2.5 WASTE

Waste constitutes one of current society's most serious problems due to its rate of growth and the hazardous nature of many substances. Waste generation is closely related to the life-cycle of materials which, from their extraction to the moment of their disposal, undergo a series of production and consumption processes until they are eventually transformed into waste. Waste management is – and must be – one of the priorities of environmental policy and should be complemented with measures adopted by the production sector.

The definition of waste is so broad ("any substance or object the holder discards or is required to discard under applicable legislation") that the legislation has to be consulted in order to verify what it constitutes. Accordingly, to provide examples, the various waste categories are set out in the European List of Waste (LoW), which came into effect on 1 January 2002, in Annex I to Directive 2006/12/EC, and in the applicable Spanish legislation (Waste Act 10/1998 – Ley 10/1998 de Residuos), which transposed framework Directive 75/442/EEC.

European legislation on waste prevention and management has been broadly developed over a period of more than 30 years and has successively addressed the following issues:

- Establish a general framework
- Regulate landfill sites and incinerators
- Recycle priority streams, such as end-of-life vehicles and waste generated by electrical and electronic products
- Update the general framework

INDICADOR	META	TENDENCIA
Urban was te gener ation	Minimise production	The amount of urban was te generated continues to increase
Urban was te management	Increase recycling and reduce the quantity of waste ending up in landfill sit es	The amount of waste discarded in landfill sites is decreasing in comparison with waste that receives some kind of treatment
P aper-cardboard recycling	Increase recycling rate	recy Pacli perng c-co ardntin bu oar es tdo increase
Glass recycling	Increase recycling rate	Glass recycling continues to increase
Packaging waste recycling and recovery	Increase recycling rate	The recycling and recovery rate is appr oaching the targets of Royal Decree 252/2006 (Real Decreto 252/2006)
Sewage sludge production and use	Increase sewage sludge reuse	The amount of sewage sludge used in agriculture continues to increase

In the EU, this effort to update and amend the regulations has given rise to the consolidated text of Directive 2006/12/EC of the European Parliament and of the Council, of 5 April 2006, on waste.

Its main objective is to regulate waste management and recovery in a coherent manner and to achieve a high level of environmental protection. In order to do so, Member States must adopt measures intended to limit waste generation and draw up waste management plans aimed at meeting such ambitious objectives. The scope of Directive 2006/12/EC excludes gaseous effluents and other types of waste that are already covered by specific legislation (radioactive waste, mineral waste, animal carcasses and agricultural waste, waste-water and decommissioned explosives).

Following these guidelines, Spain held discussions on the matter of waste, which gave rise to the 1st Conference on Waste Prevention *(I Conferencia de Prevención de Residuos*, Madrid, 5-6 April 2006), which addressed the following issues: prevention, recycling, energy recovery, landfill, packaging, hazardous waste, biodegradable waste and other special types of waste. This discussion coincided with the conclusion of the National Urban Waste Plan 2001-2006 *(Plan Nacional de Residuos Urbanos 2001-2006)*, which presented the possibility of giving new impetus to Spanish waste policy. At present, the National Integrated Waste Plan (PNIR – *Plan Nacional Integrado de Residuos)* is being drafted. The proposed wording includes 13 specific Waste Plans and Programmes, each of which lays down specific measures and environmental objectives. It also includes three strategic documents.

The precedent to these plans lies in sections 5 and 6 of the Waste Act 10/1998. These lay down the obligation to draw up and approve National Waste Plans, which will be produced by consolidating the respective Regional Plans. Such Plans must set out targets for reduction, reuse, recycling, other forms of recovery and disposal, as well as the means to achieve these targets, the financing system and the review procedure. It also establishes the obligation to review them every four years and the possibility to co- ordinate them through collaboration agreements between the General State Administration and the Autonomous Communities.

The PNIR lays down a series of principles governing the targets to be reached. According to these, measures to achieve them will be taken. One of these principles is that of hierarchy; i.e. adherence to a scale of waste management options by the persons responsible for these decisions. This principle was defined by the Community Strategy for Waste Management in 1990 and consolidated by the Community Strategy of 1996, as well as by other Community Programmes and Directives. According to the hierarchy principle, waste streams should be ordered as follows, though in practice flexible mechanisms are incorporated:

- Prevention and reduction of waste generation
- Recovery: by reuse, recycling or other options (including energy recovery)
- Elimination

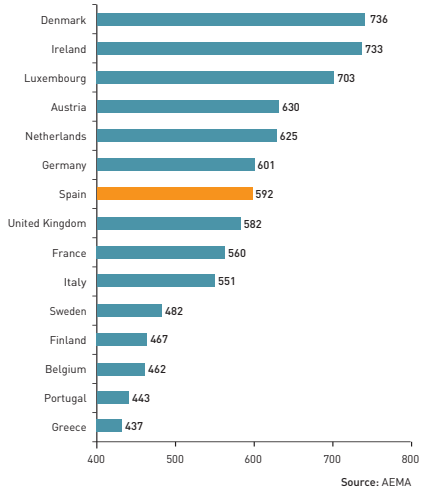
The conclusions of the abovementioned 1st Conference on Waste Prevention state that social awareness regarding this issue must be raised. Society's active participation is an essential requirement if the current situation, which is characterised by alarming growth, is to be addressed. Though this is always the case, it is especially true of waste categories such as urban waste, whose proper management is simply impossible without this contribution from the general public. It also states that "it is impossible to solve a problem that is not rigorously and precisely quantified. Accordingly, existing statistical and information systems must be improved and the circulation and publication of data must be guaranteed".

