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Energy, transport and environment indicators

2015 edition

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Foreword

This year will set another important milestone on the way to addressing the issue of climate change. Delegations from across the world will meet in Paris in December 2015 with the aim of reaching a new international agreement on climate, which will be applicable globally. The ambitious target to be agreed on at the conference will be to keep the global temperature increase at less than 2 °C.

Energy, transport and increased human intervention in the environment have proven to be major contributors to climate change over the last few decades. The European Union has actively been pursuing ambitious emission reduction targets for years, and has succeeded in reducing its carbon footprint quite significantly. It is now confident of achieving its goal of cutting greenhouse gas emissions by 20 % in 2020 and has recently doubled its target, at least a 40 % reduction compared to 1990 levels, to be achieved by 2030.

The *Energy, transport and environment indicators* statistical book provides an overview of the EU's main indicators in these areas. Such indicators provide statistical support for monitoring progress towards targets, and for the implementation and design of policies that will ensure our wellbeing as well as a safe and sustainable global society.

However, this selection of indicators is by no means exhaustive. You can find the content of this publication in a richer online format in Statistics Explained, the section of the Eurostat website that presents statistical topics in an easily understandable way. Additionally, the latest and most complete versions of the data can be downloaded directly from the Eurostat website.

You can read this publication in any way you choose — front to back or flip through it to the sections that interest you.

Enjoy the book!

Marcel Jortay
Director, Sectoral and Regional Statistics

Introduction

The 2015 edition of this publication presents a compilation of data on energy, transport and the environment. The UN Climate Change Conference taking place in Paris in December 2015, illustrates once again the global political importance of climate change, energy security and sustainable transport, three topics that have become increasingly interconnected. This greater correlation creates the need for a comprehensive approach that includes reliable and comparable statistical data, necessary for the better understanding of the complexity of the issues, for sound policy-making and the setting of effective measures.

The indicators present national data for the 28 EU Member States, the EFTA, the candidate and the potential candidate countries. When available, the EU-28 aggregate is also provided. When the EU-28 aggregate is not available, the EU-27 aggregate is provided. Data are generally available for the period between 2004 and 2013. In the energy chapter, the main data sources are being reported under Regulation (EC) No 1099/2008 of the European Parliament and of the Council on Energy Statistics and Directive 2008/92/EC of the European Parliament and of the Council concerning transparency of gas and electricity prices.

In the transport chapter, the most important data sources are being reported under the EU legal acts on transport statistics and the Eurostat/UNECE/ITF common questionnaire.

Regarding environment, data on waste derive from reporting under Regulation 2150/2002 of the European Parliament and of the Council on waste statistics. Data on water are collected in cooperation with the Organisation for Economic Co-operation and Development (OECD) by means of a Joint Questionnaire. Environmental accounts are collected by Eurostat and emissions data are taken from the European Environment Agency (EEA). The Food and Agriculture Organization (FAO) is the source of data on forest area and wood harvest by ownership whereas imports of wood and wood products come from Eurostat. Data on bird indicators are provided by the European Bird Census Council/The Royal Society for Protection of Birds/BirdLife International/Statistics Netherlands.

General data offer a first macroscopic overview of the main characteristics of the EU and its position with regard to the main economies worldwide.

Energy indicators include supply, final consumption, renewable sources, and the structure of the industry; energy dependency, energy efficiency, and energy prices. The Directive on renewable energy sources ([1]), an integral part of the Energy Package, defines the share of these sources in gross final energy consumption. This publication presents data on certain indicators, for example biofuels, relevant for the policy on the promotion of renewable energy. Energy prices are presented in accordance with the new methodology.

([1]) Directive of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (2009/28/EC) of the European Parliament and of the Council.

Transport indicators cover equipment, volume of passengers and freight transport, modes of transport, transport infrastructure, road safety and transport-related emissions.

The *Environment* chapter includes indicators on climate change and greenhouse gas emissions, waste generation and treatment, water resources, abstraction and use, wastewater treatment, forestry and biodiversity, chemicals, material flow accounts and relevant financial indicators such as environmental protection expenditure and environmental taxes.

For detailed data please check:

- the Eurostat website at http://ec.europa.eu/eurostat
- the European Environment Agency (EEA) website at http://eea.europa.eu

Eurostat — the statistical office of the European Union

Eurostat is the statistical office of the European Union, situated in Luxembourg. Its task is to provide the EU with European statistics at a European level for policy-making purposes.

Eurostat's mission is *'to be the leading provider of high quality statistics on Europe'*.

The production of European Union statistics shall conform to impartiality, reliability, objectivity, scientific independence, cost-effectiveness and statistical confidentiality; it shall not entail excessive burdens on economic operators.

Eurostat aims to:

- provide other European institutions and the governments of the EU Member States with the information needed to design, implement, monitor and evaluate EU policies;
- disseminate statistics to the European public and enterprises and to all economic and social agents involved in decision making;
- implement a set of standards, methods and organisational structures which allow comparable, reliable and relevant statistics to be produced throughout the EU, in line with the principles of the European statistics Code of Practice;
- improve the functioning of the European Statistical System, to support the EU Member States, and to assist in the development of statistical systems at an international level.

A practical guide to accessing European statistics

The simplest way to access Eurostat's broad range of statistical information is through the Eurostat website (http://ec.europa.eu/eurostat). Eurostat provides users with free access to its databases and all of its publications in PDF format via the Internet. The website is updated daily and gives access to the latest and most comprehensive statistical information available on the EU, its Member States, EFTA countries and candidate countries.

Eurostat online data code(s) — easy access to the freshest data

Eurostat online data codes, such as tps00001 and nama_gdp_c ([2]), allow the reader to easily access the most recent data on Eurostat's website. In this pocketbook these online data codes are given as part of the source below each table and figure.

In the PDF version of this publication, the reader is led directly to the freshest data when clicking on the hyperlinks that form part of each online data code. Readers of the paper version can access the freshest data by typing a standardised hyperlink into a web browser, http://ec.europa.eu/eurostat/product?code=<data_code>&mode=view, where <data_code> is to be replaced by the online data code printed under the table or figure in question. The data is presented either in the TGM or the Data Explorer interface.

Online data codes can also be fed into the 'Search' function on Eurostat's website, which is found in the upper-right corner of the Eurostat homepage, at http://ec.europa.eu/eurostat.

The results from such a search present related dataset(s) and possibly publication(s) and metadata. By clicking on these hyperlinks users are taken to product page(s) ([3]), which provide some background information about each dataset/publication or set of metadata. For example, it is possible to move directly to the data from the data product page by clicking the TGM or Data Explorer icons presented under the 'View table' sub-heading.

Note that the data on the Eurostat's website is frequently updated.

Note also that the description above presents the situation as of the end of September 2015.

Statistics Explained

Statistics Explained is part of Eurostat's website — it provides easy access to Eurostat's statistical information. It can be accessed via a link in the bottom left-hand side of the Eurostat homepage, or directly at http://ec.europa.eu/eurostat/statistics-explained.

Statistics Explained is a wiki-based system that presents statistical topics. Together, the articles make up an encyclopaedia of European statistics, which is completed by a statistical glossary that clarifies the terms used. In addition, numerous links are provided to the latest data and metadata

([2]) There are two types of online data codes:
- Tables (accessed using the TGM interface) have 8-character codes, which consist of 3 or 5 letters the first of which is 't' — followed by 5 or 3 digits, e.g. tps00001 and tsdph220.
- Databases (accessed using the Data Explorer interface) have codes that use an underscore '_' within the syntax of the code, e.g. nama_gdp_c and proj_08c2150p.

([3]) The product page can also be accessed by using a hyperlink, for example, http://ec.europa.eu/eurostat/product?code=<data_code>, where <data_code> is to be replaced by the online data code in question.

and to further information, making Statistics Explained a portal for regular and occasional users alike.

In September 2015 Statistics Explained contained well over 800 statistical and background articles and some 1 800 glossary pages in English; their number is continuously growing. About 90 of these articles, corresponding to the content of the Eurostat yearbook and Eurostat regional yearbook, are available in French and German, and 20 representative ones have been translated into 19 other EU languages. As a result, 560 articles in 21 languages besides English can be consulted.

Users can search for articles using navigational features in the left-hand menu. The top-right menu bar of Statistics Explained offers tools, among others, to print, forward, cite, blog or share content easily.

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Production

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Data extraction period

The statistical data presented in this statistical book are the ones analysed in the continuously updated Statistics Explained articles on energy, transport and the environment at the time of writing of this publication (July 2015). Some of the accompanying text was drafted in July and August 2015.

Table of contents

Symbols and abbreviations

Eurostat online databases contain a large amount of metadata that provides information on the status of particular values or data series. In order to improve readability, only the most significant information has been included in the tables and figures. The following symbols are used, where necessary:

:	Data not available
0	Real zero or figure less than half of the unit used
–	Not applicable
%	Percentage
1234	*Estimates are printed in italic*
c	Confidential
p	Provisional value

Breaks in series are indicated in the footnotes provided under each table and figure.

Units of measurement

ECU	European currency unit, data up to 31.12.1998
EUR	Euro, data from 1.1.1999 on
GJ	giga joule
GW	giga watt
GWh	gigawatt hour
ha	hectare
kg	kilogram
kgoe	kilograms of oil equivalent
kj	kilojoule
km	kilometre
km^2	square kilometre
ktoe	thousand tonnes of oil equivalent
kWh	kilowatt hour
m^3	cubic metre

mio	million (10^6)
Mt	million tonnes
Mtoe	million tonnes of oil equivalent
MW	megawatt
PJ	petajoule
pkm	passenger-kilometre
tkm	tonne-kilometre
t	tonne
toe	tonne of oil equivalent
TWh	terawatt hour
USD	United States dollar
vkm	vehicle-kilometre

Abbreviations

AWU	annual work units
CARE	Community Road Accident Database
CH_4	methane
CHP	combined heat and power
CMR	carcinogenic, mutagenic and reprotoxic
CO_2	carbon dioxide
DEU	domestic extraction used
DMC	domestic material consumption
DMI	direct material input
EBCC	European Bird Census Council
ECE	United Nations Economic Commission for Europe
EEA	European Environment Agency
EPE	environmental protection expenditure
FAWS	forests available for wood supply
FEC	final energy consumption

FLEGT	Forest Law Enforcement, Governance and Trade
GDP	gross domestic product
GHG	greenhouse gases
GIC	gross inland consumption
GNI	gross national income
GVA	gross value added
GWP	global warming potential
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IT	information technology
ITF	International Transport Forum
NACE	statistical classification of economic activities in the European Community
N_2O	nitrous oxide
OECD	Organisation for Economic Co-operation and Development
OJ	Official Journal of the European Union
OPEC	Organisation of the Petroleum Exporting Countries
OWL	other wooded land
PPP	purchasing power parity
RES	renewable energy sources
RMC	raw material consumption
RME	raw material equivalents
RMI	raw material input
RSPB	The Royal Society for the Protection of Birds
UIC	Union Internationale des Chemins de fer
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
VPA	voluntary partnership agreements
WEEE	waste electrical and electronic equipment

Countries

EU-28	The 28 Member States of the European Union from 1 July 2013 (Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom)
EU-27	The 27 Member States of the European Union from 1 January 2007 to 30 June 2013 (Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom)
EU-15	The 15 Member States of the European Union from 1 January 1995 to 30 April 2004 (Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, United Kingdom)

European Free Trade Association (EFTA) countries

Iceland
Liechtenstein
Norway
Switzerland

EU candidate countries

Albania
The former Yugoslav Republic of Macedonia
Montenegro
Serbia
Turkey

EU potential candidate countries

Bosnia and Herzegovina
Kosovo (1)

(1) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/99 and the ICJ Opinion on the Kosovo declaration of independence.

1

General data

General data

The world's population reached 7 162 million inhabitants in 2013. China was the most populous country with 1 340 million inhabitants, accounting for 19 % of the world's population. The population of the EU-28 broke through the threshold of 500 million in 2008 and stood at 505 million inhabitants in 2013, followed by the United States (309 million), Russia (143 million) and Japan (128 million). The trend in world population growth has been continuous since 1995. The overall increase between 2000 and 2013 was 17 %. Over this period, the fastest population growth was recorded in the United States (12 %), followed by China (7 %), the EU-28 (4 %) and Japan (1 %). In contrast, Russia recorded a 2 % decrease between 2000 and 2013.

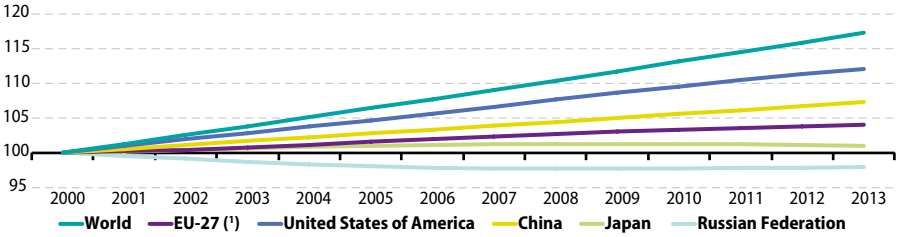
Population density is the ratio of the population of the territory to the surface (land) area of the territory. In 2013, world population density was estimated at 53 inhabitants/km^2. The most densely populated country was Japan (337 inhabitants/km^2), followed by China (141) and the EU-28 (117). The United States and Russia presented densities below the world average (32 and 8 inhabitants/km^2 respectively).

Table 1.1.1: Area and population worldwide, 2013

	Land area (1 000 km^2)	Population (1 000)	Population density (inhabitants/km^2)
EU-28 ([1])	4 494	505 200	117
China	9 597	1 339 725	141
Japan	378	128 057	337
Russia	17 098	143 436	8
United States of America	9 629	308 746	32
World	136 162	7 162 100	53

([1]) 2011 data for land area and population density; 2012 data for population.
Source: Land area: United Nations *Demographic Yearbook 2013*; EU-28: Eurostat *The EU in the world 2015 — A statistical portrait*; Population: *World Population Prospects: The 2015 Revision*, United Nations Population Division; EU-28: Eurostat (online data code: demo_pjan).

Figure 1.1.1: Population index worldwide, 2000–13
(2000 = 100)



([1]) Break in time series in 2001, 2010, 2011 and 2012. Provisional data for 2013.
Source: *World Population Prospects: The 2015 Revision*, United Nations Population Division; EU-27: Eurostat (online data code: demo_pjan).

In 2014, the world's gross domestic product (GDP) was valued at USD 77 869 billion. The EU-28 accounted for USD 18 461 billion, a 23.7 % share of the world's GDP; while the United States accounted for a 22.4 % share. The share of China in the world's GDP was 13.3%, Japan's 5.9 % and Russia's 2.4 %. Compared to 2000, all major economies increased their GDPs in 2014. However, the GDP of Japan began to decrease in 2012, followed by Russia's GDP in 2013. China's GDP grew the most exponentially from 2000 to 2014: 760 %.

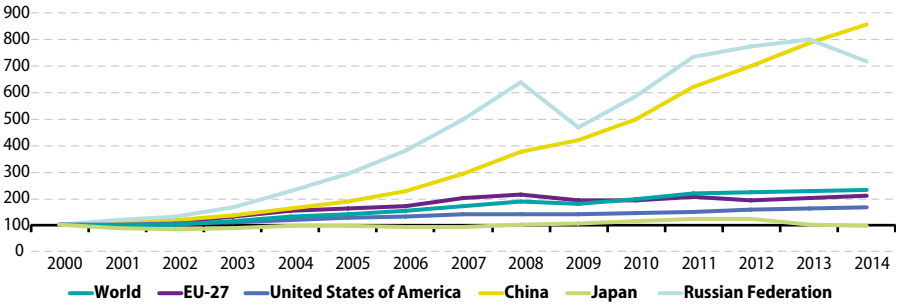
Gross national income (GNI) is the sum of gross primary incomes receivable by resident institutional units/sectors. Therefore, it is GDP less primary income payable to non-residents plus primary income receivable from non-residents. With the use of GNI per capita in purchasing power parity (PPP) the relative position of individual countries can be expressed through a comparison with the world value (100). In 2014, the highest value among the major world economies was recorded for the United States (371.6 compared to the world average), followed by Japan (252.3), EU-28 (241.3) and Russia (164.4); while for China it was 87.3.

Table 1.1.2: GDP, GDP share in the world, GNI per head in PPP worldwide, 2014

	GDP at current prices (million US $)	Share of world GDP (%)	GNI per capita in PPP (world = 100)
EU-28 (1)	18 460 646	23.7	241.3
China	10 360 105	13.3	87.3
Japan	4 601 461	5.9	252.3
Russia	1 860 598	2.4	164.4
United States of America	17 419 000	22.4	371.6
World	77 868 768	100.0	100.0

Source: The World Bank.

Figure 1.1.2: GDP in the world, 2000–14
(2000 = 100)



Source: The World Bank.

In 2013, the EU-28 presented the highest absolute exports values (EUR 1 737 billion), followed by China (EUR 1 663 billion); while the United States presented the highest value of imports (EUR 1 753 billion). As far as net exports (exports minus imports) are concerned, in 2013 the net exporting countries were China (except Hong Kong, EUR 195 billion) and Russia (EUR 160 billion), while the United States and Japan were net importers with EUR 565 billion and EUR 68 billion respectively. Having been a net importer for several years, the EU-28 again became a net exporter in 2013 (EUR 52 billion).

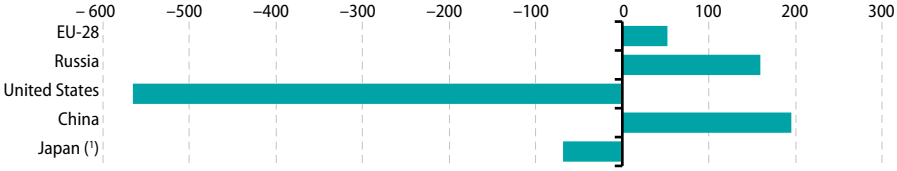
During the period 2000 to 2013, all countries presented increased exports and imports. The highest increases in exports were recorded in China (fivefold) and Russia (twofold); while in imports the highest increases were recorded in Russia and China (both fivefold).

Table 1.1.3: Trade in goods worldwide, 2000–13
(million EUR)

	2000	2005	2010	2013
			Exports	
EU-28 (1)	849 729	1 049 477	1 353 195	1 736 589
Russia	111 619	194 077	299 515	397 008
United States	844 869	726 903	963 347	1 188 165
China	269 813	612 454	1 190 460	1 663 284
Japan (2)	518 914	478 210	580 655	621 550
			Imports	
EU-28 (1)	992 695	1 183 909	1 532 089	1 684 891
Russia	36 682	79 340	172 672	237 140
United States	1 362 129	1 392 429	1 483 365	1 753 128
China	243 710	530 466	1 051 670	1 468 257
Japan (2)	411 112	414 650	523 542	689 480
			Net exports	
EU-28 (1)	– 142 966	– 134 432	– 178 894	51 698
Russia	74 937	114 737	126 843	159 868
United States	– 517 260	– 665 526	– 520 018	– 564 963
China	26 103	81 987	138 790	195 027
Japan (2)	107 802	63 560	57 113	– 67 929

(1) EU-27 data for 2000.
(2) No data for 2013, 2012 data instead.
Source: Eurostat (ext_lt_introle)

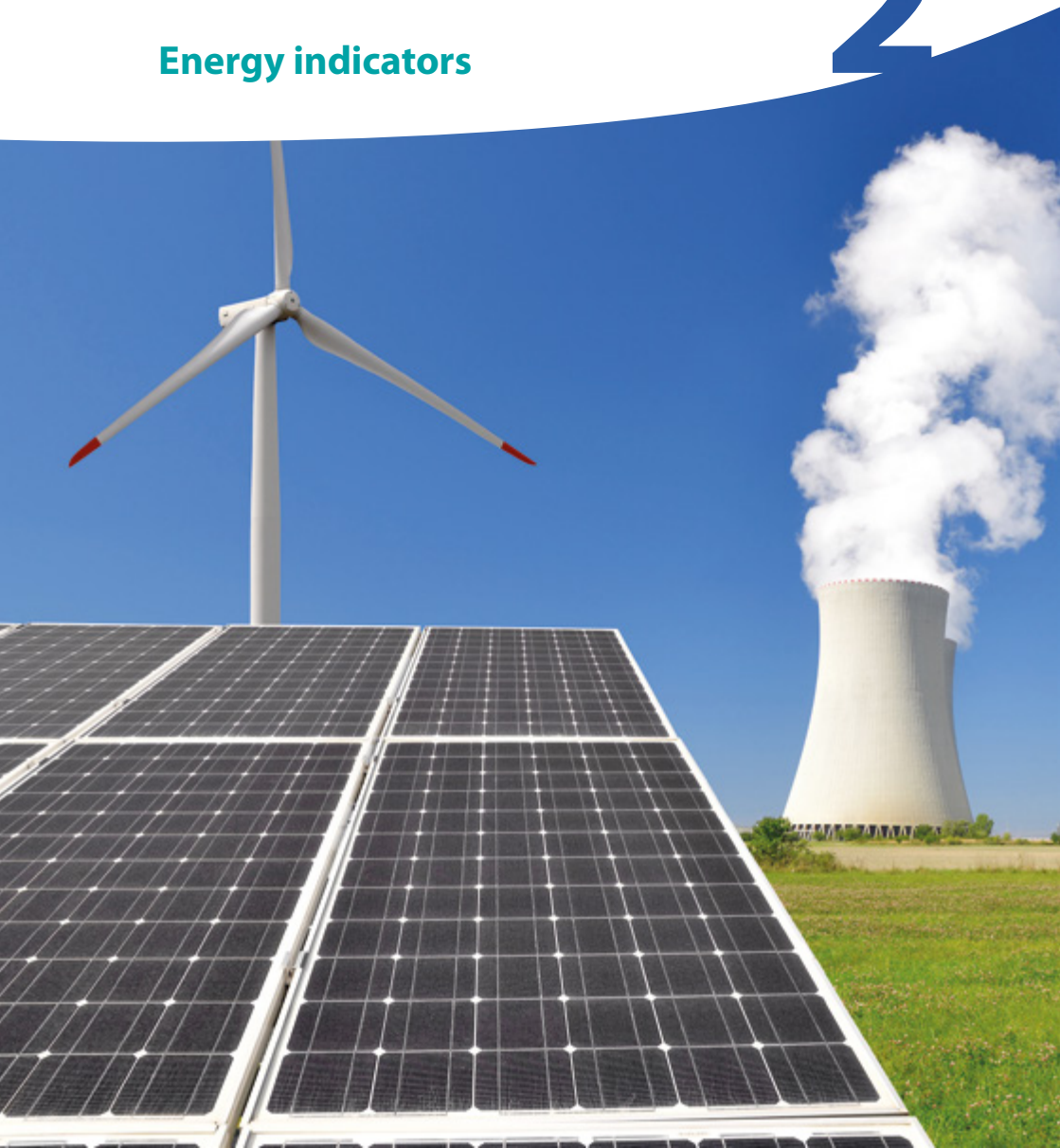
Figure 1.1.3: Net exports, 2013
(billion EUR)



(1) No data for 2013, 2012 data instead.
Source: Eurostat (ext_lt_introle)

2

Energy indicators



2.1 Energy prices

For medium-size household consumers, electricity prices during the second semester of 2014 were the highest in the EU in Denmark (EUR 0.304 per kWh), in Germany (EUR 0.297 per kWh) and in Ireland (EUR 0.254 per kWh). The lowest electricity prices in the EU for households were found in Bulgaria (EUR 0.090 per kWh), Hungary (EUR 0.115 per kWh) and Malta (EUR 0.125 per kWh). The price of electricity for households in Denmark was more than 3 times higher than the price in Bulgaria. The EU-28 average price (this price is weighted with the most recent national consumption for the household sector which is data for 2013) was EUR 0.208 per kWh.

For household consumers, the relative amount of tax contribution was the lowest in the United Kingdom and in Malta (4.8 %) where a low VAT rate is applied to the basic price and no other taxes are charged to household consumers. The highest taxes were charged in Denmark where more than half of the final price (57 %) is made up of taxes and levies.

EU-28 and euro area (EA) electricity prices for households increased in 2008, remained stable or even decreased in 2009, but went up again as of 2010. Between the second half of 2013 and the second half of 2014, electricity prices for households decreased in 16 EU Member States. The largest price increases among EU Member States between the second semester of 2013 and the second semester of 2014 were observed in France (+ 10 %) and Luxembourg (+ 6 %), while prices went down by more than 10 % in Malta and the Czech Republic.

PPS is an artificial common reference currency unit that eliminates price level differences between countries. One PPS thus buys the same given volume of goods/services in all countries. From this comparison, it follows that, relative to the cost of other goods and services, electricity for household consumers was the most expensive in Germany, Cyprus and Portugal, while it was relatively cheap in Finland, Luxembourg and Sweden.

For industrial consumers, electricity prices during the second semester of 2014 were the highest in Cyprus, Malta and Italy. The EU-28 average price (this price is weighted with the latest available (2013) national consumption for industrial consumers) was EUR 0.120 per kWh.

Looking at the proportion of non-recoverable taxes and levies in the overall electricity price for industrial consumers, the highest taxes were charged in Germany where 47 % is made up of non-recoverable taxes and levies.

Table 2.1.1: Half-yearly electricity and gas prices, 2012–14
(EUR/kWh)

	Electricity prices						Gas prices					
	Households (2)			Industry (3)			Households (4)			Industry (5)		
	2012s2	2013s2	2014s2	2012s2	2013s2	2014s2	2012s2	2013s2	2014s2	2012s2	2013s2	2014s2
EU-28	0.195	0.202	0.208	0.116	0.118	0.120	0.070	0.071	0.072	0.038	0.040	0.037
EA	0.205	0.215	0.221	0.122	0.126	0.128	0.077	0.079	0.079	0.039	0.041	0.038
Belgium	0.222	0.222	0.204	0.111	0.110	0.109	0.073	0.067	0.065	0.035	0.034	0.029
Bulgaria (1)	0.096	0.088	0.090	0.078	0.073	0.084	0.056	0.052	0.047	0.040	0.035	0.034
Czech Republic	0.150	0.149	0.127	0.103	0.099	0.082	0.066	0.058	0.056	0.034	0.033	0.030
Denmark	0.297	0.294	0.304	0.099	0.100	0.088	0.096	0.098	0.088	0.042	0.044	0.036
Germany	0.268	0.292	0.297	0.130	0.144	0.152	0.065	0.069	0.068	0.038	0.048	0.040
Estonia	0.112	0.137	0.133	0.082	0.097	0.093	0.052	0.048	0.049	0.036	0.035	0.037
Ireland	0.229	0.241	0.254	0.140	0.137	0.131	0.067	0.072	0.075	0.042	0.047	0.042
Greece	0.142	0.170	0.179	0.122	0.124	0.130	0.102	0.089	0.080	0.058	0.051	0.047
Spain	0.228	0.227	0.237	0.120	0.120	0.117	0.086	0.089	0.096	0.038	0.038	0.037
France	0.145	0.159	0.175	0.079	0.085	0.091	0.068	0.073	0.076	0.040	0.039	0.038
Croatia	0.138	0.135	0.132	0.094	0.094	0.092	0.047	0.047	0.048	0.046	0.043	0.040
Italy	0.230	0.232	0.234	0.178	0.172	0.174	0.097	0.095	0.095	0.040	0.038	0.035
Cyprus	0.291	0.248	0.236	0.234	0.201	0.190	:	:	:	:	:	:
Latvia	0.137	0.136	0.130	0.111	0.115	0.118	0.056	0.050	0.049	0.040	0.037	0.036
Lithuania	0.127	0.139	0.132	0.114	0.123	0.117	0.061	0.061	0.050	0.046	0.041	0.037
Luxembourg	0.171	0.165	0.174	0.101	0.100	0.099	0.059	0.057	0.051	0.051	0.045	0.039
Hungary	0.162	0.133	0.115	0.100	0.098	0.090	0.052	0.042	0.035	0.047	0.048	0.039
Malta	0.168	0.169	0.125	0.186	0.186	0.186	:	:	:	:	:	:
Netherlands	0.190	0.192	0.173	0.097	0.094	0.089	0.084	0.085	0.082	0.037	0.036	0.033
Austria	0.202	0.202	0.199	0.112	0.111	0.106	0.076	0.075	0.073	0.043	0.043	0.040
Poland	0.153	0.144	0.141	0.096	0.088	0.083	0.058	0.051	0.050	0.038	0.036	0.036
Portugal	0.206	0.213	0.223	0.115	0.114	0.119	0.085	0.093	0.104	0.042	0.042	0.047
Romania	0.108	0.128	0.125	0.076	0.082	0.081	0.027	0.031	0.032	0.026	0.029	0.031
Slovenia	0.154	0.166	0.163	0.094	0.095	0.085	0.073	0.071	0.063	0.055	0.048	0.044
Slovakia	0.172	0.168	0.152	0.127	0.127	0.117	0.051	0.052	0.052	0.041	0.039	0.038
Finland	0.156	0.156	0.154	0.074	0.075	0.072	:	:	:	0.048	0.047	0.056
Sweden	0.208	0.205	0.187	0.078	0.075	0.067	0.127	0.122	0.114	0.055	0.055	0.044
United Kingdom	0.179	0.180	0.201	0.119	0.120	0.134	0.058	0.059	0.065	0.034	0.036	0.035
Iceland	0.116	0.107	0.116	:	:	:	:	:	:	:	:	:
Liechtenstein	:	:	0.155	:	:	0.140	:	:	0.086	:	:	0.056
Norway	0.178	0.178	0.166	0.086	0.087	0.081	:	:	:	:	:	:
Montenegro	0.101	0.105	:	0.071	0.073	:	:	:	:	:	:	:
FYR of Macedonia	0.079	0.078	0.082	:	0.075	0.078	:	:	:	0.050	0.039	0.042
Albania	0.117	0.115	0.116	:	:	:	:	:	:	:	:	:
Serbia	:	0.061	0.060	:	0.066	0.067	:	0.044	0.045	:	0.038	0.038
Turkey	0.147	0.131	0.131	0.096	0.081	0.081	0.041	0.037	0.037	0.030	0.027	0.027
Bosnia and Herzegovina	0.080	0.080	0.081	0.066	0.066	0.062	0.056	0.051	0.051	0.057	0.053	0.053

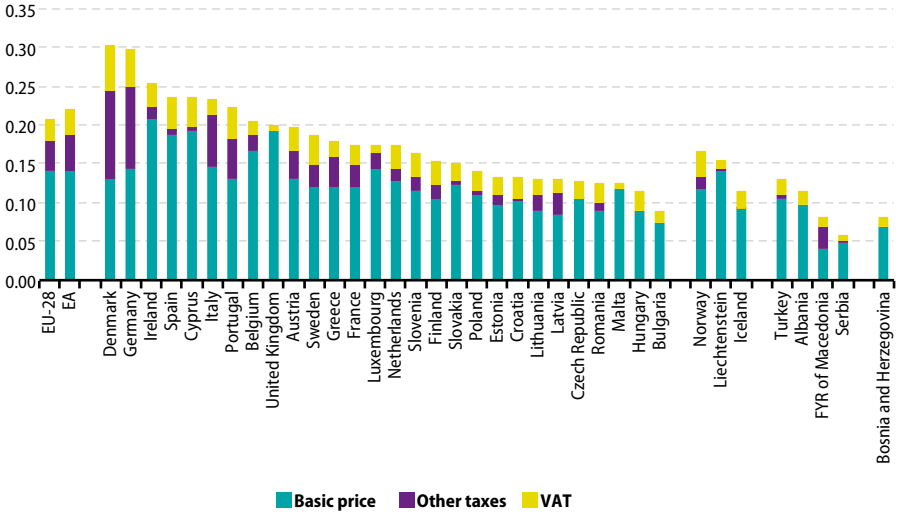
(1) Provisional data electricity industry 2014 semester 2.
(2) Annual consumption: 2 500 kWh < consumption < 5 000 kWh.
(3) Annual consumption: 500 MWh < consumption < 2 000 MWh.
(4) Annual consumption: 5 600 kWh < consumption < 56 000 kWh (20 - 200 GJ).
(5) Annual consumption: 2 778 MWh < consumption < 27 778 MWh (10 000 - 100 000 GJ).
Source: Eurostat (online data codes: nrg_pc_204, nrg_pc_205, nrg_pc_202 and nrg_pc_203)

Table 2.1.2: Electricity — share of taxes and levies paid by household consumers, 2nd semester 2014

	Basic price	Other taxes	VAT	All taxes and levies (%)
	(EUR/kWh)			
Belgium	0.168	0.021	0.016	17.87
Bulgaria	0.075	0.000	0.015	16.65
Czech Republic	0.104	0.001	0.022	18.13
Denmark	0.131	0.112	0.061	56.84
Germany	0.144	0.106	0.048	51.58
Estonia	0.098	0.012	0.022	25.89
Ireland	0.209	0.015	0.030	17.78
Greece	0.122	0.036	0.021	31.88
Spain	0.186	0.010	0.041	21.38
France	0.121	0.029	0.026	31.13
Croatia	0.101	0.005	0.027	23.49
Italy	0.147	0.066	0.021	37.21
Cyprus	0.192	0.007	0.037	18.72
Latvia	0.085	0.027	0.018	34.36
Lithuania	0.088	0.021	0.023	33.06
Luxembourg	0.143	0.021	0.010	17.66
Hungary	0.090	0.000	0.024	21.29
Malta	0.119	0.000	0.006	4.81
Netherlands	0.127	0.016	0.030	26.73
Austria	0.129	0.036	0.033	34.88
Poland	0.110	0.005	0.026	22.09
Portugal	0.130	0.052	0.041	41.69
Romania	0.091	0.010	0.024	27.40
Slovenia	0.115	0.019	0.029	29.47
Slovakia	0.124	0.003	0.025	18.78
Finland	0.105	0.019	0.030	31.73
Sweden	0.119	0.030	0.037	36.05
United Kingdom	0.192	0.000	0.010	4.77
Iceland	0.092	0.001	0.024	21.12
Liechtenstein	0.141	0.003	0.012	9.04
Norway	0.118	0.015	0.033	28.84
FYR of Macedonia	0.041	0.028	0.013	49.70
Albania	0.097	0.000	0.019	16.65
Serbia	0.049	0.001	0.010	17.79
Turkey	0.104	0.007	0.020	20.61
Bosnia and Herzegovina	0.069	0.000	0.012	14.41

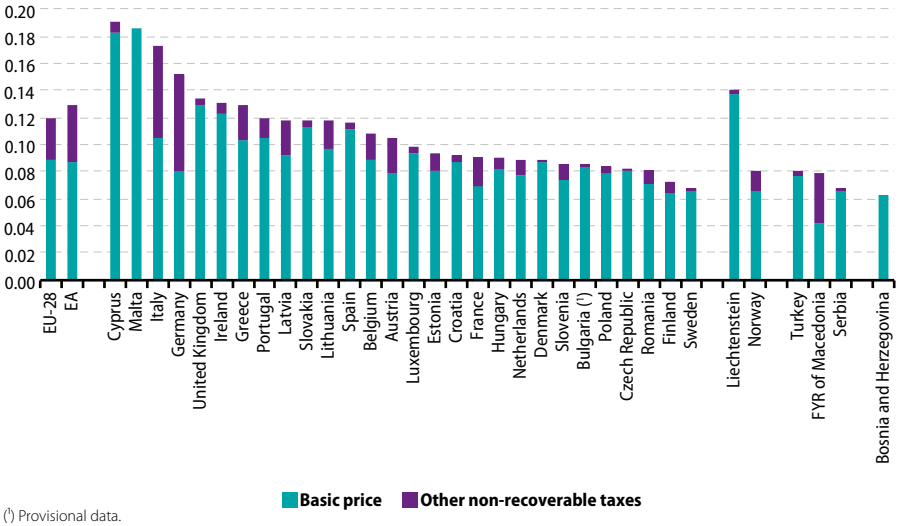
Source: Eurostat (online data code: nrg_pc_205)

Figure 2.1.1: Electricity prices for household consumers, 2nd semester 2014
(EUR/kWh)



Source: Eurostat (online data code: nrg_pc_204)

Figure 2.1.2: Electricity prices for industrial consumers, 2nd semester 2014
(EUR/kWh)



(1) Provisional data.
Source: Eurostat (online data code: nrg_pc_205)

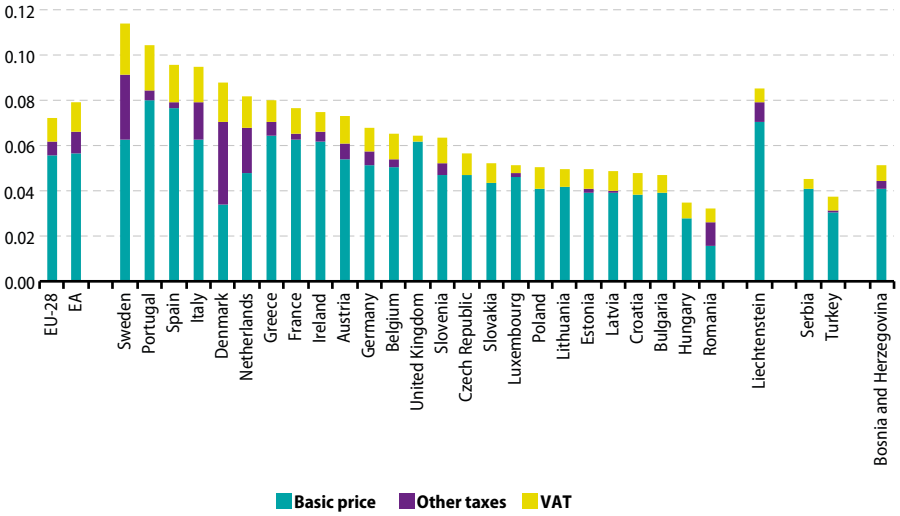
Table 2.1.3: Electricity — share of taxes and levies paid by industrial consumers, 2nd semester 2014

	Basic price	Non-recoverable taxes and levies	
	(EUR/kWh)		(%)
Belgium	0.088	0.021	19.06
Bulgaria	0.083	0.001	1.19
Czech Republic	0.081	0.001	1.22
Denmark	0.087	0.001	0.68
Germany	0.081	0.071	46.84
Estonia	0.081	0.012	13.10
Ireland	0.123	0.008	6.02
Greece	0.103	0.026	20.34
Spain	0.111	0.006	4.88
France	0.069	0.022	24.34
Croatia	0.087	0.005	5.56
Italy	0.105	0.068	39.37
Cyprus	0.183	0.007	3.78
Latvia	0.092	0.027	22.65
Lithuania	0.096	0.021	17.93
Luxembourg	0.093	0.006	5.98
Hungary	0.082	0.008	8.57
Malta	0.186	0.000	0.00
Netherlands	0.077	0.012	13.40
Austria	0.079	0.027	25.50
Poland	0.079	0.005	5.64
Portugal	0.105	0.014	11.37
Romania	0.071	0.010	12.02
Slovenia	0.074	0.011	13.11
Slovakia	0.113	0.005	3.83
Finland	0.065	0.007	9.70
Sweden	0.066	0.001	0.75
United Kingdom	0.129	0.005	3.59
Liechtenstein	0.137	0.003	1.79
Norway	0.066	0.015	18.19
FYR of Macedonia	0.041	0.037	47.19
Serbia	0.066	0.001	1.05
Turkey	0.078	0.003	3.47
Bosnia and Herzegovina	0.062	0.000	0.00

Source: Eurostat (online data code: nrg_pc_205)

For medium-size household consumers, natural gas prices during the second semester of 2014 were the highest in Sweden, Portugal and Spain. The lowest natural gas prices in the EU for households were found in Romania, Hungary and Bulgaria. The price of natural gas for households in Sweden (EUR 0.114 per kWh) was more than three times the price that was charged in Romania (EUR 0.032 per kWh). The EU-28 average price (this price is weighted with the latest available national consumption volumes for the household sector that is from 2013) was EUR 0.072 per kWh.

Figure 2.1.3: Natural gas prices for household consumers, 2nd semester 2014
(EUR/kWh)



Source: Eurostat (online data code: nrg_pc_202)

Table 2.1.4: Natural gas — share of taxes and levies paid by household consumers, 2nd semester 2014 (1)

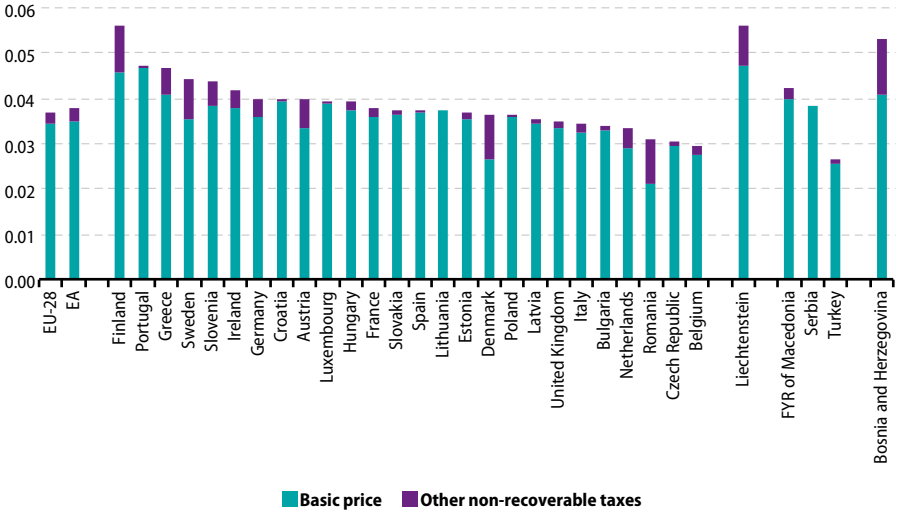
	Basic price	Other taxes and levies (excl. VAT)	VAT	All taxes and levies (%)
	(EUR/kWh)			
Belgium	0.050	0.004	0.011	22.92
Bulgaria	0.039	0.000	0.008	16.70
Czech Republic	0.047	0.000	0.010	17.41
Denmark	0.034	0.036	0.018	61.05
Germany	0.051	0.006	0.011	24.67
Estonia	0.039	0.002	0.008	20.65
Ireland	0.062	0.004	0.009	16.78
Greece	0.065	0.006	0.009	18.92
Spain	0.077	0.002	0.017	19.81
France	0.063	0.003	0.011	17.85
Croatia	0.038	0.000	0.010	20.00
Italy	0.063	0.017	0.016	34.17
Latvia	0.039	0.002	0.008	20.70
Lithuania	0.041	0.000	0.009	17.23
Luxembourg	0.046	0.002	0.003	10.89
Hungary	0.028	0.000	0.008	21.37
Netherlands	0.048	0.020	0.014	41.59
Austria	0.054	0.007	0.012	26.03
Poland	0.041	0.000	0.009	18.60
Portugal	0.080	0.004	0.019	22.81
Romania	0.015	0.010	0.006	52.04
Slovenia	0.047	0.005	0.012	26.34
Slovakia	0.043	0.000	0.009	16.76
Finland	:	:	:	:
Sweden	0.063	0.029	0.023	44.99
United Kingdom	0.062	0.000	0.003	4.80
Liechtenstein	0.070	0.009	0.006	17.97
Serbia	0.041	0.000	0.004	9.09
Turkey	0.031	0.001	0.006	17.43
Bosnia and Herzegovina	0.041	0.003	0.007	20.70

(1) Data not available for Cyprus and Malta.
Source: Eurostat (online data code: nrg_pc_202)

For industrial consumers, natural gas prices during the second semester of 2014 were the highest in Finland, Portugal and Greece. The lowest natural gas prices that are charged to medium level industrial consumers in the EU were found in Belgium. The EU-28 average price (this price is weighted with 2013 national consumption for industrial consumers) was EUR 0.037 per kWh.

For industrial consumers, the relative amount of tax contribution on gas prices in the EU-28 was the lowest in Lithuania where no energy or other taxes are applied. The highest taxes paid by industrial consumers were charged in Romania (31 %) and Denmark (27 %).

Figure 2.1.4: Natural gas prices for industrial consumers, 2nd semester 2014 ([1])
(EUR/kWh)



([1]) Data not available for Cyprus and Malta.
Source: Eurostat (online data code: nrg_pc_203)

Table 2.1.5: Natural gas — share of taxes and levies paid by industrial consumers, 2nd semester 2014 ([1])

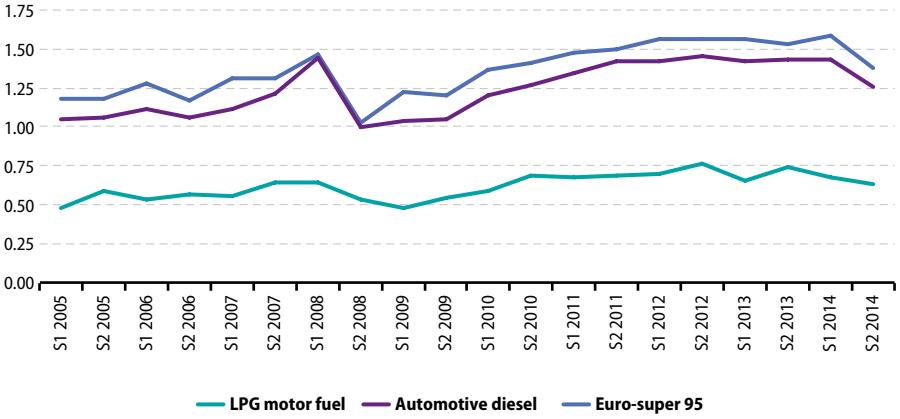
	Basic price	Non-recoverable taxes and levies	
	(EUR/kWh)		(%)
Belgium	0.028	0.002	5.80
Bulgaria	0.033	0.001	2.93
Czech Republic	0.029	0.001	3.62
Denmark	0.027	0.010	27.20
Germany	0.036	0.004	9.98
Estonia	0.035	0.002	4.07
Ireland	0.038	0.004	8.65
Greece	0.041	0.006	12.21
Spain	0.037	0.001	1.34
France	0.036	0.002	5.01
Croatia	0.040	0.000	1.25
Italy	0.032	0.002	6.09
Latvia	0.034	0.001	3.93
Lithuania	0.037	0.000	0.00
Luxembourg	0.039	0.001	1.52
Hungary	0.038	0.002	4.08
Netherlands	0.029	0.004	12.91
Austria	0.033	0.007	16.71
Poland	0.036	0.001	1.37
Portugal	0.047	0.001	1.48
Romania	0.021	0.010	31.49
Slovenia	0.039	0.005	12.10
Slovakia	0.036	0.001	3.46
Finland	0.046	0.010	18.43
Sweden	0.036	0.009	19.27
United Kingdom	0.033	0.002	4.32
Liechtenstein	0.047	0.009	16.19
FYR of Macedonia	0.040	0.002	5.45
Serbia	0.038	0.000	0.00
Turkey	0.026	0.001	3.02
Bosnia and Herzegovina	0.041	0.013	23.54

([1]) Data not available for Cyprus and Malta.
Source: Eurostat (online data code: nrg_pc_203)

Consumer prices for petroleum products are published both with taxes and duties and without them. The prices for three types of automotive fuel generally increased from 2005 to the first half of 2008, followed by a considerable correction during the second half of the same year. Thereafter, there was a gradual increase in the price of all petroleum products, such that by the second half of 2012, the prices of the three petroleum products were at historical highs. For petrol (Euro-super 95) the price remained relatively stable in 2013, reached a new peak in the first half of 2014 and fell strongly in the second half of 2014. For automotive diesel the development was similar, without the peak in the first half of 2014. For liquid petroleum gas (LPG), a price fall was recorded in the first half of 2013 which was followed in the second half of the year by a rise of similar proportions before prices declined again in 2014.

The average price of Euro-super 95 in the EU was EUR 1.38 per litre at the end of 2014, while that for automotive diesel was EUR 0.12 lower. At the end of 2014 the price of Euro-super 95 was 35.0 % higher than it had been at the end of 2008, while the corresponding price difference for automotive diesel was 26.4 %.

Figure 2.1.5: Consumer prices of petroleum products, EU, 2005–14 ([1])
(EUR/litre)



([1]) Weighted average. Inclusive of taxes and duties. Reference periods refer to the end of each semester.
Source: Oil bulletin, Directorate-General for Energy, European Commission

Table 2.1.6: Consumer prices of petroleum products, end of second half 2014
(EUR/litre)

	Euro-super 95		Automotive diesel		LPG motor fuel	
	Without taxes and duties	At-the-pump price	Without taxes and duties	At-the-pump price	Without taxes and duties	At-the-pump price
EU-28 (1)	0.51	1.38	0.57	1.26	:	:
EA-18 (1)	0.52	1.40	0.56	1.23	:	:
Belgium	0.53	1.38	0.60	1.25	0.42	0.50
Bulgaria	0.61	1.17	0.64	1.16	0.34	0.52
Czech Republic	0.55	1.23	0.64	1.25	0.43	0.61
Denmark	0.55	1.44	0.63	1.30	:	:
Germany	0.49	1.36	0.55	1.21	0.46	0.66
Estonia	0.49	1.10	0.55	1.14	0.48	0.66
Ireland	0.53	1.40	0.57	1.32	:	:
Greece	0.53	1.49	0.66	1.23	:	:
Spain	0.54	1.22	0.59	1.16	0.52	0.67
France	0.50	1.34	0.52	1.15	0.64	0.83
Croatia	0.52	1.24	0.58	1.19	0.45	0.57
Italy	0.55	1.57	0.59	1.47	0.41	0.67
Cyprus	0.57	1.26	0.64	1.31	:	:
Latvia	0.52	1.14	0.59	1.14	0.39	0.59
Lithuania	0.55	1.20	0.61	1.14	0.40	0.67
Luxembourg	0.51	1.12	0.57	1.05	0.40	0.48
Hungary	0.51	1.15	0.59	1.21	0.50	0.78
Malta	0.71	1.44	0.73	1.36	:	:
Netherlands	0.52	1.56	0.56	1.27	0.38	0.68
Austria	0.50	1.19	0.56	1.17	:	:
Poland	0.53	1.14	0.57	1.13	0.37	0.60
Portugal	0.50	1.34	0.57	1.15	0.42	0.66
Romania	0.50	1.18	0.57	1.23	0.47	0.66
Slovenia	0.52	1.36	0.56	1.29	0.47	0.69
Slovakia	0.56	1.36	0.63	1.25	0.49	0.70
Finland	0.54	1.45	0.64	1.37	:	:
Sweden	0.47	1.34	0.56	1.34	:	:
United Kingdom	0.49	1.47	0.56	1.54	:	:

(1) Weighted average.
Source: Oil bulletin, Directorate-General for Energy, European Commission

2.2 Electricity & natural gas markets

Table 2.2.1: Number of generating companies representing at least 95 % of the national net electricity generation, 2004–13

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	3	3	4	4	7	11	4	41	46	>70
Bulgaria	14	14	15	15	15	15	22	20	28	83
Czech Republic	17	18	16	16	16	19	24	51	73	328
Denmark	>1 000	>1 000	>1 000	>1 000	>1 000	>1 000	>1 000	>1600	~1300	~1450
Germany (1)	> 450	> 450	>450	>450	>450	>450	>450	>450	>450	:
Estonia	2	2	2	2	2	5	6	6	5	8
Ireland	3	4	4	5	5	5	8	6	5	7
Greece	1	1	1	1	2	3	4	:	:	12
Spain (2)	:	:	:	:	:	:	:	:	:	10
France	4	4	5	>5	>5	>5	>5	3	>5	>5
Croatia	2	2	2	2	2	2	2	2	2	2
Italy	83	88	92	105	114	167	185	219	291	493
Cyprus	1	1	1	1	1	1	1	1	1	1
Latvia	7	6	2	8	8	10	11	17	17	43
Lithuania	5	6	7	7	7	8	9	10	17	20
Luxembourg	9	>12	>12	>12	>12	>12	3	4	4	5
Hungary	30	40	57	61	52	69	68	68	32	40
Malta	1	1	1	1	1	1	1	1	1	1
Netherlands	120	100	200	1 000	1 000	900	700	700	800	700
Austria	39	53	91	106	137	128	126	129	145	169
Poland	54	70	51	54	55	59	68	73	111	103
Portugal	46	59	77	97	107	95	107	104	112	103
Romania	12	12	12	18	15	10	10	10	11	15
Slovenia	3	3	4	3	2	2	3	3	3	3
Slovakia	6	6	7	7	6	7	8	9	11	10
Finland	29	27	28	29	34	29	29	30	30	31
Sweden	14	14	11	9	8	11	24	64	74	35
United Kingdom	20	17	18	18	17	17	19	19	17	17
Norway	165	175	:	167	173	183	184	188	178	169
Montenegro	:	:	:	:	:	:	:	:	:	1
FYR of Macedonia	:	1	1	2	1	1	1	1	2	2
Serbia (1)								:	:	:
Turkey	172	29	30	36	39	69	60	60	54	87
Bosnia and Herzegovina	:	:	:	:	:	:	:	:	:	2

(1) Information on number of generating companies representing at least 95 % of the national net electricity generation not available.
(2) This figure takes into account the shares of both traditional generating companies and operators that represent renewable and CHP generation units in the market (although they are not the owners of the majority of these facilities). As renewables and CHP generation units represent 37.2 % of the total capacity installed in Spain, and those units are participated by a great amount of small companies, it is not possible to determine the exact number of generating companies (owning the generation units) representing at least 95 % of the national net electricity generation.

Source: Eurostat (Data not yet available in the Eurostat dissemination database)

Table 2.2.2: Number of main electricity generating companies, 2004–13 ([1])

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	2	2	2	2	2	2	3	3	2	2
Bulgaria	5	5	5	5	5	4	5	6	5	5
Czech Republic	1	1	1	1	1	1	1	1	1	2
Denmark	3	3	2	2	2	2	2	2	2	2
Germany	4	4	4	4	4	4	4	4	4	4
Estonia	1	1	2	1	1	1	1	1	1	1
Ireland	2	4	4	5	3	5	6	5	5	6
Greece	1	1	1	1	1	1	1	:	3	5
Spain	5	4	4	3	3	4	4	4	4	6
France	1	1	1	1	1	1	1	1	1	2
Croatia	2	2	2	2	2	2	2	2	2	2
Italy	4	4	5	5	5	4	5	4	3	4
Cyprus	1	1	1	1	1	1	1	1	1	1
Latvia	1	1	1	2	2	1	1	1	1	1
Lithuania	2	3	4	4	4	3	5	6	6	6
Luxembourg	1	2	2	2	2	2	2	2	2	3
Hungary	4	3	4	5	6	3	3	3	4	2
Malta	1	1	1	1	1	1	1	1	1	1
Netherlands	4	5	5	4	4	4	5	5	4	4
Austria	5	4	4	4	4	4	4	4	4	4
Poland	5	5	5	5	5	5	5	5	4	4
Portugal	3	3	3	3	3	3	2	4	4	4
Romania	6	7	7	7	7	6	6	6	5	5
Slovenia	2	2	2	2	2	2	2	2	2	2
Slovakia	1	1	2	2	2	1	1	1	1	1
Finland	5	4	5	5	5	5	4	4	4	4
Sweden	3	3	3	3	3	3	5	5	3	3
United Kingdom	7	7	6	7	9	8	8	7	7	7
Norway	5	4	:	3	4	4	3	2	2	3
Montenegro	:	:	:	:	:	:	:	:	:	1
FYR of Macedonia	:	1	1	2	1	1	1	1	1	2
Serbia	:	:	:	:	:	:	:	4	:	:
Turkey	4	3	3	3	3	3	2	2	2	2
Bosnia and Herzegovina	:	:	:	:	:	:	:	:	:	1

([1]) Companies are considered as 'main' if they produce at least 5 % of the national net electricity generation.
Source: Eurostat (Data not yet available in the Eurostat dissemination database)

In 2013, the number of electricity generating companies representing at least 95 % of national net electricity generation remained limited to five or fewer in five EU Member States. Germany did not report a number for this indicator. Between 2012 and 2013, the number of electricity generating companies representing at least 95 % of national net electricity generation remained stable in six EU Member States and increases could be observed in 14 EU Member States, while the number went down most significantly in Sweden and the Netherlands.

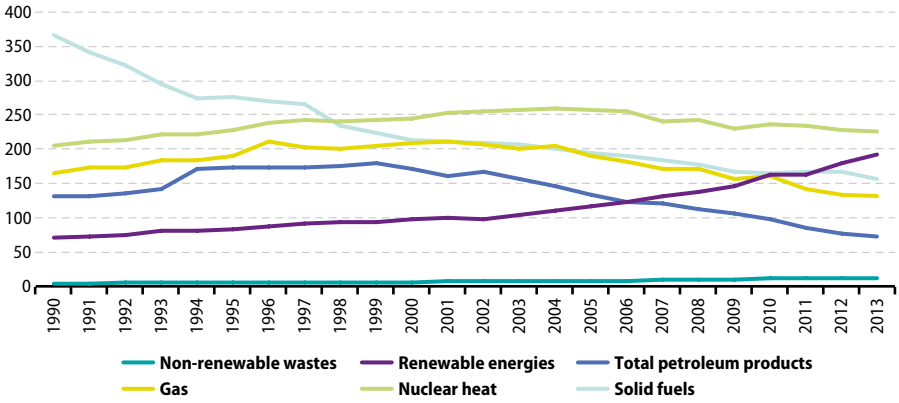
The number of main enterprises at EU-28 level fluctuated between 82 and 90 companies between 2003 and 2012. In 2013, there were 93 main enterprises, a new record. Apart from Malta and Cyprus, where only one electricity company dominates the national production, figures above 80 % for the largest electricity generators were observed in Estonia (87 %), France (84 %), Croatia (84 %) and Slovakia (84 %). A size of the largest generation company on national level below 25 % was observed in Poland (17 %) and Lithuania (24 %). The market shares of the largest generator for Bulgaria and the Netherlands were not reported.

2.3 Primary energy production

Primary production of energy within the EU-28 in 2013 was 790000 kilotonne of oil equivalent (ktoe), only 0.7 % lower than in 2012. The biggest decrease was in solid fuels (6.2 %), followed by petroleum products (5.9 %) which continue to decrease year by year, followed by gas production (1.1 %) and nuclear heat with a 0.6 % decrease, while the only increase was registered by renewables energies with 6.6 % and non-renewable waste with 1.4 %. Nuclear heat accounted for the highest share in primary energy production in EU-28 in 2013 (28.7 %), followed by renewable energies (24.3 %), solid fuels (19.7 %), gas (16.7 %), petroleum products (9.1 %) and non-renewable wastes (1.5 %).

Over the past decade (2003–13), the trend in primary energy production was negative for most energy sources. Petroleum products accounted for the biggest decrease (54.0 %) while gas production fell by 34.6 %. However, there was a positive trend in production of renewable energies over the same period, with an 84.4 % increase.

