Resource efficiency and low carbon economy

Waste generation

Indicator	Indicator past trend		Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Waste generation in Europe	EU ▲	EEA ▲	Manage waste safely as a resource. Reduce absolute and per capita waste generation — 7th EAP	●
The historic trend shows variation in waste generation among sectors, with reduction in some, little change in others and some increases. This mixed picture suggests that the outlook to 2020 is unclear				

The Seventh Environment Action Programme (7th EAP) states that, by 2020, absolute and per capita waste generation should be in decline. A society that meets its needs while producing less waste is more resource efficient with lower environmental risks from waste management. The total amount of waste, excluding major mineral wastes, generated in Europe remained stable (only a 2 % reduction) between 2004 and 2012, with an increase between 2010 and 2012. Waste generation by the manufacturing, mining and quarrying, agriculture, forestry and fishing, and service industries has significantly reduced. Waste from households has also reduced, though more modestly. However, waste from the construction and the water and waste sectors has increased sharply. The reduction in waste from manufacturing is likely to be due to a combination of improvements in the efficiency of production processes and a shift towards less-intensive waste-generating activities as more intensive manufacturing industries move production out of Europe. In addition, the shift from manufacturing industries to service industries might also have had an effect on waste generation. However, statistical changes in the allocation of waste to the economic sectors and re-classification of waste to by-products might have contributed to the trends as well. This mixed picture suggests that the outlook to 2020 is unclear. The measures in the Circular Economy Package aim to reduce waste generation in the longer term.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

The 7th EAP includes an objective that, by 2020, absolute waste and per capita waste generation will be in decline (EU, 2013). The waste hierarchy is the central framework for EU and national waste policies. This hierarchy gives the highest priority to policies and actions that promote waste prevention, followed by preparing for reuse, recycling, other recovery and finally disposal. This briefing presents trends in waste generation. Reducing the amount of waste generated means that there is less waste to manage and also potentially that the demand for material resources and associated environmental impacts has been reduced (AIRS_PO2.1, 2016).[1]

