

## Landfill Tax, Incineration Tax and Landfill Ban in Austria<sup>1</sup>

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### Brief summary of the case

The Austrian landfill tax was introduced in 1989 to provide funding to clean up contaminated sites that pre-date the introduction of the tax. Austria remains the only EU Member State where the revenue from the landfill tax, around EUR 1.2 billion in total up to 2014, is exclusively used for this purpose. Landfill operators pay the tax on the basis of the tonnages deposited and rates vary depending on the type of landfill. For mass waste or hazardous landfills, the current rate is EUR 29.80 per tonne.<sup>1</sup> Austria has banned waste with a total organic carbon (TOC) content of greater than 5% from landfills since 2004, although the ban was delayed for particular federal states until 2008. This effectively forces municipal solid waste to be pre-treated through incineration or mechanical-biological treatment.

Incineration is taxed at EUR 8 per tonne with no tax applicable to mechanical-biological treatment. The combination of the landfill tax and ban (alongside several other waste management policies and regulations) has therefore helped to ensure that residual waste treatment has shifted significantly away from landfilling towards other treatment methods.

The history of the Austrian landfill tax is complex, with many significant amendments made over the years. The Landfill Ordinance, introduced in 1996, also placed specific technological requirements on landfills, with landfills required to comply with these new standards by 2004 (with extensions again given until 2008 to some operators). Combined with a higher landfill tax rate for depositing waste in lower standard landfills compared to state of the art ones, the Ordinance has therefore also played a key role in ensuring that current landfill sites operate with lower environmental impacts.

## 1 Description of the design, scope and effectiveness of the instrument

### 1.1 Design of the instrument

The Austrian landfill tax, known as the 'Altlastensanierungsbeitrag' ('ALSAG') or 'contaminated site contribution', was introduced in 1989 and levied from 1990 to fund the identification and clean-up of contaminated land and landfill sites. Since then, the tax has undergone significant amendment, including regular rate increases. Originally, the tax was charged on the basis of two waste types: ATS 200 (EUR 14.53) per tonne for hazardous wastes and ATS 40 (EUR 2.91) per tonne for all other wastes (Umweltbundesamt, 2000).<sup>2</sup> Alongside the introduction of the Landfill Ordinance in 1996, which set out requirements for landfills to conform to specific 'state of the art' technological standards by 2004,<sup>3</sup> the tax was significantly amended with rates differentiated according to the standard of technology at

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<sup>1</sup> While still being subject to the landfill ban, mass waste or hazardous landfills accept waste with a higher limit on solubility of pollutants in the waste, as well as a higher total hydrocarbon content level, than waste allowed in residual waste landfills, for which the tax rate is EUR 20.60 per tonne.

<sup>2</sup> Converted at the fixed exchange rate for the ATS (EUR 1 = ATS 13.7603).

<sup>3</sup> Some sites were given extensions to this requirement to 2009.

the landfill site. Lower standard technology landfill sites continued to pay tax on the basis of types of waste<sup>4</sup>, but with additional surcharges. Sites that met required criteria in terms of both the technology and the requirements of the Landfill Ordinance (see Section 1.2) were charged on the basis of landfill type<sup>5</sup> (ECOTEC et al, 2001; Lebensministerium, 2006).

The Landfill Ordinance also set out a **landfill ban** on waste with total organic carbon (TOC) content of over 5%, effectively banning all municipal solid waste (MSW) from being landfilled without pre-treatment. This has been in force since 1997 for new landfill sites and was due to be in force from 2004 for older sites, but a series of exemptions meant it was not fully enforced until the end of 2008. Treated output from mechanical-biological treatment (MBT) was, and remains, exempt from the landfill ban if it meets certain requirements<sup>6</sup> (ETC/SCP, 2013).

In the years from 1997 to 2008, the rates for all types of waste and sites increased. The highest rate charged, for MSW landfilled in a lower standard technology site, was EUR 87 per tonne from 2006 to 2008, plus a surcharge of EUR 29 per tonne where there was no impermeable liner or no vertical enclosure and a further EUR 29 per tonne where there was no landfill gas capture and treatment system (Lebensministerium, 2001).

