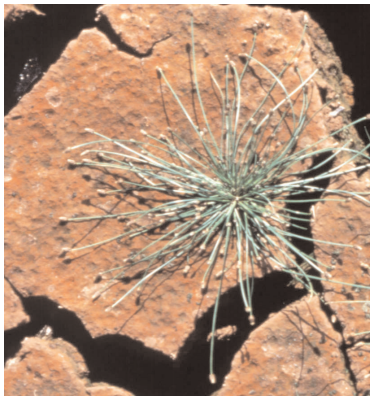
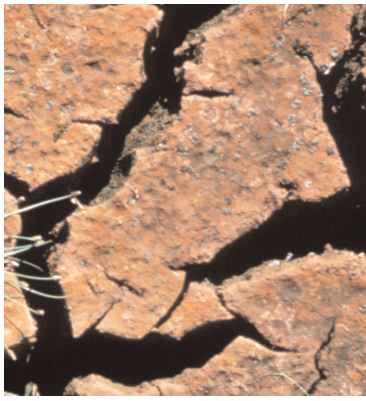
10.
ENVIRONMENT





10. ENVIRONMENT

The sixth environment action programme (sixth EAP), which was adopted by the European Parliament and Council in 2002 and runs until 2012, requires the European Commission to prepare thematic strategies covering seven areas: air pollution, prevention and recycling of waste, protection and conservation of the marine environment, soil, sustainable use of pesticides, sustainable use of resources, and urban environment. These thematic strategies represent the next generation of environment policy, setting clear environmental objectives to around 2020. Each strategy is founded on thorough research and science, and follows an in-depth review of existing policy and wide-ranging stakeholder consultation. The aim has been to create positive synergies between the seven strategies, as well as to integrate them with existing sectoral policies, the Lisbon strategy and the sustainable development strategy.

Eurostat has a wide range of data within this area, including:

- greenhouse gas emissions;
- air pollution by ozone or by particulate matter;
- water resources, abstraction and supply;
- wastewater treatment;
- waste generated, recycled and disposed of;
- municipal waste;
- hazardous waste;
- waste landfilling and incineration;
- sales and use of pesticides and consumption of commercial fertilisers;
- organic farming;
- environmental expenditure, investment and tax revenues.

AIR POLLUTION AND CLIMATE CHANGE

The air we breathe contains gases and airborne particles released into the atmosphere by fuel combustion, industrial processes and other activities. Some of these can result in environmental problems, including negative effects on ecosystems, flora, fauna and human health. Examples include global warming, respiratory diseases from particles and gases, pollution and acidification of soil and water, damage to buildings, and damage to the ozone layer.

The earth's average surface temperature rose by around 0.6 °C during the 20th century and there is broad consensus among the scientific community that most of the warming over the last 50 years has been due to increased concentrations of greenhouse gases in the atmosphere as a result of human activities, such as burning of fossil fuels and deforestation. The resulting changes in weather systems are predicted to lead to increased storms and rainfall in some areas, while others may suffer drought; sea levels are also likely to rise with implications for coastal and low-lying regions.

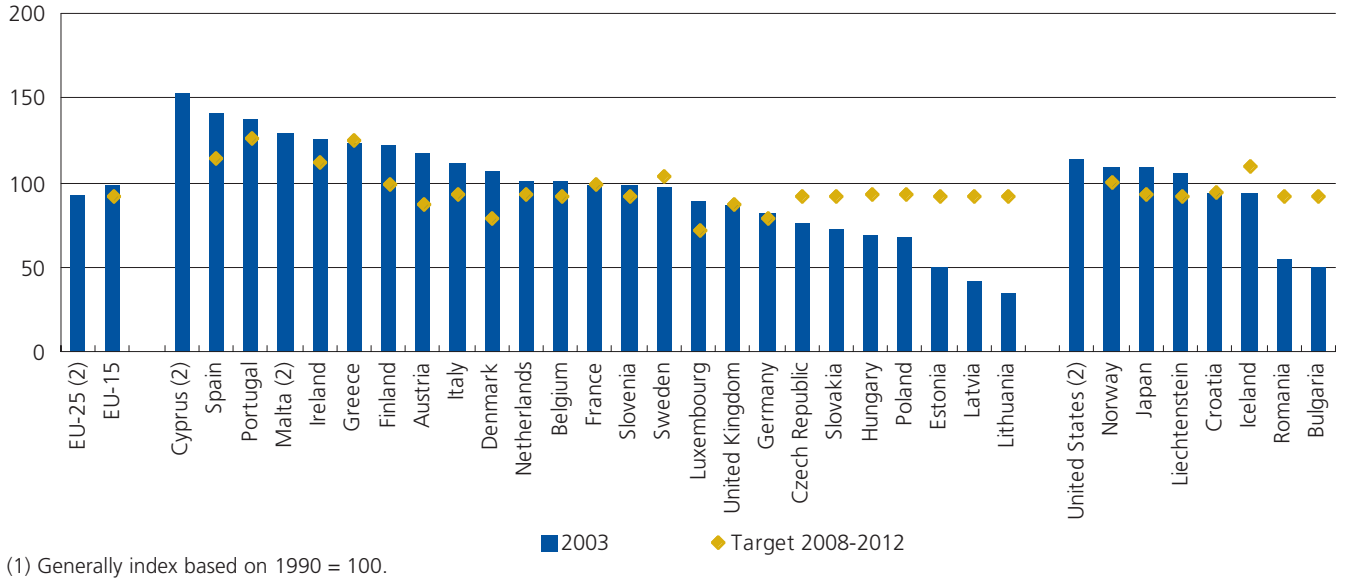
Under the 1997 Kyoto Protocol, the EU-15 agreed to reduce its greenhouse gas emissions to 8 % below its 1990 levels by 2008–12 (a five-year commitment period was chosen rather than a single target year to smooth out annual fluctuations in emissions due to uncontrollable factors such as weather). In order to meet this 8 % target, individual targets for each of the EU-15 Member States were set. The so-called '*burden-sharing*' agreement allows several EU-15 countries to increase their emissions, provided these are offset by reductions in the remaining countries. Of the 10 Member States that joined the EU in 2004, eight have individual reduction targets of 6 % or 8 %, while Cyprus and Malta do not have targets. The EU climate change programme has been developed to identify common and coordinated policies and measures at a Community level to ensure that the EU achieves its target. In 2005, the European Commission adopted a communication setting out the key elements of the EU's post-2012 strategy for climate change [44].

Although ozone (O_3) is present in small concentrations throughout the atmosphere, most ozone (about 90 %) exists in the stratosphere, a layer between 10 and 50 km above the surface of the earth. This ozone layer performs the essential task of filtering out most of the sun's biologically harmful ultraviolet (UV-B) radiation. More harmful concentrations of ground level ozone are formed by atmospheric pollutants, and are often associated with human activities, such as the burning of fossil fuels and biomass, traffic emissions, or the use of aerosols, while natural events, such as volcanic eruptions, can also have an impact on ozone levels. Areas with heavy traffic are particularly susceptible to the formation of ground level ozone; this problem is exacerbated by particular climatic conditions.

[44] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, '*Winning the battle against global climate change*', 9 February 2005, COM(2005) 35 final (more information is available at http://ec.europa.eu/environment/climat/pdf/comm_en_050209.pdf).

Figure 10.1: Total greenhouse gas emissions (1)

(1990 = 100)



(1) Generally index based on 1990 = 100.
(2) No target under the Kyoto Protocol.

