

Municipal waste management in Iceland



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Context

The Topic Centre has prepared this working paper for the European Environment Agency (EEA) under its 2012 work programme as a contribution to the EEA's work on waste implementation.

Disclaimer

This ETC/SCP working paper has been subjected to European Environment Agency (EEA) member country review. Please note that the contents of the working paper do not necessarily reflect the views of the EEA.

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Highlights

Key developments in municipal waste management in Iceland between 2001 and 2008

- High cost of appropriate waste management due to specific geographical and climate conditions;
- Recycling has increased from 17 % of MSW generated in 2001 to 23% in 2008.
- The increase is only linked to material recycling whereas the rate of organic recycling has decreased;
- An extraordinary effort will be required in order to meet the EU requirement on 50 % MSW recycling in 2020; and
- The first national waste management plan was introduced in 2004.

1 Introduction

1.1 Objective

Based on historical MSW data for Iceland and EU targets linked to MSW in the Waste Framework Directive, the Landfill Directive and the Packaging Directive, 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 differences in management performance;
- Relation of the indicators to the most important initiatives taken to improve MSW management in the country, and
- Assessment of the future possible trends and achieving of the future EU targets on MSW by 2020.

2 Iceland's MSW management performance

Iceland is relatively isolated, as the shortest distances to the European continent are approximately 1 000 km to Norway and 800 km to Scotland (EEA, 2010). The island covers an area larger than 100 000 km² but the number of inhabitants is only 300 000 of which 70 % live in the Reykjavik metropolitan area. Iceland has many smaller towns and villages and combined with long distances between the urban areas, it makes it difficult to have a well developed waste management infrastructure.

Since the 1970s, Iceland has made considerable progress regarding waste management. The main treatment option in the 1970s was open-pit burning, resulting in many small open dumps on many places emitting smoke. In the 1990s the obvious disadvantages of widely spread uncontrolled open-pit burning had been recognized. Therefore, many municipalities raised burning-cisterns, typically concrete 'boxes', preventing waste from blowing away, but still resulting in incineration at relatively low temperatures. At the same time, landfilling became more common. In 2000, open-pit burning had gradually been phased out as it was widely considered unacceptable. Instead, landfill became the most general way of final treatment, but also some (small) incineration plants were built, some of which boosted energy recovery. Furthermore, recycling became a more and more feasible waste management option, as result of increased cooperation between municipalities (Icelandic EPA, 2012a).

Due to the limited number of inhabitants in Iceland there is limited economic foundation for recycling facilities such as paper mills, glass works and plastic factories, but two aluminium factories are situated on the island. Recycling of waste has therefore to be undertaken outside Iceland. Meanwhile, other types of waste management such as proper landfilling or incineration with tight emission standards are expensive because of the long distances from the place of waste generation to the treatment sites.

Due to a very high economic growth in the 1990s and 2000s until 2008, Iceland had a large increase of material consumption and consequently also waste generation. The rate of total waste generation increased by 84 % between 1995 and 2008, while municipal waste increased by 39 % (EEA, 2010). However, this changed dramatically with the economic crisis in 2008, which was especially hard on Iceland.

Iceland is not a member of the EU. However, Iceland is an EFTA member and has signed the agreement on the European Economic Area. Through this agreement, Iceland has to implement the EU directives in the area of environment.

