

Municipal waste management



Bulgaria 

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 information

Country information on waste prevention programmes can be found at:
<http://www.eea.europa.eu/publications/waste-prevention-in-europe-2015>

For country profiles on material resource efficiency policies, please visit:
<http://www.eea.europa.eu/publications/more-from-less/>

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Highlights

- Due to a change in reporting methodology in 2012–2013, Bulgarian waste statistics for the period after 2004 have changed significantly.
- A very large proportion of Bulgaria's municipal waste (MSW) is sent to landfill. The amount landfilled in 2014 was 69 % of the amount generated.
- Bulgaria has increased the total recycling rate of MSW from 16 % in 2010 to 23 % in 2014, according to calculation method 4. The country still needs to increase its recycling efforts if it is to fulfil the EU's recycling target of 50 % by 2020.
- Bulgaria met the target for 2010 set by the EU Landfill Directive (with derogation) for diverting biodegradable municipal waste (BMW) from landfill. Considering the trends in the amount of BMW landfill and the plans for increased mechanical biological treatment (MBT) capacity, Bulgaria is on track to meet the diversion target for 2013. Additional efforts are needed to maintain the trend.
- A landfill tax was introduced in 2011. The current tax level is low compared to other European countries, however the level is planned to increase considerably by 2020.

1 Introduction

1.1 Objective

Based on historical municipal waste (MSW) data for Bulgaria, 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 to management performance;
- indicators relating to the country's most important initiatives for improving MSW management;
- possible future trends.

2 Bulgaria's municipal waste management performance

The Bulgarian Waste Management Act adopted in 2003 sets the responsibilities and the obligations of the state and local authorities with regard to the organisation, authorisation, financing, supervision and control of waste management.

With Bulgaria's accession to the EU in 2007, new standards, procedures and requirements were planned for activities related to waste production and treatment, and for operators performing such activities and services. The main purpose of their enforcement was to establish firm control mechanisms and set up guarantees for better waste recovery and protection of the environment in general.

The Ministry of Environment and Water (MOEW) is responsible for developing and implementing national waste management policy, including drafting and enforcement of legislation, strategies and programmes, as well as regulation of activities in the public and private sectors (ETC/SCP, 2009). The ministry performs some of these activities through its Executive Environmental Agency (ExEA) and a network of regional competent authorities – the Regional Inspectorates of Environment and Water (RIEW), which control the implementation of waste management legislation (ETC/SCP, 2009).

Waste organisation and treatment within the territory of municipalities is the responsibility of municipal mayors, who commonly contract it out through public procurement. Municipalities in Bulgaria that build or use a common regional landfill or treatment facility establish regional associations as legal entities, or enter into regional agreements (NWMP, 2009). Local authorities are responsible for drafting municipal waste management programmes. There are regional waste management associations but no plans/programmes on regional level (Arcadis, 2014).

The Bulgarian National Waste Management Programme (NWMP) for the period 2003–2007 introduced the waste management hierarchy and the proximity, producer-responsibility and polluter-pays principles. The subsequent NWMP covering 2009–2013 set the following strategic objectives: prevention and minimisation of waste generation; increase in the quantity of waste recycled and recovered; improve organisation for waste separation, temporary storage, collection and transportation; environmentally sound disposal, legal regulation of waste management; provision of sufficient reliable waste data; and strengthening of administrative capacity and public participation.

The new Waste Management Act, adopted in July 2012, incorporated the EU Waste Framework Directive (WFD) into Bulgarian legislation, regulating the obligations of municipalities and the state

for waste recycling. According to the act, municipalities have an obligation to collect at least paper and cardboard waste, metal waste, plastic waste and glass waste separately. The act also defines penalties for mayors of the municipalities that do not meet the requirements of the law (ExEA, 2015).

The waste management programme for 2014–2020, adopted on 22 December 2014, sets out targets for 50 % recycling of at least four material streams, with additional streams being chosen by municipalities. Targets for biodegradable municipal waste sent to landfill are in line with the Landfill Directive. (ExEA, 2015; Gibbs *et al.*, 2014a;)

At the end of 2002 organised municipal waste collection covered only 81 % of the population of Bulgaria (NSI, 2015a). By late 2006, this had risen to 90 % though it was unevenly distributed, with 100 % coverage of the urban population but less than 40 % coverage of the rural population (NWMP, 2009). Currently the waste collection systems reach 99.5 % of the population (ExEA, 2015).