Total greenhouse gas emissions: under the Kyoto Protocol, the EU has agreed to an 8 % reduction in its greenhouse gas emissions by 2008-2012, compared with the Kyoto base year; the reductions for each of the EU-15 countries have been agreed under the so-called EU burden sharing agreement (Council Decision 2002/358/EC), which allows some countries to increase emissions, provided these are offset by reductions in other Member States; 8 of the 10 new Member States have chosen other reduction targets and other base years, as allowed under the Kyoto Protocol; these and the burden-sharing targets for 2008-2012 are shown in the figure above for 2010 (no targets for Cyprus and Malta); emissions of the six greenhouse gases covered by the protocol are weighted by their global warming potentials (GWPs) and aggregated to give total emissions in CO_2 equivalents; the total emissions are presented as indices, with the base year = 100; in general, the base year is 1990 for the non-fluorinated gases (CO_2, CH_4 and N_2O), and 1995 for the fluorinated gases (HFC, PFC and SF_6); data exclude emissions and removals due to land-use change and forestry (LUCF).

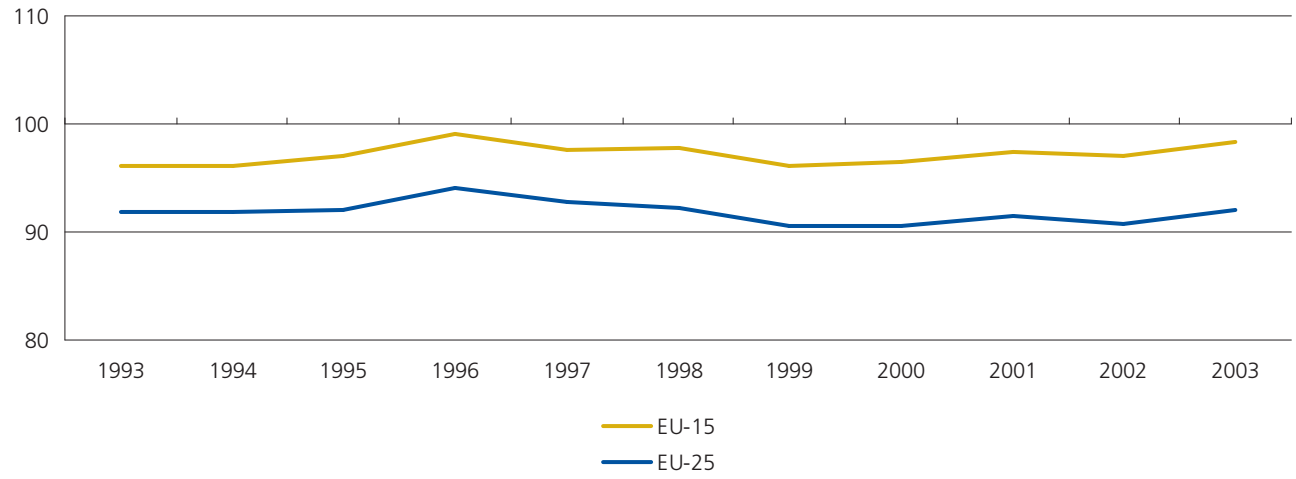
People living in urban areas are therefore most at risk from ground level ozone. Higher concentrations of ground level ozone can have harmful effects on the respiratory tract of human beings. Indeed, human health is at risk from high concentrations of particles, particularly those smaller than 10 µm, which penetrate deeply into the lungs, increasing the death rate in members of the population suffering from heart and lung diseases. Particles smaller than 2.5 µm are mostly soot, especially wood smoke and diesel-engine exhaust. These can persist in the air for long periods and can be transported over long distances. Coarser particles (soil and mineral ash) originate mainly from mechanical processes such as mining, quarrying and other industrial processes, as well as wear and tear of tyres and brakes in road traffic.

The European Environment Agency (EEA) and its European Topic Centre on Air and Climate Change compile data on greenhouse gas emissions, emissions of air pollutants and on air quality for the EU and the candidate countries. These countries send to the EEA the same data they submit officially under various international conventions, such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Long-range Transboundary Air Pollution (CLRTAP), and under various EU directives and regulations.

Total greenhouse gas emissions for the EU-15 stood at an indexed value of 98.3 in 2003 (submission year 2005; this data has been revised to 99.1 % in 2006 submission due to recalculation of national emission inventories). Between 2000 and 2003, EU-15 greenhouse gas emissions increased at an average rate of 0.7 % per annum, against an average annual decrease of 0.6 % needed to stay on the 2008–12 Kyoto target path; the overall target for the EU-15 is an indexed value of 92. This increasing trend during the period 2000–03 followed significant reductions between 1990 and 2000.

Figure 10.2: Total greenhouse gas emissions

(1990 = 100)



Total greenhouse gas emissions: under the Kyoto Protocol, the EU has agreed to an 8 % reduction in its greenhouse gas emissions by 2008–12, compared with the Kyoto base year; the reductions for each of the EU-15 countries have been agreed under the so-called EU burden-sharing agreement (Council Decision 2002/358/EC), which allows some countries to increase emissions, provided these are offset by reductions in other Member States; 8 of the 10 new Member States have chosen other reduction targets and other base years, as allowed under the Kyoto Protocol (no targets for Cyprus and Malta); emissions of the six greenhouse gases covered by the protocol are weighted by their global warming potentials (GWPs) and aggregated to give total emissions in CO_2 equivalents; the total emissions are presented as indices, with the base year = 100; in general, the base year is 1990 for the non-fluorinated gases (CO_2, CH_4 and N_2O), and 1995 for the fluorinated gases (HFC, PFC and SF_6); data exclude emissions and removals due to land-use change and forestry (LUCF).

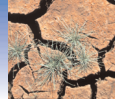
Table 10.1: Total greenhouse gas emissions (1)

(1990 = 100)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
EU-25	91.9	92.1	94.1	92.7	92.2	90.6	90.5	91.4	90.7	92.0
EU-15	96.1	97.1	99.0	97.6	97.8	96.2	96.4	97.5	97.0	98.3
Euro area	96.3	97.9	99.1	98.4	99.0	98.1	98.6	99.6	99.6	100.7
Belgium	102.8	103.8	106.6	100.9	104.0	99.7	100.6	99.9	99.0	100.6
Czech Republic	79.1	79.7	80.6	82.7	77.3	73.1	76.8	77.0	74.3	75.7
Denmark	114.5	110.2	129.3	115.3	109.3	104.7	98.1	100.2	99.1	106.3
Germany	88.8	88.3	89.8	86.8	84.7	81.8	81.4	82.3	81.3	81.5
Estonia	56.3	51.2	53.9	54.4	49.4	45.2	45.4	44.7	44.9	49.2
Greece	101.5	102.5	105.6	110.0	114.7	114.1	118.5	119.6	119.6	123.2
Spain	105.8	110.0	107.2	114.5	117.9	127.6	133.0	132.6	139.3	140.6
France	97.7	99.1	101.8	100.6	102.9	99.6	98.7	99.3	97.5	98.1
Ireland	106.1	107.8	110.9	116.1	120.0	123.9	127.8	131.1	128.6	125.2
Italy	97.3	103.4	101.7	102.9	104.9	106.5	108.0	109.0	108.7	111.6
Cyprus	119.5	119.5	125.1	126.5	135.1	135.4	141.6	140.7	145.1	152.8
Latvia	58.4	48.7	49.3	47.4	44.8	41.3	39.2	42.3	41.9	41.5
Lithuania	68.1	61.2	54.3	47.4	42.9	41.9	40.9	40.0	38.5	33.8
Luxembourg (2)	99.8	78.8	79.8	73.8	65.1	70.9	74.7	76.9	84.9	88.5
Hungary	69.5	68.3	70.3	68.7	68.8	68.5	66.3	68.5	66.1	68.1
Malta	120.6	122.4	123.5	120.0	121.9	125.9	129.0	124.4	129.7	129.1
Netherlands	103.6	105.2	109.2	105.6	106.3	100.8	100.4	101.1	100.2	100.8
Austria	98.1	102.1	106.0	105.7	105.1	102.4	103.2	108.1	110.1	116.6
Poland	77.8	73.8	77.4	75.6	71.4	71.0	68.3	67.7	65.5	67.9
Portugal	110.2	117.2	113.0	118.6	126.9	139.4	135.0	136.8	144.3	136.7
Slovenia	87.7	92.1	95.6	97.7	100.0	93.3	94.0	98.6	99.3	98.1
Slovakia	71.8	74.1	75.0	75.0	72.8	71.1	66.6	73.6	72.8	71.8
Finland	105.6	101.6	109.2	107.9	103.6	102.9	99.7	107.6	109.7	121.5
Sweden	103.3	101.5	106.7	100.6	101.3	96.7	93.0	94.4	96.1	97.6
United Kingdom	93.1	91.9	95.0	92.0	91.3	86.8	86.7	88.3	85.7	86.7
Bulgaria	60.7	63.1	61.0	58.3	51.5	47.6	47.5	48.0	45.9	50.0
Croatia	69.3	70.9	72.9	77.9	78.7	81.8	81.6	85.4	89.4	94.0
Romania	63.3	65.9	67.6	60.8	53.7	47.4	48.1	49.4	51.3	53.9
Iceland	92.5	94.8	97.5	102.8	103.0	108.6	100.4	95.4	95.5	93.9
Liechtenstein	86.9	86.9	86.8	86.8	86.8	86.8	86.8	86.8	86.8	105.3
Norway	99.7	99.0	105.3	105.6	106.4	108.4	107.4	109.5	106.7	109.3
Japan	102.1	107.3	109.3	109.7	105.6	107.4	108.0	105.2	107.5	108.3
United States	104.2	105.2	108.8	109.7	110.4	110.9	114.2	111.8	112.6	113.3

