



EUROPEN

The European Organization for Packaging and the Environment



**Packaging and
Packaging Waste
Statistics
1998-2011**

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Packaging and Packaging Waste Statistics 1998-2011

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EUROPEN — The European Organization for Packaging and the Environment — is an EU industry association in Brussels presenting the opinion of the packaging supply chain in Europe on issues related to packaging and the environment, without favouring any specific material or system.

EUROPEN members are comprised of multinational corporate companies spanning the packaging value chain (raw material producers, converters and brand owners) plus five national packaging organizations. EUROPEN members are all committed to continuously improving the environmental performances of packaging and packaged products, in collaboration with their suppliers and customers.

FOREWORD

February 2014

Dear Reader,

EUROPEN's in-depth analysis of official EU data on the evolution of packaging waste rates demonstrates the packaging supply chain's continued commitment towards Europe's resource efficiency objectives. This is reflected by the yearly increases in packaging recycling rates and decreasing packaging waste going to landfill. This report aims to inform EUROPEN members and stakeholders amid the current review by the European Commission of the EU targets in the Packaging & Packaging Waste Directive (PPWD).

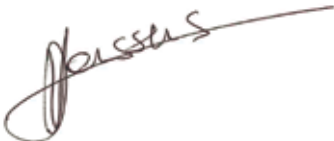
The recovery rates – and in particular recycling rates - in the EU-27 Member States continue to increase as the amount of used packaging sent for final disposal is declining rapidly. By the end of 2011, an impressive 64% of the packaging placed on the market in EU-27 was being recycled, largely exceeding the EU 55% minimum recycling target currently set by the PPWD. In the older Member States (EU-15), 65% of the packaging placed on the market was recycled, 51% was recycled in the newer Member States (EU-12), but the PPWD targets do not apply to these EU-12 countries until 2012 or later.

One of the key challenges in Europe is to bridge the gap between the newer and the older Member States in terms of waste management performances. EUROPEN therefore welcomes full implementation and enforcement of EU waste legislation across Europe, and a tailored approach in setting achievable and realistic targets for all packaging materials in the revised PPWD, which takes into account current packaging material recycling performance and the Member States' varying waste management capabilities.

A separate regulatory approach for packaging remains essential to ensure that packaging, and post-consumer packaging in particular, is collected separately to meet existing and future recycling and recovery rates across the EU. In order to ensure that recycling rates continue to increase, a revised PPWD should also contain binding minimum requirements for extended producer responsibility (EPR) for packaging waste, as well as harmonize definitions in EU waste legislation. You will find more information on EUROPEN's views on the EU Targets review in annex or on our website: www.europen-packaging.eu.

I trust you will find this report informative,

Kind regards,



Virginia Janssens
EUROPEN Managing Director



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Packaging and Packaging Waste Statistics 1998-2011

INTRODUCTION

Directive 94/62/EC on packaging and packaging waste aims to minimise the environmental impact of packaging and packaging waste and to guarantee free access throughout the European Union for packaging and packaged goods complying with its provisions. It lays down measures to reduce the generation of packaging waste and sets recovery and recycling targets which have been subsequently updated by Directive 2004/12/EC.

As part of its monitoring of European developments regarding packaging and packaging waste in Europe, EUROOPEN regularly analyses the data which Member States submit to the European Commission each year. This paper gives an overview of the latest reported packaging consumption, treatment and disposal figures from the 27 EU Member States for the year 2011 and examines the trends since 1998. As part of the ongoing review of the Packaging and Packaging Waste Directive and other EU waste legislation, this paper also reflects EUROOPEN's views on revised EU targets and the related Extended Producer Responsibility (EPR) for packaging waste which is one key policy tool.

The 15 countries then in membership of the EU ("EU-15")¹ have been reporting packaging and packaging waste data to the European Commission since 1997. As the 1997 returns were in many cases inconsistent with those for the following years, this analysis uses 1998 as the starting-point.

The ten countries which joined the EU in May 2004 were required to submit data from that year onwards, but the Czech Republic and Hungary also chose to report on 2002 and the Czech Republic and Slovakia on 2003.² A full set of data is available for all 27 Member States ("EU-27") from 2005, the first year that Bulgaria and Romania reported. For comparison purposes, this analysis sometimes shows data for "EU-12" separately: these are the member states that joined the EU in 2004 and 2007.³

Norway and Lichtenstein have reported since 2006. They are not EU members, but as part of the European Economic Area they are required to comply with the Packaging and Packaging Waste Directive. We have included their data in all of the tables in this report, but have not aggregated them with the data from the EU Member States.

Member states are required to submit their annual reports to the European Commission within 18 months of the end of the calendar year. The Member States' reports for 1997-2011 can be found on the EUROSTAT website at <http://bit.do/eurostatmemberstatesreports>.

1 Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the UK.

2 When EUROSTAT took over responsibility for the data from DG Environment in 2008 it was agreed to disregard the 2002 data as they were presented in the earlier format specified by Commission Decision 97/138/EC and were not consistent with the later submissions. However, although the 2002/03 returns from these countries do not appear in the EUROSTAT tables, they are still recorded in this analysis.

3 Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia (2004), and Bulgaria and Romania (2007).

CONTENTS

FOREWORD	3
INTRODUCTION	5
KEY CONCLUSIONS	9
EU PACKAGING RECOVERY AND RECYCLING TARGETS	13
First stage targets set by the 1994 Packaging and Packaging Waste Directive	13
Second stage targets set by the 2004 Packaging and Packaging Waste Directive	13
PROGRESS TOWARDS THE EU RECYCLING TARGETS	14
IMPACT OF RECYCLING AND ENERGY RECOVERY ON DISPOSAL RATES	15
PACKAGING PLACED ON THE MARKET	16
Glass packaging	20
Metal packaging	22
Plastic packaging	24
Paper & board packaging	26
Wood packaging	28
PACKAGING WASTE GOING TO FINAL DISPOSAL	30
RECYCLING RATES AND TRENDS	32
RECOVERY RATES AND TRENDS	34
RECYCLING RATES BY MATERIAL	38
Glass packaging	38
Metal packaging	40
Plastic packaging	43
Paper & board packaging	45
Wood packaging	47
ANNEX 1: EUROPEN POSITION PAPER ON THE EU WASTE MANAGEMENT TARGETS REVIEW – PRELIMINARY VIEWS	49
ANNEX 2: EUROPEN RECOMMENDATIONS ON EPR FOR POST-CONSUMER PACKAGING IN EUROPE – EXECUTIVE SUMMARY	52

KEY CONCLUSIONS

The amount of packaging being placed on the market has been increasing much more slowly than growth in consumer spending and other indicators.

Figure 1: Trends in household expenditure, packaging consumption and packaging disposal in EU-15, indexed to 2000

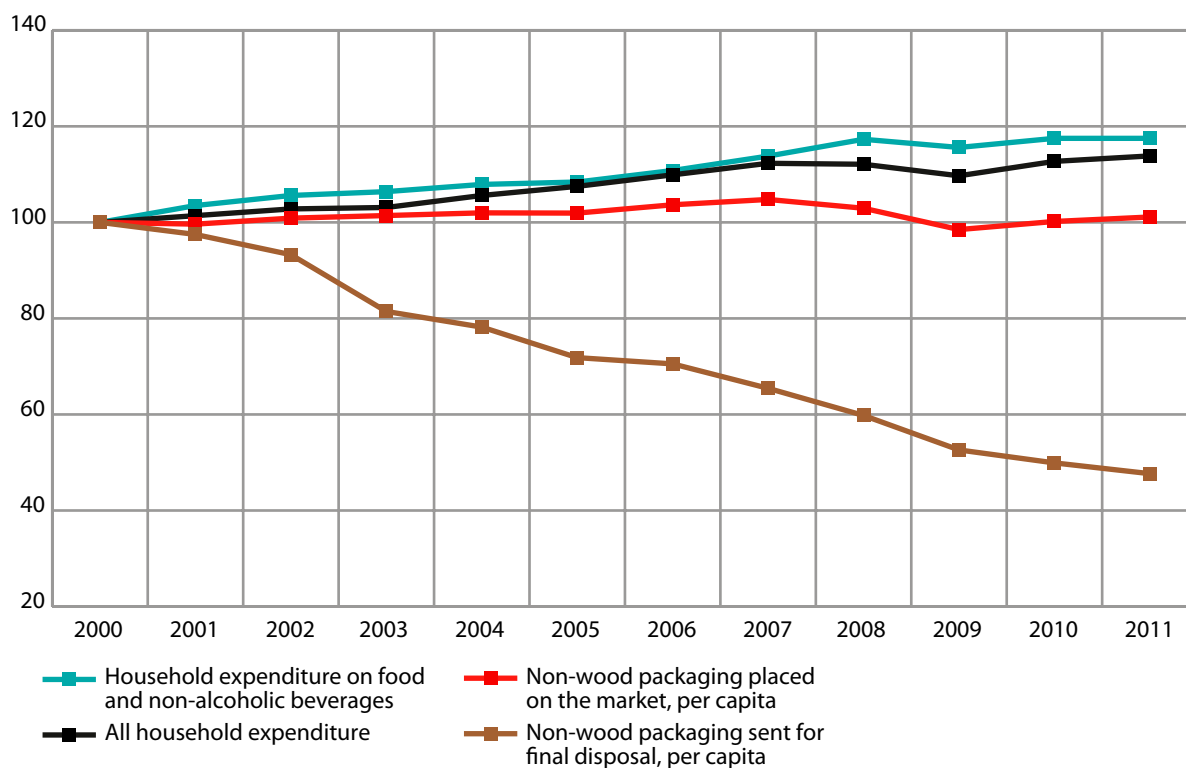


Figure 1 shows that packaging production and packaging waste disposal⁴ have clearly been decoupled from economic growth. Despite a 13.9% increase in household consumption expenditure on food and non-alcoholic drinks between 2000 and 2011,⁵ an ageing population and a trend throughout Europe toward smaller households,⁶ all of which lead to the purchase of a greater number of packaged goods, the amount of non-wood packaging placed on the market in EU-15 rose by just 7.1% and the amount of non-wood packaging waste disposed of⁷ actually fell by 49.5%.

In EU-27, just under 18.2 million tonnes of packaging (including wood) were sent for final disposal in 2011. To put this into context, it was estimated in 2010 that about 89 million tonnes of food were wasted per year in EU-27.⁸ EUROSTAT reports⁹ that in EU-27 in 2010, more than 1,051 million tonnes of all kinds of waste were sent for final disposal.

4 Differences in terminology create some confusion here. The Commission Decisions setting out the format for reporting on packaging and packaging waste require Member States to report on the amount of packaging placed on the market under the heading "packaging waste generated". This term is therefore used to describe packaging placed on the market in all official EU documents. This in turn means that official reports often state that "the amount of packaging waste is increasing", whereas the true position is that (slightly) more packaging is coming onto the market each year, but less and less of it is disposed of as waste.

5 Source: based on EUROSTAT data http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_co3_c&lang=en

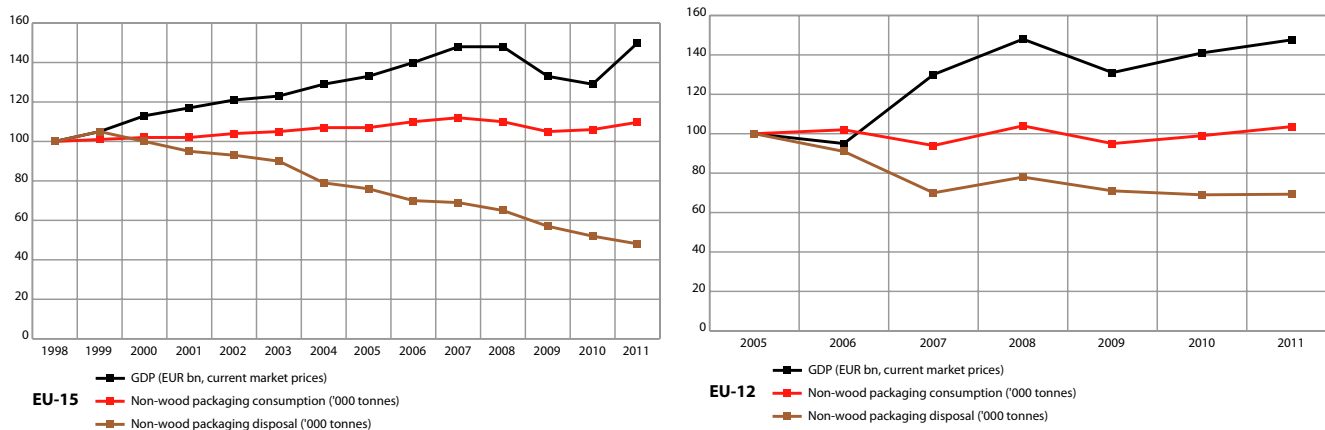
6 EUROSTAT reports (http://ec.europa.eu/dgs/energy_transport/figures/trends_2030/5_chap4_en.pdf) that the average number of people per household across EU-15 fell by about 4% from 2.40 in 2000 to 2.23 in 2010. Across EU-25 (i.e. with Bulgaria and Romania omitted), average household size fell from 2.44 to 2.26 over the same period.

7 For the purposes of packaging waste, "disposal" generally means that the material was either landfilled or incinerated without energy recovery.

8 Source: http://ec.europa.eu/environment/eussd/pdf/bio_foodwaste_abstract.pdf.

9 Source: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wastrt.

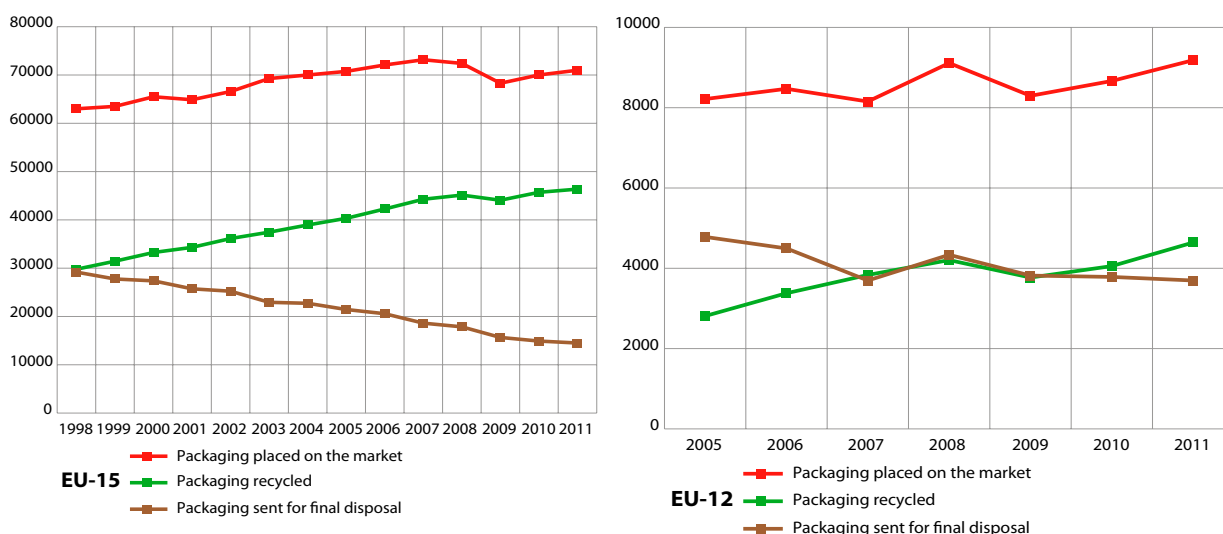
Figures 2a and 2b: Indexed trends in GDP, packaging consumption and packaging disposal



Figures 2a and 2b compare non-wood¹⁰ packaging consumption and disposal with an alternative indicator, GDP. GDP is most commonly used for this purpose, but it measures all goods and services, including those which are not packaging-related. Household expenditure, which is around half of GDP, is more relevant. Household expenditure, and more specifically household expenditure on food and non-alcoholic beverages, is shown in Figure 1.

The amount of used packaging sent for final disposal is declining rapidly, as recovery rates – and particularly recycling rates – continue to increase. In 2011, 65% of the packaging placed on the market in the older Member States (EU-15), and 51% of the packaging placed on the market in the newer Member States (EU-12), was recycled.

Figures 3a and 3b: Trends in packaging consumption, recycling and disposal ('000 tonnes)



Figures 3a and 3b illustrate the evolution of packaging consumption, recycling and disposal in EU-15 and EU-12. Between 1998 and 2011, the tonnage of packaging placed on the market in EU-15 rose by 12.7% but the tonnage recycled rose by 55.7%. In EU-12, the tonnage placed on the market between 2005 and 2010 increased by 11.8% but the tonnage recycled increased by 65.2%.

Although diversion from landfill has slowed in EU-12, with a reduction in landfilling of only 2.5% between 2009 and 2011, the tonnage of packaging placed on the market grew by 8.5% over that period and the tonnage recycled increased by 19.8%.

Despite the economic recession and a reduction in the amount of packaging placed on the market between 2007 and 2009, the recycling rate for all materials except wood continued to increase. By the end of 2011, 64% of the packaging placed on the market in EU-27, and 65% of the packaging placed on the market in EU-15, was being recycled. The “new” Member States had increased their overall recycling rate from 34% in 2005 to 51% in 2011. This is well beyond the targets set by EU legislation.

There are some anomalies in the data due to the difficulty of calculating packaging placed on the market and packaging waste recovered

¹⁰ Wood packaging has been excluded from this comparison as the data are not consistent. This is explained in more detail on page 9.

(see next section below), but there is no doubt that the experience of the last decade shows that the packaging waste management models adopted in Europe have generally been very successful.

The packaging recovery systems established have been underpinned by the PPWD, whose dual objectives – protecting the environment while securing the free movement of packaging and packaged goods throughout the EU – still remain valid today. In EUROOPEN's view, a specific regulatory approach for packaging remains essential because targeted legislative measures are necessary to ensure that packaging, and post-consumer packaging in particular, gets collected separately for recycling or energy recovery.

The basic structure of the Directive is still sound, including its internal market legal base, but some environmental provisions need to be updated. In EUROOPEN's view, the revised Directive should enhance industry's capacity to carry out its extended producer responsibility (EPR)¹¹ obligations Europe-wide. It should help to divert (post-consumer) packaging from landfill and ultimately drive higher recycling and recovery rates across the EU.

Ensuring a minimum level of EU harmonisation in the area of EPR for packaging waste can help where this cannot be achieved through individual national measures alone. For example,

- Legislation in some Member States permits heavy reliance on the collection and recycling of industrial, commercial and institutional packaging waste to meet the EU targets. As a result, insufficient attention has sometimes been devoted to building the infrastructure for separate collection of post-consumer packaging. Investment is also needed in collection points to capture packaging used by consumers out-of-home.

EUROOPEN therefore recommends that when the Directive is revised, it should explicitly require the separate collection of post-consumer packaging for recycling and recovery with the aim of optimising recycling opportunities in a manner as convenient for the consumer as possible. In particular, appropriate recycling and recovery targets should be combined with a requirement for separate collection of post-consumer packaging for which recycling capacities are in place. EUROOPEN also supports the recommendations in the European Commission's roadmaps¹² for certain Member States to apply incentives for citizens to separate household waste (e.g. pay-as-you-throw and/or landfill taxes).

- In the 1990s, the vast majority of EPR schemes were operated by the obliged industry as 'not-for-profit' or 'profit-not-for-distribution' organisations. EPR has since been identified as a business opportunity for private waste management operators, investors and entrepreneurs,¹³ and in many countries competing commercial EPR schemes owned by private waste management operators or investors offer their services to the obliged industry. However, the national legislation in most Member States did not envisage competing EPR schemes so there is no clear legal framework.