This chapter presents a series of indicators that help progress towards such a quantification of waste in Spain, contributing to greater knowledge and awareness and enabling effective responses to the issues raised.

Urban waste generation

Waste generation continues to grow in Spain

URBAN WASTE GENERATION IN THE EU-15 IN 2005 (kg/inhab)

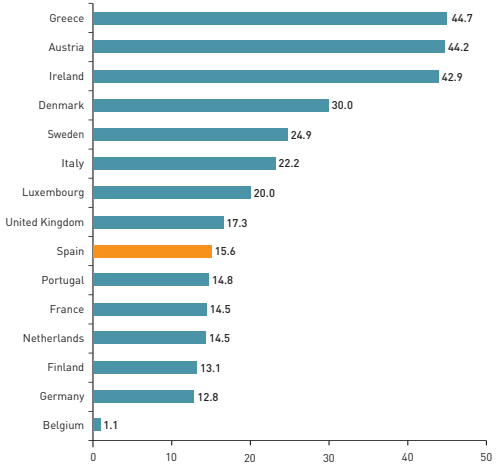


Source: AEMA

Urban waste generation, estimated as waste collected, continues to grow at both European and national level. According to data from the European Environment Agency (EEA), in 2005 Spain was the seventh-biggest waste producer within the EU-15, totalling an amount of 592 kg per inhabitant that year. The Spanish National Institute of Statistics (INE – *Instituto Nacional de Estadística*) estimates that, in 2005, 484 kg of mixed urban waste was collected per person. The Spanish Ministry of the Environment (MMA – *Ministerio de Medio Ambiente*) considers that, in 2005, 499.97 kg/inhab were collected. This figure is obtained by dividing the total amount of urban waste collected (22,353,152 t) by the population estimated by the INE for that year. In 2006, this ratio increased to 523.2 kg/inhab when 23,648,032 t of waste were collected.

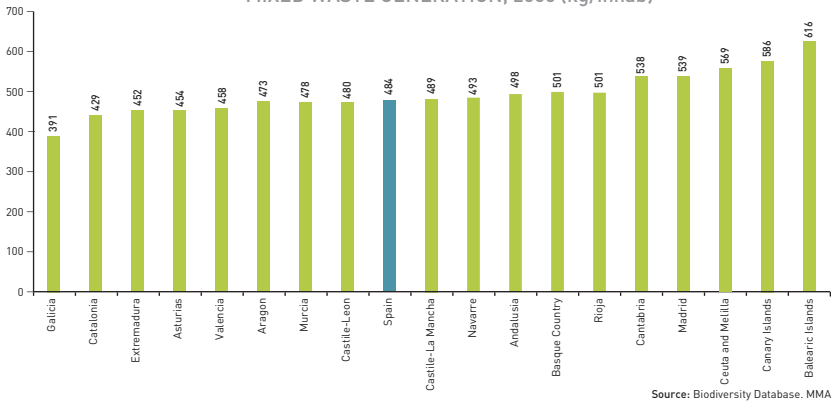
According to the EEA, urban waste generation in Spain in the period 1995-2005 grew by 15.6%, putting the country in ninth place in the ranking of EU-15 countries. In its report "The road from landfilling to recycling: common destination, different routes" (EEA, 2007), the EEA considers that urban waste generation in the EU-25 as a whole will increase by 25% between 1995 and 2020.

INCREASE IN URBAN WASTE GENERATION PER INHABITANT IN THE EU-15, 1995-2005 (%)



Source: AEMA

MIXED WASTE GENERATION, 2005 (kg/inhab)



Source: Biodiversity Database. MMA

The INE estimates that Spain's island Autonomous Communities (Balearic Islands and Canary Islands) registered the highest volumes of mixed waste per capita in 2005 (with 616 and 586 kg/inhab/year, respectively). It is significant that these regions are highly popular tourist destinations, receiving a massive influx of visitors throughout the year, which enormously increases the urban waste generated. Furthermore, the tourist population is not always properly included in the waste-generating population, so the estimated ratio assigns each inhabitant more waste than they actually produce.