Figure 2.3.1: Primary energy production, EU-28, 1990–2013
(1 000 ktoe)



Source: Eurostat (online data code: nrg_100a)

Table 2.3.1: Total production of primary energy, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	929.8	900.3	881.5	856.6	850.8	816.1	831.5	800.8	795.4	789.8
EA-19	476.6	467.9	470.4	464.2	469.3	453.9	477.1	465.0	468.7	478.0
Belgium	13.5	13.7	13.6	14.3	14.0	14.8	15.4	15.9	14.0	14.6
Bulgaria	10.2	10.6	11.0	9.9	10.2	9.7	10.5	12.3	11.7	10.5
Czech Republic	33.1	32.9	33.5	33.7	32.8	31.2	31.5	32.0	32.0	29.9
Denmark	30.9	30.8	29.3	26.8	25.8	23.5	22.9	20.2	18.6	16.6
Germany	136.8	136.8	138.7	136.5	132.9	126.6	128.7	122.7	122.7	120.6
Estonia	3.7	3.9	3.7	4.4	4.2	4.2	4.9	5.0	5.1	5.7
Ireland	1.9	1.6	1.6	1.4	1.5	1.5	1.8	1.7	1.3	2.3
Greece	10.3	10.3	10.1	10.2	9.9	10.1	9.4	9.6	10.4	9.3
Spain	32.4	30.0	31.2	30.1	30.2	30.2	34.3	31.8	33.3	34.3
France	135.4	135.8	135.2	133.3	135.4	127.9	134.7	134.9	133.3	135.1
Croatia	3.9	3.8	4.1	4.1	3.9	4.1	4.2	3.8	3.5	3.6
Italy	28.3	27.8	27.3	26.2	26.8	26.6	29.5	31.2	35.0	36.9
Cyprus	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Latvia	1.8	1.9	1.8	1.8	1.8	2.1	2.0	2.1	2.3	2.1
Lithuania	5.1	3.9	3.4	3.7	3.8	4.1	1.3	1.3	1.3	1.4
Luxembourg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hungary	10.2	10.3	10.3	10.2	10.4	10.9	11.0	10.7	10.5	10.1
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	68.0	62.2	61.1	61.4	66.7	63.2	70.0	64.5	64.9	69.7
Austria	9.9	10.0	10.1	10.9	11.2	11.7	12.1	11.5	12.9	12.1
Poland	78.1	77.9	76.8	71.7	70.6	66.9	66.8	67.7	71.0	70.6
Portugal	3.9	3.6	4.4	4.6	4.5	4.9	5.8	5.5	4.8	5.8
Romania	28.6	28.2	28.2	28.0	29.2	28.5	27.8	27.9	27.4	26.1
Slovenia	3.4	3.5	3.4	3.4	3.7	3.6	3.7	3.8	3.5	3.6
Slovakia	6.2	6.3	6.4	5.7	6.2	5.7	6.0	6.2	6.2	6.4
Finland	15.7	16.6	18.1	16.0	16.3	16.5	17.3	17.0	17.1	18.0
Sweden	33.8	34.2	32.4	33.1	32.8	29.9	32.7	32.9	35.7	34.7
United Kingdom	224.3	203.8	185.5	175.0	165.7	157.4	147.1	128.5	116.4	109.5
Norway	228.8	224.2	215.6	215.4	222.2	217.8	208.0	199.6	203.0	193.9
Montenegro	:	0.7	0.7	0.6	0.7	0.6	0.9	0.7	0.7	0.8
FYR of Macedonia	1.6	1.5	1.6	1.5	1.6	1.6	1.6	1.7	1.5	1.4
Albania	1.1	1.1	1.2	1.0	1.1	1.2	1.6	1.5	1.6	2.0
Serbia	12.0	10.2	10.5	10.5	10.7	10.2	10.5	11.1	10.7	11.3
Turkey	24.1	24.0	26.4	27.3	29.0	30.4	32.3	32.1	30.7	32.3

Source: Eurostat (online data code: ten00076)

Table 2.3.2: Primary production of coal and lignite, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	200.4	194.9	190.5	184.6	176.8	166.2	164.0	166.6	166.1	155.8
EA-19	80.4	79.3	76.3	75.5	69.5	66.3	65.1	65.2	65.2	62.7
Belgium	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulgaria	4.5	4.2	4.3	4.7	4.8	4.6	4.9	6.2	5.6	4.8
Czech Republic	23.6	23.6	23.9	23.8	22.8	20.9	20.7	20.9	20.1	17.7
Denmark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Germany	58.3	56.5	53.2	54.4	50.1	46.4	45.9	46.7	47.6	45.1
Estonia	3.0	3.2	3.1	3.7	3.5	3.3	3.9	4.1	4.0	4.4
Ireland	0.9	0.8	0.8	0.6	0.7	0.6	1.0	0.8	0.3	1.3
Greece	8.5	8.5	8.2	8.4	8.1	8.2	7.3	7.5	8.0	6.7
Spain	6.5	6.3	6.0	5.5	4.2	3.8	3.3	2.6	2.5	1.8
France	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Italy	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	2.2	1.7	1.8	1.8	1.7	1.6	1.6	1.6	1.6	1.6
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Austria	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poland	68.8	68.4	67.1	62.0	60.5	56.1	55.1	55.3	57.5	56.8
Portugal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Romania	6.3	5.8	6.5	6.9	7.0	6.6	5.9	6.7	6.3	4.7
Slovenia	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Slovakia	0.8	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6
Finland	0.9	2.1	3.2	1.1	1.0	2.2	1.8	1.7	1.0	1.7
Sweden	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
United Kingdom	14.4	11.6	10.5	9.8	10.3	10.1	10.4	10.4	9.5	7.4
Norway	1.9	1.0	1.6	2.7	2.3	1.8	1.3	0.9	0.8	1.2
Montenegro	:	0.3	0.3	0.3	0.4	0.2	0.4	0.4	0.4	0.4
FYR of Macedonia	1.3	1.2	1.3	1.3	1.4	1.3	1.2	1.4	1.2	1.1
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	9.3	7.5	7.8	7.9	8.2	7.3	7.2	7.8	7.3	7.7
Turkey	10.5	10.8	13.1	14.8	16.7	17.4	17.5	17.8	15.6	15.7

Source: Eurostat (online data code: ten00076)

Table 2.3.3: Primary production of crude oil (without NGL), 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	132.3	119.4	108.9	108.2	100.3	95.0	88.8	78.0	70.4	66.2
EA-19	13.9	13.6	12.9	13.5	12.3	10.8	10.8	11.1	11.2	11.5
Belgium	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulgaria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Czech Republic	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Denmark	19.5	18.5	17.0	15.2	13.6	12.8	12.0	10.8	10.0	8.7
Germany	3.5	3.5	3.4	3.3	3.0	2.7	2.5	2.6	2.6	2.6
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greece	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Spain	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
France	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8
Croatia	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5
Italy	5.5	6.2	5.8	5.9	5.3	4.6	5.1	5.4	5.5	5.6
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	1.1	0.9	0.9	0.8	0.8	0.8	0.7	0.6	0.6	0.6
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	2.1	1.5	1.3	2.1	1.8	1.3	1.0	1.1	1.1	1.1
Austria	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Poland	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.7	1.0
Portugal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Romania	5.6	5.3	4.9	4.7	4.7	4.6	4.4	4.3	4.0	4.2
Slovenia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovakia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Finland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
United Kingdom	90.2	79.2	71.4	72.2	67.3	64.4	59.4	49.8	43.2	39.6
Norway	138.7	126.1	116.4	112.5	108.2	101.5	91.1	87.9	77.8	74.9
Montenegro	:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Albania	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.9	1.0	1.1
Serbia	0.6	0.6	0.6	0.6	0.6	0.7	0.9	1.0	1.2	1.2
Turkey	2.3	2.3	2.2	2.1	2.2	2.4	2.5	2.4	2.4	2.5

Source: Eurostat (online data code: ten00076)

Table 2.3.4: Primary production of natural gas, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	204.9	190.7	182.5	171.3	172.2	157.1	159.8	141.7	133.2	131.8
EA-19	90.7	83.6	82.6	80.2	83.2	78.6	83.9	77.8	76.5	78.7
Belgium	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulgaria	0.3	0.4	0.4	0.2	0.2	0.0	0.1	0.4	0.3	0.2
Czech Republic	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Denmark	8.5	9.4	9.3	8.3	9.0	7.5	7.3	5.9	5.2	4.3
Germany	14.5	14.3	14.9	14.9	13.2	13.0	11.1	10.9	9.6	8.9
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.7	0.5	0.4	0.3	0.4	0.3	0.2	0.2	0.2	0.2
Greece	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spain	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
France	1.1	0.9	1.1	0.9	0.8	0.8	0.6	0.5	0.5	0.3
Croatia	1.8	1.9	2.2	2.4	2.2	2.2	2.2	2.0	1.6	1.5
Italy	10.6	9.9	9.0	7.9	7.6	6.6	6.9	6.9	7.0	6.3
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	2.4	2.3	2.4	2.0	2.0	2.3	2.2	2.1	1.8	1.5
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	61.6	56.3	55.4	54.4	59.9	56.4	63.4	57.7	57.5	61.8
Austria	1.7	1.4	1.6	1.6	1.3	1.4	1.5	1.5	1.6	1.1
Poland	3.9	3.9	3.9	3.9	3.7	3.7	3.7	3.8	3.9	3.8
Portugal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Romania	10.4	9.7	9.6	9.2	9.0	8.9	8.6	8.7	8.7	8.6
Slovenia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovakia	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Finland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
United Kingdom	86.8	79.4	72.0	64.9	62.7	53.7	51.5	40.8	35.0	32.9
Norway	69.8	75.0	76.5	78.1	89.4	92.9	95.2	89.7	100.8	95.6
Montenegro	:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4
Turkey	0.6	0.7	0.7	0.7	0.8	0.6	0.6	0.6	0.5	0.4

Source: Eurostat (online data code: ten00076)

Table 2.3.5: Primary production of nuclear energy, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	260.3	257.5	255.5	241.4	241.9	230.8	236.6	234.0	227.7	226.3
EA-19	204.0	201.5	202.0	191.5	194.2	181.5	187.3	182.0	174.1	172.3
Belgium	12.2	12.3	12.0	12.4	11.8	12.2	12.4	12.4	10.4	11.0
Bulgaria	4.4	4.8	5.0	3.8	4.1	4.0	4.0	4.2	4.1	3.7
Czech Republic	6.8	6.4	6.7	6.8	6.9	7.0	7.2	7.3	7.8	8.0
Denmark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Germany	43.1	42.1	43.1	36.3	38.3	34.8	36.3	27.9	25.7	25.1
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greece	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spain	16.4	14.8	15.5	14.2	15.2	13.6	16.0	14.9	15.9	14.6
France	115.6	116.5	116.1	113.4	113.4	105.7	110.5	114.1	109.7	109.3
Croatia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Italy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	3.9	2.7	2.3	2.6	2.6	2.8	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	3.1	3.6	3.5	3.8	3.8	4.0	4.1	4.1	4.1	4.0
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	1.0	1.0	0.9	1.1	1.1	1.1	1.0	1.1	1.0	0.7
Austria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portugal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Romania	1.4	1.4	1.5	2.0	2.9	3.0	3.0	3.0	3.0	3.0
Slovenia	1.4	1.5	1.4	1.5	1.6	1.5	1.5	1.6	1.4	1.4
Slovakia	4.4	4.6	4.7	4.0	4.4	3.7	3.8	4.0	4.0	4.1
Finland	5.9	6.0	5.9	6.0	5.9	6.1	5.9	6.0	5.9	6.1
Sweden	20.0	18.7	17.3	17.3	16.5	13.5	14.9	15.6	16.5	17.1
United Kingdom	20.6	21.1	19.5	16.3	13.5	17.8	16.0	17.8	18.2	18.2
Norway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Eurostat (online data code: ten00076)

Table 2.3.6: Primary production of renewable energy, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	111.3	116.3	122.6	130.3	138.1	146.2	163.3	162.6	180.1	192.0
EA-19	79.1	80.7	86.7	92.9	98.4	104.6	117.8	116.9	129.7	140.4
Belgium	0.8	0.9	0.9	1.3	1.6	1.9	2.2	2.7	2.8	2.9
Bulgaria	1.0	1.1	1.2	1.0	1.1	1.2	1.5	1.4	1.6	1.8
Czech Republic	1.9	2.0	2.2	2.4	2.4	2.6	2.9	3.0	3.2	3.6
Denmark	2.4	2.5	2.5	2.8	2.8	2.8	3.1	3.1	3.1	3.2
Germany	14.6	16.9	20.0	23.3	23.1	24.3	27.7	29.5	32.1	33.7
Estonia	0.7	0.7	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1
Ireland	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8
Greece	1.6	1.6	1.8	1.7	1.7	1.8	2.0	2.0	2.3	2.5
Spain	8.8	8.4	9.2	10.0	10.3	12.4	14.6	14.0	14.6	17.4
France	15.8	15.9	15.7	16.5	18.6	18.9	21.1	17.9	20.8	23.1
Croatia	1.0	0.9	0.9	0.7	0.9	1.0	1.2	1.1	1.2	1.5
Italy	11.3	10.8	11.4	11.0	12.6	14.2	15.9	17.4	21.1	23.5
Cyprus	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Latvia	1.8	1.9	1.8	1.8	1.8	2.1	2.0	2.1	2.3	2.1
Lithuania	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.2	1.2	1.3
Luxembourg	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hungary	0.9	1.2	1.2	1.3	1.6	1.9	1.9	1.9	2.0	2.1
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	1.8	1.9	2.0	2.1	2.4	2.8	2.9	3.1	3.8	4.3
Austria	6.6	7.2	7.1	7.8	8.3	8.5	8.9	8.4	9.7	9.5
Poland	4.3	4.5	4.8	4.9	5.4	6.0	6.9	7.4	8.5	8.5
Portugal	3.8	3.5	4.2	4.5	4.3	4.8	5.6	5.4	4.6	5.6
Romania	4.6	5.0	4.8	4.7	5.3	5.3	5.7	5.0	5.2	5.6
Slovenia	0.8	0.8	0.8	0.7	0.8	1.0	1.0	0.9	1.0	1.1
Slovakia	0.7	0.9	0.9	1.0	1.0	1.2	1.4	1.4	1.4	1.5
Finland	8.7	8.2	8.8	8.8	9.2	8.0	9.4	9.2	10.0	9.9
Sweden	13.1	14.8	14.4	15.3	15.6	15.8	17.0	16.5	18.5	16.8
United Kingdom	2.9	3.6	3.9	4.3	4.6	5.0	5.2	6.1	7.1	8.4
Norway	10.5	13.0	11.5	12.7	13.3	12.0	11.5	11.9	13.7	12.5
Montenegro	:	0.4	0.4	0.3	0.3	0.4	0.5	0.3	0.3	0.4
FYR of Macedonia	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.3
Albania	0.7	0.7	0.7	0.5	0.5	0.7	0.9	0.6	0.6	0.8
Serbia	1.9	1.9	1.8	1.8	1.6	2.0	2.1	1.8	1.8	2.0
Turkey	10.8	10.1	10.4	9.6	9.3	9.9	11.6	11.2	12.1	13.7

Source: Eurostat (online data code: ten00081)

Table 2.3.7: Primary energy production, by fuel, 2013 (1)

	Total production (Mtoe)	Share of each fuel to total production (%)				
		Coal and lignite	Crude oil	Natural gas	Nuclear energy	Renewable energy
EU-28	789.8	19.7	8.4	16.7	28.7	24.3
EA-19	478.0	13.1	2.4	16.5	36.1	29.4
Belgium	14.6	0.0	0.0	0.0	75.2	20.0
Bulgaria	10.5	45.4	0.3	2.1	34.8	17.3
Czech Republic	29.9	59.0	0.5	0.7	26.6	12.2
Denmark	16.6	0.0	52.3	25.8	0.0	19.5
Germany	120.6	37.4	2.2	7.4	20.8	27.9
Estonia	5.7	78.3	0.0	0.0	0.0	19.9
Ireland	2.3	56.9	0.0	6.8	0.0	33.7
Greece	9.3	72.3	0.8	0.1	0.0	26.7
Spain	34.3	5.1	1.1	0.1	42.6	50.6
France	135.1	0.0	0.6	0.2	80.9	17.1
Croatia	3.6	0.0	15.0	41.6	0.0	41.4
Italy	36.9	0.1	15.2	17.2	0.0	63.7
Cyprus	0.1	0.0	0.0	0.0	0.0	100.0
Latvia	2.1	0.1	0.0	0.0	0.0	99.7
Lithuania	1.4	1.7	6.2	0.0	0.0	91.1
Luxembourg	0.1	0.0	0.0	0.0	0.0	76.4
Hungary	10.1	15.9	5.8	15.3	39.3	20.5
Malta	0.0	0.0	0.0	0.0	0.0	100.0
Netherlands	69.7	0.0	1.6	88.7	1.1	6.2
Austria	12.1	0.0	7.0	9.3	0.0	78.2
Poland	70.6	80.5	1.4	5.4	0.0	12.1
Portugal	5.8	0.0	0.0	0.0	0.0	97.5
Romania	26.1	17.8	15.9	32.9	11.5	21.3
Slovenia	3.6	30.3	0.0	0.1	38.5	30.2
Slovakia	6.4	9.1	0.2	1.6	64.1	22.9
Finland	18.0	9.4	0.0	0.0	33.8	55.2
Sweden	34.7	0.5	0.0	0.0	49.4	48.4
United Kingdom	109.5	6.7	36.1	30.0	16.6	7.7
Norway	193.9	0.6	38.6	49.3	0.0	6.4
Montenegro	0.8	48.9	0.0	0.0	0.0	51.1
FYR of Macedonia	1.4	77.9	0.0	0.0	0.0	22.1
Albania	2.0	0.0	57.9	0.7	0.0	41.4
Serbia	11.3	67.8	10.4	3.7	0.0	17.6
Turkey	32.3	48.5	7.7	1.4	0.0	42.4

(1) Figures do not sum up to 100 % due to other fuels.
Source: Eurostat (online data codes: ten00076 and ten00081)

Total production of primary energy for the EU-28 was 789.8 million tonnes of oil equivalent (toe) in 2013. The EU-28's major primary energy producers were France (17.1 %), Germany (15.3 %), the United Kingdom (13.9 %) followed by Poland (8.9 %) and the Netherlands (8.8 %).

It is important to note that in the 2004–13 decade the United Kingdom has reduced its primary energy production by more than 50 %. In 2013, 12 EU Member States decreased their energy production while the rest increased it.

Primary energy production from solid fuels accounted for 80.5 % in Poland, 78.3 % in Estonia, 72.3 % in Greece and 59.0 % in the Czech Republic. Crude oil was used at a very low percentage by the majority of EU Member States except Denmark (52.3 %), the United Kingdom (36.1 %), Romania (15.9 %), Italy (15.2 %) and Croatia (15.0 %).

Natural gas was widely used for the production of primary energy mainly in the Netherlands (88.7 %), Croatia (41.6 %), Romania (32.9 %), the United Kingdom (30.0 %) and Denmark (25.8 %).

Nuclear energy was used in 50 % of the EU-28 Member States. Lithuania has stopped producing nuclear energy in 2009. EU Member States with high nuclear energy production were France (80.9 %), Belgium (75.2 %), Slovakia (64.1 %), Sweden (49.4 %), Spain (42.6 %), Hungary (39.3 %) and Slovenia (38.5 %).

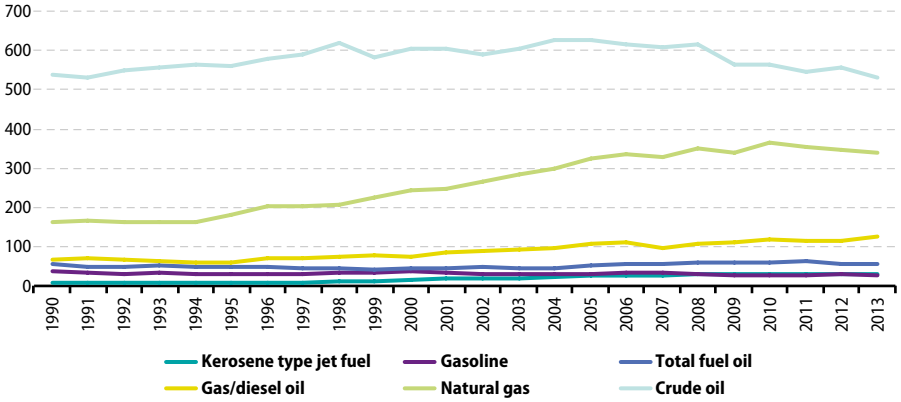
Primary energy production from renewables in the EU-28 has increased by 72.5 % during the 2004–13 decade. Renewables were used for the production of primary energy almost exclusively by Malta and Cyprus (100.0 %), Latvia (99.7 %), Portugal (97.5 %) and Lithuania (91.1 %). The lowest rates were reported in the Netherlands (6.2 %), the United Kingdom (7.7 %), Poland (12.1 %) and the Czech Republic (12.2 %).

2.4 Energy trade & dependency

The decrease of primary energy production in the EU-28 over the past decade resulted in increased imports of primary energy and energy products. The quantity of imported natural gas doubled over the period 1990–2013 to nearly 340 000 ktoe, although there was a slight decrease over the last three years. Crude oil ranked first in terms of quantities imported, though for 2013, the figure was 530 000 ktoe, 13.8 % lower than in 2008.

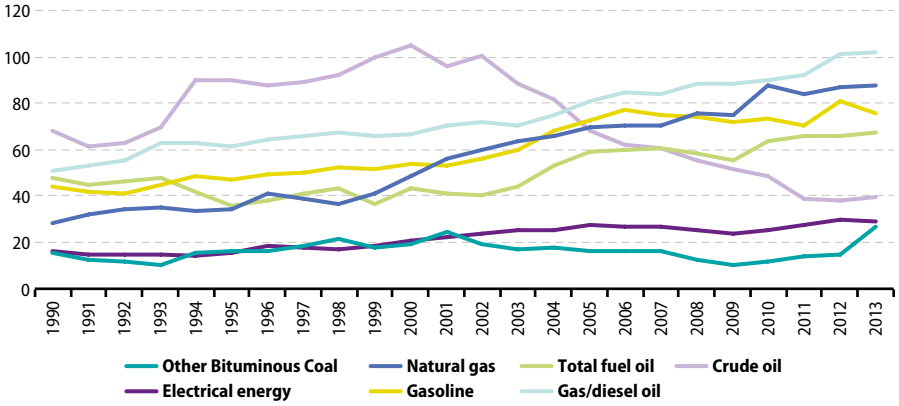
Exports were much lower than imports. In 2013, gas/diesel oil (102 000 ktoe) ranked highest, followed by natural gas (88 000 ktoe) and gasoline (76 000 ktoe).

Figure 2.4.1: Imports of selected energy products, EU-28, 1990–2013
(1 000 ktoe)



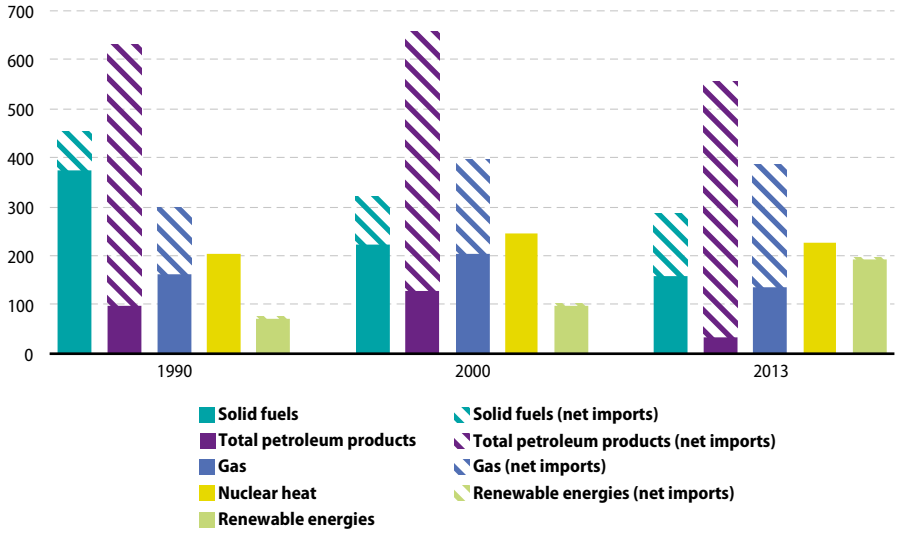
Source: Eurostat (online data codes: nrg_100a, nrg_101a, nrg_102a, nrg_103a and nrg_105a)

Figure 2.4.2: Exports of selected energy products, EU-28, 1990–2013
(1 000 ktoe)



Source: Eurostat (online data codes: nrg_100a, nrg_101a, nrg_102a, nrg_103a and nrg_105a)

Figure 2.4.3: Energy dependency by fuel, EU-28, 1990, 2000 and 2013
(1 000 ktoe)



Source: Eurostat (online data code: nrg_100a)

Table 2.4.1: Main origin of primary energy imports, EU-28, 2004–13
(% of extra EU-28 imports)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	Solid fuels									
Russia	18.0	23.7	24.8	24.8	26.1	30.0	26.9	26.2	25.9	28.8
Colombia	12.0	11.7	11.5	12.7	12.3	17.4	19.9	23.5	23.6	22.4
United States	7.2	7.6	7.7	9.1	14.0	13.5	16.8	17.8	23.0	21.8
Australia	14.5	13.1	11.9	13.0	11.7	7.5	10.5	8.7	7.4	7.3
South Africa	25.2	25.0	23.2	20.1	16.5	15.8	9.6	7.7	6.3	6.8
Indonesia	6.6	7.2	9.3	7.8	7.3	7.0	5.6	5.0	4.6	3.0
Canada	2.4	3.2	2.7	3.0	2.6	1.4	2.0	2.2	1.7	1.7
Ukraine	2.3	2.2	1.6	1.8	2.3	1.7	1.9	2.3	1.6	1.5
Norway	0.6	0.5	0.3	0.5	0.6	0.8	0.8	0.6	0.3	0.6
Others	11.3	5.8	7.0	7.2	6.7	4.9	6.0	6.0	5.8	5.9
	Crude oil									
Russia	32.5	32.9	33.8	33.7	31.8	33.5	34.7	34.8	33.7	33.5
Norway	18.7	16.8	15.4	14.9	15.0	15.1	13.7	12.5	11.2	11.7
Saudi Arabia	11.3	10.5	9.0	7.2	6.8	5.7	5.9	8.0	8.8	8.6
Nigeria	2.6	3.2	3.6	2.7	4.0	4.5	4.1	6.1	8.2	8.1
Kazakhstan	3.3	4.4	4.6	4.6	4.8	5.3	5.5	5.7	5.1	5.8
Libya	8.8	8.7	9.1	9.7	9.9	8.9	10.1	2.8	8.2	5.6
Azerbaijan	0.9	1.3	2.2	3.0	3.2	4.0	4.4	4.9	3.9	4.8
Algeria	3.3	3.5	2.5	1.9	2.5	1.6	1.2	2.6	2.9	3.9
Iraq	2.2	2.1	2.9	3.4	3.3	3.8	3.2	3.6	4.1	3.6
Others	16.4	16.5	16.8	18.9	18.7	17.6	17.1	19.1	14.0	14.4
	Natural gas									
Russia	43.6	40.7	39.3	38.7	37.6	33.0	29.5	31.5	32.0	39.0
Norway	24.3	23.8	25.9	28.1	28.4	29.3	27.5	27.4	31.2	29.5
Algeria	18.0	17.6	16.3	15.3	14.7	14.2	14.0	13.0	13.6	12.8
Qatar	1.4	1.5	1.8	2.2	2.3	5.5	9.7	11.0	8.5	6.7
Nigeria	3.6	3.4	4.3	4.6	4.0	2.4	4.1	4.3	3.6	1.8
Libya	0.4	1.6	2.5	3.0	2.9	2.9	2.7	0.7	1.9	1.8
Trinidad and Tobago	0.0	0.2	1.2	0.8	1.7	2.3	1.5	1.0	0.9	0.8
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Turkey	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
Others	8.6	11.0	8.8	7.3	8.2	10.1	10.9	10.8	7.5	6.9

Source: Eurostat (online data codes: nrg_122a, nrg_123a and nrg_124a)

Table 2.4.2: Net imports of primary energy, 2003–13

	2003	2005	2007	2009	2011	2013	2003	2005	2007	2009	2011	2013
	(million tonnes of oil equivalent)						(tonnes of oil equivalent per inhabitant)					
EU-28 ([1])	899.7	979.7	983.2	936.5	943.9	909.0	1.83	1.98	1.97	1.86	1.87	1.79
Belgium	52.8	53.4	50.8	48.3	49.0	48.8	5.10	5.11	4.80	4.49	4.45	4.37
Bulgaria	9.0	9.3	10.2	8.0	6.9	6.4	1.15	1.21	1.34	1.07	0.94	0.88
Czech Republic	11.2	12.6	11.6	11.5	12.0	11.8	1.09	1.24	1.13	1.11	1.15	1.12
Denmark	-6.8	-10.1	-5.2	-3.8	-1.1	2.3	-1.26	-1.87	-0.95	-0.70	-0.19	0.41
Germany	208.2	208.1	196.6	195.1	196.8	204.6	2.52	2.52	2.39	2.38	2.41	2.49
Estonia	1.5	1.5	1.6	1.2	0.8	0.8	1.09	1.10	1.17	0.92	0.57	0.64
Ireland	13.4	13.8	14.1	13.3	12.6	12.3	3.37	3.35	3.24	2.94	2.75	2.69
Greece	22.6	23.5	24.7	22.3	19.9	16.4	2.06	2.12	2.22	2.00	1.79	1.50
Spain	108.9	123.8	123.2	110.1	104.4	88.7	2.60	2.86	2.75	2.38	2.24	1.90
France ([2])	138.5	144.1	137.5	133.4	126.6	125.1	2.24	2.30	2.16	2.07	1.95	1.91
Croatia	4.9	5.2	5.3	4.4	4.7	4.1	1.15	1.21	1.22	1.03	1.08	0.96
Italy	155.6	160.2	158.4	142.6	142.8	124.7	2.72	2.77	2.72	2.42	2.41	2.09
Cyprus	2.7	2.8	2.9	2.9	2.7	2.3	3.76	3.88	3.83	3.67	3.17	2.70
Latvia	2.9	3.1	3.2	2.9	2.7	2.6	1.25	1.38	1.43	1.33	1.32	1.30
Lithuania	4.0	5.0	5.8	4.3	5.8	5.3	1.17	1.50	1.77	1.35	1.91	1.78
Luxembourg ([2])	4.2	4.7	4.5	4.3	4.4	4.2	9.29	10.13	9.39	8.62	8.67	7.83
Hungary ([2])	16.4	17.4	16.4	14.7	13.0	11.9	1.61	1.73	1.63	1.47	1.30	1.20
Malta	1.8	1.6	1.8	2.0	2.3	2.1	4.56	4.05	4.46	4.87	5.53	5.09
Netherlands	34.9	37.1	36.9	34.1	28.2	24.3	2.15	2.27	2.26	2.07	1.69	1.45
Austria	23.0	24.5	23.4	21.2	23.5	21.0	2.83	2.99	2.83	2.54	2.81	2.49
Poland ([3])	12.1	15.9	24.7	30.0	33.9	25.3	0.32	0.42	0.65	0.79	0.89	0.67
Portugal	22.6	24.8	21.7	20.8	18.8	17.1	2.17	2.37	2.06	1.97	1.78	1.63
Romania	10.2	10.8	12.8	7.2	7.9	6.0	0.47	0.51	0.61	0.35	0.39	0.30
Slovenia ([3])	3.7	3.9	3.9	3.4	3.5	3.3	1.87	1.93	1.93	1.69	1.72	1.59
Slovakia	12.1	12.4	12.2	11.1	11.1	10.3	2.25	2.31	2.27	2.07	2.06	1.90
Finland	22.2	19.0	20.0	18.4	19.1	16.6	4.27	3.62	3.79	3.45	3.55	3.06
Sweden	22.1	19.5	18.3	17.5	18.6	16.0	2.47	2.16	2.01	1.89	1.98	1.68
United Kingdom	- 14.9	31.6	46.0	55.2	72.9	94.4	-0.25	0.53	0.75	0.89	1.16	1.48
Norway	-205.7	-196.0	-187.5	-186.6	-170.2	-159.9	-45.18	-42.54	-40.06	-38.89	-34.59	-31.66
Montenegro	:	0.4	0.6	0.4	0.4	0.3	0.00	0.71	0.98	0.66	0.66	0.44
FYR of Macedonia	1.1	1.2	1.4	1.2	1.4	1.3	0.52	0.59	0.69	0.59	0.67	0.64
Albania	1.0	1.1	1.0	1.0	0.8	0.7	0.33	0.36	0.33	0.30	0.28	:
Serbia ([4])	4.5	5.5	5.9	4.9	4.9	3.5	0.60	0.74	0.80	0.67	0.68	0.49
Turkey	56.7	62.0	76.0	70.6	80.6	87.8	0.81	0.87	1.09	0.99	1.09	1.16

([1]) Tonnes of oil equivalent per inhabitant, 2011 and 2013: break in series.
([2]) Tonnes of oil equivalent per inhabitant, 2013: break in series.
([3]) Tonnes of oil equivalent per inhabitant, 2009: break in series.
([4]) Tonnes of oil equivalent per inhabitant, 2011: break in series.
Source: Eurostat (online data codes: nrg_100a and demo_pjan)

Table 2.4.3: Energy dependence — All products, 2004–13
(%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	50.2	52.2	53.6	52.9	54.7	53.7	52.8	54.0	53.3	53.2
EA-19	64.0	65.1	65.4	63.9	64.8	63.6	62.2	62.4	61.0	60.1
Belgium	79.8	80.1	79.6	76.8	80.7	75.5	78.0	75.8	76.1	77.5
Bulgaria	48.1	46.7	45.6	50.7	51.7	45.1	39.6	36.0	36.1	37.8
Czech Republic	25.5	28.0	27.8	25.1	28.0	27.2	25.6	28.0	25.3	27.9
Denmark	-47.0	-49.8	-35.5	-24.1	-20.5	-19.7	-15.7	-5.6	-3.0	12.3
Germany	60.9	60.4	60.8	58.4	60.8	61.0	60.1	61.6	61.3	62.7
Estonia	28.5	26.1	29.2	24.7	24.7	22.0	13.6	12.0	17.0	11.9
Ireland	90.4	89.6	90.9	87.6	90.7	88.8	86.5	89.8	84.8	89.0
Greece	72.7	68.6	71.9	71.2	73.3	67.6	69.1	65.0	66.5	62.1
Spain	77.6	81.4	81.2	79.6	81.3	79.1	76.7	76.3	73.0	70.5
France	50.8	51.6	51.4	50.4	50.8	50.9	49.0	48.6	48.0	47.9
Croatia	57.2	58.4	54.0	56.4	59.9	51.0	52.1	54.4	53.6	52.3
Italy	84.8	84.5	87.1	85.3	85.7	83.3	84.3	81.8	79.3	76.9
Cyprus	95.4	100.7	102.5	95.9	97.5	96.3	100.8	92.4	97.0	96.4
Latvia	69.4	63.9	66.7	62.5	58.8	60.4	45.5	59.9	56.4	55.9
Lithuania	46.6	56.8	62.0	61.2	57.8	49.9	81.8	81.7	80.3	78.3
Luxembourg	97.9	97.3	98.1	96.5	97.4	97.5	97.0	97.2	97.4	96.9
Hungary	60.9	63.1	62.7	61.2	63.2	58.5	58.1	51.8	52.3	52.3
Malta	99.8	100.0	100.0	100.0	100.0	99.9	99.0	101.3	101.0	104.1
Netherlands	30.1	37.7	36.8	37.5	34.3	35.8	30.4	29.7	30.7	26.0
Austria	70.7	71.3	72.3	68.7	68.7	65.1	62.4	70.0	63.6	62.3
Poland	14.5	17.2	19.6	25.5	30.3	31.6	31.3	33.5	30.7	25.8
Portugal	83.9	88.6	84.0	81.4	83.4	81.4	75.1	77.7	78.9	73.5
Romania	30.2	27.6	29.4	31.7	28.0	20.3	21.9	21.6	22.7	18.6
Slovenia	52.4	52.5	52.1	52.5	55.1	48.5	49.3	48.2	51.7	47.1
Slovakia	67.7	65.3	63.9	68.2	64.3	66.2	62.9	64.0	59.9	59.6
Finland	54.3	54.2	53.5	52.9	54.2	53.8	47.9	52.9	46.3	48.7
Sweden	36.3	36.8	36.8	35.4	37.1	36.7	36.6	36.2	28.6	31.6
United Kingdom	4.5	13.4	21.2	20.5	26.2	26.4	28.5	36.3	42.2	46.4
Norway	-739.9	-703.0	-665.2	-655.0	-570.2	-579.9	-498.7	-590.6	-566.6	-470.2
Montenegro	:	40.0	42.2	50.5	43.5	39.7	24.2	35.9	34.1	26.6
FYR of Macedonia	41.2	43.5	44.0	47.2	45.1	43.9	43.1	44.9	48.5	47.9
Albania	48.4	50.6	38.9	51.0	48.9	45.1	28.6	35.2	20.8	25.1
Serbia	32.1	35.3	37.2	35.9	37.2	32.2	33.2	30.5	27.9	23.6
Turkey	70.4	71.6	72.6	74.3	72.2	70.4	69.3	70.7	75.3	73.3

Source: Eurostat (online data code: tsdcc310)

Table 2.4.4: Energy dependence — Solid fuels and derivatives, 2004–13
(%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	38.2	39.4	41.7	41.5	44.9	41.1	39.5	41.7	42.2	44.2
EA-19	56.4	56.2	59.0	57.3	61.0	57.0	58.8	58.3	57.3	59.6
Belgium	101.5	101.4	95.9	96.2	106.6	82.1	97.8	101.2	94.4	95.1
Bulgaria	40.5	37.0	35.2	38.9	42.6	27.3	24.7	24.4	21.4	16.4
Czech Republic	-13.7	-16.1	-16.0	-14.7	-15.5	-19.4	-16.2	-14.2	-13.0	-11.6
Denmark	101.4	94.4	93.6	100.3	108.5	98.0	69.4	111.0	93.6	90.7
Germany	32.5	31.7	38.0	37.0	38.2	35.5	40.1	41.5	40.0	44.5
Estonia	5.7	0.7	-0.3	0.6	0.4	-0.2	-0.6	-0.4	0.3	-0.1
Ireland	77.9	70.8	68.4	60.9	69.0	64.0	47.8	69.7	55.6	72.4
Greece	5.0	4.1	2.6	4.1	5.0	2.0	5.1	2.9	2.3	3.2
Spain	67.7	70.1	73.7	67.7	79.2	84.8	85.1	69.8	76.5	70.3
France	94.3	94.5	104.8	92.3	109.8	91.7	101.0	99.0	95.1	93.4
Croatia	109.3	91.3	109.0	101.8	112.2	89.7	102.5	98.4	87.9	110.1
Italy	101.1	99.4	99.6	99.3	101.8	97.4	100.9	96.1	96.7	96.2
Cyprus	68.5	121.0	116.8	67.6	102.5	123.3	65.5	1.3	100.0	100.0
Latvia	93.1	94.3	119.6	88.1	97.4	91.3	102.8	100.3	95.2	88.8
Lithuania	92.1	94.2	94.2	87.1	106.9	79.0	91.9	105.5	89.4	99.7
Luxembourg	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hungary	32.3	42.8	40.9	44.1	46.6	37.1	41.9	37.6	36.8	29.5
Malta ([1])	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	98.5	101.4	102.2	104.1	105.9	124.5	121.5	100.8	83.6	111.6
Austria	98.3	99.3	91.8	104.9	103.6	97.3	99.8	89.9	103.4	93.8
Poland	-27.8	-23.9	-21.7	-15.5	-6.6	-5.2	-5.2	-1.1	-6.5	-10.4
Portugal	95.2	96.3	105.6	100.5	91.2	106.7	98.3	97.3	103.3	95.4
Romania	33.4	33.4	28.6	34.5	26.8	13.7	17.6	13.8	16.6	18.9
Slovenia	21.8	21.0	20.0	20.6	28.7	17.9	19.2	17.5	21.5	19.4
Slovakia	83.2	88.4	80.8	95.4	85.9	83.0	75.7	81.8	89.7	80.6
Finland	73.3	67.7	61.2	62.7	72.2	73.4	57.9	76.8	57.6	65.7
Sweden	89.0	97.2	86.9	92.7	93.5	70.2	102.2	94.4	78.2	82.4
United Kingdom	60.7	72.1	76.0	69.5	75.2	77.9	52.2	64.1	69.5	82.0
Norway	-109.4	-53.1	-126.2	-192.8	-175.2	-202.1	-50.2	-26.5	-6.3	-87.4
Montenegro	:	-2.1	-5.2	-2.5	0.0	-1.8	-3.7	-2.8	-3.1	-1.2
FYR of Macedonia	6.0	8.2	10.0	10.9	10.3	3.2	9.5	9.2	9.6	9.7
Albania	9.3	16.5	16.5	16.5	12.7	97.6	97.8	99.1	99.3	99.0
Serbia	5.6	8.5	10.3	8.3	9.4	7.3	9.2	9.1	5.3	3.4
Turkey	50.5	51.7	51.2	49.8	43.6	44.1	43.1	46.1	55.5	54.7

([1]) No consumption of solid fuels.
Source: Eurostat (online data code: tsdcc310)

Table 2.4.5: Energy dependence — Total petroleum products, 2004–13
(%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	79.7	82.2	83.4	82.3	84.3	83.5	84.4	85.1	86.4	87.4
EA-19	96.6	97.5	97.2	95.8	97.1	96.2	96.3	95.5	96.0	96.3
Belgium	99.8	100.8	100.8	97.3	101.3	99.3	101.4	100.6	99.3	102.0
Bulgaria	97.7	102.2	98.5	100.0	98.7	101.4	101.0	97.7	96.9	103.7
Czech Republic	93.6	97.5	96.9	96.3	97.6	96.7	96.4	95.3	95.3	96.3
Denmark	-115.9	-102.7	-86.1	-65.8	-48.3	-60.8	-43.4	-47.4	-34.9	-13.7
Germany	94.8	97.0	95.3	93.9	95.3	95.4	95.9	94.2	96.0	96.1
Estonia	73.0	70.8	76.2	74.4	65.6	66.0	57.5	56.1	60.0	59.9
Ireland	100.3	100.0	100.9	97.1	101.1	99.1	97.5	101.1	98.6	100.2
Greece	104.8	97.7	101.3	100.9	101.3	96.7	98.6	93.8	101.2	94.2
Spain	99.4	101.2	100.8	99.6	100.4	98.9	99.9	99.8	96.7	97.4
France	97.8	99.3	98.4	97.9	97.5	97.5	97.6	97.9	97.8	98.9
Croatia	77.7	79.4	76.5	81.1	84.0	77.7	80.4	79.9	71.4	77.1
Italy	93.2	91.8	93.2	92.3	91.9	91.9	93.5	91.0	90.1	90.7
Cyprus	97.8	102.3	104.2	98.6	100.1	98.9	104.2	95.8	101.0	101.0
Latvia	100.3	102.2	102.2	98.2	99.0	99.5	94.4	101.8	101.7	100.4
Lithuania	93.4	91.9	96.9	94.4	92.4	89.8	98.7	91.4	93.0	93.2
Luxembourg	99.6	99.4	101.0	98.8	100.2	100.1	99.4	99.6	100.5	100.3
Hungary	77.4	81.2	78.8	82.2	80.6	77.4	84.1	82.2	80.8	83.9
Malta	99.9	100.0	100.0	100.0	100.0	100.0	99.2	101.6	101.4	104.6
Netherlands	95.5	97.1	95.3	93.2	98.0	96.5	93.3	91.3	96.7	94.7
Austria	93.4	91.4	95.3	91.2	92.3	91.8	89.7	91.6	91.9	92.9
Poland	95.5	97.5	99.6	104.5	96.4	98.9	97.0	95.9	95.0	91.3
Portugal	97.9	102.3	99.0	97.9	102.9	99.3	97.5	100.8	99.2	97.2
Romania	46.8	38.5	43.8	51.3	51.7	51.2	51.9	47.0	51.2	47.0
Slovenia	101.4	101.3	97.8	98.9	101.7	100.1	100.0	100.1	105.0	95.8
Slovakia	95.0	88.2	95.1	90.0	90.2	87.6	88.5	89.5	89.1	88.5
Finland	95.2	98.4	99.4	98.1	100.9	98.2	89.4	97.2	92.8	106.2
Sweden	98.0	104.0	99.5	99.1	102.6	101.7	93.6	99.9	95.4	101.5
United Kingdom	-16.9	-3.2	8.7	2.1	9.0	7.5	14.8	27.1	36.1	39.8
Norway	-1 277.9	-1 126.0	-978.8	-1 027.6	-816.5	-753.6	-627.4	-757.4	-597.1	-456.7
Montenegro	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
FYR of Macedonia	:	102.5	100.3	96.4	97.3	106.7	97.8	97.3	103.8	93.7
Albania	71.2	73.9	57.1	60.9	61.9	59.9	47.3	30.1	5.2	25.6
Serbia	:	:	:	:	:	80.4	75.0	72.9	65.8	58.2
Turkey	93.0	90.8	94.0	96.4	93.4	90.9	92.5	91.4	94.3	92.5

Source: Eurostat (online data code: tsdcc310)

Table 2.4.6: Energy dependence — Natural gas, 2004–13
(%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	53.6	57.1	60.3	59.5	61.7	63.4	62.1	67.1	65.8	65.3
EA-19	69.6	72.2	74.6	71.9	73.0	74.0	70.8	74.9	72.3	70.3
Belgium	99.9	100.6	100.2	99.8	100.4	99.0	98.8	100.6	98.6	100.5
Bulgaria	95.8	87.7	89.9	91.5	96.2	98.6	92.6	86.1	83.3	93.2
Czech Republic	91.1	97.8	104.4	93.4	98.7	104.0	84.8	110.2	89.0	100.2
Denmark	-79.4	-113.5	-103.1	-99.4	-120.7	-91.6	-68.1	-54.8	-52.9	-23.1
Germany	83.7	79.6	82.0	77.7	82.2	85.8	81.2	86.8	85.7	87.2
Estonia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ireland	81.2	86.7	91.5	91.5	93.0	94.5	95.7	96.1	95.6	95.9
Greece	97.5	99.1	99.1	99.1	100.0	99.7	99.9	100.0	100.3	100.0
Spain	97.6	101.2	101.2	99.0	100.8	98.8	99.3	101.6	98.2	98.6
France	96.3	99.3	99.6	96.5	97.8	100.9	93.0	103.3	96.6	97.4
Croatia	23.5	23.7	8.0	9.2	16.6	8.1	18.1	19.5	37.1	31.8
Italy	83.8	84.7	91.2	87.0	90.3	88.6	90.5	90.2	90.2	88.1
Cyprus (1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	130.5	105.6	108.8	96.8	82.2	114.1	61.8	109.4	113.8	115.6
Lithuania	99.8	100.7	101.0	102.9	96.3	100.4	99.7	100.3	100.1	100.0
Luxembourg	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.7	99.6
Hungary	79.2	81.1	82.2	79.9	88.1	85.6	78.7	65.6	72.9	72.1
Malta (1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	-67.6	-59.3	-61.6	-63.5	-72.7	-61.2	-61.6	-68.6	-74.5	-86.8
Austria	78.9	87.7	87.2	81.6	87.5	85.8	74.4	103.2	86.3	75.5
Poland	68.3	69.7	70.7	66.0	72.6	67.3	69.3	75.1	73.4	74.2
Portugal	100.0	103.8	100.6	98.7	100.1	101.2	100.4	101.6	99.7	101.5
Romania	29.5	30.1	33.7	30.3	29.0	15.1	16.8	22.2	21.3	11.9
Slovenia	99.5	99.6	99.6	99.7	99.7	99.7	99.3	99.8	99.8	99.6
Slovakia	103.3	97.5	96.6	97.9	96.3	108.6	99.9	104.8	89.8	95.6
Finland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9
Sweden	95.3	95.1	95.5	97.3	97.1	98.1	98.8	99.2	99.1	99.1
United Kingdom	1.7	7.0	11.8	20.3	26.1	31.7	37.9	44.4	47.2	50.1
Iceland (1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Norway	-1 627.5	-1 743.1	-1 801.9	-1 504.3	-1 142.2	-1 233.2	-1 128.4	-1 754.1	-2 092.1	-1 566.7
Montenegro (1)	:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	100.2	99.5	100.4	100.1	100.0	99.8	100.0	100.0	100.0	100.1
Albania (1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	88.9	88.3	88.2	89.9	89.3	90.4	84.5	73.1	84.9	80.5
Turkey	96.9	97.1	96.9	97.8	100.2	100.1	98.1	96.6	100.1	97.8

(1) No natural gas consumption for Cyprus, Malta, Iceland, Montenegro and Albania (2005–13).
Source: Eurostat (online data code: tsdcc310)

The downturn in the primary production of hard coal, lignite, crude oil, natural gas and more recently nuclear energy led to a situation where the EU was increasingly reliant on primary energy imports in order to satisfy demand, although this situation stabilised in the aftermath of the global financial and economic crisis. The EU-28's imports of primary energy exceeded exports by some 909 million toe in 2013.

The largest net importers of primary energy were generally the most populous EU Member States, with the exception of Poland (where indigenous reserves of coal remain). Since 2004, Denmark had been the only net exporter of primary energy among the EU Member States, but in 2013 Danish energy imports exceeded exports such that there were no longer any EU Member States that were net exporters of energy. Relative to population size, the largest net importers in 2013 were Luxembourg, Malta and Belgium.

The origin of EU-28 energy imports has changed somewhat in recent years, as Russia has maintained its position as the main supplier of crude oil and natural gas and emerged as the leading supplier of solid fuels. In 2013, some 33.5 % of the EU-28's imports of crude oil were from Russia, slightly below the shares recorded between 2010 and 2012. Russia became the principal supplier of solid fuels in 2006, overtaking South Africa, having overtaken Australia in 2004 and Colombia in 2002. Russia's share of EU-28 solid fuels imports rose from 13.2 % in 2003 to 30.0 % by 2009, before falling somewhat to 25.9 % by 2012 and rebounding to 28.8 % in 2013. By contrast, Russia's share of EU-28 imports of natural gas declined from 44.1 % to 29.5 % between 2003 and 2010, but this development was reversed with increases thereafter leading to a share of 39.0 % in 2013. From 2004 to 2013, Norway remained the second largest supplier of EU imports of crude oil and natural gas.

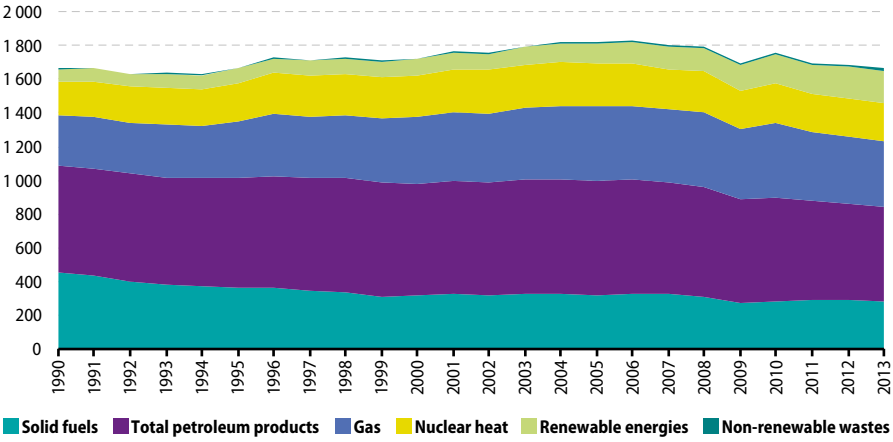
The security of the EU's primary energy supplies may be threatened if a high proportion of imports are concentrated among relatively few partners. More than two thirds (69.1 %) of the EU-28's imports of natural gas in 2013 came from Russia or Norway — as such there was a greater concentration of imports than in the previous two years as the same two countries accounted for 59.6 % of natural gas imports in 2011 and 63.7 % in 2012. A similar analysis shows that 53.8 % of EU-28 crude oil imports came from Russia, Norway and Saudi Arabia in 2013, while 73.1 % of hard coal imports were from Russia, Colombia and the United States. Although their import volumes remain relatively small, there was some evidence of new partner countries emerging between 2003 and 2013. This was notably the case for crude oil imports from Nigeria, Kazakhstan, Azerbaijan and Iraq, or natural gas imports from Qatar and Libya.

2.5 Energy consumption

Gross inland energy consumption in the EU-28 in 2013 was 1 666 318 ktoe, 1.2 % lower than in 2012. It was relatively stable during the period 1990–2010, with a strong decrease in 2009 as a result of the financial and economic crises (1). In 2009, gross inland energy consumption decreased by 5.7 % compared with 2008. The sharpest decrease was in solid fuels by 12 %, followed by natural gas (6.3 %) and petroleum products by 5.7 % each.

There was a recovery in 2010, when gross inland energy consumption increased by 3.8 %, followed by consecutive decreases in 2011, 2012 and 2013, so gross inland consumption in 2013 was just below the level recorded in 2009. A 2.6 % drop in solid fuels accounted for the biggest decrease in 2013, while renewable energies recorded the biggest increase (5.3 %).

Figure 2.5.1: Gross inland energy consumption, EU-28, 1990–2013
(1 000 ktoe)



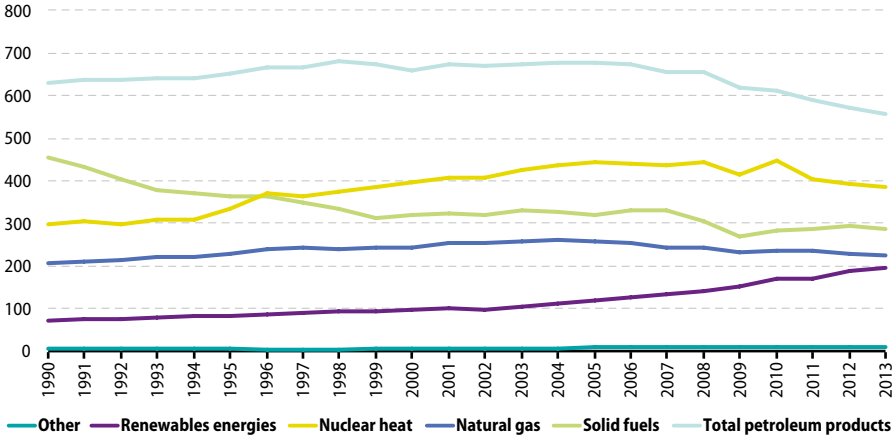
(1) Since 2010, a slight decrease can be noticed. The weather, especially during winter periods, also influences consumption of energy.

Table 2.5.1: Total gross inland energy consumption, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	1 818.2	1 824.7	1 832.2	1 804.5	1 799.4	1 696.1	1 760.6	1 698.1	1 686.1	1 666.3
EA-19	1 283.3	1 287.4	1 290.6	1 272.2	1 272.3	1 201.4	1 244.2	1 198.4	1 189.4	1 178.0
Belgium	59.3	59.0	58.0	56.9	59.3	57.0	61.3	57.8	54.8	56.7
Bulgaria	18.9	19.8	20.4	20.0	19.9	17.5	17.8	19.1	18.2	16.8
Czech Republic	45.6	45.1	46.3	46.3	45.3	42.5	44.7	43.0	42.8	42.2
Denmark	20.2	19.6	21.0	20.5	19.7	18.9	20.0	18.6	18.0	18.1
Germany	344.0	341.9	351.7	333.8	337.8	317.2	333.0	316.7	318.6	324.3
Estonia	5.7	5.6	5.5	6.1	5.9	5.4	6.2	6.2	6.1	6.7
Ireland	15.1	15.3	15.6	15.9	15.7	14.9	15.2	13.9	13.8	13.7
Greece	30.8	31.4	31.6	31.5	31.8	30.5	28.7	27.8	27.7	24.4
Spain	141.2	144.2	144.4	146.3	141.8	130.5	130.0	128.3	127.8	118.8
France	275.5	276.7	273.0	270.2	271.7	259.7	267.6	258.0	258.3	259.3
Croatia	8.8	8.9	8.9	9.3	9.1	8.7	8.6	8.5	8.1	7.8
Italy	185.1	187.5	185.3	183.4	180.6	168.9	174.8	172.0	166.3	160.0
Cyprus	2.5	2.5	2.6	2.8	2.9	2.8	2.7	2.7	2.5	2.2
Latvia	4.5	4.6	4.8	4.9	4.7	4.5	4.6	4.4	4.5	4.5
Lithuania	9.2	8.7	8.5	9.3	9.3	8.5	6.8	7.0	7.1	6.7
Luxembourg	4.7	4.8	4.7	4.6	4.6	4.4	4.6	4.6	4.5	4.3
Hungary	26.2	27.6	27.5	26.8	26.6	25.2	25.8	25.1	23.6	22.7
Malta	0.9	1.0	0.9	1.0	1.0	0.9	0.9	0.9	1.0	0.8
Netherlands	81.6	81.5	79.5	82.7	83.5	81.0	86.6	80.2	81.8	81.2
Austria	33.3	34.4	34.5	34.0	34.3	32.5	34.6	33.6	33.7	33.8
Poland	91.3	92.2	96.9	96.8	97.9	94.5	100.7	101.0	97.8	98.2
Portugal	26.8	27.5	26.2	26.2	25.4	25.1	24.3	23.6	22.5	22.6
Romania	39.5	39.2	40.6	40.4	40.3	35.6	35.8	36.6	35.4	32.3
Slovenia	7.2	7.3	7.3	7.3	7.8	7.1	7.2	7.3	7.0	6.9
Slovakia	18.5	19.0	18.9	17.9	18.3	16.8	17.9	17.4	16.7	17.3
Finland	37.3	34.5	37.6	37.3	35.9	33.9	37.1	35.8	34.7	33.9
Sweden	51.9	51.0	49.6	49.6	49.3	45.5	50.8	49.7	49.8	49.1
United Kingdom	232.5	234.0	230.5	222.5	219.1	206.4	212.2	198.1	203.0	201.1
Norway	26.8	27.2	27.6	28.0	32.6	31.7	34.4	28.4	30.1	33.7
Montenegro	:	1.1	1.2	1.2	1.3	1.0	1.2	1.1	1.1	1.0
FYR of Macedonia	2.7	2.8	2.9	3.0	2.9	2.8	2.8	3.1	3.0	2.7
Albania	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.3	2.1	2.6
Serbia	17.7	15.7	16.7	16.5	16.7	15.2	15.6	16.2	14.5	15.0
Turkey	81.8	85.6	94.3	101.4	100.2	100.0	106.9	113.9	119.8	118.8

Source: Eurostat (online data code: tsdcc320)

Figure 2.5.2: Gross inland energy consumption, EU-28, 1990–2013
(1 000 ktoe)



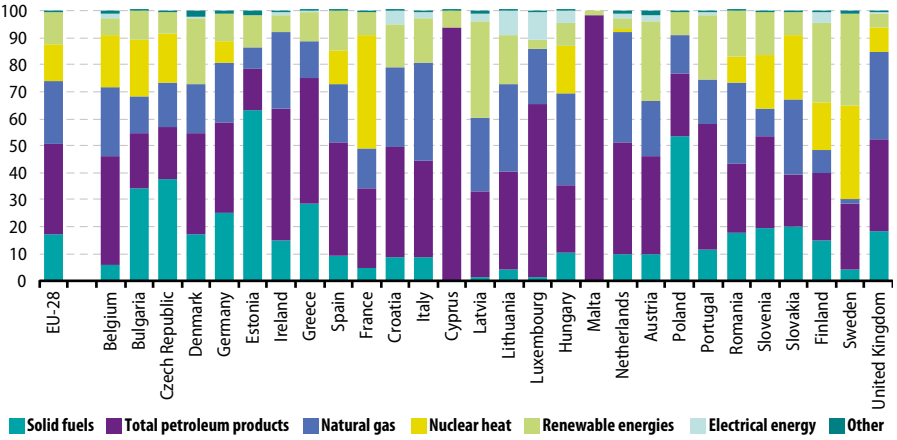
Source: Eurostat (online data codes: nrg_100a, nrg_101a, nrg_102a, nrg_103a, nrg_104a, nrg_105a, nrg_106a, nrg_107a and nrg_108a)

As for the structure of gross inland energy consumption in 2013, petroleum products held the biggest share (33.4 %), followed by gas (23.2 %) and solid fossil fuels (17.2 %). The share of nuclear heat was 13.6 % and renewables accounted for 11.8 %. Since 1990, the amount and share of solid fuels has fallen significantly (from 27.3 % in 1990, to 18.6 % in 2000, to 17.2 % in 2013). On the other hand, renewable energy sources have increased their share of the total, from 4.3 % in 1990, to 5.6 % in 2000, to 11.8 % in 2013, while gas has risen from 17.9 % in 1990, to 22.9 % in 2000 and to 23.2 % in 2013.

The mixture of fuels and their shares in gross inland energy consumption in different countries depends on the natural resources available, the structure of their economies and also national choices in energy systems. In Estonia and Poland in 2013, over half of the gross inland consumption was covered by solid fossil fuels. The average in the EU-28 was 17.5 %.

The smallest shares of solid fossil fuels in gross inland energy consumption (under 2 %) in 2013 were observed in Latvia and Luxembourg. The biggest shares of total petroleum products in gross inland energy consumption were observed in Malta 98.5 %, Cyprus 93.8 % and Luxembourg 64.1 %.

Figure 2.5.3: National shares of fuels in gross inland energy consumption, 2013
(%)



Source: Eurostat (online data codes: nrg_100a, nrg_101a, nrg_102a, nrg_103a, nrg_104a, nrg_105a and nrg_107a)

In the Czech Republic, Slovakia and Estonia, the share of petroleum products was under 20 % in 2013. Natural gas accounted for shares varying from over 40 % in the Netherlands to under 2 % in Sweden. In two EU Member States, Latvia and Sweden, renewable energies accounted for over 30 % of their gross inland energy consumption in 2013. Natural gas was an important energy source in 2013 in the Netherlands, Italy, Hungary, the United Kingdom, Lithuania and Romania, with a share of over 30 %.

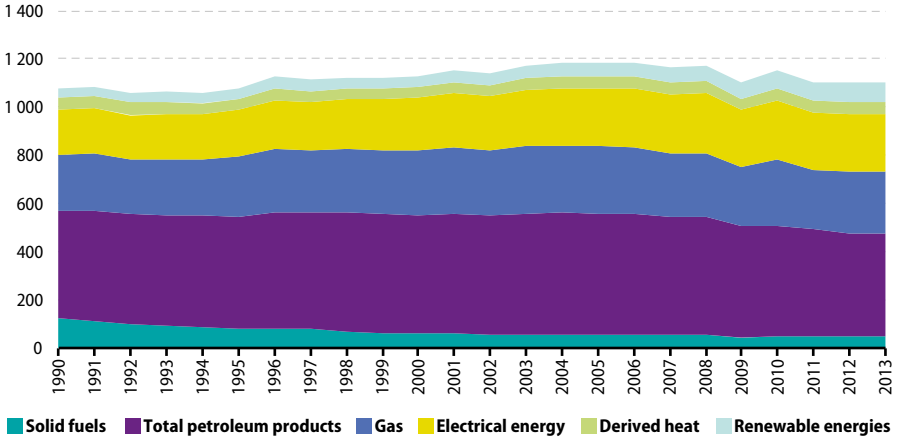
In 2013, there were 14 EU Member States with nuclear power plants. The highest nuclear share was in France (a 41.5 % share of nuclear heat in gross inland energy consumption), followed by Sweden with 34.3 %.

Table 2.5.2: Final energy consumption by product, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	1 185.3	1 186.4	1 187.2	1 167.8	1 173.3	1 106.8	1 157.2	1 104.2	1 102.4	1 103.8
EA-19	839.6	840.1	839.9	824.0	830.4	783.5	819.2	782.0	779.7	783.0
Belgium	38.0	36.7	36.3	35.2	37.3	34.1	37.5	36.1	33.8	34.8
Bulgaria	9.7	10.2	10.5	10.3	10.0	8.6	8.8	9.3	9.2	8.8
Czech Republic	26.4	26.0	26.4	26.0	25.7	24.5	24.9	24.1	23.7	23.9
Denmark	15.4	15.5	15.7	15.7	15.5	14.8	15.6	14.9	14.4	14.2
Germany	221.5	218.5	223.4	210.3	217.7	205.8	219.7	208.8	212.1	217.3
Estonia	2.8	2.9	2.9	3.1	3.1	2.8	2.9	2.8	2.9	2.9
Ireland	11.9	12.6	13.2	13.3	13.3	11.9	12.0	10.9	10.6	10.7
Greece	20.5	21.0	21.6	22.1	21.4	20.5	19.0	18.9	17.1	15.3
Spain	94.7	97.8	95.5	98.1	94.6	87.8	89.1	86.7	83.2	81.1
France	161.5	160.3	158.1	154.7	156.6	150.1	155.4	144.2	147.4	152.1
Croatia	6.2	6.3	6.5	6.5	6.6	6.4	6.3	6.2	5.9	5.8
Italy	132.8	134.5	132.6	129.5	128.0	120.9	124.8	122.1	122.1	118.7
Cyprus	1.8	1.8	1.9	1.9	2.0	1.9	1.9	1.9	1.8	1.6
Latvia	3.9	4.0	4.2	4.4	4.2	4.0	4.1	3.9	4.0	3.9
Lithuania	4.4	4.6	4.9	5.2	5.1	4.6	4.8	4.7	4.8	4.7
Luxembourg	4.4	4.5	4.4	4.3	4.4	4.1	4.3	4.3	4.2	4.1
Hungary	17.6	18.2	18.0	16.9	17.0	16.4	16.6	16.2	14.8	15.0
Malta	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.5
Netherlands	52.9	51.7	51.0	52.4	53.6	50.3	53.9	50.7	51.1	51.2
Austria	27.0	28.2	27.9	27.7	27.9	26.7	28.4	27.5	27.5	28.0
Poland	58.6	59.0	61.6	62.3	62.9	62.0	66.4	64.8	64.5	63.4
Portugal	18.9	19.0	18.8	18.9	18.4	18.2	18.1	17.3	16.2	15.8
Romania	25.0	24.7	24.9	24.2	24.9	22.3	22.6	22.8	22.8	21.8
Slovenia	4.8	4.9	4.9	4.9	5.2	4.7	4.9	5.0	4.8	4.8
Slovakia	11.1	11.6	11.4	11.2	11.5	10.6	11.5	10.8	10.3	10.9
Finland	26.2	25.2	26.6	26.6	25.8	23.8	26.2	25.0	25.2	24.6
Sweden	34.0	33.7	33.2	33.3	32.4	31.4	34.1	32.4	32.4	31.6
United Kingdom	153.0	152.7	150.7	148.5	147.9	137.0	142.7	131.6	135.0	136.4
Norway	18.5	18.6	18.5	18.9	18.9	18.3	19.6	18.7	18.8	18.8
Montenegro	:	0.8	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7
FYR of Macedonia	1.6	1.7	1.7	1.8	1.8	1.7	1.8	1.9	1.8	1.8
Albania	2.0	1.9	1.7	1.7	1.8	1.8	1.9	2.0	1.9	2.1
Serbia	10.3	9.6	9.7	10.2	9.5	8.5	9.0	9.2	8.5	8.3
Turkey	61.1	63.4	69.1	73.3	72.2	69.8	74.0	78.7	84.2	82.9

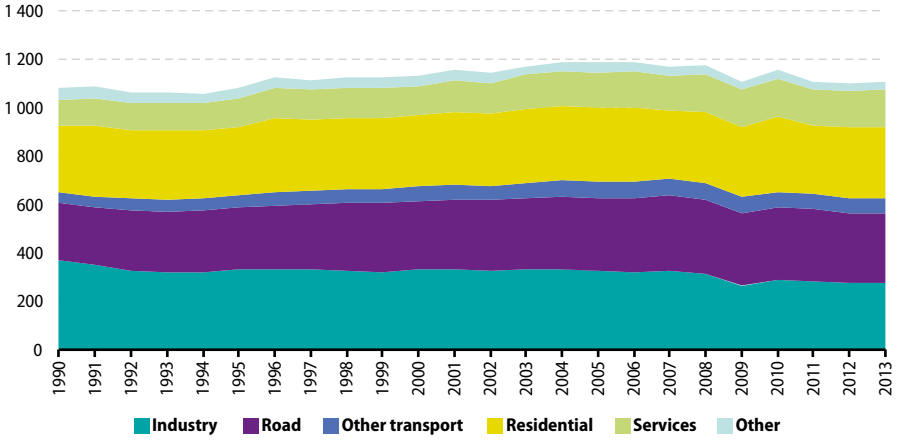
Source: Eurostat (online data code: ten00095)

Figure 2.5.4: Final energy consumption, by fuel, EU-28, 1990–2013
(1 000 ktoe)



Source: Eurostat (online data code: nrg_100a)

Figure 2.5.5: Final energy consumption, by sector, EU-28, 1990–2013
(1 000 ktoe)



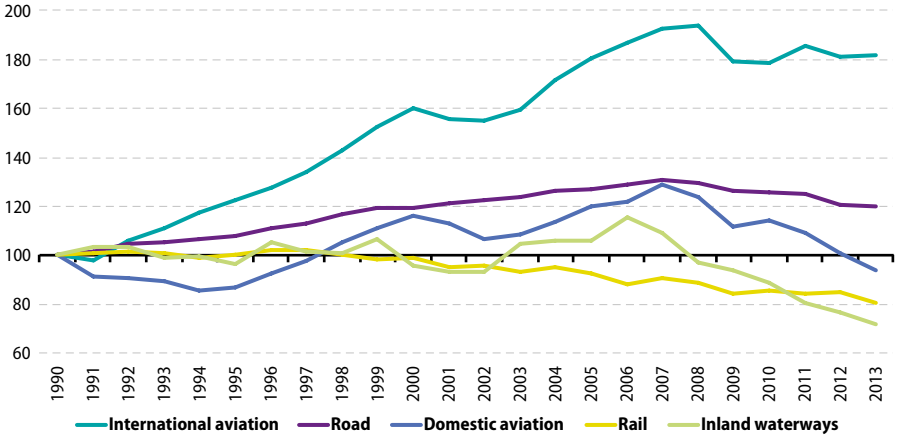
Source: Eurostat (online data code: nrg_100a)

Table 2.5.3: Final energy consumption of industry, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	332.6	326.9	320.4	325.0	312.9	265.6	285.7	282.5	274.6	276.6
EA-19	236.0	233.2	227.1	232.0	224.7	191.3	208.4	206.5	200.8	201.1
Belgium	12.5	11.8	12.5	12.3	12.0	9.7	11.7	11.9	10.3	10.5
Bulgaria	4.0	4.0	4.1	4.2	3.6	2.4	2.6	2.7	2.6	2.6
Czech Republic	9.9	9.7	9.7	9.5	9.0	8.2	7.9	7.9	7.6	7.5
Denmark	2.9	2.9	2.9	2.8	2.7	2.3	2.4	2.4	2.3	2.2
Germany	59.3	59.1	59.9	62.4	61.4	53.7	60.6	60.8	60.6	60.7
Estonia	0.7	0.7	0.7	0.8	0.8	0.5	0.6	0.6	0.6	0.6
Ireland	2.4	2.6	2.7	2.5	2.4	2.1	2.1	2.2	2.2	2.2
Greece	4.1	4.2	4.2	4.6	4.2	3.5	3.5	3.3	3.0	2.8
Spain	30.1	31.0	25.4	27.4	25.8	21.2	21.4	21.4	20.8	21.0
France	35.8	33.5	32.4	31.7	30.8	26.4	28.5	28.0	27.0	30.0
Croatia	1.5	1.6	1.6	1.7	1.7	1.4	1.4	1.3	1.1	1.1
Italy	40.2	39.9	38.8	38.1	36.4	29.8	31.3	30.2	29.4	27.0
Cyprus	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Latvia	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.8
Lithuania	0.9	1.0	1.0	1.1	0.9	0.8	0.9	0.9	1.0	1.0
Luxembourg	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.5
Hungary	3.3	3.4	3.4	3.3	3.3	2.7	2.9	2.9	2.6	3.5
Malta	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Netherlands	15.0	14.8	13.5	15.6	15.2	12.8	14.3	14.2	13.9	13.6
Austria	8.2	8.8	8.8	9.0	9.1	8.6	9.2	9.3	9.2	9.3
Poland	17.5	16.1	16.5	17.4	15.9	14.2	14.1	14.8	14.5	15.1
Portugal	5.8	5.8	5.8	5.8	5.5	5.2	5.5	5.3	4.8	4.6
Romania	10.3	10.0	9.6	9.1	9.0	6.5	6.9	7.1	6.8	6.3
Slovenia	1.5	1.6	1.7	1.6	1.5	1.2	1.3	1.2	1.2	1.2
Slovakia	4.6	4.7	4.8	4.6	4.5	4.1	4.4	4.3	4.3	4.3
Finland	12.8	11.9	13.0	12.8	12.2	10.0	11.4	11.1	10.9	10.8
Sweden	12.9	12.6	12.7	12.8	12.2	11.0	12.2	11.9	11.7	11.5
United Kingdom	34.0	33.4	32.8	32.3	30.7	25.5	26.9	25.1	24.7	25.7
Norway	6.9	6.8	6.6	6.6	6.7	5.5	6.2	6.1	5.9	5.9
Montenegro	:	0.3	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2
FYR of Macedonia	0.5	0.6	0.6	0.7	0.6	0.4	0.5	0.6	0.6	0.6
Albania	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.4	0.4	0.3
Serbia	3.5	3.5	3.7	3.8	3.2	2.2	2.6	2.8	2.5	2.5
Turkey	22.6	22.5	24.7	25.0	19.7	20.6	24.8	27.1	28.0	26.7

Source: Eurostat (online data code: nrg_110a)

Figure 2.5.6: Energy consumption by transport mode, EU-28, 1990–2013
(1990 = 100, based on tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_100a)

Final energy consumption in the EU-28 in 2013 was 1 103 813 ktoe, slightly higher than in 2012. Final energy consumption has increased slowly since 1994, reaching its highest value, 1 187 000 ktoe, in 2006. After that, the level remained relatively steady, until the first strong decrease, by 5.7 %, in 2009, as a result of the global financial and economic crises.