EUROOPEN is pleased therefore that the European Commission is examining the possibility of establishing common rules for EPR in the context of the overall EU waste legislation review. EUROOPEN would like to see in the revised PPWD a harmonised definition of EPR; a clear statement of the respective roles of producers, municipalities and citizens in the separate collection, sorting and recycling or recovery of post-consumer packaging; and minimum requirements for all EPR schemes, regardless of their ownership, in order to establish a level playing-field and prevent "cherry-picking" (focusing on industrial, commercial and institutional packaging waste which can be collected at lowest cost and ignoring the more challenging collection of post-consumer packaging waste). Where producers have the legal responsibility, they must be entitled to take an active role in fulfilling their obligations and to be able to control performance and compliance costs. That means being allowed to control how separate collection, sorting and recycling / recovery are organised and to drive cost-efficiency to ensure the lowest sustainable cost to consumers and society.

Further information on EUROOPEN's position on EPR for post-consumer packaging in the EU can be downloaded from <http://www.europen-packaging.eu/policy/9-extended-producer-responsibility.html>

The accuracy and comparability of the data which the Member States submit to EUROSTAT needs to be improved.

Commission Decision 2005/270/EC sets out the reporting formats for the Member States, starting with the 2003 reports. Before then, Commission Decision 97/138/EC was in force and reporting on wood packaging was optional. As Tables 13 and 34 show, Member States' reports on wood have been highly inconsistent and this skews the data for the earlier years. Although it is the total reported, including wood, that is relevant for achievement of the Directive's overall recycling and recovery targets, the data for packaging excluding wood is more useful for identifying trends. In this report we provide both.

Commission Decisions 97/138/EC and 2005/270/EC prescribed the reporting formats but do not specify the calculation methodologies to be used by the Member States. These vary widely, so comparisons between the relative performance levels of the Member States can only be a broad indication of orders of magnitude. The data are more useful in tracking year-on-year progress within a given Member State, though even here, changes to the calculation methodologies sometimes obscure the trends.

EUROSTAT has investigated inconsistencies in the packaging and packaging waste tonnages reported by certain Member States, and the explanations received are reported below. For example:

¹¹ EPR is a policy approach which obliges producers to take some or all responsibility for its products and/or packaging during its life-cycle, including the post-consumer phase.

¹² The roadmaps setting out advice for Bulgaria, the Czech Republic, Estonia, Greece, Southern Italy, Latvia, Lithuania, Poland, Romania and Slovakia on how to improve their waste management performance can be downloaded from http://ec.europa.eu/environment/waste/framework/support_implementation.htm

¹³ The annual fees paid by producers to EPR schemes in Europe are estimated to amount to some €3.1 billion – excluding additional payments by producers to tax regimes (e.g. in Denmark and Hungary) and to the various deposit systems (a further €1 to 1.5 billion).

- The Danish Environmental Protection Agency has a new waste database. Having used 2009 data as representative for 2010, it used a new methodology for its 2011 calculations, and as a result has reported a packaging recycling rate which is 30 percentage points lower than in the previous year.
- An apparent 25% fall in Dutch consumption of packaging between 2007 and 2008 was due to a change in the data collection methodology. Data from earlier years have since been recalculated, so this break in the trend is no longer so apparent.
- The Swedish authorities have advised that year-on-year comparisons of Swedish data are unreliable as the methodology used has changed over the years.

In a few cases, reported recycling rates have exceeded 100%. This may be due to under-reporting of the amount of packaging placed on the market, or to more used packaging being collected for recycling than was originally placed on that national market. This can happen in countries where personal imports of packaged products are significant.

EUROPEN welcomes the European Commission's review of reporting requirements, and hopes that in the light of 16 years experience, a harmonised methodology can be agreed which will allow more consistent reporting. To allow comparison with past trends, it may be desirable for Member States to continue to use their current methodologies to generate parallel reports for a few years.

Comparisons between Member States' waste management performances have to take account of their different levels of economic development, differences in geography and infrastructure, but a harmonised data collection methodology would make it easier to identify the weaknesses that should be addressed.

However, it should also be noted that the introduction of a new harmonized methodology will have an impact downwards or upwards on the national recycling rates reported. This must be taken into account in the ongoing review of the EU targets.

EU PACKAGING RECOVERY AND RECYCLING TARGETS

FIRST STAGE TARGETS SET BY THE 1994 PACKAGING AND PACKAGING WASTE DIRECTIVE

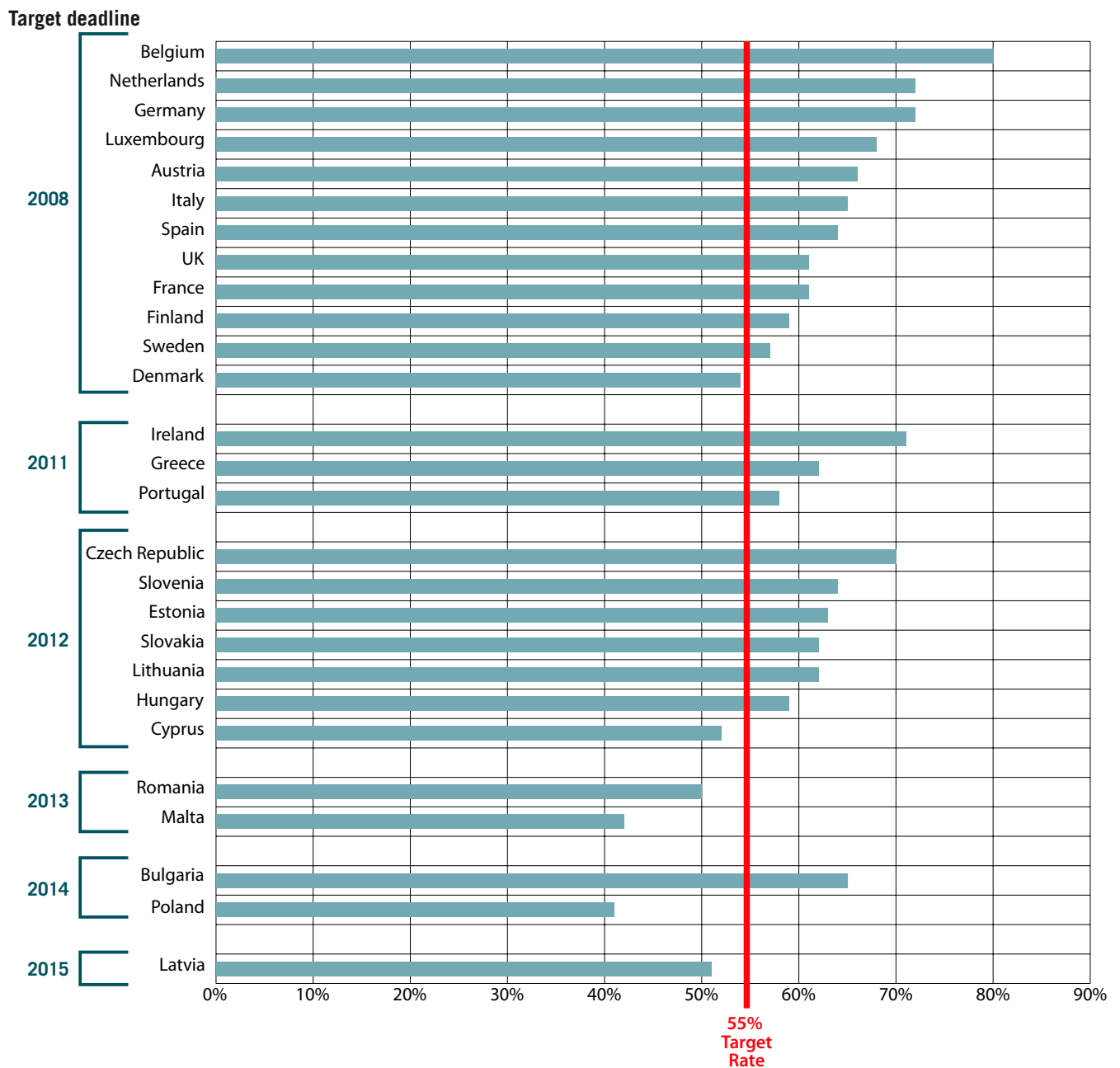
	Recovery	Recycling				
	50%-65%	25%-45% overall	min 15% glass	min 15% paper/board	min 15% metals	min 15% plastics
EU-15 except Greece, Ireland, Portugal	end 2001	end 2001	end 2001	end 2001	end 2001	end 2001
Greece Ireland Portugal	end 2005	end 2005	end 2005	end 2005	end 2005	end 2005
Estonia	May 2004	May 2004	May 2004	May 2004	May 2004	May 2004
Czech Republic	end 2005	May 2004	May 2004	May 2004	May 2004	end 2005
Cyprus	end 2005	end 2005	May 2004	end 2005	May 2004	end 2004
Hungary	end 2005	May 2004	end 2004	May 2004	May 2004	end 2005
Lithuania	end 2006	end 2004	May 2004	May 2004	end 2004	end 2004
Latvia	end 2007	May 2004	May 2004	May 2004	May 2004	end 2007
Poland	end 2007	May 2004	May 2004	May 2004	end 2005	end 2005
Slovakia	end 2007	May 2004	May 2004	May 2004	end 2007	May 2004
Slovenia	end 2007	May 2004	May 2004	May 2004	May 2004	end 2007
Malta	end 2009	end 2005	May 2004	May 2004	May 2004	end 2009
Bulgaria	end 2011	before 2007	before 2007	end 2007	end 2007	end 2009
Romania	end 2011	before 2007	before 2007	end 2007	end 2007	end 2011

SECOND STAGE TARGETS SET BY THE 2004 PACKAGING AND PACKAGING WASTE DIRECTIVE

	Recovery	Recycling				
	60%	55%-80% overall	min 60% glass	min 60% paper/board	min 50% metals	min 22.5% plastics
EU-15 except Greece, Ireland, Portugal	end 2008	end 2008	end 2008	end 2008	end 2008	end 2008
Greece Ireland Portugal	end 2011	end 2011	end 2011	end 2011	end 2011	end 2011
Cyprus	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Czech Republic	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Estonia	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Hungary	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Lithuania	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Slovakia	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Slovenia	end 2012	end 2012	end 2012	end 2012	end 2012	end 2012
Malta	end 2013	end 2013	end 2013	end 2013	end 2013	end 2013
Poland	end 2014	end 2014	end 2014	end 2014	end 2014	end 2014
Latvia	end 2015	end 2015	end 2015	end 2015	end 2015	end 2015
Romania	end 2013	end 2013	end 2013	end 2008	end 2008	end 2013
Bulgaria	end 2014	end 2014	end 2013	end 2008	end 2008	end 2013

PROGRESS TOWARDS THE EU RECYCLING TARGETS

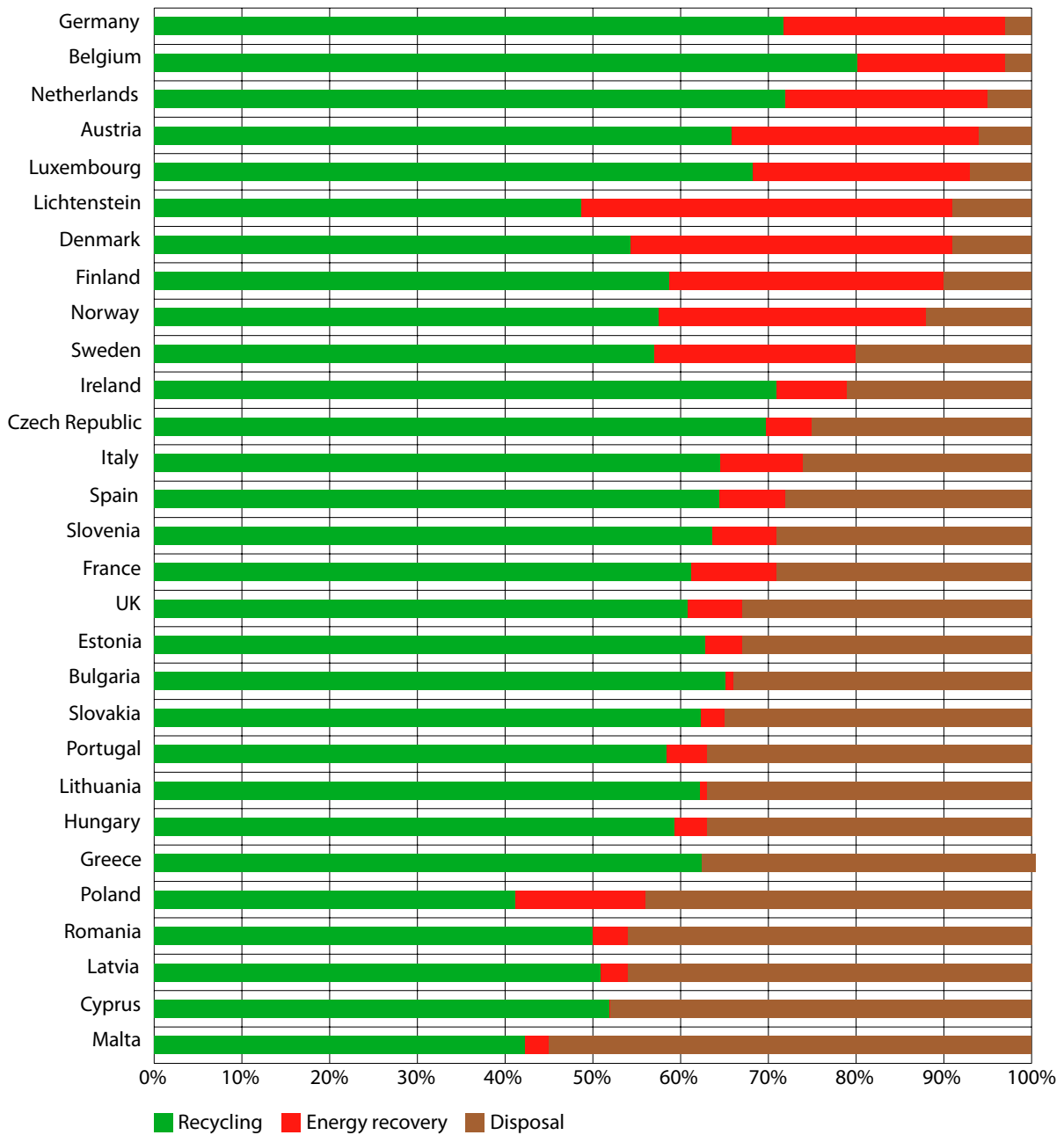
Figure 4: Member States' 2011 recycling performance against the 55% recycling target



All 15 EU Member States required to meet the second-stage target of minimum 55% recycling by 2011 did so except Denmark, which adopted a new calculation methodology which resulted in a fall of 30 percentage points in its reported recycling rate. Denmark reports that it was just 0.7% short of the 55% target in 2011. Seven of the twelve Member States whose deadline was 2012 or later had already exceeded the target by 2011.

IMPACT OF RECYCLING AND ENERGY RECOVERY ON DISPOSAL RATES

Figure 5: Recycling, energy recovery and disposal rates in the European Economic Area, 2011



By 2011, the only EU-15 Member States that needed municipal solid waste (MSW) incineration to enable them to meet the 60% recovery target were Denmark (due to its revised data collection methodology), Finland (whose recycling rate was 59%), Portugal (58% recycling) and Sweden (57% recycling). As Table 20 shows, all four exceeded the recovery target, with rates of 91%, 90%, 63% and 80% respectively.

None of the “new” Member States makes significant use of municipal solid waste incinerators.

PACKAGING PLACED ON THE MARKET

Table 1 shows the overall packaging tonnages reported to the European Commission.¹⁴ Between 1998 and 2011, the amount of packaging reported to have been placed on the market in EU-15 increased by 12.7%, an average annual increase of 1.0%. Per capita consumption of packaging rose by 5.8%, an average annual increase of 0.5%.

Between 2005 and 2011, the amount of packaging reported to have been placed on the market in EU-12 increased by 11.8%, an average annual increase of 2.1%. Per capita consumption of packaging rose by 12.4%, an average annual increase of 2.2%.

Table 1: Packaging placed on the market, as reported to the European Commission (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	1 115	1 130	1 170	1 097	1 059	1 160	1 102	1 111	1 166	1 185	1 180	1 164	1 231	1 232
Belgium	1 426	1 478	1 496	1 424	1 490	1 624	1 632	1 659	1 666	1 669	1 690	1 642	1 686	1 703
Bulgaria								520	369	318	302	304	321	315
Cyprus							145	123	63	78	87	80	80	76
Czech Rep.					832	720	776	847	899	963	968	894	923	945
Denmark	838	846	852	865	857	957	949	983	971	979	902	694	694	883
Estonia							131	137	152	162	214	162	158	193
Finland	424	443	443	457	451	616	650	689	677	696	701	654	708	710
France	11 641	11 999	12 499	12 336	12 275	12 334	12 383	12 361	12 668	12 797	12 828	12 278	12 516	12 811
Germany	14 090	14 627	15 121	15 018	15 435	15 466	15 517	15 471	16 133	16 113	16 045	15 052	16 003	16 486
Greece	795	856	935	975	995	1 014	1 038	1,061	1 056	1,050	1 050	1 008	927	866
Hungary					790		815	853	885	968	1 005	978	744	838
Ireland	683	704	795	820	850	820	851	925	1 028	1,056	1 027	972	864	864
Italy	10 846	11 122	11 168	11 262	11 367	11 537	11 989	11 953	12 220	12 541	12 169	10 862	11 411	11 638
Latvia							237	264	307	323	264	186	214	216
Lichtenstein									6	6	6	6	6	6
Lithuania							234	264	284	342	330	261	272	292
Luxembourg	77	79	80	79	85	88	93	99	105	102	104	91	101	112
Malta							41	42	44	48	49	51	46	53
Netherlands	2 525	2 593	2 903	2 984	3 117	3 394	3 214	3 349	2 755	2 785	2 780	2 529	2 724	2 748
Norway									489	506	709	705	722	727
Poland							3 413	3 509	3 655	3 134	4 182	3 780	4 293	4 611
Portugal	1 025	1 211	1 248	1 285	1 298	1 406	1 430	1 498	1 733	1 713	1 785	1 719	1 664	1 566
Romania								1 141	1 309	1 287	1 171	999	975	993
Slovakia						413	370	347	301	318	325	395	436	444
Slovenia							162	169	204	212	215	207	204	207
Spain	6 318	6 240	6 628	5 951	6 374	7 375	7 444	7 798	8 007	8 420	8 006	7 424	7 390	7 147
Sweden	955	972	977	1 010	1 029	1 423	1 480	1 512	1 420	1 443	1 410	1 420	1 262	1 295
UK	10 244	9 200	9 180	9 314	9 897	10 059	10 230	10 280	10 471	10 610	10 724	10 787	10 825	10 930
EU-27								78 966	80,546	81 312	81 514	76 593	78 671	80 172
EU-15	63 003	63 499	65 495	64 876	66 579	69 271	70 001	70 750	72,075	73 158	72 402	68 297	70 006	70 989
EU-12								8 216	8 471	8 154	9 112	8 296	8 666	9 183

As was predicted from demographic trends, the amount of packaging being placed on the market continued to increase up to the end of 2007. The demand for packaging is linked to the demand for packaged goods, so the economic downturn which began in late 2008 resulted in 19 Member States reporting a lower amount of packaging placed on the market in 2009 than in 2007. The market has recovered to some extent since, and by 2011 EU-15 packaging consumption was back at the 2005 level.

¹⁴ Official data are expressed in tonnes and there are no EUROSTAT data on the number of packaging units placed on the market. It is therefore impossible to infer from these figures the extent to which changes in the reported consumption levels are due to lightweighting or to a shift to different packaging formats or sizes. However, many industry sources have published evidence which demonstrates the success of lightweighting in bringing about a continuous improvement in the resource-efficiency of packaging.