(1) Generally index based on 1990 = 100.
(2) 1994 and 1995, break in series.

Total greenhouse gas emissions: under the Kyoto Protocol, the EU has agreed to an 8 % reduction in its greenhouse gas emissions by 2008-12, compared with the Kyoto base year; the reductions for each of the EU-15 countries have been agreed under the so-called EU burden-sharing agreement (Council Decision 2002/358/EC), which allows some countries to increase emissions, provided these are offset by reductions in other Member States; 8 of the 10 new Member States have chosen other reduction targets and other base years, as allowed under the Kyoto Protocol (no targets for Cyprus and Malta); emissions of the six greenhouse gases covered by the protocol are weighted by their global warming potentials (GWPs) and aggregated to give total emissions in CO_2 equivalents; the total emissions are presented as indices, with the base year = 100; in general, the base year is 1990 for the non-fluorinated gases (CO_2, CH_4 and N_2O), and 1995 for the fluorinated gases (HFC, PFC and SF_6); data exclude emissions and removals due to land-use change and forestry (LUCF).



WATER

Water is a natural resource that both in terms of quality and availability is a major concern in many regions. Water resources are limited and water quality is affected by human activities such as industrial production, household discharges or arable farming. The pollution of rivers, lakes and groundwater remains a concern all over the world.

At the same time, water is essential for human life and activities. Economic development and growing populations put increasing pressure on water quantity and quality. More globally, there are many places on earth where freshwater resources are being consumed faster than nature can replenish them.

Because the quality of the water available is often deteriorating and its quantity is limited, there is a need to reconsider the use of different sources of water as well as the demand on water. This has been set out in the water framework directive (2000/60/EC). It states that sustainable water resource management has to be based on the principle of integrated river basin management. The directive also promotes an approach for emission limit values and quality standards, setting prices and involving the population more closely in water problems.

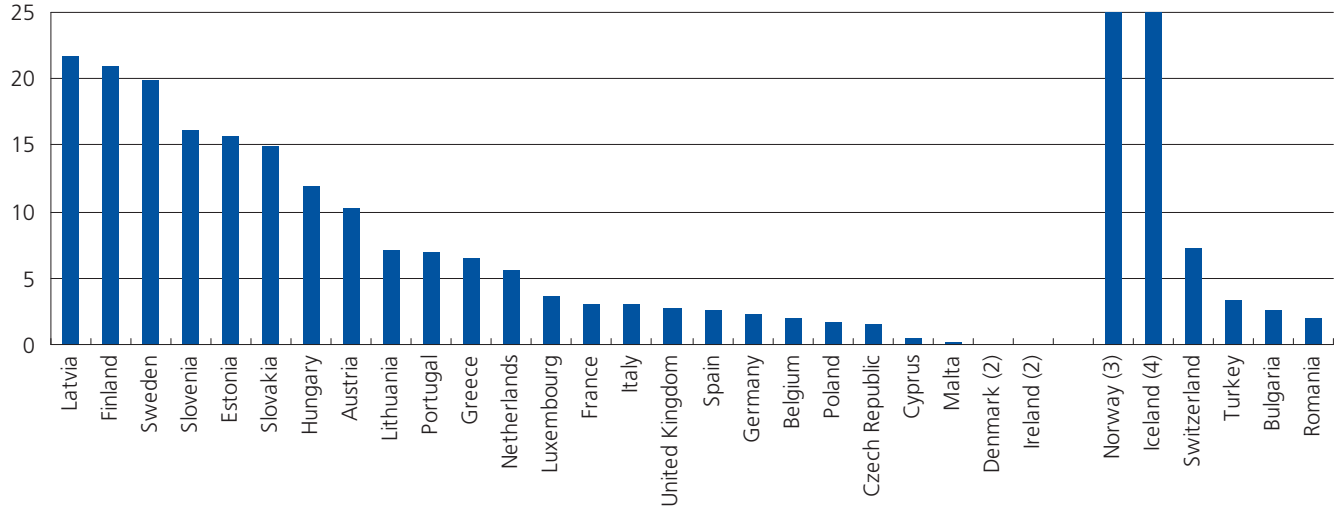
Water statistics are collected from all European countries through the '*inland waters*' section of a joint OECD/Eurostat questionnaire which is continuously adapted to the EU policy framework. It reports on the following:

- freshwater resources in groundwater and surface waters — these can be replenished by precipitation and by external inflows;
- water abstraction by source — a major pressure on resources, although a large part of the water abstracted (for domestic, industrial (including energy production), or agricultural use) is returned to the environment and its water bodies, but often as wastewater with impaired quality;
- water use by supply category and by industrial activities;
- treatment capacities of wastewater treatment plants and the share of the population connected to them — this gives an overview of the development status of the infrastructure, in terms of quantity and quality, that is available for the protection of the environment from pollution by wastewater;
- sewage sludge production and disposal — an inevitable product of wastewater treatment processes; its impact on the environment depends on the methods chosen for its processing and disposal;
- generation and discharge of wastewater — pollutants present in wastewater have different source profiles, and similarly the efficiency of treatment of any pollutant varies according to the method applied.

The majority of the EU's population is connected to public water supplies, with the proportion rising close to 100 % in most Member States. Looking at the '*other end of the pipe*', a number of countries reported that less than half of their population was connected to urban wastewater treatment.

Figure 10.3: Freshwater resources per capita — long-term average (1)

(1 000 m³ per inhabitant) TEN00001



(1) The minimum period taken into account for the calculation of long-term annual averages is 20 years; population data are as of 1 January 2005.
(2) Not available.
(3) Broken y-axis, 579 019 m³ per inhabitant.
(4) Broken y-axis, 82 806 m³ per inhabitant.
Total freshwater resources are the total volume of water that is additionally available due to internal flow and external inflow.