The sharpest decrease was in the use of solid fuels, by 18.2 %, followed by gas (7.1 %), petroleum products (5.7 %) and electricity (5.2 %). There was a recovery in 2010, when final energy consumption increased by 4.5 %, though in 2011, there was a decrease of 4.6 % while in 2012 and 2013 it remained almost at the same level, so final energy consumption in 2013 was slightly below the 2009 level. In 2013, petroleum products accounted for the biggest decrease, by 1.0 %, while the biggest increase was registered for gas (3.0 %).

The biggest share in the structure of final energy consumption in 2013 was for petroleum products (39.0 %), followed by gas (22.9 %), electricity (21.8 %), renewables (7.2 %), heat and solid fuels (4.4 and 4.3 % respectively).

Table 2.5.4: Final energy consumption of transport, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	366.4	369.5	377.0	383.2	378.3	365.5	364.6	362.9	352.0	348.5
EA-19	268.1	268.0	272.4	275.7	271.2	261.3	261.0	259.0	250.3	248.8
Belgium	10.4	10.0	9.7	9.8	10.6	10.5	10.6	10.6	9.9	9.8
Bulgaria	2.6	2.9	3.0	2.9	3.1	2.9	2.9	2.9	3.1	2.8
Czech Republic	5.7	6.1	6.3	6.7	6.7	6.6	6.3	6.3	6.1	6.0
Denmark	5.2	5.3	5.4	5.6	5.5	5.2	5.2	5.2	4.9	4.8
Germany	63.6	62.3	63.4	62.4	61.8	60.7	61.2	61.3	61.5	62.6
Estonia	0.7	0.8	0.8	0.9	0.8	0.7	0.8	0.8	0.8	0.8
Ireland	4.7	5.1	5.5	5.8	5.5	4.7	4.7	4.3	4.1	4.2
Greece	8.1	8.2	8.6	8.8	8.6	9.2	8.2	7.4	6.4	6.3
Spain	38.6	39.9	41.1	42.3	40.5	37.9	37.2	36.0	33.3	32.0
France	51.0	50.5	50.9	51.5	50.5	49.6	49.7	49.8	49.6	49.3
Croatia	1.8	1.9	2.0	2.2	2.2	2.1	2.1	2.0	2.0	2.0
Italy	45.2	44.8	45.4	45.7	44.0	42.1	41.7	41.8	39.4	38.7
Cyprus	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.0	0.9
Latvia	1.0	1.1	1.2	1.3	1.3	1.1	1.2	1.1	1.1	1.1
Lithuania	1.3	1.4	1.5	1.8	1.8	1.5	1.5	1.5	1.6	1.6
Luxembourg	2.7	2.8	2.7	2.6	2.7	2.5	2.6	2.7	2.6	2.5
Hungary	4.0	4.3	4.6	4.7	4.8	4.7	4.3	4.2	4.0	3.7
Malta	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3
Netherlands	15.2	15.2	15.7	15.7	15.9	15.0	15.0	15.2	14.8	14.6
Austria	8.7	9.1	8.9	9.1	8.8	8.5	8.7	8.6	8.5	8.9
Poland	11.7	12.5	13.9	15.3	16.3	16.6	17.7	17.9	17.2	16.3
Portugal	7.4	7.2	7.3	7.3	7.4	7.3	7.3	6.9	6.5	6.4
Romania	4.6	4.3	4.4	4.8	5.4	5.4	5.1	5.3	5.4	5.3
Slovenia	1.4	1.5	1.6	1.8	2.1	1.7	1.8	1.9	1.9	1.9
Slovakia	2.2	2.4	2.3	2.5	2.7	2.4	2.6	2.6	2.3	2.4
Finland	4.6	4.6	4.8	4.9	4.8	4.6	4.8	4.9	4.8	4.8
Sweden	8.5	8.6	8.7	8.8	8.7	8.5	8.6	8.5	8.3	8.3
United Kingdom	54.3	55.5	56.2	56.5	54.4	52.1	51.5	51.4	50.7	50.5
Norway	4.7	4.7	5.0	5.2	5.2	5.1	5.3	5.1	5.0	5.3
Montenegro	:	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
FYR of Macedonia	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5
Albania	0.8	0.8	0.7	0.7	0.8	0.7	0.8	0.8	0.8	0.8
Serbia	2.2	2.3	2.4	1.9	2.4	2.3	2.3	2.1	1.8	2.0
Turkey	13.1	13.6	15.1	17.2	16.5	16.5	16.0	16.1	18.8	20.7

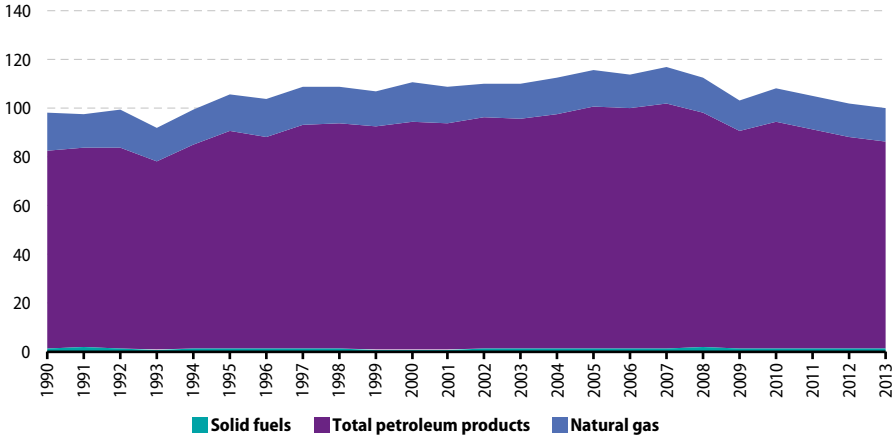
Source: Eurostat (online data code: nrg_110a)

Table 2.5.5: Final energy consumption of households, trade, services, etc., 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	486.3	490.0	489.8	459.5	482.1	475.8	506.9	458.8	475.8	478.6
EA-19	335.4	338.9	340.4	316.3	334.5	330.9	349.8	316.6	328.7	333.1
Belgium	15.1	15.0	14.2	13.0	14.6	14.0	15.2	13.5	13.6	14.6
Bulgaria	3.1	3.2	3.4	3.2	3.3	3.2	3.4	3.6	3.6	3.4
Czech Republic	10.7	10.2	10.4	9.8	10.0	9.8	10.6	9.9	10.0	10.3
Denmark	7.3	7.3	7.4	7.3	7.3	7.3	8.0	7.3	7.2	7.2
Germany	98.7	97.0	100.1	85.5	94.5	91.5	98.0	86.6	90.0	93.9
Estonia	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.5	1.5
Ireland	4.8	4.9	5.0	5.0	5.3	5.0	5.1	4.4	4.3	4.3
Greece	8.3	8.6	8.8	8.6	8.5	7.9	7.4	8.1	7.7	6.2
Spain	25.9	26.8	29.0	28.3	28.3	28.7	30.4	29.3	29.0	28.2
France	74.7	76.4	74.7	71.6	75.3	74.1	77.3	66.4	70.8	72.8
Croatia	2.8	2.9	2.8	2.6	2.8	2.8	2.9	2.9	2.8	2.7
Italy	47.3	49.9	48.4	45.7	47.6	49.0	51.7	50.1	53.3	53.0
Cyprus	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6
Latvia	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.1	2.0
Lithuania	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.2
Luxembourg	1.0	0.9	0.9	0.9	1.0	0.9	1.0	0.9	1.0	1.0
Hungary	10.2	10.5	10.0	8.9	8.9	9.0	9.4	9.1	8.3	7.8
Malta	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Netherlands	22.7	21.6	21.8	21.1	22.5	22.4	24.6	21.3	22.5	23.0
Austria	10.1	10.3	10.1	9.6	10.0	9.7	10.5	9.6	9.8	9.8
Poland	29.5	30.3	31.1	29.7	30.7	31.1	34.5	32.2	32.7	32.0
Portugal	5.7	6.0	5.7	5.8	5.5	5.7	5.3	5.1	5.0	4.9
Romania	10.0	10.4	10.9	10.3	10.5	10.4	10.6	10.3	10.6	10.2
Slovenia	1.9	1.8	1.7	1.5	1.7	1.8	1.9	1.8	1.7	1.7
Slovakia	4.3	4.5	4.3	4.1	4.2	4.2	4.6	3.9	3.7	4.2
Finland	8.7	8.7	8.8	8.9	8.8	9.2	10.0	8.9	9.5	9.0
Sweden	12.5	12.4	11.9	11.7	11.5	11.9	13.3	12.0	12.4	11.8
United Kingdom	64.7	63.8	61.6	59.6	62.8	59.4	64.3	55.1	59.6	60.2
Norway	6.9	7.1	6.9	7.1	7.1	7.7	8.1	7.4	7.8	7.6
Montenegro	:	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
FYR of Macedonia	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.7
Albania	0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.9
Serbia	4.7	3.8	3.6	4.5	3.9	4.0	4.1	4.3	4.2	3.8
Turkey	25.5	27.4	29.3	31.1	36.0	32.8	33.2	35.5	37.4	35.5

Source: Eurostat (online data code: nrg_110a)

Figure 2.5.7: Non-energy consumption by fuel, EU-28, 1990–2013
(1 000 ktoe)



Source: Eurostat (online data codes: nrg_100a and nrg_103a)

The structure of final energy consumption in 2013 by sector shows that residential (26.8 %), road transport (25.8 %) and industry (25.1 %) accounted for the biggest shares. The service sector accounted for 13.8 %, other transport 5.8 % and the remaining other sectors 2.7 %.

The decrease in 2009 was sharpest in industry (15.1 %), which partially recovered in 2010 (7.6 %), but continued in 2011 and 2012 (1.1 and 2.8 % respectively) while in 2013 it increased slightly, by 0.7 %. On the other hand, consumption in both residential and services sectors decreased only slightly in 2009, increased by 6.9 and 6.0 % in 2010, then decreased substantially in 2011, in the residential sector by 10.6 % and in services by 6.8 %. In 2012 a small recovery was registered, 5.6 % for the residential sector and 1.8 % for services, followed by another slight increase in 2013 (by 0.7 and 0.5 % respectively) so in 2013 final energy consumption in residential sector and services was slightly above 2008 levels.

Final non-energy consumption includes fuels that are used as raw materials and are not consumed as fuel or transformed into another fuel (for example, chemical reactions or bitumen for road construction). Non-energy consumption in 2013 amounted to almost 100 000 ktoe. Petroleum products accounted for 84.9 %, gas 13.7 %, and 1.4 % of all non-energy consumption was of solid fuels.

Table 2.5.6: Electricity consumption of households, 1990–2013
(million tonnes of oil equivalent)

	1990	2000	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	52.4	61.9	70.3	69.7	70.5	70.5	72.7	69.0	71.3	71.1
EA-19	35.1	42.0	48.3	48.0	49.0	49.0	51.0	48.3	50.1	50.1
Belgium	1.6	2.0	2.0	1.9	1.7	1.7	1.7	1.7	1.7	1.7
Bulgaria	0.9	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Czech Republic	0.8	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.3
Denmark	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Germany	11.8	11.2	12.2	12.0	12.0	12.0	12.2	11.7	11.8	11.7
Estonia	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Ireland	0.4	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Greece	0.8	1.2	1.5	1.5	1.6	1.6	1.6	1.5	1.6	1.5
Spain	2.6	3.8	5.8	5.9	6.0	6.1	6.5	6.5	6.5	6.2
France	8.3	11.1	12.3	12.2	13.1	12.8	13.9	12.1	13.6	14.4
Croatia	0.4	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5
Italy	4.5	5.3	5.8	5.8	5.9	5.9	6.0	6.0	6.0	5.8
Cyprus	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Latvia	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lithuania	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Luxembourg	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hungary	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
Malta	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Netherlands	1.4	1.9	2.1	2.1	2.1	2.1	2.1	2.0	2.2	2.2
Austria	1.0	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Poland	1.7	1.8	2.3	2.3	2.3	2.4	2.5	2.4	2.4	2.4
Portugal	0.5	0.9	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Romania	0.5	0.7	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0
Slovenia	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Slovakia	0.3	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Finland	1.3	1.6	1.8	1.8	1.8	1.8	2.0	1.8	1.9	1.9
Sweden	3.3	3.6	3.6	3.4	3.3	3.5	3.5	3.1	3.3	3.3
United Kingdom	8.1	9.6	10.7	10.6	10.3	10.2	10.2	9.6	9.9	9.8
Norway	2.6	3.0	2.9	3.0	3.0	3.1	3.4	3.1	3.3	3.2
Montenegro	:	:	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FYR of Macedonia	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Albania	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4
Serbia	0.9	1.4	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.2
Turkey	0.8	2.1	3.0	3.1	3.4	3.4	3.6	3.8	3.9	3.9

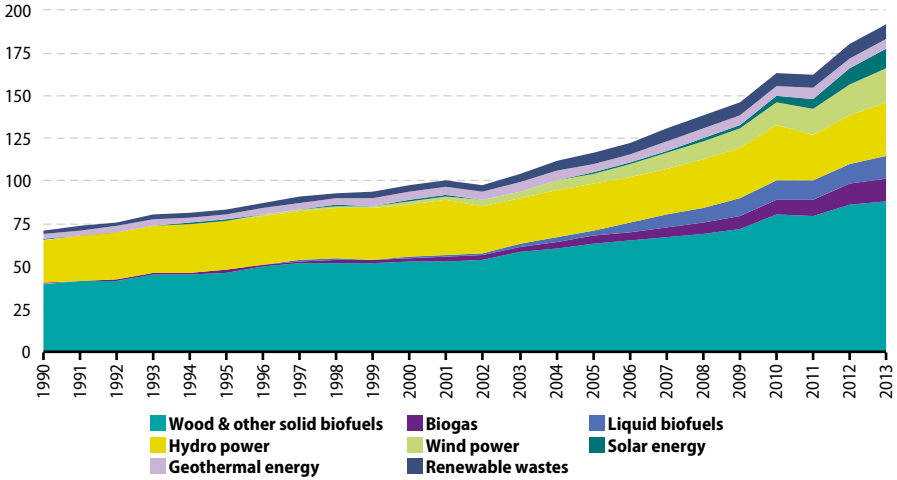
Source: Eurostat (online data code: tsdpc310)

2.6 Renewable energy sources

Primary production of renewable energies is on a long-term increasing trend. Between 1990 and 2013 it increased by 170 % (an average annual growth rate of 4.4 %). However, in 2011, the primary production of renewables declined by 0.4 %; this was mainly due to the annual variation in hydropower production. This is only the second decrease recorded since 1990 — the first in 2002 (– 2.4 %) was also a consequence of hydropower variation. The Renewable Energy Directive requires that — for accounting purposes — hydropower and wind power production is normalised for annual variations.

In 2013, the primary production of renewables increased by 6.6 % compared with 2012. When compared to the primary production five years ago, it is now 39 % higher. In 2013, gross electricity generation from renewables increased by 11 % compared with 2012. However, the picture varies depending on the energy source: from a 1 % increase for electricity generation from renewable waste to a 20 % increase for solar power. Between 1990 and 2012, total electricity generation from renewables increased by 177 %. In 2013, renewable electricity generation accounted for 26 % of total gross electricity generation.

Figure 2.6.1: Primary production of energy from renewable sources, EU-28, 1990–2013
(million tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_110a)

Table 2.6.1: Primary production of renewable energy — wood & other solid biomass, 1990–2013
(1 000 tonnes of oil equivalent)

	1990	1995	2000	2005	2010	2011	2012	2013
EU-28	39832.4	46592.7	52828.8	63744.6	80518.1	79113.5	86410.4	88059.8
EA-19	29602.6	30795.6	34543.8	42519.3	53192.9	52044.1	57397.4	59133.6
Belgium	335.9	268.7	318.8	527.9	1200.2	1328.2	1413.5	1408.4
Bulgaria	174.3	218.8	550.2	717.7	942.5	1030.8	1108.8	1122.4
Czech Republic	808.6	955.4	1046.4	1537.2	2094.4	2079.7	2152.9	2292.6
Denmark	751.7	833.9	891.5	1260.1	1703.2	1507.3	1477.6	1503.3
Germany	2944.0	2961.7	4691.7	7975.5	11010.2	10629.1	10931.0	10902.3
Estonia	187.9	351.1	509.8	682.1	957.7	939.0	1012.5	1067.3
Ireland	105.5	89.0	113.2	180.4	190.3	189.9	196.4	195.2
Greece	892.9	897.0	944.6	956.9	724.9	939.7	1000.3	846.6
Spain	3955.9	3300.4	3623.3	4176.0	4665.6	4949.5	5095.1	5575.0
France	9769.2	9589.2	8433.4	9202.4	10682.2	9003.1	9779.2	10842.3
Croatia	312.4	266.8	373.5	352.7	473.2	638.7	693.6	704.4
Italy	672.7	978.1	1179.4	1664.1	3500.2	3966.8	7248.9	7448.0
Cyprus	6.1	11.4	8.8	6.4	5.4	5.0	5.6	5.0
Latvia	675.2	1101.4	1150.1	1553.7	1596.0	1740.5	1869.5	1751.6
Lithuania	284.9	468.9	652.6	845.3	1002.2	983.3	992.0	1041.2
Luxembourg	0.0	15.4	15.2	44.4	52.2	46.2	47.5	54.7
Hungary	676.7	742.7	699.7	1039.8	1524.2	1429.4	1384.9	1448.4
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	348.5	356.0	518.3	826.6	1083.4	995.4	1107.7	1113.5
Austria	2234.3	2554.2	2827.8	3486.3	4630.9	4477.2	4806.2	4749.1
Poland	1448.4	3748.5	3594.3	4166.2	5866.2	6350.6	6987.7	6834.4
Portugal	2476.8	2546.9	2594.8	2713.3	2806.2	2853.0	2602.7	2676.2
Romania	602.2	1361.6	2762.6	3228.9	3900.0	3475.9	3795.1	3656.7
Slovenia	236.9	233.9	454.3	469.5	543.2	559.4	551.4	571.5
Slovakia	166.4	76.3	99.6	397.8	740.4	783.7	800.8	768.6
Finland	4309.7	4996.0	6408.1	6810.8	7801.8	7655.1	7937.1	8117.3
Sweden	5152.6	6783.7	7708.0	7936.6	9499.6	8933.6	9563.4	9211.4
United Kingdom	303.0	885.9	658.9	986.1	1321.8	1623.4	1849.0	2152.6
Norway	923.6	1004.2	1194.4	1119.1	1233.5	1180.1	1150.8	979.6
Montenegro	:	:	:	204.2	228.5	188.0	188.5	173.8
FYR of Macedonia	0.0	186.6	206.2	151.1	199.0	186.0	177.8	158.0
Albania	363.0	315.7	260.0	230.0	205.0	208.0	206.5	201.5
Serbia	1169.0	735.6	869.4	902.8	1036.4	1049.4	1041.4	1102.9
Turkey	7206.5	7066.6	6493.6	5325.0	4449.4	3537.5	3465.5	4281.0

Source: Eurostat (online data code: nrg_107a)

Table 2.6.2: Primary production of renewable energy — hydropower, 1990–2013
(1 000 tonnes of oil equivalent)

	1990	1995	2000	2005	2010	2011	2012	2013
EU-28	24 941.6	28 511.6	30 637.6	26 843.9	32 339.6	26 797.9	28 861.7	31 860.5
EA-19	16 555.5	19 801.9	21 087.5	17 092.5	22 954.2	18 304.0	19 528.6	23 391.4
Belgium	22.9	29.1	39.6	24.8	26.8	16.9	30.7	32.7
Bulgaria	161.5	199.0	229.8	372.9	434.8	250.8	277.4	350.8
Czech Republic	99.8	172.1	151.2	204.6	239.8	168.8	183.1	235.1
Denmark	2.4	2.6	2.6	2.0	1.8	1.5	1.5	1.1
Germany	1 498.4	1 872.7	1 868.6	1 688.6	1 801.6	1 519.4	1 870.6	1 977.5
Estonia	0.0	0.2	0.4	1.9	2.3	2.6	3.6	2.2
Ireland	59.9	61.3	72.7	54.3	51.5	60.8	69.0	49.7
Greece	152.1	303.4	317.5	431.4	641.4	344.9	378.6	545.6
Spain	2 190.0	1 984.5	2 429.6	1 581.5	3 637.5	2 630.8	1 766.6	3 162.5
France	4 631.6	6 287.1	5 706.3	4 426.5	5 392.3	3 851.3	5 048.7	6 061.0
Croatia	322.3	452.7	505.1	544.5	716.2	386.2	398.9	688.0
Italy	2 719.3	3 248.7	3 800.4	3 101.2	4 395.2	3 940.1	3 600.6	4 537.7
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	386.6	252.5	242.4	286.0	302.7	248.2	318.7	250.4
Lithuania	35.6	32.1	29.2	38.8	46.4	41.3	36.4	44.8
Luxembourg	6.0	7.6	10.7	8.1	9.3	5.3	8.5	10.2
Hungary	15.3	14.0	15.3	17.4	16.2	19.1	18.3	18.3
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	7.3	7.6	12.2	7.6	9.0	4.9	8.9	9.8
Austria	2 709.3	3 187.2	3 597.2	3 153.7	3 298.6	2 944.4	3 767.3	3 609.4
Poland	121.8	162.3	181.1	189.3	251.1	200.4	175.2	209.7
Portugal	787.4	717.4	973.6	406.8	1 388.5	992.3	483.4	1 180.6
Romania	981.2	1 435.3	1 270.7	1 737.5	1 709.6	1 266.4	1 037.5	1 286.1
Slovenia	253.7	279.6	329.7	297.6	388.0	306.0	334.7	396.6
Slovakia	161.7	419.6	396.8	398.8	451.8	324.8	352.8	416.9
Finland	933.7	1 111.3	1 260.5	1 185.2	1 111.1	1 070.1	1 449.6	1 103.9
Sweden	6 234.1	5 855.7	6 757.0	6 259.9	5 709.2	5 712.3	6 786.9	5 276.1
United Kingdom	447.7	416.0	437.3	423.2	306.8	488.5	454.4	404.0
Norway	10 416.6	10 449.7	12 194.2	11 667.1	10 038.7	10 343.1	12 187.4	11 047.0
Montenegro	:	:	:	160.4	236.5	103.5	127.0	215.3
FYR of Macedonia	42.2	68.9	100.6	128.3	209.0	123.2	89.5	136.2
Albania	244.9	361.5	395.0	462.0	650.6	355.3	406.3	598.1
Serbia	814.4	1 048.4	1 031.8	1 034.6	1 022.4	745.2	798.5	877.3
Turkey	1 990.4	3 056.0	2 655.1	3 401.6	4 453.7	4 500.3	4 975.5	5 109.2

Source: Eurostat (online data code: nrg_107a)

Table 2.6.3: Primary production of renewable energy — geothermal energy, 1990–2013
(1 000 tonnes of oil equivalent)

	1990	1995	2000	2005	2010	2011	2012	2013
EU-28	3 184.6	3 439.4	4 587.0	5 311.7	5 523.5	5 771.6	5 695.9	5 913.6
EA-19	3 096.7	3 351.5	4 489.2	5 158.2	5 343.1	5 586.2	5 501.5	5 709.7
Belgium	2.1	2.7	3.2	3.1	4.3	2.7	2.9	3.3
Bulgaria	0.0	0.0	0.0	32.7	32.7	33.0	33.4	33.4
Czech Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denmark	1.1	1.1	1.4	4.1	5.1	4.0	6.9	5.5
Germany	0.0	0.0	0.0	46.1	86.2	77.7	90.0	146.7
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Greece	2.6	2.7	1.6	12.3	16.0	15.9	13.1	11.5
Spain	3.7	4.1	5.4	7.3	16.0	16.8	17.6	18.1
France	110.4	131.9	126.0	191.9	179.5	182.6	191.6	225.0
Croatia	0.0	0.0	0.0	0.0	6.8	6.9	7.0	6.8
Italy	2 971.1	3 167.4	4 258.5	4 791.2	4 775.8	5 015.1	4 957.3	5 016.2
Cyprus	0.0	0.0	0.0	0.0	0.8	1.1	1.5	1.5
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0	2.9	4.5	3.2	3.8	1.7
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	86.0	86.0	86.0	86.6	98.6	104.4	107.2	112.7
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	0.0	0.0	0.0	0.0	7.6	7.5	11.8	23.7
Austria	3.6	4.9	24.8	29.8	34.5	32.6	36.4	36.5
Poland	0.0	0.0	3.0	11.4	13.4	12.7	15.8	18.6
Portugal	3.2	37.7	69.8	65.7	180.6	193.3	135.0	180.7
Romania	0.0	0.0	6.7	17.9	23.0	23.8	23.3	26.0
Slovenia	0.0	0.0	0.0	0.0	28.9	31.3	34.6	38.4
Slovakia	0.0	0.0	0.0	8.0	8.3	6.4	5.9	6.5
Finland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
United Kingdom	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Norway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	:	:	:	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	0.0	14.7	15.6	10.1	11.9	12.5	10.8	9.1
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	0.0	0.0	0.0	0.0	5.4	6.4	6.2	4.5
Turkey	433.2	510.7	683.6	1 007.0	1 966.1	2 059.8	2 236.5	2 636.0

Source: Eurostat (online data code: nrg_107a)

Table 2.6.4: Primary production of renewable energy — wind power, 1990–2013
(1 000 tonnes of oil equivalent)

	1990	1995	2000	2005	2010	2011	2012	2013
EU-28	66.9	349.8	1 913.5	6 058.0	12 835.6	15 448.8	17 711.1	20 207.4
EA-19	13.2	206.4	1 427.6	5 143.6	10 673.1	12 181.2	13 651.0	14 789.3
Belgium	0.6	0.8	1.4	19.5	111.1	198.8	236.5	312.6
Bulgaria	0.0	0.0	0.0	0.4	58.6	74.0	105.0	118.1
Czech Republic	0.0	0.0	0.1	1.8	28.8	34.1	35.8	41.4
Denmark	52.5	101.2	364.7	568.7	671.5	840.4	883.1	956.4
Germany	6.1	147.2	804.1	2 341.3	3 249.6	4 203.2	4 356.8	4 446.1
Estonia	0.0	0.0	0.0	4.6	23.8	31.6	37.3	45.5
Ireland	0.0	1.4	21.0	95.6	242.0	376.6	344.8	390.5
Greece	0.2	2.9	38.8	108.9	233.4	285.0	331.0	355.9
Spain	1.2	23.2	406.4	1 820.8	3 806.6	3 690.3	4 253.8	4 634.8
France	0.0	0.4	6.6	82.9	854.9	1 051.4	1 293.9	1 378.6
Croatia	0.0	0.0	0.0	0.9	12.0	17.3	28.3	44.5
Italy	0.2	0.8	48.4	201.5	784.7	847.5	1 152.8	1 280.9
Cyprus	0.0	0.0	0.0	0.0	2.7	9.8	15.9	19.9
Latvia	0.0	0.0	0.3	4.0	4.2	6.1	9.8	10.3
Lithuania	0.0	0.0	0.0	0.2	19.3	40.8	46.4	51.8
Luxembourg	0.0	0.0	2.3	4.5	4.7	5.5	6.6	7.1
Hungary	0.0	0.0	0.0	0.9	45.9	53.8	66.2	61.7
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	4.8	27.3	71.3	177.7	343.3	438.5	428.4	483.8
Austria	0.0	0.1	5.8	114.4	177.5	166.5	211.7	270.9
Poland	0.0	0.1	0.4	11.6	143.1	275.6	408.2	516.3
Portugal	0.1	1.4	14.4	152.5	789.5	787.7	882.1	1 033.0
Romania	0.0	0.0	0.0	0.0	26.3	119.3	227.0	388.7
Slovenia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Slovakia	0.0	0.0	0.0	0.5	0.5	0.4	0.5	0.5
Finland	0.0	0.9	6.7	14.6	25.3	41.4	42.5	66.6
Sweden	0.5	8.5	39.3	80.5	301.1	522.6	616.1	846.3
United Kingdom	0.8	33.6	81.4	249.7	875.3	1 330.4	1 690.5	2 444.9
Norway	0.0	0.9	2.7	42.9	75.6	110.3	133.1	162.9
Montenegro	:	:	:	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	0.0	0.0	2.8	5.1	250.7	406.1	503.9	649.8

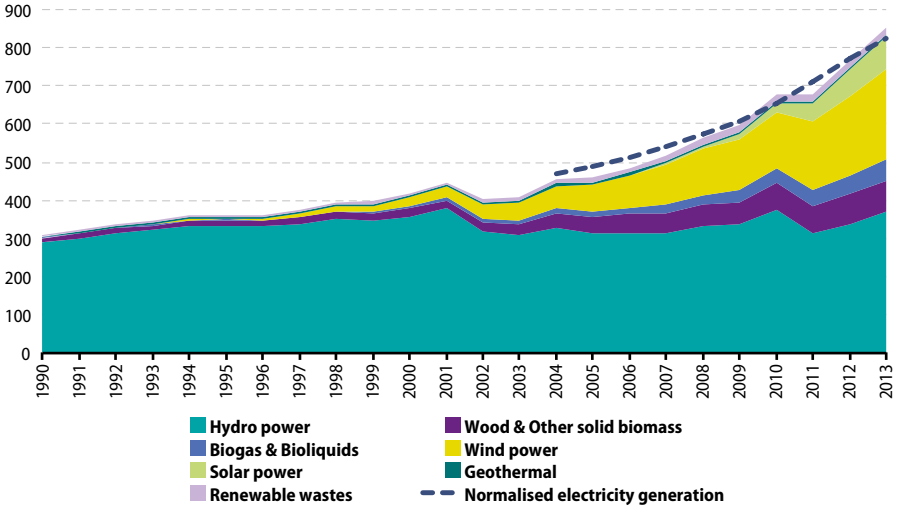
Source: Eurostat (online data code: nrg_107a)

Table 2.6.5: Primary production of renewable energy — solar energy (thermal and photovoltaic), 1990–2013 (1 000 tonnes of oil equivalent)

	1990	1995	2000	2005	2010	2011	2012	2013
EU-28	142.7	287.5	435.6	827.7	3 775.5	6 114.6	9 111.7	10 626.3
EA-19	126.9	267.3	410.8	776.7	3 554.9	5 696.7	8 489.3	9 784.5
Belgium	0.8	0.9	1.0	2.8	60.3	115.0	200.0	245.8
Bulgaria	0.0	0.0	0.0	0.0	11.5	22.5	85.4	136.1
Czech Republic	0.0	0.0	0.0	2.5	61.6	198.5	198.1	189.1
Denmark	2.4	5.1	8.1	10.2	16.2	18.9	29.9	69.0
Germany	11.3	38.4	116.1	370.8	1 492.6	2 238.9	2 844.4	3 249.3
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.0	0.1	0.1	0.5	7.5	9.1	10.2	11.3
Greece	56.4	82.2	98.8	101.0	196.9	235.4	330.1	500.7
Spain	0.5	25.9	32.6	64.9	1 034.8	1 352.9	2 407.3	2 677.7
France	24.2	24.8	21.1	25.6	117.6	250.0	424.6	487.4
Croatia	0.0	0.0	0.0	0.0	5.2	6.1	7.3	9.1
Italy	5.1	8.1	12.4	30.0	298.0	1 068.7	1 777.1	2 024.5
Cyprus	0.0	31.0	35.5	41.3	61.3	63.7	66.4	69.8
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.9
Luxembourg	0.0	0.0	0.0	1.7	2.8	3.6	5.0	8.8
Hungary	0.0	0.0	0.0	1.9	5.5	6.0	6.6	8.1
Malta	0.0	0.0	0.0	0.5	3.7	4.1	5.4	6.9
Netherlands	2.1	4.7	11.4	21.1	29.1	33.5	47.3	70.4
Austria	14.8	35.8	62.7	92.9	167.5	183.3	203.4	227.9
Poland	0.0	0.0	0.0	0.1	8.4	10.4	13.1	15.4
Portugal	11.0	14.8	18.5	22.7	66.3	83.6	101.2	114.0
Romania	0.0	0.0	0.0	0.0	0.1	0.1	0.8	36.3
Slovenia	0.0	0.0	0.0	0.0	9.4	14.4	23.4	28.1
Slovakia	0.0	0.0	0.0	0.0	5.8	39.2	41.9	56.2
Finland	0.4	0.5	0.5	0.7	1.3	1.4	1.6	1.7
Sweden	3.2	4.9	5.4	6.1	11.0	11.9	12.7	14.2
United Kingdom	10.2	10.2	11.3	30.1	101.0	143.4	268.4	364.5
Norway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro	:	:	:	0.0	0.0	0.0	0.0	0.0
FYR of Macedonia	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.8
Albania	0.0	0.0	1.1	2.3	6.7	11.7	11.8	11.9
Serbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkey	28.0	143.0	261.9	384.8	432.0	630.0	768.0	795.0

Source: Eurostat (online data code: nrg_107a)

Figure 2.6.2: Gross electricity generation from renewable sources, EU-28, 1990–2013 (GWh)



Source: Eurostat (online data code: nrg_105a)

Hydropower plants generate by far the largest share of electricity from renewable energy sources. Electricity generation from hydropower increased by 28 % between 1990 and 2013, even while its share of total renewable electricity generation shrank from 94 % to 43 % over the same period. This is due to the more rapid expansion of electricity generation from other renewable sources.

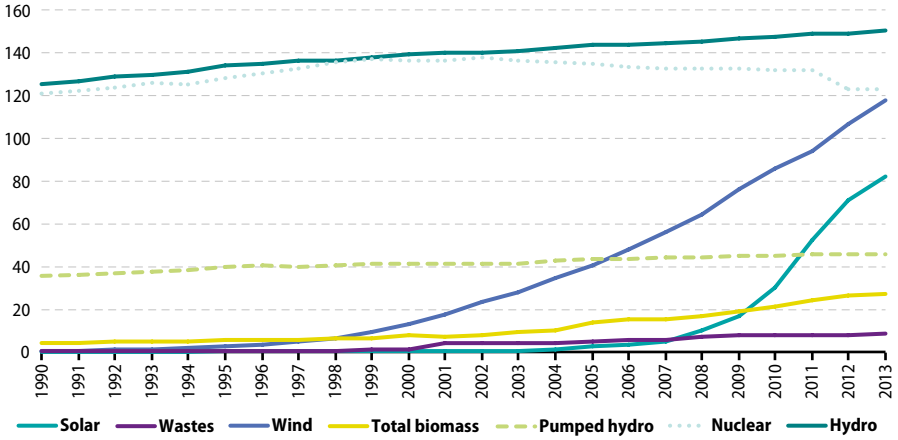
Wind power generation more than tripled over the period 2005–13: since 2000, it has been the second largest contributor to renewable electricity, replacing wood and other solid biomass, which had held that position since 1990.

Solar power electricity generation has increased rapidly in recent years and in 2013 accounted for 10 % of all renewable electricity. Also, in 2013 the electricity generated from solar energy surpassed wood and other solid biomass and is now the third most important contributor to the electricity production from renewable sources.

Solid renewables (wood and other solid biomass, excluding renewable wastes) are also used in conventional thermal generation power plants: their share in electricity from renewable sources grew from 3.5 % in 1990 to 9.5 % in 2013.

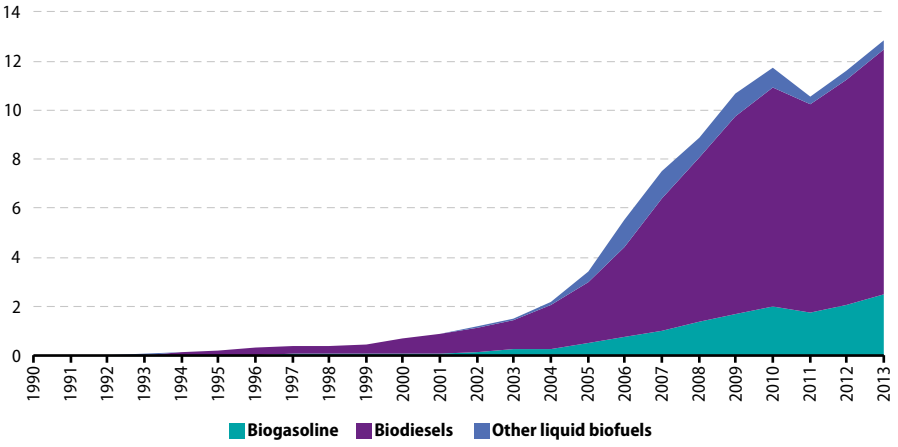
Bioliquids and biogas, which were negligible in 1990, reached 6.7 % in 2013.

Figure 2.6.3: Electricity generation capacity, EU-28, 1990–2013
(GW)



Source: Eurostat (online data code: nrg_113a)

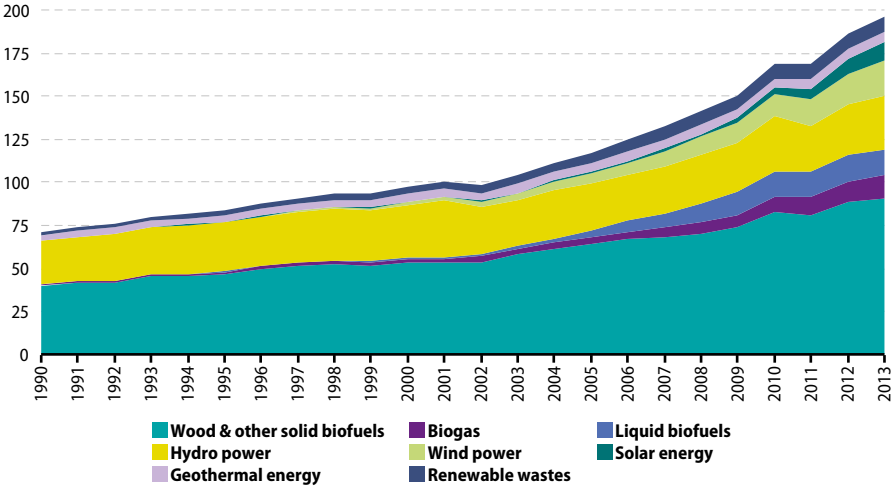
Figure 2.6.4: Primary production of liquid biofuels, EU-28, 1990–2013
(million tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_110a)

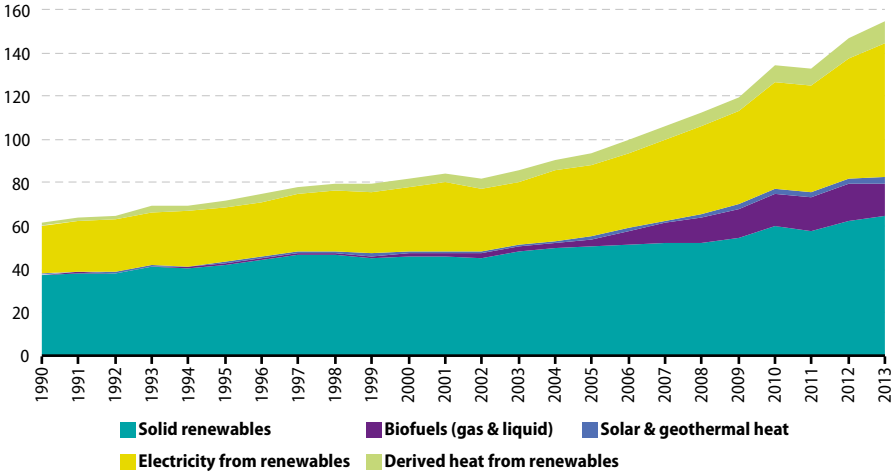
The available capacity of renewable electricity generation has increased significantly over the last 20 years. Wind power capacity had already begun to increase rapidly in the late 1990s and from 2005 there was a boom in solar generation capacity. Additional capacity increases for other renewables were much more modest than for these two. Solar and wind generation are intermittent energy sources: their utilisation rate is much lower than for those renewables used in conventional thermal power stations (as well as compared with fossil fuels and nuclear power). Pumped-storage hydropower plants can be reliably used to deal with surplus electricity generation from intermittent sources. The capacity of pumped-storage hydropower plants did not increase at the same rate as solar and wind. To put into perspective electricity generation capacities from renewable sources, which was around 380 gigawatts (GW) in 2013, the existing electricity generation capacity of fossil fuel plants in the EU was around 450 GW in 2013.

Figure 2.6.5: Gross inland consumption of renewables, EU-28, 1990–2013
(million tonnes of oil equivalent)



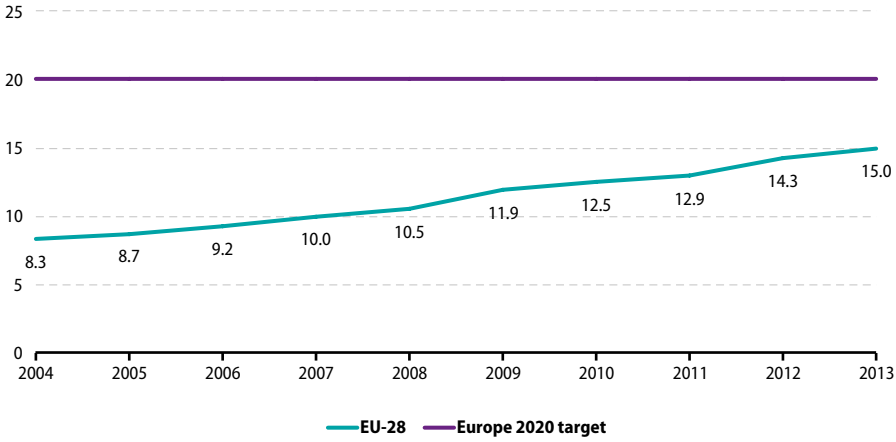
Source: Eurostat (online data code: nrg_110a)

Figure 2.6.6: Renewable energy available for final consumption, EU-28, 1990–2013
(million tonnes of oil equivalent)



Source: Eurostat (online data codes: nrg_105a, nrg_106a and nrg_110a)

Figure 2.6.7: Share of energy from renewable sources in gross final consumption of energy, EU-28, 2004–13
(%)



Source: Eurostat (online data code: nrg_ind_335a)

Table 2.6.6: Share of energy from renewable sources in gross final consumption of energy, 2004–13 (%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2011–12 average	2020 target	Indicative trajectory				S2005
													2011–12	2013–14	2015–16	2017–18	
EU-28	8.3	8.7	9.2	10.0	10.5	11.9	12.5	12.9	14.3	15.0	13.6	20	:	:	:	:	:
Belgium	1.9	2.3	2.7	3.4	3.8	5.2	5.7	6.1	7.4	7.9	6.8	13	4.4	5.4	7.1	9.2	2.2
Bulgaria	9.5	9.4	9.6	9.2	10.5	12.2	14.1	14.3	16.0	19.0	15.1	16	10.7	11.4	12.4	13.7	9.4
Czech Republic	5.9	6.0	6.4	7.4	7.6	8.5	9.5	9.5	11.4	12.4	10.5	13	7.5	8.2	9.2	10.6	6.1
Denmark	14.5	15.6	15.9	17.8	18.6	20.0	22.0	23.4	25.6	27.2	24.5	30	19.6	20.9	22.9	25.5	17.0
Germany	5.8	6.7	7.7	9.0	8.5	9.9	10.4	11.4	12.1	12.4	11.7	18	8.2	9.5	11.3	13.7	5.8
Estonia	18.4	17.5	16.1	17.1	18.9	23.0	24.6	25.5	25.8	25.6	25.7	25	19.4	20.1	21.2	22.6	18.0
Ireland	2.4	2.9	3.1	3.6	4.1	5.1	5.6	6.6	7.3	7.8	7.0	16	5.7	7.0	8.9	11.5	3.1
Greece	6.9	7.0	7.2	8.2	8.0	8.5	9.8	10.9	13.4	15.0	12.1	18	9.1	10.2	11.9	14.1	6.9
Spain	8.3	8.4	9.2	9.7	10.8	13.0	13.8	13.2	14.3	15.4	13.8	20	11.0	12.1	13.8	16.0	8.7
France	9.4	9.6	9.5	10.3	11.2	12.3	12.8	11.2	13.6	14.2	12.4	23	12.8	14.1	16.0	18.6	10.3
Croatia	13.2	12.8	12.8	12.1	12.1	13.1	14.3	15.4	16.8	18.0	16.1	20	14.1	14.8	15.9	17.4	12.6
Italy	5.6	5.8	6.4	6.4	7.3	9.1	10.5	12.1	15.4	16.7	13.8	17	7.6	8.7	10.5	12.9	5.2
Cyprus	3.1	3.1	3.3	4.0	5.1	5.6	6.0	6.0	6.8	8.1	6.4	13	4.9	5.9	7.4	9.5	2.9
Latvia	32.8	32.3	31.1	29.6	29.8	34.3	30.4	33.5	35.8	37.1	34.7	40	34.1	34.8	35.9	37.4	32.6
Lithuania	17.2	17.0	17.0	16.7	18.0	20.0	19.8	20.2	21.7	23.0	21.0	23	16.6	17.4	18.6	20.2	15.0
Luxembourg ([1])	0.9	1.4	1.5	2.7	2.8	2.9	2.9	2.9	3.1	3.6	3.0	11	2.9	3.9	5.4	7.5	0.9
Hungary	4.4	4.5	5.1	5.9	6.5	8.0	8.6	9.1	9.5	9.8	9.3	13	6.0	6.9	8.2	10.0	4.3
Malta	0.1	0.2	0.2	0.2	0.2	0.2	1.0	1.4	2.7	3.8	2.0	10	2.0	3.0	4.5	6.5	0.0
Netherlands	1.9	2.3	2.6	3.1	3.4	4.1	3.7	4.3	4.5	4.5	4.4	14	4.7	5.9	7.6	9.9	2.4
Austria	22.7	23.9	25.5	27.5	28.4	30.3	30.8	30.9	32.1	32.6	31.5	34	25.4	26.5	28.1	30.3	23.3
Poland	6.9	6.9	6.9	6.9	7.7	8.7	9.2	10.3	10.9	11.3	10.6	15	8.8	9.5	10.7	12.3	7.2
Portugal	19.2	19.5	20.8	21.9	23.0	24.4	24.2	24.7	25.0	25.7	24.8	31	22.6	23.7	25.2	27.3	20.5
Romania	17.0	17.6	17.1	18.3	20.5	22.7	23.4	21.4	22.8	23.9	22.1	24	19.0	19.7	20.6	21.8	17.8
Slovenia	16.1	16.0	15.6	15.6	15.0	19.0	19.3	19.4	20.2	21.5	19.8	25	17.8	18.7	20.1	21.9	16.0
Slovakia	5.7	5.9	6.3	7.6	7.7	9.3	9.0	10.3	10.4	9.8	10.3	14	8.2	8.9	10.0	11.4	6.7
Finland	29.2	28.8	30.0	29.6	31.4	31.5	32.5	32.9	34.5	36.8	33.7	38	30.4	31.4	32.8	34.7	28.5
Sweden	38.7	40.5	42.6	44.1	45.2	48.2	47.2	48.9	51.1	52.1	50.0	49	41.6	42.6	43.9	45.8	39.8
United Kingdom	1.2	1.4	1.6	1.8	2.4	3.0	3.3	3.8	4.2	5.1	4.0	15	4.0	5.4	7.5	10.2	1.3
Norway	58.1	59.8	60.3	60.2	61.8	64.8	61.2	64.7	65.9	65.5	65.3	67.5	60.1	61.0	62.4	64.2	58.2

([1]) 2013 data are estimated by Eurostat based on the national data transmission under Regulation (EC) No 1099/2008 on energy statistics.

Source: Eurostat (online data code: nrg_ind_335a)

In the EU-28, the share of energy from renewable sources in gross final consumption of energy increased from 8.3 % in 2004 to 15.0 % in 2013. This is evidence of a steady progress towards the Europe 2020 target of 20 %. As some EU Member States have not yet fully implemented all provisions of the Renewable Energy Directive, some biofuels and bioliquids are not counted as compliant (sustainable) in the period 2011–13. Some EU Member States have also not yet improved their national statistical system to fully account for all renewable energy sources (for example for the renewable energy with respect to heat pumps). The increased share between 2010 and 2011 is not due to increased use of renewables but rather because of a decline in use of fossil energies (oil products and natural gas). Allowing for the 2020 targets of the Energy Efficiency Directive (2012/27/EU), further decreases in the EU's energy consumption should be expected up to 2020.

The latest data for 2005 shows only a very small variation with respect to data available during the preparation and adoption of the Directive in 2007–08. Changes are due to revisions in data sets submitted by EU Member States in response to annual energy questionnaires. Comparing the average of 2011–12 to the indicative trajectory set out in the Renewable Energy Directive, it can be seen that three EU Member States (France, the Netherlands and the United Kingdom) were below the first indicative trajectory values, while all other countries were above.

The renewable share in Estonia has been above the 2020 target value since 2011. Sweden reached the 2020 level in 2012. In 2013, Bulgaria was also above its 2020 target. The Czech Republic, Italy, Latvia and Romania are less than 1 percentage point from reaching the levels of their 2020 targets. In 2013, the highest share amongst EU-28 Member States was observed in Sweden (52.1 %).

Table 2.6.7: Share of electricity from renewable sources in gross electricity consumption, 2004–13 (%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	14.3	14.8	15.3	16.1	17.0	19.0	19.6	21.7	23.5	25.4
Belgium	1.7	2.4	3.1	3.6	4.6	6.2	7.1	9.1	11.3	12.3
Bulgaria	9.1	9.3	9.3	9.4	10.0	11.3	12.7	12.9	15.8	18.9
Czech Republic	3.6	3.7	4.0	4.6	5.2	6.4	7.5	10.6	11.6	12.8
Denmark	23.8	24.7	24.0	25.0	25.9	28.3	32.7	35.9	38.7	43.1
Germany	9.4	10.5	11.8	13.6	15.1	17.4	18.1	20.9	23.6	25.6
Estonia	0.6	1.1	1.5	1.5	2.1	6.1	10.4	12.3	15.8	13.0
Ireland	6.0	7.2	8.7	10.4	11.2	13.4	14.5	17.3	19.5	20.9
Greece	7.8	8.2	8.9	9.3	9.6	11.0	12.3	13.8	16.4	21.2
Spain	19.0	19.1	20.0	21.7	23.7	27.8	29.8	31.6	33.5	36.4
France	13.8	13.8	14.1	14.4	14.3	15.0	14.7	16.2	16.4	16.9
Croatia	32.5	32.8	32.2	30.9	30.8	32.6	34.2	34.2	35.5	38.7
Italy	16.1	16.3	15.9	16.0	16.6	18.8	20.1	23.5	27.4	31.3
Cyprus	0.0	0.0	0.0	0.1	0.3	0.6	1.4	3.4	4.9	6.6
Latvia	46.0	43.0	40.4	38.6	38.7	41.9	42.1	44.7	44.9	48.8
Lithuania	3.6	3.8	4.0	4.7	4.9	5.9	7.4	9.0	10.9	13.1
Luxembourg	2.8	3.2	3.2	3.3	3.6	4.1	3.8	4.1	4.6	5.3
Hungary	2.2	4.4	3.5	4.2	5.3	7.0	7.1	6.4	6.1	6.6
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.0	1.6
Netherlands	4.4	6.3	6.6	6.0	7.5	9.1	9.7	9.8	10.5	10.1
Austria	61.9	62.4	62.4	64.6	65.2	67.8	65.7	66.0	66.5	68.1
Poland	2.1	2.7	3.0	3.5	4.4	5.8	6.6	8.2	10.7	10.7
Portugal	27.5	27.7	29.3	32.3	34.1	37.6	40.7	45.9	47.6	49.2
Romania	28.4	28.8	28.1	28.1	28.1	30.9	30.4	31.1	33.6	37.5
Slovenia	29.3	28.7	28.2	27.7	30.0	33.8	32.1	30.8	31.4	32.8
Slovakia	12.4	13.5	15.1	15.7	16.7	17.8	17.8	19.3	20.1	20.8
Finland	26.7	26.9	26.4	25.5	27.3	27.3	27.6	29.4	29.5	31.1
Sweden	51.2	50.9	51.8	53.2	53.6	58.3	56.0	59.9	60.0	61.8
United Kingdom	3.5	4.1	4.5	4.8	5.5	6.7	7.4	8.8	10.8	13.9
Norway	97.3	96.8	100.2	98.5	99.6	104.7	97.8	105.5	104.4	105.5

Source: Eurostat (online data code: nrg_ind_335a)

Table 2.6.8: Share of renewable energy sources in heating and cooling, 2004–13
(%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	9.9	10.3	10.9	11.9	12.0	13.7	14.1	15.0	16.1	16.5
Belgium	2.8	3.4	3.7	4.5	5.0	6.2	6.1	6.3	7.7	8.1
Bulgaria	14.1	14.3	14.8	13.9	17.3	21.7	24.4	24.9	27.5	29.2
Czech Republic	8.4	9.1	9.6	11.4	11.1	11.8	12.6	13.2	14.1	15.3
Denmark	19.9	22.1	23.0	27.0	28.1	29.5	30.7	32.0	33.5	34.8
Germany	6.3	6.8	6.9	8.3	7.4	9.2	9.7	10.4	10.4	10.6
Estonia	33.2	32.2	30.7	32.7	35.5	41.8	43.3	44.1	43.1	43.1
Ireland	2.9	3.5	3.6	3.9	3.6	4.3	4.5	5.1	5.4	5.7
Greece	12.8	12.8	12.5	14.4	14.3	16.4	17.8	19.4	23.4	26.5
Spain	9.5	9.4	11.4	11.3	11.7	13.3	12.6	13.6	14.1	14.9
France	12.3	12.4	12.1	12.9	13.4	15.2	16.4	16.3	17.3	18.3
Croatia	11.7	10.8	11.4	10.5	10.4	11.6	13.0	15.6	18.3	18.1
Italy	4.3	4.6	5.8	5.9	6.4	8.7	10.4	12.2	16.9	18.0
Cyprus	9.3	10.0	10.4	13.1	14.5	16.3	18.2	19.2	20.7	21.7
Latvia	42.5	42.7	42.6	42.4	42.9	47.9	40.7	44.8	47.4	49.7
Lithuania	30.4	30.1	29.7	29.8	32.8	34.4	33.2	33.7	35.5	37.7
Luxembourg	1.8	3.6	3.6	4.4	4.6	4.7	4.8	4.8	5.0	5.6
Hungary	6.5	6.0	7.5	8.9	8.3	10.5	11.0	12.3	13.4	13.5
Malta	1.1	2.2	2.6	3.2	3.6	1.8	8.4	8.1	16.7	23.7
Netherlands	1.9	2.1	2.4	2.5	2.6	3.0	2.7	3.2	3.4	3.6
Austria	20.2	22.6	23.5	26.2	26.8	28.6	30.5	30.7	32.4	33.5
Poland	10.2	10.1	10.2	10.4	10.9	11.6	11.7	13.0	13.3	13.9
Portugal	32.5	32.1	34.2	35.0	37.5	38.0	33.9	35.2	34.0	34.5
Romania	17.6	18.0	17.6	19.4	23.2	26.4	27.2	24.3	25.7	26.2
Slovenia	18.4	18.9	18.6	20.4	19.2	25.0	25.7	28.4	30.2	31.7
Slovakia	5.0	5.0	4.4	6.2	6.1	8.1	7.8	9.1	8.7	7.5
Finland	39.5	39.2	41.4	41.6	43.4	43.5	44.4	46.2	48.4	50.9
Sweden	46.6	51.8	56.2	58.6	60.9	63.5	60.9	62.5	65.7	67.2
United Kingdom	0.8	0.8	0.9	1.1	1.3	1.6	1.8	2.2	2.3	2.6
Norway	25.7	29.0	28.6	29.5	31.1	32.1	32.6	34.2	33.8	31.8

Source: Eurostat (online data code: nrg_ind_335a)

Table 2.6.9: Share of renewable energy sources in transport, 2004–13
(%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	1.0	1.4	2.1	2.8	3.5	4.3	4.8	3.4	5.1	5.4
Belgium	0.2	0.2	0.2	1.3	1.3	3.4	4.2	4.0	4.4	4.3
Bulgaria	0.4	0.3	0.6	0.4	0.5	0.5	1.0	0.4	0.3	5.6
Czech Republic	1.1	0.5	0.8	1.0	2.3	3.7	4.6	0.7	5.6	5.7
Denmark	0.2	0.2	0.3	0.3	0.3	0.4	0.9	3.3	5.5	5.7
Germany	1.9	3.7	6.4	7.4	6.0	5.5	6.0	5.9	6.9	6.3
Estonia	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2
Ireland	0.0	0.0	0.1	0.5	1.3	1.9	2.4	3.9	4.1	5.0
Greece	0.0	0.0	0.7	1.2	1.0	1.1	1.9	0.7	1.0	1.1
Spain	0.8	1.0	0.7	1.2	1.9	3.5	4.7	0.4	0.4	0.4
France	1.1	1.7	2.0	3.6	5.8	6.2	6.1	0.5	7.1	7.2
Croatia	0.4	0.4	0.4	0.5	0.6	0.7	0.5	0.4	0.4	2.1
Italy	1.0	0.8	0.9	0.8	2.3	3.7	4.6	4.7	5.8	5.0
Cyprus	0.0	0.0	0.0	0.0	1.9	2.0	2.0	0.0	0.0	1.1
Latvia	1.1	1.3	1.2	0.9	0.9	1.1	3.3	3.2	3.1	3.1
Lithuania	0.3	0.5	1.7	3.7	4.2	4.3	3.6	3.7	4.8	4.6
Luxembourg ([1])	0.1	0.1	0.1	2.1	2.1	2.1	2.0	2.1	2.2	3.9
Hungary	0.4	0.4	0.6	1.0	4.0	4.2	4.7	5.0	4.6	5.3
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.8	3.1	3.3
Netherlands	0.2	0.2	0.5	2.9	2.7	4.3	3.1	4.6	5.0	5.0
Austria	2.5	2.8	5.5	6.3	7.5	9.1	8.7	7.7	7.8	7.5
Poland	0.7	1.0	1.2	1.2	3.6	5.1	6.3	6.5	6.1	6.0
Portugal	0.2	0.2	1.3	2.2	2.3	3.6	5.3	0.4	0.4	0.7
Romania	0.9	1.0	0.8	1.8	2.7	3.5	3.2	2.1	4.0	4.6
Slovenia	0.4	0.3	0.6	1.1	1.5	2.0	2.8	2.1	2.9	3.4
Slovakia	0.6	1.1	2.9	3.5	3.9	4.9	4.8	5.0	4.8	5.3
Finland	0.5	0.4	0.4	0.4	2.4	4.0	3.8	0.4	0.4	9.9
Sweden	3.8	3.9	4.7	5.7	6.3	6.9	7.2	9.5	12.9	16.7
United Kingdom	0.2	0.3	0.6	1.0	2.1	2.7	3.1	2.7	3.7	4.4
Norway	1.3	1.2	1.3	1.9	3.2	3.6	4.0	1.4	1.4	1.6

([1]) 2013 data are estimated by Eurostat based on the national data transmission under Regulation (EC) No 1099/2008 on energy statistics.
Source: Eurostat (online data code: nrg_ind_335a)

2.7 Energy savings, efficiency & intensity

Primary energy consumption decreased by 0.2 % between 1990 and 2013. While consumption of solid fossil fuels (coal and coal products) decreased by 37.1 % and oil (including petroleum products) decreased by 14.0 %, consumption of renewables increased by 175.7 %, natural gas (including manufactured gases) increased by 32.1 % and nuclear energy increased by 10.3 %. Primary energy consumption peaked in 2006 and then decreased by 8.8 % by 2013.

