

EU as a Recycling Society

Present recycling levels of Municipal Waste and Construction & Demolition Waste in the EU

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Context

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Disclaimer

This **ETC/SCP working paper** has not been subjected to European Environment Agency (EEA) member country review, however the data collection has been subject to comments in April to June 2008. Please note that the contents of the working paper do not necessarily reflect the views of the EEA.

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1. Summary

To date, there has been no clear, detailed overview of the level, nor composition, of municipal waste recycling in the EU Member States. A similar situation exists for construction and demolition (C&D) waste. This report is an attempt to provide such an overview and is based mainly on national reports and statistics.

The main results in the overview are:

- All old and almost all new EU Member States have increased recycling of municipal waste in the last ten years.
- There are still significant differences between recycling levels of municipal waste, both within the old EU Member States and within the new EU Member States. In general the level is higher in old Member States. However, some of the new EU Member States have relatively high recycling levels.
- Some of the old EU Member States with a lower municipal recycling level have experienced relatively high yearly growth (> 0.75 percentage point) in the total recycling since 2000. Similarly, some of the new EU Member States have also had a reasonably high yearly growth (>0.50 percentage point) since 2000. These changes indicate that even if the starting point is lower some positive changes are underway in these countries.
- Recycling of paper and cardboard, and bio-waste in the form of green kitchen waste and garden waste, constitute the largest part of recycling in countries with highest recycling of municipal waste. In general, however, glass, paper and cardboard, plastic, metals are the backbone of recycling in the EU, cf. figure 1.1. In a few of the old EU Member States recycling of bulky waste is also significant.

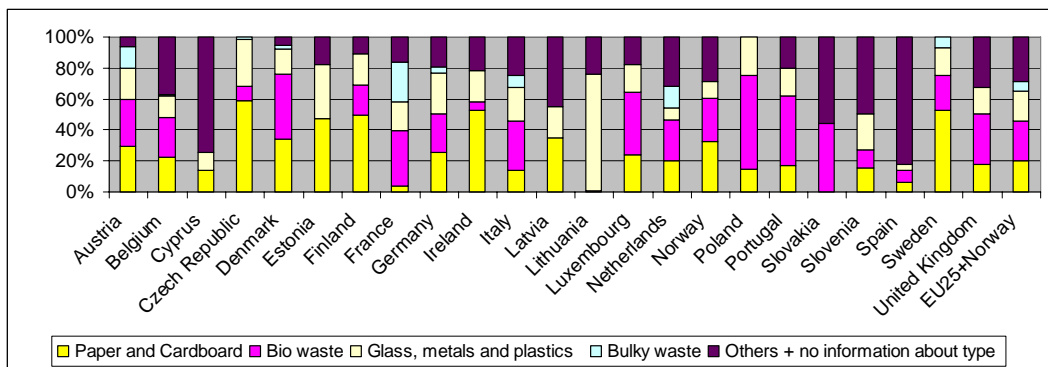


Figure 1.1 Composition of recycled municipal waste. (Sources: ETC/RWM, 2008 based on national reports and statistics)

- Many EU Member States already have high recycling levels of construction and demolition waste.
- The recycling of construction and demolition waste in ton per capita differs between countries, but the difference is not as large as seen for municipal waste. Further, the difference between the old and the new EU Member States in the recycling of construction and demolition waste in ton per capita is also not as large as that for municipal waste.
- The recycling of construction and demolition waste is quite reasonable in percentage (>50%) for most of the included 18 countries.
- Concrete, bricks, tiles and asphalt is the most commonly recycled C&D waste materials, but almost all countries with very a high recycling level also recycle a significant quantity soil, cf. figure 1.2.

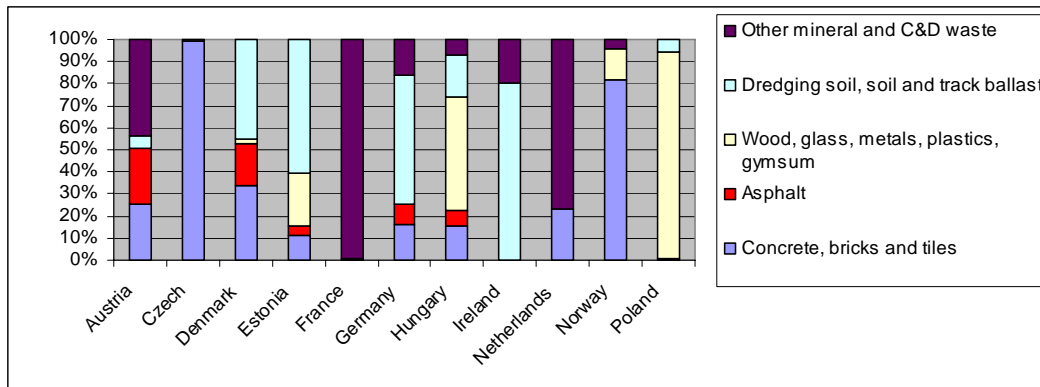


Figure 1.2. Composition of recycled construction and demolition waste. (Sources: ETC/RWM, 2008 based on national reports and statistics)

The increase in recycling reflects that EU and national policies designed to direct waste away from landfills towards recycling are producing good results. Favourable market conditions for some waste materials might have played a role. Recent information shows that the recycling markets have been negatively affected by the current economic crises, which has led to a lower demand for materials including waste materials in general. This might hamper the further positive development towards more recycling in the EU.

2. Introduction

This report is a part of the project: The Recycling Society and its Environmental Effects, which the ETC/RWM, since 1 January 2009 ETC/SCP, is undertaking in cooperation with the EEA according to its 2008 work programme.

The overall objective of the Recycling Society Project is to illustrate current levels of recycling for different municipal waste streams in the EU as well as different waste streams coming from the construction and demolition sector, project the future generation of these waste streams and to document environmental effects (expressed in GHG emissions) of the management of municipal waste and construction and demolition waste.

This report identifies the present levels of recycling of different municipal waste streams and construction and demolition waste in the EU Member States and Norway, and their development over the last 10 years. Other EEA countries have not been included because of limited data availability. The data collection ended in June 2008.

In the last couple of years there has been an ongoing discussion of future recycling levels in waste management in the EU; In June 2008 the European Parliament and the Council of the European Union agreed on new recycling targets for municipal waste and construction and demolition waste. The agreement is part of the new EU Waste Framework Directive (2008/98/EC).

The final legal text is as follows:

“In order to comply with the objectives of this Directive, and to move forwards a European recycling society with a high level of resource efficiency, Member States shall take the necessary measures designed to achieve the following targets:

- (a) by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50% by weight.
- (b) By 2020 the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 170504 in the European Waste Catalogue (EWC) shall be increased to a minimum of 70% by weight.”

This text does not include targets for individual waste types belonging to municipal waste and construction and demolition waste, but does demand an overall target of 50% and 70% respectively. Further, the overall target for the municipal waste requires that at least glass, metal, paper and plastic are included, although it can include other waste streams.

This report can qualify the discussion on how best to achieve the new targets by providing an indication of the current recycling trends for different municipal waste streams and construction and demolition waste streams in the EU and Norway.

3. Municipal Waste

There is currently no clear detailed overview of the level, nor composition of municipal waste recycling in the EU Member States. Member States do not have an obligation to report data on the recycling level of municipal waste to the EU Commission.

For many years, Eurostat has gathered and published information on generation of municipal waste as well as the amount landfilled and incinerated. The recycling level of municipal waste in each Member State is currently calculated as the difference between the generated amount minus the amount landfilled and incinerated (“the difference methodology”). This means that the calculated amount is an expression of the maximum amount of municipal waste that could have been recycled, not an assessment of actual levels.

In this study, national reports and statistics have been used to ascertain the amount of recycled municipal waste for each Member State. This includes information about how much of certain municipal waste types is recycled; paper waste or garden waste for example. By combining these different recycling levels from different waste types it is possible to find a total recycling level. This gives more insight into the composition and reliability of the aggregated information.

When analysing municipal waste recycling levels, it is relevant to examine both the percentage levels, but also the actual quantity in tonnes of recycled waste. The amount of generated municipal waste varies between the countries by a factor 2 per capita. Therefore, countries with a lower quantity of recycled waste in tonnes can have the same or higher percentage of recycling as countries with both higher amount of generated and recycled municipal waste. In this study absolute recycling figures published by the countries have been used, i.e. absolute figures for total recycling of municipal waste or recycling of specific waste fractions, for example, waste paper. The absolute recycling figures have then been related to the number of inhabitants (kilogram or ton recycling per capita). Further, the absolute figures have been used to calculate recycling percentages by relating the figures either to the total generation of municipal waste or by relating the recycled amount of a specific waste type to the total amount of recycled municipal waste.

3.1. Total recycled municipal waste

Figure 3.1 shows how the total amount of recycled waste per capita has developed in the old EU Member States and Norway. Figure 3.2 shows the same development in the new EU Member States. In 2005-2006 in the old Member States the level varies from 60 kilogram to 370 kilogram per capita. In the new Member States the level varies from 20 kilogram to 100 kilogram per capita.

In the old EU Member States the general trend is a relatively steep increase in the period from 1995 to 2006 varying by a factor of 1.5 to a factor of 6 per capita. Countries with a very high initial level of recycling per capita, like Germany and the Netherlands, have a more gentle increase compared to countries with a lower level per capita like, for example, Greece and Ireland

In the new Member States the waste statistics generally improved from 2002 on. The decline in recycling in some countries in the period before 2002 is probably a consequence of introducing better waste statistics. However, the new Member States have also, in recent years, had an increase in recycling per capita from a factor of 1.5 to a factor of 3. Many of the new Member States have a recycling level per capita similar to that in Greece, Portugal and Spain

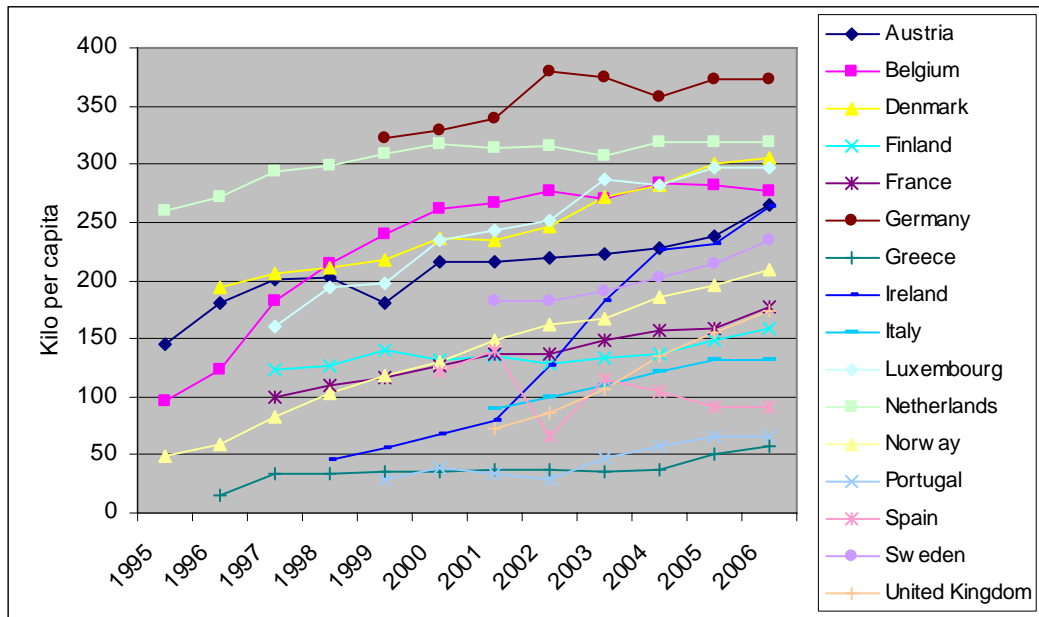


Figure 3.1. Total municipal waste recycled per capita in the old EU Member States and Norway. (Sources: ETC/RWM, 2008 based on national reports and statistics)

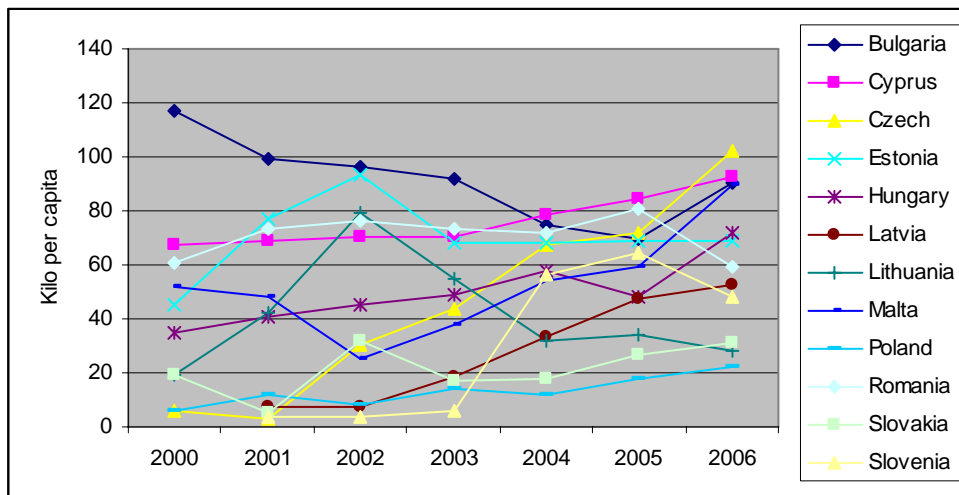


Figure 3.2. Total municipal waste recycled per capita in the new EU Member States. (Sources: ETC/RWM, 2008 based on national reports and statistics and Eurostat for Bulgaria, Hungary, Malta, Romania, Estonia 2000-2003, Lithuania except 2006, Poland except 2004 and Slovakia except 2003)

The higher amount of recycled municipal waste per capita is not per se a sign of good performance as in some Member States it can reflect that the generation of municipal waste is higher. When the recycling is shown in percentage, this bias will disappear, refer figure 3.3 and 3.4.

Among the old EU Member States and Norway, Germany has the highest recycling level in kg per capita, followed by Netherlands, Denmark and Luxembourg, but due to lower generation of municipal waste, Belgium has nearly the same percentage of recycling as Germany, followed by the Netherlands, Norway and Sweden.

Figure 3.3 also shows Ireland, Norway and United Kingdom have increased their recycling of municipal waste significantly in the last five years; by between 2-4 percentage points per year.

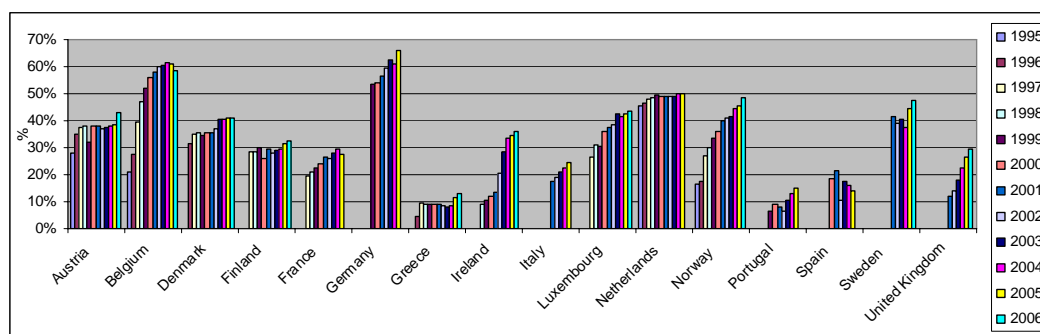


Figure 3.3. Total municipal waste recycled in percentage of generated amount in the old EU Member States and Norway. (Sources: ETC/RWM, 2008 based on national reports and statistics)

The development in the total level of recycling of municipal waste in the old EU Member States and Norway can be related to six different groups:

1. A group of countries with a very high (> 50%) level of recycling and still increasing yearly level (> 0.25 percentage point) since 2000: Belgium, Germany and the Netherlands
2. A group of countries with a high level of recycling (40%-50%), and still increasing yearly level (> 0.5 percentage point) since 2000: Austria, Denmark, Luxembourg, Norway and Sweden.
3. A group of countries, which have a medium level of recycling (25%-40%), and very high (> 0.75 percentage point) yearly increase since 2000: Ireland and United Kingdom
4. A group of countries, which have a medium level of recycling (25%-40%), and a modest (< 0.75 percentage point) yearly increase since 2000: Finland and France
5. A group of countries, which have a lower level of recycling (10%-25%), and very high (> 0.75 percentage point) yearly increase since 2000: Italy and Portugal
6. A group of countries, which have a lower level of recycling (10%-25%), and a modest (< 0.75 percentage point) yearly increase since 2000: Greece and Spain

Figure 3.4 shows the development in the new EU Member States. Even if some of the recycling figures are calculated by the difference methodology the figures indicate that the recycling by percentage of generated waste has increased in the last five years; even the country with the lowest recycling rate recycles 8% of generated municipal waste.