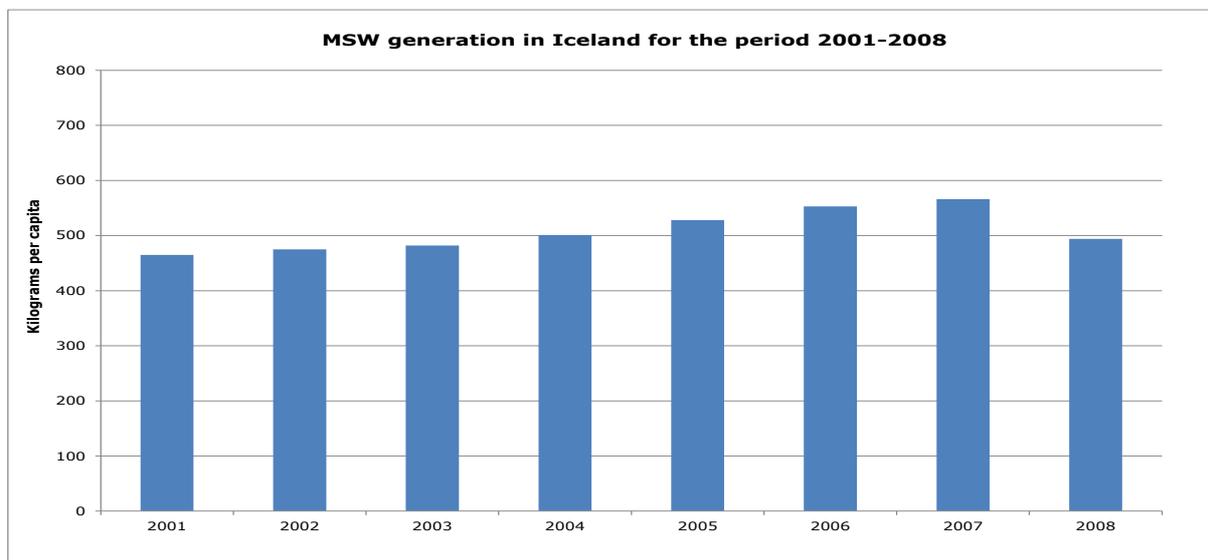
The National Plan for waste management 2004-2016, published in 2004, includes some quantitative targets for waste management until 2020, and also more general policy targets to reduce waste generation stepwise and to decrease waste disposal by reuse and recycling. As a consequence, waste management and waste treatment have been improving in recent years in general. There is, however, still potential for the future towards more sustainable waste management and to decrease waste disposal and increase recycling, composting and high-temperature incineration with energy recovery. Strategies for the future aim at these possibilities and put focus especially on collection (EEA, 2010)

2.1 MSW Indicators

Eurostat data and data from the Icelandic ministry of environment have been used to develop the indicators. The Eurostat data does not include data on recycling during the period from 2004 to 2007 and furthermore there is only an estimate by Eurostat of the MSW generation in 2008. The data from the Icelandic ministry includes a figure for the generation of MSW for 2008, which is much lower than Eurostat's estimate and in that way reflects the influence of the economic crisis. Furthermore, the Ministry provides data on recycling, which has been divided into material and organic recycling by the ETC/SCP. Included in the material recycling are: separate collection of timber waste, paper, beverages packaging and textiles. Due to the above mentioned circumstances, the assessment only covers the period 2001 to 2008.

Figure 2.0 shows the development of MSW generation per capita in Iceland from 2001 to 2008. There has been an increase from 465 kilogram per capita in 2001 to 566 kilogram in 2007. From 2007 to 2008 there was a large decrease to 494 kilogram per capita. This decrease is linked to the start of the economic crisis in 2008.

Figure 2.0 MSW generation per capita in Iceland



Icelandic EPA, 2012

The majority of MSW in Iceland is still landfilled. In absolute amounts, about 100 000 tonnes of MSW was landfilled in 2001 and 117 000 tonnes in 2007. However, due to the generated amount of MSW increasing from 133 000 tonnes in 2001 to 174 000 tonnes in 2007, there has been a reduction in the percentage of MSW landfilled, from 75 % in 2001 to 67 % in 2007. Overall, recycling has increased from 17 % to 23 % from 2001 to 2008, whereas 10 % was incinerated.

Some indicators regarding the development of MSW management are shown below.

