastics. In 2021, the share of recycled packaging waste in the glass commodity was 81.4%, and in 2022 it was 84.6%. The Czech Republic thus complied with the required recycling rate laid down by Act No. 477/2001 Sb., on Packaging, set at 75% (Table 41).

In 2021, the share of recycled packaging waste in the paper/cardboard commodity was 88.4%, and in 2022 it was 91.2%. The Czech Republic thus complied with the required recycling rate under Act No. 477/2001 Sb., of 75%.

In 2021, the share of recycled packaging waste in the metal commodity was 67.4%, and in 2022 it was 67.8%. The Czech Republic thus complied with the required recycling rate under Act No. 477/2001 Sb., of 55%.

In 2021, the share of recycled packaging waste in the wood commodity was 39.4%, and in 2022 it was 41.3%. The Czech Republic thus complied with the required recycling rate under Act No. 477/2001 Sb., of 15%.

Only in the case of plastics did the Czech Republic fail to meet the required recycling rate stipulated by Act No. 477/2001 Sb. in 2021 and 2022, since the recycling share was 45.1% in 2021 and 47.2% in 2022. The statutory share is set at 50%. Nevertheless, the recycling rate in the Czech Republic increases every year, and therefore in the coming years it should achieve the required levels of recycling.

*Table 41: Share of recycled packaging waste in the Czech Republic between 2015 and 2022 by commodity (%)*

Specimen	2015	2016	2017	2018	2019	2020	2021	2022
Glass	72.6	72.8	72.3	74.8	76.4	83.6	81.4	84.6
Plastics	61.7	59.2	58.6	57.0	61.0	41.8	45.1	47.2
Paper/cardboard	90.1	93.7	90.2	85.6	88.2	87.5	88.4	91.2
Non-ferrous (aluminium)	24.2	20.1	20.1	28.6	22.4	32.5	26.7	28.8

Specimen	2015	2016	2017	2018	2019	2020	2021	2022
Ferrous (steel)	67.6	74.6	79.3	78.1	77.3	85.4	82.7	86.1
Total metals	58.6	63.4	67.8	67.6	65.0	73.2	67.4	67.8
Wood	73.0	63.9	49.3	45.0	42.3	34.8	39.4	41.3

Source: processed on the basis of MoE.

The share of total recovery of packaging waste laid down by Act No. 477/2001 Sb., on Packaging, at 75%, was met by the Czech Republic in 2021 and 2022, since in 2021 this share amounted to 82%, and in 2022 it was 79.9% (Table 42).

Table 42: Share of total recovery (%) of packaging waste in the Czech Republic between 2015 and 2022 by commodity (%)

Specimen	2015	2016	2017	2018	2019	2020	2021	2022
Glass	72.6	72.8	72.3	74.8	76.4	83.6	81.4	85.7
Plastics	74.7	72.0	72.4	69.8	74.2	76.1	76.0	85.0
Paper/cardboard	94.5	97.4	94.1	88.9	91.5	92.0	91.5	95.9
Non-ferrous (aluminium)	24.2	20.1	20.1	28.6	22.4	32.5	26.7	28.8
Ferrous (steel)	67.6	74.6	79.3	78.1	77.3	85.4	82.8	86.1
Total metals	63.4	67.8	67.6	65.0	73.2	67.5	67.8	63.4
Wood	67.3	52.6	46.7	43.8	38.8	43.5	41.3	67.3
<b>Total</b>	79.9	77.1	73.9	75.5	77.3	77.6	82.0	79.9

Source: processed on the basis of MoE.

In the Czech Republic, so-called integrated collection of packaging waste together with non-packaging components is carried out, and they are jointly processed in waste management facilities. At present, more than one hundred re-sorting lines are available in the Czech Republic, consisting mainly of combined paper and plastic lines (including beverage cartons), and several lines for the separate treatment of paper, plastics, and glass. While the treatment and possible sorting of paper, glass, and metals is carried out with a minimal proportion of rejects that cannot be recovered within recycling, in the case of plastics the situation is the opposite. Due to the specific properties of individual polymers and the requirements of the recycling industry, plastics must be sorted into many fractions.

The authorised company EKO-KOM, a.s., which ensures the obligations of the collective system in the field of packaging waste, operates effectively in the Czech Republic. The Czech Republic also has a very dense network for separate collection and a well-functioning system for the collection of paper, plastics, glass, and metals within municipal systems. In addition, it has a dense network of re-sorting lines for plastic and paper waste and technologies for the sorting of glass for recycling purposes. One of the problems is the stagnating active participation of the population in the separate collection of municipal waste, including the packaging component (72–75%). The objective of the Czech Republic in the field of packaging waste should be to continue education and awareness-raising in order to increase the sorting of packaging waste, as well as to ensure the availability and user comfort of the network for separate collection. Given the increasing quantity of packaging waste, it would be appropriate to support the construction of automated re-sorting lines, facilities for the treatment of minority packaging waste, or processing technologies for the treatment and processing of packaging waste.

Information on capacity deficits or surpluses of packaging waste management facilities is provided in the relevant chapters of the material recoverable waste components - plastic (2.3.1.3), paper (2.3.1.2), glass (2.3.1.6), metals (2.3.1.5) and wood (2.3.1.7).

### **2.3.16 Single-Use Plastic Products**

Single-use plastic products are regulated by Directive (EU) 2019/904 of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment, and their requirements have been transposed into Czech legislation by an amendment to Act No. 477/2001 Sb., on Packaging,<sup>28</sup> and by the entirely new Act No. 243/2022 Sb., on the Reduction of the Impact of Certain Plastic Products on the Environment. Plastic products, as defined by Directive (EU) 2019/904, are defined in Act No. 243/2022 Sb. as “selected plastic products”. The aim is to prevent and reduce the impact of certain plastic products on the environment, particularly the aquatic environment, and on human health, as well as to support the transition to a circular economy through sustainable products and materials.

Through Acts No. 243/2022 Sb. and No. 244/2022 Sb., a number of measures were introduced into Czech legislation, relating in particular to the prohibition of placing certain products on the market, the establishment of targets for separate collection, and awareness-raising activities. The measures concerning the obligation of Member States to reduce consumption relate to beverage cups and food containers. Restrictions on placing on the market apply, for example, to cotton buds, plastic plates, cutlery, straws, beverage stirrers, sticks for attaching balloons, and polystyrene beverage and food containers. The Act also

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<sup>28</sup> Act No. 244/2022 Sb. amended other legislation in connection with the adoption of the Act on the Reduction of the Impact of Certain Plastic Products on the Environment.

introduced the obligation of EU Member States to ensure that single-use plastic products with plastic caps and lids may only be placed on the market if the caps and lids remain attached to the container. According to the Act, Member States must also ensure that producers of single-use plastic products cover costs under the provisions on extended producer responsibility. These costs include costs of awareness-raising measures, litter clean-up costs arising from such products, and the subsequent transport and processing of such waste. They also include costs of waste collection from those products that are discarded within public separate collection systems, as well as the costs of data collection and reporting.

Such single-use plastic products may enter waste streams, for example, through littering. The term littering refers to waste intentionally or unintentionally discarded, waste left exposed to natural processes, waste deposited in urbanised or natural environments, and in the vicinity of transport infrastructure, outside designated places for separate collection of waste (waste bins, containers for mixed waste or for separate collection of waste), where the originator shows no effort to collect it, and which has a negative impact on the environment.

On the basis of the provisions of Acts No. 243/2022 Sb. and No. 244/2022 Sb., it will be possible in the future to assess the generation of selected plastic products (selected single-use plastics), according to the quantity of such products placed on the market in the Czech Republic, which, after use, become part of municipal waste, including littering. However, it will not be possible to reliably assess the total generation of littering, as there are no relevant data available on the occurrence of these products in individual waste streams and outside waste (littering that is not cleaned up). It must also be stated that single-use plastic products represent only a smaller share of the total littering waste occurring in public spaces and in the natural environment.

The authorised packaging company EKO-KOM has started to monitor data on the generation of littering, specifically the packaging component of littering; however, at the time of preparation of the WMP CR, the data were not yet available. The results of UJEP<sup>29</sup> research showed that, in terms of weight, glass (30.4%), plastics (27.7%), and metals (18.6%) contribute most to littering. In terms of item composition, cigarettes (i.e. cigarette butts and filters) account for the largest share of littering waste (71.6%), with plastics having the second largest share (13.6%).

In the field of littering, a number of preventive and reactive measures are being implemented. Preventive measures include bans on the sale of single-use plastic shopping bags, fines for causing littering, the introduction of deposit-return systems, and educational and awareness-raising campaigns (e.g. the initiative #dostbyloplastu [#EnoughPlastic]<sup>30</sup>). Reactive measures address littering that has already occurred, with the aim of removing it. In the Czech Republic, the best-known initiatives include “Uklidíme Česko” [Let’s Clean Up Czechia] and “Uklidíme svět” [Clean Up the World], within which, for example, in 2022 a total of 4,687 clean-up events were carried out, involving 194,800 volunteers and collecting 2,730 tonnes of waste. Another activity includes calls within the Operational

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<sup>29</sup>

Assessment of Littering Waste as a Basis for the Plan to Address the Issue of Packaging Littering in the Czech Republic, Including Determination of the Share of the Packaging Component (Slavík, 2022) Available [here](#).

<sup>30</sup>

Dost bylo plastu [Enough of Plastic] (MoE). Available [here](#).

Programme Environment (OPE) aimed at preventing littering and preventing the generation of single-use tableware. In the previous programming period 2014–2020, a total of 19 projects were supported under the Operational Programme Environment (OPE), with a total value of CZK 73 million.

The Czech Republic has an appropriately established legislative framework in the field of selected plastic products, and, in addition, the authorised packaging company EKO-KOM, a.s. operates effectively in the Czech environment. For the purpose of operating a collective system to fulfil obligations relating to tobacco products with filters and filters placed on the market for use in combination with tobacco products, the company NEVAJGLUJ a.s. operates on the Czech market. For other selected plastic products (e.g. wet wipes), no collective systems currently operate in the Czech Republic. The objective in the field of selected single-use products should be intensive communication with municipalities to ensure that they conclude contracts with collective systems, in order to meet the statutory share of 90% of contracted municipalities (pursuant to Act No. 243/2022 Sb.). It is appropriate to enable and implement the umbrellaing of several commodities under a single collective system to facilitate municipal and city administration.








#### Single-Use Plastic Products

**The Czech Republic is succeeding in meeting its set targets in the field of single-use plastic products. The rate of separate collection of single-use plastic bottles reached 76% in 2023. The Czech Republic is thus on track to meet the target of 77% in 2025 and 90% by 2029. The recycled content in PET beverage bottles is also gradually increasing (11% in 2023), while the production of plastic cups and plastic food containers is slightly increasing.**

**It is no longer possible to place oxo-degradable plastic products on the Czech market. Since 2021, the obligation to label selected plastic products with the “Plastic in the product” pictogram has applied in the Czech Republic. Currently, there is one collective system in the Czech Republic in the field of tobacco products with filters and similar products – NEVAJGLUJ, a.s. – and the introduction of further collective systems is foreseen.**

**In the field of selected single-use products, a number of awareness-raising activities are being implemented (samosebou.cz, Cigaretovník, ceskobezplastu.cz).**

### 2.3.17 Sewage Sludge from Wastewater Treatment Plants

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
169 thousand tonnes	Recycling and Composting (46 %) Application to agricultural land (26%)	Imports 5 thousand tonnes	Insufficient	-

According to the MoE methodology, the sludge from wastewater treatment plants (WWTPs) stream includes waste (7 waste types) from the following groups: 02 – Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, and from the preparation and processing of food, 03 – Waste from wood processing and the production of panels, furniture, pulp, paper and cardboard, and in particular, 19 – Waste from facilities for waste management, wastewater treatment plants for the treatment of these waters outside the place of their generation, and the production of water intended for human consumption and for industrial purposes.

For sludge, the recorded quantity is expressed in dry matter. In 2022, 168,543 tonnes of sludge were generated, most of which arose within group 19, which includes waste category No. 19 08 05 (sludge from municipal WWTPs). The share of waste category No. 19 08 05 in the stream's generation reaches almost 97% and is long-term stable. Group 02 represented less than 3%, and group 03 only 0.27%; therefore, the handling and conclusions below relate predominantly to 19 08 05.

The generation of waste 19 08 05 has been long-term constant, fluctuating between 154–168 thousand tonnes per year (163 thousand tonnes in 2022). Given the quality sewerage network in the CR and the fact that 90% of the Czech Republic's population is connected to it, no significant change in production is expected in the future. On the contrary, the production in groups 02 and 03 has been declining over the long term. Although sludge represents a minor stream in terms of volume, considerable attention is devoted to it due to its potential risks.

For sludge generation and handling, it is typical that in a given year a significantly larger amount is handled than generated, as large quantities of sludge are stored and, for the purpose of the annual report, transferred from the previous year to the new year. Thus, in 2022, 228 thousand tonnes were handled. More than one thousand waste management facilities are permitted to handle sludge. Only 406 facilities actively handled sludge, of which 54 were mobile. Most sludge is today handled in a preferred manner. In 2022, most sludge was composted (82 thousand tonnes, 46%) and applied to agricultural land (44 thousand tonnes, 26%). Therefore, the most widespread type of facility was composting plants, which are operated throughout the CR. Energy recovery was negligible,

at the level of 3% (5 thousand tonnes); there is still significant potential for its recovery. Sludge was also used within facilities for biological decontamination and biodegradation. Sludge from WWTPs is not landfilled.

The forecast of the quantity of sludge from WWTPs does not expect significant changes in its production. With regard to new requirements for the quality of wastewater discharged from WWTPs into recipients (revision of the Urban Waste Water Treatment Directive), the composition and content of major pollutants in sludge may change. Wastewater treatment plants will have to be expanded by new stages of treatment.

Sludge from WWTPs is an important source of organic matter for improving the soil balance in the Czech Republic and for increasing their retention capacity, and thus also their ability to prevent the impacts of climate change. Organic carbon applied to soil as part of sewage sludge can improve soil fertility and its physical, chemical, and biological properties, which can advantageously be used, for example, to improve soil quality in semi-arid regions.

On the other hand, sludge from WWTPs concentrates undesirable substances originally contained in wastewater, such as heavy metals, metabolites, pharmaceuticals and pharmaceutical residues, bacteria, viruses, etc. These substances are collectively referred to as pollutants. With the development of knowledge and new analytical methods, new types of contaminants are emerging, such as residues of pharmaceuticals and personal care products (so-called PPCPs), microplastics, and a group of substances referred to as PFAS<sup>31</sup>. Monitoring the occurrence of these “new” pollutants is an important part of setting processes for the future management of sludge.

Ash from the incineration of sludge from urban wastewater treatment is a source of critical raw materials (phosphorus).

*Table 43: Generation and management 2018–2022 – Sludge from wastewater treatment plants I*

Year	Generation of	Energy Recovery			Application to soil			Recycling and Composting		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	172	4	2.3	2.3	45	26.3	25.6	95	51.1	54.1
<b>2019</b>	171	4	2.6	2.0	47	27.2	21.2	139	77.3	63.2
<b>2020</b>	176	7	3.9	3.2	42	23.5	18.6	139	75.3	62.5
<b>2021</b>	171	7	3.5	4.5	45	26.3	27.7	94	51.9	57.8
<b>2022</b>	169	5	2.8	3.3	44	26.3	30.7	82	45.9	57.0

<sup>31</sup>Perfluoroalkyl substances.

Source: processed on the basis of WMIS

Table 44: Generation and management 2018-2022 - Sludge from wastewater treatment plants II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	0.7	0.4	0.4	0	0.0	0.0	30	17.5	17.1
2019	0.4	0.2	0.2	0	0.0	0.0	29	16.8	13.1
2020	0.4	0.3	0.2	0	0.0	0.0	33	18.8	14.9
2021	0.3	0.2	0.2	0	0.0	0.0	13	7.8	8.3
2022	0.0	0.0	0.0	0	0.0	0.0	13	7.7	9.0

Source: processed on the basis of WMIS

In 2022, a slight deficit of capacities of facilities for sludge management was identified in the Czech Republic, consisting mainly of waste category No. 19 08 05 – *Sludge from municipal wastewater treatment*, amounting in total to 32 thousand tonnes. The highest deficit the year 2022 was recorded in the Capital City of Prague (21 thousand tonnes), the Zlín Region (11 thousand tonnes), and the South Moravian Region (10 thousand tonnes). Conversely, a surplus of capacities of facilities for sludge management was recorded in that year in the Central Bohemian Region (19 thousand tonnes), the Ústí nad Labem Region (8 thousand tonnes), the Pardubice Region (2 thousand tonnes), and the South Bohemian Region (1 thousand tonnes). In all the remaining regions of the Czech Republic, a deficit of capacities of facilities for sludge management was recorded in 2022 in the order of lower thousands of tonnes.





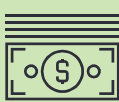



Sludge from  
WWTPs

**The generation of sludge from wastewater treatment plants is almost constant. Sludge from WWTPs is a valuable source of organic matter. Most sludge was composted (46%) and further applied to agricultural land (26%). In this type of management, there is a certain risk of the introduction and accumulation of “new” pollutants in the soil. It is therefore necessary to address their elimination directly at the source.**

**There is a significant, as yet untapped, potential for the energy recovery of sludge.**

### 2.3.18 Waste Oils

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
32 thousand tonnes 	Recycling (48%)	Exports 7.1 thousand tonnes	Included primarily in hazardous waste streams	Included primarily in hazardous waste streams

Waste oils may be considered any mineral or synthetic lubricating or industrial oil which has become unsuitable for the use for which it was originally intended. This includes, in particular, used oil from combustion engines, gearbox oil, mineral or synthetic lubricating oil, turbine oil, and hydraulic oil. Waste oils are recorded in the Waste Catalogue under group 13 (Waste oils and waste liquid fuels other than edible oils and those wastes specified in groups 05, 12 and 19). Waste oils are also included in group 12 (Waste from shaping and from physical and mechanical surface treatment of metals and plastics) and group 20 (Municipal waste, household waste and similar trade, industrial waste, and waste from offices, including fractions collected separately). The wastes included in waste oils are determined by the MoE methodology.

Until 2015, it was possible to return used motor oil within the take-back regime; however, the system was not functional. Currently, waste oils must be managed as hazardous waste under Act No. 541/2020 Sb., on Waste. Individuals should not normally generate waste oils, as these arise from servicing activities and the maintenance of machinery and vehicles. If citizens nevertheless generate waste oils, they may hand them over free of charge to the municipal system for the management of municipal waste.

In 2022, 31,543 tonnes of waste oils were generated in the Czech Republic; this is therefore a marginal stream, as it accounts for approximately 0.1% of the total waste generation in the Czech Republic. The most represented type of waste is category No. 13 02 08 (Other engine, gearbox and lubricating oils). In 2022, 17,120 tonnes of this waste were generated, corresponding to 52.12% of the entire waste stream. The second most significant waste category is 13 02 05 (Non-chlorinated mineral engine, gearbox and lubricating oils), of which 8,596 tonnes were generated in 2022, corresponding to 27.17%. After a rather sharp decline in the generation of waste oils after 2019, there was again a slight increase in the generation of this waste, which continued in 2022.

In 2022, the highest generation of waste oils was recorded in the Pardubice Region (25% of the entire stream), which is also related to the fact that the largest processor of waste oils in the Czech Republic is located in this region. Furthermore, the volume of waste oil generation is related to the number of facilities that collect waste oils, e.g. car repair shops, etc.

Since no facility for the full recycling of oils exists in the Czech Republic, part of the waste oils is exported for recycling abroad. All waste oil categories fall under hazardous waste, and their transport is therefore governed by Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste. With the growing generation of waste oils in the Czech Republic, the volume of exports of this waste is also increasing. In 2022, 7,152 tonnes of waste oils were exported abroad. Although in the past waste oils were exported for processing to Poland as well, in 2022 exports took place only to Germany.

In 2022, the most common way of handling waste oils was their treatment prior to recovery; a large part is exported for recycling (7.1 thousand tonnes). In the Czech Republic, there are 1,381 active stationary facilities and 102 active mobile facilities authorised to handle certain waste oil categories.

There is a high number of business entities in the Czech Republic engaged in the management of waste oils. However, the Czech Republic does not have any facility for the full recycling of waste oils, and a number of small and medium-sized facilities moreover handle waste oils in inappropriate ways.

At the time of preparation of the WMP CR, the MoE was preparing a new decree for liquid fuels, which will allow the production of fuels for energy recovery from suitable waste oils.

*Table 45: Generation and management 2018–2022 – Waste oils I*

Year	Generation of	Energy Recovery			Recycling		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	40	4	8.8	10.6	9	39.4	29.4
<b>2019</b>	40	3	7.0	7.9	13	41.1	38.2
<b>2020</b>	30	2	7.8	10.0	11	54.4	48.4
<b>2021</b>	31	3	11.1	12.4	15	63.8	55.3
<b>2022</b>	32	3	8.4	11.5	11	57.3	48.1

Source: processed on the basis of WMIS

*Table 46: Generation and Management 2018–2022 – Waste oils II*

Year	Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)

<b>2018</b>	1	3.3	3.9	18	46.7	56.1
<b>2019</b>	1	3.7	4.2	17	44.0	49.7
<b>2020</b>	1	3.9	5.0	8	28.7	36.7
<b>2021</b>	1	3.3	3.7	7	25.6	28.6
<b>2022</b>	0.8	2.8	3.8	8	26.7	36.6

Source: processed on the basis of WMIS





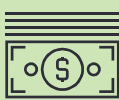
When comparing individual regions, it emerges that all regions, with the exception of the Pardubice, Olomouc, and Zlín Regions, had a negative balance of capacities of facilities for waste management, with the worst situation identified in the South Moravian, Moravian-Silesian, and Plzeň Regions, and in the Capital City of Prague. In general, it can be stated that, apart from the Pardubice and Olomouc Regions, a shortage of processing capacities was identified in 2022 in all regions of the Czech Republic. The worst situation in 2022 was associated with the management of subgroup 13 02 (Waste engine, gearbox and lubricating oils), where there was a deficit in processing facilities of 7,886 tonnes.



**Waste Oils**

**The generation of waste oils is increasing. Waste oils are recycled at a rate of 48%. The Czech Republic, however, does not have any facility for the full recycling of waste oils. Waste oils are partly exported.**

### 2.3.19 Healthcare and Veterinary Care Waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
48 thousand tonnes	Incineration (71 %)	-	Included primarily in hazardous waste streams	Included primarily in hazardous waste streams

Healthcare care waste (18 01) is waste generated in the provision of healthcare pursuant to the Act on Health Services (No. 372/2011 Sb.) in inpatient, outpatient, and similar facilities. This group of waste also includes waste generated in the provision of healthcare in the patient's own social environment and waste generated outside healthcare facilities, in particular in social care facilities, tattoo parlours, or drug prevention centres (if such waste exhibits the same properties and risks as waste from healthcare facilities). Veterinary care waste (18 02) is waste from research, diagnostics, treatment, and prevention of animal diseases generated in the provision of veterinary care. Healthcare and veterinary care waste is a subgroup of group *18 – Waste from healthcare and veterinary care and/or related research* – under the Waste Catalogue.

The holders of healthcare and veterinary care waste include facilities providing medical and nursing services such as hospitals, polyclinics, collection centres, diagnostic laboratories, doctors' surgeries, long-term care institutions, drug prevention centres, homes for the elderly, hospices, social care institutions, but also non-healthcare facilities such as tattoo or cosmetic salons. The production of waste generated from care provided in the patient's own social environment, or in an environment substituting the patient's home environment, is also continuously increasing. The holders of this type of waste may therefore include social service facilities, facilities for children requiring immediate assistance, schools and educational institutions, remand prisons and prisons for the execution of custodial sentences, institutions for the execution of security detention, facilities for the detention of foreign nationals, and asylum facilities. In the case of veterinary care waste, the waste holders are mainly veterinary clinics and surgeries, or livestock breeders under the Veterinary Act.

The generation of healthcare and veterinary care waste in the Czech Republic has been increasing in the long term, amounting to 48 thousand tonnes in 2022. From the perspective of the total amount of waste generated in the Czech Republic in 2022, however, this is a marginal stream, as it accounted for 0.1% of the total generation. Nevertheless, this waste stream is important due to its often infectious properties. The majority of stream 18 in 2022 consisted of healthcare waste (98.6%), with the remainder accounted for by veterinary care waste (1.4%). The share of hazardous waste within this waste stream in 2022 was 83%. After 2020, a slight increase in the generation of this waste was recorded in the Czech Republic due to the increased generation of medical waste as a result of the COVID-19 pandemic.

Within healthcare waste, almost the entire volume generated in 2022 was attributable to two catalogue codes: *18 01 03 Wastes whose collection and disposal are subject to special requirements in order to prevent infection* (76.2%), amounting to 36,185 tonnes; and *18 01 04 Wastes whose collection and disposal are not subject to special requirements in order to prevent infection*, amounting to 8,066 tonnes (17%). Waste category 18 01 03 includes all waste from infectious wards, biologically contaminated waste (bandaging material, infusion equipment without needles, aids for incontinent patients, protective equipment for staff, etc.). Waste category 18 01 04 includes waste from healthcare that is not demonstrably contaminated with an infectious agent or biologically contaminated or is decontaminated waste.

The most significant waste category from veterinary care is *18 02 02 – Waste whose collection and disposal is subject to special requirements in order to prevent infection*, of which 594 tonnes were generated in 2022, representing 86.8% of the generation of subgroup 18 02. This waste includes biologically contaminated aids, infusion equipment without needles, and other contaminated waste. Other waste categories were represented only marginally.

In terms of the generation of this waste in the regions of the Czech Republic, the largest producers were the Capital City of Prague (18.2%), the South Moravian Region (11.9%), the Central Bohemian Region (10.8%), and the Moravian-Silesian Region (9.1%), while the smallest producer was the Karlovy Vary Region (2.7%). The generation of waste in the regions is related to the number and size of healthcare and veterinary facilities, so regional capitals generally have increased generation of this waste.

In recent years, cross-border transport of this waste has been minimal. The only country to which this type of waste was exported in 2022 was Austria, amounting to 0.87 tonnes; no import of this waste was recorded.

In 2022, healthcare and veterinary care waste in the Czech Republic was primarily incinerated (70.3%), while part of the waste was recovered for energy (8.7%) or landfilled (8.6%).

The biggest problem in the field of healthcare and veterinary care waste in the Czech Republic is the insufficient capacity for the safe incineration of this waste and, in general, the sparse network of such facilities. Thus, the waste is transported over long distances.

Table 47: Generation and management 2018–2022 – Healthcare and veterinary care waste I

Year	Generation of Quantity (thous. t)	Energy Recovery			Recycling		
		Quantity (thous. . t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	44	3	6.0	6.5	0	0.0	0.0
2019	45	2	5.1	5.1	0	0.0	0.0

Year	Generation of	Energy Recovery			Recycling		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2020	46	2	5.3	5.3	0	0.0	0.0
2021	49	3	6.7	6.8	0	0.0	0.0
2022	48	4.2	8.7	8.8	0	0.0	0.0

Source: processed on the basis of WMIS

Table 48: Generation and management 2018–2022 – Healthcare and veterinary care waste II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	7	14.8	16.1	29	66.6	72.7	2	4.1	4.5
2019	7	15.3	15.5	27	60.8	61.5	8	17.6	17.8
2020	7	14.2	14.4	28	61.9	62.6	8	17.4	17.6
2021	4	8.4	8.5	34	68.7	69.6	7	15.0	15.2
2022	4	8.6	8.7	34	70.3	71.3	5	11.0	11.0

Source: processed on the basis of WMIS

In 2022, 286 active stationary facilities and 116 active mobile facilities were registered in the Czech Republic with authorisation to handle at least one waste category from this waste stream. An analysis of the network of facilities indicates that in most regions of the Czech Republic there is insufficient capacity for handling this waste. The analysis excludes landfilling as a method of management, since it is a non-preferred method, and, moreover, will no longer be permitted after 2028. The largest capacity deficit for handling healthcare and veterinary care waste in 2022 was in the Capital City of Prague (-6,796 tonnes), followed by the South Moravian Region (-3,057 tonnes) and the Olomouc Region (-1,936 tonnes). The total deficit of available treatment capacities for this waste in the

Czech Republic in 2022 amounted to 4,406 tonnes. In terms of the total quantity of this waste, this may not appear problematic; however, given the often infectious properties of this waste, it is essential to ensure sufficient capacity of facilities for handling it.



#### Healthcare and Veterinary Care Waste

**Healthcare and veterinary care waste constitutes only a fraction of total waste generation (0.1%), yet it is a significant waste stream due to its often infectious properties. For this reason, most of the waste (70%) is incinerated, part of it is recovered for energy (8.7%), or landfilled (8.6%). At present, facility capacities for the treatment of healthcare and veterinary care waste are lacking in the order of 4.4 thousand tonnes. Due to the sparse network of such facilities, this waste often has to be transported over long distances.**

### 2.3.20 Waste Containing Persistent Organic Pollutants

Waste containing persistent organic pollutants (POPs) is defined under Act No. 541/2020 Sb., on Waste, as waste containing at least one of the substances listed in Annex IV to Regulation (EU) 2019/1021 of the European Parliament and of the Council, with the exception of polychlorinated biphenyls. Persistent organic pollutants (POPs) are substances listed in the Stockholm Convention on Persistent Organic Pollutants or in the Protocol on Persistent Organic Pollutants to the Convention on Long-Range Transboundary Air Pollution (CLRTAP) and meet the definition of this group of substances – they are organic substances that are harmful to organisms and the environment, persist in the environment for long periods, accumulate in living organisms, and may be transported over long distances. These substances are used as pesticides, industrial chemicals, or may arise as so-called unintentional production, for example during combustion processes or as by-products of chemical manufacturing. The issue of the implementation of the Stockholm Convention is comprehensively addressed at the national level by the National Implementation Plan, which was last updated in 2023 for the period 2024–2029.

Measures adopted at the global level are transposed into Regulation (EU) 2019/1021 of the European Parliament and of the Council. Measures concerning the production, placing on the market, and use of POPs are set out in Annex I. Measures relating to the management of waste containing persistent organic pollutants are directly addressed by Articles 7 and Annexes IV and V of this Regulation. These annexes are regularly updated to reflect globally adopted changes, in particular the inclusion of new substances. Their most recent update took place in 2022 by Regulation (EU) 2022/2400 of the European Parliament and of the Council of 23 November, amending Annexes IV and V to Regulation (EU) 2019/1021 on persistent organic pollutants.

Since 2015, the production and use of most persistent substances has been prohibited, so generation is close to zero. In some sectors, the use of these substances is still permitted, but even here their utilisation is declining, albeit not at the necessary pace.

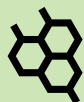
The way of managing waste containing persistent organic pollutants differs from other waste in that these substances may not be utilised, recycled, or recovered for further use.

Waste containing persistent organic pollutants may be managed in four ways: physical-chemical treatment (D9), incineration (D10), under certain conditions energy recovery (R1), and recycling and recovery of metals and metal compounds under specific conditions.

There is an obligation to ensure the traceability of this waste in waste streams in order to prevent its re-entry onto the market through recycling. For waste containing persistent organic pollutants, even if not classified as hazardous, there is an obligation to keep records applicable to producers or facilities handling hazardous waste, including documentation of the quantity, nature and origin of the waste, and its destination. This obligation has been transposed into Act No. 541/2020 Sb., on Waste.

If contamination limits under Regulation (EU) 2019/1021 on POPs are not exceeded, these substances may be handled as other waste. In the Czech Republic, there are no facilities specifically dedicated to the disposal of waste containing persistent organic pollutants; however, such waste is handled in an environmentally sound manner in order to comply with the POPs Regulation and the Stockholm Convention. This waste is therefore disposed of in hazardous waste disposal facilities. Facilities handle waste containing persistent pollutants solely by incineration; in the Czech Republic, there are currently no facilities employing non-incineration technologies for the disposal of waste containing persistent pollutants.





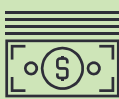
Waste originating from incinerators, facilities for energy recovery of waste, hazardous waste incinerators, and waste from the energy sector – such as fly ash, ash, or slag – may be potential sources of persistent organic pollutants, and it is therefore necessary to monitor the occurrence of these pollutants in such waste. Waste should be managed in accordance with the best available techniques and in line with procedures for handling waste containing persistent organic pollutants. The occurrence of persistent organic pollutants must also not exceed the levels permitted by applicable legislation and the Stockholm Convention. Waste from thermal processes with a potential content of persistent organic pollutants may be landfilled at hazardous waste landfills, provided that the waste is pre-treated by solidification or partially stabilised. In the future, it will be necessary to research and develop technologies for the management of this waste other than landfilling, as well as technologies that minimise as much as possible the share of hazardous substances in such waste. In accordance with Regulation (EU) 2019/1021, parameters of fly ash from hazardous waste incinerators are monitored during landfilling.



**POPs WASTE**

**In the Czech Republic, there has been a long-term decline in emissions of persistent organic pollutants; however, due to the continual addition of new chemical substances, new problems may arise in the future, such as perfluorinated and polyfluorinated alkyl sulfonates (PFAS).**

### 2.3.21 Waste Containing Polychlorinated Biphenyls

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
14 tonnes	Incineration (10 tonnes)	-	Included in hazardous waste streams	Included in hazardous waste streams

Polychlorinated biphenyls (PCBs) are among POPs and are defined by Act No. 541/2020 Sb., on Waste, as polychlorinated biphenyls, polychlorinated terphenyls, monomethyltetrachlorodiphenylmethane, monomethyldichlorodiphenylmethane, monomethyldibromodiphenylmethane, and all mixtures containing one or more of these substances at a total concentration exceeding 50 mg/kg.

The development of PCB waste generation has been characterised by a steep decline after 2010, an increase between 2016 and 2019, and a further increase after 2020, especially in the category of construction and demolition waste. Increased generation of waste under category 13 03 01 was recorded in 2015 and 2017, but in subsequent years generation was almost zero. The occurrence of waste from transformers and capacitors in 2022 was zero. Other categories of PCB waste had zero generation in the period between 2010 and 2022. In 2022, the highest generation of PCBs was in the Capital City of Prague and the Moravian-Silesian Region, although it amounted only to low single-digit tonnes.

An analysis of the development of PCB waste management in recent years showed that waste was mainly disposed of by incineration, with rates exceeding 90%. In 2022, however, a decrease in incineration was recorded. Overall, a downward trend was observed in the absolute volume of managed waste. Most PCBs were incinerated or subject to other treatment. An unbalanced mass balance between generation and management was identified, caused by inventory operations when waste was transferred between individual years (waste being handed over for disposal by entities only in subsequent years).

In the Czech Republic, a total of 320 facilities are authorised to handle PCB waste, of which 35 were active facilities that actually managed PCBs in the given year. In 2022, a deficit of treatment capacity for PCB waste from group 16 was recorded in the Czech Republic, especially in the Capital City of Prague (2.7 thousand tonnes), the South Moravian Region (1.5 thousand tonnes), the Karlovy Vary Region (1.4 thousand tonnes), and the Vysočina Region (1.1 thousand tonnes). Conversely, sufficient capacities were available in the Moravian-Silesian Region (6 thousand tonnes), due to the presence of a hazardous waste incineration plant. The total deficit of treatment capacities for PCB-containing waste in 2022 amounted to approximately 1.8 thousand tonnes.

Between 2018 and 2022, no cross-border shipment of PCB-containing waste took place. The import and export of equipment containing polychlorinated biphenyls is prohibited. The Czech Republic disposes of PCB-containing waste within its own capacities.

Emphasis is placed on supporting the process of decontamination and disposal of PCB-containing waste, which is expected to be gradual and aimed at addressing historical environmental burdens. By 2035, the Czech Republic anticipates a 64% reduction in the generation of PCB-containing waste, in line with statutory deadlines for the decontamination and disposal of equipment and waste containing polychlorinated biphenyls by 2025 and 2028, respectively. The objective is to achieve zero generation of PCB-containing waste.

*Table 49: Generation and management 2018–2022 – PCB-containing waste I*

Year	Generation of	Energy Recovery		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	0.7	0	0.0	0.0
<b>2019</b>	1.1	0	0.0	0.0
<b>2020</b>	0.04	0	0.0	0.0
<b>2021</b>	0.4	0	0.0	0.0
<b>2022</b>	0.01	0	0.0	0.0


Source: processed on the basis of WMIS

*Table 50: Generation and management 2018–2022 – PCB-containing waste II*





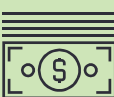
Year	Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
<b>2018</b>	0.6	91.1	95.4	0.02	2.9	3.0
<b>2019</b>	0.6	54.4	96.9	0.003	0.3	0.5
<b>2020</b>	0.5	1031.0	99.2	0.004	8.5	0.8
<b>2021</b>	0.1	19.2	92.7	0.006	1.5	7.3

Year	Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2022	0.01	70.0	83.9	0.002	13.5	16.1

Source: processed on the basis of WMIS

 <b>PCB Waste</b>	<p>In the Czech Republic, the quantity of PCB-containing waste has been declining in the long term, and its occurrence is only incidental. Contaminated sites (historical environmental burdens) have been mapped thanks to the NIKM2 project.</p> <p>Due to the ban on use, a further reduction in the occurrence of polychlorinated biphenyls is expected. The problem lies in insufficient incineration capacities for the preferred management of PCB-containing waste.</p>
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### 2.3.22 Asbestos-containing waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
 36 thousand tonnes	 Landfilling (100 %)	 -	 Included in hazardous waste streams	 Included in hazardous waste streams

Waste containing asbestos is defined under Act No. 541/2020 Sb., on Waste, as any waste that contains asbestos. According to the MoE methodology, asbestos waste includes wastes from groups 06, 10, 16, and 17 of the Waste Catalogue. The primary share within this waste stream is accounted for by group 17, specifically waste category numbers 17 06 01 – *Insulating materials containing asbestos*, and 17 06 05 – *Construction materials containing asbestos*. Historically, waste under category number 17 06 05 has been the most generated, accounting for around 90% of generation and showing a consistently increasing trend.

Waste under category number 17 06 01 has long accounted for only about 10%. In 2020, however, its generation increased significantly, reaching 30,745 tonnes, i.e. about 45% of total generation. In 2021, it decreased to 20,069 tonnes, and in 2022 to 3,476 tonnes.

The generation of asbestos-containing waste currently shows a rather increasing trend in the Czech Republic. The previously relatively stagnant trend began to change in 2017, when the generation of asbestos-containing waste started to increase. The highest generation to date occurred in 2020, when it reached almost 69 thousand tonnes per year, an increase of 240% compared to 2015 (29 thousand tonnes per year). The trend in the generation of asbestos-containing waste is rising; however, given the majority share of group 17, i.e. construction and demolition waste, the generation of asbestos-containing waste will depend primarily on the demolition of old structures and buildings, the construction materials of which often contained asbestos.

In general, it can be said that the increasing occurrence is linked to the gradual replacement of these materials during building renovations (e.g. roofing materials) with asbestos-free materials. Generation is more or less evenly distributed across the territory of the Czech Republic. Higher generation is seen in areas with lower population density, where older housing and recreational properties predominate and are being renovated. A sharp increase in asbestos-containing waste is also evident in areas where historical environmental burdens are being remediated.

The Ministry of Health of the Czech Republic and the National Institute of Public Health are preparing the *National Asbestos Profile (NAP)*. This is a document being developed for the Czech Republic in accordance with the recommendations of the World Health Organization for the structure of such national profiles. The document should define the baseline situation of asbestos in the Czech Republic in general, describe the applicable legislation in this area. The document further address asbestos in industrial sectors, the system of control and enforcement of protection against exposure, the impacts of asbestos on human health, and the management of asbestos-containing waste.

Under the EU Waste Shipment Regulation, the import and export of asbestos-containing waste is prohibited, as such waste is listed among wastes whose export is banned.

In 2022, asbestos-containing waste was handled only in the preferred manner. The number of active stationary facilities for asbestos management in 2022 totalled 474. An active facility is considered to be one that handled at least some quantity of asbestos in the given year. In addition to stationary facilities, 99 mobile facilities engaged in asbestos management were also operated in the Czech Republic in 2022. In the future, the management of asbestos-containing waste should continue to be carried out in accordance with applicable legislation, and there is no need to build additional facility capacities.

The Czech Republic has appropriately established legislative requirements for the protection of health and the environment against the effects of asbestos, and since the ban on the use of new asbestos products in 1990, asbestos occurs almost exclusively in demolition waste. In this field of waste, research is also being carried out (e.g. remote sensing), which may in the future help to identify asbestos-containing materials, thereby facilitating the removal of this waste. However, due to its widespread use in the past, asbestos is still present in a large number of buildings, and public awareness of the risks associated with handling asbestos-containing materials remains low in the Czech Republic. It is therefore necessary in the Czech Republic to continue monitoring the occurrence of asbestos and to conduct education and awareness-raising activities for both professionals and the general public.

Table 51: Generation and management 2018–2022 – Asbestos-containing waste I

Year	Generation of	Landfilling		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)
2018	35	35	100.7	99.8
2019	46	46	102.4	100.0
2020	70	70	101.6	100.0
2021	62	62	101.8	100.0
2022	36	36	101.0	99.9

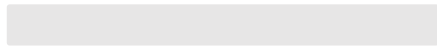
Source: processed on the basis of WMIS

In 2022, a total surplus of treatment capacities for asbestos-containing waste was identified in the Czech Republic, i.e. waste under category numbers 17 06 01\* – *Insulating materials containing asbestos* (capacity surplus of 102 tonnes) and 17 06 05\* – *Construction materials containing asbestos*. In the case of waste category number 17 06 01, the highest capacity deficit in 2022 was recorded in the Capital City of Prague (1 thousand tonnes), while the highest capacity surplus was recorded in the Central Bohemian Region (1 thousand tonnes). In the case of waste category number 17 06 05, the highest capacity deficit was recorded in the Vysočina Region (1 thousand tonnes), the Liberec Region (1 thousand tonnes), the Zlín Region (1 thousand tonnes), the Plzeň Region (1 thousand tonnes), and the Capital City of Prague (1 thousand tonnes). The highest capacity surplus was recorded in the Central Bohemian Region (2 thousand tonnes), the Olomouc Region (1 thousand tonnes), the Hradec Králové Region (1 thousand tonnes), and the South Bohemian Region (1 thousand tonnes).



**Asbestos-containing waste**

**Due to its widespread use in the past, asbestos is still present in a large number of buildings and occurs frequently as a component of construction and demolition waste. Asbestos-containing waste is today disposed of solely by landfilling. Given the nature of this waste, this is the preferred method of management.**



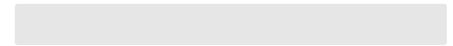
INTRODUCTION



EVALUATION OF THE SITUATION









BINDING PART



GUIDELINE PART

### 2.3.23 Secondary Waste

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
3.4 million tonnes 	Recycling (64%)	41% of total exports Imports: 0.7 million tonnes Exports: 1.4 million tonnes (Ferrous metals: 0.7 million tonnes; Paper and cardboard: 0.3 million tonnes)	Comprehensive stream included in individual sub-streams	Comprehensive stream included in individual sub-streams

Secondary waste includes in particular waste from group 19, i.e. waste from waste treatment facilities, as well as selected types of waste from group 16, which in terms of volume within the overall stream are relatively small (share of 7.5%). The generation of secondary waste shows a rising trend, which has accelerated in recent years. Over the past 10 years (2012 vs. 2022), it has increased by almost 67%, with generation at 2 million tonnes in 2012 and 3.39 million tonnes in 2022. The stream is dominated by subgroup 19 02 – *Wastes from physical-chemical treatment of waste not otherwise specified, e.g. sorting, crushing, compacting, pelletising* (74% of generation) with a share of 69%. At a considerable distance follows subgroup 16 01 – *End-of-life vehicles from various modes of transport and waste from dismantling of such vehicles* (abbreviated) with a share of 7.2%. This is followed by subgroup 19 01 – *Wastes from incineration or pyrolysis of waste* with a share of 6.9%, and subgroup 19 10 – *Shredder residues of metal-containing waste* with a share of 6.7%. Subgroup 19 03 – *Stabilised/solidified wastes* had a share of 5.1% in 2022. Other subgroups have a share below 1.5%. The most generated category is No. 19 12 02 – *Ferrous metals*, which in particular in 2021 and 2022 recorded a marked increase of more than 70% (2022 vs. 2020). Category No. 19 12 01 – *Paper and cardboard* is also growing more significantly.

Secondary waste represents a significant component of cross-border shipments. In imports, it accounted for 24% in 2022, and in exports even 41% of all cross-border shipments. From the perspective of subgroups, imports have long been dominated by subgroup 19 12 – *Wastes from the mechanical treatment of waste not otherwise specified, e.g. sorting, crushing, compacting, pelletising*. In 2022, imports of this subgroup amounted to 680 thousand tonnes, accounting for more than 95% of all imports of secondary waste. Specifically, the following were imported: category No. 19 12 04 – *Plastics and rubber* (276 thousand tonnes in 2022, representing nearly 39%), category No. 19 12 10 – *Combustible waste* (115 thousand tonnes, 16%), and category No. 19 12 07 – *Wood other than that mentioned in 19 12 06* (115 thousand tonnes, 16%). In exports, subgroup 19 12 – *Wastes from the mechanical treatment of waste not otherwise specified*,

*e.g. sorting, crushing, compacting, pelletising* – predominates. It has long accounted for over 80% of exports (1,146 thousand tonnes were exported in 2022). The second most represented subgroup is *19 10 – Shredder residues of metal-containing waste*, with a share of 13.4% (184 thousand tonnes exported in 2022). The most exported category in 2022 was No. *19 12 02 – Ferrous metals*, totalling 728,494 tonnes, representing nearly 53%. The second most represented waste category is No. *19 12 01 – Paper and cardboard*. In 2022, 326,257 tonnes were exported (24% share).

The recovery of secondary waste has long been very high and in 2022 reached 73%. Of this, energy recovery represented 6% and material recovery 67%. Non-preferred landfilling has remained nearly constant in recent years and reached 15% in 2022, i.e. nearly 500 thousand tonnes. Landfilled waste included mainly subgroup 19 12 (224 thousand tonnes), followed by subgroup 19 03 (129 thousand tonnes), subgroup 19 01 (90 thousand tonnes), and subgroup 19 08 (45 thousand tonnes).

In 2022, more than 2,000 active stationary facilities and 142 active mobile facilities were registered in the Czech Republic with authorisation to handle at least one waste category from this waste stream. Mobile facilities in most cases serve the function of collection points, transferring waste for further treatment to stationary facilities. The diverse nature of waste included in the secondary waste stream corresponds to the wide range of stationary facilities handling it. These include “metal production plants”, located mainly in the Moravian-Silesian Region, as well as various sorting and re-sorting lines evenly distributed across the Czech Republic, recycling facilities with significant capacity only in some regions (Moravian-Silesian, Vysočina, South Bohemian, and South Moravian), and facilities for energy recovery (including cement plants). The processing capacity deficit affects all streams and is caused by a combination of exports and landfilling. A significant capacity deficit was identified in facilities for the processing of ferrous scrap, paper, and cardboard (both subgroup 19 12, with a deficit of nearly 760 thousand tonnes), as well as in facilities for the processing of subgroup 19 10 – with a deficit of nearly 200 thousand tonnes. There is also considerable potential in the future recovery of slag from waste-to-energy facilities as a construction material for selected building applications. Slag and ash from municipal waste incineration may be sources of critical raw materials.

Table 52: Generation and management 2018–2022 – Secondary waste I

Year	Generation of	Energy Recovery			Recycling			Material Recovery		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	2,627	328	5.6	13.4	1,259	58.7	51.5	1,523	68.2	62.3
2019	2,647	385	6.5	17.3	1,045	54.4	46.9	1,316	64.0	59.0
2020	2,784	404	6.2	17.3	1,129	58.1	48.3	1,310	64.3	56.1
2021	3,104	402	5.7	16.8	1,269	63.6	53.0	1,422	68.2	59.4
2022	3,391	412	6.0	17.2	1,282	64.4	53.6	1,371	67.0	57.4

Source: processed on the basis of WMIS

Table 53: Generation and management 2018–2022 – Secondary waste II

Year	Landfilling			Incineration			Other Management		
	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	406	15.4	16.6	2.1	0.1	0.1	188	7.2	7.7
2019	393	14.8	17.6	5.3	0.2	0.2	131	4.9	5.9
2020	482	17.3	20.6	5.7	0.2	0.2	133	4.8	5.7
2021	452	14.5	18.9	0.8	0.0	0.0	116	3.8	4.9
2022	496	14.6	20.8	0.2	0.0	0.0	110	3.2	4.6

Source: processed on the basis of WMIS

In 2022, a deficit of treatment capacities was recorded in the Czech Republic for almost all types of secondary waste falling under the following waste catalogue numbers:

- 16 – Wastes not otherwise specified in the Waste Catalogue – total deficit 41 thousand tonnes,
- 19 01 – Wastes from incineration or pyrolysis of waste – total deficit 80 thousand tonnes,
- 19 02 – Wastes from physical-chemical treatment of waste – total deficit 12 thousand tonnes,
- 19 03 – Stabilised/solidified wastes – total deficit 3 thousand tonnes,
- 19 05 – Wastes from aerobic treatment of solid waste – total surplus -2 thousand tonnes,
- 19 10 – Shredder residues of metal-containing waste – total deficit 176 thousand tonnes,
- 19 12 – Wastes from the mechanical treatment of waste not otherwise specified – total deficit 535 thousand tonnes.

For secondary waste under catalogue number 16, the highest deficit of processing capacities in 2022 was recorded in the South Moravian Region (21 thousand tonnes). The highest surplus of treatment capacities was, on the contrary, recorded in the Moravian-Silesian Region (15 thousand tonnes) and the Liberec Region (6 thousand tonnes); in all the remaining regions, a deficit of capacities was recorded in the order of lower thousands of tonnes.

For secondary waste under catalogue number 19 01, the highest deficit of processing capacities in 2022 was recorded in the Capital City of Prague (62 thousand tonnes), followed by the Plzeň Region (24 thousand tonnes), the Central Bohemian Region (23 thousand tonnes), and the South Moravian Region (15 thousand tonnes). The highest surplus of treatment capacities was, on the contrary, recorded in the South Bohemian Region (32 thousand tonnes) and the Olomouc Region (16 thousand tonnes).


For secondary waste under catalogue number 19 02, the highest deficit of processing capacities in 2022 was recorded in the Central Bohemian Region (5 thousand tonnes). The highest surplus of treatment capacities was, on the contrary, recorded in the South Bohemian Region (3 thousand tonnes).

For secondary waste under catalogue number 19 03, the highest deficit of processing capacities in 2022 was recorded in the Liberec Region (7 thousand tonnes) and the Hradec Králové Region (3 thousand tonnes). The highest surplus of treatment capacities was, on the contrary, recorded in the Central Bohemian Region (7 thousand tonnes) and the South Bohemian Region (2 thousand tonnes).





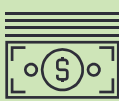
For secondary waste under catalogue number 19 05, the highest deficit of processing capacities in 2022 was recorded in the Ústí nad Labem Region (1 thousand tonnes). The highest surplus of treatment capacities was, on the contrary, recorded in the Liberec Region (2 thousand tonnes).

For secondary waste under catalogue number 19 10, the highest deficit of processing capacities in 2022 was recorded in the Moravian-Silesian Region (90 thousand tonnes), the Central Bohemian Region (35 thousand tonnes), the Liberec Region (22 thousand tonnes), the Zlín Region (14 thousand tonnes), and the Ústí nad Labem Region (14 thousand tonnes). The highest surplus of capacities of facilities for the management of secondary waste in 2022 was recorded in the South Moravian Region (5 thousand tonnes), which was also the only region where a surplus of capacities was identified.

For secondary waste under catalogue number 19 12, the highest deficit of processing capacities in 2022 in the Czech Republic was recorded in the Central Bohemian Region (183 thousand tonnes), the Plzeň Region (162 thousand tonnes), the Capital City of Prague (148 thousand tonnes), and the Hradec Králové Region (82 thousand tonnes). The highest surplus of capacities of facilities for the management of secondary waste was, on the contrary, recorded in 2022 in the South Moravian Region (54 thousand tonnes) and the Moravian-Silesian Region (19 thousand tonnes), which were also the only two regions where a surplus of capacities was identified.

 <b>Secondary Waste</b>	<p><b>Secondary waste is generated by waste treatment facilities, and its generation is continuously increasing.</b></p> <p><b>A significant part of the stream consists of treated waste, i.e. secondary raw materials, which are exported from the CR in large volumes (ferrous scrap, non-ferrous metals, paper and cardboard) due to the lack of recycling capacities in the CR.</b></p> <p><b>Higher recycling of secondary waste is highly desirable in the future, and modern automated re-sorting lines, which process separately collected components of municipal waste from municipalities, should contribute to this.</b></p> <p><b>The recovery of secondary waste will also be supported by slag from waste-to-energy facilities in selected construction applications.</b></p>
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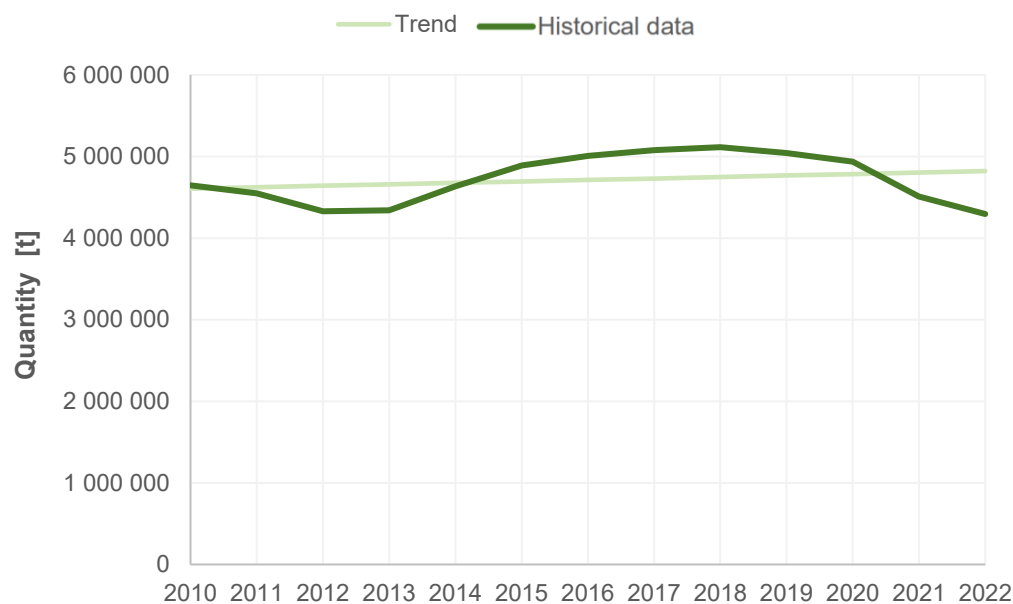
### 2.3.24 Biodegradable Waste (BDW)

Generation (2022)	Management (2022)	Transboundary Shipment (2022)	Facility Capacity	Necessary Investments
				
4.3 million tonnes	Recovery (78%)	Exports 804 thousand tonnes	Insufficient – deficit of capacities for paper and cardboard, wood, and waste from gardens and parks	Biowaste treatment technologies: CZK 7–7.5 billion Paper recycling: CZK 45 billion Treatment and re-sorting of bulky waste (wood): CZK 1–1.5 billion by 2035

The stream Biodegradable Waste (BDW), according to the MoE methodology, includes 64 waste categories across groups 02, 03, 04, 15, 16, 17, 19, and 20. The waste categories in group 20 represent the stream Biodegradable Municipal Waste (BMW), which was assessed in more detail in chapter 2.3.1.11. Also part of group 20 is the stream Biowaste analysed in chapter 2.3.1.8. The generation of BDW represents, in proportion to the total generation of all waste in the CR, a significant share. In 2022, the generation of BDW was 4,294,972 tonnes, accounting for 11% of the total waste generation in the CR in 2022. The trend

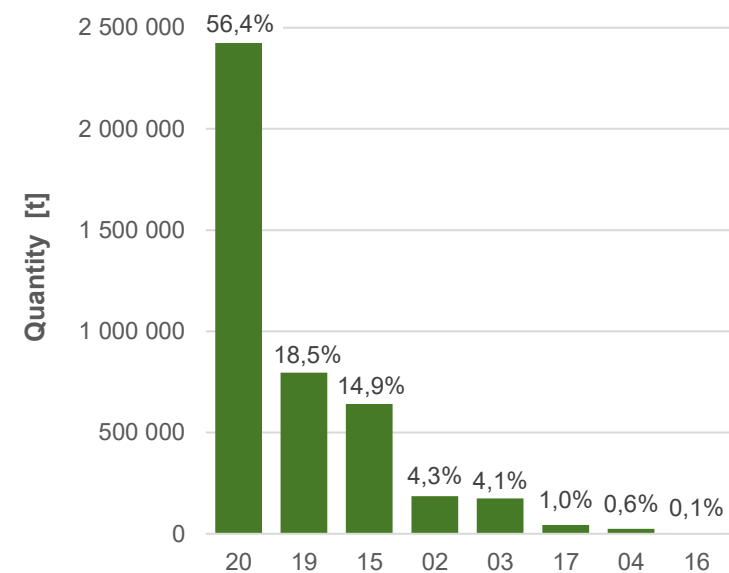
in generation has been slightly increasing since 2013; however, since 2019, the generation of biodegradable waste (BW) has been declining, with the pace of decline accelerating from 2021 onwards, see graph 47 As with biodegradable municipal waste, part of the waste categories of group 20 is calculated using a coefficient of the biodegradable fraction, e.g. category No. 20 03 01 – *Mixed municipal waste* or category No. 20 03 07 – *Bulky waste*. The waste categories included in group 20 represent the most significant part of the generation of biodegradable waste. In 2022, this accounted for a share of over 56%. The second most represented group is group 19 with a share of over 18%, followed by group 15 with a share of approximately 15%. The most represented subgroup is 20 03 – *Other municipal waste* with a share of 23%, followed by subgroup 20 02 – *Waste from gardens and parks* (including cemetery waste), which accounted for a share just under 20%, and subgroup 15 01 – *Packaging* with a share of 15%.

Graph 47: Generation of the Biodegradable Waste stream



Source: processed on the basis of WMIS and Tiramiso

Graph 48: Generation of biodegradable waste in 2022 by waste groups



Source: processed on the basis of WMIS

Table 54: Generation and Management 2018–2022 – Biodegradable Waste

Year	Generati on of	Energy Recovery			Recycling and Composting			Recovery			Landfilling			Composting		
	Quantity (thous. t)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)	Quantity (thous. t)	SP (%)	SM (%)
2018	4,015	380	8.8	10.3	2,375	67.7	64.1	2,784	77.2	75.1	852	21.2	23.0	1,884	37.1	50.9
2019	4,024	399	9.2	10.8	2,360	67.5	63.7	2,792	77.4	75.3	864	21.5	23.3	1,952	39.8	52.7
2020	3,966	441	10.1	11.5	2,420	69.9	63.4	2,881	80.4	75.4	890	22.4	23.3	1,929	39.6	50.5
2021	4,064	445	9.9	11.9	2,284	67.2	61.2	2,767	77.9	74.1	909	22.4	24.4	1,851	38.5	49.6
2022	3,808	409	10.2	12.0	2,104	67.4	61.5	2,528	77.9	73.9	841	22.1	24.6	1,697	38.7	49.6

Source: compiled on the basis of WMIS and MoE indicator calculation methodology

Note: For 2021 and the preceding years, the same coefficients of biodegradable content valid for 2022 were applied in the table.

In general, the Czech Republic has a deficit of facilities for the management of biodegradable waste.

For group 02 – *Waste from agriculture, horticulture, aquaculture, forestry, hunting, and the production and processing of food*, however, a surplus of capacities was recorded in the Czech Republic in 2022 in a total volume of 25 thousand tonnes, the highest in the Olomouc Region (31 thousand tonnes).

A slight deficit of management capacities in 2022 was recorded for group 03 – *Waste from wood processing and the production of panels, furniture, pulp, paper, and cardboard*, in a total volume of 9 thousand tonnes. The highest deficit for this group of waste was recorded in the Moravian-Silesian Region (15 thousand tonnes), the Olomouc Region (12 thousand tonnes), and the Central Bohemian Region (11 thousand tonnes), while a surplus of capacities was recorded in the South Bohemian Region (12 thousand tonnes).

A slight surplus of capacities in the Czech Republic in 2022 was also recorded for group 04 – *Waste from the leather, fur, and textile industries* (684 tonnes).

A significant deficit of treatment capacities in the Czech Republic in 2022 was recorded for group 15 – *Waste packaging, absorbents, wiping cloths, filter materials, and protective clothing not otherwise specified*, totalling 206 thousand tonnes. The highest deficit that year was recorded in the Central Bohemian Region (87 thousand tonnes) and the South Moravian Region (41 thousand tonnes). A surplus of capacities for this group (15) was recorded in 2022 in the Ústí nad Labem Region (23 thousand tonnes).

A slight deficit of management capacities in 2022 was also recorded for group 16. For category numbers 16 03 06 – *Organic waste not otherwise specified*, and 17 02 01 – *Wood*, the total deficit was 8 thousand tonnes. The highest deficit was recorded in the Capital City of Prague (6 thousand tonnes) and the South Moravian Region (5 thousand tonnes). On the contrary, a surplus of capacities was recorded in 2022 in the Vysočina Region (4 thousand tonnes).

A significant deficit of treatment capacities in the Czech Republic in 2022 was recorded for group 19 – *Waste from waste management facilities, wastewater treatment plants outside the site of generation, and the production of water for human consumption and for industrial purposes*, totalling 253 thousand tonnes. The highest deficit that year was recorded in the Capital City of Prague (89 thousand tonnes), the Plzeň Region (62 thousand tonnes), and the Central Bohemian Region (50 thousand tonnes). A surplus of capacities was recorded in 2022 in the Vysočina Region (21 thousand tonnes).

A high deficit of treatment capacities in the Czech Republic in 2022 was also recorded for group 20 – *Municipal waste* (household waste and similar trade, industrial and office waste) including separately collected fractions, totalling 182 thousand tonnes. The highest deficit that year was recorded in the Capital City of Prague (144 thousand tonnes) and the South Moravian Region (62 thousand tonnes). A surplus of capacities for this group of waste was recorded in 2022 in particular in the Central Bohemian Region (70 thousand tonnes) and the Pardubice Region (12 thousand tonnes).

Further information on the management of individual catalogue codes or sub-streams falling under biodegradable waste is provided in Chapters 2.3.1.8 Biological Waste (BIO), 2.3.1.11 Biodegradable Municipal Waste (BMW), 2.3.2 Paper, or 2.3.6 Wood.

## 2.4 Evaluation of Systems of Separate Collection

The collection network is crucial for the effective development of waste management. Properly established systems of collection of individual waste streams directly influence the participation of waste holders in the correct handling of waste, in the case of municipalities the active participation of inhabitants in the set system of waste collection. The collection system determines the effectiveness of separate collection of waste with regard to the reduction of generation of mixed municipal waste. A properly established system of waste collection also helps to eliminate illegal handling of waste such as the creation of fly-tipping sites or incorrect disposal of waste in the form of littering.

The collection network itself creates only the preconditions for proper handling of waste; the key factor is the acceptance of the established system of waste collection by the waste holders.

It is precisely the effective development of the collection network that will be crucial for ensuring the fulfilment of the objectives of the Waste Management Plan of the Czech Republic (WMP CR) for the period 2025–2035.

### 2.4.1 Characteristics of Separate Collection in the CR

According to Act No. 541/2020 Sb., on Waste, separate collection shall be understood as such collection of waste where individual wastes are sorted according to the type, category and material of the waste with the aim of facilitating their subsequent treatment. Within the Czech Republic, take-back of packaging waste is ensured together with other separately collected wastes within the so-called Integrated Municipal Waste Collection System. The network of separate collection of municipal waste thus partly overlaps with the network of separate collection of packaging waste, which is provided by the authorised packaging company pursuant to Act No. 477/2001 Sb., on Packaging. The authorised packaging company, under the Act, inter alia ensures the obligation of take-back and recovery of packaging waste.

In the Czech Republic, there is a single authorised packaging company – EKO-KOM a.s. Within the places of separate collection (the term collection nests is also used hereinafter), both packaging and non-packaging wastes are collected separately. Collection containers therefore also serve for the collection of waste according to their material. Other methods of separate collection of municipal waste include municipal collection yards and collection points, large-capacity containers (mobile collection), sack collection, or waste collection facilities with buy-back. Pursuant to Act No. 541/2020 Sb., on Waste, the municipality is obliged to determine places for separate collection of municipal waste, namely at least hazardous waste, paper, plastics, glass, metals, biodegradable waste (BDW), and edible oils and fats. As of 1 January 2025, the obligation to designate places for separate collection of textiles will also be added. At many locations, however, these places are already available at the time of preparation of this document. In order to fulfil these obligations, municipalities are required to establish a municipal waste management system, which can be established by means of a generally binding ordinance. Within this ordinance the municipality may also designate places where, within the municipal system, the following shall be collected:


- construction and demolition waste generated within the territory of the municipality by the activities of non-business natural persons,
- movable items within the framework of waste prevention,
- municipal waste generated within the territory of the municipality by the activities of legal entities and self-employed natural persons who join the municipal system on the basis of a contract,
- end-of-life products, and
- plant residues from the maintenance of greenery, gardens and households.

The following is a summary description of the methods and forms of collection of individual waste streams originating from the system of municipalities and other waste holders, including the methods of collection of selected end-of-life products in the take-back regime.

A comprehensive overview of the methods of collection of selected waste streams and products within the framework of take-back is presented in (Table 55).

Table 55: Methods of Collection and Separate Collection of Selected Waste Streams and Products in the Take-Back Regime in the CR, Situation as of 2023–2024

Waste Holder	Selected Types of Waste and Products within the Framework of Take-Back	Cities			Towns and Larger Villages			Rural Development				Specific Methods of Collection Regardless of the Size of the Municipality						
		(high population density)			(medium population density)			(low population density)										
		Door to door	Collection Nests*	Collection Yard / Collection Point	Door to door	Collection Nests	Collection Yard / Collection Point	Door to door	Collection Nests	Collection Yard / Collection Point	Collection Yard / Collection Point in a Neighbouring Municipality	Mobile Collection	Waste Collection with Buy-Back	School Collection	Retail Network / Service Shops	Sorting Bins at the Place of Generation	Waste Bins at the Place of Generation	Special Ashtrays
Municipalities – Municipal Waste	<b>Paper and Cardboard</b>	Integrated System of Collection of Packaging and Non-Packaging Waste																
	Packaging	x	xxx	x	x	xxx	x	xx	xxx	x	x	x	x	x		x		
	Other	x	xxx	x	x	xxx	x	xx	xxx	x	x	x	xx	x		x		
	<b>Plastics</b>	Integrated System of Collection of Packaging and Non-Packaging Waste																
	Packaging	x	xxx	x	x	xxx	x	xx	xxx	x	x	x				x		
	Other	x	xxx	x	x	xxx	x	xx	xxx	x	x	x				x		
	<b>Beverage cartons</b>	x	xxx	x	x	xxx	x	xx	xxx	x	x	x				x		
	<b>Glass</b>	Integrated System of Collection of Packaging and Non-Packaging Waste																
	Packaging		xxx	x		xxx	x		xxx	x	x	x						
	Other		xxx	xx		xxx	xx		xxx	xx	xx	xx						
	<b>Metals</b>	Integrated System of Collection of Packaging and Non-Packaging Waste																
	<b>Ferrous Metals</b>																	
	Packaging	x	xx	xx	x	xx	xx	x	xxx	x	x	x	x					x
	Other	x	xx	xx	x	xx	xx	x	xxx	x	x	x	xxx					x
	Aluminium and Non-Ferrous Metals	x	xxx	xx	x	xx	xx	x	xx	x	x	x	xxx					x
	Packaging	x	xxx	xx	x	xx	xx	x	xx	x	x	x	x					x
	Other	x	xx	xx	x	xx	xx	x	xx	x	x	x	xxx					x
	<b>Garden Waste</b>	x**	x	xxx	x**	x	xxx	xx**		xxx	x	x						
	<b>Bio-Waste</b>	x**	x		x**		x	xx**										
	<b>Food Waste</b>	x			x													
	<b>Edible Oils</b>		x	xx		x	xx		x	xx	xx	x						
	<b>Textiles</b>		xx	xxx		x	xx		x	xx	x	x						
	<b>Wood</b>			xxx			xxx			xxx	x	xx						
<b>Hazardous Waste</b>			xxx			xxx			xxx	x	xx							
<b>Mixed Municipal Waste</b>	x	xxx		x	xxx		xxx	x										

Waste Holder	Selected Types of Waste and Products within the Framework of Take-Back	Cities			Towns and Larger Villages			Rural Development				Specific Methods of Collection Regardless of the Size of the Municipality					
		(high population density)			(medium population density)			(low population density)									
		Door to door	Collection Nests*	Collection Yard / Collection Point	Door to door	Collection Nests	Collection Yard / Collection Point	Door to door	Collection Nests	Collection Yard / Collection Point	Collection Yard / Collection Point in a Neighbouring Municipality	Mobile Collection	Waste Collection with Buy-Back	School Collection	Retail Network / Service Shops	Sorting Bins at the Place of Generation	Waste Bins at the Place of Generation
	Bulky Waste			xxx			xxx			xxx		xx					
	Dog Excrements															xx	
	Cigarette Butts															xx	x
	Waste generated "on the street" - potentially littering															xxx	
Take-Back of Products	Waste Electrical and Electronic Equipment (WEEE)		xx	xxx			x			x	x	x		xx			
	Batteries		x	x			x			x	x	x		xxx			
	Fluorescent Lamps			xx			xx			xx	x	x		xx			
	Tyres			xx			xx			xx	x	x		xxx			
Other Waste Holders	<p>Waste collection takes place on the basis of individual contractual relations between the waste holder and the waste management company taking over the waste at the place of operation. The collection system is individually set according to the needs of the waste holder.</p> <p>If the waste holder is integrated with municipal waste into the municipal system, he uses the collection infrastructure under the conditions of the given municipality.</p> <p>In the case of generation of wastes which have a positive market value, part of the waste holders realise their sale within waste collection and buy-back facilities, or directly to recycling facilities ("recyclers").</p>																
<b>Legend:</b>  <ul style="list-style-type: none"> <li>- high comfort of collection</li> <li>- collection motivated by the sale of waste</li> <li>x - xxx - the number of crosses represents the dominance of the collection method</li> <li>* the density of the collection network of container nests is in most cases within a short walking distance of approx. 100 m</li> <li>** in the case of introduction of waste prevention, home composting / community composting replaces the need for installation of containers</li> </ul>																	

Source: own processing

From the above overview in the table (Table 55) it is obvious that among the key methods of waste collection in the Czech Republic are container collections and collections through collection yards and collection points. For specific wastes with a positive buy-back price, waste collection facilities with buy-back are also used. For take-back of products, both the network of take-back points within shops and the network of take-back points at collection yards and collection points within municipal systems are significantly utilised. As already mentioned above, information on the collection network is very limited and is primarily linked to the management of a specific commodity. The exception is collection yards and collection points, which are used both for the collection of multiple waste streams and for the collection of products within the take-back system.

Fields shaded in light grey indicate places with high collection comfort for citizens. Fields shaded in dark grey indicate collection motivated by the sale of waste. The number of crosses in the fields indicates the dominance of the given method of collection of the commodity. The asterisk symbol for biodegradable waste (BDW) and garden waste indicates that, in the event of increased waste prevention, home composting or community composting replaces the need for the installation of containers. **From the table it is clear that paper and cardboard, plastic, beverage cartons, glass, aluminium and ferrous metals, and mixed municipal waste are very convenient for Czech citizens to collect separately, both in cities, in cities and larger villages, and in village development, namely within collection nests, i.e. places where collection containers are concentrated.** In most cases, the walking distance to these containers is up to 100 metres. **For Czech citizens it is also convenient to collect separately textiles, electrical equipment and batteries, regardless of the size of the municipality, as collection nests often also have containers for these wastes; in the case of end-of-life products (including tyres and fluorescent lamps), there is also the possibility of handing these products over to producers.** Within rural development it is evident that, compared to larger cities, door-to-door systems are more widespread for traditionally separately collected commodities. Commodities such as edible oils, wood, textiles, hazardous waste, or garden waste are, regardless of the size of the municipality, predominantly collected separately within collection yards and collection points. Aluminium and ferrous metals, paper and cardboard are the only commodities for which their collection is motivated by the sale of these wastes. Hazardous waste, wood and bulky waste are to a greater extent collected separately within mobile collections, specifically large-capacity containers. Dog excrement, cigarette butts and especially littering waste are most often collected within waste bins at the place of generation of such waste.

## 2.4.2 System of Separate Collection in the CR

According to Act No. 541/2020 Sb., on Waste, everyone is obliged to collect waste separately. According to Decree No. 273/2021 Sb., on Details of Waste Management, every municipality is obliged to provide citizens of the municipality with year-round places for separate collection of paper, plastics, glass, metals, edible oils and fats, and biodegradable waste (BDW). Furthermore, the municipality must provide places for separate collection of hazardous waste at designated dates at least twice a year. In practice, this usually means mobile collection, or collection through collection yards or collection points.

**The network of collection points for separate collection of recyclable and recoverable components of municipal waste is very dense in the Czech Republic. Separate collection is practically available to 100% of the population of the CR.**

From the table (Table 56) it is obvious that within the door-to-door system the number of collection containers for plastics and paper, i.e. wastes most generated within the household waste of natural persons, is increasing in particular. The number of containers for metals and beverage cartons is not increasing as much, since these wastes are generally not produced in such quantities per item. In the case of glass, a high proportion of packaging waste is deposit-refund based, and generally glass is not produced in such amounts per item either.

*Table 56: Number of Containers in Public Areas and within the Door-to-Door System in the Czech Republic between 2020 and 2022*

Year	Metal	of which D2D*	NM	of which D2D*	Paper	of which D2D*	Plastics	of which D2D*	Glass	of which D2D*
2020	11,823	156	9,505	100	190,417	96,207	251,585	129,468	94,116	3,402

2021	14,009	156	9,680	100	240,789	148,639	317,728	201,546	96,511	4,250
2022	16,606	121	9,918	295	310,264	210,426	402,447	272,280	99,380	5,157

Source: processed on the basis of data from the Authorised Packaging Company (AOS)

### 2.4.3 General Evaluation of the CR

In 2023, approximately 75% of the inhabitants of the Czech Republic sorted separate components of waste. The proportion of citizens of the CR who sort is increasing every year, for example since 2020 it has increased by 2%. One of the main reasons is the comfort for citizens, as the average walking distance to collection containers is also decreasing every year. In 2022, the average walking distance to collection containers was 87 metres, i.e. three metres less than in 2020.



The density of the collection network is even more apparent in the figures of the average number of collection containers per km<sup>2</sup> in the Czech Republic. While in 2019 there were on average 6 containers per km<sup>2</sup> in the Czech Republic, in 2022 it was already **11.67 containers per km<sup>2</sup>**, i.e. almost double (Table 57).

Table 57: Data on the Network of Separate Collection in the CR between 2020 and 2022

Year	Total Number of Collection Containers	Average Walking Distance	Average Number of Collection Containers per km <sup>2</sup>
2020	558,000	90	8.60
2021	678,446	89	10.63
2022	838,578	87	11.67

Source: processed on the basis of data from the Authorised Packaging Company (AOS)

**In the programming period 2014–2020, within the framework of the Operational Programme Environment (OPE), 1,075 projects focused on separate collection of waste were supported, with a total subsidy amount exceeding CZK 1.8 billion. Within these projects, facility capacity of just under 151 thousand tonnes per year was built.**

The network of collection yards and collection points is also sufficient in the Czech Republic, as is evident from the following table (Table 58). **Between 2020 and 2022, the number of collection yards increased by 60, and the number of collection points by 24.**

Table 58: Number of Collection Yards and Collection Points in the CR between 2020 and 2022

Year	Collection Yards		Collection Points	
	Number of Municipalities	Number of Inhabitants	Number of Municipalities	Number of Inhabitants
2020	1,268	7,091 928	439	1,275 876

2021	1,259	7,061 681	457	1,304 631
2022	1,328	7,003 613	463	1,333 306

Source: processed on the basis of data from the Authorised Packaging Company (AOS)

**Within the programming period, more than CZK 1.4 billion was spent on projects of collection yards, comprising a total of 353 projects, thanks to which capacity exceeding 150 thousand tonnes per year was built. In the programming period, 132 projects have so far been supported with a total subsidy amount of just under CZK 450 million. In the future, the CR plans to continue investing in the development of collection yards and collection points. It is envisaged to build approximately 200 modernly equipped collection yards and to significantly develop inter-municipal cooperation in the framework of sharing and using existing or newly built collection yard infrastructure.**

A significant factor in the growth of the amount of separated waste, which is not influenced only by the setting of the system of separate collection, is also the natural increase in packaging generation, the growth of household consumption, as well as the increase in the number of households that use gardens more for recreational purposes than for growing and keeping livestock. These factors have a significant impact on waste generation, and thus also on the requirements for increasing the capacity of the collection network for separately collected components of waste.

**The inhabitants of the Czech Republic have a very positive attitude towards separate collection. One of the main reasons for the high rate of separate collection in the Czech Republic is the high level of comfort for Czech citizens, caused by the very dense network of collection containers, with the average distance to a collection container being 87 metres.** The average walking distance is moreover decreasing every year due to the increasing number of collection containers, especially within door-to-door systems. The Authorised Packaging Company also carries out extensive information and awareness-raising campaigns, through which it informs citizens about which commodities to sort and how. In the coming years, the Czech Republic is considering the introduction of a deposit-refund system for PET bottles and cans, the aim of which should be to increase the share of separation of these commodities.

### **Public Collection Network of Containers**

With the increasing number of containers installed for recyclable and recoverable components, the availability of the collection network is growing, bringing it closer to citizens and thereby facilitating opportunities for active sorting. In the future, continued expansion of the collection network is envisaged. Further development of door-to-door systems can be expected in particular. Within the programming period 2021–2027, subsidy calls are and will be announced under the Operational Programme Environment (OPE) to support collection yards, door-to-door systems, and the introduction of systems supporting PAYT. The aim is a further reduction of walking distances and an increase in the comfort of collection. In practice, this means a densification of the collection network through the use of already installed containers from other sites.

The Authorised Packaging Company carries out detailed analyses of the collection network, on the basis of which it evaluates whether the walking distance is optimal. Based on these analyses, municipalities must optimise their collection networks. Municipalities place collection containers in such a way that the walking distance for citizens is as short as possible, thus making separate collection as convenient as possible. In the future, further reduction of walking distance can be expected, as it will

be necessary to intensify separate collection in the Czech Republic in order to meet the set targets for sorting and recycling of municipal waste.

**For the Czech Republic, it would be strategic in the future to densify the collection network in places with below-average results of separate collection. In locations with increased movement of tourists and visitors, this would be achieved through waste bins for sorted waste, and in suburban areas and newly emerging urban developments through door-to-door systems.**

**The future objective of the Czech Republic should also be the continued education and awareness-raising of citizens in the area of separate collection, in particular raising awareness of separate collection of less traditional commodities such as edible oils and fats, textiles, and kitchen biowaste.**

**The Czech Republic is improving every year in the performance and efficiency of the separate collection network – the walking distance to collection containers decreases every year, the number of collection containers per km<sup>2</sup> increases annually, and the number of collection containers is rising significantly, especially within individual container collection systems. The Czech Republic is investing the necessary resources into the modernisation and expansion of the separate collection network, in particular from the resources of the Operational Programme Environment (OPE). In addition to investment in collection containers, this includes the modernisation and construction of new collection yards, the establishment of re-use centres, projects of community and individual composters, and others.**

#### **2.4.4 Development of Separate Collection of Recoverable Waste within Municipal Systems**



The following table (Table 59) presents the recommended and preferred methods of ensuring separate collection of municipal waste, including ensuring the take-back of end-of-life products. Methods of separate collection and organisation of waste collection of other waste holders are not described in detail due to the individual needs of individual waste holders in ensuring separate collection of the waste they generate. In the area of collection and collection of municipal waste generated by other waste holders, the principles and preferences for setting separate collection of these waste streams within the municipal system will be applied. Ensuring effective and efficient separate collection is a primary condition for ensuring the fulfilment of the objectives of the Waste Management Plan of the Czech Republic (WMP CR).

In the following table (Table 60) recommended methods of separate collection for individual waste streams are presented.

Table 59: Recommended Methods for the Development and Provision of Separate Collection of Individual Waste Streams and End-of-Life Products in the CR – Desired Future State

Waste Holder	Waste	Cities			Towns and Larger Villages			Rural Development				Specific Methods of Collection Linked to the Place Regardless of the Size of the Municipality						
		(high population density)			(medium population density)			(low population density)										
		Door to door	Collection Nests*	Collection Yard / Collection Point	Door to door	Collection Nests	Collection Yard / Collection Point	Door to door	Collection Nests	Collection Yard / Collection Point	Collection Yard / Collection Point in a Neighbouring Municipality	Mobile Collection	Waste Collection with Buy-Back	School Collection	Retail Network / Service Shops	Sorting Bins at the Place of Generation	Waste Bins at the Place of Generation	Special Ashtrays
Municipalities – Municipal Waste	<b>Paper and Cardboard</b>	Integrated System of Collection of All Plastic Waste																
	<i>Packaging</i>	xx	xxx	x	xx	xxx	x	xxx	xx	x	x	x	xx	x		x		
	<i>Other</i>	xx	xxx	x	xx	xxx	x	xxx	xx	x	x	x	xxx	xx		x		
	<b>Plastics</b>	Integrated System of Collection of All Paper Waste																
	<i>Packaging</i>	xx	xxx	x	xx	xxx	x	xxx	xx	x	x					xx		
	<i>Other</i>	xx	xxx	xx	xx	xxx	x	xxx	xx	x	x	x			xx			
	<b>Beverage cartons</b>	xx	xxx	xx	xx	xxx	x	xxx	xx	x	x				xx	x		
	<b>Glass</b>	Integrated System of Collection of All Glass Waste																
	<i>Packaging</i>	x	xxx	x	x	xxx	x	xxx	xx	x	x					x		
	<i>Flat</i>		x	xxx		x	xxx	x	x	xxx	xxx	x	x		x			
	<b>Metals</b>	Integrated System of Collection of All Metal Waste																
	<b>Ferrous Metals</b>																	
	<i>Packaging</i>	x	xxx	xx	x	xx	xx	x	xx	xx	xx	x	x			x		
	<i>Other</i>	x	xx	xxx	x	xx	xxx	x	xx	xxx	xxx	x	xxx					
<b>Aluminium and Non-Ferrous Metals</b>																		

	<i>Packaging</i>	x	xxx	xx	x	xx	xx	x	xx	x	x	x	xxx			x			
	<i>Other</i>	x	xx	xxx	x	xx	xxx	x	xx	xxx	xxx	x	xxx						
	<b>Garden Waste</b>	xx**	x	xxx	xx**	x	xxx	xxx**	x	xxx	xxx	x							
	<b>Bio-Waste</b>	xx**	xx	x	xx**	x	x	xxx**	x	x	x								
	<b>Food Waste</b>	x	xxx		x	xxx		x	xxx										
	<b>Edible Oils</b>		xx	xxx		xx	xxx		xx	xxx	xxx	x							
	<b>Textiles</b>		xxx	xxx		xxx	xxx		xxx	xxx	xxx	x			xx				
	<b>Wood</b>			xxx			xxx			xxx	xxx	xxx							
	<b>Hazardous Waste</b>			xxx			xxx			xxx	xxx	xxx							
	<b>Mixed Municipal Waste</b>	x	xxx		x	xxx		xxx	x										
	<b>Bulky Waste</b>			xxx			xxx			xxx	xxx	xxx							
	<b>Dog Excrements</b>																	xxx	
	<b>Cigarette Butts</b>																	xxx	
	<b>Waste generated "on the street" - potentially littering</b>																	xxx	
<b>Take-Back of Products</b>	<b>Furniture***</b>			xxx			xxx			xxx	xxx	xxx			xxx				
	<b>Waste Electrical and Electronic Equipment (WEEE)</b>		xxx	xxx			xxx			xxx	xxx				xxx				
	<b>Batteries</b>		xxx	xxx			xxx			xxx	xxx				xxx				
	<b>Fluorescent Lamps</b>			xxx			xxx			xxx	xxx				xxx				
	<b>Tyres</b>			x			x			x	x	x			xxx				
	<b>Leaflets*** (joint collection within paper)</b>	xx	xxx	x	xx	xxx	x	xxx	xx	x	x	x	xxx	xx			x		
	<b>Other products*** e.g. "house and garden", "sport", joint collection with the commodity</b>	xx	xxx	xx	xx	xxx	x	xxx	xx	x	x	x			xx				

<b>Other Waste Holders</b>	<p>Waste collection will continue to take place on the basis of individual contractual relations between the waste holder and the waste management company taking over the waste at the place of operation. The collection system will continue to be individually set according to the needs of the waste holder.</p> <p>In the case of generation of wastes which have a positive market value, it will continue to be possible to hand over sorted waste to waste collection facilities with buy-back, or directly to recycling facilities ("recyclers") for remuneration.</p> <p>If the waste holder is integrated with municipal waste into the municipal system, he will use the collection infrastructure under the conditions of the given municipality. It is recommended that the HORECA sector be integrated into the municipal system at least with wastes of paper, plastic, glass, metal, beverage cartons and kitchen and catering waste – gastro-waste.</p>
<p><b>Legend:</b></p> <p> - high comfort of collection</p> <p> - collection motivated by the sale of waste</p> <p><b>x - xxx</b> - the number of crosses represents the dominance of the collection method</p> <p>*</p> <p>**</p> <p>***</p> <p>the density of the collection network of container nests is in most cases within a short walking distance of approx. 100 m</p> <p>in the case of introduction of waste prevention, home composting / community composting replaces the need for installation of containers</p> <p>- a prerequisite for the development of extended liability systems</p>	

**Within the separately collected commodities of municipal waste, the principle of developing an integrated system of take-back of packaging waste together with the given commodity of separate collection of municipal waste is maintained.** With regard to ensuring maximum collection efficiency, in locations suitable for the introduction of door-to-door systems of separate collection of recoverable commodities, this collection is recommended. The development of door-to-door systems is primarily preferred in village development with low population density and also in areas of family houses within urban development.

For wastes with a relatively lower occurrence compared to the dominant components of separate collection such as plastics, paper or biowaste, or with their high bulk density, the development of bring systems into an efficiently located network of containers placed in publicly accessible locations with all-day availability is recommended.

The development of biowaste collection from family housing as well as apartment housing is incorporated both in the production forecast and in the cost economic model. Within the analysis, intensive work was carried out with the MoE document "Study on the Management of Biodegradable Waste for the Optimisation of Support from the OPE 2021–2027".

With regard to the efficiency of separate collection and the occupation of public space for the placement of collection containers for minor commodities, such as metals and beverage cartons, in locations where a re-sorting line is capable of effectively sorting these commodities, it is possible to introduce **multi-commodity collection** of these commodities together with a dominant commodity. This concerns in particular the collection of beverage cartons together with plastics, or the combination of collection of ferrous and non-ferrous metals together with plastics.

With the development of technologies for mechanical automated sorting both of individual separately collected commodities and of technologies for sorting mixed municipal waste, a pathway is also opening for **joint multi-commodity collection of paper, plastics, metals and beverage cartons**. An essential condition, however, is the linkage of such a set collection system to sorting and treatment technology meeting the strict criteria of secondary raw material purchasers for their subsequent recycling. With the development of glass treatment technologies in the process of producing high-quality glass batch, it is also possible to consider multi-commodity collection of metals together with glass. For multi-commodity collections, the fundamental condition always applies that the collection system must be linked to high-quality waste treatment technology capable of efficiently sorting the collected commodities primarily for the purpose of high-quality material recycling.

In the future, the importance of **collection yards and collection points** will also increase for the purposes of ensuring separate collection of wood and bulky waste with the aim of their subsequent treatment, recycling and recovery.

The collection of recoverable wastes which have a positive price on the secondary raw materials market, in particular commodities such as paper and metals, both ferrous and non-ferrous, will continue to be carried out through **buy-back waste collection facilities**. This mainly concerns the commodities paper and metals, both ferrous and non-ferrous.

Within the development of the collection network, for packaging waste the development of an integrated system of take-back together with the given commodity of separate collection of municipal waste is recommended, as described above. This also applies to end-of-life products and also to other products for which it is considered that a take-back obligation might apply, such as leaflets, or products from the home and garden category, sports equipment, etc.

For larger products, which are considered as further products that might be subject to a take-back obligation, and which are currently collected within bulky waste (e.g. furniture), it is recommended to maintain and further develop collection at collection yards and collection points. In cases where it will be effective to allow the handover of these products also within the retail network, it will be necessary to ensure the creation of logistics and handling of these products for the purposes of their preparation for re-use or recycling. When deciding on the development of take-back of individual product groups, it is necessary to take into account the willingness of users of products included in the take-back system to hand them over at designated points, with regard to ensuring conditions for collection, storage and subsequent handling of these products.

For ensuring separate collection of wastes of other waste holders, in the case of municipal waste, it is appropriate for them to be integrated into the municipal system. The condition remains, however, that the municipality offers this contractual option to other waste holders. For most waste streams of other waste holders, apart from municipal waste, collection and transport systems are set according to the individual needs of individual waste holders.

Specific waste holders are waste holders from the HORECA sector (the segment of hospitality and various types of gastronomic establishments such as restaurants, cafés, bars, pubs, clubs, catering, etc.). For these waste holders, it is appropriate that they are integrated into the municipal system due

to the high generation of recyclable commodities such as glass, plastics, paper and metals, including biodegradable waste from kitchens and catering facilities. Another group comprises administrative buildings and educational institutions, within which municipal waste with high recycling potential is again generated in larger amounts.

The primary influence on the quantity and quality of waste sorting in municipalities is the proportion of actively sorting inhabitants, as well as the participation of visitors to municipalities in sorted collection and also the involvement of small entrepreneurs in the municipal system. These factors can be influenced by technical, communication and administrative tools.

The Authorised Packaging Company will continue to carry out extensive high-quality information and awareness-raising campaigns, through which it informs inhabitants about which commodities to sort and how. In the coming years, the Czech Republic is considering the introduction of a deposit-refund system for plastic beverage bottles (PET) and metal beverage cans, the aim of which is to increase the share of sorting of these commodities.

Among the economic motivational tools used is in particular the system of payment for municipal waste “Pay As You Throw” (PAYT). This motivational tool will continue to be used in particular in locations where a waste container can be specifically assigned to the waste holder, i.e. mainly in family housing. The system also places certain demands on collection, weighing of waste and record-keeping, which can be supported from the OPE.

### 2.4.5 Summary of Separate Collection in the CR

The following table (Table 60) provides a summary overview of the separate collection of selected waste components in the Czech Republic. The selected type of waste is always assessed in terms of the current state of its separate collection, then separate collection is evaluated as to whether it appears sufficient or not. For each type of waste, the future development of the given type of waste and the measures that need to be introduced or implemented in the future in order to achieve the desired state and to meet the targets set by laws and European legislation are outlined.

Table 60: Summary of Separate Collection in the Czech Republic

Type of waste	Area	Evaluation
Municipal Waste Packaging Waste	Overview	In 2022, more than 1.4 million tonnes of packaging waste were generated in the CR, of which just under 72% was recycled. Packaging waste in the CR is collected separately through collection containers at collection points or within the door-to-door system. The obligation of take-back of packaging waste in the CR is ensured by the Authorised Packaging Company. Other waste holders may join the system or arrange containers by contract with an entity authorised for collection and handling of such waste. More detailed figures are presented within individual commodities below.
	Evaluation	<b>The network of separate collection of packaging waste in the CR appears sufficient.</b> Between 2019 and 2022, the number of collection containers for packaging waste in the CR increased by just under 365 thousand containers. The walking distance to collection containers is decreasing every year and in 2022 averaged 87 metres. Nevertheless, in the future the CR will continue to expand the network of separate collection of packaging waste (particularly collection containers), also thanks to support from the OPE. Development is expected through the introduction of door-to-door systems in family housing in municipalities and through an increase in separate collection among other municipal waste holders (business entities, public institutions, etc.). More detailed information on individual commodities of packaging waste is presented below.

