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Municipal waste management in Lithuania

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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.

Contents

Highlights

Most important factors/initiatives behind the development of MSW recycling in Lithuania:

- The vast majority of municipal waste in Lithuania is still landfilled. In 2010, 1.08 million tonnes were landfilled compared with 1.25 million tonnes in 2007, and 1.15 million tonnes in 2004;
- Currently no landfill tax is in place in Lithuania. A draft law on the introduction of a landfill tax has been prepared and it is planned that a landfill tax will be introduced when alternative treatment plants come into operation (MBT, etc.);
- Since 2004, the recycling rate of MSW has slightly increased, but the overall recycling level is still particularly low. Even if the favourable recycling trend from 2006 to 2010 continues, it would require an exceptional effort to fulfil the 50 % recycling target by 2020;
- In Lithuania, packaging waste is not included in the figures on the recycling of municipal solid waste reported to Eurostat. If a certain proportion of the recycled packaging waste from MSW sources was reported as recycled MSW, the distance to the MSW recycling target of 50 % by 2020 would be smaller;
- By 2010, the amount of landfilled Biodegradable Municipal Waste (BMW) was estimated to be 81 % of the amount generated in 2000, which implies that the 2010 target of the Landfill Directive to reduce BMW landfilled to a maximum of 75 % of that generated in 2000 is unlikely to have been met. Considering the current situation and past trends, a very large effort will need to be undertaken in Lithuania to reach the 50 % and 35 % requirements by 2013 and 2020;
- The National Strategic Waste Management Plan for 2007-2013 includes provisions for the preparation of a draft legislation on recycling, along with the elaboration of a Recycling Development Program for 2009-2013;
- The programme for the use of technical compost was adopted in 2010 (validated until January 2013). The requirements for the technical compost and its usage were adopted in 2012 and came into force in January 2013;
- Drafts of both the National Waste Management Plan for the period of 2014–2020, and Waste Prevention program are being prepared and will be adopted in 2013.

1 Introduction

1.1 Objective

Based on historical MSW data for Lithuania and EU targets linked to MSW, 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 Lithuania's MSW management performance

The first Law on Waste Management, adopted in 1998, established the basic requirements for prevention, record keeping, collection, sorting, storage, transportation, recovery and disposal of waste with a view to prevent its negative effects on the environment and human health. It also includes principles of organization and planning of waste management systems. This law was last amended in April 2012.

The outline of the National Strategic Waste Management Plan for the period 1997 to 2007 was adopted in May 1999, and the first complete National Strategic Waste Management Plan adopted in April 2002 for the period 2002 to 2006. (Ministry of Environment, 2012). This strategic document introduced the waste hierarchy prior to the accession of the country to the European Union in May 2004.

The following plan covering the period 2007–2013 was adopted in October 2007 and was last amended in December 2010.

Generation of MSW since 2001 in Lithuania peaked at 1.39 million tonnes in 2002 then, following a decline and a gradual increase, peaked once again in 2008 with 1.37 million tonnes. Since then it has decreased; down to 1.25 million tonnes by 2010. (Eurostat, 2012).

Not all of Lithuania is covered by a municipal waste collection scheme. Around 80% of the population was covered in 2007, rising to 94% in 2010. As such the total generation of municipal waste generated may be underestimated, particularly in the years before 2007 (Eurostat metadata, 2010). The remainder of the population is provided with other forms of collection services (e.g. civic amenity sites). There are around 20 000 containers for recyclable materials and 77 bulky waste collection sites currently operating (70 were constructed using 2004-2006 EU funds and seven with 2007-2013 EU funding; an additional 45 bulky waste collection sites are planned for construction with 2007-2013 EU funding).

