Country fact sheet

Municipal waste management

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Austria

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European Environment Agency
European Topic Centre on Waste and
Materials in a Green Economy

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/

Contents

Highlights

- Austria has one of the highest levels of municipal waste (MSW) recycling in Europe (56 % in 2014), even though for 2010–2014 total recycling rates were slightly below the ones recorded in 2007–2009.
- Overall, for 2004–2014 Austria's rate of MSW recycling has been stable and at a very high level, despite a 4 % growth in the generation of MSW in absolute terms.
- Austria has had a policy for the separate collection of biogenic waste across the entire country since 1995. In 2008, about 105 kilograms per person of biogenic waste were collected separately.
- In 2014, Austria's recycling rate of organic waste (31%) was by far the highest in the EU-28.
- Austria has one of the lowest landfilling rates in the EU-28 and has eliminated the landfilling of biodegradable municipal waste.
- Incineration of MSW has significantly increased in the last decade. Since 1991, all municipal waste incineration plants feature energy recovery for district heating.

1 Introduction

1.1 Objective

Based on historical municipal waste (MSW) data for each country and EU targets linked to MSW in the Waste Framework Directive (2008/98/EC), the Landfill Directive (1999/31/EC) and the Packaging and Packaging Waste Directive (94/62/EC), the analysis undertaken includes:

- the historical performance on MSW management based on a set of indicators;
- uncertainties that might explain differences between the countries' performance which are more linked to differences of what the reporting includes than to differences in management performance;
- the country's most important initiatives taken to improve the management of MSW; and
- possible future trends.

2 Austria's municipal waste management performance

Austria is at the forefront of waste management policy. In 2014, the country generated a high per person amount of MSW, 566 kilograms per person compared to the EU-28 average of 474 kilograms, but had also the highest recycling rate of organic waste (31 %) and one of the lowest landfilling rates (4 %) in the EU-28.

According to the Austrian constitution, responsibility for municipal waste management is split between the federal and provincial governments (ETC/SCP, 2009). The Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) is responsible for adopting the required country-wide provisions. The federal government has issued a number of ordinances for specific waste streams, as well as waste treatment methods.

The main piece of waste legislation is the 2002 Waste Management Act, setting the framework for waste management in Austria, which is complemented by several waste ordinances. The 2011 Federal Waste Management Plan contains provisions for the proper treatment for specific waste streams and incorporates the Waste Prevention Programme.

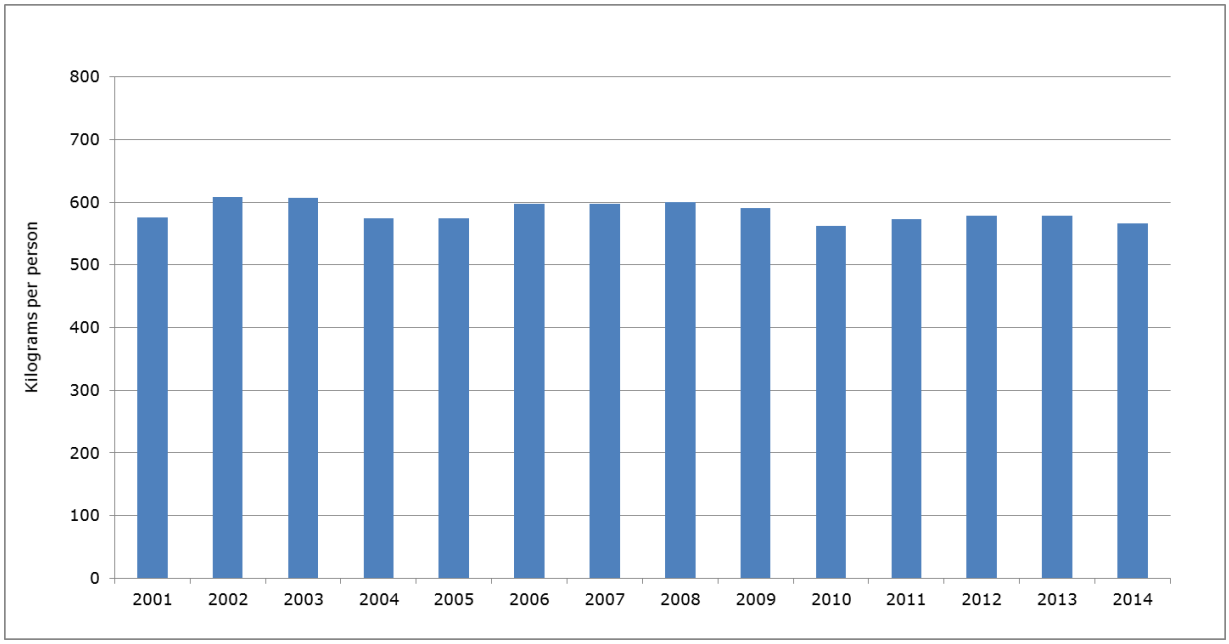
2.1 Municipal waste indicators

The following indicators illustrate the development of Austrian MSW generation and management in 2001–2014. All percentage figures have been calculated by relating the waste managed to the generated amount rather than the managed amount. Relating to the total managed amount of MSW would generally result in higher rates for all waste management paths, as the amounts reported as treated are usually lower than generated amounts. This also applies to the 2004-2014 period, for which Austria has provided Eurostat with revised MSW generation and management data (compared to the data used in the 2013 edition of this country profile). In Eurostat (2013), for 2001–2003, treated amounts of MSW appeared higher than the amounts generated because of double counting[1].

[1] Until 2003, figures for recovery and disposal included secondary waste (particularly landfill). Thus the sum is above 100 %. From 2004 onwards, the figures for recovery and disposal no longer contain this double counting. Since 2004, landfilling is only

Figure 2.0 shows a rather stable development of MSW generation per person in Austria between 2001 and 2014 (Eurostat, 2016a). The highest amount of MSW generated was recorded in 2002 (608 kilograms per person), and the lowest in 2010 (562 kilograms per person). In 2014, Austria generated 4 833 000 tonnes of MSW, equal to 566 kilograms per person, which is well above the EU-28 2014 average of 474 kilograms per person. Municipal waste generation grew faster than private consumption for most of the 2000s (OECD, 2013).

Figure 2.0 Austria, municipal waste generation, 2001–2014, kilograms per person



Source: Eurostat, 2016a

Austria has a long tradition for diverting waste from landfill and a long established and good recycling system. Most of the MSW generated in the country is either recycled or incinerated.