	<p><b>Future Development</b></p>	<p><b>In the coming years, intensification of the already relatively dense network of collection containers for separate collection of individual commodities can be expected, and in particular intensification of separate collection through door-to-door systems (mainly for plastics and paper).</b> According to the economic analysis, in order for the separate collection network to be sufficient, investments into container collection should amount to around CZK 3.5 billion by 2035 (scenario T1 and T2). The future state will be linked to the separate collection of individual commodities from which packaging waste arises (paper, plastics, beverage cartons, metals), with a more detailed analysis of individual commodities provided below.</p>
<p><b>Plastics</b></p>	<p><b>Overview</b></p>	<p>In 2022, more than 403 thousand containers for separate collection of plastics were placed in public areas in the CR. Of this number, more than 272 thousand containers were located within door-to-door systems (67.7%). In general, container and sack collection dominate separate collection of plastics in the CR. The network for separate collection of plastics in the CR is very dense and separate collection of this commodity is very convenient for citizens. The walking distance to collection points (collection nests) in 2022 averaged 87 metres. In 2022, each citizen of the CR sorted an average of 17.6 kg of plastics.</p>
	<p><b>Evaluation</b></p>	<p><b>The network of separate collection of plastics in the CR, given the current generation of plastics, appears sufficient.</b> Between 2019 and 2022, the number of collection containers for plastics nearly doubled, particularly within door-to-door systems (402 thousand in 2022). The walking distance to collection containers is decreasing every year and in 2022 averaged 87 metres. Nevertheless, in the future the CR will continue to expand the network of separate collection of plastics (particularly collection containers), also thanks to support from the OPE. Development is expected through the introduction of door-to-door systems in family housing in municipalities and through an increase in separate collection among other municipal waste holders (business entities, public institutions, etc.).</p>
	<p><b>Future Development</b></p>	<p><b>In the coming years, the possible introduction of a deposit-refund system for selected plastic beverage packaging can be expected, as well as intensification of the already relatively dense network of collection containers for separate collection of plastics, and in particular the intensification of separate collection of plastics through door-to-door systems.</b> According to the economic analysis, in order for the separate collection network to be sufficient, investments into container collection should amount to around CZK 3.5 billion by 2035 (scenario T1 and T2). However, with the possible introduction of a deposit-refund system for PET bottles in the coming years, it can be expected that this portion of waste will gradually disappear from collection containers, and it will therefore depend on the extent to which it will be necessary to further expand the network of collection containers for plastics. The expansion of the door-to-door network should also be supported by subsidies for these systems, with CZK 1.32 billion so far allocated within the programming period 2021–2027 under OPE calls, inter alia, for the support of door-to-door systems.</p>

	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Introduction of a deposit-refund system for beverage packaging – plastic beverage bottles (in particular PET).</li> <li>▪ The need to increase the separate collection of plastics and to further strengthen the collection network.</li> <li>▪ Development of door-to-door collection in single-family housing areas, and in apartment buildings and housing estates the expansion of collection points (bring banks).</li> <li>▪ In areas where modern mechanical sorting technologies are available, capable of re-sorting several types of waste within one waste stream, joint collection (multi-commodity collection) can be chosen, with regard to the quality of the treated waste and the possibilities of placing it on the market.</li> <li>▪ Address the issue of toys with portable batteries and their separate collection within the take-back system for batteries or electrical equipment, since there is a high risk of ignition in the event of mechanical damage to the battery in the process of sorting and treatment of plastics.</li> <li>▪ Allow toys to be handed over at collection yards and consider introducing an EPR system (e.g. take-back points within the retail network of distributors).</li> </ul>
<b>Paper and Cardboard</b>	<b>Overview</b>	<p>In 2022, more than 310 thousand containers for separate collection of paper were placed in public areas in the CR. Of this number, more than 210 thousand containers were located within door-to-door systems (67.8%). In the CR, separate collection of paper is generally dominated by sack and container collection. The network for separate collection of paper is very dense in the CR and separate collection of this commodity is very convenient for citizens; the walking distance to collection points (collection nests) in 2022 averaged 87 metres. In 2022, each citizen of the CR sorted an average of 30.6 kg of paper and cardboard.</p>
	<b>Evaluation</b>	<p><b>The network of separate collection of paper and cardboard in the CR, given the current generation, appears sufficient.</b> Between 2020 and 2022, the number of collection containers for paper more than doubled, particularly within door-to-door systems (210 thousand in 2022). The walking distance to collection containers is decreasing every year and in 2022 averaged 87 metres. Nevertheless, in the future the CR will continue to expand the network of separate collection of paper (particularly collection containers), also thanks to support from the OPE. Development is expected through the introduction of door-to-door systems in family housing in municipalities and through an increase in separate collection among other municipal waste holders (business entities, public institutions, etc.).</p>
	<b>Future Development</b>	<p><b>In the coming years, a further intensification of the already relatively dense network of collection containers for the separate collection of paper can be expected, in particular the strengthening of separate collection of paper and cardboard through door-to-door systems.</b> According to the economic analysis, in order for the separate collection network to be sufficient, investments into container collection should amount to around CZK 3.5 billion by 2035 (scenario T1 and T2). The expansion of the door-to-door network should also be supported by subsidies for these systems, with CZK</p>

		1.32 billion so far allocated within the programming period 2021–2027 under OPE calls, inter alia, for the support of door-to-door systems.
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of door-to-door collection in single-family housing areas, and in apartment buildings and housing estates the expansion of collection points (bring banks).</li> <li>▪ In areas where modern mechanical sorting technologies are available, capable of re-sorting several types of waste within one waste stream, joint collection can be chosen, with regard to the quality of the treated waste and the possibilities of placing it on the market.</li> <li>▪ Maintain collection and buy-back of paper waste due to the direct link of these waste collection facilities to recyclers.</li> </ul>
<b>Glass</b>	<b>Overview</b>	In 2022, more than 99 thousand containers for separate collection of glass were placed in public areas in the CR. Of this number, more than 5 thousand containers were located within door-to-door systems (5.2%). In general, container collection dominates separate collection of glass in the CR. The network for separate collection of glass is very dense in the CR and separate collection of this commodity is very convenient for citizens. The walking distance to collection points (collection nests) in 2022 averaged 87 metres. In 2022, each citizen of the CR sorted an average of 15.2 kg of glass.
	<b>Evaluation</b>	<b>The network of separate collection of glass in the CR appears sufficient.</b> Since 2016, the number of collection containers has been increasing at a rate of approximately 2 thousand per year (99 thousand in 2022). The walking distance to collection containers is decreasing every year and in 2022 averaged 87 metres. A large proportion of glass waste (deposit-refund bottles) is then handled in the CR through the deposit-refund system. Nevertheless, in the future the Czech Republic will optimise the network for the separate collection of glass (in particular collection containers) in view of the expected increase in glass sorting, also supported by funding from the (OPE). An increase in separate collection is expected among other municipal waste holders (business entities, public institutions, etc.).
	<b>Future Development</b>	<b>In the coming years, intensification of the already relatively dense network of collection containers for separate collection of glass can be expected, partly also intensification of separate collection of glass through door-to-door systems.</b> According to the economic analysis, in order for the separate collection network to be sufficient, investments into container collection should amount to around CZK 3.5 billion by 2035 (scenario T1 and T2). Part of glass waste (bottles) in the CR is collected through the deposit-refund system. The expansion of the door-to-door network should also be supported by subsidies for these systems, with CZK 1.32 billion so far allocated within the programming period 2021–2027 under OPE calls, inter alia, for the support of door-to-door systems.
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of collection points (bring banks) for glass in apartment buildings and housing estates, while ensuring their efficient placement in coordination with door-to-door systems so as to avoid a decline in residents' participation in the separate collection of glass.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Allow small quantities of broken glass to be deposited in glass collection points (bring banks).</li> <li>▪ Create and further develop conditions for the collection of flat glass at civic amenity sites and collection points.</li> <li>▪ Analyse the possibilities and consider the introduction of an EPR scheme (take-back points within the retail network, e.g. return of glass at glaziers' shops).</li> </ul>
<b>Composite Waste (Beverage Cartons)</b>	<b>Overview</b>	<p>In 2022, just under 10 thousand containers for separate collection of beverage cartons, which are a typical example of composite packaging waste, were placed in public areas in the CR. Of this number, only 295 containers were located within door-to-door systems (3%). In general, container and sack collection dominate separate collection of beverage cartons in the CR. The network for separate collection of beverage packaging is relatively dense in the CR and separate collection of this commodity is very convenient for citizens. Beverage cartons are also often collected together with plastics within multi-commodity collection. The walking distance to collection points (collection nests) in 2022 averaged 87 metres. In 2022, each citizen of the CR sorted an average of 0.4 kg of beverage cartons.</p>
	<b>Evaluation</b>	<p><b>The network of separate collection of beverage cartons in the CR appears sufficient.</b> Beverage cartons are often collected within multi-commodity collection together with plastics, for which the number of collection containers between 2019 and 2022 nearly doubled (particularly within door-to-door systems, 402 thousand in 2022). The walking distance to collection containers is decreasing every year and in 2022 averaged 87 metres. Nevertheless, in the future the CR will continue to expand the network of separate collection of beverage cartons, or together with plastics, in particular collection containers, also thanks to support from the SEF.</p>
	<b>Future Development</b>	<p><b>In the coming years, intensification of the network of collection containers for separate collection of beverage cartons can be expected, particularly within multi-commodity collection together with plastics or metals.</b> According to the economic analysis, in order for the separate collection network to be sufficient, investments into container collection should amount to around CZK 3.5 billion by 2035 (scenario T1 and T2). The expansion of the door-to-door network should also be supported by subsidies for these systems, with CZK 1.32 billion so far allocated within the programming period 2021–2027 under OPE calls, inter alia, for the support of door-to-door systems.</p>
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ The development of joint separate collection of beverage cartons, i.e. multi-commodity collection together with plastics or metals, in cases where modern re-sorting lines are capable of sorting these commodities with high efficiency and quality.</li> <li>▪ Development of door-to-door separate collection systems in single-family housing areas, expansion of collection points (bring banks) in apartment buildings and housing estates, and development of a network of collection bins in locations with a higher concentration of residents.</li> </ul>
<b>Ferrous Metals (and Aluminium)</b>	<b>Overview</b>	<p>In 2022, just under 17 thousand containers for separate collection of metals were placed in public areas in the CR. Of this number, only 121</p>

		containers were located within door-to-door systems (0.7%). The dominant method of collection of ferrous metals in the CR is primarily waste collection and buy-back facilities (79.9%), followed by collection through collection yards and collection points (15.9%) and the still increasing container and sack collection (3.3%). The network for separate collection of metals is relatively dense in the CR and collection containers intended for separate collection of this commodity are generally part of collection points (collection nests), or metals are collected within multi-commodity collection together with plastics or beverage cartons. The walking distance to collection nests in 2022 was approximately 87 metres. In 2022, each citizen of the CR sorted an average of 40 kg of metals.
	<b>Evaluation</b>	<b>The network of separate collection of ferrous metals in the CR appears sufficient.</b> Metals are also collected within multi-commodity collection together with plastics, for which the number of collection containers between 2019 and 2022 nearly doubled (particularly within door-to-door systems, 402 thousand in 2022). The walking distance to collection containers is decreasing every year and in 2022 averaged 87 metres. Nevertheless, in the future the CR will continue to expand the network of separate collection of beverage cartons, or together with plastics, in particular collection containers, also thanks to support from the SEF.
	<b>Future Development</b>	<b>In the coming years, intensification of the network of collection containers can be expected, particularly through multi-commodity collection together with plastics or beverage cartons, both in the case of collection containers in public areas and within door-to-door systems.</b> According to the economic analysis, in order for the separate collection network to be sufficient, investments into container collection should amount to around CZK 3.5 billion by 2035 (scenario T1 and T2). However, with the proposed possible introduction of a deposit-refund system for cans in the coming years, it can be expected that this portion of waste will gradually disappear from collection containers, and it will therefore depend on the extent to which it will be necessary to further expand the network of collection containers for metals. The expansion of the door-to-door network should also be supported by subsidies for these systems, with CZK 1.32 billion so far allocated within the programming period 2021–2027 under OPE calls, inter alia, for the support of door-to-door systems.
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Introduction of a deposit-refund system for metal beverage containers (particularly aluminium cans).</li> <li>▪ Development and expansion of the network of containers for separate collection of metals.</li> <li>▪ Development of joint separate collection of metals – multi-commodity collection together with plastics in cases where modern re-sorting lines are capable of highly effective and high-quality re-sorting of these commodities. Multi-commodity collection of metals together with plastics can ensure high coverage of metal collection to the extent of plastic collection.</li> <li>▪ Maintain collection and buy-back of metal waste due to the direct link of these waste collection facilities to recyclers.</li> </ul>

Textiles	Overview	<p>From 2025, municipalities will be obliged to designate places for separate collection of waste textiles, although collection containers for separate collection of textiles are already available in many places. Currently, 71% of municipalities in the CR collect textiles. Approximately 6,240 textile containers are deployed in municipalities; their placement is ensured by several different companies. Textiles can also be separately collected at civic amenity sites and collection points. Among the companies with the largest number of collection containers for textiles in the CR are Diakonie Broumov, Potex, Dimatex, the Czech Red Cross, and the Salvation Army. In 2024, Diakonie Broumov recorded 991 collection points for separate collection of textiles, including collection yards, containers of various sizes, and textile cages. Potex recorded 273 containers in the same year, Dimatex over 3,700 containers (including 2,500 company-owned containers), and Textileco recorded over 7,000 collection points. Reusable textiles can also be collected within re-use centres or re-use points. For the programming period 2021–2027, more than CZK 470 million has also been allocated under OPE calls to support re-use centres and projects for the prevention of textile and clothing waste.</p>
	Evaluation	<p><b>The network of separate collection of textiles in the CR appears sufficient.</b> The key will be the evaluation after 2025, when all municipalities in the CR will be obliged to establish a place for separate collection of textiles. After 2025, data on the number of collection containers will also be available, making it easier to assess the sufficiency of the network for separate collection of textiles.</p>
	Future Development	<p><b>In the coming years, development of the collection network is expected, due to the obligation of municipalities from 1 January 2025 to provide residents with the possibility of separate collection of waste textiles.</b> For the programming period 2021–2027, more than CZK 470 million has also been allocated under OPE calls to support re-use centres and projects for the prevention of textile and clothing waste.</p>
	Measures	<ul style="list-style-type: none"> <li>▪ Development of separate collection through specialised waterproof containers within the collection network.</li> <li>▪ Development of separate collection through collection yards and collection points.</li> <li>▪ Development of the possibility of using mobile collection.</li> <li>▪ Within waste prevention, development of separate collection through containers and sacks.</li> </ul>
Biodegradable Waste	Overview	<p>Biodegradable waste (collected separately and contained within mixed municipal waste) may account, according to estimates, for between 25% and 30% of mixed municipal waste generation. Separate collection of biodegradable waste in the CR is dominated by the collection of plant-based biowaste from gardens and parks. Collection of kitchen biowaste and waste oils is also being developed. The management of biological waste was assessed, for example, in the <i>Study on the Management of Biological Waste for the Optimisation of</i></p>

		<i>Support under the Operational Programme Environment 2021–2027<sup>32</sup>. Details for these individual sub-streams are provided below.</i>
	<b>Evaluation</b>	<b>The network of separate collection of the plant component of biodegradable waste in the CR is sufficient, even with a slight increase in the generation of this waste.</b> In contrast, for animal-based biowaste, a balance is being set between the size of the collection network and the capacity of facilities capable of treating this specific stream. In the future, it will therefore be necessary to build capacities of biogas plants and to establish a system of separate collection of the animal component of biodegradable waste.
	<b>Future Development</b>	<b>In the future, it will be necessary to build capacities of biogas plants and to establish a system of separate collection of the animal component of biodegradable waste.</b> In the coming years, the collection of plant-based biowaste in family housing is also expected to be developed directly into collection containers allocated to individual households (or groups of households) with various collection frequencies (most commonly once every 14 days). For collection of animal-based biowaste and kitchen biowaste from households (plant-based excluding garden waste + animal-based), options are being considered such as door-to-door collection in family housing through buckets or baskets, usually with a lining of biodegradable sacks, with higher collection frequencies (usually once or even twice per week). In housing estates, containers can be considered within collection nests with controlled access systems (chip or lock), most commonly of various volumes (120 l, 240 l, 1,100 l), with collection frequency according to the nature of the waste (plant-based only – once every 14 days, including animal-based – once or even twice per week).
<b>- Food Waste</b>	<b>Overview</b>	In the CR, separate collection of biodegradable kitchen and catering waste is developing. The number of municipalities involved in separate collection of kitchen waste is steadily increasing. The Ministry of the Environment clearly declares the importance of this waste stream and the need for education and awareness-raising measures that will lead to the expansion of the separate collection of household kitchen waste, its treatment, with a preference for subsequent utilisation in biogas plants. A number of projects are being developed, such as “I Sort Gastro”, the aim of which is to use kitchen and catering waste as a renewable source and process it in biogas plants instead of landfilling. Plant-based kitchen waste from households can also be collected in some municipalities through the collection of biodegradable waste from gardens and parks.  A significant option for the recovery of biodegradable waste is its processing into biogas in biogas plants. For the programming period 2021–2027, more than CZK 740 million has been allocated for calls related to the modernisation and construction of biogas plants.
	<b>Evaluation</b>	<b>Separate collection of biowaste from kitchens and catering facilities in the CR is increasing. Separate collection of kitchen</b>

<sup>32</sup> Study on Biological Waste Management for Optimising Support from OP Environment 2021–2027, Stage 2. Available [here](#).

		<b>waste from households is insufficient.</b> It can be stated that at present a balance is being established between the size of the collection network and the capacity of facilities capable of treating this specific stream. The collection network is developing in particular in towns and municipalities that fall within the collection area of existing projects (biogas plants). In the future, a significant increase in the generation of this stream, and thus also in the need for collection containers for separate collection, is expected.
	<b>Future Development</b>	<b>In the future, a significant increase in the generation of biodegradable waste from kitchens and catering facilities and kitchen waste from households, and thus also in the need for collection containers for separate collection, is expected.</b> The development of collection of kitchen waste with animal-based biowaste is expected in apartment buildings and housing estates in urban agglomerations. An increase in waste generation is expected, and therefore also a need to expand the collection network as sole traders, restaurants, schools, canteens, hospitals and retirement homes become integrated into the municipal system.
	<b>Measures (including kitchen waste)</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection primarily through door-to-door systems.</li> <li>▪ Expansion of the separate collection of household kitchen and food waste through dedicated collection containers in single-family housing areas.</li> <li>▪ Expansion of separate collection through collection containers at apartment buildings within collection points (bring banks).</li> <li>▪ Expansion of the separate collection of catering waste from restaurants, canteens and other entities.</li> </ul>
<b>- Edible Oils</b>	<b>Overview</b>	Containers for edible oils are often part of collection nests; oils can also be handed in at collection yards and collection points.
	<b>Evaluation</b>	<b>The network of separate collection of edible oils and fats in the CR, from the perspective of current generation, appears sufficient.</b> According to estimates, the volume of separately collected used edible oils and fats should double within the next five years, which will require adaptation of the collection network.
	<b>Future Development</b>	<b>According to estimates, the amount of separately collected used edible oils and fats should double within the next five years, therefore the collection network will need to be appropriately expanded.</b>
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection through specialised containers within the collection network.</li> <li>▪ Development of separate collection through collection yards and collection points.</li> <li>▪ Development of the possibility of using mobile collection.</li> </ul>
<b>- Garden Waste</b>	<b>Overview</b>	Separate collection of biodegradable waste from gardens and parks in the CR is most commonly ensured through collection yards, followed by collection containers within collection points (collection nests), door-to-door systems, and large-capacity containers. Separate collection of

		biodegradable waste through collection yards is more widespread especially in smaller municipalities, while in larger municipalities mobile collection of biodegradable waste is gradually expanding. The network of composters in the CR is expanding thanks to the OPE. Support from the OPE has also created a dense network of composting plants.
	<b>Evaluation</b>	<b>The network of separate collection of biodegradable waste from gardens and parks in the CR, from the perspective of current generation, appears sufficient.</b> It is expected that the generation of this stream will continue to increase, which will require adaptation of the collection network. The need for development also depends on the approach to preventing biowaste from gardens and parks, as some small municipalities prefer home composting to the more costly system of collecting biowaste using collection containers.
	<b>Future Development</b>	<b>The need for development of the collection network for garden and park biowaste depends on generation and on the approach and interest in preventing biowaste from gardens and parks, as some municipalities prefer home composting to the system of collecting biowaste using containers.</b> Development of door-to-door collection for garden and park biowaste, especially in family housing, is envisaged.
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection primarily through door-to-door systems.</li> <li>▪ Development of separate collection through collection yards and collection points.</li> <li>▪ Development of the possibility of using mobile collection.</li> </ul>
<b>Wood</b>	<b>Overview</b>	Wood and wooden products can be handed over in the CR within collection yards and collection points, or into large-capacity waste containers. The network of separate collection of wood therefore depends on the network of collection yards, or on systems of placing large-capacity containers in individual municipalities. Waste wood can also be used as an additive in the production of compost ("new wood") or recycled into the production of chipboards or other products ("waste wood") or used for energy recovery.
	<b>Evaluation</b>	<b>The network of separate collection of wood in the CR appears sufficient, as most wood is handed over within collection yards.</b>
	<b>Future Development</b>	<b>In the coming years, an increase in interest in wood recycling and the building of capacities for wood processing for recycling can be expected.</b> According to the economic analysis, in order for the network of collection yards and collection points to be sufficient, investments into collection yards and collection points should amount to between CZK 3 and 4 billion by 2035.
	<b>Measures (including furniture)</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection through collection yards and collection points.</li> <li>▪ Consider introducing an EPR system with the possibility of handing over furniture at furniture shops.</li> <li>▪ Within waste prevention, development of furniture banks, re-use centres and re-use points.</li> </ul>

Hazardous Waste	Overview	Hazardous waste in the CR is predominantly collected separately within collection yards and collection points. Collection is also ensured through regular mobile collection in municipalities.
	Evaluation	<b>The network of separate collection of hazardous waste in the CR appears sufficient, as most hazardous waste is handed over within collection yards.</b>
	Future Development	<b>In the future, the construction of new and the modernisation of existing collection yards can be expected in order to expand this network.</b> According to the economic analysis, in order for the network of collection yards and collection points to be sufficient, investments into collection yards and collection points should amount to between CZK 3 and 4 billion by 2035. Funds have been allocated under the OPE for the programming period 2021–2027 to support these facilities.
	Measures	<ul style="list-style-type: none"> <li>▪ Maintenance of existing systems of separate collection through collection yards and collection points and their development with the aim of achieving greater comfort for inhabitants.</li> <li>▪ Accessible mobile collection with higher frequency per year.</li> </ul>
Bulky Waste	Overview	Bulky waste in the CR is collected separately within collection yards and collection points. The collection of bulky waste in municipalities is also ensured through mobile collection.. Gradually, sorting of bulky waste into individual recoverable fractions (in particular wood) is developing. Some municipalities require such basic sorting from citizens. In other cases, sorting is carried out by staff of the collection yards.
	Evaluation	<b>The network of separate collection of bulky waste in the CR appears sufficient, as most bulky waste is handed over within collection yards.</b>
	Future Development	In the future, however, the construction of new and modernisation of existing collection yards can be expected in order to expand this network. Funds have been allocated under the OPE for the programming period 2021–2027 to support these facilities.
	Measures	<ul style="list-style-type: none"> <li>▪ Development of the infrastructure of civic amenity sites and their equipment for the sorting of recyclable and recoverable components by individual commodity, ensuring that only residual bulky waste remains.</li> </ul>
Construction and Demolition Waste	Overview	The dominant producers of construction and demolition waste are self-employed individuals. Citizens and municipalities are also producers, though to a negligible extent. Construction and demolition waste is not municipal waste and therefore is not among the types of waste that a municipality is obliged to collect separately under Act No. 541/2020 Sb. Nevertheless, 31% of municipalities enable separate collection for citizens and have introduced collection of construction and demolition waste from citizens within municipal systems. Collection in municipalities takes place at collection yards.

	<b>Evaluation</b>	The network of separate collection of minor construction waste from citizens in the CR appears sufficient, as most construction waste is handed over within collection yards.
	<b>Future Development</b>	<b>In the future, the construction of new and the modernisation of existing collection yards can be expected in order to expand this network. According to the economic analysis, in order for the network of collection yards and collection points to be sufficient, investments into collection yards and collection points should amount to between CZK 3 and 4 billion by 2035.</b> Funds have been allocated under the OPE for the programming period 2021–2027 to support these facilities.
<b>Waste Electrical and Electronic Equipment (WEEE)</b>	<b>Overview</b>	In 2022, just under 322 thousand tonnes of electrical and electronic equipment were placed on the Czech market, of which more than 99 thousand tonnes were taken back (57%). In the long term, the take-back rate of waste electrical and electronic equipment (WEEE) has been increasing, and it can therefore be assumed that the Czech Republic will meet the mandatory take-back rate in the coming years. In 2023, a total of 13 collective schemes ensured the take-back of WEEE. Among the schemes with the largest share of take-back in 2023 were ELEKTROWIN a.s., REMA Systém, a.s. and ASEKOL a.s. In the CR, take-back of waste electrical and electronic equipment can be carried out at take-back points through collection yards and collection points, containers for small appliances, mobile collection, or at retailers of electrical and electronic equipment. The list of take-back points for waste electrical and electronic equipment is continuously updated and made available to inhabitants within the VISOH2 database.
	<b>Evaluation</b>	<b>The network of separate collection of waste electrical and electronic equipment (WEEE) in the CR appears sufficient.</b> WEEE can be handed over free of charge at collection yards, or to manufacturers or retailers. For smaller appliances, collection containers for small WEEE are often placed within collection nests, and such containers are also frequently located in retail networks.
	<b>Future Development</b>	<b>In the coming years, both intensification of the already dense network of take-back points and, above all, awareness-raising in the area of WEEE take-back and the expansion of citizens' knowledge of this option can be expected.</b>
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection at take-back points within retail networks and through publicly accessible specialised collection containers for small waste electrical and electronic equipment.</li> <li>▪ Maintenance of the existing systems for establishing take-back points at civic amenity sites and their further development with the aim of achieving greater convenience for residents.</li> </ul>
<b>Waste Batteries</b>	<b>Overview</b>	In 2022, more than 46 thousand tonnes of batteries were placed on the Czech market, of which just under 25 thousand tonnes were taken back (50.2%). The CR thus met the take-back rate for waste portable batteries set at 45%. In 2023, two collective systems ensured the take-back of waste batteries – ECOBAT s.r.o. and REMA Battery, s.r.o. In the CR, take-

		back of waste batteries can be carried out through take-back points, the list of which is continuously updated and published for citizens in the VISOH2 database, or on the websites of the collective systems. Take-back points can be found at collection yards and collection points, but also include collection containers, for example in shopping centres. Furthermore, waste batteries can be handed over to the last distributor; in the case of industrial batteries, they can also be handed over to persons authorised to take them under the Waste Act.
	<b>Evaluation</b>	<b>The network of separate collection in the CR appears sufficient.</b> Waste batteries can be handed over not only at collection yards, but also to the last distributor; in the case of industrial batteries, they can also be handed over to persons authorised to take them.
	<b>Future Development</b>	<b>In the coming years, both intensification of the already dense network of take-back points and, above all, awareness-raising in the area of waste battery take-back and the expansion of citizens' knowledge of this option can be expected. For industrial batteries, increased generation and take-back can be expected due to the development of photovoltaic power plants and electromobility.</b>
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection at take-back points within retail networks and through publicly accessible specialised collection containers, with the possibility of collecting waste batteries together in dedicated compartments on containers for small waste electrical and electronic equipment.</li> <li>▪ Maintenance of the existing systems for establishing take-back points at civic amenity sites and their further development with the aim of achieving greater convenience for residents.</li> </ul>
<b>Waste Tyres</b>	<b>Overview</b>	In 2022, just under 109 thousand tonnes of tyres were placed on the Czech market, of which just under 85 thousand tonnes were taken back (83.6%). Thus, the CR met the take-back rate for waste tyres set at 80%. In 2023, the take-back of waste tyres was ensured by a single collective system – ELT Management Company Czech Republic, s.r.o. In the CR, take-back of waste tyres can be carried out through take-back points, the list of which is continuously updated and published in the VISOH2 database. Places where tyres can be handed over include collection yards and collection points in municipalities, as well as car repair shops and tyre service centres.
	<b>Evaluation</b>	<b>The network of separate collection in the CR appears sufficient.</b> Take-back points for waste tyres may include tyre service centres, car repair shops, but also municipal collection yards. Currently, there are more than 4 thousand such take-back points in the CR.
	<b>Future Development</b>	<b>In the coming years, both intensification of the already dense network of take-back points and, above all, awareness-raising in the area of waste tyre take-back and the expansion of citizens' knowledge of this option can be expected.</b>
	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Development of separate collection primarily through take-back points at car repair workshops and tyre service centres, and, where appropriate, also at civic amenity sites and municipal collection</li> </ul>

		points. Ensuring separate collection preferably through take-back points operated by authorised entities, where proper management of waste tyres is guaranteed.
End-of-Life Vehicles	Overview	End-of-life vehicles in the CR are recorded in the MAISOH database at the moment they are accepted for processing by a facility that holds the required permit for handling end-of-life vehicles. In 2023, more than 123 thousand end-of-life vehicles were recorded in MAISOH. In 2024, the MAISOH system recorded 447 facilities authorised to handle end-of-life vehicles. The network for handling end-of-life vehicles in the CR is therefore relatively dense, and its use is convenient for inhabitants.
	Evaluation	<b>The network of separate collection in the CR appears sufficient.</b> Currently, there are 445 active sites authorised to handle end-of-life vehicles in the CR. The densest network of such facilities was in the Central Bohemian Region (57), Pardubice Region (44) and South Moravian Region (43).
	Future Development	<b>In the future, changes are expected only in connection with legislative amendments. Optimisation (reduction) of the network in terms of the number of sites where an end-of-life vehicle can be processed may also occur.</b>
Mixed Municipal Waste (MMW)	Overview	Collection of mixed municipal waste in the CR takes place mainly through container collection (92% of inhabitants) and additionally through sack collection (8%). The collection system can be described as door-to-door, only in apartment buildings containers are placed within collection nests shared by several buildings with descriptive numbers. Walking distances are short (at most a few tens of metres). In the context of developing separate collection of recoverable fractions and aiming to reduce the generation of mixed municipal waste, the size of containers for mixed municipal waste is being reduced and the allocated volume limited. A number of municipalities are introducing these principles together with the PAYT system of payment for municipal waste.
	Evaluation	<b>The collection network for MMW in the CR appears sufficient.</b> Container collection dominates. An individual collection network is used in family housing, while in apartment buildings and housing estates 1,100 l containers placed within collection nests are used. In the future, a reduction in the generation of MMW is expected as a result of higher separate collection of recoverable fractions. The volume of containers for MMW will be reduced. A reduction in the number of containers is expected in apartment building developments.
	Future Development	<b>A decrease in the generation of mixed municipal waste (MMW) is expected in the future as a result of increased sorting of recyclable and recoverable components.</b> The allocated volume of containers for MMW should thus be reduced in favour of containers for separate collection. A reduction in the number of containers is expected in particular in apartment building developments.

	<b>Measures</b>	<ul style="list-style-type: none"> <li>▪ Reduction of container size and allocated container volume for the collection of mixed municipal waste, accompanied by a gradual reduction in collection frequency.</li> </ul>
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Source: own processing

## 2.5 Evaluation of Waste Management

As mentioned above in Chap .2.2.1 the state of waste management in the Czech Republic is very good. The network of facilities is well developed and enables the safe management of all waste. The CR also has experience with energy recovery, with four facilities for energy recovery of waste (FERW) in operation with a total processing capacity of 858 thousand tonnes. The CR has an extensive network of modern landfills designed for the disposal of inert, hazardous and other waste. Waste management in the CR is undergoing significant changes towards more sustainable practices. The generation of all waste in the CR has been increasing in the long term, and it is therefore necessary to expand the capacities of facilities for the management of this waste. Various methods of waste management are represented in the CR depending on their nature. In the CR, most waste has long been recovered, particularly materially.

In 2021, 87% of all waste was recovered in the Czech Republic, of which 84% materially and 3% energetically. In 2022 this ratio remained very similar, with 86% of all waste recovered, of which 83% materially and 3% energetically.

A smaller proportion of waste is disposed of in the CR; in both 2021 and 2022, a total of 13% of waste was disposed of. Landfilling of waste in the CR increased in previous years, stabilising at the mentioned 13% in 2021 and 2022. Precisely the reduction of waste disposed of by landfilling in favour of recovered waste is one of the greatest challenges for the CR's waste management in the coming years, not least in connection with the ban on landfilling certain types of waste after 2030.

### 2.5.1 Waste recovery

In the CR, biowaste is materially recovered through composting in composting plants and anaerobic digestion in biogas plants. Composts, digestates and sewage sludge are applied to soil, thereby returning organic matter to the cycle. The supplied nutrients and humic components help improve and maintain soil quality, contribute to water retention, provide protection against erosion and maintain agricultural use of soil, which is essential for adaptation to ongoing climate change. By using biowaste and converting it in biogas plants into biogas, green energy is generated, thus reducing the CR's dependence on fossil fuels. At the same time, modern technologies for biogas purification to bioCNG are being developed.

Construction waste and excavated soil are successfully used in land reclamation, terrain modifications or backfilling. Facilities for the treatment and recycling of construction waste are widely represented. There is intensive development of recycling centres which process construction waste into recyclates, whereby the waste status is terminated (transition from waste to product).

Furthermore, waste is mechanically treated before recovery, e.g. sorted on suitable sorting and re-sorting lines and, where applicable, physically compacted. Currently these lines have lower efficiency and will need to be further modernised, and the effectiveness of sorting recoverable waste components increased. At present, the production of solid recovered fuels (so-called SRF) for energy recovery mainly in cement plants or multi-fuel boilers is also developing.

Residual municipal waste is energetically recovered in FERW (four large facilities with a total annual processing capacity of 858 thousand tonnes are in operation in the CR), where heat and electricity are

cogenerated using steam turbines. FERW also play an irreplaceable role in ensuring the safe management of healthcare waste, as was shown during the COVID-19 pandemic, and are therefore important for increasing preparedness and resilience to similar emergencies and crisis situations.

In the CR, waste edible oils and fats are also processed, plastic waste, glass waste, wood waste and paper waste are recycled. Valuable raw materials are recovered from end-of-life products. In metallurgy, metal waste including critical raw materials is recycled. The metallurgical industry processes ferrous metals, as well as non-ferrous (copper, aluminium, lead, zinc, tin, nickel) and other precious metals (gold, rhodium, silver).

Special waste recovery operations include e.g. solvent regeneration, waste oil refining, and catalyst recycling.

The most frequent problems occurring in the CR are illegal handling of construction debris and excavated soil, terrain modifications using inappropriate waste such as tyres, and frequent cases of illegal dismantling of end-of-life vehicles.

### **2.5.1.1 Material Recovery**

Mineral waste in group 17, in particular subgroup 17 05 Soil (15.8 million tonnes), contributes significantly to material recovery. The dominant stream 17 05 04 is not part of the Construction and Demolition Waste stream; therefore, the Construction and Demolition Waste stream, composed of other waste in group 17, adds a further 8 million tonnes to material recovery. Whereas soil is used for backfilling, construction and demolition waste is mainly recycled. Ferrous metals are also recycled. In addition to metals from subgroup 17 04 (1.1 million tonnes), there is also metal waste from the iron and steel industry (subgroup 10 02 (1.2 million tonnes) and other waste from group 10 in the amount of 0.6 million tonnes (10 01 waste from thermal processes, 10 09 waste from casting) Waste generation from industry is 2.5 million tonnes, of which 1.4 million tonnes/year is materially recovered, which is approx. 57% of its generation. The third most significant group being recycled is group 19 waste (1.3 million tonnes). Municipal waste also contributes to recovery, with recycling in recent years amounting to approx. 2.2 million tonnes, which is 41% of its generation. There is a risk that in 2025 the CR will not meet the target of recycling 55% of generated municipal waste.

### **2.5.1.2 Energy Recovery**

Energy recovery in the CR in 2022 reached only 3%. Predominantly municipal waste is energetically recovered. Energy recovery of municipal waste in 2022 amounted to 12%. In FERW, mainly mixed municipal waste, cat. no. 20 03 01 (0.6 million tonnes) is used, and to a lesser extent bulky waste 20 03 07 (40 thousand tonnes). As no new facilities for energy recovery of waste have been commissioned since 2016, energy recovery has remained constant in recent years. Further energy recovery occurs in cement plants, where combustible fractions from waste treatment and combustible waste recorded in group 19 (0.4 million tonnes), specifically 19 12 10, 19 12 04 and 19 12 12, are recovery.

## **2.5.2 Waste Disposal**

The basic methods of waste disposal in the CR are landfilling and incineration in plants without energy recovery. Before disposal, waste is often treated both physically and chemically in waste management facilities by methods such as decontamination, biodegradation, stabilisation, solidification, demulsification and neutralisation; bituminisation and vitrification are also used.

Unfortunately, the main method of municipal waste disposal in the CR remains landfilling. However, landfill sites now often function as regional waste centres for “comprehensive” waste management and, alongside landfilling, include a range of other activities and types of facilities as ancillary operations

such as collection, storage, sorting – sorting areas, transfer stations, possibly also authorised sorting lines, production of solid recovered fuels, biodegradation, solidification and other decontamination technologies. In some areas there are also authorised composting plants.

Landfills are frequently inspected by control authorities, in particular hazardous waste landfills, landfills for other waste in the first phase of operation, i.e. actively operated landfills, as well as reclaimed parts of landfills in the second phase of operation, with priority being given to facilities with an integrated permit. Attention is also directed to landfills in the third phase of operation, which are already in the after-care regime. Regular inspections are carried out to ensure degassing of landfills, capture and handling of landfill gas in accordance with the relevant ČSN standards. A problem frequently occurring at municipal waste landfills is the dispersion of light waste fractions into the surroundings beyond the landfill site. Cases of landfill waste ignition, with impacts on the environment and economy, are also still common. Some operators have already installed thermal cameras providing information on temperatures in the landfill body, which can timely detect the source of a potential fire in the landfill.

Incineration of hazardous waste, chemical, toxic, industrial waste, infectious waste from healthcare and veterinary care takes place in hazardous waste incineration plants. These facilities play an irreplaceable role in waste management and are very important for the self-sufficiency of the CR and the ability to ensure safe and rapid disposal of hazardous waste.

The most frequent problems encountered are serious deficiencies identified in the storage of hazardous waste (oils, mercury, chemicals, etc.), which may endanger the environment. Another problem is also inappropriate disposal of waste, i.e. discarding waste in places not designated for this purpose, various forms of waste deposited, abandoned, discharged or stored. A specific form of illegal waste management is the open burning of waste or unauthorised incineration of waste in unsuitable boilers and equipment.

### **2.5.2.1 Landfilling**

In 2022, 13% of all waste (i.e. 4.5 million tonnes) and 45% of municipal waste (2.8 million tonnes) was landfilled. Crucial is the landfilling of mixed municipal waste (2.0 million tonnes) and bulky waste (0.5 million tonnes). From waste outside group 20, construction and demolition waste (0.9 million tonnes) is landfilled. Specifically, these are mixed wastes 17 09 04 (0.3 million tonnes), but also mixtures or separated fractions of concrete, bricks and tiles 17 01 07. For this waste, a change in management is necessary, e.g. as a result of a higher rate of selective demolition. Waste in group 19 is also landfilled (0.5 million tonnes), in particular 19 12 12 in subgroup 19 12, as well as subgroup 19 03 (solidified and stabilised waste) and 19 01 (waste from incineration). To a lesser extent, waste in group 10 (160 thousand tonnes) and 15 (120 thousand tonnes) is landfilled.

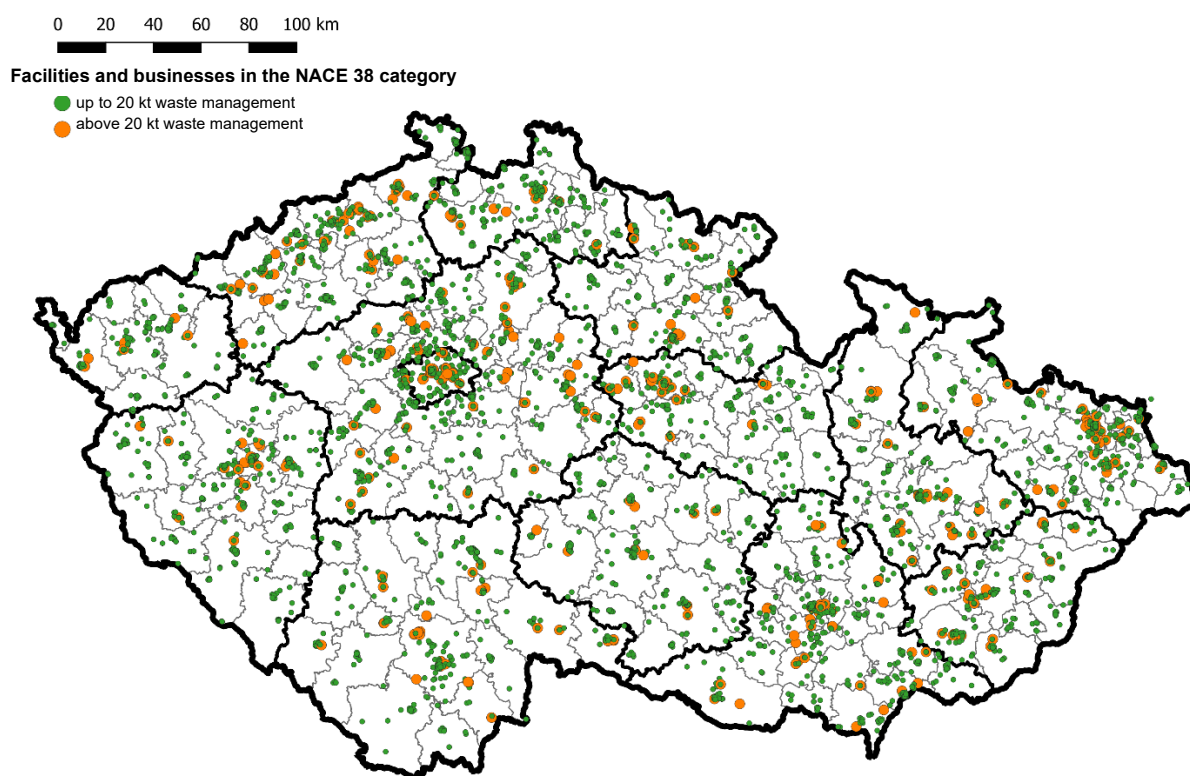
### **2.5.2.2 Incineration**

In 2022, only 0.2% (78 thousand tonnes) of all generated waste was incinerated, with almost exclusively hazardous waste being incinerated. Almost half of the incinerated amount (41% and 32 thousand tonnes) is waste from healthcare and veterinary care, i.e. waste in group 18. Another source of hazardous waste that is incinerated is industry, specifically the chemical industry and waste in group 07 (Waste from organic chemical processes, 14 thousand tonnes incinerated), in group 08, respectively subgroup 08 01 (Waste from the manufacture, formulation, distribution, use and removal of paints and varnishes, 4 thousand tonnes incinerated in 2022). Waste in group 15 is also incinerated (9 thousand tonnes). Incineration of municipal waste is negligible in relation to its generation (4 thousand tonnes).

## 2.6 Evaluation of the Network of Waste Management Facilities

In 2022, a total of 2,428 entities (unique ID No. – IČO) in NACE 38 were recorded as handling waste, with a total number of establishments or facilities of 5,761 (IČZ/IČP – Facility Identification Number / Establishment Identification Number). As shown in the following figure, their distribution across the regions may be considered even, with higher concentrations in more populated regions, i.e. especially around regional capitals. It may thus be stated that the distribution of facilities corresponds to the distribution of the population in the Czech Republic. The Karlovy Vary Region recorded the smallest number of facilities in 2022, while the Central Bohemian Region recorded the largest number. From the perspective of evaluating competition, it may be stated that there are sufficient entities within NACE 38 operating in the Czech Republic; however, 66% of facilities handle less than 1 kt of waste annually, 74% less than 2 kt of waste and 83% less than 5 kt. Above 20 kt of waste handled in 2022 was recorded for 388 facilities, which corresponds to approximately 7%. These facilities ultimately handle 75% of waste within NACE 38. Facilities handling more than 20 kt of waste annually are also distributed evenly throughout the Czech Republic.

Figure 12: Distribution of NACE 38 entities in the Czech Republic as at 2022



Source: own processing

The WMIS Facility Register at the time of preparation of the WMP CR contained more than **6,200 stationary facilities** authorised to handle waste. Facilities are often authorised to handle a large number of types of waste under the Waste Catalogue, with records in the Facility Register recording the annual designed capacity, which does not differentiate the type of waste. The differentiation of capacities focuses on activities according to waste management operations. The analysis of data from the Facility Register was also complicated by the process of re-authorising facilities under Act No. 541/2020 Sb. Assessment of the sufficiency of the network of facilities on the basis of authorised annual

designed capacities is very difficult for individual waste streams. Therefore, within the WMP CR, procedures were used that combined data from the register with data on actual handling, which is reported by facility operators in annual reports. The analysis was limited to so-called “active facilities”. An active facility is considered to be a facility that, in 2022, handled at least some quantity of the assessed stream. Facilities may be classified into:

- Stationary facilities
  - Dominant transfer: waste collection yards
  - Dominant processing: end-of-line facilities
  - Combined handling: combined facilities
- Mobile facilities

The first level of division is defined on the basis of the location of the facility and its fixed connection to the ground or its mobility. Mobile facilities (capable of movement) and stationary facilities (fixed to the ground). Stationary facilities are further divided according to the nature of handling of the given stream. For this breakdown, a ratio was used which was calculated as the proportion of output streams from facilities falling under export or transfer to input streams (incl. generation) to the facility. In the analysis of individual streams, the proportions of management methods in each of the above types of facilities are stated in detail.

When presenting the current state of the network in this chapter, an approach respecting the waste management hierarchy is chosen. The status is summarised for selected significant types of facilities which:

- contribute to material recovery of waste:
  - composting plants and biogas plants for biological waste,
  - recycling lines for construction and demolition waste,
  - facilities for the recycling of metal waste,
  - facilities for the recycling of paper,
  - facilities for the sorting and recycling of plastics,
- enable energy recovery of waste,
- are operated for the purpose of waste disposal:
  - facilities for handling hazardous waste (excluding landfills),
  - landfills

Given that facilities usually handle a larger (in some cases a large) number of types of waste, and thus their activity affects several streams, the assessment approach by individual streams is not suitable here. The evaluation of the network of facilities from the perspective of individual streams was carried out in the detailed analysis of individual waste streams. The aim is not to provide an exhaustive list of technologies; the text focuses on the key technologies.

### **2.6.1 Composting Plants and Biogas Plants for Biological Waste**

The key type of facility for handling biological waste is composting plants, in which the majority of the stream's generation was processed. Roughly 40% of stream 20 01 08 (17 thousand tonnes) was energetically recovered in biogas plants. Given that the biological waste stream (20 01 08, 20 02 01 excluding 20 01 25) is handled in the preferred manner, it may be stated that the capacity of facilities is sufficient for the current generation of the stream. The capacity, however, is determined by the capacity of composting plants. The network of biogas plants adapted for the processing of waste cat. no. 20 01 08 is insufficient (see below).

According to the WMIS Facility Register, composting plants have an annual processing capacity of 686 thousand tonnes. There are 70 small composting plants in operation in the territory of the CR. Assuming

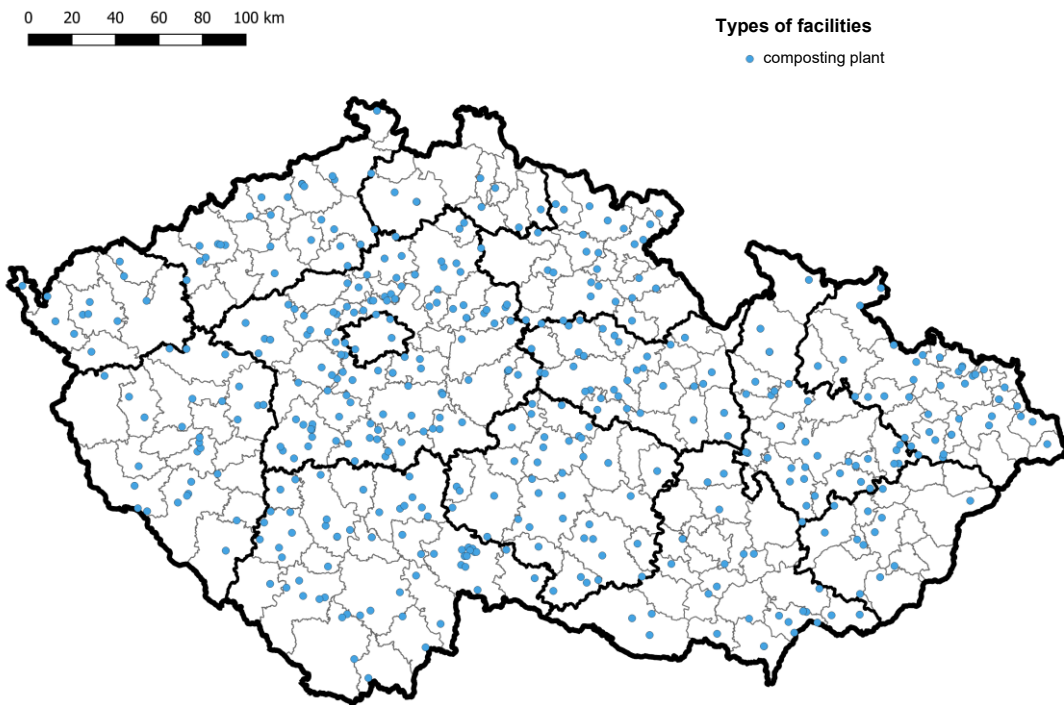
a maximum annual capacity of 150 tonnes set by law, their capacity is approx. 10.5 thousand tonnes. Within the 2007–2013 European funds programming period, dozens of projects were implemented for the construction, modernisation and expansion of composting plant capacities. The last grant call took place in the 2014–2020 programming period. Subsequently, it was evaluated that the network within the Czech Republic is (in most of the territory) sufficient and there is no need for further grant support. In 2023, under the National Recovery Plan, a grant call was announced which made it possible to procure technologies for existing composting plants, primarily to enable the acceptance of sewage sludge and its application to agricultural land. This also included the construction of new composting plants. Biogas plants record a capacity of 457 thousand tonnes. In the case of biogas plants, it must be emphasised that the authorised capacity applies to several types of waste, i.e. also to waste that is not part of the biological waste stream.

Generation of the Biological Waste Stream will increase in the future (see Chap. 2.3.1.8). The projections assume continued growth in the generation of category No. 20 02 01 as a result of the expansion of individual container-based collection systems, and a sharp increase in the generation of category No. 20 01 08 due to the separate collection of biowaste from the catering sector and the expansion of the collection of household kitchen waste of both plant and animal origin, which will lead to a decrease in the generation of mixed municipal waste. The total generation of the biological waste stream should double by 2035 from the current level of 900 thousand tonnes to 1.9 million tonnes. For the collection of both streams, it will be necessary to build the required infrastructure in the form of collection containers, collection yards, collection vehicles and, above all, end-of-line facilities for the recovery of this waste. These include composting plants and biogas plants. The method of collecting biowaste will be set in interaction with the end-of-line facility, whereby the processing of category no. 20 01 08 will be preceded by a hygienisation process. Recovery in biogas plants or special reactors is preferred, but after hygienisation it may also be processed in a composting plant. Plant biowaste may be processed in a composting plant without prior treatment. According to MoE analyses of mixed municipal waste (TIRSMZP19)<sup>33</sup> the content of biowaste in mixed municipal waste was at the level of 23%. A more detailed analysis states that the share that is not of plant origin is approx. 11%. With the current generation of mixed municipal waste and the effect of prevention activities, this may mean a need for hygienisation in the range of approx. 200 thousand tonnes annually. To this must also be added gastro-waste from the gastro sector, where the projection anticipates an increase of approx. 100 thousand tonnes annually. If approx. 400 thousand tonnes of biological waste were directed to biogas plants, the capacity of composting plants would need to be increased by 600 thousand tonnes.

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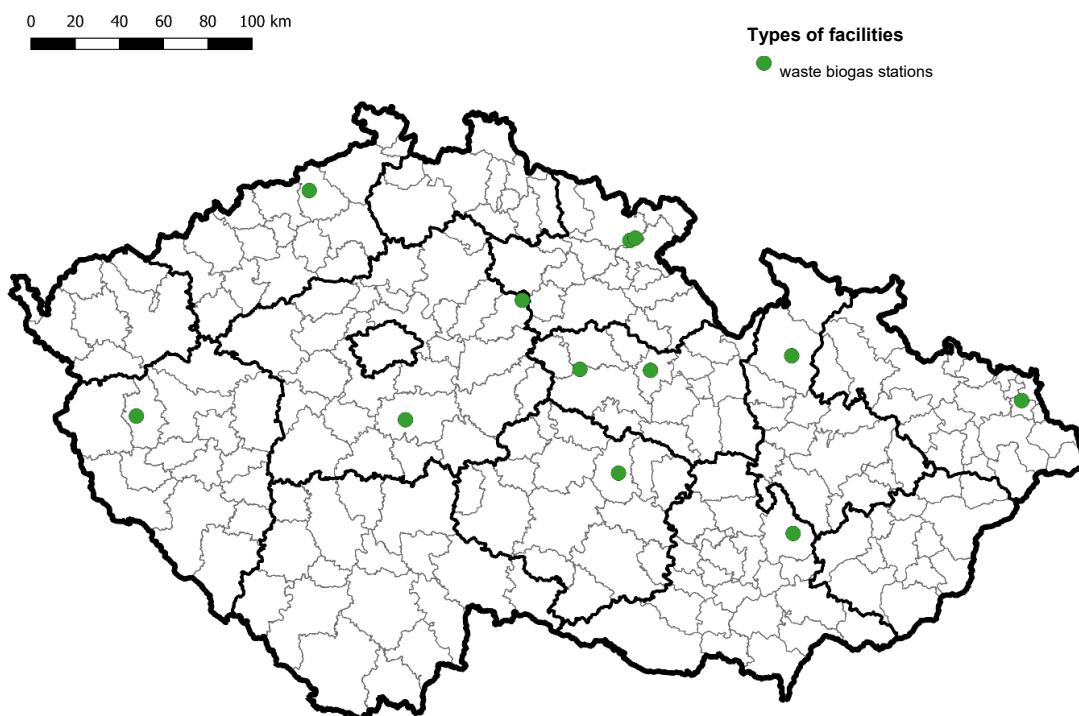
<sup>33</sup> MoE Summary Report – Results of the Average Composition of Mixed Municipal Waste in the CR (2022, Brno University of Technology). Available [here](#).

Figure 13: Map of active facilities handling biodegradable waste designated as composting plants



Source: WMIS Facility Register

Figure 14: Map of active facilities handling biodegradable waste designated as biogas plants

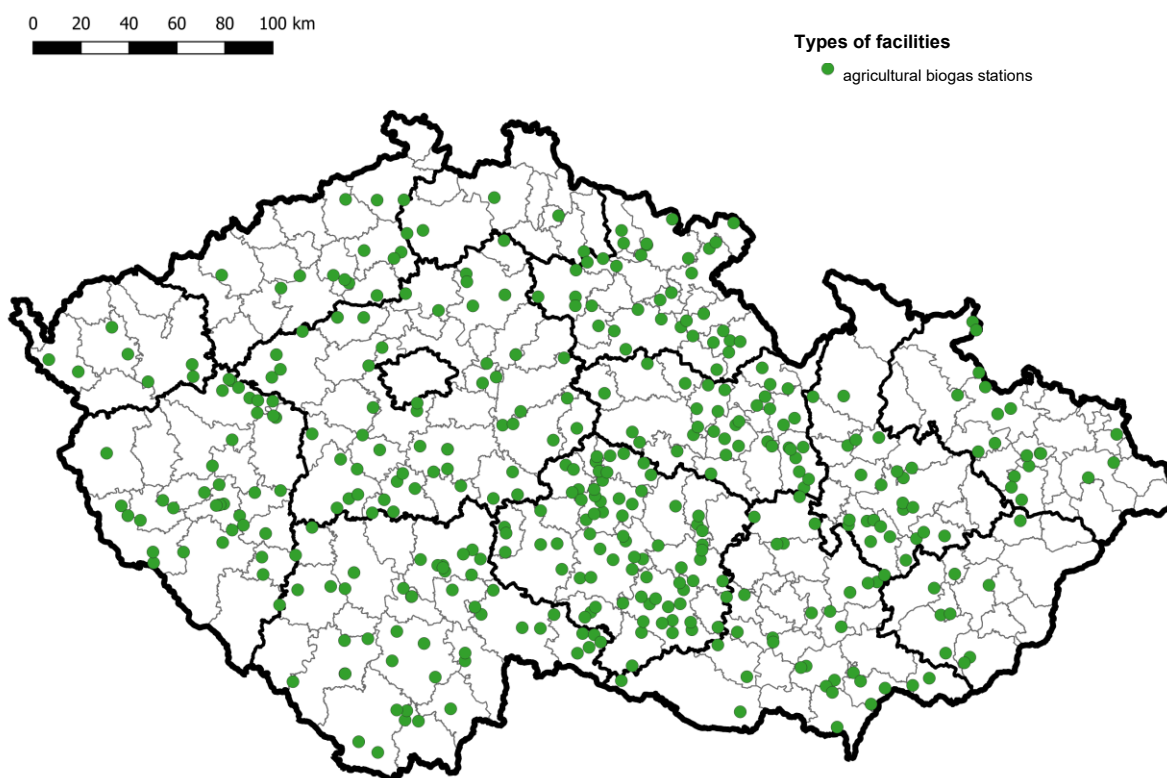


Source: processed on the basis of WMIS

Furthermore, the website of the Czech Biogas Association lists 398 agricultural biogas plant facilities. For some of them, an expansion may be considered that would enable the use of biodegradable waste. The expansion is associated with investment costs for technologies for the acceptance and treatment of waste, technologies for the hygienisation or pre-fermentation process, modification of the sludge end stage, as well as expenditure related to construction modifications.

There is also significant potential in the Czech Republic for the production of biomethane within waste biogas plants and agricultural biogas plants. This segment is developing intensively; in 2024 the installed capacity of biomethane production amounted to approximately 10 million m<sup>3</sup>. Part of the facilities was shut down due to economic disadvantage, and biomethane production reached only 1.2 million m<sup>3</sup>.

Figure 15: Map of Agricultural Biogas Plants



Source: Map of Biogas Plants (Czech Biogas Association). Available [here](#).

## 2.6.2 Recycling Lines for Construction and Demolition Waste

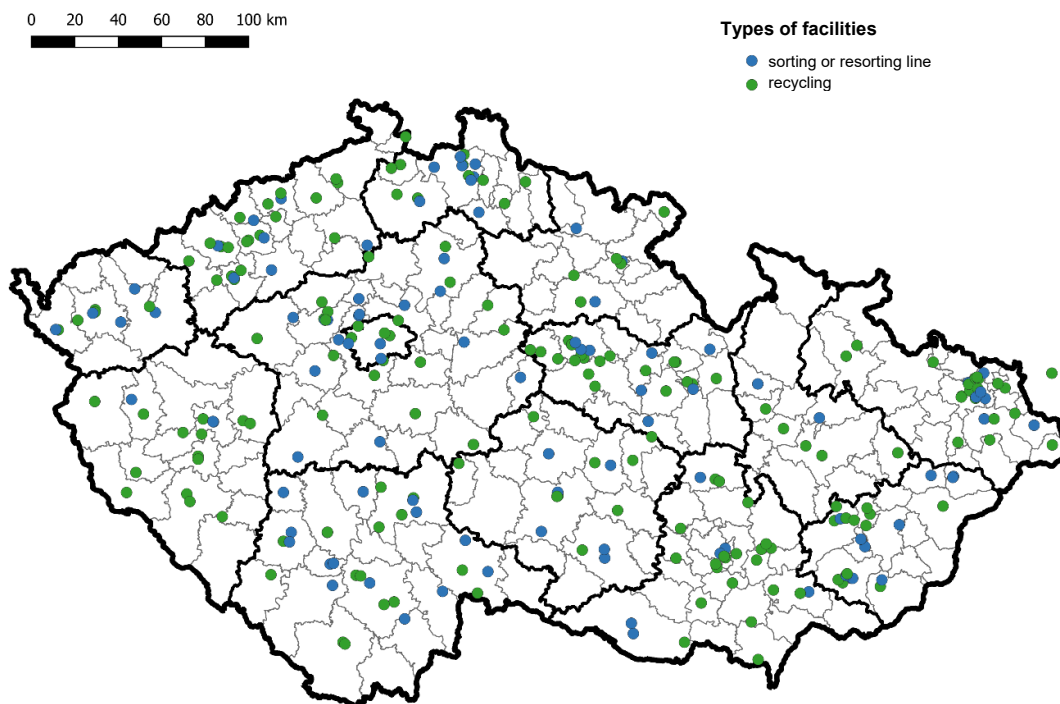
Out of a total of more than 6,200 stationary facilities, in 2022, 4,044 facilities were authorised to handle at least one catalogue number of waste belonging to the Construction and Demolition Waste stream. From the perspective of the Construction and Demolition Waste stream, **3,311 facilities** were active. In addition to stationary facilities, 777 mobile facilities operating in the CR were recorded as handling construction and demolition waste in 2022.

The current capacities of recycling lines for construction and demolition waste appear to be sufficient for current generation. Mobile facilities are common, which during the construction season are used almost exclusively for the recycling of mineral construction waste, while in the winter period it is common for these facilities to be used in cooperation with quarry operators. In the context of achieving the recycling targets for construction and demolition waste in 2030 and especially 2035, when it will be necessary to increase the amount of recycled construction and demolition waste by approximately 600 thousand tonnes, it will be necessary to expand processing capacities. From market experience, it is expected that 30% of the required increase will be covered by current technologies. The remaining 400 thousand tonnes will require new recycling lines. A standard recycling line with a medium-sized crusher has an hourly processing capacity of 60 to 80 t/h of input material. Assuming 2,000 working hours per year, the annual processing capacity is in the range of 100 to 125 thousand tonnes. A recycling line for construction and demolition waste may be authorised as a mobile facility (travelling to the waste at the holder) or as a stationary facility (waste is transported to the facility).

In the case of an increase in construction and demolition waste according to the projection of approx. 2.4 million tonnes, where up to 1.8 million tonnes of the increase is projected in subgroup 17 01, it will be necessary to additionally recycle **2.7 million tonnes of construction and demolition waste** compared to the present situation. In such a case, most of the newly generated construction and demolition waste would have to be recycled, which requires adequate technologies as well as substantial investment resources.

For the Czech Republic as a whole, this deficit amounts to 600 thousand tonnes. Significant capacity is only available in the Moravian-Silesian Region; in other regions the balance is in deficit. A large quantity of metals is therefore exported. Investment in the development and maintenance of current processing capacities for metal recycling would reduce the CR's dependence on imports of primary raw materials for the steel industry (see also the following Chap. 2.6.3).

*Figure 16: Map of active facilities handling construction and demolition waste designated as recycling and sorting or re-sorting lines*



Source: processed on the basis of WMIS

### 2.6.3 Recycling of Metal Waste

For the entire Czech Republic, a deficit in end-processing capacities for metallic waste amounting to 1.8 million tonnes has been identified. For the whole of the Czech Republic, a deficit of capacities for end-of-line processing of metal waste in the amount of 1.8 million tonnes was identified. Growth in the collection and re-sorting of aluminium packaging may be expected, also due to the installation of technologies capable of re-sorting light aluminium packaging from plastic waste on automated re-sorting lines. An increase in the efficiency of re-sorting metal waste, including non-ferrous metals from slag after energy recovery in FERW, may also be expected. The capacity deficit concerns primarily industrial metallic waste. The management of separately collected municipal waste is, from the perspective of the Czech Republic, nearly balanced.

For the recycling of industrial metal waste (including metals within the Construction and Demolition Waste stream, see above), significant capacity is lacking in all regions except the Moravian-Silesian Region (situation reflecting data for 2022), where capacity is concentrated within the two metallurgical plants Liberty Ostrava a.s. (which currently faces significant operational and existential problems) and TŘINECKÉ ŽELEZÁRNY a.s.

The issue of iron recycling was also the subject of a study<sup>34</sup>, which states the intention of steelworks to switch to electric arc furnaces in order to reduce greenhouse gas emissions and decarbonise the sector. The installation of new technologies will enable a substantial increase in the addition of iron scrap up to 3.5 times current levels. The study cites current consumption of scrap from sources outside own steel production at a level of 800 to 900 thousand tonnes per year. These figures confirm the recycling values for the Moravian-Silesian Region. The implementation of plans for electric arc furnaces should provide the necessary processing capacity for the generated ferrous metal (steel) waste, thereby reducing the export of this strategic raw material outside the Czech Republic. Recycling capacities and their existence are highly dependent on the owners' decisions on the development or decline of steel production in the CR.

#### Critical Raw Materials

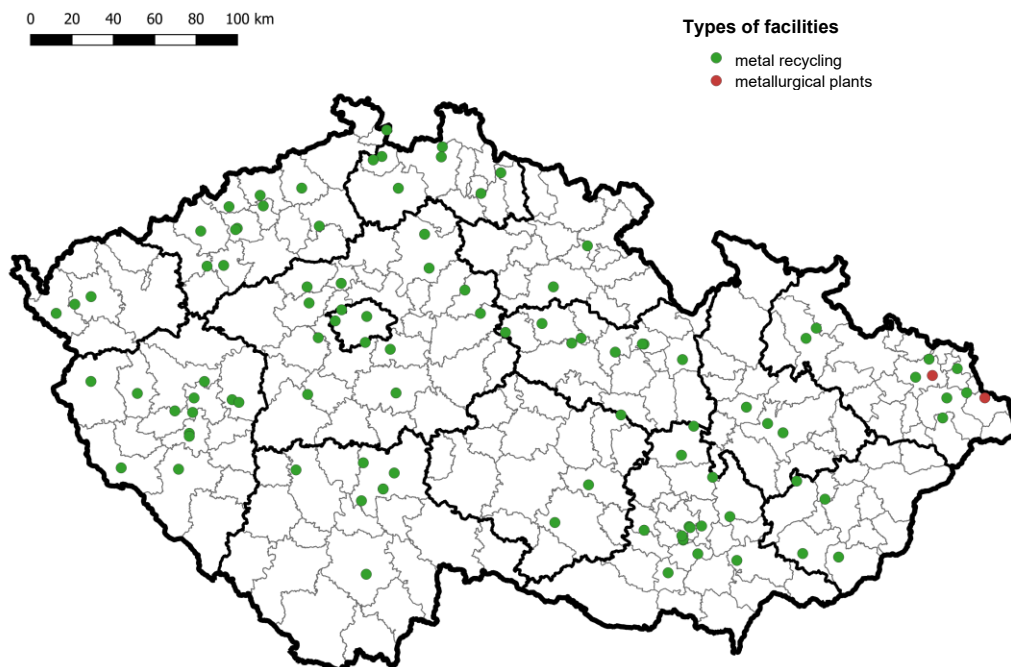
In the future, it is also necessary to focus on the recovery of critical raw materials – particularly metals – from various waste streams (construction and demolition, electrical and electronic equipment, batteries, vehicles, slag, ash from the incineration of municipal waste, ash from the incineration of sewage sludge from urban wastewater treatment).

#### Action Plan for Steel

In March 2025, the European Commission presented the Action Plan for Steel. The document identifies the problems of European steelmaking and proposes possible legislative measures. It describes the situation of the steel industry, where representatives of the sector find themselves in a difficult position due to cheaper products from China, US tariffs on imports of steel and aluminium, and high energy prices resulting from the EU's efforts to achieve carbon neutrality. At the same time, the steel industry is linked to a number of other sectors, including automotive and defence. The main objective of the plan is to address the crisis in steelmaking, to introduce mechanisms protecting European steelmakers, and to ensure the competitiveness of European industry.

Figure17: Map of Active Facilities Handling Metals Designated as Metallurgical Plants and Metal Recycling

<sup>34</sup> Risks, barriers and priorities for maximising the production and consumption of recycled steel (2023, INCIEN). Available [here](#).

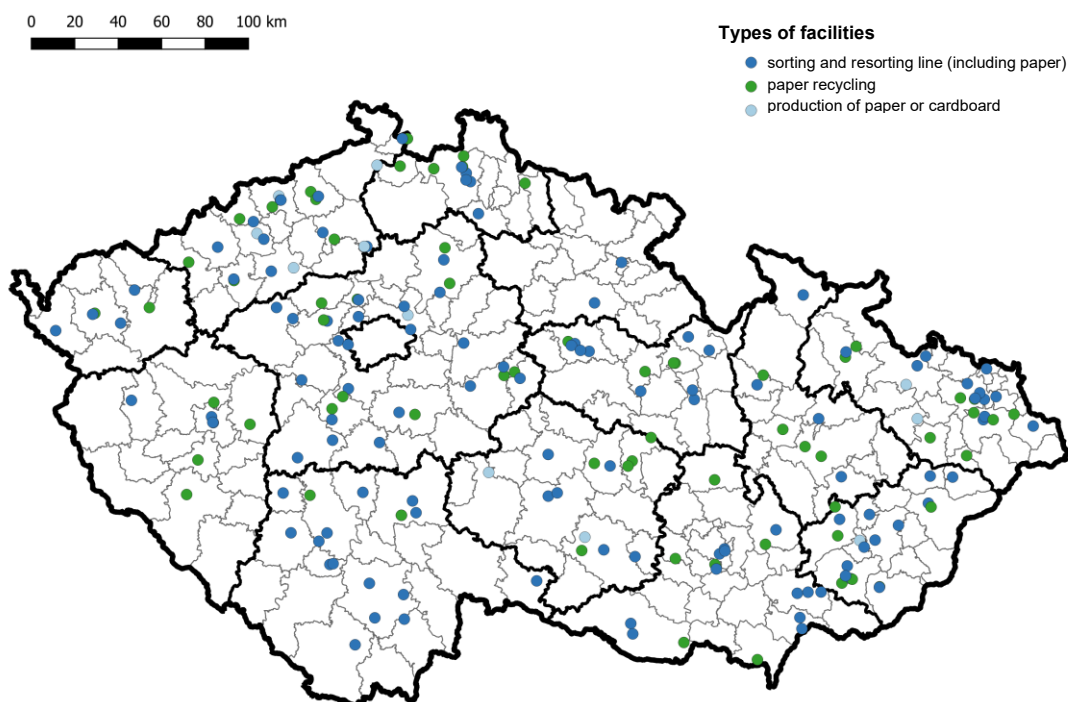


Source: processed on the basis of WMIS

#### 2.6.4 Paper Recycling:

For the whole of the Czech Republic, a deficit of capacities was identified for all category numbers 20 01 01, 15 01 01, 03 03 08 and 19 12 01, cumulatively exceeding 700 thousand tonnes, which approximately corresponds to the balance of cross-border shipments of waste paper from the CR. Only in the Ústí nad Labem Region is there sufficient capacity for managing waste paper at current generation levels. Current generation in 2022 amounted to 1.1 million tonnes. The developed scenarios envisage future growth in waste paper generation, up to around 1.4 million tonnes in 2035. The projected generation is the result of a combination of expected effects of higher sorting rates by citizens in households, in companies and in public spaces, trends in digitalisation (lower generation of printed matter, flyers, company promotional materials, etc.), the development of e-commerce and the necessary trend of changing the structure of consumer packaging, where paper can contribute to the greater sustainability of a new generation of packaging. In the long term, up to 2035, an increase in waste paper generation of 300 thousand tonnes is expected, which will deepen the deficit for domestic material recovery of paper up to a level of 1 million tonnes. With regard to paper recycling primarily in paper mills, its recycling is tied to the capacities of these facilities in the CR and the EU. Paper has long been a very well tradable commodity, and therefore it may be expected that the deficit of processing capacities in the CR may be covered by capacities abroad. In the past decade, several recycled paper machines in domestic paper mills have become obsolete and were decommissioned, while new investments have focused on improving quality and capacity based on primary softwood pulp. Significant quantities of paper are exported. In the same period, a number of investments in new paper recycling capacities were made in neighbouring countries, which further increased the CR's dependence on foreign trade in this commodity. Given the high proportion of packaging paper and cardboard in the national production mix and the low current recovery of domestic collected paper for recycling, substantial investment incentives in new capacities will be needed in the coming years in order to ensure that this raw material is recovered within the territory of the Czech Republic.

Figure 18: Map of Active Facilities Handling Paper Designated as Sorting or Re-sorting Line, Recycling and Production of Paper or Cardboard



Source: processed on the basis of WMIS

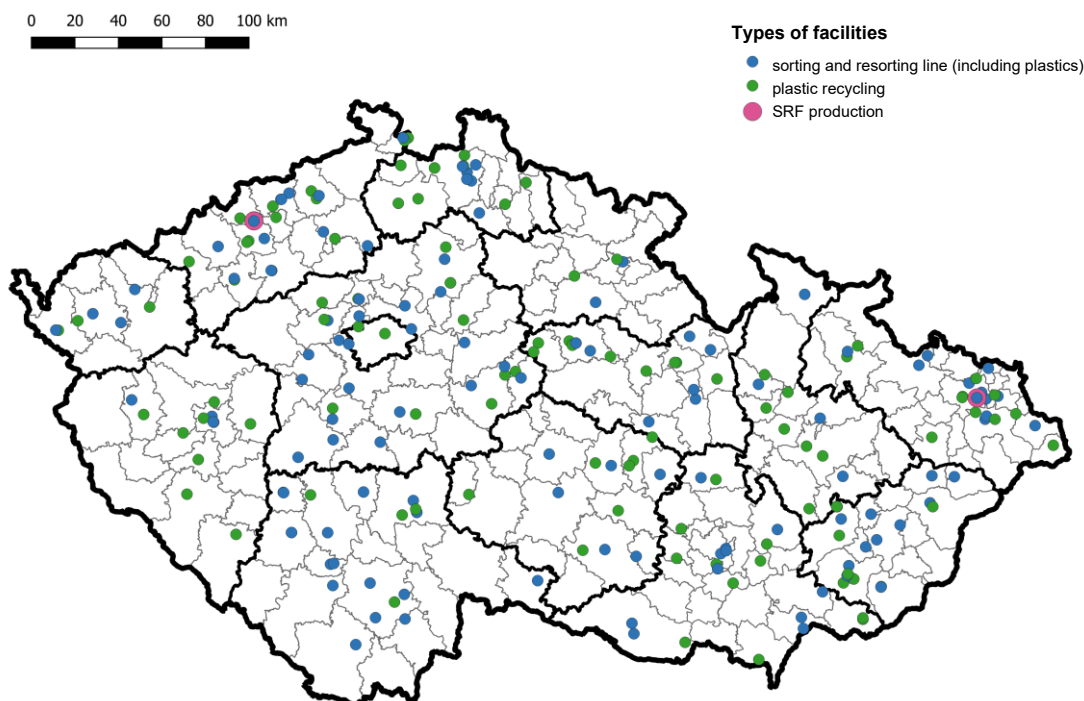
## 2.6.5 Sorting and Recycling of Plastics

Re-sorting lines are a significant element in the management of recyclable and recoverable waste, particularly separately collected fractions. These facilities provide waste treatment and the preparation of secondary raw materials according to the requirements of the recycling industry in terms of material composition and required quality. The Czech Republic has a relatively dense network of re-sorting lines, where in many of them the joint re-sorting of several commodities is carried out. Based on a combination of data from the Register of Facilities and data provided by EKO-KOM a.s., it was found that **119 facilities for the re-sorting of waste** from the separate collection of plastics, paper, metals and beverage cartons were operated in the territory of the Czech Republic in 2022. A further approx. 14 facilities provide only partial treatment such as pressing. The capacity of facilities is diverse, most often in the order of thousands of tonnes per year. From the perspective of sorted commodities treated on the lines, various combinations occur, the most widespread being the combination Plastics, Paper, Beverage Cartons, Metals, which 43 facilities process. The combination Plastics, Paper, Beverage Cartons is processed by 38 facilities, and the combination Plastics and Paper is processed by 16 facilities. Exclusively individual commodities are processed by only a few facilities.

The total capacity of all re-sorting facilities intended for the re-sorting of separately collected commodities of paper and plastics is 3.1 million tonnes. The current network of facilities for the sorting of plastics appears sufficient. From the perspective of the technology of re-sorting separately collected plastic and paper waste, manual re-sorting is predominantly used in the Czech Republic. In 2024, only two automated re-sorting lines for plastics from separate collection were in operation, with one line being hybrid, i.e. also intended for the re-sorting of mixed municipal waste in the second shift. However, these facilities do not meet needs in terms of performance, efficiency, operational costs, scope and

quality of produced sorted treated commodities. It is recommended to support the construction and efficient operation of modern automated re-sorting lines, which, with high quality outputs, will ensure raw material suitable for recycling and re-use in the plastics industry. The objective is to build sophisticated facilities with high flexibility and the ability to respond to future changes and needs in the market. The goal is to have a smaller number of facilities capable of sorting even specific waste streams of low occurrence, for which recycling technologies already exist today. In the future, it is necessary to monitor the development of new thermochemical technologies and support the creation of related integrated sorting technologies.

*Figure 19: Map of Active Facilities Handling Plastics Designated as Sorting or Re-sorting Line, Recycling and Production of Solid Recovered Fuels*



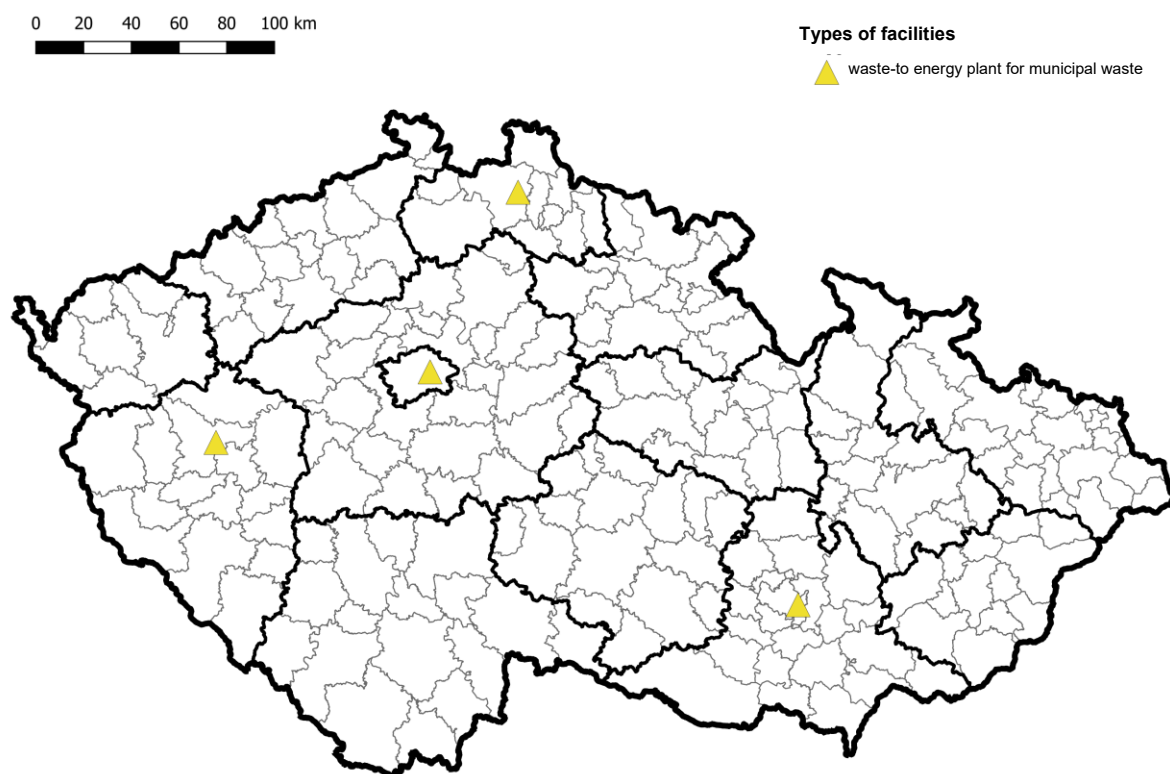
Source: processed on the basis of WMIS

### 2.6.6 Facilities for Energy Recovery of Waste

At present, there are four facilities for energy recovery of waste (FERW) in the territory of the CR. Among their authorised processed waste are primarily mixed municipal waste. These include: the Malešice facility for energy recovery of waste operated by Pražské služby, a.s. (394 thousand tonnes per year), the Brno facility for energy recovery of waste (248 thousand tonnes per year), the Chotíkov facility for energy recovery of waste (120 thousand tonnes per year), and another stationary facility authorised still under Act No. 185/2001 Sb., which has mixed municipal waste among its authorised waste – the Liberec facility for energy recovery of waste (96 thousand tonnes per year). The total of authorised annual capacities of all four existing facilities is currently (2024) 858 thousand tonnes per year.

Waste energetically recovered in these facilities in 2022 consisted mostly of mixed municipal waste (84.6%). Other significant waste streams included bulky waste (6.6%) and waste under cat. no. 19 12 (6.2%).

Figure 20: Map of Active Facilities Processing Mixed Municipal Waste Designated as Facilities for Energy Recovery of Waste



Source: processed on the basis of WMIS

A number of additional facilities are currently under preparation. Five facilities are in an advanced stage of preparation, for which investment subsidies from the Modernisation Fund have already been approved. These are:

- the Mělník facility for energy recovery of waste (320 thousand tonnes per year),
- the Komořany facility for energy recovery of waste (150 thousand tonnes per year),
- the Planá nad Lužnicí facility for energy recovery of waste (80 thousand tonnes per year),
- the Písek facility for energy recovery of waste (50 thousand tonnes per year), and
- the Vráto facility for energy recovery of waste (150 thousand tonnes per year).

**The total processing capacity of all facilities for energy recovery of waste (FERW) facilities and the four planned FERW projects amounts to 1,608 thousand tonnes per year.**

The facilities are at various stages of preparation. The fact that a facility has received a subsidy from the Modernisation Fund is not a guarantee that it will be implemented and put into operation.

Other facilities are planned (under preparation <sup>35</sup>).

Although only two projects for the production of SRF are currently listed in the EIA database, there are more projects for the mechanical sorting of mixed municipal waste under preparation. The total capacity of all projects (including the already operating OZO Ostrava) could exceed 700 thousand tonnes of

<sup>35</sup> The current overview of projects under preparation may be found [here](#).

mixed municipal waste input with implementation by 2028. Accordingly, it is necessary to build facilities for the utilisation of SRF. A multi-fuel boiler with a capacity of 114 thousand tonnes has been in operation in Přerov since 2024. Further projects are being prepared in Ostrava, Karviná and Olomouc.

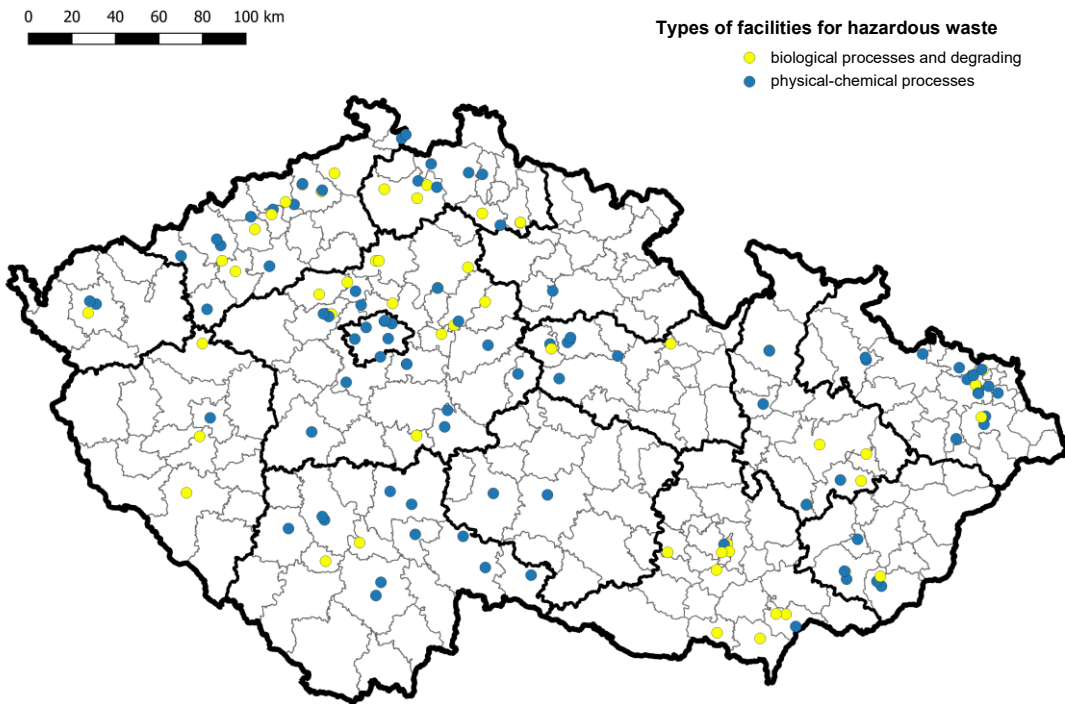
## 2.6.7 Facilities for Handling Hazardous Waste (excluding landfills)

In Chap. 2.3.13 the generation and management of hazardous waste were evaluated. The following text supplements the information with conclusions on facilities for the management of hazardous waste. The capacity of de-emulsification plants is almost sufficient for current generation. The capacity of neutralisation plants is sufficient for current generation. The network of neutralisation and de-emulsification plants is uneven. There is a capacity deficit in the Vysočina, Liberec, Olomouc and Plzeň Regions.

The capacity of biodegradation areas is not sufficiently distributed across the territory of the CR. Surplus capacities exist only in the Central Bohemian and South Bohemian Regions, and partly in the Zlín Region. The capacity of stabilisation lines, in relation to the current generation of hazardous waste suitable for stabilisation, is not sufficient and from a nationwide perspective there is a deficit of 25 to 30 thousand tonnes. Sufficient stabilisation line capacity in view of future generation appears in the South Bohemian and Olomouc Regions. A significant deficit exists in the South Moravian and Zlín Regions. In the other regions, the balance is approximately even, but with the fulfilment of the hazardous waste projections, capacities should be increased.

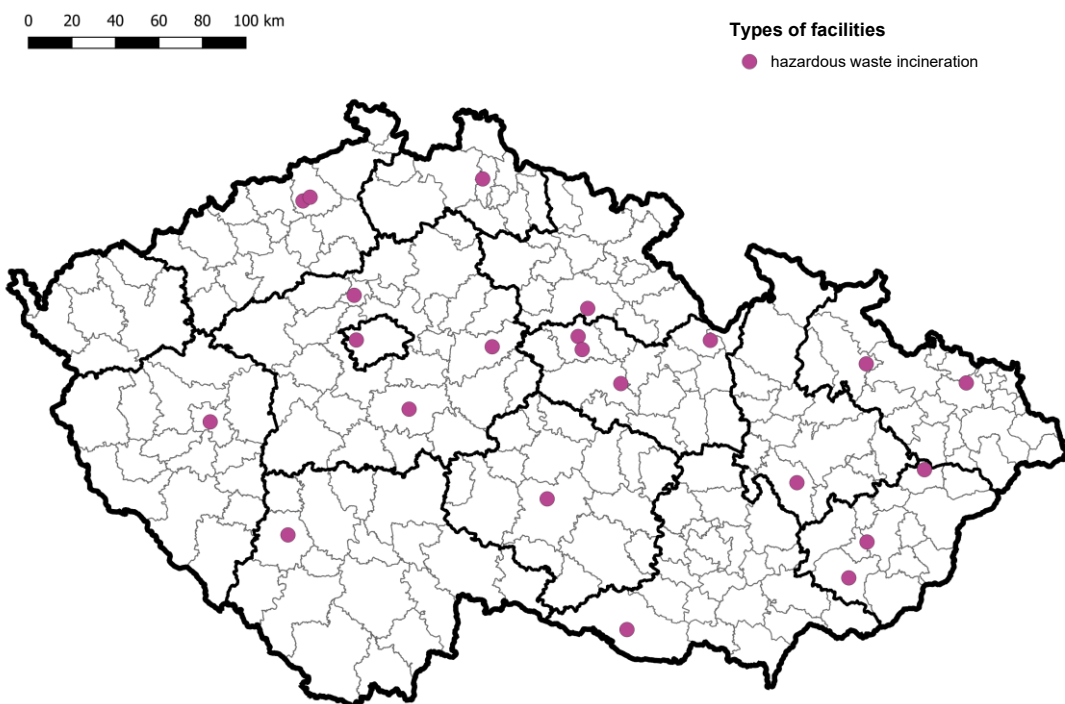
Incinerators for hazardous waste are a key technology for the safe management of combustible hazardous waste. In the CR, 21 hazardous waste incineration plants are in operation with a total processing capacity of 104 thousand tonnes. Of these, six facilities are hospital incinerators with a capacity of 8.5 thousand tonnes. Given the current generation of hazardous waste, there is a shortage of incineration capacity for hazardous waste of approx. 45 thousand tonnes. The quantity of this waste is still increasing. Almost 16% of this waste is processed in a non-preferred manner – *landfilling at or below ground level and the use of waste as a technological material for landfill coverage*. Sufficient capacity for preferred management of combustible waste is shown in the South Bohemian, Pardubice and Karlovy Vary Regions. Although the capacities of hazardous waste incinerators in these regions are not significant or are non-existent (Karlovy Vary Region), the balance is positive due to the high material recovery of hazardous waste (South Bohemian, Karlovy Vary) or treatment of this waste for its subsequent energy recovery (Pardubice Region).

Figure21: Map of Active Facilities Handling Hazardous Waste Designated as Biological Processes and Degradation and Physical-chemical Processes



Source: processed on the basis of WMIS

Figure22: Map of Active Facilities Handling Hazardous Waste Designated as Waste Incineration



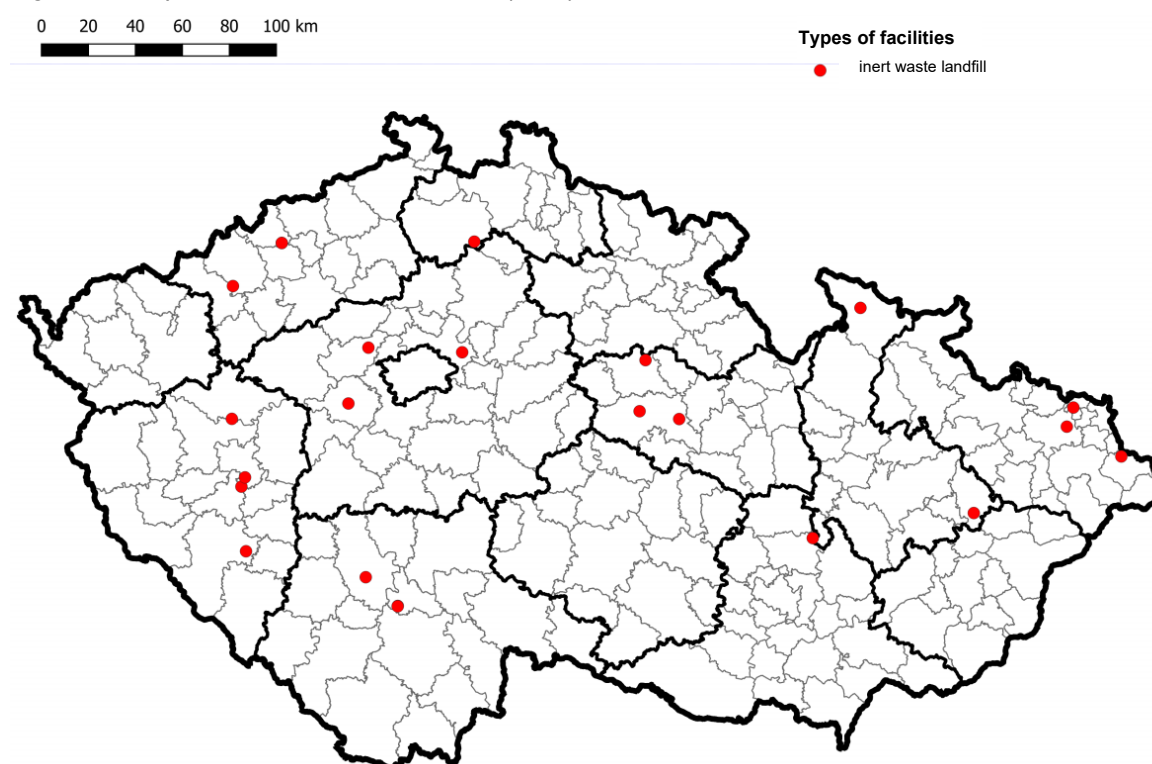
Source: processed on the basis of WMIS

## 2.6.8 Landfills

The CR has a dense network of landfills. Landfills are divided into types S-IO (landfills designated for inert waste), S-OO (landfills designated for other waste) and S-NO (landfills designated for hazardous waste).

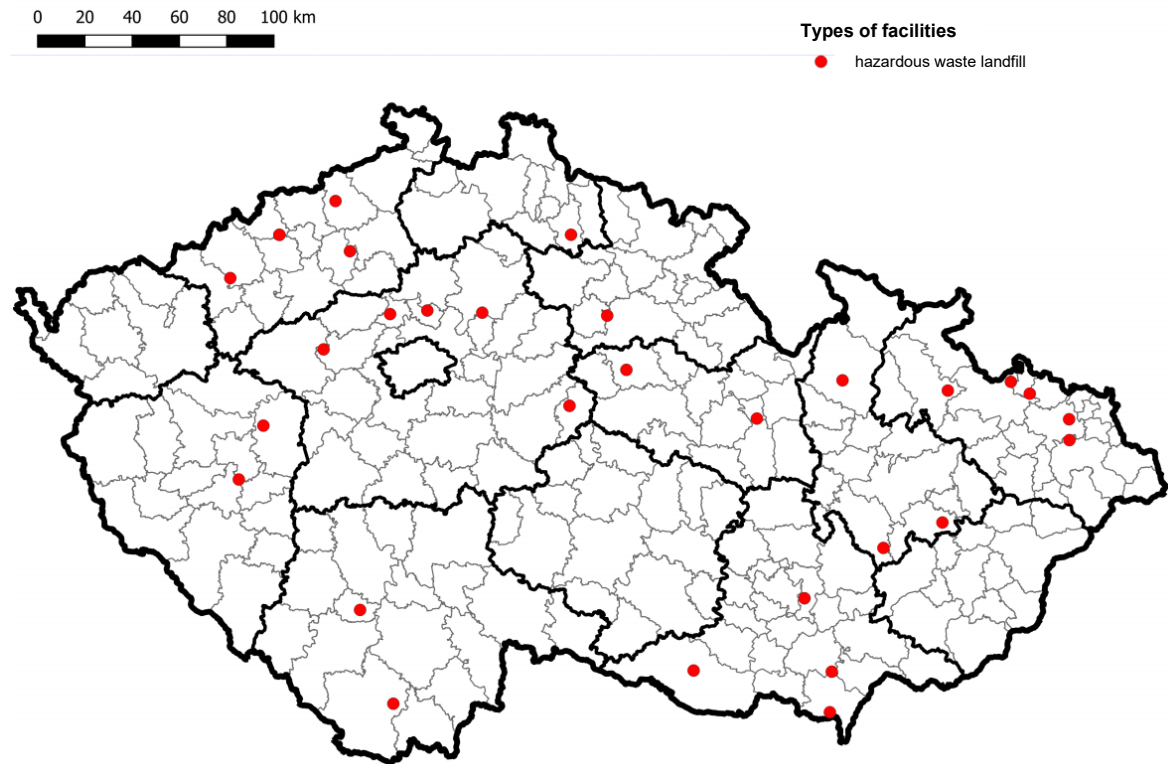
Hazardous waste landfills as well as inert waste landfills are missing in some regions. Moreover, for some, no data on their available capacity is provided. As stated above, in 2022 approx. 4.5 million tonnes of all waste was landfilled, of which 2.8 million tonnes were municipal. Outside group 20, landfilled waste consists mainly of construction and demolition waste and soil, i.e. inert waste, which is deposited in S-IO, S-OO and S-NO landfills. Landfilling of municipal waste will be prohibited from 2030. A significant proportion of residual waste will be energetically recovered. The generation of waste in group 19 will therefore increase. This will predominantly consist again of inert materials.

Figure23: Map of Landfills for Inert Waste (S-IO)



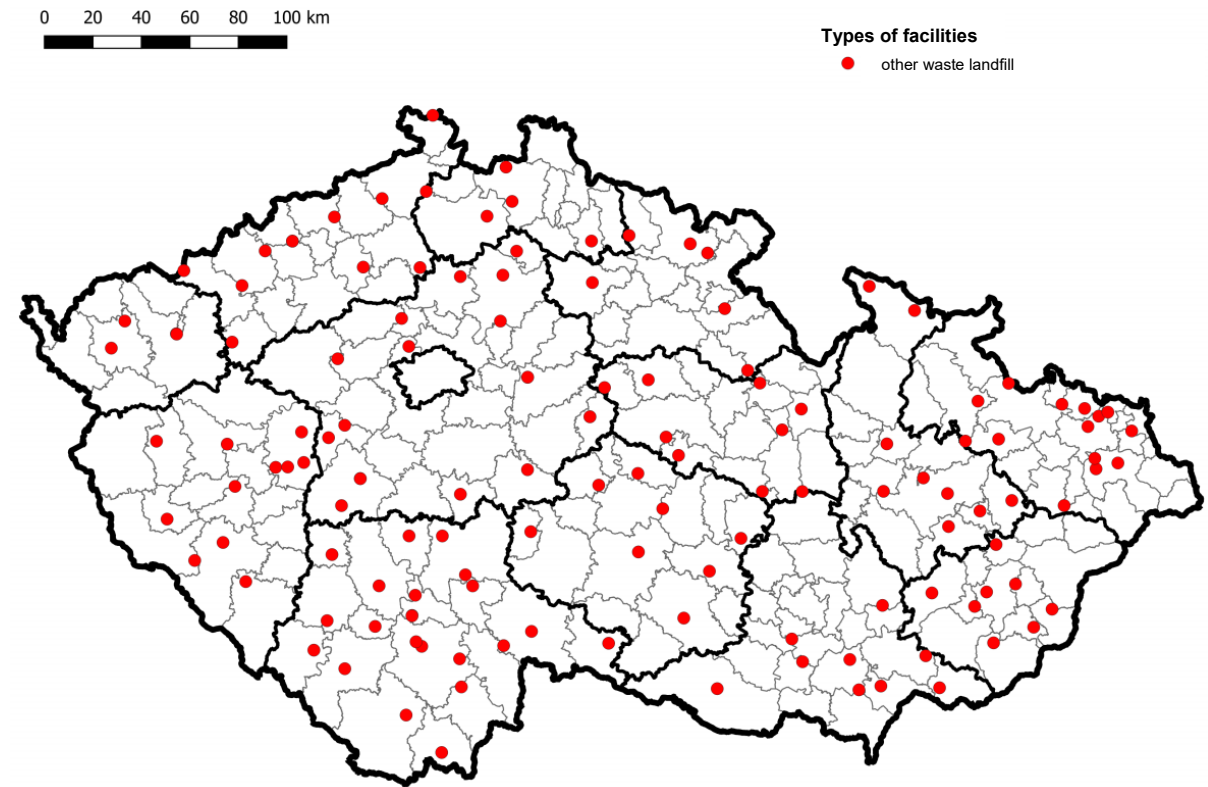
Source: processed on the basis of WMIS

Figure24: Map of Landfills for Hazardous Waste (S-NO)



Source: processed on the basis of WMIS

Figure25: Map of Landfills for Other Waste (S-OO)



Source: processed on the basis of WMIS

## 2.6.9 Summary of the Network of Waste Management Facilities

The SWOT analysis of the network of waste management facilities is based on the summary information presented in the previous chapters as well as on the conclusions of detailed analyses of the sufficiency of the network of facilities and the future management of individual streams. The CR has a very high-quality network of facilities for the separate collection of waste. Alongside collection yards, mobile facilities for waste collection are also widely used, even in cases where their use is unjustified, as they are only used for the transport of waste (e.g. collection of mixed municipal waste). Waste then passes through a network of facilities, where it is transferred between facilities, treated, or otherwise managed. In addition to waste treatment facilities (producing waste in group 19), end-of-line facilities play a key role. The analysis showed the sufficiency of facilities for the preferred management of streams such as construction and demolition waste, biodegradable waste, materially recoverable waste (here the missing domestic capacity is compensated by exports in the case of paper and metals), agricultural waste, and sewage sludge from wastewater treatment plants. On the other hand, a capacity shortage was identified for the stream of mixed municipal waste, where there is a lack of capacity in facilities for energy recovery, for the bulky waste stream, for collection yard capacities, for facilities for mechanical re-sorting of bulky waste and for the subsequent energy recovery of parts that cannot be materially recovered. There is also a lack of capacity for handling selected groups of hazardous waste, specifically hazardous waste suitable for incineration, i.e. a general shortage of hazardous waste incineration capacities, including hospital waste incinerators. An important aspect is also the modernisation of existing capacities with the aim of increasing their efficiency, performance and competitiveness in the developing market of suitably treated waste and prepared secondary raw materials of high purity, with a verifiable origin, in line with circularity principles.