In 2006, the tax was expanded to include an **incineration tax** of EUR 7 per tonne, and in 2008, as all landfill sites were then 'state of the art', the tax was amended to its current form. Current rates (since 2012) are as follows: landfills for construction or inert waste and soil excavation: EUR 9.20 per tonne; residual waste landfills: EUR 20.60 per tonne; and mass or hazardous waste landfills, including output from MBT: EUR 29.80 per tonne.<sup>7</sup> Untreated MSW that is stored or exported for disposal in a lower standard landfill is taxed at EUR 87 per tonne.<sup>8</sup> The incineration tax is EUR 8 per tonne. Several material exemptions are currently in place, e.g. for animal by-products, explosive wastes (military), wastes with high biogenic fractions and radioactive waste. Furthermore, particular activities are also exempt, including repositioning of waste, landfilling of wastes from natural disasters and use of material as part of a restoration layer or as temporary surface cover (BMF, 2016).

## 1.2 Drivers and barriers of the instrument

The legal basis for the landfill tax is the 1989 Clean Up of Contaminated Sites Act. This was triggered by specific problems with high-profile contaminated sites. The Act identified the need for funding to clean up these sites (which became the landfill tax) and, after the 1996 amendments, also to prevent such sites from posing problems in future, reducing greenhouse gas emissions and encouraging pre-treatment of waste (Eunomia Research & Consulting et

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<sup>4</sup> Types of waste: C&D waste, other mineral wastes, and other waste (e.g. household waste).

<sup>5</sup> Types of landfill: C&D waste, residual waste, and mass/hazardous waste landfills for landfills with state of the art technology.

<sup>6</sup> Requirements include stability criteria estimated using biological tests measuring the oxygen demand of the treated waste (respiration activity) or the gas formation at laboratory scale. The lower the oxygen demand or gas formation rate, the more stabilised the waste.

<sup>7</sup> The Landfill Ordinance provides definitions of waste allowed in each of these landfill types, including banning municipal waste without prior treatment from these landfills via the 5% TOC limit. 'Residual waste' in the Austrian definition is therefore not the same as, for example, the UK definition.

<sup>8</sup> Note that the European Directive on transfrontier waste shipments also places restrictions on the export of waste.

al., 2009). However, the landfill tax was principally a revenue raising mechanism, and that remains one of its key aims today. As the landfill tax was introduced at such a low rate, it did not encounter significant opposition.

The 1996 Ordinance on Landfilling was introduced to put further controls on waste sent to landfill. There was limited capacity in landfills, which was a concern for both regional and national governments. The Ordinance, therefore, both introduced measures to incentivise better environmental practices at landfills (effective immediately, via the amended landfill tax rates), and outlined the landfill ban, planned for specific waste types from 2004, which forced waste treatment higher up the waste hierarchy. A long lead-in time – as well as extensions for some federal states – was given to allow time for federal states to prepare and invest in alternative treatment (Lebensministerium, 2006). Throughout the early 1990s, at least some federal states had continued to invest in landfills, and they therefore requested extensions of the deadline so they could make use of their capacity. The incineration tax was introduced to continue to ensure funding for the clean-up of contaminated sites. The rate was relatively low at EUR 7 per tonne, so was not politically controversial (Kronberger, 2016).

Alongside these specific measures, a number of other regulatory measures have been introduced in Austria over the years to manage and encourage better waste management and treatment. This includes the 1990 Waste Management Act (and its significant amendment in 2002), the 1995 Ordinance on the Separate Collection of Biowaste and the 1996 Ordinance on Packaging (ECOTEC et al., 2001; Lebensministerium, 2006).