NOTES

- The indicator shows municipal waste generation, expressed in kilogrammes per inhabitant (kg/inhab) and refers to waste collected by municipal services or by similar services contracted by local councils.
- According to the Waste Act 10/1998, urban or municipal waste is "waste generated in private households, shops, offices and service businesses, as well as all waste similar to that produced in the above-mentioned places or activities and that is not classified as hazardous."
- Annual waste generation per person per year is calculated by dividing annual waste collected by the estimated population for each year according to INE data (1991 and 2001 population censuses and intercensal estimates for the remaining years). The seasonal tourist population is not included.

- Data refers to the EU-15, which comprised: Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, the Netherlands, Ireland, Italy, Luxembourg, Portugal, the United Kingdom and Sweden.

SOURCES

- The Environment in Spain *(Medio Ambiente en España)*. Various years. Spanish Ministry of the Environment (MMA).
- European Environment Agency (EEA). Indicator "Municipal waste generation in western European (WE) and central and eastern European (CEE) countries". Indicator No. 16 of the Core Set of Indicators.
- Spanish National Institute of Statistics (INE). Press release of 3 December 2007, regarding the "Survey on Waste Collection and Treatment. Year 2005" *("Encuestas de recogida y tratamiento de residuos. Año 2005")*.
- EEA, 2007. "The road from landfilling to recycling: common destination, different routes". Office for Official Publications of the European Communities. Luxembourg. 2007.

FURTHER INFORMATION

- http://www.mma.es
- http://www.ine.es
- http://eea.europa.eu

Urban waste management

The amount of waste landfilled in Spain dropped by over 20% between 2003 and 2006

AMOUNT OF URBAN WASTE TREATED AT SPAIN'S FACILITIES

	2005		2006	
Treatment type	No. of facilities	Waste treated (t)	No. of facilities	Waste treated (t)
Sorting of packaging	67	330,638	90	606,200
Composting of organic matter	23	243,921	18	160,017
Sorting and composting	59	6,455,248	59	6,991,541
Sorting, biomethanisation and composting	9	1,123,818	13	1,168,565
Incineration	10	1,915,279	10	2,024,586
Landfill	188	14,695,940	183	16,007,098

Source: MMA, 2007 and 2008: "The Environment in Spain, 2006 and 2007".

After studying the different waste management models, the European Environment Agency (EEA) set out a classification according to the amounts of waste eliminated by incineration and recovery (EEA, 2007. "The road from landfilling to recycling: common destination, different routes"). Of the countries studied, Spain is among the 7 that incinerate less than 25% of their waste and recover more than 25%.

The table summarising the amounts of waste treated at different types of facilities in Spain shows a predominant use of landfill. Between 2005 and 2006, disposal of waste in landfill sites increased by 8.9%.

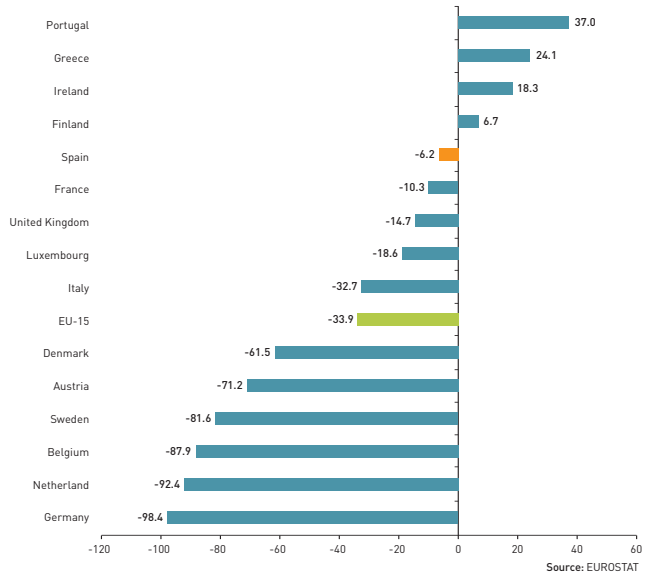
Waste incineration with energy recovery, on the other hand, showed an increase of 5.7% in 2006 in comparison with the number of tonnes incinerated in 2005. Meanwhile, between the same years, the amount of waste managed at sorting and composting facilities grew by 8.3%; and at sorting, biomethanisation and composting facilities it grew by 4.0%. The 83.3% increase in waste treated at sorting plants and the 34.4% drop in the amounts treated by composting of organic matter are both significant.

In order to interpret the table above properly, it is necessary to take into account that the amounts of waste that enter incineration and landfill facilities include those rejected from sorting plants and biological treatment plants. As a result, these figures will always show a larger amount of wasted treated than the amount of waste collected.

According to Eurostat, landfill of urban waste in Spain decreased by 6.2% in the period 1995-2005. This drop is one of the lowest among EU-15 countries and only surpasses the figures for Finland, Ireland, Greece and Portugal (countries whose landfill of waste has not only not decreased over the period but has in fact grown). It was also much less than the EU-15 average, which fell by 39.9%. Nevertheless, in the last three years (2003-2006), there was a 20.6% drop in Spain. In absolute terms, Spain landfilled 289 kg/inhab in 2006, while the figure for the EU-15 was 193 kg/inhab and 213 kg/inhab for the EU-27.