All municipalities are obliged to collect at least four recycling streams as well as biodegradable waste. There is no door-to-door collection for these, and waste collection points are mainly for packaging materials, such as glass, metals and plastic; paper and residual waste. (Gibbs *et al.*, 2014a)

Collection and management of packaging waste, not covered by a deposit refund system, are organised by four producer-responsibility organisations. Packaging waste from households is mainly collected through collection points. In addition there is a small deposit refund system for domestic glass beer bottles. (Gibbs *et al.*, 2014a)

The generation of municipal waste (MSW) in Bulgaria decreased from 4.8 million tonnes in 2001 to 3.2 million tonnes in 2014. According to reporting to Eurostat, only 83 % of generated waste was treated ⁽¹⁾ in 2001, rising to 94 % in 2014. (Eurostat, 2016)

A change in reporting methodology in 2013 has resulted in notable differences in the statistics generated from old and new data (Eurostat, 2013). The previous version of this country report was based on data using the old reporting methodology, but the current edition uses the new system. Thus, figures and historical data (post-2004) are not comparable to those reported in 2013.

By the end of 2014 infrastructure for separate waste collection and composting was in place in a number of regions across Bulgaria. These facilities were largely financed by European Structural Funds.

2.1 Municipal waste indicators

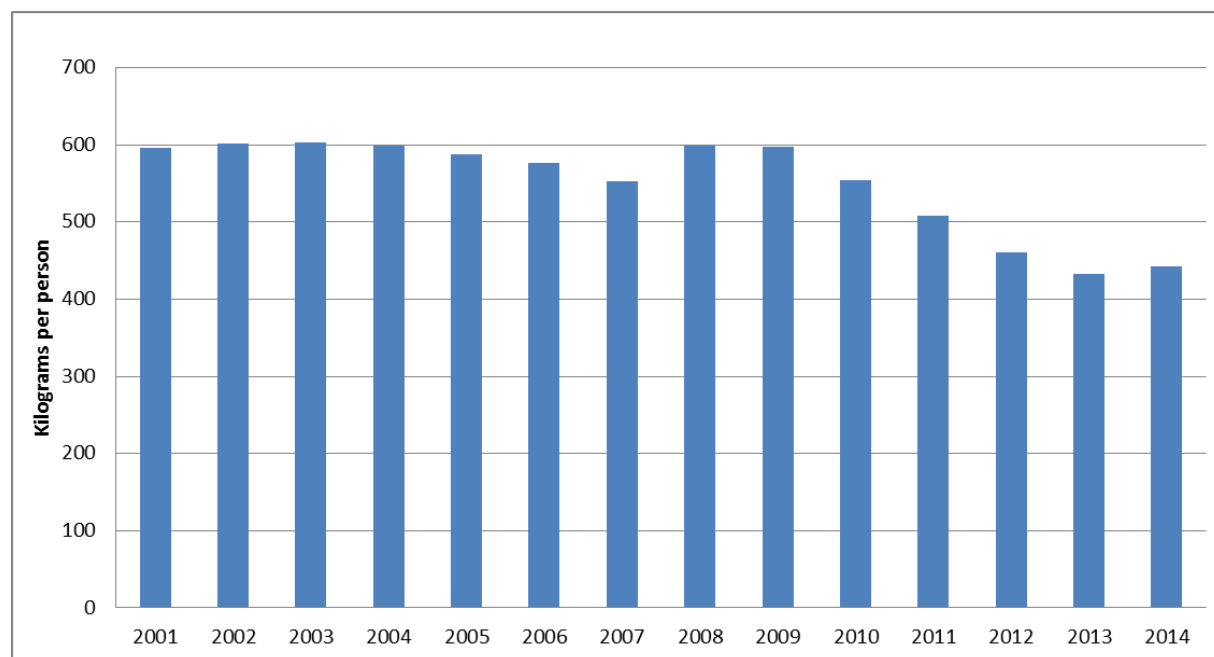
The following indicators illustrate the development of Bulgarian MSW generation and management for 2001–2014. All percentage figures have been calculated as proportions of generated waste, not managed waste. Relating the indicators to managed amounts would generally result in higher rates for all waste management paths.