### **1.3 Revenue collection and use**

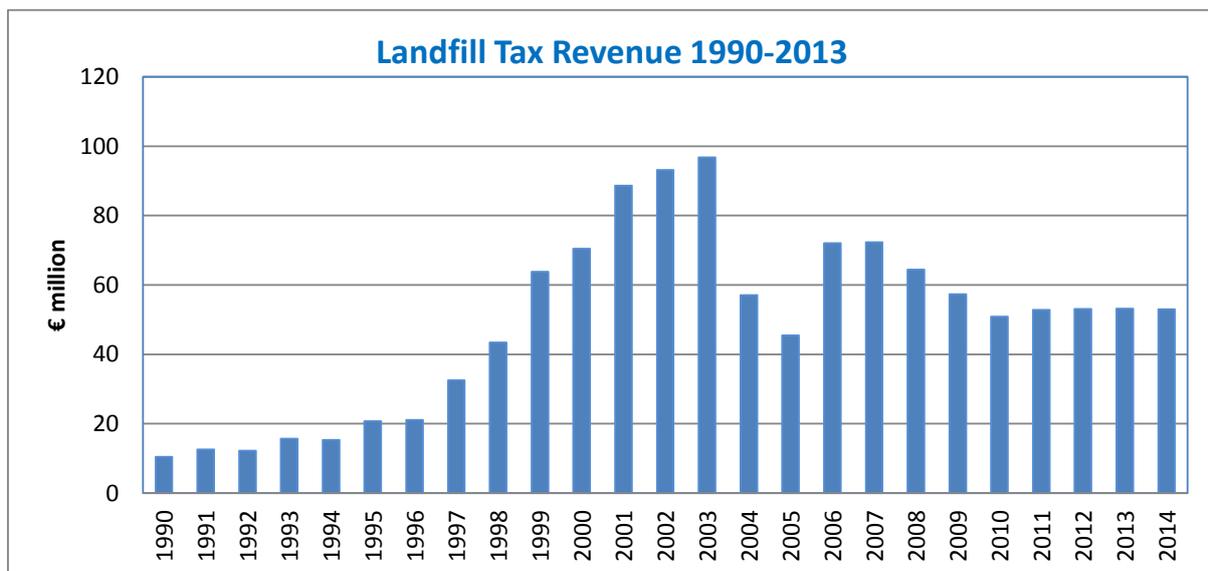
Austria is the only European country where landfill tax revenues are exclusively used to finance the containment and treatment of contaminated sites, with roughly 85% earmarked for remediation activities<sup>9</sup> and 15% used for data gathering purposes (mainly identification and administration of problem sites) (BMLFUW, 2014b). The federal financial authorities (Bundesfinanzbehörden) are responsible for the collection of the tax, with provincial authorities reporting possible contaminated sites to the Ministry of the Environment. The Ministry then consults the Federal Environment Agency on further investigations and distributes funds for clean-up operations. The owner/operator of any landfill site is liable to pay the tax. In addition, anyone using waste to carry out structural work (e.g. for road surfacing) is also liable. As per the system of 'self-assessment', operators must provide annual statements on the level of waste deposited and the accruing taxes.

Figure 1 shows how revenues from the landfill tax have changed over time. Total revenues from the tax for the period 1990-2014 were around EUR 1.229 billion, with annual revenues starting at EUR 10 million in 1990, increasing rapidly from 1996 to a peak of EUR 97 million in 2003, before falling due to the effects of the landfill ban and the structure of the tax. Since 2011, the revenue has been steady at around EUR 52 million per year (BMLFUW, 2014; BMLFUW, 2015).

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<sup>9</sup> Including direct containment or clean up, construction or upgrading of waste treatment plants and the development of new technologies for containment or treatment at landfill sites

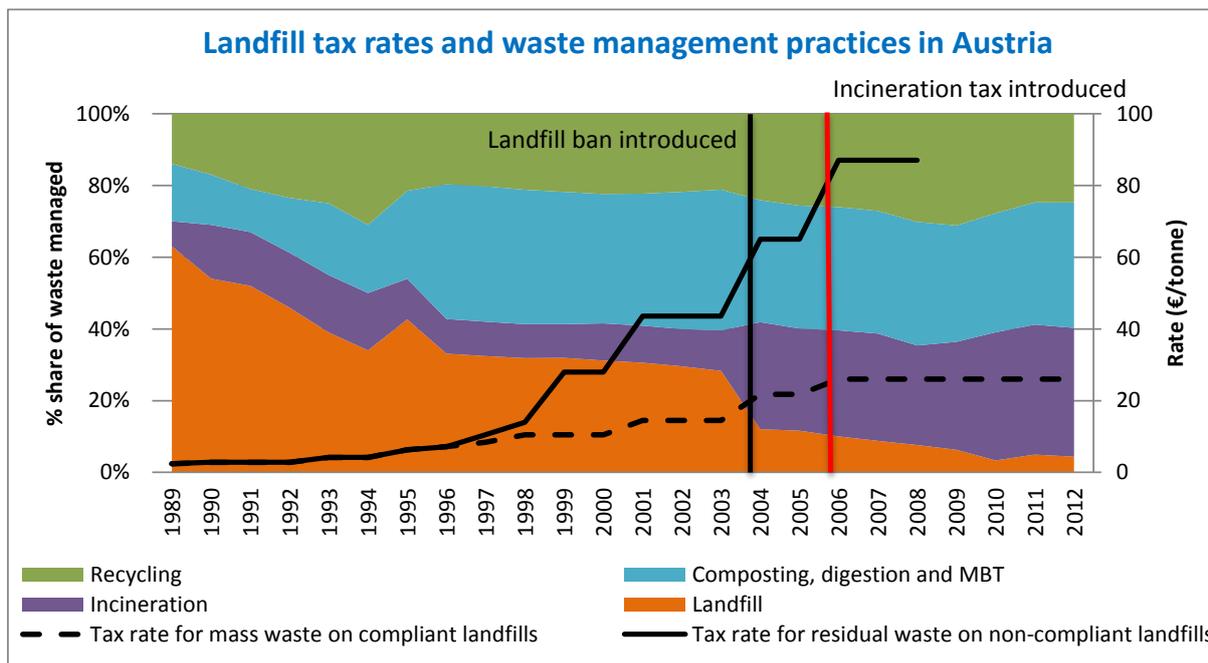
Figure 1: Austrian landfill tax revenue from 1990 to 2014