This same source estimates that urban waste incineration in Spain grew by 70.8% in the period 1995-2006, an increase surpassed by Germany, Finland, Italy and Austria and much higher than the EU-15 average, which was 48.8%. It is worth noting that Ireland and Greece do not incinerate urban waste and that Belgium and Luxembourg were the only two EU-15 countries in which there was a drop in the amount of waste incinerated in this period.

VARIATION IN LANDFILL OF URBAN WASTE (kg/inhab) IN THE EU-15, 1995-2006 (%)



Source: EUROSTAT

In 2005, separate collection of glass (green container), paper and cardboard (blue container and door-to-door collection), light-weight packaging (yellow container) and organic matter (which includes domestic biological waste, pruning waste from parks and gardens, wood debris, etc.) amounted to 2,133,435 tonnes in Spain. In 2006, this figure grew to 2,519,340 tonnes, representing an increase of 18.1%. The Autonomous Communities that carry out most separate collection per inhabitant are Navarre (137.9 kg/inhab), Galicia (114.3 kg/inhab), Catalonia (108.7 kg/inhab) and the Balearic Islands (78.2 kg/inhab).

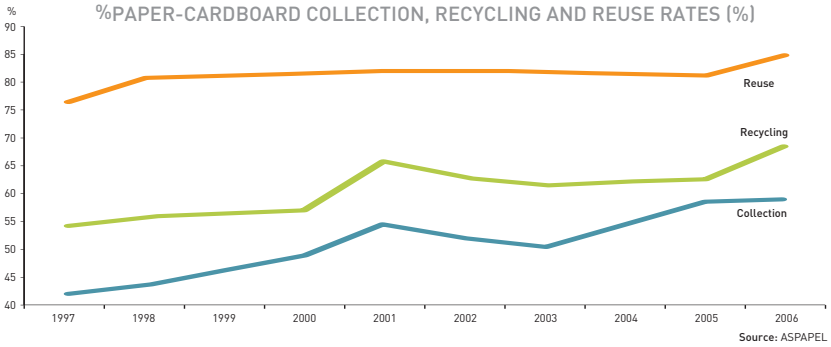
NOTES
- See notes for the previous indicator.

SOURCES
- Spanish Ministry of the Environment, 2007. "The Environment in Spain 2006". Also previous years.
- Spanish Ministry of the Environment, 2008. "The Environment in Spain 2007".
- INE, 2007. "Survey on Waste Collection and Treatment. Year 2005".
- EEA, 2007. "The road from landfilling to recycling: common destination, different routes". Office for Official Publications of the European Communities. Luxembourg. 2007.

FURTHER INFORMATION
- http://www.mma.es
- http://www.ine.es
- http://epp.eurostat.ec.europa.eu/portal/
- http://www.waste.eionet.europa.eu/etcwmf/

Paper-cardboard recycling

Paper-cardboard recovery has trebled in the last 20 years, amounting to over 4.6 million tonnes



The most developed countries have a high level of paper consumption per inhabitant. Luxembourg heads the list of countries with highest annual paper consumption, with nearly 358 kg per capita. Other examples of countries with high paper consumption are the United States, with 301 kg, and Germany, with 233 kg. Consumption in Spain stands at 175 kg per inhabitant, approaching the level of the most advanced European countries.

Used paper is one of the raw materials employed in paper manufacture and is collected separately for this purpose. The Spanish Association of Pulp, Paper and Cardboard Manufacturers (ASPAPEL – *Asociación Española de Fabricantes de Pasta, Papel y Cartón*) estimates that for every 10 kg of paper manufactured in Spain, 8 kg of recycled paper are used as raw material. Recovery of used paper therefore constitutes a good environmental management practice, as it avoids generation of large amounts of waste, which would then have to be eliminated, and avoids the need to fell trees to extract cellulose fibre.

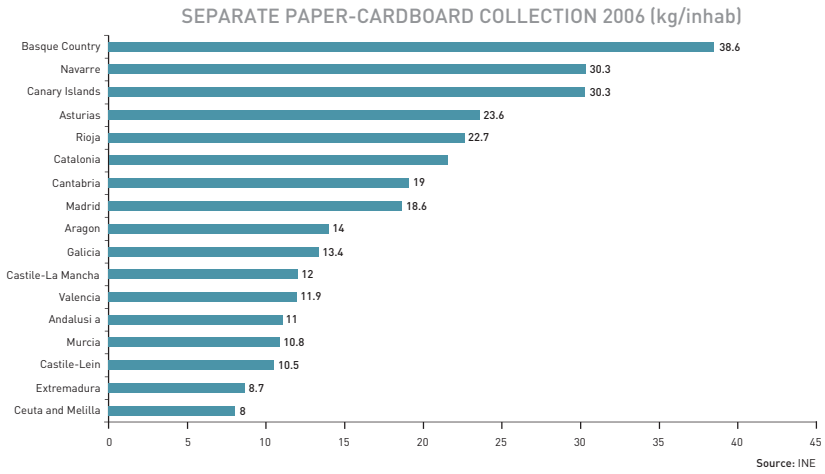
According to ASPAPEL, the recycling rate for recovered paper in 2006 stood at 68.3%, well above the European Union average. For the first time, the volume of paper recycled exceeded 5 million tonnes. This growth in the collection and recycling rate stems from the Spanish paper industry's commitment to recycle all recovered paper.

