

Municipal waste management



Czech Republic



October 2016

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Context

This country profile was prepared within the EEA's work on municipal waste, resulting in the following outcomes:

- [32 country profiles](#) (this document) – The country profiles were originally produced by the ETC/SCP and were published by the EEA in 2013. The ETC/WMGE updated them for the EEA under its 2015 and 2016 work programme.
- [An EEA briefing on Municipal waste management across European countries](#)

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Related country profiles

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<http://www.eea.europa.eu/publications/waste-prevention-in-europe-2015>

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Highlights

- Landfilling of municipal waste in the Czech Republic has declined significantly in the past decade, but, according to the Czech Ministry of the Environment, 48 % of all municipal waste (MSW) generated in the Czech Republic was still landfilled in 2014.
- Total recycling of MSW increased from 0.9 % in 2003 to 25.4 % in 2014 according to EUROSTAT and from around 10 % in 2003 to 35 % in 2014 according to the Czech Ministry of the Environment. Nonetheless, continuing effort will be needed to fulfil the EU's recycling target of 50 % by 2020.
- The Czech Republic has implemented a landfill tax; the increase in the tax is reflected in a rise in total recycling of MSW, which is mostly material recycling.
- Further efforts will have to be made to achieve the EU targets for the diversion of biodegradable MSW from landfill even though the Landfill Directive's 2010 target was reached on time.

1 Introduction

1.1 Objective

Based on historical municipal waste (MSW) data for the Czech Republic, and EU targets linked to MSW in the Waste Framework Directive (WFD), the Landfill Directive and the Packaging Directive, the analysis undertaken includes:

- the historical MSW management performance based on a set of indicators;
- uncertainties that might explain differences in country performance, which may relate more to variations in reporting methodology than differences in management performance;
- indicators relating to the country's most important initiatives taken to improve the management of MSW; and
- possible future trends.

2 The Czech Republic's municipal waste management performance

The report is based on the figures reported by the Czech Statistical Office to Eurostat. The Ministry of the Environment (MoE), however, publishes a separate dataset on MSW based on a different reporting methodology and legal requirements of both the Czech Republic and the EU. The latter dataset is used in official policy documents such as the Waste Management Plan 2015–2024, the Annual Report on the Environment of the Czech Republic, the Annual Statistical Yearbook of the Environment of the Czech Republic, and for fulfilling of the reporting obligations of EU waste legislation – the WFD, Landfill and Packaging Directives, etc. Differences between the two datasets are explained in Section 2.1.

Waste management is a relatively new, but dynamically growing sector of the national economy. The first Waste Act was adopted in the Czech Republic as recently as 1991. Prior to that, the handling of waste was subject to no legislative control or rules in the Czech Republic, and was not governed by any sectoral rules with the exception of so-called secondary raw materials (MoE, 2016a).

The current Waste Act was adopted in 2001. It emphasises waste prevention, defines the hierarchy of waste management, and promotes the fundamental principles of environmental and health protection within the waste treatment sector.

The main strategic document governing waste management is the Waste Management Plan (WMP) of the Czech Republic. The previous WMP was adopted in 2003 covering 2003–2013 although its validity was later extended to 2014. The new WMP for 2015–2024 was adopted by the Czech government in 2014.

Nearly 100 % of the population of the Czech Republic is covered by formal waste collection systems, although door-to-door collections are very limited, covering only about 1 % of the population. Bring systems mainly collect paper, plastics, glass, metals, beverage cartons, biowaste, textiles, batteries and accumulators, waste electric and electronic equipment (WEEE), tyres, hazardous waste and expired medicines, and mixed municipal (residual) waste. There is an extended producer responsibility (EPR)

system for packaging and a deposit-refund system for some returnable packaging (Gibbs *et al.*, 2014a). In addition, EPR schemes exist for WEEE, tyres, photovoltaic solar panels, batteries and accumulators (MoE, 2016b).

Individual households pay charges/fees for municipal waste collections based on a fixed payment per person, which changes every year according to volume of waste generated. For about 15 % of the population the fee is based on a pay-as-you-throw system (PAYT). Historically, however, PAYT had an undesirable influence on the behaviour of households when only unseparated mixed waste was collected. As the amount of the fee per household was dependent on the amount of waste collected, or rather the number of collections from a household's waste container per year and the volume in the container, illegal littering was high, and the competent authorities were not always able to find the original waste generators to penalize them (ETC/SCP, 2012). The situation has, however, changed, and the new strategy on waste that was adopted in 2014 made separate collections obligatory in all towns and villages (all municipalities) (MoE, 2016b).