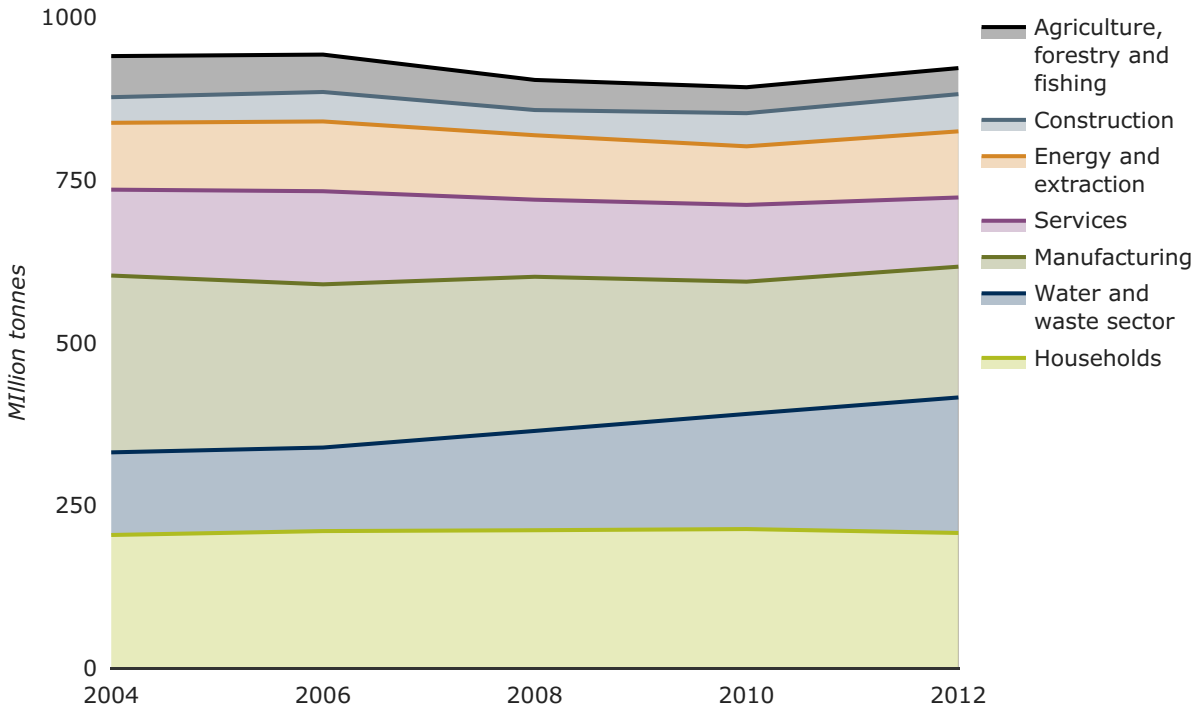
Policy targets and progress

The Roadmap to a Resource Efficient Europe includes the goal that, by 2020, waste generated per capita will be in absolute decline (EC, 2011). Waste prevention and the use of waste as a resource is becoming increasingly important, not only in environmental policy but also in industrial and raw material policy. In December 2015, the European Commission published 'Closing the loop — An EU action plan for the circular economy' (EC, 2015), otherwise known as the Circular Economy Package. Unlike the traditional linear take–make–consume–dispose approach, a circular economy seeks to respect planetary boundaries by increasing the proportion of renewable or recyclable resources while reducing the consumption of raw materials.

Approaches such as eco-design and sharing, reuse, repair and refurbishing will play a significant role in maintaining the utility of products and components, and reducing the generation of waste (EEA, 2016).

The Waste Framework Directive (EU, 2008), obliges EU Member States to adopt and implement waste prevention programmes. A review of available programmes indicates that countries use a broad range of measures with a focus on information-based instruments. However, not all programmes include quantified waste prevention targets or economic instruments (EEA, 2015).

Figure 1. Generation of waste, excluding major mineral wastes, EU



Data sources: Eurostat. Generation of waste [env_wasgen]

The total amount of waste in the EU, excluding major mineral wastes, reduced by 2 % between 2004 and 2012 (Figure 1). In 2012, the highest levels of waste generation were recorded for households, the water and waste sector and the manufacturing sector.

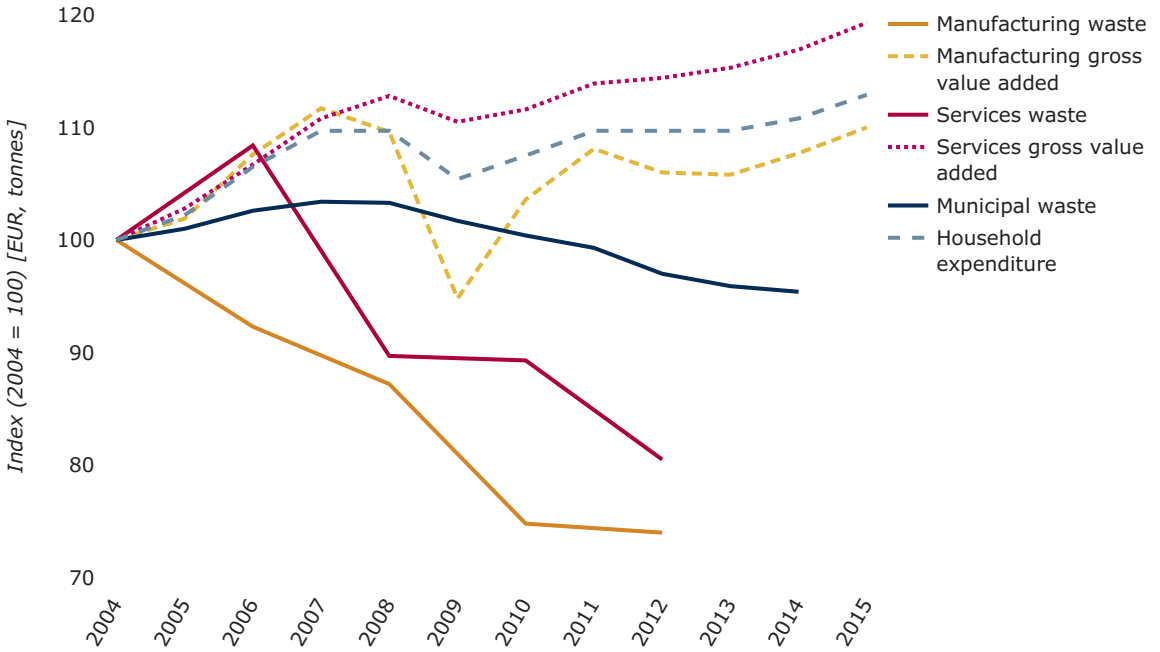
Trends in individual sectors have been mixed. Between 2004 and 2012, there was a reduction in the waste generated by agriculture, forestry and fishing (37 %), manufacturing (26 %), and services (19 %). Household waste generation declined by a more modest 5 % over the same period.