Figure 2.0 shows the development of MSW generation per person in Bulgaria for 2001–2014. There was a decrease in per person in 2001–2007, followed by an increase in 2008–2009, but it has since rather steadily decreased. The decrease may be linked to the start of the economic crisis in 2008. In 2014 municipal waste generation amounted to 442 kilograms per person.

⁽¹⁾ Treatment rates are dependent on several factors:

- 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 put through MBT undergoes a loss in mass, and as only final treatment amounts are to be reported to Eurostat, waste treatment rates might be lower than the generation and collection rates.

Figure 2.0 Bulgaria, municipal waste generation per person, 2001–2014



Source: Eurostat, 2016

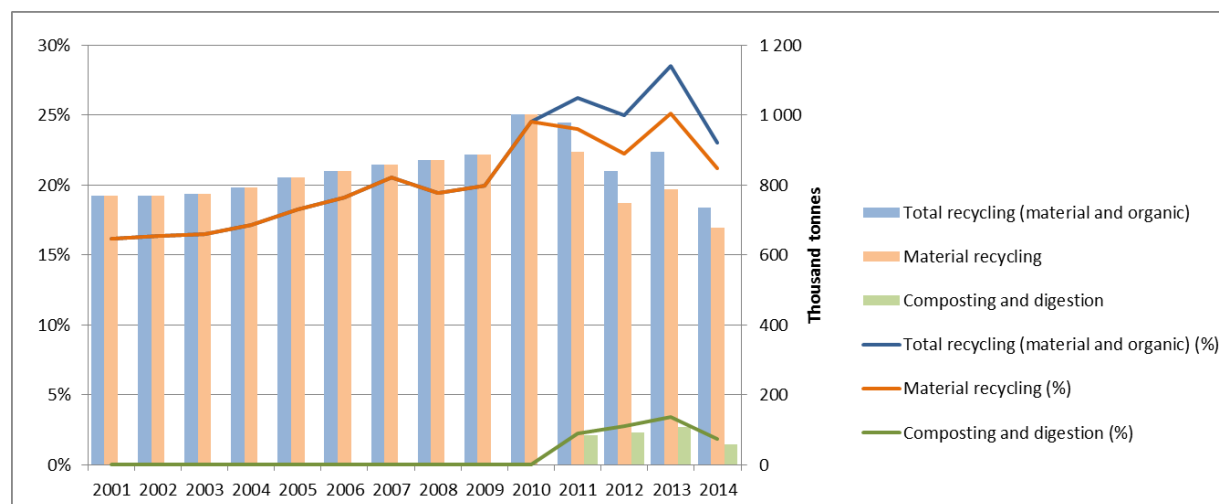
The majority of municipal waste in Bulgaria is still sent to landfill although recycling has grown. In 2014, 2.2 million tonnes of municipal waste were deposited in landfill, representing 69 % of the amount generated (3.2 million tonnes).

The landfill site in Sofia was closed between 2005 and 2007. Some waste was, thus, temporarily stored, leading to a decrease in reported waste generation and landfill during these years. (Eurostat, 2013) The main reason for the apparent recent decline in the generation of municipal waste reported to Eurostat is the change in data collection methodology in 2012 (see section 2.2; ExEA, 2015).

2.1.1 Municipal waste recycling, 2001–2014

Figure 2.1 shows the development of total, material and organic (compost and other biological treatment) MSW recycling. There was a positive trend in material quantities recycled from 2001 to 2010. Between 2010 and 2014 recycling rates as well as total amounts declined. Overall, there is a positive trend in recycling rates, with recycling growing from 16 % in 2001 to 23 % in 2014. During this time, total waste volume declined and simultaneously the recycled waste amounts reduced. Bulgaria began organic waste recycling in 2011.