In 2013, primary energy consumption of oil and petroleum products reached a record low since 1990; however oil and petroleum products are still the most important source of primary energy consumption with a 30.1 % share. Renewables reached the record high levels in 2013 and their share in primary energy consumption was 12.6 %. Fossil fuels together (solid, gaseous and liquid) account for 72.2 % of total primary energy consumption.

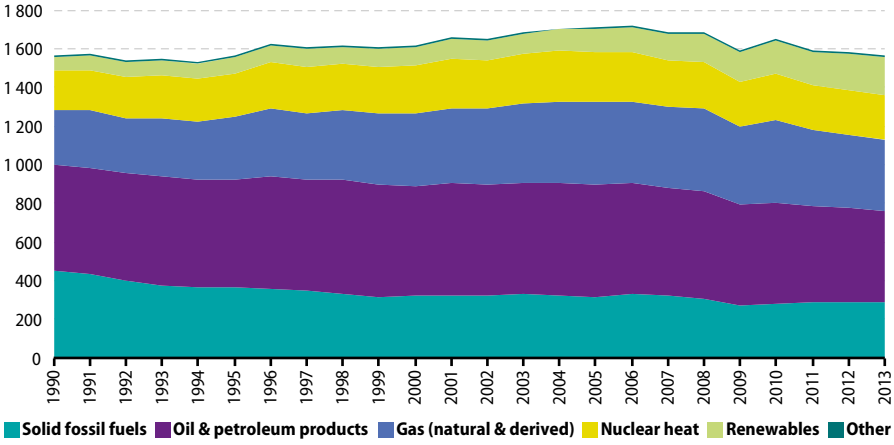
Primary energy savings for the EU-28 reached 11.9 % in 2013.

Table 2.7.1: Energy consumption in the EU-28, 1990–2013
(million tonnes of oil equivalent)

	1990	1995	2000	2005	2010	2011	2012	2013	2020 target
Primary energy	1 568.8	1 565.7	1 616.6	1 709.0	1 652.4	1 593.0	1 583.9	1 566.5	1 483
Solid fossil fuels	453.2	364.0	320.3	316.7	281.6	286.2	292.9	285.2	
Oil & petroleum products	548.9	562.3	566.5	578.2	520.1	501.5	483.6	472.0	
Gas (natural & derived)	282.4	321.2	380.4	429.7	433.7	390.2	379.5	373.2	
Nuclear heat	205.2	227.3	243.8	257.5	236.6	234.0	227.7	226.3	
Renewables	71.3	83.5	97.5	117.6	168.8	168.9	186.8	196.6	
Other	7.7	7.5	8.1	9.2	11.7	12.2	13.5	13.3	
Final energy	1 080.0	1 078.8	1 130.6	1 186.4	1 158.2	1 104.2	1 102.4	1 104.6	1 086
Solid fossil fuels	124.3	83.0	62.0	54.0	50.5	49.1	48.1	47.6	
Oil & petroleum products	446.4	464.2	489.7	502.6	457.4	444.5	429.2	425.0	
Gas (natural & derived)	229.9	247.2	267.6	281.2	273.2	244.6	252.1	259.8	
Electricity	186.0	194.3	217.6	239.5	244.5	239.9	240.5	239.1	
Derived heat	54.3	45.4	44.6	52.4	53.3	48.0	48.2	48.0	
Renewables	38.1	43.2	48.1	55.3	76.8	75.4	81.5	82.2	
Non-renewable wastes	0.9	1.6	1.0	1.4	2.6	2.7	2.8	3.0	

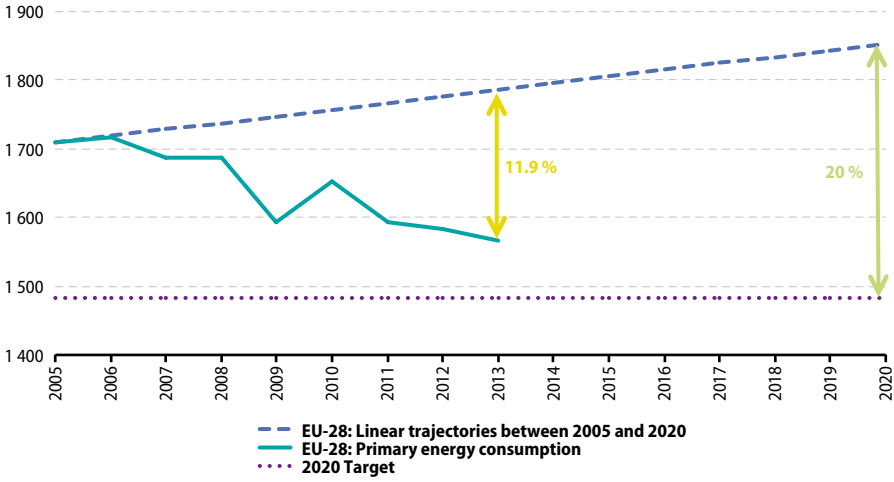
Source: Eurostat (online data code: nrg_ind_334a)

Figure 2.7.1: Primary energy consumption, EU-28, 1990–2013
(million tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_ind_334a)

Figure 2.7.2: Primary energy savings, EU-28, 2005–20
(million tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_ind_334a)

Final energy consumption increased by 2.3 % between 1990 and 2013. While consumption of solid fossil fuels (coal and coal products) decreased by 61.7 % and consumption of derived heat (heat sold) by 11.6 %, final energy consumption of renewables increased by 115.4 % and final consumption of electricity increased by 28.5 %. Final energy consumption peaked in 2006 and then decreased by 7.0 % by 2013.

In 2013, final energy consumption of oil and petroleum products reached a record low since 1990, however oil and petroleum products were still the most important source of final energy consumption with a 38.5 % share. Solid fossil fuels were undergoing a long term decreasing trend and contributed only 4.3 % to final energy consumption. Fossil fuels together (solid, gaseous and liquid) accounted for 66.3 % of total final energy consumption. Electricity had a 21.6 % share.

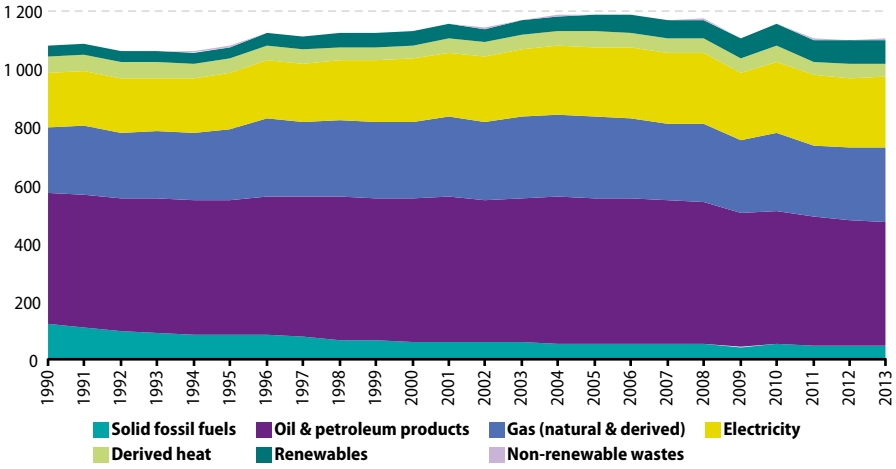
Final energy savings for the EU-28 reached 12.8 % in 2013.

Table 2.7.2: Energy saving in the EU-28, 2005–13
(%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2020 target
Primary energy	0.0	0.0	2.2	2.8	8.3	5.7	9.4	10.4	11.9	20
Final energy	0.0	0.8	3.1	3.5	9.2	6.3	11.1	12.1	12.8	20

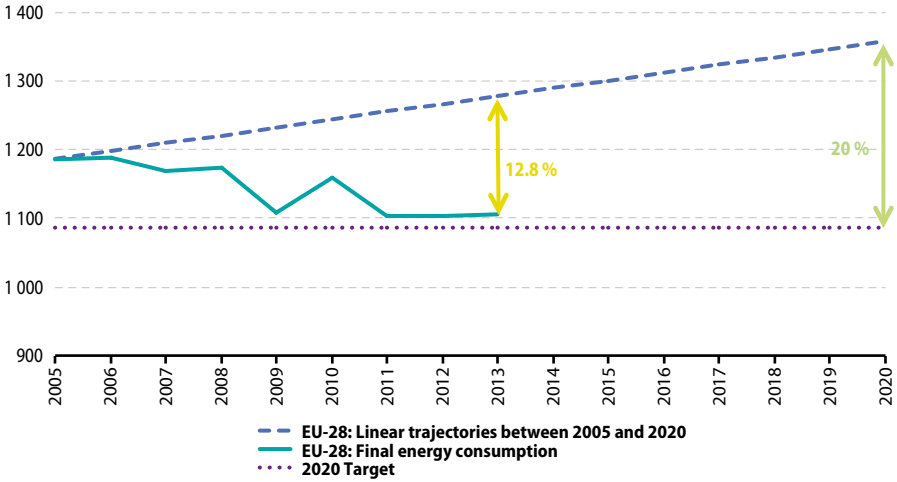
Source: Eurostat (online data code: nrg_ind_334a)

Figure 2.7.3: Final energy consumption, EU-28, 1990–2013
(million tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_ind_334a)

Figure 2.7.4: Final energy savings, EU-28, 2005–20
(million tonnes of oil equivalent)



Source: Eurostat (online data code: nrg_ind_334a)

Energy intensity is a measure of the energy efficiency of a nation's economy and shows how much energy is needed to produce a unit of GDP. There are various reasons for observing improvements in energy intensity: the general shift from industry towards a service-based economy in Europe, a shift within industry to less energy-intensive activities and production methods, the closure of inefficient units, or more energy-efficient appliances.

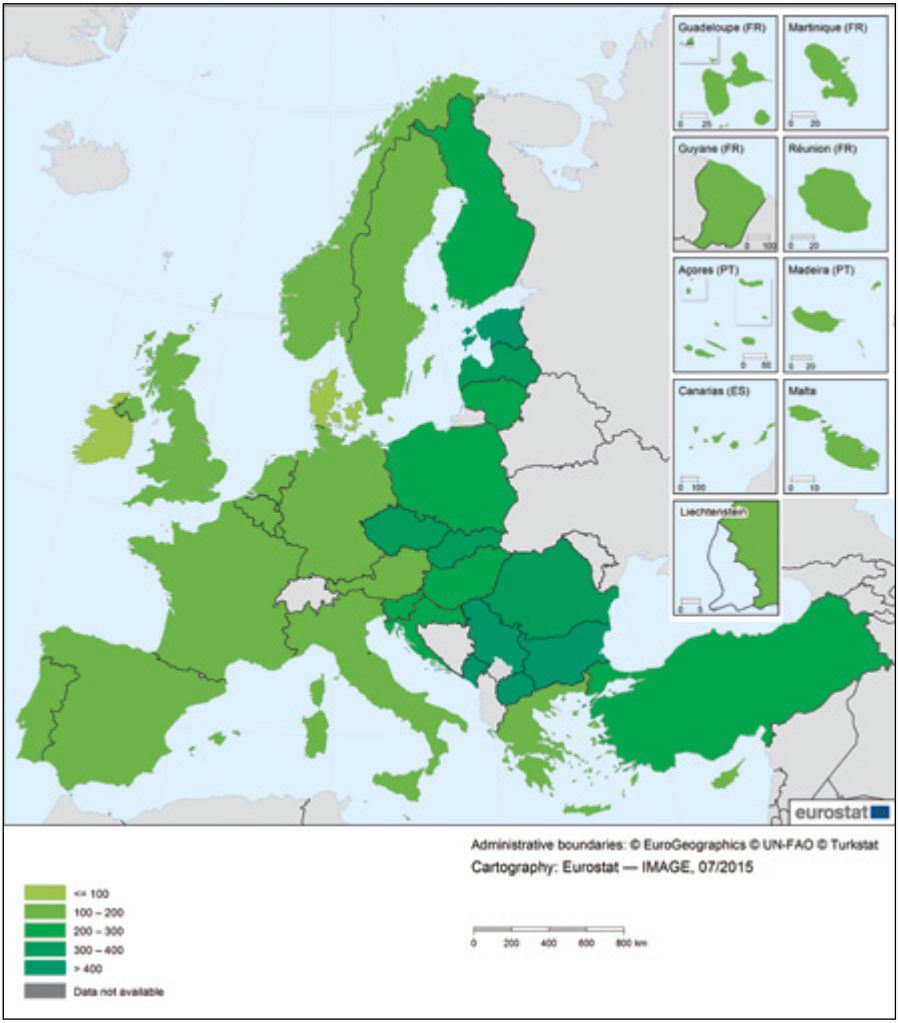
The lowest energy intensity in the EU-28 in 2012 was observed in Ireland, followed by Denmark, the United Kingdom and Italy. The highest values were observed in Bulgaria, Estonia, Romania and the Czech Republic. Nevertheless, the trend in energy intensity over the last two decades shows improvements in all EU-28 Member States, most marked in countries with high energy intensity, namely Slovakia, Lithuania, Romania and Bulgaria.

Table 2.7.3: Final energy consumption, 1990–2013
(million tonnes of oil equivalent)

	1990	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	Target
EU-28	1 080.0	1 130.6	1 186.4	1 187.2	1 167.8	1 173.3	1 106.9	1 158.2	1 104.2	1 102.4	1 104.6	1086
EA-19	723.0	794.2	840.1	839.9	824.0	830.4	783.5	819.1	782.0	779.7	783.7	:
Belgium	31.6	37.8	36.7	36.3	35.2	37.3	34.1	37.5	36.1	33.8	34.8	:
Bulgaria	16.4	9.1	10.2	10.5	10.3	10.0	8.6	8.8	9.3	9.2	8.8	:
Czech Republic	32.5	24.8	26.0	26.4	26.0	25.7	24.5	24.9	24.1	23.7	23.9	:
Denmark	13.4	14.7	15.5	15.7	15.7	15.5	14.8	15.6	14.9	14.4	14.2	:
Germany	228.9	220.0	218.5	223.4	210.3	217.7	205.8	219.7	208.8	212.1	217.3	:
Estonia	5.7	2.4	2.9	2.9	3.1	3.1	2.8	2.9	2.8	2.9	2.9	:
Ireland	7.3	10.8	12.6	13.2	13.3	13.3	11.9	12.0	10.9	10.6	10.7	:
Greece	14.7	18.7	21.0	21.6	22.1	21.4	20.5	19.0	18.9	17.1	15.3	:
Spain	57.1	79.9	97.8	95.5	98.1	94.6	87.8	89.1	86.7	83.2	81.1	:
France	136.2	155.3	160.3	158.1	154.7	156.6	150.1	155.4	144.2	147.4	152.8	:
Croatia	5.9	5.4	6.3	6.5	6.5	6.6	6.4	6.3	6.2	5.9	5.8	:
Italy	107.7	124.7	134.5	132.6	129.5	128.0	120.9	124.8	122.1	122.1	118.7	:
Cyprus	1.1	1.6	1.8	1.9	1.9	2.0	1.9	1.9	1.9	1.8	1.6	:
Latvia	6.4	3.3	4.0	4.2	4.4	4.2	4.0	4.1	3.9	4.0	3.9	:
Lithuania	9.7	3.8	4.6	4.9	5.2	5.1	4.6	4.8	4.7	4.8	4.7	:
Luxembourg	3.3	3.5	4.5	4.4	4.3	4.4	4.1	4.3	4.3	4.2	4.1	:
Hungary	19.9	16.1	18.2	18.0	16.9	17.0	16.4	16.6	16.2	14.8	15.0	:
Malta	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.5	:
Netherlands	41.3	50.5	51.7	51.0	52.4	53.6	50.3	53.9	50.7	51.1	51.2	:
Austria	19.3	23.7	28.2	27.9	27.7	27.9	26.7	28.4	27.5	27.5	28.0	:
Poland	59.9	55.3	59.0	61.6	62.3	62.9	62.0	67.5	64.8	64.5	63.4	:
Portugal	11.9	17.9	19.0	18.8	18.9	18.4	18.2	18.1	17.3	16.2	15.8	:
Romania	40.8	22.8	24.7	24.9	24.2	24.9	22.3	22.6	22.8	22.8	21.8	:
Slovenia	3.7	4.5	4.9	4.9	4.9	5.2	4.7	4.9	5.0	4.9	4.8	:
Slovakia	15.2	11.0	11.6	11.4	11.2	11.5	10.6	11.5	10.8	10.3	10.9	:
Finland	21.5	24.5	25.2	26.6	26.6	25.8	23.8	26.2	25.0	25.2	24.6	:
Sweden	31.2	35.0	33.7	33.2	33.3	32.4	31.4	34.1	32.4	32.4	31.6	:
United Kingdom	136.9	153.2	152.7	150.7	148.5	147.9	137.0	142.7	131.6	135.0	136.4	:

Source: Eurostat (online data code: t2020_34)

Map 2.7.1: Energy intensity of the economy, 2013
(kg of oil equivalent/EUR 1 000)



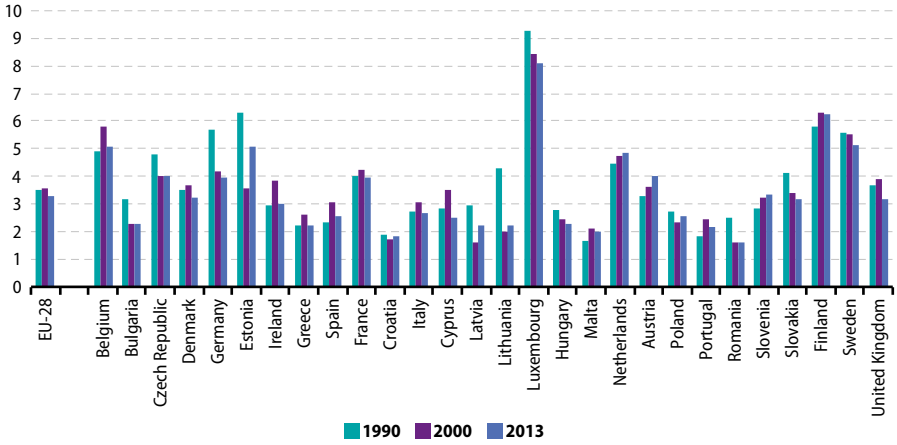
Source: Eurostat (online data code: tsdec360)

Table 2.7.4: Energy intensity of the economy, 2004–13
(million tonnes of oil equivalent)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	166.9	164.0	159.3	152.0	151.0	149.0	151.7	143.9	143.4	141.6
Belgium	198.8	194.5	186.0	177.7	183.1	181.2	190.5	176.6	167.4	173.1
Bulgaria	866.2	849.4	823.5	759.9	711.7	661.4	668.8	705.5	669.9	610.6
Czech Republic	465.7	431.2	413.6	391.3	371.1	364.4	374.1	353.9	355.7	353.8
Denmark	99.7	94.3	98.1	94.2	91.1	92.8	97.0	89.1	86.4	86.6
Germany	155.7	153.7	152.5	140.1	140.3	138.9	140.2	129.0	128.9	130.6
Estonia	550.8	501.8	444.7	464.6	468.7	491.3	546.3	505.3	478.4	512.7
Ireland	98.5	93.7	90.8	88.4	89.0	89.9	92.9	83.3	82.5	82.4
Greece (1)	163.4	162.7	155.1	149.5	151.3	149.5	148.3	154.4	165.1	151.3
Spain	160.8	158.6	152.6	149.4	143.5	137.4	137.1	135.3	137.0	128.9
France	163.3	161.0	155.1	150.0	151.0	149.0	151.0	142.7	142.8	143.0
Croatia	255.0	246.7	235.9	235.0	223.5	230.6	232.2	231.9	225.6	219.5
Italy	130.1	130.5	126.2	122.9	122.4	121.2	123.2	120.7	119.6	117.2
Cyprus	191.2	186.7	186.2	185.0	188.0	186.3	178.8	174.8	167.5	154.1
Latvia	382.2	355.2	332.0	309.6	305.9	357.1	371.4	333.5	328.6	310.6
Lithuania	474.6	415.4	377.9	374.8	363.2	389.6	307.1	299.1	292.1	266.4
Luxembourg	163.7	158.6	148.7	136.8	137.8	137.5	141.8	136.9	134.0	127.6
Hungary	306.6	311.1	297.7	290.6	285.9	289.7	294.1	281.6	268.7	256.6
Malta	196.1	197.1	180.5	184.3	177.0	163.8	166.8	164.3	171.3	143.6
Netherlands	162.3	158.7	149.8	149.8	148.6	149.8	157.7	144.7	149.4	149.5
Austria	139.0	140.1	135.6	129.1	128.3	126.3	132.1	124.8	124.2	123.9
Poland	387.1	377.3	373.0	349.2	335.9	319.2	327.4	314.0	298.0	294.7
Portugal	174.9	178.1	167.4	163.4	158.6	161.2	153.2	150.9	148.3	151.4
Romania	515.9	491.3	471.4	441.5	409.9	387.4	394.6	393.7	378.9	334.7
Slovenia	259.2	255.0	241.0	225.5	230.6	227.8	231.0	230.5	227.5	225.8
Slovakia	512.7	494.4	452.6	387.6	375.7	362.2	369.3	349.3	329.3	337.2
Finland	243.7	219.3	228.5	215.6	207.0	213.4	226.1	212.4	207.7	205.9
Sweden	179.3	170.9	159.3	154.2	154.3	149.8	157.1	149.4	148.3	143.9
United Kingdom	128.5	125.3	120.1	112.1	111.3	110.5	111.8	103.2	105.5	102.7
Norway	112.3	111.1	110.3	108.9	126.8	125.3	135.3	110.5	113.6	126.3
Montenegro	:	598.4	604.6	549.2	553.0	463.2	522.0	488.0	473.9	:
FYR of Macedonia (2)	588.3	571.8	566.3	553.6	522.8	494.0	493.5	*521.6*	502.7	*453.9*
Serbia	918.7	774.0	795.5	745.8	726.6	686.0	696.1	711.5	648.8	*652.9*
Turkey	225.9	218.0	224.7	230.8	226.7	237.8	233.0	:	:	:

(1) 2008–13: provisional.
(2) 2012 provisional.
Source: Eurostat (online data code: tsdec360)

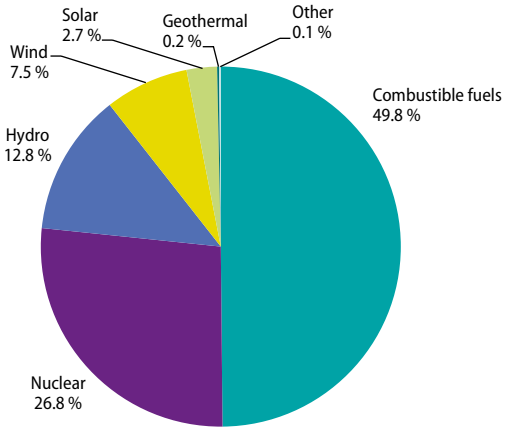
Figure 2.7.5: Gross inland energy consumption per capita, 1990, 2000 and 2013
(tonnes of oil equivalent per capita)



Source: Eurostat (online data codes: nrg_100a and demo_pjan)

2.8 Energy industry

Figure 2.8.1: Net electricity generation, EU-28, 2013 (1)
(% of total, based on GWh)



(1) Figures do not sum to 100 % due to rounding.
Source: Eurostat (online data code: nrg_105a)

Total net electricity generation in the EU-28 was 3.10 million gigawatt hours (GWh) in 2013 — which was slightly less (– 0.9 %) than the year before. This was the third consecutive fall in output, following on from a 0.1 % fall in 2012 and a reduction of 2.2 % in 2011. As such, the level of net electricity generation in 2012 remained 3.6 % below its peak level of 2008 (3.22 million GWh). Germany had the highest level of net electricity generation in 2013 among the EU Member States, accounting for 19.2 % of the EU-28 total, just ahead of France (17.7 %); the United Kingdom was the only other EU Member State with a double-digit share (11.0 %).

More than one quarter of the net electricity generated in the EU-28 in 2013 came from nuclear power plants (26.8 %), while almost double this share (49.8 %) came from power stations using combustible fuels (such as natural gas, coal and oil). Among the renewable energy sources, the highest share of net electricity generation in 2013 was from hydropower plants (12.8 %), followed by wind turbines (7.5 %) and solar power (2.7 %).

Table 2.8.1: Net electricity generation, 1990–2013
(1 000 GWh)

	1990	1995	2000	2005	2010	2011	2012	2013	Share in EU-28, 2013 (%)
EU-28	2 432.1	2 584.1	2 872.9	3 153.4	3 199.3	3 130.2	3 128.1	3 101.3	100.0
Belgium	67.3	70.6	80.3	83.4	91.4	86.7	79.9	80.2	2.6
Bulgaria	37.5	37.4	36.9	40.3	42.2	45.8	42.9	39.8	1.3
Czech Republic	58.1	56.9	68.0	76.2	79.5	81.0	81.1	80.9	2.6
Denmark	24.3	34.7	34.4	34.4	36.9	33.5	29.2	33.1	1.1
Germany	508.6	498.9	538.5	582.7	594.8	576.9	592.7	596.7	19.2
Estonia	15.4	7.6	7.6	9.1	11.7	11.7	10.5	11.8	0.4
Ireland	13.7	16.8	22.7	24.8	27.4	26.4	26.5	25.1	0.8
Greece	32.1	38.4	49.9	55.7	53.4	53.9	53.7	52.6	1.7
Spain	144.6	159.1	214.4	282.1	291.0	283.3	286.6	274.5	8.9
France	401.2	472.6	516.1	550.2	544.3	536.5	541.3	548.7	17.7
Croatia	8.3	8.5	10.3	12.0	13.6	10.4	10.2	13.0	0.4
Italy	205.1	229.2	263.3	290.6	290.7	291.4	287.8	278.8	9.0
Cyprus	1.9	2.4	3.2	4.1	5.1	4.7	4.5	4.1	0.1
Latvia	5.9	3.5	3.7	4.4	6.1	5.6	5.7	5.8	0.2
Lithuania	26.3	12.4	10.0	13.6	5.3	4.4	4.7	4.5	0.1
Luxembourg	1.3	1.2	1.1	4.1	4.6	3.7	3.8	2.9	0.1
Hungary	25.9	31.3	32.3	33.2	34.6	33.5	32.3	28.0	0.9
Malta	1.0	1.4	1.8	2.1	2.0	2.1	2.2	2.1	0.1
Netherlands	69.4	77.6	86.0	96.2	114.3	109.0	98.6	96.8	3.1
Austria	48.4	54.9	59.1	63.5	69.3	63.8	70.5	65.9	2.1
Poland	123.4	127.4	132.2	143.6	143.5	148.9	147.6	150.0	4.8
Portugal	27.3	31.9	42.2	45.0	52.8	51.1	45.3	50.4	1.6
Romania	56.7	52.9	48.6	55.5	55.9	56.5	53.7	54.1	1.7
Slovenia	11.2	11.8	12.8	14.1	15.4	15.0	14.7	15.1	0.5
Slovakia	23.0	23.4	27.7	29.3	25.4	26.1	26.1	27.2	0.9
Finland	51.6	60.5	67.3	67.8	77.2	70.4	67.7	68.3	2.2
Sweden	142.5	144.2	141.6	154.6	145.3	146.9	162.8	149.5	4.8
United Kingdom	300.1	316.6	360.8	380.5	365.6	350.8	345.5	341.3	11.0
Norway	120.8	122.6	142.3	137.4	123.1	127.1	147.2	133.6	-
Montenegro	:	:	:	2.8	3.9	2.5	2.7	3.8	-
FYR of Macedonia	5.4	5.8	6.3	6.5	6.8	6.3	5.8	5.7	-
Albania	3.2	4.4	4.7	5.4	7.6	4.2	4.7	7.0	-
Serbia	38.2	32.5	31.3	34.6	35.7	35.8	34.2	37.2	-
Turkey	54.2	81.9	118.7	155.5	203.0	217.6	227.7	229.0	-

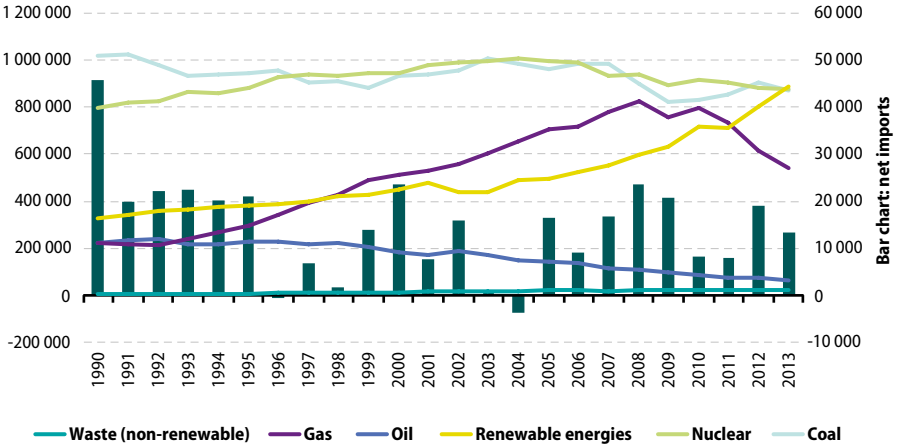
Source: Eurostat (online data code: nrg_105a)

Table 2.8.2: Total gross electricity generation, 1990–2013
(1 000 GWh)

	1990	1995	2000	2005	2010	2011	2012	2013
EU-28	2 594.8	2 743.0	3 035.2	3 325.1	3 364.4	3 296.0	3 296.6	3 261.5
EA-19	1 760.1	1 880.0	2 119.4	2 340.6	2 392.6	2 332.2	2 334.6	2 316.5
Belgium	70.9	74.4	84.0	87.0	95.1	90.2	83.1	83.5
Bulgaria	42.1	41.8	40.9	44.4	46.7	50.8	47.3	43.8
Czech Republic	62.6	60.8	73.5	82.6	85.9	87.6	87.6	87.1
Denmark	26.0	36.8	36.1	36.2	38.9	35.2	30.7	34.7
Germany	550.0	537.3	576.5	622.6	633.0	613.1	629.8	633.2
Estonia	17.2	8.7	8.5	10.2	13.0	12.9	12.0	13.3
Ireland	14.5	17.9	24.0	26.0	28.6	27.5	27.6	26.1
Greece	35.0	41.6	53.8	60.0	57.4	59.4	61.0	57.2
Spain	151.9	167.1	224.5	294.1	301.5	293.8	297.6	283.6
France	420.8	494.3	540.0	576.2	569.2	561.5	565.8	572.5
Croatia	8.7	8.9	10.7	12.5	14.1	10.8	10.6	13.4
Italy	216.6	241.5	276.6	303.7	302.1	302.6	299.3	289.8
Cyprus	2.0	2.5	3.4	4.4	5.3	4.9	4.7	4.3
Latvia	6.6	4.0	4.1	4.9	6.6	6.1	6.2	6.2
Lithuania	28.4	13.9	11.4	14.8	5.7	4.8	5.0	4.8
Luxembourg	1.4	1.2	1.2	4.1	4.6	3.7	3.8	2.9
Hungary	28.4	34.0	35.2	35.8	37.4	36.0	34.6	30.3
Malta	1.1	1.6	1.9	2.2	2.1	2.2	2.3	2.3
Netherlands	71.9	80.9	89.6	100.2	118.1	113.0	102.5	100.9
Austria	50.3	56.2	61.3	66.4	71.1	65.8	72.6	68.3
Poland	136.3	139.0	145.2	156.9	157.7	163.5	162.1	164.6
Portugal	28.5	33.3	43.8	46.6	54.1	52.5	46.6	51.7
Romania	64.3	59.3	51.9	59.4	61.0	62.2	59.0	58.9
Slovenia	12.4	12.9	13.6	15.1	16.4	16.1	15.7	16.1
Slovakia	26.1	26.8	31.2	31.5	27.9	28.7	28.7	28.8
Finland	54.4	64.0	70.0	70.6	80.7	73.5	70.4	71.3
Sweden	146.5	148.4	145.3	158.4	148.6	150.4	166.6	153.2
United Kingdom	319.7	334.0	377.1	398.4	381.7	367.3	363.4	359.2
Norway	121.8	123.2	143.0	138.0	123.6	127.6	147.7	134.2
Montenegro	0.0	0.0	0.0	2.9	4.0	2.7	2.8	3.9
FYR of Macedonia	5.8	6.1	6.8	6.9	7.3	6.8	6.3	6.1
Albania	3.2	4.4	4.7	5.4	7.6	4.2	4.7	7.0
Serbia	40.9	34.5	34.1	36.5	38.1	38.6	36.8	39.9
Turkey	57.5	86.2	124.9	162.0	211.2	229.4	239.5	240.2

Source: Eurostat (online data code: nrg_105a)

Figure 2.8.2: Gross electricity production by major fuel groups, EU-28, 1990–2013 (GWh)



Source: Eurostat (online data code: nrg_105a)

Total gross electricity production in 2013 in the EU-28 was 3 262 TWh, which is 1.1 % less than in 2012. Following the 4.9 % decrease from 2008 to 2009, there was almost a full recovery in 2012, but the production is going down again in 2013. The highest share of electricity in 2013 was produced in power plants using renewable sources of energy (27.3 %), followed by nuclear power plants (26.9 %), coal fired power plants (26.7 %), gas (16.6 %), oil (1.9 %) and non-renewable waste (0.8 %).

The detailed data on gross electricity production by fuel (Table 1 and Table 2) show that in coal fired power plants in 2013 more than half of electricity (58.2 %) was produced from other bituminous coal (steam coal), followed by lignite/brown coal (37.1 %). Both types of coal are traditionally used for electricity generation.

There have been significant changes in the structure of renewable energy sources used for electricity production over the last two decades. In 1990, 94.2 % of renewable electricity was produced from hydro energy, while in 2013 the share of hydro energy was less than half of that. The structure of energy sources used for renewable electricity production in 2013 was 45.4 % hydro energy, 26.5 % wind, 9.2 % solid biofuels, 9.1 % solar PV, 6.0 % biogases, 2.1 % municipal renewable waste, 0.7 % geothermal energy and 1 % other sources.

Since 1990 electricity generation from renewable energy sources has more than doubled in volume, and is the only source which also continued to grow after 2008. Electricity produced from gas shows the sharpest growth from 1992 until 2008, with an average growth rate of almost 9 % per year. In 2009 electricity generation from gas decreased by 8.2 %, followed by a short recovery in 2010 which changed into a steady decrease in 2011, 2012 and 2013 by 8.0 %, 16.2 % and 12.1 % respectively.

Table 2.8.3: Gross electricity production by fuel, EU-28, 1990–2013
(GWh)

	1990	1995	2000	2005	2011	2012	2013
Total gross electricity production	2 594 780	2 742 951	3 035 193	3 325 137	3 296 044	3 296 551	3 261 537
Solid fuels	1 019 429	945 866	933 855	960 571	851 472	901 699	871 835
Anthracite	0	0	0	18 184	18 384	16 987	10 872
Coking coal	52 696	59 159	37 874	37 092	18 570	24 142	5 338
Other bituminous coal	599 054	538 704	530 968	538 773	453 957	498 175	507 266
Sub-bituminous coal	7 679	10 640	6 380	5 771	5 631	5 292	4 289
Lignite/brown coal	337 807	320 479	344 081	341 162	333 501	338 213	323 717
Peat	5 137	7 843	5 902	7 486	8 346	6 768	6 012
Patent fuel	0	0	0	0	0	0	0
Coke oven coke	837	0	0	0	4	3	2
Gas coke	0	0	0	0	0	0	0
Coal tar	0	0	64	100	6	3	4
BKB	1 510	765	923	2 715	2 166	2 411	2 925
Oil shale and oil sands	14 709	8 276	7 663	9 288	10 902	9 702	11 406
Peat products	0	0	0	0	5	3	4
Crude oil and petroleum products	224 247	230 335	181 296	142 772	73 680	74 083	61 331
Crude oil	0	0	0	15	0	0	0
NGL (natural gas liquids)	0	0	0	0	0	0	0
Refinery gas	2 083	2 941	3 798	7 707	8 224	7 832	6 985
LPG (liquefied petroleum gases)	23	186	22	490	576	635	386
Naphtha	0	0	0	0	98	64	66
Kerosene type jet fuel	0	0	0	1	0	1	0
Other kerosene	1	10	0	2	14	10	22
Gas / diesel oil	2 475	3 618	4 109	5 633	9 152	9 635	9 478
Residual fuel oil	149 056	172 760	140 496	103 923	38 171	35 834	28 770
Bitumen	0	2 231	3 776	223	0	0	0
Petroleum coke	7	93	336	4 754	2 482	3 071	1 846
Other oil products	70 602	48 496	28 759	20 024	14 963	17 001	13 778
Natural gas and derived gases	223 528	294 111	513 148	704 388	733 889	614 873	540 353
Natural gas	192 637	268 089	479 563	668 602	700 151	581 796	507 439
Gas works gas	81	37	1 615	2 115	2 573	2 498	2 179
Coke oven gas	9 308	5 932	7 904	6 614	6 903	7 059	6 738
Blast furnace gas	20 992	19 398	23 447	25 494	23 226	22 318	22 825
Other recovered gases	510	655	619	1 563	1 036	1 202	1 172
Nuclear	794 863	880 821	944 993	997 699	906 744	882 366	876 836
Nuclear	794 863	880 821	944 993	997 699	906 744	882 366	876 836
Renewable energies	327 383	382 149	448 026	495 134	705 951	798 518	886 046
Hydro	308 528	352 619	386 303	347 279	339 864	366 394	402 154
Wind	778	4 068	22 254	70 455	179 669	205 980	235 012
Solar photovoltaic	12	41	118	1 459	45 312	67 403	80 867
Solar thermal	0	0	0	0	1 959	3 775	4 395
Tide, wave and ocean	503	507	507	481	478	462	420
Solid biofuels excluding charcoal	10 925	15 150	20 309	43 800	73 572	80 181	81 501
Biogases	914	2 472	6 418	12 786	37 819	46 404	52 837
Municipal waste (renewable)	2 497	3 814	7 332	11 709	18 079	18 530	18 640
Biodiesels	0	0	0	0	27	22	25
Other liquid biofuels	0	0	0	1 768	3 288	3 603	4 259
Geothermal	3 226	3 478	4 785	5 397	5 884	5 764	5 936
Waste (non-renewable)	5 292	8 745	12 128	14 221	19 954	20 379	20 700
Industrial waste	2 911	5 012	5 205	2 797	3 890	3 958	3 856
Municipal waste (non-renewable)	2 381	3 733	6 923	11 424	16 064	16 421	16 844
Other	38	717	1 339	10 318	4 308	4 559	4 345
Heat from chemical sources	38	29	267	685	704	778	867
Other sources	0	688	1 072	9 633	3 604	3 781	3 478

Source: Eurostat (online data code: nrg_105a)

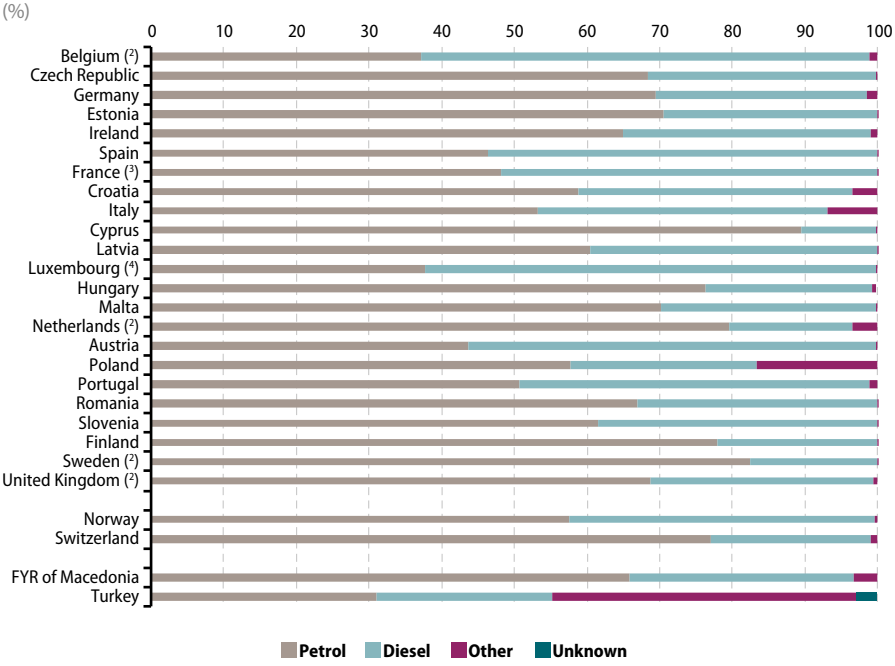
3

Transport indicators

3.1 Transport equipment

In the EU-28 most EU Member States have reported an increase in the motorisation rates of passenger cars over the last ten years (2003–12). Passenger cars are road motor vehicles, other than mopeds or motorcycles, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). The highest increases were recorded in Poland (65.3 %), Lithuania (54.1 %, up to 2011), Romania (48.3 %, since 2004) and Estonia (43.4 %). The only exceptions were Germany (– 2.9 %) and the United Kingdom (– 0.7 %). The lowest motorisation rates in 2012 were reported by Romania (224), Hungary (301) and Latvia (305). The highest motorisation rates were recorded in Italy (621), Malta (592), Finland (560), Cyprus (549), Germany (530) and Slovenia (518). In these six EU Member States there was one car for every two inhabitants.

Figure 3.1.1: Share of passenger cars, by fuel type, by country, 2012 ([1])



([1]) Data missing for Bulgaria, Denmark, Greece, Lithuania and Slovakia.
([2]) No data for 2012, 2011 data instead.
([3]) No data for 2012, 2007 data instead.
([4]) No data for 2012, 2000 data instead.

Source: Eurostat (online data codes: road_eqs_carmot and road_eqs_caralt)/ International Transport Forum/United Nations Economic Commission for Europe Common Questionnaire on inland transport).

Table 3.1.1: Motorisation rate of passenger cars, by country, 2003–12
(number of passenger cars / 1 000 inhabitants)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EU-27	*446*	*448*	*450*	*455*	:	:	:	:	:	:
Belgium	464	467	468	470	473	477	479	480	487	:
Bulgaria	296	314	329	233	277	317	337	353	368	385
Czech Republic	364	374	387	401	414	424	424	429	436	448
Denmark	:	:	:	455	466	468	:	:	:	:
Germany	546	550	559	566	:	504	510	517	525	530
Estonia	318	347	366	413	391	413	409	416	433	456
Ireland	380	385	395	:	422	:	:	:	428	425
Greece	348	:	:	:	:	:	:	:	:	:
Spain	439	451	:	470	476	479	473	475	476	476
France	475	476	476	478	480	:	:	:	:	496
Croatia	298	308	319	331	350	360	358	355	355	339
Italy	:	587	597	606	608	612	614	619	625	621
Cyprus	419	457	477	492	529	557	563	551	545	549
Latvia	285	305	333	372	413	431	426	307	299	305
Lithuania	370	392	442	490	494	525	540	554	570	:
Luxembourg	644	648	654	662	666	665	660	:	:	:
Hungary	274	280	287	319	325	305	301	299	299	301
Malta	:	:	:	:	:	:	567	581	592	592
Netherlands	425	429	434	442	451	457	460	464	470	:
Austria	498	501	504	508	510	513	521	528	:	:
Poland	294	314	323	351	383	422	432	447	470	486
Portugal	:	:	:	:	:	:	:	444	447	406
Romania	:	151	:	152	172	197	209	214	216	224
Slovenia	446	456	479	487	504	514	517	518	519	518
Slovakia	252	223	243	248	267	287	295	310	324	337
Finland	436	448	462	475	485	507	519	535	551	560
Sweden	454	456	459	461	464	462	460	460	464	:
United Kingdom	451	461	467	:	:	458	452	451	448	:
Iceland	575	596	624	:	:	:	:	:	:	:
Liechtenstein	686	692	:	691	689	715	722	744	:	:
Norway	:	429	437	445	455	458	462	469	477	484
Switzerland	510	514	518	519	521	518	515	518	523	529
FYR of Macedonia	:	:	124	119	122	128	137	151	152	146
Serbia	:	:	:	:	201	203	225	215	:	:
Turkey	66	75	80	88	92	95	98	102	109	114

Source: Eurostat (online data code: road_eqs_carhab) / International Transport Forum / United Nations Economic Commission for Europe / Common Questionnaire on inland transport

Table 3.1.2: Renewal rate of passenger cars, by country, 2003–12
(passenger cars first registration / total passenger cars, %)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	10.2	9.9	10.8	10.6	10.7	9.4	10.6	10.9	:	:
Bulgaria	6.5	6.9	7.2	19.7	16.9	8.5	7.4	7.4	7.3	:
Czech Republic	3.3	3.3	3.0	3.2	3.3	3.6	3.8	3.8	3.8	:
Denmark	:	:	:	10.2	7.2	:	:	:	:	:
Germany	7.3	7.4	7.5	6.8	:	9.2	7.0	7.5	7.2	6.8
Estonia	3.8	:	5.1	5.6	4.7	1.8	1.9	3.1	3.4	3.3
Ireland	9.8	:	:	:	:	:	:	:	3.9	3.8
Greece	:	:	:	:	:	:	:	:	:	:
Spain	:	:	:	7.8	5.5	4.4	4.5	3.7	3.2	:
France	6.8	:	6.6	6.8	6.7	:	:	:	:	:
Croatia	7.8	7.7	8.3	7.6	6.4	3.5	3.0	3.2	2.7	3.2
Italy	:	:	:	7.1	6.1	6.0	5.4	4.8	3.8	:
Cyprus	14.5	11.5	10.5	13.6	12.5	8.4	7.1	6.0	4.4	3.1
Latvia	8.9	10.2	13.1	13.0	6.1	1.9	2.9	6.8	8.2	9.0
Lithuania	10.7	13.2	12.7	13.8	12.1	8.2	9.5	7.8	:	:
Luxembourg	16.5	16.2	16.6	16.3	16.3	14.4	:	:	:	:
Hungary	6.8	:	5.2	4.2	5.4	:	2.0	2.6	3.6	:
Malta	:	:	:	:	:	:	5.8	6.6	5.3	:
Netherlands	7.0	6.7	6.8	7.0	6.8	:	:	:	:	:
Austria	7.7	:	7.4	7.1	6.9	7.5	7.5	8.0	7.4	:
Poland	7.4	8.2	7.5	8.4	8.8	5.4	5.3	5.4	5.0	5.3
Portugal	:	:	:	:	:	:	:	3.8	2.3	:
Romania	:	:	:	13.5	16.6	8.2	7.3	4.1	5.6	:
Slovenia	6.6	6.6	6.2	6.9	7.0	5.5	5.7	5.6	4.7	4.9
Slovakia	5.3	:	:	11.0	10.6	9.6	8.0	7.8	7.5	:
Finland	6.3	:	6.0	5.0	5.5	3.4	4.0	4.4	3.7	3.4
Sweden	7.3	7.2	7.2	7.7	6.1	5.0	:	7.5	:	:
United Kingdom	9.9	:	:	:	:	6.9	7.1	6.7	:	:
Iceland	8.3	12.7	:	:	:	:	:	:	:	:
Liechtenstein	7.6	:	:	8.2	8.2	6.4	6.9	:	:	:
Norway	:	:	7.0	7.8	6.4	5.7	7.1	7.3	7.2	7.2
Switzerland	7.1	6.8	7.0	7.3	7.3	6.7	7.4	8.0	8.0	:
FYR of Macedonia	:	:	4.9	7.0	7.2	5.0	17.5	12.9	10.5	:
Turkey	9.2	7.5	6.9	5.8	5.5	5.3	6.8	8.0	7.0	7.6

Source: Eurostat (online data codes: road_eqr_carm and road_eqs_carmot) / International Transport Forum / United Nations Economic Commission for Europe Common Questionnaire on inland transport).

Table 3.1.3: Motorisation rate of lorries and road tractors, by country, 2003–12
(number of lorries and road tractors / 1 000 inhabitants)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	58.3	60.2	62.4	63.8	65.3	66.7	67.3	68.0	69.2	:
Bulgaria	37.6	41.0	43.4	29.6	34.5	39.8	42.6	44.9	47.2	50.1
Czech Republic	35.9	38.9	43.1	48.0	54.1	58.7	57.7	57.2	57.0	57.5
Denmark	:	:	:	9.2	9.3	9.0	:	:	:	:
Germany	33.5	33.4	33.5	34.0	30.4	30.7	31.2	32.0	33.2	33.7
Estonia	:	:	:	:	:	62.3	60.7	60.9	63.4	66.4
Ireland	:	:	:	:	:	:	:	:	70.2	67.6
Greece	102.3	:	:	:	:	:	:	:	:	:
Spain	:	:	:	116.2	119.5	118.4	115.5	114.1	112.6	109.9
France	90.2	90.1	90.1	89.7	91.5	87.1	87.3	:	:	89.6
Croatia	34.1	35.6	37.0	38.4	38.2	39.4	38.3	36.1	35.4	32.4
Italy	:	:	:	:	68.6	69.4	69.5	70.0	70.4	69.8
Cyprus	167.6	163.0	161.5	155.5	155.0	156.9	155.7	147.3	140.5	132.0
Latvia	45.5	47.2	50.3	54.4	58.7	59.2	55.7	33.8	35.0	37.3
Lithuania	32.2	34.0	36.5	41.2	45.4	46.7	46.0	42.6	44.8	:
Luxembourg	62.1	62.5	64.2	65.5	68.3	71.1	70.4	:	:	:
Hungary	38.6	38.9	40.6	46.1	47.4	45.4	46.5	46.4	46.6	47.0
Malta	:	:	:	:	:	:	111.0	102.6	102.8	102.3
Netherlands	62.4	63.7	61.6	61.0	61.8	62.5	61.7	60.6	59.5	:
Austria	42.7	43.4	43.7	44.1	45.0	45.9	46.5	47.5	48.7	49.5
Poland	60.5	62.6	60.4	62.7	66.1	71.1	73.3	78.4	82.3	83.5
Portugal	:	:	:	:	:	:	:	136.6	134.6	119.3
Romania	:	22.3	:	21.5	23.8	31.3	32.4	32.9	34.5	35.8
Slovenia	27.0	28.5	33.3	35.0	38.6	41.7	41.2	41.1	41.3	41.1
Slovakia	34.1	32.5	:	38.7	43.7	49.9	53.6	55.0	56.3	57.4
Finland	63.9	69.2	73.0	72.7	76.2	81.7	85.0	88.6	92.9	96.1
Sweden	47.2	49.0	51.2	53.0	55.3	55.6	55.6	:	58.2	:
United Kingdom	:	61.2	61.6	:	:	61.0	59.0	58.8	58.9	:
Iceland	73.7	79.3	87.0	:	:	:	:	:	:	:
Liechtenstein	75.6	75.6	:	72.3	73.0	76.3	76.2	77.8	:	:
Norway	:	98.1	100.9	105.2	109.6	110.3	108.9	108.3	108.4	108.8
Switzerland	40.0	40.5	41.4	42.1	43.2	43.0	42.6	43.0	44.3	45.5
FYR of Macedonia	:	:	8.9	8.3	8.1	8.4	9.0	8.9	15.8	14.9
Turkey	20.4	27.0	30.1	33.2	37.6	39.8	41.0	10.0	9.9	10.1

Source: Eurostat (online data codes: road_eqs_lorroa and demo_pjan) / International Transport Forum / United Nations Economic Commission for Europe Common Questionnaire on inland transport.

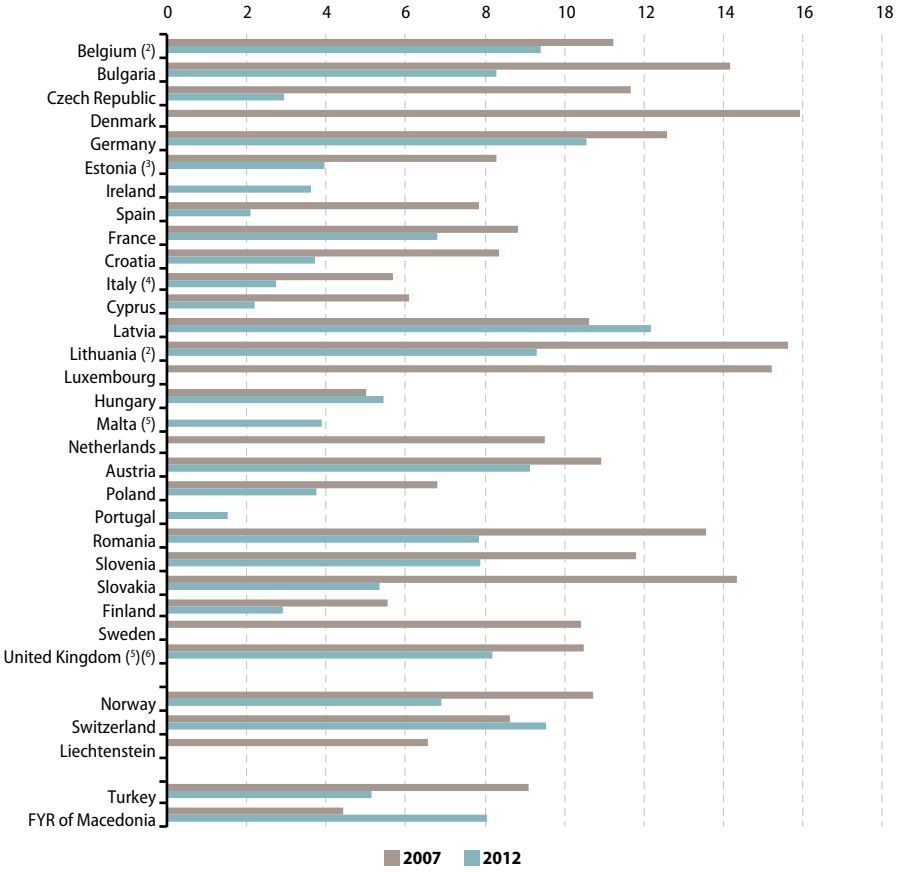
In 18 out of 23 EU Member States for which data were available in 2012, more than 50 % of the cars were petrol driven. The highest percentage of petrol-driven cars was reported by Cyprus (almost 90 %), followed by Sweden (83 %, 2011 data) and the Netherlands (80 %, 2011 data). Diesel-driven cars exceeded the 50 % threshold in Luxembourg (2009 data) and Belgium (2011 data) (both 62 %), Austria (56 %), Spain (54 %) and France (52 %, 2007 data). The contribution of alternative fuels was significant in Poland (17 %) and Italy (7 %). In the seven-year period from 2006 to 2012, all EU Member States recorded increased numbers of diesel-driven passenger cars. In Poland, Ireland, and Sweden the increase was almost threefold.

In 2012, the renewal rate of passenger cars (the ratio of first registered to total passenger cars) in the EU-28 ranged from 3.1 % in Cyprus to 9.0 % in Latvia. Renewable rates of passenger cars have had a tendency to decrease in the majority of EU Member States since 2008, likely as a consequence of the global financial and economic crisis.

In 2012, the motorisation rate of lorries and road tractors in the EU-28 varied from 32 lorries and road tractors per 1 000 inhabitants in Croatia to 132 in Cyprus. Beside Cyprus, rates above 100 were also recorded in Malta (102), Spain (110) and Portugal (119). By contrast, low rates were recorded in Germany (34) and Croatia (32). These variances are probably partly due to the fact that countries register very light lorries and vans differently. Between 2003 and 2012, the trend was not consistent among EU Member States. The highest increases were observed in eastern EU Member States, especially Slovakia (69 %), Romania (since 2004) and the Czech Republic (both 60 %) as well as Slovenia (52 %). Finland's motorisation rate also increased by 50 %. On the other hand, the highest decreases were recorded in Croatia (– 5 %), Latvia (– 18 %) and Cyprus (– 21 %).

Among those EU Member States for which data were available, only two recorded renewal rates of lorries and road tractors above 10 % in 2012: Germany (10.6 %) and Latvia (12.2 %). Furthermore, only two EU Member States showed modest increase in the renewal rates of lorries and road tractors from 2007 to 2012: Latvia and Hungary. In contrast, the decreases in renewal rates were substantial in Croatia (– 56 %), Slovakia (– 63 %), Cyprus (– 64 %), Spain (– 73 %) and the Czech Republic (– 75 %).

Figure 3.1.2: Renewal rate of lorries and road tractors, by country, 2007 and 2012 ([1])
(lorries and road tractors first registration/total lorries and road tractors, %)

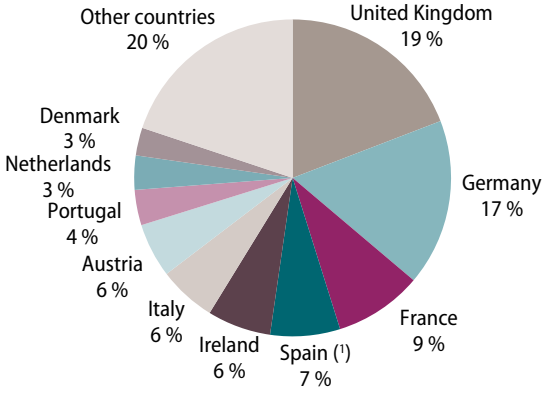


([1]) Data missing for Greece.
([2]) No data for 2012, 2011 data instead.
([3]) No data for 2007 (lorries), 2008 data instead; no data for 2007 (tractors), 2009 data instead.
([4]) No data for 2007, 2008 data instead.
([5]) No data for 2012 (tractors), 2011 data instead.
([6]) No data for 2007 (tractors), 2008 data instead.

Source: Eurostat (online data codes: road_eqr_lrstn and road_eqs_lorroa) / International Transport Forum/ United Nations Economic Commission for Europe Common Questionnaire on inland transport).

In 2013, there were 6 513 commercial aircraft in the EU-28, a 1.9 % decrease compared with 2011. The largest numbers of commercial aircraft were reported by the four largest EU Member States and Ireland. The largest air fleet was recorded in the United Kingdom (1 248 aircraft accounting for a 19 % share of the EU total), followed by Germany (1 108; 17 % share), France (585; 9 % share), Spain (464; 7 % share) and Ireland (423; 7 % share). In terms of number of aircraft per million inhabitants (2013 data), Luxembourg held the highest value (222), Poland and Romania the lowest.

Figure 3.1.3: EU commercial airfleet by operator country, top 10 countries, 2013 (%)



(1) 2012 data.
Source: Eurostat (online data code: avia_eq_arc_typ)

3.2 Freight transport

Table 3.2.1: Modal split of inland freight transport, 2002 and 2012 ([1])
(% of total inland tkm)

	2002			2012		
	Roads	Railways	Inland waterways	Roads	Railways	Inland waterways
EU-28 ([2])	75.5	18.3	6.2	75.1	18.2	6.7
Belgium	77.5	*10.7*	11.8	58.3	*17.5*	*24.3*
Bulgaria	*62.9*	*33.1*	4.0	74.7	8.9	16.4
Czech Republic	73.3	*26.6*	0.1	78.2	21.8	0.1
Denmark	92.1	*7.9*	–	88.0	12.0	–
Germany	66.3	*18.8*	14.9	*64.6*	*23.1*	12.3
Estonia	*30.3*	*69.7*	0.0	53.0	47.0	–
Ireland	97.1	*2.9*	–	99.1	0.9	–
Greece	*98.4*	*1.6*	–	98.7	1.3	–
Spain	94.1	*5.9*	–	95.2	4.8	–
France	77.7	*19.1*	3.1	80.6	15.2	4.2
Croatia	76.4	22.7	0.9	73.6	19.8	6.6
Italy	90.4	*9.6*	*0.0*	85.9	14.0	0.1
Cyprus	100.0	–	–	100.0	–	–
Latvia	29.2	*70.8*	0.0	35.8	64.2	–
Lithuania	*52.3*	*47.7*	*0.0*	62.3	37.7	0.0
Luxembourg	90.7	*5.6*	3.7	93.2	*3.4*	3.4
Hungary	66.2	*28.6*	5.2	75.1	20.5	4.4
Malta	*100.0*	–	–	*100.0*	–	–
Netherlands	63.3	*3.3*	33.4	56.2	5.1	38.7
Austria ([3])	65.8	*29.3*	4.9	54.6	40.8	4.6
Poland	*62.6*	*37.2*	0.2	81.9	18.0	0.0
Portugal	93.1	*6.9*	-	93.2	6.8	–
Romania	*57.3*	*34.4*	*8.2*	53.3	24.2	22.5
Slovenia	70.0	*30.0*	–	82.1	17.9	–
Slovakia	*58.7*	*40.9*	0.4	77.6	19.8	2.6
Finland	76.6	*23.2*	*0.3*	73.0	26.6	0.4
Sweden	65.6	34.4	–	60.3	39.7	–
United Kingdom	89.7	*10.2*	*0.1*	*87.8*	12.1	0.1
Iceland	100.0	–	–	100.0	–	–
Liechtenstein ([3])	:	:	:	96.6	3.4	–
Norway	85.1	*14.9*	–	85.3	14.7	–
Switzerland	*57.5*	*42.5*	–	53.9	46.1	–
FYR of Macedonia	92.3	7.7	–	*92.2*	7.8	–
Turkey	95.5	4.5	–	*94.7*	5.3	–

([1]) Excluding pipelines. EU, Bulgaria, Croatia and Romania: break in series.
([2]) 2002: EU-27 instead of EU-28.
([3]) The railway in Liechtenstein is owned and operated by the Austrian ÖBB and included in their statistics.
Source: Eurostat (online data code: tran_hv_frmod)

Total inland freight transport in the EU-28 was estimated to be close to 2 100 billion tonne-kilometres (tkm) in 2012; some three quarters (75.1 %) of this freight total was transported over roads. The share of EU-28 inland freight that was transported by road was more than four times as high as the share transported by rail (18.2 %), while the remainder (6.7 %) of the freight transported in the EU-28 in 2012 was carried along inland waterways. It should be noted that this analysis refers only to inland freight transport and that considerable amounts of freight may be transported by maritime freight services and for some product groups by air transport or by pipelines. Note also that all inland freight transport within Cyprus and Malta was by road due to the absence of any railways or inland waterway infrastructure; this was also the case in Iceland.

Road transport accounted for more than 90 % of inland freight transport in Ireland, Greece, Spain, Luxembourg and Portugal in 2012. By contrast, road transport accounted for just over one third (35.8 %) of inland freight transported in Latvia, while the remainder (64.2 %) was transported by rail. Between one half and one third of the inland freight transported in Estonia, Austria, Sweden and Lithuania was carried by rail in 2012; this was also the case in Switzerland. More than one tenth of total inland freight in Germany and Bulgaria was transported on inland waterways in 2012, with this share increasing to just under one quarter in Romania and Belgium, and peaking at 38.7 % in the Netherlands.