Source: BMLFUW, 2015

#### 1.4 Environmental impacts and effectiveness

Figure 2: Rates and effectiveness of the Austrian landfill tax, ban and incineration tax since its introduction<sup>10</sup>



Sources: adapted from Eurostat, 2016; IEEP et al., 2012; BMLFUW, 2011; BMLFUW, 2001; and Kossina and Sammer, 2000.

As shown in Figure 2, waste management practices for MSW in Austria have changed dramatically over the last 25 years. In 1989, prior to the introduction of the landfill tax, more than 60% of waste was landfilled, whereas the rate since the full implementation of the ban

<sup>10</sup> Note that the category 'Composting, digestion and MBT' includes the inputs to the MBT process and that these are not double-counted. The outputs from MBT which are landfilled are therefore not reflected in the graph.

in 2009 has been less than 10%. Since the introduction of the landfill ban in 2004, the proportion of waste incinerated has more than quadrupled. It is worth noting that the main effect of the ban appears to have been the increase in incineration.

The tax has been one of a range of measures that have increased recycling and composting/digestion over time. It is therefore not clear to what extent specific changes can be attributed to the landfill tax, the incineration tax and/or the landfill ban. As discussed in Section 1.2, a number of other policies and regulations have influenced waste management in Austria and it is therefore likely that a combination of many instruments, particularly those mandating source separation of particular waste fractions, has shifted waste treatment away from landfill (ECOTEC et al., 2001; ETC/SCP, 2012). However, it is certainly clear that the ban on landfilling waste with TOC of 5% or greater has played a key role in ensuring that waste is now almost universally pre-treated prior to landfilling, though it seems to have had more impact on management of residual waste than on recycling and composting/digestion.

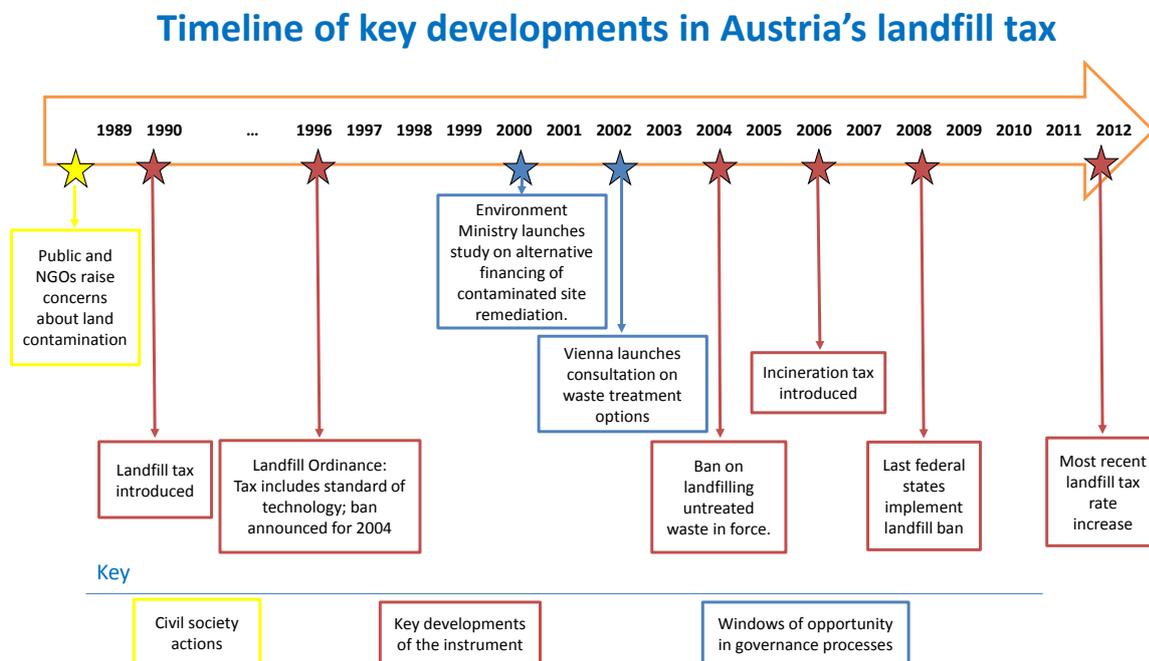
Aside from waste management practices, a key result of the landfill tax is the remediation of contaminated sites. Between 1993 and 2013, 212 remediation projects received funding from the landfill tax revenue. The requirements of the Landfill Ordinance have also resulted in improved technology and lower environmental impacts at landfill sites, including reducing greenhouse gas emissions from landfills by over 80% from 1990 to 2014 (BMLFUW, 2014).