Table 61: SWOT Analysis of Waste Management Facilities

<b>Strengths - S</b>	<b>Weaknesses - W</b>
<ul style="list-style-type: none"> <li>▪ The existing network of facilities enables waste management in compliance with legislation, in a controlled and monitorable manner. Uncontrolled waste management occurs only rarely.</li> <li>▪ The existence of competition and a market environment in all facility segments.</li> <li>▪ Increase in capacities and modernisation of facilities as a result of the implementation of grant programmes.</li> <li>▪ A developing network of collection yards as a supplementary system to container collection for waste collection.</li> <li>▪ A functioning network of facilities for the sorting of recoverable fractions from separate collection of waste.</li> <li>▪ Implementation of the first projects of automated re-sorting lines.</li> <li>▪ Sufficient capacity of facilities for preferred treatment methods is available for the following waste streams (given current waste generation levels and assuming acceptance of exports): construction and demolition waste, biological waste,</li> </ul>	<ul style="list-style-type: none"> <li>▪ Insufficient capacity of facilities for the preferred treatment of the following streams or sub-streams (with current generation): mixed municipal waste – capacity of facilities for energy recovery; bulky waste – capacities of collection yards, facilities for mechanical re-sorting of bulky or mixed waste; hazardous waste suitable for incineration – capacity of hazardous waste incinerators; waste from healthcare and veterinary care – missing incineration capacity; biodegradable waste from kitchens and canteens – insufficient collection and treatment capacities; mining waste, textile waste including footwear, plastic waste, waste batteries and in particular lithium batteries – insufficient recycling capacities.</li> <li>▪ Insufficient capacity for energy recovery of municipals that cannot be materially recovered and other combustible waste outside group 20.</li> </ul>

**Strengths - S**

- materially recoverable waste, asbestos-containing
- Long-term experience with energy recovery of waste.
- Available capacity of all types of landfills in most regions.

**Weaknesses - W**

- Excessive use of mobile facilities. Non-transparency in waste management in mobile facilities.

**Opportunities - O**

- Modernisation and improvement of technologies with an emphasis on efficiency and performance, with the aim of initiating the circular economy.
- Implementation of a network of automated mechanical sorting lines for sorting / re-sorting and treatment of waste.
- Implementation of waste treatment facilities for processing into high-quality output raw material according to the requirements of the recycling industry.
- Modernisation of recycling lines for construction and demolition waste with the aim of improving the quality of produced recyclates.
- Support for investments in recycling technologies for maximum recycling of waste and raw materials in the CR.
- Orientation of waste management from export to domestic production of products with higher added value.
- Investments in technologies for the processing of waste paper.
- Self-sufficiency of the CR in the processing of metal waste (scrap) through the implementation of plans for electric arc furnaces in steelworks.
- Support for investments in technologies for the recovery of critical raw materials.
- Partial release of re-sorting line capacity as a result of the implementation of a deposit-return system for selected packaging.
- Development of thermochemical technologies (chemical recycling) for the management of plastic waste in particular.
- Development of automation, digitalisation and modern technologies for the management and control of safe waste handling.

**Threats - T**

- Missing capacity of landfills and incinerators in some regions, particularly in cases where landfilling and incineration of certain waste is necessary, or in times of crisis and natural disasters, resulting in greater distances for the transport of waste for disposal.
- If the development of generation follows the set scenarios, there will be a lack of capacity for the streams listed in the Weaknesses section, and further for biodegradable waste – composting plants and biogas plants (up to a total of 1 million tonnes).

Source: own processing

## 2.7 Evaluation of Transboundary Shipment of Waste

Transboundary shipment of waste is one of the instruments of the free market; however, in certain cases it is subject to regulation in the form of legislation. Some waste may be excluded from the possibility of transboundary shipment and is prohibited. This applies, for example, to waste destined for disposal (D-codes of management) imported into the CR. Another category of waste is subject to the so-called Prior Informed Consent (PIC) procedure, that is, prior written notification and consent (see below), and certain waste may be transported outside the PIC procedure regime.

### 2.7.1 Transboundary Shipment of Waste Subject to the PIC Procedure

Pursuant to Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste (hereinafter referred to as the “Waste Shipment Regulation”), in the case of defined categories of waste, transboundary shipment must be notified in advance in writing and consent from the competent authorities must be awaited (PIC procedure). The following points apply to transboundary shipment within the EU, or OECD countries that have adopted the Basel Convention<sup>36</sup>.

Each individual shipment must be notified in advance in writing and consent must be awaited if the waste is:

- destined for disposal – all waste,
- mixed municipal waste (20 03 01) destined for recovery or disposal,
- destined for recovery.
  - waste listed in Annex IV to the Waste Shipment Regulation, which inter alia includes waste listed in Annexes II and VIII to the Basel Convention – the “yellow” list of waste,
  - waste listed in Annex IVA of the said Regulation,
  - waste not classified under a single entry in Annex III, IIIB, IV or IVA of the said Regulation,
  - mixtures of waste not classified under a single entry in Annex III, IIIB, IV or IVA of the said Regulation, unless listed in Annex IIIA.

It is also possible to use a single notification for several shipments at the moment when the transboundary shipment of waste fulfils the following conditions:

- the waste has substantially the same physical and chemical properties,
- the waste is transported to the same consignee and to the same facility,
- the transport route specified in the notification form remains unchanged.

Annex IV of the Waste Shipment Regulation sets out the “yellow” list of waste, which is based on an OECD<sup>37</sup> Decision and which inter alia includes Annex II and Annex VIII of the Basel Convention (List A). Individual waste is designated with a code most frequently in the format Axxxx, AXxxx, but also RBxxx or EUxx.

The specific requirements of the PIC procedure are specified in the Waste Shipment Regulation and its Annexes.

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<sup>36</sup> Czech translation available [here](#).

<sup>37</sup> Available [here](#).

## 2.7.2 Transboundary shipment of waste subject to general information requirements

Outside the PIC procedure there exists a regime of shipment subject to general information requirements. This regime applies if the waste is:

- destined for recovery, where the quantity of waste shipped exceeds 20 kg,
- waste listed in Annex III of the Waste Shipment Regulation – the “green” list of waste,
- waste listed in Annex IIIB or mixtures listed in Annex IIIA of the Waste Shipment Regulation,
- destined for laboratory analysis to assess its physical or chemical properties or to determine its suitability for recovery or disposal in a quantity of up to 25 kg.

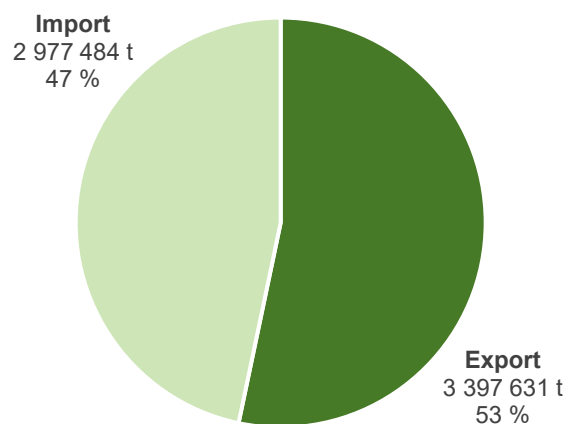
Annex III of the Waste Shipment Regulation sets out the “green” list of waste, which is based on an OECD Decision, and which inter alia includes Annex IX of the Basel Convention (List B). Individual waste is designated with a code most frequently in the format Bxxxx, but also GXxxx or EUxx. Should waste on the “green” list contain material that would render it hazardous, the shipment of such waste will be subject to the PIC procedure.

Waste shipped subject to the general information requirements must be accompanied by a document in accordance with the Waste Shipment Regulation. It is also necessary to conclude a contract on the recovery of waste, which must be effective at the time of shipment.

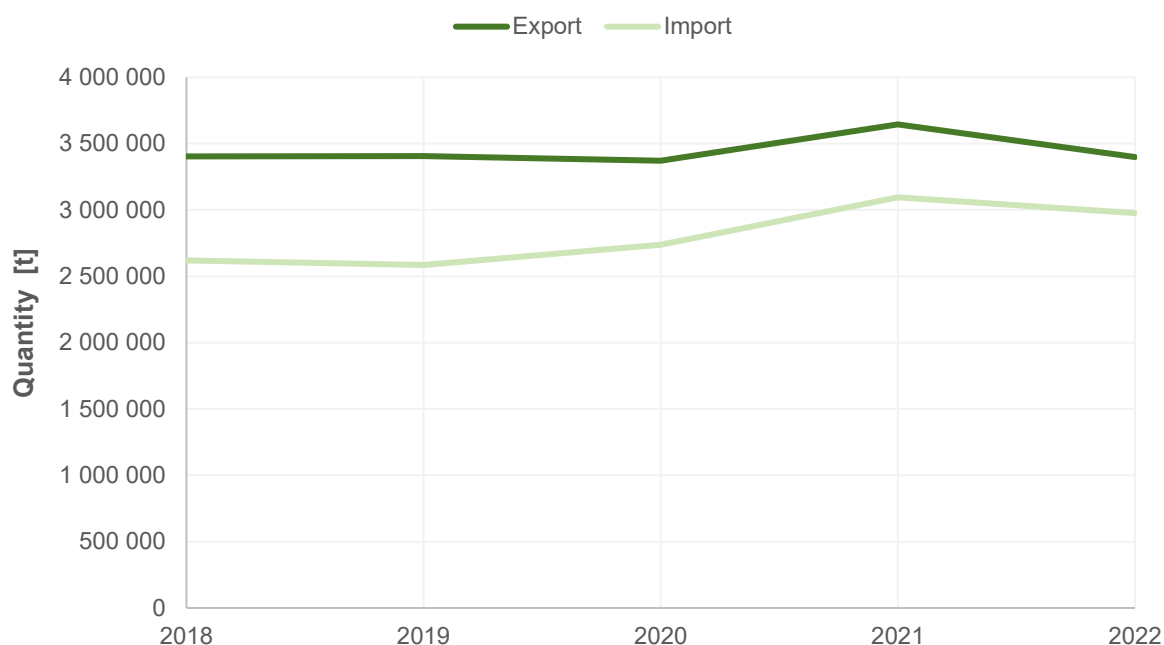
## 2.7.3 Ratio of Import and Export

Transboundary shipment of waste has long been more focused on export than import; however, in recent years the difference has diminished. Export between 2018 and 2020 stagnated, showing a slightly declining trend. In 2021 there was a more marked increase, which, however, did not continue in 2022, when there was a decrease roughly to the level of 2019. Import has been rising significantly since 2019, increasing by approximately 20% between 2019 and 2021. As with export, in 2022 import also decreased. In 2022 the ratio of export to import of waste was 53% to 47%. The values of waste shipped are shown in Graph 49, while the development between 2018 and 2022 is depicted in Graph 50.

Graph 49: Import and Export of Waste (CR, 2022)



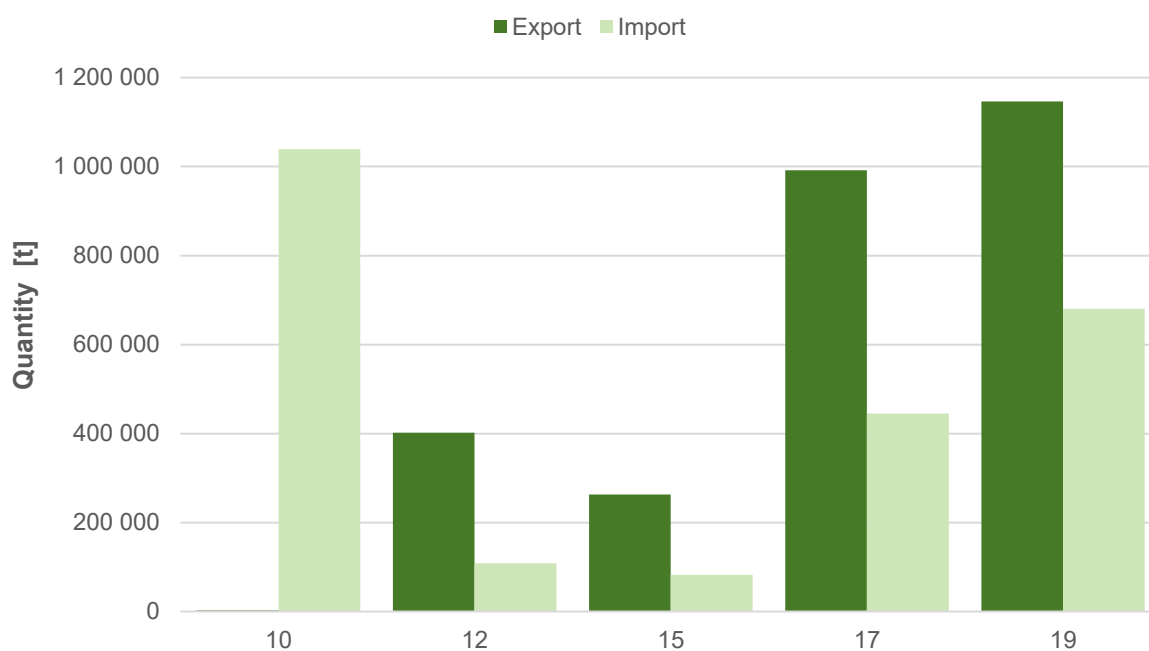
Graph 50: Development of Transboundary Shipment of Waste in the CR in the Years 2018 to 2022



Source: processed on the basis of WMIS

The most represented groups of waste include groups 10, 12, 15, 17 and 19 (unchanged in the long term). Overall, the most represented groups of waste are groups 19 and 17.

Graph 51: Ratio of Import and Export of Waste in the CR for the 5 Most Represented Waste Groups in 2022

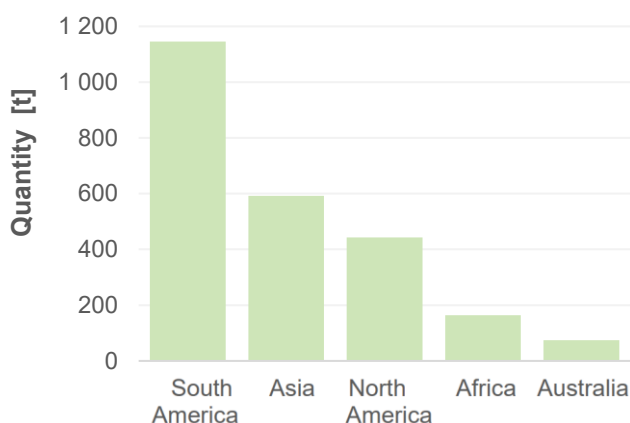


Source: processed on the basis of WMIS

## 2.7.4 Import

Import of waste takes place predominantly from Europe, specifically from the In 2022, the total import into the CR amounted to 2,977,484 tonnes. Compared to 2021, this represents a decrease of approximately 4%. Of this, 2,953,867 tonnes came from the EU (99.2%). Import from European states outside the EU accounted for 21,197 tonnes (0.7%), primarily from Switzerland. Import from non-European states amounted to 2,420 tonnes (0.1%), representing thus a negligible share. Outside Europe, in 2022 the highest import came from South America, specifically from Chile. Compared to 2021, import from non-European states decreased by 20%.

*Graph 52: Import of Waste into the CR from Non-European States in 2022*



Source: processed on the basis of WMIS

From the perspective of individual states, in 2022 waste was most frequently imported from Austria (38%), Germany (28%), Poland (17%) and Slovakia (10%), i.e. from all neighbouring states. The fifth most represented state was Italy (2.8%). Other states accounted for less than 1%.

The ten most represented states are shown in the following Table62

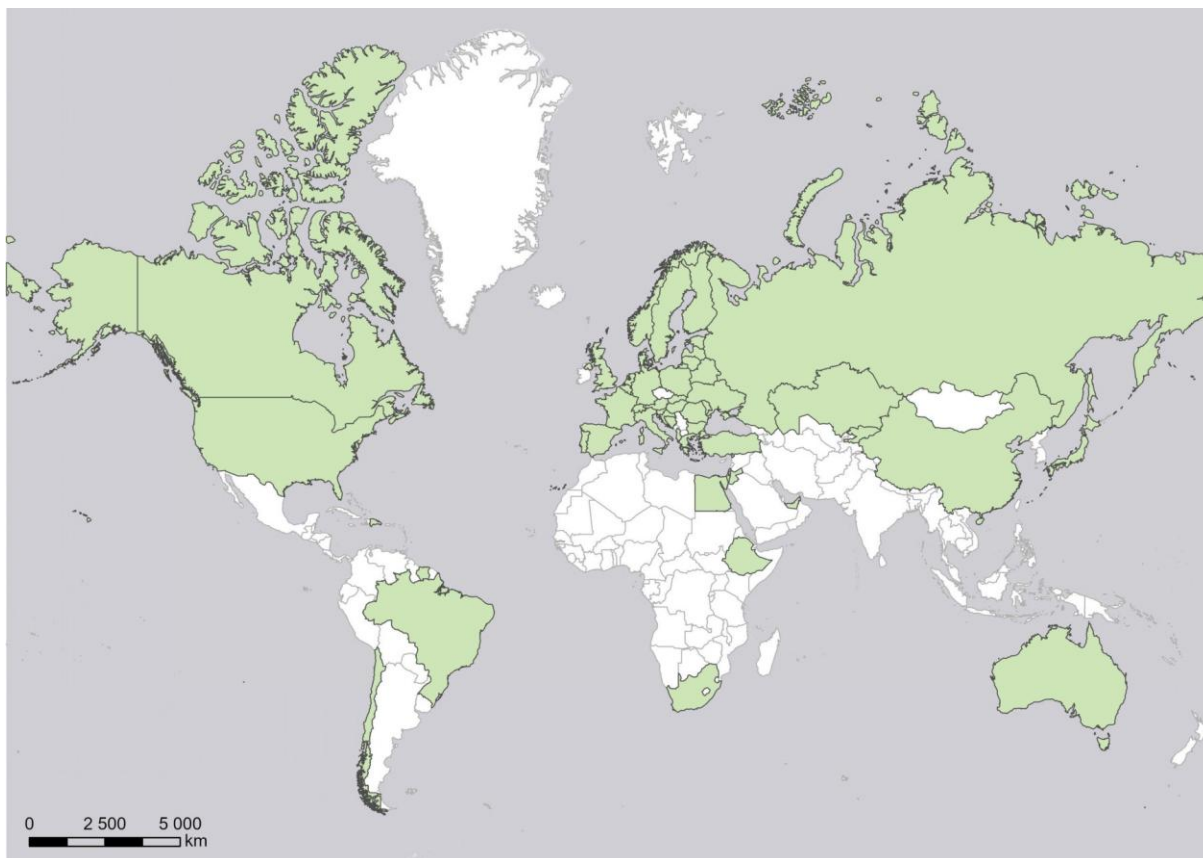
*Table62: Import of Waste into the CR by State in 2022 – Top 10*

Country	Quantity [t]	Share [%]
Austria	1,125,999	37.8
Germany	835,344	28.1
Poland	514,602	17.3
Slovakia	293,571	9.9
Italy	84,783	2.8
Netherlands	24,228	0.8
Hungary	21,219	0.7
Switzerland	16,193	0.5
Lithuania	11,933	0.4
France	7,284	0.2
Other	42,327	1.4

Source: processed on the basis of WMIS

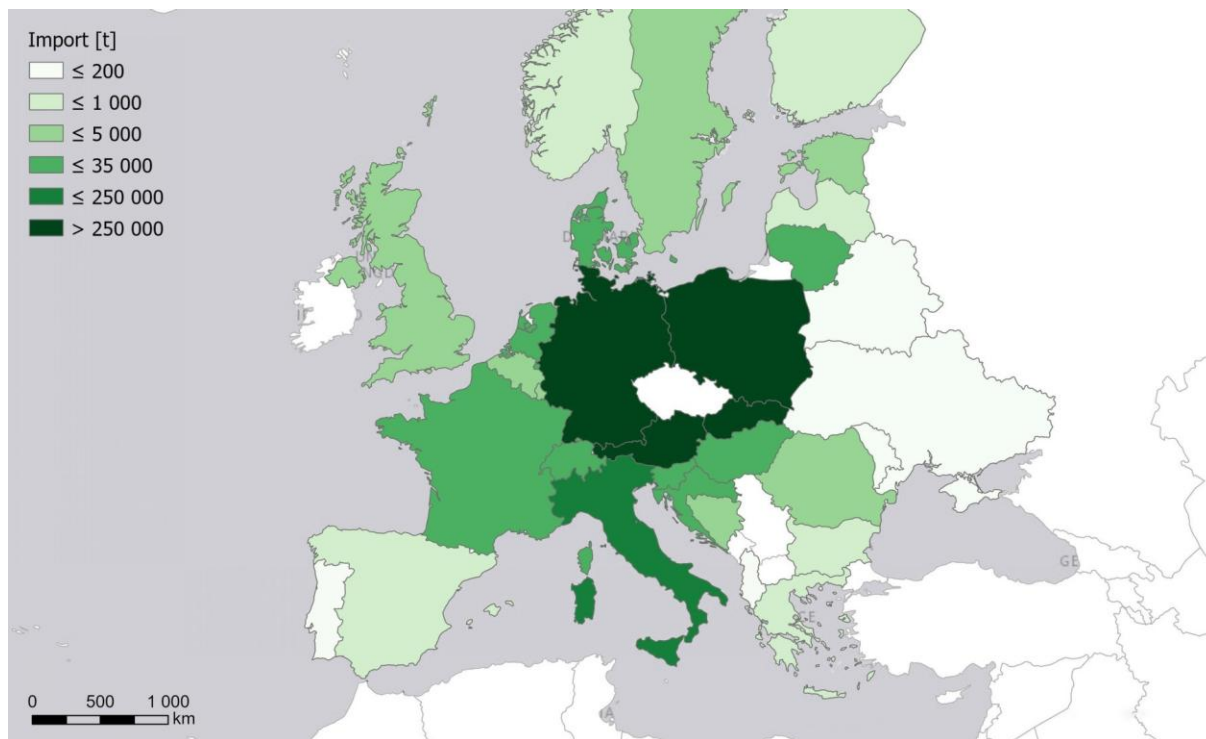
From Austria in 2022 the most imported LoW number was 10 02 02 (84%), followed by 19 12 10 (4.6%) and 17 02 01 (4.2%). From Germany the main LoW numbers were 19 12 04 (18%), 17 08 02 (16.4%) and 19 12 07 (13.3%). From Poland imports most frequently consisted of LoW number 17 04 05 (55%), 19 12 04 (10%) and 10 02 10 (6.3%).

*Figure26: Map of States from Which Waste Was Imported into the CR in 2022*



Source: processed on the basis of WMIS

Figure 27: Map of States from Which Waste Was Imported into the CR in 2022 – Europe



Source: processed on the basis of WMIS

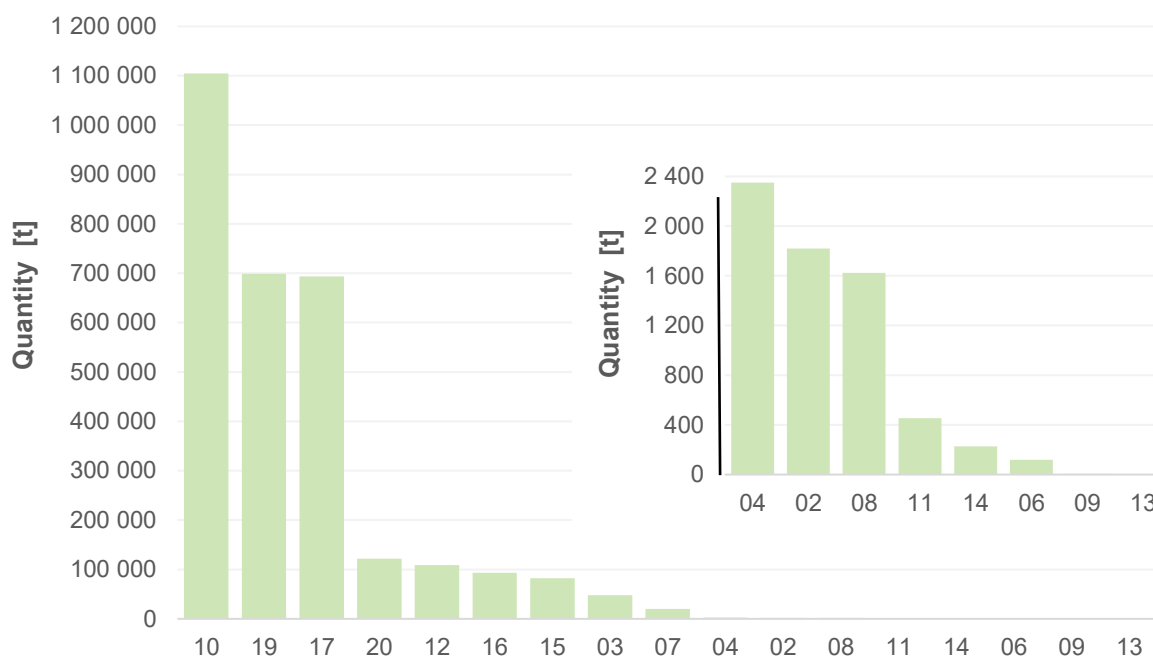
From the perspective of waste groups, the most imported were group 10 (37%), group 19 (23%) and group 17 (23%). In 2022, import of group 10 amounted to 1,104,700 tonnes. Within group 10, the essential subgroup was 10 02 (Waste from the iron and steel industry), which accounted for 94%. The most represented LoW number was 10 02 02 (Unprocessed slag), with an import of 1,003,301 tonnes, which represented 91% within group 10 and 34% of the total import into the CR.

In 2022, import of group 19 amounted to 698,769 tonnes. The majority was represented by subgroup 19 12 (Wastes from waste treatment not otherwise specified, e.g. sorting, crushing, compaction, pelletisation), forming 88%. This mainly consisted of LoW number 19 12 04 (Plastics and rubber) with a share of 40%, 19 12 10 (Combustible waste) with a share of 16.5% and 19 12 07 (Wood other than that mentioned in 19 12 06) with a share of 16.4%.

In 2022, import of group 17 amounted to 693,420 tonnes. The primary subgroup was 17 04 (Metals including their alloys), which formed 64%. Also represented was subgroup 17 08 (Gypsum-based construction material), which formed 20%, and 17 02 (Wood, glass and plastic) with a share of 8.1%. The most represented LoW number was 17 04 05 (Iron and steel) with an import of 401,028 tonnes, which accounted for 58% of group 17.

Other waste groups have long been represented to a significantly lesser extent. The representation of waste groups within import is shown in graph.

Graph 53: Import of Waste into the CR by Waste Groups in 2022



Source: processed on the basis of WMIS

From the perspective of specific LoW categories, their representation is shown in the following Table63. This covers the 10 most represented imported waste categories. Current Document

Table63: Import of Waste into the CR by LoW Categories in 2022 – Top 10

LoW Number	Waste Name	Quantity [t]	Share [%]
10 02 02	Unprocessed slag	1,003,301	33.7
17 04 05	Iron and steel	401,028	13.5
19 12 04	Plastics and rubber	275,698	9.3
17 08 02	Gypsum-based construction materials not specified under code 17 08 01.	137,710	4.6
19 12 10	Combustible waste	115,277	3.9
19 12 07	Wood other than that listed under 19 12 06	114,534	3.8
19 12 02	Ferrous Metals	54,797	1.8
12 01 03	Non-ferrous metal filings and turnings	53,252	1.8
17 02 01	Wood	52,562	1.8
12 01 01	Ferrous metal filings and turnings	42,867	1.4
Other		726,459	24.4

Source: processed on the basis of WMIS

The most significantly represented LoW category is 10 02 02 (Unprocessed slag), whose share of import amounts to almost 34%. It is most frequently transported from Austria (94%) and Germany (6%). The import volume corresponds to almost five times the domestic generation in the CR (import of cat. no. 10 02 02: 1,003,301 tonnes, generation in the CR of cat. no. 10 02 02: 201,448 tonnes).

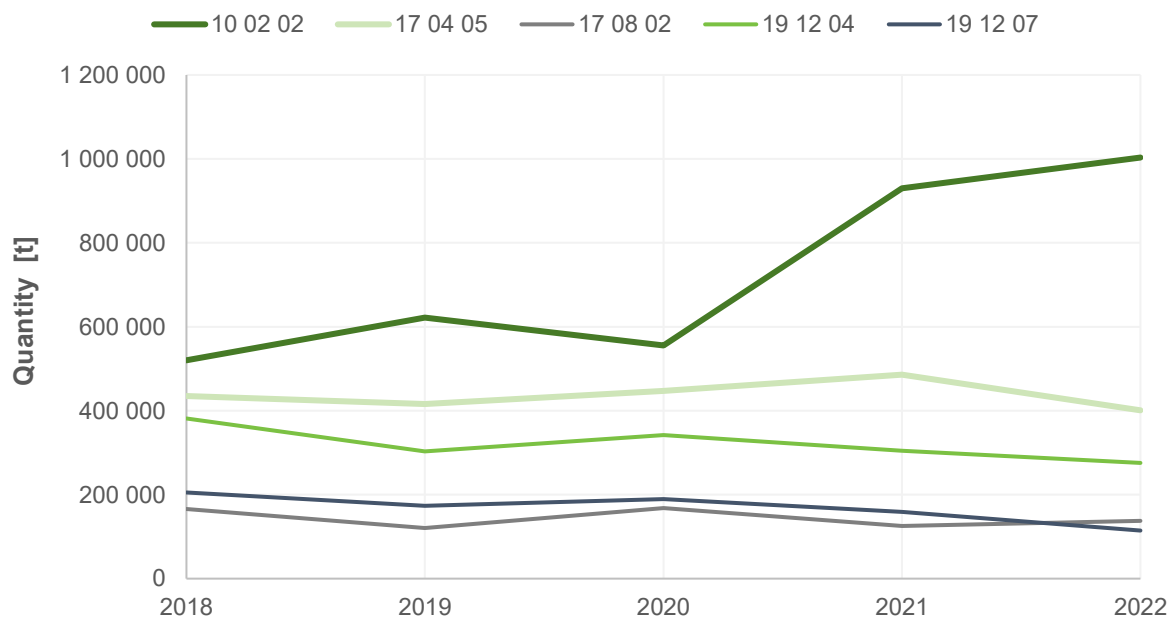
The second most represented category is 17 04 05 (Iron and steel) with a share of approximately 13.5%. It is most frequently imported from Poland (71%), Slovakia (24%) and Austria (2.3%). From other states

it is imported in hundreds or lower thousands of tonnes, with individual shares of less than 1%. The import volume corresponds to 17% of the domestic generation in the CR (import of cat. no. 17 04 05: 401,028 tonnes, generation in the CR of cat. no. 17 04 05: 2,320,702 tonnes).

The third most represented category is 19 12 04 (Plastics and rubber) with a share of approx. 9.3%. It is primarily imported from Germany (55%), Poland (19%) and Italy (16%). The import volume corresponds to 17% of the domestic generation in the CR (import of cat. no. 19 12 04: 275,698 tonnes, generation in the CR of cat. no. 19 12 04: 157,506 tonnes).

The development of imports of the most represented categories is shown in graph 54.

Graph 54: Development of Waste Import into the CR by LoW Numbers – Top 5



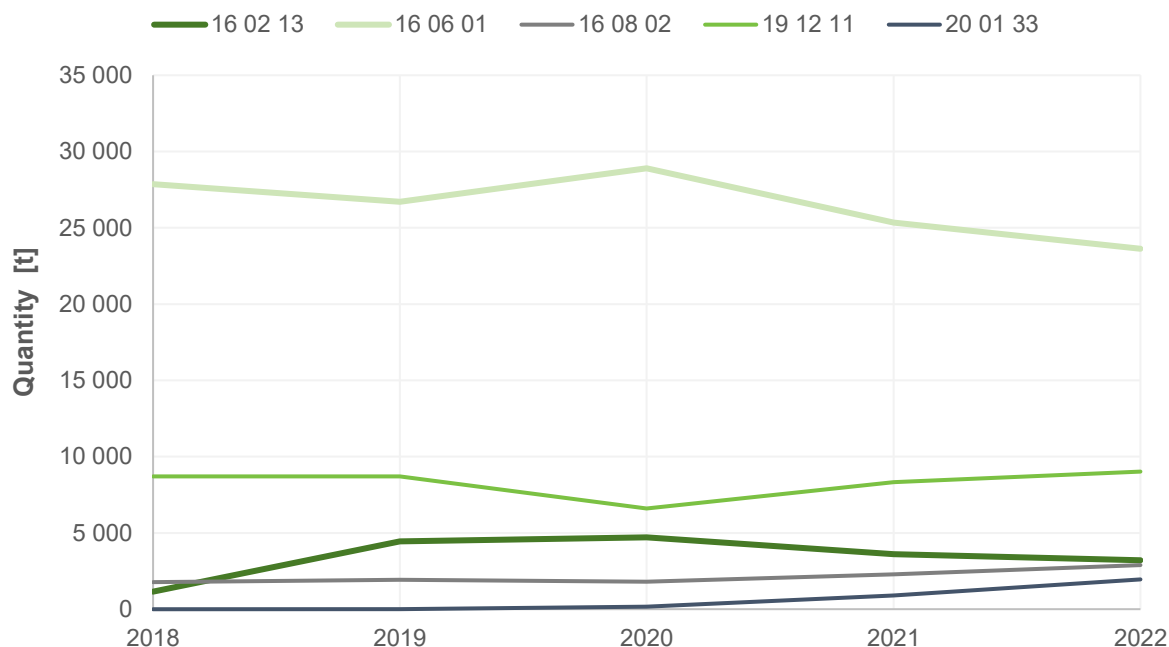
Source: processed on the basis of WMIS

### 2.7.4.1 Import of Hazardous Waste

Import of hazardous waste in 2022 amounted to 43,582 tonnes. Among the most frequently imported hazardous waste are LoW numbers 16 02 13, 16 06 01, 16 08 02, 19 12 11 and 20 01 33. The development of their import is shown in Graph 55.

Import of hazardous waste takes place primarily from Europe (in 2021 and 2022 exclusively from Europe), with imports also in hundreds of tonnes from Asia (between 2018 and 2020 primarily from China). Hazardous waste is most frequently imported from Germany (65%); other frequent countries include Lithuania, Slovakia, Hungary and China. From other states hazardous waste is imported only in hundreds of tonnes.

Graph 55: Development of Import of Hazardous Waste into the CR by LoW Numbers – Top 5

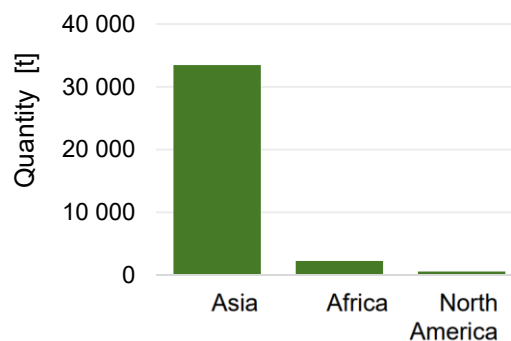


Source: processed on the basis of WMIS

## 2.7.5 Export

Exports of waste from the Czech Republic, similarly to imports, take place predominantly within Europe, specifically to European Union Member States. In 2022, the total export from the CR amounted to 3,397,631 tonnes, representing a decrease of approximately 7% compared to 2021. Export to EU Member States was 3,343,565 tonnes (98.4%). Export to European states outside the EU amounted to 14,619 tonnes, corresponding to 0.4%, most frequently to Switzerland (36%), Montenegro and Ukraine. Export to non-European states was 39,447 tonnes, thus accounting for 1.1% of total export. The largest share of exports is directed to Asia, specifically to Pakistan (most frequently LoW number 19 10 01).

Graph 56: Export of Waste from the CR to the Non-European States in 2022



Source: processed on the basis of WMIS

of total export. The largest share of exports is directed to Asia, specifically to Pakistan (most frequently LoW number 19 10 01).

In terms of countries, waste is most frequently exported to Germany (43%), Austria (16%), Italy (14%), Poland (13%) and Slovakia (6%). Other states accounted for less than 1.5%.

The ten most represented states are shown in the following Table64

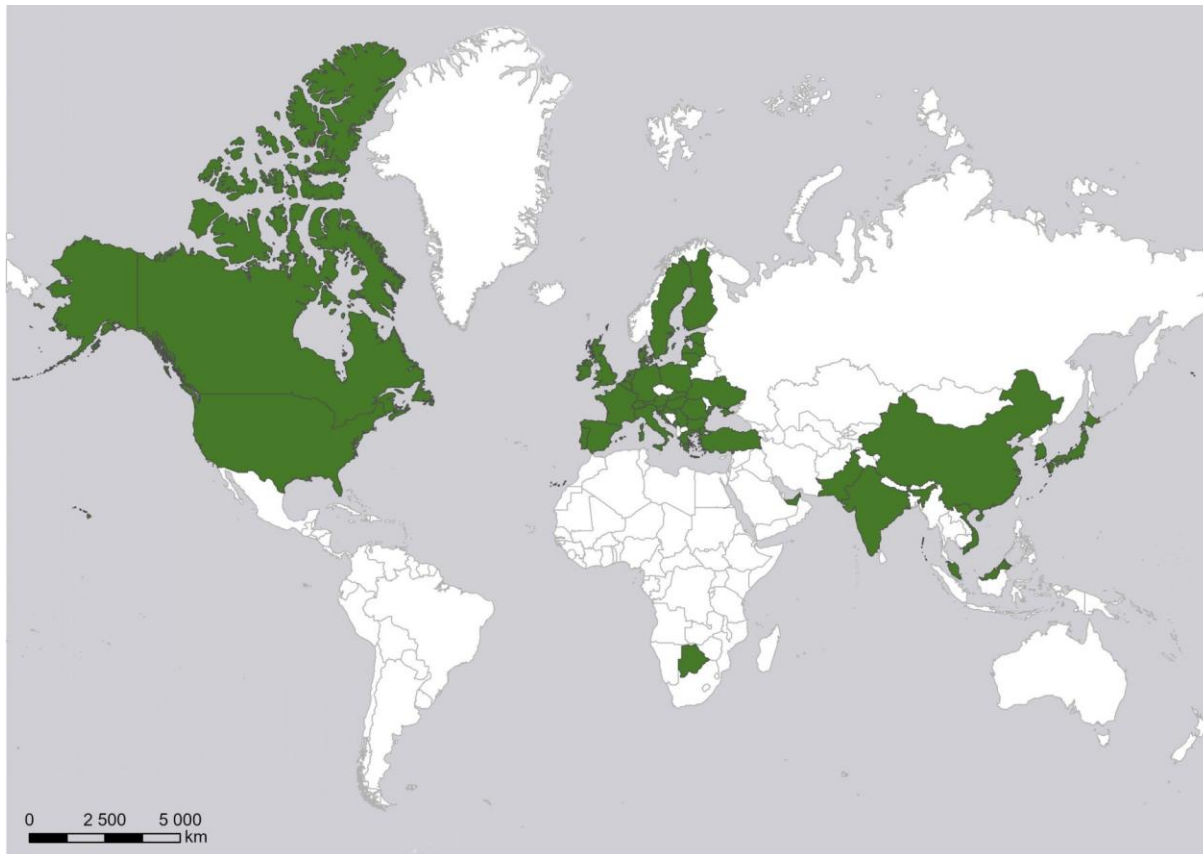
*Table64: Export of Waste from the CR to States in 2022 – Top 10*

Country	Quantity [t]	Share [%]
Germany	1,445,232	42.5
Poland	545,263	16.0
Austria	487,963	14.4
Italy	437,929	12.9
Slovakia	205,170	6.0
Netherlands	60,062	1.8
Slovenia	59,364	1.7
Pakistan	29,586	0.9
Hungary	29,207	0.9
Croatia	23,985	0.7
Other	73,870	2.2

Source: processed on the basis of WMIS

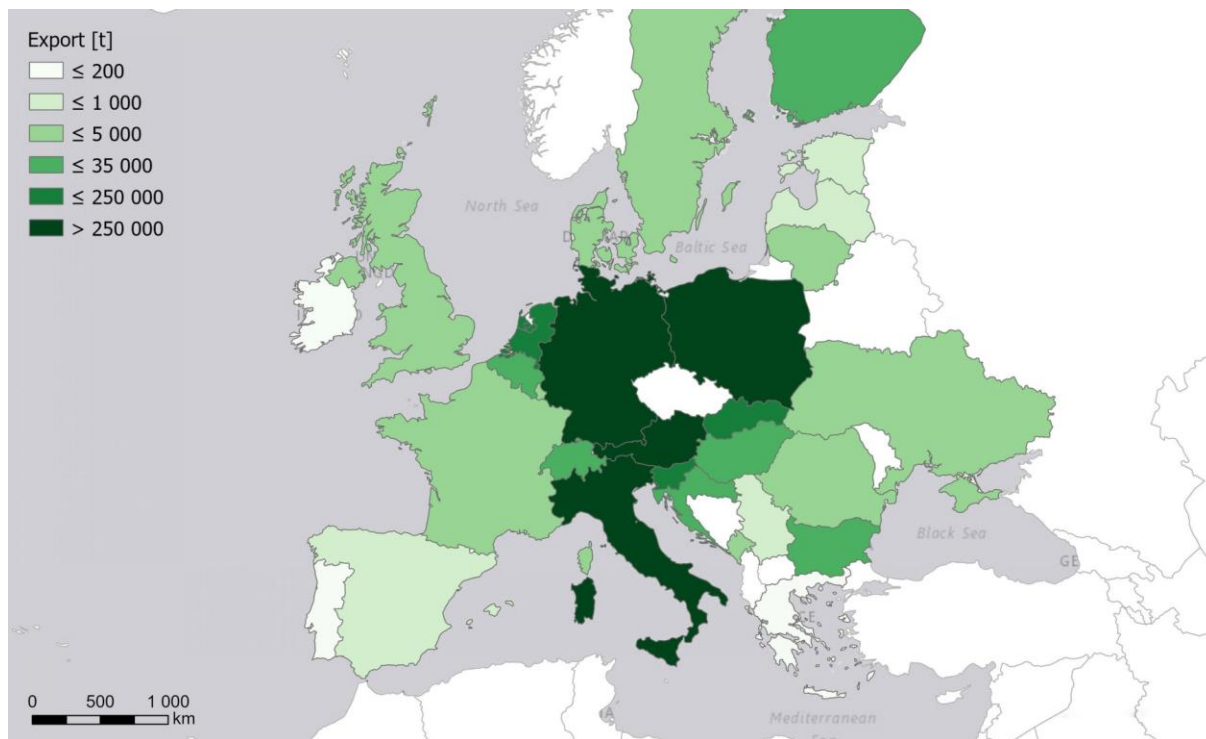
To Germany in 2022 the most exported LoW numbers were 19 12 02 (33%), 17 04 05 (15.6%) and 19 12 01 (13.3%). To Poland the most exported LoW numbers were 17 04 05 (35%), 19 12 02 (9.8%) and 12 01 01 (8.7%). To Austria the most exported LoW numbers were 17 04 05 (32%), 19 12 02 (21%) and 20 01 01 (14.7%).

*Figure28: Map of States to Which Waste Was Exported from the CR in 2022*



Source: processed on the basis of WMIS

Figure 29: Map of States to Which Waste Was Exported from the CR in 2022 – Europe

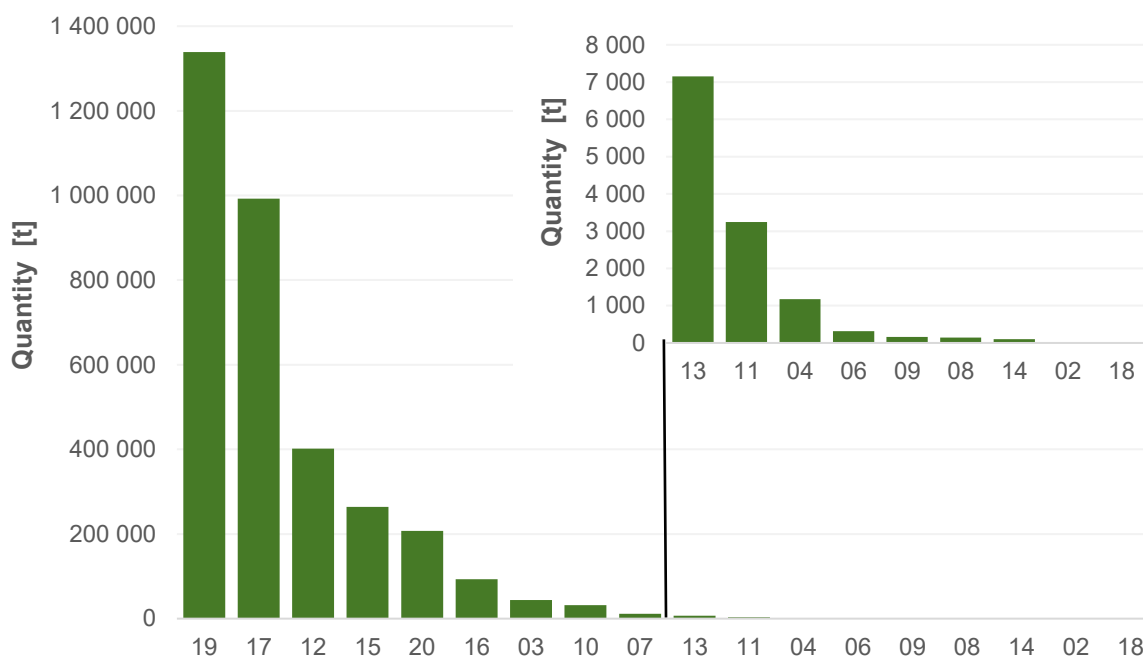


Source: processed on the basis of WMIS

From the perspective of waste groups, exports most frequently involved group 19 (39%) and group 17 (29%). Exports in other groups were significantly lower. In 2022, export of group 19 amounted to 1,339,008 tonnes. This primarily consisted of subgroup 19 12 (Wastes from waste treatment not otherwise specified, e.g. sorting, crushing, compaction, pelletisation) with a share of 85.6%. Within group 19, the most exported LoW number was 19 12 02 (Ferrous metals), accounting for a 55% share, followed by 19 12 01 (Paper and cardboard) with a share of 24.4% and 19 10 01 (Iron and steel scrap) with a share of 13%.

In 2022, export of group 17 amounted to 992,351 tonnes, which represents a significant decrease compared to 2021 (1,330,516 tonnes), and was mainly composed of subgroup 17 04 (Metals including their alloys) with a share of 99.95%. The most represented LoW number was 17 04 05 (Iron and steel), with a share of 92% within group 17 and almost 27% within the overall export from the CR (in 2021 it was 34%).

Graph 57: Export of Waste from the CR by Waste Groups in 2022



Source: processed on the basis of WMIS

Table65 shows the representation of specific LoW numbers in exports from the CR.

Table65: Export of Waste from the CR by LoW Numbers in 2022 – Top 10

LoW Number	Waste Name	Quantity [t]	Share [%]
17 04 05	Iron and steel	912,112	26.8
19 12 02	Ferrous Metals	728,494	21.4
12 01 01	Ferrous metal filings and turnings	366,000	10.8
19 12 01	Paper and Cardboard	326,257	9.6
15 01 01	Paper and Cardboard Packaging	237,127	7.0
20 01 01	Paper and Cardboard	189,297	5.6
19 10 01	Iron and Steel Scrap	174,761	5.1
19 12 04	Plastics and rubber	54,658	1.6
03 03 08	Waste From Sorting Of Paper And Cardboard intended for recycling	43,828	1.3
16 01 17	Ferrous Metals	39,863	1.2
Other		325,234	9.6

Source: processed on the basis of WMIS

The most represented LoW number is 17 04 05 (Iron and steel), whose share of export amounts to almost 27%. It was most frequently exported to Germany (25%), Poland (21%) and Italy (20%). The export volume accounts for almost 40% of the Czech Republic's production (exports of category No. 17 04 05: 912,112 tonnes; Czech Republic production of category No. 17 04 05: 2,320,702 tonnes).

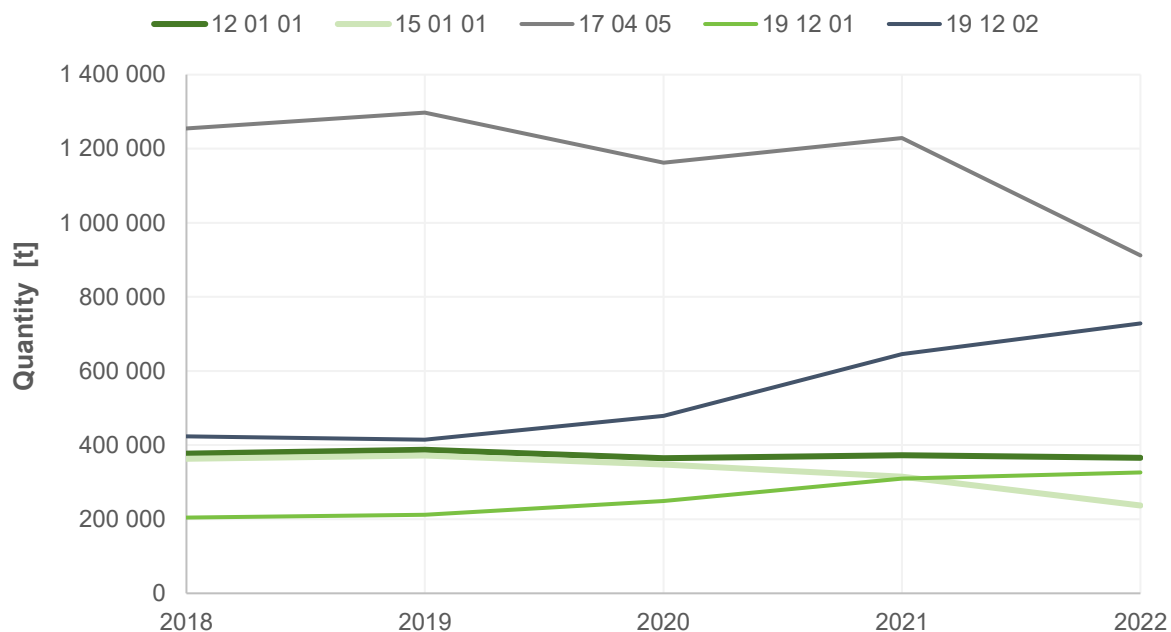
The second most represented LoW number is 19 12 02 (Ferrous metals) with a share of over 21%. It was most frequently exported to Germany (65%) and Austria (14%). The export volume amounts to 76% of the Czech Republic's production (exports of category No. 19 12 02: 728,494 tonnes; Czech Republic production of category No. 19 12 02: 953,577 tonnes).

The third most represented LoW number is 12 01 01 (Ferrous metal filings and turnings) with a share of almost 11%. It was most frequently exported to Italy (45%), Germany (36%) and Poland (13%). The

export volume corresponds to 72% of the domestic generation in the CR (export of LoW number 12 01 01: 366,000 tonnes, generation in the CR of LoW number 12 01 01: 508,048 tonnes). 366,000 tonnes, generation in the CR of cat. no. 12 01 01: 508,048 tonnes).

The development of export of the most represented categories is shown in graph 58.

Graph 58: Development of Export of Waste from the CR by LoW Numbers – Top 5

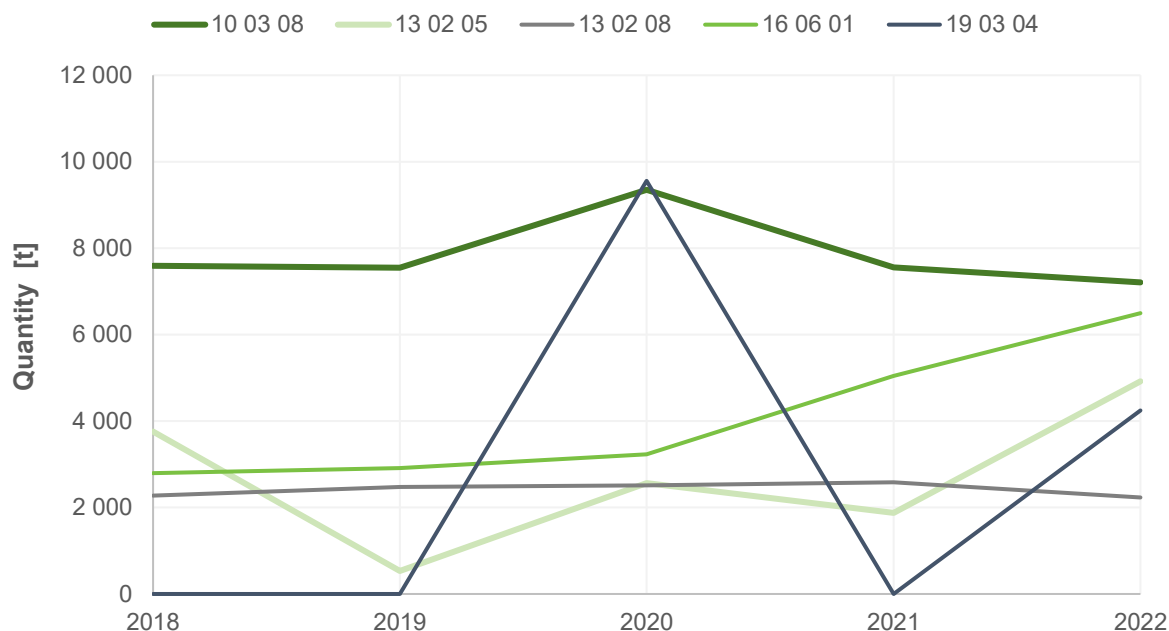


Source: processed on the basis of WMIS

### 2.7.5.1 Export of Hazardous Waste

Export of hazardous waste in 2022 amounted to 30,282 tonnes. Export of hazardous waste in 2022 amounted to 30,282 tonnes. Among the most frequently exported hazardous waste are LoW numbers 10 03 08, 13 02 05, 13 02 08, 16 06 01 and 19 03 04. The development of their export is shown in graph 59.

Graph 59: Development of Export of Hazardous Waste from the CR by LoW Numbers – Top 5



Source: processed on the basis of WMIS

Export of hazardous waste takes place primarily to European states, and in tens of tonnes also to Asia (between 2018 and 2022 solely to South Korea – LoW number 19 12 11). Hazardous waste is most frequently exported to Germany (72%); other frequent countries include Poland and Bulgaria. To other states, hazardous waste is exported only in hundreds of tonnes.

## 2.8 Evaluation of the Implementation of the Waste Prevention Programme

Waste prevention is ranked first in the waste management hierarchy, and compliance with this hierarchy is a legal obligation for both citizens and businesses. The evaluation of the Waste Prevention Programme (WPP) presents conclusions on the fulfilment of preventive measures up to 2022.

The Waste Prevention Programme of the CR up to 2024 includes **one main objective**, “**To prevent waste generation to the maximum extent possible, to reduce waste generation and consumption of primary resources**”, and **12 specific objectives and thirty-three measures** for the fulfilment of these objectives.

The implementation of the Waste Prevention Programme was evaluated with the following conclusions:

### Evaluation

#### 10 out of the 12 objectives are being fulfilled.

- Information support for waste prevention was provided by organisational units of the state as well as by non-profit organisations. Despite awareness-raising activities supported by the MoE, interest in voluntary labels and registrations stagnates. Educational, informational and other activities of the operators of collective systems significantly contribute to the trend of increasing the level of take-back of products with end-of-life.
- Reduction of resource needs is addressed at strategic, legislative, methodological, and investment levels. Significant support is being provided for innovation in the field of waste

management and waste prevention through operational programmes (OP Environment and OP EIC), as well as through TA CR, MoT and MoA programmes.




- Legislation, financing and the activity of the non-profit sector have contributed to reducing food waste generation. The generation of mixed municipal waste is also declining.
- Through the national programme and OP Environment, public administration supports a number of activities and organisations focused on the reuse of products (e.g. establishment of re-use centres, awareness-raising campaigns). The non-profit sector is also active outside the area of such support.
- In the CR, the largest proportion of littering waste by weight is glass (30%), followed by plastic (28%) and metals (19%). The main reason for littering is the absence of infrastructure (e.g. bins). The building of this infrastructure has long been supported through OP Environment.

## 2 out of the 12 objectives are partially being fulfilled.

- The use of secondary raw materials (which may also include critical raw materials) was supported mainly through OP EIC. Support continues in the subsequent OP TAC programme. However, activities specifically targeting the management of critical raw materials have not yet been implemented in the CR.
- Despite the strategic, legislative and investment attention of public administration, it has not been possible to stabilise the generation of construction and demolition waste, in particular hazardous construction and demolition waste.
- The growth in hazardous waste generation has been stabilised. Through the implementation of European legislation, the content of hazardous substances in materials and products is being gradually reduced.

The conclusions of the evaluation were used as one of the sources for the preparation of the new Waste Prevention Programme, which will apply from 2025. A schematic evaluation, including a brief assessment of the individual prevention objectives, is provided below.

Table 66: Evaluation of the Implementation of the Objectives of the Waste Prevention Programme

	<b>Objective No. 1: Ensure comprehensive information support on waste prevention issues.</b>
Information support for waste prevention was provided by organisational units of the state as well as by non-profit organisations. The activities were primarily aimed at the general public and schools, partly also at the business sector. Waste prevention was also the subject of the TA CR research programme.	
	<b>Objective No. 2: Support sustainable production and consumption models, with a focus on products containing critical raw materials (the European Commission considers as critical those raw materials that are of strategic economic importance but cannot be reliably extracted within the European Union and therefore must largely be imported).</b>
The use of secondary raw materials (which may also include critical raw materials) was supported mainly through OP EIC. Support continues in the subsequent OP TAC programme. However, activities specifically targeting the management of critical raw materials have not yet been implemented in the CR.	
	<b>Objective No. 3: Create conditions for reducing the consumption of raw material and energy resources in industrial sectors and support the use of “secondary raw materials” and input-saving technologies.<sup>38</sup></b>

<sup>38</sup> In connection with other strategic documents, in particular the Secondary Raw Materials Policy of the CR.

The reduction of resource needs is addressed at the strategic level (Strategic Framework Czech Republic 2030, Circular Czechia 2040, Update of the Secondary Raw Materials Policy of the CR for the period 2019–2022), legislative level (amendment to the Public Procurement Act of 2021), methodological level (Responsible Public Procurement in a Nutshell and others) and investment level (OP EIC, OP Environment). Through OP EIC and OP Environment, nearly CZK 38 billion was allocated to the reduction of resource needs. The operational programmes thus created strong conditions for reducing material and energy resources in production and supported the use of secondary raw materials.



**Objective No. 4: To support the introduction of low-waste, zero-waste and innovative technologies that save input raw materials and materials.**

Waste management and waste prevention are not the subject of the highest-level innovation strategies of the Czech Republic. The orientation of research and development in these areas is concentrated in the document Circular Czechia 2040. Significant support is being provided for innovation in the field of waste management and waste prevention through operational programmes (OP Environment and OP EIC).



**Objective No. 5: To actively use voluntary instruments.**

During the validity of the Waste Prevention Programme (2014–2023), the MoE carried out a systematic information campaign focused on voluntary instruments and enabled companies, the public sector and individuals to commit to voluntary obligations. The campaign led to a slight increase in interest in voluntary eco-labels and related registrations after a period of relative stagnation. In 2024, the MoE launched new web pages on plastic prevention. Recently, however, interest in voluntary eco-labels and registrations has rather stagnated.



**Objective No. 6: To reduce food waste generation.**

Between 2018 and 2022, food waste generation was reduced by 5 %. This development was facilitated by the introduction of the obligation to donate food, the possibility to donate hot meals and the provision of financial support to food banks. Furthermore, information and awareness-raising activities contributed to food waste prevention, such as the annual Waste Prevention Conference, and, last but not least, initiatives such as “Meals for the Homeless” or the application Nesnězeno.cz. Despite all activities, there remains significant potential for further reduction of food waste – in 2022, 1,081 thousand tonnes of food waste were generated in various stages of the food chain.







**Objective No. 7: To stabilise and subsequently reduce the generation of municipal waste fractions that are not suitable for preparation for reuse or recycling.**

At both central and regional public administration levels, activities are being implemented to reduce the amount of mixed municipal waste. The generation of mixed municipal waste unsuitable for recycling has been continuously decreasing.



**Objective No. 8: Stabilise the generation of hazardous waste, construction and demolition waste, and reduce the content of hazardous substances in materials and products, without prejudice to harmonised legal requirements relating to such materials and products.**

Despite the strategic, legislative and investment attention of public administration, it has not been possible to stabilise the generation of construction and demolition waste, in particular hazardous construction and demolition waste. The growth in hazardous waste generation has been stabilised. Through the implementation of European legislation, the content of hazardous substances in materials and products is being gradually reduced.

	<b>Objective No. 9: To support the activities of charitable centres and organisations, servicing and repair services with the aim of extending the lifespan and reuse of products and materials, in particular electrical equipment, textiles, furniture and construction materials.</b>
Through the national programme and OP Environment, public administration supports a number of activities and organisations focused on the reuse of products (e.g. establishment of re-use centres, awareness-raising campaigns). The non-profit sector is also active beyond the scope of support (e.g. initiatives of re-use centres and furniture banks).	
	<b>Objective No. 10: Stabilise the generation of waste from end-of-life products and strengthen the promotion of waste prevention in the activities of collective systems and systems of take-back products.</b>
Despite the growing volume of end-of-life products placed on the market, it has been possible to increase the level of take-back. Educational, informational and other activities of the operators of collective systems have significantly contributed to this trend.	
	<b>Objective No. 11: Support the active role of research, experimental development, and innovation in supporting waste prevention.</b>
Support for research and development in the field of waste prevention is ongoing. Programmes of TA CR, MoT and MoA play a key role in this area, within which a large number of projects have been implemented.	
	<b>Objective No. 12: To identify products that are the main sources of waste pollution in the terrestrial and marine environment, to adopt appropriate measures to prevent and reduce environmental pollution from these products, and thereby to contribute to the United Nations sustainable development goal aimed at preventing and significantly reducing all types of marine pollution.</b>
<p>In the CR, the largest proportion of littering waste by weight is glass (30%), followed by plastic (28%) and metals (19%). The main reason for littering is the absence of infrastructure (e.g. bins). The building of this infrastructure has long been supported through OP Environment. Between 2014 and 2020, the capacity of containers or bags for separation was increased by 229 thousand tonnes per year.</p> <p>Furthermore, legislation is beginning to come into force (Act on the Reduction of the Impact of Certain Plastic Products on the Environment), which has the potential to significantly influence the reduction of waste generation. The forthcoming amendment to the Packaging Act also addresses the reduction of environmental pollution, preparing, among other things, the framework for the possible introduction of a deposit-return system for PET bottles and cans as of mid-2025.</p>	

**During the period under review, a number of activities were implemented that had a positive impact on waste prevention in the CR:**

- Support for research and development – research focused on prevention was primarily funded by TA CR, and individual research projects were also supported from departmental resources.
- For specific studies (e.g. the use of various materials for carrier bags), the life cycle assessment (LCA) method was used.
- At present and in the future, attention is focused on product lifespan, reusability, repairability and recyclability.
- Extended producer responsibility and eco-modulation instruments are being used, contributing to the reduction of waste generation and waste management in accordance with the waste management hierarchy.

- An amendment to the Public Procurement Act was adopted, obliging public procurers, when assessing tenders, also to take into account the environmental aspects of the public contract. This created an environment for the use of green public procurement for waste prevention.
- The Ministry of the Environment has annually supported non-profit organisations in activities aimed at raising awareness and preventing waste generation.
- The Ministry of the Environment has provided financial support for projects establishing re-use centres in municipalities and towns in the CR.
- The non-profit sector is also active, inter alia, in the field of re-use centres, furniture banks and food banks. In view of the forthcoming legislation (the so-called “right to repair” directive), strengthening of the role of repair services can be expected.

### **Recommendations for the Next Period:**




The evaluation of the fulfilment of the objectives of the Waste Prevention Programme has identified the following areas on which the Waste Management Plan for 2025–2035 and the related Waste Prevention Programme should focus:

1. **Ensuring the systematic management of critical raw materials** (in line with EU Regulation 2024/1252 establishing a framework to ensure secure and sustainable supply of critical raw materials).
2. **Continuing to support waste management topics through operational programmes.**
3. **Prevention of food waste generation.**
4. **Selective demolition and proper separate collection of construction and demolition waste and reduction of the generation of this hazardous waste.**
5. **Compliance with the principles of environmentally responsible public procurement** (e.g. through minimum standards of responsible public procurement).
6. **Support for food banks, furniture banks and re-use centres.**

## **2.9 Evaluation of the Fulfilment of the Objectives of the WMP CR for the Period 2021–2022**

The following chapters evaluate the strategic objectives, objectives for priority waste streams and objectives for specific areas of waste management, as defined in the Waste Management Plan of the Czech Republic for the period 2015–2024 with a perspective up to 2035. Within this chapter, the objectives of the WMP CR are evaluated only schematically; a detailed description of the fulfilment of the objectives is contained in the separate MoE document *“Report on the Fulfilment of the Objectives of the Waste Management Plan of the Czech Republic for the Period 2021-2022.”*

For the evaluation of objectives, the following symbols are used:

-  in the case of this symbol, the objective has not been fulfilled or is not being fulfilled;
-  in the case of this symbol, the objective is partially being fulfilled;
-  in the case of this symbol, the objective has been fulfilled or is being fulfilled.

## 2.9.1 Strategic Objectives

The list and fulfilment of the strategic objectives of waste management in the Czech Republic within the Waste Management Plan of the Czech Republic for the period 2015–2024 with a perspective up to 2035 is as follows.

Table 67: Strategic Objectives of the WMP CR

Strategic Objectives	
	<b>Objective No. 1: Waste prevention and reduction of specific generation.</b>
	<b>Objective No. 2: Minimisation of the adverse effects of waste generation and waste management on human health and the environment.</b>
	<b>Objective No. 3: Sustainable development of society and transition to a circular economy.</b>
	<b>Objective No. 4: Maximum recovery of waste as a substitute for primary resources.</b>

## 2.9.2 Evaluation of the Strategic Objectives and Objectives for Priority Waste Streams of the WMP CR





The evaluation of the fulfilment of the objectives of the WMP CR for the period 2020–2022 showed that by 2022:








- **2 out of 4 strategic objectives were fulfilled.** The Czech Republic has succeeded in minimising the adverse effects of waste generation and waste management on human health and the environment, as it has appropriately designed legislation in this area. Hazardous waste is treated in such a way that its hazardous properties are significantly reduced. The Czech Republic is also moving closer each year to a circular economy, as it has a high share of material recovery of waste. On the other hand, landfilling of waste has been declining in the long term in favour of the aforementioned waste recovery. For almost all end-of-life products, the level of take-back, recycling and recovery has been increasing in the long term.
- **2 out of 4 strategic objectives are partially fulfilled.** The Czech Republic has also been successful in preventing waste generation, thanks also to significant subsidy support from operational programmes (e.g. Operational Programme Environment, Operational Programme Enterprise and Innovation for Competitiveness). Waste prevention is also improving in the area of food waste or end-of-life products. Within the framework of the above-mentioned subsidy programmes, investment projects are also supported, which help to process waste at a higher level of the waste management hierarchy. Waste can thus be used as a substitute for primary resources. Nevertheless, in the coming years, the Czech Republic will need to focus on reducing the share of municipal waste landfilling, given the ban on landfilling from 2030.
- **43 out of 54 main and specific objectives are being fulfilled.** The majority of the waste management objectives of the Czech Republic were successfully fulfilled or are being continuously fulfilled during the period under review. In total, 43 out of 54 objectives were fulfilled. A description of the fulfilment of these objectives is provided in the following table (Table 68).
- **9 out of 54 main and specific objectives are partially being fulfilled.** The partially fulfilled objectives concern in particular the landfilling of mixed waste, biodegradable waste, the achievement of set targets for end-of-life products, and the remediation of environmental burdens.

In most of these cases, however, the Czech Republic is on a good path to fulfil these objectives in the future.

- **2 out of 54 main and specific objectives are not being fulfilled.** During the period under review, the Czech Republic was not successful in increasing the share of energy recovery of mixed municipal waste, mainly due to insufficient capacities of facilities for the treatment of this waste. Nevertheless, during the period under review, several projects of facilities for energy recovery of waste were supported, and therefore the capacity should increase in the future. During the period under review, it was also not possible to increase the share of recovery of hazardous waste, which again relates to the insufficient facility capacities. The Czech Republic plans to invest in the missing facility capacities in the future.

Table 68: Evaluation of Waste Management Objectives for 2021 and 2022

Municipal Waste	
	<b>Objective No. 1: To develop and intensify separate collection of waste for paper, plastics, glass, metals and biodegradable waste. To introduce separate collection of waste (sorted collection) for textile waste by 1 January 2025.</b>
<b>The objective is being fulfilled.</b> The collection network of separately collected waste is being intensified. The number of containers for recoverable commodities (metal, beverage cartons, paper, plastic, glass) increased by 22 % in 2021 and by a further 24 % in 2022. Overall, this represents an increase of more than 280 thousand containers of various sizes over the two years. According to Act No. 541/2020 Sb., on Waste, municipalities are obliged as of 1 January 2025 to designate places for the separate collection of textiles.	
	<b>Objective No. 2: To increase by 2020 to at least 50 % by weight the overall level of preparation for reuse and recycling of waste from materials such as paper, plastic, metal, glass originating from households, and possibly waste of other origin where such waste streams are similar to household waste.</b>
<b>The objective is being fulfilled.</b> Commodities such as paper, metals, glass and plastics were predominantly recycled. This objective was already evaluated in 2020 as fulfilled.	
	<b>Objective No. 3: To increase the level of preparation for reuse and recycling of municipal waste according to the table in the annex.</b>
<b>The objective is partially being fulfilled.</b> In 2021 the recycling rate of municipal waste reached 40 %, in 2022 then 41 %, showing growth, albeit with a slow pace. By 2025, the Czech Republic should reach a level of 55 % preparation for reuse; therefore, the Czech Republic will need to significantly intensify preparation for reuse and recycling of municipal waste. According to the <a href="#">European Commission report</a> , the Czech Republic is nevertheless on track to achieve this target. Achievement is conditional on a significant change in the way municipal waste is managed and an intensification of sorting by inhabitants.	
	<b>Objective No. 4: To reduce by 2035 the amount of municipal waste landfilled to 10 % (by weight) or less of the total amount of municipal waste generated.</b>
<b>The objective is partially being fulfilled.</b> Landfilling remains the most widespread method of municipal waste management, and its share is declining only very slowly. In the coming years, only partial reduction can be expected, due to the anticipated decline in the generation of mixed municipal waste and the increase in separate collection of waste, which is preferentially recycled. A significant reduction in the landfilling of municipal waste will occur only when facilities for energy recovery of waste (FERW or production of fuels by sorting mixed municipal waste with subsequent energy end-use) are put into operation.	
Mixed Municipal Waste	

	<b>Objective No. 1: To reduce the generation of mixed municipal waste per capita.</b>
<b>The objective is being fulfilled.</b> After a significant decrease in per capita mixed municipal waste generation between 2010 and 2015, a very gradual decline followed. A substantial decline in 2022 promises a re-established downward trend as a result of the introduction of a series of measures diverting recoverable fractions from mixed municipal waste.	
	<b>Objective No. 2: Mixed municipal waste (after separation of recyclable and recoverable fractions, hazardous fractions and biodegradable waste) to be primarily used for energy recovery in designated facilities in accordance with applicable legislation.</b>
<b>The objective was not fulfilled in the period under review.</b> Between 2018 and 2022, the amount of energy recovered mixed municipal waste remained practically unchanged. Since 2016, there has been no increase in the capacities for energy recovery of mixed municipal waste in the CR, and therefore no increase in its energy recovery. Only 23.1 % of mixed municipal waste is used for energy recovery. Landfilling dominates the management of mixed municipal waste. A positive change is the commissioning in 2023 of an automatic sorting line in the CR for mixed municipal waste, designed to separate fractions suitable for energy recovery from mixed municipal waste and produce SRF.	
<b>Biodegradable Waste and Biodegradable Municipal Waste</b>	
	<b>Objective No. 1: To reduce the maximum amount of biodegradable municipal waste landfilled so that the share of this fraction in 2020 does not exceed 35 % by weight of the total amount of biodegradable municipal waste generated in 1995.</b>
<b>The objective is partially being fulfilled.</b> This objective was evaluated as already fulfilled by 2020.	
	<b>Objective No. 2: To reduce the amount of biodegradable municipal waste landfilled (from 2021 onwards).</b>
<b>The objective is being fulfilled.</b> In 2021, there was a significant decline in the amount of landfilled biodegradable municipal waste as a result of the revision of the biodegradable content in key streams – mixed municipal waste and bulky waste. In 2021, a total of 817,958 tonnes of biodegradable municipal waste was landfilled; in 2022, the amount was 762,437 tonnes. This represents a year-on-year decrease of 55,521 tonnes.	
<b>Food Waste</b>	
	<b>Objective No. 1: To prevent the generation of food waste and to reduce its quantity at all levels of the food chain.</b>
<b>The objective is being fulfilled.</b> In 2024, the Czech Federation of Food Banks had 15 members. In 2022, food banks managed to redistribute over 11 thousand tonnes of food with a total value of CZK 683 million. Assistance, thanks also to these organisations, reached a total of 313 thousand people, who generally live below the income poverty line. Further support for food banks is foreseen within OP Environment calls.	
<b>Construction and Demolition Waste</b>	
	<b>Objective No. 1: To increase by 2020 to at least 70 % by weight the rate of preparation for reuse and recycling of construction and demolition waste and other types of their material recovery for construction and demolition waste in the category “other than hazardous”, with the exception of naturally occurring materials listed in the Waste Catalogue under catalogue number 17 05 04 (soil and stones).</b>
<b>The objective has been fulfilled.</b> This objective was evaluated as already fulfilled by 2020.	
	<b>Objective No. 2: To increase the material recovery of construction and demolition waste with the exception of soil and stones, spoil and tailings (from 2021 onwards).</b>

**The objective is being fulfilled.** Recycling of construction and demolition waste has long been high; in 2021 it reached 77.8 %, and in 2022 it reached 80 %. Although the recycling rate of construction and demolition waste fluctuates slightly, it has long been around 80 %. The material recovery of construction and demolition waste has long been high and significantly exceeds 90 %. The values are also sensitive to the amount of construction and demolition waste generated in a particular year, its import, export, and also storage. Material recovery reached 98.1 % in 2020, 91.8 % in 2021, and 92.9 % in 2022.

#### Hazardous Waste



**Objective No. 1: To reduce the specific generation of hazardous waste.**

**The objective is being fulfilled.** The generation of hazardous waste in the CR stagnated between 2018 and 2020; in 2021 and 2022, a slight decline was recorded. The specific generation of hazardous waste has also been declining. In 2020 it amounted to 169 kg/inhabitant, in 2021 to 157 kg/inhabitant, and in 2022 to 151 kg/inhabitant. The trend established is positive.



**Objective No. 2: To increase the share of hazardous waste recovery.**

**The objective is not being fulfilled.** The recovery of hazardous waste is declining. For higher recovery of hazardous waste, the development of treatment technologies is essential, enabling the removal of hazardous properties of hazardous waste and thereby allowing its subsequent material recovery. In 2020, hazardous waste recovery reached 25 %, in 2021 it reached 24 %, and in 2022 it reached 21 %.



**Objective No. 3: To minimise the negative impacts of hazardous waste management on human health and the environment.**

**The objective is being fulfilled.** Since 2020, the specific generation of hazardous waste has been slightly decreasing, including per capita generation. Most hazardous waste is treated in such a way as to reduce its hazardousness and its impact on the environment. Hazardous waste is treated either at the point of generation by the holder, or subsequently in other waste treatment facilities. Legislative requirements for hazardous waste management are monitored and enforced by public administration authorities.



**Objective No. 4: To Eliminate Old Environmental Burdens Where Hazardous Waste Is Located.**

**The objective is partially being fulfilled.**

According to data from the Supreme Audit Office (NKÚ), the process of eliminating old environmental burdens has been underway since 1991, and by 2023 more than CZK 66 billion had been spent on it. Between 2018 and 2022, this process did not accelerate, and unless effective measures are adopted, the process of elimination could last until 2042. In 2021, the project “National Inventory of Contaminated Sites (NIKM2)” was completed, thanks to which most contaminated and potentially contaminated sites have been mapped. Within OP Environment calls, financial resources are provided to support the remediation of contaminated sites and risk analyses of potentially contaminated sites.

#### Packaging Waste



**Objective No. 1: To increase total packaging recycling to a level of 70 % by 2025.**

**The objective is being fulfilled.** In 2021, the share of total packaging recycling reached 69.4 %, and in 2022 it reached 71.6 %.



**Objective No. 2: To increase total packaging waste recovery to a level of 75 % by 2025.**

**The objective is being fulfilled.** In 2021, the share of packaging waste recovery reached 77.6 %, and in 2022 it reached 82.0 %.



**Objective No. 3: To increase total packaging recycling to a level of 75 % by 2030.**

**The objective is being fulfilled.** In 2021, the share of total packaging recycling reached 69.4 %, and in 2022 it reached 71.6 %. The recycling trend is increasing every year, and the Czech Republic is thus on the right path to increase total packaging recycling to at least 75 % by 2030.



**Objective No. 4: To increase total packaging waste recovery to a level of 80 % by 2030.**

**The objective is being fulfilled.** In 2021, the share of packaging waste recovery reached 77.6 %, and in 2022 it reached 82.0 %. The share of total packaging waste recovery in the Czech Republic has long been high and increases every year. Already in 2022, the Czech Republic met the objective of total packaging waste recovery of 80 %, which had been set only for 2030.



**Objective No. 5: Ensure recycling rates of 75% for paper/cardboard and glass waste, 55% for metal waste, 50% for plastic waste and 15% for wood waste, and furthermore ensure an overall recycling rate of at least 70% and a recovery rate of 80% for packaging waste by 2020.**

**The objective is partially being fulfilled.** In 2021, the recycling rate of paper and cardboard packaging was 88.4 %, glass packaging 81.4 %, plastic packaging 45.1 %, metal packaging 67.4 %, wooden packaging 39.4 %, and the overall recycling rate reached 69.4 %. The recovery rate reached 77.6 %.

In 2022, the recycling rate of paper and cardboard packaging was 91.2 %, glass packaging 84.6 %, plastic packaging 47.2 %, metal packaging 67.8 %, wooden packaging 36.9 %, and the overall recycling rate reached 71.6 %. The recovery rate reached 82.0 %.

Thus, in 2021 and 2022, the Czech Republic fulfilled the set objective for cardboard/paper, glass, metal and wooden packaging; in the mentioned years it also fulfilled the objective of the overall recycling rate. Only in the case of plastics was the recycling objective not fulfilled in 2021 and 2022. However, the recycling rate of plastic packaging has been increasing since 2021, and the Czech Republic is on the right path to achieving this objective for this commodity in the coming years.



**Objective No. 6: To ensure the separate collection (sorted collection) of 90 % of single-use plastic beverage bottles placed on the market by 2029.**

**The objective is being fulfilled.** The separate collection rate of single-use plastic bottles reached 76 % in 2023. The Czech Republic is thus on the right path to achieving this objective. This trend will be further supported in the future by the introduction of a deposit-return system for single-use plastic beverage bottles.



**Objective No. 7: To ensure the separate collection (sorted collection) of 90 % of single-use plastic beverage bottles placed on the market by 2029.**

**The objective is being fulfilled.** The separate collection rate of single-use plastic bottles reached 76 % in 2023. The Czech Republic is thus on the right path to achieving this objective. This trend will be further supported in the future by the introduction of a deposit-return system for single-use plastic bottles.



**Objective No. 8: Ensure a minimum recycled content of 25 % in PET beverage bottles by 2025.**

**The objective is being fulfilled.** The share of recycled materials used in plastic beverage bottles reached 11 % in 2023, consisting exclusively of PET. The increase in the use of recyclates in this type of product should be accelerated in the coming years by the introduction of a deposit-return system, as well as the adoption of new European legislation, which sets conditions for manufacturers on the use of recycled material in plastic

beverage bottles (revision of Implementing Decision 2023/2683/EC). An increased interest of manufacturers in incorporating recyclates into PET beverage bottles is also expected.



**Objective No. 9: Ensure a minimum recycled content of 30 % in plastic beverage bottles by 2030.**

**The objective is being fulfilled.** The share of recycled materials used in plastic beverage bottles reached 11 % in 2023, consisting exclusively of PET. The increase in the use of recyclates in this type of product should be accelerated in the coming years by the introduction of a deposit-return system, as well as the adoption of new European legislation, which sets conditions for manufacturers on the use of recycled material in plastic beverage bottles (revision of Implementing Decision 2023/2683/EC).



**Objective No. 10: Ensure that, by July 2024, beverage containers with caps and lids made of plastic may be placed on the market only if the caps and lids remain attached to the container during the product's intended use phase.**

**The objective has been fulfilled.** On 31 August 2022, Act No. 244/2022 Sb. entered into force, amending certain acts in connection with the adoption of the Act on the reduction of the environmental impact of selected plastic products. On the basis of this Act, persons placing single-use plastic packaging listed in the Annex to the Act on the market are obliged to place such packaging on the market only in such a way that the cap or lid made of plastic remains attached to the container throughout the intended use of the product.

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



**Objective No. 1: To achieve a 65 % level of take-back of waste electrical and electronic equipment (WEEE) in total for groups 1–6 and at the same time separately for groups 1, 2 and 3 from 2021 onwards.**

**The objective is partially being fulfilled.** In 2021, the take-back level of WEEE in the Czech Republic reached 57.5 %, and in 2022 it reached 57 %. Thus, between 2021 and 2022, the Czech Republic did not achieve the 65 % take-back level in total for all groups of WEEE.

In 2022, the achieved take-back level of WEEE in group 1 was 66.5 %, the take-back level of WEEE in group 2 was 56.5 %, and the take-back level of WEEE in group 3 was 75.5 %. Thus, in the case of WEEE group 2, the required take-back level of 65 % was not achieved, whereas for WEEE groups 1 and 3 the objective was achieved.



**Objective No. 2: Ensure a high level of preparation for reuse, recycling, and recovery of waste electrical and electronic equipment.**

**The objective is being fulfilled.** In 2021, the recovery rate of WEEE reached 91.4 % for group 1, 99.0 % for group 2, 98.0 % for group 4, 94.0 % for group 5 and 105.4 % for group 6. In 2022, the recovery rate of WEEE reached 95.3 % for group 1, 100.2 % for group 2, 93.6 % for group 4, 88.3 % for group 5 and 94.8 % for group 6. In both 2021 and 2022, therefore, the statutory recycling and preparation-for-reuse rate of waste EEE, which is set individually for each group, was achieved.

#### Waste Batteries



**Objective No. 1: To increase the take-back rate of waste batteries and accumulators. To achieve a take-back rate of at least 45 % for waste portable batteries and accumulators from 2020 onwards.**

**The objective is being fulfilled.** In 2020, the take-back rate of waste portable batteries was 48.6 %, in 2021 it was 50.5 %, and in 2022 it was 50.2 %. Thus, in all the mentioned years, the Czech Republic achieved the minimum take-back level of 45 % for waste batteries.



**Objective No. 2: To achieve a high recycling efficiency of waste battery and accumulator recycling processes from 2020 onwards. Specifically, 65 % for lead-acid batteries, 75 % for nickel-cadmium batteries, and 50 % for other batteries and accumulators.**

**The objective is being fulfilled.** In the case of lead-acid batteries, recycling efficiency reached 83.6 % in 2020, 83.0 % in 2021, and 83.8 % in 2022. Thus, in all the mentioned years, the Czech Republic met the minimum recycling efficiency level of 65 %. In the case of nickel-cadmium batteries, recycling efficiency reached 94.1 % in 2020, 94.0 % in 2021, and 93.8 % in 2022. Thus, in the case of nickel-cadmium batteries, the Czech Republic met the minimum recycling efficiency level of 75 %. In the case of other batteries, recycling efficiency reached 61.8 % in 2020, and 65 % in both 2021 and 2022. Thus, also in this case, the Czech Republic met the minimum recycling efficiency level of 50 %.

#### Waste Tyres



**Objective No. 1: To increase the take-back level of waste tyres to at least 65 % in 2020, at least 70 % in 2021 and at least 80 % in 2022 and onwards.**

**The objective is being fulfilled.** In 2020, the Czech Republic achieved a take-back level of waste tyres of 82.3 %, in 2021 of 81.9 %, and in 2022 of 83.6 %. Thus, in all the mentioned years, the Czech Republic met the minimum take-back level of waste tyres and at the same time increased the take-back rate each year.



**Objective No. 2: To achieve a high level of waste recovery in the treatment of waste tyres of at least 10 % in 2021, 15 % in 2022, 25 % in 2023 and 30 % in 2024.**

**The objective is being fulfilled.** In 2021, the Czech Republic achieved a waste recovery rate in the treatment of waste tyres of 99.4 %, and in 2022, by one percentage point less, i.e. 98.4 %. Although the waste recovery rate of waste tyres decreased slightly between 2021 and 2022, it remains generally at a high level, and the Czech Republic is on the right path to continue meeting this objective in the coming years.



**Objective No. 3: To achieve a recycling and preparation for reuse rate of 10 % by 2021, 15 % by 2022, 25 % by 2023 and 30 % by 2024.**

**The objective is being fulfilled.** In 2021, the Czech Republic achieved a recycling and preparation for reuse rate of waste tyres of 65 %, and in 2022 of 68.5 %. Thus, between 2021 and 2022, the recycling and preparation for reuse rate of waste tyres increased by 3.5 %, and it is highly likely that the Czech Republic will continue to meet the set objectives in the coming years.

#### End-of-Life Vehicles



**Objective No. 1: To achieve a high level of recovery in the treatment of end-of-life vehicles (ELVs) – at least 90 % recovery and reuse and 85 % recycling and reuse from 2020 onwards.**

**The objective is partially being fulfilled.** Between 2020 and 2022, the Czech Republic always achieved the minimum required level of recycling and reuse of ELVs. In 2020, the level achieved was 90.16 %, in 2021 it was 91.19 %, and in 2022 it was 89.49 %.

The minimum required level of recovery and reuse of ELV waste was achieved in the Czech Republic between 2020 and 2022 only in 2021 (96.13 %). In 2020 (94.83 %) and 2022 (94.34 %), this level was not achieved. In general, however, the level of recovery and reuse of ELV waste in the Czech Republic is high, and it can therefore be assumed that this objective will again be met in the coming years.

#### Sewage Sludge from Municipal Wastewater Treatment Plants



**Objective No. 1: Promote the material recovery of sewage sludge from municipal wastewater treatment plants, with a particular focus on phosphorus recovery, apply high-quality sludge to soil, and utilise sludge for energy recovery.**

**The objective is being fulfilled.** Sewage sludge is currently managed in a preferred way. Most sludge was applied to agricultural land in 2021 and 2022, with the share remaining at 27 %. Sludge is also composted (recycling and composting amounted to 52 % in 2021 and 46 % in 2022), and about 3 % of sludge is used for energy recovery. Sewage sludge from municipal wastewater treatment plants is not landfilled.

**Objective No. 2: Reduce the content of hazardous substances in sewage sludge from municipal wastewater treatment plants.**

**The objective is partially being fulfilled.** With the advancement of knowledge and new analytical methods, new types of contaminants have been detected, such as residues of pharmaceuticals and personal hygiene products, microplastics and the group of substances referred to as PFAS. The CEVOOH project focused on monitoring the presence of pharmaceuticals in wastewater treatment plant influent and effluent, as documented in its report.<sup>39</sup> In general, when dealing with pollutants, the preferred approach is the elimination of pollutant sources rather than the implementation of costly technologies at wastewater treatment plants. In the case of pharmaceutical residues, the main sources are hospital facilities and social care institutions, together with the management of urine and incontinence products associated with their operation.

**Waste Oils****Objective No. 1: To increase material and energy recovery of waste oils.**

**The objective is being fulfilled.** The recovery of waste oils in the Czech Republic has been increasing in recent years. The recycling of waste oils reached 64 % in 2021 and 57 % in 2022. The energy recovery of waste oils was 11 % in 2021 and 8 % in 2022.

In 2022 there was a slight decrease, and therefore it will be necessary to monitor whether this was a one-off decrease or a trend, and if necessary, to seek appropriate measures to increase recycling and energy recovery of waste oils.

**Healthcare and Veterinary Care Waste****Objective No. 1: Minimise negative impacts of healthcare and veterinary care waste management on human health and the environment.**

**The objective is being fulfilled.** For the management of healthcare and veterinary waste, obligations have been set out in detail under the Waste Act and the new implementing regulation, Decree No. 273/2021 Sb., on the details of waste management. If all rules are observed, not only should the negative impacts of healthcare and veterinary waste management on human health and the environment be minimised, but also the generation of such waste itself.

**Waste Containing Polychlorinated Biphenyls****Objective No. 1: Transfer all equipment and waste containing polychlorinated biphenyls (PCB) to waste management facilities by the end of 2025 and decontaminate PCB-containing waste by that time.**

**The objective is being fulfilled.** According to Act No. 541/2020 Sb., on Waste, owners of equipment containing polychlorinated biphenyls are obliged to hand over such equipment to waste management facilities by the end of 2025. All equipment operated in the Czech Republic as of November 2023 was in compliance with legislation, i.e. the content of polychlorinated biphenyls did not exceed 500 ppm. All locations of such equipment (or companies) were precisely known, and the decontamination of all such equipment was ongoing in accordance with the decontamination plan.

**Objective No. 2: Eliminate waste containing PCB held by waste management facilities by the end of 2028.**

<sup>39</sup> Report on the implementation of WP2.A “Contamination of the Aquatic Environment” for 2023 (2023, CEVOOH). Available [here](#).

**The objective is being fulfilled.** As of 29 March 2023, there were 185 large units of major equipment in the Czech Republic containing more than 5 litres, with a total weight of 64 tonnes. In addition, equipment containing PCBs was located in private facilities of the companies ČEZ Distribuce, a.s. (11,101 units) and E.ON Česká republika s.r.o. (3,230 units). In 2020, there were 17,635 pieces of equipment in the Czech Republic with possible PCB content, so a significant decrease has occurred.

#### Waste Containing Persistent Organic Pollutants (POPs)



**Objective No. 1: Increase awareness of persistent organic pollutants and their effects on human health and the environment.**

**The objective is being fulfilled.** In the Czech Republic, the National Centre for Toxic Compounds operates in the field of persistent organic pollutants, whose main task is to coordinate activities on chemical substances at the national level (based, for example, on the Stockholm Convention). As part of its educational and awareness-raising activities, the National Centre for Toxic Compounds organises the RECETOX Summer School every year, including lectures, workshops and theme-focused events. For the sharing of information on persistent organic pollutants, the National Centre also uses the RECETOX website and a printed and electronic newsletter.



**Objective No. 2: Restrict the input of persistent organic pollutants from waste in accordance with Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants (recast), as amended.**

**The objective is being fulfilled.** In 2021, with the new Waste Act and the implementing regulation Decree No. 273/2021 Sb., on the details of waste management, a reporting obligation on the content of persistent organic pollutants in waste for its holders was introduced. In line with the requirements of Regulation (EU) 2019/1021 on persistent organic pollutants, parameters from waste incineration fly ash are monitored during landfilling. One of the main strategic objectives for the implementation of the Stockholm Convention under the *National Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants in the Czech Republic for 2024–2029* is the elimination of POP inputs into the environment and the reduction of exposure to these substances.

#### Waste Containing Asbestos



**Objective No. 1: Minimise potential negative impacts of asbestos waste management on human health and the environment.**

**The objective is being fulfilled.** In connection with this objective, in 2018 the Ministry of the Environment prepared a *Methodical Guideline for the Management of Waste Containing Asbestos during Construction and Demolition Works and Waste Management*. One of the objectives of this document is to describe a procedure that will lead to minimisation of health risks when handling construction materials containing asbestos and, subsequently, construction and demolition waste containing asbestos. Furthermore, in this area, the Ministry of the Environment prepared the Methodological Guideline of the Waste Department of the Ministry of the Environment for the management of the generation of construction and demolition waste and for its handling. At the legislative level, therefore, a framework has been established for the safe management of waste containing asbestos.

#### Animal By-products and Biodegradable Waste from Kitchens and Catering Establishments



**Objective No. 1: To reduce the amount of biodegradable waste from kitchens and catering establishments and animal by-products in mixed municipal waste originating from households, public catering facilities (restaurants, fast-food outlets) and central kitchens (hospital, school canteens and distribution facilities, and other similar establishments).**

**The objective is partially being fulfilled.** Since 2020, municipalities in the Czech Republic have been legally obliged to provide year-round places for the separate collection of edible oils and fats. Between 2020 and 2022, the MoE focused on awareness-raising activities and increasing knowledge about food waste prevention

and its proper management (e.g. “*Ten Rules on How Not to Waste Food*”). Nevertheless, this type of waste still appears in mixed municipal waste. In the Czech Republic, the network of household and community composters for plant residues expanded between 2020 and 2022, mainly due to financial support from OP ŽP programmes. The number of collection containers for edible oils and fats has also been increasing each year, thereby reducing negative impacts on human health and the environment.



**Objective No. 2: To properly manage biodegradable waste from kitchens and catering establishments and animal by-products, thereby reducing the negative impacts associated with their management on human health and the environment.**

**The objective is being fulfilled.** The generation of waste cat. No. 20 01 08 (Biodegradable waste from kitchens and catering) is increasing, while its recovery is also rising. In managing this waste, it is necessary to proceed in accordance with Regulation (EC) No. 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption, and it is also necessary to comply with permits of the Regional Veterinary Administration. This ensures the reduction of negative impacts on human health and the environment.

#### Waste of Ferrous and Non-ferrous Metals



**Objective No. 1: To process metal waste and end-of-life products into materials to substitute primary raw materials.**

**The objective is being fulfilled.** Waste of both ferrous and non-ferrous metals has long been recycled at almost 100 %, i.e. it serves as a substitute for primary raw materials.

Waste electrical and electronic equipment also exhibits high recycling rates, which in 2022 reached 94.7% for Category 1 WEEE, 100.1% for Category 2 WEEE, 84.2% for Category 3 WEEE, 93.5% for Category 4 WEEE, 86.6% for Category 5 WEEE and 91.5% for Category 6 WEEE.





Waste batteries were also largely recycled in 2022, in particular Group 3 (100.04 %) and Group 2 (92.89 %). For Group 1, about half was recycled (51.23 %), while a large part was exported for processing to EU countries (38.50 %). There is therefore room to increase the share of processing of waste batteries within the Czech Republic.