Table 10.2: Water resources — long-term annual average (1)

(million m³) TEN00001

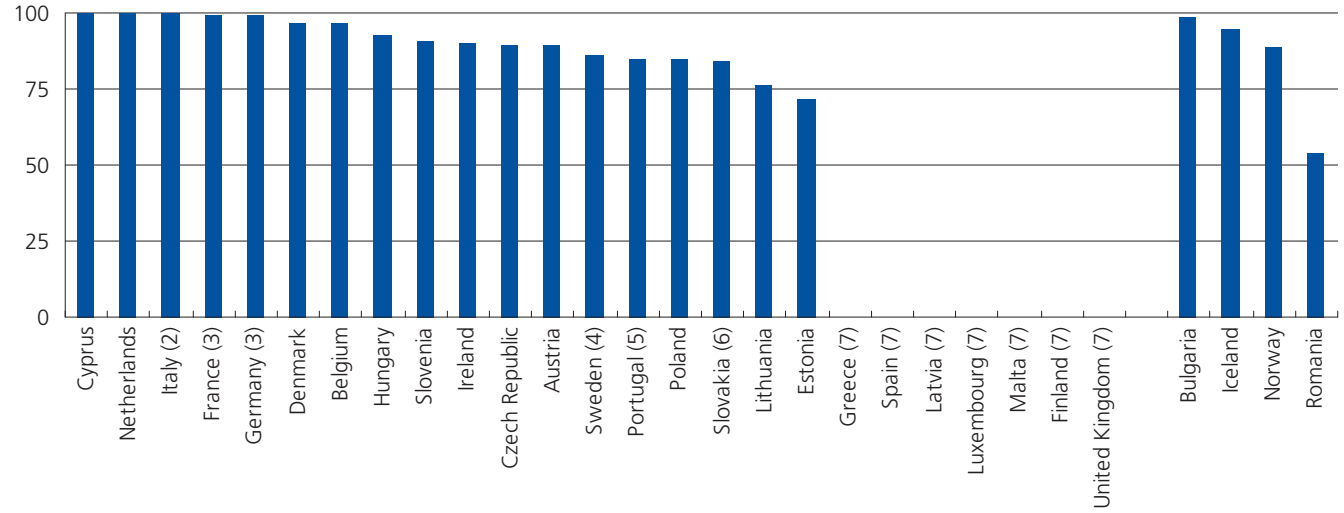
	Precipitation	Actual evapo-transpiration	Internal flow	Actual external inflow	Total actual outflow	Total freshwater resources
Belgium	28 547	16 146	12 401	8 347	17 785	20 748
Czech Republic	54 653	39 416	15 237	740	15 977	15 977
Denmark	38 485	22 145	16 340	:	1 935	:
Germany	:	190 000	117 000	71 000	180 000	188 000
Estonia	30 647	18 603	12 044	9 070	11 920	21 114
Greece	115 000	55 000	60 000	12 000	:	72 000
Spain	346 527	235 394	111 133	0	111 133	111 133
France	488 427	310 379	178 048	11 000	168 000	189 048
Ireland	:	:	:	:	:	:
Italy	296 000	129 000	167 000	8 000	155 000	175 000
Cyprus	2 670	2 300	370	-	118	370
Latvia	42 197	9 688	32 509	17 415	33 532	49 924
Lithuania	44 010	28 500	15 510	8 990	25 897	24 500
Luxembourg	2 030	1 125	905	739	1 600	1 644
Hungary	58 000	52 000	6 000	114 000	120 400	120 000
Malta	181	114	67	-	:	67
Netherlands	29 770	21 290	8 480	81 200	86 300	89 680
Austria	98 000	43 000	55 000	29 000	84 000	84 000
Poland	193 100	138 300	54 800	8 300	63 100	63 100
Portugal	82 164	43 571	38 593	35 000	34 000	73 593
Slovenia	31 746	13 150	18 596	13 496	32 274	32 092
Slovakia	37 352	24 278	13 074	67 252	81 680	80 326
Finland	222 000	115 000	107 000	3 200	110 000	110 000
Sweden	335 600	165 600	170 000	:	179 000	179 000
United Kingdom	268 214	125 187	:	2 744	160 630	160 630
Bulgaria	:	:	18 940	493	19 433	19 433
Romania	154 000	114 585	39 415	2 878	17 930	42 293
Turkey	501 000	273 600	227 400	6 900	178 000	234 300
Iceland	200 000	30 000	170 000	:	170 000	170 000
Norway	:	:	369 045	12 394	381 439	381 439
Switzerland	60 100	19 950	40 150	13 100	53 500	53 250

(1) The minimum period taken into account for the calculation of long-term annual averages is 20 years.

Water resources — long-term annual average: the minimum period taken into account for the calculation of long-term annual averages is 20 years; actual evapotranspiration is the volume of water transported from the ground (including inland water surfaces) into the atmosphere by evaporation and by transpiration of plants; internal flow is the total volume of river run-off and groundwater renewal generated, in natural conditions, exclusively by precipitation into a territory; the internal flow is equal to precipitation less actual evapotranspiration; actual external inflow is the total volume of actual inflow of rivers and groundwater coming from neighbouring territories; total freshwater resources is the total volume of water that is additionally available due to internal flow and external inflow; total actual outflow is the total actual outflow of rivers and groundwater into the sea and into neighbouring territories.

Figure 10.4: Population connected to public water supply, 2002 (1)

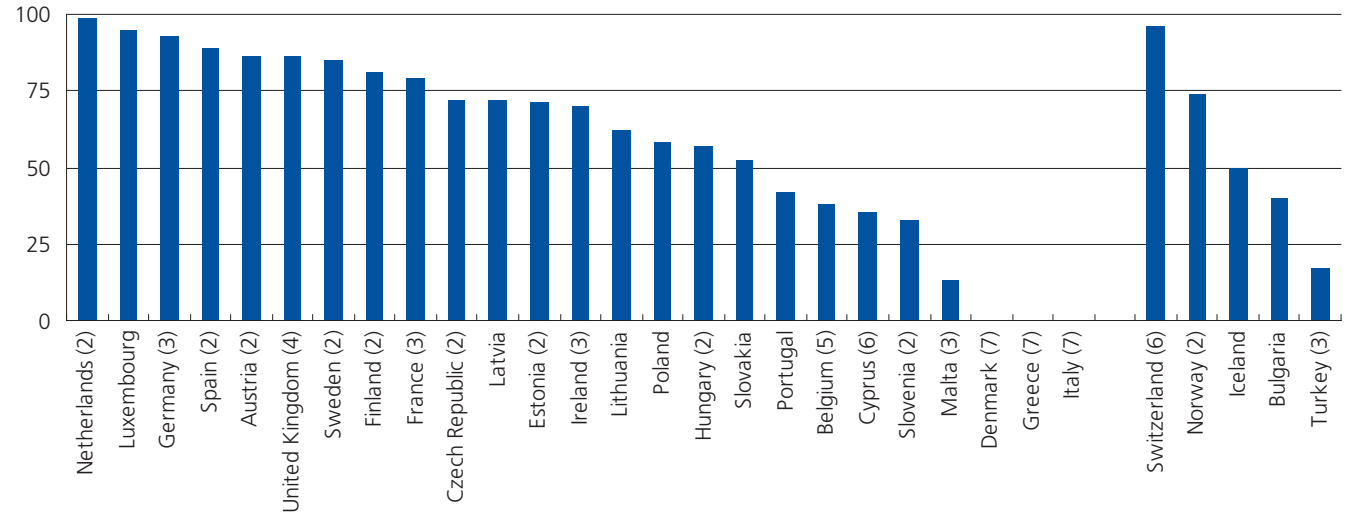
(%) TEN00012



(1) Note that connection to urban wastewater treatment in OECD and Eurostat water statistics includes wastewater collected independently and delivered to the treatment plant by trucks, whereas the definition in the urban wastewater treatment directive (91/271/EEC) differs as it requires the connection to be established by a system of conduits.
(2) 1999.
(3) 2001.
(4) 1997.
(5) 1998.
(6) 2003.
(7) Not available.
Public water supply refers to the supply of water to the general public, irrespective of whether this is the responsibility of public authorities, privately owned water supply enterprises or a mixture of both.