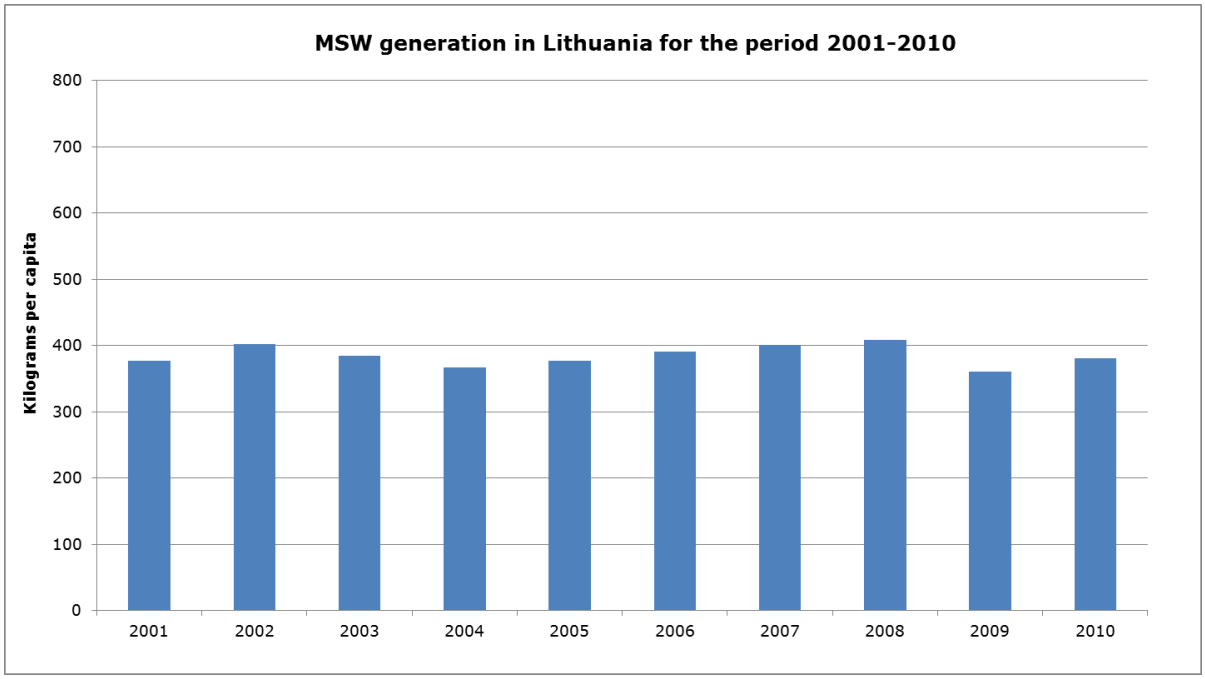
At the beginning of 2009, municipal waste collection services were provided by 104 companies. The majority of the costs for the collection and treatment of the main streams are covered by producers/importers.

2.1 MSW Indicators

The vast majority of municipal waste in Lithuania is still landfilled. In 2010, 1.08 million tonnes were landfilled compared with 1.25 million tonnes in 2007 and 1.15 million tonnes in 2004. Based on the information from the Environmental Protection Agency, 1.25 million tonnes of municipal waste was generated in 2010. 62 500 tonnes were recycled (including compost) in Lithuania, and 96 000 tonnes exported for recycling.

Figure 2.0 shows the generation of MSW per capita in Lithuania from 2001 to 2010. MSW generation per capita remained relatively stable during this period, with only slight changes over the years.

Figure 2.0 MSW generations per capita in Lithuania



Source: Eurostat, 2012

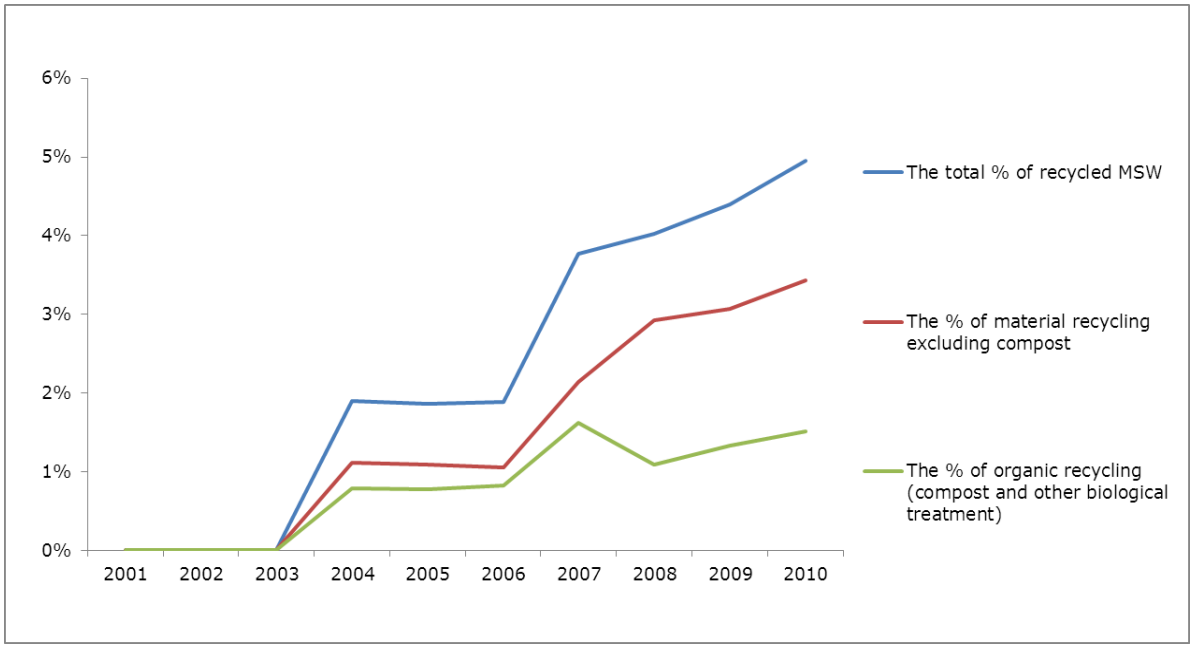
2.1.1 The recycling of MSW from 2001 to 2010