The generation of MSW in the Czech Republic increased from 2.8 million tonnes (4.5 million according to the MoE) in 2001 to 3.3 million tonnes (5.3 million according to the MoE) in 2014. In 2001, only 92 % of the reported generated MSW was treated ⁽¹⁾; this decreased to 84 % in 2004–2005, but has since increased to a full 100 % in 2012 (Eurostat, 2016; MoE, 2016b).

2.1 Municipal waste indicators

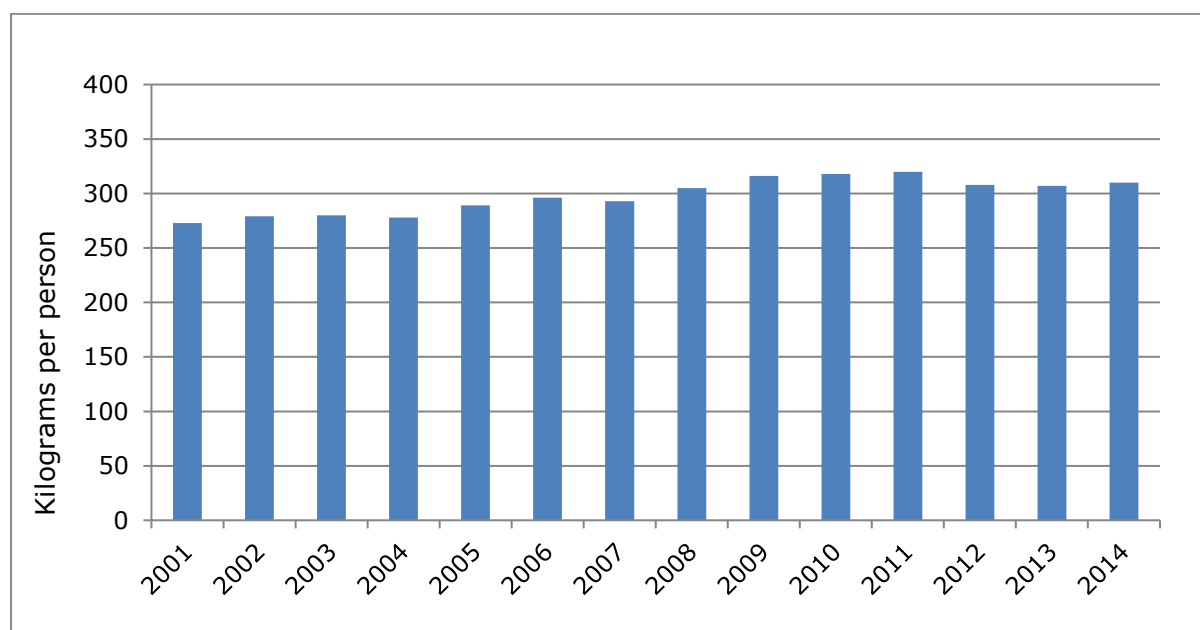
The following indicators illustrate the development of MSW management in 2001–2014. All percentage figures have been calculated by relating the waste managed to the generated amount, rather than the amount treated. Relating the amount treated to the total managed amount of MSW would generally result in higher rates for all waste management paths in all years where the reported treated amount is lower than the reported generated amount.

Figure 2.0 shows the development of MSW generation per person in the Czech Republic from 2001 to 2014, according to first Eurostat and then the MoE. The former shows that the amount of generated MSW increased each year from 2001 to 2011 and then began to decrease slightly.

⁽¹⁾ Treatment rates are dependent on several factors, including:

- if a part of the population is not covered by waste collection systems, the waste generated in those places is reported as generated but not treated;
- waste undergoing mechanical biological treatment (MBT) undergoes a loss in mass, and as only final treatment amounts are reported to Eurostat, the waste treatment rates appear lower than the generation and collection rates;

Figure 2.0 Czech Republic, municipal waste generation per person, 2001–2014



Source: Eurostat, 2016



Source: CENIA, 2016a

Generation of MSW and other types of waste is reported to two autonomous systems, with the source data for both systems based on continuous record keeping by individual waste producers and processors according to the Waste Act. One is operated by the MoE and is based on the collection of administrative data from waste producers and waste processors according to national waste legislation, which is fully in line with WFD and other European waste legislation. The other system, operated by the Czech Statistical Office, is based on the collection of selected reporting units and the output data are produced using statistical imputation methods.

The main reason for the different results presented in Figure 2.0 is the use of different methodologies. For reporting on waste management in the Czech Republic not only are disposal and recovery

operation codes used; the system also uses special codes specifying such operations as composting, reclamation and waste collected from citizens at waste collection points. In addition, since 2009, data on small producers under the reporting threshold and from producers who do not fulfil the reporting obligations are calculated. The calculation is based on a comparison of reported waste generation and waste treatment.