It is a little difficult to accurately categorize the new EU Member States because the data covering eight of the twelve countries (Bulgaria, Estonia, Hungary, Lithuania, Malta, Poland, Romania and Slovakia) are of insufficient quality for the time span and the recycling level is based wholly or partly on the “difference methodology”. Still, it seems reasonable to differentiate between:

1. A group of countries with a quite high (> 30%) level of recycling and a very high increasing yearly level (> 5 percentage point) since 2000: Czech Republic
2. A group of countries with a relatively high (> 20%) level of recycling, but where the level has been constant since 2000: Bulgaria and Romania
3. A group of countries with a lower level of recycling (10%-15%), but with an increasing yearly level (> 0.5 percentage point) since 2000: Cyprus, Estonia, Hungary, Latvia, Malta and Slovenia.
4. A group of countries, which have a lower level of recycling (< 11%), and where the development is fluctuating: Lithuania, Poland and Slovakia

The development in figure 3.4 indicates that the recycling rate in the Czech Republic has increased very rapidly, around 5 percentage points per year in the last five years. Explanations for this development are considered in section 3.2.

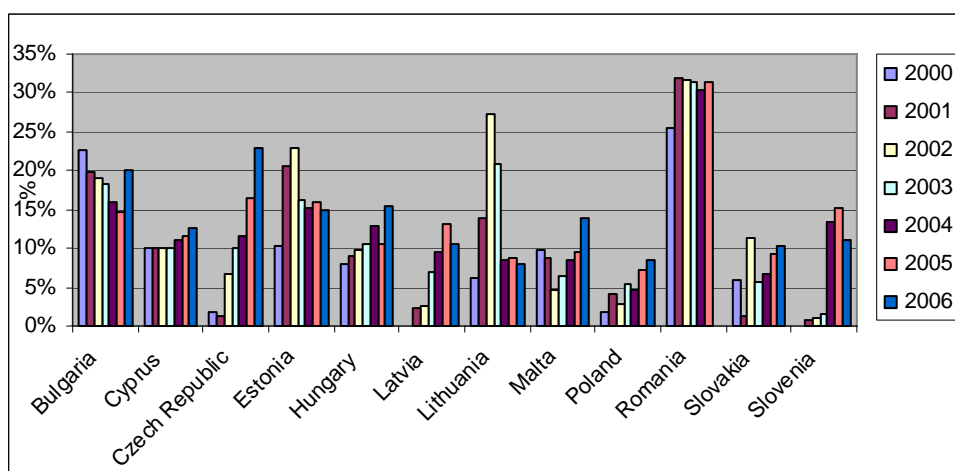


Figure 3.4. Total municipal waste recycled in percentage of generated amount in the new EU Member States. (Sources: ETC/RWM, 2008 based on national reports and statistics and Eurostat for Bulgaria, Hungary, Malta, Romania, Estonia 2000-2003, Lithuania except 2006, Poland except 2004 and Slovakia except 2003)

3.2. Difference between the calculated and reported amount of recycled municipal waste

Until now the EEA and the ETC/RWM have used calculated municipal waste recycling levels for each of the Member States. Thereby, the recycling level of municipal waste in each Member State is calculated as the difference between the generated amount minus the amount landfilled and incinerated based on the data reported to Eurostat. These calculated figures have been used, for example, in the EEA report “Europe’s Environment, the fourth assessment”, 2007; the EEA brochure “The road from landfilling to recycling”, 2007 and the EEA briefing “Better management of municipal waste will reduce greenhouse gas emissions”, 2008.

Table 3.1 shows the difference in kilogram when the “difference methodology” is used and when the “addition of recycled waste type methodology” is used.

Table 3.1. Difference between calculated MSW recycling figures (“difference methodology”) and figures based on addition of recycled waste streams in kilogram per person per year.

	Austria	Belgium	Czech Republic	Cyprus	Denmark	Estonia	Finland	Germany	Ireland	Italy	Latvia	Lithuania	Netherlands	Poland	Portugal	Slovakia	Slovenia	Spain	Sweden	United Kingdom
2001	106	-13	21	0	3		5	-1	86	35	6		52		-21		116	117	-9	3
2002	136	-12	4	1	3	5	0	-20	68	45	46		61		0		16	181	4	5
2003	130	-13	-3	0	4	76	0	-26	74	47	27		88		10	17	50	134	4	3
2004	130	-3	-50	1	5	98	0	-18	68	50	12		93	2	-8		78	154	3	2
2005	133	-2	-29	2	2	93	1	-16	66	51	17		92		4		65	170	3	3
2006	111	19	-69	0	-11	118	1	11	70	68	64	6	81		0		36	162	5	6

(Source: Eurostat and ETC/RWM, 2008 based on national reports and statistics). Only countries and years are included, where both figures are available

A positive figure in the above table indicates that the “difference methodology” has overestimated the recycled amount. A negative figure indicates that “the addition of recycled waste type methodology” somehow overestimates the recycling. In general Table 1 shows that for Austria, Estonia, Ireland, Italy, Latvia, the Netherlands, Slovenia and Spain the “difference methodology” results in considerably higher recycling levels than the ‘addition of recycled wastes methodology’ (over 50 kilogram per capita). This is often around 30%-50% of the total amount which has been possible to find through the

“addition of recycled waste type methodology”. The explanation for these large differences can be that the “difference methodology” counts or includes activities, which are not in fact proper recycling activities but pre-treatment such as mechanical-biological treatment or recovery or disposal activities.

With the exception of the Czech Republic, the countries that produce negative values from this comparison, do so only to a small degree. This indicates that “the addition of recycled waste type methodology” has been reasonable successful.

In the Czech Republic the overestimation of the recycling by “the addition of recycled waste type methodology” is quite high and constitutes up to double the amount found by the “difference methodology”. One explanation for this, according to the source used for the Czech data, is that the recycling data delivered by the Czech Republic for this project includes more municipalities than the reporting to Eurostat is normally based on. Another explanation could be that the municipal waste amounts reported to Eurostat exclude packaging waste whereas the nationally published recycled amount of municipal waste includes a significant level of packaging waste. This could partly explain the difference as the Czech Republic has, according to the reporting of the Packaging Directive, a reasonably high total recycling percentage of packaging waste (59%). This is equal to the recycled percentage in the Netherlands, higher than the Danish and Swedish and much higher than all other new EU Member States.

3.3. The composition of recycling of municipal waste

In order to identify the factors behind the different total recycling percentages in each of the countries, it is relevant to have a closer look at the composition of the recycling of municipal waste.

The old EU Member States

Figure 3.5 shows that all old Member States with detailed information on the composition of the recycling have a substantial part belonging to recycling of glass, paper, plastics and metals. Excluding France and Spain, in 2005 these fractions accounted for over 35% and in some countries like Finland, Ireland, Norway and Sweden up to 70%. In most of the countries this level has not changed in the investigated period, while it has increased a

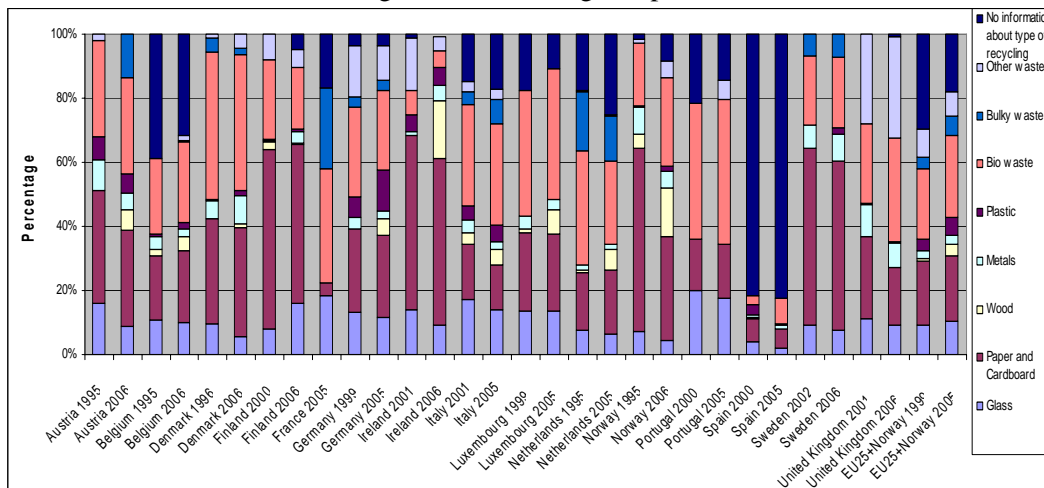


Figure 3.5. Development in percentage in the composition of recycling in the old EU Member States and Norway. ((Source: ETC/RWM, 2008 based on national reports and statistics)

little in Germany and declined in Austria and Norway. The recycling of glass, metals, paper and plastic is the backbone of the recycling of municipal waste in most countries.

Bio waste, in the form of green kitchen waste and garden waste, is also a substantial part of the recycling. In most countries it constitutes about 25% but in Denmark and

Luxembourg over 40% of the total recycled municipal waste is bio waste. Despite Denmark's and Luxembourg's high level of bio waste recycling, they are not among the top recyclers in the EU for municipal waste; see figure 3.3.

In some countries the recycling of bio waste is only a minor part of the recycling; for example, Ireland and Spain.

A few countries like Austria, France and the Netherlands have also a significant level of bulky waste recycled (between 10% and 25%).

The development in absolute recycling per capita per waste fraction is shown in figure 3.6 (note the different starting dates). The level of recycling in kilograms for each waste type varies a lot between the countries; often by a factor of 10 or more. Such big differences indicate that the data included do not necessary include the same kind of activities. For example, Denmark, Ireland and Sweden have each more than 100 kilogram per capita of recycled paper and cardboard, whereas Germany and the Netherlands has each under 95 kilogram and 65 kilogram respectively. However, Germany and the Netherlands have overall higher recycling rates. This indicates not only differences in waste policies and collection schemes, but also some differences in the activities included in the published recycled amounts. This will be discussed further in section 3.5.

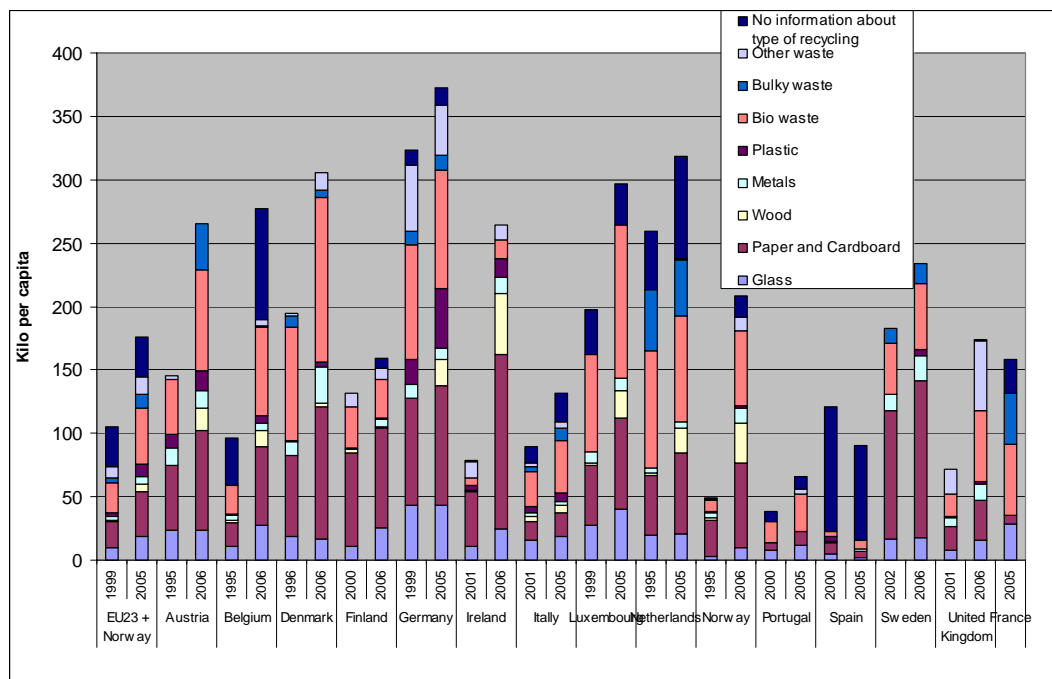


Figure 3.6. Development in kilograms in the composition of recycling in the old EU Member States and Norway. ((Source: ETC/RWM, 2008 based on national reports and statistics)

Some countries have had a very high increase per capita for certain recycled waste fractions. The recycling of paper and cardboard has increased per capita by a factor of 2 to 3 for Belgium, Ireland and Norway. The increase is between 1.5 to 2 times for Austria, Denmark, Luxembourg, Portugal and United Kingdom.

For metals the increase per capita is a factor of over 2 for Denmark, Finland, Ireland and Norway, while it is between 1.5 - 2 for Belgium, Sweden and United Kingdom.

The recycling of plastics has also increased per capita, in many countries by a factor up to 5. For glass it is also possible to document high increases in recycling per capita, but the development is here more differentiated perhaps due to glass packaging being replaced in many countries by other packaging materials.

Figure 3.6 also shows that, apart from Finland, Germany and the Netherlands, the recycled amount of bio waste has increased in kilogram by a factor of between 1.5 and 2. Further, in 10 of the old EU Member States and Norway, biowaste has the highest recycling per capita in weight.

The new EU Member States

Figure 3.7 shows that for the new Member States that have detailed information about the composition of the recycling, the recycling of glass, paper, plastics and metal constituted a substantial part of overall municipal recycling. In 2005/2006 it constituted over 30%, and in some countries like the Czech Republic and Estonia the rate is over 80%.

In all the countries percentage of more paper and cardboard has increased in the investigated period. However, missing information on the type of recycled municipal waste affects the results for some of the included countries.

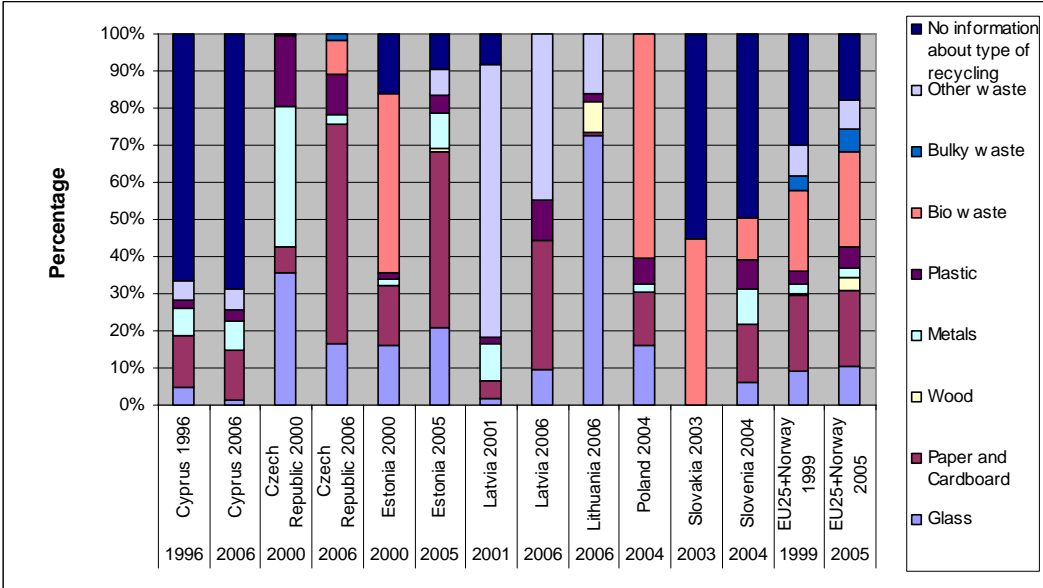


Figure 3.7. Development in percentage in the composition of recycling in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports and statistics)

In general bio waste seems not to be an important part of the recycling of municipal waste in the new Member States except in Poland and Slovakia where it constitutes 60% and 40% respectively of the recycling.

The development in absolute recycling per waste fraction per capita is shown in figure 3.8. It is only possible to show the development of this trend for four countries; there was insufficient time series data for the other new Member States.

The level of recycling in kilograms for each waste type varies a lot between the countries and for certain waste streams by a factor of 6 or more. As with the old Member States such difference reflect not only different waste policies, but indicate that the published data do not necessarily include the same kind of activities. This will be discussed further in section 3.5.

The Czech Republic, Estonia and Latvia have had high increases in the amount per capita of recycled glass. The increase is between a factor of 2 to 10.

For paper and cardboard waste the increase per capita is by a factor of 2 for Cyprus and over a factor of 4 for the Czech Republic, Estonia and Latvia.

Recycling of metals per capita has increased a little for the Czech Republic, by a factor of 2 for Cyprus and even more for Estonia. For plastics the increase is by a factor of 3 for Cyprus and even higher for the Czech Republic, Estonia and Latvia.