Table 3.2.2: Evolution of total freight transport by rail, by country, 2003–12

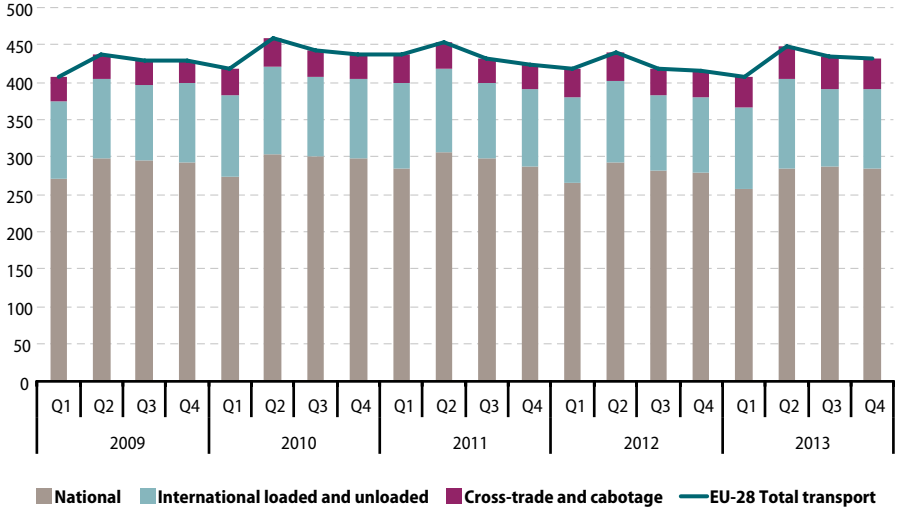
	2003	2011	2012	Growth 2011–12	
		Total (million tkm)		(million tkm)	(%)
EU-28	:	422 594	*407 502*	–15 092	–3.6
Belgium	7 293	7 593	:	:	:
Bulgaria	:	3 291	2 907	–384	–11.7
Czech Republic	15 862	14 316	14 267	–49	–0.3
Denmark	1 985	2 614	2 278	–336	–12.9
Germany	78 464	113 317	110 065	–3 252	–2.9
Estonia	9 670	6 271	5 129	–1 142	–18.2
Ireland	:	105	91	–14	–13.3
Greece	456	352	283	–69	–19.6
Spain	11 743	9 948	9 957	9	0.1
France	46 835	34 202	32 539	–1 663	–4.9
Croatia	:	2 438	2 332	–106	–4.3
Italy	20 299	19 787	20 244	457	2.3
Cyprus	–	–	–	–	–
Latvia	17 955	21 410	21 867	457	2.1
Lithuania	11 457	15 088	14 172	–916	–6.1
Luxembourg	525	288	:	:	:
Hungary	7 614	9 118	9 230	112	1.2
Malta	–	–	–	–	–
Netherlands	4 705	6 378	6 142	–236	–3.7
Austria (1)	16 866	20 345	19 499	–846	–4.2
Poland	47 407	53 746	48 903	–4 843	–9.0
Portugal	2 073	2 322	2 421	99	4.3
Romania	:	14 719	13 472	–1 247	–8.5
Slovenia	3 018	3 752	3 470	–282	–7.5
Slovakia	10 113	7 960	7 591	–369	–4.6
Finland	10 047	9 395	9 275	–120	–1.3
Sweden	20 170	22 864	22 043	–821	–3.6
United Kingdom	18 734	20 974	21 444	470	2.2
Liechtenstein (1)	:	10	10	0	0.0
Norway	2 627	3 574	3 489	–85	–2.4
Switzerland	:	11 526	11 061	–465	–4.0
Montenegro	:	:	73	:	:
FYR of Macedonia	:	479	423	–56	–11.7
Turkey	8 612	11 303	11 223	–80	–0.7

(1) The railway in Liechtenstein is owned and operated by the Austrian ÖBB and included in their statistics.
Source: Eurostat (online data code: rail_go_typeall)

The total performance of the rail freight transport sector in the EU-28 was estimated at around 408 billion tkm in 2012, showing a decrease of 3.6 % compared with 2011. This shows how difficult it is for the rail freight transport to recover following the global financial and economic crisis (which ended a sustained period of growth over recent years).

Despite the general decreasing trend, the patterns at national level show substantial differences among EU Member States. Six EU Member States recorded an increase in freight transport performance between 2011 and 2012. The highest increase was recorded by Portugal (+ 4.3 %), followed by Italy (+ 2.3 %) and the United Kingdom (+ 2.2 %). At the other end of the scale, the largest decrease between 2011 and 2012 was recorded in Greece (– 19.6 %), followed by Estonia (– 18.2 %) and Ireland (– 13.3 %). In absolute terms, the United Kingdom recorded the largest rise, 470 million tkm, ahead of Italy and Latvia, both increasing by 457 million tkm. In contrast, Poland, Germany and France registered the highest absolute falls among the reporting countries.

Figure 3.2.1: Quarterly road freight transport, EU-28, 2009–13
(billion tkm)



Source: Eurostat (online data code: road_go_tq_tott)

In terms of tkm, European road freight transport increased by 1.6% in 2013 compared with 2012, but still remained under its level of 2010 and 2011. The major component, national transport, declined slightly, while the smaller in share cross-trade and cabotage transport recorded a substantial increase. Poland confirmed its position as the second largest transport country in the EU. Romania and Lithuania were the EU Member States recording the highest rise in tkm performed (more than 12%), while at the other end of the scale, Cyprus registered a substantial decline (– 29%). Metal ores and other mining and quarrying products were the major group in tonnage terms, while food dominates transport in tkm.

Table 3.2.3: Inland waterways transport of goods by type of transport, by country, 2010–13

	2010	2011	2012	2013				Growth 2012–13			
	(1 000 tonnes)							(%)			
		Total		Total	Natl	Intl	Transit	Total	Natl	Intl	Transit
EU-28 (1)(2)	530 293	526 427	531 452	532 472	256 144	276 327	:	0.2	–1.7	2.0	:
Belgium	161 594	172 906	190 288	187 404	44 197	130 151	13 056	–1.5	–9.2	0.6	6.2
Bulgaria	18 372	14 448	16 378	16 726	1 190	2 641	12 896	2.1	–15.4	6.2	3.3
Czech Republic	833	911	838	608	236	373	:	–27.4	–42.4	–12.9	:
Germany	229 607	221 966	223 170	226 864	54 698	152 391	19 775	1.7	0.2	2.8	–2.6
France	72 747	68 471	68 710	68 926	32 012	29 285	7 630	0.3	–1.8	2.1	2.8
Croatia	6 928	5 184	5 934	5 823	42	535	5 246	–1.9	–16.0	–10.2	–0.8
Italy	1 259	1 224	655	:	:	:	:	:	:	:	:
Lithuania	98	95	89	36	36	:	:	–59.6	–59.6	:	:
Luxembourg	10 467	8 956	8 506	8 987	:	642	8 346	5.7	:	–20.7	8.4
Hungary	9 952	7 175	8 135	7 857	35	5 002	2 820	–3.4	9.4	–1.5	–6.7
Netherlands	346 901	345 469	350 069	356 062	103 715	202 887	49 460	1.7	2.0	1.5	2.2
Austria	11 052	9 943	10 714	10 710	701	7 449	2 559	0.0	–43.5	5.5	6.1
Poland	2 820	3 143	2 574	3 185	2 229	952	3	23.7	35.6	2.9	–40.0
Romania	32 088	29 396	27 946	26 858	12 848	9 797	4 212	–3.9	–3.3	4.0	–19.5
Slovakia	10 103	8 211	8 242	8 107	25	2 613	5 469	–1.6	–35.9	–10.6	3.6
Finland	303	340	471	476	476	:	:	1.1	1.1	:	:
United Kingdom	3 456	3 478	3 693	3 704	3 704	:	:	0.3	0.3	:	:

(1) To avoid double counting, the international transport for EU aggregates is calculated by adding the international loadings plus the international unloadings for which the loading country is not in the EU. Then the total transport is the sum of the national and international transport.
(2) The growth rates for national and total have been calculated excluding data for Italy, as they are not available in 2013.
Note: Natl = national; Intl = international.
Source: Eurostat (online data code: iww_go_atygo)

Following the economic crisis in 2008, activity in inland waterways transport has been very volatile. When looking at the transport of goods in tonnes, the picture was similar for almost all countries with the exception of Austria, Poland and Slovakia. Indeed, Austria and Slovakia registered a fall (– 0.8 % and – 1.6 %, respectively) in 2013 of the volume of goods transported whereas the transport performance in tkm increased. This situation suggests that the distances covered by the vessels carrying the goods increased in 2013 compared to the previous year. On the other side, Poland observed a significant rise of the tonnes transported (+ 24 %) in 2013 while the transport performance was substantially reduced (– 30 %). This time, the situation suggests that the distances covered by the vessels carrying the goods decreased in 2013 compared to the previous year.

The total gross weight of goods handled in EU maritime ports is estimated at 3.7 billion tonnes in 2013. Despite the slight decrease in the seaborne tonnage compared with 2012, there are signs of a renewed recovery in EU port freight activity emerging in the third and fourth quarters of 2013. Even so, the gross weight of goods handled in the EU-28 ports in 2013 was still lower than the volumes handled before the economic downturn in Europe in 2009.

The growing importance of the international transport segment is reflected in air freight and mail transport figures at EU level. Growths of 2.5 % and 0.5 % were recorded for international intra-EU and extra-EU respectively in 2013 compared with 2012. In contrast, domestic freight and mail transport recorded a decrease of 6.9 % over the same period. The evolution of freight and mail transport by air between 2012 and 2013 varies significantly at country level, with growths ranging from – 12.2 % in Estonia to + 66.8 % in Latvia.

Table 3.2.4: Gross weight of seaborne goods handled in all ports, by country, 2000–13

	2000	2005	2010	2011	2012	2013			Growth 2012–13 (%)
	(million tonnes)								
	Total					Total	Inwards	Outwards	
EU-28	:	3 743.1	3 670.3	3 767.9	3 737.2	3 715.6	2 244.0	1 471.6	–0.6
Belgium	179.4	206.5	228.2	232.8	224.0	228.1	123.7	104.5	1.8
Bulgaria	:	24.8	22.9	25.2	26.0	28.8	12.5	16.3	10.9
Denmark	96.5	99.7	87.1	92.6	87.8	87.8	49.7	38.1	0.0
Germany	242.5	284.9	276.0	296.0	298.8	297.3	174.7	122.6	–0.5
Estonia	:	46.5	46.0	48.5	43.5	42.9	11.1	31.8	–1.3
Ireland	45.3	52.1	45.1	45.1	47.6	46.7	31.4	15.3	–1.9
Greece	127.8	151.3	129.1	135.3	153.3	161.0	87.0	74.0	5.0
Spain	234.9	400.0	376.4	403.7	422.2	403.7	245.0	158.7	–4.4
France ([1])	325.8	341.5	316.1	322.3	303.3	304.2	205.6	98.6	0.3
Croatia	16.9	26.2	24.3	21.9	19.0	19.4	11.3	8.1	2.1
Italy	446.6	508.9	494.1	499.9	476.8	457.1	297.6	159.4	–4.1
Cyprus	:	7.3	7.0	6.6	6.2	7.2	4.7	2.5	15.0
Latvia	:	59.7	58.7	67.0	72.7	67.1	7.7	59.5	–7.7
Lithuania	:	26.1	37.9	42.7	41.0	39.8	16.1	23.6	–3.1
Malta	:	3.5	3.8	3.3	3.3	3.1	2.8	0.3	–6.8
Netherlands	405.8	460.9	538.7	532.7	549.6	548.4	388.2	160.2	–0.2
Poland	:	54.8	59.5	57.7	58.8	64.3	35.0	29.3	9.3
Portugal	56.4	65.3	66.0	67.5	67.9	78.2	45.3	33.0	15.3
Romania	:	47.7	38.1	38.9	39.5	43.6	16.8	26.8	10.3
Slovenia	:	12.6	14.6	16.2	16.9	17.2	11.6	5.6	1.6
Finland	80.7	99.6	109.3	115.5	105.1	105.1	53.7	51.4	0.0
Sweden	159.3	178.1	179.6	177.1	173.0	161.6	86.7	74.9	–6.6
United Kingdom	573.1	584.9	511.9	519.5	500.9	503.0	325.8	177.2	0.4
Iceland ([2])	5.2	5.7	2.7	2.8	2.8	:	:	:	:
Norway	:	201.7	195.1	199.0	206.0	209.3	69.3	140.0	1.6
Montenegro	:	:	:	:	1.2	1.3	0.7	0.6	8.9
Turkey	:	:	338.1	359.1	374.7	379.4	218.8	160.6	1.3

([1]) Data have been partially estimated by Eurostat for some French ports in 2010 and 2011.
([2]) From 2010, only Reykjavik.
Source: Eurostat (online data code: mar_mg_aa_cwhd)

Table 3.2.5: Overview of air freight and mail carried, by country, 2013

	Total		National		International intra-EU-28 transport		International extra-EU-28 transport	
	Volume of freight and mail (million tonnes)	Growth 2012–13 (%)	Volume of freight and mail (million tonnes)	Growth 2012–13 (%)	Volume of freight and mail (million tonnes)	Growth 2012–13 (%)	Volume of freight and mail (million tonnes)	Growth 2012–13 (%)
EU-28 (1)	13 386.8	0.5	543.0	–6.9	2 146.5	2.5	10 697.4	0.5
Belgium	957.0	–0.7	0.3	34.1	304.8	3.5	652.0	–2.5
Bulgaria	19.6	5.6	0.0	–18.1	13.9	5.4	5.7	6.5
Czech Republic	58.1	–1.0	0.8	–0.9	22.6	–5.9	34.7	2.5
Denmark	149.0	–10.4	0.8	4.2	53.2	–12.3	95.0	–9.4
Germany	4 231.5	0.3	117.5	–5.1	937.6	1.4	3 176.4	0.2
Estonia	20.9	–12.2	–	–	7.5	1.2	13.4	–18.3
Ireland	127.4	0.5	4.8	13.7	71.6	–5.8	51.0	9.4
Greece	66.1	–5.6	8.0	–2.8	39.4	–6.6	18.6	–4.7
Spain	580.8	–2.1	59.2	–6.5	160.9	–1.1	360.8	–1.8
France	*1 787.7*	*–1.2*	*159.0*	*–12.3*	*427.5*	*5.2*	*1 201.2*	*–1.8*
Croatia	6.9	–1.5	0.7	–19.2	4.6	–0.8	1.6	6.9
Italy	814.5	3.0	38.9	–14.6	254.9	3.3	520.7	4.5
Cyprus	28.3	2.7	–	–	19.4	–2.1	9.0	14.9
Latvia	52.5	66.8	–	–	9.6	29.0	42.9	78.5
Lithuania	15.9	10.6	–	–	8.3	15.2	7.6	5.8
Luxembourg	673.4	9.4	–	–	52.4	24.5	620.9	8.3
Hungary	64.2	3.7	–	–	39.4	1.1	24.8	7.9
Malta	16.0	–2.8	–	–	11.1	–8.1	4.9	11.6
Netherlands	1 620.0	3.6	–	–	49.0	8.6	1 571.1	3.5
Austria	196.5	–0.5	0.3	–15.9	51.5	7.6	144.6	–3.1
Poland	77.5	3.8	6.2	–6.8	44.8	5.9	26.6	3.0
Portugal	126.6	7.6	15.2	–0.1	47.1	–0.4	64.3	16.6
Romania	30.6	7.3	0.0	–41.3	23.7	6.3	6.8	11.7
Slovenia	8.0	5.2	–	–	6.5	8.4	1.5	–6.5
Slovakia	20.6	–1.5	0.0	–	20.2	–1.5	0.3	–2.3
Finland	192.5	–1.6	2.8	–10.3	69.0	9.8	120.7	–6.9
Sweden	130.9	–7.7	15.5	–2.3	53.2	–6.7	62.2	–9.8
United Kingdom	2 369.9	–2.4	112.7	0.2	398.9	–4.4	1 858.2	–2.1

(1) Double counting is excluded in the intra-EU-28 and total EU-28 aggregates by taking into consideration only departure declarations.
Source: Eurostat (online data code: avia_gooc)

3.3 Passenger transport

Passenger cars accounted for 83.3 % of inland passenger transport in the EU-28 in 2012, with motor coaches, buses and trolley buses (9.2 %) and trains (7.4 %) both accounting for less than a tenth of all traffic (as measured by the number of inland passenger-kilometres (pkm) travelled by each mode). Between 2002 and 2012 there was a marked increase in the relative importance of the use of passenger cars among many of the Member States that joined the EU in 2004 or 2007, in particular in Bulgaria, Estonia, Slovakia and Lithuania.

Among EU Member States the relative importance of the use of motor coaches, buses and trolley buses was lowest in the Netherlands where this mode of transport accounted for just 3.0 % of the modal split, while in Germany, France and the United Kingdom their share was below 6 %.

Among the EU Member States the modal share of trains in total inland passenger transport was highest in 2012 in Austria (11.5 %), followed by Hungary and Denmark (both 10.1 %), France (9.5 %), Sweden (9.1 %) and Germany (9.0 %); the share of trains was substantially higher in Switzerland (17.2 %).

Based on the latest data available (generally for 2013), there were 387 billion pkm travelled on national railway networks of the EU-27 (including 2011 data for Belgium and 2012 data for Denmark, Germany, Ireland, Greece, Luxembourg, Hungary and Finland). This figure was considerably higher than the 25 billion pkm travelled on international journeys (the comparison is based on the same reference years for each EU Member State).

In order to compare the relative importance of rail transport between countries, the data can be normalised by expressing the level of passenger traffic in relation to population. On average each inhabitant of France, Sweden, Austria, Germany and Denmark (data for the latter two countries refer to 2012) travelled more than 1 000 pkm in 2013 on the national railway network; this was well below the average recorded in Switzerland (2 141 pkm per inhabitant in 2013). By contrast, among the EU Member States in 2013 the lowest average distances travelled on national railway networks were recorded in Lithuania (85 pkm per inhabitant) and Greece (75 pkm in 2012), while the averages in Turkey (49 pkm) and the former Yugoslav Republic of Macedonia (39 pkm) were lower still.

Table 3.3.1: Modal split of inland passenger transport, 2002 and 2012 ([1])
(% of total inland passenger-km)

	2002			2012		
	Passenger cars	Motor coaches, buses and trolley buses	Trains	Passenger cars	Motor coaches, buses and trolley buses	Trains
EU-28	83.6	9.6	6.8	83.3	9.2	7.4
Belgium ([2])	82.3	11.4	6.3	80.4	12.4	7.1
Bulgaria	*61.2*	33.4	5.4	*80.1*	16.9	3.0
Czech Republic ([2])	73.8	18.7	7.5	*74.8*	16.8	*8.4*
Denmark	79.1	11.7	9.2	80.2	9.7	10.1
Germany	86.2	6.7	7.1	85.4	5.7	9.0
Estonia	*71.7*	26.5	1.8	*83.6*	14.6	1.8
Ireland	*81.0*	*15.6*	3.5	*82.8*	*14.4*	2.8
Greece	*75.1*	*23.0*	1.9	*81.6*	*17.7*	0.7
Spain	82.5	12.3	5.2	80.7	13.7	5.6
France	86.4	5.0	8.7	85.1	5.4	9.5
Croatia	*82.2*	13.3	4.5	85.8	10.7	3.5
Italy	83.3	11.1	5.6	78.9	15.0	6.1
Cyprus	*77.4*	*22.6*	–	*81.3*	*18.7*	–
Latvia	*76.6*	18.6	4.8	76.9	18.3	4.8
Lithuania	82.0	15.4	2.5	*91.0*	8.2	0.8
Luxembourg	*85.7*	*10.5*	3.9	*83.0*	*12.4*	4.6
Hungary ([2])	61.1	25.0	13.9	*67.7*	22.2	10.1
Malta	*79.4*	*20.6*	–	*82.5*	*17.5*	–
Netherlands	86.4	4.3	9.3	88.2	3.0	8.8
Austria ([3])	79.4	10.9	9.7	78.5	10.0	11.5
Poland ([4])	*77.0*	13.5	9.5	*84.6*	*10.7*	4.8
Portugal ([4])	*84.9*	10.9	4.3	*89.3*	*6.6*	4.1
Romania ([4])	*75.8*	12.3	11.9	*82.2*	*12.9*	4.9
Slovenia	83.9	13.2	3.0	86.7	*11.1*	2.3
Slovakia	66.8	26.0	7.2	77.8	15.1	7.1
Finland	84.1	11.1	4.8	84.9	9.8	5.3
Sweden ([2])	84.0	8.2	7.8	84.3	6.7	9.1
United Kingdom ([4])	88.4	*6.4*	5.2	86.0	*5.8*	8.2
Iceland	88.6	11.4	–	*88.5*	11.5	–
Norway	89.0	6.9	4.1	89.7	5.6	*4.7*
Switzerland	80.1	5.1	14.8	77.7	5.1	17.2
FYR of Macedonia	*81.3*	16.7	1.9	*77.8*	20.7	1.5
Turkey ([2])	*49.0*	*47.8*	3.1	61.6	36.6	1.7

([1]) Excluding powered two-wheelers.
([2]) Passenger cars: break in series.
([3]) The railway in Liechtenstein is owned and operated by the Austrian ÖBB and included in their statistics.
([4]) Motor coaches, buses and trolley buses: break in series.
Source: Eurostat (online data code: tran_hv_psmod).

Table 3.3.2: Rail passenger transport, by country, 2011–13
(million passenger-km)

	National			International		
	2011	2012	2013	2011	2012	2013
Belgium	9231	:	:	1268	:	:
Bulgaria	2032	1848	1795	27	22	26
Czech Republic	*6408*	6793	6804	*261*	402	709
Denmark	5987	6155	:	408	379	:
Germany	:	88794	:	:	5124	:
Estonia	228	218	201	15	17	22
Ireland	1607	1549	:	32	29	:
Greece	:	832	:	:	0	:
Spain	22478	22022	*23509*	167	147	*133*
France	80963	80507	79658	10335	10698	10827
Croatia	1405	1029	809	52	51	36
Italy	44915	45018	*46902*	1029	*735*	806
Cyprus	–	–	–	–	–	–
Latvia	662	640	640	71	77	81
Lithuania	249	255	*252*	21	*24*	26
Luxembourg (1)	246	270	:	103	103	:
Hungary (1)	7397	7357	:	365	411	:
Malta	–	–	–	–	–	–
Netherlands	:	:	:	:	:	:
Austria	8361	8768	9896	1458	1480	1403
Poland	17103	16598	15971	530	512	482
Portugal	4143	3713	3548	94	90	102
Romania	4998	4474	4303	47	44	49
Slovenia	641	614	*636*	48	45	*43*
Slovakia	2222	2243	2255	209	216	230
Finland	3768	3907	:	115	128	:
Sweden	10828	11330	11367	551	462	491
United Kingdom	56853	59142	60115	1753	1813	1861
Norway	3016	3047	*3215*	60	45	*45*
Switzerland	17322	17110	*17314*	997	1006	*963*
FYR of Macedonia	145	99	80	1	1	1
Turkey	5803	4541	3731	80	57	44

(1) 2012: break in series.
Source: Eurostat (online data codes: rail_pa_typepkm and demo_gind)

Table 3.3.3: Overview of air passenger carried, by country, 2013

	Total		National		International intra-EU-28 transport		International extra-EU-28 transport	
	Number of passengers (1 000)	Growth 2012–13 (%)	Number of passengers (1 000)	Growth 2012–13 (%)	Number of passengers (1 000)	Growth 2012–13 (%)	Number of passengers (1 000)	Growth 2012–13 (%)
EU-28 (1)	842 220	1.7	152 275	–4.8	364 625	2.7	325 320	3.8
Belgium	26 387	1.8	40	0.2	18 056	2.6	8 291	0.1
Bulgaria	7 078	3.8	182	–11.1	4 911	0.3	1 985	15.7
Czech Republic	11 892	1.3	83	–8.4	7 987	–0.1	3 822	4.6
Denmark	27 453	3.5	1 890	–1.6	17 955	4.5	7 608	2.4
Germany	180 782	1.2	22 617	–3.8	93 635	2.6	64 530	1.1
Estonia	1 959	–11.1	19	–23.4	1 481	–13.4	458	–1.9
Ireland	24 604	4.3	57	6.4	21 118	3.2	3 429	11.6
Greece	33 621	6.5	5 111	–2.0	21 305	4.3	7 205	21.3
Spain	157 732	–1.3	28 599	–13.9	103 814	1.4	25 319	4.6
France	138 085	2.3	28 730	1.0	60 038	1.7	49 317	3.7
Croatia	5 722	5.5	441	–4.2	4 286	10.2	995	–7.1
Italy	115 272	–0.7	28 416	–6.3	63 836	0.4	23 019	4.1
Cyprus	7 011	–4.3	–	–	4 829	–11.0	2 182	14.6
Latvia	4 782	0.6	0.3	–16.3	3 328	0.5	1 454	0.7
Lithuania	3 482	10.0	0.1	33.3	2 811	5.5	671	33.7
Luxembourg	2 169	14.5	1.0	18.6	1 803	18.0	365	–0.3
Hungary	8 441	0.1	0.3	–	6 859	–3.8	1 582	21.5
Malta	4 032	10.5	0.3	–21.2	3 544	9.0	487	22.1
Netherlands	58 077	4.3	1	–35.0	34 199	4.5	23 877	4.0
Austria	25 750	–0.8	621	–2.1	17 095	–2.1	8 034	2.1
Poland	23 274	6.8	1 217	–31.2	17 188	11.7	4 869	5.1
Portugal	29 694	5.3	2 838	0.9	21 108	6.4	5 748	3.9
Romania	10 017	3.5	566	–13.8	8 201	5.2	1 251	2.3
Slovenia	1 266	8.4	–	–	713	8.6	553	8.1
Slovakia	1 557	–0.4	20	–33.5	1 213	0.1	324	0.9
Finland	16 565	0.6	2 440	–10.4	10 300	2.1	3 826	4.7
Sweden	31 443	3.6	7 064	0.6	18 372	3.8	6 007	6.8
United Kingdom	210 469	3.6	21 318	2.6	121 036	3.9	68 114	3.6

(1) Double counting is excluded in the intra-EU-28 and total EU-28 aggregates by taking into consideration only departure declarations.
Source: Eurostat (online data code: avia_paoc)

In 2013, the total number of passengers travelling by air in the EU could be established at 842 million, an increase of 1.7 % compared with 2012. The total growth of air passengers by EU Member State between 2012 and 2013 shows a disparity that is particularly marked at country level, with year-on-year growths ranging from – 11.1 % in Estonia to + 14.5 % in Luxembourg. In 2013, London/Heathrow remained the largest EU-28 airport in terms of passenger transport.

The year-on-year monthly growth in air passenger transport for 2013 in the EU-28 underlines the progressive growth in air transport passengers in 2013: while the first quarter of 2013 recorded a decrease of 1.4 % compared to the corresponding quarter of 2012, the remaining quarters show a steady increase of the growth between 2012 and 2013 (+ 1.9 %, + 2.4 % and + 3.2 % respectively). The intra-EU share in total transport could be established at 43 % — it was the main destination ahead of extra-EU transport (39 %) and domestic passenger transport (18 %).

The total number of passengers embarking and disembarking in EU-28 ports is estimated at 400 million in 2013, a rise of 0.5 % compared with 2012 which might signal an end to the falling trend observed in the number of seaborne passengers in recent years.

Unlike goods movements (where broadly 60 % of goods are unloaded and 40 % loaded in EU ports), the difference between the number of passengers embarking ('outward movements') and disembarking ('inward movements') in European ports is normally small. This reflects the fact that seaborne passenger transport in Europe is mainly carried out by national or intra-EU ferry services, with the same passengers being counted twice in the statistics (once when they embark the ferry in one port and once when they disembark in another).

Italy maintained its position as the leading seaborne passenger transport country in the EU with more than 73 million passengers embarking and disembarking in 2013, followed by Greece with just under 73 million passengers embarking and disembarking. While Italy recorded a 4.6 % decrease in the number of passengers passing through its ports in 2013, the number of seaborne passengers passing through Greek ports was almost the same in 2012 and 2013.

Table 3.3.4: Number of seaborne passengers embarked and disembarked in all ports, by country, 2010–13

	2010	2011	2012	2013					Growth 2012–13 (%)
	(1 000 passengers)								
	Total			Total	Inwards	Out-wards	Cruise	Non-cruise	
EU-28	424 825	412 744	397 948	399 988	200 222	199 766	13 437	386 552	0.5
Belgium	829	824	850	859	430	429	467	391	1.0
Bulgaria	1	1	1	2	1	1	1	1	232.9
Denmark	41 993	41 527	40 965	40 968	20 740	20 228	438	40 530	0.0
Germany	28 780	29 233	29 481	29 848	14 729	15 119	1 267	28 581	1.2
Estonia	11 186	11 846	12 455	12 917	6 441	6 476	16	12 901	3.7
Ireland	3 089	2 906	2 758	2 747	1 362	1 385	2	2 745	– 0.4
Greece	86 189	79 183	72 899	72 918	36 488	36 430	446	72 471	0.0
Spain	21 215	21 868	21 629	23 253	11 629	11 624	2 341	20 912	7.5
France	27 218	25 552	24 815	25 637	12 885	12 752	786	24 851	3.3
Croatia	25 124	26 947	26 706	27 355	13 666	13 689	15	27 340	2.4
Italy	87 658	81 895	76 735	73 238	36 565	36 672	5 300	67 937	– 4.6
Cyprus	107	92	91	99	50	49	97	2	8.6
Latvia	676	786	826	872	432	441	0	872	5.6
Lithuania	251	281	286	280	138	142	0	280	– 2.3
Malta	8 300	8 621	8 535	9 170	4 588	4 583	102	9 068	7.4
Netherlands (1)	1 994	1 770	1 706	1 773	940	833	0	1 773	3.9
Poland	2 601	2 528	2 358	2 201	1 089	1 112	0	2 201	– 6.7
Portugal	701	677	565	555	278	276	57	497	– 1.9
Romania	0	0	0	0	0	0	0	0	91.3
Slovenia	39	36	34	28	14	14	0	28	– 17.1
Finland	17 867	18 074	18 264	18 524	9 311	9 213	4	18 520	1.4
Sweden	30 185	30 094	29 471	29 146	14 742	14 403	62	29 083	– 1.1
United Kingdom	28 824	28 002	26 516	27 598	13 702	13 897	2 032	25 566	4.1
Iceland	:	:	:	:	:	:	:	:	:
Norway (2)	5 876	6 130	6 003	5 975	3 054	2 922	273	5 702	– 0.5
Montenegro	:	:	319	184	107	77	0	184	– 42.3
Turkey	1 577	1 842	1 828	2 058	1 020	1 038	479	1 579	12.6

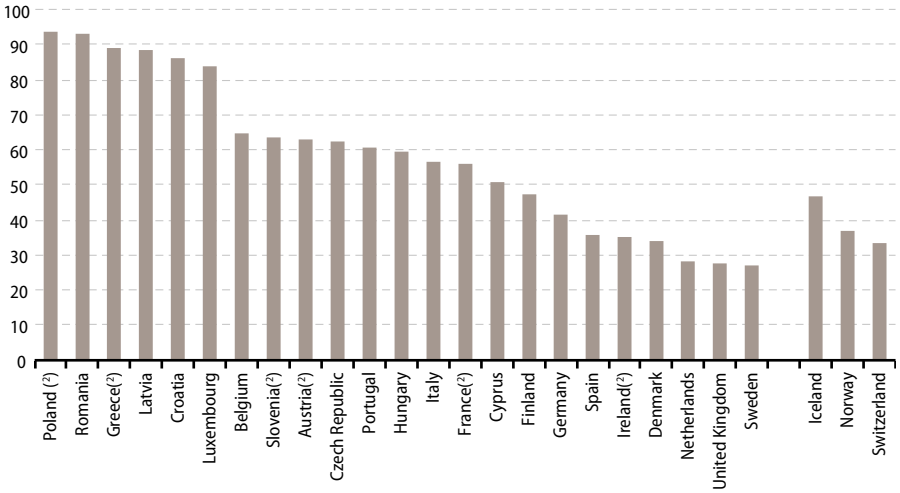
(1) Data exclude cruise passengers.
(2) Data on international maritime passenger transport only.
Source: Eurostat (online data codes: mar_mp_aa_cph, mar_mp_aa_cphd and mar_pa_aa)

3.4 Transport safety

Data on road accidents are collected through CARE, the European centralised database on road accidents (managed by DG MOVE) resulting in death or injury across the EU, and are available for 27 out of the 28 EU Member States (data are not available for Lithuania) for the period 1999–2013. Data for all EU-27 countries are only available for 2009. Since 2001, the number of persons killed in road accidents has been decreasing regularly. Whereas there were 54 439 persons killed in road accidents in the EU-27, in 2012 this figure had reached 27 101 (data for 23 out of 27 EU Member States). In 2013, Germany and Italy reported a high number of persons killed (over 3 000). In terms of persons killed per million inhabitants, Poland and Romania held the highest values. In 2013 the percentage of persons killed between the ages of 18 and 24 ranged from 8 % (Hungary) to 41 % (Cyprus). On average 34 % of the persons killed were aged between 25 and 49 (2013 data; average value for 20 EU Member States).

In 2013, on average 9 % of the total road accident fatalities were killed on motorways (data for 18 EU Member States), 38 % on urban roads (data for 17 EU Member States) and 53 % on rural roads (data for 17 EU Member States). The majority of people killed in road accidents were drivers.

Figure 3.4.1: People killed in road accidents, 2013 ([1])
(per million inhabitants)



([1]) Data not available for Bulgaria, Estonia, Lithuania, Malta and Slovakia.
([2]) 2012 data.
Source: Eurostat (online data codes: tran_sf_roadse and demo_gind)

4

Environment indicators

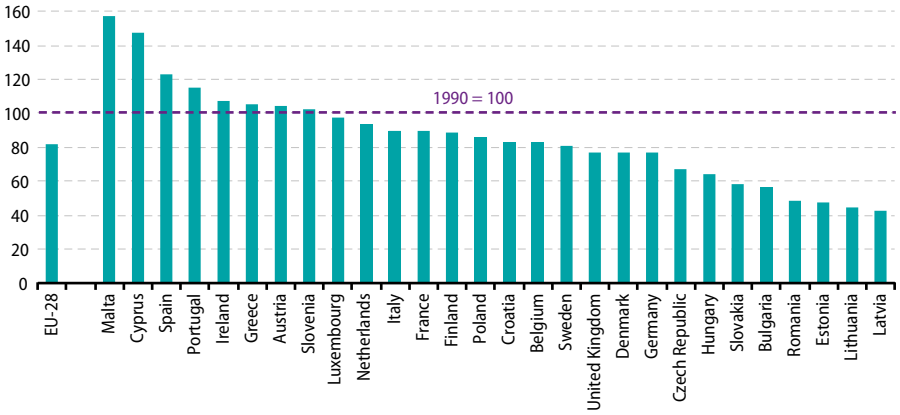
4.1 Emissions of greenhouse gases and air pollutants

Greenhouse gas emissions in the EU-28 (including international aviation but excluding LULUCF), stood at 4 682.9 million tonnes of CO_2-equivalents in 2012. This figure marked an overall reduction of 17.9 % when compared with 1990, or some 1 019 million tonnes of CO_2 -equivalents. Without international aviation, EU emissions were down 19.2 % below 1990 levels.

There was a general downward trend in emissions during the 1990–99 period (aside from a relative peak in 1996, when a cold winter led to an increase in heating requirements). From 1999 to 2006 the evolution of greenhouse gas emissions within the EU-28 remained relatively unchanged, although it started falling at a modest pace through to 2008. The year 2009 saw a sharp drop in emissions (7.3 % or 375.9 million tonnes of CO_2-equivalent in just one year) as a consequence of the global financial and economic crisis and the resulting reduced industrial activity. Emissions rose again in 2010 and decreased in 2011 and 2012. Incidentally, 2012 marked the year with the lowest emissions on record since the beginning of the time series.

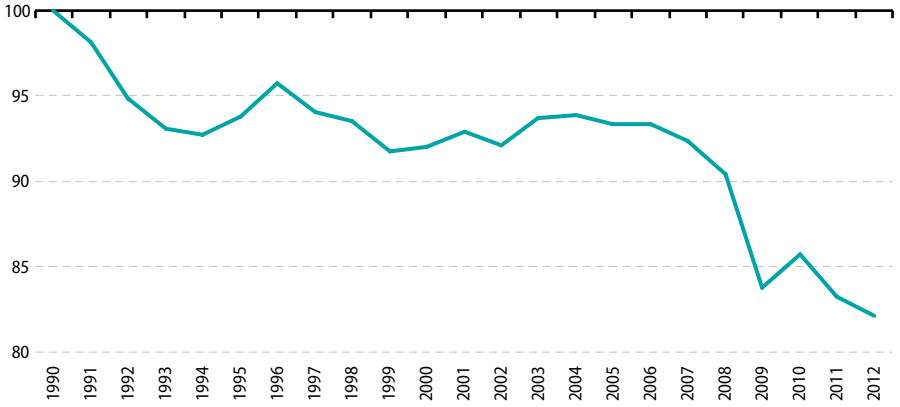
Across EU Member States in 2012, greenhouse gas emissions were the highest in Germany (20.6 % of the EU-28 total or 964.6 million tonnes of CO_2-equivalents in 2012), while the United Kingdom (13.1 %), France (10.8 %) and Italy (10.0 %) were the only other EU Member States to record double-digit shares. In 2012, the biggest decreases compared to 1990 were reported for several central and eastern EU Member States: Latvia (– 57.1 %), Lithuania (– 55.6 %), Estonia (– 52.6 %), Romania (– 52.0 %), Bulgaria (– 44.1 %), Slovakia (– 41.3 %), Hungary (– 36.3 %) and the Czech Republic (– 32.7 %). The combined share in the EU total of these countries was 10.1 %, i.e. their substantial relative reductions contributed little to the overall EU emissions. On the other side of the spectrum, the biggest increases compared to 1990 were reported for Malta (+ 57.3 %), Cyprus (+ 47.7 %), Spain (+ 22.5 %), Portugal (+ 14.9 %), Ireland (+ 7.0 %) and Greece (+ 5.7 %). These six EU Member States together accounted for 13.1 % of the total EU greenhouse gas emissions in 2012.

Figure 4.1.1: Total greenhouse gas emissions (including international aviation and excluding LULUCF), by country, 2012
(1990 = 100)



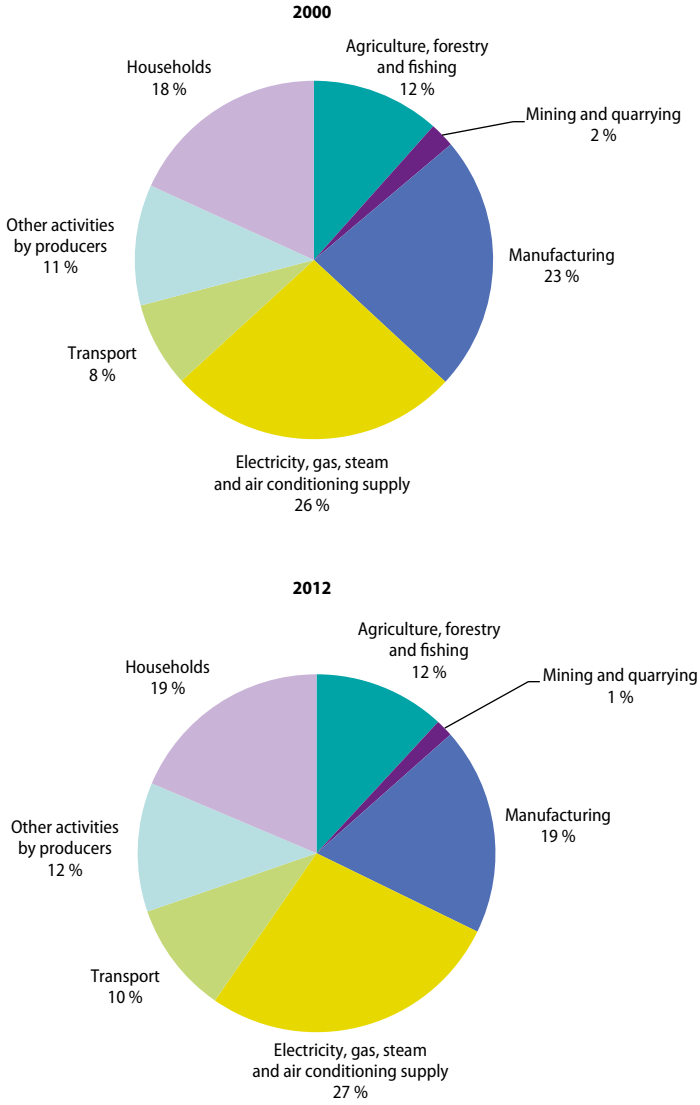
Source: Eurostat (online data code: env_air_gge), European Energy Agency, European Topic Centre on Air and Climate

Figure 4.1.2: Greenhouse gas emissions (including international aviation and excluding LULUCF) trend, EU-28, 1990–2012
(1990 = 100)



Source: Eurostat (online data code: env_air_gge), European Energy Agency, European Topic Centre on Air and Climate

Figure 4.1.3: Greenhouse gas (CO_2, CH_4 and N_2O) emissions by economic activity, EU-27, 2000 and 2012 ([1])
(% of total emissions in CO_2 equivalents)



([1]) 2012: estimates.
Source: Eurostat (online data codes: env_ac_ainah_r1 and env_ac_ainah_r2)

Table 4.1.1: Greenhouse gas emissions by economic activity, by country, 2012
(1 000 tonnes of CO_2 equivalents)

	Total — all NACE activities excluding households	Agriculture, forestry & fishing (A)	Mining & quarrying (B)	Manufacturing (C)	Electricity, gas, steam & air conditioning supply (D)	Transportation and storage (H)	Other sectors (E,F,G, I, J,K,L,M,N, O,P,Q,R, S,T,U)	Households
EU-28	3 802 402	556 596	73 571	877 818	1 278 293	501 509	514 614	870 641
Belgium	88 931	11 505	32	31 008	18 479	9 633	18 274	26 738
Bulgaria	53 659	5 208	461	6 063	33 678	6 344	1 906	6 918
Czech Republic	107 813	9 203	7 567	18 037	53 459	8 803	10 744	8 140
Denmark	82 176	11 913	1 845	5 887	13 699	42 495	6 337	8 137
Germany	811 653	77 135	11 495	179 908	356 855	83 167	103 093	183 833
Estonia	18 169	1 392	107	1 577	12 696	1 479	918	1 163
Ireland	45 755	18 907	169	5 202	12 381	3 034	6 061	11 788
Greece	90 741	13 230	63	10 012	52 077	7 941	7 418	14 575
Spain	270 941	43 590	3 106	78 989	77 509	38 422	29 325	61 699
France	341 250	101 623	1 058	98 058	32 157	40 141	68 212	126 576
Croatia	21 014	4 083	530	6 264	5 289	2 284	2 563	5 115
Italy	356 607	41 997	2 177	100 352	112 451	51 068	48 563	101 845
Cyprus	7 397	900	41	1 024	3 560	539	1 333	1 944
Latvia	10 365	2 904	40	1 589	2 023	2 261	1 548	1 859
Lithuania	21 702	5 221	28	6 137	3 449	5 449	1 417	3 696
Luxembourg	7 512	723	7	1 426	1 183	3 049	1 122	1 537
Hungary	48 870	9 972	414	9 184	17 128	2 649	9 524	14 559
Malta	5 586	107	11	71	2 065	3 149	182	349
Netherlands	185 568	25 692	3 135	43 911	49 220	31 442	32 168	40 362
Austria	60 440	9 015	1 356	27 192	9 253	6 453	7 171	15 424
Poland	352 093	53 026	13 985	65 961	156 210	24 588	38 322	47 102
Portugal	55 530	8 923	197	16 137	15 083	3 862	11 328	13 041
Romania	105 512	19 496	2 965	27 404	35 201	9 502	10 944	14 943
Slovenia	16 000	2 106	339	2 173	6 108	4 268	1 007	3 499
Slovakia	37 105	3 201	976	17 954	6 121	4 332	4 521	5 105
Finland	57 028	7 692	200	14 264	17 741	10 006	7 125	5 893
Sweden	55 106	10 007	878	15 582	7 497	12 836	8 306	9 652
United Kingdom	487 876	57 825	20 385	86 450	165 721	82 314	75 181	135 149
Norway	57 494	6 608	14 161	11 963	1 565	19 706	3 492	5 249
Switzerland	34 589	6 318	102	8 687	600	7 833	11 049	19 549
Turkey	334 862	36 160	3 554	101 210	121 902	20 140	51 896	99 047

Source: Eurostat (online data code: env_ac_ainah_r2)

In 2012, the largest share of the EU-27's greenhouse gas emissions was made up by the supply of electricity, gas, steam and air conditioning, accounting for 27 % of the total. Emissions from the supply of electricity, gas, steam and air conditioning result from fossil fuel combustion for electricity generation and district heating, but do not include emissions from combustion in individual houses or households. The share of manufacturing in all emissions was 19 %, meaning that manufacturing and the supply of electricity, gas, steam and air conditioning together contributed nearly half (46 %) of all greenhouse gas emissions in the EU-27 in 2012. Households accounted for 19 % of greenhouse gas emissions, while agriculture, forestry and fishing were responsible for a further 12 % which was the same as all remaining NACE activities combined (including construction and services but excluding transport).

While transport services (including land, water and air transport services) had a relatively low share of all emissions in 2012 (10 %) it should be noted that this encompasses only commercial transport (for hire and reward) and so excludes the operation of motor vehicles by businesses not operating in transport activities as well as the operation of motor vehicles by private households. The remaining 1 % share was for mining and quarrying.

Among the EU Member States, the magnitude of greenhouse gas emissions made by the various economic activities and households varied. These differences were, in part, due to different economic structures and different mixes of non-renewable and renewable energy sources. In most EU Member States businesses supplying energy, gas, steam and air conditioning were the main producers of greenhouse gases in 2012, followed by manufacturing. The most notable exceptions were: Ireland and Latvia where agriculture, forestry and fishing were the main emitters; Denmark, Luxembourg and Malta where transport was the main source; and France where households were the main source.

Table 4.1.2: Global and domestic CO_2 emissions induced by final use of products, EU-27, 2011 (1)

Product group	Final consumption expenditure	Gross capital formation	Exports	Final use, total	
	(kg of CO_2 per inhabitant)				(%)
Electricity, gas, steam and air-conditioning	998	-15	92	1 075	11.2
Constructions and construction works	31	663	4	698	7.2
Food products, beverages and tobacco products	436	-2	54	488	5.1
Coke and refined petroleum products	238	13	122	373	3.9
Motor vehicles, trailers and semi-trailers	127	72	105	304	3.2
Chemicals and chemical products	81	21	199	301	3.1
Public administration and defence services; compulsory social security services	262	2	1	265	2.7
Air transport services	156	0	96	252	2.6
Retail trade services, except of motor vehicles and motorcycles	225	14	12	251	2.6
Machinery and equipment n.e.c.	5	119	124	248	2.6
Accommodation and food services	238	0	5	243	2.5
Land transport services and transport services via pipelines	204	8	28	240	2.5
Wholesale trade services, except of motor vehicles and motorcycles	154	32	51	237	2.5
Human health services	196	0	0	197	2.0
Water transport services	57	1	122	180	1.9
Textiles, wearing apparel and leather products	109	2	29	140	1.4
Products of agriculture, hunting and related services	95	19	16	129	1.3
Education services	124	0	1	125	1.3
Other products	1 151	376	725	2 252	23.4
Total products	4 886	1 326	1 786	7 998	83.1
Direct emissions by private households	1 629	0	0	1 629	16.9
Total products plus direct emissions by private households	6 515	1 326	1 786	9 627	100.0

(1) Estimates.
Source: Eurostat (online data codes: env_ac_io2 and demo_gind)

Extended supply, use and input–output tables have been used to estimate CO_2 emissions induced by the final use of products within the EU-27 in 2011. Besides the CO_2 emitted by industries while processing products for final use, the estimates presented also take into account the CO_2 that is 'embedded' within the EU's imports; these emissions arise from the worldwide production chains of goods that are imported into the EU-27. CO_2 emissions that are embedded within products that are made in the EU but exported outside of the EU-27 are, in a similar vein, included in the accounts for non-EU Member States.

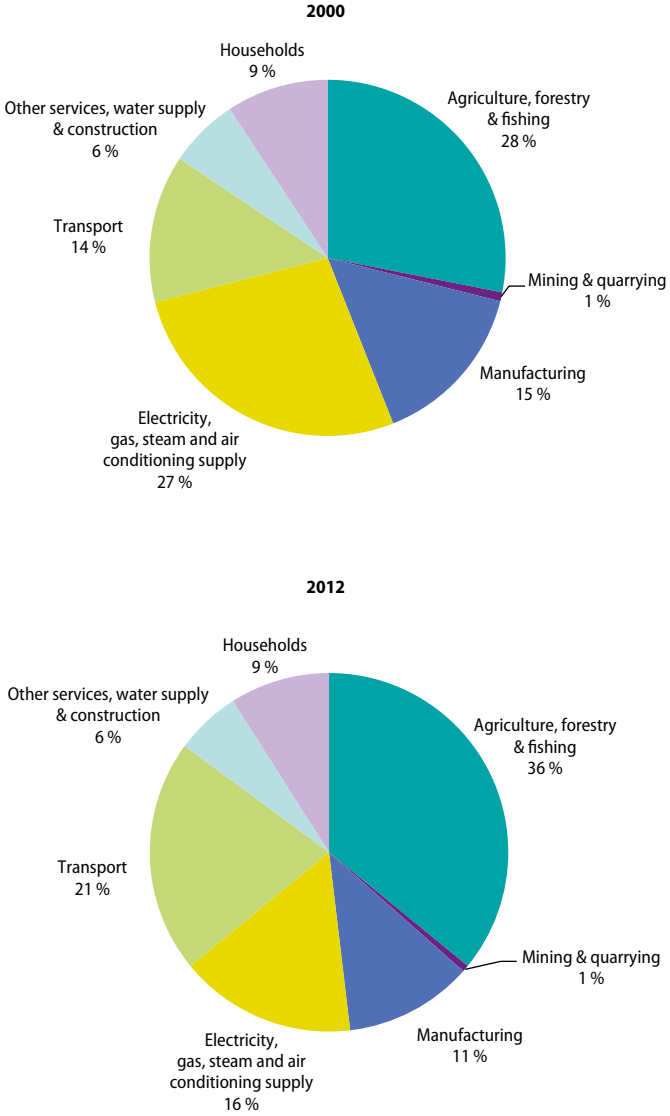
The EU-27 total of 7.8 tonnes of CO_2 emissions per inhabitant in 2011 was composed of three main elements:

- some 4.9 tonnes per inhabitant resulted from the consumption by households and governments of goods and services;
- a further 1.6 tonnes per inhabitant resulted from direct CO_2 emissions from private households in the EU-27 (for example, through the burning of fossil fuels for private vehicles or for heating);
- another 1.3 tonnes per inhabitant resulted from (production related to) fixed investments — also referred to as gross capital formation — in the EU-27 economy.

There was a slight reduction in CO_2 emissions per inhabitant in the EU-27 between 2009 and 2011, from an average of 8.0 tonnes to 7.8 tonnes per inhabitant. Direct CO_2 emissions from private households fell, on average, by 0.2 tonnes per inhabitant during this period.

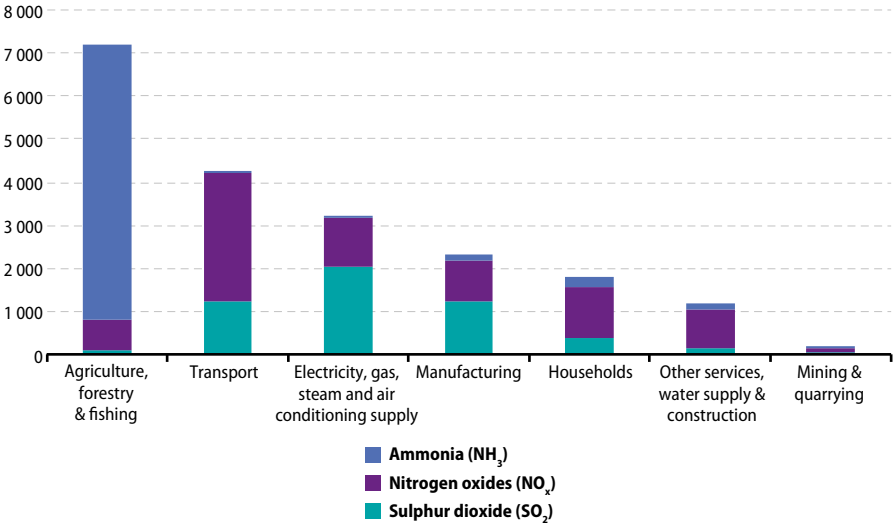
The different product groups (of CPA 2008) and categories of final use are ranked according to their importance in the terms of their respective share of emissions: electricity, gas, steam and air-conditioning; constructions and construction works; food products, beverages and tobacco products; and coke and refined petroleum products ranked as the four product groups with the highest levels of emissions per inhabitant in 2011 as a result of their final use.

Figure 4.1.4: Acidifying potential emissions, analysis by economic activity, EU-27, 2000 and 2012
(% of total emissions of tonnes of SO_2 equivalents of SO_2, NO_x and NH_3)



Source: Eurostat (online data codes: env_ac_ainah_r1 and env_ac_ainah_r2)

Figure 4.1.5: Acidifying potential emissions, analysis by economic activity, EU-27, 2012
(1 000 tonnes of SO_2 equivalents of SO_2, NO_x and NH_3)



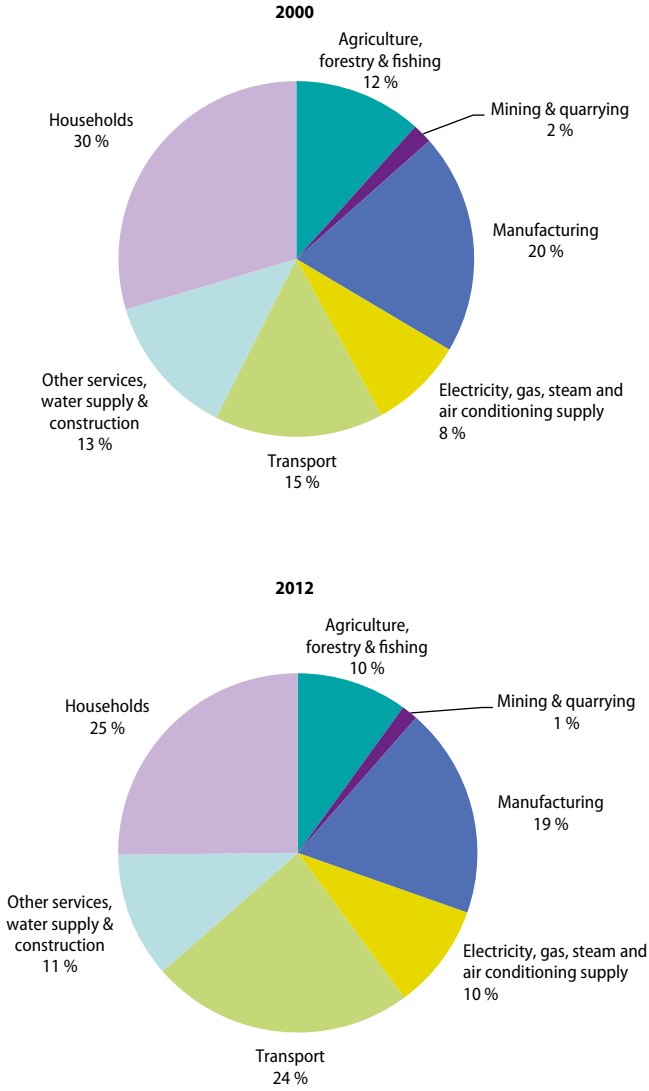
Source: Eurostat (online data code: env_ac_ainah_r2)

Agriculture, forestry and fishing account for the largest share of all industries. In 2012, these activities emitted 36 % of total acidifying potential, compared with 28 % in 2000. Although it has decreased by 13 % between 2000 and 2012 (in absolute terms by 1 million tonnes of SO_2-equivalent), mainly due to the reduction in livestock numbers, changes in the management of organic manures and the decreased use of nitrogenous fertilisers, it has decreased less than most of the other economic activities discussed in this chapter. Ammonia is the largest contributor to the acidifying emissions from agriculture, forestry and fishing with 6.4 million tonnes of SO_2-equivalent.

The second largest activity with contribution to acidifying emissions in 2012 was transport with a share of 21 % or 4.2 million tonnes of SO_2-equivalent, closely followed by the electricity, gas, steam and air conditioning supply industry (16 % or 3.2 million tonnes of SO_2-equivalent). While the largest share of emissions in transport came from NO_x, in the electricity, gas, steam and air conditioning supply industry SO_2 emissions were predominant.

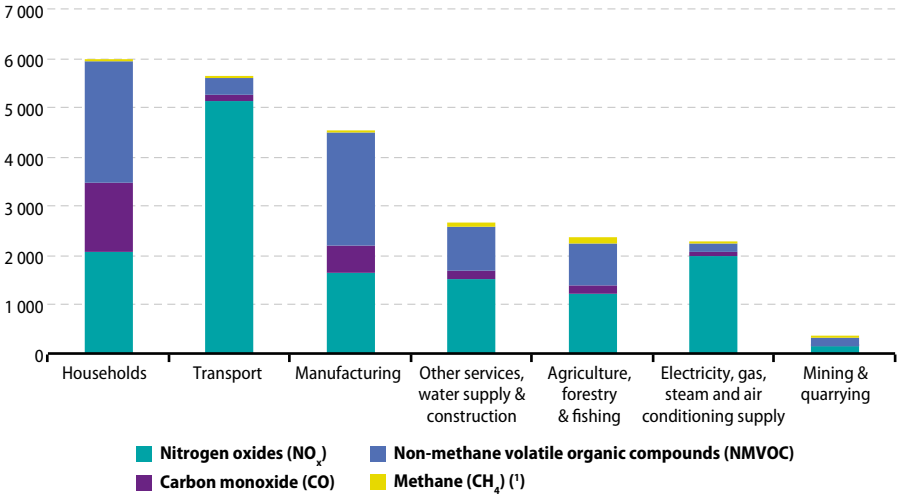
All activities recorded significant drops in acidifying emissions. The biggest decrease was observed in electricity, gas, steam and air conditioning supply industry, which dropped from 7.9 to 3.2 million tonnes of SO_2-equivalent (– 60 %) between 2000 and 2012. The more systematic use of end-of-pipe pollution filters and the use of more efficient combustion technologies in the electricity and heat production are the main contributors to this development.

Figure 4.1.6: Tropospheric ozone formation potential emissions, analysis by economic activity, EU-27, 2000 and 2012
(% of total emissions of tonnes of NMVOC equivalents of NO_x, CO, NMVOC and CH_4)



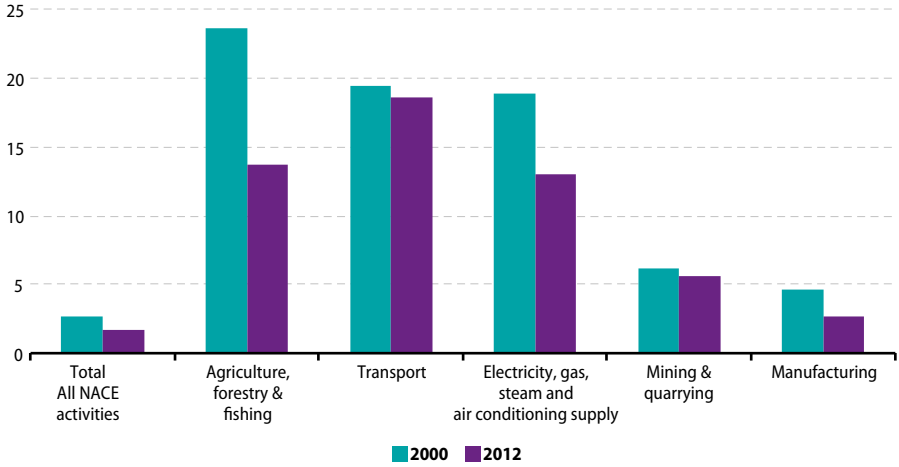
Source: Eurostat (online data codes: env_ac_ainah_r1 and env_ac_ainah_r2)

Figure 4.1.7: Tropospheric ozone formation potential emissions, analysis by economic activity, EU-27, 2012
(1 000 tonnes of NMVOC equivalents of NO_x, CO, NMVOC and CH_4)



(1) Relatively low emissions in NMVOC-equivalents renders them often unseen in the figure above.
Source: Eurostat (online data code: env_ac_ainah_r2)

Figure 4.1.8: Tropospheric ozone formation potential intensity, analysis by economic activity, EU-27, 2000 and 2012
(grammes of NMVOC equivalents of NO_x, CO, NMVOC and CH_4 per EUR)



Source: Eurostat (online data codes: env_ac_ainah_r1, env_ac_ainah_r2 and nama_nace64_k)

Similarly to the emissions of acidifying gases, the emissions of ozone precursors in the EU fell between 2000 and 2012 for all pollutants. The total change in emissions of NMVOC, NO_x, CO and CH_4 was a decrease of 32 % or 11.2 million tonnes of NMVOC equivalents. The main pollutants contributing to the tropospheric ozone formation are NO_x and NMVOC with 58 % and 30 % respectively. Between 2000 and 2012, the emissions of NO_x fell by 22 % or 3.8 million tonnes of NMVOC equivalents, and NMVOC by 43 % or 5.4 million tonnes.

The highest EU emitters of ozone precursors in 2012 were households with 25 % and the transport industry with 24 % of total EU ozone precursor emissions. The manufacturing industry is the third largest emitter (19 % of total ozone precursor emissions).

Between 2000 and 2012, the biggest absolute drop occurred in households (4.4 million tonnes of NMVOC equivalents or – 42 %), while the biggest relative drop was recorded in the mining and quarrying industry (275 000 tonnes or – 44 %).

Ozone precursor emission intensity is the ratio of ozone precursor emissions in tonnes of NMVOC equivalents per million euros of gross value added (GVA). In 2012, transport (18.7 grams NMVOC equivalents per euro) was, relative to GVA, the most important contributor to ozone precursor emissions in the EU, followed by agriculture, forestry and fishing and by electricity, gas, steam and air conditioning supply. Compared to 2000 the intensity decreased in all main industries. The biggest decrease was observed in the manufacturing industry (– 43 %).

4.2 Material flow accounts

Eurostat's material flow accounts are a comprehensive data framework that systematically records the inputs of materials to European economies, breaking them down by four main material categories, i.e. biomass, metal ores, non-metallic minerals and fossil energy materials.

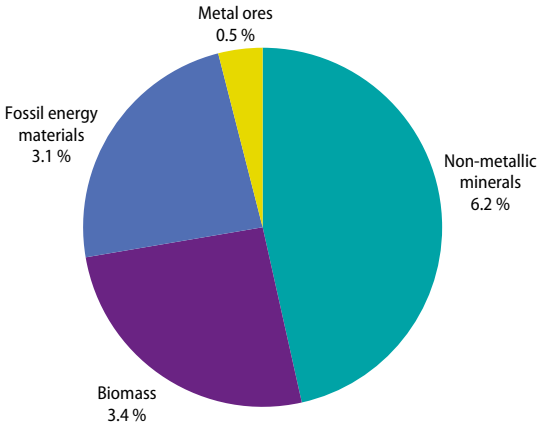
Various indicators are taken from the economy-wide material flow accounts framework — most prominently domestic material consumption (DMC). DMC related to gross domestic product (GDP) is used to monitor resource productivity in the context of the Europe 2020 strategy.

The DMC of the aggregated EU-28 economy is dominated by non-metallic minerals making up nearly half of the DMC in 2013 (6.2 tonnes per capita). With 3.4 and 3.1 tonnes per capita respectively, biomass and fossil energy materials each make up approximately one fourth of DMC. Metal ores constitute the smallest of the main categories with 0.5 tonnes per capita.

The level of DMC differs greatly among EU Member States, ranging from 8.4 tonnes per capita in Spain to 34.5 tonnes per capita in Finland in 2013. Furthermore, the structure of DMC — by main material category — also varies between EU Member States. The composition of DMC in each EU Member State is influenced by domestic extraction and by natural endowments with material resources, and the latter may form an important structural element of each economy.