Only seven Member States reported their tonnages of wood packaging in 1998 – reporting on wood did not become mandatory until 2003. This skews the comparisons between EU-15 Member States, and indeed the year-on-year trends within some of the Member States.

If wood is excluded, packaging in EU-15 is reported to have increased by just 9.7% between 1998 and 2011, an average annual increase of 0.7%, while reported consumption of non-wood packaging in EU-12 rose by 3.6% between 2005 and 2011, an average annual increase of 0.8%.

Table 2: Packaging placed on the market, excluding wood (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	1 055	1 070	1 100	1 027	997	1 099	1 038	1 042	1 089	1 117	1 115	1 102	1 142	1 141
Belgium	1 284	1 320	1 285	1 266	1 324	1 448	1 445	1 468	1 474	1 468	1 494	1 462	1 490	1 501
Bulgaria								452	301	294	295	285	302	293
Cyprus							124	115	56	69	77	72	72	68
Czech Rep.					767	673	712	780	799	849	861	808	817	851
Denmark	838	846	852	865	857	848	855	862	864	871	814	658	658	787
Estonia							124	128	141	150	207	157	149	179
Finland	424	443	443	457	451	463	445	483	471	481	484	460	485	494
France	9 945	10 098	10 389	10 223	10 207	10 093	10 088	10 143	10 362	10 409	10 186	9 804	10 103	10 392
Germany	12 122	12 472	12 766	12 650	13 053	12 958	13 198	13 062	13 500	13 492	13 474	12 942	13 453	13 695
Greece	795	856	890	930	951	969	986	1 007	996	990	985	954	877	823
Hungary					790		815	675	704	780	781	802	675	657
Ireland	683	704	795	820	850	720	740	804	916	949	916	863	762	787
Italy	8 796	8 718	8 689	8 730	8 764	8 967	9 202	9 165	9 368	9 681	9 449	8 768	9 130	9 332
Latvia							180	196	209	240	201	142	162	163
Lichtenstein									5	5	5	5	5	5
Lithuania							205	217	237	278	271	216	219	233
Luxembourg	77	79	80	79	85	81	84	90	96	92	95	83	93	102
Malta							36	37	38	44	46	48	43	49
Netherlands	2 525	2 593	2 483	2 586	2 719	2 785	2 774	2 816	2 207	2 270	2 248	2 135	2 308	2 306
Norway									489	506	548	545	548	568
Poland							2 933	3 029	3 175	2 407	3 175	2 903	3 256	3 530
Portugal	1 025	1 143	1 200	1 236	1 298	1 323	1 339	1 374	1 645	1 596	1 647	1 609	1 558	1 511
Romania								1 003	1 129	1 074	955	810	763	767
Slovakia						403	361	331	283	296	307	356	395	393
Slovenia							133	137	168	174	179	178	174	175
Spain	5 628	5 642	5 992	5 951	6 374	6 659	6 696	6 857	7 061	7 476	7 233	6 734	6 813	6 665
Sweden	955	972	977	1 010	1 029	1 030	1 057	1 072	1 118	1 142	1 110	1 113	961	993
UK	8 944	8 860	8 510	8 644	8 499	8 656	8 826	8 877	9 291	9 418	9 497	9 731	9 801	9 906
EU-27								66 223	67 698	68 108	68 103	65 196	66 661	67 791
EU-15	55 097	55 815	56 449	56 474	57 458	58 098	58 773	59 121	60 460	61 453	60 747	58 418	59 634	60 435
EU-12								7 101	7 239	6 654	7 356	6 778	7 027	7 357

Tables 3 and 4 show per capita consumption rates, applying EUROSTAT population figures to the tonnages shown in Tables 1 and 2. This is a useful indicator, since the population of EU-15 has been growing (by 6.5% between 1998 and 2011) whereas that of the "new" Member States has been in slight decline (by 0.6% between 2005 and 2011).

However, consumption data need to be treated with caution, as Member States use different methodologies to calculate packaging placed on the market. Thus, the per capita estimates for different countries are not necessarily comparable. For instance, given the strong trading and cultural links between the respective pairs of countries, one would have expected the consumption rates for Austria and Germany and for Ireland and the UK to be much closer than Tables 3 and 4 below indicate. There was a remarkable discrepancy between the reported Latvian and Lithuanian consumption rates in earlier years, but they have now converged.

Table 3: Per capita consumption of packaging placed on the market, as reported to the European Commission (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	140	141	146	136	131	143	135	135	141	143	142	139	147	146
Belgium	140	145	146	138	144	157	157	158	158	157	158	152	155	154
Bulgaria								67	48	42	40	40	43	43
Cyprus							196	162	82	100	110	100	96	89
Czech Rep.					82	71	76	83	88	93	93	85	88	90
Denmark	158	159	160	161	159	178	176	181	179	179	164	126	125	159
Estonia							97	102	113	121	160	121	118	144
Finland	82	86	86	88	87	118	124	131	129	132	132	123	132	132
France	194	199	206	202	199	199	198	196	200	201	200	190	193	197
Germany	172	178	184	182	187	187	188	188	196	196	195	184	196	202
Greece	73	79	86	89	91	92	94	96	95	94	93	89	82	77
Hungary					78		81	85	88	96	100	98	74	84
Ireland	184	188	209	212	216	205	209	222	241	242	232	218	193	189
Italy	191	195	196	198	199	200	206	204	207	211	203	181	189	192
Latvia							102	115	134	142	117	83	95	105
Lichtenstein									159	167	167	168	165	158
Lithuania							68	77	84	101	98	78	82	97
Luxembourg	183	182	183	180	190	194	204	213	222	213	213	183	202	216
Malta							103	105	107	118	120	122	111	128
Netherlands	161	164	182	186	193	209	197	205	169	170	169	153	164	165
Norway									105	107	149	146	149	147
Poland							89	92	96	82	110	99	112	120
Portugal	101	119	122	125	125	135	136	142	164	162	168	162	156	148
Romania								53	61	60	54	47	46	46
Slovakia						77	69	64	56	59	60	73	80	82
Slovenia							81	84	102	105	106	102	100	101
Spain	159	156	165	146	154	176	174	180	182	188	176	162	161	155
Sweden	108	110	110	114	115	159	165	168	156	158	153	153	135	137
UK	175	157	156	158	167	169	171	171	173	174	175	175	174	174
EU-27								160	163	164	164	153	157	159
EU-15	168	169	174	171	175	181	182	183	185	187	184	172	176	178
EU-12								79	82	79	88	80	84	89

Table 4: Per capita consumption of packaging, excluding wood (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	132	134	137	128	124	136	128	127	132	135	134	132	136	136
Belgium	126	129	125	123	128	140	139	140	140	139	140	136	137	136
Bulgaria								58	39	38	39	37	40	40
Cyprus							170	154	73	89	98	91	88	81
Czech Rep.					75	66	70	76	78	83	83	77	78	81
Denmark	158	159	160	162	160	158	158	159	159	160	149	119	119	141
Estonia							92	95	104	112	154	117	111	134
Finland	82	86	86	88	87	89	85	92	90	91	90	86	91	92
France	166	168	172	168	166	163	162	162	164	164	159	152	156	160
Germany	148	152	155	154	158	157	160	158	164	164	164	158	164	168
Greece	74	79	82	85	87	88	89	91	90	89	88	85	78	73
Hungary					78		81	67	70	77	78	80	67	66
Ireland	185	189	210	214	218	182	184	196	218	220	208	194	171	172
Italy	155	153	153	153	154	156	159	157	159	164	158	146	151	154
Latvia							77	85	91	105	88	63	72	78
Lichtenstein									137	140	139	143	136	137
Lithuania							60	63	70	82	80	64	66	76
Luxembourg	184	184	184	181	191	180	184	196	204	194	197	168	184	199
Malta							90	92	94	109	112	115	103	117
Netherlands	161	165	157	162	169	172	171	173	135	139	137	130	139	138
Norway									105	108	116	114	113	115
Poland							77	79	83	63	83	76	85	92
Portugal	101	113	118	121	126	127	128	130	156	151	155	151	146	143
Romania								46	52	50	44	38	36	36
Slovakia						75	67	61	52	55	57	66	73	73
Slovenia							67	69	84	86	89	88	85	85
Spain	142	142	150	147	156	160	158	159	161	168	156	147	148	144
Sweden	108	110	110	114	116	115	118	119	124	125	121	120	103	106
UK	153	151	145	147	144	146	148	148	154	155	155	158	158	158
EU-27								135	137	138	137	130	133	135
EU-15	147	148	150	149	151	152	153	153	155	157	154	147	150	151
EU-12								69	70	64	71	66	68	71

GLASS PACKAGING

According to EUROSTAT data, the tonnage of glass packaging placed on the market in EU-15 fell by 5.7% between 1998 and 2011, an average annual reduction of 0.4%.

The tonnage of glass packaging placed on the market in EU-12 fell by 6.0% between 2005 and 2011, an average annual reduction of 0.6%.

It is not possible to tell from the data how far this was due to lightweighting and how far to changes in demand.

Table 5: Glass packaging placed on the market (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	230	230	230	220	210	219	218	230	232	258	261	270	268	272
Belgium	335	334	334	330	323	419	396	388	385	367	400	396	386	388
Bulgaria								161	57	71	109	76	64	69
Cyprus							23	28	16	19	22	20	20	18
Czech Rep.					161	164	160	183	184	195	194	188	176	187
Denmark	176	159	168	184	156	152	135	119	101	105	101	72	72	152
Estonia							29	27	29	33	57	37	32	37
Finland	55	58	58	61	68	62	67	84	67	69	61	58	65	66
France	3 513	3 384	3 404	3 369	3 372	3 240	3 135	3 151	3 205	3 145	3 133	2 873	2 829	2 881
Germany	3 712	3 768	3 721	3 344	3 266	3 130	3 073	2 879	2 895	2 825	2 869	2 857	2 712	2 670
Greece	160	179	180	180	185	180	183	207	150	150	160	155	135	117
Hungary					165		172	126	139	144	138	146	199	110
Ireland	111	111	119	105	122	124	117	144	154	177	158	156	142	150
Italy	2 200	2 249	1 963	1 993	1 970	2 107	2 141	2 117	2 133	2 157	2 139	2 065	2 153	2 266
Latvia							57	73	66	68	67	44	52	52
Lichtenstein									1	1	1	1	1	1
Lithuania							61	65	73	84	79	60	61	63
Luxembourg	21	22	22	21	23	28	27	28	32	27	27	23	33	37
Malta							10	10	10	12	11	13	10	11
Netherlands	453	495	494	512	516	541	549	545	517	538	531	500	504	516
Norway									58	63	62	63	64	70
Poland							915	950	843	778	1 019	837	955	1 079
Portugal	289	315	352	366	363	372	367	384	394	405	431	420	399	374
Romania								249	285	233	193	180	160	140
Slovakia						113	100	100	98	85	76	88	100	81
Slovenia							26	26	31	32	31	32	31	31
Spain	1 523	1 532	1 536	1 557	1 523	1 627	1 641	1 677	1 661	1 680	1 622	1 555	1 514	1 460
Sweden	171	174	167	171	170	165	159	163	174	181	186	197	194	203
UK	2 200	2 369	2 155	2 200	2 191	2 300	2 400	2 400	2 600	2 650	2 630	2 686	2 713	2 740
EU-27								16 513	16 532	16 487	16 705	16 006	15 980	16 170
EU-15	15 149	15 379	14 903	14 613	14 458	14 666	14 608	14 515	14 699	14 734	14 708	14 283	14 118	14 292
EU-12								1 997	1 832	1 754	1 997	1 723	1 862	1 878

According to EUROSTAT data, per capita consumption of glass packaging in EU-15 fell by 11.4% between 1998 and 2011, an average annual reduction of 0.9%.

Per capita consumption in EU-12 fell by 5.5% between 2005 and 2011, an average annual reduction of 0.5%.

Table 6: Per capita consumption of glass packaging (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	29	29	29	27	26	27	27	28	28	31	31	32	32	32
Belgium	33	33	33	32	31	41	38	37	37	35	38	37	36	35
Bulgaria								21	7	9	14	10	8	9
Cyprus							31	37	20	24	28	25	25	21
Czech Rep.					16	16	16	18	18	19	19	18	17	18
Denmark	33	30	32	34	29	28	25	22	19	19	18	13	13	27
Estonia							22	20	22	24	43	28	24	28
Finland	11	11	11	12	13	12	13	16	13	13	11	11	12	12
France	59	56	56	55	55	52	50	50	51	49	49	45	44	44
Germany	45	46	45	41	40	38	37	35	35	34	35	35	33	33
Greece	15	16	17	16	17	16	17	19	13	13	14	14	12	10
Hungary					16		17	13	14	14	14	15	20	11
Ireland	30	30	31	27	31	31	29	35	37	41	36	35	32	33
Italy	39	40	34	35	35	37	37	36	36	36	36	34	36	37
Latvia							25	31	29	30	29	20	23	25
Lichtenstein									37	38	38	38	38	40
Lithuania							18	19	21	25	24	18	18	21
Luxembourg	50	52	51	48	52	62	60	62	68	57	56	46	66	73
Malta							25	25	26	30	26	32	24	25
Netherlands	29	31	31	32	32	33	34	33	32	33	32	30	30	31
Norway									12	13	13	13	13	14
Poland							24	25	22	20	27	22	25	28
Portugal	29	31	35	36	35	36	35	36	37	38	41	40	37	35
Romania								12	13	11	9	8	7	7
Slovakia						21	19	19	18	16	14	16	18	15
Slovenia							13	13	16	16	16	16	15	15
Spain	38	38	38	38	37	39	39	39	38	38	36	34	33	32
Sweden	19	20	19	19	19	18	18	18	19	20	20	21	21	22
UK	38	40	37	37	37	39	40	40	43	44	43	44	44	44
EU-27								34	34	33	34	32	32	32
EU-15	40	41	40	39	38	38	38	37	38	38	37	36	35	36
EU-12								19	18	17	19	17	18	18

METAL PACKAGING

According to EUROSTAT data, the tonnage of metal packaging placed on the market in EU-15 fell by 10.9% between 1998 and 2011, an average annual reduction of 0.9%.

It is not possible to tell from the data how far this was due to lightweighting and how far to changes in demand.

The tonnage of metal packaging placed on the market in EU-12 rose by 3.3% between 2005 and 2011, an average annual increase of 1.2%.

Table 7: Metal packaging placed on the market (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	85	85	85	70	52	62	61	61	64	58	60	56	62	63
Belgium	137	125	140	138	138	141	137	136	136	136	132	121	127	128
Bulgaria								26	24	12	18	13	16	13
Cyprus							13	13	5	6	6	6	7	5
Czech Rep.					68	47	52	46	47	50	50	46	50	51
Denmark	55	45	52	43	41	42	45	40	41	35	34	34	34	43
Estonia							12	11	11	12	9	10	12	30
Finland	33	37	39	41	41	42	42	45	45	47	51	46	52	54
France	681	704	733	739	734	688	711	685	669	673	718	670	595	593
Germany	1 109	1 110	1 129	1 127	1 091	950	904	898	887	853	912	810	833	881
Greece	72	76	94	106	116	119	122	128	146	145	145	132	127	119
Hungary					95		85	63	61	67	77	87	55	60
Ireland	39	50	49	78	74	75	72	74	67	83	68	53	49	57
Italy	773	526	659	627	625	640	674	634	633	635	604	519	568	555
Latvia							13	14	20	17	12	9	11	11
Lichtenstein									0	0	0	0	0	0
Lithuania							12	13	12	14	14	11	12	13
Luxembourg	5	5	6	6	7	4	2	4	6	6	6	5	5	5
Malta							4	4	4	5	4	4	4	4
Netherlands	236	217	220	211	222	219	213	211	187	180	182	172	178	193
Norway									13	14	25	21	21	24
Poland							168	193	221	154	249	207	244	247
Portugal	76	76	79	80	103	105	106	106	110	113	110	100	95	93
Romania								103	73	76	76	63	55	55
Slovakia						22	11	17	14	17	20	26	37	27
Slovenia							14	13	18	18	18	16	15	15
Spain	360	400	416	427	483	492	460	469	477	480	467	442	436	426
Sweden	75	69	67	68	69	66	71	73	68	70	66	64	60	61
UK	844	892	860	870	818	813	833	828	825	823	821	824	800	810
EU-27								4 905	4 871	4 785	4 928	4 544	4 540	4 612
EU-15	4 580	4 417	4 628	4 631	4 614	4 459	4 452	4 391	4 360	4 337	4 374	4 048	4 022	4 080
EU-12								515	511	448	554	496	518	532

According to EUROSTAT data, per capita consumption of metal packaging in EU-15 fell by 16.4% between 1998 and 2011, an average annual reduction of 1.3%.

Per capita consumption in EU-12 rose by 3.9% between 2005 and 2011, an average annual increase of 1.3%.

Table 8: Per capita consumption of metal packaging (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	11	11	11	9	6	8	7	7	8	7	7	7	7	7
Belgium	13	12	14	13	13	14	13	13	13	13	12	11	12	12
Bulgaria								3	3	2	2	2	2	2
Cyprus							18	17	7	7	7	7	9	6
Czech Rep.					7	5	5	5	5	5	5	4	5	5
Denmark	10	8	10	8	8	8	8	7	8	6	6	6	6	8
Estonia							9	8	8	9	7	7	9	22
Finland	6	7	8	8	8	8	8	9	9	9	10	9	10	10
France	11	12	12	12	12	11	11	11	11	11	11	10	9	9
Germany	14	14	14	14	13	12	11	11	11	10	11	10	10	11
Greece	7	7	9	10	11	11	11	12	13	13	13	12	11	11
Hungary					9		8	6	6	7	8	9	5	6
Ireland	11	13	13	20	19	19	18	18	16	19	15	12	11	13
Italy	14	9	12	11	11	11	12	11	11	11	10	9	9	9
Latvia							6	6	9	7	5	4	5	5
Lichtenstein									7	7	7	7	7	7
Lithuania							3	4	4	4	4	3	3	4
Luxembourg	13	13	13	13	16	9	4	8	12	13	12	11	10	9
Malta							10	10	10	12	10	9	8	10
Netherlands	15	14	14	13	14	14	13	13	11	11	11	10	11	12
Norway									3	3	5	4	4	5
Poland							4	5	6	4	7	5	6	6
Portugal	8	7	8	8	10	10	10	10	10	11	10	9	9	9
Romania								5	3	4	4	3	3	3
Slovakia						4	2	3	3	3	4	5	7	5
Slovenia							7	7	9	9	9	8	7	7
Spain	9	10	10	11	12	12	11	11	11	11	10	10	9	9
Sweden	8	8	8	8	8	7	8	8	8	8	7	7	6	6
UK	14	15	15	15	14	14	14	14	14	14	13	13	13	13
EU-27								10	10	10	10	9	9	9
EU-15	12	12	12	12	12	12	12	11	11	11	11	10	10	10
EU-12								5	5	4	5	5	5	5

PLASTIC PACKAGING

According to EUROSTAT data, the tonnage of plastic packaging placed on the market in EU-15 rose by 32.3% between 1998 and 2011, an average annual increase of 2.2%.

The tonnage of plastic packaging placed on the market in EU-12 rose by 8.8% between 2005 and 2011, also an average annual increase of 2.2%.