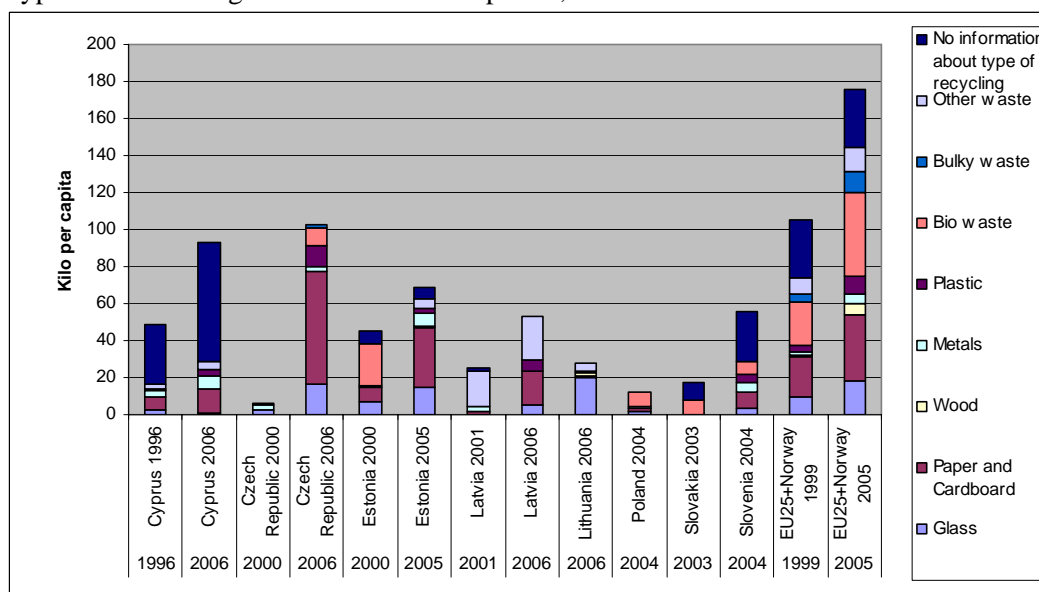


Figure 3.8. Development in kilogram in the composition of recycling in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports and statistics)

3.4. The development of recycling of specific waste types

In the new Waste Framework Directive an overall minimum recycling rate of 50% for glass, metal, paper and plastic waste has to be achieved by 2020 for household waste and possibly similar waste from other origins. This study has been able to obtain figures of the recycled amount of these waste types, but not how much this is in percentage compared to the generation of the waste type. Figures about the supply of the materials are not available at the moment.

Glass waste

Most glass recycling is normally related to packaging waste rather than window glass. Figure 3.9 shows the development since 1995. The recycling level in kilogram per capita is unchanged in countries like Austria and Sweden. It has increased in Belgium, Finland, Ireland, Italy, Luxembourg, Norway, Portugal and United Kingdom. However, in Denmark, Germany and the Netherlands it increased until 2001 but has now been replaced by a decline. This is because glass has been partly replaced by other and lighter packaging materials.

In 2005 the recycling level of glass per capita in the old EU Member States was between 10 and 40 kilograms. In the new Member States this was normally between 2 and 20 kilograms.

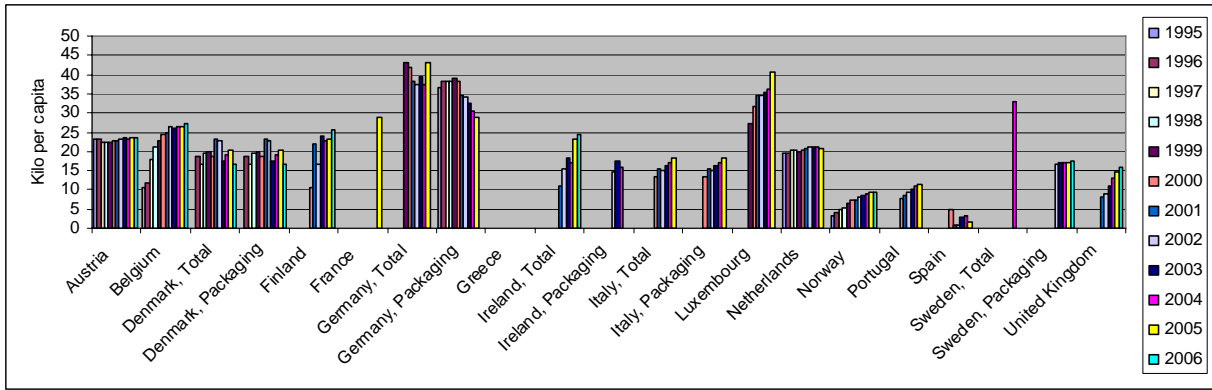


Figure 3.9. Development in recycling of glass waste per capita in the old EU Member States and Norway. ((Source: ETC/RWM, 2008 based on national reports and statistics)

It has to be underlined that a low recycling level of glass in kilogram can be caused by a low consumption of glass due to the use of refillable glass packaging. Many of the new Member States, however, have the same consumption per capita of glass packaging as the old Member States (EU Commission, 2008) and the level of recycling could therefore be increased in these countries.

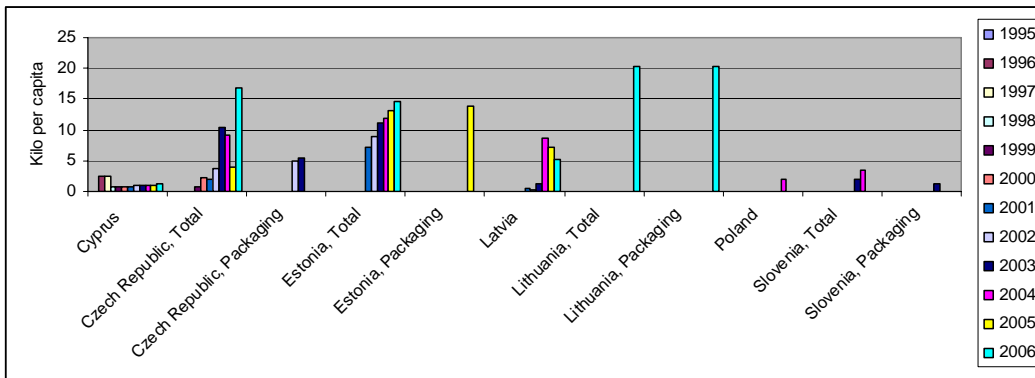


Figure 3.10. Development in recycling of glass waste per capita in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports and statistics)

Metal waste

Some recycling of metals is related to packaging waste but not all. Figure 3.11 shows the development in the old EU Member States and Norway. Where possible the figures have been divided into recycling metal packaging and total recycling of metal per capita.

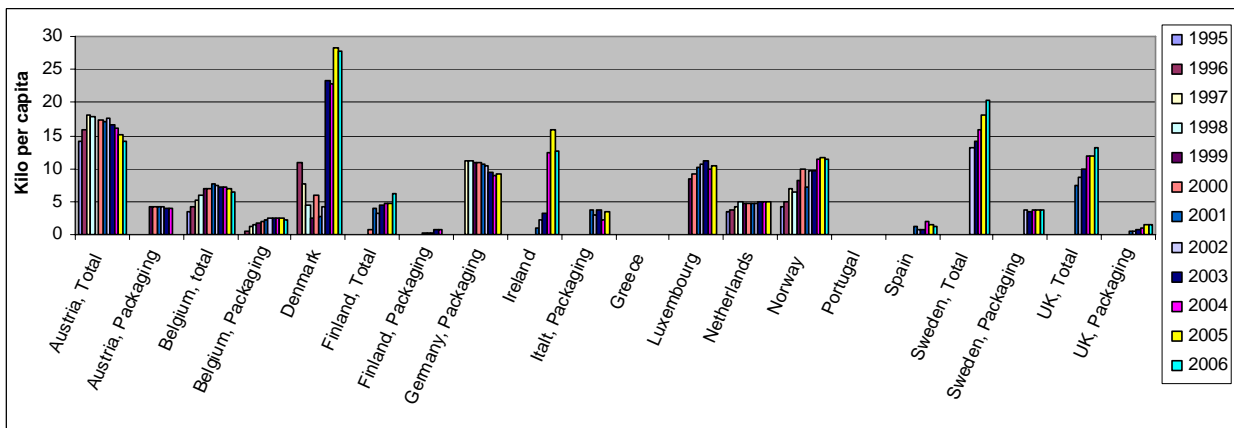


Figure 3.11. Development in recycling of metal waste per capita in the old EU Member States and Norway. ((Source: ETC/RWM, 2008 based on national reports and statistics)

The recycling level is normal between 6 to 14 kilograms per capita but the level is higher for Denmark and Sweden. This can partly be explained by the fact that the figures for these countries include other metals than packaging waste.

In new Member States the recycling level is generally lower than 10 kilogram per capita although this has been increasing for Cyprus, the Czech Republic and Estonia. The recycling level is very low for metal packaging when looking at countries where the packaging part has been possible to indicate.

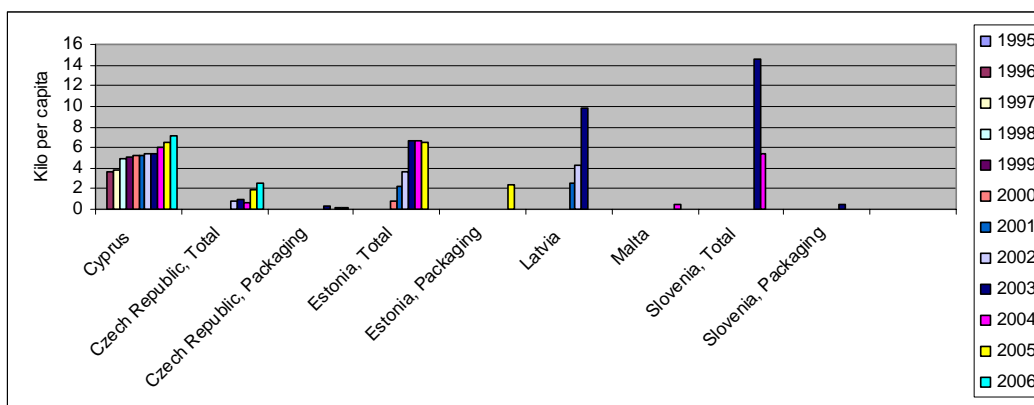


Figure 3.12. Development in recycling of metal waste per capita in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports and statistics)

Paper and cardboard waste

The paper and cardboard recycling level has increased in all the old EU Member States and Norway, but figure 3.13 shows significant differences between the old Member States.

The level varies from about 10 kilograms per capita in Portugal and Spain to 140 kilograms in Ireland. Most countries have a level between 60 to 80 kilograms recycling per capita.

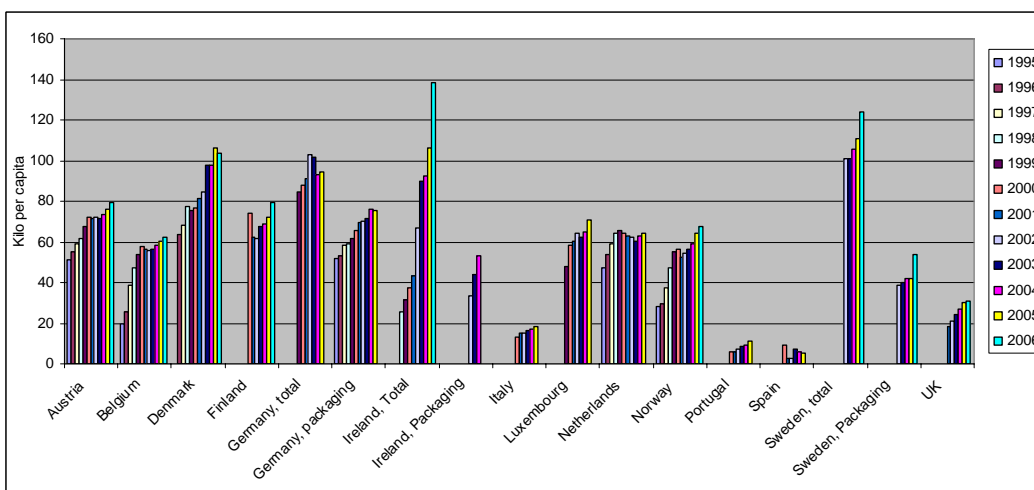


Figure 3.13. Development in recycling of paper and cardboard waste per capita in the old EU Member States and Norway. ((Source: ETC/RWM, 2008 based on national reports and statistics)

Germany, Ireland and Sweden can differentiate between total amount of paper and cardboard recycled and cardboard and paper packaging waste recycled. The difference is assumed to indicate the amount of newspaper and writing paper recycled. The high amount of recycling for Germany, Ireland and Sweden can therefore be partly explained by the inclusion in the total figures of recycled packaging paper and cardboard as well as

of other paper wastes. For the countries with only one figure it is not possible at this stage to say whether the figures also include both packaging and other types such as newspaper and writing paper.

In the new EU Member States the level has also increased in all Member States but from a starting level normally below 10 kilogram per capita. In the new Member States there is also a huge variation in recycling levels achieved. The Czech Republic, Estonia and Latvia in particular have seen a significant increase. The level for the Czech Republic and Estonia is in line with the level in Portugal, Spain and United Kingdom. However, for the Czech Republic and Estonia the high increase is partly due to the inclusion of both packaging and other types such as newspaper and writing paper. This issue is examined in more detail in section 3.5.

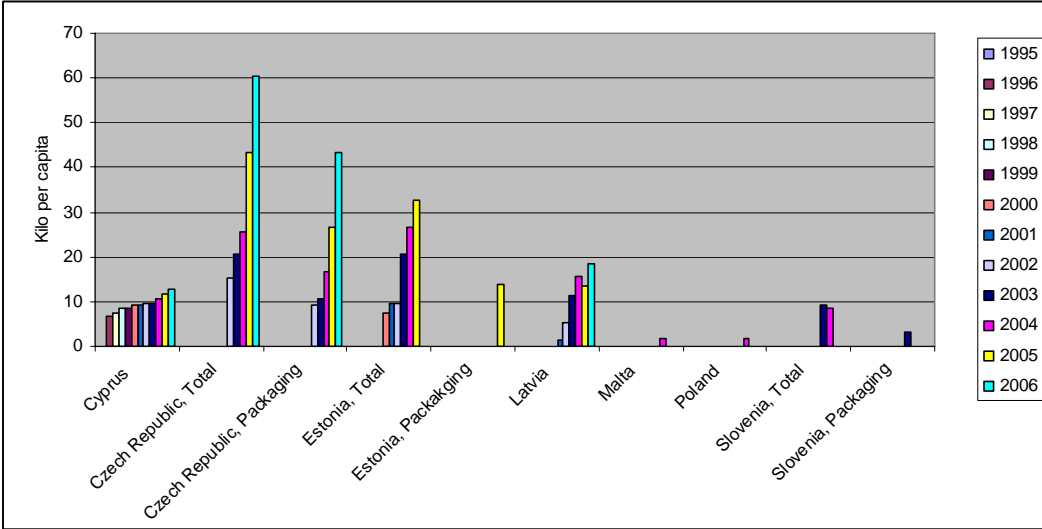


Figure 3.14. Development in recycling of paper and cardboard waste per capita in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports and statistics)

Plastic waste

The level of recycling of plastic waste has increased in many of the old EU Member States and Norway, but the level is still generally low. There are also large differences between old Member States plastic recycling levels. Apart from Germany all countries have a level below 15 kilogram recycling per capita and most are below 5 kilogram per capita.

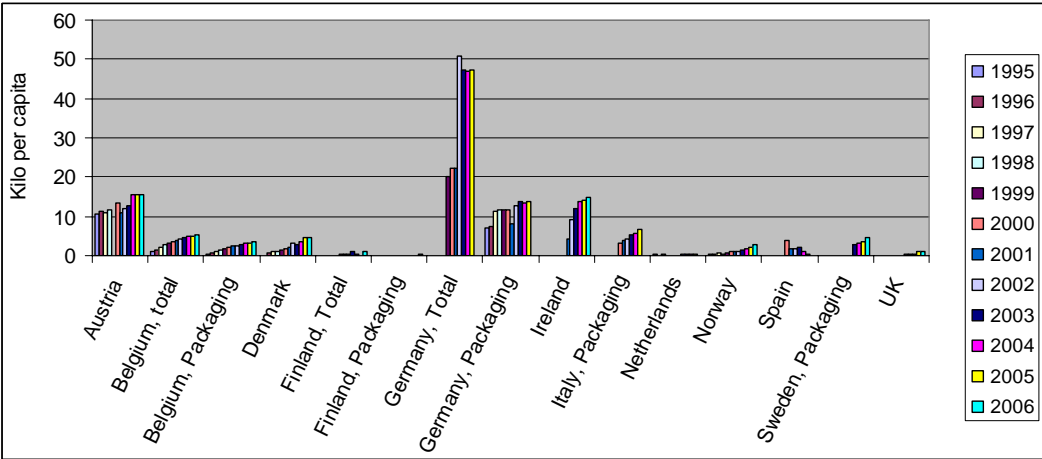


Figure 3.15. Development in recycling of plastic waste per capita in the old EU Member States and Norway. ((Source: ETC/RWM, 2008 based on national reports and statistics)

The higher recycling level in Germany and Ireland can partly be explained by these countries have both packaging and non packaging waste included in the figures.

In most of the new EU Member States the recycling level of plastic is between 3 to 6 kilograms per capita, not far below that reported by old Member States and Norway. The Czech Republic has a very high level compared to other new Member States primarily due to an increase in the recycling of plastic packaging waste.