As mentioned above, recovering and recycling paper is not only important for the saving in raw materials it represents, but also for its contribution to minimising waste generation. The volume of used paper recovered is equivalent to landfilling the equivalent of the surface area of 40 football stadiums.

According to this same source, the collection rate in recent years has shown an upward trend and, in 2006, reached 58.9% (taken to mean the amount of recovered paper collected expressed as a percentage of paper and cardboard consumption). In 2005, this rate was 58.5%, while in 2004 it was 54.6% and in 2003 it was 50.5%.

The reuse rate has remained at levels above 80% since 1989 and stood at 84.5% in 2006. This ratio is calculated by dividing recovered paper consumption by paper-cardboard production and expressing it as a percentage.

Used paper is recovered for recycling from industrial collection (companies, publishing houses, printers and large retail outlets), municipal collection (blue containers) and separate collection from small retail outlets, households, offices, schools and public buildings. Nearly 850,000 tonnes were recovered from blue containers and separate "door-to-door" collection. Among Spain's Autonomous Communities, the Basque Country and Navarre have the highest collection rate per inhabitant, followed by the Canary Islands and the Principality of Asturias. The growing trend suggests increasing awareness among the general public, with the average national level standing at 17.9 kg/inhab in 2006.



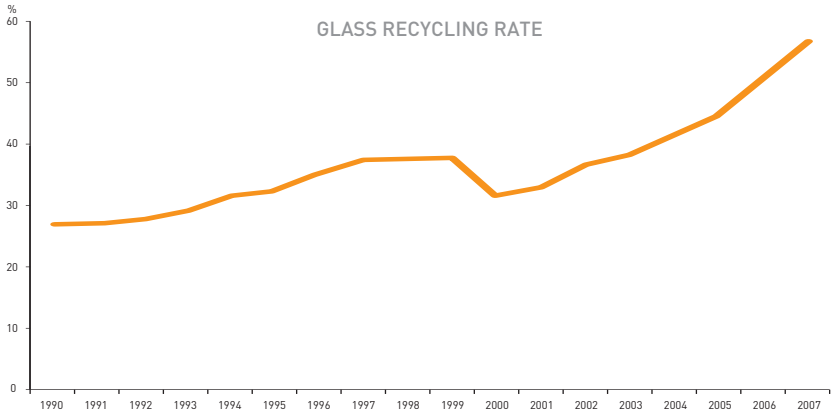
NOTES
- The reuse rate refers to consumption of recovered paper expressed as a percentage of paper and cardboard production.
- The collection rate refers to the collection of recovered paper expressed as a percentage of paper and cardboard consumption. Used paper and cardboard are recovered for recycling by various means: industrial collection (companies, publishing houses, printers and large retail outlets), separate collection (blue containers and door-to- door collection from small retailers) and specific collection (offices, public buildings, recycling points, etc.). After being cleaned and sorted into different grades, the recovered paper is used as a raw material by the paper-making industry to produce new paper. Recovered paper is thus used paper which has been collected to be used as the raw material for the manufacture of new paper, in other words to be recycled. Around 50% of the paper consumed in Spain is collected for recycling (collection rate).
- The recycling rate for waste paper and cardboard refers to the percentage ratio between recovered paper consumption (recycled paper) and apparent consumption of paper and cardboard. Apparent consumption is calculated by adding the quantity imported to the quantity produced and then deducting exports.

SOURCES
- Spanish Association of Pulp, Paper and Cardboard Manufacturers (ASPAPEL). "Sustainability Report" *("Memoria de Sostenibilidad")*, various years.
- ASPAPEL, 2008: Summary of the latest statistics on the sector (see website).

FURTHER INFORMATION
- http://www.mma.es
- http://www.aspapel.es
- http://www.ine.es

Glass recycling

The glass recycling rate continues to grow, reaching 56% in 2007



Source: ECOVIDRIO

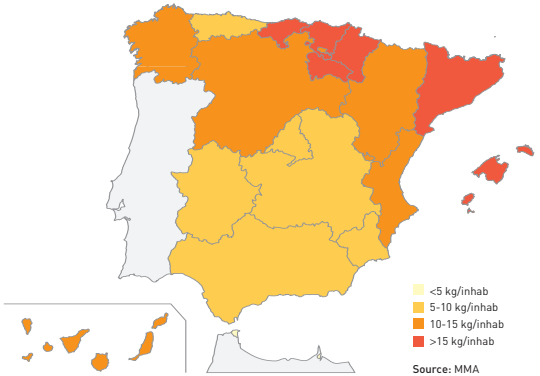
As is the case with paper, the advantages of glass recycling are obvious: raw materials savings and waste generation prevention. Furthermore, the glass recycling process requires a lower melting temperature than when using conventional raw materials (sand, soda and lime), which gives rise to major energy savings.