Table 9: Plastic packaging placed on the market (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	190	200	210	205	200	217	225	225	238	245	252	256	265	264
Belgium	218	222	244	240	258	278	281	290	302	309	302	304	316	316
Bulgaria								106	89	102	78	95	82	95
Cyprus							33	34	13	15	17	16	16	15
Czech Rep.					184	173	177	207	204	217	216	209	210	209
Denmark	172	173	157	150	157	155	174	183	191	192	165	165	165	188
Estonia							29	32	36	37	72	53	51	52
Finland	90	92	87	87	87	89	90	100	97	99	115	112	116	117
France	1 628	1 699	1 780	1 788	1 867	1 951	1 980	2 007	2 064	2 114	2 047	1 877	2 002	2 032
Germany	1 611	1 641	1 791	1 890	2 073	2 071	2 255	2 368	2 591	2 644	2 732	2 621	2 690	2 776
Greece	223	245	260	270	285	300	305	262	300	295	240	237	222	208
Hungary					160		165	188	199	218	215	229	274	209
Ireland	169	171	171	174	177	224	212	218	264	238	248	224	188	159
Italy	1 800	1 838	1 900	1 950	1 951	2 000	2 054	2 099	2 202	2 270	2 205	2 092	2 071	2 075
Latvia							36	36	40	39	38	31	35	36
Lichtenstein									1	1	1	1	1	1
Lithuania							51	51	57	64	64	54	57	60
Luxembourg	9	9	10	10	10	18	22	22	22	25	22	21	22	24
Malta							6	6	7	9	14	13	12	11
Netherlands	500	479	458	486	530	539	549	592	445	466	442	428	454	444
Norway									132	141	141	147	147	152
Poland							663	633	690	516	670	666	733	784
Portugal	259	268	286	303	325	330	345	356	377	378	388	378	361	357
Romania								332	355	375	333	294	281	279
Slovakia						67	50	90	60	75	81	91	106	107
Slovenia							32	34	47	46	48	47	45	45
Spain	1 147	1 111	1 193	1 317	1 319	1 407	1 463	1 565	1 615	1 679	1 585	1 443	1 398	1 355
Sweden	140	147	148	159	167	165	171	176	186	191	193	192	198	212
UK	1 700	1 799	1 600	1 679	1 740	1 792	1 846	1 901	2 080	2 121	2 185	2 442	2 479	2 516
EU-27								14 114	14 772	14 980	14 966	14 590	14 847	14 945
EU-15	9 857	10 093	10 295	10 708	11 147	11 536	11 972	12 364	12 974	13 265	13 120	12 791	12 945	13 042
EU-12								1 749	1 798	1 714	1 846	1 799	1 902	1 903

According to EUROSTAT data, per capita consumption of plastic packaging in EU-15 rose by 24.3% between 1998 and 2011, an average annual increase of 1.7%.

Per capita consumption in EU-12 rose by 9.4% between 2005 and 2011, an average annual increase of 1.6%.

Table 10: Per capita consumption of plastic packaging (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	24	25	26	25	25	27	28	27	29	30	30	31	32	31
Belgium	21	22	24	23	25	27	27	28	29	29	28	28	29	29
Bulgaria								14	12	13	10	13	11	13
Cyprus							45	46	17	19	21	20	19	18
Czech Rep.					18	17	17	20	20	21	21	20	20	20
Denmark	33	32	29	28	29	29	32	34	35	35	30	30	30	34
Estonia							21	23	27	28	54	39	38	39
Finland	18	18	17	17	17	17	17	19	18	19	22	21	22	22
France	27	28	29	29	30	32	32	32	33	33	32	29	31	31
Germany	20	20	22	23	25	25	27	29	31	32	33	32	33	34
Greece	21	23	24	25	26	27	28	24	27	26	21	21	20	18
Hungary					16		16	19	20	22	21	23	27	21
Ireland	46	46	45	45	45	57	53	53	63	55	56	50	42	35
Italy	32	32	33	34	34	35	35	36	37	38	37	35	34	34
Latvia							16	16	18	17	17	14	16	17
Lichtenstein									19	19	19	19	19	19
Lithuania							15	15	17	19	19	16	17	20
Luxembourg	22	22	22	22	22	40	49	48	47	53	45	42	44	46
Malta							16	16	16	22	35	32	29	27
Netherlands	32	30	29	30	33	33	34	36	27	28	27	26	27	27
Norway									28	30	30	31	30	31
Poland							17	17	18	14	18	17	19	20
Portugal	26	26	28	30	31	32	33	34	36	36	37	36	34	34
Romania								15	16	17	15	14	13	13
Slovakia						12	9	17	11	14	15	17	19	20
Slovenia							16	17	24	23	24	23	22	22
Spain	29	28	30	33	32	34	35	36	37	38	35	31	30	29
Sweden	16	17	17	18	19	18	19	19	21	21	21	21	21	23
UK	29	31	27	28	29	30	31	32	34	35	36	40	40	40
EU-27								29	30	30	30	29	30	30
EU-15	26	27	27	28	29	30	31	32	33	34	33	32	33	33
EU-12								17	17	17	18	17	18	18

PAPER & BOARD PACKAGING

According to EUROSTAT data, the tonnage of paper & board packaging placed on the market in EU-15 rose by 14.2% between 1998 and 2011, an average annual increase of 1.1%.

The tonnage of paper & board packaging placed on the market in EU-12 has fluctuated greatly, but the outcome was an increase of 10.6% between 2005 and 2011.

Table 11: Paper & board packaging placed on the market (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	510	520	535	494	500	539	490	495	523	517	504	481	505	502
Belgium	540	592	516	521	569	593	614	637	635	640	643	628	648	656
Bulgaria								149	127	107	87	97	139	110
Cyprus							53	39	20	25	27	25	25	25
Czech Rep.					339	287	311	306	335	358	374	338	353	375
Denmark	435	470	475	488	502	495	497	516	528	519	509	381	381	397
Estonia							54	59	64	69	69	57	54	60
Finland	246	256	257	267	255	269	245	248	262	265	256	242	252	255
France	4 123	4 311	4 472	4 327	4 234	4 210	4 257	4 295	4 419	4 472	4 284	4 379	4 673	4 882
Germany	5 677	5 939	6 110	6 275	6 607	6 789	6 947	6 896	7 104	7 148	6 940	6 634	7 196	7 347
Greece	340	356	356	374	365	370	376	400	400	400	440	430	393	379
Hungary					370		393	296	304	348	348	321	146	277
Ireland	300	297	374	366	375	269	311	326	399	409	406	370	326	334
Italy	4 023	4 105	4 167	4 160	4 218	4 208	4 333	4 315	4 400	4 619	4 501	4 092	4 338	4 436
Latvia							64	67	82	115	83	58	64	64
Lichtenstein									2	2	2	2	2	2
Lithuania							70	73	86	102	103	82	82	89
Luxembourg	28	29	29	30	29	28	29	32	32	30	37	31	30	33
Malta							15	15	16	18	16	17	17	22
Netherlands	1 336	1 402	1 311	1 377	1 451	1 483	1 460	1 465	1 055	1 080	1 079	1 027	1 163	1 144
Norway									282	283	313	307	310	314
Poland							1 182	1 253	1 421	959	1 237	1 193	1 323	1 420
Portugal	478	485	482	487	507	515	520	525	762	697	718	711	704	687
Romania								270	412	387	352	272	266	293
Slovakia						199	200	124	110	119	130	151	152	178
Slovenia							52	56	70	76	80	82	81	82
Spain	2 598	2 599	2 847	2 649	3 049	3 119	3 126	3 133	3 296	3 625	3 547	3 280	3 461	3 411
Sweden	570	582	594	612	623	632	641	645	676	686	651	647	496	504
UK	4 000	3 786	3 855	3 855	3 726	3 726	3 726	3 726	3 763	3 801	3 839	3 758	3 788	3 818
EU-27								30 363	31 303	31 591	31 262	29 786	31 057	31 780
EU-15	25 204	25 728	26 381	26 281	27 010	27 244	27 572	27 654	28 254	28 909	28 353	27 091	28 352	28 785
EU-12								2 708	3 049	2 683	2 909	2 695	2 705	2 994

According to EUROSTAT data, per capita consumption of paper & board packaging in EU-15 rose by 7.2% between 1998 and 2011, an average annual increase of 0.6%.

Per capita consumption in EU-12 rose by 11.2% between 2005 and 2011, an average annual increase of 2.2%.

Table 12: Per capita consumption of paper & board packaging (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	64	65	67	62	62	67	60	60	63	62	61	58	60	60
Belgium	53	58	50	51	55	57	59	61	60	60	60	58	60	60
Bulgaria								19	16	14	11	13	18	15
Cyprus							73	52	26	33	35	32	31	30
Czech Rep.					33	28	30	30	33	35	36	32	34	36
Denmark	82	88	89	91	94	92	92	95	97	95	93	69	69	71
Estonia							40	44	47	51	51	43	40	45
Finland	48	50	50	52	49	52	47	47	50	50	48	45	47	47
France	69	72	74	71	69	68	68	68	70	70	67	68	72	75
Germany	69	72	74	76	80	82	84	84	86	87	84	81	88	90
Greece	31	33	33	34	33	34	34	36	36	36	39	38	35	33
Hungary					36		39	29	30	35	35	32	15	28
Ireland	81	80	99	96	96	68	77	79	95	95	92	83	73	73
Italy	71	72	73	73	74	73	75	74	75	78	75	68	72	73
Latvia							28	29	36	50	37	26	28	31
Lichtenstein									62	64	63	67	60	59
Lithuania							20	21	25	30	31	24	25	29
Luxembourg	67	67	67	67	66	63	65	69	68	63	77	63	60	64
Malta							37	38	39	44	40	40	40	53
Netherlands	85	89	83	86	90	92	90	90	65	66	66	62	70	69
Norway									61	60	66	64	64	64
Poland							31	33	37	25	32	31	35	37
Portugal	47	48	47	47	49	49	50	50	72	66	68	67	66	65
Romania								12	19	18	16	13	12	14
Slovakia						37	37	23	20	22	24	28	28	33
Slovenia							26	28	35	38	40	41	40	40
Spain	66	65	71	65	74	75	74	73	75	82	78	72	75	74
Sweden	64	66	67	69	70	71	71	72	75	75	71	70	53	54
UK	68	65	66	65	63	63	62	62	62	63	63	61	61	61
EU-27								62	63	64	63	60	62	63
EU-15	67	68	70	69	71	71	72	71	72	74	72	68	71	72
EU-12								26	29	26	28	26	26	29

WOOD PACKAGING

According to EUROSTAT data, the tonnage of wood packaging placed on the market in EU-15 fell by 5.5% between 2003 and 2011, an average annual reduction of 1.1%.

On the other hand, the tonnage of wood packaging placed on the market in EU-12 was reported to have increased by 63.8% between 2005 and 2011, an average annual increase of 9.3%.

Table 13: Wood packaging placed on the market (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	60	60	70	70	62	61	63	69	77	68	65	62	89	91
Belgium	142	158	212	158	166	176	187	192	191	201	197	180	196	202
Bulgaria								68	68	24	7	19	19	21
Cyprus							21	8	7	9	10	8	7	7
Czech Rep.					65	47	64	68	99	114	106	86	105	95
Denmark						108	94	121	106	108	88	36	36	96
Estonia							7	9	12	12	7	5	9	14
Finland						153	204	206	206	214	217	194	223	216
France	1 696	1 901	2 110	2 113	2 068	2 240	2 295	2 218	2 306	2 388	2 642	2 474	2 413	2 418
Germany	1 968	2 155	2 356	2 368	2 382	2 508	2 319	2 408	2 633	2 620	2 571	2 110	2 550	2 791
Greece			45	45	44	45	52	54	60	60	65	54	51	43
Hungary							0	178	181	188	223	175	70	182
Ireland						100	111	121	113	107	111	110	101	76
Italy	2 050	2 404	2 479	2 532	2 603	2 570	2 787	2 788	2 852	2 860	2 720	2 094	2 281	2 306
Latvia							57	68	98	83	63	44	52	53
Lichtenstein									1	1	1	1	1	1
Lithuania							29	47	47	64	59	45	54	60
Luxembourg						7	9	9	9	10	9	8	9	10
Malta							5	5	5	4	3	3	3	5
Netherlands			420	398	398	609	440	533	548	515	532	394	416	442
Norway											160	160	174	159
Poland							480	480	480	727	1 007	877	1 037	1 081
Portugal		68	49	49		83	91	125	87	117	138	110	106	55
Romania								137	181	213	216	188	212	226
Slovakia						10	10	16	18	22	18	39	41	51
Slovenia							29	32	36	38	36	29	30	33
Spain	690	598	636			717	748	942	946	944	773	691	577	482
Sweden						393	423	440	302	301	300	307	301	301
UK	1 300	340	670	670	1 398	1 404	1 404	1 404	1 180	1 192	1 227	1 056	1 024	1 024
EU-27								12 743	12 848	13 204	13 410	11 397	12 010	12 381
EU-15						11 174	11 228	11 628	11 616	11 705	11 654	9 879	10 372	10 554
EU-12								1 115	1 232	1 499	1 756	1 518	1 638	1 827

According to EUROSTAT data, per capita consumption of wood packaging in EU-15 fell by 9.5% between 2003 and 2011, an average annual reduction of 1.1%.

However, per capita consumption in EU-12 was reported to have increased by 64.7% between 2005 and 2011, an average annual increase of 9.3%.

Table 14: Per capita consumption of wood packaging (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	8	8	9	9	8	8	8	8	9	8	8	7	11	11
Belgium	14	15	21	15	16	17	18	18	18	19	18	17	18	18
Bulgaria								9	9	3	1	2	2	3
Cyprus							29	11	9	12	13	9	9	9
Czech Rep.					6	5	6	7	10	11	10	8	10	9
Denmark						20	17	22	20	20	16	7	7	17
Estonia							5	7	9	9	5	3	6	10
Finland						29	39	39	39	41	41	36	42	40
France	28	32	35	35	34	36	37	35	36	38	41	38	37	37
Germany	24	26	29	29	29	30	28	29	32	32	31	26	31	34
Greece			4	4	4	4	5	5	5	5	6	5	4	4
Hungary							0	18	18	19	22	17	7	18
Ireland						25	28	29	27	25	25	25	23	17
Italy	36	42	44	44	46	45	48	48	49	48	46	35	38	38
Latvia							25	29	43	37	28	20	23	26
Lichtenstein									23	28	29	25	30	21
Lithuania							8	14	14	19	18	13	16	20
Luxembourg						15	21	19	20	20	18	16	18	20
Malta							13	13	13	9	8	7	8	11
Netherlands			26	25	25	38	27	33	34	31	32	24	25	27
Norway											34	33	36	32
Poland							13	13	13	19	26	23	27	28
Portugal		7	5	5		8	9	12	8	11	13	10	10	5
Romania								6	8	10	10	9	10	11
Slovakia						2	2	3	3	4	3	7	8	9
Slovenia							14	16	18	19	18	14	15	16
Spain	17	15	16			17	18	22	22	21	17	15	13	10
Sweden						44	47	49	33	33	33	33	32	32
UK	22	6	11	11	24	24	24	23	20	20	20	17	17	16
EU-27								26	26	27	27	23	24	25
EU-15						8	8	8	9	8	8	7	11	26
EU-12								11	12	15	17	15	16	18

PACKAGING WASTE GOING TO FINAL DISPOSAL

One of the principal aims of the Packaging and Packaging Waste Directive is to reduce the amount of packaging disposed of as waste. The official data should be treated with caution, as Member States have refined their estimation methodologies in the light of experience and so the returns are not necessarily comparable from year to year.

Nevertheless, the official record shows that the amount of non-wood packaging sent for final disposal in EU-15 fell by 54.0% between 1998 and 2011, an average annual reduction of 5.8%.

The amount of non-wood packaging reported to have been sent for final disposal in EU-12 fell by 30.7% between 2005 and 2011, an average annual reduction of 5.3%.

Table 15: Packaging sent for final disposal, excluding wood (in '000 tonnes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	300	280	233	253	235	226	162	129	110	96	86	78	86	77
Belgium	323	345	314	161	141	25	119	121	91	80	85	79	76	52
Bulgaria								293	172	119	146	155	114	96
Cyprus							93	103	42	51	49	40	33	30
Czech Rep.					534	255	238	238	206	214	183	165	142	171
Denmark	96	70	75	85	55	42	29	23	6	-19	-9	-42	-42	36
Estonia							79	76	74	74	117	66	60	62
Finland	189	177	177	173	174	178	163	172	114	91	69	72	71	67
France	3 985	3 859	3 940	3 644	3 243	2 992	3 012	2 829	2 780	2 571	2 491	2 139	1 977	2 095
Germany	2 088	2 214	2 274	2 230	2 522	1 537	1 657	1 581	1 402	824	763	711	605	396
Greece	520	568	589	615	636	643	623	593	579	531	545	446	358	311
Hungary					492		440	266	292	290	264	307	293	194
Ireland	582	581	645	599	554	398	368	377	437	383	362	292	226	181
Italy	6 017	5 549	4 806	4 375	3 925	3 774	3 403	3 070	3 124	3 023	2 614	2 002	2 014	2 074
Latvia							111	97	119	133	90	65	69	67
Lichtenstein									0	0	0	0	1	1
Lithuania							129	132	141	151	126	84	79	79
Luxembourg	37	45	33	24	33	12	8	11	8	8	6	8	10	8
Malta								34	35	40	23	29	29	25
Netherlands	399	382	341	931	950	269	220	239	181	149	126	77	84	128
Norway									54	51	57	80	55	39
Poland							1 936	2 027	1 861	1 094	1 561	1 524	1 543	1 740
Portugal	668	740	643	612	648	652	717	695	747	668	562	555	613	569
Romania								739	684	643	538	404	354	329
Slovakia						219	204	191	167	86	148	113	194	120
Slovenia							76	67	87	76	68	78	52	42
Spain	3 296	3 164	3 224	2 992	3 197	3 396	3 083	2 918	2 726	2 880	2 523	2 219	2 063	1 817
Sweden	174	262	336	347	335	153	271	273	271	266	285	326	294	256
UK	5 775	5 211	4 639	4 756	4 307	4 109	3 939	3 405	3 650	3 587	3 411	3 344	3 283	3 172
EU-27								20 699	20 105	18 109	17 233	15 339	14 681	14 193
EU-15	24 450	23 446	22 267	21 797	20 955	18 405	17 775	16 435	16 227	15 140	13 919	12 307	11 718	11 238
EU-12								4 264	3 878	2 970	3 314	3 031	2 963	2 955

In EU-27 just under 18.7 million tonnes of packaging (including wood) went for final disposal in 2010. To put this into context,

- it was estimated in 2010 that about 89 million tonnes of food was being wasted per year in EU-27;¹⁵
- 1,060 million tonnes of all kinds of waste was sent for final disposal in EU-27 in 2010.¹⁶

Thus packaging constituted just 1.7% of the total amount of waste sent for final disposal in EU-27 in 2010.

15 Source: European Commission, *Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Thematic Strategy on the Prevention and Recycling of Waste*, COM(2011) 13 final, 19 January 2011.

16 Source: EUROSTAT, Waste statistics, <http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/database>.

Most Member States are showing a downward trend in non-wood packaging tonnages going to final disposal. Eight reported an increase in 2011 over 2010, but in some cases this may have been due to statistical distortions.