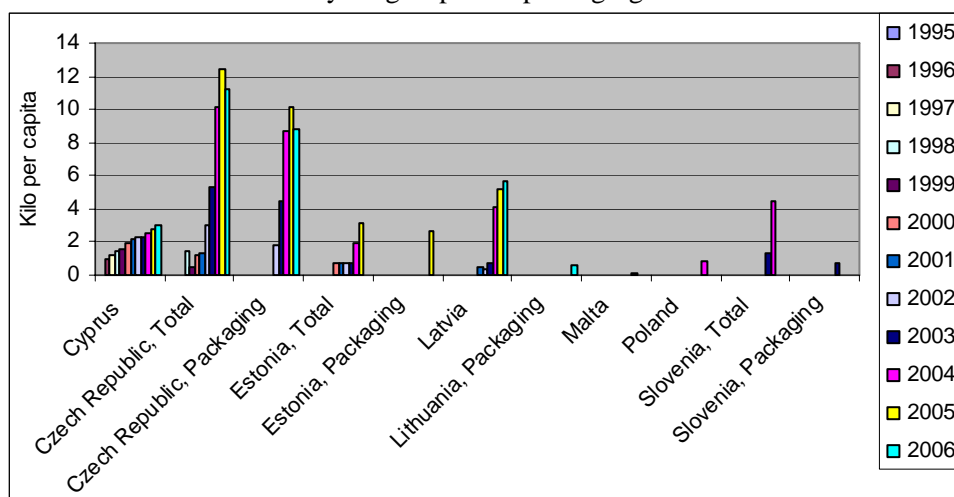


Figure 3.16. Development in recycling of plastic waste per capita in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports)

Bio waste

With the exception of Greece, it has been possible to find bio waste recycling figures for the old EU Member States. The total amount per capita of total recycled bio waste has increased in most of the old EU Member States and Norway, but figure 3.17 and figure 3.18 show huge differences between States in recycling levels.

Spain recycles only 10 kilograms of bio waste per capita, while Denmark and Luxembourg each recycle about 130 kilograms of bio waste per capita. Austria, Belgium, Germany and the Netherlands recycle between 60 to 100 kilograms per capita, while France, Italy, Norway, Sweden and United Kingdom fall between 40 to 60 kilograms. Finland, Ireland and Portugal recycle between 20 to 40 kilograms of bio waste per capita.

Bio waste, together with paper and cardboard, is the largest per capita portion of recycling of municipal waste in EU Member States. This implies that a difference between the countries in the recycled amount of bio waste has a large impact on the total amount, and percentage, of recycled municipal waste.

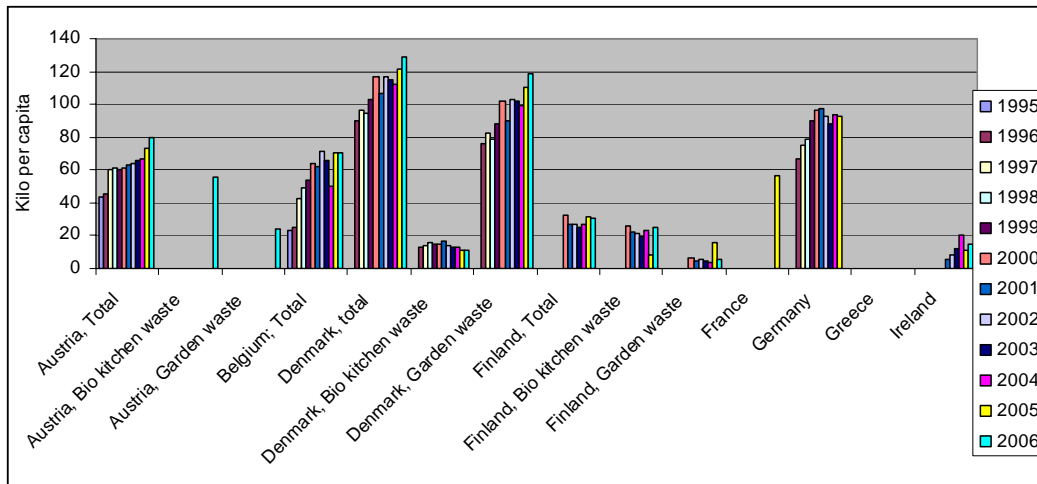


Figure 3.17. Development in recycling of bio waste per capita in the old EU Member States and Norway. (Source: ETC/RWM, 2008 based on national reports)

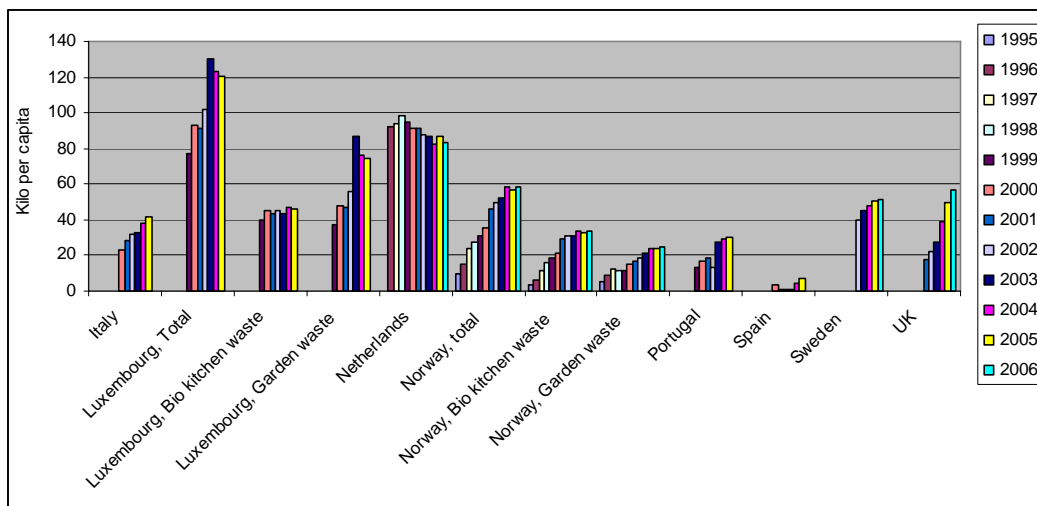


Figure 3.18. Development in recycling of bio waste per capita in the old EU Member States and Norway. (Source: ETC/RWM, 2008 based on national reports)

Figure 3.17 and figure 3.18 do not only show the total recycling of bio waste, but also for some countries, the differentiation of this waste type into kitchen waste and garden waste. This differentiation shows that the countries with highest total amount of recycled bio waste, i.e. Denmark and Luxembourg, have also the highest amount of recycled garden waste per capita (80 to 120 kilograms). However, these two countries have a much lower level of recycled bio kitchen waste (18 to 42 kilograms). This level is below or similar to the level of recycled bio kitchen waste in Austria, Finland and Norway.

It is normally easier to recycle garden waste than bio kitchen waste, since bio kitchen waste often can be polluted by non-biodegradable elements. On the other hand bio kitchen waste includes the potential for making both bio gas and compost, whereas garden waste can not be used for anaerobic digestion (bio gas) but only composted..

The large difference in the figures in figure 3.17 and 3.18 indicate that countries among the old EU Member States with a lower level of recycling of total bio waste do have a potential to increase; either through increased collection of bio kitchen waste, garden waste or both.

Figure 3.19 shows the development of bio waste recycling in the new EU Member States. In general there has been little increase, and apart from Estonia, the level is quite low (under 10 kilograms). In the Czech Republic and Slovenia it is almost exclusively only

garden waste that is recycled, whereas there is more recycling of bio kitchen waste in Estonia.

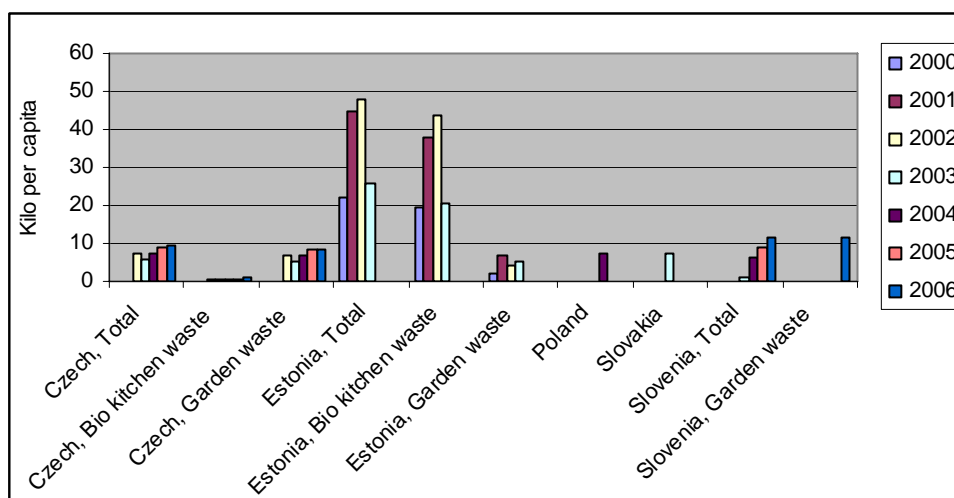


Figure 3.19. Development in recycling of bio waste per capita in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports)

Similarly, as in the old EU-Member States, there seems to a great potential to increase the recycling of total bio waste in the new EU Member States. Either by recycling more of bio kitchen waste or by garden waste. The quantity of bio waste generated is important when looking at the potential for recycling. Precise figures for this are not available.

Bulky waste

In some countries like Austria and the Netherlands, recycling of bulky waste comprises about 15% of the total recycling of municipal waste. In other countries it is a much smaller part of the total recycling. Normally, bulky wastes are larger waste components like furniture and discarded equipment and in some countries also include WEEE.

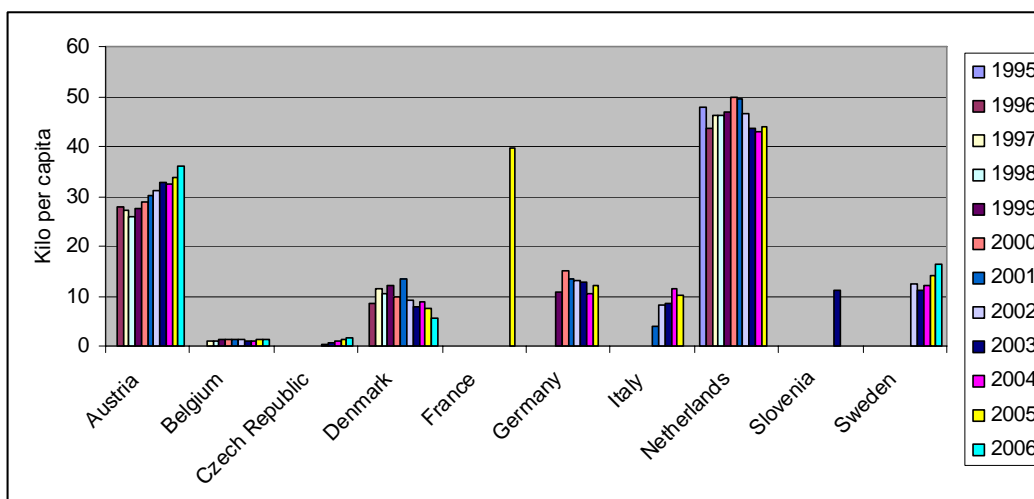


Figure 3.20. Development in recycling of bulky waste per capita in the new EU Member States. (Source: ETC/RWM, 2008 based on national reports)

Figure 3.20 illustrates the significantly different recycling levels for bulky waste in the old EU Member States. This could indicate real differences, but it can also be a reflection of the different ways in which some waste items are processed in different countries. For example in some countries certain waste items, covered by producer responsibility, for example WEEE, is included in the registration of recycling of municipal waste in some countries and not in others. It has not been possible to ascertain the precise situation in each country.

3.5. Are the same recycling activities included in the recycled amount of municipal waste?

Section 3.4 included information for some countries about the total recycling level of waste materials, and the share of that attributable to the recycling of packaging waste. Countries that reported such information seem to have a higher recycling level than those that could not.

In order to clarify whether differences in recycling levels can partly be explained by some countries including and some excluding recycled packaging waste in the amounts of recycled municipal waste streams, it is reasonable to compare the recycling figures for glass, metals, plastics and paper and cardboard used in this report, with the recycling figures reported to the EU Commission according to the EU Packaging Directive.

This comparison can indicate whether a higher recycling level is due to all, or a significant part, of the recycled packaging waste material being reported as recycled municipal waste, and whether a low recycling level is due to little or no packaging waste being included in municipal waste reporting.

The comparison is also relevant because in most EU Member States and in Norway producers have responsibility for packaging waste. Therefore, it is not always a part of the municipal collection system. However, it is reasonable to include packaging waste and especially primary and secondary packaging in the definition of municipal waste, i.e. “waste from households and other origins as far as these waste streams are similar to waste from households”.

Figures 3.21, 3.22, 3.23 and 3.24 compare the recycling of packaging waste per capita using data reported to the EU Commission, with the total recycling figures and the packaging recycling figures collected in this study.

Some countries appear to recycle more per capita when the total figure found for, say, metal waste is compared to the amount of recycled packaging metal waste reported to the EU Commission. This indicates that the total metal figure includes more recycled waste than packaging waste; for example metal waste coming from garden tools, ovens etc.

The figures show that for Austria, Cyprus, the Czech Republic (except for glass), Denmark, Estonia, Finland (except for plastic), Germany, Ireland, Luxembourg (except for glass) and Sweden the total figures include more than packaging waste. In these cases the amount of packaging waste recycled according to the data found in this study is normally equal or lower to the amount of recycled packaging waste reported to the EU Commission.

Some countries report a higher amount of recycled packaging waste per capita to the EU Commission than stated as a total waste figure and packaging waste figure in this study. Figure 3.23 shows, for example, that Italy reported more recycled packaging paper and cardboard waste to the Commission than the total amount uncovered in this study. This indicates that the figures found in this study do not include all paper and cardboard packaging waste, but only a part of it or maybe nothing at all. Instead the figure may include only waste paper in form of newspaper and writing paper.

The figures show that for Belgium (except for paper and cardboard), Italy, Latvia, Lithuania (except for glass), the Netherlands, Poland Portugal, Slovenia, Spain and United Kingdom the total figures include less than the packaging waste reported to the EU Commission. This indicates that these countries would have a higher level of recycling per capita than shown in this study if a larger part of the reported packaging waste was registered as recycling of municipal waste.

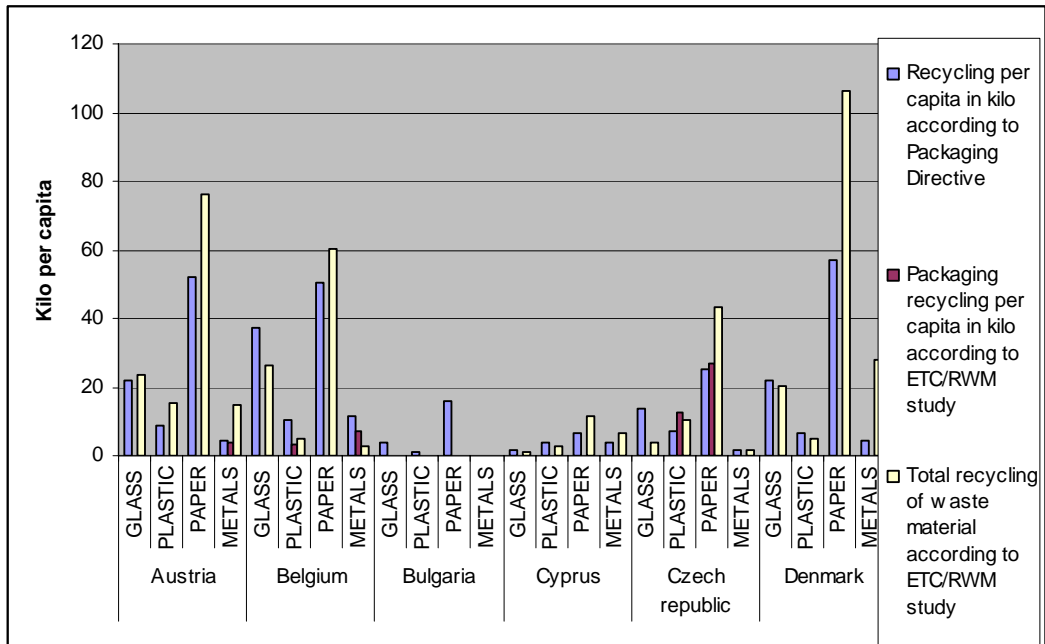


Figure 3.21. Recycling per capita of glass, metal, plastic, paper and cardboard wastes in Austria, Belgium Bulgaria, Cyprus, Czech Republic and Denmark. The figures are indicated according to source and type of waste. (Sources: EU Commission, 2008 and ETC/RWM, 2008 based on national reports and statistics)

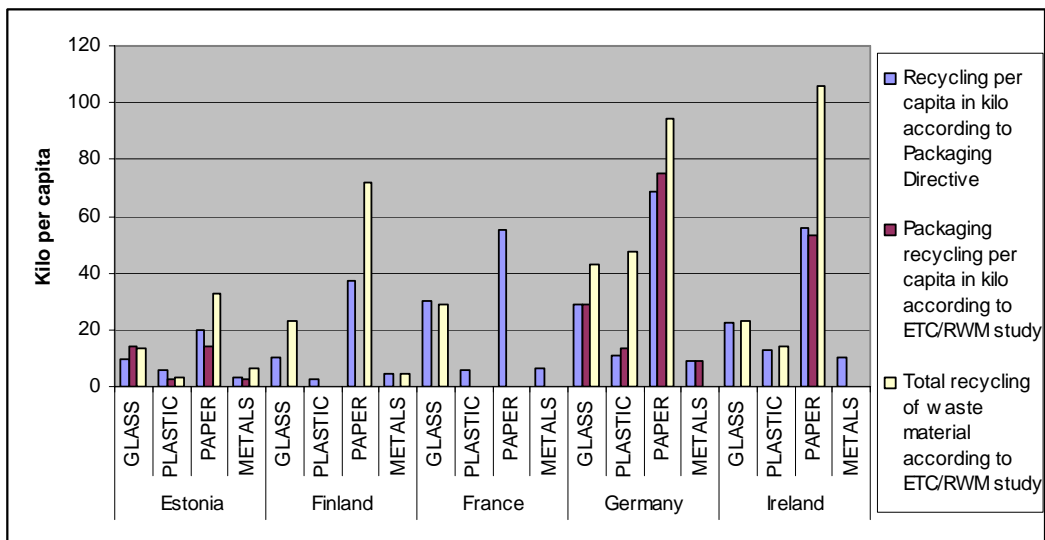


Figure 3.22. Recycling per capita of glass, metal, plastic, paper and cardboard wastes in Estonia, Finland, France, Germany and Ireland. The figures are indicated according to source and type of waste. (Sources: EU Commission, 2008 and ETC/RWM, 2008 based on national reports and statistics)