The consumption of non-metallic minerals was lowest in the Netherlands (2.2 tonnes per capita) and highest in Finland (19 tonnes per capita). Non-metallic minerals constitute a significant part of

Figure 4.2.1: Domestic material consumption (DMC) by main material category, EU-28, 2013
(tonnes per capita)



Source: Eurostat (online data codes: env_ac_mfa and demo_gind)

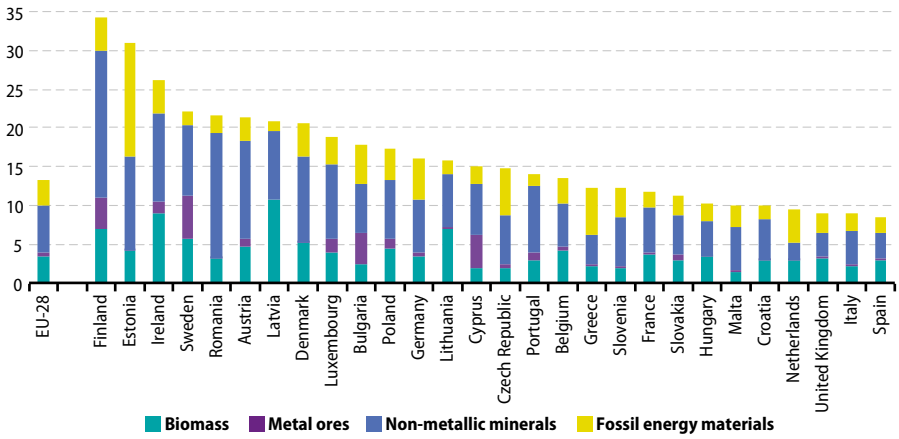
DMC in several other EU Member States, notably Romania (16.2 tonnes per capita), Estonia (12.2 tonnes per capita), Ireland and Austria (11.3 and 12.5 tonnes per capita respectively). Consumption of biomass was highest in Latvia (10.7 tonnes per capita), Ireland (9.1 tonnes per capita), Lithuania (7.1 tonnes per capita), Finland (6.9 tonnes per capita) and Sweden (5.6 tonnes per capita). In Ireland, fodder crops and grazed biomass made up the biggest share of this category, while in the other EU Member States with high values forestry played a major role in the economy. Consumption of biomass was lowest in Malta (1.4 tonnes per capita).

EU Member States with substantial amounts of fossil fuel consumption included Estonia (14.7 tonnes per capita, due to oil shale), Greece (6.2 tonnes per capita), the Czech Republic (5.9 tonnes per capita), Germany (5.3 tonnes per capita, due to lignite) and Bulgaria (5.0 tonnes per capita). Portugal and Latvia reported the lowest consumption among EU Member States for fossil energy materials, each with 1.4 tonnes per capita.

Finally, consumption of metal ores was highest in Sweden (5.7 tonnes per capita), Bulgaria (4.0 tonnes per capita) and Finland (4.0 tonnes per capita) because of their metal mining activities. The lowest values among EU Member States were reported in Estonia and Lithuania.

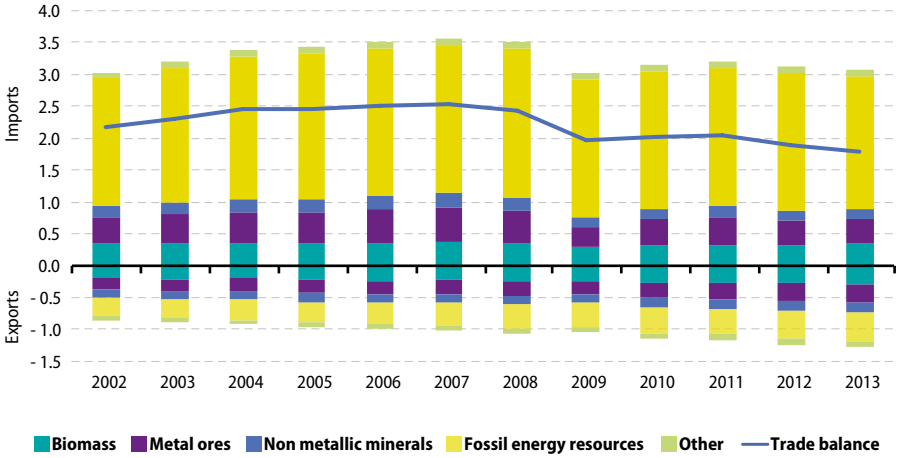
Besides the structure of the economy and climatic conditions, population density may explain — at least in part — differences between EU Member States in relation to consumption patterns. More densely populated EU Member States such as the Netherlands, the United Kingdom, Italy and Malta tend to consume somewhat lower amounts per capita than the EU-28 average whereas higher per capita consumption may be observed in EU Member States with low population density like Finland and Sweden.

Figure 4.2.2: DMC by main material category, by country, 2013
(tonnes per capita)



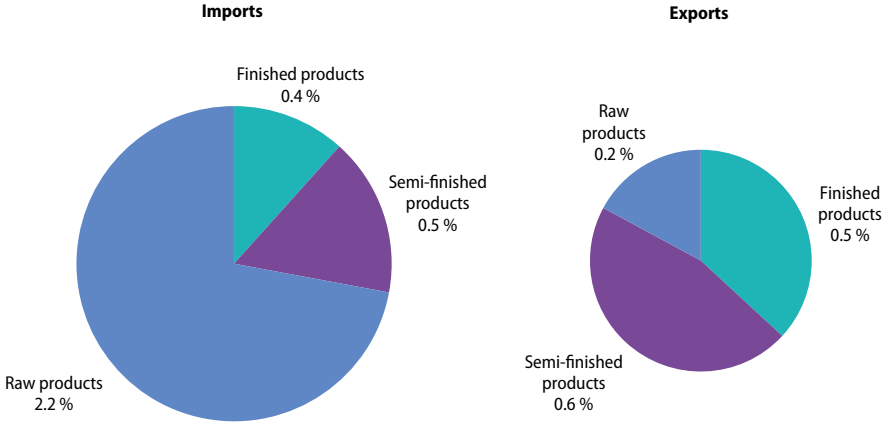
Source: Eurostat (online data codes: env_ac_mfa and demo_gind)

Figure 4.2.3: Physical imports and exports of goods, by main material category, EU-28, 2002–13
(tonnes per capita)



Source: Eurostat (online data codes: env_ac_mfa and demo_gind)

Figure 4.2.4: Extra-EU imports and exports, by stage of manufacturing, EU-28, 2013
(tonnes per capita)



Source: Eurostat (online data codes: env_ac_mfa and demo_gind)

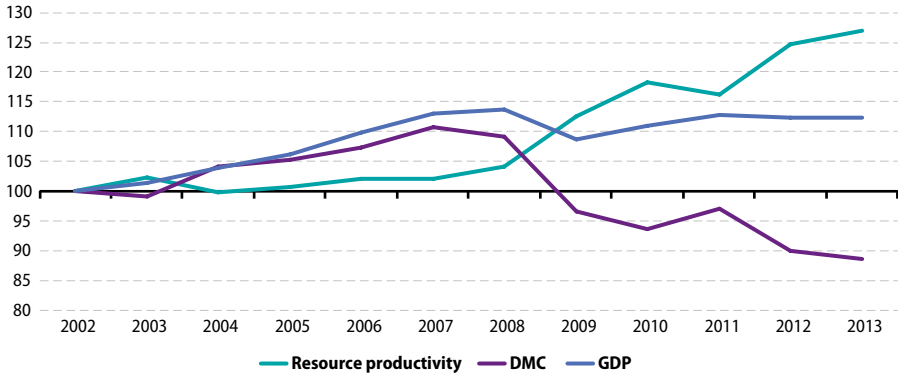
In monetary terms extra-EU imports and exports of goods and services are more or less balanced. From a physical perspective however — measured as the actual weight of traded goods — the EU's trade pattern with the rest of the world is quite different. At 3.3 tonnes per capita per year, imports of goods are about three times the size of exports, at around 1 tonne per capita per year (2002–13 averages).

Between 2002 and 2007, both physical imports and exports increased by around 20 %. In the economic crisis year of 2009 imports decreased by 13.8 % whereas exports fell by only 2.6 %. Between 2009 and 2013, physical exports increased by 23.2 %, while physical imports only went up by 2.4 %.

The majority of EU Member States import more than they export (= net importers), generally in a similar proportion than the EU-28 average. Excluding Luxembourg, which is an outlier, there are five EU Member States with high net imports, between 3.7 and 5.3 tonnes per capita: Denmark, Austria, Ireland, Malta and Belgium. Main net exporting countries are Latvia (wood), Estonia (wood, fossil energy materials) and Sweden (metal ores).

Data on physical imports and exports of goods are available in a breakdown by stage of manufacturing: finished products, semi-finished products and raw products. The EU's exports of finished products (0.5 tonnes per capita in 2013) are about 25 % higher than its imports (0.4 tonnes per capita). Its exports of semi-finished products are also higher than its imports. However, the EU imports much more raw products from the rest of the world than it exports (10 times more in 2013). The pattern shows a certain dependency on the rest of the world for raw materials. The EU economy transforms low-value raw products into high-value finished and semi-finished products.

Figure 4.2.5: Resource productivity in comparison to GDP (1) and DMC, EU-28, 2002–13 (2002 = 100)



(1) GDP in chain-linked volumes, reference year 2010.
Source: Eurostat (online data codes: nama_10_gdp and env_ac_mfa)

Table 4.2.1: Resource productivity ([1]), GDP and DMC, by country, 2013

	GDP_{PPS} per capita (Purchasing power standards (PPS) per capita)	DMC per capita (tonnes per capita)	Resource productivity (GDP_{PPS}/DMC) (PPS per kilogram)	Index (EU-28 = 100)
EU-28	26 723	13.2	2.02	100
Belgium	31 394	13.6	2.31	114.6
Bulgaria	11 880	17.6	0.67	33.4
Czech Republic	21 864	14.7	1.49	73.7
Denmark	33 063	20.8	1.59	78.9
Germany	33 142	16.1	2.06	102.3
Estonia	19 501	30.9	0.63	31.3
Ireland	34 494	26.2	1.32	65.2
Greece	19 524	12.4	1.58	78.2
Spain	24 990	8.4	2.98	147.5
France	28 486	11.9	2.40	118.9
Croatia	16 128	10.0	1.62	80.3
Italy	26 487	9.0	2.94	145.7
Cyprus	23 559	15.3	1.54	76.1
Latvia	16 985	20.8	0.81	40.4
Lithuania	19 419	15.7	1.24	61.4
Luxembourg	70 315	19.4	3.54	175.4
Hungary	17 623	10.2	1.73	85.8
Malta	22 739	10.1	2.26	111.9
Netherlands	35 294	9.4	3.76	186.4
Austria	34 074	21.5	1.58	78.4
Poland	18 120	17.3	1.05	52.0
Portugal	20 774	14.1	1.48	73.2
Romania	14 474	21.7	0.67	33.1
Slovenia	21 793	12.2	1.79	88.9
Slovakia	20 009	11.4	1.76	87.2
Finland	30 219	34.5	0.87	43.3
Sweden	33 715	22.7	1.49	73.7
United Kingdom	28 889	9.2	3.13	155.1

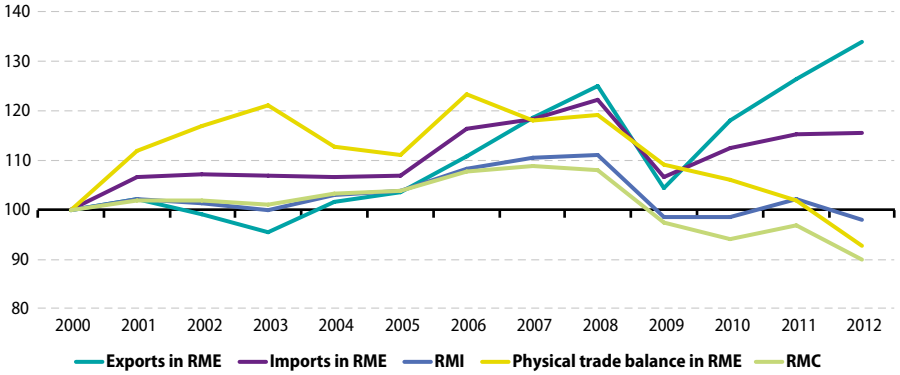
([1]) GDP/DMC (GDP in PPS - Purchasing power standards).
Source: Eurostat (online data codes: env_ac_rp, env_ac_mfa, nama_10_gdp and demo_gind)

Resource productivity is measured as gross domestic product (GDP) over domestic material consumption (DMC). For the sake of comparison, two different versions of GDP are used in this section of the publication. For comparisons over time, the GDP at market prices expressed as chain-linked volume (which eliminates the effect of inflation) is used. When comparing countries however, the GDP at market prices expressed in purchasing power standard (PPS) is used.

Resource productivity in the EU-28 economy increased by around 26.9 % between 2002 and 2013. There was a slow but steady increase between 2002 and 2008 with the exception of 2004. The economic crisis year of 2009 saw a big increase in resource productivity caused by the fall in DMC. The crisis affected the material-intensive industries of manufacturing and construction more than the services industries. Material consumption therefore fell more than GDP. After a 1.8 % decrease in 2010–11, resource productivity increased again by 7.3 % in 2012 and 1.7 % in 2013.

Expressed in GDP in PPS over DMC, the resource productivity amounts to 2.02 PPS/kg for the aggregated EU-28 economy. The ratio varies considerably across EU Member States from 0.63 PPS/kg in Estonia to 3.76 PPS/kg in the Netherlands.

Figure 4.2.6: Material flow indicators in RME, EU-27, 2000–12
(2000 = 100)



Source: Eurostat (online data codes: env_ac_rme and demo_gind)

A complementary picture on material consumption can be obtained when converting the traded goods into their raw material equivalents (RME), i.e. amounts of domestic raw material extractions required to provide the respective traded goods. Eurostat has developed a model to estimate the RME of imports and exports for the aggregated EU-27 economy.

For 2012, EU-27 RME exports are estimated at 4.6 tonnes of RME per capita. This is 3.6 times higher than actual physical exports in tonnes per capita. RMC is estimated at 14.2 tonnes per capita of RME, 5.0 % higher than DMC.

The trade balance in RME is the difference between RME imports and RME exports. When the trade balance in RME is positive, the country or region is a net importer of materials expressed in RME. When the indicator is negative, the country or region is a net exporter.

Overall RME imports and exports have increased over the last 13 years (RME imports by 15.0 % and RME exports by 34.0 %). This shows that Europe is increasingly globalised. Overall RMI and RMC decreased between 2000 and 2012. RMC decreased by 10.0 %, meaning that the EU economy consumes considerably fewer raw materials. The variation over time shows some patterns common to all indicators. They increased in times of economic growth (2000–08) and then decreased during the global financial and economic crisis (2008–12). This suggests that the consumption of materials and economic performance are closely related.

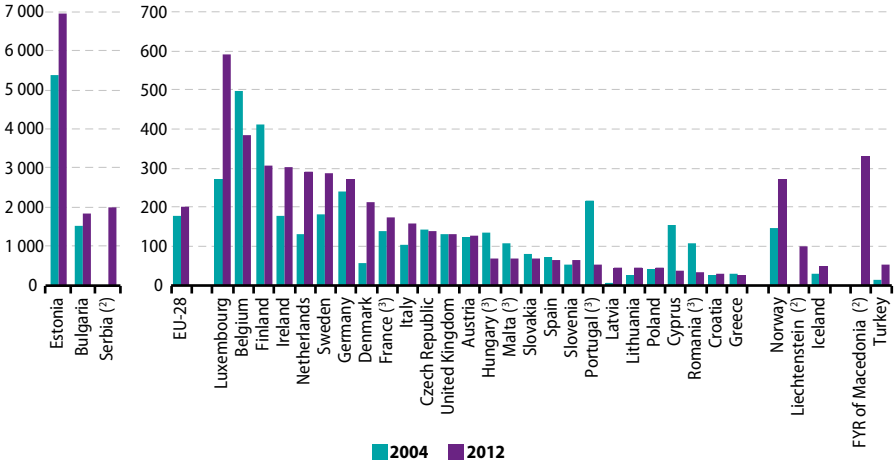
4.3 Waste

Table 4.3.1: Hazardous waste of total waste generation, 2010 and 2012

	Total waste generation		Hazardous waste		Hazardous waste share of total waste generation
	(1 000 tonnes)				(%)
	2010	2012	2010	2012	2012
EU-28	2 460 330	2 515 110	97 490	100 730	4
Belgium	62 537	67 630	4 479	4 258	6
Bulgaria	167 396	161 252	13 553	13 407	8
Czech Republic	23 758	23 171	1 363	1 481	6
Denmark	16 218	16 332	1 225	1 193	7
Germany	363 545	368 022	19 931	21 984	6
Estonia	19 000	21 992	8 962	9 159	42
Ireland	19 808	13 421	1 972	1 385	10
Greece	70 433	72 328	292	297	0
Spain	137 519	118 562	2 991	3 114	3
France	355 081	344 732	11 538	11 303	3
Croatia	3 158	3 379	73	123	4
Italy	158 628	162 765	8 543	9 474	6
Cyprus	2 373	2 086	37	31	1
Latvia	1 498	2 310	68	95	4
Lithuania	5 578	5 679	105	137	2
Luxembourg	10 441	8 397	380	315	4
Hungary	16 735	16 310	541	700	4
Malta	1 353	1 452	25	29	2
Netherlands	120 384	123 613	4 485	4 860	4
Austria	34 883	34 047	1 473	1 066	3
Poland	159 458	163 378	1 492	1 737	1
Portugal	17 313	14 184	667	545	4
Romania	219 310	266 976	666	671	0
Slovenia	5 986	4 547	117	133	3
Slovakia	9 384	8 425	415	370	4
Finland	104 337	91 824	2 559	1 654	2
Sweden	117 645	156 367	2 528	2 753	2
United Kingdom	236 568	241 922	7 004	8 452	3
Iceland	511	529	8	16	3
Liechtenstein	312	467	8	4	1
Norway	9 433	10 721	1 763	1 357	13
Montenegro	:	386	:	3	1
FYR of Macedonia	2 328	8 472	150	679	8
Serbia	33 616	55 003	11 161	14 457	26
Turkey	783 423	1 013 226	3 226	3 988	0
Bosnia and Herzegovina	:	4 457	:	946	21

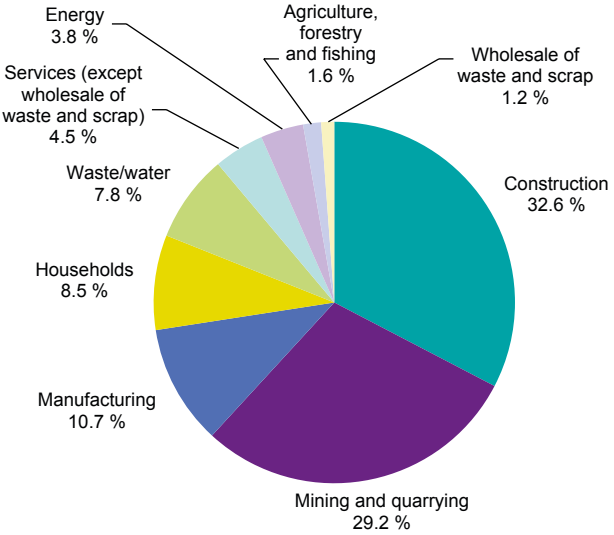
Source: Eurostat (online data code: env_wasgen)

Figure 4.3.1: Hazardous waste generation, by country, 2004 and 2012 (1)
(kg per inhabitant)



(1) Note that the two parts of the figure have different scales for the y-axis.
(2) 2004: not available.
(3) 2004: estimate.
Source: Eurostat (online data code: env_wasgen)

Figure 4.3.2: Waste generation by economic activities and households, EU-28, 2012
(%)



Source: Eurostat (online data code: env_wasgen)

In 2012, the EU-28 generated 2 414.4 million tonnes of non-hazardous waste and 100.7 million tonnes of hazardous waste (harmful for health or the environment). Compared with 2010, 2.2 % more non-hazardous waste was generated in 2012 in the EU-28 and 3.3 % more hazardous waste, the latter increasing in quantity terms from 97.5 to 100.7 million tonnes. In 2012, the share of hazardous waste in total waste generation was below 10.0 % in all EU Member States except Estonia, where it made up 41.6 % of the total, and for Ireland where its share was 10.3 %. The very high share for Estonia was principally due to energy production from oil shale. Among the non-EU Member States, Serbia recorded the highest share of hazardous waste in total waste generation (26.3 %) due to intensive activity in mining and quarrying, followed by Bosnia and Herzegovina (21.2 %) and Norway (12.7 %).

The generation of hazardous waste in 2012 across EU Member States ranged from a low of 27 kg per inhabitant in Greece to a high of 593 kg per inhabitant in Luxembourg. For Luxembourg the amount is mainly due to the construction activities.

Between 2004 and 2012, the EU-28 experienced an 11.1 % increase in hazardous waste generation per inhabitant. The large increases in some EU Member States (for example, Latvia and Denmark) were offset, to some extent, by reductions in 11 other EU Member States (for example, Cyprus, Portugal and Romania).

When looking at the share of each economic activity and of households in total waste generation in the EU-28 for 2012 we observe that construction contributed 33 % of the total (with 821 million tonnes) and was followed by mining and quarrying (29 % or 734 million tonnes), manufacturing (11 % or 270 million tonnes), households 8 % or 213 million tonnes) and energy (4 % or 96 million tonnes); the remaining 15 % was waste generated from other economic activities.

Table 4.3.2: Waste generation by economic activities and households, by country, 2012
(1 000 tonnes)

	Total	Mining and quarrying	Manufacturing	Energy	Construction	Other economic activities	Households
EU-28	2 515 110	733 980	269 690	96 480	821 160	380 390	213 410
Belgium	67 630	115	17 736	1 314	24 570	18 891	5 004
Bulgaria	161 252	141 083	3 009	9 533	1 033	3 841	2 755
Czech Republic	23 171	167	4 376	1 063	8 593	5 739	3 233
Denmark	16 332	18	1 610	893	3 867	6 216	3 727
Germany	368 022	8 625	56 596	8 050	197 528	60 752	36 472
Estonia	21 992	9 355	4 121	6 258	657	1 165	436
Ireland	13 421	2 025	4 599	396	366	4 379	1 657
Greece	72 328	47 832	4 183	12 259	813	2 383	4 859
Spain	118 562	22 509	14 594	5 772	26 129	28 333	21 224
France	344 732	2 477	21 431	2 100	246 702	42 024	29 996
Croatia	3 379	5	425	108	682	968	1 191
Italy	162 765	720	34 142	3 616	52 966	41 708	29 613
Cyprus	2 086	218	98	2	965	353	451
Latvia	2 310	2	396	133	8	558	1 213
Lithuania	5 679	26	2 551	29	419	1 477	1 177
Luxembourg	8 397	131	509	2	7 079	426	249
Hungary	16 310	91	2 991	2 872	4 038	3 638	2 681
Malta	1 452	45	9	2	1 041	201	155
Netherlands	123 613	179	14 115	1 342	81 354	17 758	8 864
Austria	34 047	51	3 636	622	19 471	6 247	4 020
Poland	163 378	68 035	31 135	20 706	15 368	18 809	9 324
Portugal	14 184	243	3 188	422	928	4 672	4 731
Romania	266 976	223 293	6 029	9 043	1 325	22 638	4 647
Slovenia	4 547	14	1 345	1 069	535	941	641
Slovakia	8 425	311	2 516	1 046	806	2 090	1 657
Finland	91 824	52 880	14 531	1 011	16 034	5 635	1 734
Sweden	156 367	129 481	6 218	1 852	7 656	6 967	4 193
United Kingdom	241 922	24 044	13 596	4 965	100 230	71 580	27 506
Iceland	529	0	93	2	11	191	233
Liechtenstein	467	29	12	0	107	2	316
Norway	10 721	470	2 639	89	1 881	3 205	2 438
FYR of Macedonia	8 472	802	1 304	6	0	6 360	0
Serbia	55 003	47 896	760	5 744	364	238	0
Turkey	1 013 226	950 587	13 141	18 424	0	289	30 785
Bosnia and Herzegovina	4 457	72	1 213	3 171	0	0	0

Source: Eurostat (online data code: env_wasgen)

In 2012, the total waste generated in the EU-28 by all economic activities and households amounted to 2 515 million tonnes; this was slightly higher than in 2010 and 2008 (2 460 million tonnes and 2 427 million tonnes) but lower than in 2004. The relatively low figures for 2008 and 2010 may, at least in part, reflect the downturn in economic activity as a result of the global financial and economic crisis. There were considerable variations across EU-28 Member States in 2012, both in the amount of waste generated and in the activities that mostly contributed to waste generation.

The total waste generated by economic activities and households in 2012 may also be expressed in relation to population size. The average amount of waste generated across the EU-28 in 2012 was equivalent to almost 5 tonnes (4 984 kg) per inhabitant. However, big differences between EU Member States can be observed which are mainly due to differences in the generation of mineral waste.

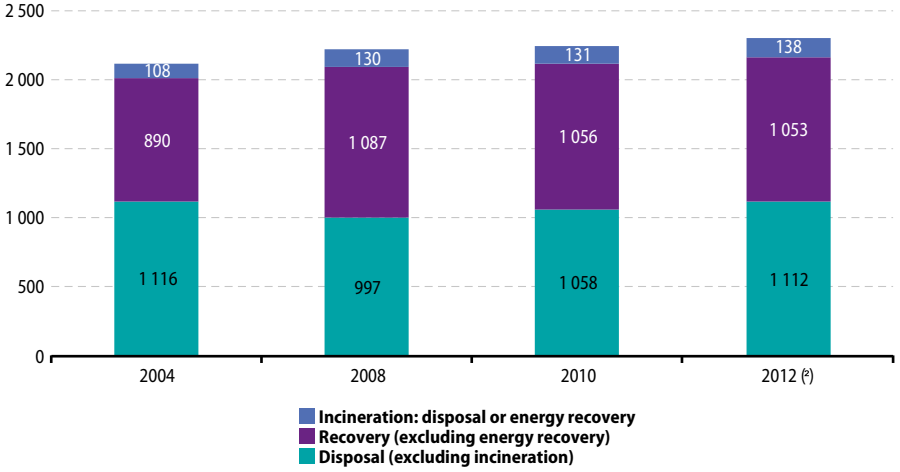
A majority (63 %) of the total waste generated in the EU-28 was mineral waste. The relative share of mineral waste in the total waste generated varied considerably between EU Member States, which may reflect, at least to some degree, different economic structures. In general, those EU Member States that had higher shares of mineral waste were those that were characterised as having sizeable mining and quarrying activities (such as Bulgaria, Finland, Estonia, Sweden and Romania) and/or construction and demolition activities (such as Luxembourg). These two activities accounted for 3.0 tonnes out of a total of 3.2 tonnes per inhabitant of mineral waste, equivalent to 93.5 % of the total mineral waste generated across the EU-28 in 2012.

Table 4.3.3: Waste treatment, by country, 2012
(1 000 tonnes)

	Total	Recycling	Energy recovery	Backfilling	Incineration	Landfill
EU-28	2 302 560	838 960	101 140	213 790	36 650	1 112 020
Belgium	41 328	30 237	4 612	0	3 331	3 148
Bulgaria	158 752	1 789	172	0	14	156 777
Czech Republic	18 263	8 420	959	5 137	76	3 670
Denmark	14 070	8 147	3 255	0	0	2 668
Germany	352 996	152 807	33 953	91 469	11 017	63 750
Estonia	20 610	7 903	349	4 196	0	8 162
Ireland	8 033	827	403	1 985	13	4 805
Greece	71 334	2 928	118	5 440	21	62 827
Spain	108 475	48 745	3 269	8 194	7	48 259
France	315 147	151 724	11 637	39 591	7 153	105 042
Croatia	2 999	994	39	42	0	1 923
Italy	130 460	98 809	2 593	160	5 814	23 084
Cyprus	2 077	409	2	232	7	1 429
Latvia	1 573	808	153	0	1	612
Lithuania	4 221	999	106	0	1	3 115
Luxembourg	10 302	4 691	36	1 934	134	3 507
Hungary	12 964	4 637	960	436	90	6 842
Malta	1 351	116	0	46	6	1 183
Netherlands	119 962	61 796	8 997	0	1 612	47 556
Austria	32 122	14 272	3 305	2 795	75	11 675
Poland	160 697	80 941	3 567	35 103	328	40 757
Portugal	10 188	4 598	1 735	0	70	3 785
Romania	264 647	18 849	1 708	1 037	182	242 871
Slovenia	5 068	2 965	326	1 102	36	639
Slovakia	7 052	2 651	270	0	71	4 059
Finland	90 478	31 700	10 317	0	445	48 015
Sweden	151 225	18 732	6 712	774	43	124 964
United Kingdom	186 163	77 467	1 585	14 114	6 102	86 895
Iceland	521	344	14	3	0	160
Norway	10 103	4 303	4 271	143	86	1 300
FYR of Macedonia	9 023	68	19	0	41	8 896
Serbia	55 023	793	49	0	0	54 180
Turkey	983 046	307 467	440	0	44	675 095

Source: Eurostat (online data code: env_wastrt)

Figure 4.3.3: Development of waste treatment, EU-28, 2004–12 (1)
(million tonnes)



(1) 2006: data not available.
(2) Estimates.
Source: Eurostat (online data code: env_wastrt)

In 2012, some 2 303 million tonnes of waste were treated in the EU-28; this includes the treatment of waste imported into the EU. Looking at the types of waste treatment operation employed, almost half (48.3 %) of the waste treated in the EU-28 in 2012 was subject to disposal operations other than waste incineration. This was predominantly deposits onto or into land (for example, landfills) but also included land treatment and waste discharges into water bodies. A further 45.7 % of the waste treated in the EU-28 in 2012 was sent to recovery operations (other than energy recovery), which comprises recycling (36.4 %) and backfilling (9.3 %) operations. Backfilling is the use of waste in excavated areas for the purpose of slope reclamation or safety or for engineering purposes in landscaping. The remaining 6.0 % of the waste treated in the EU-28 was sent for incineration: 4.4 % with energy recovery and 1.6 % without. Significant differences could be observed among the EU Member States concerning the use they made of the various treatment methods. For instance, some EU Member States had very high recovery (other than energy recovery) rates (for example, Slovenia, Italy, Belgium, Poland and Germany), while others favoured waste disposal (for example, Bulgaria, Romania, Greece and Malta).

Waste disposal accounted for almost half (47.8 %) of the hazardous waste that was treated in the EU-28 in 2012. Some 10.5 million tonnes (or 13.9 %) of all hazardous waste was incinerated or used for energy recovery, and 28.8 million tonnes (or 38.3 %) was recovered.

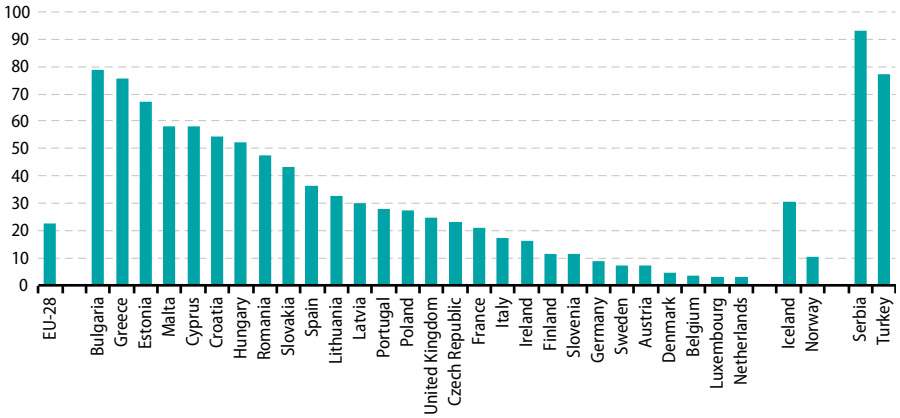
Table 4.3.4: Waste (excluding major mineral wastes), by country, 2012

	Waste generated		Waste landfilled	
	(1 000 tonnes)	(kg per inhabitant)	(1 000 tonnes)	(kg per inhabitant)
EU-28	922 310	1 828	210 180	416
Belgium	55 626	4 999	1 909	172
Bulgaria	17 945	2 456	14 144	1 936
Czech Republic	12 579	1 197	2 899	276
Denmark	9 998	1 788	438	78
Germany	145 596	1 810	12 920	161
Estonia	11 361	8 589	7 637	5 774
Ireland	9 482	2 067	1 551	338
Greece	22 653	2 042	17 084	1 540
Spain	64 480	1 379	23 376	500
France	98 950	1 513	20 608	315
Croatia	2 646	620	1 447	339
Italy	108 933	1 830	19 029	320
Cyprus	832	964	482	558
Latvia	1 820	895	547	269
Lithuania	2 968	993	977	327
Luxembourg	1 287	2 423	41	77
Hungary	11 272	1 136	5 898	595
Malta	387	922	225	537
Netherlands	42 802	2 555	1 174	70
Austria	14 625	1 735	1 033	123
Poland	71 678	1 883	19 456	511
Portugal	12 407	1 180	3 461	329
Romania	40 929	2 041	19 411	968
Slovenia	3 499	1 701	402	196
Slovakia	6 762	1 250	2 931	542
Finland	21 179	3 912	2 439	450
Sweden	18 341	1 927	1 310	138
United Kingdom	111 268	1 747	27 351	429
Iceland	513	1 599	157	491
Norway	9 773	1 947	1 039	207
FYR of Macedonia	7 654	3 714	1 794	871
Serbia	6 703	931	6 246	868
Turkey	57 601	766	44 421	591

Source: Eurostat (online data codes: env_wasnmin and demo_pjan)

The quantity of waste treated by disposal in 2012 was slightly (0.4 %) lower than it had been in 2004. The quantity of waste recovered (excluding energy recovery) grew from 890 million tonnes in 2004 to 1 053 million tonnes in 2012, an increase of 18.3 %. As a result, the share of recovery in total waste treatment rose from 42.1 % in 2004 to 45.7 % by 2012. Waste incineration (including energy recovery) saw an overall increase between 2004 and 2012 of 27.4 %.

Figure 4.3.4: Share of waste landfilled from waste generated (excl. major mineral wastes), by country, 2012
(%)



Source: Eurostat (online data codes: env_wasgen and env_wastrt)

Table 4.3.5: Municipal waste generated, by country, 1995–2013
(kg per inhabitant)

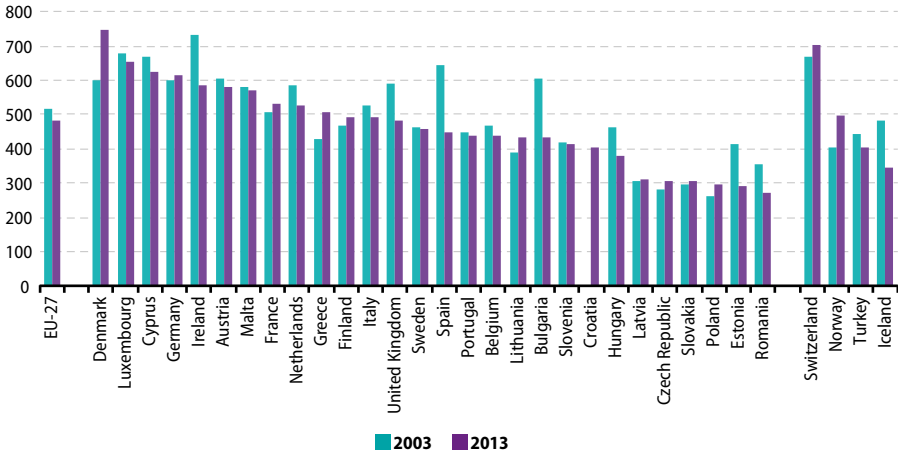
	1995	1999	2003	2007	2010	2013	Change 1995–2013
EU-28	:	:	:	523	503	481	:
EU-27	473	511	514	524	504	481	2%
Belgium	455	465	468	494	455	439	-4%
Bulgaria	694	598	603	553	554	432	-38%
Czech Republic	302	327	280	294	318	307	2%
Denmark	521	577	598	707	673	747	43%
Germany	623	638	601	582	602	617	-1%
Estonia	371	412	414	449	305	293	-21%
Ireland	512	577	730	772	624	586	14%
Greece (1)	:	392	427	448	531	506	51%
Spain	510	613	646	578	510	449	-12%
France	475	507	506	543	533	530	12%
Croatia	:	:	:	399	379	404	:
Italy	454	498	524	557	547	491	8%
Cyprus	595	620	670	704	696	624	5%
Latvia	264	256	304	391	324	312	18%
Lithuania	426	351	389	419	404	433	2%
Luxembourg	587	646	678	695	679	653	11%
Hungary	460	483	464	457	403	378	-18%
Malta	395	476	580	654	601	570	44%
Netherlands	539	582	586	606	571	526	-2%
Austria	437	563	607	597	562	578	32%
Poland	285	319	260	322	316	297	4%
Portugal	352	433	449	471	516	440	25%
Romania	342	314	353	391	324	272	-20%
Slovenia	596	550	418	525	490	414	-31%
Slovakia	295	261	281	294	319	304	3%
Finland	413	484	466	506	470	493	19%
Sweden	386	428	464	493	445	458	19%
United Kingdom	498	569	591	567	509	482	-3%
Iceland	426	454	484	558	306	345	-19%
Norway	624	594	402	491	469	496	-21%
Switzerland	600	635	667	720	708	702	17%
FYR of Macedonia	:	:	:	:	351	384	:
Serbia	:	:	:	280	363	336	:
Turkey	441	459	443	433	407	406	-8%

(1) Change (%) is calculated with value from 1996.
Source: Eurostat (online data code: env_wasmun)

In 2012, 922 million tonnes of waste excluding major mineral wastes were generated in the EU-28. Relatively to population, 1 828 kg per inhabitant of waste excluding major mineral wastes were generated in the EU-28. Across EU Member States, the generation of waste excluding major mineral waste ranged between 620 kg per inhabitant in Croatia and 8 589 kg per inhabitant in Estonia.

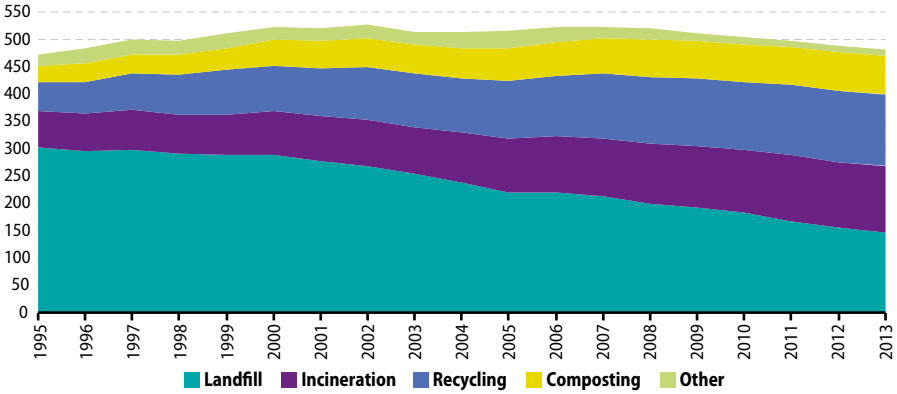
Out of the total generation of waste excluding major mineral wastes in the EU-28, a 23 % share was landfilled in 2012. The highest shares of landfilled waste excluding major minerals waste were recorded in Bulgaria (79 %), Greece (75 %), Estonia (67 %), Malta (58 %), Cyprus (58 %), Croatia (55 %) and Hungary (52 %). On the contrary, the lowest shares were recorded in the Netherlands, Luxembourg, Belgium 3 % each and Denmark (4 %). The amount of landfilled waste excluding major mineral wastes per inhabitant reached 416 kg for the EU-28 in 2012. In EU Member States, the lowest values were reported by the Netherlands (70 kg) and Denmark (78 kg), while the highest values were reported by Estonia (5 774 kg) and Greece (1 540 kg), 14 and 4 times above EU average respectively.

Figure 4.3.5: Municipal waste generated, by country, 2003 and 2013
(kg per inhabitant)



Source: Eurostat (online data code: env_wasmun)

Figure 4.3.6: Municipal waste treatment, EU-27, 1995–2013
(kg per inhabitant)



Source: Eurostat (online data code: env_wasmun)

For 2013, municipal waste generation totals varied considerably, ranging from 747 kg per inhabitant in Denmark to 272 kg per inhabitant in Romania. The variations reflect differences in consumption patterns and economic wealth, but also depend on how municipal waste is collected and managed. There are differences between countries regarding the degree to which waste from commerce, trade and administration is collected and managed together with waste from households.

Even though more waste is being generated in the EU-27, the total amount of municipal waste landfilled has diminished. In the reference period, the total municipal waste landfilled in the EU-27 fell by 71.1 million tonnes, or 49%, from 144.2 million tonnes (302 kg per inhabitant) in 1995 to 73.1 million tonnes (146 kg per inhabitant) in 2013. This corresponds to an average annual decline of 3.7%. Since 2003, landfilling has fallen by as much as 5.1% per year on average.

As a result, the landfilling rate compared with municipal waste generation, dropped from 63.8% in 1995 to 30.3% in 2013 in the EU-27.

The amount of waste recycled rose from 25.0 million tonnes (52 kg per inhabitant) in 1995 to 65.8 million tonnes (131 kg per inhabitant) in 2013 at an average annual rate of 5.5%. The share of municipal waste recycled overall rose from 11% to 27%.

The recovery of organic material by composting has grown with an average annual rate of 5.3% from 1995 to 2013. Recycling and composting together accounted for 42% of organic material in 2013, relative to waste generation.

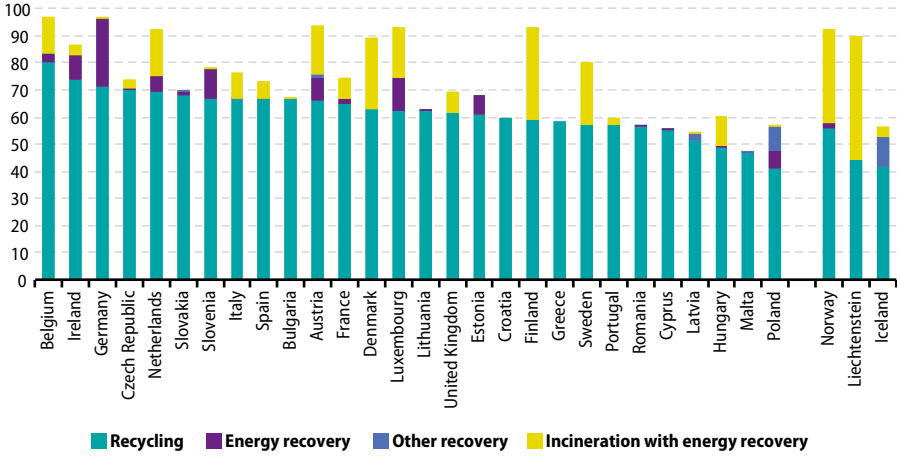
Waste incineration has also grown steadily in the reference period, though not as much as recycling and composting. Since 1995, the amount of municipal waste incinerated in the EU-27 has risen by 29.4 million tonnes or 92% and accounted for 61.6 million tonnes in 2013. Municipal waste incinerated has thus risen from 67 kg per inhabitant to 123 kg per inhabitant.

Table 4.3.6: Recovery and recycling rate for packaging waste, by country, 2012
(%)

	Recovery rate	Recycling rate
EU-28	78.5	64.6
Belgium	97.0	80.3
Bulgaria	67.5	66.5
Czech Republic	73.6	69.9
Denmark	89.4	63.0
Germany	96.8	71.3
Estonia	67.8	61.3
Ireland	86.6	74.0
Greece	58.6	58.6
Spain	73.0	66.5
France	74.7	64.9
Italy	59.7	59.7
Croatia	76.3	66.6
Cyprus	55.7	55.3
Latvia	54.6	51.1
Lithuania	62.5	62.2
Luxembourg	93.0	62.5
Hungary	60.1	48.5
Malta	47.5	46.6
Netherlands	92.7	69.3
Austria	94.0	65.9
Poland	57.1	41.4
Portugal	59.9	56.9
Romania	57.4	56.8
Slovenia	78.0	66.9
Slovakia	70.0	68.1
Finland	93.3	59.3
Sweden	80.1	56.9
United Kingdom	69.1	61.4
Iceland	56.5	41.8
Liechtenstein	90.0	44.3
Norway	92.7	55.9

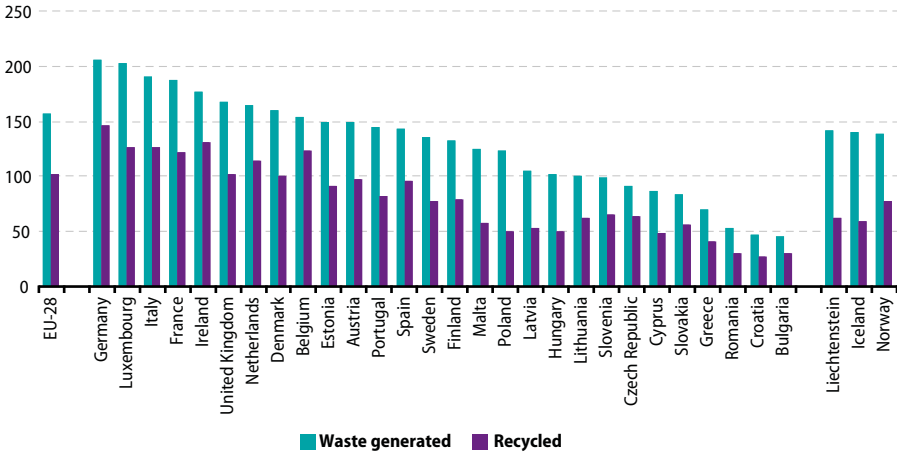
Source: Eurostat (online data code: env_waspac)

Figure 4.3.7: Share of treatment for overall packaging waste, by country, 2012
(%)



Source: Eurostat (online data code: env_waspac)

Figure 4.3.8: Volume of overall packaging waste generated and recycled per inhabitant, by country, 2012
(kg per inhabitant)



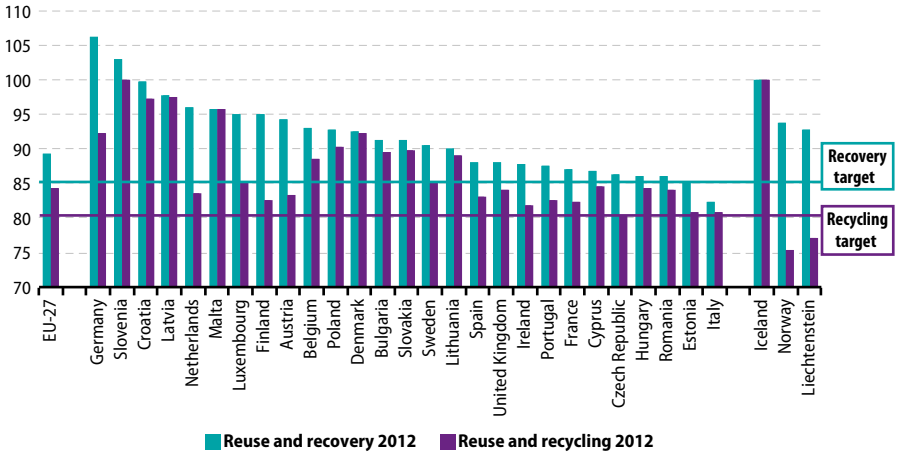
Source: Eurostat (online data code: env_waspac)

In 2012, Belgium held the EU-28's highest recovery (97.0 %) and recycling rates (80.3 %).

Recycling was the major form of recovery in all EU Member States, while other forms of recovery had a minor share in total treatment for overall packaging waste. In some EU Member States 'Energy recovery' and 'Incineration with energy recovery' contributed significantly to the overall recovery rate. Especially EU Member States which utilise 'Incineration with energy recovery' as a standard method of waste disposal achieved a significantly higher recovery rate. This was typically the case of Nordic countries but also Belgium, Luxembourg, Hungary, the Netherlands and Austria. These EU Member States all presented incineration values with energy recovery rates at over 10 %.

The Member States that joined the EU before 2004 generally showed the highest amount of packaging waste generated except Greece. Of these EU Member States, Austria, Portugal, Spain, Sweden and Finland showed a significantly lower amount of packaging waste generated (all under 150 kg/inhabitant). Romania, Croatia and Bulgaria (53 kg, 47 kg and 45 kg/inhabitant, respectively) exhibited the lowest amount of all EU Member States. Estonia had the highest figure (149 kg/inhabitant) for packaging waste generation among the Member States that joined the EU after 2004.

Figure 4.3.9: Recovery and recycling rate for end-of-life vehicles, by country, 2012 (%)



Source: Eurostat (online data code: env_waselvt)

Table 4.3.7: Total number of end-of-life vehicles, by country, 2006–12
(number of cars)

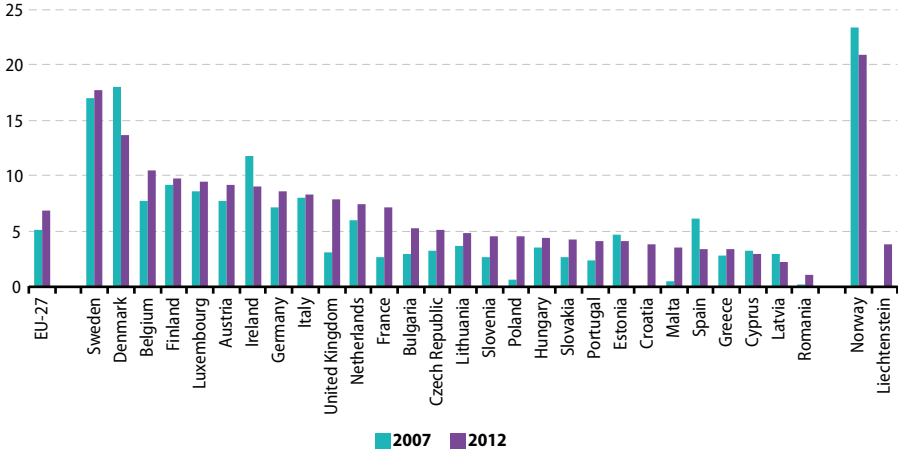
	2006	2007	2008	2009	2010	2011	2012
EU-27	*6 120 000*	*6 500 000*	*6 270 000*	*9 000 000*	*7 350 000*	*6 760 000*	*6 280 000*
Belgium	131 043	127 949	141 521	140 993	170 562	165 016	160 615
Bulgaria	45 127	23 433	38 600	55 330	69 287	62 937	57 532
Czech Republic	56 582	72 941	147 259	155 425	145 447	132 452	125 587
Denmark (1)	102 202	99 391	101 042	96 830	100 480	93 487	106 504
Germany	499 756	456 436	417 534	1 778 593	500 193	466 160	476 601
Estonia	11 035	12 664	13 843	7 528	7 268	11 413	12 835
Ireland	:	112 243	127 612	152 455	158 237	:	102 073
Greece	29 689	47 414	55 201	115 670	95 162	112 454	:
Spain	954 715	881 164	748 071	952 367	839 637	671 927	687 824
France	930 000	946 497	1 109 876	1 570 593	1 583 283	1 515 432	1 209 477
Croatia (1)	:	:	:	:	:	:	35 213
Italy	1 379 000	1 692 136	1 203 184	1 610 137	1 246 546	952 461	902 611
Cyprus	1 032	2 136	14 273	17 303	13 219	17 145	17 547
Latvia (1)	6 288	11 882	10 968	10 590	10 640	9 387	10 228
Lithuania (1)	13 877	15 906	19 534	19 656	23 351	26 619	22 885
Luxembourg	4 864	3 536	2 865	6 908	6 303	2 341	2 834
Hungary (1)	20 976	43 433	37 196	26 020	15 907	13 043	15 357
Malta (1)	:	:	:	:	330	2 526	2 530
Netherlands	192 224	166 004	152 175	191 980	232 448	195 052	187 143
Austria	87 277	62 042	63 975	87 364	82 144	80 004	64 809
Poland	150 987	171 258	189 871	210 218	259 576	295 152	344 809
Portugal	25 641	90 509	107 746	107 946	107 419	77 929	92 008
Romania (1)	21 234	36 363	51 577	55 875	190 790	128 839	57 950
Slovenia	9 418	8 409	6 780	7 043	6 807	6 598	5 447
Slovakia	15 069	28 487	39 769	67 795	35 174	39 717	33 469
Finland (1)	14 945	15 792	103 000	96 270	119 000	136 000	119 000
Sweden	283 450	228 646	150 197	133 589	170 658	184 105	185 616
United Kingdom	995 569	1 138 496	1 210 294	1 327 517	1 157 438	1 220 873	1 163 123
Iceland (1)	:	:	9 386	5 109	4 195	4 075	5 824
Liechtenstein	:	82	91	72	107	94	114
Norway	105 324	95 128	130 018	95 000	112 537	124 563	119 905

(1) Provisional data for 2012.
Source: Eurostat (online data code: env_waselvt)

The total number of end-of-life vehicles reported in the EU-27 rose sharply, from 6.3 million in 2008 to 9.0 million in 2009. Germany was the primary contributor to this rise with an increase of 1.4 million vehicles, while other major contributors included France with 0.46 million more vehicles, Italy with 0.41 million more and Spain with 0.20 million more. From 2009 to 2012 the number of reported end-of-life vehicles fell 30 %, to 6.2 million vehicles. This reduction was mostly due to the decrease on the number of vehicles in Germany (1.3 million), Italy (0.7 million), France (0.4 million), Spain (0.3 million) and the United Kingdom (0.2 million). In 2012, the end-of-life vehicles in these five EU Member States made up 70 % of the EU-27 total.

No later than 2006, EU Member States were required to meet rates for reuse and recycling of ≥ 80 % and for reuse and recovery of ≥ 85 %. All reporting EU Member States were in compliance with the recycling targets. Italy was the only EU Member State that did not comply with the recovery and reuse target in 2012 having achieved a share of 82.3 %. In 2009 several temporary national scrapping schemes were established causing visible effects on the reported data. For instance in Germany, the new scheme had a knock-on effect on stock numbers. The total amount of end-of-life vehicles is correctly reported to have been very high in 2009. Due to capacity limitations not all vehicles were treated in the same year, resulting in a decline in the recycling / recovery rate during 2009. In 2010 and 2011 most of the remaining 2009 stocks were treated and the calculated recycling / recovery rates were high (over 100 %). However, this was reportedly only due to these stock effects.

Figure 4.3.10: Waste electrical and electronic equipment (WEEE) collected, by country, 2007 and 2012
(kg per inhabitant)



Source: Eurostat (online data code: env_waselee)

Table 4.3.8: Waste electrical and electronic equipment (WEEE) collected, by EEE category and by country, 2012
(tonnes)

	Total waste	Large household appliances	Small household appliances	IT and telecommunications equipment	Consumer equipment	Other
EU-28	3 474 177	1 494 954	224 280 (1)	615 119 (1)	572 253 (1)	187 194 (1)
Belgium	116 458	50 711	11 792	19 290	26 322	8 343
Bulgaria	38 431	28 043	2 423	3 158	2 014	2 792
Czech Republic (2)	53 685	24 303	2 994	10 047	13 877	2 463
Denmark	76 200	32 121	5 019	13 520	22 881	2 659
Germany	690 711	235 666	77 149	160 125	171 354	46 416
Estonia	5 465	1 797	346	1 463	1 608	251
Ireland	41 177	22 348	2 204	6 809	7 868	1 948
Greece (2)	37 235	20 018	2 638	5 047	7 577	1 956
Spain	157 994	90 594	7 050	20 679	23 876	15 794
France	470 556	256 560	27 021	66 229	104 342	16 405
Croatia	16 187	6 620	373	2 929	5 223	1 040
Italy (3)	497 378	117 004	:	:	:	:
Cyprus	2 514	1 403	132	529	344	106
Latvia	4 694	2 150	356	502	610	1 078
Lithuania	14 259	7 927	880	1 844	1 687	1 920
Luxembourg	5 010	2 073	456	762	1 299	418
Hungary	44 262	23 685	4 356	8 961	4 964	2 295
Malta	1 506	859	6	332	273	36
Netherlands	123 684	59 590	7 067	17 625	29 869	9 533
Austria	77 402	31 326	7 431	17 632	16 160	4 854
Poland	175 295	82 246	16 946	27 154	25 746	23 203
Portugal	43 695	25 268	4 355	7 062	5 425	1 585
Romania	23 083	11 399	864	4 976	3 514	2 331
Slovenia	9 430	4 097	1 016	1 782	1 513	1 022
Slovakia	22 671	11 372	2 071	2 835	3 222	3 171
Finland	52 972	26 803	1 912	7 640	14 214	2 404
Sweden	168 612	78 084	4 991	32 467	44 310	8 760
United Kingdom (2)	503 611	240 887	32 432	173 720	32 161	24 411
Liechtenstein (2)	140	17	39	43	40	1
Norway	104 905	43 795	5 141	16 668	17 556	21 745

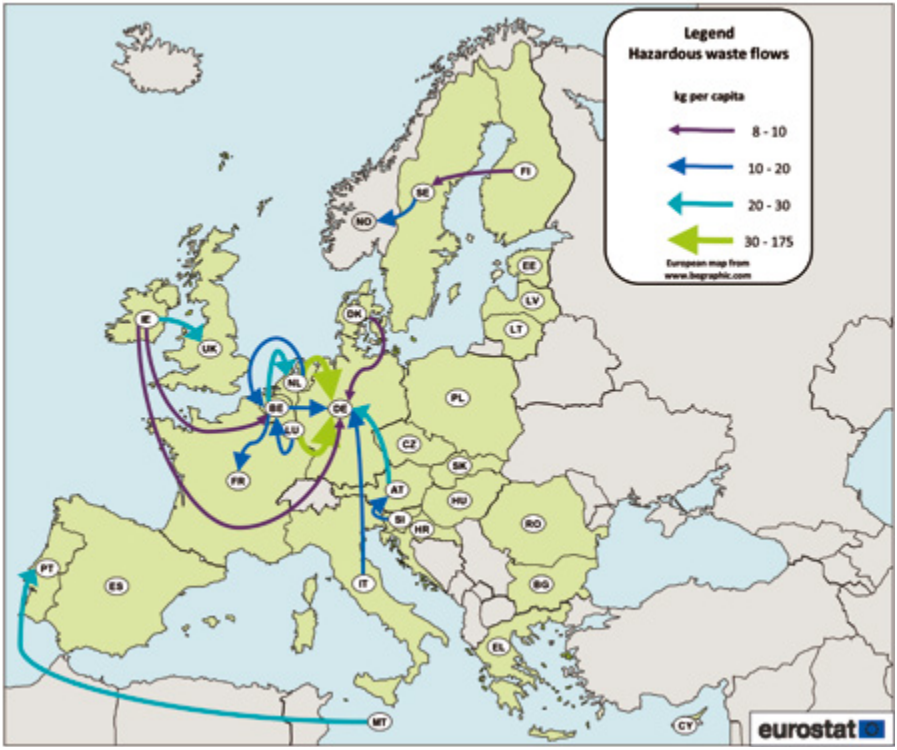
(1) Does not include Italy (breakdown not available).
(2) Provisional data.
(3) Definition differs for 'Total waste'.
Source: Eurostat (online data code: env_waselee)

Waste electrical and electronic equipment (WEEE) is one of the fastest growing waste streams in the EU. WEEE contains substances that pose environmental and health risks if treated inadequately, while their recycling offers opportunities of making secondary raw materials available on the market. EU legislation promoting the collection and recycling of such equipment had been in force since February 2003 and provides for the return of used waste equipment free of charge by consumers. WEEE data are grouped in 10 product categories.

In 2012, the tonnes of WEEE collected by EU Member States ranged between 1 506 in Malta and 690 711 in Germany. Large household appliances accounted for 1.5 million tonnes or 43 % of the total WEEE collected in the EU-28. IT and telecommunication equipment came second and consumer equipment was the third most important category in terms of quantity, with 615 000 tonnes and 572 000 tonnes respectively. Small household appliances contributed 224 000 tonnes to WEEE collection. The remaining seven categories together totalled 187 000 tonnes or 5.3 % of the collected WEEE.

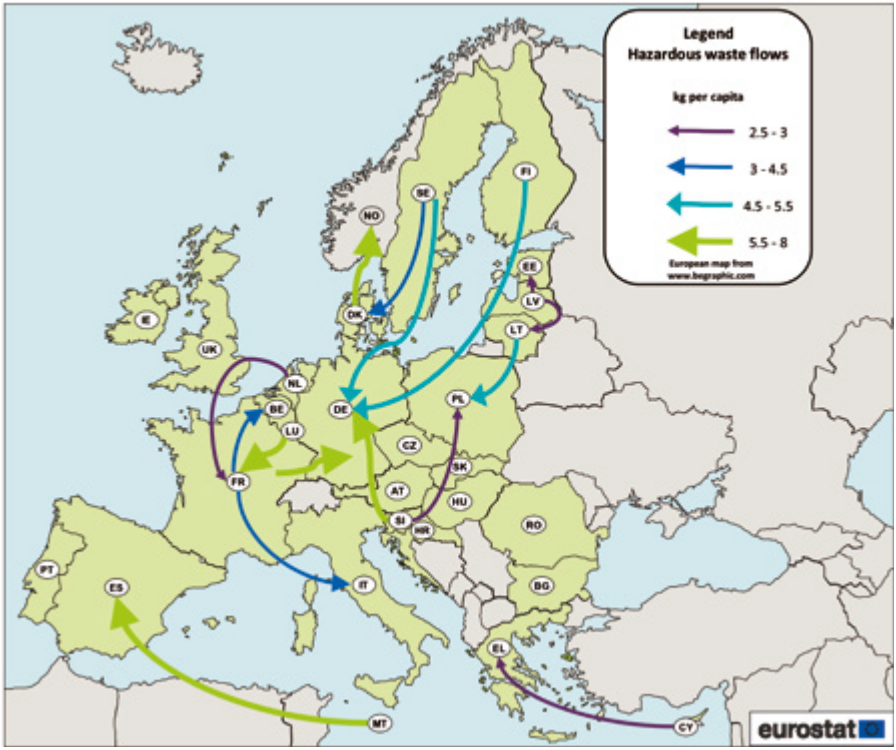
In 2012, the amount of WEEE collected varied considerably across EU Member States, from 1.2 kg/inhabitant in Romania to 17.7 kg/inhabitant in Sweden. Norway presented 20.9 kg/inhabitant. The considerable variation in the amounts collected reflects differences in EEE consumption levels as well as the different performance levels of the waste collection schemes in place. A comparison of WEEE collection in 2007 and 2012 shows that separate collection has improved significantly in most EU Member States. Decreasing amounts for WEEE collection were reported by only six EU Member States including Denmark and Ireland where the level of separate collection was already high in 2007.