Table 16: Tonnages of non-wood packaging sent for final disposal – the downward trend

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
EU-15	-4.1%	-5.0%	-2.1%	-3.9%	-12.2%	-3.4%	-7.5%	-1.3%	-6.7%	-8.1%	-11.6%	-4.8%	-4.1%
EU-12								-9.1%	-23.4%	11.6%	-8.5%	-2.2%	-0.3%

Table 17: Non-wood packaging sent for final disposal (in kg per capita)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	38	35	29	32	29	28	20	16	13	12	10	9	10	9
Belgium	32	34	31	16	14	2	11	12	9	8	8	7	7	5
Bulgaria								38	22	15	19	20	15	13
Cyprus							127	138	55	66	62	50	41	35
Czech Rep.						25	23	23	20	21	18	16	14	16
Denmark	18	13	14	16	10	8	5	4	1	-3	-2	-8	-8	6
Estonia							59	57	55	55	87	49	45	46
Finland	37	34	34	33	34	34	31	33	22	17	13	13	13	12
France	66	64	65	60	53	48	48	45	44	40	39	33	31	32
Germany	25	27	28	27	31	19	20	19	17	10	9	9	7	5
Greece	48	52	54	56	58	58	56	54	52	48	49	40	32	27
Hungary							43	26	29	29	26	31	29	19
Ireland	157	156	171	156	142	100	91	92	104	89	82	66	51	40
Italy	106	98	84	77	69	66	59	53	53	51	44	33	33	34
Latvia							48	42	52	58	40	29	31	32
Lichtenstein									0	0	0	0	14	14
Lithuania							38	39	41	45	37	25	24	26
Luxembourg	89	104	75	56	74	26	17	24	17	18	13	17	20	15
Malta							0	84	85	97	57	70	71	60
Netherlands	25	24	21	58	59	17	14	15	11	9	8	5	5	8
Norway									12	11	12	14	9	8
Poland							51	53	49	29	41	40	40	45
Portugal	66	73	63	60	63	63	68	66	71	63	53	52	58	54
Romania								34	32	30	25	19	16	15
Slovakia						41	38	35	31	16	27	21	36	22
Slovenia							38	34	43	38	34	38	26	20
Spain	83	79	80	74	78	81	73	68	62	65	56	48	45	39
Sweden	20	30	38	39	38	17	30	30	30	29	31	35	31	27
UK	99	89	79	81	73	69	66	57	60	59	56	54	53	51
EU-27								42	41	37	35	31	29	28
EU-15	65	62	59	58	55	48	46	42	42	39	35	31	29	28
EU-12								41	37	29	32	29	29	29

Between 1998 and 2011, the population of EU-15 grew by 6.5%, from 375.1 million to 399.4 million. The amount of non-wood packaging consumed per capita grew by 3.0%, from 147 kg to 151 kg. However, the amount of non-wood packaging disposed of fell by 56.8%, from 65 kg to 28 kg per capita.

In the newer Member States, lower consumption of packaging is countered by lower recovery rates. Nevertheless, there was a 30.3% per capita reduction in the amount of non-wood packaging waste sent for final disposal between 2005 and 2011 in EU-12, despite rising prosperity.

RECYCLING RATES AND TRENDS

The deadlines to meet the EU's 55%-80% recycling target are

- 2008 for Austria, Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland and Portugal;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Malta and Romania;
- 2014 for Bulgaria and Poland; and
- 2015 for Latvia.

Table 18: Overall recycling rates as reported to the European Commission

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	65%	66%	69%	64%	66%	64%	66%	67%	68%	67%	68%	67%	67%	66%
Belgium	64%	59%	63%	71%	70%	74%	76%	77%	79%	80%	79%	79%	80%	80%
Bulgaria								31%	35%	55%	50%	46%	62%	65%
Cyprus							22%	11%	25%	26%	34%	42%	50%	52%
Czech Rep.					29%	51%	56%	59%	63%	66%	67%	69%	70%	70%
Denmark	50%	53%	56%	57%	57%	54%	53%	53%	56%	57%	60%	84%	84%	54%
Estonia							33%	40%	46%	50%	44%	57%	56%	63%
Finland	45%	49%	50%	47%	49%	41%	40%	43%	49%	52%	57%	56%	55%	59%
France	42%	42%	42%	44%	45%	48%	51%	53%	55%	57%	55%	56%	61%	61%
Germany	80%	79%	78%	76%	74%	71%	70%	68%	67%	67%	71%	74%	73%	72%
Greece	35%	34%	33%	33%	33%	33%	37%	42%	43%	48%	44%	52%	59%	62%
Hungary					35%		43%	46%	49%	46%	51%	51%	52%	59%
Ireland	15%	17%	19%	27%	35%	51%	56%	56%	55%	61%	62%	65%	66%	71%
Italy	32%	34%	38%	46%	51%	51%	53%	54%	55%	57%	60%	64%	64%	65%
Latvia							46%	47%	42%	40%	47%	45%	49%	51%
Lichtenstein									49%	49%	47%	50%	46%	49%
Lithuania							33%	32%	37%	43%	52%	58%	60%	62%
Luxembourg	42%	40%	45%	57%	57%	60%	61%	63%	64%	63%	64%	61%	66%	68%
Malta							6%	8%	11%	10%	46%	36%	29%	42%
Netherlands	62%	64%	59%	56%	57%	56%	58%	59%	70%	70%	72%	75%	74%	72%
Norway									70%	68%	55%	53%	57%	58%
Poland							28%	29%	37%	48%	43%	37%	39%	41%
Portugal	35%	35%	31%	38%	36%	38%	41%	44%	51%	57%	61%	60%	56%	58%
Romania								23%	29%	31%	34%	41%	43%	50%
Slovakia						36%	38%	30%	36%	61%	48%	60%	46%	62%
Slovenia							34%	45%	40%	47%	52%	50%	61%	64%
Spain	34%	38%	40%	44%	44%	43%	47%	50%	54%	56%	59%	60%	62%	64%
Sweden	75%	65%	58%	63%	65%	60%	50%	48%	58%	59%	59%	59%	54%	57%
UK	28%	35%	40%	42%	44%	47%	50%	54%	58%	59%	62%	62%	61%	61%
EU-27								55%	57%	59%	61%	63%	63%	64%
EU-15	47%	50%	51%	53%	54%	54%	56%	57%	59%	61%	62%	65%	65%	65%
EU-12								34%	40%	47%	46%	45%	47%	51%

The second-stage target of minimum 55% recycling applied to twelve EU Member States from 2008, and to three others in 2011. All met this target in 2011 except Denmark, which adopted a new calculation methodology which resulted in a fall of 30 percentage points in its reported recycling rate. Denmark reports that it was just 0.7% short of the 55% target in 2011.

There has been a considerable convergence in recycling rates. The five leading recycling member states in 1998 – Germany, Sweden, Austria, Belgium and the Netherlands – reported an average recycling rate of 69%;¹⁷ those five countries reported the same average of 69% in 2011 (though there have been major changes in the Swedish and Dutch data-gathering methodologies over that time). Over the same period, the average recycling rate reported by the six weakest performers in 1998 – Ireland, the UK, Italy, Spain, Greece and Portugal – rose from 30% to 64%

The strongest growth has been shown by Ireland, which almost quintupled its recycling rate from 15% to 71%, and the UK, which more than doubled it from 28% to 61%. On the other hand, Sweden reported a decline from 75% to 57%, and Germany from 80% to 72%.

Germany's reported recycling rate was in steady decline until 2006. The data suggest that the downward trend in Germany has been reversed

¹⁷ In this case, and elsewhere in this chapter where the comment relates to "the average reported", the percentage is the arithmetical average reported by the Member States concerned, and is not weighted according to each country's population or tonnage.

since then, but this may well be the result of under-reporting of packaging placed on the market. This has been a concern to the German authorities, who are planning to improve compliance procedures through legislation implementing the EU Waste Framework Directive.¹⁸ If tonnage placed on the market is under-reported but the tonnage recovered and recycled is correctly reported, the recycling rate will be artificially inflated.

The new Member States have benefited from experience in Western Europe and most of them have already reported strong results. Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia were already recycling more than 55% of their packaging by 2011, and the Czech Republic, whose recycling system was set up as early as 1997, is reporting the fifth highest overall recycling rate in EU-27.

The percentages summarised in Table 18 are those relevant to assessing achievement of the overall recycling targets in the Packaging and Packaging Waste Directive, but the data in Table 19, which excludes wood, is a more reliable guide to recycling achievement.

In 1998, Germany, Sweden, Austria, Belgium and the Netherlands were still the highest recyclers, with an average reported rate of 70%, and by 2011 this had risen to 76%. Over the same period, the average non-wood recycling rate reported by the six weakest performers in 1998 – Ireland, the UK, Italy, Spain, Greece and Portugal – rose from 29% to 64%.

Again, the strongest growth has been shown by Ireland, which quadrupled its non-wood recycling rate from 15% to 69%, with Italy (29% to 67%) in second place and the UK third (30% to 61%). If wood is excluded, the decline in Sweden's and Germany's overall reported recycling rates are much smaller, from 75% to 69% and from 83% to 80% respectively.

Only two of the EU-12 Member States reported a non-wood recycling rate of less than 55% for 2011 – Malta and Poland (both 46%). The Czech Republic was in fifth place in the EU as a whole. The overall non-wood recycling rate reported by the EU-12 countries rose from 37% in 2006 to 56% in 2011.

Table 19: Overall recycling rates, excluding wood

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	68%	68%	73%	68%	69%	67%	69%	70%	72%	70%	71%	69%	69%	69%
Belgium	65%	62%	67%	73%	72%	76%	78%	78%	81%	82%	82%	82%	82%	82%
Bulgaria								35%	43%	60%	51%	46%	62%	67%
Cyprus							25%	11%	26%	26%	37%	45%	54%	57%
Czech Rep.					31%	54%	60%	63%	69%	70%	72%	73%	74%	74%
Denmark	50%	53%	56%	57%	57%	57%	56%	56%	59%	60%	62%	84%	84%	57%
Estonia							35%	40%	48%	50%	43%	56%	56%	62%
Finland	45%	49%	50%	47%	49%	52%	55%	59%	67%	71%	73%	70%	73%	77%
France	46%	47%	47%	49%	51%	54%	58%	60%	62%	65%	65%	67%	71%	70%
Germany	83%	82%	82%	82%	80%	77%	76%	74%	73%	74%	78%	80%	81%	80%
Greece	35%	34%	34%	34%	33%	34%	37%	41%	42%	46%	45%	53%	59%	62%
Hungary					35%		43%	53%	56%	53%	59%	57%	52%	66%
Ireland	15%	17%	19%	27%	35%	45%	50%	52%	52%	59%	60%	63%	64%	69%
Italy	29%	33%	39%	43%	49%	49%	52%	55%	55%	58%	62%	65%	66%	67%
Latvia							37%	43%	42%	45%	52%	52%	55%	56%
Lichtenstein									63%	61%	61%	59%	56%	56%
Lithuania							37%	39%	41%	45%	53%	61%	64%	66%
Luxembourg	41%	39%	45%	57%	57%	62%	64%	64%	67%	66%	68%	66%	69%	72%
Malta							4%	7%	11%	11%	49%	38%	30%	46%
Netherlands	62%	64%	65%	60%	61%	62%	62%	63%	78%	78%	81%	82%	81%	80%
Norway									70%	68%	66%	66%	70%	71%
Poland							30%	31%	40%	48%	48%	41%	45%	46%
Portugal	35%	35%	32%	36%	36%	36%	39%	43%	50%	55%	61%	60%	55%	58%
Romania								26%	33%	35%	39%	47%	50%	55%
Slovakia						36%	38%	30%	38%	65%	50%	66%	50%	67%
Slovenia							40%	51%	48%	53%	61%	56%	69%	73%
Spain	37%	39%	41%	44%	44%	44%	48%	51%	55%	56%	59%	61%	62%	65%
Sweden	75%	65%	58%	63%	65%	77%	67%	67%	69%	71%	70%	70%	66%	69%
UK	30%	36%	40%	39%	42%	46%	49%	54%	56%	57%	60%	60%	59%	61%
EU-27								58%	60%	63%	65%	67%	68%	68%
EU-15	49%	51%	53%	54%	56%	57%	59%	61%	62%	64%	67%	69%	70%	70%
EU-12								37%	44%	50%	51%	51%	52%	56%

18 Directive 2008/98/EC on waste – the Waste Framework Directive – sets out the basic concepts and definitions related to waste management and lays down some basic waste management principles. Transposing it into national legislation has sometimes involved amendments to national packaging and packaging waste provisions.

RECOVERY RATES AND TRENDS

The deadlines to meet the EU's 60% recovery target are

- 2008 for Austria, Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland and Portugal;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Malta and Romania;
- 2014 for Bulgaria and Poland; and
- 2015 for Latvia.

Table 20: Overall recovery rates as reported to the European Commission

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	70%	72%	76%	73%	75%	77%	82%	85%	88%	90%	92%	93%	92%	94%
Belgium	73%	71%	71%	88%	91%	92%	93%	93%	95%	95%	95%	95%	96%	97%
Bulgaria								31%	35%	55%	50%	46%	62%	66%
Cyprus							22%	11%	25%	26%	34%	43%	50%	52%
Czech Rep.					29%	59%	63%	66%	69%	71%	74%	76%	78%	75%
Denmark	89%	92%	91%	90%	94%	89%	92%	90%	94%	97%	98%	108%	108%	91%
Estonia							34%	41%	50%	52%	45%	59%	62%	67%
Finland	55%	60%	60%	62%	61%	67%	68%	68%	77%	84%	90%	88%	85%	90%
France	56%	57%	57%	59%	62%	64%	61%	64%	64%	67%	65%	66%	70%	71%
Germany	81%	80%	81%	79%	78%	86%	86%	87%	88%	95%	95%	95%	96%	97%
Greece	35%	34%	33%	33%	33%	33%	37%	42%	43%	48%	44%	52%	59%	62%
Hungary					38%		46%	52%	51%	55%	57%	55%	56%	63%
Ireland	15%	17%	19%	27%	35%	51%	56%	59%	57%	64%	65%	70%	74%	79%
Italy	34%	37%	43%	51%	56%	58%	62%	65%	65%	67%	69%	74%	75%	74%
Latvia							47%	59%	46%	41%	52%	51%	53%	54%
Lichtenstein									100%	100%	100%	100%	91%	91%
Lithuania							33%	33%	38%	44%	52%	58%	61%	63%
Luxembourg	51%	43%	59%	70%	62%	87%	91%	88%	93%	92%	94%	91%	90%	93%
Malta							6%	8%	11%	10%	46%	37%	29%	45%
Netherlands	84%	85%	77%	59%	61%	91%	93%	92%	91%	94%	95%	97%	97%	95%
Norway									89%	90%	83%	79%	87%	88%
Poland							42%	41%	48%	60%	51%	50%	54%	56%
Portugal	35%	35%	45%	52%	50%	52%	48%	51%	56%	59%	66%	66%	61%	63%
Romania								25%	36%	37%	41%	47%	48%	54%
Slovakia						47%	44%	44%	39%	67%	50%	63%	47%	65%
Slovenia							43%	47%	47%	53%	58%	54%	66%	71%
Spain	37%	42%	44%	50%	50%	48%	53%	56%	61%	62%	65%	68%	70%	72%
Sweden	82%	73%	66%	66%	67%	89%	58%	56%	81%	82%	80%	77%	77%	80%
UK	33%	41%	45%	48%	50%	53%	56%	61%	62%	64%	66%	67%	67%	67%
EU-27								67%	69%	73%	73%	75%	76%	77%
EU-15	54%	56%	58%	60%	62%	67%	68%	70%	72%	75%	75%	77%	79%	80%
EU-12								42%	47%	55%	52%	54%	56%	60%

The second-stage recovery target of 60% applied to twelve EU-15 Member States from 2008, and to the other three in 2011. All met this target in 2011, with seven achieving a recovery rate of 90% or more.

There is very little municipal solid waste incineration capacity in the EU-12 Member States – ten have none at all. Nevertheless, Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia were already exceeding the 60% recovery target in 2011 although their deadlines were not until 2012 or later.

Table 21 shows the extent to which packaging is recovered by means other than material recycling:

Table 21: Overall rates for recovery other than material recycling, as reported to the European Commission

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	5%	6%	7%	9%	9%	13%	16%	18%	19%	23%	24%	26%	26%	28%
Belgium	9%	12%	8%	17%	20%	18%	16%	16%	15%	15%	16%	16%	16%	17%
Bulgaria								0%	0%	0%	0%	0%	0%	0%
Cyprus							0%	0%	0%	0%	0%	0%	0%	0%
Czech Rep.					0%	8%	7%	7%	5%	5%	7%	7%	8%	6%
Denmark	39%	39%	36%	33%	36%	35%	39%	38%	38%	40%	38%	24%	24%	36%
Estonia							1%	1%	5%	2%	1%	2%	5%	4%
Finland	11%	11%	10%	15%	12%	26%	28%	25%	28%	32%	33%	32%	30%	31%
France	14%	15%	15%	15%	17%	16%	11%	10%	9%	10%	10%	10%	9%	10%
Germany	2%	1%	3%	3%	4%	16%	17%	19%	23%	28%	24%	21%	23%	26%
Greece	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hungary					3%		3%	6%	2%	8%	6%	4%	4%	4%
Ireland	0%	0%	0%	0%	0%	0%	0%	3%	3%	3%	3%	5%	8%	8%
Italy	2%	3%	4%	5%	5%	7%	9%	11%	10%	10%	9%	10%	10%	9%
Latvia							1%	12%	4%	1%	5%	6%	4%	3%
Lichtenstein									49%	51%	51%	50%	45%	42%
Lithuania							0%	0%	1%	1%	1%	1%	1%	1%
Luxembourg	10%	4%	14%	13%	5%	26%	30%	25%	29%	29%	30%	30%	25%	25%
Malta							1%	1%	-1%	0%	0%	1%	1%	2%
Netherlands	22%	22%	19%	3%	3%	34%	34%	33%	21%	24%	23%	22%	23%	23%
Norway									19%	22%	28%	26%	30%	31%
Poland							14%	11%	11%	12%	8%	13%	15%	15%
Portugal	0%	0%	14%	14%	14%	14%	7%	7%	5%	3%	5%	6%	6%	4%
Romania								2%	7%	6%	7%	6%	5%	4%
Slovakia						11%	6%	14%	3%	6%	2%	3%	2%	3%
Slovenia							9%	2%	6%	6%	6%	4%	5%	7%
Spain	4%	4%	4%	6%	6%	5%	6%	6%	7%	6%	6%	8%	8%	8%
Sweden	7%	8%	8%	2%	3%	29%	8%	8%	23%	22%	21%	18%	22%	23%
UK	4%	5%	5%	6%	6%	6%	6%	6%	5%	4%	4%	5%	7%	6%
EU-27								12%	12%	13%	12%	12%	13%	14%
EU-15	6%	7%	7%	7%	8%	13%	12%	13%	13%	14%	13%	13%	13%	14%
EU-12								8%	7%	8%	6%	9%	10%	9%

A series of European Court of Justice rulings delivered on 13 February 2003 effectively redefined when the incineration of waste is considered as “recovery” rather than disposal. The Court’s criteria for determining whether waste management operations meet the definition of recovery, namely “use principally as a fuel or other means to generate energy”, are that the principal objective must be to produce energy; more energy is generated than is consumed and the surplus energy is put to effective use as energy or heat; and the majority of the waste must be consumed during the operation and the majority of the energy produced must be recuperated and used.

If waste had not been sorted before arriving at the incinerator, it was inferred that the principal intention was disposal rather than energy recovery. It would therefore not count as recovery for the purpose of measuring achievement of the recovery target. This would have upset the balance of the calculations on which the 2001 and 2008 recovery and recycling targets were based, and could have meant that some member states missed the 2001 targets. To avoid having to adjust the PPWD targets, the PPWD was amended so that the target applied not only to recovery as interpreted by the Court, but also to all other (unsorted) packaging incinerated in MSW incinerators with energy recovery. Amending Directive 2004/12/EC restored the *status quo* by replacing references to packaging “recovered” by references to packaging “recovered or incinerated at waste incineration plants with energy recovery.”