Figure 2.1 shows the development of total, material and organic (compost and other biological treatment) MSW recycling in Lithuania. Figure 2.1 illustrates that from 2004 there is a very slight increase in the recycling of MSW. The total recycling only increased from 2 % in 2004 to 5 % in 2010.

Although figure 2.1 indicates a rate of zero recycling before 2004, this should be understood as a data compatibility issue; before the accession to the EU, Lithuania used national classifications for waste categories and waste treatment operations that were not fully compatible with the data reported after 2004. However, this does not have a large impact on the overall trend, because the total recycling level was only 2 % in 2005

Between 2004 and 2006, both material and organic recycling stagnated, which can possibly be attributed to the fact that following the accession of Lithuania to the EU in 2004 (changes of legal acts related to waste classification and the reporting system), both the new data collecting system and waste treatment companies required some time to adapt to new requirements.

Figure 2.1 Recycling of MSW in Lithuania



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

The increase of total recycling is primarily linked to material recycling which has increased from 1.1 % in 2004 to 3.4 % in 2010 (in absolute amounts from 14 000 tonnes to 43 000 tonnes). Organic recycling has only increased from 0.8 % to 1.5 % in the same period (or from 10 000 tonnes to 19 000 tonnes). Consequently, there is room for improving both material and organic recycling, and it seems that organic recycling in particular can be improved.

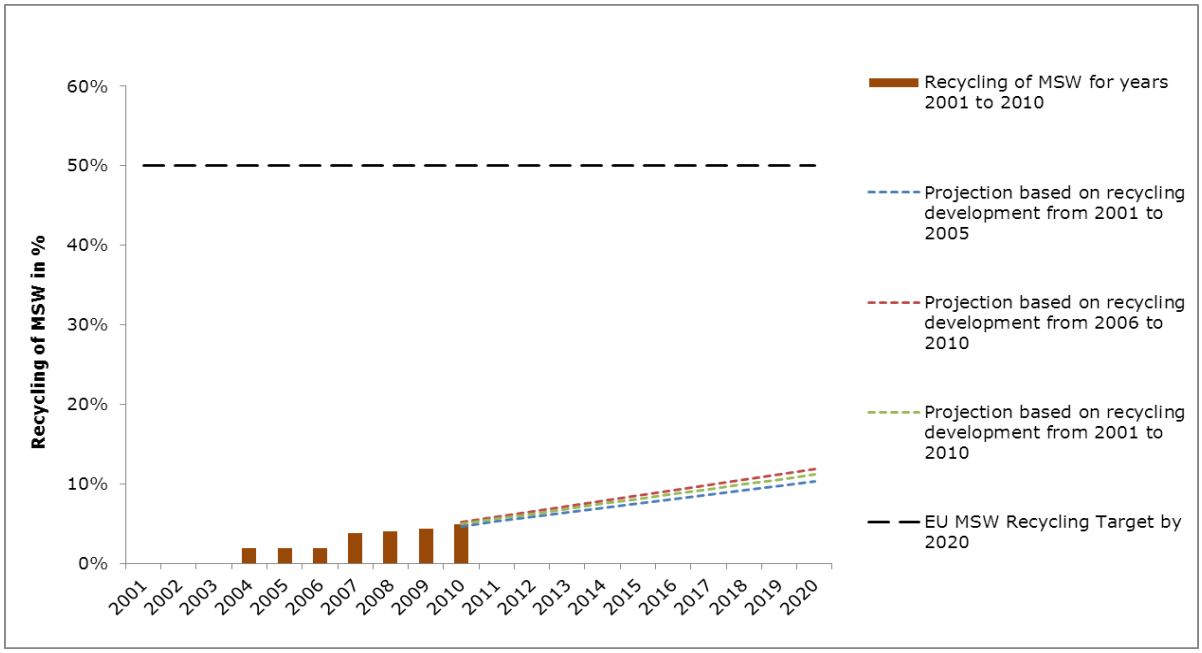
2.1.2 The yearly increase rate of recycling of MSW