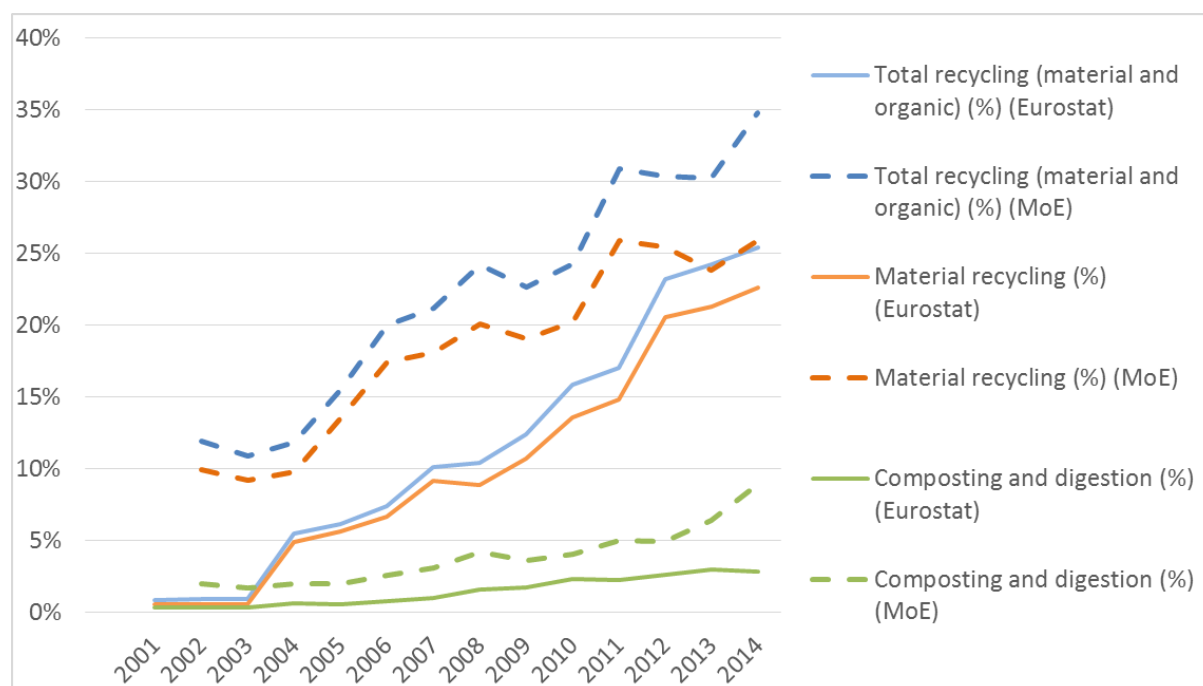
Landfilling of MSW in the Czech Republic has diminished significantly, from 79 % in 2001 to 56 % in 2014 (Eurostat, 2016) or 48 % in 2014 according to the MoE (2016b). Simultaneously, incineration, energy recovery and, particularly, recycling have increased.

2.1.1 Municipal waste recycling, 2001–2014

Figure 2.1 shows the development of MSW recycling in the Czech Republic related to total recycling, material recycling and organic recycling – composting and other biological treatment. There has been a positive trend in the recycling of MSW since 2003. The increase in recycling is mostly linked to material recycling, which has increased from 1 % of MSW in 2003 to 23 % in 2014. In the same period, organic recycling increased from 0.4 % of MSW in 2003 to 2.9 % in 2014; however, it is still at a very low level.

Based on its own dataset, the MoE reported in 2014 that 35 % of total MSW was recycled, made up of material recycling of 26 % of MSW, and organic recycling of 9 % of MSW – composting and other biological treatment (CENIA, 2016a).

Figure 2.1 Czech Republic, recycling of municipal waste, 2001–2014



Source: CENIA, 2016a; Eurostat, 2016.

The EU 2008 WFD includes a target for certain fractions of MSW: ‘by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households