Glass recycling in Spain shows continuous growth: the recycling rate in the period 1990-2007 rose by nearly 30 points. At present, more glass is recovered than is sent to landfill sites. In 2007, total glass recycled reached 936,337 tonnes, showing an increase of over 10.2% on the previous year and a recycling rate of 56%.

Public awareness and participation is essential to this process. Glass is collected for recycling in containers located on public thoroughfares (green-coloured bottle-banks) and through implementation of management programmes in a variety of companies in the hotel and catering sector (which consumes 48% of glass). The volume recovered through public participation exceeded 70% of the total recovered, showing high – and increasingly greater – public involvement. In 2005, the number of containers in Spain stood at 127,155, representing one container per 347 inhabitants. In 2006, these figures rose slightly, amounting to 136,686 containers, representing one container per 327 inhabitants. In 2006, each citizen deposited an average of 12.9 kg of glass in green bottle-banks (1.3 kg more than the average in 2005).

By Autonomous Community, the Basque Country continues to have the highest rate of glass collection per inhabitant, followed by the Balearic Islands. By comparison with the previous year, a marked improvement can be seen in Cantabria and Navarre, which have increased their recycling rate by 3.1% and 2%, respectively.

GLASS RECYCLED, 2006 (kg/inhab)



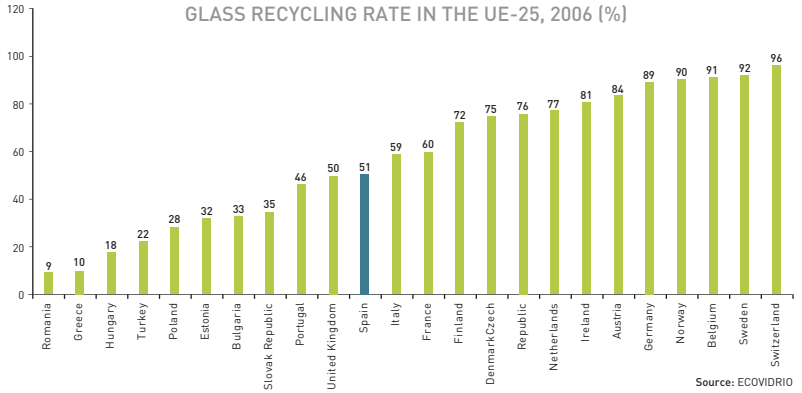
Source: MMA

2006 was a landmark year in the history of glass recycling because, according to data from the European Container Glass Federation (FEVE), European countries recycled 5.8% more than in 2005. In other words, 61% of the glass consumed all over Europe in 2006 came from recycling plants in the 24 countries belonging to this Federation.

Spain, along with Italy, Portugal and the United Kingdom, stood out among FEVE countries for their marked growth in glass recycling. Nevertheless, Spain's recycling rate in 2006 stood at 51%, slightly lower than the European average (61%) and some distance from leading countries like Switzerland (96%), Sweden (92%) and Belgium (91%), which have a long-standing and solid recycling tradition.

In 2006, twelve European countries surpassed the 60% 2008-year target recycling rate laid down by the EU Directive. The current challenge is for the rest of the countries to increase their recycling rates to meet the planned objective.

GLASS RECYCLING RATE IN THE UE-25, 2006 (%)



Source: ECOVIDRIO

NOTES

- The glass recycling rate is defined as the ratio between quantity of glass collected and apparent glass consumption. The latter is calculated by adding domestic production to glass imports and then subtracting exports. Ecovidrio conducts the entire process of glass recycling for subsequent manufacture of glass packaging (collection, treatment and final recycling, a process which takes place within the same year). This refers only to packaging glass (hollow glass), and does not include other types of glass, such as window panes, car windows, laminated glass, etc. (flat glass).
- Glass is collected from two sources: glass contributed by the public, which is glass collected in containers (green bottle-banks) located on public thoroughfares, and glass of other origin, which is obtained from packaging plants, waste sorting plants and glass collected from the hotel and catering sector and other private and public entities.

SOURCES

- Ecovidrio. "Annual Report 2006" (*"Informe anual 2006"*).
- European Container Glass Federation (FEVE).