In order to assess the prospects for Lithuania to meet the 50 % recycling target as set out in the Waste Framework Directive[1], three scenarios have been calculated. The scenarios assume that recycling in the period 2010 to 2020 develops, based on a linear regression, with the increase rates of recycling in the periods 2001-2005, 2006-2010 and 2001-2010.

Figure 2.2 highlights that there are only slight differences among the various development trends. Even if the most favourable recycling trend continues (that between 2006 and 2010), it is unlikely that Lithuania will fulfil its recycling target of 50 % by 2020. Maintaining the average yearly increase rate of 0.75 % of this period would lead only to a 15 % recycling level by 2020. A substantially higher, 4.5 % average yearly increase rate would be necessary to achieve the recycling target of the Waste Framework Directive, requiring an exceptional effort.

[1] The EU's updated Waste Framework Directive from 2008 (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 Lithuania



Source: CRI calculation based on Eurostat, 2012

Please note 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 as providing a rough indication and assessment of the risk of missing the target.

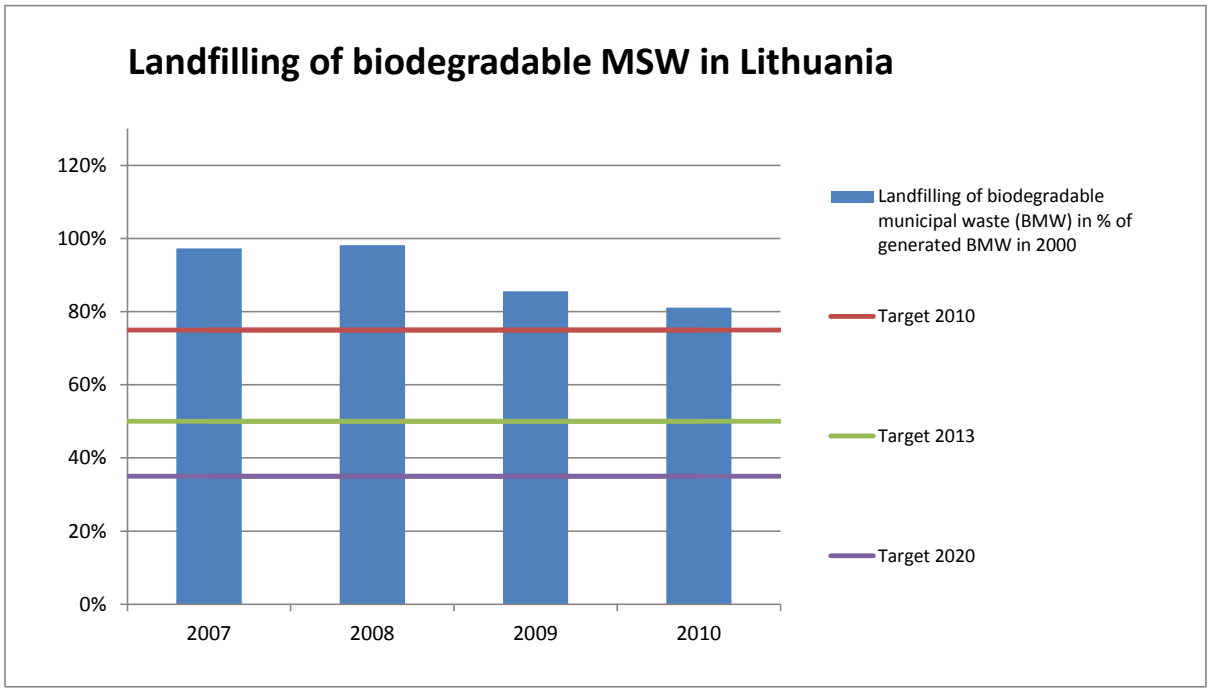
2.1.3 Landfilling of biodegradable municipal waste

The EU Landfill Directive requires that that all Member States reduce the amount of biodegradable municipal waste landfilled (BMW) by a certain percentage by 2006, 2009 and 2016. However, Lithuania has been given a four year derogation period. The targets are related to the generated amount of BMW in 2000 (766 000 tonnes).