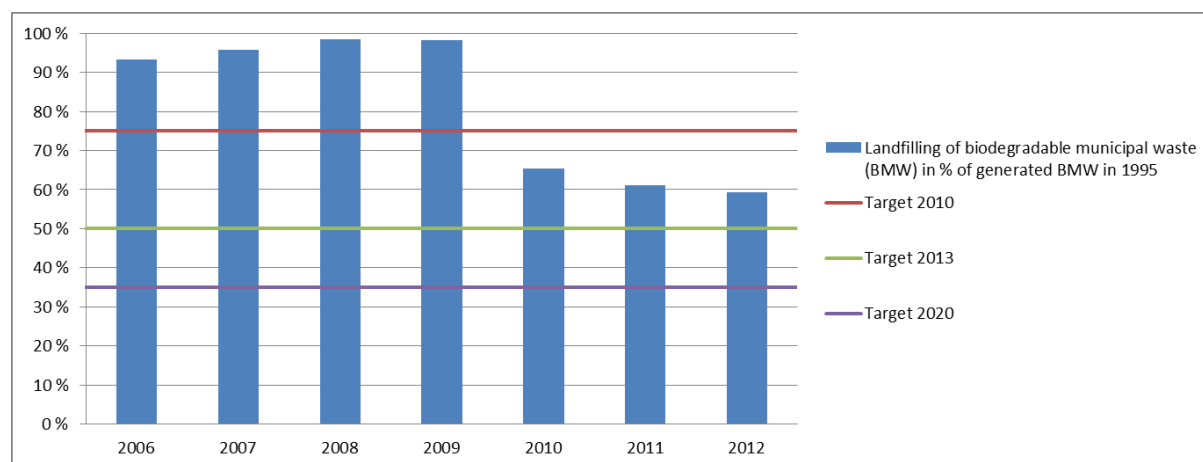
shall be increased to a minimum of overall 50 % by weight'. EU Member States may choose between four different methodologies to calculate compliance with the target ⁽²⁾. Recycling rates shown in this paper correspond to method 4. The Czech Republic reports data about compliance with the target according to Article 11 of the WFD and uses method 2. According to the reported data, the recycling rate of MSW in 2014 was 48.3 % (MoE, 2016b), and it is anticipated that the obligatory target of 50 % in 2020 will be reached. In 2015, the European Commission proposed new targets for municipal waste of 60 % recycling and preparing for reuse by 2025 and 65 % by 2030, based on only one calculation method (method 4), and with the option of time derogations for some countries excluding the Czech Republic (EC, 2015).

2.1.2 Landfill of biodegradable municipal waste

According to EU Landfill Directive, EU Member States have to reduce the amount of biodegradable municipal waste (BMW) landfilled by certain percentages, relative to BMW generated in 1995, by 2006, 2009 and 2016. As a country that landfilled more than 80 % of its MSW in 1995, the Czech Republic has been granted a derogation period of four years. In 1995, the Czech Republic generated 1 530 000 tonnes of BMW.

The Czech Republic has reported its landfilled amount of BMW to the European Commission for the years 2006–2012. In 2006, the amount landfilled was equivalent to 93 % of the generated amount in 1995, rose until 2009 and then decreased. In 2010, the Czech Republic achieved the Landfill Directive's 2010 target.

Figure 2.2 Czech Republic, landfilling of biodegradable municipal waste, 2006–2012, per cent of biodegradable municipal waste generated in 1995



Source: EC, 2014 (data for 2006-2008) and EC, forthcoming (data for 2009-2012).

Note: The target dates take account of the four-year derogation period.

⁽²⁾ Commission Decision 2011/753/EU allows countries to choose between four different calculation methods to report compliance with this target. Member States have the option of considering four alternative waste streams and fractions:

1. paper, metal, plastic and glass household waste;
2. paper, metal, plastic, glass household waste and other single types of household waste or of similar waste from other origins;
3. household waste;
4. municipal waste (the method used in this document).

Fig. 2.2 shows that significant improvements have been achieved since 2010, but to reach the 2013 target of 50 % landfilled BMW, the landfilled amount must decrease to 0.77 million tonnes, and to reach the 2020 target of 35 % landfilled BMW, the amounts must decrease to 0.54 million tonnes.

2.1.3 Regional differences of MSW recycling, 2001–2013

The Czech Republic has not reported regional MSW recycling data to Eurostat; only the generation of MSW is reported on a regional level. However, administrative data from waste producers and waste processors operated by the MoE is available from the MoE on request.