Figure 10.5: Population connected to urban wastewater treatment, 2003 (1)

(%) TEN00021



(1) Note that connection to urban wastewater treatment in OECD and Eurostat water statistics includes wastewater collected independently and delivered to the treatment plant by trucks, whereas the definition in the urban wastewater treatment directive (91/271/EEC) differs as it requires the connection to be established by a system of conduits.
(2) 2002.
(3) 2001.
(4) 1994.
(5) 1998.
(6) 2000.
(7) Not available.
Population connected to urban wastewater treatment — total: this relates to any kind of sewage treatment (primary to tertiary) in municipal treatment plants run by public authorities or by private companies (on behalf of local authorities), whose main purpose is sewage treatment.

Table 10.3: Population connected to urban wastewater treatment (1)

(%) TEN00021

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Belgium	:	:	29	30	35	38	:	:	:	:	:
Czech Republic	53	57	58	60	62	64	65	66	68	72	:
Denmark	86	86	87	87	88	89	:	:	:	:	:
Germany	:	:	89	:	:	91	:	:	93	:	:
Estonia	72	72	72	72	72	69	69	69	69	71	:
Greece	:	:	:	:	:	:	:	:	:	:	:
Spain	:	:	48	:	:	:	:	88	:	89	:
France	:	:	79	:	:	77	:	:	79	:	:
Ireland	:	:	:	:	:	:	66	:	70	:	:
Italy	:	:	75	:	:	:	:	:	:	:	:
Cyprus	:	:	:	:	:	:	33	35	:	:	:
Latvia	:	:	:	:	:	:	:	:	:	67	72
Lithuania	:	:	:	:	:	:	:	:	:	60	62
Luxembourg	:	87	88	:	:	:	93	:	:	:	95
Hungary	20	21	21	22	24	26	29	46	50	57	:
Malta	13	13	13	13	13	13	13	13	13	:	:
Netherlands	96	96	97	97	98	98	98	98	98	99	:
Austria	75	:	75	:	:	81	:	85	86	86	:
Poland	37	39	42	43	47	49	52	54	55	57	58
Portugal	:	26	:	:	:	42	:	:	:	:	:
Slovenia	:	:	:	:	:	19	19	18	20	33	:
Slovakia	:	:	:	49	49	49	50	51	51	52	52
Finland	:	:	:	78	78	79	80	80	81	81	:
Sweden	95	95	93	:	:	93	:	86	:	85	:
United Kingdom	84	86	:	:	:	:	:	:	:	:	:
Bulgaria	35	35	35	35	36	37	37	37	38	39	40
Turkey	:	10	9	10	14	17	:	:	17	:	:
Iceland	2	4	4	4	4	8	16	33	33	50	50
Norway	66	66	67	67	70	73	73	73	74	74	:
Switzerland	:	:	94	:	95	96	96	96	:	:	:

(1) Note that connection to urban wastewater treatment in OECD and Eurostat water statistics includes wastewater collected independently and delivered to the treatment plant by trucks, whereas the definition in the urban wastewater treatment directive (91/271/EEC) differs as it requires the connection to be established by a system of conduits.

Population connected to urban wastewater treatment — total: this relates to any kind of sewage treatment (primary to tertiary) in municipal treatment plants run by public authorities or by private companies (on behalf of local authorities), whose main purpose is sewage treatment.

WASTE

The EU's sustainable development strategy and the sixth environment action programme underline the relationship between the efficiency of resources and waste generation and management. The objective is to decouple the use of resources and generation of waste from economic growth, while sustainable consumption should not exceed environmental capacity.

The strategy on waste prevention and recycling aims at improved waste-prevention initiatives, better resource efficiency, and more sustainable consumption, which should lead to significant reductions in the overall generation of waste.

Waste prevention can be achieved through cleaner technologies, eco-design, or more eco-efficient production and consumption patterns. Waste prevention and better recycling, focused on materials technology, could also reduce the environmental impact of resources that are used through limiting raw materials extraction and transformation during production processes.

The strategy promotes sustainable waste management, which means minimising the environmental impacts and taking into account the economic and social considerations (costs and benefits), leading to the optimal and most efficient waste management strategy. Waste prevention is the first option in waste management, while the strategy states that landfilling should be avoided as much as possible.

In order to be able to set targets for waste prevention and recycling, reliable and comparable statistics need to be made available to assess developments. Up to 2005, waste statistics were compiled using data collected from all European countries through the '*waste*' section of a joint Eurostat/OECD questionnaire. Differences between countries in methods of data collection and different interpretations of the definitions and waste categories make data comparison among the countries rather difficult. As a result, Eurostat is currently implementing the waste statistics regulation [45]. Its objective is to create a framework for harmonised data collection and reporting on waste generation, recovery and disposal at the European level. The Member States provided Eurostat with the first data sets during 2006 for reference year 2004; as data have to be provided every second year trends can be calculated from 2008.

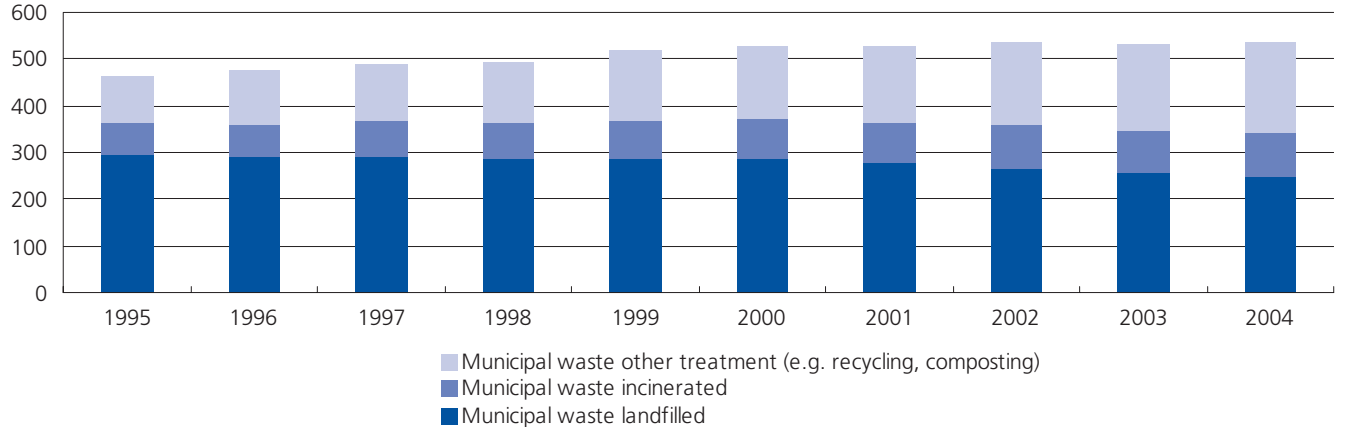
The data presented in this section show that the waste generated in the EU is growing. The average amount of municipal waste generated in 2004 in the EU-25 was 537 kg per inhabitant. The trend in municipal waste generated does not show a decoupling of waste generation and economic growth. However, municipal waste accounts for a relatively small proportion of total waste (around 15 %), with the largest volume of waste being generated by mining, manufacturing, construction and demolition activities; in addition, hazardous waste is mainly generated within the manufacturing sector.