Lithuania has reported its landfilled amount of BMW to the European Commission for the years 2007, 2008 and 2009. In 2007, the landfilled amount was 745 000 tonnes (equivalent to 97 % of the generated amount in 2000).

Lithuania estimates the percentage of landfilled BMW in 2010 to be about 81 % of the amount generated in 2000 (Lithuania, 2012). This is not sufficient to fulfil the 75 % target that Lithuania should meet in 2010.

Figure 2.3 Landfilling of biodegradable MSW in Lithuania



Source: EC, 2012 and Lithuania 2012. The target dates take account of Lithuania's 4 years derogation period.

Figure 2.3 also indicates that it will take an extraordinary effort for Lithuania to fulfil the 50 % and 35 % Landfill Directive targets by 2013 and 2020, respectively.

2.1.4 Regional differences of MSW recycling from 2001 to 2010

The Eurostat database does not contain regional waste management data for Lithuania. This indicator can therefore not be applied in this report.

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

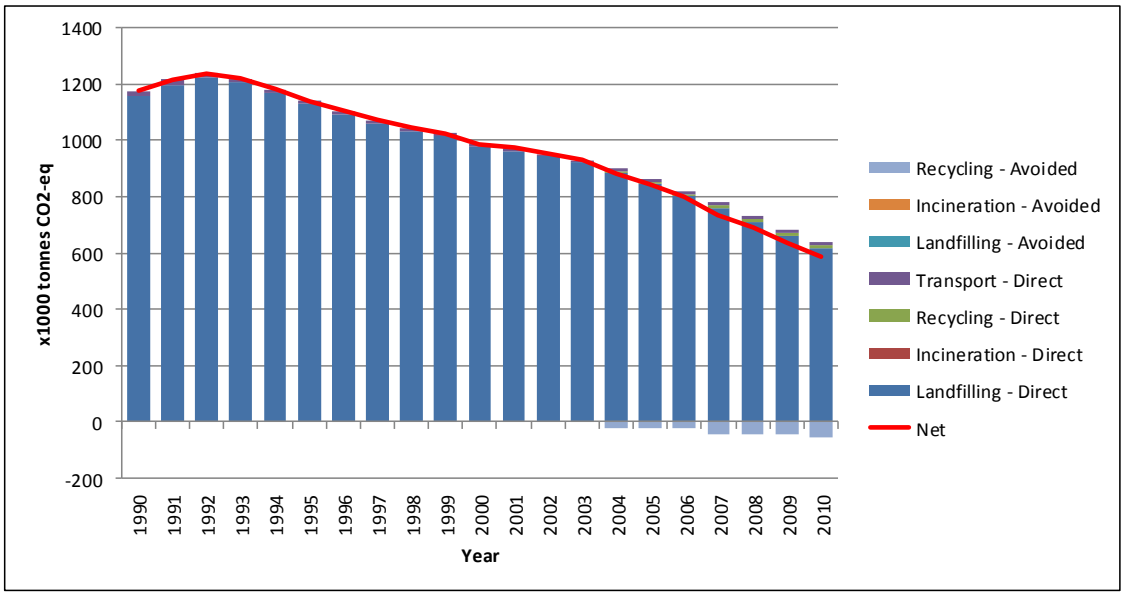
Lithuania does not currently have a landfill tax. However, a draft law on landfill tax is under preparation and a tax is expected to be introduced once treatment plants (MBT etc.) are operational. The average tipping fee for landfilling is 6.26 EUR/tonne (Ministry of Environment, 2012). The lack of landfill tax and the low landfilling fees hinder the development of recycling operations in Lithuania.

2.1.6 Environmental benefits of better MSW management

Figure 2.7 shows the development of GHG emissions from MSW management in Lithuania, calculated using a life-cycle approach. The graph shows the direct emissions, the avoided emissions and the net emissions of the MSW management.

Direct emissions from municipal waste management peaked in 1992 and have steadily decreased since then for three reasons. First, the amount of landfilled MSW has decreased from 1 546 000 tonnes in 1995 to 1 236 000 tonnes in 2001, and to 1 079 000 tonnes in 2010 (Eurostat, 2010). Second, that while the reduction in landfilled MSW was about 11 % from 2000 to 2010, the reduction of biodegradable municipal waste was 19 % in the same period. Municipal waste management related direct emissions are linked almost exclusively to landfilling. Third, that MSW generation dropped by about 20 % from 1989 to 1990, due to a similar drop in GDP precipitated by the end of the Soviet Union. The reduction in GHG emissions between 1990 and 2010 is therefore also due to the delayed emissions from a reduction of landfilling that occurred before 1990.