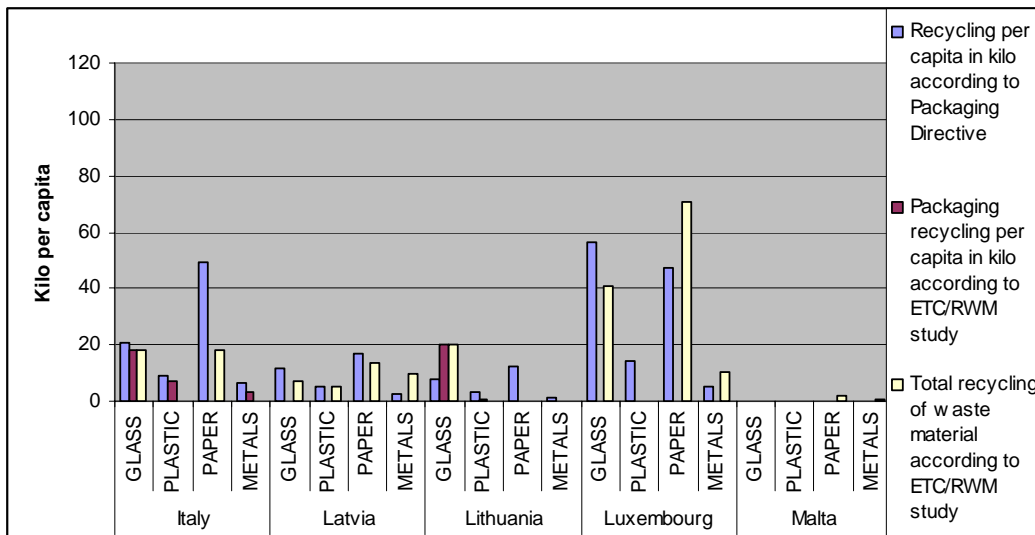


Figure 3.23. Recycling per capita of glass, metal, plastic, paper and cardboard wastes in Italy, Latvia, Lithuania, Luxembourg and Malta. The figures are indicated according to source and type of waste. (Sources: EU Commission, 2008 and ETC/RWM, 2008 based on national reports and statistics)

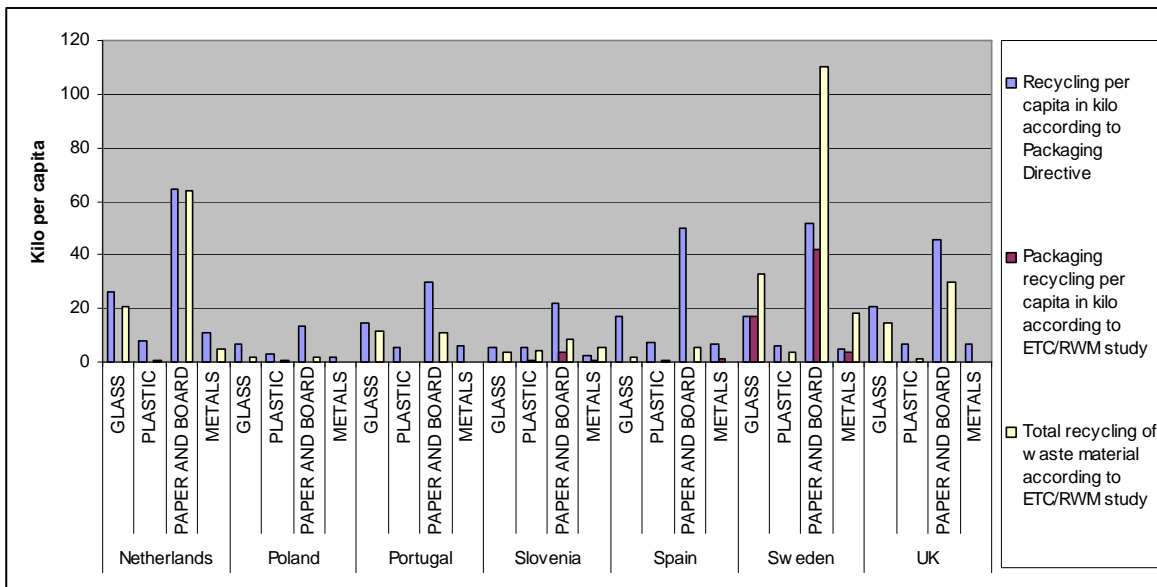


Figure 3.24. Recycling per capita of glass, metal, plastic, paper and cardboard wastes in the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and United Kingdom. The figures are indicated according to source and type of waste. (Sources: EU Commission, 2008 and ETC/RWM, 2008 based on national reports and statistics)

3.6. Conclusion

- All the old EU Member States and Norway and almost all of the new EU Member States have increased the recycling of municipal waste in the last 10 years; Both in terms of absolute weight and as a percentage of generation.
- There are still significant differences between recycling levels, both within the old EU Member States and within the new EU Member States. In general the level is higher in old Member States. However, some of the new EU Member States have relatively high recycling levels.
- Some of the old EU Member States with a lower recycling level have had a quite high yearly growth (> 0.75 percentage point) in the total recycling since 2000. Similarly, some of the new EU Member States have had a quite high yearly growth (>0.50 percentage point) since 2000. These changes indicate that even if the starting point is lower some positive changes are going on in these counties.

- Recycling of paper and cardboard and bio waste constitutes a large part of recycling in the countries with overall high levels of municipal waste recycling. In a few of the old EU Member States recycling of bulky waste is also significant.
- There is a difference between what fraction of packaging waste countries include in their municipal waste recycling figures. This indicates that some countries would have a higher recycling level if they reported the recycling of packaging waste as recycling of municipal waste.

4. Construction and demolition waste

The Waste Statistic Regulation provides information on generation and composition of construction and demolition waste for all countries for 2004. However, the Statistic Regulation does not provide information about recycling. In general, data about generation, composition and recycling of construction and demolition waste are very limited, particularly regarding its development over time.

4.1. Generation of construction and demolition waste

About 850 million tonnes of construction and demolition waste is generated in the EU per year. This represents 31% of the total waste generation in the EU.

Figure 2.1 shows the development of construction and demolition waste generation per capita in the old EU Member States and Norway since 1995.

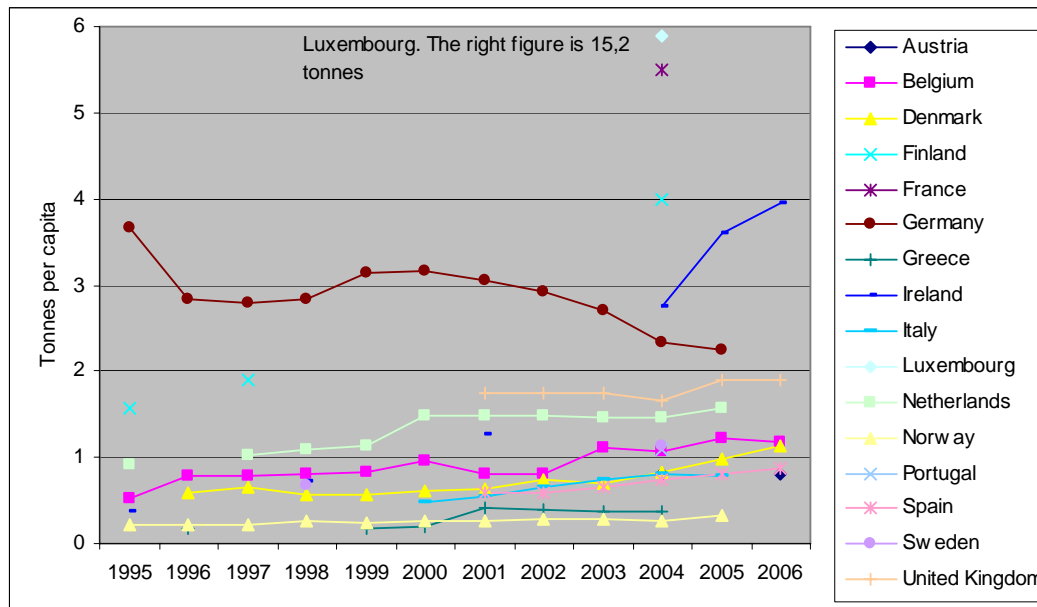


Figure 2.1. Generation of construction and demolition waste per capita in the old EU Member States and Norway. (Source: Eurostat and ETC/RWM, 2008 based on national reports and statistics)

The generation per capita in the old EU Member States and Norway varies a lot. France and Luxembourg generate 7 and 15 tonnes per year respectively. Germany and Ireland generate between 2 to 4 tonnes, whereas the rest of the countries generate between 0.2 tonnes (Norway) and 2 tonnes (United Kingdom) per capita.

All countries where data for more than one year is available except Germany have seen an increase in generation per capita in the period 1995 to 2006. The differences between countries in generation of construction and demolition waste per capita are much higher than the differences in generation of municipal waste.

Among the new EU Member States the differences are also large in generation per capita but, with the exception of Malta, the level is lower than 2 tonnes per capita. In fact, apart from Latvia, Lithuania, Poland and Romania the generation level per capita is reasonable similar to the level in the old EU Member States and Norway. The data covering Romania are extremely low, and it is assumed that the data do not provide an accurate indication of C&D waste generation in this country.

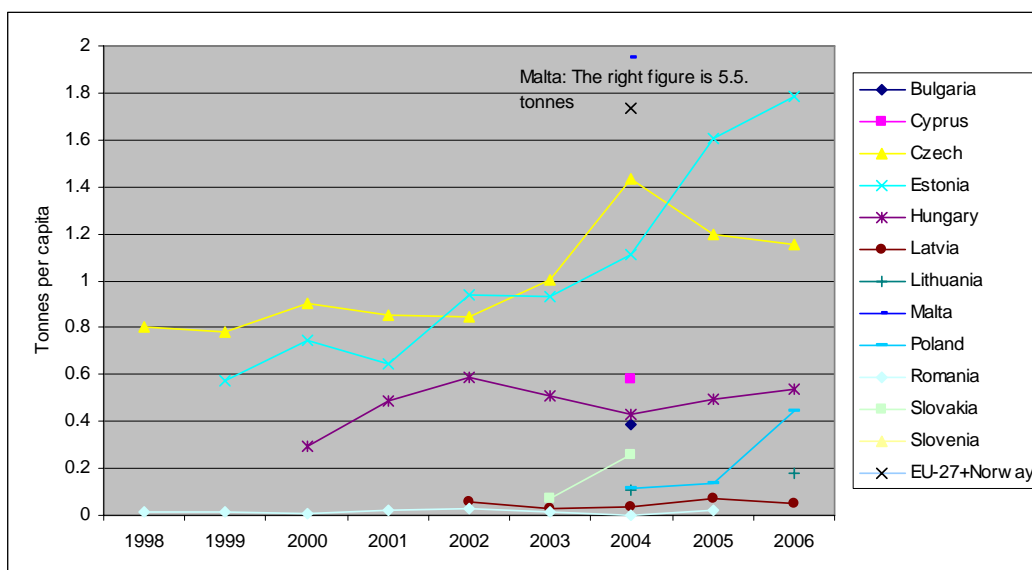


Figure 4.1. Generation of construction and demolition waste per capita in the new EU Member States. (Source: Eurostat and ETC/RWM, 2008 based on national reports and statistics)

It can be assumed that some differences in the amount of waste from construction and demolition activities derive from differences in building tradition and differences in geography/geology, but the economic activity within the sector will also influence waste generation.

The economic activity in the construction sector can explain, for example, Germany's decline in generation per capita. In recent years the construction activities have been lower in Germany after a huge activity caused by the unification of Germany in 1990.

However, even if the generation of construction and demolition waste is related to the economic activity, large differences occur between the old EU-Member States. Table 4.1 shows the amount of waste generated per million euro value added in the construction sector. There are still large differences but at a lower level than when measured by generation per capita.

Table 4.1. Waste-coefficients¹ for construction and demolition waste, 2004

Austria	0.460	Bulgaria	4.530
Belgium	0.955	Cyprus	0.545
Germany	2.406	Czech Rep.	4.034
Denmark	0.578	Estonia	4.144
Spain	0.525	Hungary	1.629
Finland	3.239	Lithuania	0.343
France	5.016	Latvia	0.118
Greece	0.344	Malta*)	#N/A
Ireland	1.312	Poland	0.410
Italy	0.778	Romania	0.020
Luxembourg*)	#N/A	Slovenia	1.261
Netherlands	1.264	Slovakia	1.047
Portugal	1.574	Norway	0.194
Sweden	1.029	UK	1.140

(Source: ETC/RWM forthcoming Working Paper, 2008)

¹ For Luxembourg data for construction & demolition waste is lacking for 2004 and for Malta data for the production within the construction and building sector is missing.

This will be discussed further in section 4.3 and 4.4.

¹ 1000 tonnes of waste per mill. euro value added in the construction sector

4.2. Total recycling of construction and demolition waste

How should recycling of construction and demolition waste be understood?

This section describes the level of, and trends within, generation and treatment of construction and demolition waste. The term “recycling” is difficult to apply consistently to construction and demolition waste across countries as there is a broad range of recycling and recovery activities executed. Recovery can for a minor part be incineration with energy recovery, but normally the term recovery is used as “material recovery” and indicates a lower product quality than recycling; for example backfilling operations using waste to substitute other materials.

The 70% recycling target for C&D waste in the new Waste Framework Directive includes “preparing for re-use, recycling and other material recovery including backfilling operations...”. Further, the definition of recycling explicitly excludes “... the reprocessing into materials that are to be used as fuels or for backfilling operations” (Waste Framework Directive 2006/12/EC and amendments).

In the following, we use the term recycling to mean both recycling and other material recovery as defined in the new Waste Framework Directive.

Recycling amounts

It is only possible to obtain information about recycling of C&D waste for 18 out of the potential of 28 countries covered by this study (EU-27 and Norway). Figure 4.3 shows the total recycling of C&D waste per capita and, where possible, its development over time. Countries with high generation of construction and demolition waste per capita, like France, Germany and Ireland, have a similarly high recycling level; between 2 and 3.5 tonnes. But also countries like Austria, Belgium, Denmark, Estonia, the Netherlands and United Kingdom, with a lower generation per capita, have a reasonably high recycling; between 0.5 and 1.5 tonnes.

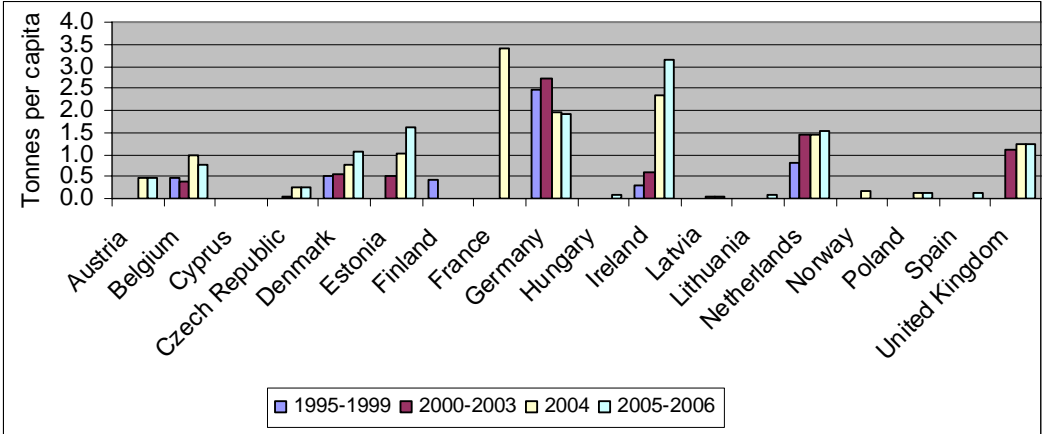


Figure 4.3. Recycling of construction and demolition waste per capita in the EU and Norway. (Source: Eurostat and ETC/RWM, 2008 based on national reports and statistics)

The higher amount of recycle C&D waste per capita in some Member States seems to reflect that the countries with high recycling amounts perform ‘better’. When the recycling is shown in percentage of total generation, this bias disappears, refer figure 4.4.