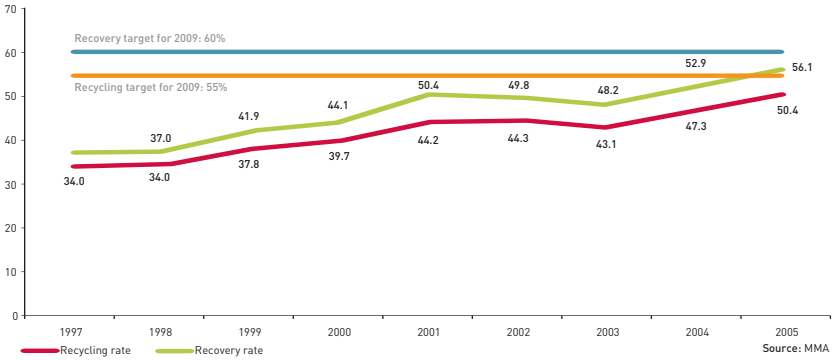
FURTHER INFORMATION

- **http://www.mma.es**
- **http://www.ecovidrio.es**
- **http://www.anfevi.com/**
- **http://www.feve.org**

Packaging waste recycling and recovery

Packaging waste recycling and recovery rates continue to grow and are approaching the targets set for 2009

OVERALL PACKAGING WASTE RECYCLING AND RECOVERY RATE (%)



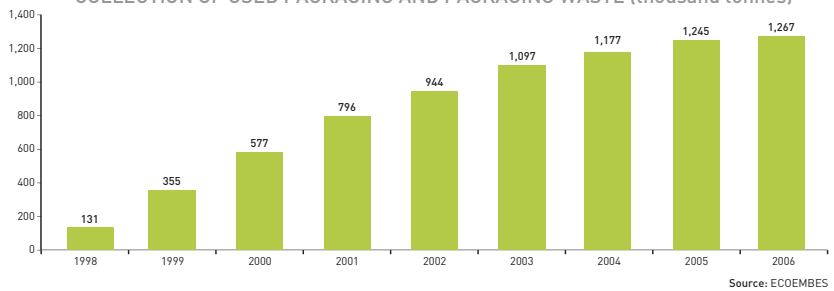
Royal Decree 252/2006 (Real Decreto 252/2006), of 3 March, amended the targets laid down by the Packaging Act 11/1997 *(Ley 11/1997 de envases)* and set new objectives for 2009: to reach a packaging recycling rate of 55% and a recovery rate of 60%.

In 2005, Spain reached a recovery rate of 56.1% and a recycling rate of 50.4%. Over the last two years, both rates increased by between 7 and 8 points, so it is expected that, if the same growth rate continues, the Royal Decree's targets may be achieved before 2009.

According to information provided by Ecoembes, in December 2006, 41.4 million inhabitants had access to a light-weight packaging collection system (plastic packaging, cans and cartons). In other words, 94% of municipalities with over 5,000 inhabitants had a separate collection system for this kind of waste in 2006.

Most municipalities belonging to the Integrated Management System (IMS) operated by ECOEMBES have opted for the specific separate collection system for light-weight packaging. The yellow, igloo-shaped container is the most widely used in Spain (almost 40% of the total), and the first choice for semi-urban and rural areas.

COLLECTION OF USED PACKAGING AND PACKAGING WASTE (thousand tonnes)



In 2006, 53.2% of packaging handled by Ecoembes' Integrated Management System (IMS) was recycled, while 200,686 tonnes were recovered for their energy value.

At the end of 2006, Ecoembes had 12,208 member companies, a figure 1.7% higher than the previous year and 50.2% higher than in 1998. This indicates greater commitment by and involvement from companies that place packaging on the market, as they are meeting their obligation to take responsibility for the waste their packaging generates.

Food is the best represented sector, with 6,269 companies, 51.35% of the total. The beverages sector accounts for 7.74% of companies (945 in total). Hygiene and beauty-product manufacturers make up 7.22% of IMS member companies (881), while cleaning and maintenance-product makers account for 4.67% (570) of packaging managed.

At regional level, Catalonia has the largest number of companies affiliated to the IMS, followed by Valencia and Madrid.

NOTES

- Ecoembalajes España, S.A. (ECOEMBES) is a not-for-profit public limited company whose purpose is to design and manage systems to separate and recover used packaging and packaging waste in order to ensure compliance with the reduction, recycling and recovery targets defined in the Packaging Act 11/1997, of 24 April 1997.
- Recycling and recovery rates are calculated from the tonnes of material recycled and recovered for energy value (measured at the point of entry into the recycling and recovery process) compared with total packing waste generated. This figure is estimated as the total quantity of packaging placed on the market, since it is assumed that the quantity of reusable containers from previous years which become waste will balance out the reusable containers placed on the market in that year and which continue to be reused.

SOURCES

- "The Environment in Spain". Various years. Spanish Ministry of the Environment (MMA).
- Ecoembalajes España S.A. (ECOEMBES). Annual Report (Memoria annual).