For waste tyres, the share of material recovery has been increasing every year compared to energy recovery. In 2022, 67.4 % of waste tyres were materially recovered and 29.5 % energy recovered.

In the management of end-of-life vehicles, the Czech Republic also achieved good results in 2022, with reuse and recovery reaching 94.34 % and reuse and recycling 89.49 %.

## 2.9.3 Evaluation of the Objectives of Specific Areas of Waste Management

Table 69: Specific Objectives of Waste Management in the WMP CR

Creating a Waste Management Network	
	<b>Objective No. 1: Create and coordinate a comprehensive, adequate and efficient network of waste management facilities in the territory of the Czech Republic.</b>
<p><b>The objective is partially being fulfilled.</b> The network of facilities is not sufficient for certain waste streams. Capacity gaps were identified for mixed municipal waste, where facilities for energy recovery are lacking; bulky waste, where there is a shortage of collection yards; as well as facilities for mechanical sorting of bulky waste and subsequent material and energy recovery of waste. Capacity is also lacking for handling selected groups of hazardous waste, specifically hazardous waste intended for incineration, where there is a shortage of hazardous waste incinerators, including those for medical waste. An important aspect is also the possible modernisation of existing capacities or the construction of new ones in order to increase their competitiveness; for example, there is a lack of highly efficient and high-performance sorting and re-sorting lines for separating and processing waste to achieve high purity and traceable origin. Secondary raw materials can then enter high-quality recycling in line with the principles of the circular economy.</p>	
Decision-making in the Transboundary Shipment, Import and Export of Waste	
	<b>Objective No. 1: Not to endanger, as a result of the transboundary movement of waste, human health, the environment, and the fulfilment of obligations or binding objectives of the Czech Republic arising from European legislation.</b>
<p><b>The objective is being fulfilled.</b> The transboundary shipment of waste into the Czech Republic is authorised only for the purpose of recovery in facilities operated on the basis of a permit. Similar criteria are applied to the transboundary shipment of waste from the Czech Republic. Regular inspections are carried out to ensure compliance with the rules governing the transboundary movement of waste. The MoE and control authorities cooperate continuously, both within the Czech Republic and with the authorities of neighbouring states, in preventing, detecting and prosecuting illegal shipments of waste.</p>	
Limiting the Illegal Dumping of Waste and Ensuring the Management of Waste Whose Owner Is Unknown or Has Ceased to Exist	
	<b>Objective No. 1: To limit the dumping of waste outside designated areas.</b>
<p><b>The objective is being fulfilled.</b> Since January 2021, Act No. 541/2020 Sb., on Waste, has been in force, clearly defining responsibility for such waste. The Act introduces an obligation for the waste holder or facility operator to remove waste accumulated in the facility in the event of the closure of the facility, and further transfers responsibility for such waste to the new owner of the facility.</p> <p>The creation of illegal dumps is often caused by undisciplined citizens or illegal activities, which can only be eliminated to a limited extent. Nevertheless, awareness-raising has helped to reduce the incidence of illegal dumps. Furthermore, timely interventions by municipalities and, where appropriate, collection companies help to remove illegal dumps, especially in the vicinity of collection sites and clusters.</p>	
	<b>Objective No. 2: Ensure proper management of waste disposed of outside designated places and of waste whose owner is unknown or has ceased to exist.</b>
<p><b>The objective is being fulfilled.</b> Since January 2021, Act No. 541/2020 Sb., on Waste, has set rules for the management of waste deposited outside designated areas. The Municipalities with Extended Competence (MEC) have the option, in the event of the landowner's inaction, to secure, at their own expense, waste that threatens the environment by releasing pollutants into the surroundings, or in the case of illegal waste, to remove it and deliver it to a facility designated for waste management. In 2021, under the National Programme</p>	

Environment (NPE), a call was announced for the removal of illegal dumps with a total allocation of CZK 50 million. A further CZK 166 million was allocated to calls related to the elimination of environmental accidents and illegal dumps. These resources contributed to the quicker removal of certain illegal dumps.

### Reducing the Environmental Impact of Certain Plastic Products



**Objective No. 1: To achieve, by 2026 compared to 2022, a reduction in the consumption of selected single-use plastic products.**

**The objective is being fulfilled.** Decree No. 95/2023 Sb., to the Packaging Act, entered into force in 2023. On the basis of this Decree, the authorised packaging company has a statutory obligation to report data relating to the consumption (i.e. placing on the market) of single-use plastic cups and food containers. The first reporting year is 2023. For 2022, the authorised packaging company provided data on the basis of which a slight decrease in consumption (placing on the market) in both categories of products was assessed.



**Objective No. 2: Not to place on the market oxo-degradable plastic products and selected single-use plastic products.**

**The objective is fulfilled.** In 2022, Act No. 243/2022 Sb., on the Reduction of the Impact of Certain Plastic Products on the Environment, entered into force. According to this Act, neither legal entities nor self-employed individuals may place on the market or distribute selected plastic products defined by this Act or products made of oxo-degradable plastic.



**Objective No. 3: Correctly label selected single-use plastic products on their packaging or on the products themselves.**

**The objective has been fulfilled.** In 2022, Act No. 243/2022 Sb., on the Reduction of the Impact of Certain Plastic Products on the Environment, entered into force. According to this Act, the manufacturer must ensure that each selected plastic product defined by this Act, which it places on the market, is marked on its packaging or on the product itself with a visible, clearly legible and indelible label. This label is intended to provide end-users with information on appropriate procedures for handling such products once they become waste, or on methods of disposing of such waste. Furthermore, the label contains information on the presence of plastics in the product and the resulting negative impacts of disposing of such waste outside designated waste disposal areas on the environment.



**Objective No. 4: To introduce extended producer responsibility systems for selected single-use plastic products.**

**The objective is being fulfilled.** In mid-2024, one extended producer responsibility system was introduced in the Czech Republic, specifically the company NEVAJLGUJ, a.s. This company was established for the purpose of operating a collective system to meet obligations for tobacco products with filters and filters placed on the market for use in combination with tobacco products. In the future, it will be necessary to establish collective systems also for other products subject to Act No. 244/2022 Sb., on the Reduction of the Impact of Certain Plastic Products on the Environment. It is further anticipated that additional extended producer responsibility systems will be established on the market as the range of products covered by extended producer responsibility expands.



**Objective No. 5: To ensure awareness-raising and consumer information and to encourage responsible consumer behaviour in order to reduce the amount of litter from single-use plastic products.**

**The objective is being fulfilled.** In the field of single-use products, several information campaigns have taken place, for example the MoE campaign #dostbyloplastu ("enough with plastic"), or Uklidme Česko ("Let's Clean Up Czechia"), of which the MoE is a partner. Furthermore, for example, a *Case Study was prepared on the transition from single-use to reusable packaging and tableware at farmers' markets on the Prague*

*embankment, as well as a general methodology for farmers' markets in the Czech Republic.* The Ministry of the Environment is currently running a continuous campaign on the “Plastic-Free Czechia” [website](#).

An important element was also the ban on selected single-use plastic products. This reduced both their generation and also the associated discarding outside designated waste disposal areas (littering).

## 2.9.4 Waste Management Indicator System 2022

Indicators are the basic tools by which the state and development of waste management in the Czech Republic are continuously assessed. Quantitative and qualitative indicators make it possible to monitor the fulfilment of the objectives of the Waste Management Plan of the Czech Republic (WMP CR). The Ministry regularly evaluates the Waste Management Indicator System and ensures its updating. For the evaluation of the waste management indicators for 2022, the MoE prepared in 2023 the Methodology of the Waste Management Indicator System. For the calculation of the indicators for 2022, data were used from the agenda Waste Management Information System (new ISOH2), containing data from obliged entities under the Waste Act and the Act on End-of-life Products. The basic quantitative indicators of the Indicator System enable a basic assessment of waste management at the level of the Czech Republic.

Since 2024, the Ministry of the Environment has been publishing key indicators on the website of the Public Waste Management Information System ([VISOH2](#)) in the “Waste Generation and Management in the Czech Republic” section, where these key indicators can be viewed.

## 2.10 Assessment of Waste Management Instruments

To support and achieve the objectives, principles and measures of the WMP CR, selected waste management instruments were applied, which motivated individual entities towards activities desirable for the fulfilment of the principles and adopted objectives. In order to achieve maximum effect, these instruments were combined. When developing the instruments, the principles of the free movement of goods on the EU single market were respected; some of the instruments are embedded in the Waste Act, the End-of-Life Products Act, the Packaging Act, or other related legal acts. The following chapters contain an assessment of the effectiveness of these instruments, as established in the previous plan.

### 2.10.1 Legal Instruments

- a) **The legal framework of the Czech Republic, in particular the set of legal regulations governing the field of the environment, waste and circular economy, and the relevant technical standards.**

The most important legal regulations in the field of waste are:

- Act No. 541/2020 Sb., on Waste,
- Act No. 542/2020 Sb., on End-of-Life Products, and
- Act No. 477/2001 Sb., on Packaging.

Act No. 541/2020 Sb., on Waste, entered into force only on 1 January 2021, i.e. in the second half of the period covered by the previous Waste Management Plan of the Czech Republic 2015–2024 with a perspective to 2035. This Act adjusted a number of obligations in the field of waste management. Compared to the original Waste Act (No. 185/2001 Sb.), for example, it modified the obligations of waste holders (for example, in the field of construction and demolition waste). Furthermore, the Act expressly regulates the issue of waste collection outside designated places (so-called illegal dumps), while charges for participation in the municipal system are newly regulated by the Local Charges Act (No.

252/2023 Sb.) only. The Waste Act also includes changes relating to landfills, e.g. the introduction of different fee levels for different categories of waste, which will furthermore be increased annually until 2030. From 2030 onwards, the landfilling of recoverable waste is to be prohibited, which reflects progress in line with the waste management hierarchy, where landfilling is the last method of waste management. The Act also describes the obligation of municipalities to designate sites for the separate collection of recyclable fractions of municipal waste and sets minimum rates for the use and recycling of such waste. This places higher demands on municipalities in terms of waste separation than before. Data for 2022 show a certain decrease in mixed municipal waste and also an increase in the amount of separately collected fractions of waste. The overall amount of waste also slightly decreased. However, from a one-year decrease it cannot be inferred whether this is a trend or an after-effect of the Covid year. A more detailed assessment of the effectiveness of the Waste Act will be possible with a greater time interval.

Act No. 542/2020 Sb., on End-of-Life Products, also entered into force only on 1 January 2021. This Act separated from the original Waste Act (No. 185/2001 Sb.) selected products and equipment subject to take-back. The purpose of this Act was to clarify the original definition of take-back and to define selected products subject to this regime. The Act newly defines a public take-back point (collection yards, containers, etc.), i.e. a place accessible to every citizen throughout the year during designated opening hours, where an end-of-life product can be returned. The Act also clearly stipulates that no fees may be charged to the end-user for ensuring take-back. Furthermore, the Act addresses, for example, the obligations of the last sellers, the extension of information obligations concerning take-back systems, the setting of minimum levels of take-back and minimum levels of recovery of end-of-life products, and other changes.

Act No. 541/2020 Sb., on Waste, and Act No. 542/2020 Sb., on End-of-Life Products, contain a number of changes compared to the original Waste Act, which reflect the principles of the waste management hierarchy. Since they only entered into force in 2021 and contain a number of transitional periods, with the intended effect only to be achieved after their end, it is problematic to evaluate these instruments at present. The changes in the Acts are not yet visible in the data for 2022, which are the most recent available data, and thus it is not possible to evaluate this instrument quantitatively.

In the course of 2024, Act No. 477/2001 Sb., on Packaging, is being amended. The draft Act is based on a preliminary agreement between the Council and the European Parliament, from which a new EU Regulation on Packaging is expected to emerge. The Czech Republic is preparing this Act in advance, and it is possible that its wording will still undergo a number of modifications. According to the draft Act, in the coming years a deposit system is to be introduced for PET bottles, cans or other single-use beverage packaging. Only packaging registered with the operator of the deposit system should then be permitted to be placed on the market. However, the introduction of a mandatory deposit system has not yet been established legislatively in the European Union. This obligation is envisaged only from 2029. The draft Act thus preliminarily responds to this potential obligation. The aim of the amendment is to support the circular economy, increase the proportion of returned packaging and reduce the quantity of waste generated by the use of single-use packaging. This obligation is not foreseen until 2029.

#### **b) Strategic Documents of the CR**

These are strategic documents related to waste and waste management, or the themes of raw material and energy policies, development and operational programmes which address waste issues, etc. The main documents in the field of waste management are:

- State Environmental Policy 2030 with a perspective to 2050 (approved in 2021),
- Strategic Framework Czech Republic 2030 (approved in 2017, continuously updated),

- Strategic Framework for the Circular Economy of the Czech Republic 2040 – “Circular Czechia” (approved in 2021),
- Raw Material Policy of the CR in the Field of Mineral Resources and their Sources (approved in 2017),
- Update of the Secondary Raw Material Policy of the Czech Republic for the period 2019–2022 (approved in 2019, an Update of the Secondary Raw Material Policy of the Czech Republic for the period up to 2035 is planned), and
- State Energy Policy of the CR (approved in 2015, update in progress).

Strategic documents in the field of waste management exist in sufficient numbers, however, they are long-term strategies, with horizons extending over several decades. For this reason, it is not possible to evaluate these long-term legal instruments, except perhaps documents with a shorter strategic horizon (Raw Material Policy of the CR in the Field of Mineral Resources and their Sources, Secondary Raw Material Policy of the CR, State Energy Policy of the CR), in which, however, waste management is not the main theme. In recent years, subsidies have been used for the transformation of waste management, thanks to which it is now possible to meet some objectives and measures more easily. The key document in the field of waste management of the Czech Republic for the coming years should therefore be primarily this document. The role of strategic documents is above all to guide entities towards a certain vision and to set objectives. The fulfilment of the vision can be assessed on the basis of meeting the objectives. The aforementioned strategic documents fulfil this role.

### **c) Waste Management Plans of the Regions**

The Waste Management Plans of the individual regions of the Czech Republic are strategic documents in the field of waste and circular economy and serve as a basis for further documentation of the regions and municipalities (zoning plans, etc.). The Waste Management Plans are based on the national objectives, principles and measures set out in the national Waste Management Plan. They were also intended to focus on decisions concerning the financing of larger local projects. In this field, the regions have greater local knowledge. In the past, regional WMPs played rather a passive role.

### **d) Exercise of Supervisory Powers of Public Administration**

The obligations in the field of circular economy and waste management established by law are subject to sanctions. However, supervisory activity has long been hampered by a lack of personnel (or expertise) across supervisory authorities. Thanks to the functioning of state administration (e.g. the Czech Environmental Inspectorate), however, there have been improvements in the operation of enterprises and companies in relation to the environment and in proper record-keeping, with a positive impact on waste management planning. Furthermore, ongoing supervisory activity increases the quality of waste management, as it becomes more difficult to circumvent the laws in place, thereby also increasing the preventive effect. Thanks to the supervisory activities of the Customs Administration of the CR and the CEI in the field of transboundary shipments of waste, illegal shipments of waste, e.g. municipal and other waste, are being eliminated. In general, it remains necessary to continue improving the conditions of supervisory authorities and to strengthen the practical implementation of supervisory competences and the enforcement of legal obligations by all concerned authorities. In the 21st century, improving the digitalisation and automation of supervisory mechanisms is also essential.

## **2.10.2 Economic Instruments**

### **a) Landfill Disposal Fee**

The increase in the landfill disposal fee had long been recommended by the European Commission, and the new Waste Act (No. 541/2020 Sb.) has indeed increased this fee. Due to the gradual rise in inflation, the landfill disposal fee had in fact not been increasing. The rate of the fee is set by this Act

and is raised annually until 2030. For recoverable waste, landfilling will be prohibited after 2030, and the gradually increasing fee rate is thus intended to provide an incentive for the progressive reduction of landfilling of such waste. Conversely, for hazardous waste, the fee was reduced, as the level of the fee had led to illegal handling of such waste.

Although it is difficult to evaluate this economic instrument given the short time since the Waste Act entered into force, it can so far be said that the landfill disposal fee (and its increase) is functioning and helping to achieve the objectives and principles set out in the previous WMP CR. In the past, landfilling was essentially the cheapest method of waste disposal, although it ranks lowest in the waste management hierarchy. The increase in the fee has thus made this method of waste management less attractive and has supported the development of technologies handling waste at a higher level of the waste management hierarchy (facilities for energy recovery of waste, re-sorting lines, etc.), some of which have been implemented precisely thanks to the revenue from these fees. Other projects are awaiting a rise in the fee to a higher level in the coming years, after which they will be able to be implemented thanks to the higher revenue from the fees. In the event of changes to other waste management instruments (e.g. emission allowances), it is necessary to ensure sufficient motivation of investors also through responsive changes to the landfill disposal fee.

#### **b) Discount for Municipalities for Landfilling of Municipal Waste**

According to the new Waste Act (No. 541/2020 Sb.), the rate of the fee for landfilling of municipal waste for the fee base of the fee for landfilling of municipal waste is CZK 500 per tonne of waste. After exceeding this amount, the municipality must pay the fee for recoverable waste. Until 2029, municipal waste meeting the conditions of recoverability, the holder of which is the municipality (with the exception of hazardous waste), will be included, instead of the fee base of the fee for landfilling of recoverable waste, in the fee base of the fee for landfilling of municipal waste, provided that the total weight of such waste landfilled in any landfill does not exceed, within the period specified by law, the quantity set out in the annex to this Act. The limit of such waste deposited in landfills is set on a degressive basis in order to support the objective of reducing the landfilling of recoverable waste and thereby the principles of the waste management hierarchy.

Although it is difficult to evaluate this economic instrument given the short time since the Waste Act entered into force, it can so far be said that the so-called discount for municipalities is functioning and helping to achieve the objectives and principles set out in the previous WMP CR. Municipalities seek ways of reducing costs and are generally motivated to reduce the generation of municipal waste. This is linked to the expansion of the separate collection network, not only in terms of the number of collection containers, but also the breadth of commodities that can be separated. The discount therefore has a positive impact for municipalities on the growth of separation and the reduction of the amount of mixed municipal waste landfilled.

#### **c) Extended Producer Responsibility**

Extended producer responsibility is absolutely essential for waste management (in particular municipal). Waste falling under extended producer responsibility is less costly than waste outside this regime. By applying extended producer responsibility, municipalities are motivated, since through the systems of separate collection and collection of this waste (ensured by the authorised packaging company EKO-KOM, a.s.) they significantly save costs, as they are paid contractual remuneration. Although this contractual remuneration usually does not cover 100% of the waste management costs in municipalities, even this possibility of reducing the overall costs for municipalities is significant. It is rare that the full costs of waste management are passed on to citizens. Extended producer responsibility appears to be an important stabilising element of waste management in the face of changing prices and costs in this sector. It is also a significant economic support for municipalities, and for this reason the

application of this principle can be recommended also for other waste streams with a direct impact on municipal budgets.

Given the functioning system of separation, raw materials are also obtained for the production of products from recycled raw materials (or for energy recovery), thus shifting towards more preferred methods of handling within the waste management hierarchy. The increase in the landfill disposal fee and the related discount has had an impact on the growth of investment projects in waste management (sorting, energy recovery) and on the change in perception of waste management (expansion of separate collection systems, door-to-door systems, changes in collection frequency, etc.).

#### **d) Financial Guarantee for Transboundary Shipment**

The Ministry of the Environment uses the financial guarantee to finance alternative recovery or disposal of waste, including the necessary preliminary operations, storage of the waste and transport costs, if the notifier, consignee, or another responsible person fails to fulfil at their own expense all obligations under the Waste Shipment Regulation. The financial guarantee is calculated by the Ministry according to the relevant annex of the Waste Act and must remain valid throughout the entire period of notification of the transboundary shipment of waste and for a further 16 months after the end of the shipment.

This long-standing economic instrument is based on Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste and was already included in the previous Waste Act (No. 185/2001 Sb.). Financial guarantees for transboundary shipment function and help to achieve the objectives, measures and principles set out in the previous WMP CR. The notifier of a transboundary shipment of waste must, within the framework of the shipment, arrange the provision of a financial guarantee with a bank, which will liaise directly with the Ministry of the Environment. This provides the Ministry of the Environment with greater control over these waste flows; it is therefore primarily a matter of monitoring exports due to the responsibility of the state.

#### **e) Financial Guarantee and Insurance of the First Phase of Landfill Operation under the Waste Act**

The financial guarantee and insurance of the first phase of landfill operation were already part of the previous Waste Act (No. 185/2001 Sb.), and thus represent an instrument used for a longer period. The landfill operator has a statutory obligation, before commencing the first phase of landfill operation, to secure financial resources for the first phase of landfill operation by taking out insurance covering liability for damage to the environment, human health and property caused by landfill operation (in the first phase of landfill operation and for damage resulting from the termination of operation during the first phase of landfill operation). The operator is also obliged to deposit an amount in a special account or provide a bank guarantee in the amount of the costs necessary to remedy potential damage, in the amount determined by an expert opinion.

The financial guarantee and insurance of the first phase of landfill operation is a long-standing and effective instrument, which contributes to the fulfilment of the objectives, measures and principles set out in the previous WMP CR. The statutory obligation to secure financial resources for taking out insurance covering liability for environmental damage increases the likelihood that damage to the environment, human health or property will have a secured source of financing should such damage occur or will compensate for damage caused by the termination of landfill operation during the first phase.

#### **f) Financial Reserve for Landfill Reclamation and Aftercare Following Closure**

The financial reserve for landfill reclamation and aftercare following the closure of a landfill is also a long-standing instrument, as it was already included in the previous Waste Act (No. 185/2001 Sb.).

During the operation of the first phase, the landfill operator creates and maintains a reserve to ensure reclamation and subsequent care of the landfill, and for its closure after the termination of the first phase of operation. The operator creates this reserve as part of its costs, while the method of creating and drawing on this reserve is laid down by the Waste Act.

The financial reserve for landfill reclamation and the insurance of the first phase of landfill operation are long-established and effective instruments that help to meet the objectives and principles set out in the previous WMP CR. Financial reserves for landfill reclamation, where firmly linked to the implementation of their purpose (reclamation) and where access to these funds is limited prior to the implementation of that purpose, are a good instrument providing the affected regions with a sufficient degree of certainty that the landfill will indeed be reclaimed and the environment protected.

#### **g) Deposit Systems for Returnable Packaging under the Packaging Act**

Producers in the Czech Republic may, on the basis of their own decision, voluntarily introduce a deposit system for their packaging. In the Czech Republic, a voluntary deposit system for reusable packaging is still in operation; within the amendment to the Packaging Act, which could enter into force in 2025, the introduction of a mandatory deposit system for selected packaging (PET bottles and beverage cans) is envisaged. In the Czech Republic, the voluntary deposit system for glass packaging, based on long-standing practice, has been functioning well for many years.

#### **h) Eco modulation**

Eco modulation is an instrument of the extended producer responsibility system and applies not only to packaging but also to end-of-life products – electrical and electronic equipment, batteries, tyres. Eco modulation enables the fees of extended responsibility systems to be set in such a way as to motivate producers to use appropriate solutions with minimal negative impact on waste management and a positive impact on the circular economy and the environment. The basic principle of Eco modulation is to motivate producers to prefer packaging that has lower collection and recycling costs and is therefore easier to separate and recycle. The calculation of fees takes into account the impact of packaging (and other products) on the environment, recyclability, possible content of hazardous substances and overall material composition of the product.

Although the obligation of Eco modulation is defined by Act No. 542/2020 Sb., on End-of-Life Products, Eco modulation of products is so far applied in the Czech Republic only to a limited extent. Eco modulation is applied in particular in the area of packaging reduction, which is regulated by the Packaging Act. Eco modulation is an effective instrument for increasing recycling; when applied, waste management is also more efficient, as it is not necessary to employ such a large number of technological processes and solutions. A greater impact on producers and application of the principles of Eco modulation is expected only with the entry into force of the Regulation on Packaging and Packaging Waste.

Eco modulation in the Czech Republic became most evident from July 2021, when fees for almost all packaging were increased. Companies paid about one-third more for plastic packaging and metal packaging (cans), while fees were reduced for transparent PET bottles, which are more easily recyclable. These fees are part of the Eco modulation measures arising from the applicable legislation. Eco modulation ensures that the costs associated with the end-of-life of products are included in the price of products and at the same time motivate producers to take into account the recyclability, reusability, reparability and presence of hazardous substances when designing products. The table

below (Table 70) shows that there is a continuous increase in fees for ensuring the obligation of take-back and recovery of waste through the EKO-KOM compliance system, but also an increase in the benefits for producers using packaging made from recyclates. Between 2021 and 2025 the fee for transparent PET bottles made from recyclates even decreased by 18.63%.

*Table 70: Fees for ensuring the obligation of take-back and recovery of packaging (integration of Eco modulation)*

Commodity	Fees per tonne from 7/2021 (CZK)	Fees per tonne from 1/2025 (CZK)	Percentage increase (%)
Composite packaging	11,180	25,212	113.7
Beverage cartons	7,720	7,879	2.1
Coloured PET bottles (for beverages)	8,790	17,970 (9,433 from recycle)	104.5 (7.3)
Cans (aluminium)	3,760	4,017	6.8
Transparent PET bottles (for beverages)	4,070	11,850 (3,312 from recycle)	191.2 (- 18.6)

Source: Authorised packaging company (AOS)

Already during the introduction of the first phase of Eco modulation (increase in fees, see Table 70) in 2021, it was evident that in the following years further gradual changes would occur, depending on the growth of recycling, changes in the prices of secondary raw materials and prices in waste management. The highest increase in fees between 2021 and 2025 occurred for transparent PET bottles made from primary plastics (by 191.18%), mainly due to the decline in their purchase price and the increase in waste collection costs in general. In contrast, for transparent PET bottles made from recyclates, fees decreased by just under 19%. A significant increase also occurred for composite packaging (by 113.66%), which is often non-recyclable, or its recycling is economically unfeasible (soup sachets, spray bottles with plastic caps).

From the beginning of 2023, a further phase of the Eco modulation process can be identified, specifically a further differentiation of fees for packaging. This concerned in particular the distinction of aluminium packaging according to sortability, i.e. the technical feasibility of returning it into recycling. Another part of this phase was a further step in the Eco modulation differentiation of composite packaging from more easily recyclable mono-material packaging. Furthermore, rates were differentiated for the primary and recycled component of PET beverage packaging, based on legislative amendments concerning single-use plastic products. In the coming years, further increases in fees for less recyclable commodities and a general shift towards more recyclable materials (transparent plastic, aluminium) can be expected. With the introduction of a deposit system for PET bottles and beverage cans, an increase in the efficiency of sorting of these commodities is also expected.

#### i) Emission Fee

The emission fee is an instrument that was part of the previous Waste Act (No. 185/2001 Sb.), and is now included in Act No. 542/2020 Sb., on End-of-Life Products, although its amount and method of payment have not changed. The emission fee is paid upon the registration of a road vehicle of category M1 and N1 in the Vehicle Register of the Czech Republic or upon a change of the owner or operator of the vehicle. This fee was intended to prevent the import of old vehicles into the Czech Republic from

abroad and to accelerate the decommissioning of old vehicles which pollute the air most. The collected funds are revenue of the State Environmental Fund (SEF), through which they are distributed among projects contributing to environmental protection in the form of subsidy programmes (support for recycling of materials from the dismantling of end-of-life vehicles, support for infrastructure and the purchase of alternative-fuel vehicles, decarbonisation in general).

The emission fee is a long-standing economic instrument of waste management that helps to achieve the objectives, measures and principles of the previous WMP CR. The effect of the emission fee was to motivate owners of older vehicles to switch to more modern vehicles, which pollute the environment to a lesser extent, through the relatively high amount of the fee. However, the average age of cars in the Czech Republic in 2022 was just under 16 years (the 5th highest in the EU) and continues to increase annually, similarly to the trend across Europe. Although this instrument has not reduced the age of the vehicle fleet in the Czech Republic, it can be considered functional, since its revenue is again used for subsidy incentives in the field of decarbonisation in the Czech Republic.

#### **j) Fines under the Waste Act, the End-of-Life Products Act, the Packaging Act, the Municipalities Act and the Misdemeanours Act**

In the aforementioned Acts, the sanctioning power of supervisory authorities has been strengthened with respect to supervisory obligations. Administrative authorities are also allowed to impose on-the-spot fines and corrective measures without simultaneously imposing a monetary sanction in the case of minor infringements of statutory obligations (for example, administrative offences).

The new Waste Act (No. 541/2020 Sb.) has, compared to the old Act (No. 185/2001 Sb.), increased certain fines for misdemeanours (or reduced the number of categories of misdemeanours) that may be imposed on legal entities or self-employed natural persons. Municipalities may also be fined, for example, for failing to designate a site for the separate collection of biodegradable waste or for failing to meet the share of separately collected recyclable fractions of the total amount of municipal waste. In general, fines and their amounts are a good motivational instrument for public administration to oversee entities operating within waste management. They are also an instrument that helps to achieve the objectives and principles of the previous WMP CR. The biggest problem, however, lies in the enforcement of these fees and the detection of offences, as supervisory authorities of the state administration often encounter insufficient personnel capacity during their supervisory activities.

#### **k) Payments for Municipal Waste**

By the amendment to the Waste Act in 2021, the issue of charging citizens for municipal waste was transferred solely to Act No. 565/1990 Sb., on Local Charges, as amended by Act No. 252/2023 Sb. A municipality may choose either a fee for the municipal waste management system, or a fee for the disposal of municipal waste from a property.

The fee for the municipal waste management system is linked to the permanent residence of persons or the ownership of a property in which no natural person is registered as resident, and which is located within the municipality. The amount of the fee is a maximum of CZK 1,200 and the municipality introduces it at a uniform rate for all taxpayers. The maximum amount of this fee has not been adjusted in relation to the rate of inflation since 2021.

The fee for the disposal of municipal waste from a property is based on the actual quantity of waste generated by citizens, or on the capacity of collection containers ordered for the fee period. The

municipality may set its amount for individual taxpayers with regard to the amount of waste generated by them or the capacity of the collection containers (PAYT system<sup>40</sup>).

In general, the possibility for the municipality to choose the fee is a good step and an effective instrument for fulfilling the objectives and principles of the previous WMP CR, particularly in the case of various PAYT system variants. Precisely PAYT systems may have a motivational effect on citizens, for example towards a greater degree of waste separation, since the fee actually reflects the amount of waste generated. In the CR, the current use of PAYT payments in municipalities is around 20%. The introduction of PAYT systems and, in general, the increase in municipal waste charges were originally accompanied by concerns that the obligation to pay for municipal waste would lead to an increased incidence of sites polluted by waste concentrated outside designated places (so-called illegal dumps). According to the information available as of 2022, this phenomenon has not been occurring to a significant extent, nor can its occurrence be directly linked to the increase in fees, as it may also have other causes. For example, during the Covid-19 pandemic, there was indeed an increase in reports of such sites, but this can also be explained by other reasons – greater movement of citizens in nature and increased awareness of citizens who reported these sites; cleaning of neglected areas accessed by citizens due to more free time and the temporary closure of collection yards, etc. A concern in the case of expanding PAYT systems may be, for example, the scavenging of bins for certain commodities, or the artificial increase in the weight of the collected volume of waste in situations where citizens are financially motivated. The ideal scenario is thus to base the municipal waste charge on the size of the collection container or on the frequency of waste collection.

#### **l) Support with the SEF CR**

Through the State Environmental Fund of the Czech Republic (SEF), the Ministry of the Environment provides significant support for projects in the field of waste management. Various instruments (loans, subsidies) directed to waste and circular economy are used, aimed at progress within the waste management hierarchy.

Subsidy support from the SEF is indeed a significant form of support in the field of waste management in the Czech Republic and can be considered a very effective instrument contributing to the fulfilment of the objectives and principles of the previous WMP CR. The overall effect of subsidy programmes (for example, the Operational Programme Environment) can be described as very positive, since a large number of projects focused on primary and secondary sorting, material or energy recovery of waste, prevention of waste generation, development of the waste collection and treatment network, reclamation of old landfills and environmental burdens (including their inventory), and others were supported on the basis of subsidy calls, all of which had a positive impact on progress in the waste management hierarchy. From the Operational Programme Environment 2021–2027, in the field of waste management, by the first quarter of 2024 almost 500 projects had been supported, aimed in particular at waste prevention, construction and modernisation of collection yards and separate collection systems, or composters. This support exceeded CZK 2.4 billion (of which almost CZK 250 million were already completed projects). In the previous period of the Operational Programme Environment (2014–2020), a total of 2,851 waste management projects were supported, amounting to a total of CZK 8.5 billion. A problem that is also typical for the subsidy area in general is the granting of different percentages of support to identical projects (state aid) and the preferential treatment of certain types of projects, which affects the competitive environment. On the part of applicants, a number of projects are also motivated by the prospect of investment subsidies.

#### **m) Funds from the State Budget**

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<sup>40</sup>From English Pay as you throw – pay for what you throw away.

In terms of financial volume, the state budget is an important central source of environmental financing. It provides resources primarily for the co-financing of environmental protection projects supported by European Union funds, subsidies, repayable financial assistance (interest-free loans), investment incentives and guarantees for commercial loans; it also provides transfers of financial resources to regional budgets and to the State Environmental Fund (SEF).

Funds from the state budget are one of the key economic instruments supporting waste management, through which the objectives, measures and principles set out in the previous WMP CR are fulfilled. In the field of waste management, it is essential that resources to support the environment within the state budget continue to increase. This is because in the field of the environment it is constantly necessary to respond to regulations, directives and delegated acts issued at the level of the European Union, the implementation of which also entails necessary investments. The evaluation of the individual specific instruments into which state budget resources are redistributed is explained separately within this chapter.

#### **n) Expenditure from Regional Budgets**

On the basis of the principles of subsidiarity, finances from regional and local budgets are another important source of waste management financing. These budgets are mainly used to cover smaller-scale activities.

Within the framework of subsidiarity, some subsidy titles aimed at less financially demanding projects are redirected to lower self-government levels (regions, municipalities). This process appears effective, as within subsidy programmes aimed at financially demanding projects the administrative burden is reduced. In the context of waste management, it is crucial that the state budget continuously increases the funds for environmental support. Subsidy titles are then managed by the regions or municipalities, which possess more detailed local knowledge and can better set the conditions of these titles so that they better correspond, for example, to regional Waste Management Plans.

#### **o) Support from EU Programmes and Funds**

The Czech Republic draws financial resources from European Union funds, which form the basis of European structural policy and contribute to supporting balanced and sustainable development of all countries. This concerns in particular the Operational Programme Environment 2021–2027 (and the previous programme for 2014–2020), from which activities are supported in important investments for the development of the waste management sector, for fulfilling the objectives of the Waste Management Plan of the Czech Republic and for fulfilling commitments towards the European Union to strengthen waste management in line with the waste management hierarchy. For the so-called “coal regions” (Karlovy Vary, Moravian-Silesian, Ústí nad Labem Regions) there is the possibility of using the Operational Programme Just Transition, under which waste management projects can also be supported. Other possible options in this field include the Modernisation Fund or the Innovation Fund.

Support from the Operational Programme Environment, which is managed by the SEF, has already been mentioned separately within this chapter, and it is the key economic instrument in the field of waste management in the Czech Republic. The Operational Programme Just Transition targets rather digitalisation, innovation and support for small and medium-sized enterprises; support for waste management under this programme is therefore more marginal, though possible. Another possible support from EU programmes is the Operational Programme Technology and Applications for Competitiveness, which focuses on supporting projects in the field of research, development and innovation, digitalisation and digital infrastructure, business development, smart and sustainable energy and circular economy. One of the priorities of the programme is more efficient resource management, with a sub-priority being support for the transition to a circular economy. The total allocation of this

programme is CZK 81.5 billion, and by the first quarter of 2024 one call had been announced for the support of circular economy projects with a total allocation of CZK 1 billion. In the field of development and innovation of new waste management technologies, the Operational Programme Enterprise and Innovation for Competitiveness may also be used by waste management actors. In general, the above-mentioned instruments (especially the Operational Programme Environment) are excellent tools that help to fulfil the objectives, principles and measures set out in the previous WMP CR by implementing projects in the field of waste management. In addition to smaller projects focused on awareness-raising in the field of waste management, projects are implemented under these programmes which would have no chance of being realised without the existence of these programmes.

#### **p) Taxation of Primary Raw Materials, Tax Measures and Reliefs**

Since 2021, by Act No. 609/2020 Sb., amending certain tax laws, a reduced rate of value added tax (15%, originally 21%) has been introduced for the activity “38.3 Processing of municipal waste for further recovery, secondary raw materials.” The reduced rate of value added tax on waste processing was intended to promote greater utilisation and recycling of waste. In 2020, the value added tax was also reduced to 10% for services such as shoe and leather goods repairs, clothing and textile repairs and alterations, bicycle repairs and book lending (from the original 21%), although this is no longer the case. The reduction in the tax rate was intended to contribute to prolonging the lifetime of products and to waste prevention. In the past, consideration was also given to reducing tax on the repair, renovation and modification of other products, or to introducing further tax incentives for products with a specific content of recycled material, with the aim of stimulating demand for recyclates.

Although tax instruments may be effective tools for helping to achieve the objectives and principles of the previous WMP CR, the effect of the reduction in value added tax for selected types of services is difficult to assess. Only a short time elapsed between its introduction and its termination for the effect to become evident in the data. Moreover, the period during which the reduced tax rate applied was significantly affected by the Covid-19 pandemic, which may have distorted the data. In 2024, within the framework of the above services (and municipal waste processing), the value added tax returned to its original level of 21% as part of the consolidation package.

#### **q) Additional Support and Subsidies**

In order to identify more effective ways of supporting waste management, working teams are being established that generate knowledge, monitor current trends and seek solutions, for example the Centre for Environmental Research (CEVOOH). This centre consists of a consortium of eight research organisations and universities and is focused on conducting research in thematic areas related to the transition of the Czech Republic from a linear to a circular economic model. The project is divided into work packages that target different areas of waste management. The project is supported under the departmental programme of the Ministry of the Environment “Environment for Life”. The administrator of this programme and the provider of support is the Technology Agency of the Czech Republic (TA CR). Within this programme, other projects of public interest are also supported, aimed at new procedures, environmental technologies and eco-innovations (with high potential for rapid application in practice as well as supporting more time- and knowledge-demanding solutions based on long-term monitoring of social, natural and climate changes). Among the main priorities are, inter alia, waste management and the circular economy. The support of research projects in the field of waste management, both in the short and long term, is an important tool of waste management that significantly contributes to fulfilling the objectives, measures and principles of the previous WMP CR. Given that the Environment for Life programme has been in operation only since 2020 (until 2026), it is appropriate to evaluate its outputs after a longer time interval. The main criterion for the success of this programme, however, should be the applicability of research outputs in the practice of waste management.

Since 2019, the Ministry of the Environment has annually launched a call for the support of non-governmental non-profit organisations active in the field of environmental protection and sustainable development. Within these calls, more than seventy projects have already been supported, focused mainly on promotion and awareness-raising in the field of waste management and on minimising waste generation, preventing waste generation and the transition to waste management. These projects are successful and provide a valuable service in terms of raising awareness of waste management – for example, projects sharing examples of good practice, awareness-raising in the field of composting, food or furniture bank projects and others.

### **2.10.3 Administrative Instruments**

#### **a) Ensuring Uniform Performance of State Administration in the Field of Environmental**

The unification of state administration performance has been significantly facilitated by new legislation in the field of waste management, in particular Act No. 541/2020 Sb., on Waste, Act No. 542/2020 Sb., on End-of-Life Products, and also, for example, Decree No. 273/2021 Sb., on Details of Waste Management. The entire waste management sector will also be significantly influenced by the amendment to the Packaging Act (No. 244/2022 Sb.)

The aforementioned administrative instruments (and many others) are key tools in the field of waste management and already have a considerable impact on the development of waste management in the Czech Republic and on the fulfilment of the objectives, measures and principles of Waste Management Plans. The evaluation of their impacts will continue. In the future, these instruments will certainly be updated (amended) in response to developments in waste management.

#### **b) Raising the Professional Competence of Public Administration Staff in the Field of Waste Management**

The professional training of public administration staff in the field of waste management is continuously ensured by the state administration. Training cycles and examinations of professional competence of officials in the field of waste management take place several times a year. Employees of authorities in the field of waste management take an examination in technical environmental protection pursuant to the Civil Service Act.

Long-term continuous professional training of staff of the Ministry of the Environment and other public administration authorities in the field of waste management is an important administrative instrument, for example in inspection activities. Individual approaches of officials of administrative authorities are eliminated by methodological communications, guidelines and instructions, and by the continuous improvement of educational materials. Methodological meetings are regularly held between higher and lower authorities.

#### **c) Strengthening the Powers of the Czech Environmental Inspectorate and Other State Administration Control Authorities**

Ensuring optimal conditions for the effective performance of inspection activities, through sufficient personnel capacity as well as financial and technical resources, is necessary also for other state administration control authorities (for example, the Czech Environmental Inspectorate (CEI)). In general terms, the CEI operates at an excellent level. A unified approach in all regions is supported through regular training and close communication between the CEI Directorate, the MoE and regional inspectorates.

#### **d) Green Public Procurement**

By Act No. 543/2020 Sb., amending certain laws in connection with the adoption of the Act on End-of-Life Products, the principles of socially responsible procurement, environmentally responsible procurement and innovation were implemented into the Public Procurement Act.

Green procurement is gradually gaining ground in practice. A positive impact is, for example, the Operational Programme Environment, where green public procurement provides a bonus in the intensity of support. The pressure towards carbon neutrality also causes contracting authorities to focus more on the origin and sources of the subject matter of the contract. This instrument can be evaluated as a very positive and effective means for the development of the circular economy and the improvement of environmental protection.

**e) Supporting Desirable Activities Leading to Waste Prevention, Reduction of Its Quantity and Hazardous Properties, Preference for Products from Recycled Materials and Environmentally Friendly Products**

Within this instrument, methodological guidelines have been developed to help direct waste prevention and waste management in accordance with the requirements of the waste management hierarchy.

Preventive activities are also supported through subsidy programmes, such as the Operational Programme Environment (OPE). Previously specific objective 3.1. of OPE 2014–2020, now measure 1.5./1-1.5.4 within OPE 2021–2027. Furthermore, preventive activities were supported through the Operational Programme Enterprise and Innovation for Competitiveness and now through the Operational Programme Technology and Applications for Competitiveness. Preventive activities can also be supported through programmes of the Technology Agency of the Czech Republic or through the programme National Environment Programme. A wide range of instruments exist and have been used to support desirable preventive activities.

**f) Environmental Education, Training and Awareness-Raising**

Environmental education (hereinafter also EEAR) is conducted at a good level. It takes place at several levels and through various entities. There are programmes, courses and events organised directly by central organisations such as the Ministry of the Environment, the State Environmental Fund and other institutions. Furthermore, education is carried out through universities and schools and accredited courses. Many activities are provided through non-profit organisations or private entities.

EEAR has a significant impact when the youngest children and adolescents are involved. Acquiring habits of environmental protection already in childhood has the greatest chance of knowledge acquisition and their adaptation also in adulthood. Various activities of civic associations on a voluntary basis can also be observed. Equally important within EEAR are activities that are not primarily educational events, but which also have an educational effect. EEAR is also important for foreign nationals who study and work here.

**g) Professional Support for the Performance of State and Public Administration**

The professional support for the performance of public administration has significantly improved. Several information systems have been created or modernised. A new modernised Waste Management Information System ISOH2 has been launched, the TIRAMISO application for forecasting waste generation has been developed, as well as CEVOOH (Centre for Environmental Research), all of which provide significant support for the performance of public administration as well as for the private sector. Other professional needs are addressed primarily through public procurement within the programmes announced by the Technology Agency of the Czech Republic (TA CR) or through public procurement under the Public Procurement Act.

**h) Support for Research, Experimental Development and Innovation**

Support for research, development and innovation (hereinafter “RDI”) leads, in the long term, to reducing the negative impacts of human activities on the environment, to ensuring remediation and to monitoring the environment. Since 2011, the Technology Agency of the Czech Republic (TA CR) has played a significant role in providing targeted support for applied research and development, including in the field of waste management and the circular economy. TA CR ensures the preparation and implementation of applied research, development and innovation programmes, including programmes for the needs of state administration, public competitions in research, development and innovation to support projects, and the awarding of public contracts. Specific areas for support of RDI in the field of the environment, including waste management and the circular economy, are set out in the RDI Concept of the MoE<sup>41</sup> and are further applied within the programme Environment for Life.

#### **i) Waste Management Council**

On the basis of recommendations arising from previous Waste Management Plans, the Waste Management Council was established as an inter-ministerial advisory body to the Minister of the Environment. This body coordinates waste management planning at the national level, discusses proposed measures to support the implementation of the Waste Management Plan of the Czech Republic (WMP CR) and submits proposals for addressing waste management issues. The Council is envisaged to continue operating in the next period.

### **2.10.4 Information Instruments**

#### **a) Information Concept of the Ministry of the Environment**

The Information Concept of the MoE, based on the current situation, defines its own objectives in the field of quality management and the security of managed information systems of public administration (hereinafter “ISVS”). It also sets out the general principles for the acquisition, creation and operation of ISVS so that these objectives and principles are in line with the Information Concept of the CR and so that the information systems acquired, created and operated by the MoE are gradually brought into compliance with them. Information systems currently serve to support public administration and to inform the public.

#### **b) Communication Strategy for Waste Management**

Information in the field of environmental protection and waste management is available on the Ministry’s websites, on the websites of departmental organisations and through specialised information systems. Within the communication strategy of the Ministry, media campaigns are used to promote proper municipal waste management, focusing on the active involvement of the population in sorting and recycling and the positive perception of municipal waste recovery. The campaigns also promote increased take-back of end-of-life products and, more generally, waste prevention. Comprehensive communication campaigns are prepared by the Regions in connection with real regional waste management solutions. The communication strategy is prepared in accordance with the State Programme of Environmental Education, Training and Awareness-Raising and Environmental Counselling for the years 2016–2025. The programme involves Regions, municipalities, towns, schools, non-profit organisations, educational institutions and others.

#### **c) Unified Environmental Information System (UESIS)**

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<sup>41</sup> The updated Research, Development and Innovation Concept of the Ministry of the Environment for the years 2016 to 2035, with a perspective to 2050, was approved by Government Resolution of the CR of 1 February 2023 No. 82.

The Unified Environmental Information System (JISŽP) represents a set of specialised information tools of the Ministry of the Environment; however, it still remains only a theoretical concept. Unfortunately, the development and implementation of the unified information system has not yet been achieved, despite the fact that it is required under Act No. 2/1969 Sb., on the Establishment of Ministries and Other Central Bodies of State Administration. At present, therefore, several dozen independent information systems and databases operate within the Ministry of the Environment, which are not necessarily interconnected. The unification of information systems and databases and the digitalisation of processes within authorities are key prerequisites for increasing the efficiency of state administration bodies in general, which can significantly reduce the administrative burden and relieve the already limited personnel capacities.

#### **d) Integrated Reporting System (IRS)**

IRS represents a unique system that is a very effective tool for data collection in the field of waste management. Through this system, the MoE ensures the collection of information on the generation and management of individual types of waste according to catalogue numbers, by waste holders and facilities for waste management, as well as other data.

#### **e) System for the Registration of Hazardous Waste Shipments (SEPNO)**

The System for the Registration of Hazardous Waste Shipments (SEPNO), which was launched in 2018, is a separate module of the Integrated Reporting System (IRS), providing services for the receipt and processing of Notification Forms of Hazardous Waste Shipments in electronic form and their further provision to the relevant state administration institutions. This system has contributed to streamlining and clarifying the agenda of hazardous waste shipments through the digitalisation of processes. The introduction of the system has also reduced the administrative burden on obliged entities and enabled more efficient and faster control of hazardous waste management by public authorities, as the situation can be monitored in real time.

#### **f) Hazardous Waste Properties Assessment (HNVO)**

The HNVO system, serving for the receipt of applications for the assessment of hazardous waste properties and for the provision of evaluations to applicants and state administration authorities, is fully operational. The system also provides contact details of authorised persons, including a list of which properties they are authorised to assess under the Waste Act.

#### **g) Waste Management Information System (WMIS)**

The Waste Management Information System (WMIS) is an important tool for handling data on waste management. The data make it possible to monitor waste generation and its management. The system also serves as a conceptual solution for the permitting process of facilities in waste management. Information is also collected on extended producer responsibility systems, authorised packaging companies, packaging waste and end-of-life products. An important step was the development of the new modern version WMIS2.

#### **h) System of Public Hearings within the EIA/SEA Process**

The EIA/SEA tool is very important for environmental protection. The system serves to keep records of the projects and concepts under assessment and to publish documents related to the environmental impact assessment process. The tool is also important for the public, as it provides access to information on any submitted project. The system may also serve as a certain safeguard for the parties concerned in individual proceedings, as it enables them to identify proceedings that affect them and to express their views.

#### **i) Integrated Pollution Prevention and Control Information System (IPPC)**

The Integrated Prevention Information System serves to ensure all obligations related to the publication of information and public access to information under the Integrated Prevention Act. The system enables the public to obtain the widest possible overview of individual permitting processes and, where appropriate, to participate in proceedings. The Integrated Prevention Information System provides an overview of ongoing proceedings and a database of all issued integrated permits. The system thus excellently fulfils its informational role and functions as a safeguard for the public, enabling citizens to submit comments on permitted sources of pollution.

#### **j) Other Information Systems of the Ministry of the Environment and Other State Administration Authorities Intended for Public Information**

Information on the environment is also published, for example, on social networks and the websites of other public administration authorities, which mostly take it over from the MoE, or as part of the agenda within their competences.

### **2.10.5 Voluntary Instruments**

#### **a) Voluntary Agreements in the Field of Waste Management, the Circular Economy and Other Related Areas**

Voluntary agreements are a very effective tool. The behaviour of consumers, traders or industry, on the basis of a voluntary agreement, may even precede legislative standards and instruments and thus contribute to their creation.

A very good concrete example of a voluntary agreement was the initiative “Enough of Plastics”, aimed at reducing the amount of single-use packaging and tableware. The aim of this campaign was primarily to prevent waste generation. Another example is “Responsible Shopping”, where the objective was to motivate the public, public as well as private entities to change consumption habits and prevent waste generation.

#### **b) Environmental Management Systems Improving the Quality of Activities of Waste Management Entities**

The basic voluntary instruments applied in the CR are environmental management systems that improve the quality of activities of waste management entities. The most widespread environmental management system is according to the international standard ISO 14001 or the EMAS system, for which a national programme has also been adopted. The MoE will therefore continue to support the implementation of the EMAS Programme. An excellent example is also the requirement for the implementation of EMAS or ISO 14001 in certain subsidy titles.

#### **c) Corporate Social Responsibility (CSR)**

In the context of the European Green Deal, Fit for 55 and other European activities, the pressure on companies is growing not only in the area of environmental sustainability but also in the area of social responsibility. Thanks to the power of social media, companies place strong emphasis on CSR activities and thereby improve their PR. This naturally has a positive impact on the environment, as many activities are genuinely beneficial. A certain risk, however, is posed by well-intentioned activities that do not have a sustainable impact, or which are directly an example of greenwashing. It is therefore important in CSR to implement only those activities that have a real and positive impact on society and the environment.

#### **d) Ecolabelling**

A number of positively perceived labels (ecology, recyclability, etc.) have been created which influence the perception of citizens as consumers. With the development of information campaigns, awareness and demand for ecological products are also increasing. The danger, however, is greenwashing, where

some products are labelled as ecological but in reality are not. It is therefore appropriate to focus further on education in this area.

### e) Life Cycle Assessment (LCA) and Environmental Product Declarations (EPD)

An important tool is life cycle assessment (LCA) and, deriving from it, the calculation of the carbon footprint not only of products but of entire production processes. The environmental product declaration is a tool for the transparent declaration of the properties of a product to the customer, serving to present the actual impacts of the product on the environment. Although it is a set of measurable information on the environmental impact of products throughout their life cycle, it remains a voluntary tool. Recently, this tool has been increasingly used, especially in the field of construction products, with regard to the growing use of building certifications or the processing of the carbon footprint of buildings, as well as new regulations in the field of construction.

## 2.11 Evaluation of Specific Areas of Waste Management

### 2.11.1 Waste Deposited Outside Designated Sites

#### Legal Regulation

The management of illegally accumulated waste is regulated by the Waste Act. If the owner of waste accumulates waste illegally, the Act obliges him to hand it over to a facility designated for waste management or to a waste trader. In the case of waste that is illegally accumulated on land where the owner of the land is not also the owner of the waste (generally referred to as “illegal dumps”), the landowner must inform the relevant Municipality with Extended Competence (MEC). The MEC then attempts to identify the waste owner. If the waste owner cannot be identified, the MEC municipal office calls upon the landowner to remedy the situation. If the landowner fails to provide a remedy, the authority may order the landowner to secure the site against further waste accumulation, or it may itself secure the waste or transfer it to a facility designated for waste management.

Waste management may also be regulated through generally binding ordinances issued by territorial self-governing units in the exercise of their independent competence.

#### Illegal Dumps – Current Situation

The primary objective is to prevent the delivery of additional waste and to ensure the fastest possible removal of waste deposited outside designated sites. This minimises the impact on the environment and at the same time reduces the costs of removal through the timely implementation of preventive measures (e.g. barriers preventing entry onto the land). As these illegal dumps often arise in remote locations, in the vast majority of cases it is not possible to identify the originator of such waste. Illegal dumps are created by residents and often by self-employed individuals and legal entities seeking to save costs on waste removal.

The burden of removing such waste therefore often falls on municipalities, with the associated costs representing significant amounts. In 2022, for example, the costs incurred by municipalities for the removal of illegal dumps amounted to approximately CZK 10.2 per inhabitant. Unit costs have ranged between CZK 10 and 12 per inhabitant over the past five years.

Most municipalities deal with littering (illegally disposed scattered waste) through the following activities:

- Organisation of clean-ups (3,348 municipalities)
- Awareness campaigns (1,777 municipalities)
- Information on litter bins (820 municipalities)
- Fines for littering (320 municipalities)

- Other tools and measures (327 municipalities)

The removal of waste deposited outside designated sites can also be supported by citizens themselves, who may submit a notification to the relevant municipality in which the illegal dump is located, e.g. via e-mail, SMS, the municipal website, a data mailbox (with an attached photograph of the site) or by other means. The mere submission of a notification does not automatically mean the initiation of administrative proceedings ex officio; however, as part of the notification the citizen may submit a request for information, which obliges the competent authority to inform the citizen of the status of the matter.

In specific cases, and depending on the degree of threat to the environment or human health, notifications are submitted to other competent authorities (CEI, Police of the CR, Fire Rescue Service), depending on the size or location of the dump

Various commercial applications used by municipalities themselves for communication with citizens (MUNIPOLIS, ZmapujTo.cz, etc.) may also be used to report illegal dumps

Municipalities with Extended Competence and municipalities annually deal with and remove around 5,000 illegal dumps on the basis of notifications

The MoE has long been addressing the issue of illegally accumulated waste, i.e. waste deposited outside designated sites in unauthorised “illegal dumps” Within the National Programme Environment (NPE), the MoE, through the State Environmental Fund of the CR (SEF), regularly announces subsidy calls for municipalities to support the removal of “illegal dumps”. These are projects where the polluter is unknown, including ensuring proper waste management in accordance with Act No. 541/2020 Sb., on Waste. A new NEP subsidy call No. 9/2024 to support municipalities in the removal of illegal dumps, with a total allocation of CZK 50 million, will be announced in mid-2024.

### Causes and Possible Solutions of Illegal Dumps

One of the main reasons leading to the emergence of illegal dumps in the Czech Republic is the influence of the human factor. This issue is related to insufficient public awareness regarding responsible waste management and awareness of the consequences of illegal waste disposal In this context, the insufficient effectiveness of enforcement and punishment of illegal behaviour also plays a role, creating the impression that the disposal of waste outside official collection sites may occur without sanctions In the Czech Republic, the large number of recreational properties, particularly cottages and weekend houses, which are often not easily accessible for regular waste collection or where owners face difficulties in handing over waste to collection yards, also contributes to the creation of illegal dumps Illegal dumps are often also made up of illegally disposed of business waste or construction waste, where the motivation of small entrepreneurs is to save money on legal waste management These specifics encourage illegal waste disposal in remote locations, complicating inspection and monitoring measures.

A specific area within the issue of illegal dumps is the problem of temporary waste storage around collection sites and containers within urban areas. The regular removal of these illegal dumps once again represents an increase in costs for municipalities and thus contributes to the need to increase local fees for municipal waste management systems in municipalities.

The main **problematic areas** can be considered as follows:

- Lack of discipline among some citizens in the proper method of waste management, often resulting from poor socio-economic conditions (linked to unemployment in the region).
- Insufficient awareness and ineffective development of resident education programmes at municipal level, including support particularly in the form of financing these programmes.

- Inadequate funding for the removal of illegal dumps due to very limited municipal financial resources.
- Insufficient performance of preventive inspection activities by municipalities and Municipalities with Extended Competence aimed at waste holders (especially small entrepreneurs) in their territory.
- Insufficient cooperation of competent authorities (municipal offices, municipal self-governments, Police of the CR, municipal police, CEI).
- Insufficient prevention of the emergence of illegal dumps consisting in ensuring regular cleaning of public areas, eliminating opportunities for the potential creation of illegal dumps, preventive inspection activities and insufficient or non-existent environmental education and awareness-raising.
- Insufficient level of sanctions for establishing an illegal dump.
- The solution to the issue of so-called illegal dumps does not lie only in the removal of the dump and subsequent restoration of the site in question, but above all in the consistent identification and punishment of their originators and in the prevention of the emergence of illegal dumps.

**Measures** that could help address some of the above-mentioned areas include:

- The establishment of rapid communication channels enabling more active and effective communication between municipalities and citizens, including the use of modern technologies (communication form on the municipal website, the possibility for citizens to send an SMS to the municipal office, communication via portal, data mailbox or other commercial applications intended for municipalities).
- Prioritisation of preventive activities such as the installation of information boards, camera traps and camera systems, and increased supervision by the municipal police in places where waste is frequently deposited outside designated sites.
- Effective development of educational materials and awareness programmes at the municipal level, including support, particularly in the form of financing these programmes.
- The obligation of the waste holder to ensure further management of municipal, construction and demolition waste at the time of its generation.
- More effective promotion of the use of subsidy programmes related to waste management (Operational Programme Environment, National Environment Programme).
- Involvement of the public in programmes and events leading to the formation of a positive attitude towards maintaining environmental cleanliness and proper waste management (initiatives such as Clean Up the World, Clean Up Czechia, Trash Hero, World Cleanup Day, etc.).
- Inclusion of individuals and legal entities with their waste in municipal waste management systems.
- Regular placement of bulky waste containers within municipalities and effective informing of citizens about their location (social networks, applications for communication with citizens).
- Acceptance of construction and demolition waste from citizens up to a certain limit within the municipal system.
- Introduction of so-called waste amnesties, offering citizens free collection of a specific type of waste that might otherwise end up in an illegal dump (kitchen appliances, carpets, tyres, etc.).
- Maintaining the cleanliness of public areas.
- Use the institute of community service or the institute of public service by municipalities to ensure the cleaning and maintenance of public areas, including activities associated with the removal of waste disposed of outside designated places.

## 2.11.2 Waste Generated from Emergencies and Crisis Situations

An emergency, pursuant to Act No. 239/2000 Sb., on the Integrated Rescue System, is understood as the harmful effects of forces and phenomena caused by human activity, natural influences, as well as accidents which endanger life, health, property or the environment and require the performance of rescue and liquidation work. If an emergency cannot be averted by ordinary means and extraordinary powers associated with the declaration of a state of emergency are required to avert it, it constitutes a crisis situation.

Preparedness for emergencies and crisis situations and their resolution is enshrined primarily in Act No. 239/2000 Sb., on the Integrated Rescue System and on Amendments to Certain Acts, Act No. 240/2000 Sb., on Crisis Management and on Amendments to Certain Acts (Crisis Act), and Act No. 241/2000 Sb., on Economic Measures for Crisis States and on Amendments to Certain Related Acts.

The Regional Emergency Plan is a plan for limiting the immediate impacts of threats arising from an emergency and for eliminating the consequences caused by an emergency (a plan for the performance of rescue and liquidation work). Part of the Regional Emergency Plan is also a specific activity plan – the removal of waste. The plan for the removal of waste generated during an emergency includes the method of waste removal and the entities carrying out the waste removal, an overview of landfills, incineration plants and other facilities for the disposal of waste and hazardous waste, the division of responsibilities for waste removal and the designation of supervision during waste removal. The Regional Emergency Plan also includes financial reserves allocated within the Region for dealing with emergencies.

The Regional Emergency Plan is prepared by the Regional Authority (or the Fire Rescue Service of the Region). At the regional level, information on the Regional Emergency Plan and its storage is part of the Regional Crisis Plan. At the level of a Municipality with Extended Competence, information on the Regional Emergency Plan (an extract) and its storage is part of the Crisis Plan of the Municipality with Extended Competence.

The most common emergency (and thus crisis situation) under the conditions of the CR are natural disasters (fires, floods, tornadoes), during which waste arises in the form of ordinary municipal waste, rubble and possibly contaminated rubble. These materials may be polluted with various hazardous substances, such as heavy metals, petroleum products or other harmful chemicals that may be released in these situations.

The most threatening natural disaster in the Czech environment is flooding. The scope of measures carried out for flood protection is governed by the degree of flood risk, which is expressed in three levels of flood activity (Act No. 254/2001 Sb., on Water and on Amendments to Certain Acts (hereinafter the “Water Act”). **A flood** begins with the declaration of the second or third level of flood activity and ends with the cancellation of the declared level of flood activity. A flood is also considered to exist in a situation where the second or third level of flood activity is not declared, but the water level or flow at the relevant profile reaches the reference level specified for one of these levels of flood activity in accordance with the flood plan of the relevant territorial unit. The decision on the existence of a flood in a given area and time depends on the fulfilment of one of these conditions, with the authority to decide resting with the water authority (pursuant to the Water Act).

Waste generated as a result of floods must be considered as potentially hazardous and possibly infectious. For this reason, temporary dumps (depots) in the municipality should not be located near permanent residences, sports grounds or recreational areas (risks may include infectious aerosols, chemical contamination, the spread of odorous substances).

For the priority removal of flood waste, the most appropriate method is incineration, but it is important to ensure that it takes place in a controlled manner in waste disposal facilities such as hazardous waste incineration plants or municipal waste incineration plants. Uncontrolled burning of waste in landfills or in open areas is not acceptable.

For handling dead animals and animal by-products, it is necessary to use a veterinary sanitation institute and specialised companies. Handling of damaged foodstuffs during clean-up operations is carried out by firefighters or the army. Sanitation companies carry out the collection of waste.

Another significant event is a pandemic situation. In this situation, it is necessary to ensure, to the maximum extent possible, the safety of workers handling waste. It is also important to ensure the continuity of waste management, even at the cost of a temporary reduction in waste management in accordance with the waste management hierarchy.

In a situation similar to the Covid-19 pandemic, an increase in the generation of mixed municipal waste can be expected. Potentially infectious waste is recommended to be removed in an incineration plant.

To ensure a high level of protection, decontamination of infectious medical waste should be carried out. In 2020, the European Centre for Disease Prevention and Control (ECDC) identified the following decontamination methods: steam, heat, chemical treatment, microwave radiation, ultraviolet radiation, gamma radiation, autoclaving, and others. During pandemics, a sharp increase in hazardous waste usually occurs, which must be safely and properly removed. However, given limited capacities, there may be situations where it is not possible to process all such waste quickly and appropriately. It is therefore important for the future to ensure sufficient incineration plant capacities capable of dealing with emergencies and crisis situations. For addressing emergencies and crisis situations, it is essential to ensure sufficient incineration plant capacities in the CR and also to have sufficient landfill capacities available. A large part of the waste generated after a flood is combustible. After an event such as a tornado, more mineral non-combustible waste is generated. As the Covid pandemic also demonstrated, it is highly appropriate to include waste incineration plants as part of critical infrastructure. The MoE attempted to add selected hazardous and municipal waste incineration plants to critical infrastructure; however, this was not achieved at the time of the preparation of the WMP CR.

### **Management of Emergencies and Crisis Situations**

During emergencies and crisis situations, there is an obligation to follow the basic crisis management standards laid down in the relevant legislation (e.g. the Crisis Management Act No. 240/2000 Sb.) and contained in crisis and emergency plans.

Crisis measures are part of the crisis and emergency plans of the Regions. Among other things, the plans also address the area of waste management. They specifically identify locations for the possible storage of flood waste (depots), establish an agreed model for the use of the necessary equipment, including arrangements with landfills for the disposal of flood waste according to their classification.

These plans are drawn up by the crisis authorities of the Regions. Detailed data from the Regional Plans are then elaborated in more detail for smaller territories under the administration of Municipalities with Extended Competence. The plans also include financial reserves allocated within the Region for dealing with emergencies.

In addition, the removal of waste from emergencies may also be methodically directed by the MoE, which issues the relevant methodological guidelines (e.g. Methodological Guidelines for Natural Disasters Ref. No. MZP/2021/720/3403 and Ref. No. MZP/2024/740/6949). In 2021, this was the MoE methodological guideline for managing waste from the tornado. In 2013, the MoE issued a methodological guideline for municipalities on the removal of waste after floods and provided

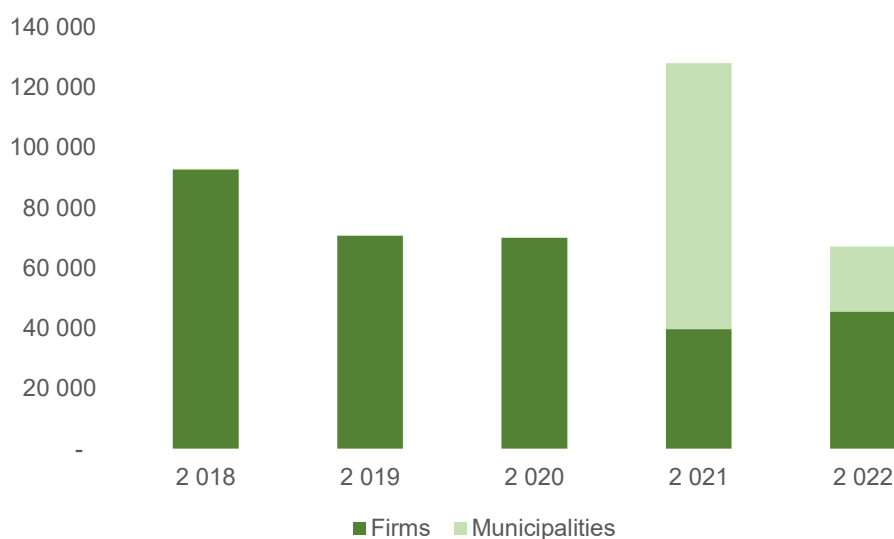
methodological recommendations for the Ministry of the Interior and municipal mayors for flood management. At the time of the preparation of the WMP CR, there was another guideline for the management of waste from extensive floods in September 2024. Methodological guidelines related to waste generated due to emergencies are always issued by the MoE as a response to the specific emergency and crisis situation.

According to the Waste Act, units of fire protection and legal entities and self-employed individuals who are designated by other legal regulations to deal with accidents and fight fires are not subject to obligations in this activity, with the exception of the obligation to hand over waste pursuant to this Act.

### Current Situation

- Waste from emergencies is recorded under reporting code AN60, which also includes waste from old environmental burdens. When processing data, it is not possible to easily distinguish between these two different groups of origin. Graph 60 shows the development of generation under AN60 in the CR in recent years. The waste holders are distinguished as municipalities and companies.

*Graph 60: Development of Waste Generation from Emergencies and Waste from Old Environmental Burdens in the CR between 2018 and 2022*



Source: processed on the basis of data from the Authorised Packaging Company (ISOH)

In recent years, in the field of waste generation from emergencies and from old environmental burdens, the dominant role has been played by companies, while the generation of waste by municipalities has been marginal. The recorded generation of company waste in the years 2018 to 2022 shows a declining trend, with the prevailing types of waste being those included in groups 17 and 19. Specifically, these are wastes from group 17, identified under catalogue numbers 17 05 03 *Soil and stones containing hazardous substances* and 17 05 04 *Soil and stones other than those mentioned in 17 05 03*.

From the graph (Graph 60), a significant increase in the amount of waste generated by municipalities during 2021 is apparent. This increased amount of waste can be explained by the extraordinary event that affected several municipalities on the border of Břeclav and Hodonín Districts in the South Moravian Region in June 2021. It was a severe tornado accompanied by suction vortices, which reached F4 strength on the Fujita scale. In the affected municipalities, about 1,200 to 1,600 buildings were damaged, including public, agricultural and industrial buildings, as well as a large number of trees and vehicles. Infrastructure, including the railway corridor, was heavily affected. As a result of the tornado in

Břeclav and Hodonín Districts, approximately 90,000 tonnes of mainly mixed construction and demolition waste were generated.

### 2.11.3 Contaminated Sites in the Territory of the CR

The vast majority of contaminated sites in the Czech Republic arose before 1990 (the oldest already in the period of Austria-Hungary, later during the First Republic, and significantly during the communist regime), when environmental protection was not a priority of state interest. For such contaminated sites, the term “old environmental burden” (hereinafter “OEB”) is used, referring to sites where contamination was caused by an originator that no longer exists or is unknown (these were primarily state-owned enterprises and organisations). An old environmental burden is thus one type of contaminated site. A contaminated site is considered to be a locality with serious contamination of the rock environment, soil air, groundwater or surface water, caused by inappropriate handling of hazardous substances (in particular, for example, petroleum substances, pesticides, polychlorinated biphenyls, chlorinated and aromatic hydrocarbons, heavy metals, etc.).

In Czech legislation, there is no specific act governing old environmental burdens; the main act in this area is, however, Act No. 254/2001 Sb., on Water and on Amendments to Certain Acts (the Water Act). Other acts dealing with the removal of environmental damage include, for example, Act No. 541/2020 Sb., on Waste, Act No. 17/1992 Sb., on the Environment, Act No. 334/1992 Sb., on the Protection of Agricultural Land Resources, Act No. 258/2000 Sb., on the Protection of Public Health, Act No. 114/1992 Sb., on the Protection of Nature and Landscape, Act No. 100/2001 Sb., on Environmental Impact Assessment, and Act No. 201/2012 Sb., on Air Protection.

Another concept associated with contaminated sites is so-called environmental damage, which is defined by Act No. 167/2008 Sb. (as amended from 1 February 2022), on the Prevention of Environmental Damage and its Remedy, which is based on Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage. This Act defines the ways in which environmental damage may be prevented or remedied. According to this Act, environmental damage is an adverse change to a natural resource or a measurable deterioration of its functions, which may occur directly or indirectly, and constitutes a change in protected species of wild animals or wild plants or natural habitats, which has serious adverse effects on achieving or maintaining the favourable conservation status of such species or habitats. It also concerns changes to groundwater or surface water, including natural healing resources and natural mineral water sources, which have a serious adverse effect on the ecological, chemical or quantitative status of the water or on its ecological potential. Finally, it concerns changes to soil through contamination that present a serious risk of adverse effects on human health as a result of the direct or indirect introduction of substances, preparations, organisms or micro-organisms onto or beneath the earth's surface.

Contaminated sites may be of various types – they may include waste landfills, industrial and agricultural premises, small-scale operations, unsecured hazardous substance storage sites, former military bases, areas affected by mineral extraction, or abandoned and closed disposal sites for mining waste presenting serious risks.

A number of programmes exist for the removal of old environmental burdens, the most extensive of which was launched at the beginning of privatisation. Under so-called ecological contracts, the State undertook to reimburse individual acquirers for the costs of removing OEB up to a certain predetermined amount, the so-called guarantee. Within these guarantees, almost CZK 67 billion has been paid out since 1991, with a total of CZK 821 million paid out in 2023. The rights and obligations of the State in ensuring these remediations and reimbursing the costs associated with them are exercised by the

Ministry of Finance. The MoF is the contracting authority for public contracts for the implementation of measures to remove OEB, and the relevant expenditures are paid from a special account of funds derived from the proceeds of the sale of privatised property and from the profit from the State's participation in commercial companies. It ensures the monitoring of the use of these funds through its employees and external supervisors.

The role of professional guarantor of the process of removing old environmental burdens is performed by the MoE through the Department of Environmental Risks and Environmental Damage, which:

- assesses and evaluates the entire process of removing old environmental burdens from the environmental perspective,
- comments on proposals for the conclusion of new ecological contracts and on tender documentation in the awarding of public contracts organised by the Ministry of Finance,
- assesses risk analyses,
- participates in inspection days and in the assessment of interim and annual reports,
- comments on adjustments to guarantees, methodological changes, possible increases in financial resources, and ultimately on the termination of ecological contracts.

The Ministry of the Environment of the CR also provides methodological support for the removal of environmental burdens:

- Methodological Guideline of the MoE – Pollution Indicators,
- Methodological Guideline of the MoE – Risk Analysis of Contaminated Sites,
- Methodological Guideline of the MoE – Investigation of Contaminated Sites,
- Methodological Guideline of the MoE – Sampling in Remediation Geology,
- Principles for the Preparation of a Feasibility Study of Measures for the Remediation of Contaminated Sites,
- Methodological Guideline of the MoE for Addressing the Issue of Determining the Indicator of Potential Petroleum Contamination in the Remediation of Contaminated Sites,
- Methodological Guideline of the MoE for Basic Risk Assessment of Environmental Damage,
- Methodological Guideline of the MoE for Detailed Risk Assessment of Environmental Damage,
- Methodological Guideline of the Ministry of the Environment for Working with the SEKM System
- Methodological Manual – Evaluation of Investigations and Remediations,
- Methodological Manual – ISCO,
- Methodological Manual of the MoE – Application of Geophysical Methods in the Protection of Water Resources,
- Methodological Manual of the MoE – Basic Principles of Hydrogeology,
- Methodological Manual of the MoE – Possibilities of Geophysical Methods,
- Methodological Manual of the MoE for the Use of In-Situ Reductive Technologies in the Remediation of Contaminated Sites,
- Directive of the MoF CR and MoE No. 4/2017 for the Preparation and Implementation of Contracts Addressing Environmental Liabilities Arising from Privatisation.

The MoE also operates the Contaminated Sites Register (hereinafter referred to as “SEKM”), which is a key system for the registration, monitoring and assessment of contaminated sites in the Czech Republic. The database contains detailed information on contaminated sites, including map visualisation.

### **Current Situation**

In 2022, the Contaminated Sites Register recorded 10,174 contaminated and potentially contaminated sites. In the same year, reporting on the completion of remediation of 1,148 sites was finalised. The

most recent inventory of environmental liabilities was completed at the end of 2021 as part of the project “National Inventory of Contaminated Sites – Phase II”<sup>42</sup>. The results of the mapping are presented in the text below.

Across the territory of the Czech Republic, a total of 30,020 sites or indications were examined using two primary sources, namely the SEKM information system and remote sensing of the Earth, of which 8,643 sites were assessed as contaminated or potentially contaminated. The remaining 21,377 sites or indications were excluded. From other sources, a further 1,491 assessed sites (contaminated or potentially contaminated sites) were identified, i.e. as of December 2021 there were a total of 10,134 contaminated or potentially contaminated sites in the Czech Republic.

The highest number of environmental burdens is in the Central Bohemian Region (16%), the Moravian-Silesian Region (9.5%) and the Pilsen Region (9.5%).

More than 70% of the sites (a total of 7,102 out of 10,134 sites) are assessed as unexplored or insufficiently explored sites. For these sites, further investigation of pollution of the rock environment is necessary, possibly also the preparation of a risk analysis, which may subsequently result in a proposal for the implementation of remedial measures. The majority of the unexplored areas consist of municipal waste landfills (58.5%) and contaminated sites (14.4%). Other locations include sites associated with the handling of petroleum substances, industrial landfills and other sites (e.g. handling of hazardous substances, shooting ranges, etc.).

At the remaining 30% of sites (a total of 3,032 out of 10,134 sites), activities related to the remediation of legacy environmental contamination have either been completed, are ongoing, are being prepared, or were not required at all. At 496 sites, remedial measures are desirable or necessary. Most of these sites are located in the Moravian-Silesian Region – the former centre of heavy industry in the CR (65) – and in the Central Bohemian Region – in its industrial northern part (67).

In terms of site type, municipal waste landfills predominate in the Czech Republic, accounting for almost 46% of sites. The predominance of these sites is historical: before 1989, waste was simply deposited in terrain depressions and exhausted quarries. The share of municipal waste landfills in the total number of assessed sites is higher in the southern regions of the Republic, such as the South Bohemian Region, the Vysočina Region and the South Moravian Region, with predominant agricultural production.

More than 17% consist of sites classified in the SEKM system as contaminated areas, i.e. sites where multiple activities occurred concurrently, leading to the creation of legacy environmental contamination. The sites are concentrated in regions with significant industrial production. These are mainly Czech regions along the River Elbe, the Capital City of Prague and the Ostrava region.

More than 10% of the sites consist of locations where petroleum substances were handled and where systematic leaks into the rock environment occurred. These three types of sites (municipal solid waste, contaminated premises and handling of petroleum substances) together account for almost all contaminated and potentially contaminated sites in the Czech Republic. The remaining part of the assessed sites consists of other types of sites.

### **Remedial Measures**

With regard to remedial measures, at 667 sites (approx. 6.5%) the remedial measure is either ongoing, at the pre-implementation stage, has been interrupted, or was unsuccessful. Overall, for more than

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<sup>42</sup> Comprehensive inventory – delivery of inventory work within the 2nd stage of NIKM (2021, CENIA). Available [here](#).

72.5% of sites, the remedial measure has not yet been identified, while for the remaining approximately 21%, no remedial measure is required, or it has been successfully completed.

A total of 446 sites in the Czech Republic require urgent action (investigation or implementation of a remedial measure). Out of the total number, these sites account for 4.40% of all assessed sites. The highest numbers of such sites are in the Pilsen Region (83), the Central Bohemian Region (50) and the Liberec Region (45). At 31 sites the remedial measure has already been completed, at 101 sites it is ongoing, and at 95 sites it has not yet started. At the remaining sites, the remedial measure has been interrupted (27), or further investigation work will be necessary (192).

### Financing

Remedial measures as well as the implementation of investigations are linked to financing, which needs to be secured for 8,024 sites. Securing financing for the remaining 2,110 sites is not required, as remedial measures are not necessary or have already been successfully completed. Of the 8,024 sites, for approx. 84%, i.e. a total of 6,757 sites, financing has not been secured. Conversely, at the remaining 1,267 sites, financing has been or was secured for at least some stage of the process of removing old environmental burdens (e.g. investigation and risk analysis). Given the large number of unexplored sites with environmental burdens, it is not possible to quantify the total costs of remediation.

*Table 71: Contaminated Sites in the Territory of the CR*

Site Characteristics	Number of sites
Total number of contaminated or potentially contaminated sites	10,134
- of which sites not requiring remedial measures	2,110
- of which sites requiring investigation and/or remedial measures	8,024
- of which sites with secured financing	1,267
- of which sites with missing financing	6,757

Source: CENIA, 2021

According to the Act<sup>43</sup> in the case of environmental damage arising since August 2008, the operator who caused the environmental damage or its imminent threat is obliged to bear the costs of remedial measures. If, however, the damage occurs as a result of compliance with a binding act of public administration, the public authority shall reimburse the operator for the incurred costs from the state budget. The same applies in cases where the operator did not breach legal regulations or where it was not likely that the operational activity could cause environmental damage. Funds for the reimbursement of costs are part of the financial security which the operator is obliged to provide.

The financing of contaminated site remediation is most often secured from a special account of funds from the proceeds of privatised property and from the profit from the State's participation in commercial companies. The Ministry of Finance participates in financing through ecological contracts, with other sources being other ministries, municipalities and Regions in whose territory the contaminated site is located, state enterprises, or even private sources. One of the most significant sources of financing is also the European Funds – the Operational Programme Environment<sup>44</sup>.

In the new programming period (2021–2027), as of 18 August 2023, a total of CZK 2.5 billion from European sources has been allocated for the remediation of contaminated sites. When allocating funds,

<sup>43</sup> Act No. 167/2008 Sb., on the Prevention of Environmental Damage and its Remedy and on Amendments to Certain Acts.

<sup>44</sup> In the programming period 2014–2020, a total of CZK 3.3 billion was approved for activities related to the inventory, analysis and remediation of old environmental burdens. Since 2010, with the contribution of EU funds, 10–15 contaminated sites have thus been remediated.

the seriousness of the contamination is taken into account (contaminants, components, priority, number of people at risk, complexity of the solution, etc.). In the years 2021–2027, EU funds will also support the investigation of sites and the design of effective measures. As of 18 August 2023, CZK 150 million had been allocated to the issue; however, only 30 projects with a total value of CZK 61 million were ultimately approved.

## 2.12 SWOT Analysis of Waste Management

Waste management plays a key role in sustainable development and environmental protection. To examine and assess its status and identify key factors, a comprehensive SWOT analysis was conducted, summarising the strengths and weaknesses, opportunities and threats of current waste management in the Czech Republic.

As part of the detailed analysis of individual waste streams, specific SWOT analyses were prepared for each stream, on the basis of which the principles and measures for handling the respective waste stream, set out in the binding part of the WMP CR, were proposed.

*Table 72: SWOT Analysis of Waste Management in the CR*

Strengths - S
<p>The strengths of waste management include:</p> <ul style="list-style-type: none"> <li>➤ Existence of a high-quality and accessible collection network for municipal waste and end-of-life products. Citizens are motivated to separate waste; the work of municipalities, authorised packaging companies and collective systems with citizens in waste management is effective.</li> <li>➤ Waste in general is predominantly recovered, recycling and material recovery are increasing, which contributes to sustainability.</li> </ul>
Weaknesses - W
<p>The weaknesses of waste management include:</p> <ul style="list-style-type: none"> <li>➤ Insufficient levels of waste prevention, high material intensity of the economy, and increasing waste generation.</li> <li>➤ A shortage of modern, high-performance facilities for the sorting and re-sorting of waste, insufficient capacity of waste recycling facilities, low levels of energy recovery from waste and inadequate capacity for the safe incineration of hazardous waste are the main current challenges facing waste management.</li> </ul>
Opportunities - O
<p>The opportunities for waste management include:</p> <ul style="list-style-type: none"> <li>➤ Change in behaviour patterns and introduction of approaches of waste prevention and circular economy into everyday life.</li> </ul>

- Continuous and intensive training, education and awareness-raising of citizens, waste holders and waste processors about the possibilities of waste prevention and proper waste management.
- Innovation and eco-design in the production of quality products and development of sustainable consumption behaviour.
- Development of a network for separate collection of waste and a network of facilities for waste processing. New modern, high-performance technologies for waste treatment. Research and development of new technologies, introduction of digitalisation.
- Increasing the capacity of waste treatment facilities is key to achieving sustainable waste management in the CR

### Threats - T

The threats to waste management include:

- Inappropriate landfilling of waste.
- Inefficient and insufficiently effective sorting and re-sorting facilities for waste.
- Inefficient long-distance transport of waste for treatment.
- Illegal transport of waste.
- Risks of the presence of persistent organic pollutants in recyclates, further risks associated with new types of waste and the increasing presence of microplastics and hazardous substances in the environment.
- High levels of freeriding and non-compliance with obligations for end-of-life products. These threats must be addressed and eliminated within modern waste management.

In the next period, the key task will be to maximise the use of the strengths and opportunities of waste management in the Czech Republic. It is essential to eliminate weaknesses and effectively address the threats to waste management in order to move towards fully effective waste management and a circular economy. The main objective is to retain the value of products, materials and resources in the economic cycle for as long as possible and, after the end of their life cycle, to use them as resources. In the coming years, it is necessary to deepen the process of transition from a linear economy to a circular economy, which will better correspond to the principles of sustainability and efficient waste and material management.

## 2.13 Scenarios of the Development of Waste Management in the CR

The basic supporting tool for preparing future projections of waste generation and management is the MoE web application Tiramiso<sup>45</sup>. Tiramiso makes it possible to estimate future waste generation for all waste types and selected waste streams for the territory of the Czech Republic, regions, and the territories of municipalities with extended powers. The tool implements the methodological

<sup>45</sup> Available [here](#).

requirements<sup>46</sup> and is publicly available on the website of the Ministry of the Environment. The tool distinguishes between forecast and projections (scenarios).

### Forecast

The forecast, in the sense of the methodology used for the development of the Tiramiso application, represents the most probable scenario of future development. It is based on historical data and does not include (except for necessary exceptions) an expert aspect, i.e. a change of trend due to expected interventions in waste management. The forecast does not have the capacity to respond to legislative and other interventions in the system that will occur in the future. Within the framework of scenario building, the forecast is referred to as the business-as-usual (BAU) scenario.


The key element for preparing the forecast is historical data on generation. It is therefore an approach that follows the long-term development in the generation of a specific type of waste by catalogue number, subgroup, group or stream. The Tiramiso tool also provides confidence bands of the forecast, i.e. a confidence interval. Since the development of most groups has been turbulent in recent years, with frequent significant changes and one-off leaps in generation, the confidence bands are quite wide. The forecast can therefore be interpreted as the median (most probable) value with respect to currently available information and historical data.

### Projection – Scenario

The projection is based on a defined scenario of future development. The projection takes into account expert-defined boundary conditions, but in such a way as to reflect the historical course as much as possible. The projection should be as consistent as possible with the forecast of future development. The projection can therefore be understood as an expert assessment of future development by means of scenarios that reflect situations where the system is influenced externally (legislative impacts, technological progress, etc.).

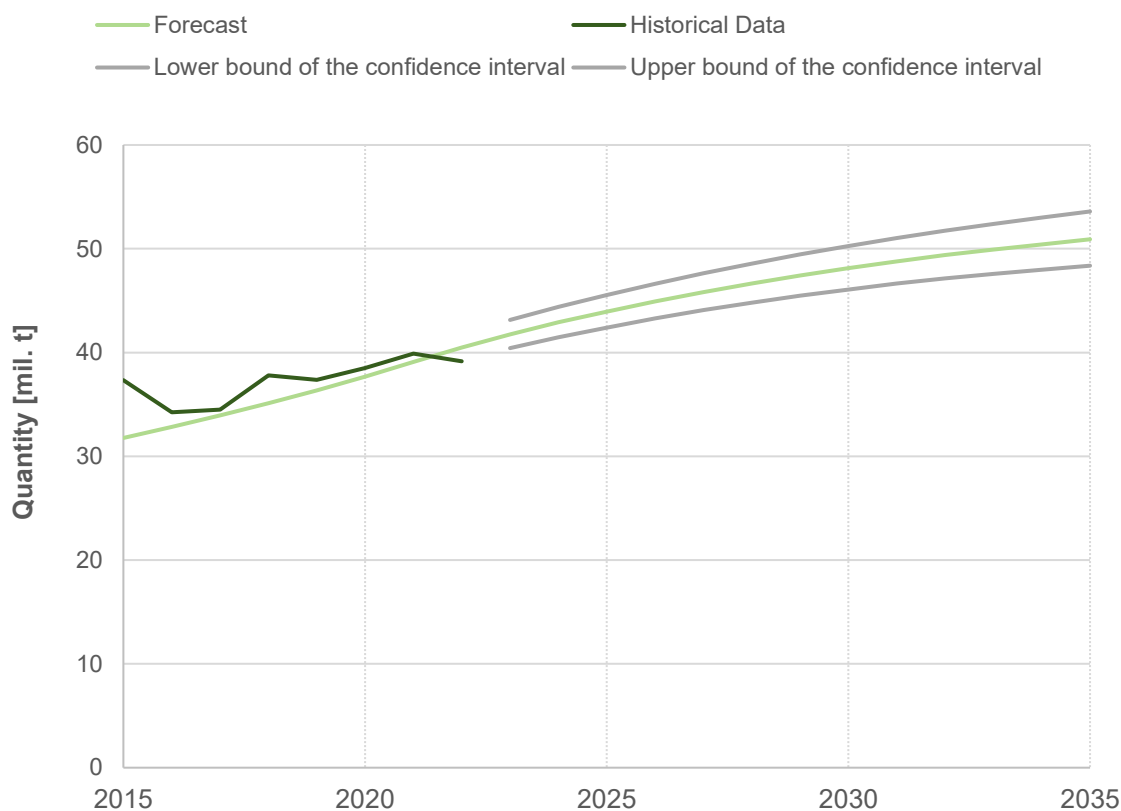
## 2.13.1 Assumptions for the Development of Scenarios

The forecast of the generation of all waste, together with the above-mentioned confidence interval, is shown in (graph 61). According to the forecast, the total generation of waste will increase by 2035. From the current generation value of 39.2 million tonnes, an increase up to 51 million tonnes is expected. As a result of the integration of scenarios for municipal waste (Trajectory 1 and 2), see the following chapter, the figure may be slightly lower (50 million tonnes).

	<p><b>Future development based on historical data expects that the generation of all waste in the CR may increase to more than 50 million tonnes by 2035.</b></p>
<p><b>Development of Total Waste Generation</b></p>	

<sup>46</sup> Šomplák, R., Smejkalová, V., Bouda, Z., Szásziová, L., Suzová, J., Popela, P., Rosecký, M., Kúdela, J., Eryganov, I., Šramková, K., Pavlas, M. *Certified methodology for conducting long-term forecasts of waste generation in the CR including revision of the forecast*. Technical Report. Result V9, TIRSMZP719, 2021.

Graph 61: Forecast of Waste Generation by 2035



Source: Generation data 2022 – WMIS, forecast Tiramiso

The aspects influencing waste generation that were taken into account can be summarised as follows:

- Economic development, the condition of the economy and its segments, the level of construction activity and the industrial sectoral structure.
- Demographic development and consumer preferences.
- The level of waste prevention at the municipal waste level (age structure of the population, education of the population, environmental awareness of the population) as well as industrial waste, including hazardous waste (preference for sustainable production, circular audits, corporate social responsibility, etc.).
- Improved waste reporting, inspection activities and compliance with legislation also lead to a long-term increase in generation.

### 2.13.2 Summary of Expected Future Generation of Main Streams

The projection (scenario) was used mainly for municipal waste, where a significant change in the generation of certain sub-streams is expected as a necessary precondition for achieving the objectives of municipal waste management. The projection was also used for waste in group 19 (partially also in group 17), see below. For the preparation of the projection, long-term analytical work, data collection and processing were used at the level of the MoE, expert advisers and the academic sphere (e.g. in project TIRSMZP719 and CEVOOH). For most of the other streams, the forecast was used, as the necessary expert background was not available and the preparation of scenarios was therefore not carried out, or the forecast sufficiently described the expected future development.

Forecasts and possible projections were prepared in analytical background materials for all streams. The text below briefly summarises the most essential of them. Chapter 2.13.3 sets out separately the expected development of generation and management of municipal waste according to the developed scenarios, and Chapter 2.13.4 then the expected development of generation for secondary waste (Group 19).

### Construction and Demolition Waste

The dominant stream in total waste generation is construction and demolition waste (group 17). Its generation is increasing and is expected to grow further for the following reasons:

- 1) Reconstruction and construction of infrastructure and linear structures. *Expected growth in defined Regions* – linked to the document Development of Transport Infrastructure until 2050, published by the Ministry of Transport in 2020.
- 2) Repairs and construction of motorways and expressways.
- 3) Reconstruction and construction of production and storage facilities. *Expected growth.*
- 4) Housing reconstruction and residential construction. *Expected growth.*
- 5) Reconstruction and construction of social and healthcare infrastructure. *Expected growth.*
- 6) Demolition and removal of redundant or structurally compromised buildings and infrastructure unsuitable for reconstruction.
- 7) Demolition and removal of old burdens.
- 8) Proper reporting of small-scale construction waste, which was often part of mixed municipal waste and bulky waste. *Expected growth in defined Regions.*
- 9) Proper handling of construction waste that is part of illegal waste management (fly-tipping).

A detailed quantification of the impact of individual segments on the generation of construction and demolition waste is not possible. The expert assessment and the assumption of increasing generation of construction and demolition waste are covered on the basis of trend and forecast (business-as-usual).

### Group 19 Waste

Based on scenarios of generation and management of municipal waste, an increase is also expected in group 19 waste as outputs from waste treatment facilities. An increase will occur in the generation of solid residues from facilities for energy recovery of waste, i.e. slags cat. no. 19 01 12. By 2035, in connection with the objectives of municipal waste management, the capacities of facilities for energy recovery of waste will significantly increase, and thus also the generation of waste cat. no. 19 01 12. Similarly, the generation of outputs from the treatment of recyclable waste such as paper, plastic, metals and textiles (subgroup 19 12) will grow. The expected increase is linked to the forecasted growth in generation of separately collected fractions, which are subsequently re-sorted in automated sorting lines. Another source of waste in subgroup 19 12 may also be the sorting of bulky waste into individual material fractions. This development is addressed in more detail in Chapter 2.13.4.

### Biodegradable Waste

Depending on the scenarios for municipal waste, changes will occur in food waste. These will be most influenced by the share of food waste in mixed municipal waste, as well as in kitchen and canteen waste

(cat. no. 20 01 08). Also significant are the shares of biowaste from gardens and parks (cat. no. 20 02 01), kitchen waste (cat. no. 20 01 08), and the generation of edible oils and fats (cat. no. 20 01 25).

### **Waste from Thermal Processes**

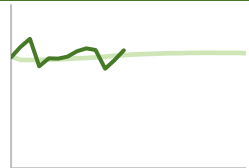
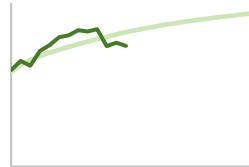
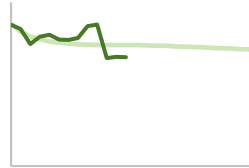
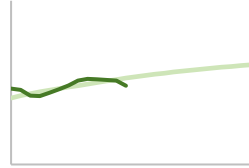
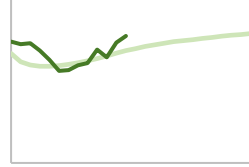
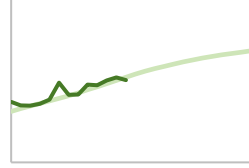
In the case of other waste streams with more significant generation, a decline is expected in waste from group 10 *Waste from thermal processes*, specifically in subgroup 10 01, where, due to the decarbonisation of the energy sector and energy-intensive industrial production, coal combustion will decrease, and thus also the generation of waste associated with its combustion. This decline has already been occurring in the long term, and it can be stated that the forecast takes the expected decline into account. It is therefore not necessary to create a scenario.

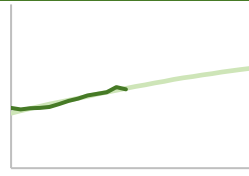
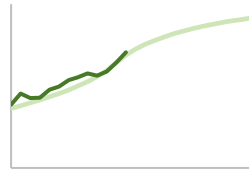
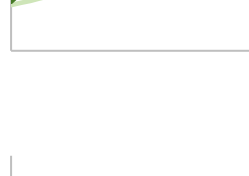
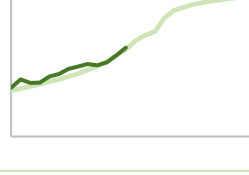
The following table 73 summarises the current generation and the projected development of generation by waste group. Unless otherwise stated, this refers to the forecast of waste generation for the years 2030 and 2035.

Table 73: Current Generation and Expected Development until 2035 by Waste Groups

Group	Name of Group	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
01	Waste from mineral exploration, mining, quarrying, and physical and chemical treatment of minerals	60.2	85.9	86.4		Significant increase in 2013. In subsequent years, a decline of approx. one third. Trend mainly based on data in recent years. Development is expected to be rather constant or with slight growth, reflecting possible commencement of new mining and construction of major infrastructure projects.
02	Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	214.8	250.0	245.7		Significant decrease until 2012, then rather constant or slightly declining trend. A further slight downward trend is expected in the future.
03	Waste from wood processing and the production of panels, furniture, pulp, paper and cardboard	180.0	294.5	318.2		Slight increase since 2013, sharp increase in 2020 and 2021, mainly due to bark beetle calamity in previous years. Significant decrease in 2022. Forecast influenced by recent developments. Further increase is expected.
04	Waste from the leather, fur and textile industries	69.9	91.1	92.8		Growth until 2016, then decline to the 2010 level. Due to historical development, further development is difficult to predict; expectation is rather constant or slightly increasing.
05	Waste from petroleum refining, natural gas purification and pyrolytic treatment of coal	6.6	12.1	12.1		Sharp increase in 2010, 2011 and 2020. Otherwise constant development. Constant development expected also in the future.

Group	Name of Group	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
06	Waste from inorganic chemical processes	12.8	21.5	22.0		Dramatic decline until 2012, followed by stagnation with minor fluctuations. Expected constant or slightly increasing development.
07	Waste from organic chemical processes	146.7	182.7	194.7		Stable growth between 2013 and 2017, followed by stagnation. In the future, slight growth or constant development is expected, provided that generation continues to stagnate in the coming years.
08	Waste from the manufacture, formulation, supply and use of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	51.0	63.9	66.9		Slightly increasing trend, stagnation in recent years. Slight growth or constant development is expected, provided that generation continues to stagnate in the coming years.
09	Waste from the photographic industry	1.3	1.1	1.1		Long-term declining trend, increase between 2019 and 2021, decrease in 2022. Further decline in generation expected.
10	Waste from Thermal Processes	1,088.5	1,130.2	1,042.7		Declining trend, significant decrease between 2018 and 2020, subsequent stabilisation of generation. Further declining development expected.
11	Waste from chemical surface treatment, coating of metals and other materials and from non-ferrous hydrometallurgy	86.8	108.1	113.1		Long-term increasing trend, but generation has been decreasing since 2019. Slight further growth expected in the future.

Group	Name of Group	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
12	Waste from shaping and from physical and mechanical surface treatment of metals and plastics	718.8	704.1	702.2		Constant generation with minor fluctuations. The same development is expected in the coming years.
13	Waste oils and waste liquid fuels (except edible oils and wastes listed in groups 05, 12 and 19)	149.2	180.1	186.8		Long-term slightly increasing trend, decline since 2020. Further slight increase expected, or stabilisation and rather constant or slightly declining development as in recent years.
14	Waste organic solvents, refrigerants and propellants (except those in groups 07 and 08)	3.3	3.6	3.6		Long-term slightly decreasing trend, more significant decline in 2020 followed by stagnation. Further slight decrease expected.
15	Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	984.8	1,165.1	1,216.9		Long-term slightly increasing trend, decline since 2019. Due to historical development, the forecast is more difficult to predict. Slight increase assumed.
16	Waste not otherwise specified in this catalogue	775.5	759.9	790.0		Declining trend until 2015, then increasing. Continued increase in generation expected.
17	Construction and demolition waste (including excavated soil from contaminated sites)	25,135.5	31,846.5	34,040.9		Long-term increasing trend with a positive fluctuation in 2015. Continued growth expected in the future.

Group	Name of Group	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
18	Waste from human or animal health care and/or related research (except kitchen and catering waste not arising directly from health care)	48.2	56.9	60.9		Long-term increasing trend without significant fluctuations.
19	Waste from waste treatment facilities (recovery and disposal), from wastewater treatment plants outside the site of generation and from the production of water for human consumption and water for industrial use	3,530.5	Forecast: 4,318.9	Forecast: 4,574.0		Long-term strongly increasing trend, even more pronounced in recent years. Growth is expected to slow gradually as potential is exhausted.
			Trajectory 1: 5,099.9	Trajectory 1: 5,398.4		Optimistic scenario. It is expected that there will be higher energy recovery of waste, accompanied by the construction of facilities for energy recovery of waste and facilities for sorting recyclable and recoverable fractions from mixed municipal waste, followed by the production of solid alternative fuels. There will also be increased sorting of separated fractions. These changes will lead to a significant increase in the generation of secondary waste.
			Trajectory 2: 5,145.8	Trajectory 2: 5,399.5		Realistic scenario. The same factors as for Trajectory 1 apply; however, due to a smaller number of residents who sort waste intensively, the development of waste generation will be slightly different. However, in 2035 the same level of generation is expected for both scenarios.
20	Municipal waste (household waste and similar commercial, industrial and institutional waste), including separately collected fractions	5,854.4	Forecast: 6,850.0	Forecast: 7,142.3		A long-term slightly increasing trend without significant fluctuations, expected to continue according to the forecast. Approximately 75% of the population sorts municipal waste; however, full application of municipal waste prevention has not been achieved.

Group	Name of Group	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 1: 6,224.3	Trajectory 1: 6,165.2		Optimistic scenario. It is expected that 86% of the population will sort municipal waste intensively. By 2030, growth will slow down, and from 2031 onwards a slight decline in generation is anticipated.
			Trajectory 2: 6,369.0	Trajectory 2: 6,410.5		Realistic scenario. It is expected that less than 86% of the population will sort municipal waste intensively. The growth in generation is slowing down, but it will not be fully halted even by 2035.
Total generation		39,159.6	Forecast: 48,126.2	Forecast: 50,913.6		Total waste generation continues to increase, by 23% by 2030 and by 30% by 2035.
			Trajectory 1: 47,500.6	Trajectory 1: 49,936.6		Total waste generation continues to increase, while for municipal waste a slight decline in generation is expected from 2031 onwards, with secondary waste rising significantly. Overall waste generation will increase by 24% by 2030 and by 30% by 2035.
			Trajectory 2: 47,645.3	Trajectory 2: 50,181.8		Total waste generation continues to rise, with municipal waste following the realistic scenario in which its generation continues to grow slightly, while secondary waste increases significantly. Overall waste generation will increase by 25% by 2030 and by 31% by 2035.

Note: Unless stated otherwise, figures for 2030 and 2035 represent a forecast of generation.

Source: processed on the basis of WMIS and Tiramiso

### 2.13.3 Municipal Waste

The historical development of the generation and management of municipal waste and its sub-streams was summarised in Chapter 2.3.1. The development can be outlined as follows.

#### Current Situation

- The total amount of generated municipal waste has been increasing in the long term, as has the per capita generation.
- The long-term trend foresees growth in plastics, glass, wood, textiles, biodegradable waste (BDW) from gardens and parks as well as from kitchens and canteens.
- The steep growth in the generation of biodegradable municipal waste has turned into a more gradual increase.
- For most sub-streams, or in the case of municipal waste of other category numbers, a decline has occurred in the past year (or in the last few years), which may not yet be reflected in the trend.
- The generation of bulky waste has been increasing in the long term, while mixed municipal waste is gradually declining.
- As the forecast shows, the current development of municipal waste generation and the ratio between the amount of separately collected fractions and residual waste in sub-group 20 03, in the context of the actual possibilities of their management, **cannot ensure compliance with the binding targets set for municipal waste management.**

#### Main challenges:

- To halt the growth in municipal waste generation through preventive activities.
- To reduce the generation of mixed municipal waste by more intensive sorting by citizens, or by mechanical sorting, in order to decrease the content of recoverable fractions.
- To ensure the conditions for a higher degree of recovery of bulky waste, in particular by its separation at source or subsequent sorting, which will help better utilise wood and metals, which constitute a significant part of bulky waste.

#### Proposed solution:

In response to the above-mentioned challenges, **two scenarios of generation** of individual streams within **municipal waste** have been developed, which **have the potential to meet the targets**. The scenarios are based on an analysis of factors that may lead to changes in the generation of streams. Such changes cannot be achieved without well-implemented **measures**, see Chapter 3.5.1, of both economic and educational nature. They are based on the current legislative framework.

#### 2.13.3.1 Factors influencing the generation of municipal waste

##### Demographic development

- The generation of municipal waste depends on demographic development. The forecast assumes an increase in the population up to 10.7 million inhabitants by 2035.

##### Prevention of waste generation.

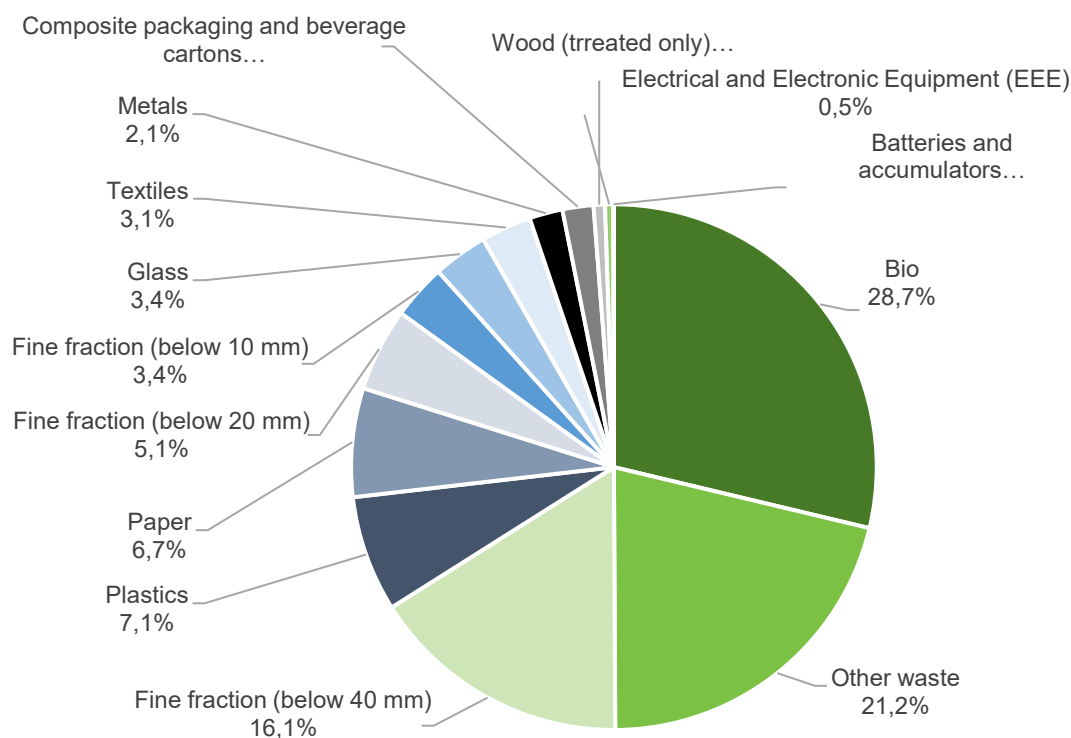
- The generation of municipal waste has been increasing in recent years (up to 2022), reflecting the rising living standards of the population of the CR. The link between generation and economic development has historically been observed worldwide. At the same time, municipal waste generation has been increasing through the entry of new streams into waste management (in particular biowaste from the maintenance of gardens and parks) or through improved reporting. The objective for the forthcoming period is to achieve a decoupling of generation and the economy, to

at least slow down, and preferably completely halt, the growth of municipal waste generation, for example by supporting the introduction of systems where citizens pay for municipal waste based on the actual amount or volume of generated municipal waste. The issue of waste prevention receives considerable attention at EU level, with the adoption of the Ecodesign Regulation and the preparation of an amendment to the Waste Directive.

### Aspects common to municipal waste

- The generation of mixed municipal waste from municipalities amounted to 2 million tonnes in 2022. Based on MoE analyses of mixed municipal waste (TIRSMZP19)<sup>47</sup> the average residual occurrence of recoverable fractions in mixed municipal waste can be estimated. The average composition is presented on the MoE website<sup>24</sup>. Their content in mixed municipal waste also represents the theoretical potential for their future transfer into separate collection. A similar composition of mixed municipal waste is also reported by the authorised packaging company EKO-KOM<sup>48</sup>, which has been monitoring the composition of mixed municipal waste over a long period.

Graph 62: Average Composition of MMW in the CR, values given by weight.<sup>24</sup>



Source: MoE

<sup>47</sup> MoE summary report – Results of the average composition of mixed municipal waste in the CR (2022, MoE, Brno University of Technology). Available [here](#).

<sup>48</sup> Results of Analyses of Mixed Municipal Waste from Municipalities in 2022 (2023, EKO-KOM). Available [here](#).

- Material-recoverable fractions of municipal waste from citizens are collected through bin and bag separate collections, civic amenity sites and collection points, as well as other collection methods, which include collection facilities with purchase options and mobile collections. The description of the current state of the collection network and its development is provided in Sec. 2.4.2 System of Separate Collection in the CR.
- The amount of waste from separate collection has been increasing in the long term, which between 2008 and 2014 was also reflected in a decrease in the generation of mixed municipal waste in municipalities. This trend ended, and since 2015 the generation of mixed municipal waste has essentially stagnated. At the same time, the amount of separately collected fractions of municipal waste continues to increase, as evidenced by the higher generation of individual commodities, but the increase is not fully accompanied by a decrease in mixed municipal waste. Since 2019, the generation of mixed municipal waste has begun to decline again, which can be attributed to the expansion of individual bin collection (door to door).
- According to the authorised packaging company, 75% of the population currently sort their waste. However, according to the results of analyses, this sorting is not sufficient for all fractions. It cannot be said that everyone sorts with sufficient quality and intensity. In the future, it is necessary to increase the share of actively sorting citizens. The instruments in this respect are training, education, awareness-raising and the development of the collection network. It cannot be expected, however, that all citizens will participate. There will always remain a certain percentage of citizens who do not sort or who sort insufficiently.
- The generation of municipal waste is also contributed to by generation outside the municipal system, i.e. in companies and public buildings, hotels, etc. Information on the composition of mixed municipal waste in this segment is insufficient. Measures should also target this sector. It is assumed that habits which citizens have or will acquire at home will also be transferred to activities outside the home (workplace, offices, schools), if they are further encouraged to do so and provided with the appropriate infrastructure.
- In the case of municipal waste generation in companies, changes are also expected as a result of improved and more accurate waste reporting.

### Aspects Specific to Paper

- A trend that will influence paper consumption in general is the process of digitalisation, which will affect both households (replacement of information leaflets and printed matter with applications and other promotional channels) and public administration and the corporate sector (digitalisation of agendas). Counteracting this trend is the development of e-commerce and parcel delivery services, which use paper packaging for consignments. In accordance with the conclusions of the CEVOOH<sup>49</sup> project, the importance of paper can also be mentioned as a material suitable for replacing today's difficult-to-recycle plastic packaging. Given that paper is generally regarded as a sustainable and easily recyclable material, it can be expected that it will be used more widely in the future, also within the principles of eco-modulation.

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<sup>49</sup> Pešta J., Kulhánek J., Herasymchuk I., Gregor J., Pavlas M., Weinzettel J. Comprehensive Comparison of Packaging Eco-Design Options from a Life Cycle Perspective. Comprehensive Research Report 2023, Gregor J., Kropáč J., Pavlas M., Ticháček J., Shtukaturova A., Šyc M., Kulhánek J., Pešta J. Proposal of Innovative Packaging for a Higher Degree of Recyclability. Comprehensive Research Report. 2023. Outputs of the CEVOOH project – Centre for Environmental Research – Waste and Circular Management and Environmental Safety. Work Package 1.D. Available [here](#).

- There is also a clear trend towards the development of individual catering, the growing popularity of take-away, delivery services or boxed meal systems, where paper packaging and napkins form a significant share.

### Aspects Specific to Plastics

A factor that will influence the placing of single-use plastic packaging on the market is eco-modulation and the future pressure on the design of sustainable and easily recyclable packaging. The issue was also addressed, for example, in project CEVOOH<sup>49</sup>. Specific conclusions:

Plastics:

- Excessive use of non-renewable resources and, in the future, the effort to minimise dependence on non-renewable resources.
- Plastic packaging is often multi-material (a combination of several types of plastics), whereas paper packaging is usually single-material, where more efficient treatment of waste into higher-quality secondary raw material can be expected. In the future, efforts can be expected to replace multi-material plastic packaging.
- The selection of sustainable materials that are easily recyclable or biodegradable.
- A trend towards the light-weighting of packaging can be expected, with the load-bearing function taken over by other types of materials with a lower carbon footprint (such as paper).
- In the case of beverage packaging, aluminium cans are expected to become increasingly popular.

### Aspects Specific to Glass

- The generation of glass from separate collection could be influenced by eco-modulation, where packaging that is currently difficult to recycle could, for certain products, be replaced by glass packaging.

### Aspects Specific to Metals

- The generation of metals from separate collection (from the municipal system) accounts for only a small part of the overall metal stream generation.

### Aspects Specific to Wood

- Crucial for the generation of wood from separate collection is the sorting of bulky waste directly by citizens or by the staff of civic amenity sites. In the future, the collection of discarded wooden furniture can be expected within the framework of the Extended Producer Responsibility (EPR) system for the purpose of preparation for re-use and recycling. An example of good practice in this area is France, where such a system has been in place since 2013.
- Another instrument that will in the future lead to lower generation of wooden waste will be green public procurement, which will stimulate demand for wooden furniture designed on circular and sustainable principles for easy disassembly, re-use or recycling. If appropriate public procurement criteria are introduced in the coming years, given the life cycle of furniture, the effect of their implementation will be manifested rather at the end of the period for which the forecast is prepared, i.e. after 2035.

### Aspects Specific to Biowaste from Gardens and Parks

- A positive impact on the generation of biowaste from gardens and parks will result from changes in citizens' behaviour, where a shift towards an environmental mindset is expected. Citizens will limit

the burning of leaves, branches and greenery. A higher demand for seasonal collections organised by municipalities is anticipated. At the same time, citizens must have access to a civic amenity site directly in the municipality or in its immediate vicinity, which is conditioned by the expansion of civic amenity sites.

- The anticipated restriction of solid-fuel boilers may lead to higher generation of this waste.
- The development of door-to-door collection in detached housing is also expected. Equally significant is the approach taken to the prevention of biowaste generation, i.e. the use of home composting.
- The generation of biodegradable waste from greenery maintenance may tend to decrease due to the preference for long grass as a specific tool for preventing drought and preserving biodiversity. Many municipalities prefer mulching. At the same time, adaptation to climate change will require the expansion of green areas and new greenery will be planted, which, on the other hand, may result in an increase in the separate collection of biowaste from gardens and parks.

### **Aspects Specific to Biowaste from Kitchens and Canteens**

- An increase in the generation of biowaste from kitchens is expected as a result of the involvement of small businesses, restaurants, schools, canteens, hospitals and retirement homes in the municipal system. The inappropriate management of this waste by entrepreneurs (Horeca) is also expected to cease, with this biowaste being handed over for recovery. A decline will occur as a result of waste prevention initiatives and the reduction of food waste as a consequence of new EU legislation. Education of citizens and entrepreneurs and numerous campaigns on this topic are anticipated.
- The development of separate collection of kitchen waste without or with kitchen biowaste of animal origin is expected in detached housing, apartment buildings/housing estates and urban agglomerations.
- Partial diversion of kitchen biowaste that currently ends up in home composters in detached housing is also possible, due to citizens' preference for more convenient ways of handling.

### **Aspects Specific to the Textile Stream**

- The generation of textiles including footwear in the municipal system will be significantly influenced by legislation (the Waste Act), which will enter into force as of 1 January 2025, when municipalities will be obliged to ensure the separate collection of waste textiles. An analogy is expected with the development of generation of a stream with a similar legislative intervention that affected the generation of biowaste (cat. no. 20 02 01).
- Textile waste is expected to partly arise as a new stream and at the same time to be separated from mixed municipal waste.
- A specific type of waste classified as textile waste is footwear. Clothing, footwear and household textiles can be deposited in textile collection bins, re-use centres or swap shops. The ideal method of management is the re-use of clothing and footwear until the end of their service life. Textile waste including footwear can be deposited at collection points and civic amenity sites. Textile recycling technologies are available. Technological options for recycling footwear are currently limited due to the large number of different materials from which footwear is usually made.
- Prevention can have a significant impact on generation. In larger cities across the CR, second-hand shops are gaining popularity, especially among the younger generation, and their number has increased in recent years. Equally popular are swap shops, where unwanted clothing can be

exchanged for other clothing or other items. It can be assumed that in larger cities there is a higher level of awareness and education on sustainability issues, and therefore also greater demand for second-hand and swap shops. A shift away from “fast fashion” and interventions contributing to the sustainability of the textile industry, such as support for local and sustainable fashion, are also expected.

### 2.13.3.2 Scenarios of Municipal Waste Generation


Based on the consideration of the above-mentioned aspects, two scenarios of municipal waste generation, i.e. individual sub-streams, have been developed. The scenarios are designated as the **optimistic** and the **realistic scenario**. The scenarios assume a certain percentage of citizens participating in sorting. According to available data, 75% of citizens currently sort their waste.

#### **MoE OPTIMISTIC SCENARIO of municipal waste generation (TRAJECTORY 1)**

- **In the optimistic scenario of generation (Trajectory 1 – T1)**, prevention activities are highly effective, with **86% of citizens** intensively sorting municipal waste. The amount of sorted fractions increases, even though the occurrence of material-recoverable fractions in municipal waste decreases as a result of prevention. Prevention affects all sub-streams, but the degree of achieved prevention differs for various sub-streams. Specific measures in the field of prevention are set out in the Waste Prevention Programme. Sorting also applies to bulky waste directly at source – by citizens or by the staff of civic amenity sites, resulting in a reduction in the generation of bulky waste.

#### **MoE REALISTIC SCENARIO of municipal waste generation (TRAJECTORY 2)**

- **In the realistic scenario of generation (Trajectory 2 – T2)**, prevention activities are less effective. Municipal waste is intensively sorted by **81% of citizens**. A lower percentage of citizens are willing to sort, which is also reflected in the generation of bulky waste (the assumption being that those who are not willing to sort basic materials such as paper, plastics, glass and biowaste will not be willing to sort bulky waste either).

		<b>Optimistic scenario (Trajectory 1)</b>	<b>Realistic scenario (Trajectory 2)</b>
	<b>75%</b> citizens sort today	<b>86%</b> citizens will be intensively sorting in 2035	<b>81%</b> citizens will be intensively sorting in 2035
<b>Sorting by Citizens</b>			

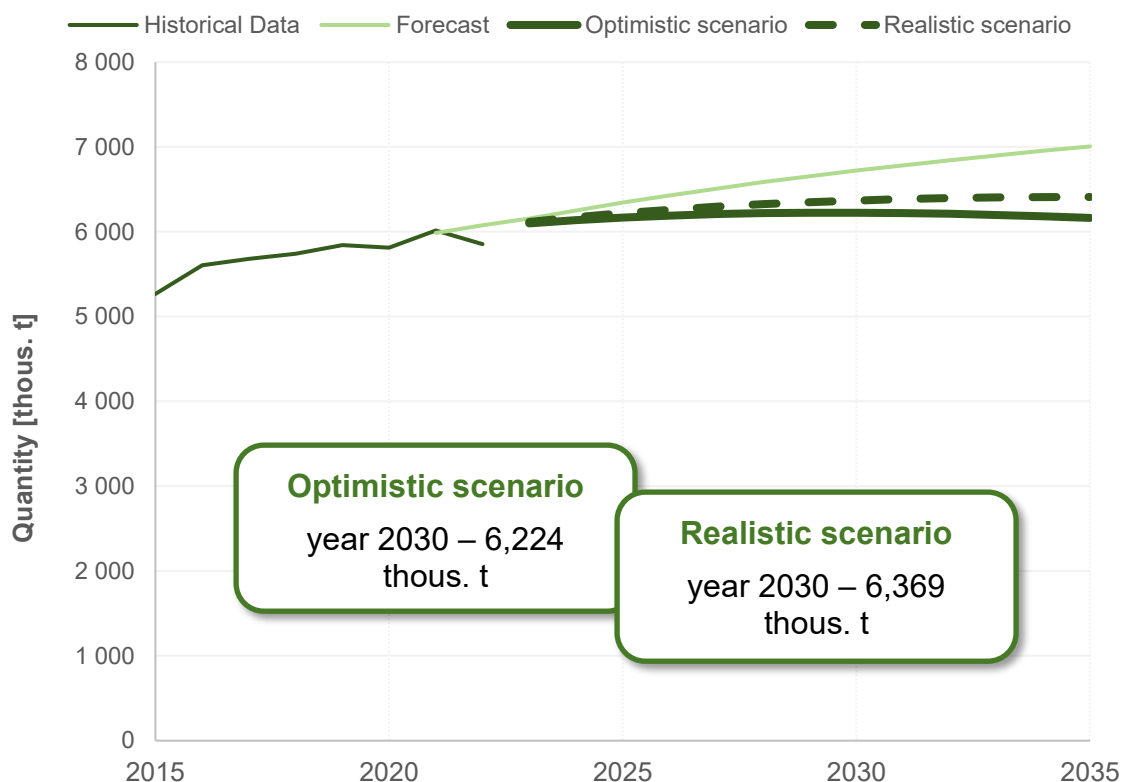
The results of the scenarios for the entire municipal waste stream are shown in graph 63. In both trajectories, as a result of prevention measures, the growing generation of municipal waste is successfully stopped.

**In the case of the optimistic scenario (Trajectory 1), municipal waste generation in 2025 is expected to be approximately 6.2 million tonnes.**

**For the realistic scenario (Trajectory 2), this amounts to 6.4 million tonnes of municipal waste.**

The two trajectories further differ in the level of sorting of bulky waste and mixed municipal waste.


Graph 63: Scenarios of Municipal Waste Generation Development



Source: Generation data 2022 – WMIS, forecast Tiramiso, own projections

The development of generation along the proposed trajectories will be influenced by the motivation of citizens and waste holders towards the required behaviour. This behaviour will be influenced both by the quality and intensity of awareness-raising and educational campaigns, and by technical and economic motivation. These will include instruments such as restrictions on the collection of mixed municipal waste (MMW) and the provision of sufficient collection capacity for separate collection, as well as economic motivation, e.g. payments according to the amount of MMW or the volume of MMW bins and the frequency of their collection.

From the perspective of municipalities, a significant motivation for maximising separate collection will be the economic advantage of separate collection compared to the management of mixed municipal waste or bulky waste. This economic advantage may be achieved through the co-financing of municipal collection, transport and subsequent management of end-of-life products covered by individual EPR systems.

<p>Scenarios T1 and T2 differ in the level of waste prevention and in the level of municipal waste sorting, which is simultaneously reflected in the differing generation of individual municipal waste sub-streams.</p>  <p><b>Prevention</b></p>	<p><b>Both the optimistic and realistic scenario take into account significant prevention of municipal waste generation.</b></p> <p><b>The long-term upward trend in municipal waste generation will be halted.</b></p> <p><b>However, the impact on the generation of all waste will be negligible.</b></p>
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The following tables summarise the expected amounts of individual municipal waste sub-streams.

**Table 74: Optimistic scenario of generation (Trajectory 1) – overview of expected future generation by municipal waste sub-streams (individual commodities)**

Waste stream	Quantity [t]				Quantity [kg/cap.]	
	2021	2022	2030	2035	2022	2035
<b>Municipal waste total</b>	6,015,603	5,854,385	6,224,283	6,165,246	544	576
<b>Biodegradable Waste</b>						
From kitchens and canteens (20 01 08)	28,428	42,776	337,296	535,783	4	50
From gardens and parks (20 02 01)	878,977	845,876	1,204,012	1,298,190	81	121
Edible oil and grease (20 01 25)	10,709	12,437	16,438	17,619	1	2
<b>Separately collected fractions</b>						
Separated paper and cardboard (20 01 01 + 15 01 01)	467,582	466,454	550,741	581,519	44	54
Separated glass (20 01 02 + 15 01 07)	173,080	171,084	221,106	243,476	16	23
Separated plastics (20 01 39 + 15 01 02)	194,803	205,920	329,548	397,247	20	37
Separated metals (20 01 40 + 15 01 04)	434,215	441,751	441,198	478,588	42	45
Separated textiles (20 01 10 + 20 01 11)	34,004	35,855	85,300	115,582	3	11
Separated wood (20 01 38)	78,070	79,187	220,151	311,849	8	29
Mixed MMW (20 03 01)	2,755,893	2,674,934	2,008,871	1,539,322	255	144
<b>Waste from marketplaces (20 03 02)</b>	7,007	5,997	6,853	6,637	1	1
<b>Street sweepings (20 03 03)</b>	92,434	101,325	114,786	121,334	10	11
<b>Bulky waste (20 03 07)</b>	712,494	634,822	578,957	441,167	60	41
<b>Hazardous waste 20 (municipal waste), H</b>	8,346	38,402	9,627	10,267	4	1
<b>Residual waste in MW</b>	140,198	98,594	99,421	66,680	9	6

Source: compiled on the basis of WMIS, own projections

**Table 75: Realistic scenario of generation (Trajectory 2) – overview of expected future generation by municipal waste sub-streams (individual commodities)**

Waste stream	Quantity [t]				Quantity [kg/cap.]	
	2021	2022	2030	2035	2022	2035
<b>Municipal waste total</b>	6,015,603	5,854,385	6,369,031	6,410,455	544	599
<b>Biodegradable Waste</b>						
From kitchens and canteens (20 01 08)	28,428	42,776	312,793	494,792	4	46
From gardens and parks (20 02 01)	878,977	845,876	1,228,935	1,343,859	81	126
Edible oil and grease (20 01 25)	10,709	12,437	16,438	17,619	1	2
<b>Separately collected fractions</b>						
Separated paper and cardboard (20 01 01 + 15 01 01)	467,582	466,454	539,304	562,689	44	53
Separated glass (20 01 02 + 15 01 07)	173,080	171,084	218,221	238,464	16	22
Separated plastics (20 01 39 + 15 01 02)	194,803	205,920	305,708	355,870	20	33
Separated metals (20 01 40 + 15 01 04)	434,215	441,751	435,320	468,935	42	44
Separated textiles (20 01 10 + 20 01 11)	34,004	35,855	81,352	108,610	3	10
Separated wood (20 01 38)	78,070	79,187	207,673	289,860	8	27
Mixed MMW (20 03 01)	2,755,893	2,674,934	2,167,714	1,796,115	255	168
<b>Waste from marketplaces (20 03 02)</b>	7,007	5,997	6,853	6,637	1	1
<b>Street sweepings (20 03 03)</b>	92,434	101,325	114,786	121,334	10	11
<b>Bulky waste (20 03 07)</b>	712,494	634,822	623,966	519,885	60	49
<b>Hazardous waste 20 (municipal waste), H</b>	8,346	38,402	9,627	10,267	4	1
<b>Residual waste in MW</b>	140,198	98,594	100,363	75,531	9	7


Source: compiled on the basis of WMIS, own projections

### 2.13.3.3 Expected Future Management of Municipal Waste


The scenarios of future municipal waste management follow on from the scenarios of future municipal waste generation. For both the optimistic and realistic municipal waste generation scenarios (Trajectory 1 and 2), **three management scenarios (N1, N2 and N3)** have been drawn up, which will lead to **the achievement of the targets for the recycling of municipal waste and for diverting municipal waste from landfilling.**

Specifically, the targets are as follows:

- To increase the level of preparation for re-use and recycling of municipal waste to at least **55% in 2025, 60% in 2030 and 65% in 2035.**
- By **2035**, to reduce the amount of municipal waste **landfilled to 10%** (by weight) or less of the total amount of municipal waste generated.

 <b>Targets for Municipal Waste</b>	<b>Level of preparation for re-use and recycling of municipal waste</b>		
	<b>55%</b> in 2025	<b>60%</b> in 2030	<b>65%</b> in 2035
	<b>Landfilled maximum 10%</b> 10% of generated municipal waste in 2035		

The scenarios differ in the **extent of municipal waste landfilling** in 2035, with the **maximum value being 10%** (scenario N1), in scenario N2 it is lower, and in scenario N3 the minimum realistic value is achieved (approaching zero). Corresponding to the decline in the landfilling rate, the **share of energy recovery increases** (theoretically from 25% to 35% with zero landfilling).

 <b>Scenarios of Municipal Waste Management</b>	<b>Management scenarios for 2035</b>					
	<b><u>Scenario N1</u></b>		<b><u>Scenario N2</u></b>		<b><u>Scenario N3</u></b>	
	<b>Recycling</b>	<b>65%</b>	<b>Recycling</b>	<b>65%</b>	<b>Recycling</b>	<b>65%</b>
	<b>Energy Recovery</b>	<b>25%</b>	<b>Energy Recovery</b>	<b>30%</b>	<b>Energy Recovery</b>	<b>35%</b>
	<b>Landfilling</b>	<b>10%</b>	<b>Landfilling</b>	<b>5%</b>	<b>Landfilling</b>	<b>0%</b>

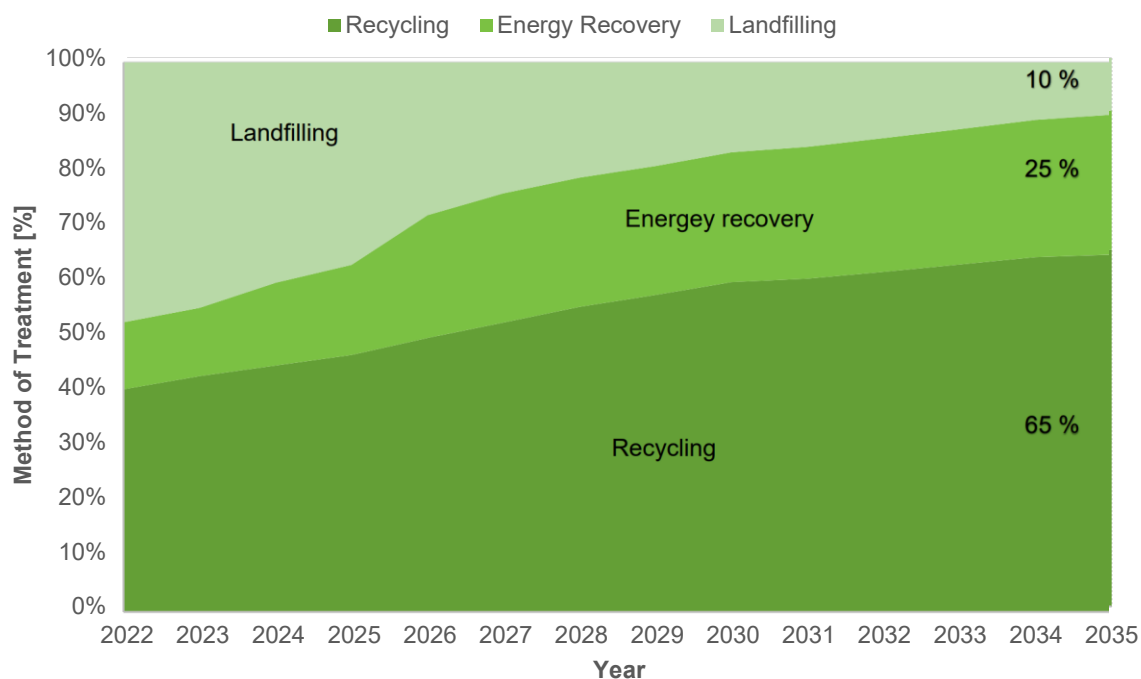
In contrast to the generation scenarios (T1, T2), the **management scenarios (N1, N2, N3) are closely linked to the implementation of processing technologies.** Without the existence of the necessary infrastructure, their achievement cannot be expected. Achieving a municipal waste recycling rate of 65% in 2035 is associated with investments in technologies for the management of biodegradable waste

(biogas plants including hygienisation, composting plants), re-sorting lines for plastics and paper, and technologies for the treatment and sorting of bulky waste.

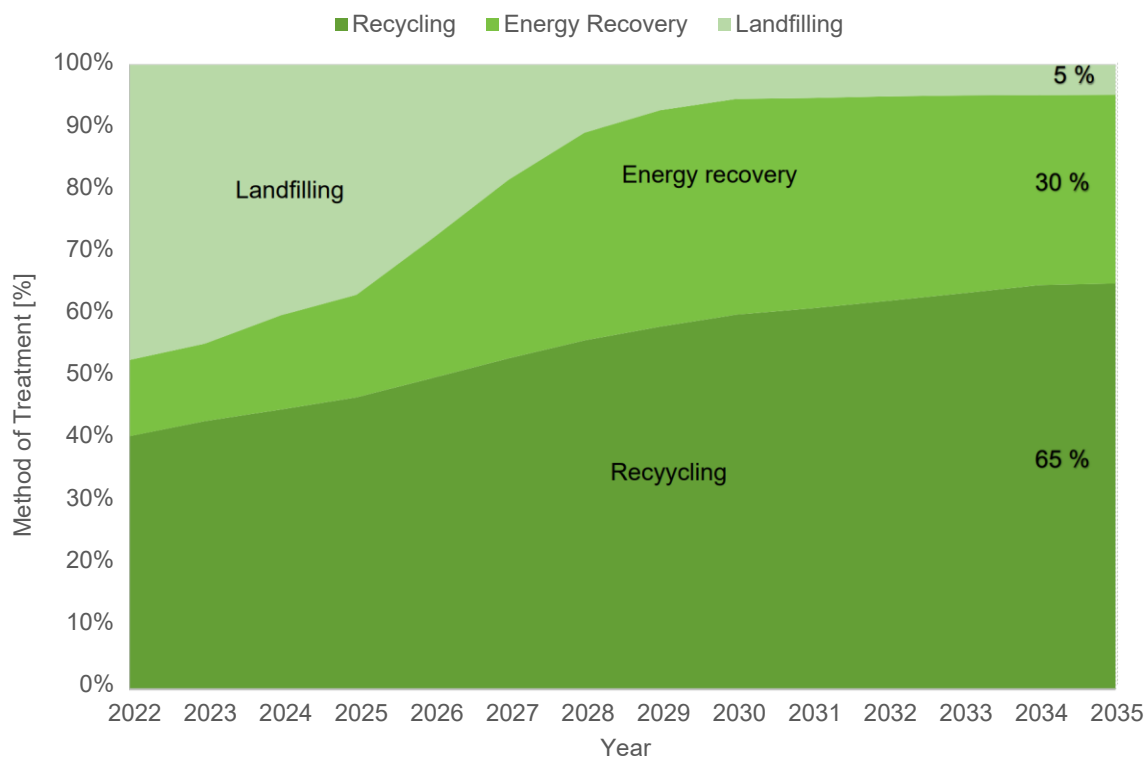
The results of modelling, in the form of quantities of municipal waste ending up in individual management methods according to the hierarchy, are shown in table 76 for the optimistic municipal waste generation scenario (Trajectory 1) and Table 77 for the realistic municipal waste generation scenario (Trajectory 2) at the end of this chapter.

The gradual development in management towards the set targets is evident from Graphs 64 to 66. Since the progression expressed in percentages is essentially the same for both the optimistic and realistic scenarios, a single common graph is shown for both municipal waste generation scenarios, i.e. for the optimistic scenario (T1) and the realistic scenario (T2).

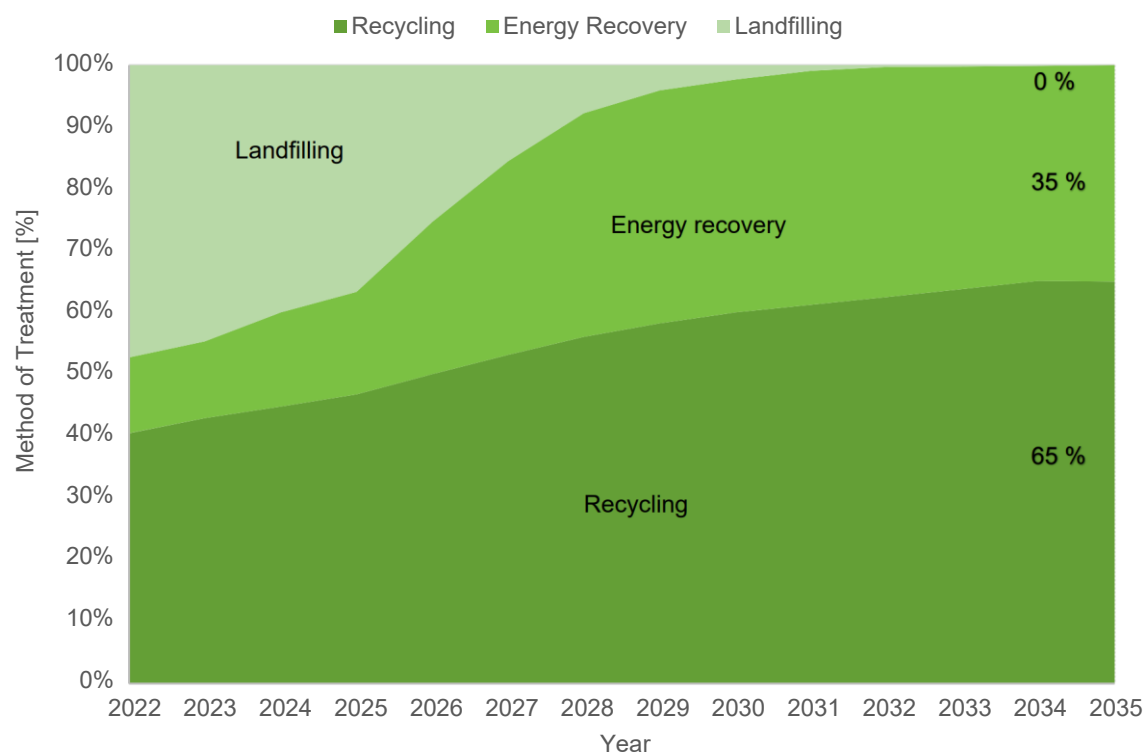
**Graph 64: Model of Municipal Waste Management for Management Scenario N1 (graph common to both the optimistic and realistic municipal waste generation scenarios – Trajectories T1 and T2)**



Graph 65: Model of Municipal Waste Management for **Management Scenario N2** (graph common to both the optimistic and realistic municipal waste generation scenarios – Trajectories T1 and T2)



Graph 66: Model of Municipal Waste Management for **Management Scenario N3** (graph common to both the optimistic and realistic municipal waste generation scenarios – Trajectories T1 and T2)



The following text describes in greater detail the material fractions and sub-streams that contribute to the individual methods of management. The commentary relates primarily to the target year 2035. The share of individual sub-streams in management in 2035 is evident from 67 below.

## **RECYCLING**

The following sub-streams contribute primarily to recycling:

- **Biowaste from gardens and parks (20 02 01) and biowaste from kitchens and canteens (20 01 08)** – this represents the most significant stream, which will be predominantly recovered materially.
- **Paper, plastics, glass, metals** – these are already established commodities of separate collection, whose importance will gradually increase.
- **Textiles** – textiles represent waste whose separate collection within the waste regime will significantly increase in the coming years.
- **Bulky waste and separately collected wood** – these constitute another important stream suitable for recycling.
- **Mixed municipal waste** – of the entire generation of this stream, only a small portion of recoverable fractions contributes to recycling, obtained through mechanical sorting of mixed municipal waste and the separation of metals from slag produced by facilities for energy recovery of municipal waste.

## **ENERGY RECOVERY**

The following sub-streams contribute primarily to energy recovery:

- **Bulky waste** – a portion of bulky waste, after its sorting (by staff at civic amenity sites or following mechanical re-sorting), may not be recoverable. This portion is preferred for energy recovery.
- **Mixed municipal waste** – residual waste, after maximum sorting of recoverable fractions, will be the dominant stream to be utilised for energy recovery. The management scenarios assume a share of **energy recovery from approximately 25 to 35%**, depending on the extent of municipal waste landfilling. In order to achieve this, it is necessary to build an adequate network of facilities for energy recovery of waste and the related logistics.

## **LANDFILLING**

Municipal waste landfilling correlates with the share of energy recovery. The management scenarios were set from the perspective of landfilling under the assumptions outlined below.

### **Scenario N3– zero landfilling**

- The process that contributes to the landfilling of mixed municipal waste is the mechanical sorting process of mixed municipal waste in mechanical treatment technologies. Achieving zero landfilling of mixed municipal waste means that, when sorting mixed municipal waste, no fraction is generated that cannot be recovered. Current knowledge and practical experience, however, show that this state is highly unlikely. The basic balance of mechanical sorting technologies assumes, under the current composition of mixed municipal waste, that approx. 20% by weight of incoming waste will still be destined for landfilling.
- The assumption of this scenario is therefore that there will be no inert fine fractions or pieces of stones, etc. in mixed municipal waste. Fine fractions will not be present as a result of a fundamental restriction (ban) on solid-fuel boilers, or separate collection of ash within the waste category no. 20

03 01 01 *Separately collected household ash* will be enabled and carried out. At the same time, it is a condition that no pieces of construction and demolition waste appear in mixed municipal waste. Citizens will sort this waste perfectly.

- Alongside mixed municipal waste, no other stream will be landfilled. This applies, for example, to street sweepings, which will have to be perfectly sorted and utilised (e.g. for obtaining inert gritting materials during road cleaning after winter maintenance).

<b>Landfilling of municipal waste</b>	<b>Achieving zero landfilling of municipal waste in 2035 is difficult to attain, if not unrealistic.</b>
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#### **Scenario N2– minimum landfilling** (5% of municipal waste is landfilled)

- Landfilling includes approximately 20% of mixed municipal waste that undergoes mechanical sorting and, in addition, a portion of street sweepings (still assuming sorting of inert waste from winter road maintenance and energy recovery).

#### **Scenario N1** — approaching the **maximum permitted landfilling** of municipal waste in 2035 (10%)

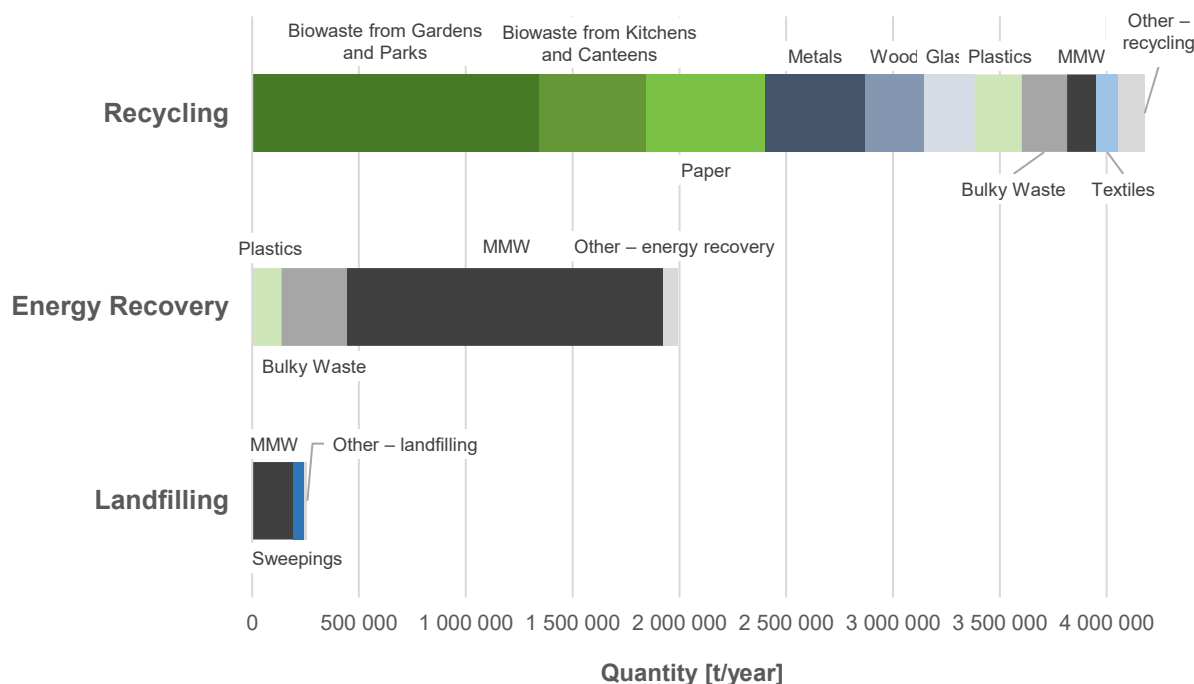
- In this scenario, more than 600 thousand tonnes of municipal waste are landfilled annually. In addition to the above, direct landfilling of mixed municipal waste also contributes, as a result of insufficient capacities of facilities for energy recovery or other recovery. For this scenario, a capacity of facilities for energy recovery of waste of around 1 million tonnes/year and approx. 300 thousand tonnes/year capacity of sorting lines for mixed municipal waste would be sufficient. If the statutory condition is met that untreated mixed municipal waste cannot be landfilled, the same balance would be achieved with sorting lines operating at a capacity of 1.5 million tonnes/year (with a 20% share of outputs being landfilled).
- Separately collected fractions are not landfilled in this scenario. These are mostly recyclable wastes, the landfilling of which will be prohibited as of 2030, since under the current state of scientific and technical progress they can be efficiently recycled.

<b>Landfilling of municipal waste</b>	<b>The realistic share of landfilling, which will be in compliance with legislation, should be at the level of 5%.</b>
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Graph 67 shows the share of individual municipal waste sub-streams by management method in 2035 for the optimistic municipal waste generation scenario (Trajectory 1) and the management scenario N2.

It may be assumed that the structure of the representation of individual sub-streams will be similar or almost identical also for the other management scenarios, respectively for the realistic generation scenario (Trajectory 2).

Graph 67: Contributions of individual municipal waste sub-streams to the key waste management methods in 2035 – **management scenario N2 (landfilling of 5% of municipal waste generation)**.



Note: Prepared for the optimistic municipal waste generation scenario (Trajectory 1) and the management scenario N2, assuming landfilling of 5% of municipal waste generation.

## CONCLUSIONS OF SCENARIO MODELLING

- The combination of the considered generation scenarios and the **development of technologies**, on which the management scenarios are based, has the **potential to achieve the set targets** for municipal waste management.
- Since the generation scenario foresees a gradual increase in the generation of material-recoverable fractions (paper, plastics, glass, metals, biowaste), **achieving the target of 60% recycling of municipal waste in 2030 is more difficult** than achieving 65% in 2035. It follows that **achieving the target in 2030 requires the immediate implementation of all measures and the construction of technologies** to ensure the fulfilment of the targets.
- It also follows that **achieving the target for the realistic municipal waste generation scenario (Trajectory 2) is more difficult** than for the optimistic municipal waste generation scenario (Trajectory 1).



**Fulfilment of  
recycling targets**

**Achieving the target of 60% recycling of municipal waste in 2030 appears to be more difficult than achieving the target of 65% in 2035.**

**The reason is the gradual increase in separately collected fractions intended for recycling at the expense of residual waste, which today is predominantly landfilled.**

**Achieving the target in 2030 requires the immediate implementation of all proposed measures and the construction of the necessary technologies for collection, sorting and recovery of waste.**

**Table 76: Scenarios of Municipal Waste Management – Optimistic Municipal Waste Generation Scenario (Trajectory 1)**

<b>Trajectory 1 Scenario N1</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
Generation (thous. t)	5,854	6,099	6,136	6,168	6,190	6,208	6,221	6,223	6,224	6,221	6,213	6,199	6,184	6,165
Recycling (thous. t)	2,371	2,618	2,749	2,883	3,086	3,270	3,454	3,589	3,734	3,773	3,845	3,918	3,993	4,007
Energy recovery (thous. t)	716	757	926	1,013	1,384	1,459	1,463	1,460	1,473	1,491	1,510	1,527	1,542	1,570
Landfilling (thous. t)	2,767	2,724	2,461	2,272	1,720	1,479	1,304	1,174	1,017	957	858	754	649	588
<b>Trajectory 1 Scenario N2</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
Generation (thous. t)	5,854	6,099	6,136	6,168	6,190	6,208	6,221	6,223	6,224	6,221	6,213	6,199	6,184	6,165
Recycling (thous. t)	2,371	2,618	2,749	2,883	3,086	3,289	3,477	3,614	3,734	3,796	3,864	3,933	4,004	4,007
Energy recovery (thous. t)	716	757	926	1,013	1,384	1,774	2,069	2,157	2,151	2,095	2,035	1,963	1,882	1,863
Landfilling (thous. t)	2,767	2,724	2,461	2,272	1,720	1,145	675	452	339	330	314	303	298	295
<b>Trajectory 1 Scenario N3</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
Generation (thous. t)	5,854	6,099	6,136	6,168	6,190	6,208	6,221	6,223	6,224	6,221	6,213	6,199	6,184	6,165
Recycling (thous. t)	2,371	2,618	2,749	2,883	3,096	3,300	3,489	3,626	3,736	3,812	3,883	3,954	4,027	4,007
Energy recovery (thous. t)	716	757	934	1,024	1,527	1,944	2,247	2,342	2,344	2,353	2,311	2,230	2,150	2,158
Landfilling (thous. t)	2,767	2,724	2,453	2,261	1,567	964	485	255	144	56	19	15	7	0

Source: compiled on the basis of WMIS, own projections

**Table 77: Scenarios of Municipal Waste Management – Realistic Municipal Waste Generation Scenario (Trajectory 2)**

<b>Trajectory 2 Scenario N1</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
Generation (thous. t)	5,854	6,116	6,170	6,219	6,259	6,296	6,327	6,348	6,369	6,385	6,397	6,404	6,409	6,410
Recycling (thous. t)	2,371	2,611	2,746	2,882	3,105	3,305	3,504	3,641	3,841	3,917	3,989	4,054	4,116	4,178
Energy recovery (thous. t)	716	756	917	1,003	1,297	1,360	1,650	1,646	1,507	1,530	1,555	1,577	1,598	1,632
Landfilling (thous. t)	2,767	2,749	2,507	2,334	1,857	1,631	1,173	1,061	1,021	938	853	773	695	600
<b>Trajectory 2 Scenario N2</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
Generation (thous. t)	5,854	6,116	6,170	6,219	6,259	6,296	6,327	6,348	6,369	6,385	6,397	6,404	6,409	6,410
Recycling (thous. t)	2,371	2,611	2,744	2,880	3,140	3,377	3,580	3,713	3,841	3,917	3,989	4,054	4,116	4,178
Energy recovery (thous. t)	716	699	852	931	1,368	1,750	2,015	2,187	2,201	2,150	2,098	2,045	1,993	1,937
Landfilling (thous. t)	2,767	2,806	2,574	2,408	1,751	1,169	732	448	327	318	310	305	300	295
<b>Trajectory 2 Scenario N3</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>
Generation (thous. t)	5,854	6,116	6,170	6,219	6,259	6,296	6,327	6,348	6,369	6,385	6,397	6,404	6,409	6,410
Recycling (thous. t)	2,371	2,611	2,739	2,875	3,137	3,367	3,563	3,703	3,823	3,902	3,977	4,048	4,121	4,177
Energy recovery (thous. t)	716	756	925	1,014	1,527	1,923	2,224	2,455	2,399	2,415	2,380	2,334	2,274	2,230
Landfilling (thous. t)	2,767	2,749	2,506	2,330	1,595	1,006	540	190	147	68	40	22	14	0

Source: compiled on the basis of WMIS, own projections

## 2.13.4 Waste After Treatment and Processing (Secondary Waste)

Waste from waste treatment facilities, i.e. waste generated during the treatment and processing of waste (e.g. waste from wastewater treatment plants, waste from shredding or other mechanical or physical-chemical treatment of waste), is collectively referred to as secondary waste or also as secondary waste generation. This stream is formed by catalogue numbers from group 16 *Waste not otherwise specified in this catalogue* and group 19 *Waste from waste management facilities* (shortened).

More significant changes in generation are expected mainly in group 19, in particular in the generation of waste after the treatment or processing of municipal waste. For this reason, the following chapters focus primarily on municipal waste.

### 2.13.4.1 Factors Influencing the Generation of Waste of Group 19

After the processing of municipal waste, secondary waste arises primarily as outputs from the energy recovery of municipal waste, outputs from the re-sorting of separately collected fractions, and in the future will also arise from the mechanical sorting of recyclable and recoverable fractions from mixed municipal waste. These three factors will significantly influence the generation of secondary waste derived from municipal waste in the future.

#### Energy recovery of municipal waste

In the coming years, the capacity of facilities for energy recovery of waste and also the energy recovery of municipal waste, in particular mixed municipal waste and fuels produced from mixed municipal waste, will increase. This will also lead to greater generation of solid residues, so-called slag, where in the CR an average of 220 kg of slag per one tonne of processed waste is generated in four facilities for energy recovery of waste, i.e. approximately 160 thousand tonnes of waste under cat. no. 19 01 12 *Other ash and slag not included under 19 01 11*. With the increase in the capacity of facilities for energy recovery of waste, slag generation will rise.

#### Sorting of Recyclable and Recoverable Fractions

The forecast of municipal waste generation anticipates an increase in the generation of separately collected fractions such as paper, plastics, glass, metals and textiles. In this context, the importance of their treatment with subsequent generation of secondary waste will increase. In the context of scenario development, the management of group 19 waste is crucial, in particular cat. no. 19 12 04 *Plastics and rubber*, 19 12 10 *Combustible waste*, 19 12 01 *Paper and cardboard*, 19 12 02 *Ferrous metals* and 19 12 03 *Non-ferrous metals*.

#### Mechanical Sorting of Recyclable and Recoverable Fractions from Mixed Municipal Waste and Subsequent Production of Solid Recovered Fuel (SRF)

The scenarios of municipal waste management envisage, in addition to facilities for energy recovery of waste, also the construction of facilities for mechanical sorting of mixed municipal waste, in particular with subsequent production of solid recovered fuel. After sorting out part of the recyclable fractions such as PET bottles, aluminium cans, polyethylene, partly paper, and after sorting out mineral fractions and possibly also part of biodegradable fractions (for bio stabilisation), solid recovered fuel (SRF) will be produced from the remaining recoverable waste, which can subsequently be utilised for energy recovery in cement plants or heating plants.

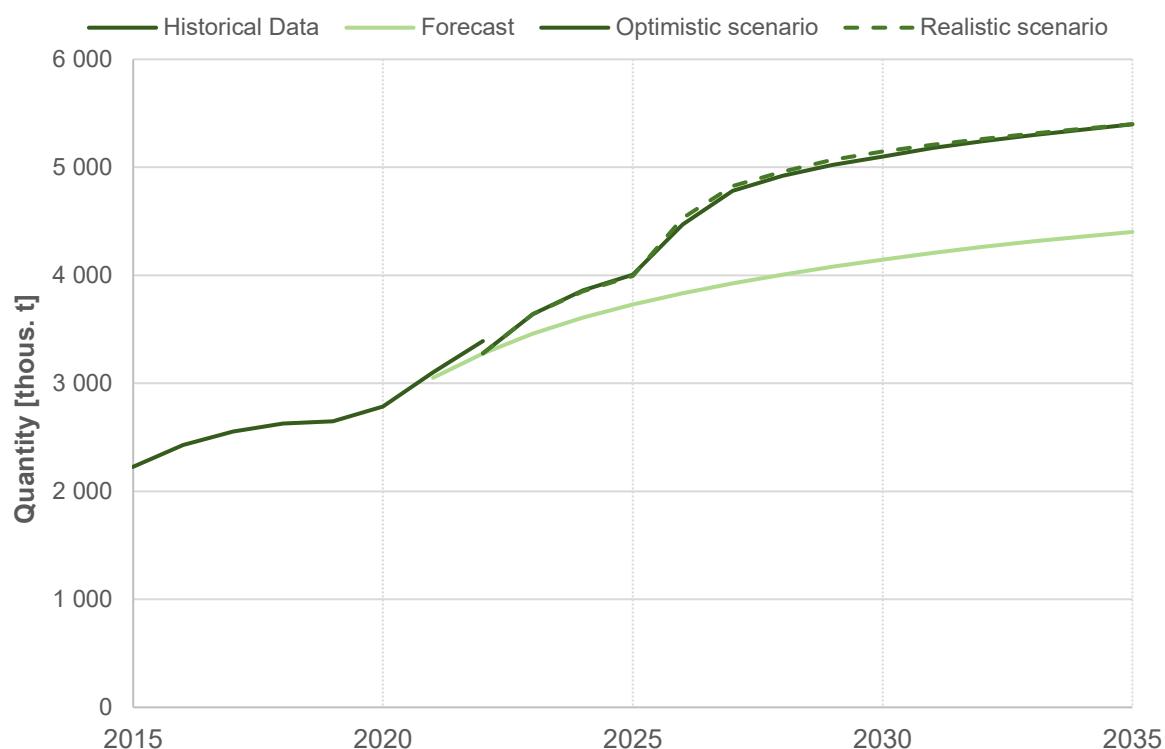
On the basis of greater sorting of recoverable fractions from mixed municipal waste, higher generation of waste under cat. no. 19 12 10 *Combustible waste* is expected.

## Scenarios of Secondary Waste Generation from the Processing of Municipal Waste

In line with the developed scenarios for municipal waste generation (Chap. 2.13.3), two scenarios will also be considered for secondary waste, reflecting the above-mentioned links between the generation of separately collected fractions and the energy recovery of municipal waste and the generation of secondary waste (group 19) – **the scenarios of secondary waste generation are directly linked to the scenarios of municipal waste generation**. Of the three municipal waste management scenarios created (scenarios N1, N2 and N3), scenario N2 has been selected as the **basis for the subsequent analysis – landfilling of municipal waste at the level of 5% in 2035, energy recovery 30% and recycling 65%**.

Graph 68 shows the development curves of secondary waste generation (group 19) for both proposed municipal waste generation scenarios (Trajectories 1 and 2). The difference between secondary waste generation in the optimistic municipal waste generation scenario (Trajectory 1) and the realistic municipal waste generation scenario (Trajectory 2) is negligible. It can be seen that the generation of secondary waste will increase significantly in the coming years in both scenarios.

*Graph 68: Development of Secondary Waste Generation from the Processing of Municipal Waste According to the Proposed Scenarios*



Source: WMIS generation data, Tiramiso forecast, own projections

*Table 78: Expected Future Generation of Secondary Waste – Trajectory 1 and Trajectory 2 [thousand t]*

Generation of	Forecast (trend)		Projection (scenario)		Comment
	2030	2035	2030	2035	
2022	4,146	4,401	5,099	<b>5,398</b>	Optimistic Generation Scenario (Trajectory 1), Management Scenario N2

			5,128	<b>5,399</b>	Realistic Generation Scenario (Trajectory 2), Management Scenario N2
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Source: WMIS generation data 2022, Tiramiso forecast, own projections

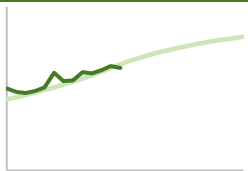
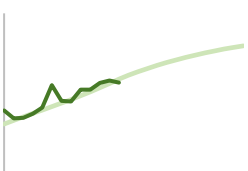
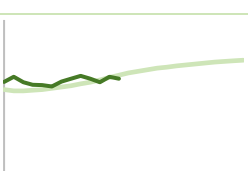
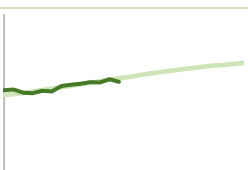
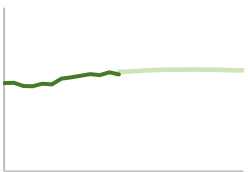
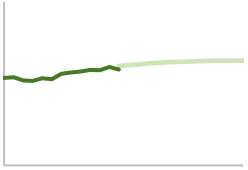
### 2.13.5 Expected Development of the Generation of All Waste Streams

For the sake of clarity and simplification, the following table does not include in the presentation and evaluation certain waste streams where the impact of the scenarios on these streams is relatively small.

The following table 79 summarises the current generation and the projected development of generation by waste group. Unless otherwise stated, the figures for 2030 and 2035 represent generation forecasts.

Table 79: Current Generation and Expected Development until 2035 by Waste Streams

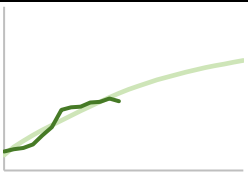
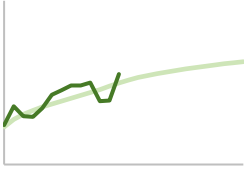
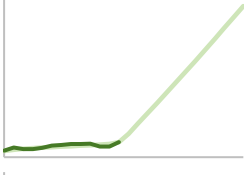
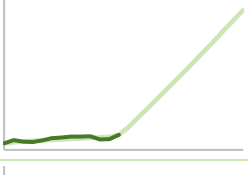
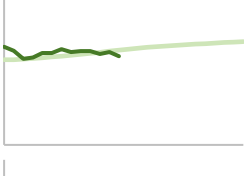
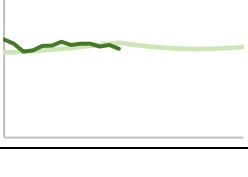
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Primary waste (primary generation)	all groups	35,982	Forecast: 44,044	Forecast: 46,576		Long-term slightly increasing trend. The fluctuation in 2015 is mainly due to Group 17, otherwise generation follows the long-term trend apart from isolated minor fluctuations. Further significant growth is expected in the future.
Secondary waste (secondary generation)	16 , 19	3,391	Forecast: 4,083	Forecast: 4,338		Secondary waste has been growing for a long time. A significant upswing came in 2021 and 2022. This increase is also respected in the future forecast, but the growth rate declines from around 2025 onwards.
			Trajectory 1: 5,100	Trajectory 1: 5,398		Optimistic scenario. It is expected that there will be higher energy recovery of waste, accompanied by the construction of facilities for energy recovery of waste and facilities for machine sorting recyclable and recoverable fractions from mixed municipal waste, followed by the production of solid alternative fuels. There will also be increased sorting of material-recoverable fractions. These changes will lead to a significant increase in the generation of secondary waste.
			Trajectory 2: 5,146	Trajectory 2: 5,400		Realistic scenario. The same factors as in the optimistic scenario apply; however, due to the lower number of inhabitants who actively sort waste, the development of waste generation will differ slightly. In 2035, however, a more or less identical level of waste generation is expected under both scenarios.
Hazardous Waste	all groups	1,604	1,845	1,918		The generation of hazardous waste fluctuates year-on-year, rather in waves. In 2021 and 2022, generation declined; in the future, a slight increase in the generation of hazardous waste is expected.

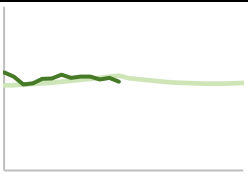
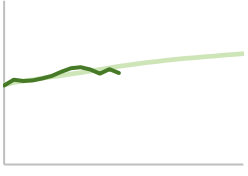
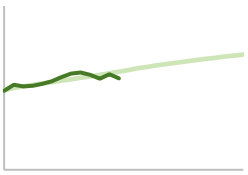
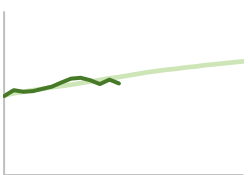
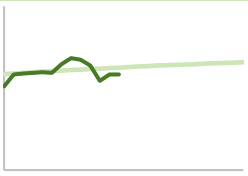
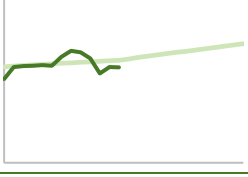
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Other waste	all groups	37,555	46,282	48,996		Apart from occasional fluctuations to higher figures, the generation of other waste has been increasing in the long term and follows the trend. Further growth in the generation of other waste is expected, with the growth rate expected to slow slightly around 2030.
Mineral Waste	01, 02, 05, 06, 08, 10, 11, 12, 15, 16, 17, 19, 20	23,099	29,833	32,059		In 2015 there was a significant deviation from the trend towards higher generation; otherwise, generation follows a markedly increasing trend, which is also expected in the future unless further unexpected fluctuations occur that would affect the long-term trend. The main influence on generation is in subgroup 17 05.
Generation excluding Mineral Waste	all groups	16,061	18,293	18,858		In the long term, the trend is rather constant, with slight fluctuations. Given the expected significant increase in the generation of all waste, a slight increase is also anticipated in this stream (apart from the pronounced increase in the generation of mineral waste).
Municipal Waste	20	5,854	Forecast: 6,850	Forecast: 7,142		A long-term slightly increasing trend without significant fluctuations, expected to continue according to the forecast. Approximately 75% of citizens sort municipal waste, yet it has not been possible to fully apply waste prevention, and generation is increasing.
			Trajectory 1: 6,224	Trajectory 1: 6,165		Optimistic scenario. It is expected that approximately 86% of citizens sorts municipal waste intensively. By 2030, growth will slow down, and from 2031 onwards a slight decline in generation is anticipated.
			Trajectory 2: 6,369	Trajectory 2: 6,410		Realistic scenario. It is expected that approximately 81% of citizens sorts municipal waste intensively. There is a slowdown in the growth of generation, but growth will not be fully halted. Generation will increase slightly by 2035.

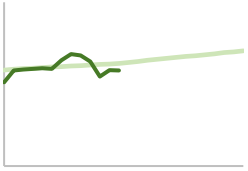
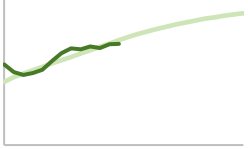
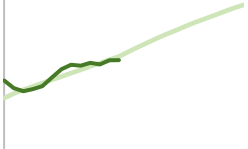

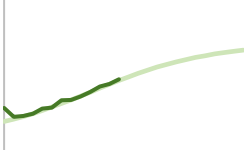
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Mixed Municipal Waste	20	2,675	Forecast: 2,748  Trajectory 1: 2,009  Trajectory 2: 2,168	Forecast: 2,733  Trajectory 1: 1,539  Trajectory 2: 1,796		<p>Generation has been slightly declining in the long term, following the trend with occasional fluctuations such as in 2014 (upwards) and in 2022, when a decline occurred again. According to the forecast, a continued slight decline is expected, though development according to the scenarios below is more likely.</p> <p>Optimistic scenario. Prevention of waste generation will work very effectively, and most material-recoverable fractions will not enter mixed municipal waste, which will lead to a significant decline in its generation.</p> <p>Realistic scenario. The diversion of material-recoverable fractions from mixed municipal waste will also take place, but not to the same extent as in the optimistic scenario. Here, too, the effect of waste prevention is considered, and a significant decline in mixed municipal waste generation is predicted.</p>
Bulky Waste	20	635	Forecast: 849  Trajectory 1: 579  Trajectory 2: 624	Forecast: 914  Trajectory 1: 441  Trajectory 2: 520		<p>Generation has been growing significantly since 2015. In 2021, stagnation occurred, and in 2022 a more pronounced decline. According to the forecast, a significant increase in generation is expected in the following years. However, development is expected to follow the prediction – the scenarios below.</p> <p>Optimistic scenario. A significant decline in generation is assumed. In addition to the effect of municipal waste prevention, the re-sorting of approximately 70% of bulky waste by citizens and at civic amenity sites works very effectively.</p> <p>Realistic scenario. Here, too, a significant decline in generation is assumed. In addition to the effect of municipal waste prevention, the re-sorting of approximately 60% of bulky waste at civic amenity sites works very effectively.</p>

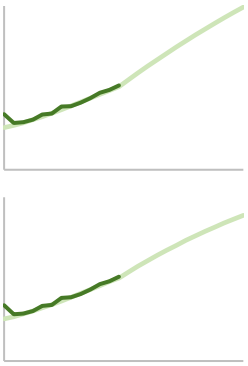
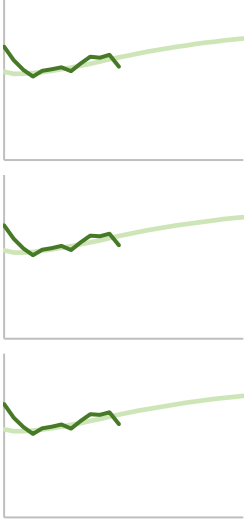
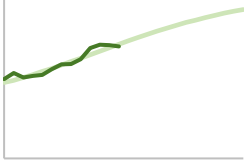
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Biodegradable waste	02, 03, 04, 15, 16, 17, 19, 20	4,273	Forecast: 4,692	Forecast: 5,052		In 2022, there was a more pronounced decline in generation. In the future, however, a continuation of the previous long-term growth in generation is expected, unless a further decline occurs in the coming years.
			Trajectory 1: 4,899	Trajectory 1: 5,383		Optimistic scenario. A partial decline in the generation of cat. no. 20 02 01, for example due to restrictions on grass mowing, and a significant increase in the generation of cat. no. 20 01 08 in view of the expected development of separate collection of kitchen waste.
			Trajectory 2: 4,900	Trajectory 2: 5,388		Realistic scenario. The same factors as in the optimistic scenario apply; however, the decrease under category No. 20 02 01 and the increase under category No. 20 01 08 will not be as pronounced.
Biodegradable municipal waste	20	2,442	Forecast: 3,167	Forecast: 3,542		As a result of the coefficients reflecting the share of the biodegradable component in certain waste streams, growth halted in 2017, followed by a gradual decline from 2018 and a more pronounced decrease in waste generation, particularly in 2020. In the long term, however, a slight decline in generation is expected.
			Trajectory 1: 3,375	Trajectory 1: 3,873		Optimistic scenario. A partial decline in the generation of cat. no. 20 02 01, for example due to restrictions on grass mowing, and a significant increase in the generation of cat. no. 20 01 08 in view of the expected development of separate collection of kitchen waste.
			Trajectory 2: 3,376	Trajectory 2: 3,877		Realistic scenario. The same factors as in the optimistic scenario apply; however, the decrease under category No. 20 02 01 and the increase under category No. 20 01 08 will not be as pronounced.

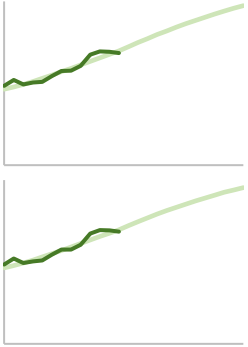
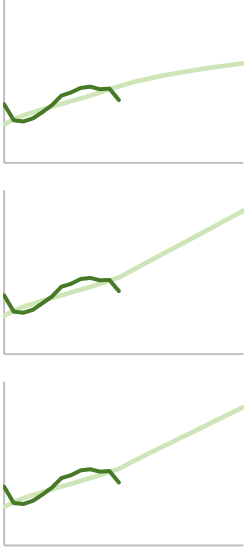
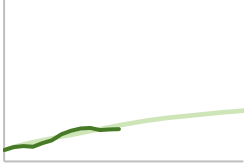
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Biodegradable Waste	20	901	Forecast: 1,350	Forecast: 1,520		A sharp increase between 2013 and 2016, followed by slight growth. In the long term, further larger growth in generation is expected.
			Trajectory 1: 1,558	Trajectory 1: 1,852		Optimistic scenario. A partial decline in the generation of cat. no. 20 02 01, for example due to restrictions on grass mowing, and a significant increase in the generation of cat. no. 20 01 08 in view of the expected development of separate collection of kitchen waste.
			Trajectory 2: 1,558	Trajectory 2: 1,856		Realistic scenario. The same factors as in the optimistic scenario apply; however, the decrease under category No. 20 02 01 and the increase under category No. 20 01 08 will not be as pronounced.
Biodegradable waste from gardens and parks	20	846	Forecast: 1,291	Forecast: 1,458		This stream constitutes the largest fraction of biodegradable waste and therefore mirrors its development. A sharp increase between 2013 and 2016, followed by slight growth. In the long term, further larger growth in generation is expected.
			Trajectory 1: 1,204	Trajectory 1: 1,298		Optimistic scenario. A partial decline in the generation of cat. no. 20 02 01, for example due to restrictions on grass mowing. Furthermore, a shift to community composting of plant residues in municipalities is expected, as this may be counted towards meeting recycling targets. At the same time, a shift towards more environmentally conscious behaviour of citizens and greater prevention, e.g. through the use of home composting, is also anticipated.

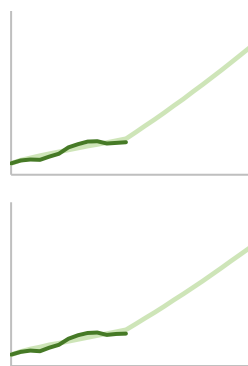
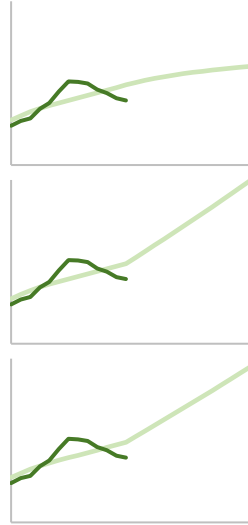
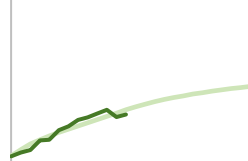
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 2: 1,229	Trajectory 2: 1,344		Realistic scenario. The same factors as in the optimistic scenario apply; however, the decrease will not be as pronounced.
Animal By-products and Biodegradable Waste from Kitchens and Catering Establishments	20	55	Forecast: 59	Forecast: 63		A long-term increasing trend with slight fluctuations in generation and a decline in 2020 and 2021 due to the COVID-19 pandemic. The increasing trend is expected to continue in the future.
			Trajectory 1: 354	Trajectory 1: 553		Optimistic scenario. The development of separate collection of kitchen waste and the discontinuation of inappropriate food waste management are expected. A significant increase in generation is anticipated.
			Trajectory 2: 329	Trajectory 2: 512		Realistic scenario. The development of separate collection of kitchen waste and the discontinuation of inappropriate food waste management are expected. A slowdown and lower growth can be expected as a result of initiatives to prevent or reduce food waste. A significant increase in generation is anticipated.
Food Waste	02, 16, 20	1,081	Forecast: 1,230	Forecast: 1,261		The generation of food waste is fluctuating; it increased between 2012 and 2016, then has been slowly declining. In the future, a slightly increasing trend in generation is expected.
			Trajectory 1: 1,082	Trajectory 1: 1,107		Optimistic scenario. Depending on the municipal waste generation scenarios, changes will also occur in the generation of food waste. As a result of waste prevention measures, the amount of food waste in mixed municipal waste will decrease. A decrease in generation is expected.

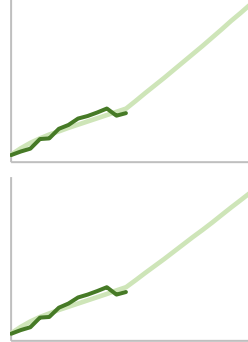
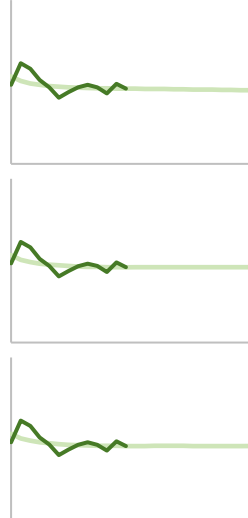

Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 2: 1,064	Trajectory 2: 1,070		Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, a decline in generation is expected.
All paper	03, 15, 20	1,118	Forecast: 1,306	Forecast: 1,354		A long-term stable increase with slight fluctuations, which is also expected in the future.
			Trajectory 1: 1,339	Trajectory 1: 1,408		Optimistic scenario. The replacement of printed matter with digital formats, which will lead to a decline in generation. Counteracting this, however, is the development of e-commerce and parcel services, where paper packaging is extensively used and is expected to be used even more in the future. In the future, an increase in generation is anticipated.
			Trajectory 2: 1,328	Trajectory 2: 1,389		Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Separated paper	15 , 20	466	Forecast: 518	Forecast: 527		Long-term slightly increasing trend. In 2016 and 2017, a sharp increase occurred, followed by a decline until 2020. In the future, the increasing trend is expected to continue.
			Trajectory 1: 551	Trajectory 1: 582		Optimistic scenario. The replacement of printed matter with digital formats, which will lead to a decline. Counteracting this, however, is the development of e-commerce and parcel services, where paper packaging is extensively used and is

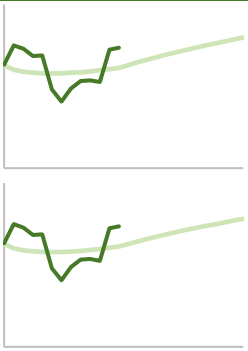
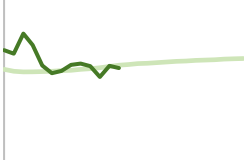
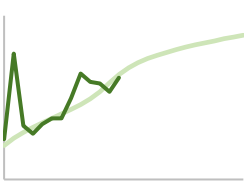
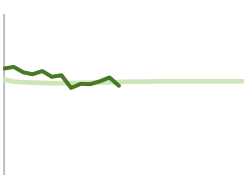
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 2: 539	Trajectory 2: 563		<p>expected to be used even more in the future. In the future, an increase in generation is anticipated.</p> <p>Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.</p>
All plastics	02, 07, 12, 15, 16, 17, 20	494	Forecast: 609	Forecast: 644		After a decline until 2012, growth continued until 2017, when stagnation occurred, or rather the beginning of slight growth. In the future, a more pronounced increase is expected.
			Trajectory 1: 679	Trajectory 1: 764		Optimistic scenario. As with paper, the development of e-commerce and parcel services, where plastic packaging is often used, leads to increased generation. Further, more sorting of plastic waste and its transfer from mixed municipal waste to separated waste is expected. In the future, a more pronounced increase in generation is anticipated.
			Trajectory 2: 655	Trajectory 2: 722		Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, a more pronounced increase in generation is anticipated.
Separated plastic	15, 20	206	Forecast: 259	Forecast: 277		Until 2012, a slight decline, followed by the onset of stable growth, which is expected to continue.

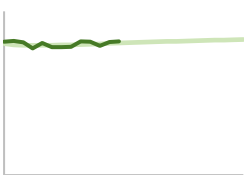
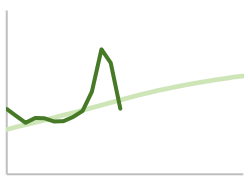
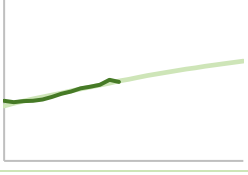

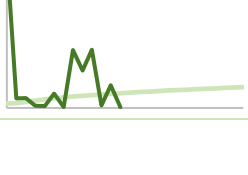
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 1: 330 Trajectory 2: 306	Trajectory 1: 397 Trajectory 2: 356		Optimistic scenario. As with paper, the development of e-commerce and parcel services, where plastic packaging is often used, leads to increased generation. Further, more sorting of plastic waste and its transfer from mixed municipal waste to separated waste is expected. In the future, a more pronounced increase in generation is anticipated.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, a more pronounced increase in generation is anticipated.
All glass	10, 15, 16, 17, 20	285	Forecast: 354 Trajectory 1: 364 Trajectory 2: 361	Forecast: 371 Trajectory 1: 387 Trajectory 2: 382		Until 2013, a significant decline, followed by slight growth with several fluctuations. In the future, the increasing trend is expected to continue.  Optimistic scenario. A shift of glass from mixed municipal waste to separated waste is expected due to prevention and increased sorting in households as well as in businesses. The growth trend is expected to continue.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Separated glass	15, 20	171	Forecast: 211	Forecast: 227		Long-term stable growth, stagnation to slight decline since 2021. In the future, growth is expected to continue.

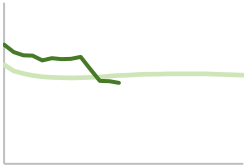
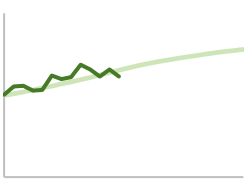
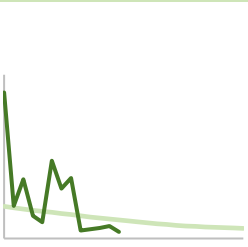
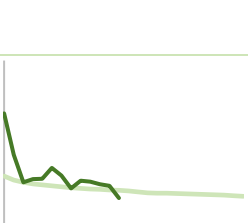
Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 1: 221 Trajectory 2: 218	Trajectory 1: 243 Trajectory 2: 238		Optimistic scenario. A shift of glass from mixed municipal waste to separated waste is expected due to prevention and increased sorting in households as well as in businesses. In the future, an increase in generation is anticipated.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
All wood	02, 03, 15, 17, 20	269	Forecast: 397 Trajectory 1: 503 Trajectory 2: 491	Forecast: 425 Trajectory 1: 613 Trajectory 2: 591		Until 2011, a sharp decline, followed by significant growth, which shifted into stagnation and even a slight decline in 2020. In 2022, a sharp decrease occurred. In the future, the generation of wood is expected to increase.  Optimistic scenario. Extensive re-sorting of bulky waste will lead to a significant increase in the generation of wood. A slowdown may occur due to efforts to introduce furniture designed according to circular and sustainable principles with a longer lifespan; however, the effect is estimated to be seen only around 2035.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Separated wood	20	79	Forecast: 114	Forecast: 124		Long-term increasing generation with slight fluctuations, and growth is expected to continue in the future.

Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 1: 220 Trajectory 2: 208	Trajectory 1: 312 Trajectory 2: 290		Optimistic scenario. Extensive re-sorting of bulky waste will lead to a significant increase in generation. A slowdown may occur due to efforts to introduce furniture designed according to circular and sustainable principles with a longer lifespan; however, the effect is estimated to be seen only around 2035.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Textile waste total	04, 15, 20	59	Forecast: 86 Trajectory 1: 119 Trajectory 2: 115	Forecast: 90 Trajectory 1: 150 Trajectory 2: 142		Increase until 2016, then decrease. Given the historical production, it is difficult to predict the development, but future growth is expected in any case.  Optimistic scenario. There is a significant increase in textile waste, primarily due to the obligation of municipalities, as of 2025, to introduce separate collection of textile waste. The increase will also be influenced by the further sorting of bulky waste or the transfer of textile waste from mixed municipal waste.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Separated textiles	20	36	Forecast: 52	Forecast: 56		A long-term stable increase with a decline only in 2021, probably due to the Covid-19 pandemic. Subsequently, growth continued, which is also expected in the future.

Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 1: 85 Trajectory 2: 81	Trajectory 1: 116 Trajectory 2: 109		Optimistic scenario. There is a significant increase in textile waste, primarily due to the obligation of municipalities, as of 2025, to introduce separate collection of textile waste. The increase will also be influenced by the further sorting of bulky waste or the transfer of textile waste from mixed municipal waste.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Ferrous Metals	02, 10, 12, 15, 16, 17, 20	3,674	Forecast: 3,629 Trajectory 1: 3,682 Trajectory 2: 3,677	Forecast: 3,597 Trajectory 1: 3,684 Trajectory 2: 3,674		A sharp increase in 2011, followed by a significant decline until 2015, then a fluctuating trend. A slight decrease or stagnation is expected. The future development will be determined by ferrous metal waste (steel scrap) from other holders (companies).  Optimistic scenario. Within total ferrous waste, only a slight increase is expected, reflecting more extensive sorting of metal waste in households and businesses and the additional sorting of bulky waste.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent.
Separated metals	15, 20	442	Forecast: 388	Forecast: 391		Fluctuating generation, with a steep decline in 2015 and 2016, followed by growth and a sharp increase in 2021. In the future, a rather constant development is expected; however, due to the fluctuating generation, it is difficult to predict.

Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
			Trajectory 1: 441 Trajectory 2: 435	Trajectory 1: 479 Trajectory 2: 469		Optimistic scenario. An increase is expected owing to greater sorting of metal waste in households and companies, and the further sorting of bulky waste. The growing popularity of aluminium packaging, for example in the food industry, may also contribute to the increase.  Realistic scenario. The same reasons as in the optimistic scenario, only to a lesser extent. In the future, an increase in generation is anticipated.
Non-ferrous metals	06, 10, 11, 12, 16, 17	229	248	252		Between 2012 and 2015, there was a significant decline, after which generation rather stagnated. In the future, a slight increase in generation is expected.
Edible oil and grease	20	12	16	18		In 2011, there was a sudden rise, followed by a decline to previous levels and the start of growth. Generation may be considerably higher given that part of the waste also ends up in sewers, and proper management of this waste will take place. An increase is expected due to the introduction and development of separate collection.
Sewage Sludge	02, 03, 19	169	177	176		Long-term slightly declining generation, which is expected to stabilise in the future and stagnate. The entire stream is primarily influenced by sludge code 19 08 05 from the treatment of municipal wastewater, which has long exhibited stable generation levels. Sludge from agriculture and the wood-processing industry shows a declining trend in generation.

Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Sludge from the treatment of municipal wastewater and the timber industry have declining production.	19	163	164	166		Generation is long-term constant, which is expected to continue. Alternatively, only a minimal increase of a few per cent may occur due to the construction of wastewater treatment plants even in smaller municipalities.
Asbestos waste	06, 10, 16, 17	36	50	54		Since 2017, there has been a very significant increase in generation, peaking in 2022, followed by a sharp decline. The main stream consists of group 17, therefore the development of generation will be determined by the number of demolitions of older buildings and structures whose construction materials contain asbestos.
Waste from human and veterinary health care	18	48	57	61		Generation has been increasing in the long term and follows the trend. The same development is also expected in the future. Generation consists mainly of sub-group 18 01 (waste from human health care).
Waste Oils	12, 13, 20	32	42	44		The development of generation is abrupt. From 2013 to 2016 it increased sharply, then stagnated, and in 2020 there was a sudden decrease. Long-term development is expected to be increasing, but with the transition to electromobility, a gradual decline is anticipated.
PCB	13, 16, 17	0.14	0.34	0.38		Generation is irregular. A sharp decline after 2010, a sudden increase in 2017 and 2019, and a sudden decrease in 2020. The forecast for the future shows a very slight increase. However, it is more likely that the decline from 2020 and 2022 will continue, and the future trend will shift to a slight decrease.

Waste stream	Waste included in groups	2022 [thous. t]	2030 [thous. t]	2035 [thous. t]	Development	Note on expected development
Industrial waste	03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14	2,513	2,793	2,756		A slightly decreasing trend was disrupted by a sudden decline in 2019 and 2020. Subsequently, a slight decrease continued, which is expected to persist. The main share consists of group 10 and 12.
Construction and Demolition Waste	17	9,201	11,132	11,694		Generation depends on construction and demolition works; therefore, it is slightly fluctuating. In the long term, however, it shows a growing trend. Expected selective demolitions will have a negligible effect on reducing generation; rather, they will redirect waste into other waste types. Generation will therefore grow according to the expected trend.
Mining Waste	01, 17	81	147	124		Generation is highly fluctuating, mainly due to group 17 (excavated gangue and spoil), which constitutes the main share and is linked to construction activities. Waste from treatment shows a slight decrease, but stabilisation at constant generation is expected. Waste from mining has a declining trend, which, however, may change abruptly with the opening of a new mining site. During the construction of infrastructure networks, for example the excavation of large tunnels that are planned, waste generation will increase sharply.
Agricultural waste	02	80	92	85		Long-term decline in generation with slight fluctuations, a sharp decrease until 2012. In the future, a continued decline in generation is expected.

Source: processed on the basis of WMIS and Tiramiso

## 3 Binding Part

The Binding Part takes into account the environmental policy of the Czech Republic, the commitments of the Czech Republic towards the EU, and the needs of the current waste and circular economy in the Czech Republic. The Binding Part represents the strategy for the development of the waste and circular economy for the forthcoming period.

The Binding Part is based on the principle of adherence to the waste management hierarchy and the promotion of the higher levels of the waste management hierarchy.

The Binding Part, in accordance with the Waste Act, presents an overview of the objectives of the WMP CR for priority waste streams, which are derived from the vision of the WMP CR and the priorities for the period 2025–2035 with a perspective until 2040.

The Binding Part of the Waste Management Plan of the Czech Republic sets out the objectives and measures for waste prevention, as well as the objectives and principles of waste management, the measures to achieve them, including preferred methods of waste management, and a system of indicators for evaluating the fulfilment of objectives and monitoring the development of waste management.

Furthermore, the Binding Part addresses specific areas of waste management (transboundary shipment of waste, limitation of the impact of certain selected plastic products, unauthorised waste disposal, and the approach to addressing extraordinary events and contaminated sites).

The Binding Part of the Waste Management Plan of the Czech Republic is a binding basis for the preparation of Waste Management Plans of the Regions and a basis for the preparation of spatial planning documentation.

### 3.1 Priorities and Objectives of the WMP CR for 2025–2035

#### 3.1.1 Vision of the WMP CR

**“The Czech Republic maximally prevents waste generation and efficiently recovers the full potential of generated waste.”**

#### 3.1.2 Strategic Objectives of the Czech Republic for the Period 2025–2035

- S1. Prevention of waste generation and reduction of specific waste generation.
- S2. Minimisation of the adverse effects of waste generation and waste management on human health and the environment.
- S3. Sustainable development of society and transition to a circular economy.
- S4. Maximum recovery of waste as a substitute for primary resources.

#### 3.1.3 Priorities of the WMP CR

Waste management is to contribute significantly to the circular economy. In the coming years, the Czech Republic will focus on waste prevention, extending the life of products, minimising wastefulness,

protecting critical raw materials, recycling and recovery of waste, and substituting primary raw materials with secondary raw materials. Part of the natural resources will be substituted with materials from waste recycling, i.e. recyclates.

## Basic Principles of the Approach to Waste Management

The basic principles are applied to strengthen the waste management hierarchy while maintaining social acceptability and economic feasibility, so as to achieve the objectives of the Waste Management Plan.

1. **Prevention of Waste Generation**
2. **Waste as a Resource**
3. **Polluter Pays**
4. **Extended Producer Responsibility**
5. **Self-sufficiency**
6. **Proximity**
7. **Precaution**
8. **Do Not Significantly Harm the Environment (Do Not Significant Harm DNSH)**

### Prevention of Waste Generation

- P1. Prevention of waste generation.
- P2. Re-use and preparation for re-use.
- P3. Training, education, and public awareness.

### Generation and Impact on the Environment and Human Health

- P4. Eco-design and eco-modulation.
- P5. Reduction of hazardous properties of waste.
- P6. Restriction of the entry of materials containing persistent organic pollutants into recycling.
- P7. Reduction of food waste.
- P8. Application of life cycle assessment (LCA).
- P9. Reduction of greenhouse gas emissions in the waste management sector.

### Separate Collection of Waste

- P10. Intensification and optimisation of separate collection of recyclable and recoverable municipal waste – paper, plastic, glass, metals, edible oils, biodegradable waste, textiles, and wood in municipalities.
- P11. Separate collection of recyclable and recoverable waste from legal entities and self-employed natural persons.
- P12. Improvement, strengthening, and development of extended producer responsibility (EPR) systems, especially for existing products, and consideration of extending EPR to other product groups.
- P13. Restriction of exports of waste containing critical and strategic raw materials.

- P14. Restriction of imports of waste into processing facilities in relation to the achievement of the objectives of the WMP CR.

### **Waste Management**

- P15. Promotion and support of high-quality recycling.
- P16. Clarification of the conditions under which waste ceases to be waste.
- P17. Clarification of upcycling and downcycling for selected waste streams.
- P18. Support for research, development, and innovation in waste management.
- P19. Ban on landfilling of recyclable and recoverable waste in the territory of the CR.
- P20. Energy recovery of non-recyclable residual waste.
- P21. Optimisation and streamlining of the management of biodegradable waste, biodegradable municipal waste.
- P22. Increasing the recovery of kitchen bio-waste from households and food waste from catering facilities.
- P23. Support for the development of capacities for anaerobic digestion – biogas plants.
- P24. Support for the development of capacities for preparation for re-use.
- P25. Support for environmentally friendly transport of waste.
- P26. Support for the creation of sufficient processing capacities to meet the objectives.
- P27. Support for innovative technologies, e.g. within the framework of the bioeconomy, hydrogen production, and chemical recycling, particularly for problematic types of plastics.
- P28. Support for technologies and procedures for obtaining critical raw materials.
- P29. Support for the development of capacities for the safe incineration of hazardous waste, including waste from health care.

### **Use of Waste in the Economy**

- P30. Re-use and preparation for re-use of end-of-life products.
- P31. Substitution of primary raw materials with waste (secondary raw materials), including critical raw materials.
- P32. Maximum use of suitable waste in the economy of the CR, particularly in relation to industrial sectors in the regions (agriculture, energy, construction).
- P33. Strengthening demand for recyclates by promoting criteria for the use of recycled products in public procurement.
- P34. Ensuring the long-term stability and sustainability of waste management in the CR.
- P35. Addressing the optimal setting of objectives in the area of municipal waste for municipalities, taking into account the size of municipalities and the generation of mixed municipal waste.

### **Economic and Financial Instruments**

- P36. Promotion of the application of economic instruments for the regulation of the development of waste management (e.g. fee for exceeding state-defined limits for specific waste management methods whose share is to be reduced in favour of material recovery, landfill fee, fee for diversion from material recovery, PAYT with possible consideration of the municipality's waste management costs, and others).

- P37. Analysis of the possibilities and consideration of introducing a tax on primary raw materials.<sup>50</sup>
- P38. Analysis of the possibilities and consideration of introducing tax measures for products with recycled content.<sup>51</sup>
- P39. Promotion of quick access to funding sources, particularly for innovative technologies, and support for the application of financial instruments such as incentives, loans, financial guarantees, and credits.
- P40. Subsidy support for the association of municipalities in the area of waste management.
- P41. Involvement of regions in waste management governance and investment planning. Preparation of regional waste management plans addressing the necessary investments in infrastructure and waste management facilities.

### Enforceability

- P42. Setting penalties for non-compliance with statutory obligations and, in the case of non-compliance with the objectives set at the municipal level, consideration of the possibility of setting penalties according to the specific generation of mixed municipal waste per capita.

### 3.1.4 Objectives of the WMP CR

An overview of the strategic, main, and specific objectives for individual waste streams is available in the table in Annex No. 1. The objectives for individual streams, together with the principles and measures, are elaborated in the following chapters of the respective waste streams.

## 3.2 General Principles and Measures for Waste Management

### Principles:

- Z1. Ensure information support for the fulfilment of the strategic objectives of the Czech waste policy.
- Z2. Prevent waste generation in all activities.
- Z3. In waste management, it is mandatory to apply the waste management hierarchy, i.e. to handle waste in the following order:
1. prevention of waste generation,
  2. preparation for re-use and re-use,
  3. recycling,
  4. other recovery (for example energy recovery),
  5. disposal (safe disposal).
- Z4. When applying the waste management hierarchy, support the options that provide the best overall result in terms of the environment. Take into account the entire life cycle of products and materials and focus on reducing the environmental impact of waste management.

<sup>50</sup> Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy, measure point 9) use of tax measures or other means to promote market penetration in the case of products and materials prepared for re-use or recycled products and materials.

<sup>51</sup> Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy, measure point 9) use of tax measures or other means to promote market penetration in the case of products and materials prepared for re-use or recycled products and materials.

- Z5. When applying the waste management hierarchy, reflect the precautionary principle and prevent adverse effects of waste management on human health and the environment.
- Z6. When applying the waste management hierarchy, take into account the principle of proximity, self-sufficiency, and sustainability, including technical feasibility and economic viability.
- Z7. Apply the polluter pays principle and develop extended producer responsibility.
- Z8. When applying the waste management hierarchy, ensure the protection of raw material resources, the environment, and human health, with regard to economic and social impacts.
- Z9. For specific waste streams, a deviation from the established waste management hierarchy may be allowed if justified by consideration of the overall life cycle impacts of that waste and its management.
- Z10. Support waste management methods that use waste as a resource and contribute to the substitution of primary natural resources, including critical raw materials.
- Z11. Support waste management that leads to an increase in the economic recoverability of waste.
- Z12. Support direct re-use, preparation for re-use, and recycling of waste.
- Z13. Do not support landfilling or incineration of recyclable waste.
- Z14. Apply a ban on landfilling of waste suitable for recycling or other recovery.
- Z15. Tighten the criteria for assessing waste as recyclable or recoverable, taking into account the state of scientific and technological progress.
- Z16. Ensure the creation of sufficient capacities of facilities for waste processing, recycling, and recovery.
- Z17. Individual methods of waste management within the Czech Republic must form a comprehensive system ensuring the lowest possible negative impacts on the environment and a high level of human health protection.

**Measures:**

- O1. Support activities in the field of waste prevention.
- O2. Strictly monitor compliance with the waste management hierarchy.
- O3. Use instruments with a positive effect on reducing generation and preferred waste management.
- O4. Introduce measures to eliminate “free riders” in waste management systems.
- O5. Support re-use and repair centres, sharing services, etc.
- O6. Support low-waste innovative production technologies.
- O7. Support separate collection of recyclable and recoverable waste, especially municipal, and their subsequent recycling and recovery.
- O8. Development and modernisation of the network of waste management facilities.
- O9. Support high-quality sorting and further sorting of waste and new waste treatment technologies, modern optical sorting lines.
- O10. Support the development of sufficient capacities for waste recycling.
- O11. Support the construction of modern innovative technologies for waste recycling.
- O12. Support technologies and procedures for obtaining critical raw materials.
- O13. Support the modernisation of existing waste management facilities.

- O14. Support the development of infrastructure for the separate collection of biodegradable waste and the construction of biogas plants for the production of biogas, biomethane, and other products.
- O15. Energy recovery of non-recyclable fractions of municipal waste.
- O16. Support the expansion of capacities to increase the share of co-incinerated waste in facilities suitable and designated for that purpose.
- O17. Support the development of capacities for the safe energy recovery and incineration of waste from human and veterinary health care (both other and hazardous) and other hazardous waste.
- O18. Support the transport of waste by rail.
- O19. Prevent dilution or mixing of waste for the purpose of meeting the criteria for landfilling and backfilling.
- O20. Ensure sufficient capacities of facilities for the management of waste from natural disasters and emergency situations.
- O21. Support newly emerging techniques, in particular those set out in the reference documents on best available techniques (BREF).
- O22. Support the use of secondary raw materials from waste in production processes.
- O23. Optimise production processes, innovations, new technologies, and the development of new materials with the aim of reducing material intensity.
- O24. Focus on product development and eco-design.
- O25. Define at the national level the criteria that must be met for a particular substance or object to be regarded as a by-product and not waste.
- O26. Define at the national level the criteria under which waste ceases to be waste.
- O27. Support research, experimental development, and innovation in the field of processing and recycling technologies.
- O28. Support the introduction of certified environmental management systems.
- O29. Support consumer and industry interest in recycled products, support the certification of products and services (environmental claims, eco-labelling).
- O30. Engage in education, information support, environmental education, and awareness-raising. Carry out information campaigns for residents on the proper management of municipal waste.
- O31. Support responsible green public procurement to ensure demand for recycled products.
- O32. Involvement of regions in the management and development of waste management and investment planning. Preparation of regional waste management plans addressing the necessary investments in infrastructure and waste management facilities, to which subsidy policy will be linked.
- O33. Consider introducing penalties for municipalities in the area of meeting sorting targets linked to the specific generation of mixed municipal waste per capita.
- O34. Create strategies for public support of the development of new facilities.
- O35. Introduce a regulatory economic instrument to ensure that the state-defined level of capacity and the quantity of energy-recovered waste are not exceeded. In the event of exceeding the limits defined by the Waste Act, the Ministry of the Environment will propose the introduction of an appropriate regulatory instrument. The capacities of facilities and, in particular, the quantities of municipal waste used for energy recovery and incinerated will be continuously monitored. In

the event of exceeding the set limits, the CR will consider introducing an economic instrument to limit further growth of these capacities.

### 3.3 Waste Prevention Programme

#### 3.3.1 Objectives and Measures in the Area of Waste Prevention

The objectives of the Waste Prevention Programme of the CR are based on Directive 2008/98/EC of the EP and the Council on waste, on the analysis of existing measures and waste streams. The objectives also take into account strategic documents of the EU and the CR.

To achieve the above-mentioned objectives, measures must be implemented. Proposals for measures for the Waste Prevention Programme of the CR are based in particular on the measures set out in Annex IV and IVa of Directive No. 98/2008 on waste.

#### WPP

##### Main Objective:

- a) Maximally prevent waste generation, reduce waste generation and the consumption of primary resources.

##### Specific Objectives:

- a) Ensure comprehensive information support on waste prevention issues.
- b) Promote models of sustainable production and consumption (durability, reparability, and reusability of products) and increase the quantity of re-used and repaired products (particularly products containing critical raw materials).
- c) Create conditions for reducing the consumption of raw material and energy resources in industrial sectors and maximise the use of “secondary raw materials” and input-saving technologies.
- d) Stabilise and subsequently reduce the generation of waste from packaging and single-use plastic products and packaging.
- e) Stabilise the generation of hazardous waste, construction and demolition waste, and reduce the content of hazardous substances in materials and products, without prejudice to harmonised legal requirements relating to such materials and products. Increase the share of re-used construction products and materials.
- f) Stabilise the generation of waste from end-of-life products and strengthen the promotion of waste prevention in the activities of collective systems and systems of take-back products.
- g) Strengthen the active role of research, experimental development, and innovation in supporting waste prevention.
- h) Minimise the occurrence of waste (particularly single-use plastics) in the environment and thus reduce the negative impact of waste management on the environment and human health.
- i) Continuously increase the share of re-used textile products and footwear, furniture, electrical equipment, tyres, and other products (particularly from households).

##### Measures:

- a) Support the implementation of information campaigns to raise awareness among the public and businesses about waste prevention.

- b) Develop and support a communication strategy for reducing waste generation, especially for residents. Update educational and training materials and integrate them into education and vocational training.
- c) Support the provision of all information necessary for an informed choice of product (e.g. origin, environmental impact, reparability, availability of spare parts, durability, recyclability, etc.), including through the introduction of digital product passports.
- d) Support re-use and repair of products through the development of a network of repair services, shared workshops, and other related projects.
- e) Support online sharing platforms, libraries of things, and other related projects.
- f) Support packaging-free sales and other business models, sharing schemes aimed at waste prevention.
- g) Provide information on waste prevention techniques in order to facilitate the use of best available techniques in industry.
- h) Prepare methodological guidance on by-products.
- i) Use planning measures and economic instruments to promote the efficient use of resources.
- j) Support research and development in achieving cleaner products and technologies associated with waste minimisation, and the dissemination and use of the results of such research.
- k) Support business activities aimed at preventing waste generation in manufacturing and distribution.
- l) Include environmental and waste prevention criteria in public procurement procedures.
- m) Support municipalities in introducing systems in which citizens pay for municipal waste based on the actual amount of waste generated and which encourage the sorting of recyclable waste at source and lead to a reduction in the generation of mixed municipal waste.
- n) Make efforts to amend the relevant EU legislation (Directive 2006/112/EC) so that the donation of goods to non-profit organisations can be exempted from tax and propose other activities that would motivate private entities to provide unsaleable goods for public benefit purposes.
- o) Consider, in appropriate cases, the introduction of take-back systems and other measures to support the efficient collection of used products and materials, including support for voluntary take-back systems for selected products.
- p) Provide financial and methodological support for the establishment and operation of re-use centres and furniture banks.
- q) Introduce mandatory consumer payments for a given part or element of packaging that would otherwise be provided free of charge.
- r) Reduce waste from single-use products and non-plastic packaging.
- s) Support the use of pre-demolition audits and digital building passports in the preparation of demolitions of buildings or parts thereof.
- t) Support the use of alternative construction materials (e.g. recycled concrete, wooden materials, and others) and construction elements that can be re-used after removal from buildings.
- u) Analyse the possibilities for the preparation of standards for construction products and materials intended for re-use in buildings.
- v) Ensure the alignment of national standards with the eco-design requirements laid down in legislation and support small and medium-sized enterprises (SMEs) in applying eco-design requirements.

- w) Make use of voluntary agreements in the area of waste prevention and single-use products or packaging.
- x) Support reliable eco-labels in cooperation with producers and retailers and ensure their active use.
- y) Support and provide information on environmental management systems (EMAS system and ISO 14001 standards).
- z) Evaluate the effectiveness of existing extended producer responsibility systems and consider extending the systems to other groups of products and waste arising from them.
- aa) Identify products that are major sources of waste pollution in the environment, including plastic waste in aquatic ecosystems, and adopt appropriate measures to minimise them and to prevent and reduce environmental pollution.
- bb) Organise training at the level of the relevant public administration authorities, focused on integrating requirements concerning waste prevention, including environmentally responsible public procurement.
- cc) Coordinate the relevant public administration authorities involved in waste management, including waste prevention.

### **Additional Activities in the Area of Waste Prevention**

- a) **Consider introducing a deposit-return scheme for beverage PET bottles and beverage aluminium cans.**

In 2022, the European Commission presented a draft Regulation aimed at reducing the quantity of packaging waste. The draft was, and is, under discussion in 2023–2024.

- b) **Introduction of separate collection of textile waste from 2025**

It may be assumed that the activities currently implemented in the area of textile waste prevention (charity, swaps, bazaars) will continue in the future. As of 1 January 2025, municipalities are obliged to ensure the separate collection of textile waste from residents.

- c) **Eco-design and Digital Product Passport**

In 2022, the European Commission proposed a new regulation on eco-design. Regulation (EU) No. 2024/1781 establishing a framework for setting eco-design requirements for sustainable products (Eco-design Regulation) entered into force on 18 July 2024.

The Regulation will enable the EC (in cooperation with the eco-design expert group) to formulate eco-design requirements for products in the following areas:

- durability, reliability, reusability, upgradability, and reparability of the product,
- the possibility of maintenance and upgrading of the product,
- presence of substances of concern,
- energy, water, and material efficiency,
- use of resources, materials, and related efficiency,
- recycled content,
- potential for refurbishment, recyclability, and material recovery,
- carbon and environmental footprint,
- contribution to climate change and pollution of water/air/soil,
- expected waste generation.

In these areas, performance requirements of a quantitative or qualitative nature will be defined.

Certain products should be equipped with a so-called digital passport. The digital product passport should contain:

information on installation, use, maintenance, and reparability of the product, together with information on how to handle the product at the end of its life cycle,

information for waste management facilities – methods of dismantling, re-use, recycling, and disposal at the end of the life cycle.

The Regulation also prohibits the destruction of unsold textile products (in particular clothing) and footwear, and in the future, a prohibition on destruction is expected to be extended to other product groups (e.g. electronic equipment), which will also have an impact on waste prevention for selected product groups.

#### d) **Right to Repair Products**

The draft Directive from 2023 specifies groups of products that will be subject to repair requirements. These include, for example, washing machines, dishwashers, dryers, refrigerators, vacuum cleaners, mobile phones, and electronic displays. The right to repair will also apply in situations where the warranty of the goods has expired. Consumers will thus be able to request, free of charge, from any repair shop the so-called European Repair Information Form, which will include, inter alia, the price and expected repair time. Following the adoption of the Directive, the Commission will create a unified online platform, which will include, inter alia, an overview of repair shops and the possibility to search for repair shops by product type (European Council, 2023b).

#### e) **Extension of the Restriction on Waste from Single-use Products to Non-plastic Products**

In the future, it is expected that the pressure to reduce waste from single-use products will also extend to non-plastic products, while the pressure to re-use selected products will intensify, including the setting of quantitative targets. A similar development has been observed in the area of single-use packaging.

## 3.4 Food Waste Prevention Programme

### 3.4.1 Objectives and Measures in the Area of Food Waste Prevention

#### FWPP

##### Objectives:

- a) Prevent food waste generation and reduce its generation in primary production, processing, distribution, and consumption of food.
- b) By the end of 2030, reduce the production of food waste by 10% in processing and production compared to the average annual amount produced in 2021-2023.
- c) By the end of 2030, reduce per capita food waste generation jointly in retail and other forms of food distribution, in restaurants and catering services, and in households by 30% compared to the average annual amount generated in the years 2021–2023.

##### Measures:

- a) Support the implementation of information campaigns to raise awareness among the public and businesses about food waste prevention.
- b) Develop and support a communication strategy for reducing food waste generation, especially for residents. Update educational and training materials in the area of food waste prevention and integrate them into education and vocational training.
- c) Provide financial support for business activities aimed at preventing food waste generation in primary production, manufacturing, processing, and distribution of food.

- d) Apply tax and other incentives for food donations by producers and ensure infrastructure<sup>52</sup> for the collection and storage of food.
- e) Support regional and local authorities in food waste prevention.
- f) Continue supporting the activities of food banks so that, for food suitable for this purpose, their donation for human consumption is always ensured to the greatest possible extent.
- g) Assess the potential and consider allowing food donations from school canteens and possibly other catering facilities.
- h) For food not suitable for human consumption, allow its use as feed or its reprocessing into non-food products.
- i) Revise food labelling (date of minimum durability or use-by date) in line with legislative changes at EU level.
- j) Analyse and prepare a study specifying the types of food waste (particularly with regard to edible and inedible parts) and household behaviour in handling food.
- k) Make use of voluntary agreements in the area of food waste prevention.
- l) Coordinate the relevant entities involved in food waste prevention and in food waste management.
- m) Support research and development of new technologies and procedures for food waste prevention at all stages of the food chain. Identify gaps and propose appropriate solutions.

## 3.5 Objectives, Principles, and Measures for Individual Waste Streams

### 3.5.1 Municipal Waste

#### Objectives:

- 1.1. Increase the rate of preparation for reuse and recycling of municipal waste to at least 55% by 2025, 60% by 2030 and 65% by 2035, calculated as a share of the total municipal waste generated.
- 1.2. Reduce the amount of municipal waste landfilled to 10% by weight or less of the total municipal waste generated by 2035.

#### Principles:

- a) Support the development of preventive activities for the prevention and reduction of municipal waste generation.
- b) Ensure the diversion of municipal waste from landfilling.
- c) Maintain, support, develop, or, where appropriate, introduce separate collection of recyclable and recoverable fractions of municipal waste – separate commodity collection (paper, plastic, glass, metals, beverage cartons, biodegradable waste, textiles, wood, and others) with regard to the objectives set for individual materials and the higher quality of waste collected in this way.
- d) Maintain and develop the accessibility and user-friendliness of separate collection of recyclable and recoverable fractions of municipal waste in municipalities.

<sup>52</sup>Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy, measure point 3) adopt tax incentives for the donation of products, in particular food.

- e) The system of separate collection of municipal waste fractions shall be determined by the municipality, within its independent competence, by generally binding ordinance or by other means.
- f) Promote that municipalities determine the scope and method of separate collection of municipal waste fractions in the municipality, taking into account technical, environmental, economic, and regional circumstances and technological possibilities for further waste treatment, while complying with legislative requirements and meeting the objectives.
- g) Expand separate collection of all biodegradable waste in municipalities (including biodegradable waste of animal origin).
- h) In municipal waste management, strictly adhere to the waste management hierarchy, in particular to prevent their generation and reduce their quantity, and, where possible, to give priority to recycling of generated municipal waste, then to other recovery, and only if the waste cannot be recovered, to its disposal.
- i) A deviation from the waste management hierarchy is permissible only in the case of extraordinary events, in serious justified cases, in accordance with the applicable legal framework, provided that it does not endanger or harm the environment or human health and after consultation with the MoE.
- j) Prioritise environmentally beneficial, economically and socially acceptable technologies for the treatment of municipal waste.
- k) Maintain and develop the participation and cooperation with packaging producers and other product manufacturers, according to the principle of “polluter pays” and “extended producer responsibility”, in ensuring separate collection or take-back and recovery of relevant fractions of municipal waste.
- l) Support the treatment of mixed municipal waste by mechanical sorting as a possible waste treatment technology prior to its further material or energy recovery or disposal, while fully maintaining the requirements for separate collection of recoverable fractions of municipal waste at source.
- m) Support the sorting and treatment of bulky waste collected within municipal systems for the purpose of recycling and further recovery of all recoverable fractions.
- n) Improve systems for the separate collection of recyclable and recoverable components of municipal waste in municipalities and at legal entities and self-employed persons and integrate legal entities and self-employed persons generating municipal waste into municipal waste management systems.
- o) Prevent the disposal of fractions of municipal waste outside designated places (illegal dumping).
- p) Support the application and use of recyclates – outputs from facilities for the recycling of municipal waste.
- q) Consider and propose measures that will make recyclates a favourable alternative to primary materials.
- r) Broad application of green public procurement – giving preference to recycled products in so-called “green” tenders.
- s) Use of economic instruments – give preference to economic instruments so that the municipal waste management sector can adapt to new conditions.

**Measures:**

- a) Actively support the development of re-use centres, repair services, workshops, and other activities within the framework of municipal waste prevention.

- b) Strictly monitor municipalities and other holders of municipal waste to ensure that they provide for separate collection (sorted collection) of recyclable and recoverable fractions of municipal waste, at least for paper, plastics, glass, metals, biodegradable waste, and textiles.
- c) Intensify and optimise the separate collection of recyclable and recoverable municipal waste in municipalities, primarily by densifying and optimising the collection network and by raising residents' awareness. Focus on the quality of sorted recoverable municipal waste.
- d) Support municipalities in extending separate collection of municipal waste fractions to other fractions beyond statutory obligations, e.g. wood, ash from household heating installations.
- e) Continuously tighten the criteria for assessing waste as recyclable or recoverable, which, as of 2030, will be banned from landfilling, especially in the case of municipal waste, taking into account the state of scientific and technological progress.
- f) Ensure strict compliance with the waste hierarchy in the management of municipal waste.
- g) Ensure municipalities continuously evaluate their municipal waste management systems and their capacity possibilities and propose measures for their improvement and streamlining.
- h) Classify sorted waste containing packaging fractions, obtained within separate collection (sorted collection) of recyclable fractions of municipal waste in municipalities, as municipal waste, i.e. group 20 of the Waste Catalogue.
- i) Improve traceability of municipal waste streams by significantly eliminating the granting of exemptions from separate collection of waste at source.
- j) Integrate, communicate, and require proper waste management from all residents and ensure their involvement in prevention and in the collection of recyclable and recoverable fractions of municipal waste.
- k) At municipal level, inform citizens and other entities involved in the municipal waste management system throughout the year about the methods and scope of separate collection of municipal waste, the recovery and disposal of municipal waste, and the management of other waste within the municipal system, about possibilities of prevention and minimisation of municipal waste generation, and publish at least once a year quantified results of the municipality's waste management.
- l) Continuously inform legal entities and self-employed persons involved in the municipal waste management system about the methods and scope of separate collection of municipal waste fractions and their management.
- m) Inform legal entities and self-employed persons about their obligation to carry out separate collection of recyclable and recoverable fractions of municipal waste.
- n) Continuously evaluate the municipal waste management system at municipal and regional level.
- o) Support innovation, digitalisation, and smart solutions in waste management of municipalities and other waste holders in municipal waste management, e.g. dynamic weighing, smart collection systems.
- p) Support innovative technologies and digitalisation in the collection, further sorting, mechanical sorting, and final treatment of municipal waste.
- q) Support the establishment of municipal waste management systems based on the "Pay-As-You-Throw" (PAYT) principle and the related setting of municipal waste fees in the form of a fee for the disposal of municipal waste from real estate. Support municipalities in building infrastructure and technologies for the introduction, expansion, and operation of such systems.

- r) Ensure targeted education of the general public on the prevention of municipal waste generation, on the environmental benefits, and on cost savings associated with municipal waste management through appropriate information campaigns.
- s) Specifically focus on education and continuous training on proper municipal waste management and its benefits already in kindergartens and at the first stage of primary schools and in other institutions caring for school-age children.
- t) Strictly monitor and sanction inappropriate or illegal management of municipal waste.
- u) Support the construction of regional facilities and waste centres for municipal waste management and its appropriate treatment in order to meet objectives, reduce waste transport costs, and mitigate the environmental impact. Focus also on efficient transport to these centres.
- v) Support the construction of infrastructure for the efficient transport of municipal waste to more distant processing facilities, taking into account environmental impacts, safety, and economic aspects.
- w) Support the construction of a stable, safe, and long-term network of key facilities for municipal waste management, in particular for the most significant streams by weight (mixed municipal waste, bulky waste, separately collected recoverable fractions of municipal waste).
- x) Support the construction of highly efficient technologies for the mechanical sorting of municipal waste to ensure its subsequent recycling and further recovery.
- y) Consider introducing EPR systems for other products / waste that meet the definition of municipal waste.

### 3.5.1.1 Mixed Municipal Waste

#### Objectives:

- 1.1.1. To reduce the generation of mixed municipal waste per capita.
- 1.1.2. Mixed Municipal Waste (after the separation of recyclable and recoverable fractions, hazardous fractions, and biodegradable waste) to be utilised primarily for energy recovery.

#### Principles:

- a) Prevent waste generation in order to reduce the generation of mixed municipal waste (education, awareness-raising, home composting, prevention of food waste, textile waste).
- b) Expand separate collection, including take-back, to other recoverable fractions of municipal waste.
- c) Significantly limit the landfilling of mixed municipal waste.
- d) Create conditions for the possibility of direct use or use of treated residual mixed municipal waste in thermal and thermochemical technologies.

#### Measures:

- a) Support the reduction of mixed municipal waste generation through intensive separate collection of recyclable and recoverable fractions of municipal waste, both within municipal systems and at other waste holders.
- b) Develop infrastructure for the separate collection of recoverable fractions of municipal waste and bring the collection network closer to residents, including intensifying separate collection of recoverable fractions of municipal waste (paper, plastic, glass, metal, beverage cartons, biodegradable waste, textile waste, wood) and other waste such as small construction waste.

- c) Gradually reduce the frequency of mixed municipal waste collection in connection with the development of infrastructure for the separate collection of recoverable fractions of municipal waste.
- d) Support the development of SMART systems, PAYT, and the application of the “Pay-As-You-Throw” principle.
- e) Support municipalities in introducing a municipal waste fee based on the amount of disposed mixed municipal waste, thereby increasing citizens’ motivation to reduce mixed municipal waste generation.
- f) Support municipalities in introducing the separation of ash from household heating installations in order to reduce the amount of mixed municipal waste and deposit ash as technological waste in landfills.
- g) Support the gradual reduction in the frequency of mixed municipal waste collection in connection with infrastructure development.
- h) Enable the involvement of small tradesmen as generators of municipal waste in municipal systems.
- i) Monitor municipal waste management at generators, including strict control of the presence of recoverable fractions in mixed municipal waste at households and other waste holders.
- j) Adopt corrective measures in municipalities that fail to meet the sorting targets for separately collected recyclable components of municipal waste.
- k) Consider adjusting the component of the landfill fee for the landfilling of recoverable municipal waste so that its level more strongly disincentivises the landfilling of those waste types whose landfilling will be prohibited from 2030 onwards, including mixed municipal waste.
- l) Support the treatment of mixed municipal waste before its energy recovery or disposal in order to obtain recyclable and recoverable fractions and thus divert them from landfilling.
- m) Allow the landfilling of untreated mixed municipal waste only if it has been stripped of all recoverable waste, including biodegradable waste, and if it meets calorific value conditions and other legislative requirements.
- n) Enable and support mechanical sorting of recyclable and recoverable waste from mixed municipal waste in order to increase the rate of its recycling.
- o) Support the development of appropriate infrastructure necessary to ensure and increase the thermal recovery of non-recyclable residual waste from mixed municipal waste, without prior treatment or after treatment, depending on the specific technologies.
- p) Continuously evaluate the mixed municipal waste management system at the regional level.
- q) Support the association of municipalities for the improvement of waste management.
- r) Reduce the hazardous properties of mixed municipal waste through strict sorting of hazardous waste and intensification of the collection of hazardous municipal waste by municipalities.
- s) At national level, monitor the composition of mixed municipal waste.
- t) Raise public awareness in the areas of prevention of mixed municipal waste generation and the sorting of recyclable and recoverable fractions of municipal waste, with an emphasis on the benefits, meaningfulness of sorting, and the reduction of residual mixed waste generation.
- u) Inform residents about the proper management of small construction and demolition waste and other types of waste not classified as municipal waste, to ensure their diversion from mixed municipal waste.

### 3.5.2 Biodegradable waste

#### Objectives:

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- 2.1. Reduce the amount of biodegradable municipal waste landfilled.
- 2.2. Increase the use of compost and digestate on agricultural land.
- 2.3. Increase the separation of biodegradable waste, particularly kitchen waste from households.
- 2.4. Increase the utilisation of biodegradable waste through composting and anaerobic digestion.

#### Principles:

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- a) Apply the principles of the bioeconomy and maximise the use of biodegradable waste and the products of its treatment.
- b) Divert biodegradable waste from mixed municipal waste and from landfilling.
- c) Increase the separation of biodegradable waste as a recoverable fraction of municipal waste, and the achievement of municipal waste sorting targets.
- d) Support, expand, and intensify the system of separate collection of biodegradable waste (of plant and animal origin) in municipalities as well as in legal entities and self-employed persons throughout the territory of the CR.
- e) Gradually expand in municipalities the separate collection of biodegradable waste of animal origin in connection with the available treatment facilities.
- f) Develop infrastructure, including municipal infrastructure, and a network of facilities necessary to ensure the utilisation of biodegradable waste.
- g) Focus on the quality of outputs from facilities processing biodegradable waste, set requirements for output quality, and minimise the production of low-quality outputs.
- h) Ensure that the processing of biodegradable waste into organic products does not lead to the concentration of harmful substances in these organic outputs.
- i) Use biodegradable waste as a source of organic matter and a source of renewable energy.
- j) Treat waste from agricultural activities with aerobic composting, anaerobic digestion, and fermentation technologies.

#### Measures:

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- a) Optimise the separate collection of biowaste in municipalities.
- b) Develop and intensify the separate collection of biodegradable waste in municipalities, with an increase in the separation of both plant and animal biowaste.
- c) Introduce an economically sustainable, accessible, and convenient separate collection of kitchen biowaste from households in municipalities for all residents.
- d) Introduce the joint collection of garden plant biowaste and household kitchen biowaste, provided that composting facilities with the required validated technologies for possible joint processing are available.
- e) Develop and gradually expand the collection of household kitchen waste and catering biowaste from food service establishments, in connection with the development of a network of accessible biogas plants.
- f) Provide subsidy support for the separate collection of household kitchen waste in municipalities and its processing.

- g) Support the development of infrastructure, ensuring the provision of sufficient containers for the collection of biodegradable waste, suitable collection vehicles, and washing technology for larger collection containers.
- h) Fulfil the obligations of residents and waste holders involved in the municipal system to properly separate and hand over biodegradable waste for recovery in accordance with the system established by the municipality.
- i) Regularly evaluate at the municipal level the implemented municipal system of separate collection of biodegradable waste and its management in connection with its treatment at the regional level and adjust this system on the basis of the results to achieve the highest possible separation and subsequent recovery.
- j) Support and expand home and community composting as waste prevention.
- k) Promote the management of biodegradable waste through aerobic composting and anaerobic digestion technologies.
- l) Process biowaste into high-quality organic fertilisers (compost, digestate, and fugate) and energy (biogas, biomethane, and bioCNG).
- m) Maximise the use of food waste unsuitable for consumption in biogas plants.
- n) Develop a network of biowaste treatment facilities and increase the number of biogas plants capable of processing kitchen waste and food waste.
- o) Equip biogas plants with technologies enabling the acceptance and treatment of expired packaged food.
- p) Provide investment subsidies for the construction of new biogas plants for the treatment of biowaste, especially kitchen biowaste from municipalities and catering biowaste from food service establishments.
- q) Provide subsidy support for the modernisation and equipment of agricultural biogas plants and the construction of pre-treatment facilities for the proper treatment and hygienisation of biowaste.
- r) Modernise existing composting plants with a capacity of over 150 tonnes of biodegradable waste treated per year as the basic network of facilities for the treatment of plant biowaste and also for the treatment of sludge from WWTPs.
- s) Promote an even distribution of biodegradable waste treatment facilities across the territory of the CR.
- t) Continuously evaluate the generation of biowaste and the network of facilities for its management and appropriately locate new biowaste treatment facilities within the regions.
- u) Use compost as a substitute for mineral fertilisers in agriculture and improve soil quality through the application of organic carbon derived from biowaste.
- v) Increase compost quality, ensure and guarantee high-quality compost, and support its certification under ISO standards.
- w) Promote demand from farmers for high-quality compost, digestate, and fugate as a substitute for mineral fertilisers.
- x) Support the continuous market placement of high-quality compost and consider introducing systematic operational support for compost application.
- y) Strictly monitor the quantity and quality of doses of individual inputs of biodegradable waste and other organic materials (digestates, fugates, composts, fertilising substrates, etc.) applied to agricultural land and soil.

- z) Production of renewable energy sources – fuels from compost of unsuitable quality for agricultural use.
- aa) Support the development of technologies for the production of biomethane, bioCNG, and their connection to the distribution network in biogas plants processing biowaste.
- bb) Promote demand for renewable fuels produced from biowaste (dried biomass from compost of unsuitable quality, biomethane, bioCNG).
- cc) Communication with the Ministry of Agriculture to allow the application of compost from municipal community composting also on land owned by municipal residents.
- dd) Communication with the Ministry of Agriculture on the possibility of changes in agricultural legislation to include organic fertilisers from biowaste (compost, digestate, fugate) in soil protection measures.
- ee) Address the possibilities of recognition and verification of home composting and consider the risks of increased generation of municipal waste. Communicate the outlook for the introduction of mandatory targets in the area of waste prevention.
- ff) Intensive educational activities, awareness-raising, and information campaigns to support the separate collection of biodegradable waste and the promotion of the establishment of a “Communication Strategy” in municipalities. Regularly inform residents and other participants in the municipal waste management system about the methods and scope of separate collection of biodegradable waste, its management, and its benefits.
- gg) Introduce bonuses within investment subsidy support for the establishment of a “Communication Strategy” for engaging residents in the system of separate biowaste collection.
- hh) Educational and awareness-raising activities by the Ministry of Agriculture aimed at farmers about the benefits of fertilisers produced from biowaste and building trust in the quality of compost, digestate, and fugate.
- ii) Communication between investors and municipalities with the public and overcoming the NIMBY effect in the planning of waste biogas plants and composting plants.
- jj) Educational and awareness-raising activities by the State Veterinary Administration and the Ministry of Agriculture to meet the requirements for the hygienisation of biowaste (animal by-products).

### **3.5.2.1 Animal By-products and Biodegradable Waste from Kitchens and Catering Establishments**

#### **Objectives:**

- 2.1.1. To reduce the amount of biodegradable waste from kitchens and catering establishments and animal by-products in mixed municipal waste originating from households, public catering facilities (restaurants, fast-food outlets) and central kitchens (hospital, school canteens and distribution facilities, and other similar establishments).
- 2.1.2. Increase separation and ensure proper management of biodegradable waste from kitchens and catering facilities and animal by-products, thereby reducing the negative impacts associated with their management on human health and the environment.
- 2.1.3. Increase the recovery of biodegradable waste from kitchens and catering facilities and animal by-products through anaerobic digestion.

### 3.5.3 Food Waste

#### Objectives:

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- 3.1. Prevent food waste generation and reduce its generation in primary production, processing, distribution, and consumption of food.
- 3.2. By the end of 2030, reduce the production of food waste by 10% in processing and production compared to the average annual amount produced in 2021–2023.
- 3.3. By the end of 2030, reduce per capita food waste generation jointly in retail and other forms of food distribution, in restaurants and catering services, and in households by 30% compared to the average annual amount generated in the years 2021–2023.

#### Principles:

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- a) Prevent food waste generation at all stages of the food chain.
- b) Continue to develop a motivational environment to support food donation by producers.
- c) Promote food donation systems and redistribution for human consumption.
- d) Support activities to reduce the amount of food waste at all stages of the food chain, particularly in households.
- e) Educational activities, training, and awareness-raising in the field of responsible and sustainable food management, especially in households.
- f) Ensure the separate collection of food waste and its material and energy recovery.

#### Measures:

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- a) Educate and raise awareness among consumers on food wastage, prevention of food waste, and the need to transform traditional consumption patterns (produce–consume–dispose).
- b) Raise awareness regarding use-by dates and best-before dates of food.
- c) Educate consumers and vocational school students on shelf life and proper storage of food.
- d) Educate retail chains on logistics, food handling, and food waste prevention.
- e) Develop an analysis of further options for food waste prevention at all stages of the food chain.
- f) Ensure supervision of compliance with the obligation to donate food to food banks.
- g) Develop food banks, strengthen logistical capacities, and support the efficient operation and functioning of food banks.
- h) Support (both technically and legislatively) the safe use of food as animal feed in compliance with Regulation (EC) No. 1069/2009 of the European Parliament and of the Council on animal by-products, where further redistribution of food for human consumption is not possible.
- i) Shift food waste from mixed municipal waste to separately collected biowaste.
- j) Develop an analysis to determine the content of parts of food waste not intended for human consumption and which cannot be prevented, across all stages of the food chain.
- k) Update the CR methodology for measuring food waste quantities in line with potential adjustments to the EU methodology for measuring food waste, with regard to data on food waste parts not intended for human consumption and which cannot be prevented.
- l) Support technologies aimed at improving and extending the shelf life of food.
- m) Focus on food production and optimal packaging sizes in order to account for the diverse needs of households, thereby reducing food waste generation.

- n) Optimise legislative requirements for catering establishments and the use of food to reduce food waste quantities.
- o) Thoroughly monitor the management of food waste from catering facilities and animal by-product waste.
- p) Where food waste is generated, ensure its recovery through composting or anaerobic digestion.
- q) Focus on the development, expansion, and intensification of separate collection of food waste (household kitchen waste and catering waste from restaurants and canteens) and its linkage to recovery in biogas plants.
- r) Develop a network of biogas plants for biowaste. Support the construction and modernisation of biogas plant technologies to enable them to accept food waste (kitchen waste and catering waste), including expired food waste, potentially also in packaging.
- s) Equip biogas plants with technologies ensuring hygienisation.
- t) Create conditions for the development of additional technologies for the treatment of food waste.
- u) Support research, experimental development, and innovation programmes in the field of food production and food waste prevention.

### 3.5.4 Bulky Waste

#### Principles:

- a) Reduce the generation of bulky waste by extending the lifespan of products that would otherwise become bulky waste and by promoting their reuse.
- b) Support the development of further preventive activities aimed at avoiding and reducing the generation of bulky waste.
- c) Ensure the diversion of bulky waste from landfilling.
- d) Landfill only residual bulky waste that has undergone separation of recyclable and recoverable components.
- e) Support the treatment of bulky waste collected within municipal systems in order to enable the recycling and further recovery of all recyclable and recoverable components.
- f) Prevent the disposal of bulky waste outside designated places (illegal dumping).

#### Measures:

- a) Actively support the development of re-use centres and furniture banks, repair services, workshops, and other activities aimed at preventing the generation of bulky waste.
- b) Inform residents and other entities generating bulky waste about options for preventing its generation and reducing its quantity.
- c) Integrate, communicate, and enforce proper waste management practices among all residents, ensuring their involvement in prevention and the collection of bulky waste.
- d) Introduce user-friendly and convenient systems for the collection of bulky waste from residents to collection yards, in order to minimise the creation of illegal dumps near collection points, etc.
- e) Support, expand, and intensify the system for the collection of bulky waste in municipalities and by legal entities and self-employed persons across the territory of the CR.
- f) Reduce the generation of bulky waste by sorting out individual recoverable components directly at collection yards already within municipal systems.

- g) Support the construction and development of infrastructure for dismantling, shredding, and further sorting of bulky waste for recycling and recovery, within collection points and yards or within waste management facility technologies.
- h) Support the development of technologies for mechanical sorting, treatment, and subsequent processing of bulky waste in regional waste centres. Promote efficient transport to these centres.
- i) Provide economic incentives for the further sorting of bulky waste into recyclable and recoverable components for the purpose of recycling or energy recovery.
- j) Within municipal systems, educate and motivate both residents and collection yard staff towards proper bulky waste management.
- k) Thoroughly monitor and penalise inappropriate and illegal bulky waste management.
- l) Consider introducing extended producer responsibility (EPR) schemes for furniture, mattresses, carpets or other waste streams that meet the definition of bulky waste.

### 3.5.5 Construction and Demolition Waste

#### Objectives:

- 5.1. Increase the recycling rate of construction and demolition waste to **83%** by **2030** (excluding soil, stones, and spoil). (indicative)
- 5.2. Increase the recycling rate of construction and demolition waste to **87%** by **2035** (excluding soil, stones, and spoil). (indicative)

#### Principles:

- a) Regulate the generation of construction and demolition waste and its management with regard to the protection of human health and the environment.
- b) Maximise the recovery of treated construction and demolition waste and recyclates from construction and demolition waste.
- c) Approach construction and demolition waste as a source of critical raw materials and adopt measures to increase the recovery of critical raw materials – particularly metals (copper, aluminium).

#### Measures:

- a) Establish legislative conditions for carrying out selective demolition with the aim of enabling the removal of hazardous materials from buildings, ensuring the safe management of such materials, and facilitating the reuse and high-quality recycling of construction materials, building products, and the recovery of critical raw materials.
- b) Separately collect construction and demolition waste, at a minimum wood, mineral fractions (concrete, bricks, tiles and ceramics, stones), metal, glass, plastics, and gypsum during demolition, construction, or maintenance of buildings, in order to ensure the highest possible level of their reuse and recycling in subsequent waste management.
- c) Comply with EU legislation in the area of “end-of-waste” for selected construction and demolition waste, and if the relevant legislative document is not adopted at EU level, prepare national regulations for selected types of construction and demolition waste setting criteria for end-of-waste and the transition of recycled construction and demolition waste into a product.
- d) Carry out revisions of standards for the quality of recyclates from construction and demolition waste in cooperation with the Ministry of Industry and Trade.

- e) Initiate and promote the use of recyclates meeting the required construction standards as substitutes for natural resources in construction activities financed from public funds, where technically and economically feasible.
- f) Ensure monitoring of compliance with legislation in the area of the use of treated construction and demolition waste and recyclates from such waste for backfilling, while maintaining a high level of environmental and human health protection.
- g) Prevent the use of untreated construction and demolition waste for backfilling, except for excavated soil and spoil without hazardous properties.
- h) Monitor facilities for the bioremediation of contaminated soil to ensure its safe further use and provide information on soils that have undergone bioremediation treatment.
- i) Analyse options for setting conditions under which non-business natural persons may hand over selected construction and demolition waste for landfilling without submitting the relevant analyses.
- j) Thoroughly monitor how non-business natural persons manage construction and demolition waste and ensure their delivery to the appropriate waste management facility.
- k) Support the acceptance of construction and demolition waste from citizens at municipal collection yards.
- l) Promote the reuse of construction materials and products while ensuring technical and safety requirements for construction materials and products.
- m) Support technologies and procedures for the recovery of critical raw materials from construction and demolition waste.
- n) Consider and analyse options for extended producer responsibility and take-back schemes for selected construction products and materials.

### 3.5.6 Mineral Waste

#### Principles:

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- a) Limit the landfilling of mineral waste and prioritise its material recovery and recycling.

#### Measures:

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- a) Prevent the landfilling of excavated soils suitable for material recovery for land improvement and backfilling, including their use as technical landfill cover.
- b) Support technologies and procedures enabling the use of suitable mineral waste, particularly as a substitute for natural aggregates.
- c) Support technologies and procedures enabling the use of suitable mining waste, particularly as a substitute for natural aggregates.
- d) Prevent the use of untreated construction and demolition waste for backfilling, except for excavated soil and spoil without hazardous properties.
- e) Monitor facilities for the bioremediation of contaminated soil to ensure its safe further use and provide information on soils that have undergone bioremediation treatment.
- f) Promote the reuse of construction materials and products while ensuring technical and safety requirements for construction materials and products.
- g) Support technologies and procedures for the recovery of critical raw materials from construction, demolition, and mining waste.
- h) Focus on research into new technologies for the recovery of critical raw materials.

### 3.5.7 Mining Waste

**Principles:**

- a) Recover and recycle mining waste.
- b) Limit the landfilling of mining waste.
- c) Approach mining waste as a source of critical raw materials and adopt measures to increase the recovery of critical raw materials.

**Measures:**

- a) Selective sorting and use of soils at the mining site.
- b) Prevent the landfilling of excavated soils that could be materially recovered for landscaping or backfilling, including their use as landfill cover.
- c) Support technologies and procedures enabling the use of suitable mining waste, particularly as a substitute for natural aggregates.
- d) Support technologies and procedures for the recovery of critical raw materials from mining waste.
- e) Focus on research into new technologies for the recovery of critical raw materials.

### 3.5.8 Industrial waste

**Principles:**

- a) Make maximum use of industrial waste as a substitute for primary raw materials.
- b) In industry, focus on optimising production processes and transitioning to circular solutions, low-waste and zero-waste technologies, and on eliminating the hazardous properties of industrial waste.

**Measures:**

- a) Support the optimisation of industrial production processes and modernisation leading to low-waste, zero-waste technologies and the reduction of hazardous properties of industrial waste.
- b) Support industrial modernisation and innovative technologies, thereby reducing the generation of industrial waste.
- c) Support increasing energy efficiency and reducing energy consumption in industry, with a focus on the decarbonisation of energy production and thus reducing waste from thermal processes.
- d) Classify by-products from production as by-products and use them for recycling.
- e) Prepare methodological guidance on by-products.
- f) Support opportunity analyses (circular audits, scans) and the search for circular production solutions.
- g) Support technologies for using waste as input in industrial production as a substitute for primary resources.
- h) Support technologies for recycling and material recovery of industrial waste.
- i) Support recycling technologies for industrial waste with end-of-waste status and defined output (product).
- j) Legislatively establish the transition from waste to non-waste for selected materials and streams.
- k) Support the construction and modernisation of technologies for the treatment of industrial waste, especially hazardous waste.

- l) Support the construction of facilities for the energy recovery or incineration of hazardous industrial waste.
- m) Raise awareness and educate industrial entities in the field of waste management and the implementation of circular economy principles.
- n) Control the handling of imported industrial waste.

### 3.5.9 Hazardous Waste

#### Objectives:

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- 9.1. To reduce the specific generation of hazardous waste.
- 9.2. To minimise the negative impacts of hazardous waste management on human health and the environment.
- 9.3. Remove old environmental burdens with the highest degree of urgency.

#### Principles:

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- a) Ensure a high level of protection of human health and the environment in hazardous waste management.
- b) Focus on the identification of hazardous substances in waste.
- c) Eliminate hazardous properties of waste and prevent the generation of hazardous waste.
- d) Ensure a stable network of sufficient capacities of facilities for the safe thermal disposal of hazardous waste.
- e) Utilise hazardous waste with regard to its properties, particularly for energy recovery.

#### Measures:

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- a) Focus on product design, reduction of harmful substances already in production, and minimisation of hazardous waste generation during production and at the end of product life. Actively promote the substitution of chemical compounds suspected of adverse effects on the environment and human health.
- b) Modernise production technologies and comply with EU regulations for placing products on the market.
- c) Correctly classify hazardous waste based on its actual properties.
- d) Correctly identify and classify liquid hazardous waste and establish procedures for its management.
- e) Treat hazardous waste appropriately to remove its hazardous properties.
- f) Use digitalisation to monitor the content of substances in products and waste.
- g) Always provide, together with waste, all necessary information on the content of hazardous substances and substances of very high concern (SVHC).
- h) Ensure sufficient information on hazardous substances in waste at the input to treatment facilities, particularly before mechanical treatment and recycling, where there is a risk of dispersion of hazardous substances and deterioration of outputs.
- i) Support research into new materials free of hazardous substances.
- j) Build key treatment facilities and ensure sufficient capacities for the management of all hazardous waste.

- k) Minimise long-distance transport of hazardous waste and ensure the availability of final treatment within the region, unless it concerns specific types of waste.
- l) Support the expansion of technologies for the decontamination of hazardous waste from healthcare and veterinary care for the purpose of safe disposal or recovery.
- m) Support the construction and modernisation of technologies for the treatment of hazardous waste such as demulsification, neutralisation, stabilisation, and biodegradation.
- n) Ensure sufficient capacities for the safe thermal disposal of hazardous waste, including waste from healthcare and veterinary care, corresponding to the actual generation of combustible hazardous waste in the CR, while at the same time providing capacities for the safe disposal of larger volumes of hazardous waste arising suddenly in the event of crisis situations.
- o) Enable the energy recovery of selected waste from healthcare and veterinary care in facilities for energy recovery of municipal waste.
- p) Support the construction of final facilities for the incineration or energy recovery of hazardous waste.
- q) Consider including facilities for energy recovery or incineration of hazardous waste among critical infrastructure.
- r) Utilise hazardous wood waste (e.g. railway sleepers) energetically in suitable facilities authorised for waste incineration.
- s) Minimise landfilling of hazardous waste.
- t) Ensure an even distribution of hazardous waste treatment facilities within the territory of the CR, thus enabling reasonable transport distances for treatment.
- u) Facilitate communication of investors and municipalities with the public to overcome the NIMBY effect in planning the construction of hazardous waste incineration plants.
- v) Divert hazardous household waste from mixed municipal waste and landfilling.
- w) Provide regular education and awareness-raising for residents on what constitutes hazardous household waste, how to correctly separate and collect it, and how to handle it within the municipal system.
- x) Support the separate collection of municipal hazardous waste from households at collection yards.
- y) Educate collection yard staff on proper separate collection of hazardous municipal waste.
- z) Maintain the possibility for citizens to hand in unused and expired medicines at pharmacies and continue to ensure that the costs of proper disposal of such medicinal waste from citizens are covered by the state.
- aa) Focus on monitoring tradespeople and entrepreneurs in municipalities (e.g. car repair shops, small workshops, craftsmen) as prevention against misuse of the municipal system and collection yards.
- bb) Educate healthcare staff and support the development of proper separate collection of waste in healthcare and hospital facilities with the aim of reducing the share of hazardous waste from healthcare.
- cc) Strengthen inspection of waste that has undergone treatment to remove hazardous properties to ensure that it does not actually exhibit such properties.
- dd) Strengthen inspection of obligated entities to ensure proper management of hazardous waste, in particular those with carcinogenic properties.
- ee) Focus on illegal handling of hazardous waste and reinforce the fight against environmental crime in this area.

- ff) Equip inspection authorities with modern technical equipment for monitoring the occurrence of hazardous substances in waste.
- gg) Promote thermochemical technologies based on scientific knowledge, assess the environmental impacts of these technologies, and comply with approaches recommended by the European Commission, e.g. for the processing of selected waste by chemical recycling methods.
- hh) Support research into thermochemical conversion technologies for hazardous waste, analysis, identification of chemical composition, and classification of outputs. Expand expert knowledge on outputs from these technologies and provide evidence of their safety for human health and the environment.
- ii) Support research and development of new technologies for hazardous waste treatment.

### 3.5.10 End-of-Life Products

#### 3.5.10.1 End-of-Life Vehicles

##### Objectives:

- 10.1.1. Increase the rate of recovery of critical raw materials contained in end-of-life vehicles.
- 10.1.2. Achieve a high level of recovery in the treatment of end-of-life vehicles. Achieve the rate of reuse, recycling, and recovery in the treatment of selected end-of-life vehicles according to the following table.

*Table 80: Targets for reuse, recycling, and recovery of end-of-life vehicles*

End-of-life vehicle management	
Reuse and recovery	95%
Reuse and recycling	85%

##### Principles:

- a) Recycle the maximum quantity of end-of-life vehicles within the CR.
- b) Prefer reuse of parts and recycling in the treatment of end-of-life vehicles.
- c) Treat end-of-life vehicle waste as a source of critical raw materials and adopt measures to increase the recovery of critical raw materials – metals.

##### Measures:

- a) Support the collection and treatment of selected end-of-life vehicles from resources collected on the basis of the emission fee (additional emission classes, e.g. EURO 3).
- b) Maintain, support, and further develop the existing network of facilities for the collection of selected end-of-life vehicles. Set standards for the treatment and collection of end-of-life vehicles and standards for the reuse of parts from selected vehicles, strengthen control of their compliance, and enforce them rigorously.
- c) Set safety conditions for the treatment of end-of-life vehicles from electric vehicles (particularly dismantling, handling, and storage of batteries from these vehicles).
- d) Conduct information campaigns and public awareness-raising on the management of end-of-life vehicles and increasing awareness of the network of facilities for the collection of end-of-life vehicles.

- e) Support research, development, innovation, and implementation of processes and technologies with a positive impact on increasing the level of material and energy recovery of waste generated in the treatment of end-of-life vehicles, focusing on the utilisation of raw materials, particularly the recovery of critical raw materials (non-ferrous metals).

### 3.5.10.2 Waste Batteries

#### Objectives:

- 10.2.1. Achieve the collection target for waste portable batteries at a level of at least 45 %, 63 % by the end of 2027, and 73 % by the end of 2030.
- 10.2.2. Achieve the collection target for waste batteries from light means of transport at a level of 51 % by the end of 2028 and 61 % by the end of 2031.
- 10.2.3. Increase the rate of recovery of critical raw materials contained in waste batteries.
- 10.2.4. Ensure recycling and financing of “old environmental burdens” from industrial batteries.
- 10.2.5. Increase the level of take-back of waste portable batteries. Achieve take-back of waste portable batteries at a minimum level according to the following table.

*Table 81: Targets for take-back of waste batteries*

Portable batteries	By 31. 12. 2027	By 31. 12. 2030
Collection (%)	63%	73%

- 10.2.6. Achieve high recycling efficiency of waste battery recycling processes. Achieve minimum recycling efficiency of waste battery recycling processes for groups of waste batteries according to the following table.

*Table 82: Targets for recycling efficiency of waste battery recycling processes*

Battery group	Recycling efficiency (% by weight)	
	By 31. 12. 2025	By 31. 12. 2030
Lead batteries	75	80
Lithium batteries	65	70
Nickel-cadmium batteries	80	-
Other waste batteries	50	-

- 10.2.7. Achieve by 18 August 2031 in the active materials of industrial batteries with a capacity greater than 2 kWh minimum shares of cobalt, lithium, and nickel from battery manufacturing or consumer waste and a minimum share of lead present in the battery and recovered through waste recovery, for each battery model per year and per production plant according to the following table.

*Table 83: Targets for minimum shares of cobalt, lead, lithium, and nickel recovered from waste in industrial batteries*

Specimen	Minimum proportion of material recovered from waste (%)	
	From 18. 8. 2031	From 18. 8. 2036
Cobalt	16	26
Lead	85	85
Lithium	6	12
Nickel	6	15

10.2.8. Achieve the recycling efficiency of selected batteries by materials by the end of 2025 and subsequently 2030 (see the following table).

*Table 84: Targets for recycling efficiency of selected batteries by materials*

Battery group	Recycling efficiency (% by weight)	
	By 31. 12. 2025	By 31. 12. 2030
Lead batteries	75	80
Lithium batteries	65	70
Nickel-cadmium batteries	80	-
Other waste batteries	50	-

10.2.9. Achieve the recycling of selected materials by 2027 and subsequently 2031 (see the following table).

*Table 85: Target for recycling of waste batteries*

Specimen	Recycling (%)	
	By 31. 12. 2027	By 31. 12. 2031
Cobalt	90	95
Copper	90	95
Lead	90	95
Lithium	50	80
Nickel	90	95

#### Principles:

- Apply the principle of extended producer responsibility.
- Recycle the maximum quantity of waste batteries within the CR.
- Treat waste batteries as a source of critical raw materials and adopt measures to increase the recovery of critical raw materials – metals.

**Measures:**

- a) Support the construction of facilities for the recycling of waste batteries within the CR.
- b) Support the establishment of processing capacities for the treatment of waste batteries.
- c) Support research and development of recycling technologies that are environmentally friendly and cost-effective.
- d) Support for technologies and procedures for obtaining critical raw materials.
- e) Support the safe management of waste batteries containing lithium or its compounds.
- f) Maintain, support, and further develop functional systems for the take-back of waste batteries.
- g) Strengthen cooperation between producers and collective systems with municipalities and reinforce the link between the collection network and municipal systems of municipal waste management.
- h) Utilise Regulation No. 2023/1542 for the introduction of mandatory collective compliance or the establishment of equal conditions for individual and collective compliance.
- i) Set standards for the treatment of waste batteries and strengthen control of their compliance.
- j) Strengthen supervisory activities with regard to producers and collective schemes, including oversight of the effective use of financial resources collected under the waste battery take-back system.
- k) Increase inspection activities to reduce the level of free-riding.
- l) For products where feasible, set and effectively implement eco-modulation through producers and collective systems.
- m) Continue public education in the field of take-back, intensify information campaigns and awareness-raising on the proper management of waste batteries.
- n) Raise awareness among end-users in the field of take-back of industrial batteries.
- o) Create legislative conditions for the solidarity financing of old batteries.

**3.5.10.3 Waste Tyres****Objectives:**

- 10.3.1. Increase the level of take-back of waste tyres. Achieve annual take-back of waste tyres of at least 80 %.
- 10.3.2. Achieve a high level of recovery in the treatment of waste tyres. Achieve annual recovery of waste tyres of 100 %.
- 10.3.3. Achieve annual recycling and preparation for reuse of waste tyres of at least 30 %.

**Principles:**

- a) Prefer tyre take-back in the Czech Republic.
- b) Recycle the maximum quantity of waste tyres within the CR.
- c) Prefer recovery in the treatment of tyres.

**Measures:**

- a) Support the construction of facilities for the recycling of waste tyres within the CR.
- b) Support processing capacities for the treatment of waste tyres.

- c) Support the construction and establishment of logistics centres for the optimisation of waste tyre transport.
- d) Maintain, support, and further develop functional systems for the take-back of waste tyres.
- e) Divert waste tyres from municipal systems and collection yards to the natural points of occurrence of waste tyres (tyre services, industry).
- f) Increase the number of tyre take-back points.
- g) Strengthen inspection activities towards producers and operators of collective systems, including the monitoring of the efficient use of financial resources collected under the waste tyre take-back system.
- h) Analyse the level of free-riding and possibilities of its elimination, particularly in the context of online sales.
- i) For products where feasible, set and effectively implement eco-modulation through producers and collective systems.
- j) Intensify information campaigns and awareness-raising to promote proper management of waste tyres, in order to minimise the disposal of tyres outside take-back points and increase awareness of the network of tyre take-back points.
- k) Support research and development of new technological procedures and recycling technologies in the field of waste tyres that are environmentally friendly and cost-effective (chemical recycling, devulcanisation).

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

##### Objectives:

- 10.4.1. Achieve take-back of waste electrical and electronic equipment at a level of 65 % (from 2025 onwards).
- 10.4.2. Increase the rate of recovery of critical raw materials contained in electrical and electronic equipment.
- 10.4.3. Ensure a high level of preparation for reuse, recycling, and recovery of waste electrical and electronic equipment. Achieve preparation for reuse, recycling, and recovery of waste electrical and electronic equipment as set out in the following table (from 2025 onwards).

*Table 86: Targets for individual groups of waste electrical and electronic equipment*

Group of electrical and electronic equipment	Group of electrical and electronic equipment	Recycling and preparation for reuse
1	85	80
2	80	70
3	-	80
4	85	80
5	75	55
6	75	55

**Principles:**

- a) Apply the principle of extended producer responsibility.
- b) Recycle the maximum quantity of waste electrical and electronic equipment within the CR.
- c) Ensure effective functioning of collective systems for selected electrical and electronic equipment with long service life or low economic value (e.g. solar panels).
- d) Treat waste electrical and electronic equipment as a source of critical raw materials and adopt measures to increase the recovery of critical raw materials – metals.

**Measures:**

- a) Support the construction and modernisation of facilities for the recycling of waste electrical and electronic equipment within the CR.
- b) Support processing capacities for the treatment of waste electrical and electronic equipment.
- c) Support technologies and procedures for the recovery of critical raw materials from waste electrical and electronic equipment.
- d) Maintain, support, and further develop existing take-back systems for waste electrical and electronic equipment.
- e) Strengthen cooperation between producers and collective systems with municipalities and reinforce the link between the collection network and municipal systems of municipal waste management.
- f) Continue to support the establishment of cooperation of collective systems with employers providing sheltered jobs (formerly so-called sheltered workshops).
- g) Set by legislation an effective system of financing for the take-back of solar panels.
- h) Set standards for the treatment of waste electrical and electronic equipment and strengthen control of their compliance.
- i) Ensure greater supervision of collective systems over B2B waste electrical and electronic equipment.
- j) Strengthen inspection activities towards producers and collective systems, including the monitoring of the efficient use of financial resources collected under the waste electrical and electronic equipment take-back system.
- k) Promote compliance of producers / importers / retailers / operators of online marketplaces / e-shops and other entities at EU level (free-riding), i.e. prevention of misuse of extended producer responsibility systems.
- l) Ensure conditions for directing waste electrical and electronic equipment into the extended producer responsibility system and strengthen inspections of facilities of other processors.
- m) For products where feasible, set and effectively implement eco-modulation through producers and collective systems.
- n) Continue public education in the field of take-back.
- o) Support research and development of new technological procedures and recycling technologies focusing on the utilisation and recovery of critical raw materials from waste electrical and electronic equipment.

### 3.5.11 Packaging And Packaging Waste

#### Objectives:

- 11.1. Increase overall packaging recycling to a level of 75 % by 2025 and maintain or further increase it in subsequent years.
- 11.2. Ensure, from 2025 to 2028, the take-back of 77 % by weight of single-use plastic beverage bottles placed on the market in the given calendar year.
- 11.3. Ensure, from 2029 onwards, the take-back of 90 % of single-use plastic beverage bottles placed on the market in the given calendar year.
- 11.4. Ensure a minimum recycled content of 25 % in PET beverage bottles from 2025.
- 11.5. Ensure a minimum recycled content of 30 % in plastic beverage bottles from 2030.
- 11.6. Ensure that beverage containers with caps and lids made of plastic are placed on the market only in such a way that the caps and lids remain attached to the container during the intended use phase of the products.
- 11.7. Achieve, from 2025 onwards, the recycling targets for individual materials set out in the following table.

*Table 87: Recycling targets for packaging waste*

Packaging Waste (%)	from 1. 1. 2025 to 31. 12. 2029	from 1. 1. 2030 to 31. 12. 2034	from 1. 1. 2035
Paper and cardboard	75	85	85
Glass	75	75	75
Plastics	50	55	55
Ferrous metals	70	80	80
Aluminium	35	50	60
Wooden	25	30	30
Sales packaging intended for consumers	50	50	50

- 11.8. By 1 January 2030 or three years from the date of entry into force of the implementing act (to EU Regulation 2025/40), all plastic parts of packaging placed on the market in the given calendar year must contain the following minimum percentages of recycled material obtained from post-consumer plastic waste, according to the type of packaging and packaging format, as set out below:
  - a. 30 % for contact-sensitive packaging, excluding single-use plastic beverage bottles, made predominantly of polyethylene terephthalate (PET);
  - b. 10 % for contact-sensitive packaging made of plastic materials other than PET, excluding single-use plastic beverage bottles;
  - c. 30 % for single-use plastic bottles;
  - d. 35 % for packaging other than those referred to in points a), b), and c).

- 11.9. By 1 January 2040 all plastic parts of packaging placed on the market in the given calendar year must contain the following minimum percentages of recycled material obtained from post-consumer plastic waste, according to the type of packaging and packaging format, as set out below:
- a. 50 % for plastic contact-sensitive packaging, excluding single-use plastic beverage bottles, made predominantly of polyethylene terephthalate (PET);
  - b. 25 % for contact-sensitive packaging, excluding single-use plastic beverage bottles, made of plastic materials other than PET;
  - c. 65 % for single-use plastic beverage bottles;
  - d. 65 % for other plastic packaging than those referred to in points a), b), and c).
- 11.10. By 1 January 2030 or three years from the date of entry into force of the implementing act (to EU Regulation 2025/40), ensure that the proportion of empty space in grouped, transport packaging, or e-commerce packaging does not exceed 50 %.
- 11.11. From 1 January 2030, economic operators using transport packaging or sales packaging for the transport of products, including products distributed through e-commerce, shall ensure that at least 40 % of all such packaging is reusable within a reuse system.
- 11.12. From 1 January 2040, economic operators shall use at least 70 % of the packaging referred to in point k) in a reusable format within a reuse system.
- 11.13. From 1 January 2030, economic operators using grouped packaging in the form of boxes, other than cardboard, which, in addition to sales packaging, are used to group a certain number of products into a storage or distribution unit, shall ensure that at least 10 % of such packaging is reusable within a reuse system.
- 11.14. From 1 January 2040, economic operators shall use at least 25 % of the packaging referred to in point m) in a reusable format within a reuse system.
- 11.15. From 1 January 2030, final distributors supplying consumers with alcoholic and non-alcoholic beverages in sales packaging shall ensure that at least 10 % of these products are supplied in reusable packaging within a reuse system.
- 11.16. From 1 January 2040, economic operators shall supply at least 40 % of the products referred to in point o) in reusable packaging within a reuse system.
- 11.17. By 12 February 2028, final distributors operating in the accommodation, catering, and hospitality sector, who supply hot or cold drinks or prepared meals in takeaway packaging, shall provide consumers with the option of receiving these products in reusable packaging within a reuse system.
- 11.18. From 2030, final distributors operating in the accommodation, catering, and hospitality sector, who supply hot or cold drinks or prepared meals in takeaway packaging, shall endeavour to offer 10 % of products in a reusable packaging format.
- 11.19. Reduce the consumption of lightweight plastic carrier bags so that annual consumption as of 31 December of the given year does not exceed 40 lightweight plastic carrier bags per capita.
- 11.20. Reduce the quantity of packaging waste generated per capita compared to the quantity of such waste generated per capita in 2018 by at least
- a. 5% by 2030;
  - b. 10% by 2035;
  - c. 15% by 2040.

- 11.21. By 1 January 2029, ensure the separate collection of 90 % by weight of single-use plastic beverage bottles with a volume of up to 3 litres and single-use metal beverage containers with a volume of up to 3 litres first placed on the market in the relevant calendar year.
- 11.22. By the end of 2025, ensure the recycling of at least 65 % by weight of all packaging waste generated, with the minimum weight shares of selected specific materials contained in the packaging waste generated being:
- a. 50% for plastics;
  - b. 25% for wood;
  - c. 70% for ferrous metals;
  - d. 50% for aluminium;
  - e. 70% for glass;
  - f. 75% for paper and cardboard.
- 11.23. By the end of 2030, ensure the recycling of at least 70 % by weight of all packaging waste generated, with the minimum weight shares of selected specific materials contained in the packaging waste generated being:
- a. 55% for plastics;
  - b. 30% for wood;
  - c. 80% for ferrous metals;
  - d. 60% for aluminium;
  - e. 75% for glass;
  - f. 85% for paper and cardboard.
- 11.24. Achieve, in 2030, a take-back rate of packaging waste from beverage cartons of at least 60 % by weight of such packaging. (indicative)

**Principles:**

- a) Observe the waste management hierarchy.
- b) Emphasise prevention of packaging waste generation (reusable packaging, economic instruments, and others).
- c) Prefer preparation for reuse and reuse.
- d) Prefer separate collection of packaging waste by material at source.

**Measures:**

- a) Reflect the new Regulation on packaging and packaging waste in Czech legislation at the time of its entry into force and prepare for this Regulation.
- b) Maintain and develop the integrated system of separate collection of municipal waste, including its packaging component, and expand the range of commodities that can be sorted.
- c) Strengthen educational activities, education, and awareness-raising in the field of packaging waste management (educational advertising and campaigns).
- d) Provide targeted education for residents (and other waste holders) in order to increase the sorting of packaging waste.
- e) Educate residents in the prevention of the use of single-use packaging and in the use of packaging-free services.

- f) Ensure the availability of a network for separate collection, and user-friendliness and convenience for residents.
- g) Support the introduction of reusable packaging.
- h) Apply eco-modulation and eco-design effectively, thereby preventing the generation of non-recyclable packaging.
- i) Increase the secondary sorting of packaging fractions from all waste streams through modern sorting lines.
- j) Support innovative technologies for the management of packaging waste.
- k) Support the construction of automated secondary sorting lines.
- l) Enable multi-commodity collection in connection with the availability of modern high-performance automated secondary sorting lines.
- m) Support the construction of facilities for the treatment of minority packaging waste.
- n) Support processing technologies for the treatment and recycling of packaging waste.
- o) Support research into reusable and readily recyclable packaging materials.
- p) Control the application of eco-modulation principles with a link to better sortability, recyclability, and recycled content in packaging.
- q) Require optimised packaging size and weight without affecting the function and usability of packaging.
- r) Support demand for recyclates through legislation and economic instruments.
- s) Obligation for the authorised packaging company to publish the method of achieving the % recycling in terms of investments in the waste sector.
- t) Obligation for the authorised packaging company to publish plans for the development of individual systems of collection, treatment, and recycling so that the waste management sector can prepare and be aligned with the intentions of the authorised packaging company.
- u) Obligation for the authorised packaging company to publish the methodology for the approach to the application of eco-modulation..
- v) Continuously evaluate the management of packaging waste within the municipal waste management system, the capacity options of the system, and propose measures for its improvement.

### 3.5.12 Single-Use Plastic Products

#### Objectives:

- 12.1. Reduce the placing on the market (consumption) of selected single-use plastic products compared with 2023.
- 12.2. Limit the disposal of single-use plastic waste outside designated places.

The objectives apply to tobacco products, wet wipes, balloons, sanitary products, beverage cups, food containers (within the meaning of Act No. 243/2022 Sb.).

#### Principles:

- a) Do not place on the market selected single-use plastic products and products made of oxo-degradable plastics.

- b) Respect requirements for placing plastic products on the market (beverage bottles up to 3 l only with non-detachable closures, and others as applicable).
- c) Focus long-term on reducing the consumption of selected single-use products.
- d) Promote extended producer responsibility.
- e) Education, training, and awareness-raising in the field of selected single-use products and littering.

**Measures:**

- a) Correctly label selected single-use plastic products on their packaging or on the products themselves.
- b) Replace single-use plastic products with suitable substitutes more environmentally friendly.
- c) Replace production and consumption patterns oriented towards single-use products with sustainable models – reusability, durability.
- d) Support the development of technologies introducing new packaging solutions (reuse, refill).
- e) Support the application of extended producer responsibility systems for selected single-use products.
- f) Negotiate with collective systems on the possibility of covering several commodities of selected single-use products under one collective system.
- g) Communicate with municipalities and motivate them to sign contracts with producers or collective systems.
- h) Consider amending the obligation of municipalities to conclude contracts so that it covers only the mandatory share of the population, without linkage to the share of municipalities.
- i) Support the expansion of the network of collection bins and litter bins in public places with a higher occurrence of littering.
- j) Increase cleaning of areas prone to littering.
- k) Conduct and support public awareness campaigns on the reduction of single-use plastics, reducing environmental pollution from waste, and incorporate this issue into education and professional training.
- l) Carry out awareness-raising and provide information on the availability of reusable alternatives, reuse systems, and correct methods of handling waste from the above-mentioned single-use plastic products and fishing gear, which do not endanger human health or harm the environment.
- m) Support, through legislation, technical measures, awareness campaigns, and subsidy programmes, the replacement of single-use plastics, especially packaging, disposable tableware, and cutlery, with reusable products and packaging.
- n) Provide information on the impacts of inappropriate methods of disposal of single-use plastic product waste on the sewer system.
- o) Inform users of tobacco products about the harmfulness of discarding cigarette butts outside designated places.
- p) Inform users about the benefits of sustainable behaviour in the context of waste prevention.
- q) Support initiatives dealing with the removal of litter waste.
- r) Analyse the possibilities of measuring the consumption of selected single-use products and the generation of waste from these products.
- s) Support, through legislation, technical measures, and awareness campaigns, the fulfilment of producers' obligations to achieve the mandatory amount of recyclate in selected products.

### 3.5.13 Sewage Sludge from Wastewater Treatment Plants

#### Objectives:

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- 13.1. Utilise sewage sludge materially with a particular focus on the recovery of phosphorus and nitrogen, apply high-quality sludge to soil, and utilise sludge energetically.
- 13.2. Reduce the amount of hazardous substances in sewage sludge intended for application to agricultural land.

#### Principles:

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- a) Prefer methods of sewage sludge management (WWTP sludge) based on the content of hazardous substances in the sludge.
- b) Apply the precautionary principle in order to ensure a high level of environmental and human health protection.
- c) Prioritise the utilisation of WWTP sludge generated in the Czech Republic over the utilisation of sludge imported from abroad.
- d) Treat ash generated during the incineration of municipal sewage sludge as a source of critical raw materials – phosphorus.

#### Measures:

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- a) Continue to use high-quality and suitable WWTP sludge for application to agricultural land.
- b) Support the development of technologies for the removal of heavy metals, pharmaceutical residues, hormones, chemicals, microplastics, and other contaminants from WWTP sludge.
- c) Monitor the prescribed microbiological and chemical parameters of treated WWTP sludge intended for soil application.
- d) Increase and prioritise the composting of WWTP sludge.
- e) Optimise operation and improve composting technology for WWTP sludge.
- f) In order to achieve higher-quality sewage sludge from wastewater treatment plants, do not accept industrial wastewater into municipal wastewater treatment technologies.
- g) Support the development of industrial wastewater treatment plants, including leachate treatment from waste landfills.
- h) Support investments in technologies for the management of WWTP sludge, particularly prevention of residue formation while preserving the potential of sludge as a source of nutrients (nitrogen, phosphorus, and others) and organic matter, including the energy recovery of WWTP sludge.
- i) Optimise the anaerobic digestion process in order to achieve higher hygienisation and greater energy recovery from WWTP sludge.
- j) Support the development of technologies for the extraction and use of biogas from sludge directly at WWTPs.
- k) Increase biogas production at WWTPs and explore options for its injection into the distribution grid and its use as a substitute for fossil fuels.
- l) Prevent inappropriate methods of WWTP sludge management in mobile facilities and backfilling facilities.
- m) Enable the utilisation of WWTP sludge in biogas plants, including agricultural biogas plants processing biomass.

- n) Set legislative rules for the preparation of cultivation and reclamation substrates containing WWTP sludge for use in topsoil layers in land reclamation.
- o) Support the development of technologies enabling the recovery of phosphorus as a critical raw material.
- p) Focus on the development of technologies for the recovery of phosphorus, iron, aluminium, and other substances from residual products when applying thermal methods.
- q) Support technologies for the drying of WWTP sludge, particularly before entering thermal processes.
- r) Support the development and expansion of thermal pyrolytic treatment of WWTP sludge.
- s) Educate and raise public awareness to reduce the load on wastewater, and consequently WWTP sludge, with pharmaceuticals, heavy metals, chemicals, microplastics, etc.
- t) Monitor developments and consider the possibility of applying extended producer responsibility to producers of drugstore goods, chemical products, etc., as their residues end up at WWTPs and in WWTP sludge.
- u) Support research focused on monitoring the content and assessing the effects of contaminants in WWTP sludge on human health and the environment.
- v) Focus research on the content and removal of pharmaceutical residues, chemicals from personal hygiene products, microplastics, and persistent organic pollutants from WWTP sludge and on the contribution of WWTP sludge to bacterial antibiotic resistance.

### 3.5.14 Waste Oils

#### Objectives:

- 14.1. Increase recycling and energy recovery of waste oils.

#### Principles:

- a) Observe the waste management hierarchy and prioritise the recycling of waste oils.
- b) Prevent environmental and human health damage in the management of waste oils.

#### Measures:

- a) Collect waste oils appropriately at the place of generation and prevent their improper mixing.
- b) Ensure that waste oils are properly collected, stored, and not mixed with oils of different properties or with other waste or substances, with regard to their subsequent utilisation.
- c) Prioritise the regeneration and recycling of waste oils and utilise oils unsuitable for this purpose energetically in accordance with applicable legislation.
- d) Support the construction of facilities for the regeneration and recycling of waste oils.
- e) Set criteria for the production of liquid fuels from waste oils.
- f) Build facility capacities for the production of fuels from waste oils.
- g) Conduct awareness-raising and increase public knowledge on the proper management of waste oils, with education on their transfer into the municipal system.
- h) Control the collection of waste oils and compliance with the hierarchy of waste oil management.

### 3.5.15 Healthcare and Veterinary Care Waste

#### Objectives:

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- 15.1. Minimise negative impacts of healthcare and veterinary care waste management on human health and the environment.
- 15.2. Increase the incineration of healthcare and veterinary care waste.

#### Principles:

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- a) Strengthen education and awareness-raising in the field of healthcare and veterinary care waste management (particularly in the area of healthcare provided in patients' own environments).
- b) Prevent the generation of healthcare and veterinary care waste (use of reusable aids after sterilisation, measures against wastage, etc.).
- c) Eliminate the infectiousness and hazardousness of healthcare and veterinary care waste primarily by decontamination directly at source at the place of generation.
- d) Ensure sufficient capacity for the safe management of healthcare and veterinary care waste.

#### Measures:

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- a) Education and awareness-raising on the proper management of healthcare waste, including unused and expired medicines. Training of employees in facilities where healthcare and veterinary care waste is generated.
- b) Reduce the use of disposable aids, support the reuse and sterilisation of instruments.
- c) Implement and comply with rules for the management of healthcare and veterinary care waste, including unused and expired medicines, focusing on safe collection, transport, disposal, and possible recovery of waste from healthcare, veterinary, and similar facilities.
- d) Expand decontamination of healthcare and veterinary care waste directly at source at the place of generation.
- e) Expand decontamination as a basic safe procedure for reducing the generation of hazardous waste and lowering the risk of infection through improper waste handling.
- f) Support the acquisition of decontamination devices for healthcare facilities.
- g) Manage healthcare and veterinary care waste in accordance with the waste management hierarchy and according to available technologies, prioritising the best available techniques.
- h) Support investment projects to complement the network of facilities and increase capacities for the safe energy recovery or incineration of healthcare waste (both other and hazardous) and improve the preparedness and resilience of the Czech Republic in the event of possible pandemics.
- i) Modernise existing capacities for the safe energy recovery or incineration of healthcare and veterinary care waste.
- j) Consider including healthcare waste incineration facilities in critical infrastructure.
- k) Support the construction and modernisation of facilities for the energy recovery of healthcare and veterinary care waste directly within hospital premises.
- l) End landfilling of healthcare and veterinary care waste, even after treatment.
- m) Support research and development of new technologies for the management of healthcare and veterinary care waste.
- n) Control compliance with legislatively established procedures for the management of healthcare and veterinary care waste by waste holders (collection, storage, etc.).

- o) Unify and implement procedures for the proper management of healthcare and veterinary care waste.
- p) Control proper management of healthcare and veterinary care waste throughout the entire waste management chain.
- q) Improve resilience and preparedness for potential pandemics through education, training, and awareness-raising of relevant persons.

### 3.5.16 Waste Containing Persistent Organic Pollutants

#### Objectives:

- 16.1. Increase awareness of persistent organic pollutants (POP), proper management of waste that is a source of POP, and their effects on human health and the environment.
- 16.2. Restrict the input of persistent organic pollutants from waste into recycling.

#### Principles:

- a) Focus on POP prevention in products.
- b) Reduce the risk of negative impacts of POP on human health and the environment.
- c) Remove old environmental burdens containing POP.

#### Measures:

- a) Raise public awareness and increase understanding of the risks associated with the use of POP, their occurrence in waste, in the environment, in households, and in everyday life.
- b) Provide education and awareness-raising on POP also for public administration bodies for permitting processes and public procurement.
- c) Strictly control compliance with POP regulations, the placing of POP-free products on the market, the presence of POP in recyclates, and the removal of POP.
- d) Recommend methods for detecting POP content in products and waste and raise awareness of possible exposure.
- e) Carry out POP monitoring in environmental components, identify potential sources of leakage and prevent their spread, and conduct POP biomonitoring in the population.
- f) Improve POP monitoring in waste (e.g. sewage sludge, textile waste, plastic waste, fly ash).
- g) Support research on POP and possible POP substitutes.
- h) Share information on POP at national and international levels.
- i) Develop methodological guidance on possible POP occurrence in selected waste and the proper management of POP-containing waste.
- j) Maintain records of sites contaminated or potentially contaminated with POP (e.g. new substances – PFAS) and update the SEKM database.
- k) Support remediation of sites contaminated with POP.
- l) Prioritise the severity of POP-contaminated sites for remediation and increase subsidy support for the highest-risk areas.
- m) Improve and develop methods for the separation of POP-containing waste.
- n) Support research into new methods of detection, monitoring, and removal of POP (both existing and new).

- o) Apply BAT/BEP technologies in the removal of POP-containing waste.
- p) Develop new technologies and methods of POP decontamination, remediation, and safe disposal (e.g. fire-fighting equipment containing fluorinated substances).
- q) Support the building of facility capacities (new or expanded) for the management of POP-containing waste, for the safe disposal of POP-containing waste (e.g. hazardous waste incinerators) and explore new POP removal technologies.
- r) Support natural attenuation of POP in the environment (e.g. degradation of pesticides in agricultural soil).

### 3.5.17 Waste Containing Polychlorinated Biphenyls

#### Objectives:

- 17.1. Transfer all equipment and waste containing polychlorinated biphenyls (PCB) to waste management facilities by the end of 2025 and decontaminate PCB-containing waste by that time.
- 17.2. Eliminate waste containing PCB held by waste management facilities by the end of 2028.

#### Principles:

- a) Focus on prevention and discontinue the use of PCB.
- b) Reduce the risk of negative impacts of PCB on human health and the environment.
- c) Remove old environmental burdens containing PCB.

#### Measures:

- a) Increase public awareness and information on the negative effects of PCB.
- b) Maintain records of equipment containing PCB.
- c) Maintain records of sites contaminated or potentially contaminated with PCB and update the SEKM database.
- d) Recommend methods for determining PCB content in operating equipment.
- e) Transfer lightly contaminated equipment and equipment containing PCB with a filling volume of less than 5 litres to facilities for the management of this type of waste by the end of 2025.
- f) Monitor compliance with the obligation to transfer all equipment containing PCB by the target year 2025.
- g) Monitor and control the gradual removal of PCB-containing waste held by waste management facilities by the target year 2028.
- h) Carry out monitoring of PCB in environmental components and PCB biomonitoring in the population.
- i) Monitor PCB content in waste used for backfilling and reclamation.
- j) Monitor PCB content in WWTP sludge intended for land application.
- k) Continue the implementation of the National Inventory of Contaminated Sites project to map additional contaminated sites. Monitor sites with PCB content.
- l) Prioritise the severity of contaminated sites for remediation and increase subsidy support for the highest-risk sites.
- m) Apply BAT/BEP technologies in the removal of PCB-containing waste.

- n) Support the use of “in situ” methods to reduce the potential risk of PCB spread.
- o) Support research into new methods of monitoring and removing PCB.
- p) Explore possibilities for alternative methods of PCB waste disposal other than incineration.
- q) Support the construction of new capacities for the elimination of PCB waste or the expansion of existing facility capacities.

### 3.5.18 Asbestos-containing waste

#### Objectives:

- 18.1. Minimise potential negative impacts of asbestos waste management on human health and the environment.

#### Principles:

- a) Monitor the occurrence of asbestos.
- b) Ensure a high level of human health protection.
- c) Manage asbestos waste.
- d) Safely dispose of asbestos waste.

#### Measures:

- a) Carry out continuous training, education, and awareness-raising for both professionals and the general public.
- b) Regularly update methodologies for the proper management of asbestos-containing waste with regard to developments in this area.
- c) Provide sufficient training for employees and personnel whose activities involve contact with materials or waste containing asbestos.
- d) Control the implementation of measures to separate the workspace in which asbestos materials or waste are handled from the surrounding environment.
- e) Minimise the disturbance of asbestos-containing material during handling to prevent the release of asbestos fibres and asbestos dust.
- f) Prepare a professional quantification of the existing asbestos burden throughout the CR for public buildings completed before 2005.
- g) Carry out building inspections prior to demolition, alterations of completed buildings, or maintenance work in order to identify and determine the presence of asbestos.
- h) Establish a publicly accessible list of authorised persons for building inspections to detect asbestos and for professional asbestos management.
- i) Establish a publicly accessible list of authorised persons for building inspections to detect asbestos and for professional asbestos management.
- j) Consider introducing a requirement that the removal of buildings or parts of buildings containing asbestos be carried out by construction companies or tradespeople with the relevant trade licence.
- k) Introduce a subsidy scheme or other funding instrument to support the proper removal of asbestos from buildings.
- l) Support science and research in the field of asbestos treatment, assessment, and research into health risks associated with exposure to respirable asbestos fibres.

- m) Strictly monitor compliance with safe asbestos waste management and occupational hygiene requirements in asbestos handling.
- n) Provide further economic incentives for asbestos waste removal.
- o) Evaluate options for creating a national plan or other long-term national strategy for the complete removal of asbestos from buildings in the CR and the management of waste arising from them.

### 3.5.19 Material-recoverable Waste

#### Objectives (wood):

- 19.1. Increase the efficiency of separation (rate of separate collection) of wood in municipalities.
- 19.2. By 2030 achieve a rate of preparation for re-use and recycling of wooden waste of at least 40%. (indicative)
- 19.3. By 2035 achieve a rate of preparation for re-use and recycling of wooden waste of at least 50%. (indicative)

(Note: The targets relate to municipal wood waste.)

#### Objectives (ferrous and non-ferrous metals):

- 19.4. To process metal waste and end-of-life products into materials to substitute primary raw materials.
- 19.5. Increase the recycling rate of metal waste.

#### Principles:

- a) Maintain, support, and develop the separate collection of recyclable and recoverable fractions of municipal waste – separate commodity collection (paper, plastic, glass, metals, wood, beverage cartons) with regard to the targets set for individual materials and with regard to the higher quality of waste collected in this way.
- b) Maintain and develop the accessibility and user-friendliness of separate collection of recyclable and recoverable fractions of municipal waste in municipalities.
- c) The system of separate collection of municipal waste in a municipality shall be determined by the municipality in accordance with statutory requirements and with regard to the availability of technological waste treatment.
- d) The scope and method of separate collection of municipal waste fractions in a municipality shall be determined by the municipality with regard to technical, environmental, economic, and regional conditions and the technological possibilities of further waste treatment, while complying with legislative requirements and meeting the targets.
- e) Maintain and develop the participation and cooperation with packaging producers and other product manufacturers, according to the principle of “polluter pays” and “extended producer responsibility”, in ensuring separate collection or take-back and recovery of relevant fractions of municipal waste.
- f) Improve systems of separate collection of recyclable and recoverable fractions of municipal waste at legal entities and self-employed natural persons and involve legal entities and self-employed natural persons with municipal waste in municipal waste management systems.
- g) Promote the application and use of recycled materials (so-called recyclates), thereby contributing to the marketability of outputs from municipal waste recycling facilities.
- h) Consider and propose measures that will make recyclates a favourable alternative to primary materials.

- i) Broad application of green public procurement – giving preference to recycled products in so-called “green” tenders.
- j) Use of economic instruments – prioritise economic instruments in order to support the recycling of separately collected and suitably treated waste.

### Measures:

- a) Intensify and optimise the separate collection of recyclable and recoverable municipal waste in municipalities, primarily by densifying and optimising the distribution of the collection network, reducing walking distances to collection containers, and increasing residents’ awareness of sorting.
- b) Densify the collection network in areas with increased tourist traffic and in areas with new residential development. Further, in areas with a significantly higher number of inhabitants compared to the registered population (cottage and recreational areas, tourist areas with high visitor turnover, etc.).
- c) Enable the sorting of bulky waste at collection yards into basic recoverable fractions by material.
- d) Focus on maximising the sorting (transfer) of material fractions from mixed municipal waste.
- e) Develop highly user-friendly separate collection for residents (its users), in particular a clear sorting system, short carrying distances, and door-to-door systems.
- f) Expand the network of litter bins in public spaces to enable sorting into recoverable fractions.
- g) Expand the individual collection network in areas with a higher proportion of family housing.
- h) Motivate residents to actively participate in sorting, in particular through the setting of municipal waste management systems and municipal waste charges based on the “Pay-As-You-Throw” (PAYT) principle and other motivational tools. Support municipalities in building infrastructure and technologies for the introduction and expansion of PAYT.
- i) Provide education and awareness-raising for residents and increase their involvement in the municipal system, prevention, and sorting of recoverable waste.
- j) Focus on increasing the number of residents actively sorting, increasing waste sorting, and improving the quality of sorted fractions (paper, plastics, glass, metals, wood) from municipal waste.
- k) Provide subsidy support for environmental education, training, and awareness-raising in the field of consistent sorting of recyclable and recoverable waste.
- l) Motivate legal entities and self-employed natural persons to carry out separate collection of recyclable and recoverable waste (audits, scans, etc.).
- m) Strictly monitor municipalities and other waste holders to ensure they have in place separate collection (sorted collection) of recyclable and recoverable fractions (paper, plastics, glass, metals).
- n) Municipalities to strictly monitor their residents to ensure that they sort adequately and do not dispose of recoverable fractions in mixed municipal waste (e.g. random checks of bin contents).
- o) **Wood:** Develop and increase the separate collection of waste wood and its transfer for recycling. Ensure the separate collection of waste wood at municipal collection yards.
- p) **Glass:** Develop the separate collection of waste flat glass, construction and technical glass, or vehicle glass, as well as packaging glass from the hotel and restaurant sector, i.e. from other holders.
- q) **Multi-commodity:** Develop multi-commodity collection in connection with the capacities of modern, efficient, and high-performance sorting lines.
- r) **Wood, metals, plastics, glass:** Develop the sorting of bulky waste and increase the quantities of sorted waste wood, metals, plastics, and partly also glass.

- s) Support innovation, digitalisation, and smart solutions in the field of collection, sorting, machine sorting, and final treatment of recyclable and recoverable waste.
- t) Develop systems of digitalisation and records of waste weight and tracking of waste origin.
- u) Support, through subsidies, the construction of highly efficient technologies for machine sorting and post-sorting of municipal waste to ensure subsequent recycling and further recovery. Maximise the utilisation of sorted commodities.
- v) Support, through subsidies, the modernisation and construction of technologies and facilities for waste recycling and strengthen the competitiveness of production in the Czech Republic compared to the EU.
- w) Build automated sorting lines for separately collected waste and ensure the high quality of treated waste (secondary raw materials).
- x) Build automated sorting lines for machine sorting of recyclable and recoverable fractions from mixed municipal waste.
- y) **Metals:** Facilities for energy recovery of waste (FERW) with technologies for highly efficient separation of ferrous and non-ferrous metals from slag.
- z) **Glass:** Modernise and build new sorting lines for effective separation of glass so that processed cullet is competitive on the EU market.
- aa) **Plastics:** Improve the system of sorting and treatment of plastics. Build modern, automated, high-capacity sorting lines and waste treatment facilities to achieve efficient separation of even minor material groups of plastics present in sorted collection and ensure better market opportunities. Recycle plastics and use plastics unsuitable for recycling for energy recovery.
- bb) **Plastics:** Develop plastic recycling technologies with the aim of producing high-quality recyclates suitable for use back in the packaging and food industries.
- cc) **Beverage cartons:** Consider introducing quantitative targets for the recycling of beverage cartons (composite packaging for beverages).
- dd) Consider introducing EPR systems for other products / waste that meet the definition of municipal waste.
- ee) Analyse potential changes in the waste sorting system and eliminate the risk of a decrease in the share of residents actively sorting waste.
- ff) Ensure greater importance of financial resources from collective systems and authorised packaging companies for financing the intensification of the collection network for recoverable waste and the operation of processing facilities.
- gg) Ensure a financially stable environment (covering market downturns) through financial resources from EPR systems.
- hh) Ensure the marketability of treated waste from re-sorting lines even during downturns in the secondary raw materials market through the core role of EPR systems.
- ii) **Metals, plastics:** Consider increasing the amount of sorted and recycled aluminium and PET beverage packaging waste through deposit-return schemes.
- jj) Analyse the possibilities of potentially introducing additional deposit-return schemes for various products (which, at the waste stage, constitute municipal waste).
- kk) Targeted continuous education and awareness-raising of residents about proper waste sorting, its importance, and its benefits. Information campaigns dispelling concerns about the use of products containing recyclates.

- ll) Support demand and consumption of products made from recycled materials (paper, plastic, glass, wood), in 53 through public procurement, possible tax incentives, etc.<sup>53</sup>
- mm) **Metals, glass, plastics, paper:** If sufficient sorting results are not achieved within the primary municipal sorting system, it will be necessary to promptly ensure the development of technologies for machine sorting of mixed municipal waste, especially from housing estates (metals, glass, part of plastics and paper), or other suitable localities.
- nn) Support research and development of new recycling technologies for sorted waste, in particular paper and plastic.

### 3.5.20 Textile Waste

#### Objectives:

- 20.1. By 2030 achieve a separation efficiency (rate of separate collection) of textile waste in municipalities of at least 50%. (indicative)
- 20.2. By 2035 achieve a separation efficiency (rate of separate collection) of textile waste in municipalities of at least 55%. (indicative)
- 20.3. Achieve a rate of preparation for re-use and recycling of textile waste of at least 35 % by 2030. (indicative)
- 20.4. Achieve a rate of preparation for re-use and recycling of textile waste of at least 45 % by 2035. (indicative)

Note: The objectives relate to municipal textile waste.

#### Principles:

- a) Strengthening a sustainable approach to textiles and the circularity of textile products.
- b) Focusing on the potential of textile waste, including footwear, its sorting, preparation for re-use, and recycling.

#### Measures:

- a) Introduce effective systems for the separate collection of textile waste, including footwear, in municipalities.
- b) Introduce extended producer responsibility (EPR) systems for textiles, including footwear, for waste textiles and footwear.
- c) Awareness-raising and support in the field of eco-design, sustainability, and circularity of textile products.
- d) Apply eco-modulation and set placing-on-the-market fees that will motivate increased durability, reparability, and recyclability of textile products.
- e) Monitor compliance with the ban on destroying unsold textile products and footwear.
- f) Develop systems for providing information on textile products (product passports, labels, green claims).

<sup>53</sup>Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy.

- g) Support the development of infrastructure, increasing the capacity of collection networks for textile waste, including footwear, establishing central collection points, and building modern, efficient optical sorting technologies and high-capacity sorting lines.
- h) Support preparation for re-use of textile products and clothing.
- i) Support the construction of modern technologies for recycling textile waste, including footwear.
- j) Restrict the export of textile waste, including footwear, for disposal purposes.
- k) Educate and raise awareness among the public regarding the issue of fast fashion, ways of reducing and preventing the generation of textile waste including footwear, and possibilities for re-use of textile products.
- l) Educate and raise awareness among the public about the correct management of textile waste, including footwear.
- m) Provide subsidy support for environmental education, training, and awareness-raising in the field of correct sorting of textile waste and its benefits.
- n) Support research and development of recycling technologies for textile waste, including footwear.

## 3.6 Objectives, Principles and Measures for Specific Areas of Waste Management

### 3.6.1 Limiting the Illegal Dumping of Waste and Ensuring the Management of Waste Whose Owner Is Unknown or Has Ceased to Exist

In order to achieve the objective of restricting unauthorised disposal of waste outside designated places, it is necessary to proceed from the following principles and adopt the following measures.

#### Objectives:

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- SO1.1st To limit the dumping of waste outside designated areas.
- SO1.2nd Ensure proper management of waste disposed of outside designated places and of waste whose owner is unknown or has ceased to exist.

#### Principles:

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- a) Focus on preventive activities.
- b) Increase awareness of the importance of proper disposal of waste in designated places and of environmental protection.

#### Measures:

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- c) Create programmes of training, education and awareness-raising at the level of municipalities, in particular by ensuring the financing of such programmes.
- d) Involve the public in programmes and events leading to the formation of a positive attitude towards maintaining a clean environment and proper waste management.
- e) Involve producers in the creation of programmes and marketing campaigns for consumers of their products or services.
- f) Increase preventive inspection of persons authorised to conduct business (in particular sole traders) by municipalities and municipalities with extended competence (MEC).
- g) Inform citizens and business entities about the possibility of being fined for activities associated with the creation of illegal dumps.

- h) Introduce and support the development of municipal communication channels (forms on municipal websites, SMS), through which residents should be able to report illegally deposited waste in public areas or temporary waste storage near collection points and containers.
- i) Carry out, at the level of municipalities, the inventory and tagging with chips of municipal waste containers for the purpose of detailed inspection of collected containers and prevention of unauthorised disposal of business waste in municipal waste containers.
- j) Install camera systems or place photo traps in locations with frequent unauthorised waste disposal.
- k) Involve business entities in the municipal system through direct engagement by municipalities.
- l) Strengthen oversight of compliance with the obligation to ensure subsequent management of municipal and construction and demolition waste at the moment of its generation.
- m) Focus municipal inspections on unauthorised use of municipal systems for waste management by legal entities and self-employed natural persons.
- n) Improve the effectiveness of the system of inspections and the imposition of fines for pollution of public areas.
- o) Increase the maximum level of fines for the offence of creating an illegal dump.
- p) Use the institute of community service or the institute of public service by municipalities to ensure the cleaning and maintenance of public areas, including activities associated with the removal of waste disposed of outside designated places.
- q) Maintain the cleanliness of public areas.
- r) Secure places where illegal dumps are being created and renewed.
- s) Supplement the systems of collection yards, containers and collection services for the types of waste most frequently occurring in illegal dumps.
- t) Ensure the acceptance of construction and demolition waste from citizens up to a certain limit within the municipal system.
- u) Introduce systems of regular collection of bulky waste and other household waste to increase citizens' motivation to dispose of such waste at designated places and effectively inform citizens about these services (social networks, applications for communication with citizens).
- v) Allocate funds in municipal budgets for the financing of waste management (waste clearance) where the originator is unknown.
- w) Promote the provision of support for co-financing the removal of illegal dumps from resources of the Ministry of the Environment (MoE).

### 3.6.2 Approach to the Management of Emergencies and Crisis Situations and Waste Generated Therein

The management of emergencies and crisis situations is governed by the Act on the Integrated Rescue System and the Act on Crisis Management. The regional emergency plan is applied, including a plan for the removal of waste generated during an emergency. Other laws governing waste management under normal circumstances are then applied in a subsidiary manner.

#### Objectives:

SO2.1st Proper and safe management of waste from natural disasters and crisis situations.

#### Principles:

- a) Ensure high protection of human health, the environment and property.

- b) Safely manage waste generated as a result of emergencies and crisis situations.

**Measures:**

- a) Promptly determine, by expert estimation, the quantity and composition of waste occurring as a result of emergencies and crisis situations and effectively direct the flow of such waste to facilities for disposal or, where applicable, for recovery.
- b) Inform residents (both natural and legal persons) about the preventive measures necessary to avoid damage prior to emergencies and crisis situations, as well as the procedures to follow after such events and during the removal of their consequences.
- c) Safely remove waste from areas affected by emergencies and crisis situations.
- d) Where circumstances permit, ensure appropriate sorting of waste into basic fractions (metals, wood, plastics, hazardous waste, etc.) and manage them in accordance with the waste management hierarchy.
- e) Always consider waste contaminated by floods as potentially hazardous and infectious.
- f) Do not locate temporary landfills in municipalities (interim landfills, so-called interim depots) near permanent residences, sports grounds or recreational areas.
- g) The priority method for the disposal of hazardous waste is controlled incineration in hazardous waste incineration plants and municipal waste incineration plants; it may also be temporarily stored in hazardous waste landfills. Open incineration of waste at landfills or the incineration of waste in open areas is impermissible.
- h) Consider including waste incineration plants, including facilities for energy recovery of waste (FERW), among critical infrastructure.
- i) Remove dead animals and spoiled foodstuffs of animal origin exclusively in rendering plants.

### 3.6.3 Remediation of Contaminated Sites

Waste policy has long been striving to minimise the adverse effects of waste on human health and the environment. Within this framework, the removal and remediation of contaminated sites and environmental burdens is a particularly important aspect.

In the implementation of activities concerning contaminated sites, the following principles shall be observed and the following measures applied.

**Principles:**

- a) Continue identifying new sites with environmental burdens and recording them in the relevant databases.
- b) For unexplored sites, carry out further investigation of pollution of the geological environment, and where appropriate prepare risk analyses, and evaluate the need for remediation.
- c) Continue with remediation activities.

**Measures:**

- a) Prioritise remediation of sites endangering the environment or human health.
- b) Prioritise the removal of burdens where the originator does not exist or is not known.

- c) Prioritise remediation of areas with a higher number of endangered persons and according to the higher severity of contamination (for example, the harmfulness of contaminants, priority in SEKM<sup>54</sup>, number of affected components of the environment).
- d) Support activities aimed at increasing the awareness of potential applicants regarding available possibilities for financing remediation.
- e) Strengthen the role of the Ministry of the Environment (MoE) in inspections and assessment of remediation works.
- f) Monitor the condition of sites during and after the completion of remediation intervention.

### 3.7 Development of a Network of Waste Management Facilities

**In order to achieve the objective of creating a comprehensive, adequate and efficient network of waste management facilities at national and regional levels, in accordance with the principles of self-sufficiency and at the same time respecting the waste management hierarchy, this network must include types of facilities of various capacities and significance.**

The network of waste management facilities should also include modern and innovative technologies that are more environmentally friendly and, in addition to fulfilling the objectives of waste management, help create a high-quality living environment for residents. One of the many objectives is, inter alia, to support waste management facilities with environmental added value.

The regional waste management plans shall also contribute, in the long term, to the achievement of the objectives of the Waste Management Plan of the Czech Republic. From the perspective of the needs of waste management, it is therefore essential to coordinate the interconnection of regional waste management plans with the WMP CR, but also to monitor the interconnection of regional plans with sub-regional plans.

The required capacities of the facility network are addressed by the economic analysis, the summary of which forms part of the WMP CR, with a separate document as an annex. **The economic analysis provides a framework plan of investments in waste management facilities in the Czech Republic.**

From a long-term perspective, it is necessary to monitor the necessity, economic competitiveness and sustainability of waste management facilities in connection with the current and potential generation of selected waste in the Regions. On the basis of this information, it is necessary to continuously update the plans for construction and investment in these facilities. It is precisely the regional waste management plans that help to guide support from public resources towards selected waste management facilities.

Optimisation, expansion and modernisation of the facility network in future years will again be enabled thanks to support from the Operational Programme Environment (OPE), the Operational Programme Technology and Applications for Competitiveness (OP TAC), the Operational Programme Enterprise and Innovation for Competitiveness (OP EIC), as well as still ongoing projects within the National Recovery Plan as part of the implementation of the structural support of the European Union (EU) for the Czech Republic, and other supporting programmes. The Operational Programme Environment (OPE) for the programming period 2021–2027 was set up for the purpose of fulfilling the objectives of the WMP CR.

For facilities of nationwide importance, which may include in particular facilities for energy recovery of waste (FERW) or facilities for the incineration of hazardous waste whose hazardous component cannot

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<sup>54</sup> System of records of contaminated sites. Available [here](#).

be removed in another way, it is necessary to take into account interregional cooperation. In particular, in the case of hazardous waste, the logistics of transport should be arranged so that such waste is transported for disposal over the shortest possible distances, for both safety and environmental reasons. This criterion should also be taken into account when planning the construction of such facilities.

The individual Regions, within their own waste management plans, shall set their primary needs and capacities of waste management facilities and their utilisation in their territory in relation to waste management and the current level of fulfilment of the objectives of the Waste Management Plan of the Czech Republic (WMP CR) as well as of the Region itself. In the analysis of facilities in their territory, the Regions may proceed in cooperation with the Ministry of the Environment (MoE).

### Objectives:

SO3.1st Create and coordinate a comprehensive, adequate and efficient network of waste management facilities in the territory of the Czech Republic.

SO3.2nd Construct facilities of major importance for waste processing.

### Basic Classification of Waste Management Facilities in the Czech Republic and Examples

- Facilities for preparation for re-use.
- Facilities for material recovery and recycling of other waste.
- Facilities for material recovery and recycling of hazardous waste.
- Facilities for material recovery and energy recovery of biodegradable waste (BDW) and biodegradable municipal waste (BMW) (e.g. facilities based on aerobic decomposition – composting plants, or facilities based on anaerobic decomposition – biogas plants).
- Facilities for the utilisation of sewage sludge (e.g. composting plants).
- Facilities for the treatment of waste prior to its recovery or disposal by biological processes (e.g. biodegradation), physical-chemical processes (e.g. neutralisation), biological and physical-chemical processes (e.g. sludge treatment), mechanical treatment (e.g. sorting, dismantling, crushing) or mechanical-biological treatment.
- Facilities for the collection of waste, facilities for the treatment and collection of end-of-life vehicles, facilities for the treatment and collection of end-of-life products.
- Facilities for energy recovery of waste (e.g. facilities for the energy recovery of municipal waste – facilities for energy recovery of waste (FERW)).
- Facilities for the separation of metals from waste from facilities for energy recovery of municipal waste.
- Facilities for co-incineration of waste.
- Facilities for the disposal of other waste (e.g. landfills).
- Facilities for the disposal of hazardous waste (e.g. landfills, incineration plants).
- Facilities for the storage of waste.

### Systems of Separate Collection and Separate Gathering of Waste:

- Separate gathering (sorted/separate collection) of recyclable and recoverable fractions into colour-differentiated collection containers (including containers within door-to-door systems), large-capacity containers, or sack collection.
- Separate gathering of biological waste, hazardous waste, recyclable and recoverable municipal waste (metals and others) and construction waste.

- Take-back points for end-of-life products (waste electrical equipment, waste batteries, waste tyres) and facilities for the treatment of end-of-life vehicles.
- Collection of mixed municipal waste into containers and large-capacity containers and litter bins in public areas.
- Collection of other waste (littering, street sweepings and others).
- Facilities for waste collection (collection points and collection points with purchase of metals and other waste).

### **Waste Collection and Transport Systems**

- A set of specially equipped vehicles for the collection of waste from all types of collection containers (including sack collection).
- Weighing systems for the automatic determination of the weight of collected waste and modern systems for determining the volume of waste.
- Container carriers with large-capacity containers.
- Logistics operations, transfer stations, and facilities for reducing the volume of waste to streamline the transport of waste over longer distances.
- Automated and robotised systems supporting collection logistics.

### **Principles for Developing a Network of Waste Management Facilities:**

- a) Support the construction of waste management facilities in accordance with the waste management hierarchy.
- b) Create conditions for the construction and modernisation of a nationwide network of recycling facilities.
- c) Create conditions for the construction and modernisation of a nationwide network of hazardous waste management facilities.
- d) Support innovative recycling technologies.
- e) Support innovative thermochemical technologies, including chemical recycling.
- f) Make use of existing waste management facilities that meet the required technical level (pursuant to point g).
- g) Design new waste management facilities in compliance with legislative and technical requirements and the best available techniques.
- h) Support from public resources the construction and modernisation of waste management facilities for which the economic and technical justification of their operation at regional and national levels will be proven, with regard to the adequacy of the existing network of facilities and in accordance with the regional waste management plans and the Waste Management Plan of the Czech Republic (WMP CR).
- i) Within the assessment process relating to support from public resources, evaluate waste management facilities in terms of ensuring inputs of the relevant types of waste to be managed, including the assessment of documents demonstrating that sufficient waste is available in the area for the technology or waste management system, and that the facility is adequate in terms of capacity.
- j) Within the assessment process relating to support from public resources, evaluate waste management facilities in terms of contractual assurance of the marketing of outputs from the facilities.

- k) In the case of support from public resources for the material recovery of biodegradable waste (BDW), place emphasis on the observance of a closed cycle, requiring proof of the assurance of marketing for the use of compost on agricultural land or for reclamation.
- l) Prioritise and support from public resources the construction of waste management facilities where the output is a product further materially recoverable.
- m) For support from public resources, recommend waste management facilities of a capacity corresponding to regional importance, which will form a valid part of the waste management system.
- n) To demonstrate the necessity of a facility with the proposed capacity in the given Region and to enable support of such a facility from public resources, a recommendation from the Regional Authority (RA) will be required. The RA's opinion will be based on compliance with the valid regional waste management plan and on documents proving the deficit of such facilities identified within the evaluation of fulfilment of the objectives of the regional waste management plan.
- o) Gradually incorporate the requirements for developing a network of waste management facilities into the set of outputs of spatial planning as an important basis for decision-making on further territorial development.
- p) Do not support the construction of new landfills.
- q) Inform about the criteria and conditions set at the level of the European Union (EU) under which waste ceases to be waste in a facility, and, if appropriate, propose possible criteria at national level.
- r) Within research objectives, support projects focused on the development of new technologies for recovery, recycling and treatment of waste, or the verification of technologies and waste management facilities not yet operated in the Czech Republic.

#### **Measures for Developing a Network of Waste Management Facilities:**

- a) Continuously evaluate the network of waste management facilities at regional level.
- b) Evaluate the network of waste management facilities at national level.
- c) Based on the current fulfilment of the objectives of regional waste management plans, determine the necessary waste management facilities in the Regions.
- d) Based on the current fulfilment of the objectives of the Waste Management Plan of the Czech Republic (WMP CR), determine the waste management facilities recommended and preferred for support from public resources.

#### **Waste Collection**

To achieve the objective of creating a comprehensive and adequate network of waste collection facilities at national level, in accordance with the waste management hierarchy and in order to maximise the use of waste as a resource, modern systems of separate gathering and collection of municipal waste must be developed. The development of separate gathering systems should aim at reducing greenhouse gas emissions from waste landfilled, inter alia by preferring separate gathering systems at higher levels of the waste management hierarchy. Another objective should remain the preservation of waste collection facilities (collection points and collection points with purchase of metals and other waste), with restrictions for mobile facilities and metal waste, tightening of the authorisation system, and, in the case of violation of legal regulations, application of withdrawal of authorisation to operate waste collection facilities.

#### **Principles for Waste Collection:**

- a) For projects of collection yards, separate gathering of paper, plastics, glass, metals, wood, textiles, biowaste, used cooking oil, bulky waste, hazardous fractions of municipal waste and space for

establishing a take-back point for end-of-life products within the producer responsibility service, in particular take-back of electrical equipment, shall be ensured. Collection yards including a place for receiving movable items from citizens as part of waste prevention will be preferred for support from public resources.

- b) Support separate gathering (sorted collection) of recyclable and recoverable fractions of municipal waste, including the packaging fraction, through a sufficiently numerous and accessible network of collection points in municipalities, at minimum for paper, plastics, glass, metals and textiles, provided that existing separate gathering (sorted collection) systems are utilised, and that networks of take-back systems for end-of-life products, which are ensured by obligated persons, i.e. producers, importers, distributors, are in place.
- c) Support separate gathering of biodegradable waste, both of plant and of animal origin.
- d) Support separate gathering of hazardous fractions of municipal waste and achieve environmentally safe waste management.
- e) In waste collection facilities, allow the purchase of waste from citizens (payment for waste) only in accordance with applicable legislation.
- f) At take-back points for end-of-life products, further enable free acceptance of such products from citizens in accordance with applicable legislation.

### 3.7.1 Slag Waste from Facilities for Energy Recovery of Waste (FERW)

Slag from facilities for energy recovery of waste has considerable potential as a construction material for selected building applications, as well as a possible source of critical raw materials.

#### Objectives:

SO4.1st Increase the level of material recovery of slag waste from the incineration of other waste, particularly municipal waste.

#### Principles:

- a) Utilise quality slag (waste category No. 19 01 12) from the incineration of other waste, particularly municipal waste, in facilities for energy recovery of waste (FERW) for backfilling and construction in accordance with applicable legislation.
- b) Approach slag as a source of critical raw materials and adopt measures to increase the recovery of critical raw materials – metals.

#### Measures:

- a) Ensure proper management of slag waste from facilities for energy recovery of waste, particularly municipal waste.
- b) Monitor the content of substances in slag waste.
- c) Education and awareness-raising on the possibilities of using slag as a construction material, for example for layers in the construction of roads.
- d) Support technologies and procedures for the recovery of critical raw materials – metals.

## 3.8 Principles for Decision-Making in Transboundary Shipment, Import and Export of Waste

In order to achieve the objective of not endangering human health and the environment as a result of the transboundary movement of waste and not jeopardising the fulfilment of binding objectives of the Czech Republic arising from European legislation, decision-making in matters of transboundary

shipment, import and export of waste shall follow the principles arising from Regulation (EU) No. 2024/1157 of the European Parliament and of the Council on shipments of waste, as amended (hereinafter the “Regulation on Shipments of Waste”), and according to the requirements of European legislation establishing binding waste management objectives for the Czech Republic.

**Objective:**

SO5.1st Not to endanger, as a result of the transboundary movement of waste, human health, the environment, and the fulfilment of obligations or binding objectives of the Czech Republic arising from European legislation.

**Principles:**

- a) The Ministry, in implementing the Regulation on Shipments of Waste, shall cooperate with neighbouring states and, in the Czech Republic, with public administration authorities, in particular in the field of methodology and control of transboundary shipment of waste.
- b) In assessing a proposal for the transboundary shipment of waste into the Czech Republic, the Ministry shall cooperate with the relevant Regional Authority (RA). The Ministry may prohibit or restrict the shipment of waste into the Czech Republic if the RA does not recommend the shipment.
- c) Waste generated in the Czech Republic shall be utilised primarily within the Czech Republic, and if that is not possible, then in other Member States of the European Union (EU).
- d) Transboundary shipment of waste from the Czech Republic for disposal shall only be permitted if there is insufficient capacity in the Czech Republic to dispose of the waste in an environmentally effective and favourable manner.
- e) Transboundary shipment of waste into the Czech Republic for disposal is prohibited, except for waste generated in neighbouring states as a result of natural disasters or in a state of emergency.
- f) Transboundary shipment of waste into the Czech Republic for recovery, including pre-treatment prior to recovery, shall be permitted only into facilities operated in compliance with applicable legislation, with sufficient capacity, and only if the fulfilment of obligations or binding objectives of the Czech Republic arising from European legislation is not endangered thereby. All stages of waste management shall be assessed until its delivery to the final facility for recovery or disposal.
- g) For the purpose of protecting the facility network, the Ministry may prohibit or restrict the shipment of waste into the Czech Republic for energy recovery, including all pre-treatments of waste preceding energy recovery, if, as a result of the transboundary shipment, waste generated in the Czech Republic would have to be disposed of or if waste generated in the Czech Republic would have to be treated in a manner not in conformity with the waste management plans or obligations set out in the Waste Act.
- h) The Ministry may prohibit or restrict the shipment into the Czech Republic of wastes listed in Annex II of the Basel Convention, pursuant to Article 4(1) of this Convention, if, as a result of the transboundary shipment, the fulfilment of obligations or waste management objectives laid down in the Waste Act would be endangered.
- i) For the purpose of protecting the network of facilities and infrastructure for waste management, the Ministry may prohibit or restrict the shipment of other types of waste into the Czech Republic if, as a result of the transboundary shipment, the fulfilment of obligations or binding objectives established for the Czech Republic by European legislation would be endangered.
- j) The utilisation of waste (in particular sewage sludge) generated in the Czech Republic shall take precedence over the utilisation of waste imported from abroad.

**Measures:**

- a) Education in the field of proper conduct of the process of transboundary shipment of waste.

- b) Increase in the number of inspections of transboundary shipments of waste.
- c) Strengthening of intensive cooperation of all competent authorities in the field of transboundary shipment.

### 3.9 System of Indicators for Evaluating the Fulfilment of the Objectives of the WMP CR

The Czech Republic has established basic key indicators for monitoring the state of waste management and the fulfilment of the Waste Management Plan of the Czech Republic (WMP CR). The indicators are based on the recommendations of the United Nations (UN), the European Commission (EC) Eurostat and the European Environment Agency (EEA).

Indicators are the basic tools by which the state and development of waste management in the Czech Republic are continuously assessed. Quantitative and qualitative indicators make it possible to monitor the fulfilment of the WMP CR. The Ministry regularly evaluates the system of waste management indicators and ensures its updating. The Ministry develops methodologies for evaluating the fulfilment of the objectives of the WMP CR and establishes a methodological approach to the determination of waste management indicators and other basic waste data.

For the calculation of waste management indicators, data from the Ministry's main information source – the Waste Management Information System (WMIS), containing data from obligated entities under the Waste Act, the Act on End-of-Life Products and the Act on the Reduction of the Impact of Certain Plastic Products on the Environment – shall be used. Information from other departmental databases may also be used.

The basic indicators of the System of Indicators allow for fundamental evaluation of waste management at both national and regional levels. If necessary, other available data on waste streams are also used for the evaluation of waste management.

The WMP CR includes an overview of the basic key indicators used for evaluating waste management (Annex No. 2).

The Czech Republic has also adopted indicators for monitoring the effectiveness of preventive measures, recommended by the European Environment Agency (EEA, 2023) for monitoring long-term trends in the field of waste prevention. The main objective of the Waste Prevention Programme (WPP) is to create conditions for lower consumption of primary resources and for the gradual reduction of waste generation. The main quantitative indicator is specific waste generation. Waste generation, however, is also influenced by external factors, in particular economic growth and other macroeconomic indicators. The effectiveness of preventive measures cannot therefore be assessed solely by changes in waste generation but must also be put into context with the macroeconomic perspective. The decoupling of economic growth from waste generation is precisely the purpose of the objectives and measures.

Contextual indicators make it possible to take external factors into account in assessing the success of waste prevention measures. These indicators may also be used to recalculate the values of other indicators (e.g. amount of waste per capita).

#### Data Collection System

The system of waste record-keeping by waste holders and authorised persons, and the system of data collection in the field of waste management, which enables the monitoring of developments and the identification of trends in waste and circular management over longer periods, shall continue to be used.

Furthermore, the Ministry of the Environment (MoE) will systematically collect comprehensive data on the prevention of municipal waste generation, on the management of municipal waste, data on the set-up of municipal waste management systems of municipalities including economic data, as well as data on related technologies to which municipal waste is handed over for treatment.

In the collection of data in the field of waste management, emphasis will be placed on ensuring data quality and traceability. The area of data control and validation will be strengthened. In the Waste Act, the Act on End-of-Life Products and the Act on the Reduction of the Impact of Certain Plastic Products on the Environment, a system of record-keeping, reporting and data collection in the field of waste management is established.

The central authority of state administration in the field of waste management (Ministry of the Environment) and the central administrative office for statistical services (Czech Statistical Office) shall continue to ensure the collection and evaluation of data in the field of waste management also in the following period and in accordance with the signed Memorandum of Cooperation in the field of waste statistics.

### **3.10 Recommendations in Relation to the Economic Aspects of Implementing the Priorities, Objectives, Principles and Measures of the WMP CR 2025–2035**

The key recommendation with regard to the economic aspects of the Waste Management Plan of the Czech Republic for the period 2025–2035 is compliance with the principles and measures of the WMP, as well as compliance with the principles and measures in the area of waste prevention (3.4), individual waste streams (see Chapter 3.5), and other specific areas of waste management. Another important recommendation is to base decisions in the areas of waste management on the Economic Analysis (4.4), which was prepared on the basis of a large volume of waste-management data for the Czech Republic. Only in this way is it possible to achieve both the strategic and specific objectives and priorities of the WMP CR.

The Waste Management Plan offers economic instruments that can significantly influence the generation and methods of waste management, such as the landfill disposal fee, payments for the municipal waste management system and subsidy instruments aimed at the construction or modernisation of facilities for recovery and disposal of waste. The economic impacts of fulfilling the objectives and principles of the WMP largely depend on the decision as to what function these instruments are to perform – whether primarily motivational (prevention and minimisation of waste generation) or fiscal (a source of funds for public budgets).

As regards the landfill fee (see further in 4.4.2), this mainly involves decisions on the level of the fee, its designated recipient, and the purposes for which the fee may be allocated. If this fee is to serve a motivational role, it should be set in accordance with the costs of alternative (environmentally desirable) methods of waste management, such as material recovery or energy recovery. The break-even point for determining the level of the fee is the equalisation of the costs of landfill disposal with the costs of alternative methods of waste management, when the waste holder is indifferent between the substitution methods of waste management. Setting the fee at a level that does not motivate substitution of the method of waste management reduces the effectiveness of this economic instrument. In simple terms – given the ban on landfilling from 2030, the landfill disposal fee should be set at a sufficiently high level to motivate the waste holder to use an alternative method of waste management. These methods should be at higher levels of the waste management hierarchy and waste holders should have simplified access to these methods.

Another factor that may contribute to the fulfilment of the objectives of the Waste Management Plan of the Czech Republic (WMP CR) is the redistribution of these fees to those waste management entities that are responsible for the waste management strategy and that allocate funds to projects which may significantly contribute to the fulfilment of the objectives. Redistribution of the fee, in particular to the State Environmental Fund (SEF) or also to the Regions, provided that the condition of purposeful use is met, may thus ensure that, for example, a facility with a preferred method of management (e.g. material or energy recovery of waste) is built in the required territory.

The effectiveness of payments for the municipal waste management system is also influenced by the decision as to what function these fees are to perform. If the motivational function of these payments is to be fulfilled, then their structure must reflect the performance of municipal waste management systems (volume of generation, collection frequency, size of collection container, length of collection routes, etc.). When a flat fee is set for the operation of the municipal waste management system, the fiscal function (replenishment of municipal budgets) is indeed fulfilled, but the motivation of households towards environmentally desirable methods of waste management disappears.

The effectiveness of subsidy instruments (from public, state and European budgets) depends on whether the criteria of the circular economy are met, i.e. whether material and financial flows are being closed. The construction of a waste management facility thus makes sense if the financing of its operation is ensured from external sources (e.g. sale of suitably treated waste, secondary raw materials). The operation of such facilities is sustainable only if the revenues from sales cover the costs.

## 4 Guideline Part

### 4.1 Conditions and Assumptions for Meeting the Set Objectives






Proper fulfilment of the set objectives depends on a number of factors. Some factors may be influenced to a greater or lesser extent by actors in waste management, others are entirely beyond their control. If all conditions are met, it can be assumed that the objectives set out in the WMP CR 2025–2035 will be achieved. The most important conditions include:

- Stable legal and economic environment in the areas affecting waste management, which will enable long-term investment projects.
- Responsibility of the State and of the entities concerned for the objectives, principles and measures of the WMP CR, including the Food Waste Prevention
- Raw material security, preference for the recovery of waste and secondary raw materials within the CR.
- Recovery of critical raw materials from waste and their recycling in the CR.
- Preparedness and resilience to deal with extraordinary events and crisis situations (e.g. natural disasters).
- The Waste Prevention Programme and the Food Waste Prevention Programme, which motivate citizens, municipalities and companies to increase their responsibility for the environment and human health.
- Support for the development of technologies in the field of waste treatment, recovery and recycling with the aim of automating processes in order to effectively increase both the quantity and quality of secondary raw materials and recycled materials for their use in the national economy of the CR.
- Ensuring and guaranteeing the origin and properties of the recyclates produced, including the control of their quality with regard to the requirements of high-quality recycling in terms of meeting the objectives of waste management and the circular economy.
- Support for the awarding of green and circular public procurement.

### 4.2 Instruments for Implementation and Monitoring of the Fulfilment of the Objectives of the WMP CR

Below is an overview of the instruments that will help to achieve the objectives in the field of waste management. These instruments are described in more detail in the text.

Table 88: Instruments for Enforcement and Monitoring of the Fulfilment of the Objectives of the WMP CR

LEGAL INSTRUMENTS	VOLUNTARY INSTRUMENTS
 <ul style="list-style-type: none"> <li>▪ Legal order of the CR</li> <li>▪ Acts, implementing regulations, amendments to Acts, review and regulation</li> <li>▪ Waste Management Plans of the Regions</li> <li>▪ Exercise of Supervisory Powers of Public Administration</li> <li>▪ Legal framework for reporting of corporate activities in the area of ESG</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Voluntary agreements in the field of waste management</li> <li>▪ Voluntary improvement of the quality of activities of waste management entities</li> <li>▪ Corporate social responsibility</li> <li>▪ Ecolabelling</li> <li>▪ Environmental product declarations</li> </ul>
ECONOMIC INSTRUMENTS	
 <ul style="list-style-type: none"> <li>▪ Green and Circular Public Procurement</li> <li>▪ Landfill Disposal Fee</li> <li>▪ Reduced Landfill Fee for Municipal Waste for Municipalities by 2029</li> <li>▪ Fee for Diversion from Material Recovery</li> <li>▪ Extended Producer Responsibility Systems</li> <li>▪ Transboundary Transport – Financial Guarantee</li> <li>▪ Financial Guarantee and Insurance of the First Phase of Landfill Operation under the Waste Act</li> <li>▪ Financial Reserve for Landfill Reclamation and Aftercare Following Closure</li> <li>▪ Deposit-Return Systems for Selected Packaging Waste under the Packaging Act</li> </ul>	<ul style="list-style-type: none"> <li>▪ Eco modulation</li> <li>▪ Emission Fee</li> <li>▪ Penalties and fines</li> <li>▪ Payments for Municipal Waste</li> <li>▪ Support from the SEF CR</li> <li>▪ Funds from the State Budget</li> <li>▪ Expenditure of Regional Budgets</li> <li>▪ Support from EU Programmes and Funds</li> <li>▪ Tax Measures and Reliefs<sup>55</sup></li> <li>▪ Other Support and Subsidies Implemented by Other Ministries</li> <li>▪ Investment Incentives and Bank Guarantees</li> </ul>
ADMINISTRATIVE INSTRUMENTS	INFORMATION INSTRUMENTS
 <ul style="list-style-type: none"> <li>▪ Ensuring Uniform Performance of Public Administration</li> <li>▪ Enhancing the Professional Competence of Public Administration Staff</li> <li>▪ Strengthening the Powers of the Competent Supervisory Authorities of State Administration</li> <li>▪ Green and Circular Public Procurement</li> <li>▪ Supporting Desirable Activities</li> <li>▪ Environmental Education, Training and Awareness-Raising</li> <li>▪ Professional Support for the Performance of State and Public Administration</li> <li>▪ Adequate Material Resources for Supervisory Authorities</li> <li>▪ Support for Research, Experimental Development and Innovation</li> <li>▪ Waste Management Council</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Information Concept of the Ministry of the Environment</li> <li>▪ Communication Strategy for Waste Management</li> <li>▪ Methodological Guidance in the Field of Waste Management</li> <li>▪ Unified Environmental Information System</li> <li>▪ Hazardous Waste Transport Register</li> <li>▪ Assessment of Hazardous Properties of Waste</li> <li>▪ Sectoral Waste Management Information System</li> <li>▪ System of Public Hearings within the EIA/SEA Process</li> <li>▪ IPPC Information System</li> <li>▪ Integrated Environmental Pollution Register</li> <li>▪ Other Information Systems of the MoE and Other State Administration Authorities</li> </ul>

<sup>55</sup> Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy.

## 4.2.1 Legal Instruments

### **Legal order of the CR, in particular the body of legislation governing the field of the environment, waste management and circular economy, and the relevant technical standards.**

The legal framework of the CR includes a set of legal regulations governing the environment, waste management and circular economy, and technical standards. These legal regulations are listed in Annex No. 1. The most important include Act No. 541/2020 Sb. on Waste, Act No. 542/2020 Sb. on End-of-Life Products, Act No. 477/2001 Sb. on Packaging, as amended, and Act No. 243/2022 Sb. on the Reduction of the Environmental Impact of Certain Plastic Products, which enshrine the obligations laid down by EU legislation, in particular directives and regulations relating to waste management and circular economy. There are also implementing legal regulations to the above-mentioned Acts. Other legislative provisions are listed in the Annex to this document.

#### **Amendments to Acts, Regulatory Review**

Amendments to Acts, adaptation and implementation of EU legislation, and regulatory review are important instruments for enforcing the fulfilment of the objectives of the WMP CR. Amendments to Acts include changes or additions to existing legislation.

#### **Strategic Documents of the CR**

The field of circular economy is also regulated at the strategic level. The fundamental document for other sectoral and regional policies in the field of the environment is the State Environmental Policy of the CR 2030 with a perspective until 2050. Other important documents include the Strategic Framework Czech Republic 2030, the Strategic Framework for Circular Economy of the Czech Republic 2040, known as “Circular Czechia 2040”, the Raw Material Policy of the CR in the Area of Mineral Resources and their Sources, the Secondary Raw Materials Policy of the CR, and the State Energy Policy of the CR. These documents are of key importance for other sectoral and regional policies in the field of the environment. The list of other strategic documents is set out in the relevant chapter of the WMP CR.

#### **Waste Management Plans of the Regions**

At the regional level, Waste Management Plans serve as strategic documents in the field of waste management and circular economy. These documents (among other things) serve as a basis for the preparation of spatial planning documentation of the regions and municipalities.

#### **Exercise of Supervisory Powers of Public Administration**

Supervisory authorities have the power to impose penalties for breaches of legislation relating to waste management and circular economy, and the Acts set out obligations that are subject to sanction. However, it is important to further improve the conditions for supervisory authorities and to strengthen the practical exercise of supervisory competences and enforcement of statutory obligations by all the relevant administrative authorities.

#### **Legal framework for reporting of corporate activities in the area of ESG**

Corporate activities have great potential to contribute to the achievement of the transition to a circular economy. Large companies are obliged to report information in the environmental and social fields, including compliance with human rights and anti-corruption measures.

Following the Action Plan for ESG: Financing Sustainable Growth (Communication from the Commission), the EU Taxonomy entered into force in 2020 as the main pillar of the EU framework for financing sustainability. The EU Taxonomy represents a comprehensive classification system which, through scientifically substantiated and objective technical criteria, provides uniform definitions of environmentally sustainable economic activities. The EU Taxonomy also includes certain economic

activities related to the transition to a circular economy, such as the activities of companies that reduce waste generation and increase the rate of recycling. Through uniform definitions, the EU Taxonomy helps investors and businesses to make informed investment decisions and thereby facilitates the direction of capital into sustainable activities. At the same time, the EU Taxonomy enshrines the principle of Do No Significant Harm (DNSH). For economic activities included in the relevant delegated acts, entities will thus find information not only on the criteria to be met in terms of sustainability, but also with regard to not significantly harming the transition to a circular economy. The DNSH criteria thus apply to activities across the economy (in particular industrial activities) and provide appropriate guidance in decision-making on investments (whether from private or public sources). Overall, the criteria in the EU Taxonomy provide valuable guidance not at the entity level, but at the activity level of specific economic activities, while at the same time respecting the waste management hierarchy and drawing on reputable sources, the latest EU legislation and best available practices. The obligation to report non-financial activities was strengthened in 2023, when Directive (EU) 2022/2464 of the European Parliament and of the Council on Corporate Sustainability Reporting, known as the CSRD (Corporate Sustainability Reporting Directive), entered into force. This significantly expands, in several waves, the number of companies required to report sustainability information. To ensure consistency of reporting and to reduce the administrative burden, in 2023 the European Commission's advisory body EFRAG (European Financial Reporting Advisory Group) issued ESRS reporting standards, which in the same year were adopted by the European Commission in the form of Commission Delegated Regulation (EU) 2023/2772 establishing standards for sustainability reporting (so-called ESRS). In the field of circular economy, companies thus report, inter alia, objectives and indicators focused on resource use, waste generation and waste management. In the area of transition to a circular economy, significant examples include the activities of companies that reduce waste generation and increase the rate of recycling<sup>56</sup>. The first sustainability reports prepared in accordance with this Directive will be issued in 2025 for financial years starting on or after 1 January 2024.

In the field of circular economy, companies thus report, inter alia, objectives and indicators focused on resource use, waste generation and waste management. The first reports prepared in accordance with the CSRD will be issued in 2025 for the financial year 2024.

## 4.2.2 Economic Instruments

### Green and Circular Public Procurement

As of 1 January 2021, public contracting authorities must, under the Public Procurement Act, comply with the principles of socially and environmentally responsible public procurement. An environmentally responsible approach to public procurement is also included, in addition to the above, in the methodology of "Green Public Procurement". This is an instrument for achieving the objectives of environmental policy, whereby public authorities, when selecting suppliers, seek to procure products, services and works with lower environmental impacts during their life cycle. In public procurement, it is therefore necessary, for example, to take into account the impact on the environment, sustainable development, the life cycle of the supply or service, and other aspects.

Public procurement/purchasing is often the only means by which services or products reach public organisations and local self-governing authorities. Green public procurement offers great environmental potential and can serve as an accelerator of the circular economy. Increased demand for products using recycled materials instead of primary raw materials can significantly strengthen the production of recycling enterprises and contribute to achieving the recycling targets of the CR. Last but not least,

<sup>56</sup> For the complete list of criteria, see Regulation (EU) 2020/852 of the European Parliament and of the Council, Article 13. Available [here](#).

green procurement is a means of integrating sustainable management into the practice of municipalities and can thus support economic growth in the regions.

Another development in the field of public procurement is circular procurement, under which public authorities purchase works, goods or services that contribute to closing energy and material loops in supply chains. Whereas in the case of green procurement the emphasis is on environmentally friendly products, circular procurement takes into account an additional aspect – namely how the product will be managed at the end of its life cycle, or when it is no longer needed by the consumer. By taking product life cycles into account, the negative environmental impacts and waste generation over the entire life cycle can be significantly minimised. Circular procurement has the potential to increase the rate of reuse and recycling, to bring circular business models and methods, for example through product-service systems and changes in material ownership. Public administration can thus set an example and stimulate circular activities.

### **Landfill Disposal Fee**

A fee is payable for the disposal of waste at a landfill. The payer of the fee is the person who relinquishes ownership of the waste upon its handover for disposal at a landfill; the municipality, if it is the holder of the municipal waste being disposed of; or the landfill operator, if it disposes of waste at the landfill it operates, or designates waste upon its landfilling as technological material for the technical securing of the landfill.

The subject of the landfill disposal fee is the disposal of waste at a landfill during the first phase of its operation. The basis of the landfill fee is the sum of the components of the fee base, consisting of the mass of recyclable and recoverable waste; hazardous waste, with the exception of asbestos and waste from remediation activities; selected technological waste; hazardous waste arising from the disposal or remediation of environmental contamination, where the disposal of such waste by landfilling is financed from public funds; and residual waste, i.e. waste not listed above and asbestos.

The fee rates are set in such a way as to ensure diversion from landfilling towards recovery methods in accordance with the waste management hierarchy. For recoverable waste, the landfilling of which will be prohibited from 2030, the fee will be progressively increased in the coming years in order to motivate a gradual reduction of such landfilling. The fee for hazardous waste remains low, as in the past a high fee led to significant attempts to avoid payment or to illegal waste management.

Exemption from the landfill disposal fee is possible for the disposal of waste in the context of dealing with the consequences of a crisis situation under the Crisis Act. Exemption also applies to the disposal of waste as technological material for the technical securing of the landfill (hereinafter referred to as “TSL”), up to 25% of the total weight of waste disposed of at the landfill during the fee period.

The landfill fee shall be calculated as the sum of the individual fee components. An individual fee component shall be calculated as the product of the relevant component of the fee base and the applicable rate. The landfill fee rates applicable to the individual components of the fee base are laid down in the Waste Act. The taxpayer of the landfill disposal fee is the landfill operator. The administrator of the landfill disposal fee is the State Environmental Fund of the Czech Republic. The collection of the fee is administered by the Customs Office. The revenue from the landfill disposal fee is the income of the budget of the State Environmental Fund of the Czech Republic and of the budget of the municipality in whose territory the landfill is located, with the percentage shares set out in the Waste Act.

## **Reduced Landfill Disposal Fee for Municipal Waste for Municipalities – the so-called “Discount”**

A municipality will pay for the disposal of municipal waste only up to a certain amount of recoverable waste disposed of per capita in the given calendar year, at a fee of CZK 500/t. If this amount is exceeded, the municipality will have to pay the fee for recoverable waste. From 2029, municipal waste meeting the statutory conditions for recoverability (with the exception of hazardous waste), for which a municipality is the waste producer, shall be included in the component of the fee base for the landfilling of municipal waste, provided that the total mass of such waste landfilled at any landfill does not exceed the quantity specified in the Waste Act. The limit on the amount of waste disposed of at landfills will be reduced annually on a degressive basis, in order to support the objective of reducing the landfilling of recoverable municipal waste and to strengthen the waste management hierarchy.

### **Fee for Diversion from Material Recovery**

This is a regulatory economic instrument which ensures that the State-set level of capacities and quantities of waste used for energy recovery is not exceeded. In the event of exceeding the limits defined by the Waste Act, the Ministry of the Environment will propose the introduction of an appropriate regulatory instrument. The capacities of facilities and, in particular, the quantities of municipal waste used for energy recovery and incinerated will be continuously monitored. In the event of exceeding the set limits, the CR will consider introducing an economic instrument to limit further growth of these capacities.

### **Extended Producer Responsibility (EPR) Systems**

Extended Producer Responsibility (EPR) is an effective concept of managing material flows in waste management, which minimises net economic (societal) costs and helps to implement desirable elements of environmental protection, in particular material circularity. The OECD defines the Extended Producer Responsibility system as an environmental policy approach in which the producer's responsibility is extended to the stage of the product's life cycle that follows its use by the customer. There are two main features of this approach. The first is the shifting of responsibility (physically or economically, fully or partially) towards the producer (and away from municipalities). It is also a significant economic support for municipalities, and for this reason the application of this principle can be recommended also for other waste streams with a direct impact on municipal budgets. The second is providing incentives to producers to incorporate environmental requirements already at the stage of designing their products. The EPR system is generally based on the polluter pays principle.

Entrepreneurs or legal entities that place certain end-of-life products on the Czech market or into circulation are obliged to meet specific requirements for the take-back of these products, provide information about them, finance certain activities and awareness-raising, and ensure proper waste management and the achievement of the prescribed percentage of recovery, recycling and reuse of waste.

EPR can be considered as an instrument to ensure the effective fulfilment of policy objectives across a wide range of sectors. It is a proven tool that delivers good results (experience particularly in the field of packaging waste or electrical and electronic equipment).

The introduction of an Extended Producer Responsibility system for individual commodities should always be in line with the requirements of the European Union and after discussion with stakeholders in the relevant sector. The Extended Producer Responsibility system should ensure effective financing and fulfilment of the objectives set for the relevant commodities, while at the same time playing the role of organiser of the system. The Extended Producer Responsibility system should contribute to ensuring a functioning market for the relevant commodity.

In the CR, EPR is currently in place in the area of packaging waste, waste from electrical and electronic equipment, tyres, batteries, end-of-life vehicles, tobacco products with filters and filters placed on the market for use in combination with tobacco products. EPR has also been extended to wet wipes for personal hygiene or household care and to balloons.

It is appropriate to focus on the development of Extended Producer Responsibility systems particularly for already existing products and to consider extending EPR to further groups of products. These products often have low market value at the end of their life cycle, which means high costs for companies to ensure their proper treatment.

If producers commit themselves to the EPR system, they are obliged to ensure the collection and recycling of products at the end of their life cycle. EPR involves producers and makes them responsible for their products even after the end of their life cycle. Producers provide financial resources for the proper management of waste from their products, thereby reducing the participation of municipalities in covering the costs associated with such waste. The aim of introducing these systems is to improve waste management and advance towards a circular economy.

The introduction of Extended Producer Responsibility is appropriate where objectives can be set in the relevant area. These objectives should have a positive impact on the environment, for example by eliminating negative externalities, motivating the shift towards the desirable levels of the waste management hierarchy, increasing the rate of collection, recycling and use of recyclates, etc.

If the objective of introducing EPR is to generate financial resources for the collection, separation and management of waste without added value in the form of measurable targets, streamlining of material flows, etc., then the task de facto is to finance a certain share of municipal waste. For such a purpose, it is possible to use EPR, but also other instruments which will be associated with lower transaction costs and thus higher efficiency.

#### **Transboundary Shipment – Financial Guarantee**

From the financial guarantee, the Ministry finances alternative recovery or disposal of waste, including the necessary preliminary operations, storage of waste and transport costs, if the notifier, consignee, or another responsible person fails to fulfil, at their own expense, all their obligations under the Waste Shipment Regulation.

#### **Financial Guarantee and Insurance of the First Phase of Landfill Operation under the Waste Act**

Before the commencement of the first phase of landfill operation, the operator has a statutory obligation to secure financial resources designated for this purpose. This includes the conclusion of liability insurance for damage to the environment, human health and property caused by the operation of the landfill in the first phase of operation or as a result of closure of the landfill during this phase. At the same time, the operator must deposit the relevant amount in a special tied account or secure a bank guarantee pursuant to the Banking Act. The amount is determined on the basis of an expert opinion which establishes the costs of eliminating potential damage. The guarantee must remain valid throughout the first phase of landfill operation and the financial resources may be drawn only with the consent of the Regional Authority and solely for predetermined purposes. The interest accrued on the funds in the account becomes part of the resources designated for this purpose.

#### **Financial Reserve for Landfill Reclamation and Aftercare Following Closure**

During the first phase of landfill operation, the operator is obliged to establish and maintain a financial reserve to ensure reclamation, subsequent care and the closure of landfills after the end of operation. The operator creates this reserve as part of its costs, and it also includes interest. It is a positive measure, with a statutory method for the creation and drawing of the financial reserve. The financial

resources may be used for works related to reclamation and subsequent care of the landfill, subject to the consent of the relevant Regional Authority.

### **Deposit Systems for Returnable Packaging under the Packaging Act**

In the CR, producers are permitted to voluntarily introduce a deposit system. In the future, deposits may be used to a much greater extent for products. The introduction of such systems has the potential to contribute to high levels of waste separation and to the achievement of waste management objectives. The introduction of a deposit system should be preceded by an impact assessment and a discussion with stakeholders. At present, the introduction of a deposit-return system aimed at increasing the rate of sorting of selected types of beverage packaging – PET bottles and beverage cans – is under discussion in the CR. This change is introduced by a draft amendment to the Packaging Act No. 477/2001 Sb., which is designed to ensure that all participants in the existing system find their role, and to reflect and implement the Government's programme statement and the Circular Czechia 2040 strategy. It is expected that the introduction of a deposit system will also have a positive impact on municipal budgets. Any potential deposit-return system will be based on an optimal technological solution.

### **Eco modulation**

Eco modulation is an instrument focused on Extended Producer Responsibility (EPR) and is not limited solely to packaging but also applies to other products such as electrical and electronic equipment, batteries, tyres and, in principle, any other products. This system makes it possible to set fees in such a way that producers are motivated to use solutions that minimise the negative impact on waste management while at the same time having a positive effect on the circular economy and the environment. Eco modulation is linked to the recycling contribution that producers pay for the materials used, packaging and environmental friendliness, above all for their recyclability. It motivates producers and importers to design products and packaging, including their functions, minimal size and suitable material composition for recycling. The fees should take into account a wide range of criteria, such as product durability, reparability, reusability, hazardous substance content and the ease of sorting packaging. These fees should reflect the real costs of recycling the individual types of materials and strengthen the waste management hierarchy.

### **Emission Fee**

The fee is collected upon the registration of road vehicles of categories M1 and N1 (hereinafter "selected vehicle") in the Road Vehicle Register or upon a change of their owner or operator in the Road Vehicle Register. The fee is not payable if the obligation to pay the fee has already arisen in the past for the applicant (payer) who was not exempt. The aim of this fee is to prevent the import of older vehicles from abroad into the Czech Republic and to accelerate the removal of old vehicles which pollute the air most heavily. The fee is CZK 3,000 if the vehicle meets the EURO 2 emission limits, CZK 5,000 if it meets the EURO 1 emission limits, and CZK 10,000 if it does not meet the EURO 1 emission limits. The financial resources from this fee are used to support the recycling of materials from dismantled end-of-life vehicles. The support is based on the amount of commodities (tyres, plastics, glass, textiles) handed over for processing. Alternatively, these financial resources may also be used to support infrastructure and the purchase of vehicles with alternative propulsion. The revenue from this fee is included in the budget of the State Environmental Fund.

### **Sanctions and Penalties Pursuant to the Waste Act, the End-of-Life Products Act, the Packaging Act, the Municipalities Act and the Misdemeanours Act**

The Acts must confer strong sanctioning powers on supervisory authorities in the exercise of their supervisory competences. Serious environmental damage must be subject to severe penalties in order

to have a deterrent effect. However, the aim is also to effectively address situations where the supervisory activity of administrative authorities reveals breaches of statutory obligations that are less serious and may not even have an immediate impact on the environment (such as administrative offences or breaches of environmental law). The current legislation makes it possible to impose fines in summary proceedings on the spot or to adopt remedial measures without imposing a financial penalty. This is an effective instrument for environmental protection and indirectly contributes to the fulfilment of the waste management hierarchy. One of the sanctions used is the sanction for municipalities for non-compliance with the sorting target laid down in the Waste Act. The possibility will be considered of introducing a graduated level of sanction for municipalities in the area of compliance with sorting targets, linked to the specific generation of mixed municipal waste.

### **Payments for Municipal Waste**

As of 1 January 2021, the regulation of charging citizens is limited solely to the Local Fees Act No. 565/1990 Sb., as amended. A municipality has the option to choose either the fee for the municipal waste management system or the fee for the disposal of municipal waste from a property. The fee for the municipal waste management system is linked to the permanent residence of persons or to the ownership of a property in which no person is registered for permanent residence, and the municipality introduces it at a uniform rate for all payers. The Local Fees Act also allows for exemptions and reliefs from this fee for certain groups of residents, taking into account their social situation and other factors. The fee for the disposal of municipal waste from a property is based on the actual amount of waste generated by citizens, or on the capacity of the collection containers ordered for the fee period, and the municipality may set its amount for individual payers with regard to the quantity (weight or volume) of waste generated by them or to the capacity of the collection containers ordered (PAYT system = pay as you throw). The PAYT principle strengthens the waste management hierarchy. Assessment and collection of both fees is carried out by the municipality, otherwise the fee is subject to the procedural regime of the Tax Code.

### **Support from the SEF of the CR (Waste Management Area)**

The State Environmental Fund (SEF) provides significant support in the field of waste management. For this purpose, various financial instruments are used, such as loans, subsidies and others, aimed at supporting waste management and circular economy and strengthening compliance with the waste management hierarchy.

### **Finance from the State Budget (primarily for collection and transport of waste)**

In terms of public resources, the State budget constitutes the most significant source of financing for environmental protection, and this also applies to the area of waste. The State budget is used in particular for co-financing environmental protection projects supported by EU funds. Furthermore, the State budget finances subsidies, repayable financial assistance (interest-free loans) and investment incentives and guarantees for commercial loans. In addition, financial resources are transferred to territorial budgets and the State Environmental Fund. This financial instrument will continue to be actively used.

### **Expenditures of Territorial Budgets (primarily for collection and transport of municipal waste)**

Financing of environmental protection from territorial budgets is a significant public source of funds for waste management. Waste management has long been one of the most supported areas. Territorial budgets are particularly used to support smaller-scale measures. This financial instrument will continue to be actively used.

### **Support from EU Programmes and Funds**

The Czech Republic benefits from financial resources forming the basis of the European structural policy, which support balanced and sustainable development of all Member States. Specifically, this refers to the Operational Programme Environment (OPE 21+). The Operational Programme supports investments that are key to the development of the waste management sector and compliance with the waste management hierarchy. For the period 2028–2033, one of the priority areas proposed for future support will be the field of waste management.

In addition, it is possible to use newly established funds, such as the Just Transition Fund for the so-called “Coal Regions” or the Modernisation Fund. For supporting investments and economic recovery after the COVID-19 pandemic, the National Recovery Plan will be used.

#### **Tax Measures and Reliefs (for selected activities, products, etc.)<sup>57</sup>**

The possibility of using this financial instrument will be considered, in particular with regard to EU legislation. For the promotion of the use of secondary raw materials, the taxation of primary raw materials may also be considered and revised. Similarly, the introduction of other tax incentives for products with a high content of recycled material will be considered, with the aim of stimulating demand for recycled materials.

#### **Other Support and Subsidies Implemented by Other Ministries**

There is a possibility to use financial resources intended for the development of waste management, the modernisation of technologies, in the form of subsidies, loans and programmes to support entrepreneurship and others.

#### **Investment Incentives and Bank Guarantees**

In the case of strategically important investments (e.g. capacities of waste management facilities, modern technologies), the State may consider using investment incentives and bank guarantees for the purpose of stimulating and motivating the implementation of investment.

### **4.2.3 Administrative Instruments**

#### **Ensuring Uniform Performance of State Administration in the Area of Environmental Law (Waste Management)**

The unification of the performance of State administration in waste management is supported by legislation in the field of waste management, Acts and related implementing regulations.

#### **Enhancing the Expertise of Public Administration Staff in Waste Management and Related Areas**

The professional training of public administration staff in the field of waste management will continue to be part of the management system of the Ministry of the Environment. The aim is to unify the interpretation of the Waste Act and implementing regulations at the level of Regional Authorities and authorised municipalities, as well as the Czech Environmental Inspectorate (CEI). Emphasis is placed on methodological guidance by the MoE and Regional Authorities.

#### **Strengthening the Powers of the Czech Environmental Inspectorate and Other State Administration Control Authorities**

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<sup>57</sup> Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy.

Ensuring optimal conditions for the effective performance of supervisory activities through sufficient professional and staffing capacity, and financial and technical support.

### **Green Public Procurement (GPP)**

The possibility of including environmental requirements and criteria in public procurement should be used, and contracting authorities should be further motivated to make use of this instrument. This is supported by the amendment to the Public Procurement Act (No. 543/2020 Sb.), which establishes the obligation of contracting authorities to comply with the principles of socially responsible and environmentally responsible procurement and innovation. Documents also support green procurement, such as Government Resolution of 24 July 2017 No. 531 on the rules for applying a responsible approach to public procurement and purchases by State administration and local self-governing authorities. To support compliance with the principles of responsible procurement and purchases by State administration and local self-governing authorities, Part III of document No. 781/17 was approved. In 2020, the amendment to the Public Procurement Act (No. 134/2016 Sb.) was supplemented with the obligation of contracting authorities to comply with the principles of socially responsible procurement, environmentally responsible procurement and innovation when establishing procurement conditions, evaluating bids and selecting suppliers. This approach should lead to a preference for products containing recyclates and strengthen the waste management hierarchy. Public procurement may also contribute to increasing the use of products with recycled content, reparability and extending the lifespan of products by including these criteria in public contracts.

### **Encouraging Desirable Activities Leading to Waste Prevention, Reduction of Waste Quantities and Hazardous Properties, Preference for Products Made of Recycled Materials and Environmentally Friendly Products**

Measures will be adopted to implement the actions set out in the Waste Prevention Programme and to strengthen the waste management hierarchy. Some of these include methodological recommendations on extending product lifespans, reducing waste generation, prioritising the reuse of products and recyclates, and including appropriate criteria in the conditions of public tenders issued by public authorities, as well as other similar measures.

### **Environmental Education, Training and Awareness (hereinafter “EETA”)**

This is a preventive systemic instrument that promotes sustainable and environmentally responsible behaviour of individuals. This instrument includes standard education and training of children and young people, various awareness-raising events and campaigns for the public, the provision of environmental counselling, as well as civic activism and participation in environmental protection and waste management. The current EETA programme for the years 2016–2025 sets out the appropriate content, methods and forms of education and awareness-raising.

### **Professional Support for the Performance of State and Public Administration**

At present, the professional needs of State administration authorities and the Ministry of the Environment are addressed partly through targeted support of applied research under the programmes Environment for Life and Environment for Life 2, and through public procurement within the programmes of the Technology Agency of the CR. For the purposes of the performance of State and public administration, further professional documents are prepared through public procurement in accordance with the Public Procurement Act and the internal regulations of organisations. Professional support in the field of waste management agenda is provided to the MoE by the State-contributory organisation Czech Environmental Information Agency (CENIA).

### **Support for Research, Experimental Development and Innovation**

Support for research, development and innovation (also known as “RDI”) has long-term positive impacts on reducing the negative effects of human activities on the environment, ensuring remediation and monitoring of the state of the environment. Since 2011, the Technology Agency of the Czech Republic (TA CR) has played a significant role in providing targeted support for applied research and development, including in the field of waste management and the circular economy. The TA CR is responsible for the preparation and implementation of applied research, development and innovation programmes, including programmes for the needs of State administration and public competitions in research, development and innovation to support projects and public procurement. The specific areas supported under research, development and innovation (R&D&I) in the field of the environment, including waste management and the circular economy, are set out in the Ministry of the Environment’s<sup>58</sup> R&D&I Concept and are further implemented through the Environment for Life programme.

Increasing investment in research and development to 2.5% of GDP by 2025 and to 3% of GDP by 2030 is a long-term objective of the Innovation Strategy of the Czech Republic for the period 2019–2030. The strategy also includes several other objectives and measures aimed at supporting research, development and innovation in the CR. Although the strategy does not specifically cover the circular economy, part of the resources allocated for research and development, as well as other planned support mechanisms, may be used for innovative projects in this area.

#### **Waste Management Council (hereinafter “the Council”) as an Advisory Body of the Ministry of the Environment**

The Waste Management Council was established by ministerial order in 2004. The Council serves as an advisory body for the purpose of coordinating waste management planning at the national level. The members of the Council are appointed by the Minister of the Environment.

### **4.2.4 Voluntary Instruments**

#### **Voluntary agreements in the field of waste management**

Where it is necessary to achieve a greater environmental effect beyond the scope of legislation, voluntary agreements may be concluded. It is assumed that voluntary agreements and cooperation agreements will continue to be concluded with the aim of protecting and improving the state of the environment in the CR and of developing a modern and efficient public administration. As an example, the initiative “*Enough of Plastics*” can be mentioned, which in the past focused on reducing the use of single-use packaging and tableware with the aim of preventing waste generation. Another example is “Responsible Shopping”, which motivates private entities as well as the public to change consumption habits and to prevent waste generation.

#### **Voluntary improvement of the quality of activities of waste management entities**

In the CR, the fundamental voluntary instruments for environmental protection are the National EMAS Programme and the National Environmental Labelling Programme. These instruments have been approved by government programmes. The most widespread voluntary instruments in the CR are environmental management certification EMS under the international standard ISO 14001 or the EMAS system. The MoE will continue to support the implementation of the EMAS programme. The CR will continue to participate in international projects and activities aimed at promoting modern technologies, energy savings and eco-innovation. The MoE will support the use of environmental labels, declarations

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<sup>58</sup> The updated Research, Development and Innovation Concept of the Ministry of the Environment for the years 2016 to 2035, with a perspective to 2050, was approved by Government Resolution of the CR of 1 February 2023 No. 82.

and claims by producers about products. The objective is to expand the use of voluntary instruments in corporate practice, increase promotional and marketing activities, and deepen cooperation with business associations and consulting companies.

The method of assessing the environmental impacts of a product by means of the Life Cycle Assessment (LCA) method focuses on the entire life cycle of the product. This method assesses all the environmental impacts of a product throughout its life cycle, i.e. from the extraction of primary raw materials through production and use to its reuse, recycling, recovery or final disposal. This method identifies all material, energy and other inputs and outputs, thereby enabling a comprehensive assessment of impacts on the environment and human health. Enterprises successfully use environmental certifications to present their activities.

The MoE will support the use of “SMART solutions” in waste management where they can provide benefits for the environment and human health.

### **Corporate Social Responsibility (CSR)**

Corporate Social Responsibility includes the voluntary commitment of organisations to take into account, in their activities, the needs of customers, suppliers, employees and other stakeholders who are affected by their operations, whether directly or indirectly. CSR is an integral part of strategic management aimed at achieving long-term performance. CSR is voluntary and covers activities carried out by organisations beyond compliance with legal obligations, focused on stakeholders, society and the environment.

The National Action Plan for the Promotion of Corporate Social Responsibility in the Czech Republic for the years 2019–2023 was prepared by the Ministry of Industry and Trade. A follow-up plan has not yet been established.

### **Ecolabelling**

An ecolabel (Environmentally Friendly Product, Environmentally Friendly Service) is a special symbol used to identify products or services. This certification is carried out by a third party on the basis of the ČSN ISO 14024 standard Environmental Labels and Declarations. The main objective is to enable consumers to easily identify products that are environmentally friendly throughout their entire life cycle. For manufacturing companies, certification makes it possible to present their environmentally friendly practices and products in a credible manner.

### **Environmental Product Declarations (hereinafter “EPD”)**

An EPD represents a set of measurable information on the environmental impact of a product (good or service) throughout its life cycle, such as energy and water consumption or waste generation. A product declaration helps consumers in making purchasing decisions. The Life Cycle Assessment (LCA) method under ČSN ISO 14040–49 standards is used to create an EPD. The resulting report containing the information must be publicly accessible and all the data presented must be verifiable. The methodology for preparing EPDs is international, which ensures that individual declarations are transferable and comparable across different parts of Europe or the world. In the CR, this practice is governed by the Rules of the National Environmental Labelling Programme.

### **Voluntary Commitments**

Voluntary commitments represent a form of self-regulation that organisations and companies can use to support objectives in the field of waste management. These commitments are often part of a broader sustainability strategy of the organisation. For example, corporate commitments to reducing plastics and packaging may contribute to reducing the amount of packaging used for products, transitioning to recyclable or compostable materials, or addressing issues with single-use plastics.

The Voluntary Commitments Platform for Sustainability Czech Republic 2030 goes even further and includes a wide range of sustainability objectives. Through this platform, companies can share their commitments, monitor their progress and exchange best practices. This platform thus helps to promote corporate commitments to sustainability, increases transparency and at the same time strengthens public trust in corporate sustainability efforts.

### **Environmental Management Systems**

Environmental management systems such as EMAS (Eco-Management and Audit Scheme) or ISO 14001 help organisations to establish, implement, improve and monitor their environmental management systems. They provide organisations with a framework for managing their environmental matters with the aim of achieving continuous improvement in performance. This may include better management of waste generation, energy and water consumption, and other aspects.

### **Voluntary Agreements and the Open Method of Coordination**

Voluntary agreements and the open method of coordination are instruments that can support companies in making commitments going beyond current legislation, while at the same time providing them with certainty in the long-term legislative environment. These agreements and methods enable companies to take a proactive approach to environmental management and sustainability while remaining in compliance with legal and regulatory frameworks.

A specific example of such an agreement could be a company's commitment to go "beyond Best Available Techniques" (Beyond BAT). Such a commitment could mean the adoption of technologies and practices that go beyond current standards of industrial practice, but which could lead to significant improvements in sustainability and waste management.

## **4.2.5 Information Instruments**

### **Information Concept of the Ministry of the Environment (hereinafter "IC MoE")**

The Ministry of the Environment is the publisher and administrator of several information sources, such as the Waste Management Information System. In accordance with the Act on Information Systems of Public Administration and the project Digital Czechia 2018+, the MoE issued the Information Concept. In this Concept, the MoE builds upon the objectives set out in the ICT Development Strategy of the Environment Sector for 2016–2020, the Information Concept of the Environment Sector for 2017–2022, the State Environmental Policy of the Czech Republic 2030 with a perspective until 2050 (which followed the State Environmental Policy of the CR for 2012–2020), and the current objectives, principles and rules of the Information Concept of the Czech Republic for the Development of e-Government in the CR 2018+ (ICCR).

The objective of the Information Concept of the MoE is, on the basis of the current state, to define or update its own objectives in the area of quality management and security of the administered information systems of public administration (ISPA) and to define the general principles for the acquisition, creation and operation of ISPA. These objectives and principles must be in line with the ICCR and must also gradually be aligned with the information systems of the MoE. The main purpose of these information systems is to support public administration and inform the public.

### **Communication Strategy for Waste Management**

Information on the environment and waste management is available on the websites of the Ministry, its subordinate organisations and through specialised information systems. Within the framework of the Ministry's communication strategy, media promotion of proper municipal waste management will be used in order to make people more active in sorting and to increase recycling. On the basis of the

strategy, the separation of recoverable fractions of municipal waste, the increase in take-back of end-of-life products, and the prevention of waste generation will be promoted.

Regions will prepare large-scale communication campaigns based on real regional waste management solutions. The communication strategy will be prepared in line with the State Programme of Environmental Education, Training and Awareness and Environmental Counselling for the years 2016–2025, which involves regions, municipalities, towns, schools, non-governmental organisations, educational institutions and others.

### **Methodological Guidance in the Field of Waste Management**

Methodological instruments primarily fulfil an educational role and are oriented towards providing instructions, guidance, communications and recommendations on how to proceed in specific cases or situations. The methodological guidelines issued by the MoE for specific areas are based on professional foundations and good practices and are created with the aim of providing instructions and guidance in solving particular problems. These documents contain practical information, detailed procedures, standards or examples of good practice that assist in the implementation and management of policies and programmes in the field of waste management. Such methodological guidelines are a reliable source of information for waste management actors.

### **Unified Environmental Information System (hereinafter “UEIS”)**

The UEIS is the information base of the Ministry of the Environment, containing professional information sources and serving for the management and administration of the agendas of the environment sector. Environmental data are collected, verified, processed and published by the MoE and its subordinate organisations. The information systems forming part of the UEIS provide electronic information services for the performance of professional agendas and also contain process-based public administration information systems and systems for collecting and presenting environmental data.

The current effort is the gradual integration of the environmental sector’s data base into a unified data platform. The MoE implements government policy in the field of e-Government, in particular by ensuring the reporting obligation of the MoE within the Register of Rights and Obligations, including notification of competence in the agendas for which the Ministry has defined authority. This fulfils the condition of access to reference data of the Basic Registers system, and relevant information systems are gradually being connected to its interface.

### **Integrated System for the Fulfilment of Reporting Obligations (hereinafter “ISPOP”)**

ISPOP was introduced in 2011 on the basis of the Act on the Integrated Environmental Pollution Register and the Integrated System for the Fulfilment of Reporting Obligations in the Field of the Environment and on Amendments to Certain Acts (No. 25/2008 Sb.). This system serves for the processing, receipt and storage of selected reports (reporting obligations) in the field of the environment in the form of electronic forms in the relevant data standard, and their submission to public administration institutions. ISPOP concerns entities with a statutory obligation to report the impact on natural components, such as pollution of water, air, soil, waste generation and others. At the same time, ISPOP is interconnected with the Information System of Basic Registers.

### **System for the Registration of the Transport of Hazardous Waste (hereinafter “SEPNO”)**

SEPNO is an independent module of the Integrated System for the Fulfilment of Reporting Obligations, which ensures the receipt and processing of Notification Forms for the transport of hazardous waste from obligated persons. This information system enables the relevant public administration institutions to monitor the flows of hazardous waste across the territory of the Czech Republic and improves the supervision of hazardous waste transport.

**Assessment of Hazardous Properties of Waste (hereinafter “AHPW”)**

This is a separate module that enables electronic processing of applications for the assessment of waste properties. The system is used for issuing electronic certificates on the exclusion of hazardous properties of waste and notifications that the waste has one or more hazardous properties.

**Waste Management Information System (hereinafter “WMIS”)**

The WMIS is an agenda-related robust database system for the central management of the waste management and circular economy sector in the Czech Republic. The data it collects make it possible to monitor waste generation and waste management methods. It also contains data on waste management facilities, waste traders, waste carriers and intermediaries. The WMIS also provides a platform for handling the permitting of waste management facilities. The system collects information on Extended Producer Responsibility systems, authorised packaging companies, packaging waste and end-of-life products.

Aggregated waste management data from the WMIS are presented to the general public in the Public Waste Management Information System (P-WMIS) module.

A separate part of the system, the End-of-Life Vehicles Module of the Waste Management Information System (MA WMIS), is used to monitor the flow of end-of-life vehicles and enables authorised persons with a permit for the collection and treatment of end-of-life vehicles to upload the issued confirmation of receipt of a selected end-of-life vehicle into the central system, thereby fulfilling their statutory obligations.

**System of Public Hearings within the EIA/SEA Process**

Environmental Impact Assessment, i.e. the EIA process (Environmental Impact Assessment) and the SEA process (Strategic Environmental Assessment), are regulated by Act No. 100/2001 Sb., on Environmental Impact Assessment, as amended. These processes are also commonly used in the field of waste management. The main purpose of impact assessment is to obtain comprehensive information on the expected impacts of proposed projects or concepts on the environment and public health. The information system serves to record the projects and concepts assessed and to publish documents related to the environmental impact assessment process.

**IPPC Information System**

The Integrated Prevention Information System, administered by the MoE, is a nationwide public administration information system. Its main function is to ensure all obligations concerning the publication of information under the Integrated Prevention Act and to provide public access to them. This system provides the public with information on individual permitting processes and enables active involvement in the proceedings. The IPPC includes a list of current proceedings and a database of all issued integrated permits.

**Integrated Environmental Pollution Register (hereinafter “IEPR”)**

The IEPR serves to fulfil the Czech Republic’s commitment in the field of collecting and disseminating environmental information and ensuring public access to such information. The Register, which is administered, monitors, records and presents information on selected types of pollutants released into the environment or transferred off-site. Its task is to provide the public with clear and accessible information on environmental pollution. The IEPR is one of the main instruments for monitoring and evaluating environmental burdens in the CR. In addition to providing information to the public, it also serves as a basis for the formulation of State environmental policy, for planning and managing

environmental protection, and for assessing compliance with international commitments in the field of the environment.

#### **Other information systems of the MoE and other State administration bodies**

In addition to monitoring the development of waste management and circular economy and the fulfilment of the objectives of the WMP CR, other available information sources of the Ministry of the Environment, as well as the support and services provided by other ministries and State administration authorities, may also be used for this purpose.

### **4.3 Change and New Setting of Waste Management Policy**

In the Binding Part of the WMP CR, strategic objectives, priorities, general principles and measures leading to the fulfilment of waste management objectives are defined. To keep waste management on the right track towards meeting the objectives, it is above all necessary in the field of waste management policy to observe certain aspects set out below.

- 1) Promote a policy ensuring the long-term stability and sustainability of waste management in the CR.
- 2) Timely adaptation and transposition of new EU legislation into CR legislation.
- 3) Follow and implement the principles and guidelines set out in other strategic documents of the CR, such as the Strategic Framework of the Circular Economy of the CR 2040 (Circular Czechia 2040), the Update of the Raw Materials Policy of the CR and others.
- 4) Appropriately adjust and supplement subsidy policy, including the delegation of subsidy policy to the regional level.
- 5) Involve the regions in the management and development of waste management and in investment planning. Prepare Regional Waste Management Plans addressing the necessary investments in infrastructure and waste management facilities.
- 6) Promote future supra-regional key investments in waste management.
- 7) Create appropriate conditions for the storage, processing, recycling and recovery of critical raw materials in the CR.
- 8) Support the establishment of sufficient processing capacities and the promotion of innovative “green” technologies.
- 9) Replace primary raw materials with secondary raw materials from waste.
- 10) Restrict the export of waste containing strategic and critical raw materials.
- 11) Increase preparedness and resilience to crisis situations and emergencies and seek to integrate waste incineration plants into critical infrastructure.
- 12) Use waste management regulations to motivate a shift up the waste management hierarchy, while maintaining economic, technological and social feasibility for the Czech economy.
- 13) Use and expand mandatory and voluntary Extended Producer Responsibility (EPR) systems to reduce negative impacts on waste holders and to increase the responsibility of waste holders and consumers, while ensuring appropriate settings for the stability of EPR systems.
- 14) Set targets for products and waste covered by EPR systems. Set targets for waste streams.
- 15) Strongly promote the application of economic instruments for regulating the development of waste management and financial instruments for the development of waste management and the circular economy. Promote, through appropriate financial instruments, rapid access to financing sources, in particular for modern and innovative technologies.

- 16) Analyse options for adjusting tax settings to support products with recycled content)<sup>59</sup>.
- 17) Improve the enforceability of statutory obligations and set sanctions for their non-compliance in an optimal manner.
- 18) Strengthen digitalisation, information systems and artificial intelligence for collecting, verifying and processing data on waste and material flows.

In the Chapter 4.2 instruments for enforcing the objectives of the WMP CR 2025–2035 were presented.

## 4.4 Economic Analysis of the WMP CR – Executive Summary

The Economic Analysis of the Waste Management Plan of the Czech Republic describes the impacts of the WMP CR on the Czech economy, including the impacts on the revenue and costs of municipalities and other waste holders, especially municipal ones. The document also sets out the assumptions for the development of technologies and their capacities, with an impact on the investment needs of the waste management sector, so as to ensure the fulfilment of the WMP CR objectives in the long-term horizon until 2035.

Changes in waste management methods, with the aim of diverting waste from landfilling towards maximising recycling and recovery of waste, represent one of the main factors influencing the increase in the costs of waste management methods throughout the entire chain. Other significant factors include inflation, which substantially and persistently increases costs across all waste management methods and the prices of commodities and products. The anticipated changes in waste management costs are described in more detail further in the economic analysis.

From an environmental perspective, it can be stated that the WMP CR represents the main instrument for maximising the use of waste as a source of raw materials and energy, thanks to the transformation of waste management towards more efficient waste use within the circular economy. The key aspect is the positive shift in the waste management hierarchy and the preference for waste management methods ranked higher in this hierarchy. For the fulfilment of the WMP CR objectives, an active approach of society as a whole, including a change in the attitude to waste by waste holders, will be absolutely crucial.

An indispensable prerequisite for the successful development of waste management is the acceptance of changes in waste management, including economic impacts, as well as support for the market in products with recycled content, i.e. so-called recyclates.

The implementation of the Waste Management Plan of the Czech Republic is expected to lead to an **increase in employment by up to several thousand jobs**. In the case of the construction of modern waste management facilities, demand is expected for hundreds of highly qualified workers, with further demand arising for construction work, designers and other activities associated with the construction of such facilities. Although the investment costs for these facilities may in future years be reflected in product prices, and thus also in increased household costs, such costs should be offset by positive consequences, such as improved environmental quality, reduced transport burden, etc. Overall, the transition to higher levels of the waste management hierarchy should have a positive impact on citizens' costs. **The construction of modern facilities will also strengthen the competitiveness**

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<sup>59</sup> Based on Directive 2008/98/EC of the European Parliament and of the Council, Annex IVa – Examples of economic instruments and other measures to provide incentives for the application of the waste hierarchy, measure point 9) use of tax measures or other means to promote market penetration in the case of products and materials prepared for re-use or recycled products and materials.

of individual regions, as well as of the Czech Republic as a whole, since it will have modern technologies requiring highly qualified labour.

The measures and instruments proposed in the WMP CR are feasible and should deliver the expected effect.

The Waste Management Plan of the Czech Republic represents an opportunity for the development of waste management in the CR, and it has been evaluated that, provided all the assumptions considered in the economic analysis are met, it is technically and economically feasible.

#### 4.4.1 Analysis of the Current State

As indicated by the Czech Republic's [2023 Statistical Yearbook](#) (CSO), investments in waste management have been increasing in the long term. In the period 2020 to 2022, they increased from CZK 4.6 billion to CZK 5.2 billion. Total costs of waste management in the Czech Republic also show an upward trend. Over the last three recorded years, 2020 to 2022, published within this Yearbook of the Czech Statistical Office, total non-investment costs of waste management in the CR increased by CZK 15 billion, from CZK 45 billion in 2020 to CZK 60.7 billion in 2022.

**In the period 2020 to 2022, investments in waste management increased from CZK 4.6 billion to CZK 5.2 billion. Non-investment costs of waste management in the CR increased by CZK 15 billion, from CZK 45 billion in 2020 to CZK 60.7 billion in 2022.**

A significant increase in costs is also recorded in municipal waste management. From 2006 to 2022, the average annual municipal costs of municipal waste increased from CZK 698 per capita to CZK 1,319 per capita. In the last three recorded years, 2020 to 2022, this average annual cost represented an increase of 24 %, from CZK 1,064 per capita to CZK 1,319 per capita. Over the last ten years, total municipal costs have increased by almost 50 %.

**The costs of municipal waste management increased from 2006 to 2022 from CZK 698/inhabitant to CZK 1,319/inhabitant.**

Costs associated with the collection and transport of municipal waste represent a significant part of the municipal waste management costs within the municipal system. For the evaluated waste streams, the costs associated with the collection and transport of municipal waste within the municipal system always represent the dominant part of the total municipal costs associated with the given commodity. The share of municipal costs associated with collection and transport amounts to roughly two-thirds of the costs of mixed municipal waste management, while in the case of the commodity of separate plastic collection, the share of collection and transport accounts for about three-quarters of the costs of this commodity. If the price for handing over a sorted commodity to a facility for its treatment is zero, or the supplier receives payment for it, the average municipal costs consist solely of the costs associated with the collection and transport of this commodity.

Within the available data, it can be stated that the total costs associated with ensuring compliance with Extended Producer Responsibility increased by 45 % in the period 2019 to 2022. The largest share of these costs is represented by the costs of ensuring Extended Producer Responsibility for packaging and packaging waste. Their share gradually increased from 69 % to 76 % of all costs associated with ensuring compliance with Extended Producer Responsibility obligations. From a cost perspective, the

second most significant group are the collective systems ensuring the take-back of electrical and electronic equipment.

**The costs associated with ensuring compliance with Extended Producer Responsibility obligations increased by 45 % in the period 2019 to 2022. The largest share of these costs is represented by the costs of ensuring Extended Producer Responsibility for packaging and packaging waste.**

In the Czech Republic, the collection of data on costs associated with waste management is carried out by the Czech Statistical Office. However, the data are presented without distinction and segmentation by individual types and groups of waste holders. These include both data on investments in environmental protection in the category of waste management, as well as data on non-investment costs of environmental protection in the category of waste management.

Detailed collection of data on costs and revenue in the area of municipal waste, their regular evaluation and presentation, is carried out only at the municipal level. For this reason, it is not possible to adequately assess the costs associated with waste management in other segments, such as industry, construction and in other sectors, to the same extent as at the municipal level. Manufacturing companies have individual contracts with waste management companies, and these data are not publicly available.

In the area of municipal waste management by municipalities, these costs are increasing, as indicated above. The largest share of municipal waste costs in the CR is represented by costs associated with mixed municipal waste. The second most significant group are the costs associated with ensuring separate collection of recoverable waste (paper, plastic, glass, metal, beverage cartons). The third most significant item are the costs associated with the management of biodegradable waste (plant biowaste from greenery).

**The largest item of municipal costs is the cost of mixed municipal waste. In 2006, these costs amounted on average to CZK 463 per capita, while in 2022 they had already risen to CZK 652 per capita. In the last three years, 2020 to 2022, these average annual costs increased by 14 %, from CZK 574/inhabitant to CZK 652/inhabitant.**

**The average annual municipal costs of separate collection of recyclable and recoverable fractions of municipal waste increased in the period 2006 to 2022 from CZK 98/inhabitant to CZK 307/inhabitant. In the last three years, 2020 to 2022, this increase amounted to 21 %, with average costs rising from CZK 253/inhabitant to CZK 307/inhabitant.**

As part of the questionnaire survey, data on municipal revenue related to municipal waste are also collected. According to the presented outputs, in 2022 these average municipal revenues amounted to CZK 911 per capita, which represents an increase of 24 % compared to 2020. The largest share of municipal revenues in 2022 was covered by revenues from residents in the form of payments for municipal waste, while the second largest source of municipal revenues were payments from the authorised packaging company system for ensuring the take-back of packaging waste. In 2022, these revenues represented on average CZK 181 per capita.

**The total amount of municipal revenues is, in most cases, lower than the total costs associated with municipal waste. Municipalities cover the difference between revenues and expenditures from their budgets. On average, in 2022 municipalities had to allocate 31 % of**

**their budgetary funds to ensure the functioning of waste management. In 2023, this share increased to 34 %.**

As part of the analysis of costs associated with input prices for waste management facilities, the highest prices are represented by technologies handling hazardous waste, i.e. hazardous waste incineration plants (up to CZK 25,000/t) and hazardous waste landfills (up to CZK 10,000/t). At the opposite end of the spectrum are metal recycling facilities (the purchaser pays up to CZK 20,000/t).

#### 4.4.2 Modelling of Future Developments

For the purpose of assessing the impacts of individual scenarios of waste generation and methods of municipal waste management, **six scenarios** were created. **Two trajectories of waste generation were prepared according to individual waste streams, and three scenarios of waste management methods with the objective of meeting legislative requirements relating to municipal waste in terms of recycling and landfilling.**

The economic analysis evaluates all six of these scenarios. Within the economic analysis, significant factors influencing costs were also taken into account, such as the development of the population of the CR, the development of inflation, the development of landfill fee rates, etc.

As regards municipal waste costs, in all scenarios the total costs of municipalities for municipal waste management increase. In 2035, it can be expected that the total municipal costs for municipal waste will exceed CZK 27 billion annually, which is essentially double the level in 2022. **It can be expected that average annual unit costs per capita in the period 2025 to 2035 will increase by approximately CZK 700 per capita**, i.e. an increase of almost 40 % compared to the assumed municipal costs in 2025. Since the modelling of future developments uses 2022 waste management prices as the baseline, it is appropriate to present the cost difference also in the period 2022 to 2035. This difference, averaged across all scenarios, represented an increase in annual costs of CZK 1,200/inhabitant.

**In 2035, it can be expected that the total municipal costs for municipal waste will exceed CZK 27 billion annually, which is essentially double the level in 2022.**

As part of the modelling of future developments of municipal waste costs in municipal systems, the sensitivity of municipal cost increases to inflation was also tested. The result of the testing shows that an increase in inflation, according to the baseline assumption of the analysis, will raise municipal costs in the period 2022 to 2035 by almost CZK 1,000 per capita.

Under the defined assumptions of the analysis, it can be assumed that municipal costs associated with the sub-stream of “*separately collected waste*” will increase by CZK 8 billion between 2025 and 2035, taking into account developments in waste generation and price trends, including the impact of inflation.

Municipal costs associated with the sub-stream of “*hazardous waste*” are negligible compared to other sub-streams. In the long-term horizon, their stagnation can be expected.

On the basis of the defined conditions of the analysis, it can be assumed that the costs associated with the sub-stream “*other waste*”<sup>60</sup> will reach their maximum in the period 2028 to 2030. After this period, costs will decrease due to the reduction in the total quantity of such waste (effect of the growth of separate collection). An increase in costs associated with the sub-stream “*other waste*” is expected only

<sup>60</sup>The sub-stream “*other waste*” is defined in a separate document, the Economic Analysis of the WMP CR.

in the period 2025 to 2028, by approximately CZK 0.6 billion. In the subsequent period and after 2030, a decrease in costs by CZK 1.5 billion is expected by 2035. From 2025 to 2030, the share of costs associated with separately collected waste will increase by 8 percentage points, and between 2030 and 2035 this share will increase by a further 10 percentage points. Accordingly, the share of the sub-stream of other waste in the total municipal costs will decline. The share of the sub-stream of hazardous waste remains more or less unchanged over time.

**According to the analysis and the evaluation of individual scenarios of waste generation and waste management in relation to the assumed extent of co-financing of individual waste streams by current and planned EPR systems, it can be expected that the net costs of all municipalities, cumulatively after deducting revenues, will amount to just under CZK 17 billion in 2025, just under CZK 18 billion in 2030, and just under CZK 19 billion in 2035.**

**From the perspective of the impact on citizens, these will be costs that should also be transferred to citizens. In the period 2025 to 2030, an increase of approximately CZK 140 per capita can be expected. In the subsequent period to 2035, the increase in costs per capita should be more gradual, with an expected annual increase of just under CZK 100 per capita.**

**From the citizen's perspective, the costs associated with EPR systems will be reflected in the price of goods for which the respective EPR systems are and will be responsible. The practical impact on the citizen will be that part of the costs associated with waste management will be paid indirectly as a consumer in the price of purchased goods.**

The total costs associated with municipal waste for other holder increase significantly until 2025, followed by a more gradual growth until 2035. The total increase between 2022 and 2035 is, according to the average value of the scenarios, CZK 2.6 billion. Overall, the costs associated with the sub-stream of separately collected waste between 2025 and 2035 will increase by CZK 1.7 billion, including the effect of inflation.

The costs of other holders associated with the sub-stream of hazardous waste are negligible compared to other sub-streams. In the long-term horizon, their stagnation can be expected. The costs of other holders associated with the sub-stream of other waste will reach their maximum in the period 2025 to 2026. After this period, costs will decrease due to the reduction in the quantity of such waste (effect of the growth of separate collection). An increase in costs associated with this sub-stream is expected only in the period 2022 to 2026, amounting to approximately CZK 1.3 billion. In the subsequent period, a decrease in costs of approximately CZK 0.9 billion is expected by 2035. From 2025 to 2035, the share of costs associated with the sub-stream of separately collected waste will increase by 20 percentage points. The share of the sub-stream of hazardous waste remains unchanged over time.

### **Level of Costs in the Regions in Connection with the Fulfilment of the Objectives of the WMP CR**

From the perspective of the cost impacts induced by activities aimed at meeting the WMP objectives on the regions, these costs can be divided into four main groups.

- **Administrative Costs**

These are costs of waste management administration, control, data analysis, etc. Costs of this type will increase in connection with growing objectives and the need to provide support.

- **Preparation of Conceptual Documents and Strategies**

These costs include the preparation of analyses, consultations with experts, negotiations and ensuring compliance with national objectives, monitoring the fulfilment of objectives and the definition of measures. Another segment is the developing cooperation with municipalities in optimising waste collection. The area of preparation and updating of emergency waste management plans in the event of natural disasters will also play an important role. For this type of costs as well, it can be expected that they will increase in the future.

- **Subsidy Resources**

Regions often provide (not only) municipalities with financial contributions for the introduction of efficient waste collection systems, composting, anaerobic digestion of biowaste or the construction of local facilities. In the future, the support of the regions in the field of collection and waste management for specific waste streams can be expected to expand. For these costs, growth can also be expected in the future.

- **Support for Waste Sorting and Recycling**

These costs include financing and co-financing of projects to increase the share of sorted waste, such as information campaigns, support for the development of the collection network and proper waste management, etc. In the future, it is to be expected that these expenditures will increase relatively significantly.

**The development of the level of these costs cannot be predicted, but it can be assumed that they will grow in relation to the increasing WMP objectives.**

### **Expected Costs in the Regions**

From the perspective of predicting costs associated with waste management in individual regions, only indicative qualified estimates can be made, based on the expected and modelled development of waste generation and the costs associated with ensuring municipal waste management in line with the objectives of the WMP CR.

As follows from the analytical data of regional costs in 2022, the differences in costs for individual commodities vary greatly between regions and are influenced by a wide range of factors, such as the number of inhabitants and their standard of living in individual regions, their consumption behaviour patterns, population density, geographical conditions, transport services in the area, methods of collection and transport of commodities, availability and equipment of waste management technologies, competition among waste management companies, methods of setting prices for individual activities and methods of waste management in the field of waste management, and others. From this perspective, predicting the development of these factors, including the evolution of waste management at regional level, for the period by 2035 is almost unrealistic. For an indicative overview, a calculation was made of the projected municipal waste costs of municipalities in 2035 at the level of regions and NUTS 2 areas, based on the average population living in the regions in 2024.

The following table (Table 89) shows that the highest costs can be expected in the Capital City of Prague (up to CZK 3.6 billion) and the Central Bohemian Region (up to CZK 3.8 billion), the South Moravian Region (up to CZK 3.2 billion) and the Moravian-Silesian Region (up to CZK 3.1 billion) by 2035. Conversely, the lowest costs can be expected by 2035 in the Karlovy Vary Region (CZK 0.8 billion). It should be noted, however, that these are estimates determined on the basis of the population in these regions, and the actual cost level will be influenced by a wide range of other factors mentioned above.

*Table 89: Breakdown of Scenarios of the Development of Total Municipal Waste Costs of Municipalities in Individual Regions (CZK billion)*

Region	2030 (billion CZK)		2035 (billion CZK)	
	min.	max	min.	max
Capital City of Prague	3.2	3.2	3.5	3.6
Central Bohemia Region	3.3	3.4	3.6	3.8
the South Bohemian Region	1.5	1.5	1.6	1.7
Pilsen Region	1.4	1.4	1.5	1.6
Karlovy Vary Region	0.7	0.7	0.7	0.8
Ústí nad Labem Region	1.8	1.9	2.0	2.1
Liberec Region	1.0	1.1	1.1	1.2
Hradec Králové Region	1.3	1.3	1.4	1.4
Pardubice Region	1.2	1.2	1.3	1.4
Vysočina Region	1.2	1.2	1.3	1.3
South Moravian Region	2.8	2.9	3.1	3.2
Olomouc Region	1.4	1.5	1.6	1.6
Zlín Region	1.3	1.4	1.4	1.5
Moravian-Silesian Region	2.7	2.8	3.0	3.1

Source: Source: CSO (2024), own calculation

The following table (Table 90) shows that the highest costs are estimated in the NUTS 2 regions of Southeast (up to CZK 4.5 billion), Northeast (up to CZK 4 billion), Central Bohemia (up to CZK 3.8 billion) and Prague (up to CZK 3.6 billion) by 2035. Conversely, the lowest costs are expected in the regions of Northwest (CZK 2.9 billion), Central Moravia (CZK 3.1 billion), Moravia-Silesia (CZK 3.1 billion) and Southwest (CZK 3.3 billion). Again, it must be taken into account that these are only estimates based on the population of the given areas, and that the actual cost level will be influenced by a number of other factors mentioned above.

*Table 90: Breakdown of Scenarios of the Development of Total Municipal Waste Costs of Municipalities in Individual NUTS 2 Regions (CZK billion)*

NUTS 2 area	2030 (billion CZK)		2035 (billion CZK)	
	min.	max	min.	max
Prague	3.2	3.2	3.5	3.6
Central Bohemia	3.3	3.4	3.6	3.8
Southwest	2.9	3.0	3.2	3.3
Northwest	2.5	2.6	2.8	2.9
Northeast	3.5	3.6	3.8	4.0
Southeast	4.0	4.1	4.4	4.5
Central Moravia	2.8	2.8	3.0	3.1
Moravia-Silesia	2.7	2.8	3.0	3.1

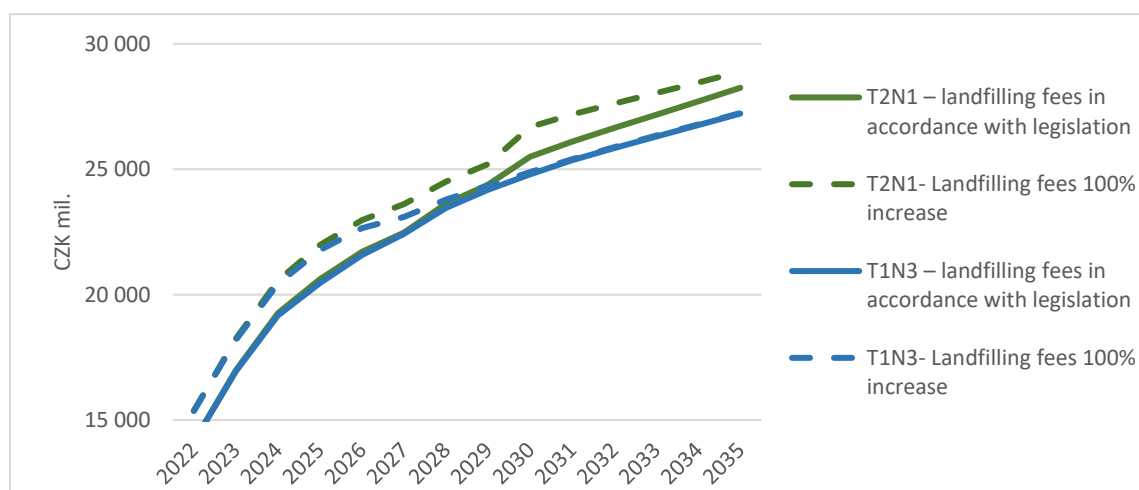
Source: Source: CSO (2024), own calculation

In the Czech Republic, there is no comprehensive system for collecting data on the costs of waste management outside the collection of data on municipal costs. For this reason, it is not possible to reliably evaluate future costs associated with waste management in other segments such as industry, construction and other sectors to the same extent as at the municipal level. Manufacturing companies have individual contracts with waste management companies and these data are not publicly available.

### Assumption of the Impact of Changes in the Landfilling Fee on the Total Costs of Municipal Waste Management of Municipalities and Other Waste Holders

As part of the Economic Analysis, the impact of changes in landfilling fees on the total costs of municipal waste management of municipalities and other waste holders was analysed for all scenarios (T2N1–T1N3). These calculations indicate that **a 100% increase in landfill fees for recoverable waste would be reflected in total municipal waste management costs by an increase of up to 7%, with a gradual decline in the impact of landfill fees** on overall municipal waste management costs, primarily due to a decrease in the amount of waste landfilled (Graph 69).

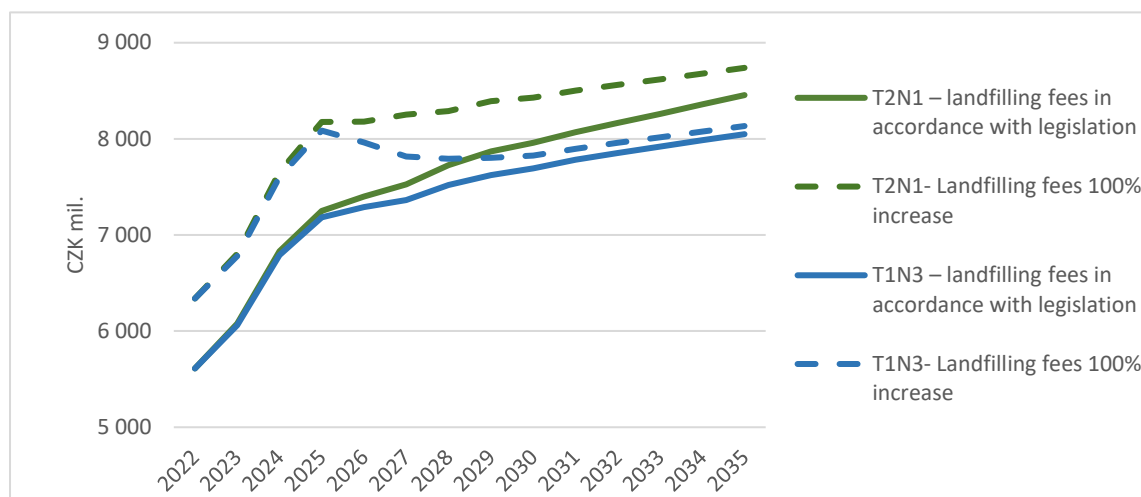
Graph 69: Development of Total Costs of Municipal Waste According to Individual Scenarios – Municipalities (CZK mil.)



Source: own processing

In the case of other waste holders, **the calculations show that an increase of 100% in the fees for landfilling recoverable and residual waste would result in an increase of up to 13% in the total costs of other waste holders of municipal waste management.** As with municipalities, the impact of landfilling fees on the total costs of other waste holders of municipal waste management is expected to decline, primarily due to the reduction in the quantity of landfilled waste (Graph 70).

Graph 70: Development of Total Costs of Municipal Waste Management by Scenario – Other Waste Holders (CZK million)



Source: own processing

### 4.4.3 Necessary Investments

The following presents the assumptions regarding investment needs to ensure the development of waste management in the Czech Republic with the aim of meeting the required objectives of the Waste Management Plan of the Czech Republic.

For each waste stream, the capacity needs of the various groups of technologies were assessed. Differences were defined between the required quantities of waste to be processed in individual years and the currently existing capacities. **The highest investment expenditure per annual unit of processed waste is associated with investments in hazardous waste incinerators, medical waste incinerators, and facilities for energy recovery of waste;** It should also be noted that within the model only investments in waste management infrastructure are considered. Therefore, for example, the construction of multi-fuel boilers is not included, as these fall within the energy sector.

For the purposes of the WMP, investments were also calculated for the development of the collection network for separately collected recoverable waste fractions collected within municipal waste originating from municipalities. These concerned investments into the expansion and development of the collection network linked to the growth in separately collected quantities of individual commodities, not its renewal, as such costs are subsequently reflected in operating costs. In the field of container-based collection, the highest investment expenditure is associated with commodities for which intensive implementation of the door-to-door system is expected. These are primarily paper, plastics, and biowaste. Investments in containers for the collection of these commodities represent almost 90% of the total anticipated investment expenditure for the development of the collection network.

**The total investments in the development of the collection network (container collection and collection yards) for its expansion are expected in the period 2025 to 2035 at CZK 7 to 7.5 billion.**

For municipal waste, assumptions regarding the required capacities of technologies that will be used primarily for the management of individual municipal waste streams under six scenarios of waste generation and management were also calculated. For these capacities, the anticipated necessary investments were then quantified for the individual periods.

**In all scenarios, the greatest need for the construction of new capacities up to 2030 is in the area of energy recovery of waste and transfer stations. The opposite is true for paper-sorting capacities.**

The highest investment expenditure by 2030 relates to technologies for **energy recovery from waste**. Significant investment costs can also be expected for the construction of technologies for the mechanical sorting of mixed municipal waste. After 2030, unlike the previous period, no significant need for new capacities is expected, with a few exceptions. **Overall, in the period 2025 to 2035, key facilities will be required for handling primarily municipal waste or outputs from its treatment, with a capacity of 2.5 to 5 million tonnes of waste.** These capacities are distributed among various groups of waste treatment or final disposal technologies.

Part of the mixed municipal waste is treated for the purposes of producing refuse-derived fuel. Within the model, the construction of multi-fuel boilers capable of energetically utilising such fuel is not considered. This already falls within the energy sector (for a cost comparison, it would be necessary to compare the costs of building a FERW with the combined costs of constructing sorting lines for municipal waste, technologies for fuel production, as well as multi-fuel boilers). The FERW technology is primarily an end-of-pipe facility, being a sophisticated energy installation. A significant part of FERW investment expenditures consists of flue gas cleaning costs. For this reason, the average investment expenditures per tonne of waste processed are so different between a sorting line and a FERW facility. The overall expected investment expenditures for each category (FERW, sorting line) are based on recently implemented projects.

As part of the reconstruction of existing capacities, it will be necessary to modernise facilities with a total capacity of at least 0.9 million tonnes of waste.