Map 4.3.1: Hazardous waste shipments between EU Member States (larger flows), 2012



Source: Eurostat, Environmental Data Centre on Waste (http://ec.europa.eu/eurostat/web/waste/overview)

Map 4.3.2: Hazardous waste shipments between EU Member States (smaller flows), 2012



Source: Eurostat, Environmental Data Centre on Waste (http://ec.europa.eu/eurostat/web/waste/overview)

Table 4.3.9: Shipment of hazardous waste, by country, 2001–12
(1 000 tonnes)

	2001	2003	2005	2007	2008	2009	2010	2011	2012
EU-28	3 164.2	4 444.5	6 487.5	8 046.9	7 966.8	7 427.9	6 257.4	6 125.1	5 249.4
Belgium	721.2	792.5	829.0	1 026.2	861.2	672.6	688.8	836.2	631.1
Bulgaria	:	:	:	0.3	0.9	0.4	9.4	5.0	2.1
Czech Republic	1.9	1.1	1.5	3.5	5.9	7.3	15.2	11.4	18.1
Denmark	177.2	136.1	85.6	117.0	166.5	176.1	102.0	64.3	118.8
Germany	270.0	186.3	229.5	249.3	248.7	163.7	308.9	317.0	334.3
Estonia	3.2	1.3	0.3	2.7	0.7	4.7	0.9	1.6	3.4
Ireland	282.0	388.6	257.0	322.5	575.6	190.9	201.1	211.1	193.4
Greece	0.7	3.2	3.2	8.5	25.5	23.1	39.0	44.1	21.9
Spain	61.2	48.9	44.1	60.2	52.1	53.9	51.7	104.4	59.0
France	149.2	709.6	399.2	863.4	759.9	971.7	1 400.4	1 223.3	985.3
Croatia	:	:	:	:	:	:	:	:	21.2
Italy	182.6	243.5	671.9	1 243.4	1 237.4	1 404.9	1 458.8	1 353.8	976.8
Cyprus	2.5	2.4	2.8	4.1	2.1	2.3	4.7	7.9	5.4
Latvia	16.6	16.2	0.8	7.2	2.3	10.9	17.4	14.4	11.9
Lithuania		84.4	2.3	4.1	6.5	17.3	17.8	23.9	21.4
Luxembourg	89.1	85.8	45.8	72.7	44.3	114.1	88.7	80.7	102.1
Hungary	18.3	31.5	76.0	72.2	76.6	69.3	48.9	29.4	19.1
Malta	4.5	:	1.3	1.8	2.0	1.9	17.8	16.7	14.3
Netherlands	808.1	1 177.3	3 221.1	3 120.6	3 030.9	2 743.4	738.1	813.0	788.5
Austria	106.2	150.3	191.1	284.9	199.2	172.9	278.7	284.7	270.0
Poland	17.9	37.0	10.0	66.4	13.0	25.6	20.3	13.7	13.7
Portugal	63.3	92.3	107.7	7.5	6.4	61.4	54.3	62.5	17.4
Romania	:	:	:	37.2	2.4	23.4	3.9	2.1	7.0
Slovenia	7.9	14.7	22.0	69.7	102.6	57.6	35.1	45.4	46.6
Slovakia	0.3	2.2	2.6	2.2	3.4	3.0	4.3	4.4	5.0
Finland	39.0	59.9	68.5	74.2	113.5	107.0	119.6	92.1	94.8
Sweden	105.3	119.2	94.8	176.0	255.6	184.3	310.0	269.9	249.0
United Kingdom	35.9	60.3	119.5	149.3	171.6	164.4	221.7	192.1	217.9

Source: Eurostat, Environmental Data Centre on Waste (http://ec.europa.eu/eurostat/web/waste/overview)

Between 2001 and 2012, the amount of hazardous waste shipments from EU Member States to other EU Member States or out of the EU has increased by 66%, from 3164000 tonnes in 2001 to 5249000 tonnes in 2012, although shipments peaked in 2007 at 8047000 tonnes. However, there has been a decrease of 14% from 2011 to 2012, largely due to decreased export from Belgium, France and Italy.

Two thirds of the countries have increased their shipments from 2001 to 2012. France and Italy, especially, have seen a large increase in waste exports: in 2012, both countries dispatched about 0.8 million tonnes of hazardous waste, despite exports from both countries falling by around 100000 tonnes from 2010 to 2012. The Netherlands had a large fall in exported hazardous waste from 2009 to 2012. This decrease can be partly explained by changes in the waste reporting: some waste earlier reported as hazardous was in fact non-hazardous, elevating the earlier figure in relation to the 'correct' amount of exported hazardous waste.

Almost all EU Member States shipped hazardous waste to Germany, and this is reflected in the large number of arrows into Germany on the maps. Belgium and France also received waste from a number of countries.

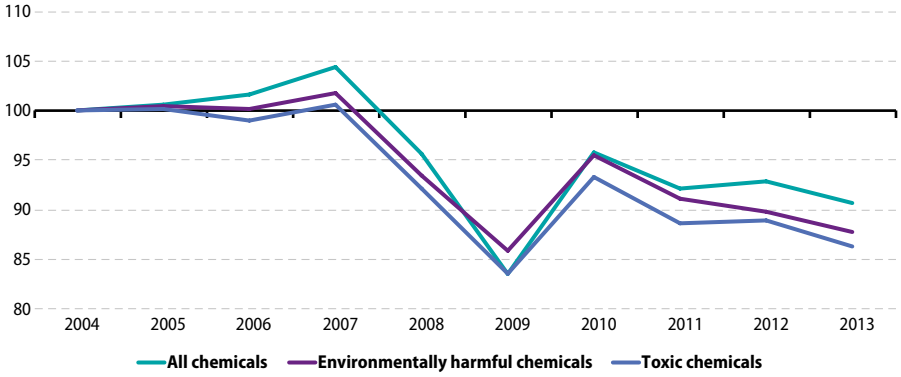
4.4 Chemicals

The EU-28's production of toxic chemicals (all five toxicity classes together) increased by 0.6 % between 2004 and 2007 to reach a peak of 235 million tonnes. Production fell by 20 million tonnes in 2008 (or by 8.4 %) and by the same amount in 2009 (or 9.3 %) to a level of 196 million tonnes. The rebound in activity in 2010 (up 11.7 %) made up for the losses recorded in 2009 but was followed by further reductions in 2011 (– 5.0 %) and 2013 (– 3.0 %). As a result of these developments, the EU-28's level of production of toxic chemicals in 2013 was 202 million tonnes, some 32 million tonnes less than in 2004.

The share of all toxic chemicals (all five classes) in total EU-28 chemicals production generally followed a gradual downward path over the 10 years. From a peak of 66.0 % of total chemicals production in 2004, the share of all toxic chemicals fell to 63.5 % in 2008. While there was a spike in the share of all toxic chemicals in 2009 (which may be attributed to a rapid decline in the overall production of chemicals during the financial and economic crisis, rather than an increase in the production of all toxic chemicals), the share subsequently continued to fall, reaching 62.7 % in 2013.

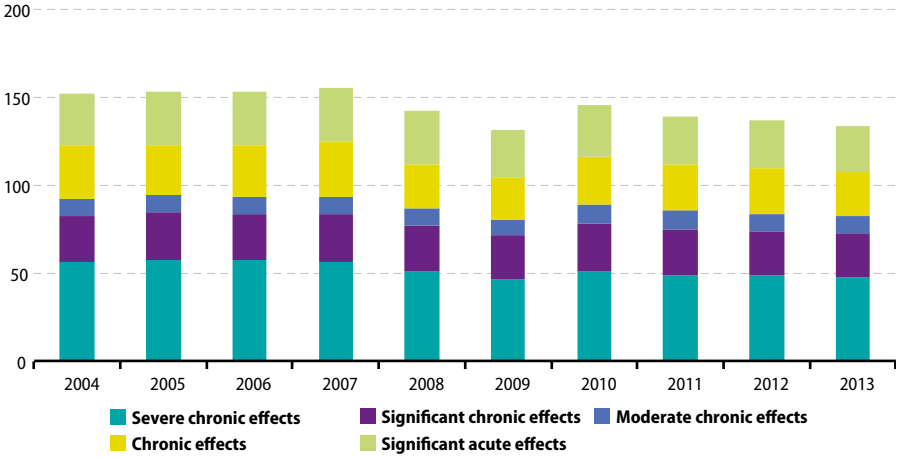
EU-28 production of the most toxic chemicals — carcinogenic, mutagenic and reprotoxic (CMR) chemicals — fluctuated between 34 and 36 million tonnes from 2004 to 2007. Production fell by 5.3 million tonnes (or 14.8 %) between 2007 and 2008 to stand at 30.6 million tonnes. There was a recovery in the level of production of CMRs in 2009 and 2010, as the production of CMR chemicals rose to 34.7 million tonnes — back to a level of production that was similar to that recorded prior to the financial and economic crisis. From 2010, the level of production of CMR chemicals declined once more at a relatively steady rate to reach 30.7 million tonnes by 2013.

Figure 4.4.1: Production of chemicals, EU-28, 2004–13 ([1])
(2004 = 100)



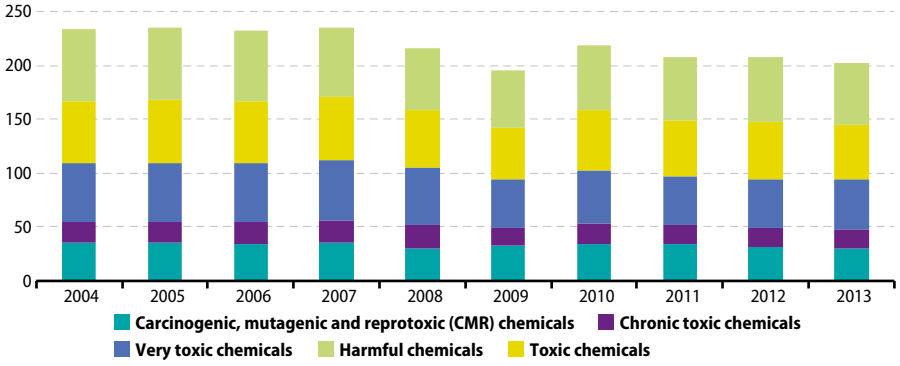
Source: Eurostat (online data codes: tsdph320 and ten00011)

Figure 4.4.2: Production of chemicals harmful to the aquatic environment, EU-28, 2004–13 ([1])
(million tonnes)



([1]) The different classes of chemicals are ranked according to their environmental impact from the most harmful (bottom class) up to the least harmful (top class).
Source: Eurostat (online data code: ten00011)

Figure 4.4.3: Production of toxic chemicals, EU-28, 2004–13 ([1])
(million tonnes)



([1]) The different classes of chemicals are ranked according to their toxicity from the most dangerous (bottom class) up to the least dangerous (top class).
Source: Eurostat (online data code: tsdph320)

4.5 Forestry and biodiversity

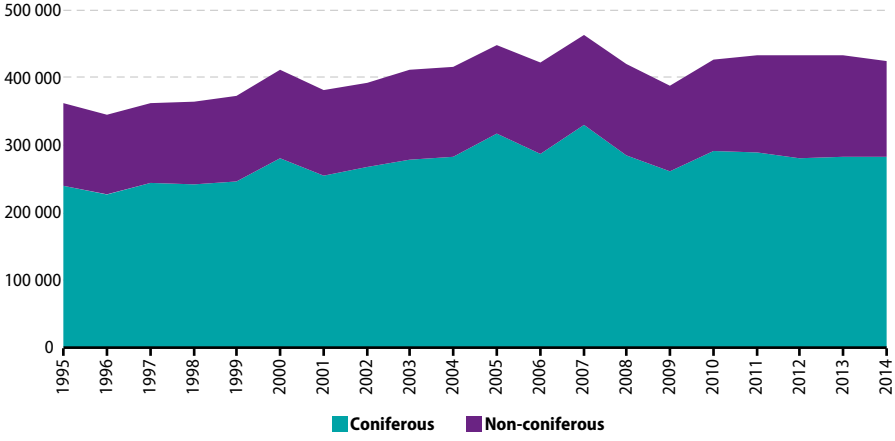
The EU-28 has just over 180 million hectares of forests and other wooded land, corresponding to 42 % of its land area. Wooded land covers a slightly greater proportion of the land than is used for agriculture (some 40 %). In six EU Member States, more than half of the land area was wooded in 2010. Just over three quarters (77 %) of the land area was wooded in Finland and Sweden, while Slovenia reported 63 %; the remaining three EU Member States, each with shares in the range of 54–56 %, were Estonia, Spain and Latvia.

Sweden reported the largest wooded area in 2010 (31.2 million hectares), followed by Spain (27.7 million hectares), Finland (23.3 million hectares), France (17.6 million hectares), Germany (11.1 million hectares) and Italy (10.9 million hectares). Of the total area of the EU-28 covered by wooded land in 2010, Sweden accounted for 17.3 %. Spain (15.4 %) and Finland (12.9 %) were the only other EU Member States to record double-digit shares.

New data were collected by the Food and Agriculture Organization (FAO) in 2015 for the Global Forest Resources Assessment. They show that several EU Member States have revised their time series upwards, but this does not mean that forest area has actually increased in the EU, only that the area estimates produced from existing inventory data have been corrected.

Just less than 60 % of the EU-28's forests were privately owned in 2010. There were 11 EU Member States where the share of privately owned forests was above the EU-28 average, peaking at 98.4 % in Portugal. By contrast, the share of privately owned forests was below 20 % in Poland and Bulgaria (where the lowest proportion was recorded, 13.2 %).

Figure 4.5.1: Annual production of roundwood, EU-28, 1995–2014 (1)
(1 000 m^3)



(1) 2014 provisional.
Source: Eurostat (online data code: for_remov)

Table 4.5.1: Forest area and ownership by country, 2010 and 2015

	Land area 2010 without inland water (1)	Forest and other wooded land		Forest		Forest ownership 2010	
		2010	2015	2010	2015	Public	Private (2)
	(1 000 hectares)					(%)	
EU-28	*424 578*	*180 232*	*181 924*	*158 785*	*161 081*	*40.3*	*59.7*
Belgium	3 033	706	719	678	683	44.3	55.7
Bulgaria	10 893	3 927	3 845	3 927	3 823	86.8	13.2
Czech Republic	7 723	2 657	2 667	2 657	2 667	76.8	23.2
Denmark	*4 243*	591	658	544	612	23.7	76.3
Germany	*34 877*	11 076	11 419	11 076	11 419	51.5	48.5
Estonia	4 343	2 350	2 456	2 217	2 232	39.0	61.0
Ireland	6 839	789	801	739	754	54.3	45.7
Greece	13 082	6 539	6 546	3 903	4 054	77.5	22.5
Spain	50 176	27 748	27 627	18 173	18 418	29.4	70.6
France	*55 010*	17 572	17 579	15 954	16 989	25.8	74.2
Croatia	5 659	2 474	2 491	1 920	1 922	72.7	27.3
Italy	29 511	10 916	11 110	9 149	9 297	33.6	66.4
Cyprus	921	387	386	173	173	68.7	31.3
Latvia	6 220	3 467	3 468	3 354	3 356	49.4	50.6
Lithuania	6 268	2 240	2 284	2 160	2 180	63.5	36.5
Luxembourg	259	88	88	87	87	47.1	52.9
Hungary	*8 961*	2 029	2 190	2 029	2 069	57.8	42.2
Malta	32	0	0	0	0	:	:
Netherlands	3 372	365	376	365	376	50.4	49.6
Austria	8 241	4 006	4 022	3 887	3 869	25.7	74.3
Poland	*30 633*	9 337	9 435	9 337	9 435	82.2	17.8
Portugal	*9 068*	3 611	4 907	3 456	3 182	1.6	98.4
Romania	23 016	6 733	6 951	6 573	6 861	67.7	32.3
Slovenia	2 014	1 274	1 271	1 253	1 248	23.2	76.8
Slovakia	*4 810*	1 933	1 940	1 933	1 940	50.6	49.4
Finland	30 389	23 269	23 019	22 157	22 218	30.3	69.7
Sweden	40 734	31 247	30 505	28 203	28 073	26.8	73.2
United Kingdom	24 251	2 901	3 164	2 881	3 144	33.3	66.7
Iceland	10 024	116	193	30	49	27.8	72.2
Liechtenstein	16	7	7	7	7	91.4	8.6
Norway	30 425	12 384	14 124	10 250	12 112	14.1	85.9
Switzerland	4 000	1 311	1 324	1 240	1 254	71.7	28.3
Montenegro	*1 345*	744	964	467	827	72.2	27.8
FYR of Macedonia	2 491	1 141	1 141	998	998	90.4	9.6
Serbia	*8 746*	3 123	3 228	2 713	2 720	50.6	49.4
Turkey	76 960	20 864	21 845	10 175	11 715	99.9	0.1

(1) Latest available year; France: only covers the mainland.
(2) Includes any other form of ownership.
Source: Eurostat (online data code: demo_r_d3area); Food and Agriculture Organization of the United Nations
— Global Forest Resources Assessment, 2015; Ministerial Conference for the Protection of Forests in Europe (Forest Europe)
— State of Europe's Forests, 2011

Table 4.5.2: Roundwood production, by country, 2000–14
(1 000 m³)

	2000	2005	2010	2011	2012	2013	2014
EU-28	*411 764*	*447 502*	*427 611*	*433 657*	*433 173*	*434 326*	*425 351*
EA (1)	*236 540*	*232 925*	*234 993*	*237 590*	*237 347*	*237 044*	*225 127*
Belgium	4 510	4 950	4 827	5 128	6 663	:	*:*
Bulgaria	4 784	5 862	5 668	6 205	5 973	5 804	*5 570*
Czech Republic	14 441	15 510	16 736	15 381	15 061	15 331	*15 476*
Denmark	2 952	2 962	2 669	2 583	2 669	3 180	*3 180*
Germany	53 710	56 946	54 418	56 142	52 338	53 207	*54 356*
Estonia	8 910	5 500	7 200	7 110	7 290	7 655	*8 460*
Ireland	2 673	2 648	2 618	2 635	2 580	2 760	*2 831*
Greece	2 245	1 523	1 048	1 196	:	:	*:*
Spain	14 321	15 531	16 089	15 428	14 657	15 758	*15 911*
France	65 865	52 499	55 808	55 041	51 495	51 671	*51 671*
Croatia	3 669	4 018	4 477	5 258	5 714	5 436	*5 003*
Italy	9 329	8 691	7 844	7 744	7 744	:	*:*
Cyprus	21	10	9	8	11	9	*9*
Latvia	14 304	12 843	12 534	12 833	12 530	12 242	*12 597*
Lithuania	5 500	6 045	7 097	7 004	6 921	7 053	*7 351*
Luxembourg	260	249	275	261	:	:	*:*
Hungary	5 902	5 940	5 740	6 232	5 946	6 027	*5 671*
Malta	0	0	0	0	0	0	*0*
Netherlands	1 039	1 110	1 081	982	8 063	1 108	*1 337*
Austria	13 276	16 471	17 831	18 696	18 021	17 390	*17 089*
Poland	26 025	31 945	35 467	37 180	38 015	38 939	*40 565*
Portugal	10 831	10 746	9 648	10 961	10 711	10 642	*:*
Romania	13 148	14 501	13 112	14 359	16 088	15 195	*15 068*
Slovenia	2 253	2 733	2 945	3 388	3 341	3 415	*5 099*
Slovakia	6 163	9 302	9 599	9 213	8 063	9 168	*:*
Finland	54 542	52 250	50 952	50 767	52 310	56 992	*57 033*
Sweden	63 300	98 200	72 200	71 900	69 499	69 600	*70 100*
United Kingdom	7 791	8 519	9 718	10 020	10 120	10 821	*11 184*
Iceland	0	0	:	3	4	:	*:*
Liechtenstein	:	:	25	26	23	19	*19*
Norway	8 156	9 667	10 443	10 291	10 572	11 598	*12 386*
Switzerland	9 238	5 285	4 938	4 861	4 466	4 577	*4 709*
Montenegro	:	:	364	364	915	915	*915*
FYR of Macedonia	:	822	631	631	779	691	*691*
Turkey	15 939	16 185	20 554	21 039	21 959	20 858	*22 835*
Brazil	:	*255 743*	*271 501*	*284 019*	*284 985*	*264 443*	*264 443*
Canada	201 845	203 121	142 013	148 178	152 594	152 076	*154 259*
China	:	*302 037*	*291 251*	*288 466*	*285 135*	*347 512*	*347 512*
India	:	*328 677*	*332 499*	*331 969*	*331 436*	*357 226*	*357 226*
Indonesia	:	*123 791*	*113 849*	*117 994*	*115 623*	*115 232*	*115 232*
Russia	158 100	185 000	175 000	220 224	216 379	194 461	*203 000*
United States	466 549	467 347	323 986	338 090	376 629	396 818	*398 693*

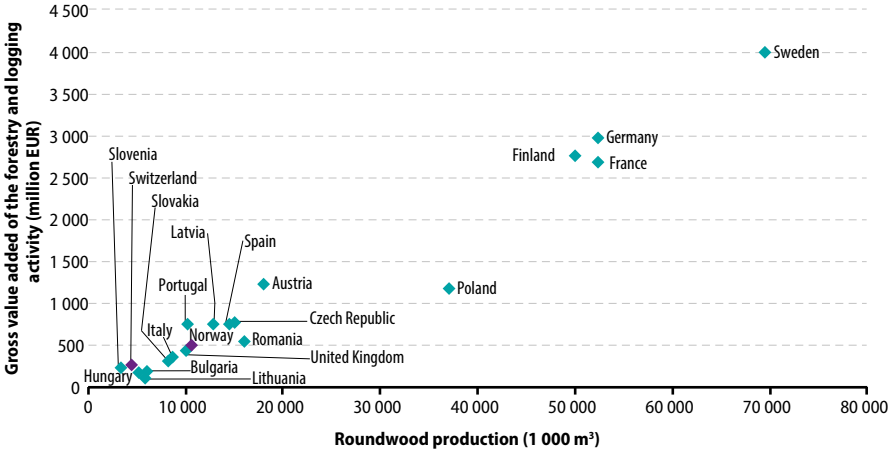
(1) EA-11 for 2000. EA-12 for 2005. EA-16 for 2010. EA-17 for 2011–13. EA-18 for 2014.
The data not available were nevertheless estimated by Eurostat and are included in the EU-aggregates.
Source: Eurostat (online data codes: for_removv)

Table 4.5.3: Sawnwood production, by country, 2000–14
(1 000 m³)

	2000	2005	2010	2011	2012	2013	2014
EU-28	*100 706*	*108 706*	*100 815*	*101 994*	*100 058*	*99 736*	*99 208*
EA (1)	*61 337*	*66 777*	*59 673*	*60 627*	*57 947*	*58 002*	*55 133*
Belgium	*1 150*	*1 285*	*1 383*	*1 388*	*1 342*	:	:
Bulgaria	312	569	554	728	698	801	:
Czech Republic	4 106	4 003	4 744	4 454	4 259	4 037	*3 861*
Denmark	364	*196*	*448*	*372*	*392 7*	357 6	*358*
Germany	16 340	21 931	22 059	22 628	21 081	21 478	*21 787*
Estonia	1 436	2 063	1 771	1 503	1 491	1 558	*1 600*
Ireland	888	1 015	772	761	782	825	*907*
Greece	123	191	118	106	:	:	:
Spain	3 760	3 660	2 038	2 162	1 971	2 047	*2 047*
France	10 536	9 715	8 316	*8 675*	8 067	7 901	*7 901*
Croatia	642	624	677	754	851	877	*780*
Italy	1 630	1 590	1 200	1 250	1 370	1 360	*1 430*
Cyprus	9	4	4	3	3	2	*2*
Latvia	3 900	4 227	3 150	3 432	3 316	3 367	*3 657*
Lithuania	1 300	1 445	1 272	1 260	1 150	1 120	*1 345*
Luxembourg	*133*	*133*	*94*	*78*	:	:	:
Hungary	291	215	133	:	302	109	*121*
Malta	0	0	0	0	0	0	*0*
Netherlands	389	279	231	238	1 430	216	*227*
Austria	10 390	11 074	9 603	9 636	8 952	8 534	*8 351*
Poland	4 262	3 360	4 220	4 422	4 249	4 321	*4 615*
Portugal	1 427	1 010	1 045	1 044	1 097	872	:
Romania	3 396	4 321	4 323	4 442	5 500	5 532	*5 762*
Slovenia	439	527	760	703	660	660	*700*
Slovakia	1 265	2 621	2 576	2 204	1 430	1 750	:
Finland	13 420	12 269	9 473	9 750	9 440	10 440	*10 940*
Sweden	16 176	17 600	16 750	16 500	16 492	16 074	*17 500*
United Kingdom	2 622	2 780	3 101	3 279	3 409	3 581	*3 764*
Iceland	0	0	:	:	0	:	:
Liechtenstein	:	:	4	8	0	0	*0*
Norway	2 280	2 326	2 118	2 271	2 289	2 206	*2 407*
Switzerland	1 625	1 591	1 457	1 313	1 135	1 044	*1 140*
Montenegro	:	:	50	50	53	53	*53*
FYR of Macedonia	:	18	5	5	8	4	*4*
Turkey	5 528	6 445	6 243	6 461	6 682	6 405	*6 635*
Brazil	:	*23 557*	*25 080*	*25 210*	*25 210*	*15 397*	*15 397*
Canada	50 465	60 187	38 667	38 880	40 715	42 813	*43 351*
China	:	*18 348*	*37 231*	*44 638*	*55 738*	*63 040*	*68 440*
India	:	*14 789*	*6 889*	*6 889*	*6 889*	*6 889*	*6 889*
Indonesia	:	*4 330*	*4 169*	*4 169*	*4 169*	*4 169*	*4 169*
Russia	20 000	22 033	28 870	31 215	32 230	*33 500*	*33 900*
United States	91 076	97 020	57 629	60 185	64 246	71 115	*74 803*

(1) EA-11 for 2000. EA-12 for 2005. EA-16 for 2010. EA-17 for 2011–13. EA-18 for 2014.
The data not available were nevertheless estimated by Eurostat and are included in the EU-aggregates.
Source: Eurostat (online data code: for_swpan)

Figure 4.5.2: Roundwood production and gross value added of forestry and logging, by country, 2012 ([1])



([1]) EU Member States that are not shown: not available or values too low. Italy, Lithuania and Netherlands: 2006. Spain: 2007. Hungary and Malta: 2009. Greece, Latvia and Luxembourg: 2011. France, Portugal and Norway: provisional.

Source: Eurostat (online data codes: for_remov and for_ieeaf_cp)

Among the EU Member States, Sweden produced the most roundwood (70 million m³) in 2014, followed by Finland, Germany and France (each producing between 52 and 57 million m³). Slightly more than one fifth of the EU-28's roundwood production in 2014 was used as fuelwood, while the remainder was industrial roundwood used either for sawnwood and veneers, or for pulp and paper production.

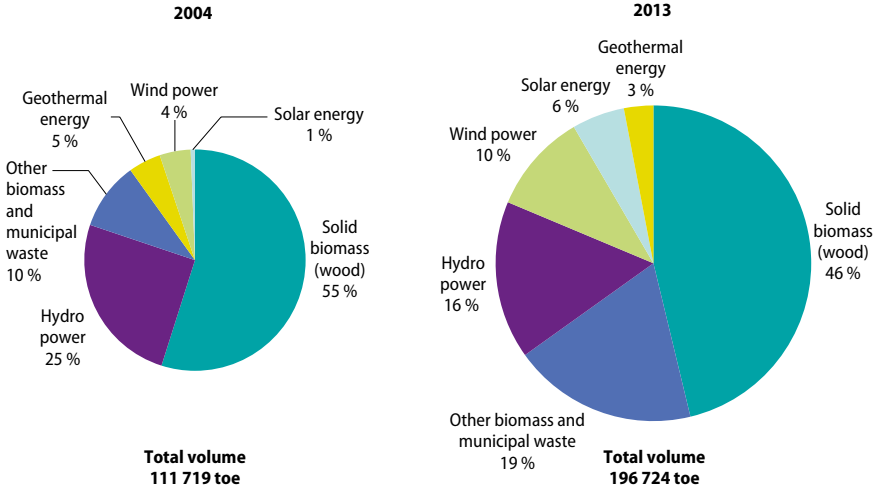
In 2013 and 2014, two EU Member States — Sweden and Ireland — reported that over 90 % of their total roundwood production was used as industrial roundwood. France and Cyprus were the only EU Member States where over half of the roundwood produced in 2013 and 2014 was used as fuelwood, while Hungary, Croatia and Lithuania reported proportions between 32 and 45 %. In many EU Member States, however, no estimates of actual fuelwood consumption by households are included in the numbers reported. Separate studies would be needed to produce such estimates, because this wood may be acquired informally, including from forests owned by households. The numbers reported here are probably under-reported in several EU Member States, given the recent increases in the EU's production of wood pellets and other agglomerates used for energy (see Figure 4.5.5) and the share of wood in gross inland energy consumption (see Figures 4.5.3 and 4.5.4).

The overall level of EU-28 roundwood production reached an estimated 425 million m³ in 2014, some 37 million m³ (8 %) less than the peak output level recorded in 2007. Note that some of the peaks (most recently 2000, 2005 and 2007) in roundwood production are due to forestry and logging having to cope with unplanned numbers of trees that were felled by severe storms.

From 1996 to 2007, there was a steady increase in the level of roundwood production in the EU-28. While the output of non-coniferous (broadleaved or hardwood) species remained relatively stable, there were greater year-on-year differences for coniferous (softwood) species. The effects of the financial and economic crisis led to a drop of the level of EU-28 coniferous production in 2008, a pattern confirmed by a further reduction in 2009. The output has since returned to pre-crisis levels of approximately 280 million m^3 per annum. Non-coniferous production increased relative to coniferous production ever since the crisis years. In 2010, EU-28 total roundwood production rebounded strongly by 10 % and continued to rise in 2011, but has since levelled out at – 2 % in 2014.

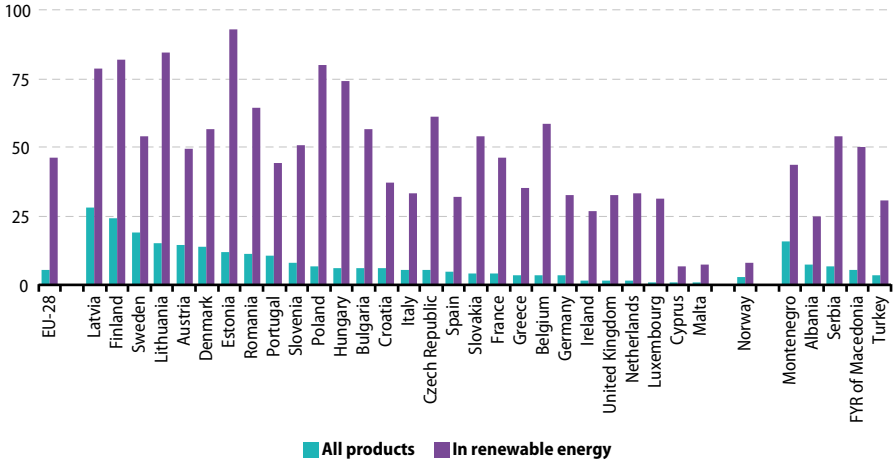
The total output of sawnwood across the EU-28 was approximately 100 million m^3 per year from 2010 to 2014, some 14 % lower than in 2007, the year of the global financial and economic crisis, which was also the year of the all-time maximum in production at 116 million m^3. The situation has now returned to the average production level of the years preceding the crisis. Germany and Sweden are the EU's leading sawnwood producers, regularly accounting for approximately 22 % and 17 % of the EU-28 total output over the past few years.

Figure 4.5.3: Gross inland consumption of renewable energy, EU-28, 2004 and 2013



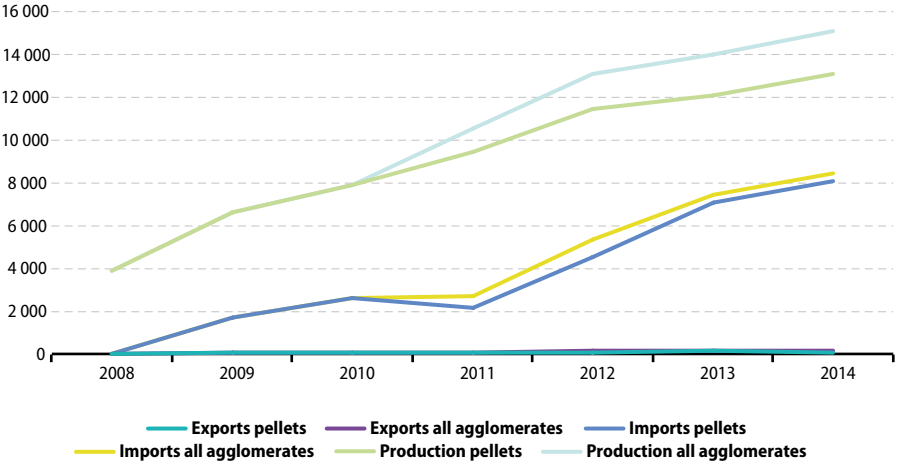
Source: Eurostat (online data code: nrg_107a)

Figure 4.5.4: Wood as a source of energy, by country, 2013
(% share of wood and wood products in gross inland energy consumption, in toe)



Source: Eurostat (online data codes: nrg_100a and nrg_107a)

Figure 4.5.5: Development of production and trade in wood pellets, EU-28, 2008–14 (1)
(1 000 tonnes)



(1) EU-27: 2008–11.
Source: Eurostat (online data code: for_basic)

Between 2004 and 2013, the consumption of renewable energy within the EU-28 almost doubled. Some renewable energy sources grew exponentially. The consumption of solar energy for example, grew by 1 433 % between 2004 and 2013. However, the consumption of more established renewable energy sources, such as biomass other than wood (including municipal waste) also increased substantially (+ 235 %) during the same period. Among renewable energy sources, total biomass (wood and other biomass including municipal waste) plays an important role, accounting for just over two thirds (65.0 %) of the gross inland energy consumption of renewables in the EU-28 in 2013. As part of this biomass total, wood and wood waste provided the highest share of energy from organic, non-fossil materials of biological origin, accounting for almost half (46 %) of the EU-28's gross inland energy consumption of renewables in 2013.

In many EU Member States, wood is the most important single source of energy from renewables. Wood and wood waste accounted for 5.5 % of the total energy consumed within the EU-28 in 2013. The share of wood and wood waste in gross inland energy consumption ranged from over 20 % in Latvia and Finland down to less than 1 % in Cyprus and Malta.

Wood was the source for more than three quarters of the renewable energy consumed in Estonia, Lithuania, Finland, Poland and Latvia. By contrast, the relative weight of wood in the mix of renewables was relatively low in Malta and Cyprus (where the lowest share was reported, 6.7 %); this was also the case in oil- and gas-rich Norway (8.0 %).

The EU-28 is the largest global producer of wood pellets, its output reaching an estimated 13.1 million tonnes in 2014; production in the EU-28 rose by 97 % overall between 2009 and 2014. The EU-28 is also a net importer of wood pellets: the level of imports from non-EU Member States rose to 8 million tonnes in 2014, an overall increase of 364 % compared with 2009. The main suppliers of EU imports are the United States and Canada; much less is supplied by Russia and other countries (i.a. Belarus and Ukraine).

Germany produced an estimated 2 million tonnes of wood pellets in 2014, or 15 %, of the EU-28's output. Sweden was the second largest producer with around 1.6 million tonnes, followed by Latvia (1.3 million tonnes), France (1.2 million tonnes), Austria and Portugal (945 and 944 thousand tonnes).

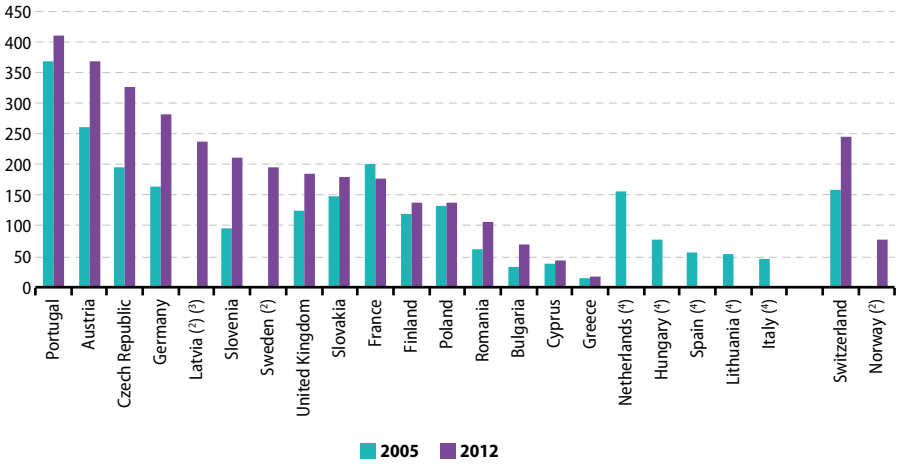
The United Kingdom had the highest level of wood pellet imports in 2014 among the EU-28 Member States, some 7.2 million tonnes (note that this figure relates to total imports, from non-EU countries as well as from Member States). Denmark and Italy each imported around 2 million tonnes of wood pellets in 2014. By contrast, Latvia was the only EU Member State to export more than 1 million tonnes of wood pellets in 2014, followed by Portugal with 750 thousand tonnes and the Czech Republic with 700 thousand tonnes. The Czech Republic also exported 591 thousand tonnes of other agglomerates, such as wood briquettes.

Table 4.5.4: Economic indicators for forestry and logging, by country, 2005 and 2012

	Gross output		Gross value added at basic prices		Gross fixed capital formation		Gross value added/ forest area available for wood supply	
	(EUR million)						(EUR/hectare)	
	2005	2012	2005	2012	2005	2012	2005	2012
Belgium	:	:	:	:	:	:	:	:
Bulgaria	216	459	84	197	11	20	33	69
Czech Republic	1 035	1 744	496	764	63	103	197	328
Denmark	:	:	:	:	:	:	:	:
Germany	4 141	6 348	1 738	2 975	168	226	164	282
Estonia	:	:	:	:	:	:	:	:
Ireland	:	:	:	:	:	:	:	:
Greece	60	70	54	63	4	17	16	18
Spain	1 438	:	787	:	:	:	55	:
France	4 446	4 578	2 968	2 690	472	275	201	178
Croatia	:	:	:	:	:	:	:	:
Italy	443	:	365	:	83	:	47	:
Cyprus	2	3	2	2	2	1	38	44
Latvia (1)	:	1 168	:	749	:	:	:	239
Lithuania	167	:	102	:	10	:	55	:
Luxembourg	:	:	:	:	:	:	:	:
Hungary	277	:	132	:	24	:	79	:
Malta	:	:	:	:	:	:	:	:
Netherlands	22	:	46	:	10	:	156	:
Austria	1 592	2 244	873	1 222	155	149	261	368
Poland	1 991	2 051	1 110	1 166	137	280	132	137
Portugal	693	758	666	747	98	97	370	410
Romania	286	1 075	314	550	:	42	62	106
Slovenia	178	341	115	230	8	12	99	211
Slovakia	551	656	259	321	33	28	148	181
Finland	1 890	2 251	2 422	2 761	388	444	121	139
Sweden	:	8 728	:	3 996	:	704	:	194
United Kingdom	535	856	357	444	20	46	150	184
Norway	:	1 014	:	500	:	69	:	78
Switzerland	279	407	188	296	83	119	159	246

(1) 2011 data.
Source: Eurostat (online data codes: for_ieeaf_cp and for_area)

Figure 4.5.6: Forestry and logging value added per forest area available for wood supply, by country, 2005 and 2012 (1)
(EUR/hectare)



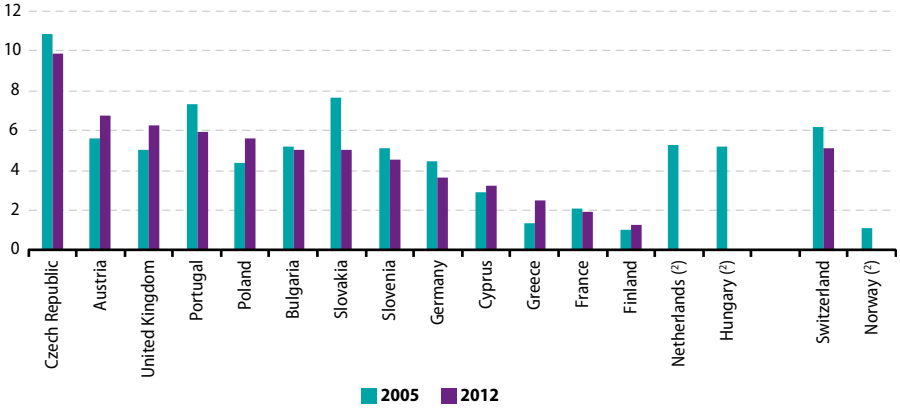
(1) Ranked on 2012; those EU Member States not shown: not available or not applicable.
(2) 2005: not available.
(3) 2012: not available; 2011 instead.
(4) 2012: not available.
Source: Ministerial Conference for the Protection of Forests in Europe (Forest Europe) — State of Europe's Forests, 2011, supplemented by Eurostat estimates (online data codes: for_area and for_ieeaf_cp)

The ratio of value added generated within the forestry and logging sector compared with the forest area available for wood supply is one indicator that can be used to analyse the productivity of forestry activities across the EU. The indicator shows that the highest shares of value added per forest area in the EU were in Portugal, Austria, the Czech Republic, Germany, Latvia and Sweden; forests accounted for at least one third of the total land area in each of these EU Member States.

The largest workforce in the EU's forestry and logging sector was recorded in Poland, with 47 700 annual work units (AWUs) in 2012. There were also relatively large workforces in Germany (39 800 AWUs), France (29 300 AWUs) and Finland (25 000 AWUs); note that this information is incomplete with data only available for 15 EU Member States.

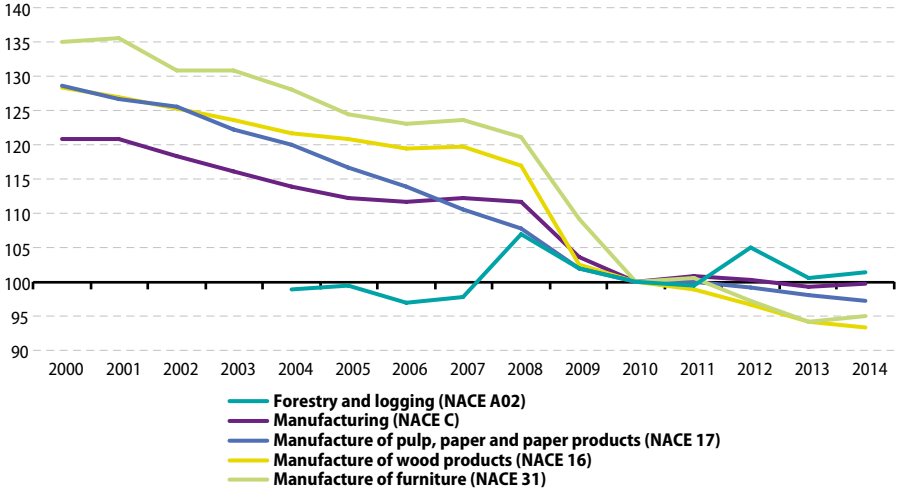
A ratio of labour input (as measured by AWUs) per area of exploited forest provides some information on the labour intensity of the forestry sector across the EU Member States. This indicator varies considerably between countries, ranging from a high of around 10 AWUs per 1 000 hectares in the Czech Republic to less than 2 AWUs per 1 000 hectares in France and Finland. Some of the differences across EU Member States may, at least in part, be explained by the local terrain in areas where forestry and logging takes place, as work in mountainous areas will generally require a higher level of labour input than work on large tracts of flat land.

Figure 4.5.7: Employment per area of forest available for wood supply, by country, 2005 and 2012 ([1])
(annual work units/1 000 hectares)



([1]) Ranked on 2012; those EU Member States not shown: not available or not applicable. Data on forest area: 2010.
([2]) 2012: not available.
Source: Ministerial Conference for the Protection of Forests in Europe (Forest Europe) — State of Europe's Forests, 2011; supplemented by Eurostat estimates (online data codes: for_awu and for_area)

Figure 4.5.8: Employment in wood-based industries compared with total manufacturing, EU-28, 2000–14
(2010 = 100)



Source: Eurostat (online data codes: sts_inlb_a, for_emp_lfs1 and for_emp_lfs)

The labour productivity of the forestry and logging sector (calculated as gross value added per AWU) also varied substantially across the EU Member States in 2012. The highest levels of labour productivity using this measure were recorded in Finland (EUR 110 440 per AWU) and France (EUR 91 817 per AWU), while at the other end of the range, Cyprus, Bulgaria and Greece recorded productivity levels that were below EUR 14 000 per AWU.

Across the EU-28, manufacturing employment fell by 18 % during the 2000–14 period, while the largest losses among the three wood-based industries were recorded for furniture manufacturing (30 % fewer persons employed).

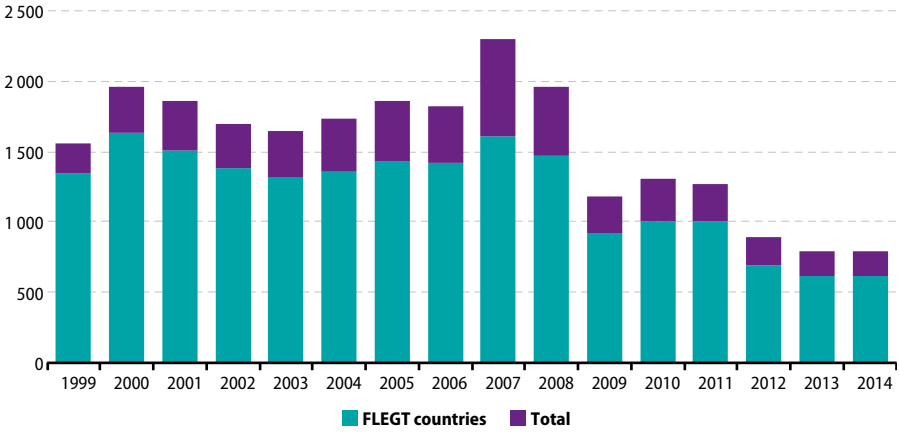
Each of these wood-based industries, in keeping with most manufacturing sectors, experienced a reduction in the number of persons employed during the 2000–14 period. The development of EU-28 employment for wood and wood products and furniture manufacturing closely followed the overall pattern for total manufacturing during the period 2000–08. Thereafter, with the onset of the global financial and economic crisis, job losses for these two wood-based industries accelerated at a faster pace than the manufacturing average. In contrast, employment in the upstream supply of timber to the wood-based industries presented a peak in 2008 (following the 2007 storms) and an increase from 2011 onwards.

Table 4.5.5: Total wood imports to the EU and the share of FLEGT countries, EU-28, 2000–14
(million EUR)

	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Cameroon	467.3	427.1	394.5	447.0	378.4	229.7	269.1	298.5	277.6	231.6	229.4
Central African Republic	30.4	24.7	27.9	24.6	21.4	11.4	10.1	10.7	9.7	6.8	5.6
Congo	83.3	101.1	99.3	91.8	94.7	53.0	79.9	60.8	53.9	65.3	64.8
Côte d'Ivoire	261.9	244.4	216.4	227.5	210.8	111.1	120.7	102.1	100.2	86.1	94.5
Democratic Republic of Congo	24.8	69.5	100.0	124.2	110.4	58.6	57.9	56.5	42.2	42.7	32.0
Gabon	204.2	269.9	250.0	289.9	265.9	180.6	168.5	161.8	140.8	147.1	143.8
Ghana	126.4	121.9	103.5	101.1	86.4	47.8	50.3	50.3	42.0	35.4	34.8
Guyana	2.7	5.5	7.7	8.2	6.1	4.8	7.6	4.7	4.3	2.3	2.0
Honduras	12.7	4.7	4.5	4.7	2.7	2.7	2.3	2.4	3.5	3.0	4.1
Indonesia	588.0	703.2	741.0	655.1	581.4	427.7	494.0	470.4	428.6	363.8	362.8
Laos	1.3	0.2	0.1	0.4	0.9	0.3	0.2	0.2	0.1	0.2	0.3
Liberia	70.3	0.0	0.0	0.0	0.3	3.6	2.3	16.2	11.0	4.7	2.3
Malaysia	557.6	439.0	582.8	587.2	539.4	391.5	441.4	408.1	376.4	316.5	310.9
Thailand	128.2	120.1	121.8	126.5	111.1	73.9	63.0	57.5	60.6	44.5	48.6
Vietnam	24.1	33.5	42.5	50.5	60.5	55.8	60.0	58.5	68.1	64.4	36.0
Sum of the 15 countries above	2 583.3	2 564.6	2 692.0	2 738.8	2 470.5	1 652.3	1 827.3	1 758.8	1 618.9	1 414.3	1 371.9
All countries of the world	8 926.0	10 427.4	11 336.3	13 129.9	11 343.4	7 881.5	9 532.6	9 767.1	9 421.9	9 209.0	9 463.6

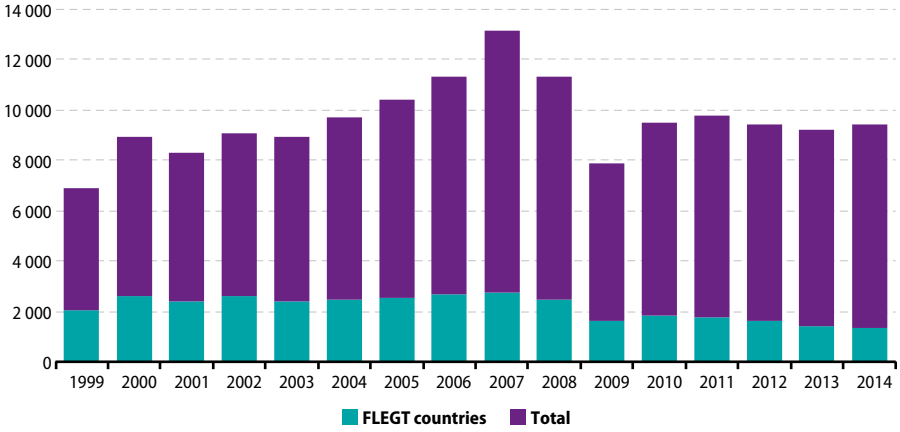
Source: Eurostat (online data code: for_trop)

Figure 4.5.9: FLEGT countries' stable share in tropical wood imports to the EU-28, 1999–2014
(million EUR)



Source: Eurostat (online data code: for_trop)

Figure 4.5.10: FLEGT countries' diminishing share in total wood imports to the EU-28, 1999–2014
(million EUR)

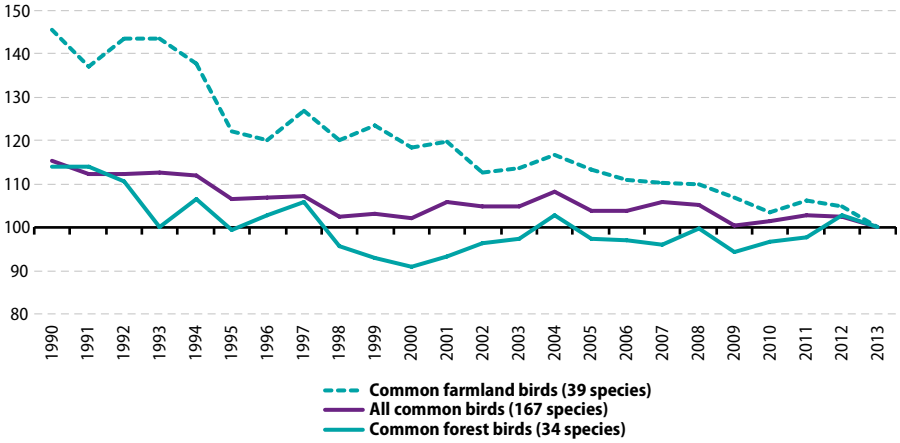


Source: Eurostat (online data code: for_trop)

The value of wood imports into the EU-28 from the fifteen tropical countries (FLEGT countries) that have signed or are in the process of signing voluntary partnership agreements (VPAs) with the EU reached a peak of EUR 2.7 billion in 2007, before falling by 10 % in 2008 and by another 33 % in 2009. This shows how hard the global financial and economic crisis hit these high-value imports. There was a modest recovery in 2010, but a further decline in the period 2011–14, when the EU-28's imports from these countries totalled EUR 1.372 billion.

The numbers also show that the FLEGT countries' share in the EU's total imports of wood and wood products has diminished over the years from 30 to 15 %. By contrast, when looking at only specified tropical wood products, the FLEGT countries' share was stable over the years and even increased of late to close to 80 %.

Figure 4.5.11: Common bird indices, EU, 1990–2013 ([1])
(aggregated index of population estimates of selected groups of breeding bird species, 2013 = 100)

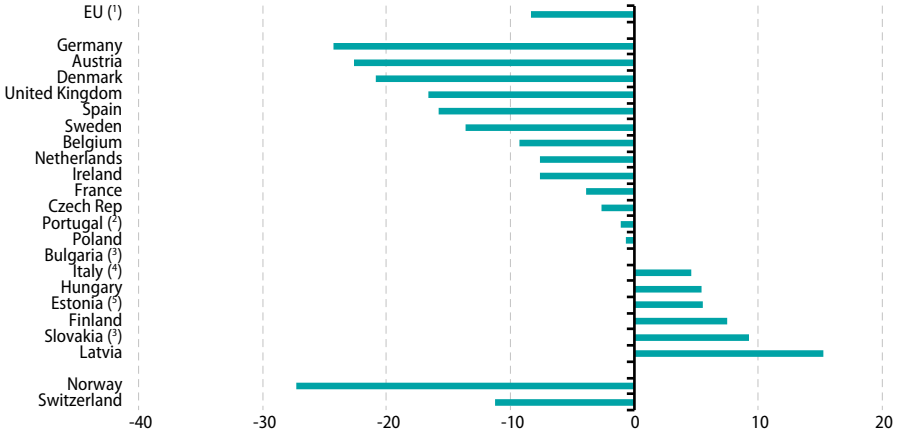


([1]) Estimates. EU aggregate changing according to the context.
Source: EBCC / RSPB / BirdLife / Statistics Netherlands; Eurostat (online data code: env_bio3)

Between 1990 and 2000 there was a general decline in the EU's populations of both common farmland birds and common forest birds. This pattern was even sharper before 2000 for common farmland birds, resulting in a huge decline by 45 % overall between 1990 and 2013. Many of these losses can be attributed to changes in land use and agricultural practices, including the intensification of crop rotation patterns and of pesticide use. While the number of common forest birds in the EU declined by 23 percentage points between 1990 and 2000 (indexed on 2013), there was a small recovery during the period 2000–13, so that the overall decline between 1990 and 2013 was around 14 %, while all common species declined by 16 % in the same period.

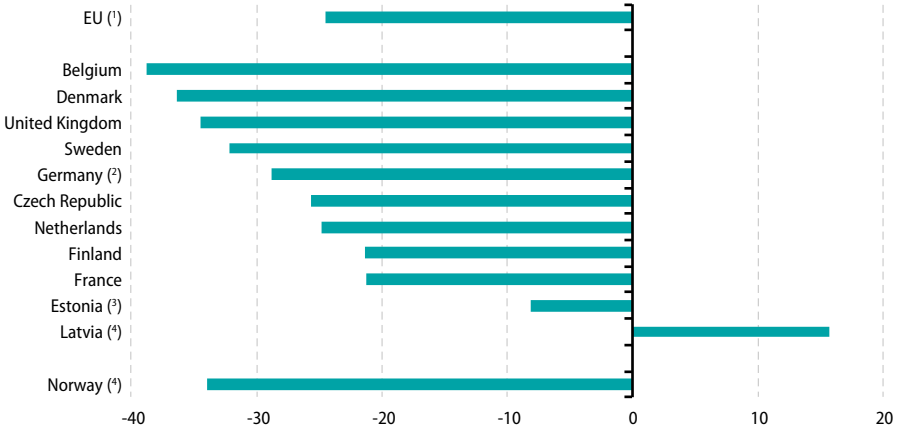
The last two figures show the changes in the national farmland bird indicators. The short-term changes in the period 2000–08 are in Figure 4.5.12, while the longer-term changes in the period 1990–2008 are in Figure 4.5.13. Only 11 EU Member States (Belgium, Denmark, the United Kingdom, Sweden, Germany, the Czech Republic, the Netherlands, Finland, France, Estonia, Latvia) and Norway are covered by both figures. This is because the countries joined the pan-European common bird monitoring scheme in different years, so there are fewer data available going back to 1990. Only Latvia had any improvement in its farmland bird index between 1990 and 2008, the last year for which national data are available. Latvia also showed a positive development from 2000–08, as did Slovakia, Finland, Estonia, Hungary and Italy. The figures show that where data exist, the greatest changes already occurred long ago, even in the few countries that showed a more positive shorter-term development (Finland and Estonia).

Figure 4.5.12: Change in national EU farmland bird indicators, by country, 2000–08
(%)



(1) Aggregate changing according to the context.
(2) 2004–08.
(3) 2005–08.
(4) 2000–07.
(5) 2000–06.
Source: Eurostat (online data code: env_bio2)

Figure 4.5.13: Change in national EU farmland bird indicators, by country, 1990–2008
(%)



(1) Aggregate changing according to the context.
(2) 1991–2008.
(3) 1990–2006.
(4) 1995–2008.
Source: Eurostat (online data code: env_bio2)

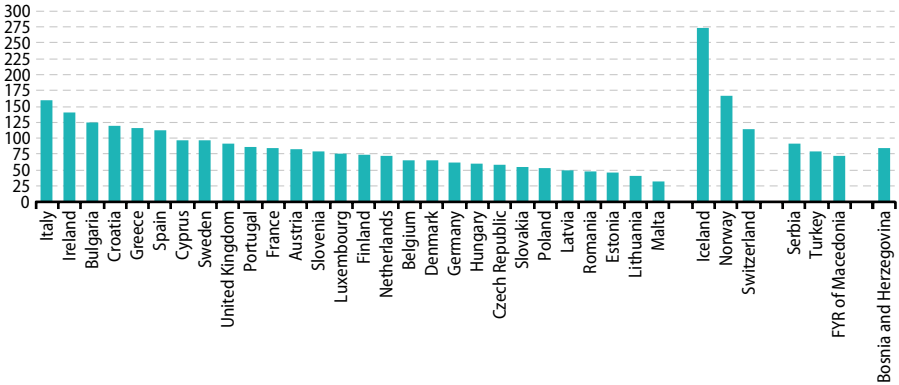
4.6 Water

There are considerable differences in the amounts of freshwater abstracted within each of the EU Member States, in part reflecting the resources available, but also abstraction practices depending on climate as well as on the industrial and agricultural structure of the country. Total abstraction of fresh water ranged between 45 million m^3 in Malta (2013 data) and 37 349 million m^3 in Spain (2012 data). From 2001 to 2013, total abstraction of fresh water recorded the highest increases in Cyprus (26 %) and Malta (25 %); while the highest decreases were recorded in Lithuania (– 77 %) and Slovakia (– 46 %).

Differences among EU Member States are also apparent when looking at the breakdown of water abstraction between groundwater and surface water resources. In Belgium (2011), Bulgaria (2013), Hungary (2012), Romania (2013) and the Netherlands (2012), surface water abstraction accounted for around 10 times the volume of water abstracted from groundwater resources. At the other end of the range, considerably larger volumes of groundwater than surface water were abstracted in Malta (2013), Denmark (2012), Latvia (2012), Luxembourg (2013) and Cyprus (2011).

In terms of water abstractions per inhabitant, EU Member States had annual rates of freshwater abstraction between 33 m^3 (Malta) and 159 m^3 (Italy). The extremes of freshwater abstraction reflect specific conditions: for example, in Ireland (140 m^3 per inhabitant) the use of water from the public supply was still free of charge in 2013; while in Bulgaria (125 m^3 per inhabitant) there are particularly high losses from the public network. Abstraction rates were also very high in some non-EU Member States, notably Iceland and Norway.

Figure 4.6.1: Total freshwater abstraction by public water supply, by country, 2013 ([1]) (m^3 per inhabitant)



([1]) Ireland, 2007; Belgium, 2009; Germany, Austria and Sweden, 2010; Greece and Finland, 2011; Denmark, Spain, France, Italy, Lithuania, the Netherlands, Portugal, the United Kingdom, Iceland, Turkey and Bosnia and Herzegovina, 2011.

Source: Eurostat (online data code: env_wat_abs)

Table 4.6.1: Groundwater and surface water abstraction, by country, 2001–13 (million m^3)

	Groundwater abstraction			Surface water abstraction		
	2001	2007	2013	2001	2007	2013
Belgium (1)	679	648	602	6316	5570	4480
Bulgaria	719	642	558	5114	5560	4910
Czech Republic	529	381	371	1310	1589	1279
Denmark (2)	693	567	644	15	3	8
Germany (3)	6204	5825	5841	31802	26476	27195
Estonia	272	248	213	1199	1586	1535
Ireland	:	213	:		517	:
Greece	3390	3651	:	6384	5821	:
Spain (2)	5759	6496	6884	30349	29077	30465
France (2)	6284	5662	5608	27261	25748	24400
Croatia	:	464	444			189
Italy	:	:	:			:
Cyprus	141	145	140	61	71	115
Latvia (2)	116	107	155	141	111	92
Lithuania	157	175	132	2611	2094	518
Luxembourg	:		25		:	18
Hungary (2)	726	521	535		4758	4516
Malta	36	37	45	0	0	0
Netherlands (2)	977	996	940	7938	9954	9784
Austria	:				:	:
Poland	2700	2671	2608	8899	9356	8635
Portugal	:	:	:		:	:
Romania	990	644	581	6353	6240	5837
Slovenia	:	191	181		745	975
Slovakia	423	358	329	716	330	308
Finland	285	:	:		:	:
Sweden (3)	628	346	348	2048	2285	2342
United Kingdom	2366	2197	2046		6379	6168
Iceland	159	:	466		:	:
Switzerland (2)	:	1255	1005	:	:	1000
FYR of Macedonia	62	116	162	606	435	885
Albania	:	388	:	:	2225	:
Serbia	72	532	478	2510	3426	3673
Turkey (2)	10670	12096	13560	33780	27582	36950
Bosnia and Herzegovina	152	146	:	182	182	:

(1) No data for 2013, 2011 data instead.
(2) No data for 2013, 2012 data instead.
(3) No data for 2013, 2010 data instead.
(4) No data for 2013, 2009 data instead.
Source: Eurostat (online data code: env_wat_abs)

Table 4.6.2: Water use in the manufacturing industry by supply category, by country, 2003–13 (m^3 per inhabitant)

	Public water supply						Self and other water supply					
	2003	2005	2007	2009	2011	2013	2003	2005	2007	2009	2011	2013
Belgium	9.3	9.8	9.7	8.8	9.4	:	117.5	122.2	122.0	104.2	105.3	:
Bulgaria	6.5	6.0	6.4	4.9	4.7	3.4	38.9	38.1	40.3	27.2	23.8	23.2
Czech Republic	:	:	:	:	:	:	:	:	:	24.3	22.3	20.4
Denmark	:	:	:	:	:	:	:	:	:	:	:	:
Germany (1)	:	4.2	:	:	:	:	:	:	:	:	:	:
Estonia	:	:	:	:	5.4	6.0	:	:	:	:	16.3	15.1
Ireland	:	:	:	:	:	:	:	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:	:
Spain	10.1	11.2	10.0	8.3	8.0	:	32.0	27.9	22.2	17.2	15.8	:
France	:	:	:	:	:	:	:	:	:	28.3	27.2	:
Croatia	:	:	:	:	:	:	:	:	:	42.0	66.7	29.3
Italy	:	:	:	:	:	:	:	:	:	:	:	:
Cyprus	3.8	3.5	3.3	3.1	2.8		22.3	3.5	4.8	3.9	2.7	:
Latvia	32.6	25.3	26.5	:	:	:	:	:	:	:	:	:
Lithuania	2.5	:	:	3.6	2.6	:	:	:	:	8.0	9.4	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:
Hungary	:	1.1	:	:	0.7	0.6	:	:	:	:	:	:
Malta	3.8	5.9	4.8	4.6	4.6	4.2	:	2.5	2.5	2.4	2.4	2.4
Netherlands	12.8	8.8	8.8	8.5	8.1	:	244.3	210.5	210.8	236.4	216.3	:
Austria	:	:	:	:	:	:	:	:	:	:	:	:
Poland	0.5	0.5	0.5	0.3	0.4	0.3	16.1	17.1	18.0	15.0	17.1	16.5
Portugal	:	0.8	0.8	1.6	:	:	:	:	:	26.6	:	:
Romania	:	:	:	:	:	:	:	:	:	:	:	:
Slovenia	6.4	6.2	:	:	:	5.2	:	:	:	74.8	:	148.4
Slovakia	:	:	:	:	:	:	:	:	:	:	:	:
Finland	:	:	:	:	:	:	:	:	:	:	:	:
Sweden	10.1	11.3	:	:	:	:	:	:	:	:	:	:
United Kingdom	:	:	:	:	4.2	:	:	:	:	:	:	:
Iceland	17.3	:	:	:	:	:	:	:	:	:	32.8	:
Norway	19.7	40.3	40.9	34.4	:	:	173.8	210.4	213.6	179.6	:	:
FYR of Macedonia	19.7	95.1	:	:	98.5	171.1	:	:	:	:	123.6	204.3
Serbia	:	4.9	3.9	2.5	1.9	2.2	23.5	14.7	14.0	12.0	10.4	7.8
Turkey (2)	:	0.7	:	:	1.0	0.9	:	16.6	:	:	22.3	24.0

(1) Data from 2004.
(2) Data from the previous even year.
Source: Eurostat (online data code: env_wat_cat)

Table 4.6.3: Water use in the manufacturing industry by activity, by country, 2013 ([1])
(m^3 per inhabitant)

	Manufacture of food products	Manufacture of textiles	Manufacture of paper and paper products	Manufacture of refined petroleum products, chemicals and chemical products	Manufacture of basic metals	Manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment	Other manufacturing
Belgium ([2])([3])	10.6	0.5	4.2	82.4	12.5	0.0	4.4
Bulgaria	4.8	0.7	4.0	10.9	2.4	0.1	3.8
Czech Republic ([4])	1.7	0.4	4.4	9.2	3.1	0.1	1.5
Denmark	:	:	:	:	:	:	:
Germany	:	:	:	:	:	:	:
Estonia	:	:	:	:	:	:	:
Ireland	:	:	:	:	:	:	:
Greece	:	:	:	:	:	:	:
Spain ([5])	4.4	0.5	2.8	8.0	3.4	0.3	1.1
France ([4])	3.8	0.3	3.3	12.8	2.0	0.4	2.6
Croatia	:	0.4	0.8	20.2	0.1	0.1	2.9
Italy ([5])	2.3	:	:	:	:	:	:
Cyprus ([5])		0.3	0.0	0.2	0.1	0.0	1.7
Latvia ([5])	3.1	:	:	:	:	:	:
Lithuania ([5])	:	0.5	0.5	8.8	0.0	0.0	1.2
Luxembourg	:	:	:	:	:	:	:
Hungary ([3])	2.0	:	:	:	:	:	:
Malta ([5])	19.3	0.3	0.0	0.4	0	0.0	1.5
Netherlands ([5])	:	0.5	5.7	182.0	14.9	0.2	2.7
Austria	2.0	:	:	:	:	:	:
Poland	:	0.1	2.3	8.4	0.9	0.1	1.5
Portugal	:	:	:	:	:	:	:
Romania	3.44	:	:	:	:	:	:
Slovenia	:	0.5	55.3	23.0	3.8	0.4	67.1
Slovakia ([4])	5.73	:	:	:	:	:	:
Finland	:	0.3	177.1	204.2	45.6	0	9.8
Sweden ([2])([3])	0.7	:	:	:	:	:	:
United Kingdom	:	0.1	:	2.6	0.3	0.0	3.2
Iceland ([4])	:	:	:	:	36.6	:	:
Norway ([5])	8.1	:	:	:	:	:	:
Switzerland	:	0.4	6.3	59.7	8.1	0.2	1.3
Montenegro ([4])	4.02	:	:	:	:	:	:
FYR of Macedonia	5.72	0.2	0.0	6.0	16.9	0.0	1.7
Serbia	3.01	0.4	0.7	1.5	2.6	0.3	1.4
Turkey ([5])	1.6	2.3	0.3	1.7	16.8	0.2	0.9

([1]) Selected years for selected countries due to missing information for the reference year.
([2]) 2011 data.
([3]) Only public water supply.
([4]) Only self and other water supply.
([5]) 2012 data.
Source: Eurostat (online data codes: env_wat_ind and tps00001)

In most countries, self and other supply was the predominant water source in the manufacturing industry. Among EU Member States, total water use in this sector ranged from 5.5 m^3 per inhabitant (Cyprus, 2011 data) to 224.4 m^3 per inhabitant (Netherlands, 2011 data). With regard to the evolution over time during the last decade, an increase was recorded only in Slovenia, the former Yugoslav Republic of Macedonia and Turkey. For most countries, however, the water use for manufacturing decreased, which may be due to both to the global financial and economic crisis (resulting in a reduction of production) and/or to the adoption of more water-efficient technologies in industry.