Figure 2.7 GHG emissions from MSW management in Lithuania[2]



Results presented in this figure should not be used for the compilation of GHG reporting (national inventory report of the IPCC) or compared with IPCC figures, as the methodology employed here relies on life-cycle thinking and, by definition, differs from the IPCC methodology.is that

It should be noted that Lithuania did not report any landfill gas collection from landfill to the IPCC. This explains why no avoided emissions from landfill are observed in the Figure 2.7.

As the recycling level of MSW in Lithuania is very low, recycling does not contribute substantially to GHG emissions reduction.

2.2 Uncertainties in the reporting

As recycling levels are related to the generation of municipal waste, uncertainties or differences in the reporting of MSW can result in different levels of recycling. One example is to what extent packaging waste from households and similar packaging from other sources is included in the reported recycling of MSW. Most EU Member States, including Lithuania, have producer responsibility schemes on packaging waste and therefore packaging waste is not always reported to Eurostat as MSW.

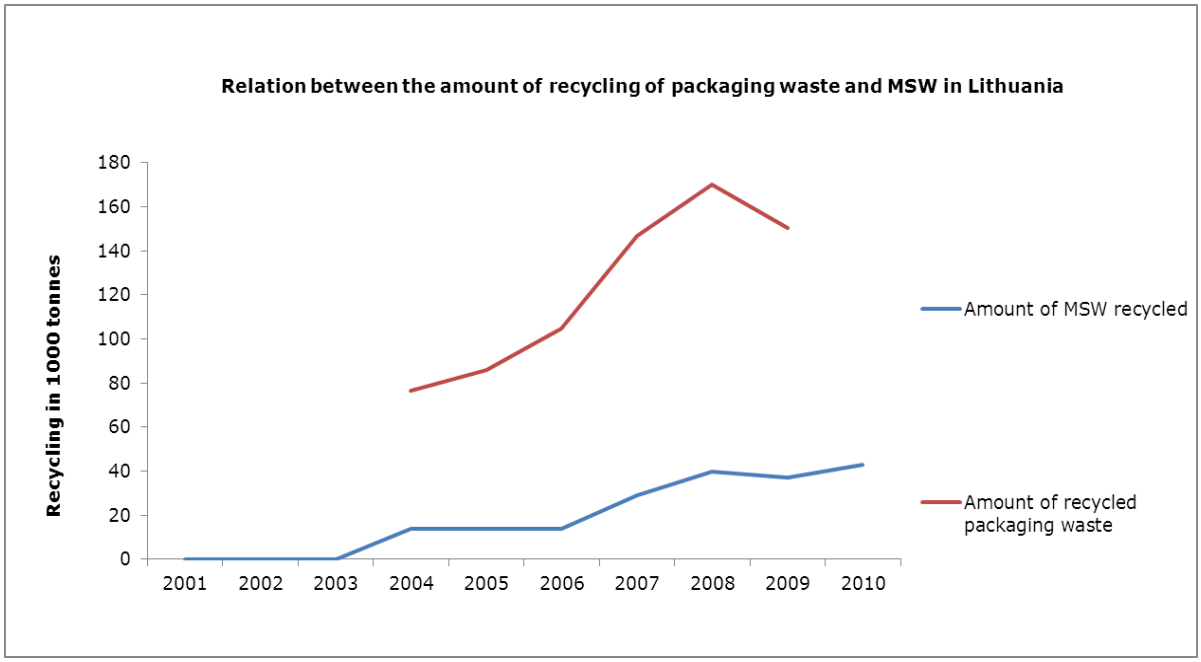
Figure 2.8 shows that the amount of recycled MSW in Lithuania is significantly lower than the amount of recycled packaging waste. In 2008, 170 000 tonnes of packaging waste was recycled, while only 40 000 tonnes of MSW was recycled (excluding composting). In 2009 packaging waste recycling decreased to 150 000 tonnes and the amount of material-recycled MSW also dropped slightly to 37 000 tonnes. The main reason for the reduction of the amount of packaging recycling