2.1.4 Recycling and landfill taxes

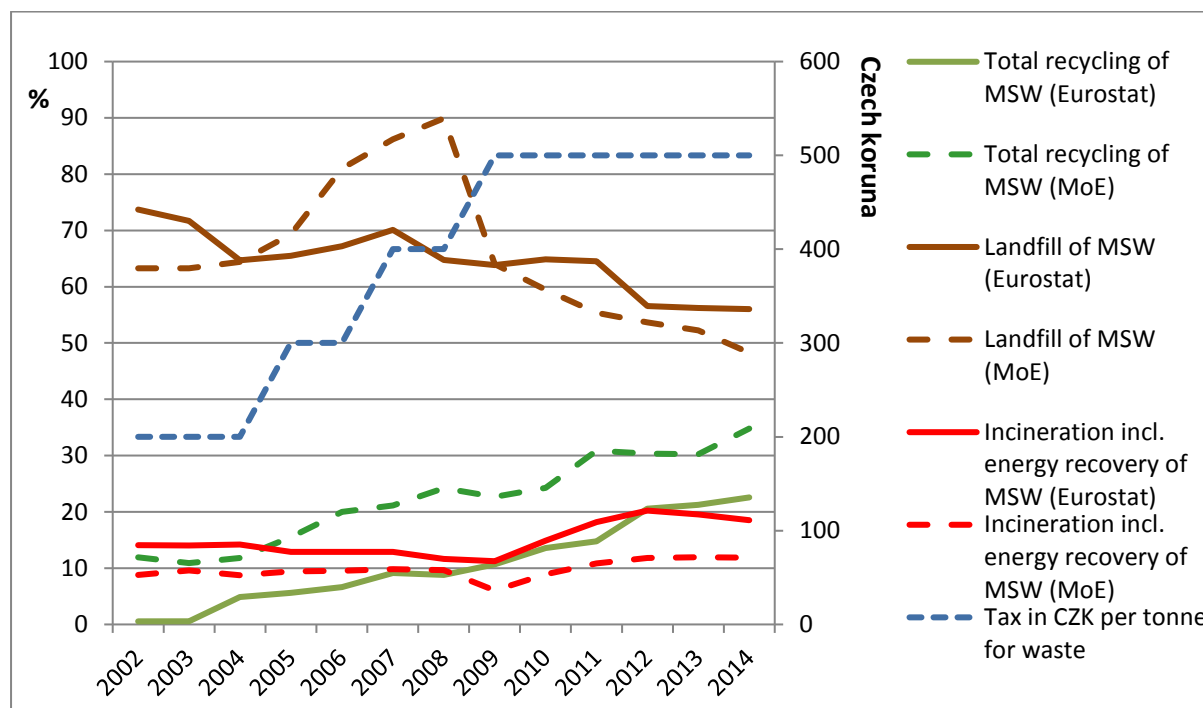
A landfill tax was established in 1992. Since 1998, the charge for all landfills has consisted of two components:

- 1) a basic charge, paid for municipal, hazardous and other waste; and
- 2) a risk charge, paid only for hazardous waste.

The level of both components of the charge grows progressively, particularly for hazardous waste, so that waste generators are encouraged to limit their generation, introduce different technologies, and use raw materials that do not generate hazardous wastes (ETC/SCP, 2012).

The basic charge for municipal waste has been CZK 500 (EUR 20) per tonne since 2009 (ETC/SCP, 2012), but an increase for the deposition of non-hazardous waste is currently under discussion within the ongoing reform of Czech waste legislation. In 2014 The Czech Republic adopted a ban on landfilling from 2024 of recyclable, recoverable and mixed MSW. Since 2015, the separate collection of paper, plastic, metal, glass and biodegradable waste has been obligatory in all towns and villages. Proposals to increase landfill taxes for recyclable and recoverable waste (2020 – CZK 1350 and 2023 – CZK 1850) were drafted in 2016 by the MoE, discussed with Czech stakeholders and then sent for adoption by the Government Office in July 2016 (MoE, 2016b).

Figure 2.3 Czech Republic, landfill tax, CZK per tonne, and municipal waste management, per cent, 2001–2014



Source: CENIA, 2016a; ETC/SCP, 2012; Eurostat, 2016; MoE, 2016b

* EUR 1 = CZK 24 590 (2011 annual average currency exchange rate)

Figure 2.3 shows that while the landfill tax more than doubled from 2001 to 2014, the share of landfilled MSW decreased by 18 percentage points (15 percentage points according to MoE). In addition, the landfill tax seems to have contributed to the recent diversion of municipal waste from landfill towards recycling and, to a lesser extent, to incineration. The increase in total recycling of MSW is mostly linked to material recycling and to a lesser extent to organic recycling.

The landfill tax may change in the near future. The MoE has proposed an increase in the new Waste Act, which is due to be adopted by the end of 2016 (MoE, 2016b).