2.1.1 The recycling of MSW from 2001 to 2014

Over the last decade, the level of MSW recycling has remained consistently high in Austria.

In 2014, around 4 170 000 tonnes of municipal waste was generated in Austria (Table 2.1). Of this, 2 483 000 tonnes were separately collected, about 1 427 700 tonnes were mixed (residual) waste, and some 259 500 tonnes were bulky waste.

permitted for pre-treated waste. In addition, the figures since 2004 include amounts treated in mechanical-biological facilities (after the deduction of decomposition losses) which were formerly allocated to composting (Eurostat, 2013).

Table 2.1 Austria, municipal waste collected, 2014, tonnes

Category	Quantity (tonnes)
Residual waste	1.427.700
Bulky waste	259.500
Biogenic waste and green waste	933.100
Waste paper	677.000
Waste glass	220.800
Waste wood	234.200
Light fraction	154.200
Scrap metal – household scrap (bulky waste collection)	85.700
Waste metals	29.200
Waste textiles	27.700
Other recoverables	25.200
Hazardous household waste	19.300
Waste electrical and electronic equipment	76.700
Total (rounded)	4.170.000

Source: BMLFUW, 2011a-c: Federal Waste Management Plan, 2011, updated by Status Report 2015 and Status Report 2014

As a result of separate collection, about 60 % of the total amount collected, was destined for recycling or special treatment.

As Figure 2.1 shows, over the 2004–2014 period (2001-2003 data is affected by double counting[1]), 56–63 % of MSW was recycled, of which 24–30 % was material recycling – including metal, glass, plastic, paper and cardboard recycling, but excluding composting – while composting and other biological treatment together accounted for the remaining 31–34 %.

This is among the highest recycling levels in the EU, even though total annual recycling rates fell below 60 % in 2010–2014 mainly due to a decrease in material recycling rates. In 2014, the material recycling rate was 25 %, slightly below the EU average of 28 %, while the organic recycling rate, at 31 %, was by far the highest in the EU.

According to the Federal Waste Management Plan (BMLFUW, 2011, updated by the Status Report 2015), in 2014 some 917 400 tonnes of organic waste were treated in composting and biogas facilities, and around a further 603 000 tonnes were treated in mechanical or mechanical-biological treatment (MBT) plants. Of this, about 432 000 tonnes were biologically treated; around 153 000 tonnes of waste with high calorific value were separated and sent for incineration; and the remainder, about 18 000 tonnes were metals that were recovered for recycling.

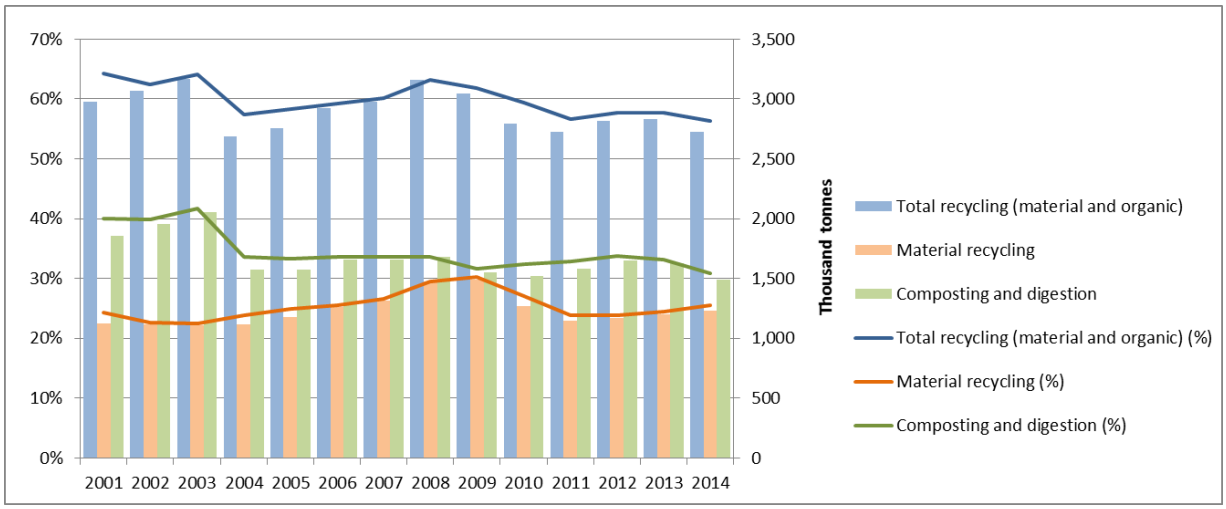
As the biologically treated residues from MBT 274 000 tonnes in 2014, did not fulfil the compost criteria and were landfilled, only the 18 000 tonnes of recovered metals from MBT treatment could be taken into account in the recycling rate.

The EU's 2008 Waste Framework Directive (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 for calculating compliance with the target[2] – Austria chose calculation method 2 (Gibbs *et al*., 2014a). The recycling rates shown in this

[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:

paper correspond to method 4, the only method for which time series exist. According to this method, the level of MSW recycling in the 2001–2014 period has been above 50%. Therefore, it is very unlikely that the country will have any problem in meeting the EU recycling targets by 2020. 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, but with the possibility of time derogations for some countries (EC, 2015).

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



Source: Eurostat, 2016a.

Note: According to Eurostat (2013), for 2001–2003, treated amounts of MSW are higher than generated amounts because of double counting.

2.1.2 Landfilling of biodegradable municipal waste

According to the EU Landfill Directive (1999/31/EC), Member States shall reduce the amount of biodegradable municipal waste (BMW) landfilled to 75 % of the total amount of BMW generated in 1995 by 2006; to 50 % by 2009; and to 35 % by 2016.

Austria has met all three targets, well in advance, as, by 2006, no BMW was landfilled.