Although the amount of landfilling clearly declined, it is still the most important type of waste treatment; in 2004 the amount of waste landfilled was over 2.5 times as high as the amount of waste incinerated.

[45] Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics.

Figure 10.6: Municipal waste, EU-25

(kg per inhabitant)



Municipal waste landfilled: this indicator presents the amount of municipal waste disposed of through landfill; the bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included; landfill is defined as the depositing of waste into or onto land, including specially engineered landfill, and temporary storage of over one year on permanent sites; the definition covers both landfill in internal sites (i.e. where a generator of waste is carrying out its own waste disposal at the place of generation) and in external sites; the quantity of waste landfilled is expressed in kilograms per person per year.
Municipal waste incinerated: this indicator presents the amount of municipal waste disposed of through incineration; the bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included; incineration means thermal treatment of waste in an incineration plant as defined in Article 3(4) or a co-incineration plant as defined in Article 3(5) of the directive on the incineration of waste (Directive 2000/76/EC of 4 December 2000); the quantity of waste incinerated is expressed in kilograms per person per year.
Recycling is defined as any reprocessing of material in a production process that diverts it from the waste stream, except reuse as fuel; both reprocessing as the same type of product, and for different purposes should be included; direct recycling within industrial plants at the place of generation should be excluded.
Composting: biological process that submits biodegradable waste to anaerobic or aerobic decomposition, and that results in a product that is recovered.

Table 10.4: Waste

	Amount of waste generated (1 000 tonnes)			Municipal waste generated (kg per capita) (1)			Municipal waste landfilled (kg per capita) (2)			Municipal waste incinerated (kg per capita) (3)		
	1995	2000	2003	1995	2000	2004	1995	2000	2004	1995	2000	2004
EU-25	:	:	:	461	528	537	295	287	247	69	84	94
EU-15	:	:	:	487	564	580	294	281	242	83	99	111
Euro area	:	:	:	487	563	577	279	254	218	84	104	115
Belgium	28 969	36 688	:	456	468	469	218	81	47	163	156	154
Czech Republic	32 522	43 597	28 362	302	334	278	302	282	222	-	31	39
Denmark	11 466	13 031	12 835	567	665	696	96	67	31	294	352	379
Germany	:	406 663	:	533	610	600	245	165	104	97	133	141
Estonia	14 196	11 616	18 397	368	440	449	365	438	283	-	-	-
Greece	:	:	:	302	408	433	311	372	397	-	-	-
Spain	:	:	:	510	662	662	308	339	364	24	37	42
France	129 253	:	:	489	531	567	219	227	217	183	174	184
Ireland	41 020	:	:	514	603	869	398	554	397	-	-	-
Italy	:	111 124	:	454	509	538	422	385	306	24	41	61
Cyprus	:	:	:	600	680	730	600	613	657	-	-	-
Latvia	:	:	1 283	263	270	311	247	252	259	-	-	12
Lithuania	:	:	:	424	363	366	424	344	334	-	-	-
Luxembourg	:	:	:	592	658	668	161	138	123	312	284	270
Hungary	84 442	:	:	460	445	506	346	376	422	32	34	21
Malta	:	:	2 101	338	471	572	311	348	458	-	-	-
Netherlands	:	:	:	549	616	624	158	57	17	139	190	210
Austria	:	:	:	438	581	627	205	196	126	54	65	136
Poland	133 647	137 710	130 476	285	316	256	280	310	241	-	-	2
Portugal	33 781	17 961	4 701	385	472	434	200	338	318	-	96	96
Slovenia	2 659	:	:	596	513	435	457	402	364	-	-	8
Slovakia	25 668	16 100	:	302	316	274	168	196	222	-	-	13
Finland	:	:	:	414	503	455	268	306	273	-	52	45
Sweden	:	:	:	386	428	464	136	98	42	149	164	217
United Kingdom	:	:	:	499	578	600	414	469	416	45	42	48
Bulgaria	:	97 316	88 855	693	516	471	530	399	396	-	-	-
Croatia	:	4 300	:	:	336	282	:	332	278	:	1	1
Romania	352 087	55 832	:	342	355	378	254	294	306	-	-	-
Turkey	52 720	:	:	438	464	458	324	354	369	-	-	-
Iceland	381	432	476	427	466	492	322	351	372	82	57	48
Norway	7 451	8 517	8 837	626	615	724	456	336	243	84	90	118
Switzerland	:	:	:	598	660	678	77	40	3	288	321	347

(1) Hungary, break in series, 2000.
(2) Hungary, break in series, 2000; Austria, break in series, 2004.
(3) Austria, break in series, 2004.

Amount of waste generated: waste refers to materials that are not prime products, for which the generator has no further use for own purpose of production, transformation or consumption, and which he discards, or intends or is required to discard.
Municipal waste generated: this indicator presents the amount of municipal waste generated; it consists of waste collected by or on behalf of municipal authorities and disposed of through the waste management system; the bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included; for areas not covered by a municipal waste scheme an estimation has been made of the amount of waste generated; the quantity of waste generated is expressed in kilograms per person per year.
Municipal waste landfilled: this indicator presents the amount of municipal waste disposed of through landfill; the bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included; landfill is defined as the depositing of waste into or onto land, including specially engineered landfill, and temporary storage of over one year on permanent sites; the definition covers both landfill in internal sites (i.e. where a generator of waste is carrying out its own waste disposal at the place of generation) and in external sites; the quantity of waste landfilled is expressed in kilograms per person per year.
Municipal waste incinerated: this indicator presents the amount of municipal waste disposed of through incineration; the bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included; incineration means thermal treatment of waste in an incineration plant as defined in Article 3(4) or a co-incineration plant as defined in Article 3(5) of the directive on the incineration of waste (Directive 2000/76/EC of 4 December 2000); the quantity of waste incinerated is expressed in kilograms per person per year.

ENVIRONMENT AND AGRICULTURE

The links between the natural environment and farming practices are complex: farming has contributed over the centuries to creating and maintaining a variety of valuable semi-natural habitats. While many of these are maintained by extensive farming and a wide range of wild species rely on this for their survival, agricultural practices can also have an adverse impact on natural resources. Pollution of soil, water and air, fragmentation of habitats and loss of wildlife can be the result of agricultural practices and land use. EU policies, and notably the common agricultural policy (CAP), are therefore increasingly aimed at reducing the risks of environmental degradation, while encouraging farmers to continue to play a positive role in the maintenance of the countryside and the environment.

Organic farming is one example of a sustainable farming system. Its importance has grown worldwide due to increased consumer awareness of organically grown products and government support for conversion. Since the start of the implementation of the EU regulation on organic farming [46], many agricultural holdings across the EU have converted to certified organic production methods. This regulation also established procedures for the Member States to report data on organic farming to the European Commission. Among the Member States, the largest area devoted to organic crops (fully converted area) in 2004 was recorded in Italy (708 000 hectares), followed by the United Kingdom (635 000 hectares); the reported data of Germany and Austria refer to the area including the area under conversion. Please note more information is available on agriculture in the next chapter, which covers agriculture, forestry and fisheries (see page 283).

[46] Council Regulation (EEC) No 2092/91.