## **1.5 Other impacts**

The introduction of the differentiated landfill tax rates for new and state of the art landfills and older, lower standard technology landfills was intended to address an imbalance between the costs associated with developing and operating the two types of landfill. However, there have been concerns that the tax differential for the two types of landfills was not substantial enough to offset the additional costs, and may therefore have made it still difficult for new sites to compete with old ones (BMLFUW, 2001; ECOTEC et al., 2001). The structure of the tax was also intended to place alternative treatment options (MBT, linked to thermal treatment, and incineration), on a par with each other in terms of their respective financial costs. The Government was, therefore, trying to be neutral in respect of how the landfill ban was implemented, at least in respect of residual waste treatment, and not to prefer one treatment method over another.

## 2 Stakeholder engagement

**Figure 3: Schematic view of the involvement of civil society (in yellow) and policy-makers (in blue) in the introduction and implementation of the instrument (in red)**



Since the 1980s, waste has been on the political agenda in Austria. A few high-profile pollution incidents raised awareness about problematic contaminated landfill sites. This enabled NGOs and the public to push for the Government to act, in the name of securing safe drinking water supplies. The landfill tax was therefore implemented to provide funding for the identification and remediation of such sites (BMLFUW, 2015). In addition to concerns about pollution, there was general acceptance, across the private and public sectors, that waste treatment methods and waste management practices had to change. Municipalities were aware that they had little space to open new landfills and existing landfills were filling up and that, from a technical point of view, a landfill ban had to be implemented. The early landfill tax was helpful in starting to shift some treatment away from landfills and was relatively uncontroversial due to its very low rate at introduction, but it was not until the 1996 Landfill Ordinance that federal states were finally made to act. Due to the significant impacts of the Landfill Ordinance, there were lengthy negotiations between the Ministry of Environment, waste operators, federal state governments and municipalities over the nature of the Ordinance. As some municipalities had continued to invest in landfill during the early 1990s, the potential ban was not popular with everyone (Kronberger, 2016).

Once the Landfill Ordinance was in force and the landfill ban announced for 2004, several federal states requested longer to apply the ban. For example, Vienna ran a full-scale public consultation from 2000-2002 to decide what alternative treatment to invest in. This included NGOs, academics, local government and the public. The result was a decision to invest in waste minimisation efforts, an aerobic digestion plant and a new incinerator. Due to the lengthy discussions, the final result appeared to be accepted and agreed on by all