[2] All the GHG emissions (positive values) represent the direct operating emissions for each waste management option. These direct operating emissions have been calculated with the use of the IPCC (IPCC, 2006) methodology for landfills and life cycle modelling for the other technologies (incineration, recycling, bio-treatment and transport).
For the indirect avoided emissions (negative values), the calculations integrate the benefits associated with the recovery of energy (heat and electricity generated by incinerators, electricity generated by the combustion of landfill gas or methane from anaerobic digestion). Other avoided emissions include the benefits of recycling of food and garden waste, paper, glass, metals, plastics, textiles and wood in the municipal solid waste. Recycling is here assumed to include material recycling and bio-treatment. Avoided emissions of bio-treatment include fertilizer substitution. All processes generating electricity are assumed to substitute electricity mix of Lithuania in 2009. Processes generating heat are assumed to substitute average heat mix for the EU25 in 2002. The electricity mix and heat mix are assumed to remain constant throughout the whole time series. The compositions of the MSW disposed in landfills, incinerated or recycled respectively are based on ETC/SCP 2011. In an Eionet consultation process, initiated by the EEA in 2012, Lithuania updated the composition of the landfilled, incinerated and recycled MSW for 2008. The complete methodology is available from (ETC/SCP, 2011).

from 2008 to 2009 was that the amount of packaging placed on the market decreased significantly as a consequence of the global economic crisis.

Lithuania does not include packaging waste in reporting to Eurostat on the recycling of municipal solid waste. Due to the specificity of national waste statistics, Lithuania does not have the possibility to identify which part of the separately collected packaging waste was generated by households and which by industries. Similarly, the amount of packaging waste collected by municipal waste collecting systems cannot be identified (Ministry of Environment, 2012).

Figure 2.8 A comparison of packaging waste recycled and material MSW recycled



Source: Eurostat, 2012

Lithuania reported 3.1 % MSW recycling excluding composting in 2009. Under the assumption that all packaging waste was from households and similar sources, the real rate would be 15.6 %. However, it has to be noted that not all recycled packaging waste is necessarily from households or similar sources, but this calculation indicates that the MSW recycling rate would probably be considerably higher if packaging waste from households would be included in the reported MSW.

2.3 Important initiatives taken to improve MSW management

The waste policy in Lithuania was poorly developed in the beginning of the 1990s – many household waste streams simply did not exist, the reuse rate of packaging and organic waste was high and what was left over was dumped in hundreds of uncontrolled sites that fell short of environmental standards (Veidemane, K, et al., 2004).

As Lithuania moved towards a market-based economy, a legislative framework for waste handling was built up, institutions were created and their responsibilities were defined, waste management strategies were developed with targets set for individual waste streams and, at the same time, measures were introduced for the continuous improvement of the system. By 2009, the waste collection system covered 80 % of residents, while in 2010 this figure grew to 94 %. The remaining population only has access to other forms of waste collection services (e.g. civic amenity sites).

Municipalities are the main institutions organising municipal waste management, with the main responsibility to create effective waste management systems.

Local authorities are also responsible for reaching EU targets regarding recycling and recovery - with the exception of some waste streams (WEEE, packaging batteries and accumulation waste) which are managed by Extended Producer Responsibility schemes. They set out the terms of municipal waste collection, transport, treatment and disposal. They are also responsible for ensuring that the waste treatment installations function. In Lithuania, residents pay a monthly fixed fee for waste management. Municipalities are responsible for billing and collection of fees (Ernst & Young, 2011). Waste management is financed under the 'polluter pays' principle.

Municipal waste management is conducted according to the municipal waste management rules approved by the municipal Council. These rules regulate rights and duties of system actors and set the conditions of municipal waste provision. The Municipal Councils approve municipal waste management service fees (ECAT, 2012).