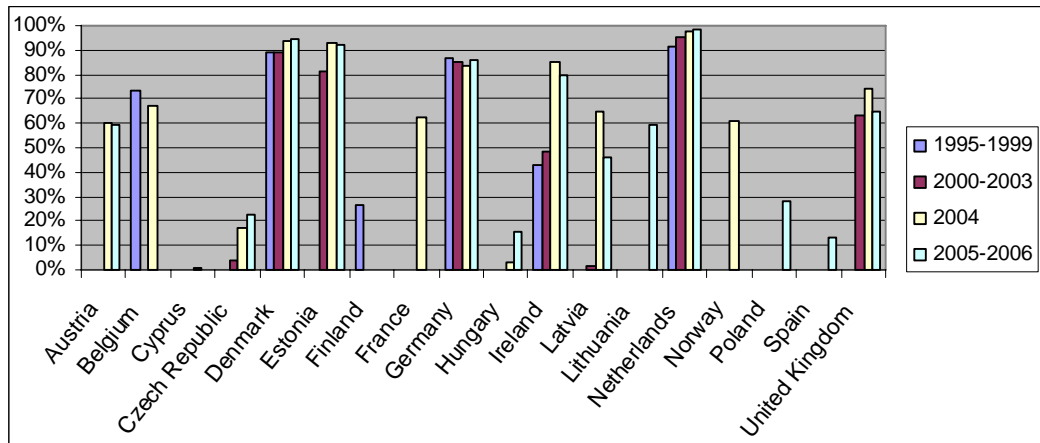


Figure 4.4. Recycling of construction and demolition waste in percentage of generated amount in the EU and Norway. (Source: Eurostat and ETC/RWM, 2008 based on national reports and statistics)

Figure 4.4. shows that most of the old EU Member States and Norway have a recycling percentage over 60. Denmark, Germany, Ireland and the Netherlands but also Estonia, recycle even over 80% of C&D waste generation, while the Czech Republic, Finland, Hungary and Poland only recycle between 15% and 30%. Latvia and Lithuania have recycling percentages over 45; although Latvia and Lithuania have very low generation figures.

During the last years it seems that the recycling level has increased a little in countries with already a high level of recycling like Denmark, Germany, the Netherlands and United Kingdom. In the Czech Republic, Estonia, Hungary and Ireland, the initial level was lower, but the increase larger.

4.3. Composition of recycling of construction and demolition waste

The very high recycling levels in some countries like for example, Denmark, Germany, Ireland and the Netherlands can possibly be explained by the composition of the recycled waste. Figure 4.5 shows the composition of the recycled construction and demolition waste and how it has developed over time.

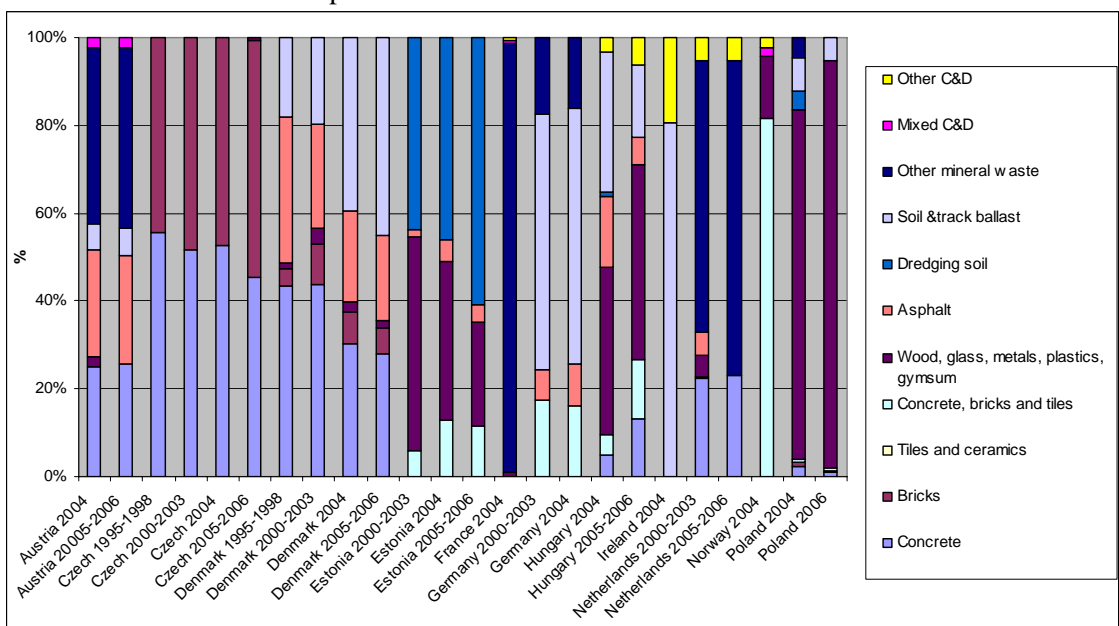


Figure 4.5. Percentage composition and development of recycled construction and demolition waste in the EU and Norway. (Source: ETC/RWM, 2008 based on national reports and statistics)

It is possible to identify recycling of concrete, bricks, tiles and asphalt in all countries with recycling except Ireland and France. Norway, and to an extent the Czech Republic, has a high portion of recycling of concrete, bricks and tiles, while Austria, Denmark and Hungary have a high portion of asphalt.

Denmark, Germany and Ireland have a high rate of soil and track ballast included in the recycling figures. France and the Netherlands have a high rate of other mineral waste included in the recycling figures, whereas Estonia has both a high rate of metals and dredging soils.

The development in absolute recycling per waste fraction per capita is shown in figure 4.6. The level of recycling in kilograms for each waste type varies between the countries, but it is interesting that for concrete, bricks and asphalt the difference is not more than a factor of 2 to 3. However for dredging soil, soil and track ballast as well other mineral waste the difference of recycling per capita is much higher; even up to a factor of 60 for soil and track ballast. This indicates that data on C&D waste does not include the same waste categories in all countries.

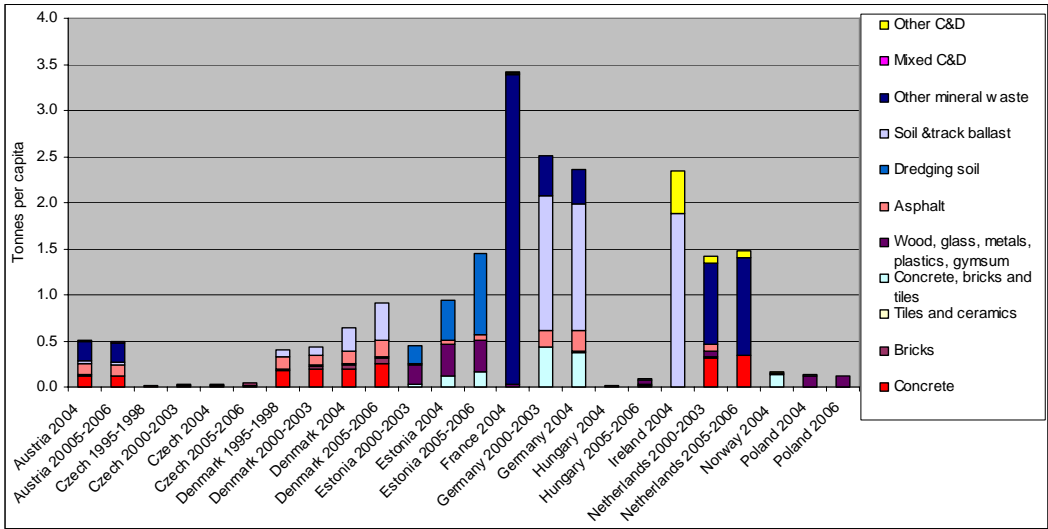


Figure 4.6. Development in tonnes in the composition of recycled construction and demolition waste in the EU and Norway. (Source: ETC/RWM, 2008 based on national reports and statistics)

4.4. Recycling of dredging soil, soil and track ballast in % of total recycling

Figure 4.5 and figure 4.6 show that both dredging soil, soil & track ballast constitute a large part of the recycling. Figure 4.7 illustrates this further by taking the total amount of these two waste types in selected countries and relating them to the total recycling of construction and demolition waste. Denmark, Estonia, Germany and Ireland all recycle over 70% of generated C&D waste, but a minimum 40% of the total recycling is by way of recycling dredging soil, soil and track ballast. Further, other “mineral waste” in the figures for France and the Netherlands could, in principle, also include recycling of soil.

The target of 70% recycling of non-hazardous construction and demolition waste in the new Waste Framework Directive includes backfilling operations but excludes naturally occurring material defined in the category 170504 in the European Waste List (soil and stones not containing dangerous substances). The figures for dredging soil, soil and track ballast stated in figure 4.5, figure 4.6 and figure 4.7 also include the category 170504, but it has not been possible in this study to isolate the specific amount for each country.

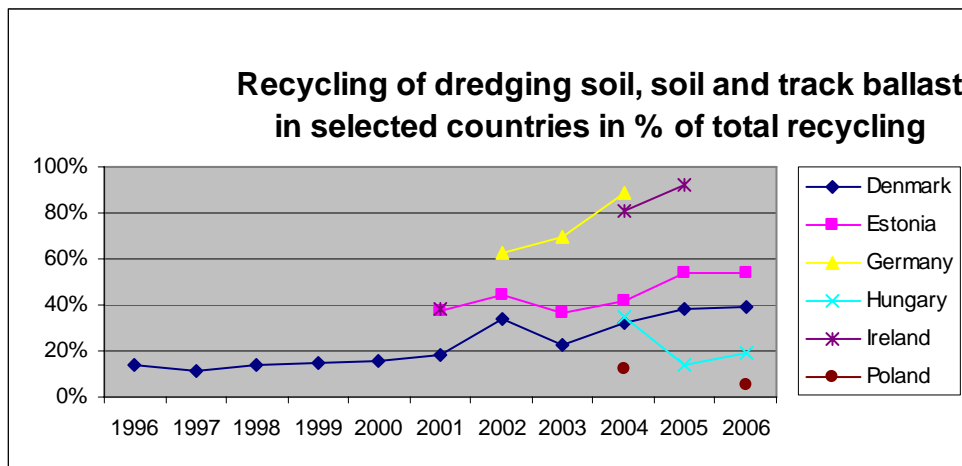


Figure 4.7. Development in recycling of dredging soil, soil and track ballast in selected countries in percentage of total recycling. (Source: ETC/RWM, 2008 based on national reports and statistics)

It seems Denmark, Estonia, Germany and Ireland might exhibit a lower level of total recycling in tonnes if category 170504 is excluded. The precise influence of this on the recycled percentage of generated waste is difficult to gauge, since the generated amount of this waste category should also be excluded. Further, most of the countries with a high total recycling as a percentage of generated waste also have a high amount in tonnes of recycled concrete, asphalt, metals.

4.5. Conclusion

- It is only possible to obtain sufficient data on the total recycling of construction and demolition waste for 18 countries out the 27 EU Member States and Norway which are covered by this study.
- The recycling in ton per capita differs among countries, but the difference is not as large as seen for municipal waste. Further, the difference is not so large between the old and the new EU Member States.
- The recycling is quite reasonably in percentage (>50%) for most of the included 18 countries.
- Almost all of the 18 countries, where recycling has been identified, register recycling of concrete, bricks, tiles and asphalt.
- For all countries with a high percentage of recycling of construction and demolition waste, recycling of dredging soil, soil and track ballast amounts a large part of the recycling.

5. Annex. Background data for all the figures

Background data for figure 1.1

Total municipal waste recycled (kg) per capita in the old EU Member States and Norway

	Paper and Cardboard	Bio waste	Glass, metals and plastics	Bulky waste	Others + no information about type
Austria	79.1	79.8	53.3	36.2	17.2
Belgium	62.6	70.3	39.1	1.2	103.8
Cyprus	12.7	0.0	11.3	0.0	68.8
Czech Republic	60.4	9.4	30.5	1.7	0.2
Denmark	103.8	129.3	49.2	5.7	17.6
Estonia	32.6	0.0	24.2	0.0	12.3
Finland	79.1	30.8	32.6	0.0	16.8
France	6.5	56.5	28.8	39.8	26.3
Germany	94.5	92.6	99.8	12.1	73.4
Ireland	138.1	14.6	52.1	0.0	57.9
Italy	18.5	41.5	28.8	10.0	32.6
Latvia	18.3	0.0	10.8	0.0	23.6
Lithuania	0.2	0.0	20.9	0.0	6.8
Luxembourg	70.9	120.8	51.0	0.0	53.8
Netherlands	64.0	83.5	25.9	43.9	101.4
Norway	67.2	58.3	23.6	0.0	59.4
Poland	1.7	7.3	3.0	0.0	0.0
Portugal	11.3	29.8	11.5	0.0	13.5
Slovakia	0.0	7.6	0.0	0.0	9.4
Slovenia	8.6	6.5	13.3	0.0	27.7
Spain	5.4	7.1	3.3	0.0	74.8
Sweden	123.6	51.7	42.4	16.5	0.0
United Kingdom	31.1	56.5	30.4	0.0	56.2
EU25+Norway	35.5	45.1	33.7	10.6	50.9

Background data for figure 1.2
Total municipal waste recycled (kg) per capita in the new EU Member States

	Concrete, bricks and tiles	Asphalt	Wood, glass, metals, plastics, gypsum	Dredging soil, soil and track ballast	Other mineral and C&D waste
Austria	0.12	0.12	0	0.03	0.21
Czech	0.04	0	0.00	0	0
Denmark	0.31	0.18	0.02	0.41	0
Estonia	0.16	0.06	0.34	0.88	0
France	0.00	0	0.03	0	3.39
Germany	0.38	0.22	0.00	1.37	0.38
Hungary	0.01	0.01	0.04	0.02	0.01
Ireland	0.00	0	0	1.88	0.45
Netherlands	0.34	0	0	0	1.14
Norway	0.13	0	0.02	0	0.01
Poland	0.00	0	0.12	0.01	0.00

Background data for figure 3.1

Total municipal waste recycled (kg) per capita in the old EU Member States and Norway

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	United Kingdom
1995	145	96									259	49				
1996	181	123	195				15				272	59				
1997	201	182	205	123	99		34			161	294	83				
1998	203	214	211	126	110		34	45		194	299	102				
1999	180	239	217	139	116	323	35	56		198	309	117	28			
2000	216	262	236	132	127	329	36	67		235	317	129	39	121		
2001	215	266	234	136	138	339	37	79	90	243	314	148	34	140	183	72
2002	220	276	247	127	138	380	37	126	100	251	316	161	29	67	183	85
2003	223	269	271	133	148	375	35	182	110	287	308	167	48	115	191	106
2004	228	284	281	137	157	357	37	226	121	282	319	186	58	104	218	135
2005	237	281	300	148	158	372	51	232	131	296	319	196	66	91	214	156
2006	266	277	306	159	177	372	57	263	131	297	319	209	66	91	234	174

Background data for figure 3.2

Total municipal waste recycled (kg) per capita in the new EU Member States

	Bulgaria	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Romania	Slovakia	Slovenia
1995	163								5	91	99	
1996	139	49							6	98	75	
1997	144	52			64				9	70	68	
1998	113	62	1		53				6	54	44	
1999	115	65	1		44				7	61	44	
2000	117	67	6	45	35		19	52	6	61	19	
2001	99	69	3	77	41	7	42	48	12	73	5	4
2002	96	70	31	93	45	7	79	25	8	76	32	4
2003	92	71	43	68	49	18	55	38	14	73	17	6
2004	75	79	54	68	58	34	32	54	12	72	18	56
2005	70	84	72	69	48	47	34	59	18	81	27	65
2006	90	93	102	69	72	53	28	90	22	59	31	48

Background data for figure 3.3

Total municipal waste recycled in percentage of generated amount in the old EU Member States and Norway

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	United Kingdom
1995	28.1%	21.2%									45.5%	16.4%				
1996	35.1%	27.3%	31.5%				4.4%				46.6%	17.3%				
1997	37.7%	39.3%	35.0%	28.6%	19.4%	0.0%	9.4%			26.7%	48.0%	26.8%				
1998	38.1%	46.8%	35.6%	28.3%	21.1%	0.0%	9.0%	9.0%		30.9%	48.5%	30.0%		0.0%		
1999	32.0%	52.2%	34.7%	30.0%	22.4%	53.4%	8.9%	10.5%		30.6%	49.3%	33.6%	6.5%	0.0%		
2000	37.8%	56.2%	35.5%	26.2%	24.2%	54.0%	8.8%	11.9%		35.9%	49.2%	36.0%	8.8%	18.4%		
2001	37.8%	58.0%	35.6%	29.3%	26.4%	56.5%	8.9%	13.3%	17.4%	37.6%	48.9%	40.0%	7.8%	21.4%	41.4%	12.2%
2002	37.0%	60.1%	37.2%	28.0%	26.1%	59.4%	8.7%	20.7%	19.2%	38.4%	49.2%	40.9%	6.6%	10.3%	39.2%	14.2%
2003	37.4%	60.6%	40.4%	28.9%	28.0%	62.3%	8.2%	28.4%	21.1%	42.3%	49.2%	41.5%	10.6%	17.5%	40.6%	17.9%
2004	37.9%	61.3%	40.5%	29.6%	29.4%	60.9%	8.5%	33.6%	22.7%	41.3%	50.0%	44.4%	13.0%	16.1%	40.6%	22.4%
2005	38.3%	60.8%	40.8%	31.3%	27.5%	66.0%	11.6%	34.6%	24.3%	42.4%	50.0%	45.3%	14.8%	14.0%	44.4%	26.6%
2006	43.1%	58.3%	41.2%	32.7%			12.9%	36.1%		43.4%		48.6%			47.3%	29.6%

Background data for figure 3.4

Total municipal waste recycled in percentage of generated amount in the new EU Member States