Figure 2.1 Bulgaria, recycling of municipal waste, 2001–2014, per cent and tonnes



Source: Eurostat, 2016

The EU’s 2008 WFD includes a target for certain fractions of MSW: ‘by 2020, the preparing for reuse 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⁾. Bulgaria has chosen calculation method 3 (Gibbs *et al.*, 2014) and has reported a recycling rate of 31 % according to this methodology. The recycling rates shown in this paper correspond to method 4, the only method for which time series data exist. 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, and with the option of time derogations for some countries (EC, 2015).

Bulgaria still needs to increase its efforts on recycling in order to meet the 2020 50 % recycling target.

2.1.2 Landfill of biodegradable municipal waste

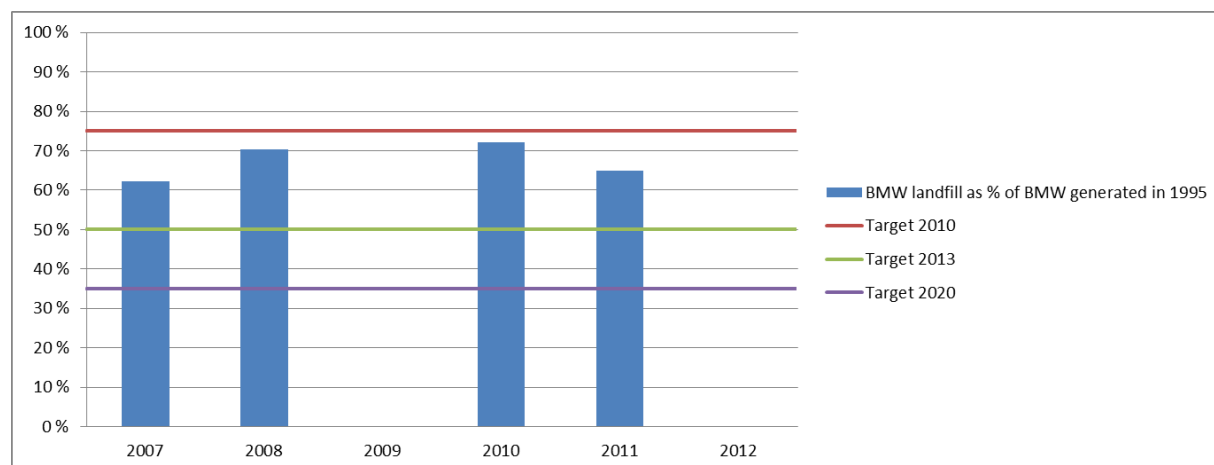
According to the EU Landfill Directive, Member States have to reduce the amount of biodegradable municipal waste (BMW) sent to landfill by a specific percentage by 2006, 2009 and 2016. However, Bulgaria has benefited from a four-year derogation period and thus the target years for the country are 2010, 2013 and 2020. The targets relate to the amount of BMW generated in 1995 – 2.25 million tonnes in Bulgaria.

⁽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).

Bulgaria has reported its BMW landfill quantities to the European Commission for the years 2007, 2008, 2010 and 2011. In 2010, BMW landfill was 72 % of the amount generated in 1995, meaning that Bulgaria met its 2010 Landfill Directive target (Figure 2.2).

Figure 2.2 Bulgaria, landfill of biodegradable municipal waste, 2007–2011, % of biodegradable municipal waste generated in 1995



Source: EC, 2014. The target dates take account of Bulgaria's 4-year derogation period.

Figure 2.2 shows that significant improvements were made in 2011, but in order to reach the 2013 target of 50 %, annual amounts must decrease to 1.1 million tonnes and to reach the 2020 target of 35 % this must fall to 0.8 million tonnes.