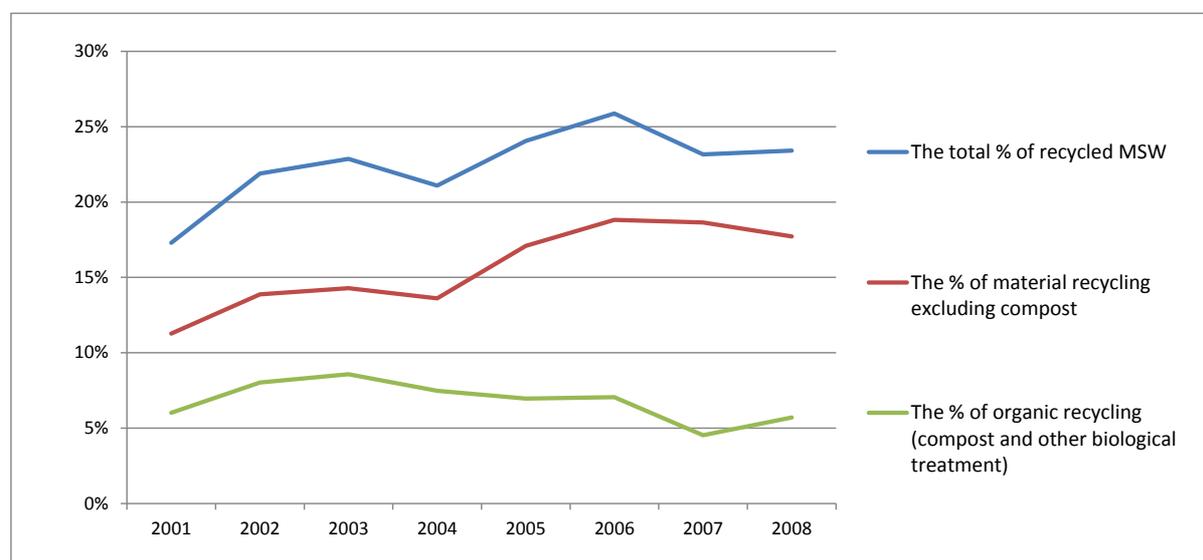
2.1.1 The recycling of MSW from 2001 to 2008

Figure 2.1 shows the development of recycling of MSW in Iceland related to total recycling, material recycling and organic recycling (compost and other biological treatment). Figure 2.1 illustrates a positive trend in the recycling of MSW from 2001 to 2008 although there are some fluctuations during the years. In fact, the recycling percentage was highest in 2006 with 26 %.

The total increase of recycling is first of all linked to material recycling which has increased from 11 % in 2001 to 19 % in 2006 and 2007, and then decreased to 18 % in 2008. The material recycling amount was 28 000 tonnes in 2008. Organic recycling did not increase from 2001 to 2008, as it remained at about 6 %.

The development in Iceland shows that some progress has been achieved but there is still much room for improving both for material and organic recycling.

Figure 2.1 Recycling of MSW in Iceland



Source: Icelandic EPA, 2012. The percentages are calculated as % of generated MSW.

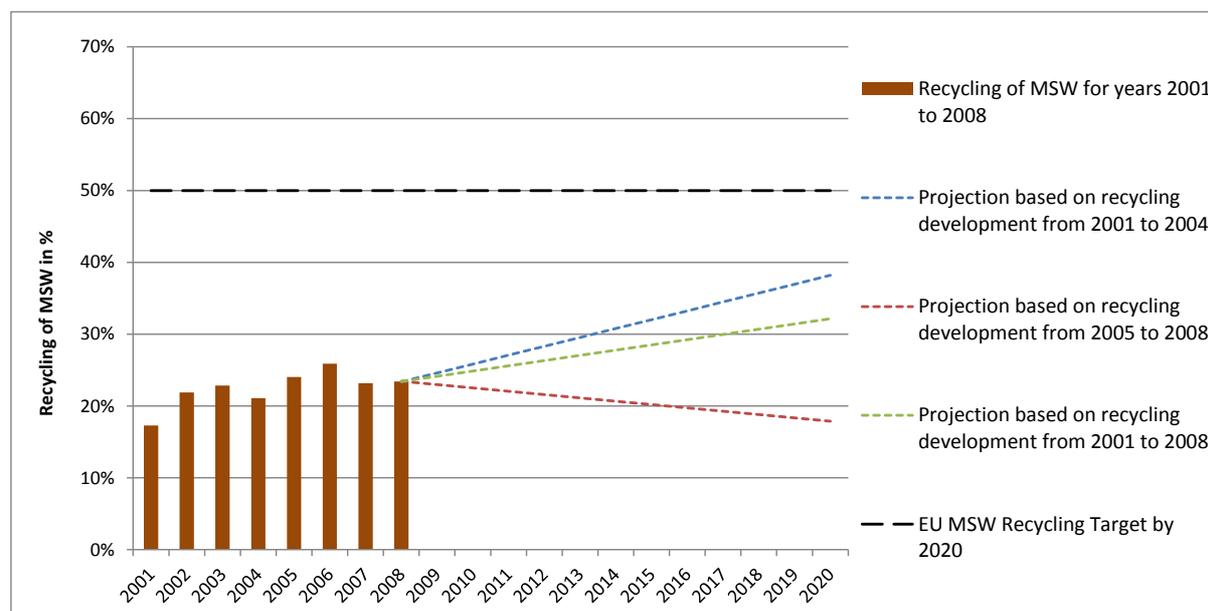
2.1.2 The yearly increase rate of recycling of MSW