	Bulgaria	Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Romania	Slovakia	Slovenia
1995	23.5%								1.8%		32.8%	
1996	22.5%	8.2%							2.0%		23.7%	
1997	24.9%	8.2%			13.1%				2.9%		20.7%	
1998	22.7%	9.7%	0.5%		10.9%				2.0%	28.7%	13.6%	
1999	22.8%	9.8%	0.4%		9.1%				2.2%	26.2%	13.7%	
2000	22.6%	10.1%	1.8%	10.3%	7.9%		6.1%	9.7%	1.9%	25.5%	6.0%	
2001	19.8%	10.1%	1.2%	20.7%	9.1%	2.3%	14.0%	8.9%	4.1%	31.9%	1.3%	0.8%
2002	19.1%	10.1%	6.8%	23.0%	9.9%	2.6%	27.4%	4.6%	2.9%	31.7%	11.3%	0.9%
2003	18.4%	10.0%	10.1%	16.3%	10.6%	6.9%	20.9%	6.5%	5.4%	31.5%	5.7%	1.4%
2004	15.9%	11.0%	11.7%	15.1%	12.8%	9.4%	8.5%	8.4%	4.7%	30.3%	6.6%	13.4%
2005	14.7%	11.6%	16.4%	15.8%	10.4%	13.0%	8.8%	9.6%	7.3%	31.5%	9.3%	15.3%
2006	20.2%	12.7%	22.8%	14.8%	15.4%	10.5%	8.1%	13.8%	8.5%		10.3%	11.2%

Background data for figure 3.5 and 3.6

3.5 Development in percentage in the composition of recycling in the old EU Member States and Norway

3.6 Development in kilograms in the composition of recycling in the old EU Member States and Norway

	Glass	Paper and Cardboard	Wood	Metals	Plastic	Bio waste	Bulky waste	Other waste	No information about type of recycling	Total recycling by adding fractions
Austria 1995	23.3	51.1	0.0	14.1	10.6	43.5	0.0	2.8	0.0	145.3
Austria 2006	23.6	79.1	17.2	14.1	15.6	79.8	36.2	0.0	0.0	265.6
Belgium 1995	10.4	19.4	1.9	3.6	1.0	22.8	0.0	0.0	37.3	59.1
Belgium 2006	27.2	62.6	12.0	6.5	5.4	70.3	1.2	4.0	87.8	189.2
Denmark 1996	18.8	63.4	0.7	10.9	0.8	89.6	8.5	2.1	0.0	194.9
Denmark 2006	16.7	103.8	3.7	27.8	4.7	129.3	5.7	13.9	0.0	305.5
Finland 2000	10.6	73.9	2.9	0.8	0.2	32.7	0.0	10.8	0.0	132.0
Finland 2006	25.5	79.1	0.2	6.1	0.9	30.8	0.0	9.0	7.6	151.7
France 2005	28.8	6.5	0.0	0.0	0.0	56.5	39.8	0.0	26.3	131.6
Germany 1999	43.0	84.3	0.0	11.0	20.3	90.3	10.8	51.8	11.7	311.5
Germany 2005	43.3	94.5	20.2	9.2	47.3	92.6	12.1	39.5	13.7	358.7
Ireland 2001	11.1	43.0	0.0	1.0	4.1	5.8	0.0	13.0	1.1	78.0
Ireland 2006	24.5	138.1	47.8	12.8	14.9	14.6	0.0	11.7	-1.6	264.4
Italy 2001	15.4	15.4	3.4	3.7	4.0	28.1	3.8	2.6	13.4	76.4
Italy 2005	18.5	18.5	5.9	3.5	6.8	41.5	10.0	4.1	22.6	108.8
Luxembourg 1999	27.1	48.0	2.1	8.4	0.0	77.1	0.0	0.0	35.0	162.6
Luxembourg 2005	40.7	70.9	21.9	10.3	0.0	120.8	0.0	0.0	31.9	264.6
Netherlands 1995	19.5	47.0	2.4	3.4	0.3	92.3	48.0	0.6	45.9	213.6
Netherlands 2005	20.7	64.0	19.5	4.8	0.3	83.5	43.9	1.6	80.3	238.3

Background data for figure 3.5 and 3.6 (continued)

	Glass	Paper and Cardboard	Wood	Metals	Plastic	Bio waste	Bulky waste	Other waste	No information about type of recycling	Total recycling by adding fractions
Norway 1995	3.4	28.0	2.1	4.2	0.2	9.6	0.0	0.5	0.9	47.9
Norway 2006	9.4	67.2	31.4	11.5	2.7	58.3	0.0	10.6	17.3	191.2
Portugal 2000	7.8	6.2	0.0	0.0	0.0	16.4	0.0	0.0	8.4	30.4
Portugal 2005	11.5	11.3	0.0	0.0	0.0	29.8	0.0	4.0	9.5	56.5
Spain 2000	4.7	9.1	0.1	1.1	3.7	3.8	0.0	0.0	98.9	22.4
Spain 2005	1.8	5.4	0.0	1.1	0.4	7.1	0.0	0.2	74.6	16.0
Sweden 2002	16.7	101.3	0.0	13.1	0.0	39.6	12.4	0.0	0.0	183.0
Sweden 2006	17.5	123.6	0.0	20.2	4.6	51.7	16.5	0.0	0.0	234.3
United Kingdom 2001	8.2	18.3	0.0	7.4	0.1	18.1	0.0	20.1	0.0	72.2
United Kingdom 2006	16.0	31.1	0.0	13.2	1.1	56.5	0.0	54.8	1.4	172.7
EU25+Norway 1999	9.6	21.3	0.9	2.4	3.6	23.2	4.0	8.9	31.4	73.9
EU25+Norway 2005	18.6	35.5	6.0	5.2	9.8	45.1	10.6	13.5	31.4	144.5

Background data for figure 3.7 and 3.8

3.7 Development in percentage in the composition of recycling in the new EU Member States

3.8 Development in kilogram in the composition of recycling in the new EU Member States

	Glass	Paper and Cardboard	Wood	Metals	Plastic	Bio waste	Bulky waste	Other waste	No information about type of recycling	Total recycling by adding fractions
Cyprus 1996	2.4	6.8	0.0	3.6	1.0	0.0	0.0	2.6	32.4	16.5
Cyprus 2006	1.2	12.7	0.0	7.1	3.0	0.0	0.0	5.0	63.9	28.9
Czech Republic 2000	2.2	0.4	0.0	2.3	1.2	0.0	0.0	0.0	0.0	6.1
Czech Republic 2006	16.8	60.4	0.2	2.5	11.2	9.4	1.7	0.0	0.0	102.2
Estonia 2000	7.3	7.3	0.0	0.7	0.7	21.9	0.0	0.0	7.3	38.0
Estonia 2005	14.5	32.6	0.8	6.5	3.2	0.0	0.0	4.9	6.6	62.5
Latvia 2001	0.4	1.3	0.0	2.5	0.4	0.0	0.0	18.7	2.1	23.4
Latvia 2006	5.1	18.3	0.0	0.0	5.7	0.0	0.0	23.6	0.0	52.8
Lithuania 2006	20.3	0.2	2.3	0.0	0.6	0.0	0.0	4.4	0.0	27.9
Poland 2004	1.9	1.7	0.0	0.3	0.8	7.3	0.0	0.0	0.0	12.0
Slovakia 2003	0.0	0.0	0.0	0.0	0.0	7.6	0.0	0.0	9.4	7.6
Slovenia 2004	3.5	8.6	0.0	5.4	4.4	6.5	0.0	0.0	27.7	28.4
EU25+Norway 1999	9.6	21.3	0.9	2.4	3.6	23.2	4.0	8.9	31.4	73.9
EU25+Norway 2005	18.6	35.5	6.0	5.2	9.8	45.1	10.6	13.5	31.4	144.5

Background data for figure 3.9

Development in recycling of glass waste (kg) per capita in the old EU Member States and Norway

	Austria	Belgium	Denmark, Total	Denmark, Packaging	Finland	France	Germany, Total	Germany, Packaging	Greece	Ireland, Total	Ireland, Packaging	Italy, Total	Italy, Packaging	Luxembourg
1995	23.3	10.4						36.6						
1996	23.0	11.8	18.8	18.8				38.2						
1997	22.3	18.1	16.7	16.7				38.2						
1998	22.3	21.0	19.4	19.4				38.3						
1999	22.5	23.0	19.8	19.8			43.0	38.9						27.1
2000	23.0	24.4	18.8	18.8	10.6		41.8	38.3				13.3	13.3	31.6
2001	22.6	25.0	23.4	23.4	21.9		38.2	34.5		11.1		15.4	15.4	34.7
2002	23.3	26.2	22.8	22.8	16.7		37.4	34.1		15.3	14.8	15.1	15.1	34.5
2003	23.4	26.2	17.4	17.4	23.9		39.5	32.6		18.3	17.4	16.1	16.1	35.2
2004	23.3	26.6	18.9	18.9	22.8		37.4	30.3		16.9	15.8	16.9	16.9	36.3
2005	23.4	26.4	20.2	20.2	23.2	28.8	43.3	28.8		23.2		18.5	18.5	40.7
2006	23.6	27.2	16.7	16.7	25.5					24.5				

Background data for figure 3.9 (continued)

	Netherlands	Norway	Portugal	Spain	Sweden, Total	Sweden, Packaging	United Kingdom
1995	19.5	3.4					
1996	19.7	4.0					
1997	20.2	4.7					
1998	20.2	5.2					
1999	20.1	6.4					
2000	20.5	7.2	7.8	4.7			
2001	20.9	7.4	8.5	0.7			8.2
2002	21.2	8.2	9.3	0.7		16.7	8.9
2003	21.0	8.5	10.1	2.7		16.9	10.8
2004	21.0	8.9	10.8	3.1	33.0	16.9	12.8
2005	20.7	9.4	11.5	1.8		17.2	14.8
2006		9.4				17.5	16.0

Background data for figure 3.10
Development in recycling of glass waste (kg) per capita in the new EU Member States.

	Cyprus	Czech Republic, Total	Czech Republic, Packaging	Estonia, Total	Estonia, Packaging	Latvia	Lithuania, Total	Lithuania, Packaging	Poland	Slovenia, Total	Slovenia, Packaging	EU-27 + Norway
1995												
1996	2.4											
1997	2.4											
1998	0.7											
1999	0.6	0.7										
2000	0.7	2.2								-		
2001	0.9	1.9		7.3		0.4						
2002	0.9	3.7	5.0	8.8		0.1						
2003	0.9	10.5	5.4	11.0		1.3				2.1	1.3	
2004	1.0	9.1	0.0	11.8		8.6			1.9	3.5		
2005	1.1	4.0	0.0	13.2	13.9	7.2						
2006	1.2	16.8	0.0	14.5		5.1	20.3	20.3				

Backgroup data for figure 3.11

Development in recycling of metal waste (kg) per capita in the old EU Member States and Norway

Recycling per capita in kilo												
	Austria, Total	Austria, Packaging	Belgium, total	Belgium, Packaging	Denmark	Finland, Total	Finland, Packaging	Germany, Packaging	Ireland	Italy, Packaging	Greece	Luxembourg
1995	14.1		3.6	0.1								
1996	15.8		4.2	0.5	10.9							
1997	18.2		5.3	1.1	7.6			11.2				
1998	17.9		6.0	1.5	4.4			11.1				
1999	0.0	4.3	6.9	1.7	2.6			11.0				8.4
2000	17.3	4.2	6.9	1.9	6.0	0.8	0.2	10.9				9.2
2001	17.0	4.2	7.6	2.3	2.6	3.9	0.3	10.8	1.0	3.7		10.1
2002	17.6	4.1	7.5	2.4	4.1	3.2	0.4	10.5	2.2	2.9		10.7
2003	16.6	4.0	7.2	2.5	23.3	4.4	0.7	9.4	3.2	3.8		11.1
2004	16.0	4.0	7.3	2.6	22.7	4.7	0.8	9.0	12.4	2.3		10.0
2005	15.1		6.9	2.5	28.2	4.6	0.1	9.2	15.9	3.5		10.3
2006	14.1		6.5	2.3	27.8	6.1	0.1		12.8			

Backgroup data for figure 3.11 (continued)

	Netherlands	Norway	Portugal	Spain	Sweden, Total	Sweden, Packaging	UK, Total	UK, Packaging
1995	3.4	4.2						
1996	3.8	5.0						
1997	4.2	7.0						
1998	4.9	6.5						
1999	4.7	8.1						
2000	4.8	9.9						
2001	4.8	7.3		1.1			7.4	0.5
2002	4.8	9.6		0.7	13.1	3.7	8.6	0.5
2003	4.9	9.5		0.7	14.3	3.6	9.8	0.8
2004	4.9	11.5		1.9	16.0	3.7	12.0	1.0
2005	4.8	11.7		1.5	18.1	3.7	12.0	1.5
2006		11.5		1.1	20.2	3.7	13.2	1.6

Backgroup data for figure 3.12

Development in recycling of metal waste (kg) per capita in the new EU Member States

	Cyprus	Czech Republic, Total	Czech Republic, Packaging	Estonia, Total	Estonia, Packaging	Latvia	Malta	Slovenia, Total	Slovenia, Packaging
1995									
1996	3.6								
1997	3.8								
1998	4.9								
1999	5.1								
2000	5.2			0.7					
2001	5.2			2.2		2.5			
2002	5.4	0.8	0.03	3.7		4.3			
2003	5.4	0.9	0.24	6.6		9.9		14.6	0.4
2004	6.0	0.7	0.03	6.6			0.4	5.4	
2005	6.5	1.8	0.1	6.5	2.4				
2006	7.1	2.5	0.1						

Background data for figure 3.13

Development in recycling of paper and cardboard waste (kg) per capita in the old EU Member States and Norway

	Austria	Belgium	Denmark	Finland	Germany, total	Germany, packaging	Ireland, Total	Ireland, Packaging	Italy	Luxembourg
1995	51.1	19.4				51.6				
1996	55.2	25.6	63.4			53.4				
1997	58.7	38.8	68.4			58.1				
1998	61.7	47.2	77.7			59.3	25.4			
1999	67.6	53.6	75.4		84.3	61.4	31.4			48.0
2000	72.0	57.5	76.6	73.9	88.1	65.4	37.3		13.3	58.2
2001	71.6	56.2	81.6	62.6	91.3	69.3	43.0		15.4	60.6
2002	72.0	55.5	84.5	61.8	103.2	70.4	66.8	33.7	15.1	64.5
2003	71.7	56.3	97.6	67.8	101.4	71.7	89.8	44.0	16.1	62.3
2004	73.5	58.1	98.0	68.9	92.9	75.7	92.3	53.4	16.9	64.9
2005	76.1	60.3	106.4	72.0	94.5	75.4	106.1		18.5	70.9
2006	79.1	62.6	103.8	79.1			138.1			

Background data for figure 3.13 (continued)

	Netherlands	Norway	Portugal	Spain	Sweden, total	Sweden, Packaging	UK
1995	47.0	28.0					
1996	54.1	29.6					
1997	59.1	37.5					
1998	64.4	47.0					
1999	65.5	55.4					
2000	64.2	56.4	6.2	9.1			
2001	63.1	52.4	6.2	2.8			18.3
2002	62.3	54.2	7.2	2.7	101.3	38.8	20.9
2003	60.5	56.2	8.2	6.9	101.0	40.3	23.9
2004	63.1	59.1	9.2	6.1	105.7	41.7	27.0
2005	64.0	64.6	11.3	5.4	110.5	42.1	30.1
2006		67.2			123.6	53.6	31.1

Background data for figure 3.14

Development in recycling of paper and cardboard waste (kg) per capita in the new EU Member States

	Cyprus	Czech Republic, Total	Czech Republic, Packaging	Estonia, Total	Estonia, Packaging	Latvia	Lithuania, Total	Lithuania, Packaging	Malta	Poland	Slovenia, Total	Slovenia, Packaging	EU-27 + Norway
1995													
1996	6.8												
1997	7.6												
1998	8.4												
1999	8.6												
2000	9.3			7.3									
2001	9.4			9.5		1.3							
2002	9.6	15.2	9.3	9.6		5.5							
2003	9.7	20.4	10.8	20.7		11.4					9.2	3.4	
2004	10.8	25.7	16.7	26.7		15.8			1.9	1.7	8.6		
2005	11.6	43.4	26.7	32.6	14.0	13.4							
2006	12.7	60.4	43.4			18.3	0.2	0.2					

Background data for figure 3.15

Development in recycling of plastic waste (kg) per capita in the old EU Member States and Norway

	Austria	Belgium, total	Belgium, Packaging	Denmark	Finland, Total	Finland, Packaging	Germany, Total	Germany, Packaging	Ireland	Italy, Packaging	Netherlands	Norway	Spain	Sweden, Packaging	UK
1995	10.6	1.0	0.2					7.1			0.3	0.2			
1996	11.3	1.5	0.7	0.8				7.5			0.1	0.2			
1997	11.0	2.2	1.2	0.9				11.2			0.3	0.7			
1998	11.7	2.7	1.6	1.0				11.6			0.1	0.3			
1999	0.0	3.2	1.9	1.4			20.3	11.7			0.1	0.7			
2000	13.4	3.4	2.1	1.7	0.2		22.4	11.6		3.1	0.1	1.1	3.7		
2001	11.1	3.9	2.4	2.0	0.5		22.2	8.2	4.1	4.0	0.1	0.9	1.9		0.1
2002	12.0	4.2	2.6	3.3	0.4		50.7	12.6	9.3	4.2	0.2	1.1	1.9		0.2
2003	12.7	4.5	2.9	2.9	1.1		47.5	13.8	12.1	5.3	0.2	1.5	2.0	2.7	0.3
2004	15.5	4.9	3.0	3.6	0.2		46.9	13.3	13.7	5.8	0.3	1.7	1.2	3.3	0.5
2005	15.6	5.0	3.2	4.7	0.1		47.3	13.7	14.1	6.8	0.3	2.0	0.4	3.4	1.0
2006	15.6	5.4	3.5	4.7	0.9	0.3			14.9			2.7		4.6	1.1

Background data for figure 3.16

Development in recycling of plastic waste (kg) per capita in the new EU Member States

	Cyprus	Czech Republic, Total	Czech Republic, Packaging	Estonia, Total	Estonia, Packaging	Latvia	Lithuania, Packaging	Malta	Poland	Slovenia, Total	Slovenia, Packaging	EU-27+Norway
1995												
1996	1.0											
1997	1.3											
1998	1.4	1.5										
1999	1.5	0.4										
2000	1.9	1.2		0.7								
2001	2.2	1.4		0.7		0.4						
2002	2.3	3.0	1.8	0.7		0.4						
2003	2.3	5.3	4.4	0.7		0.8				1.3	0.7	
2004	2.5	10.1	8.6	1.9		4.1		0.1	0.8	4.4		
2005	2.7	12.4	10.1	3.2	2.6	5.2						
2006	3.0	11.2	8.8			5.7	0.6					

Background data for figure 3.17 and 3.18

3.17 Development in recycling of bio waste (kg) per capita in the old EU Member States and Norway

3.18 Development in recycling of bio waste (kg) per capita in the old EU Member States and Norway

	Austria, Total	Austria, Bio kitchen waste	Austria, Garden waste	Belgium; Total	Denmark, total	Denmark, Bio kitchen waste	Denmark, Garden waste	Finland, Total	Finland, Bio kitchen waste	Finland, Garden waste	France
1995	44			23							
1996	45			25	90	13	76				
1997	60			43	97	14	82				
1998	61			49	95	15	79				
1999	60			54	103	15	88				
2000	61			64	117	15	102	33	26	7	
2001	63			62	107	17	90	27	23	4	
2002	64			71	117	14	103	27	21	6	
2003	66			65	115	13	102	25	20	5	
2004	67			50	113	13	99	27	23	4	
2005	73			70	122	11	110	32	9	16	57
2006	80	56	24	70	129	11	118	31	25	6	

Background data for figure 3.17 and 3.18 (continued)

	Germany	Greece	Ireland	Italy	Luxembourg, Total	Luxembourg, Bio kitchen waste	Luxembourg, Garden waste	Netherlands	Norway, total	Norway, Bio kitchen waste	Norway, Garden waste	Portugal	Spain	Sweden	UK
1995									10	4	6				
1996	67							92	15	6	9				
1997	75							94	24	11	12				
1998	79							98	27	16	12				
1999	90				77	40	37	95	31	19	12	14			
2000	96			23	93	45	48	91	36	21	15	16	4		
2001	97		6	28	91	44	47	91	46	29	17	18	1		18
2002	92		9	32	101	46	56	87	49	31	18	13	1	40	22
2003	88		12	33	130	43	87	87	53	31	21	27	1	45	28
2004	94		21	38	123	47	76	83	58	34	24	29	4	48	39
2005	93		11	41	121	46	74	86	57	33	24	30	7	50	49
2006			15					83	58	33	25			52	56

Background data for figure 3.19
Development in recycling of bio waste (kg) per capita in the new EU Member States.

	Czech, Total	Czech, Bio kitchen waste	Czech, Garden waste	Estonia, Total	Estonia, Bio kitchen waste	Estonia, Garden waste	Poland	Slovakia	Slovenia, Total	Slovenia, Garden waste
1995										
1996										
1997										
1998										
1999										
2000				21.9	19.7	2.2				
2001				44.7	38.1	6.6				
2002	7.3	0.3	7.0	47.8	43.4	4.4				
2003	5.7	0.3	5.4	25.9	20.7	5.2		7.6	1.1	
2004	7.1	0.4	6.7				7.3		6.5	
2005	9.1	0.8	8.3						9.0	
2006	9.4	0.9	8.5						11.3	11.3

Background data for figure 3.20

Development in recycling of bulky waste (kg) per capita in the new EU Member States

	Austria	Belgium	Czech Republic	Denmark	France	Germany	Italy	Netherlands	Slovenia	Sweden
1995								48.0		
1996	27.8			8.5				43.5		
1997	27.4	1.0		11.3				46.4		
1998	25.8	1.1		10.4				46.3		
1999	27.4	1.2		12.2		10.8		46.9		
2000	28.7	1.2		9.9		14.9		49.9		
2001	30.1	1.2		13.4		13.6	3.8	49.4		
2002	31.3	1.2	0.5	9.3		13.1	8.1	46.7		12.4
2003	32.6	1.1	0.5	7.9		12.7	8.4	43.6	11.0	11.2
2004	32.5	1.1	0.9	8.9		10.5	11.6	42.9		12.1
2005	33.8	1.2	1.2	7.6	39.8	12.1	10.0	43.9		14.0
2006	36.2	1.2	1.7	5.7						16.5

Background data for figure 3.21

Recycling (kg) per capita of glass, metal, plastic, paper and cardboard wastes in Austria, Belgium Bulgaria, Cyprus, Czech Republic and Denmark

		Recycling per capita in kilo according to Packaging Directive	Packaging recycling per capita in kilo according to ETC/RWM study	Total recycling of waste material according to ETC/RWM study	Generation per capita in kilo
Austria	Glass	22.2		23.4	27.9
	Plastic	9.0		15.6	27.3
	Paper and board	51.9		76.1	60.1
	Metals	4.3	4.0	15.1	7.4
Belgium	Glass	37.0		26.4	37.1
	Plastic	10.5	3.2	5.0	27.7
	Paper and board	50.6		60.3	60.8
	Metals	11.5	6.9	2.5	13.0
Bulgaria	Glass	3.8			20.8
	Plastic	1.2			13.7
	Paper and board	15.7			19.3
	Metals	0.0			3.3
Cyprus	Glass	1.4		1.1	36.7
	Plastic	3.9		2.7	45.2
	Paper and board	6.7		11.6	51.7
	Metals	3.8		6.5	16.6
Czech Republic	Glass	13.4		4.0	17.9
	Plastic	7.1	12.4	10.1	20.2
	Paper and board	25.1	26.7	43.4	29.9
	Metals	1.5	0.1	1.8	4.5
Denmark	Glass	21.9		20.2	21.9
	Plastic	6.4		4.7	33.7
	Paper and board	57.1		106.4	95.3
	Metals	4.4		28.2	7.4

Background data for figure 3.22

Recycling (kg) per capita of glass, metal, plastic, paper and cardboard wastes in Estonia, Finland, France, Germany and Ireland

		Recycling per capita in kilo according to Packaging Directive	Packaging recycling per capita in kilo according to ETC/RWM study	Total recycling of waste material according to ETC/RWM study	Generation per capita in kilo
Estonia	Glass	9.8	13.9	13.2	19.8
	Plastic	6.0	2.6	3.2	23.4
	Paper and board	19.8	14.0	32.6	43.9
	Metals	3.1	2.4	6.5	8.2
Finland	Glass	10.1		23.2	16.0
	Plastic	2.6		0.1	19.1
	Paper and board	37.3		72.0	47.2
	Metals	4.6	0.1	4.6	8.5
France	Glass	30.0		28.8	50.2
	Plastic	6.1			31.9
	Paper and board	55.3			68.4
	Metals	6.2			10.9
Germany	Glass	28.8	28.8	43.3	34.9
	Plastic	11.2	13.7	47.3	28.7
	Paper and board	68.7	75.4	94.5	83.6
	Metals	9.2	9.2		10.9
Ireland	Glass	22.2		23.2	34.6
	Plastic	12.6		14.1	52.4
	Paper and board	56.1	53.4	106.1	78.4
	Metals	10.3			17.7

Background data for figure 3.23

Recycling (kg) per capita of glass, metal, plastic, paper and cardboard wastes in Italy, Latvia, Lithuania, Luxembourg and Malta

		Recycling per capita in kilo according to Packaging Directive	Packaging recycling per capita in kilo according to ETC/RWM study	Total recycling of waste material according to ETC/RWM study	Generation per capita in kilo
Italy	Glass	20.7	18.5	18.5	36.1
	Plastic	9.3	6.8		35.8
	Paper and board	49.1		18.5	73.6
	Metals	6.6	3.5		10.8
Latvia	Glass	11.9		7.2	31.5
	Plastic	5.3		5.2	15.8
	Paper and board	17.2		13.4	29.0
	Metals	2.3		9.9	6.0
Lithuania	Glass	7.7	20.3	20.3	19.2
	Plastic	3.2	0.6		15.0
	Paper and board	12.6			21.3
	Metals	1.1			3.7
Luxembourg	Glass	56.2		40.7	61.3
	Plastic	14.2			47.9
	Paper and board	47.5		70.9	68.5
	Metals	4.9		10.3	7.8
Malta	Glass	0.0			0.0
	Plastic	0.0	0.1		0.0
	Paper and board	0.0		1.9	0.0
	Metals	0.0		0.4	0.0

Background data for figure 3.24

Recycling (kg) per capita of glass, metal, plastic, paper and cardboard wastes in the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and United Kingdom

		Recycling per capita in kilo according to Packaging Directive	Packaging recycling per capita in kilo according to ETC/RWM study	Total recycling of waste material according to ETC/RWM study	Generation per capita in kilo
Netherlands	Glass	25.9		20.7	33.4
	Plastic	8.0		0.3	36.3
	Paper and board	64.4		64.0	89.8
	Metals	10.8		4.8	12.9
Poland	Glass	6.8		1.9	24.9
	Plastic	3.1		0.8	16.6
	Paper and board	13.4		1.7	32.8
	Metals	1.6			5.1
Portugal	Glass	14.8		11.5	36.4
	Plastic	5.3			33.7
	Paper and board	29.8		11.3	49.8
	Metals	6.1			10.1
Slovenia	Glass	5.2		3.5	12.8
	Plastic	5.8	0.7	4.4	17.0
	Paper and board	21.7	3.4	8.6	28.0
	Metals	2.3	0.4	5.4	6.6
Spain	Glass	17.2		1.8	38.6
	Plastic	7.5		0.4	36.1
	Paper and board	50.0		5.4	72.2
	Metals	6.4	1.5		10.8
Sweden	Glass	17.2	17.2	33.0	18.0
	Plastic	5.8		3.4	19.5
	Paper and board	51.6	42.1	110.5	71.4
	Metals	5.2	3.7	18.1	8.1
UK	Glass	20.9		14.8	39.8
	Plastic	6.9		1.0	31.6
	Paper and board	45.9		30.1	61.9
	Metals	6.5			13.7

Background data for figure 4.1

Generation of construction and demolition waste (t) per capita in the old EU Member States and Norway

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	United Kingdom
1995		0.52		1.57		3.67		0.37			0.91	0.22				
1996		0.78	0.59			2.83	0.17					0.23				
1997		0.79	0.65	1.91		2.80					1.02	0.23				
1998		0.80	0.56			2.83		0.73			1.08	0.26			0.68	
1999		0.84	0.56			3.15	0.17				1.14	0.24				
2000		0.95	0.61			3.17	0.19		0.48		1.49	0.25				
2001		0.81	0.63			3.05	0.41	1.70	0.54		1.48	0.27		0.59		1.74
2002		0.80	0.75			2.92	0.38		0.65		1.47	0.28		0.58		1.74
2003		1.11	0.70			2.71	0.37		0.74		1.467	0.27		0.66		1.75
2004	0.81	1.06	0.83	3.99	5.50	2.33	0.37	2.74	0.80	5.9	1.47	0.70	1.09	0.74	1.14	1.66
2005		1.22	0.97			2.24		3.60	0.78		1.58	0.32		0.80		1.90
2006	0.81	1.18	1.12					3.95						0.88		1.89

Background data for figure 4.2

Generation of construction and demolition waste (t) per capita in the new EU Member States

	Bulgaria	Cyprus	Czech	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Romania	Slovakia	Slovenia	EU-27+Norway
1995													
1996													
1997													
1998			0.80							0.01			
1999			0.78	0.57						0.02			
2000			0.91	0.74	0.29					0.01			
2001			0.85	0.64	0.49					0.02			
2002			0.85	0.94	0.59	0.06				0.03			
2003			1.00	0.93	0.51	0.03				0.01	0.07		
2004	0.39	0.58	1.44	1.12	0.43	0.04	0.10	1.95	0.11	0.00	0.26		1.74
2005			1.20	1.61	0.49	0.07			0.14	0.02			
2006			1.15	1.78	0.54	0.05	0.18		0.44				

Background data for figure 4.3
Recycling of construction and demolition waste (t) per capita in the EU and Norway

	1995-1999	2000-2003	2004	2005-2006
Austria			0.49	0.48
Belgium	0.47	0.39	0.96	0.75
Cyprus			0.00	
Czech Republic	0.03	0.24	0.27	
Denmark	0.52	0.54	0.78	1,067
Estonia		0.52	1.03	1,64
Finland	0.41			
France			3.43	
Germany	2.45	2.71	1.95	1,93
Hungary			0.01	0,08
Ireland	0.32	0.61	2.34	3,14
Latvia		0.00	0.02	0,02
Lithuania				0.11
Netherlands	0.83	1.43	1.44	1,550
Norway			0.17	
Poland			0.13	0,13
Spain				0,12
United Kingdom		1.11	1.24	1.22

Background data for figure 4.4
Recycling of construction and demolition waste in percentage of generated amount in the EU and Norway

	1995-1999	2000-2003	2004	2005-2006
Austria			60.2%	59.5%
Belgium	73.8%		67.5%	
Cyprus			0.7%	
Czech Republic		3.6%	17.0%	23.0%
Denmark	89.0%	89.4%	94.1%	94,9%
Estonia		81.0%	92.7%	91.9%
Finland	26.3%			
France			62.3%	
Germany	86.7%	85.3%	83.6%	86,3%
Hungary			3.1%	15.5%
Ireland	43.3%	48.2%	85.2%	79,5%
Latvia		1.8%	64.6%	45,8%
Lithuania				59.7%
Netherlands	91.4%	95.5%	97.8%	98,1%
Norway			61.0%	
Poland				28.3%
Spain				13,6%
United Kingdom		63.5%	74.6%	64.8%

Background data for figure 4.5 and figure 4.6

4.5 Percentage composition and development of recycled construction and demolition waste in the EU and Norway

4.6 Development in tonnes in the composition of recycled construction and demolition waste in the EU and Norway

Recycling-ton per capita	Concrete	Bricks	Tiles and ceramics	Concrete, bricks and tiles	Wood, glass, metals, plastics, gypsum	Asphalt	Dredging soil	Soil & track ballast	Other mineral waste	Mixed C&D	Other C&D
Austria 2004	0.13	0.00	0.00	0.00	0.01	0.12	0.00	0.03	0.20	0.01	0.00
Austria 2005-2006	0.12	0.00	0.00	0.00	0.00	0.12	0.00	0.03	0.20	0.01	0.00
Czech 1995-1998	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Czech 2000-2003	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Czech 2004	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Czech 2005-2006	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Denmark 1995-1998	0.18	0.02	0.00	0.00	0.00	0.13	0.00	0.07	0.00	0.00	0.00
Denmark 2000-2003	0.19	0.04	0.00	0.00	0.01	0.10	0.00	0.09	0.00	0.00	0.00
Denmark 2004	0.19	0.05	0.00	0.00	0.01	0.13	0.00	0.25	0.00	0.00	0.00
Denmark 2005-2006	0.26	0.05	0.00	0.00	0.02	0.18	0.00	0.41	0.00	0.00	0.00
Estonia 2000-2003	0.00	0.00	0.00	0.03	0.22	0.01	0.20	0.00	0.00	0.00	0.00
Estonia 2004	0.00	0.00	0.00	0.12	0.34	0.05	0.43	0.00	0.00	0.00	0.00
Estonia 2005-2006	0.00	0.00	0.00	0.16	0.34	0.06	0.88	0.00	0.00	0.00	0.00
France 2004	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	3.35	0.03	0.02
Germany 2000-2003	0.00	0.00	0.00	0.44	0.00	0.17	0.00	1.46	0.44	0.00	0.00
Germany 2004	0.00	0.00	0.00	0.38	0.00	0.22	0.00	1.37	0.38	0.00	0.00
Hungary 2004	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Hungary 2005-2006	0.01	0.00	0.00	0.01	0.04	0.01	0.00	0.02	0.00	0.00	0.01
Ireland 2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.45
Netherlands 2000-2003	0.32	0.01	0.00	0.00	0.07	0.07	0.00	0.00	0.87	0.00	0.07
Netherlands 2005-2006	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.00	0.08
Norway 2004	0.00	0.00	0.00	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Poland 2004	0.00	0.00	0.00	0.00	0.11	0.00	0.01	0.01	0.01	0.00	0.00
Poland 2006	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.01	0.00	0.00	0.00

Background data for figure 4.7**Development in recycling of dredging soil, soil and track ballast in selected countries in percentage of total recycling**

	Austria	Denmark	Estonia	Germany	Hungary	Ireland	Poland
1996		14%					
1997		11%					
1998		14%					
1999		15%					
2000		16%					
2001		19%	38%			38%	
2002		34%	45%	62%			
2003		23%	36%	70%			
2004	6%	32%	42%	88%	34%	81%	13%
2005		38%	54%		14%	92%	
2006	6%	39%	54%		19%		5%

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