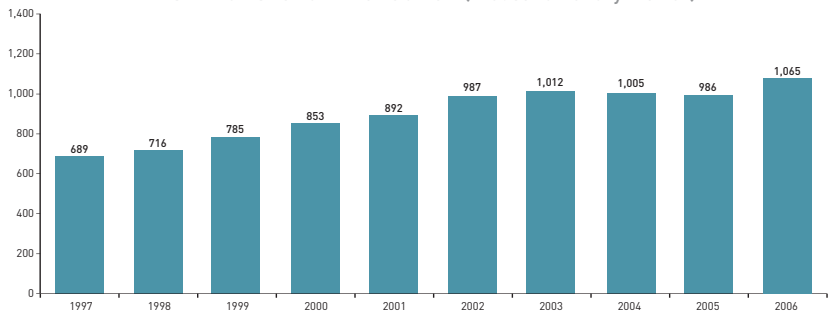
FURTHER INFORMATION

- http://www.mma.es
- http://www.ecoembes.com

Sewage sludge production and use

Sewage sludge production has surpassed one million tonnes of dry matter. Agriculture continues to be the main use

SEWAGE SLUDGE PRODUCTION (thousand t of dry matter)



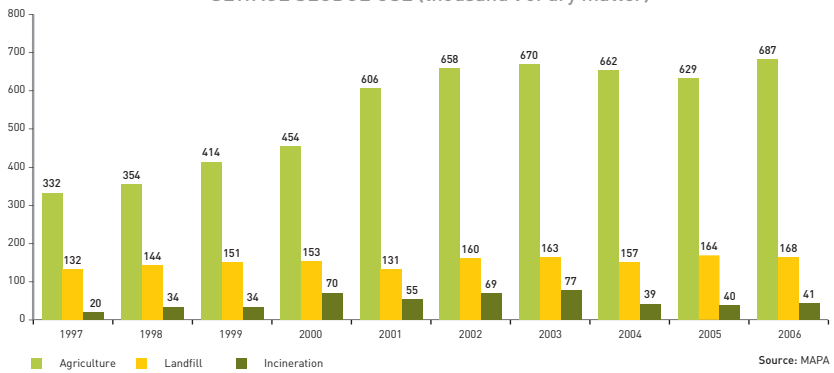
Source: MAPA

Implementation of the National Sewerage and Waste-Water Treatment Plan *(Plan Nacional de Saneamiento y Depuración)* has increased production of sewage sludge by treatment plants, and its use in agriculture is one of the approved disposal solutions. Using sewage sludge as agricultural fertiliser is not only environmentally friendly, but also contributes to improving the physical, chemical and biological properties of the soil on which it is applied, mitigating problems of erosion, dependence on chemicals and of organic and mineral deficiencies.

Sewage sludge production in Spain has grown constantly over the last 10 years, surpassing 1 million tonnes of dry matter in 2006. This figure is expected to continue to grow, as Spain's new Water Quality Plan *(Plan de Calidad del Agua)* provides for the construction of new treatment plants and facilities in sensitive areas.

Council Directive 86/278/EEC, of 12 June, on the protection of the environment, and in particular of soil, allows sewage sludge to be used on agricultural land provided that the concentration of heavy metals, both in the sewage sludge and in the cultivated soil, does not surpass certain limits and, furthermore, that the heavy-metal accumulation in the cultivated soil is monitored.

SEWAGE SLUDGE USE (thousand t of dry matter)



Source: MAPA

In 2006, sewage sludge production increased by 8% on the previous year. Agriculture continues to be the main use for this kind of waste, accounting for 64.5% of all sludge produced. At present, prior to being applied as fertiliser, sewage sludge undergoes anaerobic digestion, which produces methane as a by-product. This biogas is then used as an energy source.

Landfill showed a slight upward trend in the period 1997-2006, although it seems to have stabilised in recent years. As regards incineration, no clear trend is appreciable in the same period, and this option has remained at around 40,000 tonnes. The volume of waste incinerated in 2006 amounted to 3.4% of the total.

NOTES

- Directive 86/278/EEC, of 12 June, on "the protection of the environment and, in particular, of the soil, when sewage sludge is used in agriculture", refers to the following terms:
  - "residual sludge from sewage plants treating domestic or urban waste-water and from other sewage plants treating waste-waters of a composition similar to domestic and urban waste-water"
  - "residual sludge from septic tanks and other similar installations for the treatment of sewage"
  - "residual sludge from sewage plants other than those referred to above"
- The drop in sewage sludge production in 2005 was because the Regional Government of Valencia decommissioned some treatment plants that had ceased operations and adjusted the production of others.

SOURCES

- National Sewage Sludge Register *(Registro Nacional de Lodos)*. Sub-Directorate General for Means of Agricultural Production *(Subdirección General de Medios de Producción Agraria)*. Spanish Ministry of Agriculture, Fisheries and Food (MAPA – *Ministerio de Agricultura, Pesca y Alimentación*). (Specific query).

FURTHER INFORMATION

- http://www.mma.es
- http://www.mapya.es