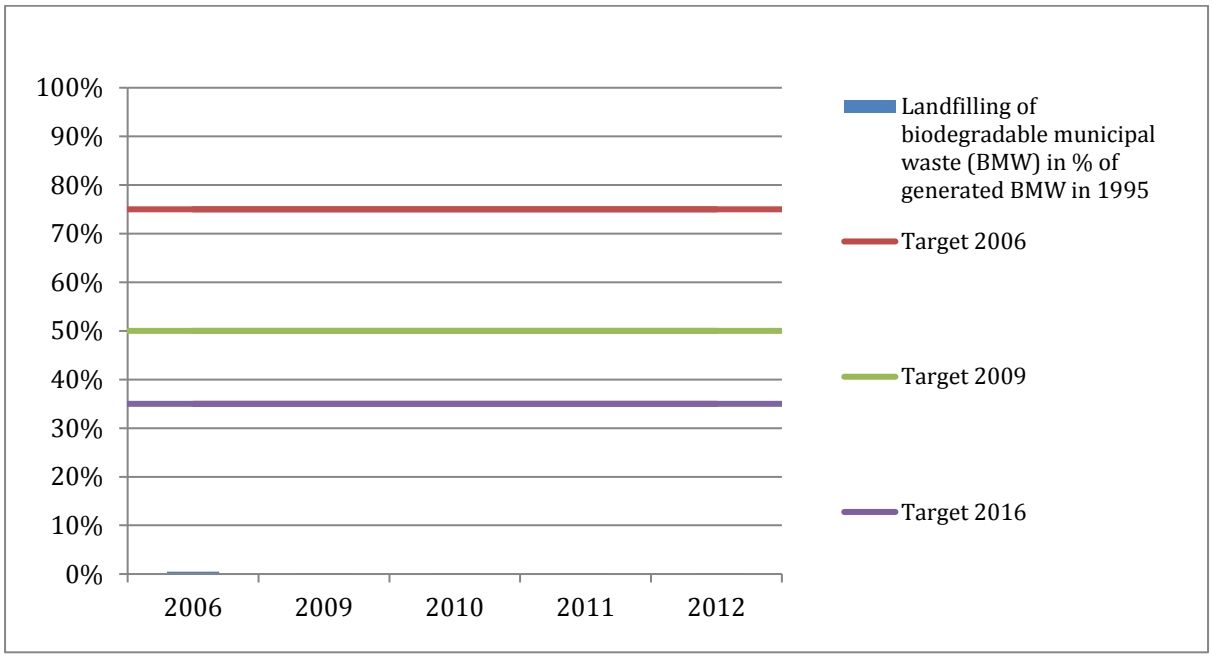
Ban on biodegradable municipal waste

All the main legislation to divert biodegradable municipal waste from landfills was adopted in Austria before the respective EU legislation came into force. Austria has achieved a decrease to almost zero BMW landfilling following the full implementation of the landfill ban on waste containing more than 5 % by weight of total organic carbon (TOC) (introduced by the Landfill Ordinance 1996, Law Gazette II No 164/1996, as revised in 2008 and amended in 2014). The TOC limit does not apply to waste from MBT plants. However, the calorific value of MSW pre-treated in MBT plants has to be

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

below 6.6 megajoules (10^6 joules) per kilogram of dry matter to be accepted for landfill (ETC/SCP, 2012).

Figure 2.2 Austria, landfilling of biodegradable municipal waste, 2006–2012, % of biodegradable municipal waste generated in 1995



Source: EC, forthcoming
Note: No data for 2007 and 2008

In second place, the Ordinance on the Separate Collection of Biogenic Waste (Federal Law Gazette No. 68/1992) has introduced, since 1992, specific requirements on separate collection of biogenic waste – biowaste and paper waste. In particular, if bio-waste is not recovered directly by the household or establishment, it must be made available for separate collection or be delivered to a designated collection point. For paper waste – packaging, as well as other paper – an effective separate waste collection system was installed providing separate bins for almost every house.

Moreover, the 2001 Ordinance on Quality Requirements for Compost from Waste (Compost Ordinance, FLG II Nr. 292/2001), laid down standardised, nationwide rules for the production, marketing and labelling of compost as a product, so that it can be used in a safe and environmentally sound way.

These two approaches are supplemented by a landfill tax (Section 2.1.4).

Because of these legislative provisions, Austria extensively uses MBT and currently has 14 plants with a total authorised capacity of 661 450 tonnes (BMLFUW, 2011, updated by Status Report 2015).

The BMLFUW published a guideline for MBT in 2002.

In MBT, mostly residual MSW is sorted and treated. This is the part of the MSW that is not separately collected for recycling. In the MBT, the residual municipal waste is separated into:

1. lower calorific value waste – the bulk of biodegradable waste;
2. higher calorific value waste – mostly plastics;

3. metals.

The lower calorific value waste is biologically treated at the MBT plants. This is meant to be a pre-treatment step before landfilling, as the contamination levels in the biologically treated output are too high for it to be used for soils. The separated higher calorific value waste, mostly plastics, is forwarded to incineration for energy recovery. The metal fraction is recycled. The combined functions of MBT contribute to the diversion of MSW from landfill.

From the MBT output, in 2014, 36 % was classified as waste from households – the remainder being similar waste from commercial sources (BMLFUW, 2011 a-c).

2.1.3 Regional differences in municipal waste recycling, 2001–2013

Austria has reported regional recycling data of MSW to Eurostat. Figure 2.3 shows regional differences in the development of total MSW recycling in 2004 and 2007–2013, as no data is available for 2001–2003 and 2005–2006 (Eurostat, 2015a).

Austria has nine regions (Figure 2.3): Burgenland (Burgenland), Styria (Steiermark), Carinthia (Kärnten), Vorarlberg (Vorarlberg), Tyrol (Tirol), Salzburg (Salzburg), Upper Austria (Oberösterreich), Lower Austria (Niederösterreich), Vienna (Wien).

In 2013, total population ranged from 286 691 in the Burgenland to 1 741 246 in the Vienna region (Eurostat, 2015b), while population density, in 2013, ranged from 57 people per square kilometre in the Tirol region to 4 439 people in the Vienna region (Eurostat, 2015c). In 2013, gross domestic product (GDP) per person, as a percentage of the EU-28 average, ranged from 88 % in the Burgenland to 159 % in the Vienna region (Eurostat, 2015d).