Waste generated by the water and waste sector and the construction industry grew at a rapid pace: by 61 % and 45 %, respectively, despite a dip in construction waste output in 2008 that corresponded with the economic downturn. However, waste generated by the waste sector includes secondary waste so it is likely that an increase in recycling activities has contributed to this increase, because some material that is collected for recycling cannot be recovered and has to re-join the waste stream. This effect cannot currently be quantified because of a lack of data.

Figure 2 presents indices for the waste generated by the two main production sectors of the

European economy (manufacturing and services), for the EU-28 plus Norway, and by household consumption for the EEA-33 (EU-28, Iceland, Lichtenstein, Norway, Switzerland and Turkey). Household waste comprises the bulk of municipal waste. The figure also shows a measure of the economic output of services and manufacturing (the gross value added) and a measure of consumption (household expenditure).

Figure 2. Waste generation by production and consumption activities



Data sources:
a. Eurostat. GDP and main components (output, expenditure and income)
b. Eurostat. Municipal waste
c. Eurostat. Gross value added and income by A*10 industry breakdowns
d. Eurostat. Generation of waste
e. EEA. Indicator CSI 041

Some economic production and consumption activities in Europe are becoming less waste intensive, even if allowance is made for the 2008 economic downturn. Figure 2 shows that waste generation from manufacturing declined by 25 % in absolute terms between 2004 and 2012, despite an increase of 7 % in sectoral economic output. Waste generation from the service sector also declined by 23 % in the same period, despite an increase of 13 % in sectoral economic output.

Turning to consumption, total municipal waste generation in the EEA-33 declined by 2 % between 2004 and 2012, despite a 7 % increase in real household expenditure. Per capita generation of municipal waste (EEA-33), which mostly originates from households, declined by 5 % in the same period, falling from 511 to 485 kg per capita.

The overall improvements are most likely due to a combination of various factors: efficiency improvements in production processes and management, changes in the structure of the manufacturing sector, an increase in activity in the services sector and a shift towards less intensive waste-generating activities. However, some of the trends might be influenced by data quality issues. For example, the distinction between waste and by-products has a significant impact on the amounts of waste generated in agriculture, forestry and fishing; and in manufacturing (EC, 2014).