2.1.3 Regional differences in municipal waste recycling from 2001 to 2013

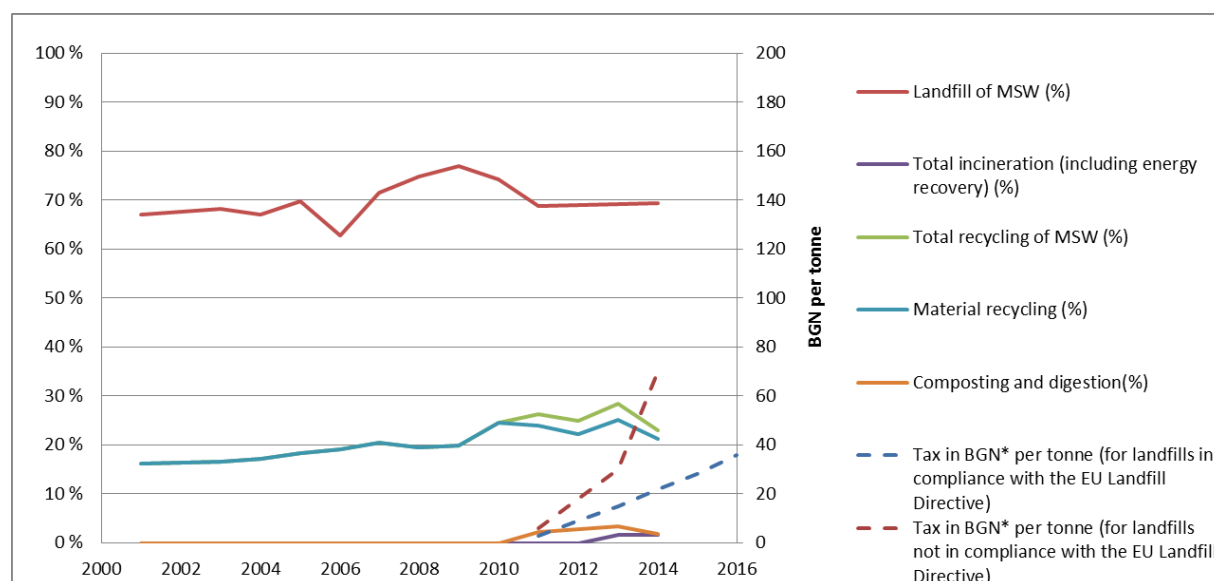
Eurostat's database holds no regional on MSW recycling for Bulgaria.

2.1.4 Recycling and landfill taxes

A landfill tax was introduced for municipal waste in Bulgaria in 2011. In line with Ordinance No. 7 of 19 December 2013 on the terms and procedures for calculating and determining the amount of benefits and deductions required for waste disposal, the landfill tax for 2015 is BGN 28 per tonne (EUR 14.3 per tonne) and the rate will increase to BGN 95 per tonne (EUR 48.6 per tonne) by 2020 (ExEA, 2015).

Figure 2.3 shows the development of landfill, incineration and recycling rates in Bulgaria for the years 2001–2013 together with landfill tax. The data series is too short to assess the effects of the tax on MSW management. There is no waste incineration plant in the country.

Figure 2.3 Bulgaria, landfill tax and the development of recycling, landfill and incineration of municipal waste 2001–2016, per cent and BGN per tonne



Source: Eurostat, 2016; ETC/SCP, 2013.

*EUR 1 = BGN 1.9558 (2011 annual average currency exchange rate).

The landfill tax has constantly increased since 2011 but is still very low compared to rates in other countries across Europe (ETC/SCP, 2012). The share of municipal waste sent to landfill has virtually stagnated since 2001, with some fluctuation over the years. There is a slow but steady increase in recycling rates but this cannot be attributed to the landfill tax.