In order to assess the prospects for Iceland to meet the 50 % recycling target as required by the Waste Framework Directive (2008/98/EC)¹, three scenarios have been calculated. The scenarios assume that recycling in the period 2008 to 2020 develops, based on a linear regression, with the increase rates of recycling in the periods 2001-2004, 2005-2008 and 2001-2008 respectively.

Figure 2.2 highlights the fact that none of the increase rates will be sufficient and it will require an extraordinary effort to reach the 50 % target of the EU legislation by 2020. Even in the best scenario, based on the increase rates from 2001 to 2004, the projection only ends up at a recycling level of 38 % by 2020.

¹ The EU's 2008 Waste Framework Directive (EU, 2008) includes a new 50 % recycling target for waste from households, to be fulfilled by 2020. In 2011, the European Commission decided that countries can choose between four different calculation methods to report compliance with this target. One of these methods is to calculate the recycling rate of MSW as reported to Eurostat (EC, 2011).

Figure 2.2 Future recycling of MSW in Iceland



Source: Icelandic EPA, 2012

It has to be kept in mind that these three scenarios are very simplistic and do not take into account any planned policy measures. In addition, they are based on one calculation methodology for recycling of municipal waste (MSW recycled/MSW generated, using data reported to Eurostat) whereas countries may choose to use another methodology to calculate compliance with the 50 % recycling target of the Waste Framework Directive. The scenarios in Figure 2.2 should therefore be interpreted only as to give some rough indications and assessment of the risk of missing the target.

2.1.3 Landfilling of biodegradable municipal waste

It is a general requirement of the EU Landfill Directive that all EU Member States have to reduce the amount of biodegradable municipal waste (BMW) landfilled by a certain percentage by 2006, 2009 and 2016 respectively. As an EFTA member and having signed the agreement on the European Economic Area, Iceland has to fulfil the requirements in the Landfill Directive. However, Iceland has been given a four year derogation period. The targets are related to the generated amount of BMW in 1995.

No data for landfilling of BMW is available for Iceland, so this indicator can not be applied.

2.1.4 Regional differences of recycling MSW from 2001 to 2008

No regional data is available for Iceland.

2.1.5 The relation between landfill tax level and recycling level of MSW

Iceland does not have a landfill tax.

The Icelandic government has decided, at least for the time being, not to introduce landfill and incineration taxes as done elsewhere in Europe and certain people in Iceland argue that they merely increase the overall cost of waste treatment and do not have much influence on prevention, reuse, recycling and recovery of waste generated in the country. Instead, Law 162/2002 on Recycling Fees was passed (Icelandic EPA, 2012a).

This was followed by setting up the Icelandic Recycling Fund (Úrvinnslusjóður – IRF, www.urvinnslusjodur.is). A recycling fee is now being levied on the products recognized in the law, i.e. hazardous waste, end-of-life vehicles, composite packaging (drinking cartons), and farm silage films and tires, in order to finance collection sites, transport of these wastes from the sites and recycling, recovery or disposal.

2.1.6 Environmental benefits of better MSW management

The EEA and the ETC/SCP have developed a model assessing the environmental benefits of better MSW management indicated by the greenhouse gas emission over time. The model does not include Iceland at the moment.

2.2 Uncertainties in the reporting

Some uncertainties or differences included in the reporting of MSW can result in different recycling levels.

One example of such differences which might influence the recycling rate of MSW in Iceland is to what extent packaging waste from households and similar packaging from other sources is included in the reported recycling of MSW. Most Member States have producer responsibility schemes on packaging waste and private operators of the schemes do not always report the source of the packaging waste. Therefore, packaging waste is not always regarded or reported to Eurostat as MSW.