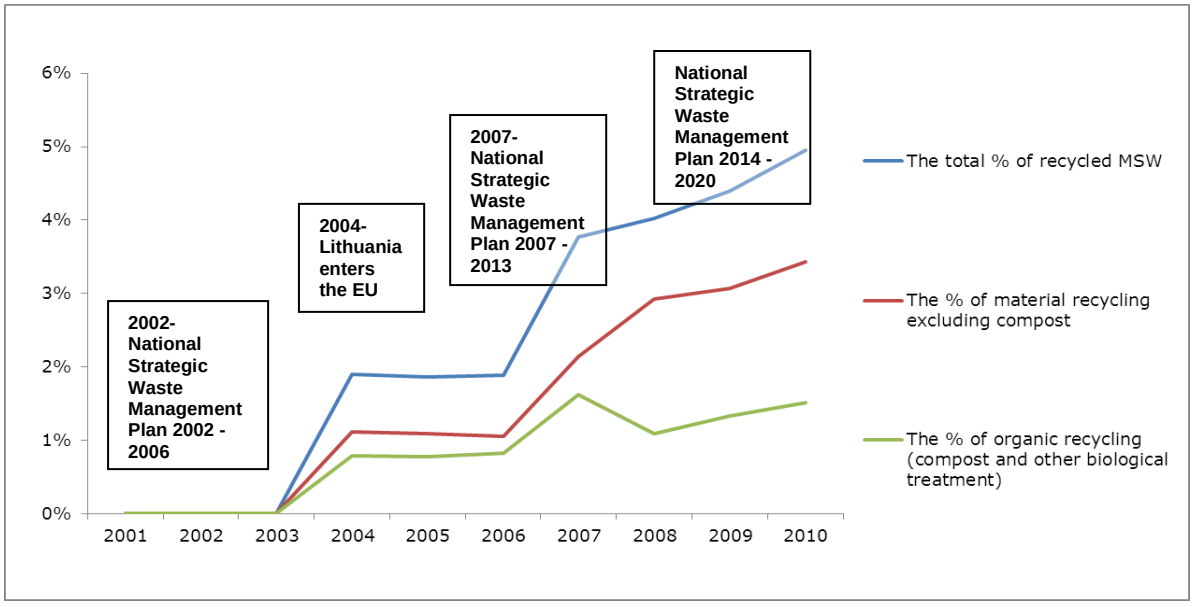
In Lithuania, local authorities have relatively strong control over waste flows and general influence over the waste management sector. Most municipalities have joined waste management cooperation structures.

Lithuania has been developing a regional municipal waste management system since 2008. Waste collection and systems of sorting and utilization were developed. Furthermore, non-compliant landfill sites have been closed and redeemed, new and modern waste disposal facilities have been constructed, and green waste composting and bulk waste acceptance sites have been installed.

Disposal of waste in old, non-compliant landfills has been banned since July 16 2009. In all, 612 old landfills have been closed. According to the plans the remaining 198 non-compliant landfills should have been closed by 2013. Regional Waste Management Centres (RWCMs) were established as legal entities with the main purpose of implementing waste management tasks effectively and creating the waste management system. For non-hazardous waste, 11 regional landfills and 21 green waste composting sites have been constructed.

The modest progress in recycling operations in Lithuania can partially be attributed to the generally low landfilling fees that hinder the development of the recycling sector and to deficiencies in the planning of the EU funded recovery projects (Moora, 2011).

Figure 2.9 Recycling of MSW in Lithuania and important policy initiatives



2.4 Future possible trends

An extraordinary effort will be required from the Lithuanian government to fulfil the 50 % recycling target by 2020, requiring a 4.5 % average yearly increase in the recycling rate to be maintained until 2020. This is a huge yearly increase that will require extraordinary initiatives. Rapid establishment of recycling facilities, combined with the introduction of effective economic incentives and robust information measures, will be essential for fulfilling the target. In addition, a more realistic picture of MSW recycling rates would be attained if a proportion of the recycled packaging waste from MSW sources was reported as recycled MSW (cf. section 2.2).

The long term objectives of the Lithuanian waste policy, among others, are to encourage waste prevention, reuse, recycling (especially secondary raw materials including packaging), to minimize disposal of municipal waste, to ensure the accessibility and high-quality of public municipal waste management services and to ensure municipal biodegradable waste collection and treatment.

Although currently no landfill tax is in place in Lithuania, the introduction of a landfill tax is planned as soon as alternative waste treatment facilities come into operation and the draft document for the introduction of a landfill tax has been prepared.

In order to increase recycling levels in the country, the introduction of a certification system of products and materials obtained from recycled waste is planned as well as the organisation of public facing information campaigns on waste separation.

The National Strategic Waste Management Plan for 2007-2013 includes provisions for the preparation of a draft legislation to promote recycling and the use of different recycled materials, and for the elaboration of a Recycling Development Program for 2009-2013. The programme for the use of technical compost was adopted in 2010 (validated until January 2013). The requirements for the technical compost and its usage was adopted in 2012 and will enter into force in January 2013.

Energy production from mixed municipal waste unsuitable for recycling and recovery is expected to start from 2013 (ECAT, 2012). The establishment of 36 green waste composting sites (on top of the existing 21) and 9 Mechanical Biological Treatment facilities are planned in the coming years in Lithuania (Ministry of Environment, 2012).

In the upcoming period, a substantial part of the EU structural funds for 2007–2013 will be channelled into the development of municipal biodegradable waste management infrastructure (e.g. installation of mechanical-biological treatment (MBT) plants, composting containers, and green waste composting sites).

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