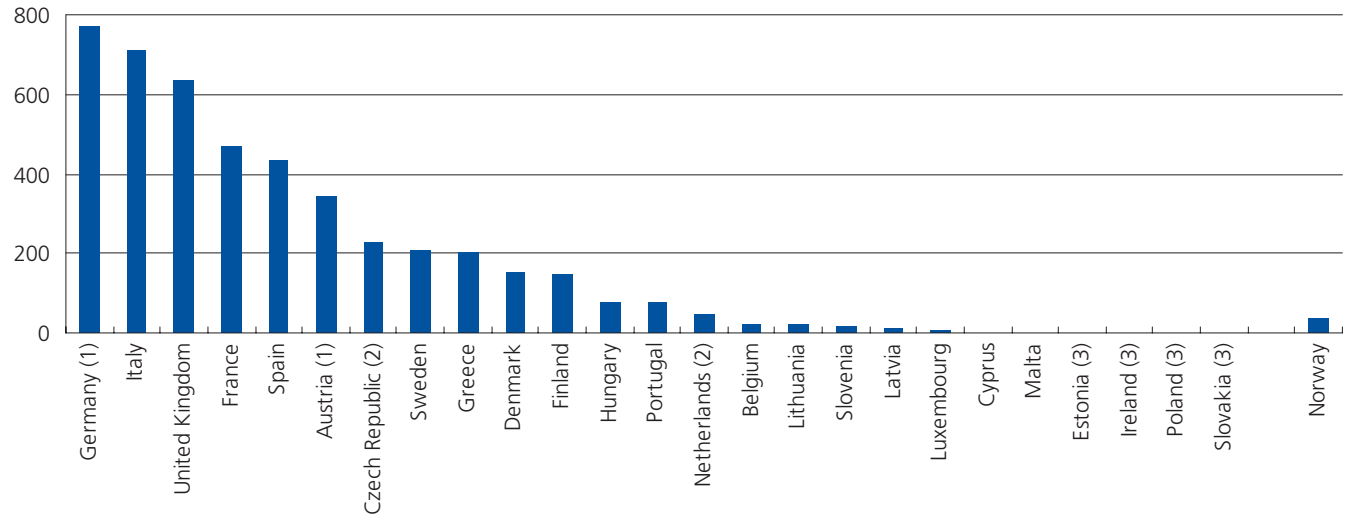
The intensive use of pesticides can have a negative impact on biodiversity and increases the risk of them finding their way into drinking water and the food chain. Eurostat collects plant protection product sales data from Member States, while the European Crop Protection Association produces data for Eurostat on the estimated use of plant protection products.

Total sales of pesticides vary greatly across the Member States and to some degree reflect the importance of the farming sector, the types of farming that are practised, and the types of crop that are grown. Just over 300 000 tonnes of pesticides were sold in the EU-15 in 2001, with sales in France and Italy approximately three times as high as in Germany or the United Kingdom.

The livestock density index measures the stock of animals per hectare. Consumer concerns over the intensive rearing of some animals and preferences for organically farmed produce may explain, at least to some degree, why there was a reduction in livestock density in a number of Member States during the period 2000–03.

Figure 10.7: Organic crop area — fully converted area, 2004

(1 000 hectares) TAG00098



(1) Including area under conversion.
(2) 2005.
(3) Not available.
The area defined comprises all crop area; it might include secondary and other crops; it might not be strictly comparable with the definition of 'utilised agricultural area' (only the area of main crops) in the farm structure survey (FSS).

Table 10.5: Environmental and agricultural indicators

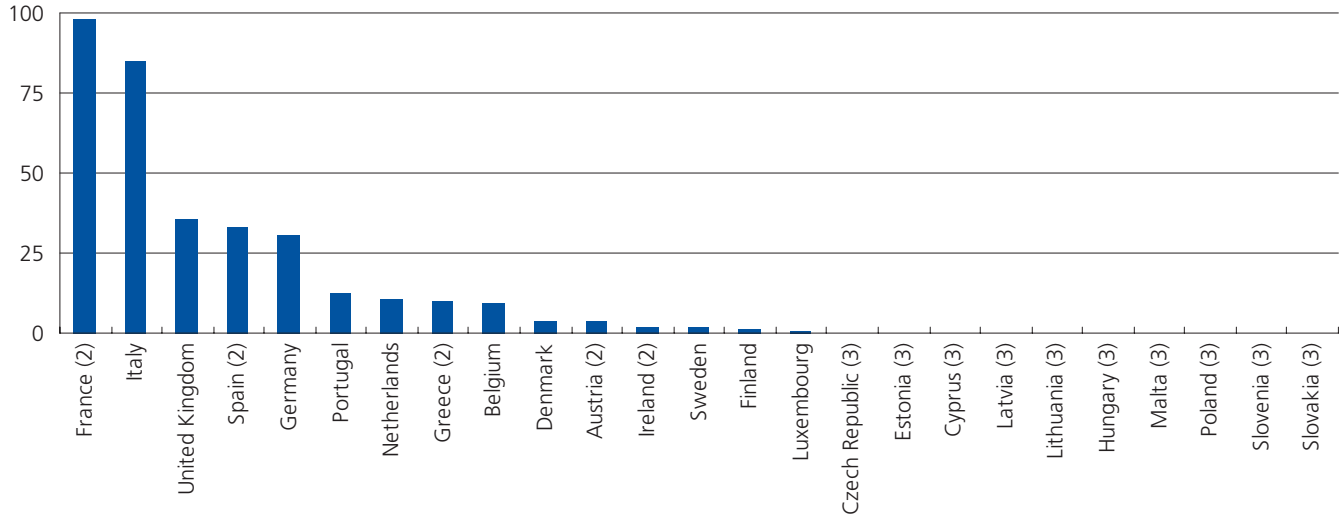
TAG00098 TAG00084 TAG00095

	Organic crop area - fully converted area (hectares) (1)		Livestock density index (livestock per hectare)		Total sales of pesticides (tonnes of active ingredient)		Irrigable area (hectares)	
	2000	2004 (2)	2000	2003	2000	2002 (3)	2000	2005 (4)
EU-15	:	:	0.9	0.9	332 806	327 280	:	:
Belgium	13 036	19 853	3.1	2.8	9 953	9 204	32 590	21 710
Czech Republic	:	226 209	:	0.6	:	:	:	47 030
Denmark	93 371	149 219	1.7	1.7	2 747	2 722	446 920	432 030
Germany	546 023	767 891	1.1	1.1	30 331	29 531	:	:
Estonia	:	:	:	0.4	:	:	:	:
Greece	10 309	202 799	0.7	0.7	11 131	11 111	1 321 300	1 521 600
Spain	:	430 900	0.6	0.6	34 597	35 700	3 478 050	3 828 110
France	230 739	468 476	0.9	0.8	97 490	99 635	2 633 680	2 723 700
Ireland	:	:	1.5	1.5	2 133	2 246	0	0
Italy	502 078	708 043	0.8	0.8	79 831	94 711	3 855 920	3 977 210
Cyprus	:	111	:	1.6	:	:	:	44 930
Latvia	:	12 142	0.3	0.3	:	:	560	790
Lithuania	:	18 395	:	0.5	:	:	:	4 420
Luxembourg	807	2 741	1.4	1.2	:	:	0	0
Hungary	:	75 834	:	0.6	:	:	308 110	152 750
Malta	:	0	:	4.5	:	:	:	3 020
Netherlands	25 531	46 877	3.6	3.1	9 653	8 072	498 330	350 570
Austria	275 789	343 183	0.8	0.8	3 563	3 133	95 140	90 420
Poland	:	:	:	0.8	:	:	:	124 200
Portugal	14 438	75 143	0.7	0.6	15 470	17 435	791 990	674 800
Slovenia	:	14 354	1.3	1.2	:	:	2 230	4 430
Slovakia	:	:	:	0.5	:	:	225 310	209 070
Finland	117 080	148 183	0.6	0.5	1 146	1 614	88 140	70 500
Sweden	143 552	206 631	0.6	0.6	1 652	1 711	136 730	167 000
United Kingdom	242 473	635 495	1.0	0.9	33 109	31 064	:	208 140
Norway	18 084	34 957	1.2	1.2	:	:	:	:

(1) Germany and Austria, including area under conversion.
(2) The Czech Republic and the Netherlands, 2005.
(3) EU-15, Greece, Spain, France, Ireland and Austria, 2001.
(4) Greece, Spain, France, Ireland, Italy, Cyprus, Luxembourg, the Netherlands, Austria, Portugal and Slovakia, 2003.
The area defined comprises all crop area; it might include secondary and other crops; it might not be strictly comparable with the definition of 'utilised agricultural area' (only the area of main crops) in the farm structure survey (FSS).
Livestock density index: provides the number of livestock units (LSU) per hectare of utilised agricultural area; the LSU is a reference unit which facilitates the aggregation of livestock from various species and ages; the Eurofarm LSU coefficients, which are at the basis of this indicator, are established by convention (originally, they were related to the animals' feed requirements, the reference being a dairy cow with an annual yield of 3 000 kg milk, without additional concentrated feedingstuffs).
Total sales of pesticides: total volume of pesticides sold in the Member States; the total is the sum of fungicides, herbicides, insecticides and other pesticides.
Irrigable area: the maximum area which could be irrigated in the reference year using the equipment and the quantity of water normally available on the holding; the total irrigable area may differ from the sum of the areas provided with irrigation equipment since the equipment may be mobile and therefore utilisable on several fields in the course of a harvest year; capacity may also be restricted by the quantity of water available or by the period within which mobility is possible.

Figure 10.8: Total sales of pesticides, 2002 (1)

(1 000 tonnes of active ingredient) TAG00084



(1) EU-15: 327 280 tonnes of active ingredient, 2001.
(2) 2001.
(3) Not available.

ENVIRONMENTAL EXPENDITURE

Statistics collected on environmental protection expenditure are one indicator that may be used to measure the response of society to reduce pollution. Spending on environmental protection occurs in all sectors of the economy: two of the main areas include the public sector and industry, and it is in these areas where data are available for most of the Member States.

To encourage enterprises and private households to protect the environment, governments can use regulatory measures or levy taxes directly linked to pollution. The '*polluter pays*' principle is one such example of a policy designed to reduce pollution. An environmental tax is defined as '*a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven specific negative effect on the environment*'. For analytical purposes, environmental taxes are divided into four categories: energy taxes (including CO_2 taxes), transport taxes, pollution taxes and resource taxes.

- Energy taxes include taxes on energy products (such as petrol and diesel for transport purposes, or fuel oils, natural gas, coal and electricity for stationary use; CO_2 taxes are also included).
- Transport taxes are related to the ownership and use of motor vehicles and other transport equipment (for example, duty on charter or scheduled flights).
- Pollution taxes include taxes for air and water emissions, the management of solid waste, and noise.
- Resource taxes are related to water consumption, forestry and mining, although taxes on oil and gas extraction are excluded from the definition of environmental taxes, as these are often designed to capture the resource rent and do not influence prices in the way that other environmental taxes do.

Indeed, while environmental protection measures generally cost money, they can also generate revenues. Measures to protect the environment are increasingly being taken on a voluntary basis, for example, to meet the expectations of consumers or stakeholders, to increase market shares, or to improve a company's image. By the same token, environmental protection creates new markets for environmental goods and services, with benefits for exports and employment.

The legal framework for the collection of statistical data on environmental protection expenditure by industry is provided by Council Regulation (EC, Euratom) No 58/97 of 20 December 1996 concerning structural business statistics. The regulation provides a tool for the development of regular data collection on the variables and economic activities of the highest policy interest.

Total environmental expenditure is the sum of investments and current expenditure. Effective interpretations need to take into account that:

- high levels of spending in one country could, for example, be the result of new stricter policies or of long periods of no spending;
- the proportion of public-sector expenditure versus industry expenditure could vary between countries depending on the degree of privatisation among basic environmental protection activities, i.e. waste collection, waste treatment and sewage treatment.

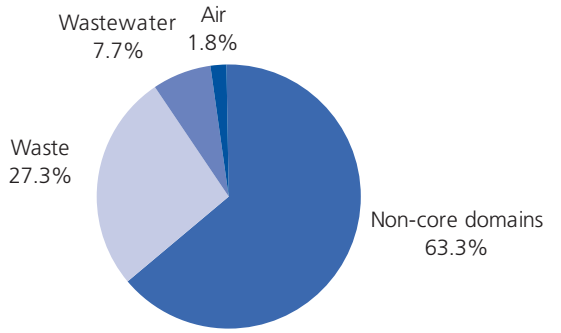
As with many of the other statistics that are presented in this section, environmental protection expenditure statistics are collected through a joint Eurostat/OECD questionnaire.

A breakdown of environmental protection expenditure shows that there are considerable differences when comparing expenditure incurred by the public sector and that incurred by industry; note that total expenditure of the EU-25's public sector was 1.4 times as high as that incurred by industry (excluding recycling activities) in 2002.

A relatively small share (less than 2 %) of EU-25 public expenditure on environmental protection was devoted to air protection, whereas the proportion rose to over 16 % of total expenditure for industry. In a similar vein, the proportion of total expenditure on wastewater was considerably higher for industry (around 23 %) than it was for the public sector (under 8 % of the total). There were similar proportions of public-sector and industrial environmental expenditure devoted to waste, at just over 27 % and 30 % respectively.

Figure 10.9: Breakdown of environmental protection expenditure by the public sector, EU-25, 2002

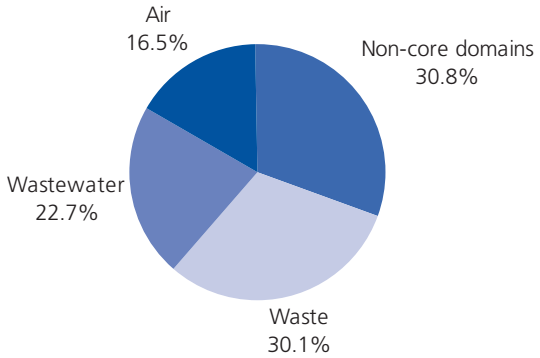
(%) TEN00060



Environmental protection expenditure is defined as the money spent on all purposeful activities directly aimed at the prevention, reduction and elimination of pollution or nuisances resulting from the production processes or consumption of goods and services; excluded are activities that, while beneficial to the environment, primarily satisfy technical needs or health and safety requirements; environmental protection expenditure is classified into different economic sectors (public, agriculture, industries, and households), financial variables (treatment and prevention investments, current expenditure, subsidies, etc.) and environmental domains (air, water, waste, soil, noise, biodiversity and landscape).

Figure 10.10: Breakdown of environmental protection expenditure by industry, EU-25, 2002 (1)

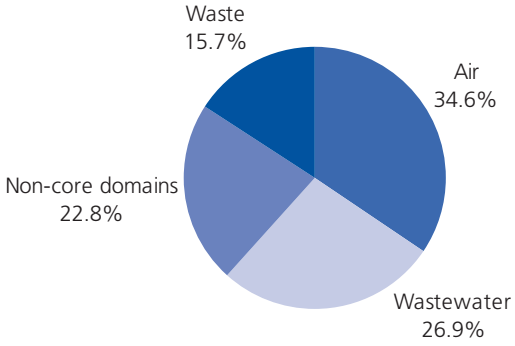
(%)



(1) Excluding the activities of the recycling sector (NACE Division 37).

Figure 10.11: Breakdown of environmental protection investment by industry, EU-25, 2002 (1)

(%) TEN00061



(1) Excluding the activities of the recycling sector (NACE Division 37).
Investment expenditure includes outlays in a given year (purchases and own-account production) for machinery, equipment and land used for environmental protection purposes; total investments in a sector or industry is the sum of the two categories.