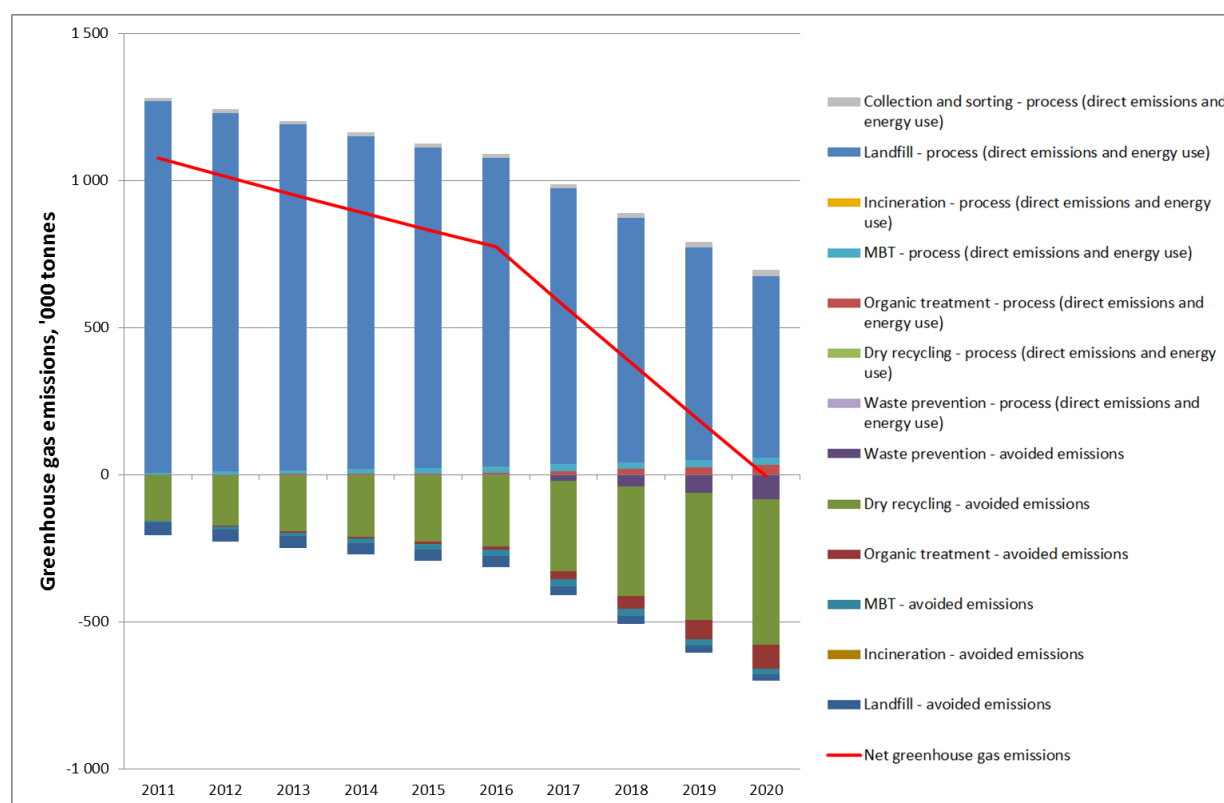
2.1.5 Environmental benefits of better municipal waste management

Figure 2.4 shows a scenario for greenhouse gas emissions from MSW management in Bulgaria. The scenario assumes a zero growth rate for municipal waste generation for the years 2011–2020 and it also assumes that EU targets for municipal waste are fully met. The calculation of emissions is based on data and assumptions 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 from 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 direct emissions, avoided emissions and net emissions resulting from the management of MSW. All the emissions (positive values) represent 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 landfill.

For avoided emissions (negative values), the calculations integrate the benefits associated with energy recovery and material recycling of paper, glass, metals, plastics, textiles and wood, and bio-treatment of food and garden waste from MSW. (Gibbs *et al.*, 2014c)

Figure 2.4 Bulgaria, 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 and includes processes without a biological treatment step.

In countries with a low landfill share and high recycling rate, waste treatment can have an overall positive impact on greenhouse gas emissions, reducing emissions from the economy as a whole: Bulgaria is not yet one of these. Based on the modelled scenario with full policy implementation, however, net emissions from the treatment of municipal waste in Bulgaria are expected to decrease over the period 2011–2020 and reach zero in 2020. Throughout the modelled time period direct greenhouse gas emissions related to municipal waste management are almost exclusively from landfill.

Greenhouse gas emissions from landfill are caused by the breakdown of organic wastes accumulated over past decades. In the model, which calculates landfill impacts over a 100-year period, the longer-term emissions from any given waste are attributed to the year in which that waste is deposited (Gibbs et al., 2014b). Therefore, the positive effect of diverting BMW from landfill shows in the figures as an immediate reduction in greenhouse gas emissions from landfill.

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 included or not included in the MSW recycling reported;

- 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.

Due to a change in the reporting methodology in the National Statistical Institute (NSI) currently includes packaging waste in the reporting of municipal waste recycling to Eurostat (ExEA, 2015). There is no information about how much of the recycled packaging waste is from households and similar sources, but it can be assumed that at least a part of it comes from households.

The national reporting of the waste management activities was updated, after adoption of the new waste management act (July 2012). The data have been revised according to the new methodology for the entire series and thus there is no break in time series in the data used to produce the figures presented in this report. According to Ordinance No. 1 of 4 June 2014 on the procedures and forms for providing information about waste and procedures for keeping the public registers (prom. SG. 51 of 20 June 2014) the person with waste management activities (from producers of waste to operators of installations and landfills) has an obligation to keep the records about activities and to send annual reports, with summarized quantity of waste. After data processing, checking and verification procedures all aggregated data are sent to NSI for additional quality assurance (QA/QC) procedures. The NSI also receives questionnaires from municipalities, regarding data on collected, treated and disposed of MSW. Finally, the aggregated data concerning all waste types and respective activities are reported to Eurostat. Additionally, most of the new regional waste systems have implemented electronic systems for weighing and recording waste (ExEA, 2015).

Previously one reason for uncertainty in waste reporting was the recycling activities of the informal sector. However, the method for municipal waste data collection for reporting to Eurostat was changed in 2012 to better account for waste from people collecting beyond the organised collection, based on observation. This change of methodology lead to lower uncertainty, i.e. the share of “calculated” quantity, based on a statistical approach and mathematical instruments, decreased compared to the share of the reported quantity of generated waste. (ExEA, 2015)

2.3 Important initiatives for improving municipal waste management

In 2001, 2 500 landfill sites were observed by regional environmental inspectorates in Bulgaria, out of which 124 were controlled and only nine met EU standards (REC, 2001). The closing down and rehabilitation of non-compliant landfill sites and the elimination of illegal dumpsites are still in progress in the country. At the end of 2013, 30 regional landfill sites for municipal waste had been constructed. Ecologically non-compliant landfills have been closed and as a result, the total number of sites diminished from 278 in 2009 to 144 in 2013. (NSI, 2015b)

As a deterrent, a landfill tax was introduced for municipal waste in Bulgaria in 2011. The tax level has been increased regularly, the 2015 level being 28 BGN/tonne (EUR 14.3 per tonne). The rate will be increased to 95 BGN/tonne (EUR 48.6 per tonne) by 2020 (ExEA, 2015).

It is likely that initiatives taken by the Bulgarian government after 2010 (the Waste Management Act, adopted in July 2012; NWMPs for 2009–2013 and 2014–2020; the National Strategic Plan for diversion of biodegradable waste going to landfill 2010–2020; and Decree No 207/16.09.2010 on landfill tax) will help to improve the country’s recycling rate.

According to the 2012 Waste Management Act, municipalities have an obligation to collect at least paper and cardboard waste, metal waste, plastic waste and glass waste separately (ExEA, 2015).

The first MBT plant in Bulgaria began pilot operations in 2009 in the city of Plovdiv, and currently three MBT plants are operational in the country: in Varna, capacity 140 000 tonnes per year, in Plovdiv, with capacity of 43 800 tonnes per year, and in Sofia, capacity of 410 000 tonnes/year. The

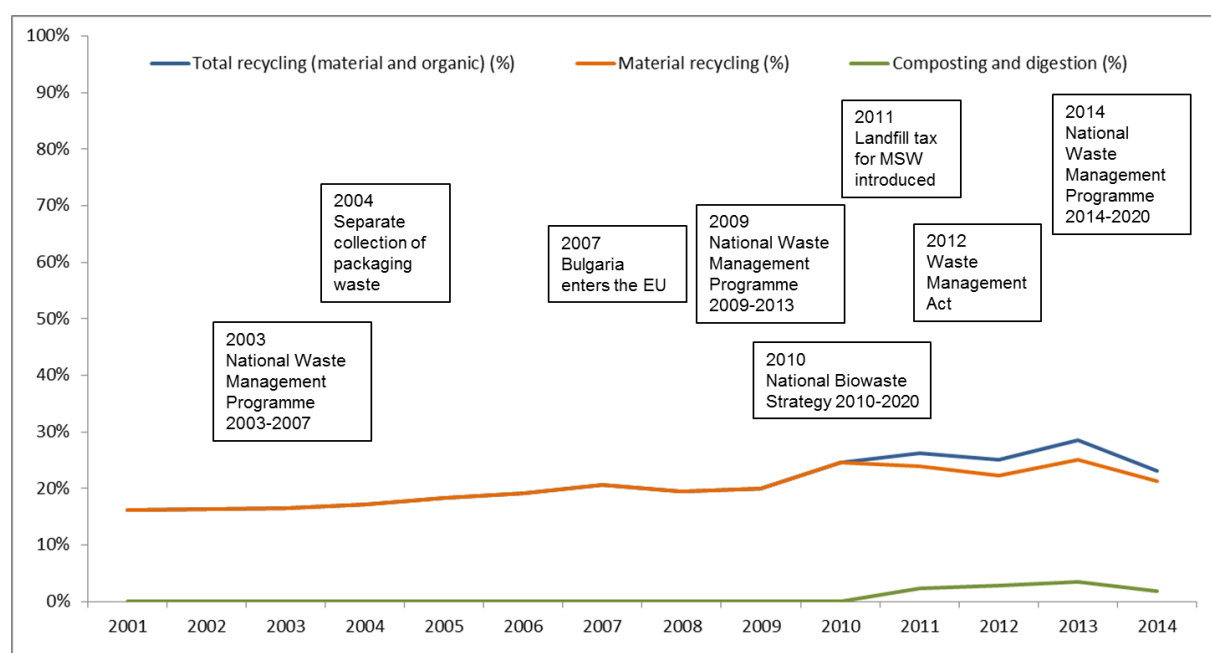
MBT plants include mechanical/manual separation and sorting, biological treatment of organic waste and production of refuse derived fuel (RDF) (ExEA, 2015).

The latest NWMP (2014–2020) sets objectives to meet the 50 % recycling target of the EU’s WFD, whilst also meeting the Landfill Directive’s BMW targets. This is to be achieved by improving the waste collection point infrastructure, increasing the landfill tax to BGN 95 (EUR 48.6) per tonne by 2020 and imposing fines on authorities and producer-responsibility organisations that do not meet Landfill Directive targets or that do not provide separate collection in line with the new NWMP. Responsibility for implementing the strategy lies with local authorities. (Gibbs *et al.*, 2014a)

Extended producer responsibility (EPR) 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 over the responsibility for collecting or taking back used goods and for sorting and treating them for eventual recycling. The responsibility can be either voluntary or through a statutory EPR scheme set up by one or several producers. Bulgaria has EPR systems for packaging, batteries and accumulators, waste electrical and electronic equipment (WEEE), vehicles, oils and tyres (ExEA, 2015; EC, 2012).

Bulgaria has introduced additional product fee for plastic bags with thickness of 25 microns (ExEA, 2015).

Figure 2.5 Bulgaria, recycling of municipal waste in and important policy initiatives, 2001–2014



Source: Eurostat, 2016.

2.4 Possible future trends

The recycling sector is expanding rapidly in Bulgaria. Major investment in the construction of pre-treatment facilities and installations for waste separation is envisaged under the Operational Programme Environment 2007–2013 (NWMP, 2009). European funds are to be complemented by state and municipal budgets as well as loans from the World Bank, European Bank for Reconstruction and Development (EBRD) and European Investment Bank (EIB). Funds for home composting will be provided by the Environmental Protection Fund.

The Bulgarian Ministry of Environment and Water has adopted a national strategic plan for diverting biodegradable waste from landfill during the period 2010–2020 to facilitate a gradual reduction in the amount of BMW going to landfill. In addition, sub-legislation concerning the management of bio-waste is in force (Ordinance on the separate collection of bio-waste, adopted by Decree No. 275 of 06 December 2013 and Ordinance for the treatment of bio-waste, adopted by Decree No. 235 of 15 October 2013). In order to reach the targets of NWMP 2014–2020 for biodegradable waste, the construction of composting and anaerobic digestion installations with a total annual capacity of 654 000 tonnes is planned on national level. (ExEA, 2015)

Considering the current level of recycling of MSW in Bulgaria, the country will need to speed up efforts on recycling in order to fulfil the 50 % recycling target by 2020. It is likely that certain initiatives taken after 2010 by the Bulgarian government will contribute to an improvement in recycling rates.

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