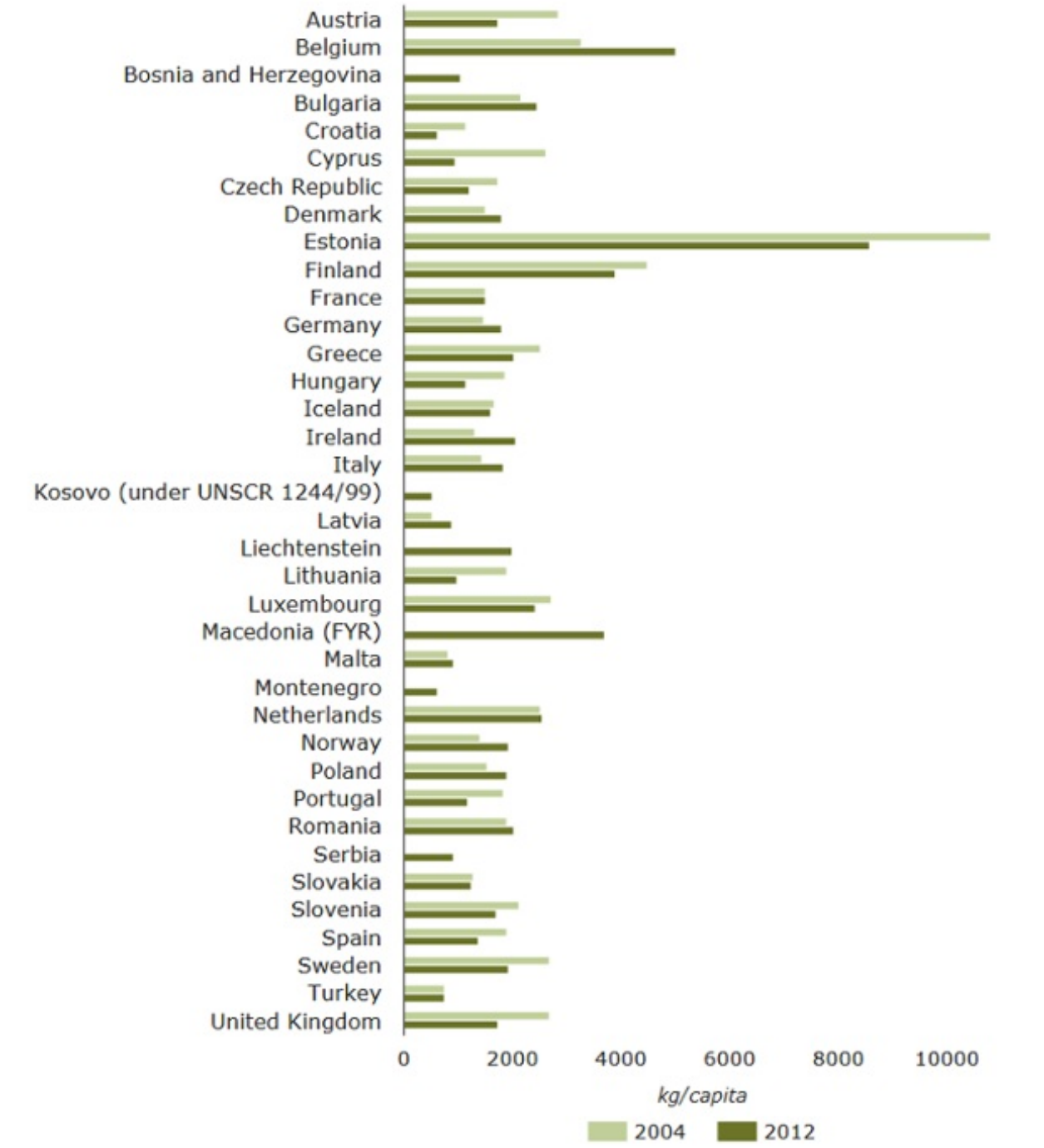
The services sector is an order of magnitude less waste intensive than the manufacturing sector: 0.014 kg/EUR in 2012 for services and 0.12 kg/EUR in 2012 for manufacturing. An economic restructuring towards more service industries can therefore be a key driver towards reduced waste generation.

The structure of production in Europe is changing. Trade liberalisation combined with lower labour costs and less regulation in many developing countries has resulted in the movement of the production of goods consumed in Europe to other regions of the world. Some sectors, including the metals, telecommunications, electrical appliances, textiles, food and chemical sectors, have been particularly affected by relocation since 2000. Some parts of the services sector have also been affected. This development may have added to the decline in waste generation (EEA, 2014).