**In the horizon of the period 2025 to 2035, the total expected investments in technologies primarily ensuring the management of municipal waste according to the defined scenarios range between CZK 32.5 and 65.3 billion.**

**If the expected investments in the reconstruction and modernisation of key technologies for municipal waste management, such as sorting lines for paper and plastics and technologies for the treatment of biowaste, are also taken into account, the estimated investment volume will range between CZK 48.4 billion and CZK 82.7 billion.**

Technologies for managing hazardous waste are investment-intensive. The estimated total investment expenditure over the 2025–2035 period is expected to amount to approximately CZK 12.3 billion. The largest expenditures are allocated to the construction and reconstruction of hazardous waste incineration plants. Total investments in these technologies are expected to be approximately CZK 9 billion.

**The projected total investment expenditures for technologies for handling hazardous waste in the period 2025–2035 are expected to reach about CZK 12.3 billion, of which CZK 8.9 billion will be allocated to the construction and reconstruction of hazardous waste incineration plants.**

Technologies for **processing construction and demolition waste** will require a very high level of new capacity. However, the investment costs are relatively low when calculated per tonne of new capacity.

Approximately half of the capacity value and investment costs relate to the reconstruction of existing capacities (approximately 65% of the total required capacity).

If the Czech Republic were to require the **provision of recycling capacities for 100% of separately collected material-recoverable waste directly within its territory**, it would be necessary to secure new recycling capacity for **paper** of 1 million tonnes per year. In terms of investment, this would amount to around **CZK 45 billion**. Furthermore, it will be necessary to expand existing recycling capacities for **plastics** by approximately 300,000 tonnes per year. The investment expenditures for building these technologies can be expected at around **CZK 4.2 billion**. It will also be necessary to ensure an expansion of **metal** recycling capacities by 1.8 million tonnes per year. The investment expenditures would amount to approximately **CZK 11.9 billion**. The required new capacities for processing metals are largely influenced by the current state and further development of the metallurgy sector in the Czech Republic. The required capacity of **glass** recycling technologies amounts to about 100,000 tonnes by 2035. The technologies should focus on facilities for the treatment and processing of waste glass into very high-quality input raw materials for glassworks, or technologies for the production of final products. The investment expenditures are very low, at around **CZK 100 million**. A commodity whose production is expected to grow significantly is textile waste. An increase in processing capacity for waste textiles, which will not be directly transferred for reuse, is expected to reach up to 100,000 tonnes per year by 2035. The expected investment expenditures are around CZK 1 billion..

Note: The estimates of investment costs (unit costs) are based on an expert market and literature review from 2023 and may differ in reality depending on the development of the economic environment.

### **NIMBY Effect**

The issue of constructing new facilities or expanding the capacities of existing ones is almost always associated with resistance from local residents. This phenomenon is referred to as the NIMBY syndrome ("Not In My Backyard").

It often involves situations where residents generally support the project but reject its implementation in their immediate vicinity. This usually indicates that the solution is considered correct and necessary from the perspective of society. However, it is essential to identify the true reason behind the reluctance of residents or communities who oppose the construction or expansion of such waste management technologies.

Addressing the NIMBY syndrome is complex, as it combines psychological, social and political aspects. The principles for mitigating the NIMBY syndrome can be grouped into three thematic areas.

- **Open discussion and transparent communication of the project**
  - Organise information meetings with experts presenting both the benefits and risks of the project. This category also includes education on the current state of knowledge in the field and clarifying and dispelling myths that may be a key factor in residents' negative attitudes.
  - Listen to the concerns of residents, involve the local community in the planning process and allow them to propose measures for eliminating potential risks.
  - Take residents' relevant views into account in the project and gain their trust.
  - Visits by residents and their representatives to sites where such facilities are already operating, including discussions with local inhabitants about the facilities' impact on their lives, can also be beneficial.
  - In the case of construction, meetings with residents should be held during the different phases of the project's implementation, with the possibility of physical site visits.
- **Identifying benefits for residents of the affected locality**

- This group of measures includes positive incentives, such as offering benefits to citizens in the area, for example investments in infrastructure, improved services or financial compensation.
- Depending on the type of project and investment, this may also involve the creation of new jobs.
- For certain stakeholder groups, initiatives aimed at improving the local environment, including regular environmental monitoring, may also be of interest.

**The third group of measures to ensure acceptance of the construction or expansion of a facility is the possibility of an agreement on gradual development.** This could involve implementing a pilot project—a smaller version of the project—allowing local residents to verify its safety and benefits.

The general conclusion for addressing the NIMBY syndrome is patience, empathy, clear communication and thorough explanation of all project impacts. The key is to build trust and seek mutually beneficial solutions. Mediation between project proponents and opponents also plays an important role.

## Summary of Required Investments – Overview of the Anticipated Need for the Construction of Waste Management Facilities for Selected Waste Streams and the Related Level of Investment in These Facilities

### Anticipated Investments in Technologies for the Management of Biowaste

Figure 30: Anticipated Investments in Technologies for the Management of Biowaste

#### Input Waste

Separate collection from municipalities and other holders – biodegradable waste from kitchens and catering facilities  
Waste from the food and processing industry

#### Hygienisation

		min	max.	total
mil. t	New capacities*	0.3	0.3	0.3 – 0.3
	Reconstruction of capacities**			
CZK billion	New capacities*	0.7	0.7	0.7 – 0.7
	Reconstruction of capacities**			

#### Input Waste

Treated waste – hygienisation  
Waste from the food and processing industry

#### Biogas Plant

		min	max.	total
mil. t	New capacities*	0.3	0.3	0.3 – 0.3
	Reconstruction of capacities**			
CZK billion	New capacities*	4.4	4.8	4.4 – 4.8
	Reconstruction of capacities**			

#### Input Waste

Separate collection from municipalities and other holders – biowaste from gardens and parks  
Waste from the food and processing industry

#### Composting Plant

		min	max.	total
mil. t	New capacities*	0.4	0.5	0.6 – 0.6
	Reconstruction of capacities**	0.2		
CZK billion	New capacities*	4.4	4.8	1.9 – 2
	Reconstruction of capacities**	0.5		

Anticipated Capacity Requirements up to 2035	Anticipated Investment Requirements up to 2035
mil. t	CZK billion
1.2 - 1.2	7 - 7.5

#### Legend:

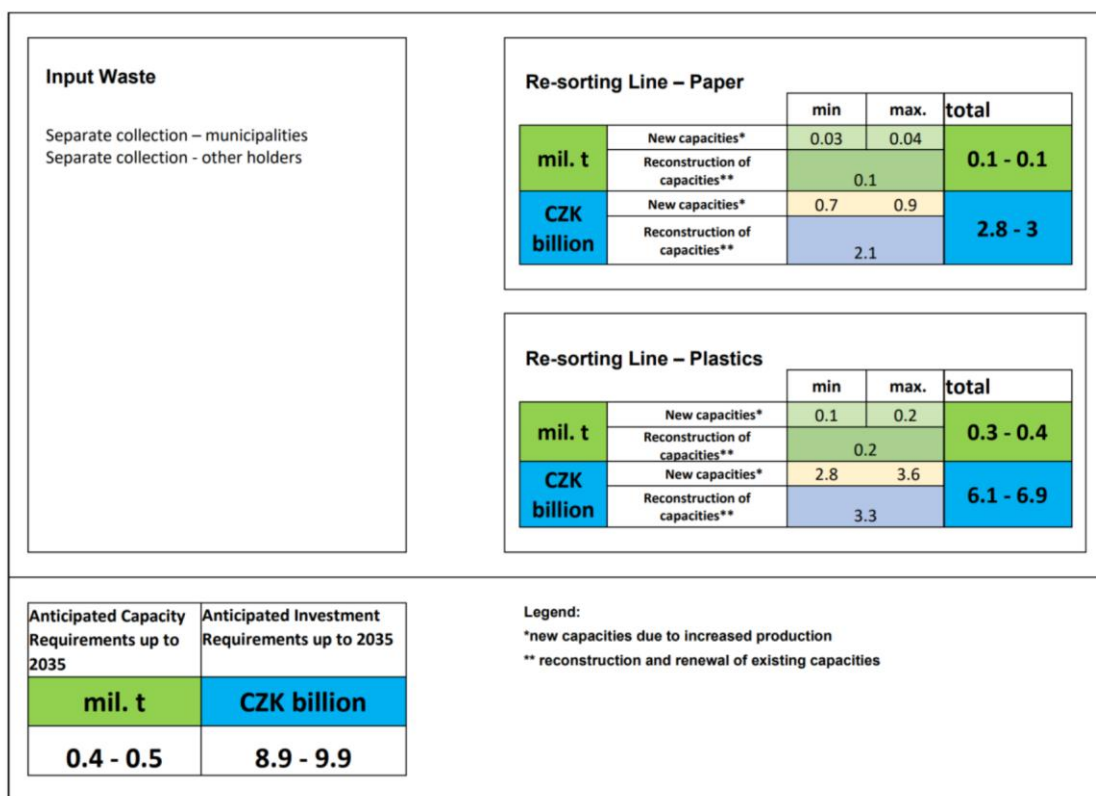
\*new capacities due to increased production

\*\* reconstruction and renewal of existing

Source: own processing

Note: The estimates of investment costs (unit costs) are based on an expert market and literature review from 2023 and may differ in reality depending on the development of the economic environment.

Figure31: Anticipated Investments in Technologies for the Treatment of Waste from Separate Collection of Recyclable Waste (Paper, Plastic)



Source: own processing

Note: The estimates of investment costs (unit costs) are based on an expert market and literature review from 2023 and may differ in reality depending on the development of the economic environment.

## Anticipated investments in technologies for the management of primarily municipal waste outside separate collection

Figure 32: Anticipated investments in technologies for the management of primarily municipal waste outside separate collection

**Input Waste**  
Mixed Municipal Waste  
Bulky waste  
Other primarily municipal waste

### Transfer Stations

		min	max.	total
mil. t	New capacities*	0.6	1.2	0.6 - 1.2
	Reconstruction of capacities**			
CZK billion	New capacities*	1.6	3.2	1.6 - 3.2
	Reconstruction of capacities**			

**Input Waste**  
Mixed Municipal Waste

### Sorting Line for Mixed Municipal Waste

		min	max.	total
mil. t	New capacities*	0.2	0.9	0.2 - 0.9
	Reconstruction of capacities**			
CZK billion	New capacities*	2.1	8.1	2.1 - 8.1
	Reconstruction of capacities**			

**Input Waste**  
Bulky Waste

### Treatment and Sorting of Bulky Waste

		min	max.	total
mil. t	New capacities*	0.4	0.6	0.4 - 0.6
	Reconstruction of capacities**			
CZK billion	New capacities*	1.1	1.5	1.1 - 1.5
	Reconstruction of capacities**			

**Input Waste**  
Municipal Waste  
Industrial Waste  
Selected hazardous  
Rejects from treatment and processing technologies

### Energy Recovery of Waste (FERW)

		min	max.	total
mil. t	New capacities*	0.4	0.9	0.9 - 1.4
	Reconstruction of capacities**	0.5		
CZK billion	New capacities*	14.3	34.7	23.8 - 44.3
	Reconstruction of capacities**	9.6		

**Input Waste**  
Rejects from treatment and processing technologies

### Production of Solid Recovered Fuel (SRF)

		min	max.	total
mil. t	New capacities*	0.43	0.91	0.4 - 0.9
	Reconstruction of capacities**			
CZK billion	New capacities*	3.9	8.2	3.9 - 8.2
	Reconstruction of capacities**			

Anticipated Capacity Requirements up to 2035	Anticipated Investment Requirements up to 2035
<b>mil. t</b>	<b>CZK billion</b>
<b>2.5 - 5</b>	<b>32.5 - 65.3</b>

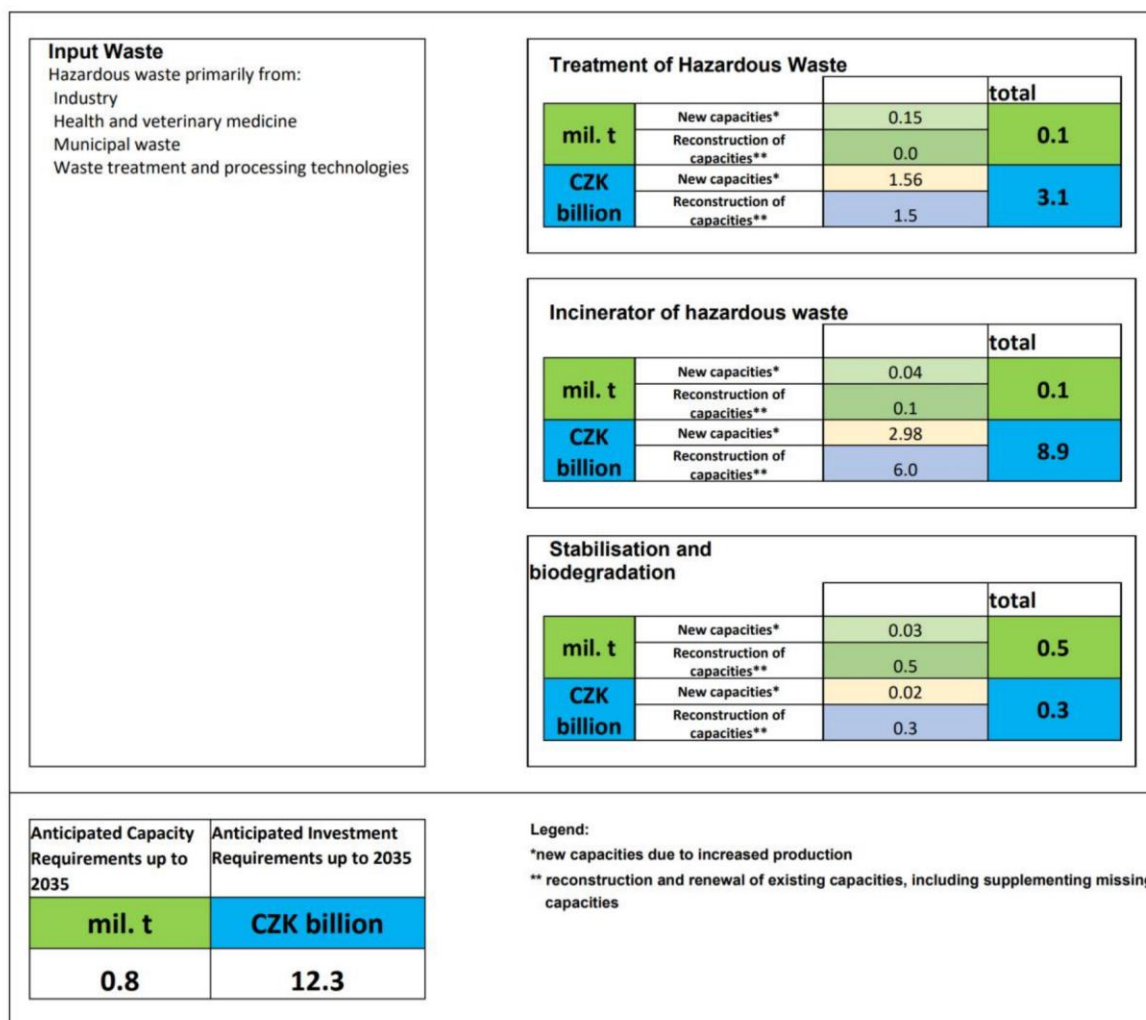
Legend:

Source: own processing

Note: The estimates of investment costs (unit costs) are based on an expert market and literature review from 2023 and may differ in reality depending on the development of the economic environment.

## Anticipated Investments in Technologies for the Management of Hazardous Waste

Figure33: Anticipated Investments in Technologies for the Management of Hazardous Waste

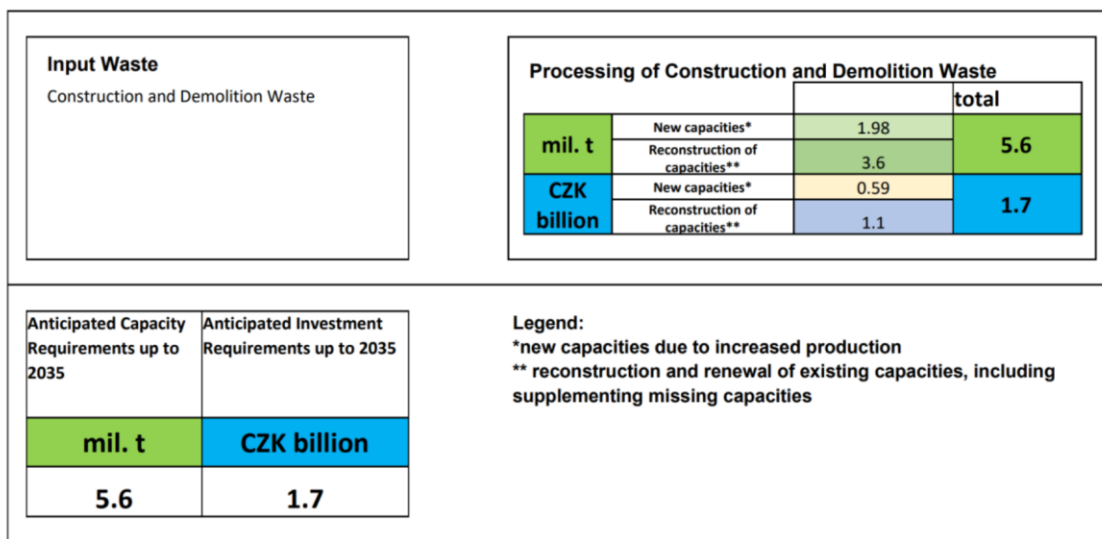


Source: own processing

Note: The estimates of investment costs (unit costs) are based on an expert market and literature review from 2023 and may differ in reality depending on the development of the economic environment.

## Anticipated Investments in Technologies for the Management of Construction and Demolition Waste

Figure 34: Anticipated Investments in Technologies for the Management of Construction and Demolition Waste



Source: own processing

Note: The estimates of investment costs (unit costs) are based on an expert market and literature review from 2023 and may differ in reality depending on the development of the economic environment.



#### 4.4.4 Distribution of Investments in Waste Treatment Facilities

For an indicative overview of the distribution of investments within the Czech Republic, a qualified assessment of the situation and an estimate of the needs of individual technologies in the Eastern and Western regions of the Czech Republic was carried out for suitable waste streams. A description of the NUTS 2 regions included in the Eastern and Western areas is provided in the following table (Table 91).

Table 91: Division of NUTS 2 Regions

<u>Region East</u>	<u>Region West</u>
CZ06 – Southeast	CZ01 – Prague
CZ07 – Central Moravia	CZ02 – Central Bohemia
CZ08 – Moravian-Silesian Region	CZ03 – Southwest
	CZ04 – Northwest
	CZ05 – Northeast

Source: own classification

For each waste stream linked to end-of-line technology, the following table (Table 92) describes the principle used to determine the projected total capacity requirements in the individual areas. These considerations must be regarded as very indicative, particularly in view of the free market and the appropriate conditions for constructing specific technologies in given regions/areas. It is always necessary to adopt an individual approach to each investment project, taking into account the intentions and decisions of the investor, including the specific conditions for implementing the project in the given location. For these reasons, **it is not possible to determine the distribution and location of capacities or investments within the individual areas of the Czech Republic with precision.**

Table 92: Principles for the Approach and Determination of Projected Capacity Requirements of Waste Management Facilities in the Czech Republic for the Individual Areas (East/West) by Technology Group

<b>Technology</b>	<b>Estimated capacity requirements in individual areas</b>
<b>Collection network (containers and collection yards)</b>	Cannot be determined – lack of data on the detailed distribution (door to door) and coverage area in individual regions. Lack of detail on the need to develop the public collection network in individual regions. Excessive detail given the approx. 6,500 independent municipalities.
<b>Sorting Lines– Paper</b>	Based on the amount of separately collected paper in 2035.
<b>Sorting Lines– Plastics</b>	Based on the amount of separately collected plastic in 2035.
<b>Paper and Cardboard</b>	Cannot be determined – dependent on suitable locations and business intentions.
<b>Plastics</b>	Cannot be determined – dependent on suitable locations and business intentions.
<b>Metal</b>	Cannot be determined – dependent on suitable locations and business intentions.
<b>Glass</b>	Cannot be determined – dependent on suitable locations and business intentions.

Technology	Estimated capacity requirements in individual areas
Textiles	Cannot be determined – dependent on suitable locations and business intentions.
Hygienisation	Based on the increase in quantities up to 2035 – almost identical to the production of biowaste from kitchens and canteens in 2035, due to minimal production in 2022.
Biogas Plant	Based on the increase in the quantity of biowaste up to 2035, taking into account deficits/surpluses in treatment capacity in 2022, when a surplus was identified in the Central Bohemian Region and a deficit in the Capital City of Prague (treatment took place in the Central Bohemian Region). No impact on distribution into regions.
Composting Plant	Based on the increase in quantities by 2035, taking into account deficits/surpluses in treatment capacity in 2022, when a surplus was identified in the Central Bohemian Region and a deficit in the Capital City of Prague (treatment took place in the Central Bohemian Region). No impact on distribution into regions.
Transfer Stations	Based on the production of mixed municipal waste in 2030.
Sorting Line for Mixed Municipal Waste	According to the share of planned capacities in each region in relation to the total planned capacity for the Czech Republic.
Treatment and Sorting of Bulky Waste	Based on the production of bulky waste in 2030 (the increase in technologies ends), in individual regions, scenario T1.
Energy Recovery of Waste (FERW)	According to the share of planned capacities in each region in relation to the total planned capacity for the Czech Republic.
Production of Solid Recovered Fuel (SRF)	Cannot be determined – dependent on SRF (solid recovered fuel) consumers.
Treatment of Hazardous Waste	Based on the increase in quantities.
Incinerator of hazardous waste	Based on the sub-stream “Waste Exclusively for Hazardous Waste Incineration.” The amount is more or less proportional to population distribution. Significant are wastes from healthcare and veterinary care in group 18 – their production in 2035.
Stabilisation and biodegradation	Production of hazardous waste in 2035 in individual regions.
Processing of Construction and Demolition Waste	Cannot be determined – primarily mobile facilities, linked to major demolition/reconstruction/construction projects.

Source: own processing

In the segment of future management of primarily mixed municipal waste, prepared projects are already known.

From the presented and known plans, it follows that the Eastern region will primarily be oriented towards treatment and mechanical sorting of mixed municipal waste with the aim of producing alternative fuels, linked to existing and planned projects for the transformation of the energy sector towards the use of alternative fuels.

Conversely, according to the known and presented projects, the Western region will be oriented more towards the utilisation of mixed municipal waste within waste-to-energy facilities.

As already stated above, however, each project is individual, and the condition of its implementation depends on a wide range of aspects. **In the field of waste management, a market environment**

**applies, and it is not possible for the state to centrally determine the locations where projects should be implemented.** The individual entities active in the waste market themselves bear the risks associated with securing their clients and waste streams.

Transport costs also have a significant impact on the overall costs of waste management. Naturally, therefore, projects will emerge that take into account local waste generation.

Another important aspect in the development of projects is the suitability of the given location. The construction of waste infrastructure “on greenfield sites” is very difficult and is usually accompanied by resistance from citizens and civic initiatives. Typically, in the case of FERW plants or hazardous waste incinerators, it can be expected that investments will be implemented in locations where infrastructure already exists and will be adapted or expanded. The construction of new projects in completely new locations appears rather unrealistic. Thus, these are investments where the geographical division into NUTS 2 regions is unlikely to be maintained.

**In the Czech Republic, a market environment will operate, which by its very nature should optimise the overall costs of waste management.**

## 4.5 Information on Criteria for the Location of Future Waste Treatment Facilities

In the preparation of projects for the development of a network of facilities intended for waste management, when planning the location of future waste treatment facilities it is necessary to take into account a number of criteria, which are listed below:

- a) **the number of individual types of facilities that are active in the region** (classification according to the new Register of Facilities of the Waste Management Information System – WMIS) within the CR and individual regions of the CR,
- b) **the capacity of individual types of facilities** within the CR and individual regions of the CR,
- c) **the deficit/surplus of the capacities of facilities for the management of a given waste in the region,**
- d) **the capacity of individual activities in facilities** pursuant to Annex No. 2 to the Act within the CR,
- e) **waste generation** within the CR and individual regions of the CR,
- f) **legislative restrictions arising from the legal regulation of spatial planning and from component legal regulations** (e.g. protected areas, geologically unsuitable areas),
- g) **the preference for facilities processing waste at higher levels of the waste management hierarchy,**
- h) **the suitability of the location of facilities in a given region in terms of accessibility and travel distance,**
- i) **the use of BAT,**
- j) **the evaluation of possible technological solution variants in the given region.**

In general, from the above criteria it follows that future waste management facilities should be located in regions with the highest deficit of capacities for the management of the relevant wastes, or in the vicinity of such regions, depending on the character and properties of the relevant target waste.

Facilities processing waste suitable for transport may serve larger catchment areas than, for example, facilities processing hazardous waste and other waste unsuitable for transport. The Czech Republic should build a network of waste treatment facilities so that hazardous waste (and other waste unsuitable for transport) is transported over the shortest possible distances, and other waste transported only over such distances as not to cause unnecessary environmental burden.

New facilities should be established in locations/regions where they are needed, and their construction must comply with applicable legislation, must respect the waste management hierarchy, the principles of BAT, the Waste Management Plan of the Czech Republic (WMP CR) (and of the relevant region) and the suitability of the location of facilities in the given region (e.g. geographical suitability).

Where possible, facilities managing waste at higher levels of waste management (e.g. facilities whose output is a further utilisable material product) should be preferred. It is also appropriate to continue to use existing facilities if they meet the technical requirements, or to modernise them. If the nature of the waste allows, emphasis should be placed on adherence to a closed cycle, and in the planning of the location of waste treatment facilities it is also necessary to address the marketing of outputs from the facilities.

Obsolete facilities with unsatisfactory technologies will be gradually closed down.

As part of the preparation of the WMP CR, a detailed analysis of the existing network of waste management facilities (the number of facilities and capacity within individual regions of the CR) was carried out, the adequacy of the existing network was evaluated, and a proposal was drawn up for the optimisation of the network of facilities in the area of:

- a) management of biodegradable waste,
- b) management of waste from separated collection of recyclable and recoverable wastes (paper, plastics, glass, metals, textiles),
- c) management of municipal waste other than separated collection – mixed municipal waste, bulky waste,
- d) management of hazardous waste,
- e) management of industrial waste,
- f) management of waste from healthcare and veterinary care,
- g) management of sludge from WWTP,
- h) management of construction and demolition waste,
- i) technologies for sorting, re-sorting and treatment of waste,
- j) waste recycling,
- k) waste recovery for energy purposes.

### **Long-Term Outlook for the Period 2035 – 2040**

Investment planning with a horizon up to 2065 and beyond is very complex, particularly in terms of significant legislative changes and requirements for changes in the behaviour and approach of society towards waste management. The degree of success of this transformation will be directly reflected in the need for and adaptation of waste management technologies.

In general, it can be stated that, assuming the development of waste generation and management described in the individual scenarios T1N1–T2N3, a significant proportion of financial resources will be invested in modifications, expansions and reconstructions of existing facilities so that they are able to manage the generated wastes within the CR in the long term, safely and efficiently.

A fundamental transformation awaits the sector of sorting, re-sorting and treatment of plastic waste, with requirements for the production of high-quality raw materials for the purposes of their reuse in products. In this technology segment, the closure of manual re-sorting lines, or their transformation into transfer stations for the efficient transport of compressed sorted plastic waste for re-sorting in sophisticated automated lines, can be expected.

Further changes are needed in the industry of recycling technologies for the recovery of critical raw materials, in thermochemical waste treatment and in the development of biogas plants for the anaerobic digestion of BDW.

A significant transformation can also be expected in the sector of hazardous waste incineration, linked to the need to increase capacities by constructing new facilities and reconstructing technologies currently in use. These technologies should comply with the requirements for best available techniques applicable to new waste incineration plants, as set out in the Best Available Techniques (BAT) Reference Document for Waste Incineration; EUR 29971 EN; doi:10.2760/761437 (2019), and in Commission Implementing Decision (EU) 2019/2010 establishing the BAT conclusions for waste incineration.

Further new BAT and BREF will influence waste management. The impact of BAT and BREF on waste technologies is fundamental not only in environmental terms, but also from technical and economic perspectives. They ensure that industrial processes meet the highest standards of environmental protection while supporting innovation and competitiveness in waste management.

## 4.6 Sources of Financing and Enforcement of Measures of the WMP CR

Investments in the waste and circular economy of the CR may be financed through the appropriate use of economic instruments, including subsidy programmes (European and national funds) or private investments.

These programmes focus on financing the transition to the principles of the circular economy and on improving the application of the waste management hierarchy, waste prevention, increasing the quality of sorting and improving the usability of sorted waste in line with the priorities and hierarchy of waste management, as well as the creation and expansion of capacities for recycling and waste recovery. Financial incentives favour, and will continue to **favour, support for highly efficient and high-quality recycling and the manufacture of products with recycled content (recyclates)**. Subsidy support also focuses on financing **technologies that minimise waste generation, increase recycling and processing of secondary raw materials, innovative technologies and new approaches to waste recovery**. Research and development and environmental education in the field of waste and circular economy are also supported.

The largest sources of financing for investments in technologies are the European Structural and Investment Funds (ESIF) and the National Recovery Plan (NPO).

For an overview of sources of financing of the waste and circular economy of the CR, see the table.

*Table 93: Overview of Sources of Financing for the Development of the Waste and Circular Economy*

Operational Programmes
Operational Programme Environment 2021–2027 (OPE)
Operational Programme Technology and Applications for Competitiveness (OPTAK)
Operational Programme Just Transition 2021–2027 (OPJT)

Integrated Regional Operational Programme (IROP)
<b>Other Programmes</b>
National Recovery Plan (NPO)
Modernisation Fund
National Programme Environment (NPE)
Programme Environment for Life and Environment for Life 2
MoT programmes
EEA and Norway Grants
MoA programmes
Programme for the Support of NGO Projects
<b>Directly Managed EU Programmes</b>
Horizon Europe
LIFE
Single Market Programme
Innovation Fund
<b>National and International Cooperation Programmes</b>
Interreg – European Territorial Cooperation Programmes
Interreg Central Europe
Europe Interreg
<b>Other Sources of Financing</b>

### **Operational Programme Environment 2021–2027 (OPE)**

The Operational Programme Environment (OPE) has long been the main subsidy programme supporting the development of the waste and circular economy of the CR. In the programming period 2021–2027, the circular economy is addressed under Specific Objective (SO) 1.5 Support for the Transition to a Resource-Efficient Circular Economy.

#### **SO 1.5 – Support for the Transition to a Resource-Efficient Circular Economy**

Within the programme and SO 1.5, the entire area of waste and circular economy is supported. The priority is to support activities leading to the development of waste and circular economy infrastructure, the fulfilment of the objectives of the WMP CR, commitments towards the EU, and the improvement of the application of the waste management hierarchy.

In the area of **waste prevention**, the following activities are supported:

- Acquisition of composters for the prevention of municipal waste generation;
- Development of re-use centres for the re-use of products, including activities for the repair and extension of product lifespan;
- Development of food bank infrastructure;
- Support for the prevention of waste generation from single-use tableware or single-use packaging.
- In the area of waste recovery, the following activities are supported:

- Construction and modernisation of collection yards, systems for separate collection and waste transport;
- Support for sorting and re-sorting systems (including treatment) for the separation of other wastes;
- Development of facilities for the treatment and processing of sewage sludge from wastewater treatment plants;
- Construction and modernisation of facilities for material recovery of waste;
- Construction and modernisation of facilities for energy recovery of waste;
- Development and modernisation of facilities for chemical recycling of waste;
- Development and modernisation of facilities for the collection and management of hazardous waste.

### **Operational Programme Technology and Applications for Competitiveness 2021–2027 (OPTAK)**

The area of the circular economy with a primary focus on business entities is supported by the Ministry of Industry and Trade within OPTAK.

## **SO 5.2 – Support for the Transition to a Resource-Efficient Circular Economy**

Supported activities:

- Acquisition of innovative technologies for the recovery, processing and utilisation of secondary raw materials from end-of-life products and materials, and for the manufacture of products containing secondary raw materials;
- Support for innovative technologies for the recovery and processing of secondary raw materials (e.g. by-products, non-waste materials, non-conforming products and others);
- Investments in innovative technologies enabling new or higher utilisation of secondary raw materials as substitutes for primary resources;
- Investment in innovative technologies to reduce the material intensity of production and to replace primary input raw materials with secondary raw materials;
- Optimisation of the material eco-design of products in order to facilitate recycling and reuse;
- Projects and implementation of industrial symbiosis;
- Improvement of material recycling of waste and its re-use;
- Emphasis on the re-closing of material cycles, particularly through the support of material recycling;
- Introduction of product material eco-design (support for innovative production technologies applying remanufacturing).

### **Operational Programme Just Transition 2021–2027 (OPJT)**

The OPJT addresses the negative impacts of the coal phase-out in the most affected regions of the CR, namely Karlovy Vary, Ústí nad Labem and Moravian-Silesian Regions. In the field of the circular economy, innovative projects aimed at sorting, re-sorting, treatment, material transformation, and chemical recycling of other and hazardous wastes are supported.

### **National Recovery Plan (NPO)**

#### **Component 2.7 Circular Economy, Recycling and Industrial Water**

Within Activity 2.7.1.1 Development of Recycling Infrastructure, support is provided for the increase in capacity and efficiency of the system of BDW management as a whole, primarily through the support of facilities for the treatment of biodegradable waste and the application and incorporation of compost produced from BDW treatment facilities into agricultural land.

## **Modernisation Fund**

The Modernisation Fund is an instrument financed from revenues from the sale of emission allowances, with its main objective being the modernisation of the energy sector. The Modernisation Fund is divided into separate priority programmes, within which funds are also allocated to support selected types of facilities for energy recovery of waste and the construction of biogas plants.

### **Programme No. 2 Modernisation of District Heating Systems (HEAT)**

Within the HEAT programme, projects for the reconstruction or replacement of a heat source in district heating systems with a change in fuel base or type of energy to waste-to-energy in combination with high-efficiency CHP can be supported.

### **Programme No. 5 Renewable Gaseous and Liquid Fuels (GREENGAS)**

Within this programme, projects for the construction of waste and municipal biogas plants and facilities for upgrading biogas to biomethane can be supported.

### **Programme No. 7 Community Energy (KOMUNERG)**

Within this programme, projects for the construction of community biogas plants processing community-sorted BDW, generated industrial BDW, sewage sludge from wastewater treatment plants, or agricultural by-products can be supported.

## **National Programme Environment (NPE)**

The priority of the area “**Waste, Old Burdens and Environmental Risks**” is investments focused on waste prevention, compliance with the waste management hierarchy, and minimisation of the impact of waste on human health and the environment.

### **The aim of this priority area is:**

- Compliance with the waste management hierarchy.
- Prevention of waste generation and reduction of specific waste generation.
- Maximum recovery of waste as a substitute for primary resources.
- Minimisation of the adverse effects of waste generation and waste management on human health and the environment.
- Minimisation of environmental risks (old landfills, old environmental burdens, chemical substance management, prevention of industrial accidents).
- Sustainable development of society and the transition towards a “circular economy.”

### **Programme Environment for Life and the Follow-Up Programme Environment for Life 2**

A programme of the Ministry of the Environment to support applied research and innovation in the field of environmental protection, climate protection and sustainable development. Within the programme, research projects leading to the transition to a circular economy, the efficient use of natural resources and long-term sustainability can be supported.

## **Other Sources of Financing**

The operation of waste management and possible compensation for increased costs is further financed through the use of economic instruments set out in Chap. 4.2.2.

## **Programme for the Support of NGO Projects**

This programme has long focused on supporting projects in education, training and awareness-raising in the field of waste prevention, minimisation of waste generation, waste recovery and the transition to a circular economy.

### **Extended Producer Responsibility (EPR) Systems**

Another source of financing for waste management is the costs associated with the operation of systems ensuring extended producer responsibility; this concept is described in more detail in Chap. 4.2.2.

### **Public Procurement**

The new methodology of public procurement supports the circular economy in the Czech Republic. For more detail, see Chap. 4.2.2.

### **Private Investments**

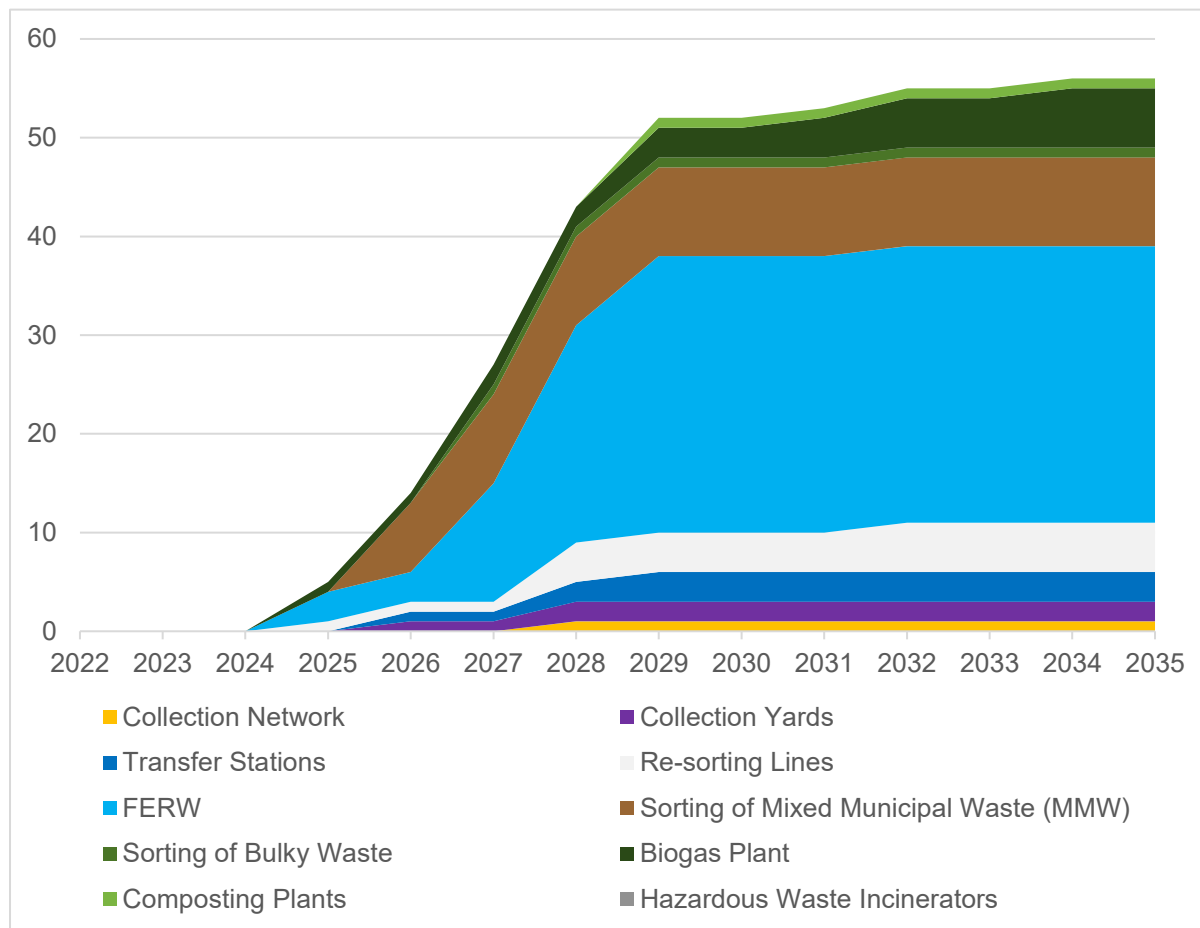
Private investments may be prompted by the need to expand the separate collection network or the need to build or modernise other technologies. Impulses for private investment include, for example, the stability of the environment, market potential and the estimated capacity gap of the collection network and waste management facilities, see the conclusions of the economic analysis. Another financing option may also be projects under public–private partnerships (PPP).

## 4.7 Proposal for the Implementation of Measures of the WMP CR

### 4.7.1 Implementation Schedule

Proper management of municipal waste will require high investments by 2035. The largest part of investments in facilities for the management of municipal waste should take place between 2026–2029. Primarily, investments should be directed to facilities where **the shortage of capacities is most serious – facilities for energy recovery of waste (FERW) and facilities for mechanical sorting of mixed municipal waste.**

Graph 71: Cumulative Required Investments in Facilities for the Management of Municipal Waste (CZK billion)



To meet the objectives of waste management, it will be necessary to invest in facility capacities. Estimates of investment costs are given in the following table.

Table 94: Estimated Range of Investment Costs for Meeting Waste Management Objectives

Technology	Minimum cost (thous. CZK/tonne of annual capacity)	Maximum cost (thous. CZK/tonne of annual capacity)	Mean cost (thous. CZK/tonne of annual capacity)*
Hazardous Waste Incinerators	55	80	68.3
Healthcare Waste Incinerators	40	70	55.0
Energy Recovery of Waste (FERW)	30	43	37.1

Technology	Minimum cost (thous. CZK/tonne of annual capacity)	Maximum cost (thous. CZK/tonne of annual capacity)	Mean cost (thous. CZK/tonne of annual capacity)*
Re-sorting Lines – Plastics	16	29	22.3
Biogas Plant	13	18	15.4
Sorting Line for Mixed Municipal Waste	4	14	9.1
Re-sorting Lines – Paper	4	12	9.0
De-emulsification and Neutralisation	10.0	11.5	10.8
Composting Plants	3	4	3.2
Hygienisation	2	3.0	2.3
Transfer Stations	2	4	2.7
Production of Solid Recovered Fuel (SRF)	2	3	2.5
Treatment and Sorting of Bulky Waste	2	3	2.5
Biodegradation	0.5	1	0.7
Stabilisation Lines	0.4	0.7	0.5
Processing of Construction and Demolition Waste	0.2	0.4	0.3
Glass Recycling	1	3	1.5
Metal Recycling	6	8	6.7
Textile Recycling	10	20	15.0
Mechanical Plastics Recycling	10	22	15.0
Paper Recycling:	40	60	45.0

Source: own processing

Based on the analysis of investments, costs and capacities of individual facilities, a weighted average for individual facilities was determined, from which the average value was derived. This is an expert estimate based on knowledge of the sector.

All newly constructed waste treatment facilities should meet the criteria of Best Available Techniques (BAT) and the Reference Document on Best Available Techniques (BREF).

BAT (Best Available Techniques) represent standardised procedures and technologies considered to be the most effective in terms of environmental protection, while being technically and economically feasible. BREF (BAT Reference Documents) serve as reference materials that describe specific BAT for individual industrial sectors and processes. They have positive impacts:

### 1) Improved Environmental Performance

- The implementation of BAT ensures that waste treatment technologies minimise emissions of harmful substances (e.g. nitrogen oxides, heavy metals, greenhouse gases).
- They include the efficient use of raw materials and energy, thereby contributing to reducing the ecological footprint of waste processes.

### 2) Harmonisation of Technical and Environmental Standards

- BAT and BREF provide uniform standards valid throughout the EU, thereby supporting transparency and predictability of regulations in the field of waste management.
- They contribute to the elimination of obsolete and inefficient technologies.

### 3) Strengthening Economic Efficiency

- The application of BAT may lead to reduced costs associated with energy, materials or emissions thanks to higher process efficiency.
- Investments in upgrading equipment often bring long-term economic benefits.

### 4) Ensuring Compliance with Legislation

- BAT and BREF are part of the Industrial Emissions Directive (IED, 2010/75/EU), which requires that waste management facilities comply with emission limits based on BAT.
- An indirect impact is increased pressure on the modernisation of facilities and operations that would otherwise not meet the requirements.

### 5) Support for Innovation and Research

- BAT and BREF support the development of new technologies by setting standards that motivate the search for innovative solutions.
- They significantly influence the design and implementation of new waste technologies for recycling, energy recovery of waste, or recycling and recovery of critical raw materials.

### 6) Minimisation of Risks to Health and the Environment

- Thanks to clear rules on emission control, the management of hazardous waste or wastewater treatment, BAT contribute to the protection of public health and the environment.
- They bring about higher-quality waste management, management of by-products, and minimise the risks of soil, water and air contamination.

The impact of BAT and BREF on waste technologies is fundamental not only in environmental terms, but also from technical and economic perspectives. They ensure that industrial processes meet the highest standards of environmental protection while supporting innovation and competitiveness in waste management.

## 4.7.2 Responsibility for the Implementation of the WMP CR and Its Measures

The Ministry of the Environment, municipalities and waste holders continuously monitor the creation of conditions for waste prevention and waste management. They also monitor the fulfilment of the objectives, principles and measures set out in the Waste Management Plan of the Czech Republic (WMP CR).

### Responsibility for the Implementation of the WMP CR

In the CR, responsibilities, enforcement and support mechanisms for achieving the objectives of the WMP CR, and in particular for fulfilling the municipal waste objectives, are clearly established and defined. The responsible institutions are:

- **Government of the Czech Republic;**
- **Ministry of the Environment (MoE) of the CR;**
- **municipalities of the CR in cooperation with the Regions of the CR;**

- **producers and extended producer responsibility organisations** (end-of-life products and packaging);
- **other waste holders.**

Since the entry into force of the Waste Act, individual municipalities of the CR have been responsible for meeting the separate collection targets. Failure to comply with this obligation may be sanctioned by the control authorities of the CR.

### **Public Administration**

Public administration in the field of waste management is exercised by:

- Ministry of the Environment,
- Ministry of Industry and Trade,
- Ministry of Agriculture,
- Ministry of Health,
- Central Institute for Supervising and Testing in Agriculture (CISTA),
- Regional Public Health Authorities (RPHA),
- Customs Offices and the General Directorate of Customs,
- Police of the Czech Republic,
- Regional Authorities,
- Municipalities with Extended Competence (MEC),
- Municipal Authorities,
- Military District Offices,
- State Environmental Fund (SEF).

The duties and powers of all these authorities exercising public administration in the field of waste management are laid down in Act No. 541/2020 Sb., on Waste. If the process of implementing the measures of the Waste Management Plan relates to any of these authorities, such authority must act within the scope of its competences established by law.

### **Ministry of the Environment**

Within the evaluation of the Waste Management Plan of the Czech Republic (WMP CR), the Ministry evaluates the waste management system in the territory of the Czech Republic, the management of municipal waste, mixed municipal waste, biodegradable waste, packaging waste, hazardous and other waste, construction waste, end-of-life products and other wastes. It also evaluates the system of separate collection of waste and the management of materially recoverable components. As part of the evaluation, the capacity possibilities of the waste management system and end-of-life products are assessed, and measures for its improvement are proposed. In addition to the overall evaluation of the fulfilment of the objectives and measures of the WMP CR, the Ministry also evaluates the network of facilities for waste management and, in general, waste management in the territory of the Czech Republic, as well as evaluating the waste management instruments and the fulfilment of the objectives and measures of the Waste Prevention Programme.

The Ministry uses all available instruments and means to achieve the objectives and measures set out in the WMP CR. Every two years the Ministry prepares a report on the state of fulfilment of the WMP CR, always for the past two-year period by 31 December of the given year. On the basis of this report, the Ministry proposes measures to support the fulfilment of the WMP CR.

The CR must, in accordance with Art. 29 of the Waste Directive, prepare Waste Prevention Programmes with a view to decoupling economic growth from the environmental impacts associated with waste

generation and evaluate them at least once every six years. In accordance with the Waste Act, the Waste Prevention Programme will be evaluated together with the WMP CR.

### **Regions**

The Regions continuously evaluate the waste management system for municipal waste, mixed municipal waste, biodegradable waste, packaging waste, hazardous and other waste, construction waste and end-of-life products in their territory. They also evaluate the system of separate collection of waste and the management of materially recoverable components. As part of the evaluation, the capacity possibilities of the waste management system and end-of-life products are assessed, and measures for its improvement are, where appropriate, proposed. As part of the evaluation of the Regional Waste Management Plan, the network of facilities for waste management in the territory of the Region is evaluated. The Regions also evaluate the fulfilment of the objectives and measures of the entire Regional Waste Management Plan, as well as of the Waste Prevention Programme, which forms part of the Regional Waste Management Plan.

The Regions use all available instruments and means to ensure the fulfilment of the Regional Waste Management Plan. Every two years, the Region prepares a report on the state of fulfilment of the Regional Waste Management Plan, always for the past two-year period by 15 November of the given year. On the basis of this report, the Region proposes further measures to support the fulfilment of the Regional Waste Management Plan.

### **Municipalities**

The Municipalities continuously evaluate the municipal system for the management of municipal waste, including the packaging component, the management of mixed municipal waste, and they also evaluate the system of separate collection of recoverable components of municipal waste (sorted collection), the system of BDW management, the system of construction waste management and the management of end-of-life products originating from the inhabitants of the municipality and the participating entities. As part of the evaluation, they assess the capacity possibilities of the municipal waste management system and end-of-life products and propose measures for its improvement. The Municipalities also evaluate the fulfilment of the objectives and measures for waste prevention, while respecting the hierarchically higher waste management plans.

### **Waste Management Council**

The Waste Management Council is an interdepartmental body of the Minister of the Environment, which is responsible for planning the coordination of waste management at the national level. Furthermore, the Council coordinates the evaluation of the state of waste management with a focus on the fulfilment of the measures falling within the competence of other ministries. As an advisory body to the Minister, it discusses the proposed measures to support the fulfilment of the Waste Management Plan of the Czech Republic (WMP CR) and submits proposals for its update.

### **Private Sector**

The duties of natural persons, self-employed natural persons or legal persons are set out in the relevant provisions of Act No. 541/2020 Sb., on Waste. The aforementioned persons are obliged in the field of waste management to comply with statutory obligations, municipal ordinances and other legal instruments issued by the State, Region or Municipality for the purpose of fulfilling the measures of the WMP CR.

## Annex No. 1 – Objectives of the WMP CR

### 4.7.2.1 Objectives of the WMP CR

Table 95: Objectives of the WMP CR arising from the currently applicable legislation (and, at the time of preparation, the EU legislation already being finalised and nearly in force)

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)
<b>Strategic Objectives</b>		
S1	Prevention of waste generation and reduction of specific waste generation.	Description
S2	Minimisation of the adverse effects of waste generation and waste management on human health and the environment.	Description
S3	Sustainable development of society and transition to a circular economy.	Description
S4	Maximum recovery of waste as a substitute for primary resources.	Description
<b>Targets for waste streams</b>		
<b>Municipal Waste</b>		
1. 1.	Increase the level of preparation for re-use and recycling of municipal waste to at least <b>2025 – 55% / 2030 – 60% / 2035 – 65%</b> .	
1. 2.	By <b>2035</b> , to reduce the amount of municipal waste <b>landfilled to 10%</b> (by weight) or less of the total amount of municipal waste generated.	
<b>Mixed Municipal Waste</b>		
1.1.1.	To reduce the generation of mixed municipal waste per capita.	
1.1.2.	Mixed Municipal Waste (after the separation of recyclable and recoverable fractions, hazardous fractions, and biodegradable waste) to be utilised primarily for energy recovery.	Description
<b>Biodegradable waste</b>		
2. 1.	To reduce the amount of biodegradable municipal waste landfilled (from 2021 onwards).	
2. 2.	Increase the use of compost and digestate on agricultural land.	Description
2. 3.	Increase the separation of biodegradable waste, particularly kitchen waste from households.	
2. 4.	Increase the utilisation of biodegradable waste through composting and anaerobic digestion.	
<b>Animal By-products and Biodegradable Waste from Kitchens and Catering Establishments</b>		
2.1.1.	To reduce the amount of biodegradable waste from kitchens and catering establishments and animal by-products in mixed municipal waste originating from households, public catering facilities (restaurants, fast-food outlets) and central kitchens (hospital, school canteens and distribution facilities, and other similar establishments).	
2.1.2.	Increase separation and ensure proper management of biodegradable waste from kitchens and catering facilities and animal by-products, thereby reducing the negative impacts associated with their management on human health and the environment.	
2.1.3.	Increase the recovery of biodegradable waste from kitchens and catering	

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)
	facilities and animal by-products through anaerobic digestion.	
<b>Food Waste</b>		
3. 1.	Prevent food waste generation and reduce food waste generation in primary production, processing, distribution and consumption of food.	Description
3. 2.	By the end of <b>2030</b> , reduce the production of food waste by <b>10%</b> in processing and production compared to the average annual amount produced in 2021-2023.	
3. 3.	By the end of <b>2030</b> , reduce per capita food waste generation jointly in retail and other forms of food distribution, in restaurants and catering services, and in households by <b>30%</b> compared to the average annual amount generated in the years 2021–2023.	
<b>Construction and Demolition Waste</b>		
5. 1.	Increase the recycling rate of construction and demolition waste to <b>83%</b> by <b>2030</b> (excluding soil, stones, and spoil).	
5. 2.	Increase the recycling rate of construction and demolition waste to <b>87%</b> by <b>2035</b> (excluding soil, stones, and spoil).	
<b>Hazardous Waste</b>		
9. 1	To reduce the specific generation of hazardous waste.	
9. 2	To minimise the negative impacts of hazardous waste management on human health and the environment.	Description
9. 3	Remove old environmental burdens with the highest degree of urgency.	Description

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)																	
<b>End– Life Products – Waste Products</b>																			
<b>End-of-Life Vehicles</b>																			
1.1.10.	Increase the rate of recovery of critical raw materials contained in end-of-life vehicles.																		
2.1.10.	<p>Achieve a high level of recovery in the treatment of end-of-life vehicles. Achieve the rate of reuse, recycling, and recovery in the treatment of selected end-of-life vehicles according to the following table.</p> <table border="1"> <thead> <tr> <th colspan="2">End-of-life vehicle management</th> </tr> </thead> <tbody> <tr> <td>Reuse and recovery</td> <td>95%</td> </tr> <tr> <td>Reuse and recycling</td> <td>85%</td> </tr> </tbody> </table>	End-of-life vehicle management		Reuse and recovery	95%	Reuse and recycling	85%												
End-of-life vehicle management																			
Reuse and recovery	95%																		
Reuse and recycling	85%																		
<b>Waste Batteries</b>																			
10.2.1.	Achieve the collection target for waste portable batteries at a level of at least 45 %, 63 % by the end of 2027, and 73 % by the end of 2030.																		
10.2.2.	Achieve the collection target for waste batteries from light means of transport at a level of 51 % by the end of 2028 and 61 % by the end of 2031.																		
10.2.3.	Increase the rate of recovery of critical raw materials contained in waste batteries.	Description																	
10.2.4.	Ensure recycling and financing of “old environmental burdens” from industrial batteries.	Description																	
10.2.5.	<p>Increase the level of take-back of waste portable batteries. Achieve take-back of waste portable batteries at a minimum level according to the following table.</p> <table border="1"> <thead> <tr> <th>Portable batteries</th> <th>By 31. 12. 2027</th> <th>By 31. 12. 2030</th> </tr> </thead> <tbody> <tr> <td>Collection (%)</td> <td>63%</td> <td>73%</td> </tr> </tbody> </table>	Portable batteries	By 31. 12. 2027	By 31. 12. 2030	Collection (%)	63%	73%												
Portable batteries	By 31. 12. 2027	By 31. 12. 2030																	
Collection (%)	63%	73%																	
10.2.6.	<p>Achieve high recycling efficiency of waste battery recycling processes. Achieve minimum recycling efficiency of waste battery recycling processes for groups of waste batteries according to the following table.</p> <table border="1"> <thead> <tr> <th rowspan="2">Battery group</th> <th colspan="2">Recycling efficiency (% by weight)</th> </tr> <tr> <th>By 31. 12. 2025</th> <th>By 31. 12. 2030</th> </tr> </thead> <tbody> <tr> <td>Lead batteries</td> <td>75</td> <td>80</td> </tr> <tr> <td>Lithium batteries</td> <td>65</td> <td>70</td> </tr> <tr> <td>Nickel-cadmium batteries</td> <td>80</td> <td>-</td> </tr> <tr> <td>Other waste batteries</td> <td>50</td> <td>-</td> </tr> </tbody> </table>	Battery group	Recycling efficiency (% by weight)		By 31. 12. 2025	By 31. 12. 2030	Lead batteries	75	80	Lithium batteries	65	70	Nickel-cadmium batteries	80	-	Other waste batteries	50	-	
Battery group	Recycling efficiency (% by weight)																		
	By 31. 12. 2025	By 31. 12. 2030																	
Lead batteries	75	80																	
Lithium batteries	65	70																	
Nickel-cadmium batteries	80	-																	
Other waste batteries	50	-																	

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)																				
10.2.7.	<p>Achieve by 18 August 2031 in the active materials of industrial batteries with a capacity greater than 2 kWh minimum shares of cobalt, lithium, and nickel from battery manufacturing or consumer waste and a minimum share of lead present in the battery and recovered through waste recovery, for each battery model per year and per production plant according to the following table.</p> <table border="1"> <thead> <tr> <th rowspan="2">Specimen</th> <th colspan="2">Minimum percentage of material recovered from waste (%)</th> </tr> <tr> <th>From 18. 8. 2031</th> <th>From 18. 8. 2036</th> </tr> </thead> <tbody> <tr> <td>Cobalt</td> <td>16</td> <td>26</td> </tr> <tr> <td>Lead</td> <td>85</td> <td>85</td> </tr> <tr> <td>Lithium</td> <td>6</td> <td>12</td> </tr> <tr> <td>Nickel</td> <td>6</td> <td>15</td> </tr> </tbody> </table>	Specimen	Minimum percentage of material recovered from waste (%)		From 18. 8. 2031	From 18. 8. 2036	Cobalt	16	26	Lead	85	85	Lithium	6	12	Nickel	6	15				
Specimen	Minimum percentage of material recovered from waste (%)																					
	From 18. 8. 2031	From 18. 8. 2036																				
Cobalt	16	26																				
Lead	85	85																				
Lithium	6	12																				
Nickel	6	15																				
10.2.8.	<p>Achieve the recycling efficiency of selected batteries by materials by the end of 2025 and subsequently 2030 (see the table).</p> <table border="1"> <thead> <tr> <th rowspan="2">Battery group</th> <th colspan="2">Recycling efficiency (% by weight)</th> </tr> <tr> <th>By 31. 12. 2025</th> <th>By 31. 12. 2030</th> </tr> </thead> <tbody> <tr> <td>Lead batteries</td> <td>75</td> <td>80</td> </tr> <tr> <td>Lithium batteries</td> <td>65</td> <td>70</td> </tr> <tr> <td>Nickel-cadmium batteries</td> <td>80</td> <td>-</td> </tr> <tr> <td>Other waste batteries</td> <td>50</td> <td>-</td> </tr> </tbody> </table>	Battery group	Recycling efficiency (% by weight)		By 31. 12. 2025	By 31. 12. 2030	Lead batteries	75	80	Lithium batteries	65	70	Nickel-cadmium batteries	80	-	Other waste batteries	50	-				
Battery group	Recycling efficiency (% by weight)																					
	By 31. 12. 2025	By 31. 12. 2030																				
Lead batteries	75	80																				
Lithium batteries	65	70																				
Nickel-cadmium batteries	80	-																				
Other waste batteries	50	-																				
10.2.9.	<p>Achieve material recovery of selected materials by 2027 and subsequently by 2031 (see table).</p> <table border="1"> <thead> <tr> <th rowspan="2">Specimen</th> <th colspan="2">Material recovery target (%)</th> </tr> <tr> <th>By 31. 12. 2027</th> <th>By 31. 12. 2031</th> </tr> </thead> <tbody> <tr> <td>Cobalt</td> <td>90</td> <td>95</td> </tr> <tr> <td>Copper</td> <td>90</td> <td>95</td> </tr> <tr> <td>Lead</td> <td>90</td> <td>95</td> </tr> <tr> <td>Lithium</td> <td>50</td> <td>80</td> </tr> <tr> <td>Nickel</td> <td>90</td> <td>95</td> </tr> </tbody> </table>	Specimen	Material recovery target (%)		By 31. 12. 2027	By 31. 12. 2031	Cobalt	90	95	Copper	90	95	Lead	90	95	Lithium	50	80	Nickel	90	95	
Specimen	Material recovery target (%)																					
	By 31. 12. 2027	By 31. 12. 2031																				
Cobalt	90	95																				
Copper	90	95																				
Lead	90	95																				
Lithium	50	80																				
Nickel	90	95																				
<b>Waste Tyres</b>																						
10.3.1.	<p>Increase the level of take-back of waste tyres. Achieve annual take-back of waste tyres of at least 80 %.</p>																					
10.3.2.	<p>Achieve a high level of recovery in the treatment of waste tyres. Achieve annual recovery of waste tyres of 100 %.</p>																					
10.3.3.	<p>Achieve annual recycling and preparation for reuse of waste tyres of at least 30 %.</p>																					
<b>Waste Electrical and Electronic Equipment (WEEE)</b>																						
10.4.1.	<p>Achieve take-back of waste electrical and electronic equipment at a level of 65 % (from 2025 onwards).</p>																					

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)																					
10.4.2.	<p>Ensure a high level of preparation for reuse, recycling, and recovery of waste electrical and electronic equipment. Achieve preparation for reuse, recycling, and recovery of waste electrical and electronic equipment as set out in the table (from 2025 onwards).</p> <table border="1"> <thead> <tr> <th>Group of electrical and electronic equipment</th> <th>Group of electrical and electronic equipment</th> <th>Recycling and preparation for reuse</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>85</td> <td>80</td> </tr> <tr> <td>2</td> <td>80</td> <td>70</td> </tr> <tr> <td>3</td> <td>-</td> <td>80</td> </tr> <tr> <td>4</td> <td>85</td> <td>80</td> </tr> <tr> <td>5</td> <td>75</td> <td>55</td> </tr> <tr> <td>6</td> <td>75</td> <td>55</td> </tr> </tbody> </table>	Group of electrical and electronic equipment	Group of electrical and electronic equipment	Recycling and preparation for reuse	1	85	80	2	80	70	3	-	80	4	85	80	5	75	55	6	75	55	
Group of electrical and electronic equipment	Group of electrical and electronic equipment	Recycling and preparation for reuse																					
1	85	80																					
2	80	70																					
3	-	80																					
4	85	80																					
5	75	55																					
6	75	55																					
10.4.3.	<p>Increase the rate of recovery of critical raw materials contained in electrical and electronic equipment.</p>																						
<b>Packaging And Packaging Waste</b>																							
11. 1.	<p>Increase overall packaging recycling to a level of 75 % by 2025 and maintain or further increase it in subsequent years.</p>																						
11. 2.	<p>Ensure, from 2025 to 2028, the take-back of 77 % by weight of single-use plastic beverage bottles placed on the market in the given calendar year.</p>																						
11. 3.	<p>Ensure, from 2029 onwards, the take-back of 90 % of single-use plastic beverage bottles placed on the market in the given calendar year.</p>																						
11. 4.	<p>Ensure a minimum recycled content of 25 % in PET beverage bottles from 2025.</p>																						
11. 5.	<p>Ensure a minimum recycled content of 30 % in plastic beverage bottles from 2030.</p>																						
11. 6.	<p>Ensure that beverage containers with caps and lids made of plastic are placed on the market only in such a way that the caps and lids remain attached to the container during the intended use phase of the products.</p>																						

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)																																
11. 7.	<p>Achieve, from 2025 onwards, the recycling targets for individual materials set out in the following table.</p> <table border="1"> <thead> <tr> <th>Packaging Waste (%)</th> <th>from 1. 1. 2025 to 31. 12. 2029</th> <th>from 1. 1. 2030 to 31. 12. 2034</th> <th>from 1. 1. 2035</th> </tr> </thead> <tbody> <tr> <td>Paper and cardboard</td> <td>75</td> <td>85</td> <td>85</td> </tr> <tr> <td>Glass</td> <td>75</td> <td>75</td> <td>75</td> </tr> <tr> <td>Plastics</td> <td>50</td> <td>55</td> <td>55</td> </tr> <tr> <td>Ferrous metals</td> <td>70</td> <td>80</td> <td>80</td> </tr> <tr> <td>Aluminium</td> <td>35</td> <td>50</td> <td>60</td> </tr> <tr> <td>Wooden</td> <td>25</td> <td>30</td> <td>30</td> </tr> <tr> <td>Sales packaging intended for consumers</td> <td>50</td> <td>50</td> <td>50</td> </tr> </tbody> </table>	Packaging Waste (%)	from 1. 1. 2025 to 31. 12. 2029	from 1. 1. 2030 to 31. 12. 2034	from 1. 1. 2035	Paper and cardboard	75	85	85	Glass	75	75	75	Plastics	50	55	55	Ferrous metals	70	80	80	Aluminium	35	50	60	Wooden	25	30	30	Sales packaging intended for consumers	50	50	50	
Packaging Waste (%)	from 1. 1. 2025 to 31. 12. 2029	from 1. 1. 2030 to 31. 12. 2034	from 1. 1. 2035																															
Paper and cardboard	75	85	85																															
Glass	75	75	75																															
Plastics	50	55	55																															
Ferrous metals	70	80	80																															
Aluminium	35	50	60																															
Wooden	25	30	30																															
Sales packaging intended for consumers	50	50	50																															
11. 8.	<p>By 1 January 2030 or three years from the date of entry into force of the implementing act (to EU Regulation 2025/40), all plastic parts of packaging placed on the market in the given calendar year must contain the following minimum percentages of recycled material obtained from post-consumer plastic waste, according to the type of packaging and packaging format, as set out below:</p> <p>a. 30 % for contact-sensitive packaging, excluding single-use plastic beverage bottles, made predominantly of polyethylene terephthalate (PET);</p> <p>b. 10 % for contact-sensitive packaging made of plastic materials other than PET, excluding single-use plastic beverage bottles;</p> <p>c. 30 % for single-use plastic bottles;</p> <p>d. 35 % for packaging other than those referred to in points a), b), and c).</p>																																	
11. 9.	<p>By 1 January 2040 all plastic parts of packaging placed on the market in the given calendar year must contain the following minimum percentages of recycled material obtained from post-consumer plastic waste, according to the type of packaging and packaging format, as set out below:</p> <p>a. 50 % for plastic contact-sensitive packaging, excluding single-use plastic beverage bottles, made predominantly of polyethylene terephthalate (PET);</p> <p>b. 25 % for contact-sensitive packaging, excluding single-use plastic beverage bottles, made of plastic materials other than PET;</p> <p>c. 65 % for single-use plastic beverage bottles;</p> <p>d. 65 % for other plastic packaging than those referred to in points a), b), and c).</p>																																	
11:10:00	<p>By 1 January 2030 or three years from the date of entry into force of the implementing act (to EU Regulation 2025/40), ensure that the proportion of empty space in grouped, transport packaging, or e-commerce packaging does not exceed 50 %.</p>	Description																																
11:11	<p>From 1 January 2030, economic operators using transport packaging or sales packaging for the transport of products, including products distributed through e-commerce, shall ensure that at least 40 % of all such packaging is reusable within a reuse system.</p>																																	
11:12	<p>From 1 January 2040, economic operators shall use at least 70 % of the</p>																																	

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)
	packaging referred to in point k) in a reusable format within a reuse system.	
11:13	From 1 January 2030, economic operators using grouped packaging in the form of boxes, other than cardboard, which, in addition to sales packaging, are used to group a certain number of products into a storage or distribution unit, shall ensure that at least 10 % of such packaging is reusable within a reuse system.	
11:14	From 1 January 2040, economic operators shall use at least 25 % of the packaging referred to in point m) in a reusable format within a reuse system.	
11:15	From 1 January 2030, final distributors supplying consumers with alcoholic and non-alcoholic beverages in sales packaging shall ensure that at least 10 % of these products are supplied in reusable packaging within a reuse system.	
11:16	From 1 January 2040, economic operators shall supply at least 40 % of the products referred to in point o) in reusable packaging within a reuse system.	
11:17	By 12 February 2028, final distributors operating in the accommodation, catering, and hospitality sector, who supply hot or cold drinks or prepared meals in takeaway packaging, shall provide consumers with the option of receiving these products in reusable packaging within a reuse system.	Description
11:18	From 2030, final distributors operating in the accommodation, catering, and hospitality sector, who supply hot or cold drinks or prepared meals in takeaway packaging, shall endeavour to offer 10 % of products in a reusable packaging format.	Description
11:19	Reduce the consumption of lightweight plastic carrier bags so that annual consumption as of 31 December of the given year does not exceed 40 lightweight plastic carrier bags per capita.	
11:20	Reduce the quantity of packaging waste generated per capita compared to the quantity of such waste generated per capita in 2018 by at least a. 5% by 2030; b. 10% by 2035; c. 15% by 2040.	
11:21	By 1 January 2029, ensure the separate collection of 90 % by weight of single-use plastic beverage bottles with a volume of up to 3 litres and single-use metal beverage containers with a volume of up to 3 litres first placed on the market in the relevant calendar year.	
11:22	By the end of 2025, ensure the recycling of at least 65 % by weight of all packaging waste generated, with the minimum weight shares of selected specific materials contained in the packaging waste generated being: a. 50% for plastics; b. 25% for wood; c. 70% for ferrous metals; d. 50% for aluminium; e. 70% for glass; f. 75% for paper and cardboard.	
11:23	By the end of 2030, ensure the recycling of at least 70 % by weight of all packaging waste generated, with the minimum weight shares of selected specific materials contained in the packaging waste generated being:	

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)
	a. 55% for plastics; b. 30% for wood; c. 80% for ferrous metals; d. 60% for aluminium; e. 75% for glass; f. 85% for paper and cardboard.	
11:24	Achieve, in 2030, a take-back rate of packaging waste from beverage cartons of at least 60 % by weight of such packaging.	
<b>Single-Use Plastic Products</b>		
12. 1.	Reduce the placing on the market (consumption) of selected single-use plastic products compared with 2023.	Description
12. 2.	Limit the disposal of single-use plastic waste outside designated places.	
The objectives apply to tobacco products, wet wipes, balloons, sanitary products, beverage cups, food containers (within the meaning of Act No. 243/2022 Sb.).		
<b>Sewage Sludge from Wastewater Treatment Plants</b>		
13. 1.	Utilise sewage sludge materially with a particular focus on the recovery of phosphorus and nitrogen, apply high-quality sludge to soil, and utilise sludge energetically.	
13. 2.	Reduce the amount of hazardous substances in sewage sludge intended for application to agricultural land.	Description
<b>Waste Oils</b>		
14. 1.	Increase recycling and energy recovery of waste oils.	
<b>Healthcare and Veterinary Care Waste</b>		
15. 1.	Minimise negative impacts of healthcare and veterinary care waste management on human health and the environment.	Description
15. 2.	Increase the incineration of healthcare and veterinary care waste.	
<b>Waste Containing Persistent Organic Pollutants</b>		
16. 1.	Increase awareness of persistent organic pollutants (POP), proper management of waste that is a source of POP, and their effects on human health and the environment.	Description
16. 2.	Restrict the input of persistent organic pollutants from waste into recycling.	Description
<b>Waste and Equipment Containing Polychlorinated Biphenyls (PCBs)</b>		
17. 1.	Transfer all equipment and waste containing polychlorinated biphenyls (PCB) to waste management facilities by the end of 2025 and decontaminate PCB-containing waste by that time.	Description
17. 2.	Eliminate waste containing PCB held by waste management facilities by the end of 2028.	Description
<b>Asbestos-containing waste</b>		
18. 1.	Minimise potential negative impacts of asbestos waste management on human health and the environment.	Description
<b>Material-recoverable Waste</b>		
19. 1.	Increase the efficiency of separation (rate of separate collection) of wood in	

Objective Number	OBJECTIVE OF THE WMP CR	Recommended Evaluation (numeric/descriptive)
	municipalities.	
19. 2.	By 2030 achieve a rate of preparation for re-use and recycling of wooden waste of at least 40%.	
19. 3.	By 2035 achieve a rate of preparation for re-use and recycling of wooden waste of at least 50%. (The objectives relate to municipal wooden waste.)	
19. 4.	To process metal waste and end-of-life products into materials to substitute primary raw materials.	Description
19. 5.	Increase the recycling rate of metal waste.	
<b>Textile Waste</b>		
20. 1.	By 2030 achieve a separation efficiency (rate of separate collection) of textile waste in municipalities of at least 50%.	
20. 2.	By 2035 achieve a separation efficiency (rate of separate collection) of textile waste in municipalities of at least 55%.	
20. 3.	Achieve a rate of preparation for re-use and recycling of textile waste of at least 35 % by 2030.	
20. 4.	Achieve a rate of preparation for re-use and recycling of textile waste of at least 45 % by 2035.	
<b>Objectives for Specific Areas of Waste Management</b>		
<b>Limiting the Illegal Dumping of Waste and Ensuring the Management of Waste Whose Owner Is Unknown or Has Ceased to Exist</b>		
SO1.1.	To limit the dumping of waste outside designated areas.	Description
SO1.2.	Proper management of waste disposed of outside designated places and of waste whose owner is unknown or has ceased to exist.	Description
<b>Waste from Emergencies and Crisis Situations</b>		
SO2.1.	Proper and safe management of waste from natural disasters and crisis situations.	Description
<b>Development of a Network of Waste Management Facilities</b>		
SO3.1.	Create and coordinate a comprehensive, adequate and efficient network of waste management facilities in the territory of the Czech Republic.	Description
SO3.2.	Construct facilities of major importance for waste processing.	Description
<b>Slag Waste from Facilities for Energy Recovery of Waste (FERW)</b>		
SO4.1.	Increase the level of material recovery of slag waste from the incineration of other waste, particularly municipal waste.	
<b>Principles for Decision-Making in Transboundary Shipment, Import and Export of Waste</b>		
SO5.1.	Not to endanger, as a result of the transboundary movement of waste, human health, the environment, and the fulfilment of obligations or binding objectives of the Czech Republic arising from European legislation.	Description

## Annex No. 2 Overview of Basic Key Indicators for the Evaluation of Waste Management and Waste Prevention

### Evaluation of Waste Management

National Indicators (name)	
<b>GENERATION</b>	
1.	<b>Total generation of waste</b>
2.	<b>Total generation of other waste</b>
3.	<b>Total generation of hazardous waste</b>
4.	<b>Municipal waste generation</b>
5.	Generation of municipal waste
6.	<b>Generation of mixed municipal waste</b>
7.	Generation of mixed municipal waste from municipalities
8.	Generation of bulky waste
9.	Generation of bulky waste from municipalities
10.	Generation of biodegradable waste
11.	<b>Generation of biodegradable municipal waste</b>
12.	Generation of biodegradable municipal waste from municipalities
13.	<b>Generation of biological waste</b>
14.	Generation (separation) of biological waste in municipalities
15.	<b>Generation of construction and demolition waste</b>
16.	Generation of other construction and demolition waste
17.	Generation of textile waste
18.	Generation (separation) of textile waste from municipalities
19.	Generation (separation) of wooden waste from municipalities
20.	Generation of waste oils
21.	Generation of sludge
22.	Generation of sludge 19 08 05 from wastewater treatment plants
23.	Generation of food waste
24.	Generation of secondary waste
25.	Generation of primary waste
26.	Generation of mineral waste
27.	Generation of waste excluding mineral waste
28.	Generation (separation) of paper, plastics, glass and metals in municipalities
29.	Separation efficiency of paper, plastics, glass and metals in municipalities
30.	Separation efficiency of biological waste in municipalities
31.	Separation efficiency of textile waste in municipalities
32.	Separation efficiency of wood in municipalities
<b>MANAGEMENT</b>	
29.	<b>Waste recovery</b>
30.	<b>Recovery of other waste</b>
31.	<b>Recovery of hazardous waste</b>
32.	<b>Material recovery of waste</b>
33.	<b>Material recovery of other waste</b>
34.	<b>Material recovery of hazardous waste</b>
35.	<b>Waste recycling</b>
36.	<b>Recycling of other waste</b>

37.	<b>Recycling of hazardous waste</b>
38.	<b>Energy recovery of waste</b>
39.	<b>Energy recovery of other waste</b>
40.	<b>Energy recovery of hazardous waste</b>
41.	<b>Waste disposal</b>
42.	<b>Disposal of other waste</b>
43.	<b>Disposal of hazardous waste</b>
44.	<b>Landfilling of waste</b>
45.	<b>Landfilling of other waste</b>
46.	<b>Landfilling of hazardous waste</b>
47.	<b>Waste incineration</b>
48.	<b>Incineration of other waste</b>
49.	<b>Incineration of hazardous waste</b>
50.	Total waste management Landfilling of other waste
51.	Total management of other waste
52.	Total management of hazardous waste
53.	<b>Recovery of municipal waste</b>
54.	<b>Recycling of municipal waste</b>
55.	<b>Energy recovery of municipal waste</b>
56.	<b>Disposal of municipal waste</b>
57.	<b>Landfilling of municipal waste</b>
58.	<b>Incineration of municipal waste</b>
59.	Total management of municipal waste
60.	<b>Energy recovery of mixed municipal waste</b>
61.	Disposal of mixed municipal waste
62.	<b>Landfilling of mixed municipal waste</b>
63.	Incineration of mixed municipal waste
64.	Total management of mixed municipal waste
65.	Landfilling of biodegradable municipal waste
66.	<b>Recovery of construction and demolition waste</b>
67.	<b>Material recovery of construction and demolition waste</b>
68.	<b>Recycling of construction and demolition waste</b>
69.	Energy recovery of construction and demolition waste
70.	Total management of construction and demolition waste
71.	Material recovery of other construction and demolition waste
72.	<b>Recycling of other construction and demolition waste</b>
73.	Total management of other construction and demolition waste
74.	<b>Recycling of waste oils</b>
75.	<b>Energy recovery of waste oils</b>
76.	Total management of waste oils
77.	Application of sludge on agricultural land
78.	Energy recovery of sludge
79.	Recycling, composting of sludge
80.	Total management of sludge
81.	Application of sludge 19 08 05 from wastewater treatment plants on agricultural land
82.	Total management of sludge 19 08 05 from wastewater treatment plants

Source: MoE Methodology System of Indicators

**Regional Indicators (name)**

<b>GENERATION</b>	
1.	<b>Total generation of waste</b>
2.	<b>Total generation of other waste</b>
3.	<b>Total generation of hazardous waste</b>
4.	<b>Municipal waste generation</b>
5.	Generation of municipal waste
6.	<b>Generation of mixed municipal waste</b>
7.	Generation of mixed municipal waste from municipalities
8.	Generation of bulky waste
9.	Generation of bulky waste from municipalities
10.	Generation of biodegradable waste
11.	<b>Generation of biodegradable municipal waste</b>
12.	Generation of biodegradable municipal waste from municipalities
13.	<b>Generation of biological waste</b>
14.	Generation (separation) of biological waste in municipalities
15.	<b>Generation of construction and demolition waste</b>
16.	Generation of other construction and demolition waste
17.	Generation of textile waste
18.	Generation (separation) of textile waste from municipalities
19.	Generation of waste oils
20.	Generation of sludge
21.	Generation of sludge 19 08 05 from wastewater treatment plants
22.	Generation of secondary waste
23.	Generation of primary waste
24.	Generation of mineral waste
25.	Generation of waste excluding mineral waste
26.	Generation (separation) of paper, plastics, glass and metals in municipalities
27.	Separation efficiency of paper, plastics, glass and metals in municipalities
<b>MANAGEMENT</b>	
28.	<b>Waste recovery</b>
29.	<b>Recovery of other waste</b>
30.	<b>Recovery of hazardous waste</b>
31.	<b>Material recovery of waste</b>
32.	<b>Material recovery of other waste</b>
33.	<b>Material recovery of hazardous waste</b>
34.	<b>Waste recycling</b>
35.	<b>Recycling of other waste</b>
36.	<b>Recycling of hazardous waste</b>
37.	<b>Energy recovery of waste</b>
38.	<b>Energy recovery of other waste</b>
39.	<b>Energy recovery of hazardous waste</b>
40.	<b>Waste disposal</b>
41.	<b>Disposal of other waste</b>
42.	<b>Disposal of hazardous waste</b>
43.	<b>Landfilling of waste</b>
44.	<b>Landfilling of other waste</b>
45.	<b>Landfilling of hazardous waste</b>
46.	<b>Waste incineration</b>
47.	<b>Incineration of other waste</b>
48.	<b>Incineration of hazardous waste</b>
49.	Total waste management Landfilling of other waste

50.	Total management of other waste
51.	Total management of hazardous waste
52.	<b>Recovery of municipal waste</b>
53.	<b>Recycling of municipal waste</b>
54.	<b>Energy recovery of municipal waste</b>
55.	<b>Disposal of municipal waste</b>
56.	<b>Landfilling of municipal waste</b>
57.	<b>Incineration of municipal waste</b>
58.	Total management of municipal waste
59.	<b>Energy recovery of mixed municipal waste</b>
60.	Disposal of mixed municipal waste
61.	<b>Landfilling of mixed municipal waste</b>
62.	Incineration of mixed municipal waste
63.	Total management of mixed municipal waste
64.	Landfilling of biodegradable municipal waste
65.	<b>Recovery of construction and demolition waste</b>
66.	<b>Material recovery of construction and demolition waste</b>
67.	<b>Recycling of construction and demolition waste</b>
68.	Energy recovery of construction and demolition waste
69.	Total management of construction and demolition waste
70.	Material recovery of other construction and demolition waste
71.	<b>Recycling of other construction and demolition waste</b>
72.	Total management of other construction and demolition waste
73.	<b>Recycling of waste oils</b>
74.	<b>Energy recovery of waste oils</b>
75.	Total management of waste oils
76.	Application of sludge on agricultural land
77.	Energy recovery of sludge
78.	Recycling, composting of sludge
79.	Total management of sludge
80.	Application of sludge 19 08 05 from wastewater treatment plants on agricultural land
81.	Total management of sludge 19 08 05 from wastewater treatment plants

Source: MoE Methodology System of Indicators

## Evaluation of Waste Prevention

<b>Contextual Indicators (name)</b>
Population
Material consumption (DMC)
Waste intensity of production
Material Intensity (DMC/GDP)
Turnover in sectors engaged in repair
Total GDP

<b>Indicators of System Preparedness to Support Waste Prevention (name)</b>
The WPP captures all types of measures pursuant to Directive 2008/98/EC, Article 9
The WPP sets quantified objectives
The WPP sets appropriate indicators
The PPVO employs a combination of instruments—legal, economic, administrative, informational and voluntary instruments.
The PPVO addresses all waste streams that are key to waste prevention.

<b>Waste Indicators (name)</b>
Total waste generation
Generation excluding mineral waste
Waste generation intensity
Generation of municipal waste
Generation of individual components of municipal waste
Generation of residual mixed municipal waste
Quantity of re-used selected products
Generation of food waste – breakdown by individual phases of economic activity
Generation of hazardous waste
Quantity of collected textiles including footwear and, where applicable, other selected re-usable products

Source: MoE

## EU Legal Regulations

### International Conventions

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel, 1989), promulgated under No. 6/2015 Sb. m. s.
- Stockholm Convention on Persistent Organic Pollutants (Stockholm, 2001), promulgated under No. 40/2006 Sb. m. s.
- Vienna Convention for the Protection of the Ozone Layer (Vienna, 1985), promulgated under No. 108/2003 Sb. m. s.
- Minamata Convention on Mercury (Kumamoto, 2013), promulgated under No. 53/2017 Sb. m. s.
- Convention on Long-Range Transboundary Air Pollution (Geneva, 1979), promulgated under No. 5/1985 Sb.
- European Agreement concerning the International Carriage of Dangerous Goods by Road – ADR (Geneva, 1957), promulgated under No. 64/1987 Sb., as amended.
- European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) (Geneva, 2000), promulgated under No. 102/2011 Sb. m. s.
- Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), which forms Appendix C to the Convention concerning International Carriage by Rail (COTIF), promulgated under No. 8/1985 Sb., as amended.

### Regulation

- Regulation (EU) 2024/590 of the European Parliament and of the Council on substances that deplete the ozone layer and repealing Regulation (EC) No. 1005/2009
- Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste (provisions still applicable)
- Regulation (EU) 2024/1157 of the European Parliament and of the Council of 11 April 2024 on shipments of waste, amending Regulations (EU) No. 1257/2013 and (EU) 2020/1056 and repealing Regulation (EC) No. 1013/2006
- Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No. 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020
- Regulation (EC) No. 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No. 1774/2002 (Animal By-products Regulation)
- Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006
- Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93, Commission Regulation (EC) No. 1488/94, Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (REACH Regulation)

- Regulation (EC) No. 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics
- Regulation (EU) 2017/852 of the European Parliament and of the Council on mercury and repealing Regulation (EC) No. 1102/2008
- Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants
- Regulation (EU) 2023/1542 of the European Parliament and of the Council on batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020, and repealing Directive 2006/66/EC
- Regulation (EU) No. 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No. 1013/2006 and Directive 2009/16/EC, as amended.
- Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No. 1069/2009 and (EC) No. 1107/2009 and repealing Regulation (EC) No. 2003/2003
- Regulation (EU) 2024/573 of the European Parliament and of the Council on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No. 517/2014
- Commission Regulation (EC) No. 1418/2007 of 29 November 2007 concerning the export for recovery of certain waste listed in Annex III or IIIA to Regulation (EC) No. 1013/2006 of the European Parliament and of the Council to certain countries to which the OECD Decision on the control of transboundary movements of wastes does not apply, as amended
- Commission Regulation (EC) No. 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- Commission Regulation (EU) No. 1179/2012 establishing criteria determining when copper scrap ceases to be waste within the meaning of Directive 2008/98/EC of the European Parliament and of the Council
- Commission Regulation (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.
- Commission Regulation (EU) No. 493/2012 of 11 June 2012 laying down detailed rules regarding the calculation of recycling efficiencies of recycling processes of waste batteries and accumulators in accordance with Directive 2006/66/EC of the European Parliament and of the Council
- Commission Regulation (EU) No. 715/2013 establishing criteria determining when copper scrap ceases to be waste within the meaning of Directive 2008/98/EC of the European Parliament and of the Council
- Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex III to Directive 2008/98/EC of the European Parliament and of the Council as regards the hazardous property HP 14 'Ecotoxic'
- Council Regulation (EU) No. 333/2011 establishing criteria determining when certain types of scrap metal cease to be waste within the meaning of Directive 2008/98/EC of the European Parliament and of the Council
- Commission Implementing Regulation (EU) 2019/290 of 19 February 2019 laying down the format for registration and reporting by producers of electrical and electronic equipment to the register
- Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904 and repealing Directive 94/62/EC

- Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for setting eco-design requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542, and repealing Directive 2009/125/EC
- Proposal for a Regulation on circularity requirements for vehicle design and on the management of end-of-life vehicles (ELV), amending Regulations (EU) 2018/858 and 2019/1020 and repealing Directives 2000/53/EC and 2005/64/EC (July 2023)

## **Directives**

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
- Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources
- Directive (EU) 2018/849 of the European Parliament and of the Council of 30 May 2018 amending Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment
- Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste
- Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste
- Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste
- 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
- Directive 2000/53/EC of the European Parliament and of the Council on end-of-life vehicles
- Directive 2005/64/EC of the European Parliament and of the Council of 26 October 2005 on the type-approval of motor vehicles with regard to their reusability, recyclability and recoverability and amending Council Directive 70/156/EEC
- Directive 2006/21/EC of the European Parliament and of the Council on the management of waste from extractive industries and amending Directive 2004/35/EC
- Directive 2006/66/EC of the European Parliament and of the Council on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC
- Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of eco-design requirements for energy-related products
- Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (Integrated Pollution Prevention and Control)
- Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- Directive 2012/19/EU of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE)
- Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags
- Directive 94/62/EC of the European Parliament and of the Council on packaging and packaging waste
- Council Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture
- Council Directive 87/217/EEC on the prevention and reduction of environmental pollution by asbestos

- Council Directive 91/271/EEC concerning urban waste-water treatment
- Council Directive 96/59/EC on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT).
- Proposal for a Directive of the European Parliament and of the Council amending Directive 2008/98/EC on waste

## National Legal Regulations

### Acts

- Act No. 17/1992 Sb., on the Environment, as amended
- Act No. 22/1997 Sb., on Technical Requirements for Products and on Amendments to Certain Acts, as amended
- Act No. 25/2008 Sb., on the Integrated Environmental Pollution Register and the Integrated System of Reporting Duties in the Field of the Environment and on Amendments to Certain Acts, as amended
- Act No. 44/1988 Sb., on the Protection and Utilisation of Mineral Resources (Mining Act), as amended
- Act No. 56/2001 Sb., on the Conditions of Operation of Vehicles on Roads, as amended
- Act No. 73/2012 Sb., on Substances that Deplete the Ozone Layer and on Fluorinated Greenhouse Gases, as amended
- Act No. 76/2002 Sb., on Integrated Pollution Prevention and Control, on the Integrated Pollution Register and on Amendments to Certain Acts (Integrated Prevention Act), as amended
- Act No. 88/2021 Sb., amending Act No. 44/1988 Sb., on the Protection and Utilisation of Mineral Resources (Mining Act), as amended, and Certain Related Acts, as amended
- Act No. 90/2016 Sb., on the Conformity Assessment of Specified Products when Placed on the Market, as amended
- Act No. 100/2001 Sb., on Environmental Impact Assessment and on Amendments to Certain Related Acts (Environmental Impact Assessment Act), as amended
- Act No. 110/1997 Sb., on Foodstuffs and Tobacco Products and on Amendments to Certain Related Acts, as amended
- Act No. 114/1992 Sb., of the Czech National Council, on the Protection of Nature and the Landscape, as amended
- Act No. 156/1998 Sb., on Fertilisers, Auxiliary Soil Substances, Plant Bio stimulants and Substrates and on Agrochemical Testing of Agricultural Soils (Fertilisers Act), as amended
- Act No. 157/2009 Sb., on the Management of Extractive Waste and on Amendments to Certain Acts, as amended
- Act No. 201/2012 Sb., on Air Protection, as amended
- Act No. 243/2022 Sb., on the Reduction of the Environmental Impact of Certain Plastic Products, as amended
- Act No. 244/2022 Sb., amending Certain Acts in Connection with the Adoption of the Act on the Reduction of the Environmental Impact of Certain Plastic Products, as amended
- Act No. 254/2001 Sb., on Waters and on Amendments to Certain Acts (Water Act), as amended
- Act No. 258/2000 Sb., on the Protection of Public Health and on Amendments to Certain Related Acts, as amended
- Act No. 282/1991 Sb., on the Czech Environmental Inspectorate and Its Competence in Forest Protection, as amended
- Act No. 283/2021 Sb., Building Act, as amended
- Act No. 350/2011 Sb., on Chemical Substances and Chemical Mixtures and on Amendments to Certain Acts (the Chemicals Act), as amended.
- Act No. 378/2007 Sb., on Pharmaceuticals and on Amendments to Certain Related Acts (Pharmaceuticals Act)
- Act No. 387/2024 Sb., on General Product Safety and on Amendments to Certain Related Acts, as amended.
- Act No. 388/1991 Sb., on the State Environmental Fund of the Czech Republic, as amended

- Act No. 477/2001 Sb., on Packaging and on Amendments to Certain Acts (Packaging Act), as amended
- Act No. 541/2020 Sb., on Waste, as amended
- Act No. 542/2020 Sb., on End-of-Life Products, as amended
- Act No. 565/1990 Sb., on Local Fees, as amended
- Act No. 634/1992 Sb., on Consumer Protection, as amended
- Draft Act amending Act No. 477/2001 Sb., on Packaging, and Other Related Acts

### **Implementing Legal Regulations**

- Government Regulation No. 481/2012 Sb., on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, as amended
- Decree No. 8/2021 Sb., on the Waste Catalogue and the Assessment of Waste Properties (Waste Catalogue), as amended
- Decree No. 16/2022 Sb., on Details of the Management of Certain End-of-Life Products, as amended
- Decree No. 30/2021 Sb., on the Implementation of Certain Provisions of the Packaging Act, as amended
- Decree No. 47/2023 Sb., on the Implementation of Certain Provisions of the Act on the Reduction of the Environmental Impact of Certain Plastic Products, as amended
- Decree No. 99/1992 Sb. of the Czech Mining Authority, on the Establishment, Operation, Safety and Decommissioning of Facilities for the Disposal of Waste in Underground Spaces, as amended
- Decree No. 104/1988 Sb. of the Czech Mining Authority, on the Rational Use of Exclusive Deposits, on the Authorisation and Notification of Mining Activities and on the Notification of Activities Carried Out by Mining Methods, as amended
- Decree No. 116/2002 Sb. of the Ministry of Industry and Trade, on the Method of Labelling Returnable Deposit Packaging, as amended
- Decree No. 169/2023 Sb., laying down the Conditions under which Solid Fuel from Waste Ceases to be Waste, as amended
- Decree No. 243/2023 Sb., on the Implementation of Certain Provisions of the Act on Substances that Deplete the Ozone Layer and on Fluorinated Greenhouse Gases, as amended
- Decree No. 273/2021 Sb., on Details of Waste Management, as amended
- Decree No. 283/2023 Sb., laying down the Conditions under which Recovered Asphalt Mixtures and Recovered Penetration Macadam are Considered a By-Product or Cease to be Waste, as amended
- Decree No. 306/2012 Sb., on the Conditions for the Prevention and Spread of Infectious Diseases and on Hygienic Requirements for the Operation of Healthcare Facilities and Selected Social Service Facilities, as amended
- Decree No. 345/2021 Sb., on Details of the Management of End-of-Life Vehicles, as amended
- Decree No. 415/2012 Sb., on the Permissible Level of Pollution and its Determination and on the Implementation of Certain Other Provisions of the Air Protection Act, as amended
- Decree No. 428/2009 Sb., implementing certain provisions of the Act on the Management of Extractive Waste, as amended.
- Decree No. 429/2009 Sb., laying down the Requirements of a Plan for the Management of Extractive Waste, including the Assessment of its Properties and Certain Other Details for the Implementation of the Act on the Management of Extractive Waste, as amended
- Decree No. 474/2000 Sb. of the Ministry of Agriculture, laying down the Requirements for Fertilisers, as amended

## Annex No. 4 – Economic Analysis of the WMP CR 2025–2035

**Economic Analysis of the Waste Management Plan of the Czech Republic 2025–2035** – a standalone document outlining the economic impacts of the WMP, forming an integral part of the Waste Management Plan for the period 2025–2035.

## Annex No. 5 – List of Abbreviations

### List of Abbreviations

Abbreviation	Meaning
CENIA	Czech Environmental Information Agency
CVVM	Public Opinion Research Centre
CSR	Corporate social responsibility
CEI	Czech Environmental Inspectorate
ČNB	Czech National Bank
CTIA	Czech Trade Inspection Authority
CR	Czech Republic
CSO	Czech Statistical Office
DSS	Transport Sector Strategy
DMC	Domestic Material Consumption
DNSH	Do No Significant Harm
EIA	Environmental Impact Assessment
EC	European Commission
EPR	Extended Producer Responsibility
EU	European Union
EVVO	Environmental Education, Training and Awareness-Raising
HNVO	Assessment of Hazardous Properties of Waste
IKČR	Information Concept of the Czech Republic
ICT	Information and Communication Technologies
IPPC	Integrated Pollution Prevention and Control Information System
ISPOP	Integrated Reporting Duty Fulfilment System
WMIS	Waste Management Information System
UEO	Unified Environmental Opinion
UEIS	Unified Environmental Information System
RPHA	Regional Public Health Authorities
RA	Regional Authority
MoT	Ministry of Transport
MoRD	Ministry for Regional Development
MIT	Ministry of Industry and Trade
MoH	The Ministry of Health
MoA	Ministry of Agriculture
MoE	Ministry of the Environment
citizens	Non-Entrepreneurial Natural Persons

<b>Abbreviation</b>	<b>Meaning</b>
ORP	Municipality with Extended Power
PAYT	Pay As You Throw
PDISOH	Working Database of WMIS
WMP CR	Waste Management Plan of the Czech Republic
SP	Share (Ratio) to Production
SM	Share (Ratio) to Management
WPP	Waste Prevention Programme
Council	Waste Management Council
SEA	Strategic Environmental Assessment
SEKM	Contaminated Sites Register
SEPNO	Hazardous Waste Transport Register
SEZ	Old Environmental Burden
SFŽP	State Environmental Fund
MMW	Mixed Municipal Waste
SÚKL	State Institute for Drug Control
SZPI	Czech Agriculture and Food Inspection Authority
TA CR	Technology Agency of the Czech Republic
ÚKZÚZ	Central Institute for Supervising and Testing in Agriculture
ÚV ČR	Office of the Government of the Czech Republic
R&D&I	Support for Research, Development and Innovation
VISOH	Public Waste Management Information System

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