Iceland does not report data on packaging waste to Eurostat. It is therefore difficult to make the assessment. However, according to data from the Icelandic EPA (Icelandic EPA, 2012) between 7 000 and 8 000 tonnes of beverages packaging waste is included in the MSW separately collected. This implies that about 1/3 of the total material MSW recycling is based on packaging waste. Therefore, it seems that Iceland is among the countries including recycling of packaging waste from households in its MSW recycling data.

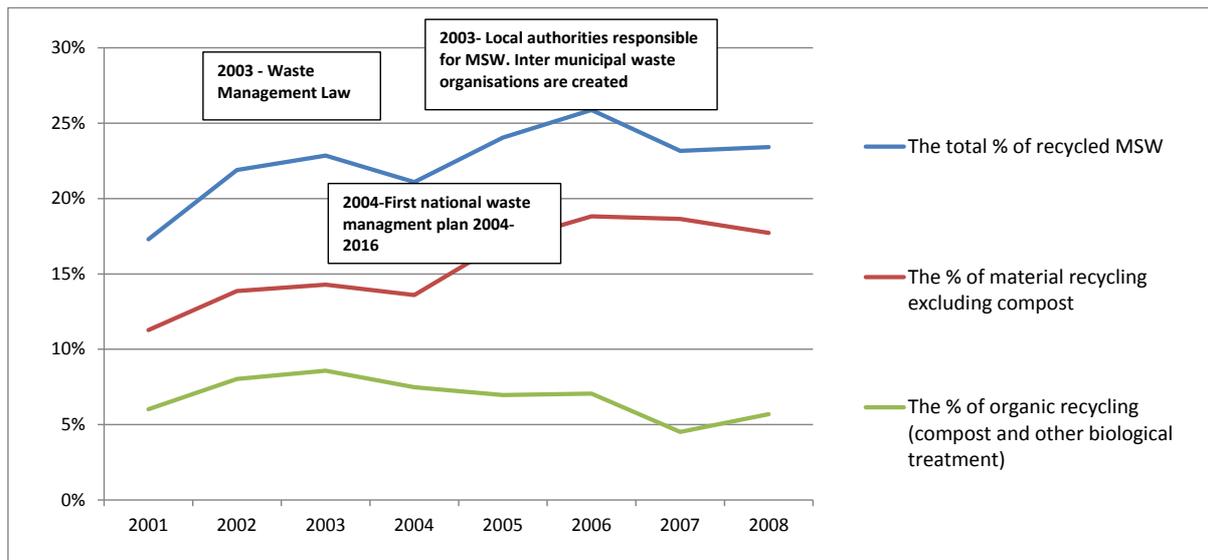
2.3 Important initiatives taken to improve MSW management in the countries

Law no. 55 from 2003 on Waste Management was set to address the more stringent demands of waste management today. The objective of the law is to decrease the quantity of waste by preventing generation, increasing recycling and recovery, and reducing the quantity of waste deposited in landfills (Iceland, EPA, 2012a).

The first National Plan for waste management 2004-2016, published in 2004, includes some quantitative targets for waste management until 2020, and also more general policy targets to reduce waste generation stepwise and to decrease waste disposal by reuse and recycling. (Iceland, EPA, 2012a). The targets are related to the targets in the EU Landfill Directive and other EU Directives.

Regulation no. 737/2003 on treatment of waste makes the local authorities responsible for the collection, handling and treatment of municipal waste. Several municipalities operate cooperative (regional) waste treatment facilities. In the capital area of Reykjavik this is SORPA, a company owned by several municipalities (covering around 62 % of the total Icelandic population). New national targets are under preparation (Iceland, EPA, 2012a).

Figure 2.8 Recycling of MSW in Iceland and important policy initiatives



2.4 Future possible trends

In the last twenty years the development of MSW management in Iceland has developed from open burning of waste, to the use of small incinerators, further to the use of sanitary landfills and to recycling. Due to geographical and climate conditions, proper waste management is rather difficult in Iceland and therefore also extra costly.

Material recycling of MSW has already increased from 11 % to 19 % during the period 2001 to 2008. Organic recycling is still on a quite low level of 6 %. Therefore, as indicated in Figure 2.2, Iceland will have to increase its MSW recycling rate with at least 2.1 percentage points per year throughout 2008-2020 in order to fulfil the 50 % EU recycling target by 2020. Achieving such a high increase rate will require an extraordinary effort.

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