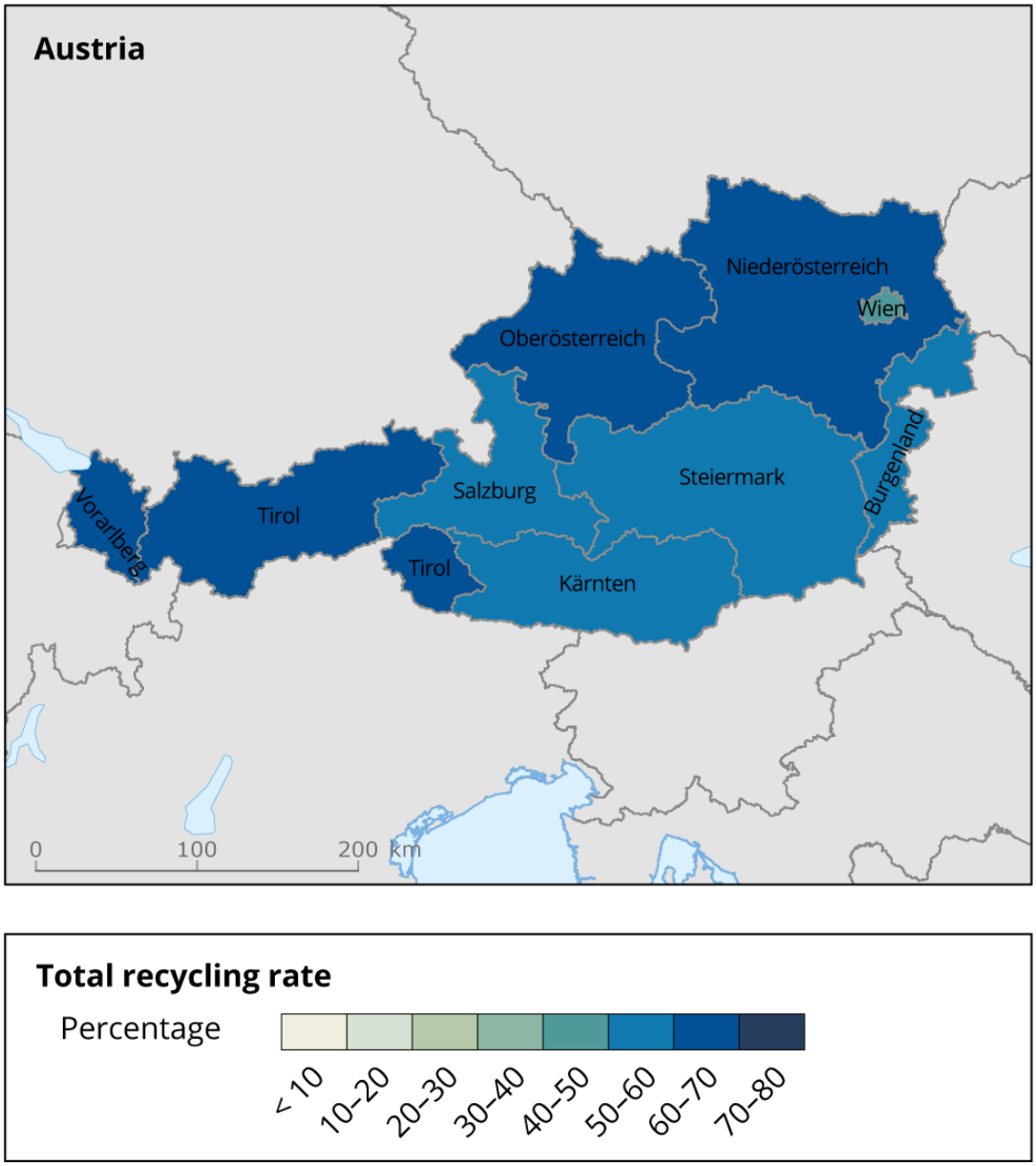
In 2013, Austria, across all regions, achieved a 100 % coverage rate of MSW collection (Eurostat, 2016b).

Figure 2.3 shows regional differences in MSW total recycling in 2013, when total recycling rates ranged from 44 % to 67 % across the regions.

In 2013, Vienna, the capital region, shows the highest amount of MSW generated, 1 604 920 tonnes, and the lowest percentages of both total recycling, 44 %, and material recycling, 18 %. In the same year, the organic recycling rate of 26 % was the second lowest in the country. The relatively low level of recycling, compared to the other regions, is due to the high share of incineration –53 % in 2013. Nevertheless, 53 % of MSW is a high recycling rate compared to many other metropolitan regions in the EU.

In 2013, Upper Austria had the best total recycling rate, 67 %, while Vorarlberg was the best performing region with regard to material recycling, 35 %. The best and worst performing regions with regard to organic recycling were Lower Austria, 40 %, and Carinthia, 26 %.

Figure 2.3 Austria, regional differences in municipal waste recycling, 2013, per cent

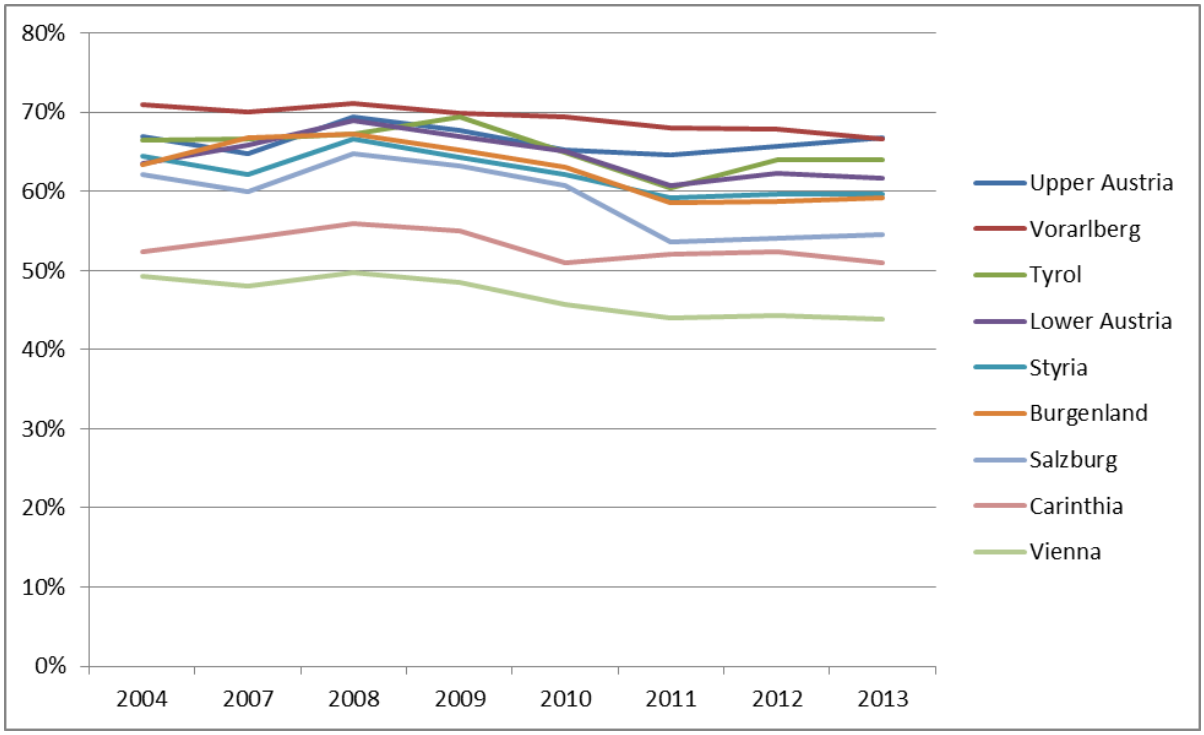


Source: Eurostat, 2015a.