The extent to which energy recovery from municipal solid waste incinerators has featured in packaging waste management in Europe is shown in Table 22. The percentage of packaging waste recovered in this way is in slight decline as recycling rates increase:

Table 22: Packaging waste incinerated in MSW incinerators with energy recovery, as a percentage of packaging placed on the market

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	8%	9%	12%	13%	17%	17%	18%	19%	19%
Belgium	17%	16%	15%	15%	14%	15%	14%	14%	14%
Bulgaria									0%
Cyprus									0%
Czech Rep.	7%	6%	6%	5%	4%	6%	6%	7%	5%
Denmark	35%	39%	38%	38%	40%	38%	24%	24%	36%
Estonia									0%
Finland	2%	2%	23%				6%	30%	31%
France	13%	10%	10%	9%	8%	9%	9%	8%	8%
Germany	8%	8%	8%	10%	16%	13%	10%	12%	1%
Greece									0%
Hungary		3%	5%	2%	6%	6%	4%	3%	4%
Ireland									0%
Italy	6%	8%	9%	9%	9%	9%	10%	10%	9%
Latvia									0%
Lichtenstein				51%	52%	53%	50%	45%	42%
Lithuania									0%
Luxembourg	21%	23%	22%	23%	23%	23%	23%	18%	18%
Malta									0%
Netherlands	31%	31%	30%	18%	15%	10%	9%	12%	15%
Norway				14%	15%	22%	23%	26%	25%
Poland					1%		1%	1%	0%
Portugal	14%	7%	7%	4%	3%	5%	6%	6%	4%
Romania									0%
Slovakia	10%	6%	14%	2%					0%
Slovenia			1%	3%	1%			1%	0%
Spain	4%	5%	5%	6%	5%	5%	6%	7%	7%
Sweden	29%	8%	8%	23%	22%	21%		22%	23%
UK	6%	5%	5%	4%	4%	4%	5%	7%	6%
EU-27			9%	8%	9%	8%	8%	9%	7%
EU-15	10%	9%	9%	9%	10%	9%	8%	10%	7%
EU-12			2%	1%	1%	1%	1%	2%	1%

It is sometimes suggested that the establishment of incineration facilities for energy recovery diverts materials away from recycling. Possibly the best way to resolve this question is to examine recycling trends in the countries with the highest reliance on energy recovery, though of course the availability of energy recovery facilities is not the only determinant of recycling rates:

- Finland (31% recovery through MSW incinerators in 2011) – 25% of plastic packaging was reported to have been recycled in 2011, well below the overall EU-15 recycling rate of 34%; however, the paper and board packaging recycling rate was 97%, well above the overall EU-15 rate of 84%.
- Sweden (23% recovery through MSW incinerators in 2011) – the reported plastic packaging recycling rate was 34%, in line with the overall EU-15 recycling rate; the paper and board packaging recycling rate was 76%, well below the overall EU-15 rate of 84%.
- Austria (19% recovery through MSW incinerators in 2011) – the reported plastic packaging recycling rate was 35% and the paper and board recycling rate 85%, in both cases one percentage point higher than the overall EU-15 rate.
- The Netherlands (15% recovery through MSW incinerators in 2011) – the reported plastic packaging recycling rate was 51%, well above the overall EU-15 recycling rate of 34%; the paper and board recycling rate was 89%, well above the overall EU-15 rate of 84%.
- Denmark - The picture in Denmark is unclear, due to the recent change in methodology. In 2012 Denmark reported that recovery through MSW incinerators had declined from a peak of 40% in 2007 to 24% in 2010, but it has now reported that 36% was recovered in this way in 2011. This is in line with the trend prior to 2009. It was reported that only 22% of plastic packaging was recycled in 2011, well below the overall EU-15 recycling rate of 34%; the reported paper and board packaging recycling rate fell from 94% in 2010 to 64% in 2011, no doubt due to the new methodology: the 2011 recycling rate was also far below the overall 2010 EU-15 rate of 84%. However, the absence of any producer responsibility requirements for household packaging may be more significant for plastics recycling than Denmark's traditional reliance on energy recovery as a means of treating household waste.

Taking 2011 data for EU-27 plus Norway, here is another way of examining the question of whether or not energy recovery impedes recycling. None of the “new” Member States recovered more than 5% through MSW incineration. Conversely, the only EU-15 Member States to recover less than 5% through MSW incineration were Germany, Greece, Ireland and Portugal.

Table 23: Comparison of MSW incineration recovery and recycling rates, 2011

MSW incineration recovery rate	No. of countries	Average paper & board recycling	Average plastics recycling
16-30%	6	81%	31%
6-15%	6	85%	35%
1-5%	4	86%	36%
0%	12	79%	41%

Paper & board recycling	No. of countries	Average MSW incineration recovery rate
91-100%	6	7%
81-90%	9	10%
71-80%	11	5%
61-70%	2	18%
51-60%	3	0%

Plastics recycling	No. of countries	Average MSW incineration recovery rate
46-55%	6	1%
36-45%	10	7%
26-35%	7	10%
16-25%	6	14%

In principle, EUROPEAN acknowledges the benefits of EU measures to divert valuable material from landfills for recycling or energy recovery, provided that there is integrated waste management planning in Member States to ensure that appropriate waste treatment facilities and capacities are located where they are needed.

Energy recovery is a complementary option for those combustible materials that cannot be sustainably recycled, for example because the packaging has been too heavily contaminated by its residual contents. If landfill bans are imposed, energy recovery will attain greater significance in packaging waste management.

RECYCLING RATES BY MATERIAL

GLASS PACKAGING

The deadlines to meet the EU's 60% glass packaging recycling target are

- 2008 for Austria, Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland and Portugal;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Bulgaria, Malta and Romania;
- 2014 for Poland; and
- 2015 for Latvia.

Table 24: Glass packaging recycling rates

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	80%	77%	97%	82%	86%	83%	86%	79%	85%	86%	84%	85%	83%	83%
Belgium	66%	75%	80%	85%	93%	96%	98%	100%	100%	100%	100%	100%	100%	100%
Bulgaria								18%	77%	71%	47%	40%	51%	60%
Cyprus							4%	4%	8%	10%	18%	20%	25%	34%
Czech Rep.					42%	63%	69%	75%	71%	65%	70%	71%	73%	74%
Denmark	75%	85%	80%	76%	90%	95%	103%	100%	115%	128%	121%	174%	174%	86%
Estonia							64%	50%	49%	62%	46%	90%	43%	65%
Finland	64%	79%	66%	50%	50%	61%	55%	63%	74%	81%	80%	45%	61%	88%
France	45%	50%	50%	51%	52%	57%	59%	60%	60%	62%	63%	68%	70%	71%
Germany	85%	85%	85%	85%	86%	86%	82%	83%	82%	84%	82%	83%	86%	88%
Greece	21%	19%	24%	24%	24%	25%	35%	24%	25%	18%	15%	15%	21%	37%
Hungary					12%		15%	21%	21%	21%	28%	24%	35%	41%
Ireland	32%	32%	29%	39%	48%	56%	55%	64%	62%	76%	74%	76%	78%	81%
Italy	37%	40%	47%	48%	53%	53%	56%	57%	59%	60%	65%	66%	68%	69%
Latvia							25%	38%	32%	35%	53%	45%	48%	52%
Lichtenstein									63%	63%	63%	63%	62%	64%
Lithuania							35%	40%	31%	36%	50%	76%	67%	74%
Luxembourg	81%	73%	82%	91%	84%	90%	94%	92%	93%	92%	92%	93%	94%	96%
Malta							4%	8%	14%	17%	143%	9%	6%	17%
Netherlands	85%	80%	80%	78%	79%	76%	76%	78%	84%	86%	87%	92%	91%	83%
Norway									105%	99%	101%	86%	92%	87%
Poland							27%	27%	34%	40%	44%	42%	46%	45%
Portugal	42%	44%	38%	34%	35%	38%	39%	41%	46%	46%	52%	55%	57%	60%
Romania								10%	8%	17%	35%	48%	57%	60%
Slovakia						27%	27%	50%	15%	55%	48%	52%	56%	64%
Slovenia							18%	41%	38%	42%	80%	52%	75%	82%
Spain	37%	38%	31%	32%	36%	38%	41%	44%	51%	56%	60%	57%	60%	67%
Sweden	84%	84%	86%	84%	88%	92%	104%	95%	91%	95%	94%	90%	93%	92%
UK	23%	30%	39%	35%	34%	38%	44%	53%	51%	55%	61%	62%	61%	64%
EU-27								59%	61%	64%	66%	68%	69%	71%
EU-15	52%	55%	57%	56%	58%	60%	61%	63%	64%	66%	69%	70%	72%	74%
EU-12								30%	33%	39%	46%	47%	49%	52%

The EU-15 Member States all met the second-stage target of 60% recycling in 2011 – their overall glass container recycling rate was 74% in that year. Personal imports from neighbouring countries with lower taxes on alcoholic drinks will have inflated the glass recycling rates of Belgium, Denmark and Norway, all of which have reported a glass recycling rate of 100% or more at least once.

Of the twelve Member States with later deadlines, seven (Bulgaria, the Czech Republic, Estonia, Lithuania, Romania, Slovakia and Slovenia) have already reported a recycling rate of 60% or more in 2011.

Denmark's new waste management data system resulted in a reduction in its reported glass recycling rate from 174% in 2009 and 2010 to a more plausible 86% in 2011.

Estonia's reported 2009 recycling rate was well out of line with its 2008 and 2010 rates. The Estonian authorities have explained that their estimates of the amount of glass packaging generated were derived from a survey of mixed municipal waste, and may not be reliable.

Finland reported that the reason for the low tonnage of glass recycled in 2009 was the shutdown of the country's only glass manufacturer that year. The situation returned to normal in 2010.

Malta's leap in glass recycling from 17% in 2007 to 143% in 2008 was partly attributable to the withdrawal of refillable glass bottles.

Table 25: Glass packaging recycled per capita (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	23	22	28	23	22	22	23	22	24	27	26	27	27	27
Belgium	22	24	26	27	29	39	37	37	37	35	37	37	36	35
Bulgaria								4	6	7	7	4	4	6
Cyprus							1	1	1	3	5	5	6	7
Czech Rep.					7	10	11	14	13	12	13	13	12	13
Denmark	25	25	25	26	26	27	26	22	21	25	22	23	23	23
Estonia							14	10	10	15	19	25	10	18
Finland	7	9	7	6	6	7	7	10	10	11	9	5	7	11
France	26	28	28	28	29	30	30	30	30	30	31	30	31	31
Germany	39	39	38	35	34	32	30	29	29	29	29	29	29	29
Greece	3	3	4	4	4	4	6	5	3	2	2	2	3	4
Hungary					2		3	3	3	3	4	4	7	5
Ireland	10	10	9	11	15	18	16	22	23	31	27	27	25	27
Italy	14	16	16	17	18	20	21	21	21	22	23	23	24	26
Latvia							6	12	9	11	16	9	11	13
Lichtenstein										28	28	24	23	25
Lithuania							6	8	6	9	12	14	12	15
Luxembourg	40	37	41	43	43	56	57	56	62	53	52	43	62	70
Malta							1	2	3	5	37	3	1	4
Netherlands	25	25	25	25	25	25	26	26	26	28	28	28	28	26
Norway									13	13	13	11	12	12
Poland							7	7	8	8	12	9	11	13
Portugal	12	14	13	12	12	13	14	15	17	18	21	22	21	21
Romania								1	1	2	3	4	4	4
Slovakia						6	5	9	3	9	7	8	10	10
Slovenia							2	5	6	7	12	8	12	13
Spain	14	14	12	13	13	15	16	17	19	21	21	19	20	21
Sweden	16	16	16	16	17	17	18	17	18	19	19	19	19	20
UK	9	12	14	13	13	15	18	21	22	24	26	27	27	28
EU-27								20	20	21	22	22	22	23
EU-15	21	22	23	22	22	23	23	24	24	25	26	25	25	26
EU-12								6	6	7	9	8	9	10

METAL PACKAGING

The deadlines to meet the EU's 50% metal packaging recycling target are

- 2008 for Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Romania, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland and Portugal;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Malta;
- 2014 for Poland; and
- 2015 for Latvia.

Table 26: Metal packaging recycling rates

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	38%	38%	49%	61%	67%	56%	59%	58%	60%	67%	64%	61%	61%	62%
Belgium	66%	72%	70%	81%	86%	93%	91%	89%	93%	91%	94%	95%	95%	97%
Bulgaria								0%	6%	0%	65%	50%	51%	70%
Cyprus							35%	23%	74%	70%	95%	98%	117%	89%
Czech Rep.					18%	37%	35%	34%	47%	56%	43%	52%	64%	68%
Denmark	40%	36%	48%	40%	44%	41%	41%	60%	64%	87%	82%	77%	77%	58%
Estonia							28%	38%	53%	18%	26%	36%	61%	63%
Finland	15%	19%	28%	42%	50%	50%	55%	53%	59%	70%	75%	84%	78%	80%
France	45%	45%	49%	52%	53%	57%	53%	57%	65%	64%	60%	64%	75%	74%
Germany	83%	82%	78%	79%	80%	82%	83%	84%	89%	89%	92%	92%	93%	93%
Greece	11%	11%	11%	10%	10%	10%	15%	38%	47%	51%	44%	48%	42%	44%
Hungary					37%		48%	68%	64%	65%	67%	69%	84%	84%
Ireland	5%	26%	24%	37%	35%	55%	58%	58%	45%	65%	62%	57%	60%	67%
Italy	5%	11%	45%	45%	54%	55%	53%	61%	64%	67%	68%	75%	71%	71%
Latvia							35%	39%	35%	50%	68%	52%	75%	74%
Lichtenstein									100%	100%	100%	100%	100%	100%
Lithuania							21%	29%	60%	57%	62%	63%	69%	68%
Luxembourg	11%	43%	69%	77%	79%	70%	66%	63%	78%	80%	79%	84%	79%	82%
Malta							3%	5%	7%	6%	12%	59%	33%	30%
Netherlands	80%	78%	78%	78%	80%	85%	86%	84%	81%	83%	86%	87%	88%	91%
Norway									67%	66%	79%	76%	78%	79%
Poland							23%	31%	44%	30%	38%	43%	46%	45%
Portugal	0%	1%	15%	24%	53%	53%	55%	60%	61%	63%	65%	64%	72%	71%
Romania								54%	77%	55%	51%	56%	66%	62%
Slovakia						37%	16%	41%	24%	73%	56%	61%	41%	58%
Slovenia							24%	35%	19%	21%	21%	27%	33%	40%
Spain	22%	24%	34%	38%	39%	45%	56%	60%	62%	63%	68%	71%	71%	75%
Sweden	76%	51%	43%	69%	68%	70%	65%	64%	71%	74%	71%	78%	76%	75%
UK	23%	38%	42%	35%	39%	41%	42%	47%	53%	52%	57%	55%	56%	55%
EU-27								61%	66%	67%	68%	70%	72%	72%
EU-15	42%	47%	53%	54%	57%	59%	59%	64%	68%	69%	70%	72%	74%	74%
EU-12								39%	48%	44%	47%	52%	56%	57%

All twelve Member States required to reach the second-stage target of 50% recycling by 2008 had already done so by 2006. Of the fifteen with later deadlines, only Greece, Malta, Poland, Slovakia and Slovenia had not achieved 50% recycling by 2010.

Of the countries where deposits are imposed on beverage cans, only Germany (93%) significantly exceeded the overall EU-15 recycling rate of 74% for all metal packaging, though Finland (78%), Norway (78%), Denmark (77%) and Sweden (76%) slightly exceeded it. Estonia's metal packaging recycling rate jumped from 36% in 2009 to 61% in 2010 and so now exceeds the overall EU-12 recycling rate of 56%.

Germany's metal packaging recycling rate has always been above the overall EU-15 rate – indeed, this was the case before mandatory deposits were introduced in 2003. However, it is only since 2008 that metal packaging recycling rates in the other EU-15 deposit states have overtaken the overall EU-15 rate:

- The improvement in Finland's metal packaging recycling rate from 59% in 2006 to 75% in 2008 will have been at least partly due to increased opportunities for returning deposit-bearing cans – there were 7,000 outlets and 3,000 reverse vending machines accepting them in 2006, and 9,500 outlets and 4,000 reverse vending machines in 2008.
- On the other hand, the Danish deposit system reported an 84% return rate for deposit-bearing cans in 2006, 2007 and 2008, so the

increase in the metal packaging recycling rate from 64% in 2006 to 82% in 2008 (declining to 77% in 2009/10) seems to have been attributable to an increase in the recycling of non-beverage metal packaging.

- Similarly, Norway's increase in metal packaging recycling from 67% in 2006 to 79% in 2008 does not appear to owe anything to an increase in the return rate for deposit-bearing cans, since in 2008 the reported return rate for these cans fell to 90% from its previous 92%.

Thus it appears that there is no correlation between metal packaging recycling rates and beverage container deposits.

The Cypriot authorities have explained that Cyprus's high metal packaging recycling rate is attributable to increasing imports of products in metal packaging. Also, treatment facilities stockpiled metal waste from previous years and exported it in 2010 when better prices could be achieved in the market.

The fluctuation in Estonia's reported metal packaging recycling rates may have been due to a data collection methodology issue. 5,900 tonnes of metal packaging were reported to have been recycled in 2006 and 7,400 tonnes in 2010; but in the intervening years the amount recycled ranged between 2,100 and 3,500 tonnes.

Member states are not obliged to report aluminium and steel packaging data separately, and only a few choose to do so:

Table 27: Aluminium packaging recycling rate

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cyprus													7%	9%
Czech Rep.										31%	24%	20%	25%	29%
France						35%	35%	39%	38%	40%	42%	48%	48%	46%
Germany	78%	79%	75%	77%	74%	71%	73%	76%	77%	74%	80%	85%	88%	89%
Greece			33%	34%	28%	24%	31%	32%	33%	34%	34%	38%	37%	32%
Hungary								54%						
Ireland	4%	4%	7%	8%	8%									39%
Italy	14%	26%	28%	34%	45%	43%	45%	48%	49%	54%	58%	51%	73%	60%
Lichtenstein									100%	100%	100%	100%	100%	100%
Norway										66%				
Poland							39%	58%	88%	82%	61%	64%	60%	
Romania												13%		
Slovakia								21%	29%				43%	
Sweden							62%	61%	67%	69%	74%	76%	67%	66%
UK		12%	15%	24%	24%	25%	23%	28%	32%	31%	35%	41%	41%	46%

Table 28: Steel packaging recycling rate

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cyprus													196%	180%
Czech Rep.										61%	47%	59%	73%	76%
France						59%	55%	58%	68%	67%	62%	66%	78%	77%
Germany	83%	82%	78%	79%	80%	83%	83%	85%	90%	91%	93%	92%	93%	93%
Greece			6%	6%	6%	6%	10%	39%	50%	54%	46%	50%	43%	47%
Hungary								69%						
Ireland	4%	32%	30%	49%	47%									74%
Italy	4%	9%	46%	46%	55%	56%	54%	63%	66%	69%	70%	78%	71%	73%
Lichtenstein									100%	100%	100%	100%	100%	100%
Norway														
Poland							17%	20%	25%	21%	26%	34%	39%	
Romania												74%		
Slovakia								45%	21%				40%	
Sweden							67%	65%	73%	77%	70%	79%	82%	83%
UK		43%	45%	37%	42%	45%	46%	51%	58%	56%	62%	58%	59%	58%

Table 29: Metal packaging recycled per capita (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	4	4	5	5	4	4	4	4	5	5	5	4	5	5
Belgium	9	9	10	11	12	13	12	12	12	12	12	11	11	11
Bulgaria								0	0	0	2	1	1	1
Cyprus							6	4	5	5	7	7	10	6
Czech Rep.					1	2	2	2	2	3	2	2	3	3
Denmark	4	3	5	3	3	3	3	4	5	6	5	5	5	5
Estonia							2	3	4	2	2	3	6	14
Finland	1	1	2	3	4	4	4	5	5	6	7	7	8	8
France	5	5	6	6	6	6	6	6	7	7	7	7	7	7
Germany	11	11	11	11	11	9	9	9	10	9	10	9	9	10
Greece	1	1	1	1	1	1	2	4	6	7	6	6	5	5
Hungary					3		4	4	4	4	5	6	5	5
Ireland	1	3	3	8	7	10	10	10	7	13	10	7	7	8
Italy	1	1	5	5	6	6	6	7	7	7	7	6	7	6
Latvia							2	2	3	4	4	2	4	4
Lichtenstein										7	7	7	7	7
Lithuania							1	1	2	2	3	2	2	3
Luxembourg	1	5	9	10	12	7	3	5	10	10	9	9	8	7
Malta							0	0	1	1	1	5	3	3
Netherlands	12	11	11	10	11	11	11	11	9	9	10	9	9	11
Norway									2	2	4	3	3	4
Poland							1	2	3	1	2	2	3	3
Portugal	0	0	1	2	5	5	6	6	6	7	7	6	6	6
Romania								3	3	2	2	2	2	2
Slovakia						2	0	1	1	2	2	3	3	3
Slovenia							2	2	2	2	2	2	2	3
Spain	2	2	4	4	5	5	6	6	7	7	7	7	7	7
Sweden	6	4	3	5	5	5	5	5	5	6	5	5	5	5
UK	3	6	6	5	5	6	6	7	7	7	8	7	7	7
EU-27								6	6	6	7	6	6	7
EU-15	5	6	6	7	7	7	7	7	8	8	8	7	7	8
EU-12								2	2	2	2	2	3	3

PLASTIC PACKAGING

The deadlines to meet the EU's 22.5% plastic packaging recycling target are

- 2008 for Austria, Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland and Portugal;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Bulgaria, Malta and Romania;
- 2014 for Poland; and
- 2015 for Latvia.

Table 30: Plastic packaging recycling rates

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	27%	25%	26%	29%	30%	31%	33%	33%	36%	33%	35%	33%	34%	35%
Belgium	26%	24%	25%	29%	30%	33%	37%	38%	39%	38%	39%	43%	42%	41%
Bulgaria								8%	20%	20%	16%	30%	41%	39%
Cyprus							9%	9%	15%	14%	15%	18%	27%	38%
Czech Rep.					21%	38%	44%	35%	44%	46%	50%	52%	54%	57%
Denmark	7%	11%	12%	14%	16%	17%	16%	19%	20%	22%	25%	26%	26%	22%
Estonia							12%	26%	34%	38%	22%	23%	33%	40%
Finland	10%	13%	14%	15%	15%	14%	15%	14%	16%	18%	23%	25%	26%	25%
France	8%	9%	11%	14%	15%	16%	18%	19%	19%	21%	23%	25%	24%	23%
Germany	59%	59%	53%	52%	49%	53%	44%	39%	41%	43%	47%	48%	49%	49%
Greece	4%	3%	3%	3%	3%	3%	6%	10%	10%	14%	12%	27%	30%	33%
Hungary					9%		14%	19%	20%	17%	25%	25%	36%	37%
Ireland	3%	4%	9%	12%	17%	16%	22%	24%	20%	22%	29%	36%	39%	48%
Italy	11%	16%	16%	19%	23%	24%	26%	26%	27%	28%	31%	34%	35%	36%
Latvia							22%	34%	27%	23%	18%	20%	24%	23%
Lichtenstein									5%	3%	2%	3%	2%	3%
Lithuania							21%	21%	27%	29%	33%	36%	38%	39%
Luxembourg	9%	26%	36%	34%	28%	24%	35%	30%	32%	39%	30%	25%	31%	33%
Malta							3%	5%	7%	11%	14%	51%	22%	29%
Netherlands	14%	18%	23%	21%	16%	20%	19%	22%	33%	34%	36%	38%	48%	51%
Norway									30%	30%	27%	30%	36%	38%
Poland							17%	19%	25%	28%	24%	22%	20%	23%
Portugal	4%	4%	4%	9%	9%	9%	11%	16%	15%	15%	19%	26%	25%	26%
Romania								11%	17%	15%	16%	24%	28%	40%
Slovakia						12%	16%	18%	40%	42%	44%	49%	45%	50%
Slovenia							19%	34%	39%	47%	56%	42%	67%	76%
Spain	9%	14%	17%	18%	20%	20%	20%	21%	22%	23%	24%	27%	29%	32%
Sweden	25%	20%	14%	17%	20%	22%	25%	30%	44%	42%	37%	38%	32%	34%
UK	7%	13%	15%	16%	19%	18%	19%	22%	22%	23%	24%	24%	24%	24%
EU-27								25%	27%	28%	30%	32%	33%	34%
EU-15	18%	21%	22%	23%	24%	25%	25%	26%	27%	28%	31%	33%	34%	34%
EU-12								19%	26%	27%	27%	29%	32%	35%

Of the EU-15 Member States, only Denmark reported having not achieved the second-stage target of 22.5% recycling in 2011 – Denmark's new data calculation methodology produced an estimated recycling rate of 22.3%. The overall metal packaging recycling rate of the EU-15 countries was 34% in that year.

All twelve of the Member States with later deadlines reported that they had met the target in 2011, and nine of them reported a recycling rate exceeding 30%.

Of the countries where deposits are imposed on beverage containers, Germany (49%) and Norway (38%) exceeded the overall EU-15 plastics recycling rate of 34% in 2011, and Sweden equalled it. Finland (25%) and Denmark (22%) reported a plastics recycling rate rather lower than the overall EU-15 rate. Estonia (40%) reported a significantly higher plastic packaging recycling rate than the overall EU-12 recycling rate.

Table 31: Plastic packaging recycling per capita (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	6	6	7	7	7	8	9	9	10	10	11	10	11	11
Belgium	6	5	6	7	7	9	10	11	11	11	11	12	12	12
Bulgaria								1	2	3	2	4	4	5
Cyprus							4	4	2	3	3	4	5	7
Czech Rep.					4	6	8	7	9	10	10	10	11	11
Denmark	2	4	4	4	5	5	5	6	7	8	8	8	8	8
Estonia							3	6	9	11	12	9	13	15
Finland	2	2	2	2	2	2	3	3	3	3	5	5	6	6
France	2	3	3	4	5	5	6	6	6	7	7	7	7	7
Germany	12	12	12	12	12	13	12	11	13	14	16	15	16	16
Greece	1	1	1	1	1	1	2	2	3	4	3	6	6	6
Hungary					1		2	4	4	4	5	6	10	8
Ireland	1	2	4	5	8	9	12	13	13	12	16	18	17	16
Italy	4	5	5	7	8	8	9	9	10	11	12	12	12	12
Latvia							3	5	5	4	3	3	4	4
Lichtenstein									0	1	0	1	0	0
Lithuania							3	3	4	5	6	6	7	8
Luxembourg	2	6	8	7	6	9	17	14	15	21	13	10	14	15
Malta							0	1	1	2	5	16	6	8
Netherlands	5	5	7	6	5	7	7	8	9	10	10	10	13	14
Norway									8	9	8	9	11	12
Poland							3	3	4	4	4	4	4	5
Portugal	1	1	1	3	3	3	3	5	6	5	7	9	8	9
Romania								2	3	3	2	3	4	5
Slovakia						1	1	3	4	6	7	8	9	10
Slovenia							3	6	9	11	13	10	15	16
Spain	2	4	5	6	6	7	7	8	8	9	9	8	9	10
Sweden	4	3	2	3	4	4	5	6	9	9	8	8	7	8
UK	2	4	4	5	6	5	6	7	8	8	8	10	10	10
EU-27								7	8	8	9	9	10	10
EU-15	5	6	6	6	7	8	8	8	9	10	10	11	11	11
EU-12								3	4	4	5	5	6	7

PAPER & BOARD PACKAGING

The deadlines to meet the EU's 60% paper and board packaging recycling target are

- 2008 for Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Romania, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland and Portugal;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Malta;
- 2014 for Poland; and
- 2015 for Latvia.

Table 32: Paper and board packaging recycling rates

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	84%	88%	87%	81%	80%	82%	83%	86%	87%	84%	85%	85%	85%	85%
Belgium	83%	70%	82%	86%	78%	79%	83%	83%	89%	92%	89%	88%	90%	90%
Bulgaria								82%	52%	98%	85%	67%	82%	98%
Cyprus							42%	13%	38%	39%	60%	79%	83%	88%
Czech Rep.					36%	62%	71%	84%	91%	94%	94%	94%	94%	91%
Denmark	58%	59%	62%	65%	61%	60%	59%	60%	62%	61%	61%	94%	94%	64%
Estonia							34%	45%	55%	57%	65%	69%	83%	79%
Finland	57%	61%	62%	58%	61%	63%	70%	79%	86%	88%	93%	95%	96%	97%
France	61%	59%	59%	62%	64%	69%	77%	81%	85%	89%	87%	86%	92%	88%
Germany	88%	87%	90%	91%	88%	81%	83%	82%	80%	80%	88%	91%	90%	88%
Greece	66%	67%	67%	68%	69%	70%	70%	72%	70%	80%	74%	83%	94%	92%
Hungary					55%	67%	86%	94%	87%	91%	94%	95%	94%	94%
Ireland	15%	14%	17%	24%	35%	65%	70%	72%	74%	77%	78%	81%	84%	92%
Italy	37%	39%	46%	52%	59%	58%	62%	67%	67%	70%	74%	80%	79%	80%
Latvia							60%	59%	58%	58%	66%	75%	75%	75%
Lichtenstein									76%	77%	76%	78%	75%	75%
Lithuania							59%	59%	60%	68%	73%	74%	84%	84%
Luxembourg	49%	35%	37%	59%	60%	64%	65%	69%	72%	71%	78%	77%	76%	78%
Malta							9%	11%	11%	8%	30%	48%	51%	73%
Netherlands	70%	71%	71%	65%	69%	69%	70%	72%	94%	94%	96%	95%	90%	89%
Norway									83%	82%	78%	80%	83%	85%
Poland							40%	41%	51%	69%	67%	51%	57%	59%
Portugal	48%	52%	47%	57%	50%	50%	56%	60%	68%	82%	88%	80%	67%	71%
Romania								51%	56%	61%	62%	69%	67%	66%
Slovakia						49%	50%	20%	61%	86%	54%	84%	51%	80%
Slovenia							76%	77%	66%	69%	66%	72%	75%	74%
Spain	52%	54%	58%	64%	60%	57%	63%	69%	71%	70%	73%	77%	76%	77%
Sweden	84%	72%	63%	69%	70%	88%	71%	72%	72%	74%	74%	74%	70%	76%
UK	47%	49%	50%	53%	59%	65%	68%	74%	78%	79%	80%	84%	82%	85%
EU-27								73%	76%	78%	81%	83%	84%	83%
EU-15	61%	62%	64%	67%	68%	69%	72%	75%	77%	79%	82%	85%	85%	84%
EU-12								54%	61%	74%	72%	68%	68%	72%

Poland (59%) was the only EU-27 Member State to report a 2011 paper and board recycling rate below the 60% target, even though that target did not apply to the EU-12 countries until 2012 or later.

Denmark's reported paper & board recycling rate showed a 50% increase between 2008 and 2009. There were no major changes in the tonnages recycled, but the estimated amount placed on the market fell by 25%. Following the change in methodology, the reported 2011 recycling rate is of the same order of magnitude as the rates reported before 2009.

The tonnage of Portuguese paper & board recycled fell sharply in 2009 and again in 2010. This was apparently due to a lack of export markets for this material. There was a moderate increase in Portugal's recycling rate in 2011.

In Slovakia, the fluctuations in the reported recycling rate are attributable to variations in the tonnages recycled rather than to variations in the quantities placed on the market. The amount reported to have been recycled in 2011 (142,550 tonnes) was double the tonnage recycled in 2010.

Table 33: Paper & board packaging recycling per capita (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	54	57	58	50	50	54	50	52	55	52	52	49	51	50
Belgium	44	40	41	44	43	45	49	51	54	56	54	51	54	54
Bulgaria								16	9	14	10	9	15	15
Cyprus							31	7	10	13	21	25	26	26
Czech Rep.					12	18	22	25	30	33	34	30	31	32
Denmark	48	52	55	59	57	55	54	57	61	58	57	65	64	46
Estonia							13	20	26	29	33	30	34	36
Finland	27	30	31	30	30	32	33	37	43	44	45	43	45	46
France	42	42	44	44	44	47	52	55	59	63	58	58	66	66
Germany	61	63	67	69	70	66	70	69	69	70	74	74	79	79
Greece	21	22	22	23	23	24	24	26	25	28	29	32	33	31
Hungary					20		26	25	28	30	31	30	14	26
Ireland	12	11	16	23	34	44	54	57	70	73	72	68	61	67
Italy	26	28	33	38	43	42	47	49	50	54	56	55	57	58
Latvia							17	17	21	29	24	19	21	23
Lichtenstein									47	50	48	53	45	44
Lithuania							12	13	15	20	22	18	21	24
Luxembourg	33	24	25	40	40	40	42	48	49	45	59	48	45	50
Malta							3	4	4	4	12	19	21	39
Netherlands	59	63	59	56	62	63	63	64	61	62	63	59	63	61
Norway									50	50	51	51	53	54
Poland							12	13	19	17	22	16	20	22
Portugal	22	25	22	27	25	25	28	30	49	54	59	53	44	46
Romania								6	11	11	10	9	8	9
Slovakia						18	19	5	12	19	13	23	14	26
Slovenia							20	22	23	26	27	29	30	29
Spain	34	35	41	42	45	43	47	50	54	57	57	55	57	57
Sweden	54	48	42	47	49	62	51	52	54	55	52	52	37	40
UK	32	32	33	34	37	41	43	46	49	50	50	51	50	52
EU-27								45	48	50	51	50	52	52
EU-15	41	42	45	46	48	49	52	54	56	58	59	58	61	61
EU-12								14	18	19	20	18	18	21

WOOD PACKAGING

The deadlines to meet the EU's 15% wooden packaging recycling target are

- 2008 for Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Sweden, the UK and for EFTA members Iceland, Lichtenstein and Norway;
- 2011 for Greece, Ireland, Portugal and Romania;
- 2012 for Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia;
- 2013 for Malta;
- 2014 for Poland; and
- 2015 for Latvia.

Table 34: Wood packaging recycling rates

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	17%	17%	15%	12%	16%	19%	19%	19%	17%	19%	22%	22%	34%	21%
Belgium	53%	39%	34%	60%	55%	60%	64%	65%	64%	72%	58%	57%	63%	63%
Bulgaria								0%	0%	0%	41%	46%	54%	42%
Cyprus							5%	21%	23%	22%	15%	25%	8%	10%
Czech Rep.					2%	12%	10%	16%	21%	37%	29%	33%	36%	28%
Denmark						26%	30%	24%	34%	33%	41%	86%	86%	30%
Estonia							5%	37%	17%	39%	57%	81%	63%	72%
Finland						7%	7%	5%	8%	10%	21%	21%	18%	18%
France	18%	18%	18%	19%	19%	20%	20%	21%	20%	21%	19%	13%	19%	25%
Germany	60%	61%	55%	41%	41%	35%	35%	35%	30%	30%	29%	31%	28%	30%
Greece			22%	22%	23%	22%	35%	56%	58%	75%	31%	37%	50%	66%
Hungary								18%	21%	20%	23%	23%	46%	35%
Ireland						98%	98%	77%	77%	76%	77%	79%	83%	93%
Italy	43%	38%	35%	53%	60%	60%	57%	50%	53%	54%	53%	58%	59%	55%
Latvia							74%	58%	43%	24%	28%	22%	30%	35%
Lichtenstein									0%	0%	0%	0%	0%	0%
Lithuania							2%	1%	18%	32%	43%	39%	46%	47%
Luxembourg						38%	36%	53%	31%	31%	19%	14%	32%	34%
Malta							10%	8%	13%	4%	1%	2%	3%	0%
Netherlands			25%	27%	29%	32%	33%	39%	39%	32%	36%	38%	33%	31%
Norway											14%	10%	14%	9%
Poland							20%	17%	16%	48%	26%	23%	21%	27%
Portugal		30%		72%		67%	66%	58%	73%	71%	65%	65%	66%	78%
Romania								5%	3%	9%	8%	13%	18%	33%
Slovakia						61%	30%	33%	3%	5%	16%	9%	8%	26%
Slovenia							5%	21%	5%	21%	7%	11%	16%	16%
Spain	3%	23%	24%			37%	43%	44%	50%	61%	58%	56%	56%	53%
Sweden						16%	7%	2%	17%	17%	17%	19%	17%	17%
UK	13%	28%	44%	86%	55%	54%	57%	55%	73%	77%	77%	77%	75%	59%
EU-27								37%	38%	41%	38%	38%	38%	38%
EU-15						40%	40%	38%	41%	42%	41%	40%	40%	39%
EU-12								17%	16%	33%	24%	23%	24%	30%

As noted on page 13, reporting on wood packaging was optional before 2003. The Packaging and Packaging Waste Directive did not set any recycling target for wood until it was revised in 2004.

The island nation-states Cyprus (10%) and Malta (0%) were the only EU-27 countries to report a 2011 wood recycling rate below the 15% target, even though that target did not apply to the EU-12 countries until 2012 or later.

Wood recycling rates are entirely atypical of a country's general recycling performance. Member States' data on wood tends to be particularly inconsistent because of the fine distinction between recycling and reuse, especially for wooden pallets. At what point does pallet repair cease to be reconditioning (reuse) and become recycling? In 2005, Latvia reported a recycling rate of 57%, while Lithuania reported 1%, even though for all other materials the two Baltic neighbours' reported recycling rates were very close.

As the Swedish authorities have pointed out, in northern Europe broken pallets are often incinerated rather than repaired, because they are drier than forestry waste and so are preferable as incinerator feedstock. Also, if forestry waste is left on the ground, it enriches the soil for the next growth. Another factor is that in countries where wood-burning stoves are common, used wooden packaging is a source of domestic fuel. This means that it will bypass the official accounting system, but in any case should not be counted because burning in domestic wood fires does not meet the definition of "recovery" in the revised Packaging and Packaging Waste Directive.

Table 35: Wood packaging recycled per capita (in kg)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	1	1	1	1	1	1	1	2	2	2	2	2	4	2
Belgium	7	6	7	9	9	10	12	12	12	14	11	10	11	12
Bulgaria								0	0	0	0	1	1	1
Cyprus							1	2	2	3	2	2	1	1
Czech Rep.					0	1	1	1	2	4	3	3	4	2
Denmark						5	5	5	7	7	7	6	6	5
Estonia							0	2	1	3	3	3	4	7
Finland						2	3	2	3	4	9	7	7	7
France	5	6	6	7	7	7	7	7	7	8	8	5	7	9
Germany	15	16	16	12	12	11	10	10	10	10	9	8	9	10
Greece			1	1	1	1	2	3	3	4	2	2	2	3
Hungary								3	4	4	5	4	3	6
Ireland						25	27	23	21	19	19	19	19	16
Italy	15	16	15	24	27	27	28	24	26	26	24	20	22	21
Latvia							18	17	19	9	8	4	7	9
Lichtenstein										0	0	0	0	0
Lithuania							0	0	3	6	8	5	7	9
Luxembourg						6	7	10	6	6	3	2	6	7
Malta							1	1	2	0	0	0	0	0
Netherlands			7	7	7	12	9	13	13	10	12	9	8	8
Norway											5	3	5	3
Poland							3	2	2	9	7	5	6	8
Portugal		13	15	3		5	6	7	6	8	8	7	7	4
Romania								0	0	1	1	1	2	3
Slovakia						1	1	1	0	0	1	1	1	2
Slovenia							1	3	1	4	1	2	2	2
Spain		3	4			6	8	10	11	13	10	8	7	6
Sweden						7	3	1	6	5	5	6	5	5
UK	3	2	5	10	13	13	13	13	14	15	15	13	12	10
EU-27								9	10	11	10	9	9	9
EU-15	7	8	8	9	10	12	12	12	12	13	12	10	11	10
EU-12								2	2	5	4	3	4	5

ANNEX 1: EUROPEAN POSITION PAPER ON THE EU WASTE MANAGEMENT TARGETS REVIEW – PRELIMINARY VIEWS

On behalf of the packaging supply chain, EUROOPEN – The European Organization for Packaging and the Environment - is pleased to contribute to current EU regulatory discussions on the review of EU waste management targets and to share its preliminary views, in the context of the ongoing review of the EU Packaging and Packaging Waste Directive (PPWD).

EUROOPEN may offer further comments and positions on the EU PPWD targets, as part of the ongoing EU waste review process, and intends to offer comprehensive positions linked to the broader 'fitness check' of the PPWD. The positions below are therefore preliminary views, including the support of a first set of considerations and challenges, in specific related to the EU PPWD targets review.

EUROPEAN POSITION

EUROOPEN shares the European Commission's views as expressed in its Roadmap for a Resource Efficient Europe, on the importance of ensuring the full implementation of existing EU waste legislation, including the Waste Framework Directive (WFD) and the Packaging and Packaging Waste Directive (PPWD), as a fundamental step in the transition to a resource efficient and competitive economy.

The PPWD is a fundamental tool for guaranteeing the free movement of packaged products. It is key for the effective functioning of the Single Market and also aims to optimise the environmental performance of packaging and packaged products, which provides economic, environmental and societal gains for European citizens and industry. In this regard, the review of the PPWD is an opportunity to identify the conditions required for ensuring a robust packaging waste management culture and infrastructure emerging in those Member States that are currently lagging behind. A revised PPWD will allow the Directive to remain relevant and effective in a changed regulatory and market setting, and will support the EU in meeting its aspirational objectives as set in the EU Resource Efficiency Roadmap.

EUROOPEN therefore supports::

- 1. The PPWD as an appropriate and effective legislative framework for driving the recovery and recycling of all packaging waste.** Measures for packaging recycling and recovery should not hinder innovation and the free movement of packaged goods throughout the EU, safeguarded by the PPWD's Internal Market legal base. The PPWD also ensures regulatory security and predictability for companies investing in the packaging recycling and recovery value chains.
- 2. Maintaining the recovery and recycling targets for packaging waste in the PPWD** to ensure that the legal obligation to separately collect packaging for recycling/recovery continues. The PPWD targets should not be subsumed into the broader WFD targets. In addition, a separate regulatory approach for packaging is essential in order to address the specific requirements for packaging and packaging waste in terms of volume, consumer visibility, recycling value and market structure.
- 3. Full implementation and enforcement of the PPWD and WFD** in Member States where implementation gaps persist to meet current and future recycling and recovery targets¹. Full implementation and enforcement is a pre-requisite to ensure conditions for effective separate collection of post-consumer packaging. Studies demonstrate that the lack of implementation leads to missed opportunities in terms of environmental benefits and job creation (400.000 jobs could be created if the EU waste legislation was fully implemented²).
- 4. The consideration of clustering Member States with a view to setting targets that are achievable, realistic and take into account different Member State specificities.** Targets should be achievable and take into account different municipal waste management infrastructure and packaging waste reprocessing capacity. They should also have a proven environmental benefit and a realistic timeline for reaching them. In this respect, it would be useful to consider different scenarios to assess environmental and economic costs and benefits.
- 5. Specified requirements for post-consumer packaging³ collection in the PPWD, for example by introducing separate post-consumer packaging recovery/recycling targets.** Collection of post-consumer packaging separately from organic or industrial, commercial and institutional (ICI) packaging waste is essential to ensure sufficiently high levels of both quality and quantity to make recycling and recovery economically viable and environmentally beneficial. This would also support the recommendations in the European Commission's roadmaps⁴ to apply incentives for citizens to separate household waste (e.g. pay-as-you-throw, landfill gate fees). As a prerequisite, an impact assessment would need to be undertaken to ensure this would not result in disproportionate costs or a lower net environmental performance.
- 6. Minimum requirements in the PPWD for all EPR schemes for packaging waste, as well as their enforcement by Member States via authorisation procedures.** This would help meet existing and future packaging recycling and recovery targets across Europe. Minimum rules for all EPR schemes should cover areas such as scope (geographic scope, types of packaging material to be covered), transparency (material flows, cost, tendering procedures), consumer information, monitoring, reporting and audits, and financial solidity. *Read more in EUROOPEN's recommendations for EPR for post-consumer packaging in the EU.*
- 7. Clarifying and harmonising definitions of key terms in both the WFD and the PPWD** like EPR, consumer packaging, separate collection, recovery, recycling, 'obliged industry' and 'obliged packaging', would help to meet targets.
- 8. Harmonising rules for calculating and reporting packaging recycling and recovery rates.** This would ensure that data can be

¹ The overall recovery rate in the EU as a whole is 76% (2010). Performance in EU-12 is lower (56%) compared with EU-15 (79%). The overall recycling rate in the EU as a whole is 63% (2010). Performance in EU-12 is lower (47%) compared with EU-15 (65%).

² BIO Intelligence Service (2011), Implementing EU Waste Legislation for Green Growth, Final Report prepared for European Commission, DG Environment, p. 34, <http://ec.europa.eu/environment/waste/studies/pdf/study%2012%20FINAL%20REPORT.pdf>.

³ Primary and secondary packaging generated by households, away-from-home and at closed surroundings (e.g. small businesses, bars, restaurants, public events, schools) insofar as the type of packaging/volumes consumed are similar to households.

⁴ European Commission, Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste, June 2012.

tracked and compared between member states effectively. Amounts of packaging placed on the market and post-consumer packaging separately collected and recycled or recovered should be tracked in order to accurately assess progress in meeting EU targets and objectives.

9. Diverting valuable packaging material from landfills for recycling and recovery, provided that there is integrated waste management planning in Member States to ensure that appropriate waste treatment facilities and capacities are located where needed. For instance, any landfill taxes in the 28 Member States could be applied at a progressive rate with a stepwise steady increase in the tax rate. This would provide stakeholders with a predictable timeframe and an economic incentive to adjust.

10. The aspirational targets currently set in the 7EAP and the Resource Efficiency Roadmap, rather than the need for additional quantified waste prevention targets. According to Eurostat data, continuous decoupling of packaging production and packaging waste going to landfill from economic growth is happening. In addition, a prevention target in the PPWD might have side effects on economic growth. Targets for reuse are feasible, necessary nor easy to measure. Producers employ reusable packaging where this is efficient, and the market will be the best guide.

FURTHER CONSIDERATIONS AND CHALLENGES (PRELIMINARY AND NON-EXHAUSTIVE LIST)

The need for the Packaging and Packaging Waste Directive:

The Packaging and Packaging Waste Directive (PPWD) has proven to be a successful and appropriate legislative framework for driving the recovery and recycling of all packaging waste (see point 1 above).

Packaging requires a separate regulatory approach tailored to its inherent characteristics (volume, consumer visibility, recycling value and market structure), but also taking into account the key role of packaging which is that of product facilitator, i.e. as part of the product and essential for functions such as distribution, storage, waste prevention and provision of information. It has a key role in developing the EU Single Market. EUROOPEN therefore strongly supports the PPWD's internal market principle as its sole legal base. In our view the directive's dual objectives—to protect the environment whilst securing the free movement of packaging and packaged goods throughout the EU, as well as avoiding divergences in national policies—remain valid today.

WFD and PPWD not fully implemented yet:

The WFD is currently not fully implemented or enforced. In many cases, municipal waste is not collected nationwide and there is consequently very little separate collection of household waste, and in specific post-consumer packaging. For example, the WFD sets requirements for separate collection of paper, metal, plastics and glass by 2015. This will have to be implemented in all Member States to allow the re-use and recycling targets to be met by 2020, particularly in Member States where the recycling targets are currently met almost entirely through the collection of industrial and commercial waste.

As for the PPWD, low recycling rates for packaging waste in some EU Member States is mainly due to the existence of weak or absence of separate collection systems for household packaging waste.

Realistic packaging waste targets:

Industry, municipalities and other stakeholders have made substantial investments to ensure that packaging waste targets in Member States and at EU level are met and in many cases exceeded.

Higher minimum recovery and recycling targets are subject to certain caveats concerning feasibility, economic efficiency and maintenance of the provisions on the Single Market. There are wide variations in recycling performances across the EU due to differences in Member States' interpretations of definitions, waste legislation and its enforcement, waste management and recycling infrastructure and consumption rates. Therefore it is not feasible for all Member States to meet the same recycling targets, even with different deadlines.

EUROOPEN considers that a tailored approach taking into account national specificities should focus on incentivising the lowest performing Member States to reach higher levels of recovery and recycling in order to achieve more level waste management performance across the EU. EUROOPEN welcomes the Commission's initiative to take up bilateral contacts with 10 lesser performing Member States in this regard.

Minimum recycling targets should not exceed those currently achieved by the highest performing Member States as this probably represents the practical limits for recovery and recycling. For example, the Member States which achieved the highest overall recycling rates in 2001 have not continued increasing them at the same rates and in some cases the rates have fallen (Germany, 76% in 2001 to 73% in 2010; Belgium, 71% to 80%; Austria, 64% to 67% and Sweden, 63% to 54%). This would indicate that there are practical limits to recovery and recycling beyond which increased yields entail disproportionate costs with little or no net environmental gain. The best performing Member States are converging on recovery rates of around 90% and recycling rates of approximately 80%. These rates probably represent the likely *de facto* environmental and economic limits for recovery and recycling. Going beyond those limits would require significant additional investments in infrastructure and reprocessing capacity whilst achieving only minimal incremental yields of packaging materials.

Incentivise collection of post-consumer packaging:

Consumer packaging generally represents the largest amount of all packaging and it would therefore seem appropriate to consider

the possibility of introducing a target for this specific waste stream in the PPWD. A prerequisite to the introduction of post-consumer packaging recycling and recovery targets would be to undertake an impact assessment to better understand how existing targets and their reporting would be affected. (See also in EUROOPEN's recommendations for EPR for post-consumer packaging in the EU).

A level playing field for EPR schemes is needed:

Since the introduction of the PPWD in the 1990's, a growing number of competing EPR schemes have been set up at national level for managing waste from all packaging materials. These systems vary according to local conditions and there is no legal framework to ensure a level playing field for the operation of competing schemes. Specific concerns related to this include a lack of clarity on how to apply EPR requirements and lack of clear definitions for EPR, in particular with regard to responsibilities. In addition, there are large differences between Member States in terms of the types of packaging covered, cost efficiency, the control and transparency of systems and the role of municipalities and obliged industry. (See more in EUROOPEN's recommendations for EPR for post-consumer packaging in the EU and EUROOPEN's position paper on EPR for post-consumer packaging).

A waste prevention target for packaging is not required:

Concretely, prevention targets are impracticable. Attempts to measure prevention have not been successful, as studies⁵ have shown. Quantified prevention targets in Dutch and Spanish legislation were abandoned some years ago. Enforcement was a problem because it is always unclear how targets can be translated to individual companies' performance, as this needs to take account of specific protection requirements related not only to the contents and distribution channels, technological feasibility and demand but also to the timing of replacement of manufacturing equipment.

The Commission's December 2006 report to the other EU institutions on the progress of implementation of the PPWD made the same point. In general, it concluded, packaging is not produced as a good in itself but as a tool to allow the distribution of other packaged goods. "Packaging is a cost factor, so preventing packaging is in the interest of the producer of the packaged good. Taking all the functions of packaging into account, it is often difficult to draw an exact line between the acceptable use of packaging as a marketing tool and unnecessary 'over-packaging'."

Targets for reuse are neither feasible nor necessary:

Reuse of packaging can be a viable option for local or regional distribution, but has proved environmentally disadvantageous for longer distances. Where applied by Member States, reuse / refill quotas have tended to pose a barrier to trade within the EU and thus a barrier to the internal market objectives of the PPWD. There is reason to believe that such quotas have sometimes been used to create trade barriers rather than to meet environment objectives.

The PPWD says that Member States may encourage reuse systems; they are not obliged to do so. This means that any measures taken must not discriminate against imports and any aid granted through state resources must not distort or threaten to distort competition by favouring certain companies or the production of certain goods. Reuse targets are difficult to measure. Data on the proportion of packaging placed on the market that is reusable is meaningless unless information is also available on how many times that packaging is actually reused.

Read EUROOPEN's response to the EU waste management targets consultation here: www.europen-packaging.eu/component/downloads/downloads/1374.html.

October 2013

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⁵ For example: analysis of the evolution of waste reduction and the scope of waste prevention, Arcadis, October 2010.

ANNEX 2: EUROPEAN RECOMMENDATIONS ON EPR FOR POST-CONSUMER PACKAGING IN EUROPE – EXECUTIVE SUMMARY

On behalf of the packaging supply chain, EUROOPEN – The European Organization for Packaging and the Environment - is pleased to contribute to current EU policy discussions on Extended Producer Responsibility (EPR) schemes for packaging waste and to share its recommendations, in the context of the ongoing review of the EU Packaging and Packaging Waste Directive (PPWD).

As indicated in the Commission's Roadmap for a Resource Efficient Europe¹, a fundamental step in the transition to a circular economy is to ensure that existing EU waste legislation is implemented and enforced in all Member States. In this respect, it is critical that EPR schemes are expanded and improved in light with good practice, a view also supported by the European Resource Efficiency Platform². EPR schemes have been instrumental in meeting and often exceeding targets set in the PPWD, as well as facilitating its implementation.

Our recommendations are based on the expert assessment and conclusions of EUROOPEN members, including companies that are required to fulfil producer responsibility obligations at national level. A number of our members are founder members and shareholders of EPR schemes³ set up to meet national packaging waste targets. The recommendations below provide effective guiding principles to address current and future challenges in setting up and running EPR schemes and to ensure fair competition and a level playing field.

EUROPEAN RECOMMENDATIONS ON EPR FOR POST-CONSUMER PACKAGING⁴:

1. Full implementation and enforcement of EU waste legislation in all Member States.

This is a pre-requisite to ensure conditions for effective separate collection of post-consumer packaging in sufficient volume and value to minimize exports of secondary materials to third party countries, to secure fair competition for European recyclers, and to stimulate additional investment in recycling technologies.

2. Maintain the legal base, objectives and core provisions of the PPWD, while amending environmental provisions to drive collection and recycling/recovery of post-consumer packaging.

EUROOPEN strongly supports the PPWD, including the internal market principle as its sole legal base⁵. In our view the directive's dual objectives—to protect the environment whilst securing the free movement of packaging and packaged goods throughout the EU, as well as avoiding divergences in national policies — remain valid today. However, new challenges related to its environmental objective require the PPWD to be updated so that it can continue to be relevant and effective and help the EU meet the aspirational objectives set in the EU Resource Efficiency Roadmap.

Introduce in the PPWD an EU harmonised definition for EPR and align the definitions of recycling and recovery with those in the WFD.

EUROOPEN supports the OECD's definition of EPR⁶ and supports the introduction of a harmonized definition of EPR, to apply across all relevant EU and national legislation. Similarly, EUROOPEN supports the harmonisation of the definitions of recycling and recovery in the PPWD with those in the WFD⁷.

3. Introduce in the PPWD a requirement for Member States to allow obliged industry to choose how to fulfil their legal obligations and to control performance and costs.

Obliged industry must be granted the right to strongly influence separate collection, sorting and recycling/recovery and to drive cost-efficiency to ensure the lowest sustainable cost to consumers and society. The options available should include self-compliance or collective compliance, for example through an EPR scheme. Mandated transparency on material flows, cost and performance of compliance/schemes is key.

Introduce in the PPWD a provision which requires Member States to assign roles and responsibilities to public authorities (municipalities) and economic operators.

Obliged industry, the municipalities and citizens each have specific roles and responsibilities to perform in order to ensure the separate collection, sorting and recycling or recovery of post-consumer packaging. Obliged industry accepts its specific responsibilities for the organisation and associated funding of separate collection and sorting of post-consumer packaging. Obliged industry cannot however accept costs from other parties over which it has no control. Residual waste (including packaging waste not collected separately for recycling and/or recovery) from households and public areas should remain the responsibility of municipalities.

Specify requirements for separate collection of post-consumer packaging in the PPWD, for example by setting a recovery/recycling target for post-consumer packaging.

1 Roadmap for a Resource Efficient Europe: http://ec.europa.eu/environment/resource_efficiency/about/roadmap/index_en.htm

2 EREP recommendations for Action for a Resource Efficient Europe: http://ec.europa.eu/environment/resource_efficiency/re_platform/

3 EPR Schemes include 1) compliance schemes – organisations whose main purpose is to offer compliance with requirements on recycling and recovery of packaging waste, and to manage take-back obligations, on behalf of the obliged industry (collective compliance). 2) Packaging Recovery Organisations (PROs) – organisations that offer commercial services and operations linked to packaging recovery management to the obliged industry.

4 Primary and secondary packaging generated by households, away-from-home and at closed surroundings (e.g. small businesses, bars, restaurants, public events, schools) insofar as the type of packaging/volumes consumed are similar to households.

5 Art.114 in TFEU on the establishment and functioning of the Internal Market

6 OECD definition of EPR: "an environmental policy approach in which a producer's responsibility (physical and financial) for a product is extended to the post-consumer state of a product's life cycle. There are two features of EPR policy: (1) the shifting of responsibility (physically and/or economically, fully or partially) upstream toward the producer and away from municipalities, and (2) to provide incentives to producers to take environmental considerations into the design of the product." See http://www.oecd.org/document/1/9/0,3343,en_2649_34281_35158227_1_1_1_1,00.html

7 Waste Framework Directive 2008/98/EC: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF>

Collection of post-consumer packaging separately from organic or industrial, commercial and institutional (ICI) packaging waste is essential to ensure sufficiently high levels of both quality and quantity to make recycling and recovery economically viable and environmentally beneficial. This would also support the recommendations in the European Commission's roadmaps⁸ to apply incentives for citizens to separate household waste (e.g. pay-as-you-throw, landfill gate fees).

4. Introduce in the PPWD minimum requirements for all EPR schemes and a requirement for Member States to enforce them via authorisation procedures.

This would facilitate compliance monitoring for Member States, ensure fair competition between multiple schemes, and discourage free riders. Minimum rules for all EPR schemes (regardless of their ownership) should cover areas such as scope (geographic scope, types of packaging material to be covered), transparency (material flows, cost, tendering procedures), consumer information, monitoring, reporting and audits, and financial solidity.

5. Harmonise rules for calculating and reporting packaging recycling and recovery rates

Harmonized calculation and reporting methods at EU level would ensure that data can be tracked and compared between member states effectively. This must be combined with harmonised definitions of 'recycling' and 'recovery', along with a clear distinction between post-consumer and industrial, commercial and institutional packaging waste.

Read EUROPEN's position paper on EPR for packaging waste enclosed and/or on www.europen-packaging.eu/component/downloads/downloads/1375.html

October 2013

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⁸ European Commission, Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste, June 2012

EUROPEN -- the European Organization for packaging and the Environment – is an EU industry association in Brussels presenting the opinion of the packaging supply chain in Europe, without favouring any specific material or system. EUROPEN members are comprised of multinational corporate companies spanning the packaging value chain (raw material producers, converters and brand owners) plus five national packaging organizations all committed to continuously improving the environmental performances of packaged products, in collaboration with their suppliers and customers. www.europen-packaging.eu



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