2.1.5 Environmental benefits of better municipal waste management

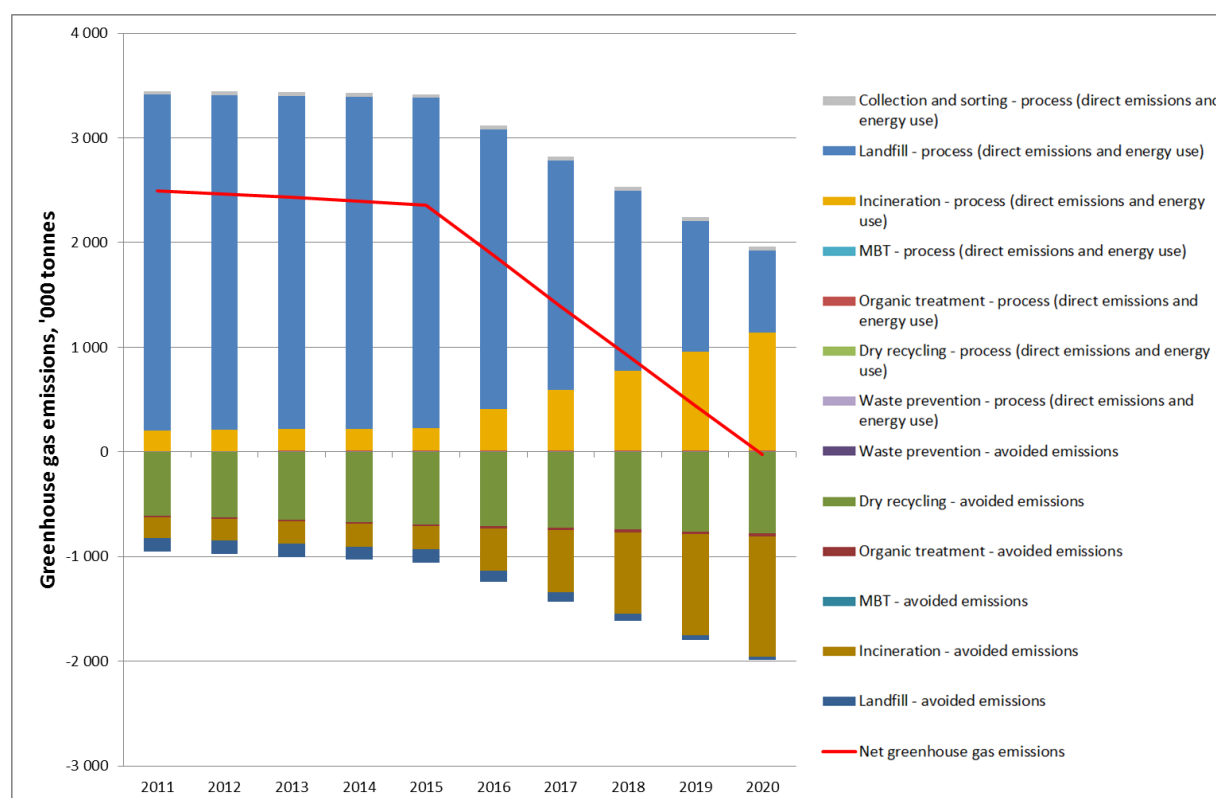
Figure 2.4 shows a scenario for the development of greenhouse gas emissions from MSW management in the Czech Republic. The scenario assumes a yearly increase rate of 0.8 % for municipal waste generation for the years 2011–2020 and that EU targets for municipal waste are fully met. The calculation of emissions is based on data and assumptions contained in the European Reference Model on Municipal Waste Generation and Management. The approach taken in the model is rooted in life-cycle thinking, in that it considers not only direct emissions, but also avoided emissions associated with the recycling of materials, and the generation of energy by waste management processes. The more detailed methodology is described in Gibbs *et al.* (2014b). The level of emissions depends on the amount of waste generated and the treatment it undergoes each year.

Figure 2.4 shows the direct emissions, the avoided emissions and the net emissions resulting from the management of MSW. All the emissions (positive values) represent the direct operating emissions for each waste management option. The phases of the waste management chain covered include waste

prevention; material recycling; composting and anaerobic digestion; mechanical biological treatment (MBT) and related technologies; collection and sorting; incineration and landfilling.

For the avoided emissions (negative values), the calculations integrate the benefits associated with the recovery of energy and material recycling of paper, glass, metals, plastics, textiles and wood, and bio-treatment of food and garden waste from the MSW. The modelled scenario assumes full implementation of the existing EU targets on municipal waste management (Gibbs *et al.*, 2014c).

Figure 2.4 Czech Republic, scenario for greenhouse gas emissions from municipal waste management, 2011–2020



Source: ETC/WMGE, calculation based on the European Reference Model on Waste.

Note: Results presented in this figure should not be used for the compilation of greenhouse gas reporting for the Intergovernmental Panel on Climate Change (IPCC) national inventory report, or be compared with IPCC figures, as the methodology employed here relies on life cycle thinking and, by definition, differs substantially from the IPCC methodology.

MBT means mechanical-biological treatment.

Based on the modelled scenario with full policy implementation, the net greenhouse gas emissions from the treatment of municipal waste in the Czech Republic are expected to decrease in the period 2011–2020 and fall to around zero in 2020 when the benefits of better waste management are expected to be equal to the direct emissions from collection and treatment operations. In the first modelled years of the scenario the direct greenhouse gas emissions related to municipal waste management are, almost exclusively, caused by landfilling.

Greenhouse gas emissions from landfills are caused by the breakdown of organic wastes accumulated in landfills over past decades. In the model, however, the landfill impacts are calculated over a 100 year period, with the total impact over this period being attributed to the year in which the waste is deposited (Gibbs *et al.*, 2014b). The positive effect of diverting BMW from landfills can, therefore, be immediately observed in the results as reduced emissions from landfilling. According to the model,

towards 2020 the direct greenhouse emissions of waste management in the Czech Republic will increasingly originate from incineration.

2.2 Uncertainties in the reporting

Some uncertainties or differences in how countries report MSW recycling can result in different recycling levels. This applies, for example, to the following issues:

- the extent of packaging waste from households and similar packaging from other sources are included in or excluded from reports of the MSW recycling;
- the definition of municipal waste used by the country, such as the inclusion or exclusion of home composting;
- the methodology used to report the inputs and outputs of MBT and sorting plants.

Municipal waste data collection in the Czech Republic is carried out by a statistical survey (Czech Statistical Office, 2013). Since 2004 the treatment data has been calculated using a new methodology (EC, 2013).

The Czech Republic includes packaging waste both from households and from small businesses in its reporting on municipal waste, but no distinction is made between the different sources (Czech Statistical Office, 2013).

There are currently no MBT plants in the Czech Republic (Gibbs *et al.*, 2014a) and thus the uncertainties related to reporting waste undergoing MBT are not applicable.

2.3 Important initiatives taken to improve municipal waste management

The goals and targets for various waste treatment methods and the optimum ways of achieving them were set out in the 2003–2013 national WMP and a new WMP for 2015–2024 was approved in 2014 (Government resolution no. 1080/2014). The binding part of the national WMP was published as Government Regulation no. 352/2014 Coll. All regional and municipal WMPs must comply with the national one. The first Waste Prevention Plan (WPP) of the Czech Republic, part of the national WMP for 2015–2024, was adopted in 2014.

Regions and municipalities have to draw up plans in compliance with the national WMP – there were 14 regional WMPs in place for the period 2004–2014 – and waste producers that generate more than 1 000 tonnes of non-hazardous waste or more than 10 tonnes of hazardous waste per year must also develop WMPs. Since the amendment of the Waste Act, from 2013 onwards these must comply with the national WMP. The national and regional WMPs include a strategy for the reduction of biodegradable waste going to landfills in line with the requirements of the national WMP and the objectives of EU Landfill Directive, and this is being gradually implemented. Quality standards for composted bio-waste are also in place (BIPRO, 2013). Rules for waste management installations are included in the national legislation. All regional WMPs were adopted by July 2016.

The Czech Republic's Waste Prevention Programme was approved by the government in October 2014 (Government resolution no. 869/2014) and has subsequently become part of the new WMP. The main goal of the Programme is to create conditions to lower consumption of primary resources and the gradual reduction of waste generation. The objectives and measures are part of the binding section of the 2015–2024 WMP. The Programme is in line with strategies at the European level – the 7th Environment Action Programme, the Roadmap to a Resource Efficient Europe, and the Thematic Strategy on the Prevention and Recycling of Waste – and at the national level – the Raw Materials Policy, and the Secondary Raw Materials Policy. It places particular emphasis on research, development and technological innovation that can reduce waste generation in production.

Since 2001, regional and national data collection from waste producers and waste processors has been done by the MoE in accordance with national waste legislation.

The implementation of national regulations and legislation is an obligation for regions and municipalities. The MoE has a role of state supervision and methodological support for municipalities and regions.

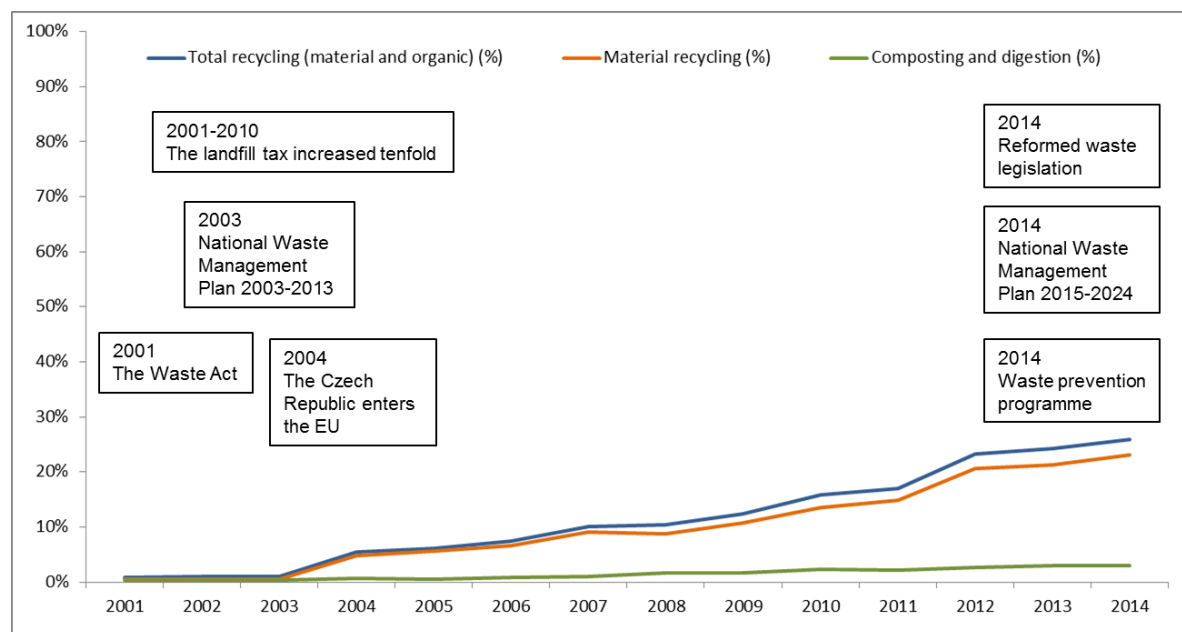
Enforcement national waste legislation is the responsibility of the Czech Environmental Inspectorate and regional authorities.

To increase awareness, numerous public information campaigns, such as the Multimedia Environmental Yearbook (CENIA, 2016b), addressing different target groups – for example, households, businesses, industry and tourists – have been organised together with school activities, including a website for children (EKO-KOM, 2016). Training of municipality officials has also been undertaken, together with the establishment of an advice service for municipalities on optimising the separate collection of household waste (BIPRO, 2013).

The creation of more waste processing facilities, and the subsequent change in technical and economic conditions, could potentially offer an alternative to landfilling. According to an economic model of the cost and price relationships for municipal waste management, developed by Czech experts, the average cost difference between landfilling and more beneficial strategies such as recycling is only CZK '00s per tonne (CZ NRC, 2012). Introducing charges through the new Waste Management Act, currently under preparation together with drafted plans for doubling of the current landfill tax in 2020 and tripling it in 2023, could balance these costs. If the charges for landfilling were gradually increased, they could bridge the difference in average costs between landfilling and more beneficial waste management options (ETC/SCP, 2012; MoE, 2016b).

Extended producer responsibility is an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. In practice, EPR implies that producers take responsibility for collecting or taking back used goods, sorting and preparing them for eventual recycling – schemes can be either voluntary or statutory. The Czech Republic has EPR schemes for batteries, WEEE, tyres, photovoltaic solar panels and packaging in MSW.

Figure 2.5 Czech Republic, recycling of municipal waste, per cent, and important policy initiatives, 2001–2014



Note: Different data reported by the MoE are available in Section 2.1.1

In a partial amendment of the current Waste Act in October 2014, bans on landfilling mixed MSW, recyclable waste and recoverable waste were adopted and will come into force in 2024. A new initiative for the mandatory separation of biodegradable municipal waste in every Czech town and village came into force on 1 January 2015.

2.4 Possible future trends

The outlook for Czech waste management will be influenced by the new 2015–2024 WMP that was adopted by the government on 22 December 2014 and came into force on 1 January 2015. Its targets are:

- to prevent and reduce specific waste generation;
- to minimise the adverse effects of waste generation and waste management on human health and the environment;
- the sustainable development of the Czech Republic and moving the country closer towards the European concept of a recycling society;
- maximum utilisation of waste as a substitute for primary resources and the transition to a circular economy;
- to increase the MSW prepared for re-use and recycling to at least 50 % by weight of the amount generated, at least for paper, plastics, metal and glass from households and possibly waste of other sources, if such waste streams are similar to household waste;
- to use MSW, after the removal of recoverable components, recyclable materials, hazardous substances and biodegradable waste, for energy recovery in facilities designed for this purpose in accordance with effective legislation;
- by 2020, to reduce the quantity of biodegradable municipal waste deposited in landfill to a maximum of 35 % by weight of the total quantity of biodegradable municipal waste produced in 1995;

- by 2020, to increase to at least 70% by weight the rate of preparing for re-use and recycling of construction and demolition waste and other types of recovered building materials, including for backfilling in which materials can be replaced, in accordance with the applicable legislation, by construction and demolition waste categorised as “other”, but excluding naturally occurring material defined in the Waste Catalogue (catalogue number 17 05 04, soil and stones).

The Czech MoE is preparing a reform of its waste legislation – a new Waste Act is planned to enter into force on 1 January 2018, the objectives of which were approved by the Government in May 2015. This new legislation includes two new Acts – on waste and on end-of-life products. The MoE plans to send the new legislation through Parliament by the end of 2016.

Based on the current state of compliance with the objectives and targets of EU and national legislation, the national and regional WMPs and the Waste Prevention Programme will provide the framework for improved waste management in the Czech Republic.

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