Although all regions have high recycling rates, there are quite large differences between them. This is the case both for material recycling and organic recycling. This indicates that next to national waste policies, regional and local policies in Austria might have a significant influence on the recycling levels of MSW.

Similarly to the nation-wide trend (Figure 2.1), the overall recycling performance has slightly decreased since 2009 (Figure 2.4), mainly because of material recycling – organic recycling rates have been more stable.

Figure 2.4 Austria, regional differences in municipal waste recycling, 2004-2013, per cent



Source: Eurostat, 2015a.
Note: the ratio between treated amounts and waste generated varies between 86 % and 100 % over the regions and years (Eurostat, 2015e)

2.1.4 The relationship between landfill tax and recycling levels of municipal waste

The Austrian landfill tax (*Altlastenbeitrag* or ALSAG tax) was introduced in 1989 with the aim of raising revenues for the clean-up of contaminated sites and pollution prevention. Since 1996, rates have been differentiated according to the technical quality of the landfill site and the type of waste landfilled.

In particular, as highlighted by Table 2.2, the landfill tax applies to the following categories of waste:

1. reactive (for example biodegradable) waste in non-compliant landfills;
2. reactive waste in compliant landfills;
3. non-reactive waste fulfilling the conditions of mass waste landfill (*Massenabfalldeponie*[3]).

[3] Conditions for waste that can be landfilled and requirements for each type of landfill are defined in the Austrian Landfill Ordinance

Table 2.2 Landfill taxes in Austria

ALSAG – landfill tax for municipal waste, EUR per tonne	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Since 2012
Reactive waste in non-compliant landfills	72.7	72.7	72.7	94	94	116	116	na	na	na	na	na
Reactive waste in compliant landfills	43.6	43.6	43.6	65	65	87	87	87	87	na	na	na
Non-reactive waste fulfilling the conditions of mass waste landfill	na	na	na	21.8	21.8	26	26	26	26	26	26	29.8

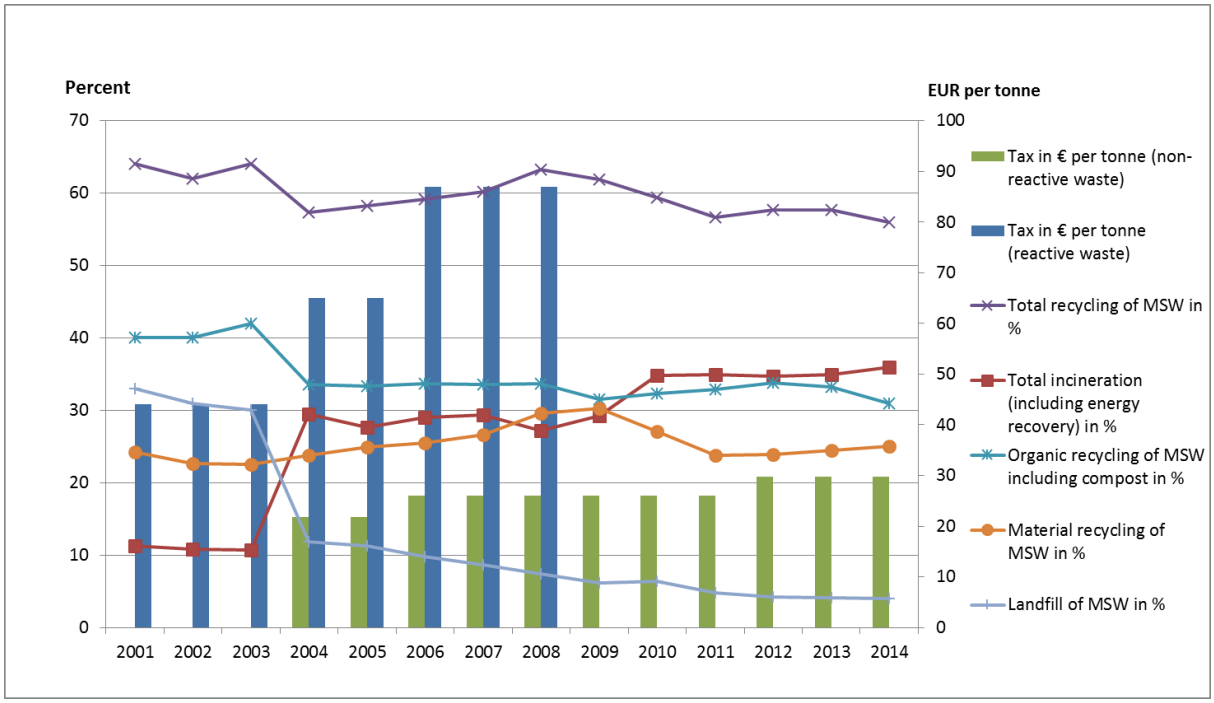
Source: Altlastensanierungsgesetz (BGBl 1989/299) in the versions valid during the respective years.

A first distinction made is that between compliant and non-compliant landfills. In 1996–2008, sites with lower technological standards, for example, those without landfill gas capture, paid a much higher rate than those with state-of-the-art technology. This was a clear incentive to modernise landfills: while in 1996–1997, 21 sites did not meet the latest technological standards, by 1999 this applied to only four sites (ETC/SCP, 2012). All non-compliant landfills had been phased out by 2008, so the higher tax rate is no longer applied (ETC/SCP, 2012).

Secondly, different landfill tax rates have been traditionally applied to reactive and non-reactive waste – the fee for the landfilling of biodegradable waste was EUR 43.6 in 2001; EUR 65 in 2004; and EUR 87 in 2006. Since 2009, landfilling waste containing more than 5 % by weight of TOC has been banned, except for mechanically biologically pre-treated waste – this attracted a landfilling fee of EUR 26 in 2009 and EUR 29.8 in 2012 (ETC/SCP, 2012). The current landfill rate of EUR 29.8 is low compared to other EU Member States (Bio Intelligence Service, 2012).

Indicators presented in Figure 2.5 illustrate the development of the tax against that of landfilling and incineration, as well as that of total, material, and organic recycling, between 2001 and 2014.

Figure 2.5 Austria, development of landfilling, incineration and recycling of municipal waste and the landfill tax, 2001–2014, per cent and EUR per tonne



Source: Austria, 2016 ; Eurostat, 2016a ; ETC/SCP, 2012

Notes: Only the tax rates for compliant landfills are included. Since 2009, waste containing more than 5 % by weight of TOC is banned from landfilling, except for mechanically-biologically pre-treated waste, which has higher limit values for TOC. According to Eurostat (2013), in 2001–2003 treated amounts of MSW appeared higher than generated amounts because of double counting.

The gradual increase in landfill tax rates up to 2008, coupled with the ban on landfilling BMW implemented in the 2004–2008 period, reduced landfilling. According to Eurostat (2016a), the amount of landfilled municipal waste fell by 64 % between 2004 and 2014.

A positive trend can be observed in total recycling, mainly due to an increase in material recycling between 2004 and 2008, and in incineration for 2001–2014. This, in turn, has led to a reduction in the quantity of waste going to landfill. The shift to incineration has been stimulated by the introduction of the landfill ban for biodegradable waste in 2009, and by the fact that the incineration tax, introduced in 2006, is much lower than the landfill tax – EUR 7 per tonne from 2008 to 2011 and EUR 8 per tonne from 2012 (ETC/SCP, 2012).

2.1.5 Environmental benefits of better municipal waste management

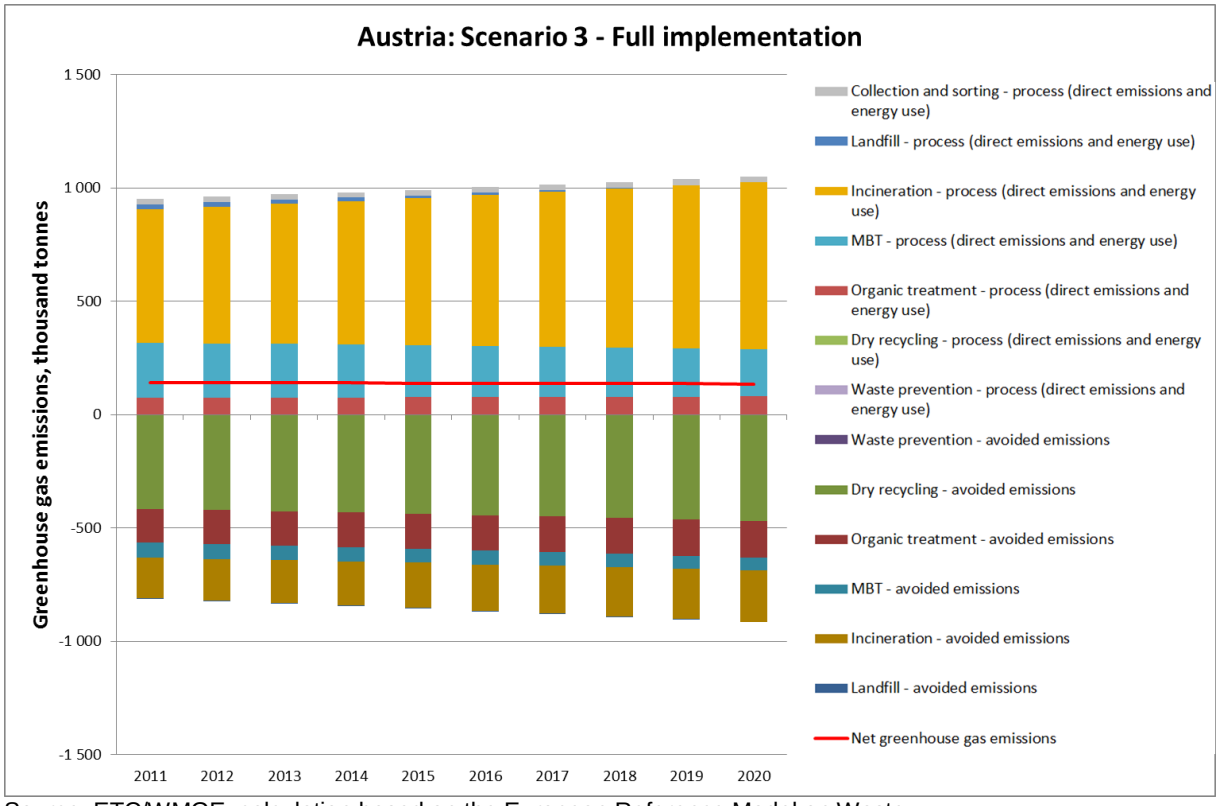
Figure 2.6 shows a scenario for greenhouse gas (GHG) emissions from MSW management in Austria. The scenario assumes a yearly growth rate of 0.85 % for MSW generation for 2011–2015 and 1.0 % for 2015–2020. The scenario also assumes that EU targets for MSW are fully met. The calculation of emissions is based on data and assumptions in the European Reference Model on Municipal Waste Generation and Management. The approach taken 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 2.6 shows direct, avoided, 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; MBT and related technologies; collection and sorting; incineration and landfill.

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

Based on the modelled scenario with full policy implementation, net emissions from the treatment of municipal waste in Austria are expected to be slightly positive, with emissions from processes outweighing avoided emissions, and stagnate in 2011–2020. The reason for this is that Austria has already met the EU 2020 targets, and therefore the scenario does not imply relevant changes in municipal waste management. Throughout the modelled time period greenhouse gas emissions related to municipal waste management originate mostly from incineration and MBT. Landfill only marginally contributes to emissions.

Figure 2.6 Austria, 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.

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 the reported data for 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.

Austria includes packaging waste from households in the reported amounts of MSW. Waste treated in MBT plants is reported based on outputs, therefore the generated amounts of MSW are higher than the treated amounts, taking into account mass losses during the treatment process.

2.3 Important initiatives taken to improve municipal waste management

The 2002 Waste Management Act, with its related legislation, is the key federal law that established the countrywide regulatory framework for the management of waste and set out a waste management hierarchy in line with the EU waste policy. In addition, all the nine Austrian regions have their own laws on collection, treatment and charges of non-hazardous waste (OECD, 2013).

The Waste Management Act requires the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) to prepare a federal waste management plan at least every six years. The latest one, approved in 2011, runs to 2016. This plan was evaluated positively within the screening of *ex-ante* conditionality regarding the consistency of national waste management plans with the requirements of the Waste Framework Directive (total score of 9/10, classification green; Arcadis, 2014).

To further promote waste prevention and recovery, the BMLFUW launched a Prevention and Recycling Strategy in 2006 and adopted a Waste Prevention Programme in 2011. The former is aimed at achieving emission reduction; the reduction of hazardous substances and their dissipation; and resource efficiency. The latter, which is part of the 2011 Waste Management Plan, targets the construction sector; industries and households in general; the food sector, and particularly food industries, retailers, large scale catering establishments and households; and the re-use sector including repair networks. The programme mainly focuses on providing examples of best practice, disseminating supporting information, establishing networks and removing legislative barriers. An update of the Austrian Waste Prevention Programme, taking into account of experience gained in Austria and other EU Member States is to be prepared in 2017. In 2012, the Resource Efficiency Action Plan established a policy framework for achieving the target of improving resource productivity by 50% by 2020 (OECD, 2013). Finally, Austria is in the process of adopting a target on the reduction of preventable food waste in line with the corresponding UN sustainable development goal on halving the per person generation of food waste by 2030.

Other relevant pieces of waste legislation, often adopted before the EU legislation came into force, cover a number of fields, including biodegradable waste, landfilling and a number of specific waste streams.

- ✓ Biodegradable waste: the 1992 Ordinance on the Separate Collection of Biogenic Waste (Federal Law Gazette No. 68/1992) introduced specific requirements for separate collection of biogenic waste – bio-waste and packaging paper waste. Further, the 2001 Ordinance on Quality Requirements for Compost from Waste (Compost Ordinance, FLG II Nr. 292/2001) laid down standardised, nationwide rules on the production, marketing and labelling of compost. In 2012, about 875 000 tonnes of biogenic and green waste were separately collected (BiPRO, 2015) and,

in 2014, Austria had the highest organic recycling rate in the EU-28 – 31 % compared with the EU-28 average of 16 %.

- ✓ Landfilling: in 1989 the Act on the Remediation of Contaminated Sites introduced a tax on landfilled waste (ALSAG) which, on one hand, financed the remediation of contaminated sites and, on the other, provided a financial incentive for treating and recycling waste, instead of landfilling it. The landfill tax increased in 2004 and again in 2006 (Table 2.2), and an incineration tax was introduced in 2006. The 1996 Landfill Ordinance (Law Gazette II No 164/1996) has gradually implemented, over the 2004-2008 period, a ban on landfilling waste containing more than 5 % by weight of TOC – this, however, does not apply to waste from MBT.
- ✓ Specific waste streams: packaging waste, waste electrical and electronic equipment (WEEE) and waste batteries are regulated, respectively, by the 2014 revised Packaging Ordinance (BGBl. 184/2014), the 2005 WEEE Ordinance (BGBl. 121/2005) and subsequent amendments, and the 2008 Battery Ordinance (BGBl. 159/2008). According to the Packaging Ordinance, which came into force on 1 January 2015, all manufacturers, distributors and importers that place packaging or packaged goods on the Austrian market are required to take the packaging back free of charge and ensure its recycling or reuse. The following separate collection and recycling targets for household packaging waste have been established, based on the weight of materials collected in a calendar year, and inputs to recycling facilities (BiPRO, 2015):
    - paper, cardboard, board, corrugated-board: separate collection 80 % and recycling 95 %;
    - glass: separate collection 80 % and recycling 100 %;
    - metals: separate collection 50 % and recycling 100 %;
    - plastic: separate collection 60 % and recycling 50 %;
    - bonded drinks cartons: separate collection 50 %, recycling 60 %;
    - other composite materials: separate collection 40 %, recycling 40 %.

According to the 2011 Waste Management Plan, there are currently seven accredited collection and recovery systems for packaging[4], five for WEEE[5], and five for waste batteries and accumulators[6]. Austria is among the few EU countries in which producers cover all the costs of managing these waste streams (BIO Intelligence Service, 2012; OECD, 2013). In addition to producer responsibility schemes for packaging waste, there is a deposit/refund system for refillable bottles of EUR 0.29 per unit for beverages and EUR 0.09 per unit for beer. There is also a voluntary deposit system for bottles operated by single fillers (Gibbs *et al*., 2014a).

Thirty-three per cent of all households in Austria have door-to-door collections, covering dry recycling – mainly paper and plastic; organic waste; and residual (mixed) waste. Furthermore, 66 % of households are served by bring sites for dry recyclables – mainly glass and metals; textiles; food and garden waste; WEEE; batteries; hazardous waste; and residual waste (BiPRO, 2015; Gibbs *et al*., 2014). There are around 2 500 civic amenity sites in the country, which typically collect plastics; glass; paper; cardboard; metals; bulky waste; textiles; wood; hazardous waste; garden waste; tyres; and construction and demolition waste (Gibbs *et al*., 2014a).

Austria is one of the EU Member States that uses a pay-as-you-throw (PAYT) system across the country. The setting of fees falls under the competence of the relevant federal provinces and charges,are usually based on the size of a household waste bin and the frequency of collection. The fees levied are typically made up of a system charge, which is used to finance waste management activities such as the removal of litter, and a charge covering the costs of waste collection and

[4] ARA Altstoff Recycling Austria AG; AGR Austria Glas Recycling GmbH (in the ARA system); GUT (Galle Umwelttechnik GmbH; Öko-Box Sammel GmbH; Bonus Holsystem Gesellschaft m.b.H & Co KG; UFH Verpackung Systembetreiber GmbH; EVA Erfassen und Verwerten von Altstoffen GmbH.

[5] ERA Elektro Recycling Austria GmbH; UFH Elektroaltgeräte System Betreiber GmbH; UFH Altlampen Systembetreiber GmbH; EVA Erfassen und Verwerten von Altstoffen GmbH; European Recycling Platform (ERP) Österreich GmbH.

[6] ERA Elektro Recycling Austria GmbH; UFH Elektroaltgeräte System Betreiber GmbH; UFS Umweltforum Startbatterien GmbH; EVA Erfassen und Verwerten von Altstoffen GmbH; European Recycling Platform (ERP) Österreich GmbH.

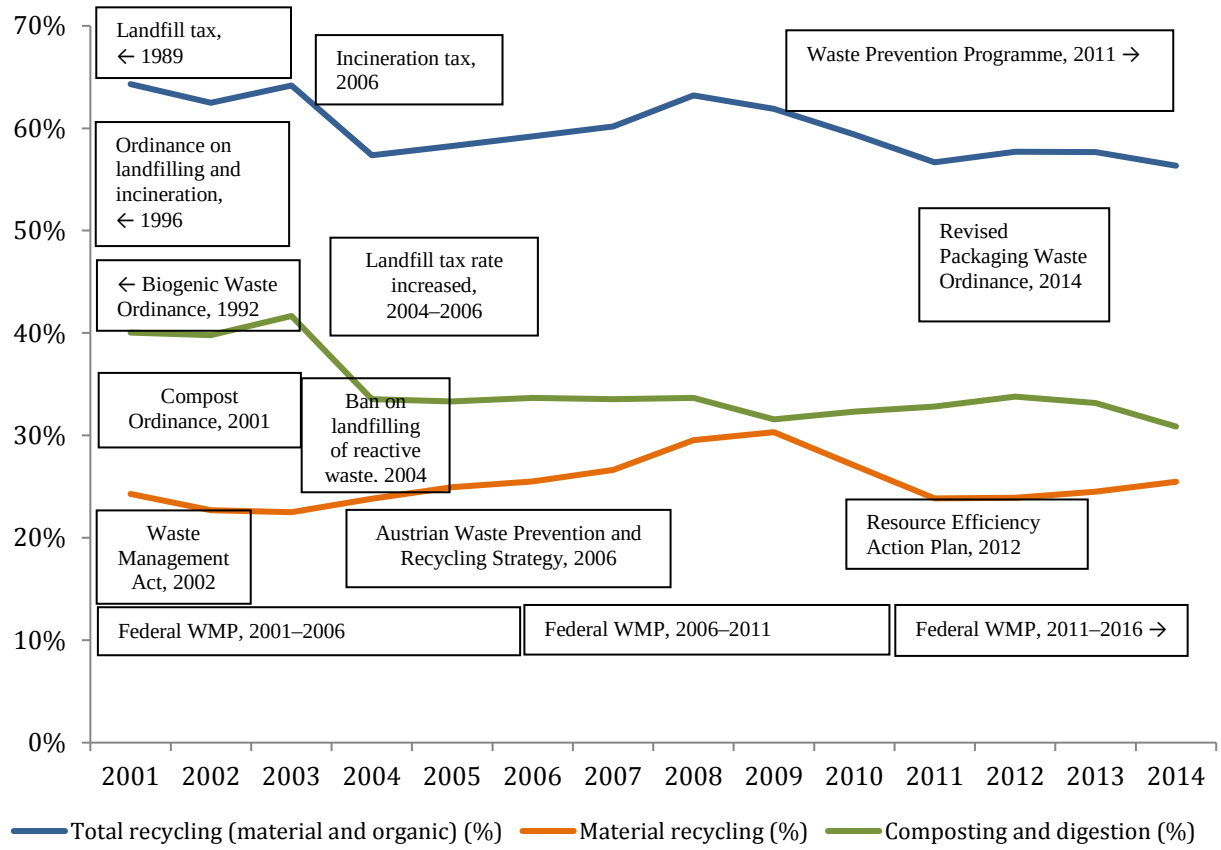
treatment (BIO Intelligence Service, 2012). According to government surveys, cost recovery is generally assured: about 60 % of municipalities cover at least 95 % of all waste service costs (OECD, 2013). Although based on the volume of waste generated, waste charges are relatively low and, as a result, their impact on waste prevention at a household level is limited (OECD, 2013; BIO Intelligence Service, 2012). Pay-as-you-throw schemes are only provided for single-family houses, with waste collection and treatment fees for apartment buildings being determined by apartment size (per square metre) as opposed to the size of the waste container (BIO Intelligence Service, 2012).

Table 2.3 Austria, waste treatment plants

Type of facility - including internal company facilities	*Number in 2014*
Municipal waste incineration plants	11
Thermal treatment facilities (excluding municipal waste incineration plants)	58
Physico-chemical treatment facilities	48
Selected processing plants for specific waste (fats and frying oil, asbestos waste, chemicals, batteries, etc.)	40
Plants for the treatment of WEEE	43
Shredder plants for scrap metals (including post shredders)	52
Processing plants for construction and demolition waste	411
Bio-technological treatment facilities for pre-treating residual and other waste (MBT)	14
Plants for the aerobic bio-technological treatment of separately collected biogenic waste, etc. (composting facilities)	411
Plants for anaerobic bio-technological treatment (biogas plants)	150
Plants for sorting and processing separately collected recoverables and other waste	167
Recovery plants for separately collected recoverables	94
Landfills	939

Source: BMLFUW, 2011, 2014, 2015

Figure 2.7 Austria, recycling of municipal waste, per cent, and important policy initiatives, 2001-2014



Source: Eurostat, 2016a

Note: According to Eurostat (2013), in the years from 2001 to 2003 the amount of MSW treated is higher than the amount generated because of double counting.

If municipalities or other actors within MSW management do not implement a national regulation, provided that the action constitutes an administrative rather than a criminal offence, they are liable to fines of EUR 850–41 200.

The outlined mix of regulatory and economic measures has supported the achievement of very positive results in MSW management. In the report published by the European Commission (BiPRO, 2012) on the screening of the EU Member States' waste management performances, Austria is ranked among those performing above average and obtained, along with the Netherlands, the highest overall score.

Table 2.3 provides a list of all waste treatment plants of the country in 2014, not just those dealing with MSW.

2.4 Possible future trends

Austrian waste policy aims to further 'increase the contribution of the Austrian waste management sector to sustainable material flows and waste management'. According to the Austrian strategic approach, wastes should be seen as a source of raw materials, waste management should contribute to a reduction of greenhouse gas emissions, and to the reduction of environmental pollution. One

example is that, while Austria already has a very high share of organic recycling of MSW, there is a potential to further increase the recovery of biogenic waste, and improve the capture of energy from this waste through biogas plants. Finally, Austria strongly focuses on waste prevention (BMLFUW, 2012) – its waste prevention programme, included in the 2011 Waste Management Plan, sets out a wide range of waste prevention measures, including reuse.

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