The overall amount of waste generated has remained fairly stable, with only a slight reduction between 2004 and 2012. While some sectors are becoming less waste intensive, the prospect that total waste generation will be in decline by 2020 is uncertain. Total waste generation began to rise again between 2010 and 2012 as economies recovered. However, the Circular Economy Package and the waste prevention programmes in the EU Member States should contribute to a reduction in waste generation.

Country level information

Figure 3. Waste (excluding mineral and solidified) generation by country, 2004 and 2012 (kg/capita)



Data sources:Eurostat. Generation of waste [env_wasgen]

Figure 3 shows that the majority of European countries generate between 1 and 2 tonnes of waste (excluding mineral waste) per person per year. That figure is declining in most countries; however, increases in some countries may be due to changes in data collection methods. This is the case in Belgium (EC, 2014), and the high figures for Estonia are believed to relate to the inclusion of waste from the oil shale industry, which is included as mineral wastes in other countries (Eurostat, 2014).

Outlook beyond 2020

The long-term prospects for reducing the waste generated by production activities appear positive, although some of these gains could be associated with the movement of manufacturing industries out of Europe. A shift to a circular economy, with increased reuse of goods and materials, will reduce both consumption- and production-based waste generation. The Circular Economy Package (EC, 2015) includes a number of measures that aim to reduce waste generation beyond 2020. These include concrete measures to promote reuse and stimulate industrial symbiosis — turning one industry's by-product into another industry's raw material — and economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles). The success of these measures will be key to the medium- to long-term prospects for reducing waste generation.

About the indicator

This indicator is defined as the weight of waste generated by an economy per year, excluding mineral wastes, dredging spoils and contaminated soils. This exclusion enhances comparability across countries, as mineral waste accounts for very high quantities in some countries and for some economic activities, such as mining and construction. If this category were included, it would account for 71 % of the total waste generated in the EU in 2012.

Waste generation data are published by Eurostat every 2 years for seven broad economic sectors: agriculture, forestry and fishing; energy and extraction; water and waste; manufacturing; construction; services; and households.

The water and waste sector includes water collection, treatment and supply, sewerage and three waste sector categories (waste collection, treatment and disposal activities; materials recovery, remediation activities and other waste management services; and wholesale of waste and scrap). The three waste sectors include secondary waste, i.e. material that has originated from other sectors.

The energy and extraction sector includes electricity, gas, steam and air conditioning supply plus non-mineral wastes from mining and quarrying. Manufacturing includes foods, textiles, wood, paper, coke, chemicals, metals, electronics, transport equipment and other machinery.

Footnotes and references

EC, 2011, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Roadmap to a Resource Efficient Europe' (COM(2011) 571 final).

EC, 2014, Report from the Commission to the European Parliament and the Council on statistics compiled pursuant to Regulation (EC) No 2150/2002 on waste statistics and their quality (COM(2014) 079 final).

EC, 2015, Closing the loop — An EU action plan for the circular economy (COM(2015) 614 final) (http://ec.europa.eu/environment/circular-economy/index_en.htm).

EEA, 2014, Environmental indicator report 2014,European Environment Agency. (http://www.eea.europa.eu/publications/environmental-indicator-report-2014).

EEA, 2015, Waste prevention in Europe — the status in 2014, EEA Report No 6/2015, European Environment Agency.

EEA, 2015, 'Waste generation (CSI 041)', European Environment Agency (http://www.eea.europa.eu/data-and-maps/indicators/waste-generation-1/assessment) accessed 5 December 2016.

EEA, 2016, Circular economy in Europe — Developing the knowledge base, EEA Report No 2/2016, European Environment Agency.

EU, 2008, Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3–30).

EU, 2013, Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet', Annexe A, paragraph 43(d) (OJ L 354, 28.12.2013, p. 171–200).

Eurostat, 2014, 'Waste statistics' (http://ec.europa.eu/eurostat/statistics-explained/index.php/Waste_statistics), accessed 14 October 2016.

AIRS briefings

1. AIRS_PO2.1, 2016, Resource efficiency.

> Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency