

Municipal waste management in France



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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/ECP 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

- Recycling has increased from 26 % of MSW generated in 2001 to 35 % in 2010;
- Significant efforts are required to meet the EU's 50% recycling target for household waste by 2020;
- The 2016 target for biodegradable municipal waste sent to landfill has almost been met in 2010;
- The extended producer responsibility has been broadened;
- The landfill and incineration tax escalator has been initiated; and
- The First Grenelle Law has set quantitative national targets for waste prevention, recycling and diversion of waste from landfill.

1 Introduction

1.1 Objective

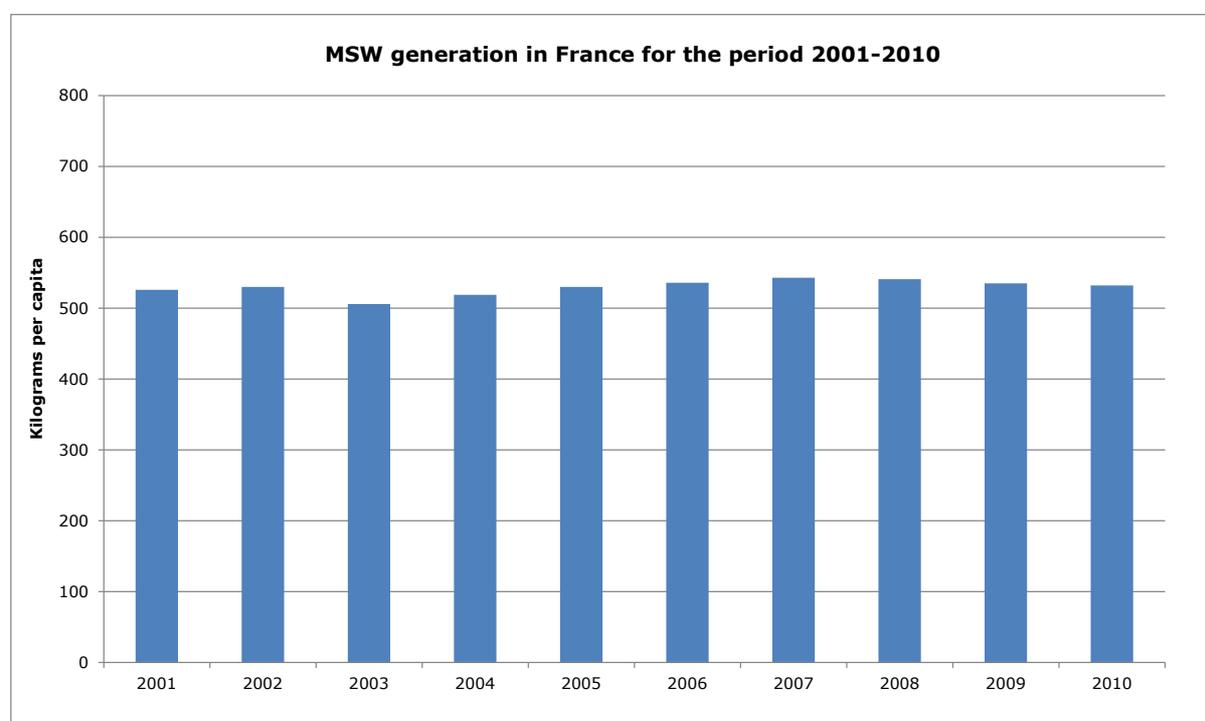
Based on historical MSW data for each country and EU targets linked to MSW in the Waste Framework Directive, the Landfill Directive and the Packaging Directive, the analysis undertaken includes:

- 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 France's MSW management performance

In 2001, France has reportedly generated 32 198 000 tonnes of MSW, compared to 34 535 000 in 2010. This corresponds to a 7 % increase over this period. On per-capita basis, the generation of MSW has varied from 506 kg per capita (2003) to a maximum of 543 kg per capita (2007). A decrease of MSW generation per capita was observed from 2007 to 2010 from 543 to 532 kg per capita, equivalent to a reduction of 2 % over this 3-year period (Figure 2.0).

Figure 2.0 MSW generations per capita in France



Source: Eurostat 2012

In France, the waste management landscape between 1992 and 2007 has been governed by the law implemented on 13 July 1992¹. The main objectives of this law were to reduce waste generation, to minimise waste transport distance, to promote material or energy recovery and to ban the landfilling of untreated waste or waste that cannot be treated any further. This legislation, however, did not include any quantitative targets, except for the landfill ban of untreated waste, which had to be enforced by 1 July 2002. The 1992 law also included the requirement for municipalities to produce waste management plans (98 plans produced) with specific collection targets, and waste management targets.

The review of these waste management plans (ADEME, 2004²) indicates an evolution of waste management share between 1998 and planned objectives for 2010, where separate collection and collection at recycling centres were planned to account for 30 % of all the MSW collected (16 % in 1998). The material recovery from organic sources was also planned to increase to 17 % in 2010 (8% in 1998). No major change was foreseen for the incineration share (37 % planned for 2010, 33 % in 1998). Finally, a large decline in landfilling was foreseen with 8 % of MSW collected planned to be sent to landfills (30 % in 1998).

Since 2007, in France, a new waste management policy and a waste management strategy have been developed with a detailed stakeholder engagement process, known as the ‘Grenelle Environnement’ process, discussing a wide range of environmental issues including waste management. This decision making process was the first of its kind in the French regulatory system, involving government, unions, employers, NGOs and local authorities’ representatives. The outcomes of this very detailed consultation process, supported directly by the French President, have been shaping the new legislative framework in France with specific targets for waste management at the national level.

In 2009, the first Grenelle Law was implemented³. The key points of this law include:

- Reduction of the production of household waste and similar waste by 7 % per capita between 2009 and 2014;
- Reduction of waste sent to landfill or incineration of 15 % between 2009 and 2012;
- Implementation of economic instruments (variable payment scheme for collection, such as pay as you throw, ...) between 2009 and 2014;
- Implementation of waste prevention plans at municipality level; and
- Recycling rate (material and organic recycling) of 35 % in 2012 (24 % in 2004).

The policy instrument related to the extended producer responsibility (EPR) was initiated as early as 1975 but has been extended to a number of new waste types relatively recently in the French regulatory system. The increased scope of the EPR, mostly implemented between 2001 and 2010 includes: tyres, printed/graphic paper, textiles and shoes, furniture, household healthcare products, chemicals from households and household natural gas cylinders. The overall aim is to improve the waste management performance of these materials, using a financial contribution from the producers (and transferred to consumers), which is then redistributed to municipalities with a variable rate per tonne depending on the type of waste management (higher contribution for recycling for example).

¹ [Loi No 92-646 du 13 juillet 1992](#) relative à l'élimination des déchets ainsi qu'aux installations classées pour la protection de l'environnement (In French). Law No 92-646 of 13th July 1992, concerning the disposal of waste and registered organisations for the protection of the environment.

² [ADEME \(2004\)](#). Municipal waste management plans. 2002 Assessment. (In French). Plans départementaux d'élimination des déchets ménagers et assimilés. Bilan 2002. Direction Déchets et sols. Prepared by Bossu, C., Filippi, P. O., Bergey, J. L., Chare, B. and Benony, V. for ADEME. Angers, France. 101 pp.

³ [First Grenelle Law](#) (2009-967, 3 August 2009, Art. 46, relating to the implementation of the Grenelle for the environment)

The implementation of the EPR has reportedly contributed to the improvement in the recycling performance according to the Environment Ministry (2012)⁴.

2.1 MSW Indicators

In France, MSW is defined by the following waste types: street sweeping, sewage sludge and garden and park waste (from municipal sources), household waste (recycling centre and bulky items, household hazardous waste and mixed & separately collected household waste). Finally, MSW includes trade waste similar in nature to household waste.

Between 2001 and 2007, MSW management in France has essentially been driven by the Law of 13 July 1992, requesting municipal waste management plans to be submitted to the national authorities. These plans generally followed the principle of the waste hierarchy (reduction of landfilling, stabilisation of incineration with energy recovery, increase of material recovery and waste prevention goals) albeit with large differences among the different departments. From 2007, a change of direction in French waste management policy was initiated (Grenelle Environment process) with the overall objective to harmonise waste management targets at the national level.

For this ex-post analysis, nine MSW indicators have been chosen, related to historical data from 2001 to 2010 to assess the performance of waste management in France.

2.1.1 The recycling of MSW from 2001 to 2010

The development in the rates of total MSW recycling, organic and material recycling is analysed to assess whether one type of recycling has been prioritised over the other type.

Figure 2.1 indicates that total MSW recycling, related to MSW generation, has increased from 26 % in 2001 to 35 % in 2010, equivalent to about 1 percentage point increase per year. Figure 2.1 also shows that material recycling and organic recycling have been evolving approximately at the same rate between 2000 and 2010, with the material recycling rate slightly higher than the organic recycling rate. It is important to note that the increase in recycling rate is strongly related to the high increase in container parks where more than 4500 container parks were accounted for in 2009, compared to 3000 in 2000 (Ademe, 2012)⁵. 11.8 million tonnes of waste were collected in 2009, as opposed to 6.8 million tonnes in 2001.

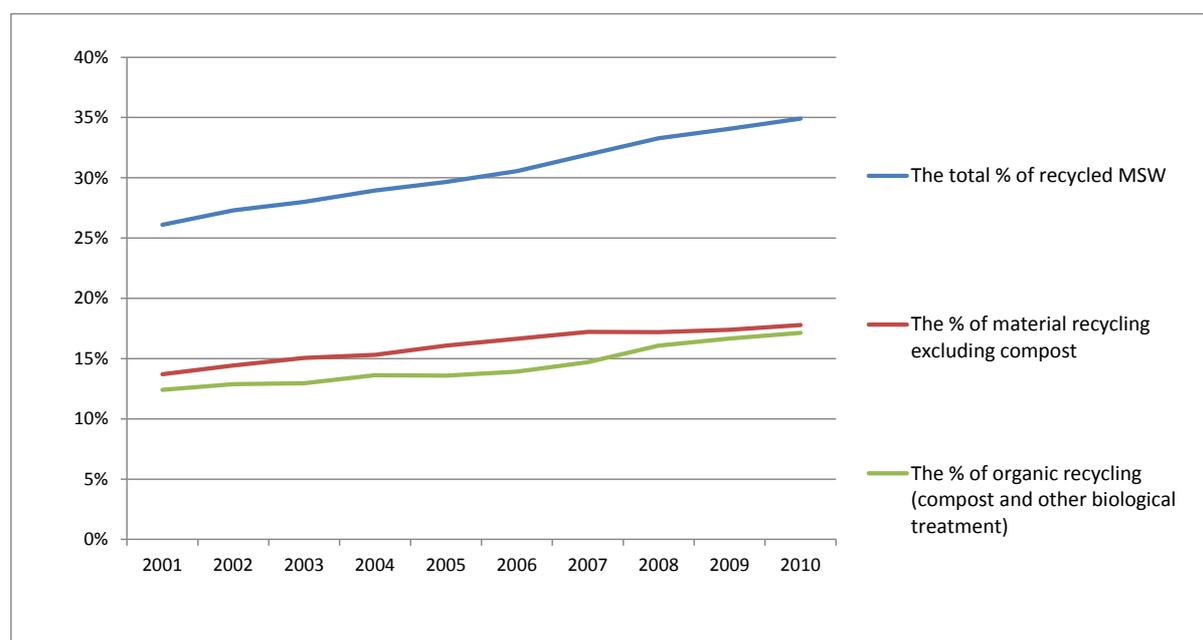
Over the time period of interest, on average the share of material recycling and the share of organic recycling were respectively 53 % and 47 % of the total reported MSW recycled.

It should be noted that the MSW generation increased by 7 % in this ten year time period, while the amount of municipal organic waste recycled increased by 48 %. In the same period, the amount of MSW recycled as materials increased by 39 %. In 2010, 34.5 million tonnes of MSW were reportedly generated, six million tonnes were recycled as materials and 5.9 million tonnes were recycled as organic material.

⁴[Environment Ministry \(2012\)](#). Rapport sur les modalités d'évolution et d'extension du principe de responsabilité élargie des producteurs dans la gestion des déchets. (In French). Report on the modalities of evolution and extension of the principle of extended producer responsibility in waste management. 124pp.

⁵[Ademe \(2012\)](#). Déchets, Edition 2012. Chiffres clés. (In French). Waste, Edition 2012. Key data. Angers France. 50pp.

Figure 2.1 Recycling of MSW in France



Source: Eurostat, 2012

The recycling rate is calculated as the percentage recycling of the total MSW generated.

2.1.2 Yearly increase rate of recycling of MSW

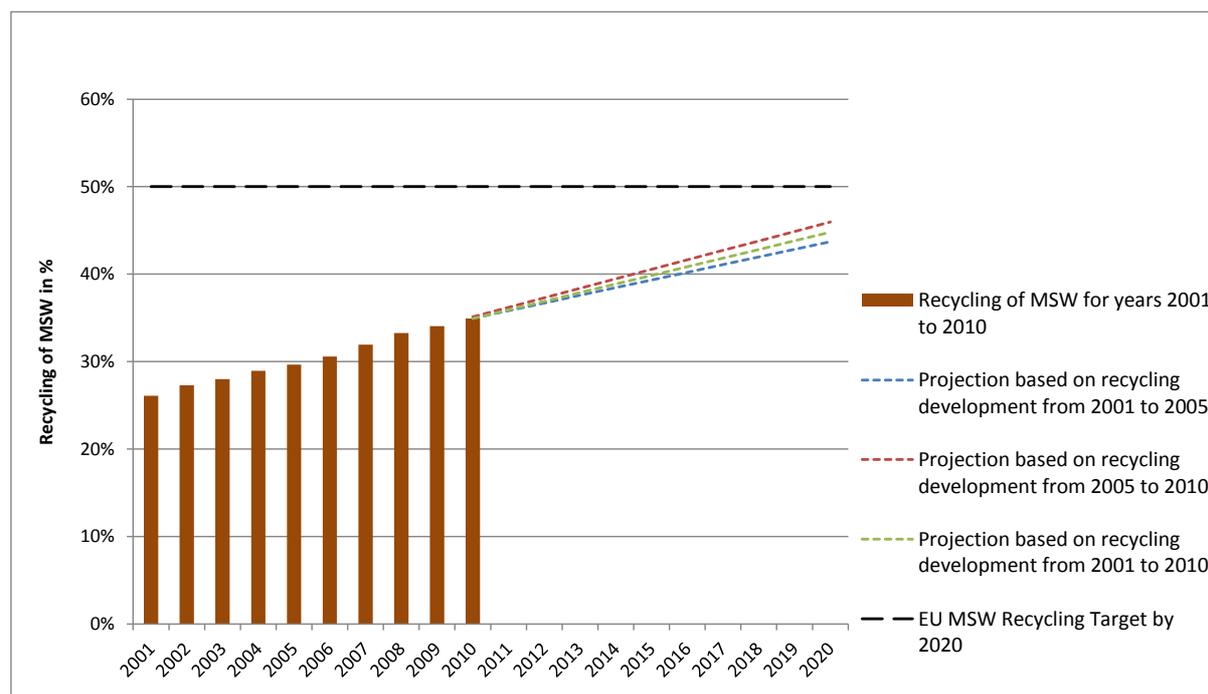
In order to assess the prospects for France to meet the 50 % recycling target as set out in the Waste Framework Directive 2008/98/EC (EC, 2008⁶), three scenarios have been calculated. The scenarios assume that recycling in the period 2010 to 2020 develops with the increase rates of recycling in the periods 2001-2005, 2006-2010 and 2001-2010

In France, the recycling rate has increased almost linearly between 2001 and 2010. When considering the three historical trends and their associated future projections to 2020, it is clear that the recycling rate will increase, but the historical recycling effort will not be sufficient and significant efforts still need to be made in order to meet the target imposed by the Waste Framework Directive⁷. The combination of both an absolute reduction in waste generation and increase in MSW recycling, as prescribed in the French regulatory framework, may improve the recycling rate, in order to meet the 2020 target.

⁶ [EC \(2008\)](#). Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives Text with EEA relevance. Official Journal L 312 , 22/11/2008 P. 0003 – 0030.

⁷ 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 France



Source: Calculation done by Copenhagen Resource Institute (CRI) based on Eurostat, 2012. Recycling rate calculated as % of generated MSW.

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

The historical development in the percentage of biodegradable municipal waste (BMW) landfilled, related to the amounts generated in 1995 was analysed to assess compliance with the Landfill Directive 1999/31/EC (EC, 1999)⁸.

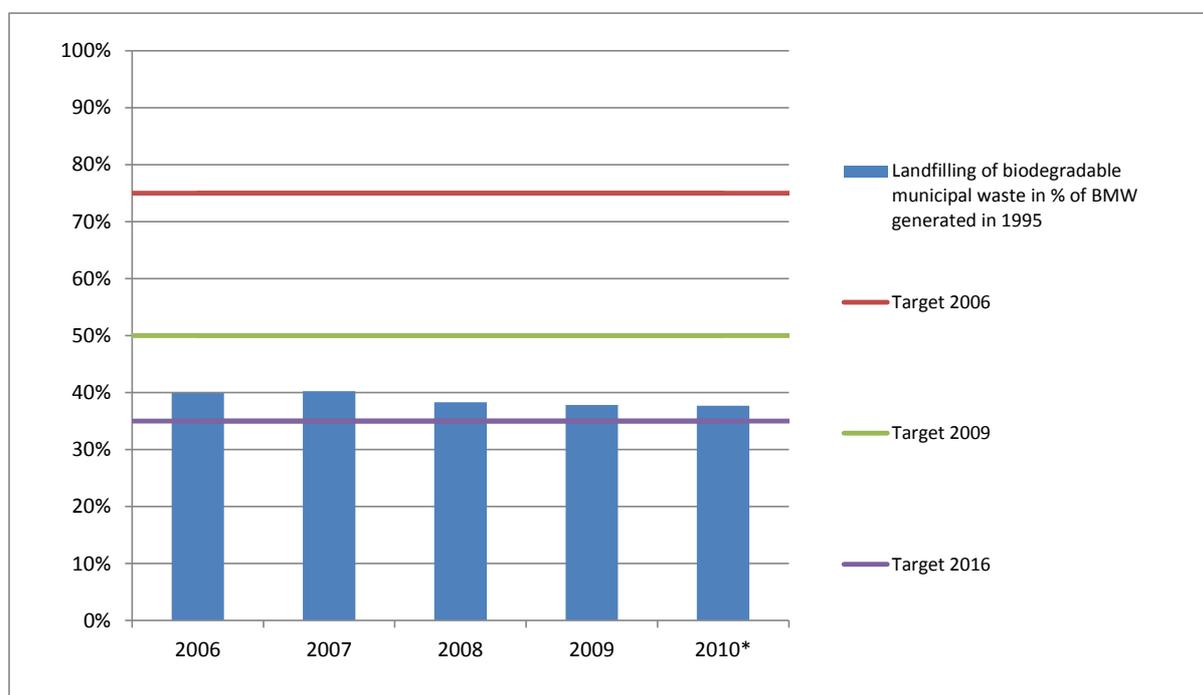
The ETC/SCP has estimated the 2010 data (in Figure 2.3) by subtracting the increase in amount of MSW going to composting and digestion between 2009 and 2010, from the amounts of BMW being landfilled in 2009. This calculation methodology did not address improvements in diverting other biodegradable waste from landfill, such as paper or textiles, or diversion from landfill to incineration. As such, these data are only rough estimates.

According to the EU Landfill Directive, France is required to landfill a maximum of 75 % of the total biodegradable municipal waste (BMW) generated in 1995 by 2006, 50 % by 2009 and 35 % by 2016. The generated amount of BMW was 18 615 000 tonnes in 1995. As indicated in Figure 2.3, France has already met its legal obligations for the first two targets back in 2006. France has not yet met its 2016 target. If the trend observed from 2006 to 2010 is continued, France would meet its 2016 target by 2016. On the contrary, if this trend of the most recent three years is maintained, France would not meet its 2016 target before 2018. In order to meet its last target, France shall landfill no more than 6.5

⁸ [EC \(1999\)](#). Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste. OJ L 182, 16.7.1999, p. 1–19

million tonnes of BMW by 2016 (an estimated 7 million tonnes of BMW were disposed to landfill in 2010).

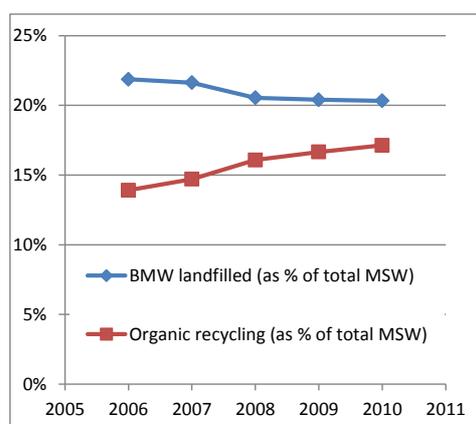
Figure 2.3 Landfilling of biodegradable municipal waste in France as % of BMW generated in 1995



Source: EC, 2012 and CRI calculation * The figures for 2010 are own (CRI) estimations

When comparing organic waste recycling and the BMW landfilled as percentage of the generated MSW for each year (Figure 3.2a), one can infer that the biodegradable waste diverted from landfills has been contributing to the increase in organic recycling, as opposed to be diverted from landfilling to incineration. This is based on the assumptions that the waste composition has remained constant in the time period and that a minimum of home composting has been introduced.

Figure 3.2a Comparison of BMW landfilled and organic recycling (as percentage of the MSW generation)



Source: Eurostat, 2012; EC, 2012

The theoretical potential for increasing further the BMW sent to biotreatment, diverted from landfill, can be estimated to be about 7 million tonnes (current amount landfilled in 2010). It is important to keep in mind that the quality of the biotreated material is determinant if the final use of this material is intended for other purposes than landfilling or landfill covers.

2.1.4 Regional differences of MSW recycling for 2001 to 2008

France has reported regional recycling data of MSW to Eurostat. Figure 2.4 shows regional differences in the development of MSW recycling from 2001 to 2008, in relation to total recycling, material recycling and organic recycling. Three different regions have been chosen for each type of recycling: 1) recycling in the region with the highest generated total amount of MSW in 2008; 2) recycling in the region with the lowest percentage of recycling in 2008 and 3) recycling in the region with the highest percentage of recycling in 2008.

Unsurprisingly, the highest amount of MSW generated in France is located in the Paris region ('Ile de France') (Figure 2.4). However, the recycling rate has remained relatively low for 2002, 2004, 2006 (less than 20 % of the total MSW generated). The most probable reason for the low recycling performance of the Paris Region is the high density of multi-storey housing, making efficient recycling more technically challenging (space constraints). In 2008, the recycling rate reached 23 %, equivalent to more than 2 million tonnes of material and organic recovery. The increase in the recycling rate, observed in 2008, is due to an increase of material recycling (ranging from about 12 % in 2002 to 17 % in 2008). The organic recycling rate has remained constantly low (7 % over the reported period). This indicates that a significant proportion of BMW is either incinerated or landfilled in the French capital region. The 2008 recycling rate should, however, be seen as very positive improvement in waste management performance.

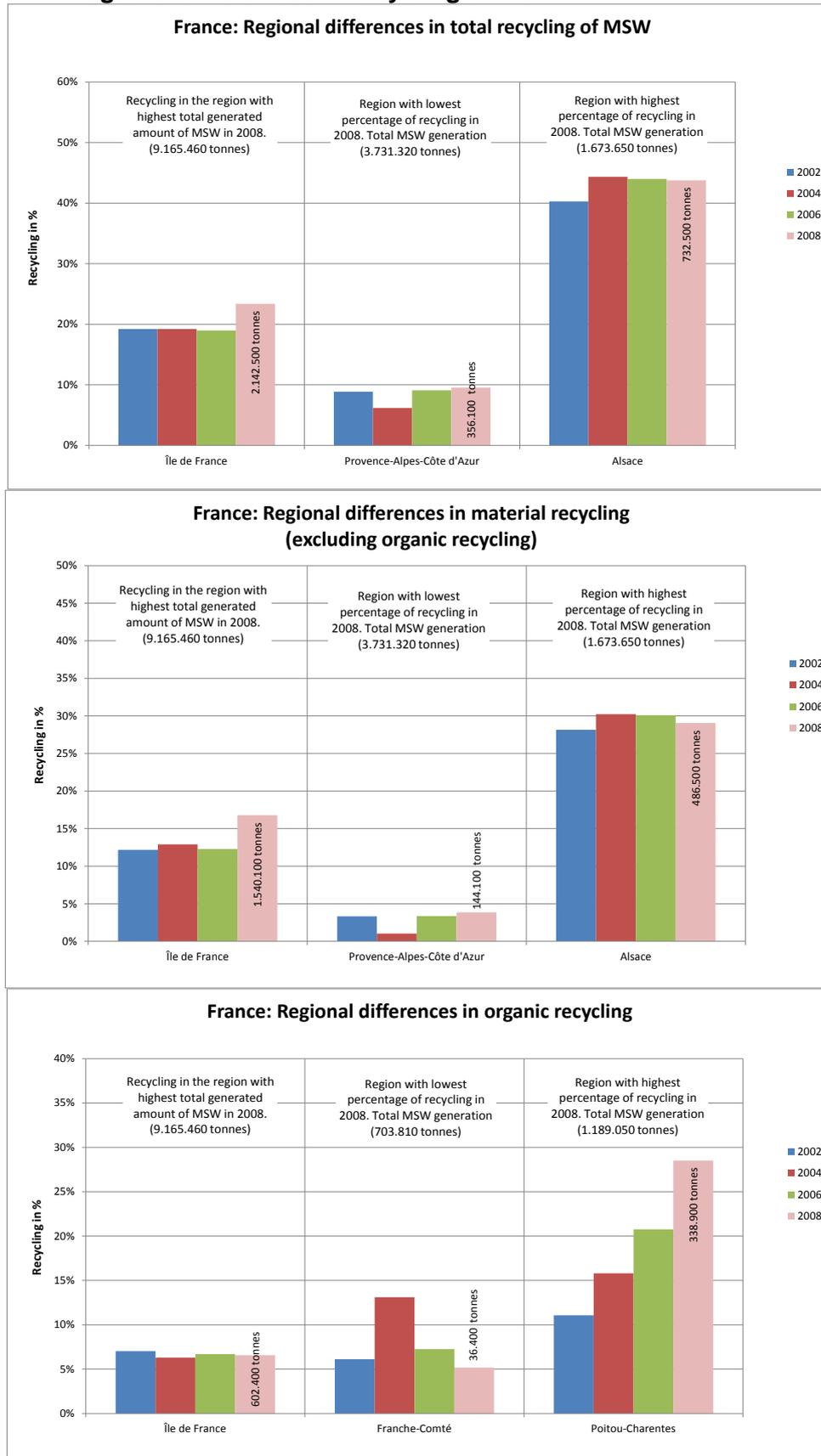
The Martinique region has the lowest recycling rate (6 % of the MSW generated in 2008). However, it is difficult to draw any conclusion from this region as it is an overseas region of France (very different climatic, demographic and socio-economical situation compared to mainland France). Within mainland France, the region with the lowest recycling rate (10 % of the generated MSW in 2008) is the Provence-Alpes-Côte d'Azur region, located in the south of France. In 2008, the total MSW generated in that region was 3.7 million tonnes (third largest MSW producer in France).

The Alsace region, located in the north east of France, representing 40 % of the MSW generated in 2008, has the highest recycling rate. More specifically, material recycling excluding organic recycling was 29 % in 2008.

The Poitou-Charentes region (located on the west coast of France), has the largest organic recycling rate, with a very large increase from 11 % in 2002 to 29 % in 2008. This region has a low population density of 68 inh./km² and is considered semi-rural with a relatively low rate of urbanisation. On the other hand, Corsica has the lowest organic recycling rate at 1%.

The wide regional differences of waste management performance are an indication that policies have been applied differently at the regional level. This wide variation could also be explained by the regional cultural differences of the different regions but also the available budget allocated for waste management in each region. The overall message of Figure 2.4 is for the French regions to assess the drivers of the best performers and identify the potential barriers for implementation in the less well performing regions, in order to improve the overall waste management situation in France.

Figure 2.4 Regional differences in recycling of MSW



Source: Eurostat regional data, 2012. Recycling rate calculated as % of generated MSW

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

The objective of this analysis is to assess whether fiscal instruments, and more specifically the landfill tax and the incineration tax has an effect on the recycling rate.

In France, the general tax on polluting activities ('Taxe Générale sur les Activités Polluantes' or TGAP) is applied to landfilling and recently to incineration activities. The landfill tax was applied at EUR 9.15 per tonne of waste disposed and remained constant between 2001 and 2008. Landfill sites with ISO14001 or EMAS accreditation were given a discount (EUR 7.5/t), as the environmental certification implies better management of the waste and potentially improved environmental performance, compared to non-certified sites. The TGAP reform of 2009 has imposed the TGAP to be increased 4 times between 2009 and 2015. In addition, the tax reform is now including an incineration tax implemented for the period 2009 (EUR 7/t) to 2015 (EUR 14/t). However, incineration with energy recovery and high energy efficiency are subject to a tax break (EUR 1.5/t in 2009 to EUR 3/t) (ETC/SCP, 2012⁹). It is worth noting that more than 90 % of all operators subject to the landfill tax and incineration tax benefits from a tax break, potentially reducing the strength of these instruments. It is also important to indicate that the landfill tax and the incineration tax apply to all types of waste and not specifically to MSW. It is argued that these financial instruments may have had more immediate effect on the non-MSW than MSW (Environment Ministry, 2012b)¹⁰.

The new tax on incineration and the increase of the landfill tax has so far only had a minor effect on the amount of waste disposed to landfills or sent to incineration (Figure 2.5). Similarly, the tax increases have not yet generated a significant increase of recycling, since the increase in recycling has grown constantly over the time period (Figure 2.6).

One may have expected to see a change in trend, such as an increased reduction of waste sent to landfill or incineration and an increased rate of recycling in 2009 and 2010, compared to 2001-2008 period, but trends have remained unchanged so far. Overall, the MSW landfill rate decreased slightly since 2001 and the recycling rate increased accordingly, indicating that the landfill tax had only a limited effect. This might be due to the fact that France has one of the lowest landfill taxes among the western European countries. The recently introduced incineration tax seems to have had no effect on the incineration rate. The effect of the increase in tax levels for landfill and incineration until 2015 still remains to be seen. In France, the landfill tax is supplemented by a ban on non-pretreated waste which might even have had a larger effect on the landfill rate.

It should be noted, however, that the tax revenue generated from the landfill tax (EUR 259M in 2010) and incineration taxes (EUR 42M in 2010) has supported local authorities for the investment necessary for increasing recycling rates in France (Environment Ministry, 2011)¹¹.

Other fiscal instruments have also been developed in France, related to the Extended Producer Responsibility (EPR), which have been specifically designed to increase the quantity and the quality of the recycling in France (Environment Ministry, 2012)¹².

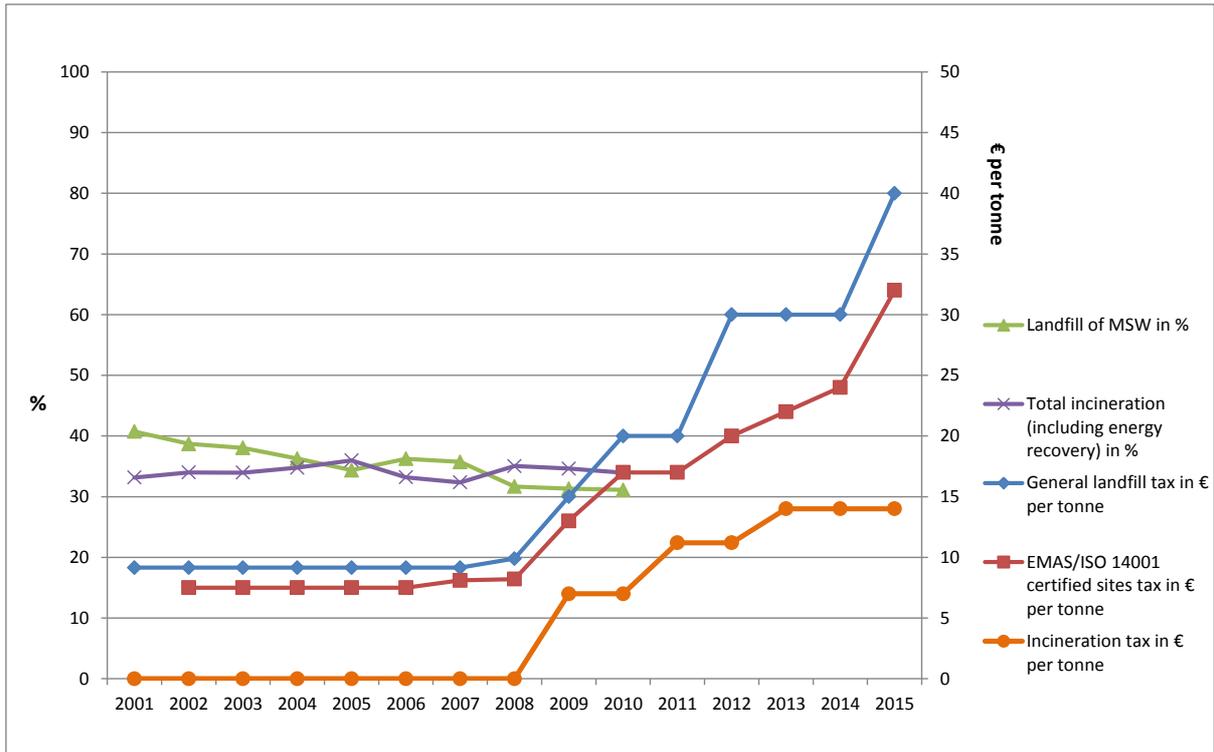
Figure 2.5 Landfilling and incineration of MSW and associated taxes in France

⁹ [ETC/SCP \(2012\)](#). Overview of the use of landfill taxes in Europe. Prepared by Fischer, C., Lehner, M., and McKinnon D. L. ETC/SCP Working paper 1, 2012.

¹⁰ Environment Ministry (2012b). Personal correspondence.

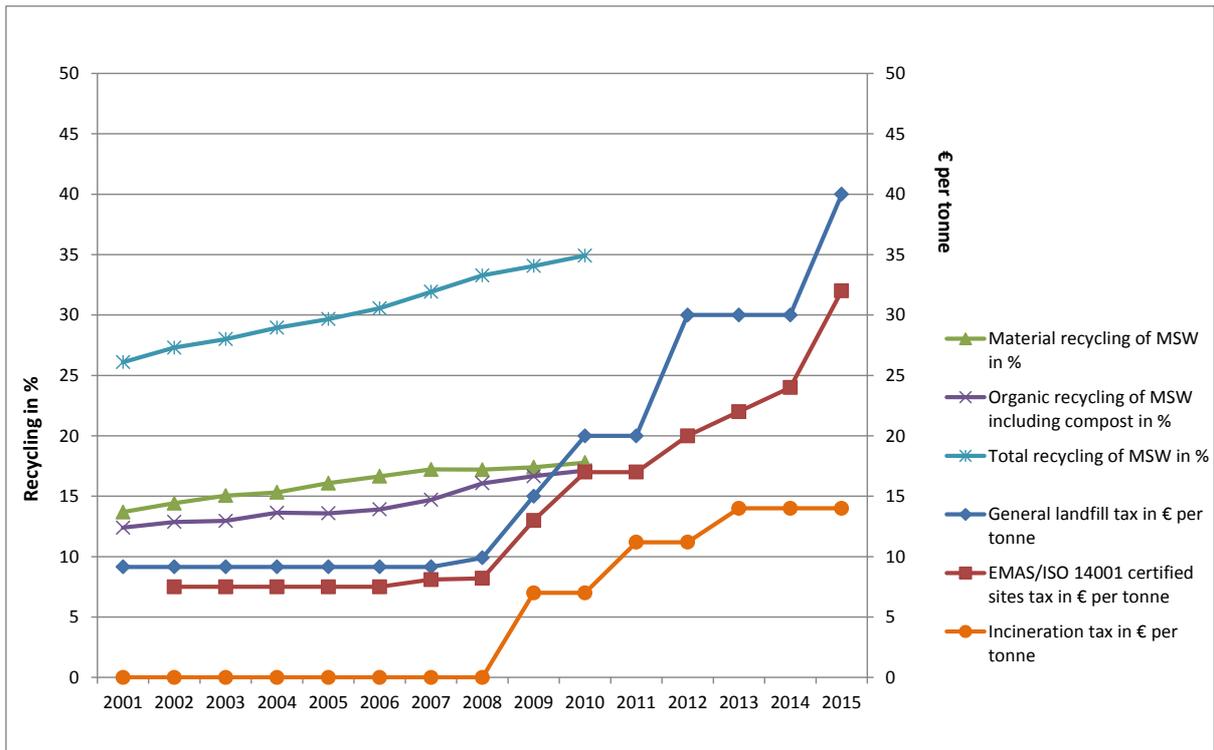
¹¹ [Environment Ministry \(2011\)](#). Premier bilan de la réforme de la TGAP de 2009 et de la politique de soutien sur les déchets ménagers et assimilés. (In French). First assessment of the reform of the 2009 general tax on polluting activities and financing policy on municipal solid waste. 167 pp.

¹² [Environment Ministry \(2012\)](#). Rapport sur les modalités d'évolution et d'extension du principe de responsabilité élargie des producteurs dans la gestion des déchets. (In French). Report on the modalities of evolution and extension of the principle of extended producer responsibility in waste management. 124pp



Source: ETC/SCP, 2012 and Eurostat, 2012

Figure 2.6 Development of MSW recycling and landfill tax in France



Source: ETC/SCP, 2012 and Eurostat, 2012

2.1.6 Environmental benefits of better MSW management

It is important to assess the performance of waste management by analysing the quantity of waste and their treatment share. This assessment, presented in the previous sections, provide some indication about compliance with the EU's regulatory framework on waste. This section addresses the evaluation of the greenhouse gas (GHG) emissions of the whole waste management system, using a life-cycle approach. The description of the GHG modelling performed in order to produce Figure 2.7 is out of the scope of the present analysis. However, a brief methodological summary is presented in the box below.

Assumptions concerning the production of Figure 2.7

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

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 methodology for landfills and incinerators and life-cycle modelling for the other technologies (recycling, biotreatment and transport).

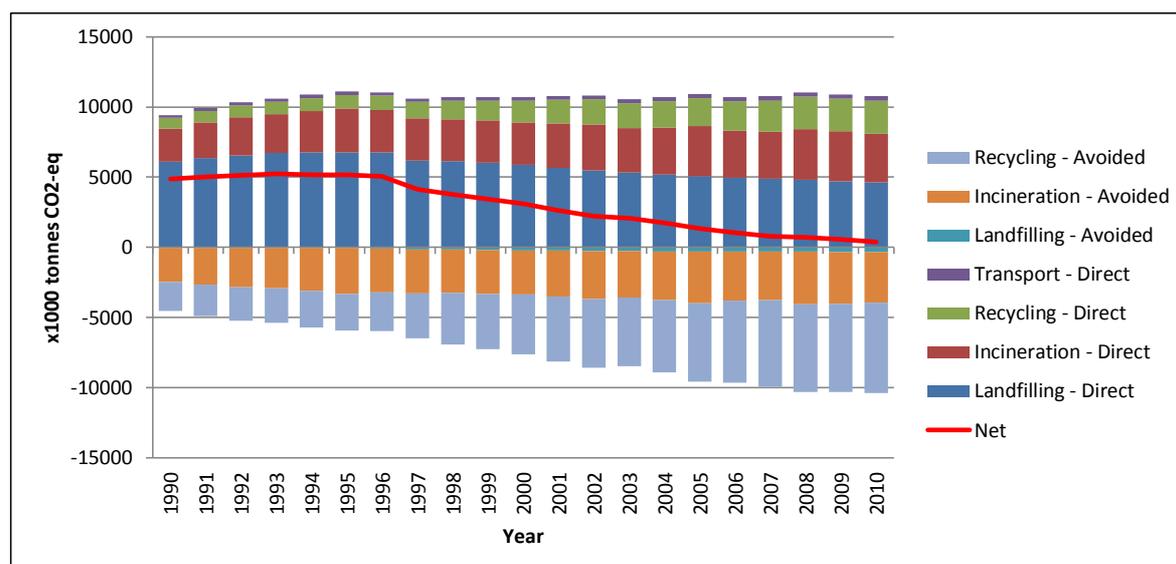
For the indirect avoided emissions (negative values), the calculations integrate the benefits associated with the recovery of energy (heat and electricity generated by incinerators, electricity generated by the combustion of landfill gas or methane from anaerobic digestion). Other avoided emissions include 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 biotreatment. Avoided emissions of biotreatment include fertilizer substitution. All processes generating electricity are assumed to substitute electricity mix of France in 2009. Processes generating heat are assumed to substitute average heat mix for the EU-25 in 2002. The electricity mix and heat mix are assumed to remain constant throughout the whole time series. The composition of the MSW disposed in landfills, incinerated or recycled respectively are based on ETC/SCP (2011), as well as the complete methodology.

Figure 2.7 indicates that the reduction of landfill, associated with an increase of recycling has reduced the overall net life-cycle GHG emission of municipal waste management in France between 1990 and 2010. It should be noted that the direct emissions from incineration have remained stable (no large variation of incineration rate over the time period). The direct emissions from landfill (landfill gas emissions) decreased in France due to a reduction of the MSW landfilled and improved landfill technologies (higher rate of landfill gas recovery).

The increased recycling rate has contributed to a growing amount of avoided emissions (the benefits of recycling are calculated based on the displaced virgin production, due to the provision of secondary material). Note that the direct emissions of recycling have simultaneously increased with the increase of recycling rate.

In the model, transportation has remained almost constant (proportional to the amount of waste collected and transported). In reality one can assume that an increasing level of recycling can generate a higher amount of transport (separate collection vehicles). However, as indicated in Figure 2.7, transport does not contribute much to the overall amount of GHG emitted and the avoided GHG.

Figure 2.7 GHG emissions from MSW management in France



Note: 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.

2.2 Uncertainties in the reporting

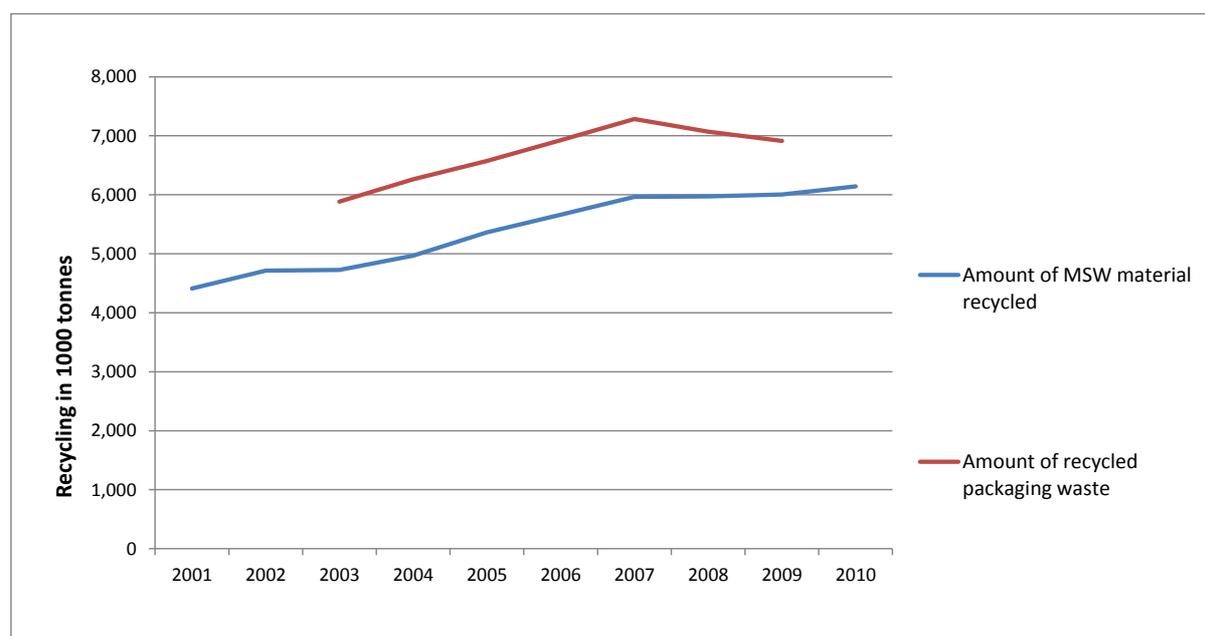
Some uncertainties or differences included in the reporting of MSW can result in different reported recycling levels. For instance, the reporting of MSW recycling may include a certain proportion of packaging waste. Some countries do not include any packaging waste recycling in their MSW recycling, even if the waste originates from a municipal source. In France, the proportion of packaging waste generated by households is estimated to be about 37 % of the total packaging placed on the French market in 2008. This includes metal (50 %), paper and cardboard (20 %), plastic (50 %), glass (80 %), wood (less than 1 %), originating from households (Ademe, 2010)¹³.

Figure 2.8 indicates that both the rate of MSW recycling and the rate of packaging waste recycling have evolved at the same pace, suggesting that the same methodology has been used for reporting packaging waste recycling and MSW recycling (no break in the time series observed).

The data also suggest that at least part of the recycled packaging waste is included in the MSW reported as recycled.

¹³ [Ademe \(2010\)](#). Industrial, commercial and household packaging in France. Collection Repère. 12 pp.

Figure 2.8 Comparison of MSW recycled and packaging waste recycled



Source: Eurostat, 2012

Another source of uncertainty is associated with the countries' reporting for MSW sent to mechanical biological treatment (MBT). The reporting of waste sent to MBT is subject to a wide level of interpretation by different countries. For instance, in some countries the whole amount received at the MBT plant is reported as recycled. In other countries, it is only the actual amount recycled after the MBT, which is included, excluding the amount subsequently sent to landfilling or incineration after treatment. Finally, in other countries, MBT is reported based on the final output of the MBT. According to Eurostat (2012)¹⁴, in France, MSW sent to MBT, is reported as the outputs to the final treatments after the MBT process.

2.3 Important initiatives taken to improve MSW management

The most important initiatives taken in France to improve MSW management between 2001 and 2010 include the implementation of the landfill ban for non-pretreated waste, and the legal requirement for municipalities to provide waste management plans. It is likely that the implementation of the Packaging Waste Directive might have played a role in the recycling rate increase. From 2007, the process and output of the 'Grenelle Environnement', has been a very important initiative to improve waste management in France, as summarised below:

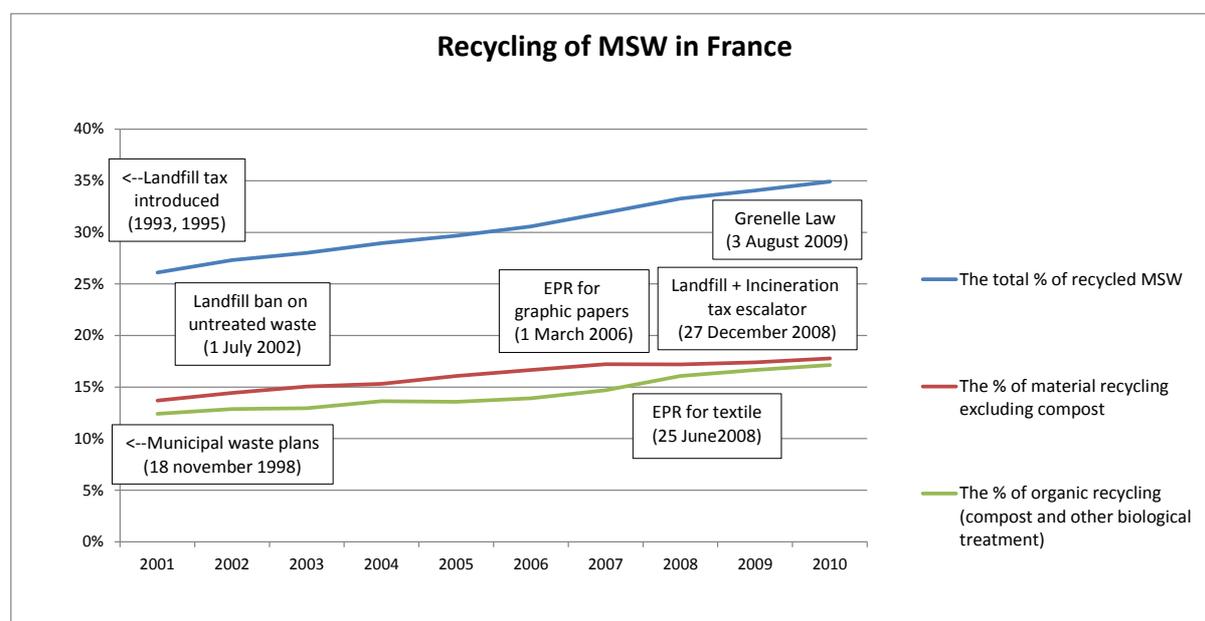
- Target to reduce the production of household waste and similar waste by 7 % per capita between 2009 and 2014;
- Target to reduce waste sent landfilling or incineration of 15 % between 2009 and 2012;
- Introduction of economic instruments (variable payment scheme for collection, such as pay as you throw, in addition to a fixed collection fee...) between 2009 and 2014;
- Implementation of waste prevention plans at municipality level; and
- Recycling rate (material and organic recycling) target of 35 %, to be achieved by 2012 (up from 24 % in 2004).

¹⁴ Eurostat (2012). Results of Eurostat survey on MSW reporting presented at a Eurostat conference on 7 to 8 February 2012.

In order to achieve the objectives indicated above, France has decided to increase the landfill tax significantly and has also introduced an incineration tax, in order to create an incentive to divert waste away from landfill and incineration. However, the tax rate is still relatively low compared to other countries.

In addition, the large efforts made on the implementation of extended producer responsibility applied to a wider range of waste types, are expected to increase recycling rates and potentially improve the quality of the recyclable materials. It can also be expected that waste subject to the EPR will be diverted from mixed residual waste. The EPR financial mechanism is developed in such a way that the eco-tax collected from the producers is redistributed to the municipalities at a variable rate per tonne of waste, in accordance with the waste hierarchy (higher subsidy distributed to the municipality on a tonne basis, for waste fractions sent to recycling). Both the rate of the eco-tax and the rate of the subsidy are reviewed and audited by the government on a regular basis. An overview of the main policy instruments that may have influenced or will influence the recycling rate in France is presented in Figure 2.9.

Figure 2.9 Recycling of MSW in France and important policy initiatives



2.4 Future possible trends

The generation of MSW per capita in France has decreased, in absolute terms, by 2 % between 2007 and 2010 (Eurostat, 2012¹⁵). The total generation of MSW has remained stable. It is not possible yet to determine whether this trend is likely to continue and this reduction of waste generation has occurred at the time of economic downturn, which may have been the main driver for the reduction of waste generated by capita.

In addition, the amount of municipal waste disposed to landfill has decreased between 2001 and 2010, incineration has remained almost stable, incineration without energy recovery has almost disappeared (530 000 tonnes in 2010) and recycling (materials and organic) has increased.

¹⁵ Eurostat (2012). Generation and treatment of Municipal waste in France. Eurostat dataset [env_wasmun]. Last updated 14 March 2012.

The 2016 target for the diversion of biodegradable municipal waste from landfill is likely to be met on the French territory (38 % achieved in 2010, with a target of 35 % in 2016), although regional performance differences are quite marked. It should be noted that the reduction rate of biodegradable municipal waste sent to landfill is almost inversely proportional to the increase rate of organic recycling, indicating that biodegradable waste has mostly been diverted from landfill to biological treatment. This is also supported by the fact that the amount of incinerated MSW has been very stable since 2004.

Compared to past trends in the development of the MSW recycling rate, France has to speed up its efforts in order to meet the 50% recycling target by 2020 as required by the EU Waste Framework Directive. Several initiatives have been taken recently:

One of the requirements of the Grenelle Law is the reduction of the amount of MSW landfilled or incinerated between 2009 and 2012 by 15 %. The aim of this measure is to incentivise further a higher recycling rate. Data for 2009 and 2010 do not indicate that this target will be reached in 2012.

‘Pay as you throw’ has been introduced on a voluntary basis in France for a trial period in selected municipalities to evaluate whether this economic instrument is suitable for accelerating the increase in recycling rate but this is unlikely to be implemented over the whole territory since this instrument is generally not well accepted by citizens.

An additional specificity of the French regulatory system on waste, which could have a small influence on future recycling rates, is the requirement for retailers to offer a packaging recovery centre, where shoppers can remove the packaging from the products after the purchase. This measure is nevertheless not appropriately implemented (Actu-environnement, 2011)¹⁶.

The EPR occupies a prominent role in the array of regulatory mechanisms towards improving recycling performance. The EPR concept is broadened to include additional waste fractions. These include:

- Medical waste with infectious risks used for self-treatment (needles, syringes...), 360 tonnes per year;
- Household hazardous waste (paint, varnish, glues, acids and bases), 43 000 tonnes per year;
- Natural gas canisters (propane, butane, oxygen, acetylene); and
- Household furniture waste, 2.7 million tonnes per year.

While the three first EPR will not significantly affect the tonnage of MSW produced, nor affect the treatment share, it is expected to reduce the hazardousness of MSW. However, household furniture represents a significant amount of waste generated. According to Decree 2012-22, dated 6 January 2012¹⁷, 45 % of household furniture and 75 % of the professional furniture should be reused/recycled by 2015. If this policy instrument is successful, a significant amount of waste will be diverted from the mixed MSW stream and the recycling rate of France is likely to increase and will contribute towards its 2020 recycling targets. This instrument, if successful, could also contribute towards the biodegradable municipal waste reduction targets, imposed by the EU Landfill Directive (reduction of furniture waste to landfill).

The acceptance of the Grenelle law objectives and the further development of the EPR principle seem to provide a suitable legal framework for France. In addition, the economic instruments, such as the

¹⁶ [Actu-environnement \(2011\)](#). Emballages : les hypermarchés ne respectent pas le Grenelle [In French]. Packaging : Supermarkets do respect the Grenelle.

¹⁷ [Décret n° 2012-22 du 6 janvier 2012](#) relatif à la gestion des déchets d'éléments d'ameublement. Decree 2012-22 of 6 January 2012, related to the management of waste originating from furniture.

increase of the landfill tax, implementation of the incineration tax and voluntary variable tax rate on waste collection, should also provide the necessary foundations and incentives for increasing further the recycling rates.

However, the fact remains that France still needs to continue to make significant efforts in order to fulfil the 50 % target of the Waste Framework Directive by 2020.

References

ADEME (2004). Municipal waste management plans. 2002 Assessment. (In French). Plans départementaux d'élimination des déchets ménagers et assimilés. Bilan 2002. Direction Déchets et sols. Prepared by Bossu, C., Filippi, P. O., Bergey, J. L., Chare, B. and Benony, V. for ADEME. Angers, France. 101 pp.

Ademe (2010). Industrial, commercial and household packaging in France. Collection Repère. 12 pp.

[Ademe \(2012\)](#). Déchets, Edition 2012. Chiffres clés. (In French). Waste, Edition 2012. Key data. Angers France. 50pp

Décret n° 2012-22 du 6 janvier 2012 relatif à la gestion des déchets d'éléments d'ameublement. Decree 2012-22 of 6th January 2012, related to the management of waste originating from furniture.

Environment Ministry (2012). Rapport sur les modalités d'évolution et d'extension du principe de responsabilité élargie des producteurs dans la gestion des déchets. (In French). Report on the modalities of evolution and extension of the principle of extended producer responsibility in waste management. 124pp.

[EC \(2008\)](#). Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives Text with EEA relevance. Official Journal L 312 , 22/11/2008 P. 0003 – 0030.

[EC \(1999\)](#). Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste. OJ L 182, 16.7.1999, p. 1–19.

EC (2011): Commission Decision of 18 November 2011 establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and the Council

EC, 2012: Member States' reporting to the Commission according to Council Directive 1999/31 of 26 April 1999 Landfill Directive and [Commission Decision 2000/738/EC](#) concerning a questionnaire for Member States reports on the implementation of Directive 1999/31/EC on the landfill of waste. E-mail from the Commission to the EEA on 16 February, 2012.

Environment Ministry (2011). Premier bilan de la réforme de la TGAP de 2009 et de la politique de soutien sur les déchets ménagers et assimilés. (In French). First assessment of the reform of the 2009 general tax on polluting activities and financing policy on municipal solid waste. 167 pp.

Environment Ministry (2012b). Personal correspondence.

ETC/SCP (2011). Projections of Municipal Waste Management and Greenhouse Gases. Prepared by Bakas, I., Sieck, M., Hermann, T., Andersen, F. M., Larsen, H. and Reichel, A. Working paper 4/2011. Copenhagen, Denmark, 89 pp.

ETC/SCP, 2012: Christian Fischer, Mathias Lehner and David Lindsay McKinnon 'Overview of the use of landfill taxes in Europe'. ETC/SCP Working paper 1, 2012.
http://scp.eionet.europa.eu/publications/WP2012_1

Eurostat, 2012: 'Waste database municipal waste'
<http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/database>
Accessed May 2012

Eurostat regional data, 2012: 'Generation and treatment of municipal waste (1 000 t) by NUTS 2 regions'

http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

Eurostat (2012). Results of Eurostat survey on MSW reporting presented at a Eurostat conference on 7 to 8 February 2012.

First Grenelle Law (2009-967, 3rd August 2009, Art. 46, relating to the implementation of the Grenelle for the environment).

Loi No 92-646 du 13 juillet 1992 relative à l'élimination des déchets ainsi qu'aux installations classées pour la protection de l'environnement (In French). Law No 92-646 of 13th July 1992, concerning the disposal of waste and registered organisations for the protection of the environment.