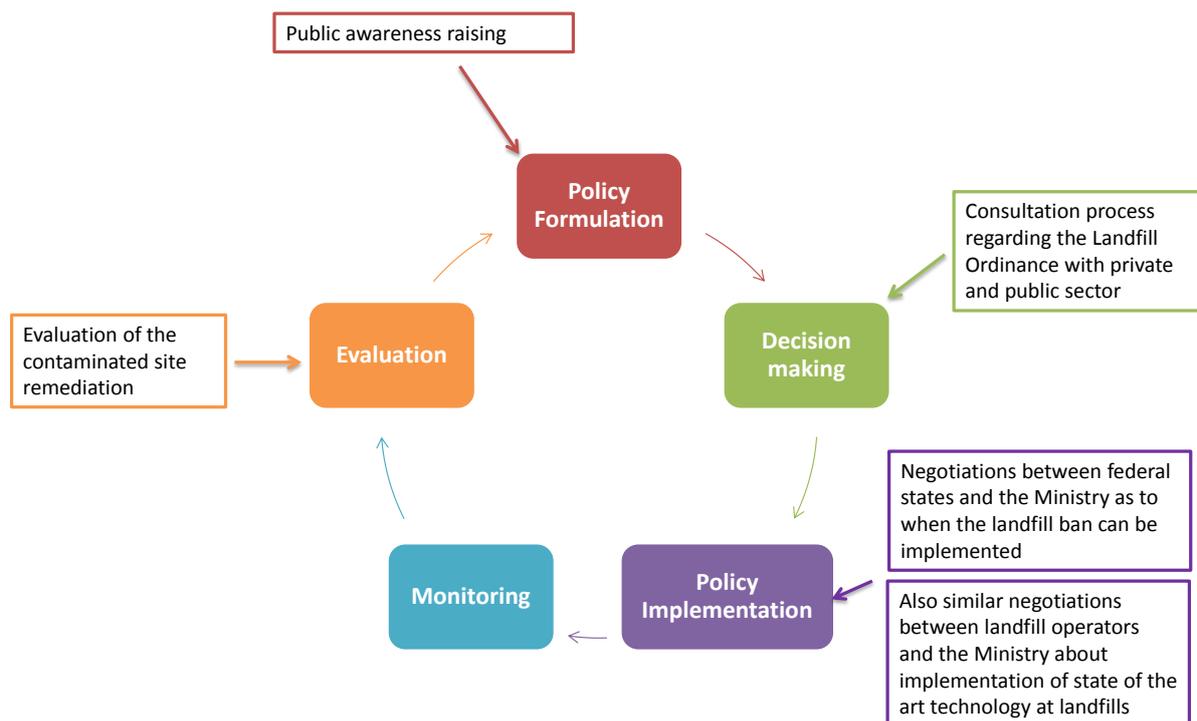
stakeholders. This was considered a successful process, though it led to Vienna meeting the landfill ban with a four year delay (Kronberger, 2016).

It is not known to what extent government considered or formally consulted on alternative options for raising revenue for remediation of contaminated sites, although a study was launched in 2000 to look at alternative options, as it was clear that revenues would decline once the landfill ban was effective. Further conversations regarding future funding took place between federal states and the Ministry of Environment in 2004, but again it is not clear to what extent these influenced the outcome. It is also not known to what extent the incineration tax was discussed ahead of its introduction. At the relatively low rate of EUR 7 per tonne, however, there was no significant push-back against it.

### 3 Windows of opportunity

Figure 4: Schematic overview of windows of opportunity throughout the policy cycle of the Austria landfill tax and ban

## Civil society engagement with the Austria Landfill Tax and Ban



### 4 Insights into future potential/reform

#### 4.1 Actual planned reforms and stakeholder engagement

There are no known planned reforms to the landfill tax or the incineration tax.

## 4.2 Suggestions for future reforms – instrument design and civil society engagement

We are aware that there have been discussions within government around the potential for increasing the tax to ensure a minimum level of funding required for the continual remediation of contaminated sites. However, municipalities have suggested that other industries, also historically responsible for contaminating the ground, should be required to pay for the remediation, and that the landfill tax revenues to date should have covered the contamination due to landfill sites in existence prior to the introduction of the tax. This argument has been taking place for some time, with no indication that it will be resolved in the near future (Kronberger, 2016).

## 4.3 Suggestions for replicability

Numerous EU Member States have already implemented landfill taxes and some have also implemented bans on the landfilling of specific wastes. However, not all of these taxes have included differentiated rates based on the type and technology of landfill. Theoretically, these are amendments that could be built into existing tax structures, which would encourage landfilling into sites with lower environmental impacts, though they would have significant consequences for the current operators of waste facilities. Due to the long lead time for planning, constructing and commissioning new treatment facilities, it is key that any such amendments are given with early warning and that a longer-term view of further future developments are also provided in good time (BMLFUW, 2015).

Austria's landfill ban, which ensures pre-treatment of MSW, as well as the tax structure, which puts alternative treatment methods on equal terms concerning their respective costs, could also be replicated in other Member States. Finally, the use of revenue to clean up contaminated sites could favourably be used in many countries that have major problems with hazardous chemicals at old industrial sites.

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<sup>i</sup> This case study was prepared as part of the study 'Capacity building, programmatic development and communication in the field of environmental taxation and budgetary reform', carried out for DG Environment of the European Commission during 2016-2017 (European Commission Service Contract No 07.027729/2015/718767/SER/ENV.F.1) and led by the Institute for European Environmental Policy ([www.ieep.eu](http://www.ieep.eu)). This manuscript was completed in December 2016.