In most EU Member States, the main water-using industry was the 'Manufacture of refined petroleum products, chemicals and chemical products'. However, the manufacture of basic metals was the main water-using industry in the former Yugoslav Republic of Macedonia and Turkey, water use for the manufacture of food products prevailed in Malta and Serbia, while the manufacture of paper and paper products was the main water-using industry in Slovenia.

Most EU Member States reported the water use by the domestic sector as being relatively stable; significant increases over the past decade were recorded in Greece (67 %) and Malta (85 %), while the highest decreases were observed in Switzerland and Belgium. Per capita water use by the domestic sector was particularly high among the Mediterranean EU Member States (highest value in Cyprus, 93 m^3 in 2011), followed by Greece (82 m^3 in 2011). Six EU Member States reported per capita water use values below 40 m^3: Belgium (2011), Latvia (2007), Lithuania (2011), Hungary (2013), Poland (2013) and Romania (2013).

The share of energy production in total water use (for all NACE activities, limited data availability) ranged from 12 % (Spain, 2012 data) to 88 % (Malta, 2013 data). The energy sector is typically supplied with water from self-supply and other sources and the majority of water is used for cooling purposes. Estonia and Cyprus reported the highest self-supply for energy production (cooling water: 1 117 m^3 and 1 102 m^3 per inhabitant, respectively; 2013 data).

Table 4.6.4: Use of water by the domestic sector (households and services), by country, 2001–13
(m^3 per inhabitant)

	2001	2003	2005	2007	2009	2011	2013
Belgium	:	:	29	28	26	21	:
Bulgaria	46	44	43	46	45	45	47
Czech Republic	48	46	45	:	46	45	43
Denmark	47	53	:	:	:	:	:
Germany	46	:	:	:	:	:	:
Estonia	:	:	:	:	:	:	:
Ireland	:	:	:	:	:	:	:
Greece	49	55	58	56	:	82	:
Spain	83	83	79	82	77	70	:
France	:	:	:	:	64	62	:
Croatia	49	52	50	:	43	43	46
Italy	:	:	:	:	:	:	:
Cyprus	83	92	96	95	85	93	:
Latvia	33	30	35	39	:	:	:
Lithuania	:	:	:	:	28	29	:
Luxembourg	:	:	:	:	:	:	:
Hungary	37	39	47	:	:	39	38
Malta	37	33	55	59	55	58	61
Netherlands	:	50	54	54	54	53	:
Austria	44	:	:	:	:	:	:
Poland	37	38	36	36	36	36	35
Portugal	:	:	47	53	60	:	:
Romania	44	33	26	:	:	:	35
Slovenia	44	49	47	:	:	:	47
Slovakia	:	:	:	:	:	:	:
Finland	:	:	:	:	:	:	:
Sweden	70	69	65	:	:	:	:
United Kingdom	:	:	:	:	:	55	:
Norway	66	66	100	:	:	:	:
Switzerland	:	:	89	82	74	70	66
FYR of Macedonia	37	43	41	:	:	38	41
Serbia	:	48	62	61	59	60	59
Bosnia and Herzegovina	:	:	32	32	33	34	:

Source: Eurostat (online data code: env_wat_cat)

Table 4.6.5: Self and other supply water use for energy production (for cooling purposes), by country, 2002–13
(m^3 per inhabitant)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium	423	395	399	403	397	381	382	378	356	298	:	:
Bulgaria	600	569	537	542	545	462	498	476	471	513	447	435
Czech Republic	:	:	:	:	:	:	:	65	67	65	60	47
Denmark	:	:	:	:	:	:	:	:	:	:	:	:
Germany	:	:	:	:	:	:	:	:	:	:	:	:
Estonia	:	:	:	:	:	:	:	:	1 121	1 149	983	1 117
Ireland	:	:	:	:	:	:	:	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:	:
Spain	143	143	140	154	148	131	136	132	136	132	133	:
France	:	:	:	:	:	:	361	341	339	335	362	:
Croatia	:	:	:	:	:	:	:	:	:	:	:	:
Italy	:	:	:	:	:	:	:	:	:	:	:	:
Cyprus	1 254	1 282	1 289	1 356	1 547	1 582	1 566	1 518	1 420	1 131	716	:
Latvia	:	:	:	:	:	:	:	:	:	:	:	:
Lithuania	:	:	:	:	:	:	:	:	:	:	117	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:
Hungary	:	:	:	:	:	:	:	:	:	:	:	:
Malta	1 259	1 251	1 243	1 234	1 227	1 225	1 219	1 209	1 200	1 233	980	1 102
Netherlands	:	566	628	:	319	371	347	:	:	:	:	:
Austria	:	:	:	:	:	:	:	:	:	:	:	:
Poland	170	178	176	173	192	186	161	168	168	177	169	167
Portugal	:	:	:	:	:	:	:	:	:	:	:	:
Romania	:	:	:	:	:	:	:	:	:	:	:	:
Slovenia	:	:	:	:	:	:	:	:	:	:	:	:
Slovakia	:	:	:	:	:	:	:	:	:	:	:	:
Finland	:	:	:	:	:	:	:	:	:	:	34	32
Sweden	:	:	:	:	:	:	:	:	:	:	:	:
United Kingdom	:	:	:	:	:	:	:	:	:	:	:	:
Switzerland	:	:	:	:	:	:	:	:	:	:	5	:
Serbia	275	295	216	379	399	402	417	439	409	459	406	454
Turkey	34	31	36	:	:	:	:	:	58	:	85	:

Source: Eurostat (online data code: env_wat_cat)

Table 4.6.6: Population connected to at least secondary wastewater treatment, by country, 1990–2013
(% of total)

	1990	1995	2000	2005	2010	2011	2012	2013
Belgium	:	3	41	54	75	77	82	84
Bulgaria	:	35	36	38	45	54	54	55
Czech Republic	:	:	:	73	77	78	78	80
Denmark	71	85	87	:	88	88	88	90
Germany	:	84	:	97	95	:	:	:
Estonia	31	68	68	73	78	81	81	82
Ireland	21	34	:	:	:	:	:	:
Greece	:	22	:	:	87	88	92	:
Spain	:	38	:	:	93	:	95	:
France	:	:	:	:	:	56	56	55
Croatia	:	:	4	9	:	27	:	:
Italy	:	60		94	:	:	:	:
Cyprus	:	8	14	30	:	:	:	:
Latvia	:	:	:	64	58	64	66	67
Lithuania	:	:	:	:	:	:	63	:
Luxembourg	:	68	:	:	91	91	96	96
Hungary	15	18	30	42	70	71	73	73
Malta	13	13	14	13	7	93	93	93
Netherlands	93	97	98	99	99	:	99	:
Austria	67	74	:	:	94	:	95	:
Poland	:	34	50	58	65	66	69	70
Portugal	12	:	:	43	:	:	:	:
Romania	:	:	:	17	22	31	33	36
Slovenia	:	:	12	32	53	54	54	55
Slovakia	:	:	:	:	:	:	:	:
Finland	76	77	80	:	83	83	83	83
Sweden	94	93	86	86	86	86	87	87
United Kingdom (1)	:	:	:	99	100	:	:	:
Iceland	:	:	:	2	:	:	:	:
Norway	44	52	52	58	59	61	63	63
Switzerland	90	94	96	:	:	:	:	98
Albania	:	:	:	:	5	5	7	22
Serbia	:	:	:	6	9	9	9	9
Turkey	:	3	18	29	38	:	42	:
Bosnia and Herzegovina	:	:	1	2	2	2	2	2

(1) 2005 data for England and Wales only.
Source: Eurostat (online data code: env_ww_con)

Statistics on the proportion of the population connected to at least secondary wastewater integrate sewage treatment of any type (urban, other and independent). This share has been gradually increasing and is above 80 % in 15 EU Member States for which data are available (mixed reference years), and is even exceeding 95 % in six EU Member States (Austria, the Netherlands, the United Kingdom, Germany, Spain and Luxembourg). At the other end of the range, less than one in two households of EU Member States were connected to at least secondary wastewater treatment in Ireland, Croatia and Cyprus. The situation is even worse in some EU candidate countries and potential candidates, with connection rates as low as 2 % (Bosnia and Herzegovina).

Overall, there is a trend of increasing connection of the population to urban wastewater treatment. The increase reported by Malta is exceptional — coverage reached 93 % in 2011, from 7 % in 2010 due to the construction of new wastewater treatment plants all over the country.

4.7 Environmental taxes

Environmental taxes have a tax base with a proven, specific negative impact on the environment. European statistics distinguish environmental taxes relating to energy, transport, pollution and resources.

The total revenue from environmental taxes in the EU-28 in 2013 was EUR 331 billion; this figure is 2.5 % of the gross domestic product (GDP) and 6.3 % of the total revenues derived from all taxes and social contributions.

Table 4.7.1: Environmental tax revenue by type, 2013 (1)
(million EUR)

	Total environmental taxes	Energy taxes	Transport taxes	Taxes on pollution/ resources
EU-28	331 378	248 496	66 617	16 266
Belgium	8 101	4 739	2 843	519
Bulgaria	1 178	1 032	114	32
Czech Republic	3 361	3 115	226	20
Denmark	10 751	6 282	3 811	659
Germany	57 595	46 851	9 445	1 299
Estonia	479	415	11	53
Ireland	4 251	2 554	1 629	68
Greece	5 905	4 005	1 274	626
Spain	19 231	14 659	2 662	1 910
France	42 877	33 858	6 017	3 002
Croatia	1 524	894	348	283
Italy	56 588	46 068	10 057	463
Cyprus	28	23	6	0
Latvia	558	435	103	20
Lithuania	572	538	16	19
Luxembourg	1 007	928	70	9
Hungary	913	248	476	190
Malta	203	104	89	11
Netherlands	21 511	12 590	6 126	2 795
Austria	7 848	5 107	2 669	72
Poland	9 440	8 270	763	406
Portugal	4 546	2 207	928	1 412
Romania	2 955	2 546	398	11
Slovenia	1 400	1 078	164	158
Slovakia	1 471	1 092	153	226
Finland	5 929	3 951	1 853	125
Sweden	10 295	8 268	1 907	119
United Kingdom	50 861	36 640	12 461	1 759
Norway	9 285	4 710	4 140	435

(1) Provisional data
Source: Eurostat (online data code: env_ac_tax)

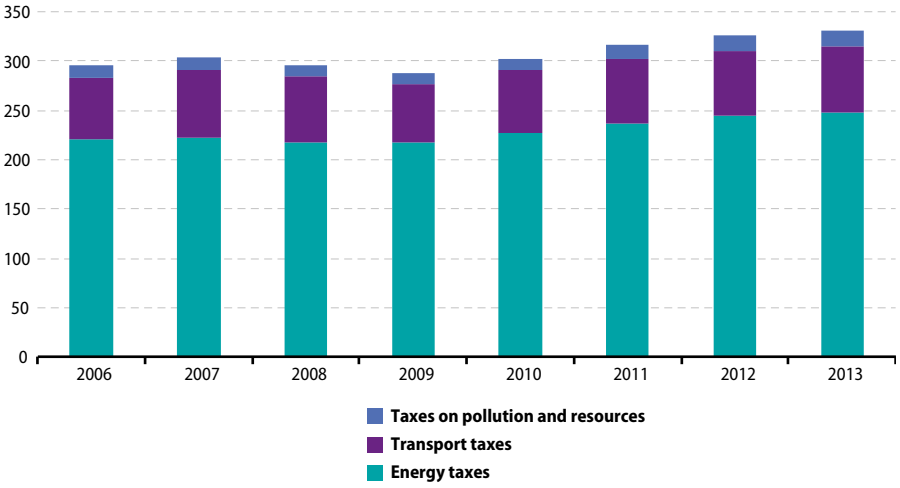
Table 4.7.2: Environmental tax revenue by type, 2013 ([1])
(% of taxes and social contributions excluding imputed social contributions)

	Total environmental taxes	Energy taxes	Transport taxes	Taxes on pollution/ resources
EU-28	6.32	4.74	1.27	0.31
Belgium	4.53	2.65	1.59	0.29
Bulgaria	10.21	8.95	0.99	0.28
Czech Republic	6.13	5.69	0.41	0.04
Denmark	8.93	5.22	3.17	0.55
Germany	5.38	4.37	0.88	0.12
Estonia	8.03	6.96	0.18	0.89
Ireland	8.43	5.06	3.23	0.14
Greece	9.42	6.39	2.03	1.00
Spain	5.65	4.31	0.78	0.56
France	4.47	3.53	0.63	0.31
Croatia	9.58	5.62	2.19	1.78
Italy	8.11	6.61	1.44	0.07
Cyprus	:	:	:	:
Latvia	8.61	6.71	1.59	0.31
Lithuania	6.08	5.71	0.17	0.20
Luxembourg	5.64	5.20	0.39	0.05
Hungary	:	:	:	:
Malta	8.18	4.18	3.57	0.43
Netherlands	9.00	5.27	2.56	1.17
Austria	5.70	3.71	1.94	0.05
Poland	7.50	6.57	0.61	0.32
Portugal	:	:	:	:
Romania	7.48	6.44	1.01	0.03
Slovenia	10.46	8.05	1.22	1.18
Slovakia	6.62	4.92	0.69	1.01
Finland	6.69	4.46	2.09	0.14
Sweden	5.51	4.42	1.02	0.06
United Kingdom	7.47	5.38	1.83	0.26
Norway	5.83	2.96	2.60	0.20

([1]) Provisional data. Cyprus, Hungary and Portugal: not available.
Source: Eurostat (online data code: env_ac_tax)

From 2006 to 2013, the total environmental tax revenue in the EU increased on average by 1.6 % per year (at current prices). In 2013, the level of environmental tax revenues was some EUR 35.5 billion higher than in 2006. This year-on-year increase was not steady: the financial and economic crisis caused a reduction in economic activity in the EU, leading to lower tax receipts in 2008 and 2009. In 2010, environmental tax revenues returned to an upward path.

Figure 4.7.1: Total environmental tax revenue by type of tax, EU-28, 2006–13 (1) (billion EUR)



(1) Provisional.
Source: Eurostat (online data code: env_ac_tax)

Energy taxes (which include taxes on transport fuels) had by far the highest share of overall environmental tax revenue, accounting for 75.0 % of the EU-28 total in 2013. These taxes were particularly prominent in Lithuania, Luxembourg and the Czech Republic, where they accounted for more than nine tenths of total environmental tax revenues. By contrast, energy taxes slightly exceeded 50 % of the revenues from environmental taxes in Malta and Norway.

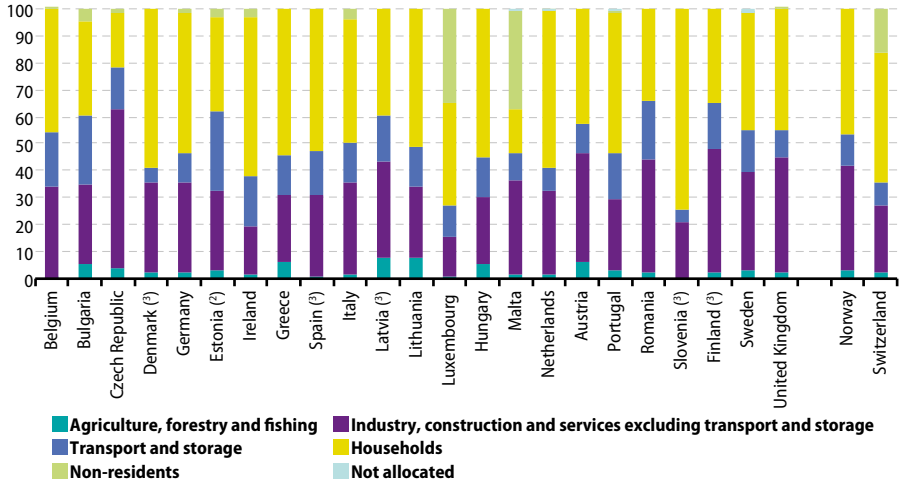
Transport taxes (excluding taxes on transport fuels) were the second most important contribution to total environmental tax revenues, with 20.1 % of the EU-28 total in 2013. Their relative significance was considerably higher in Norway (44.6 % of all revenues from environmental taxes) and Malta (43.6 %); the smallest shares of transport taxes in total revenues from environmental taxes were in Lithuania and in Estonia (both less than 3.0 %).

Pollution and resource taxes had a relatively small share (4.9 %) of total environmental tax revenues in the EU-28 in 2013. This category of taxes is more recent in most EU Member States. The highest share of pollution and resource taxes was observed in Croatia (18.5 %), Slovakia (15.3 %) and the Netherlands (13.0 %). In contrast, in some EU Member States no taxes of this category have been levied. This can be due to specificities in the management of water and waste charges which may be collected by schemes other than taxes.

Across those EU Member States for which a distribution of 2012 data by economic activity is available, businesses paid half (50 %) of all energy tax revenue collected by governments, while the contribution of households rose to 48 %. The remainder (2 %) was paid by non-residents. In Luxembourg, taxes collected from non-residents rose to 35.0 % of the whole energy tax revenue, largely due to purchases of petrol and diesel by non-residents.

Among the EU Member States for which data are available, the share of energy taxes paid by households was highest in Slovenia (74 %), Ireland and Denmark (both 59 %). The share of taxes borne by households was lowest in Malta (16 %) and the Czech Republic (20 %). Generally the highest share of energy tax revenues from businesses came from the largest activity grouping: industry, construction and services other than those related to transportation and storage. The shares for this activity grouping ranged between 15 % and 59 % of total energy taxes. The share of energy taxes borne by transport and storage activities also varied, from 5 % in Slovenia to 30 % in Estonia. The contribution of agriculture, forestry and fishing to the total energy taxes was less than 3.0 % in most EU Member States.

Figure 4.7.2: Energy taxes by economic activity, 2012 ([1])
(% of energy tax revenue)



([1]) France, Croatia, Cyprus, Poland and Slovakia: not available.
([2]) 2011.
([3]) Non-residents: not available.
Source: Eurostat (online data code: env_ac_taxind2)

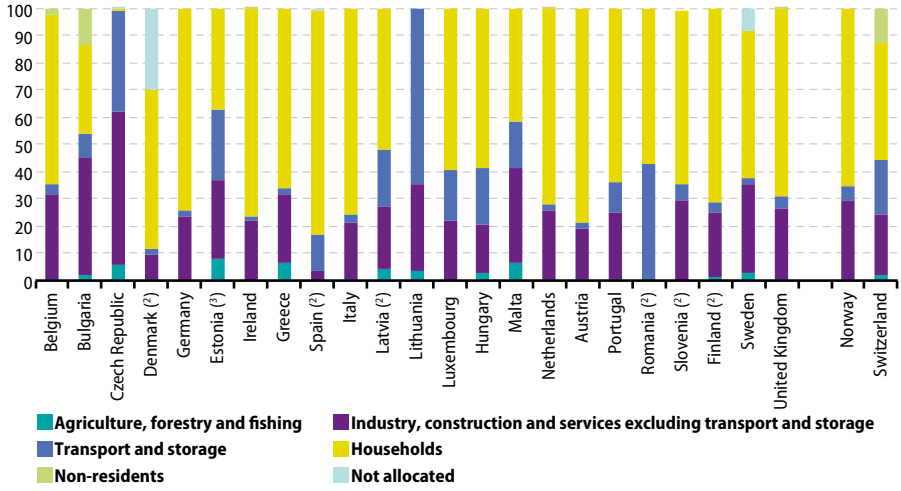
Table 4.7.3: Energy taxes by economic activity, 2012 ([1])
(million EUR)

	Agriculture, forestry and fishing	Industry, construction and services excluding transport and storage	Transport and storage	Households	Non-residents	Total energy taxes ([4])
Belgium	6.0	1 626.4	964.1	2 196.7	18.5	4 811.7
Bulgaria	56.5	287.4	259.8	347.2	44.3	995.2
Czech Republic	124.6	1 977.8	522.6	685.7	48.7	3 359.3
Denmark ([3])	135.1	2 029.6	349.1	3 563.2	:	6 076.9
Germany	1 252.9	16 232.0	5 208.7	25 181.3	705.2	48 580.0
Estonia ([2])	13.6	114.2	115.5	136.2	11.5	390.9
Ireland	46.8	443.5	460.7	1 493.0	74.3	2 518.4
Greece	265.3	1 050.2	603.4	2 287.2	0.0	4 206.0
Spain ([3])	146.5	3 905.1	2 180.0	6 877.4	:	13 109.0
Italy	641.5	15 569.2	6 864.4	21 060.6	1 641.3	45 777.0
Latvia ([3])	32.1	152.4	75.3	168.6	:	428.4
Lithuania	38.5	136.9	76.4	262.4	0.0	514.2
Luxembourg	6.5	142.3	111.9	354.3	333.2	948.1
Hungary	104.5	448.8	275.1	1 005.9	0.0	1 834.2
Malta	1.6	37.5	11.1	17.5	39.7	107.9
Netherlands	224.2	3 536.8	1 053.0	6 676.0	47.0	11 623.0
Austria	328.0	1 987.9	567.9	2 128.6	0.0	5 012.4
Portugal	93.1	727.1	479.8	1 470.4	19.6	2 805.2
Romania	47.7	947.8	505.8	771.4	0.0	2 272.7
Slovenia ([3])	0.0	226.0	54.0	814.7	:	1 094.8
Finland ([3])	85.9	1 825.9	679.7	1 370.5	:	3 962.0
Sweden	240.2	3 008.8	1 274.7	3 594.1	9.8	8 249.3
United Kingdom	803.9	16 064.5	3 660.4	16 670.5	64.5	37 263.7
Norway	123.2	1 755.8	558.8	2 092.4	0.0	4 530.2
Switzerland	100.9	1 253.2	425.9	2 366.5	822.3	4 968.8

([1]) France, Croatia, Cyprus, Poland and Slovakia: not available.
([2]) 2011.
([3]) Non-residents: not available.
([4]) For some countries the total differs from the sum of the components due to non-allocated tax revenues.
Source: Eurostat (online data code: env_ac_taxind2)

In general, the share of transport taxes paid by households was much higher than the share paid by businesses: 70 % versus 27 % on average among the EU Member States for which data are available. However, in some EU Member States less than half of transport tax revenues were paid by households, in particular in Bulgaria, the Czech Republic, Estonia, Lithuania and Malta.

Figure 4.7.3: Transport taxes by economic activity, 2012 ([1])
(% of transport tax revenue)



([1]) France, Croatia, Cyprus, Poland and Slovakia: not available.
([2]) Non-residents: not available.
([3]) 2011. Industry, construction and services excluding transport and storage: excluding mining and quarrying.
Source: Eurostat (online data code: env_ac_taxind2)

Table 4.7.4: Transport taxes by economic activity, 2012 ([1])
(million EUR)

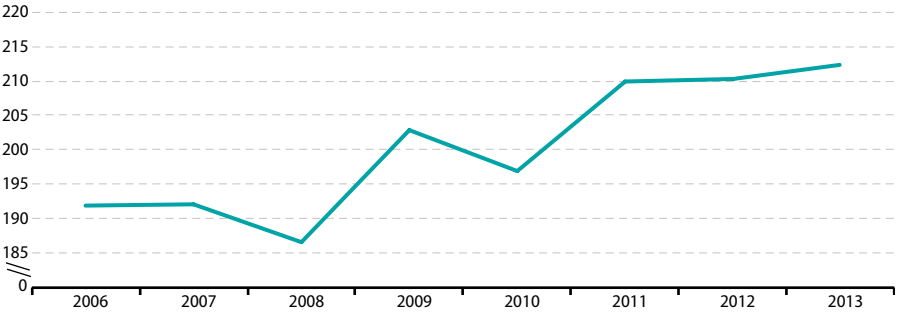
	Agriculture, forestry and fishing	Industry, construction and services excluding transport and storage	Transport and storage	Households	Non-residents	Total energy taxes ([4])
Belgium	8.7	882.3	105.4	1 746.7	54.6	2 881.6
Bulgaria	2.0	45.0	9.5	33.5	14.0	89.9
Czech Republic	11.4	118.7	77.6	0.4	0.0	214.7
Denmark ([2])	18.9	295.9	100.0	1 997.6	:	3 487.7
Germany	18.7	2 185.0	250.7	6 942.3	0.0	9 381.3
Estonia ([3])	0.8	2.9	2.6	3.6	0.0	9.8
Ireland	3.0	319.2	28.3	1 118.9	1.5	1 448.8
Greece	86.7	336.4	20.7	873.3	0.0	1 379.0
Spain ([2])	2.7	86.4	363.9	2 218.0	:	2 835.0
Italy	27.1	2 136.3	304.7	7 540.0	0.0	9 481.0
Latvia ([2])	3.9	21.7	20.0	49.4	:	90.6
Lithuania	0.5	4.9	10.0	0.0	0.0	14.3
Luxembourg	0.1	13.5	11.1	36.3	0.0	63.1
Hungary	12.7	71.6	86.7	239.1	0.0	471.9
Malta	5.6	30.7	14.4	36.4	0.0	93.0
Netherlands	25.7	1 671.5	129.8	4 677.0	11.0	7 032.0
Austria	8.6	489.8	43.8	2 013.3	0.0	2 440.9
Portugal	6.0	185.2	87.1	491.7	0.0	1 008.3
Romania ([2])	0.0	0.2	112.6	151.3	:	228.0
Slovenia([2])	0.2	42.8	8.7	91.6	:	145.0
Finland ([2])	20.1	420.5	63.6	1 247.9	:	1 838.8
Sweden	54.1	586.2	41.6	963.1	0.0	1 741.4
United Kingdom	102.1	3 180.7	477.1	8 450.7	35.5	10 870.2
Norway	21.7	1 282.1	222.5	2 909.8	0.0	4 104.2
Switzerland	65.7	853.9	743.6	1 638.8	467.8	3 677.7

([1]) France, Croatia, Cyprus, Poland and Slovakia: not available.
([2]) Non-residents: not available.
([3]) 2011. Industry, construction and services excluding transport and storage: excluding mining and quarrying.
([4]) For some countries the total differs from the sum of the components due to non-allocated tax revenues.
Source: Eurostat (online data code: env_ac_taxind2)

The implicit tax rate on energy is defined as the ratio of energy tax revenues to final energy consumption calculated for a calendar year. Energy tax revenues are measured in constant price euros (deflated with the final demand deflator) and final energy consumption is measured in tonnes of oil equivalent (toe); as such, the implicit tax rate on energy is expressed in terms of euros per tonne of oil equivalent (EUR per toe). The implicit tax rate on energy is not influenced by the size of the tax base and provides a measure of the effective level of energy taxation.

From 2006 to 2013, the implicit tax rate on energy increased by 11 % in real terms, (in other words, after deflating the energy tax revenue, prices of year 2010) changing from EUR 191.8 per toe to EUR 212.3 per toe. However two dips were observed during this period: the first one in 2008 was due to a decline in energy tax revenue; the second one in 2010 resulted from a substantial recovery in energy consumption (following a strong reduction in 2009) which exceeded the increase of energy tax revenue in the same year.

Figure 4.7.4: Implicit tax rate on energy (deflated), EU-28, 2006–13 (1)
(EUR per tonne of oil equivalent)



(1) Provisional.
Source: Eurostat (online data code: tsdcc360)

Table 4.7.5: Implicit tax rate on energy, by country, 2006–13 ([1])
(EUR per tonne of oil equivalent)

	2006	2007	2008	2009	2010	2011	2012	2013
EU-28	191.9	192.1	186.6	202.8	196.9	209.9	210.3	212.3
EA-19	201.1	198.0	191.1	208.3	201.4	217.4	218.6	219.6
Belgium	130.3	135.6	122.9	133.6	129.9	138.2	140.3	127.7
Bulgaria	75.7	97.7	109.6	111.2	104.8	101.5	99.5	111.1
Czech Republic	126.0	132.1	131.0	136.3	133.4	142.2	135.0	127.4
Denmark	350.4	370.5	345.8	371.2	368.1	391.3	402.5	417.7
Germany	221.7	224.1	215.0	234.9	211.6	228.0	214.9	205.9
Estonia	100.9	104.5	106.9	132.1	128.6	131.1	136.5	129.0
Ireland	157.5	156.6	154.0	186.6	206.5	230.1	231.5	228.2
Greece	128.7	135.5	131.3	140.7	215.3	223.8	238.6	257.2
Spain	159.5	156.1	155.0	163.9	162.6	155.1	152.8	170.2
France	190.4	188.7	180.1	190.0	192.0	211.8	207.4	214.3
Croatia	153.6	152.9	134.5	139.5	154.5	131.6	126.9	148.4
Italy	282.6	273.9	254.8	290.4	283.6	318.5	354.7	363.1
Cyprus	:	:	:	:	:	:	:	:
Latvia	88.5	86.7	85.3	91.1	87.1	95.0	94.8	101.6
Lithuania	100.0	104.4	103.7	113.0	103.4	101.1	99.3	104.8
Luxembourg	205.8	212.2	213.1	212.7	205.1	215.9	221.9	214.6
Hungary	:	:	:	:	:	:	:	:
Malta	191.7	270.8	182.0	198.4	188.2	210.5	204.9	194.6
Netherlands	223.8	202.3	212.2	233.4	222.7	231.9	219.6	233.3
Austria	162.1	168.1	168.6	169.8	161.4	176.4	172.8	169.0
Poland	108.7	120.2	117.4	117.7	115.5	121.2	123.7	125.8
Portugal	179.8	181.0	173.9	178.9	174.5	171.6	166.9	133.1
Romania	72.0	85.6	77.6	92.3	99.0	95.4	96.9	108.6
Slovenia	159.7	173.9	167.2	221.8	215.0	201.8	219.0	216.6
Slovakia	104.3	106.3	105.6	101.9	93.3	99.6	97.4	92.4
Finland	122.3	119.0	128.9	132.2	122.8	152.5	150.1	147.6
Sweden	229.4	227.9	231.9	238.5	226.5	225.8	227.5	230.6
United Kingdom	217.9	225.2	221.5	246.3	237.8	251.3	245.5	247.2
Norway	223.7	227.3	227.7	227.5	216.2	224.6	216.1	233.0

([1]) Provisional data.
Source: Eurostat (online data code: tsdcc360)

4.8 Environmental protection expenditure

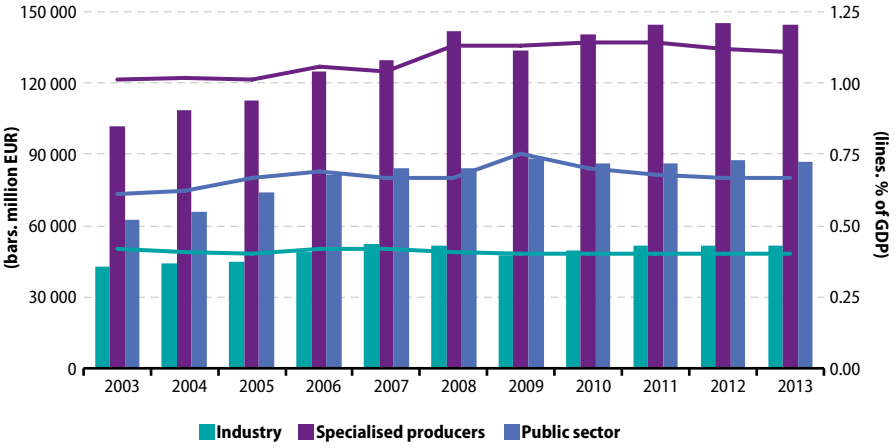
Environmental protection expenditure relates to expenditure that is carried out with the purpose of protecting the environment. This covers spending on activities that are directly aimed at preventing, reducing and eliminating pollution or any other degradation of the environment.

Environmental protection expenditure can be analysed by the type of provider of environmental protection services. There are three main providers: the public sector, industry (mining and quarrying; manufacturing; and electricity, gas and water supply), and specialised producers of environmental services (such as waste collection); the latter can be private or public enterprises.

Specialised producers accounted for most environmental protection expenditure in the EU-28 in 2013 — some EUR 145 billion, which was just over half (51.1 %) the total level of expenditure. The rest was split between expenditure by the public sector (EUR 87.2 billion) and that by industry (EUR 51.6 billion).

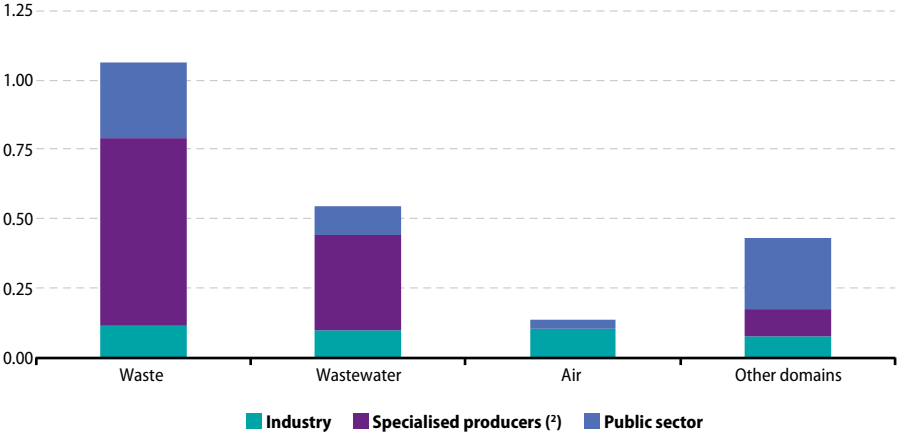
Between 2003 and 2013, the expenditure of specialised producers in the EU-28 grew by more than two fifths (41.8 %) at current prices. Over the same period, environmental protection expenditure by the public sector increased by 40.0 %. By 2013, environmental protection expenditure by industry was 21.3 % above its 2003 level. Expenditure by industry dipped during the early part of the decade beginning in 2000 and again in 2009.

Figure 4.8.1: Total environmental protection expenditure, EU-28, 2003–13 (1)



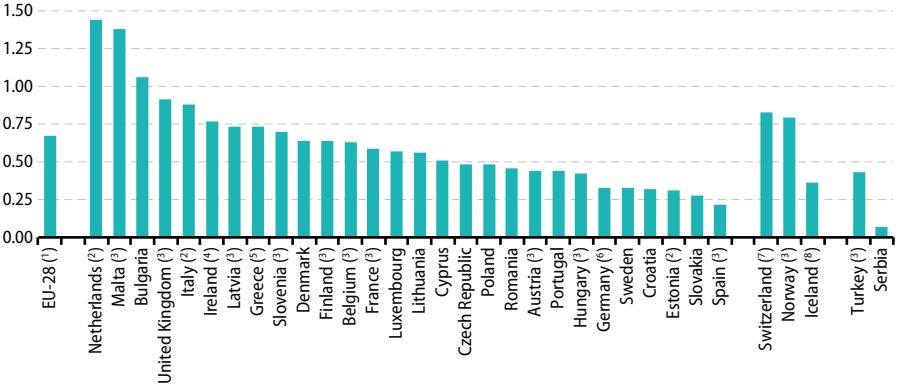
(1) Estimates.
Source: Eurostat (online data codes: env_ac_exp1r2 and env_ac_exp2)

Figure 4.8.2: Total environmental protection expenditure by domain, EU-28, 2013 (1)
(% of GDP)



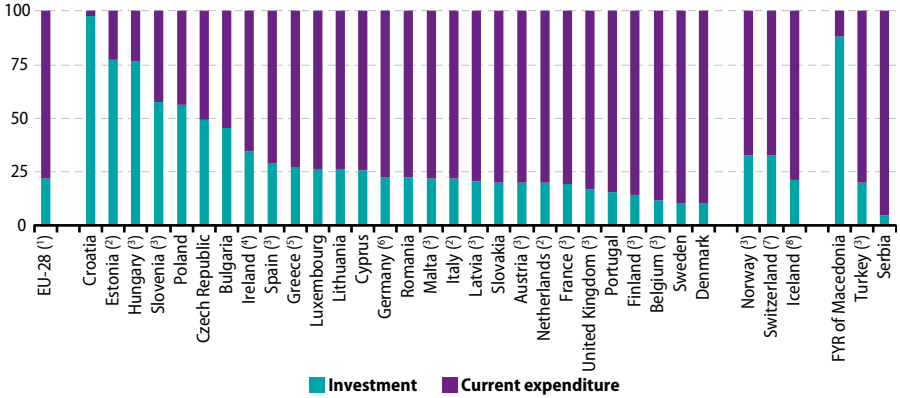
(1) Estimates.
(2) Air: not available.
Source: Eurostat (online data codes: env_ac_exp1r2 and env_ac_exp2)

Figure 4.8.3: Public sector environmental protection expenditure, by country, 2013
(% of GDP)



(1) Estimate.
(2) 2011.
(3) 2012.
(4) 1998.
(5) 1999.
(6) 2010.
(7) 2003.
(8) 2002.
Source: Eurostat (online data code: env_ac_exp2)

Figure 4.8.4: Public sector environmental protection investments and current expenditure, by country, 2013
(% of total expenditure)



(1) Estimates.
(2) 2011.
(3) 2012.
(4) 1998.
(5) 1999.
(6) 2010.
(7) 2003.
(8) 2002.
Source: Eurostat (online data code: env_ac_exp1r2)

In both cases these reductions were related to relatively weak industrial activity, for example the fall in 2009 could be associated with the global financial and economic crisis.

The ratio between environmental protection expenditure and gross domestic product (GDP) is an indicator of the importance of environmental protection relative to overall economic activity. In the EU-28, for specialised producers this ratio stood at 1.11 % of GDP in 2013, compared with 0.67 % for the public sector and 0.40 % for industry. The environmental protection expenditure of specialised producers (as a share of GDP) rose by 0.10 percentage points between 2003 and 2013, while the ratio for the public sector increased by 0.06 percentage points. By contrast, expenditure made by industry fell slightly in relation to GDP between 2003 and 2013 (– 0.02 percentage points).

The largest domain in the EU-28 in 2013 was waste management, followed by wastewater treatment, with specialised producers accounting for more than three fifths of the expenditure within these two domains. By contrast, there was a relatively low level of environmental protection expenditure related to air pollution, with a large proportion coming from industry (note that no data are available for this domain for the expenditure of specialised producers); the air pollution domain accounted for a quarter of the environmental protection expenditure made within industry.

Table 4.8.1: Public sector environmental protection expenditure by environmental domain, by country, 2013
(million EUR)

	Air	Wastewater	Waste	Other domains
EU-28	*3 793.7*	*14 133.5*	*35 888.6*	*33 368.3*
Belgium (1)	115.2	261.2	964.2	1 014.8
Bulgaria	1.1	147.3	241.4	35.5
Czech Republic	19.7	291.6	350.8	62.7
Denmark	242.9	0.0	52.0	1 302.8
Germany (2)	:	3 280.0	3 040.0	1 950.0
Estonia (3)	0.2	37.9	8.5	4.2
Ireland (4)	0.0	192.5	129.4	287.0
Greece (5)	0.7	215.8	429.5	214.7
Spain (1)	:	:	:	2 298.0
France (1)	503.1	1 760.6	2 068.8	7 732.8
Croatia	11.8	0.0	93.6	34.0
Italy (3)	:	732.4	7 312.3	5 815.4
Cyprus	-1.4	30.1	9.3	46.5
Latvia (1)	39.9	9.4	94.6	19.4
Lithuania	30.2	22.0	75.9	67.1
Luxembourg	-47.1	254.8	1.2	50.7
Hungary (1)	1.1	227.3	47.1	41.5
Malta (1)	0.0	27.4	51.1	16.9
Netherlands (3)	791.2	2 945.8	2 323.2	2 566.0
Austria (1)	221.5	230.1	466.3	440.6
Poland	39.1	917.3	261.1	661.5
Portugal	12.4	0.8	410.5	299.9
Romania	31.3	148.2	442.3	25.8
Slovenia (1)	10.4	126.2	37.2	73.0
Slovakia (6)	12.3	31.1	155.5	:
Finland (1)	:	503.1	144.7	583.4
Sweden	34.1	1.9	789.9	571.8
United Kingdom (1)	203.5	17.3	14 190.9	3 053.5
Iceland (7)	:	5.6	28.0	0.3
Norway (1)	234.9	1 210.7	701.9	922.7
Switzerland (8)	49.6	1 179.1	716.2	500.2
FYR of Macedonia	0.1	4.1	1.0	19.9
Serbia	0.6	1.1	6.0	15.8
Turkey (1)	7.7	351.1	1 616.6	649.8

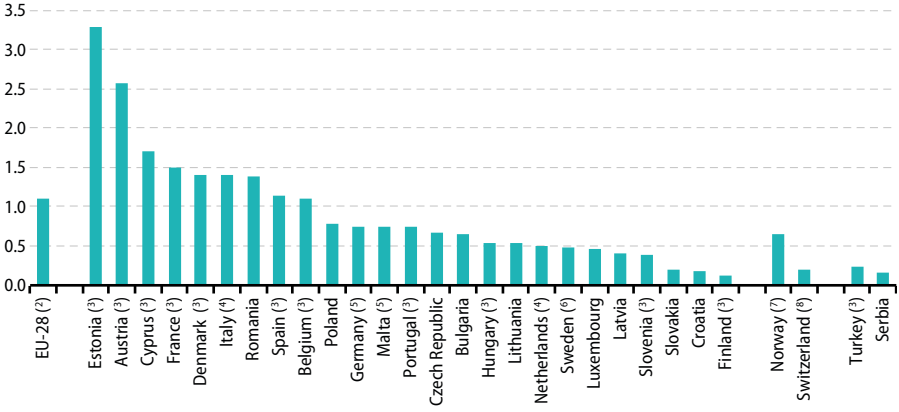
(1) 2012.
(2) 2010.
(3) 2011.
(4) 1998.
(5) 1999.
(6) Other domains: confidential.
(7) 2002.
(8) 2003.
Source: Eurostat (online data code: env_ac_exp1r2)

In most EU Member States, environmental protection expenditure by the public sector ranged in 2013 between 0.31 % and 1.06 % of GDP. Only Slovakia (0.28 %) and Spain (0.22 %, 2012 data) were below this range, while relatively high levels of public sector environmental protection expenditure were recorded in the Netherlands (1.44 %, 2011 data) and Malta (1.38 %, 2012 data).

In the EU-28 investment accounted for just over one fifth (21.9 %) of total expenditure in 2013 in the EU-28, the rest being current expenditure. All of the EU Member States where investment accounted for more than 35 % of the total were Member States that joined the EU in 2004 or more recently; this may reflect expenditure on fixed assets required to meet EU environmental legislation.

In most EU Member States, public sector expenditure was concentrated in waste management and wastewater treatment. Spain was an exception as the public sector directed its expenditure towards other domains, like biodiversity and landscape protection, protection against radiation, research and development (R & D) and other environmental protection activities. Denmark and France were also exceptions as more than 80 % and 60 % of their expenditure by the public sector was reported in the miscellaneous category, which includes: protection and remediation of soil, groundwater and surface water, noise and vibration abatement, protection of biodiversity and landscapes, protection against radiation, R & D, general environmental administration and management, education, training

Figure 4.8.5: Environmental protection expenditure by specialised producers, by country, 2013 ([1])
(% of GDP)



([1]) Ireland, Greece and the United Kingdom: not available.
([2]) Estimate.
([3]) 2012.
([4]) 2011.
([5]) 2010.
([6]) 2006.
([7]) 2005.
([8]) 2003.
Source: Eurostat (online data code: env_ac_exp2)

Table 4.8.2: Specialised producers' environmental protection expenditure by environmental domain, by country, 2013
(million EUR)

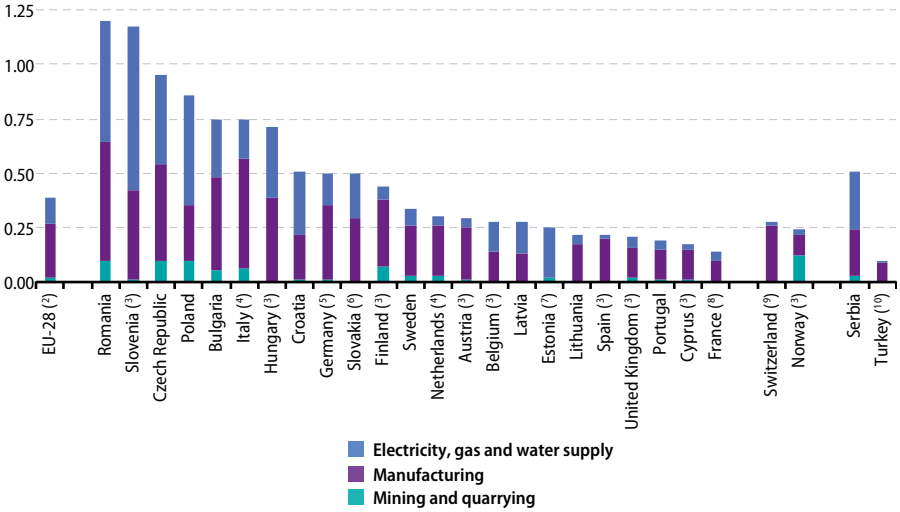
	Wastewater	Waste	Other domains
EU-28	*44 334.3*	*87 621.6*	*12 822.4*
Belgium (1)	866.7	3 156.2	144.4
Bulgaria	34.9	217.8	9.7
Czech Republic	46.7	890.6	63.2
Denmark (1)	1 348.2	2 082.5	23.7
Germany (2)	8 140.0	10 600.0	:
Estonia (3)	100.5	456.5	:
Ireland	:	:	:
Greece	:	:	:
Spain (1)	2 188.9	9 326.5	296.4
France (1)	10 847.3	18 221.8	1 274.8
Croatia	19.9	53.1	5.2
Italy (4)	1 643.8	13 353.2	:
Cyprus (1)	142.2	159.7	0.1
Latvia	61.6	32.6	2.2
Lithuania	101.6	72.2	10.1
Luxembourg	2.4	205.8	4.1
Hungary (1)	113.8	335.7	69.9
Malta (2)	7.7	21.2	19.4
Netherlands (5)	512.3	2 497.9	2.4
Austria (1)	1 521.6	3 331.3	3 058.4
Poland	1 261.8	1 697.0	95.8
Portugal (1)	379.2	807.1	28.8
Romania	24.6	1 887.5	63.8
Slovenia (1)	11.7	124.0	2.8
Slovakia	7.8	114.6	16.4
Finland (1)	227.7	19.4	0.0
Sweden	:	:	:
United Kingdom	:	:	:
Norway (6)	129.0	1 433.4	29.3
Switzerland (7)	:	565.8	:
FYR of Macedonia	0.0	21.5	0.0
Serbia	0.9	51.3	1.1
Turkey (1)	656.9	520.5	229.8

(1) 2012.
(2) 2010.
(3) 2012. Other domains: confidential.
(4) 2007.
(5) 2011.
(6) 2005.
(7) 2003.
Source: Eurostat (online data code: env_ac_exp1r2)

and information relating to the environment, as well as activities leading to indivisible expenditure and activities not elsewhere classified.

In the EU Member States, environmental protection expenditure by specialised producers generally ranged between 0.41 % and 1.49 % of GDP, with an EU-28 average of 1.11 % in 2013. Only Slovenia (2012 data), Slovakia, Croatia and Finland (2012 data) had lower ratios, while at the other end of the range, Estonia and Austria (both 2012 data) recorded by far the highest ratios (3.29 % and 2.58 % of GDP); Cyprus (2012 data) was the only other EU Member State to record environmental protection expenditure by specialised producers higher than 1.5 % of GDP.

Figure 4.8.6: Industrial environmental protection expenditure by subsector, by country, 2013 ([1])
(% of GDP)



([1]) Denmark, Ireland, Greece, Luxembourg and Malta: not available.
([2]) Estimates.
([3]) 2012.
([4]) 2011.
([5]) 2010.
([6]) Mining and quarrying: confidential.
([7]) 2012. Manufacturing: confidential.
([8]) 2007.
([9]) 2003.
([10]) 2012. Mining and quarrying: confidential.
Source: Eurostat (online data code: env_ac_exp2)

Table 4.8.3: Industrial environmental protection expenditure by environmental domain, by country, 2013
(million EUR)

	Air	Wastewater	Waste	Other domains
EU-28	*13 702.4*	*12 882.2*	*15 035.1*	*10 010.4*
Belgium (1)	132.0	543.2	139.6	259.7
Bulgaria	134.7	51.3	79.8	37.5
Czech Republic (2)	321.4	431.1	:	363.7
Denmark	:	:	:	:
Germany (3)	5 190.0	3 580.0	3 160.0	610.0
Estonia (4)	34.3	18.2	:	4.8
Ireland	:	:	:	:
Greece	:	:	:	:
Spain (1)	506.8	592.1	921.4	328.5
France (5)	760.0	705.8	380.3	735.6
Croatia	26.0	86.2	42.8	63.3
Italy	:	:	:	:
Cyprus (1)	10.2	8.9	9.3	1.2
Latvia	26.1	16.3	8.1	15.0
Lithuania	21.2	25.3	20.5	8.0
Luxembourg	:	:	:	:
Hungary (1)	34.5	395.7	175.2	81.4
Malta	:	:	:	:
Netherlands (6)	605.6	370.0	407.8	363.8
Austria (1)	280.5	236.8	215.0	161.8
Poland	1 095.5	1 344.7	624.2	264.2
Portugal	62.6	75.3	120.1	61.1
Romania	283.9	494.5	166.6	768.3
Slovenia (1)	205.6	86.8	94.6	25.5
Slovakia (2)	53.6	159.2	:	60.5
Finland (1)	283.2	293.7	159.8	107.6
Sweden	399.2	420.9	311.4	278.6
United Kingdom (1)	453.3	1 179.6	1 052.6	1 210.5
Norway (1)	131.7	295.4	375.5	128.9
Switzerland (7)	159.1	277.5	272.7	94.8
FYR of Macedonia	16.9	5.7	17.1	5.2
Serbia	29.3	34.3	67.6	29.2
Turkey (8)	:	97.6	:	:

(1) 2012.
(2) Waste: confidential.
(3) 2010.
(4) 2012. Waste: confidential.
(5) 2007.
(6) 2011.
(7) 2003.
(8) 2010. Air, waste and other domains: confidential.
Source: Eurostat (online data code: env_ac_exp1r2)

These differences across EU Member States may, at least to some degree, reflect whether the public sector provides services itself or contracts out these activities to specialised producers. The specialisation and concentration of particular industrial activities within each country also plays a role — for example, wastewater treatment or waste management may be internalised within industrial plants in order to recycle or reuse some of the materials that are discarded as part of the production process.

In all of the EU Member States, except in Malta and Austria, the vast majority of the environmental protection expenditure by specialised producers was allocated to waste management and wastewater treatment.

On average, 0.40 % of GDP was spent on environmental protection by industry in the EU-28 in 2013. This ratio generally ranged between 0.21 % and 0.75 % in the EU Member States, falling below this range in Portugal, Cyprus (2012 data) and France (2007 data) and rising above it in Poland, the Czech Republic, Slovenia (2012 data) and Romania.

Within industry, the highest environmental protection expenditure was made by manufacturing, about two thirds (64 %) of the industrial total in 2013. Most of the remaining industrial environmental protection expenditure was made by mining and quarrying or by electricity, water and gas supply. The high share for manufacturing is not a surprise given its far larger size (according to most economic measures like gross value added or employment) than the other industrial activities.

Across the EU Member States, the relative size of each of these three activities could be explained, at least to some degree, by natural resource endowments, as well as industrial specialisation. For example, a higher reliance on the burning of fossil fuels to generate electricity in many of the EU Member States that joined the EU in 2004 or more recently may explain the relatively high degree of environmental protection expenditure by the producers of electricity, gas and water supply in these countries (for example, Slovenia, Poland, Croatia and Latvia). Significant coal mining activity or oil and gas extraction on the other hand may explain the higher than average levels of expenditure by mining and quarrying in Finland, Poland, the Czech Republic, the Netherlands, the United Kingdom and Romania.

In most EU Member States, environmental protection expenditure by industry was generally concentrated on air protection measures, wastewater treatment and waste management activities.

Annexes

Annex A: Glossary of terms used in the energy section

These are the main definitions. More can be found in the glossary of Statistics Explained http://ec.europa.eu/eurostat/statistics-explained/index.php/Category:Energy_glossary.

Biofuels

Liquid or gaseous fuels used primarily for transport produced from biomass. Biofuels comprise biogasoline, biodiesel and other liquid biofuels. Second-generation biofuels refer to biofuels produced from wastes, residues, non-food cellulosic material and lingo-cellulosic material.

CHP

See 'Combined heat and power'.

Cogeneration

See 'Combined heat and power'.

Combined heat and power

A combined heat and power (also referred to as a cogeneration or a CHP) unit is an installation in which heat energy released from fuel is transmitted to electrical generator sets which are designed and operated in such a way that energy is partly used for generating electrical energy and partly for supplying heat for various purposes. The thermal efficiency of a combined heat and power unit is significantly higher than that of a unit producing electricity only.

Energy balance sheets

The energy balance sheets expressed in specific units and in tonnes of oil equivalent, for the European Union as a whole, as well as for each EU Member State, Iceland, Norway, and all candidate countries can be found on the Eurostat website http://ec.europa.eu/eurostat/web/energy/data/energy-balances.

Energy dependency

Energy dependency shows the extent to which a country relies upon imports in order to meet its energy needs. It is calculated using the following formula: net energy imports/(gross inland energy consumption + international maritime bunkers).

Energy intensity

Energy intensity gives an indication of the effectiveness with which energy is being used to produce added value. It is defined as the ratio of Gross Inland Energy Consumption to Gross Domestic Product.

Final energy consumption

Final energy consumption is the energy consumed in the following sectors: industry, transport, commercial and public services, agriculture/forestry, fishing, residential and other. It excludes the non-energy consumption, deliveries to the energy transformation sector and for the own use of the energy sector.

GCV

See 'Gross calorific value'.

Gross calorific value

The gross calorific value (GCV) is the total amount of heat released by a unit quantity of fuel, when it is burned completely with oxygen, and when the products of combustion are returned to ambient temperature. This quantity includes the heat of condensation of any water vapour contained in the fuel and of the water vapour formed by the combustion of any hydrogen contained in the fuel.

Gross inland consumption

Gross inland consumption (also referred to as Gross Inland Energy Consumption) is the quantity of energy consumed within the borders of a country. It is calculated using the following formula: primary production + recovered products + imports + stock changes – exports – bunkers (i.e. quantities supplied to seagoing ships).

Hard coal and derived products

Hard coal and derived products include hard coal (anthracite, coking coal, bituminous coal and sub-bituminous coal), patent fuels, coke oven coke and coal tar.

Installed capacity

Installed capacity represents the maximum active power that can be supplied, continuously, with all plants running.

Lignite and derived products

Lignite and derived products include lignite, peat, brown coal/lignite briquettes and peat briquettes.

Natural gas

Natural gas comprises gases, occurring in underground deposits, whether liquefied or gaseous, consisting mainly of methane. It includes both 'non-associated' gas originating from fields producing hydrocarbons only in gaseous form, and 'associated' gas produced in association with crude oil as well as methane recovered from coal mines.

NCV

See 'Net calorific value'.

Net calorific value

The net calorific value (NCV) is the amount of heat released by a unit quantity of fuel, when it is burned completely with oxygen, and when the products of combustion are returned to ambient temperature. This quantity does not include the heat of condensation of the water vapour formed by the combustion of hydrogen contained in the fuel.

Net import

Net import is calculated as the difference between imports and exports.

Power station efficiency

The efficiency of a thermal or nuclear power station is defined as the ratio between the output, i.e. the gross electricity generated, and the fuel input. In the case of a combined heat and power installation the output is the gross electricity generated plus the heat produced.

Primary energy production

Primary energy production is the extraction of energy from a natural source. The precise definition depends on the fuel involved:

- *Hard coal, lignite*: Quantities of fuels extracted or produced, calculated after any operation for removal of inert matter. In general, production includes the quantities consumed by the producer during the production process (e.g. for heating or operation of equipment and auxiliaries) as well as any quantities supplied to other on-site producers of energy for transformation or other uses.

- *Crude oil*: Quantities of fuels extracted or produced within national boundaries, including off-shore production. Production includes only marketable production, and excludes any quantities returned to formation.

- *Natural gas*: Quantities of dry gas within national boundaries, measured after purification and extraction of natural gas liquids and sulphur. The production includes only marketable production, and excludes any quantities re-injected, vented and flared, and any extraction losses. The production includes all quantities used within the natural gas industry, in gas extraction, pipeline systems and processing plants.

- *Nuclear heat*: Quantities of heat produced in a reactor. Production is the actual heat produced or the heat calculated on the basis of the gross electricity generated and the thermal efficiency of the nuclear plant.

- *Hydropower, wind, solar photovoltaic*: Quantities of electricity generated. Production is calculated on the basis of the gross electricity generated and a conversion factor of 3 600 kJ/kWh.

- *Geothermal energy:* Quantities of heat extracted from geothermal fluids. Production is calculated on the basis of the difference between the enthalpy of the fluid produced in the production borehole and that of the fluid disposed of via the re-injection borehole.

- *Biomass/wastes:* In the case of municipal solid wastes (MSW), wood, wood wastes and other solid wastes, production is the heat produced after combustion and corresponds to the heat content (NCV) of the fuel. In the case of anaerobic digestion of wet wastes, production is the heat content (NCV) of the biogases produced. The production includes all quantities of gas consumed in the installation for the fermentation processes, and excludes all quantities of flared gases.

In the case of biofuels, the production is the heat content (NCV) of the fuel.

RES

See 'Renewable energy'.

Renewable energy

Renewable energy includes hydroelectricity, biomass, wind, solar, tidal and geothermal energies.

Annex B: Terms and methodology used in the transport section

The main terms used in the field of transport statistics are defined in the 'Eurostat concepts and definitions database' (CODED) accessible on the Eurostat website under http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL_GLOSSARY&StrNom=CODED2&StrLanguageCode=EN. Further clarification of the terms used in transport statistics can be found in the Eurostat/ITF/UNECE 'Illustrated Glossary for Transport Statistics' publication, available at http://ec.europa.eu/eurostat/ramon/other_documents/transport_glossary_4_ed/index.cfm?TargetUrl=DSP_TRANSPORT_GLOSSARY_4_ED and in the glossary of Statistics Explained under http://ec.europa.eu/eurostat/statistics-explained/index.php/Category:Transport_glossary.

The indicators presented in the transport section of this statistical book represent a small part of the very detailed data collected by Eurostat in the framework of legal acts and voluntary data agreements. According to a commonly agreed breakdown, the indicators are presented on the one hand by domains of interest (equipment, vehicle-kilometres, quantity and performance for the transport of freight and passengers, safety) and on the other hand, by modes of transport (rail, road, inland waterways, pipelines, maritime and aviation). To facilitate the comparisons between smaller and bigger countries, most of the indicators combine basic transport figures with population or Gross Domestic Product (GDP). Eurostat's online database has been used as the main source for the indicators, while figures from the DG for Mobility and Transport have been used as an additional source. For some missing data, figures from miscellaneous international or national bodies have been used and some estimates (put in italics) have been made.

Two main channels are used by Eurostat to collect statistical data:

1. Legal acts on transport statistics which cover detailed data collections for all the main modes of transport:

- *Rail:* Regulation (EC) No 91/2003 of the European Parliament and of the Council of 16 December 2002 on rail transport statistics (OJ L 14 of 21.1.2003)
- *Road:* Regulation (EU) No 70/2012 of the European Parliament and of the Council on statistical returns in respect of the carriage of goods by road (recast) (OJ L 32 of 3.2.2012)
- *Inland waterways:* Regulation (EC) 1365/2006 of the European Parliament and of the Council of 6 September 2006 on statistics of goods transport by inland waterways and repealing Council Directive 80/1119/EEC (OJ L 264 of 25.9.2006)
- *Maritime:* Directive 2009/42/EC of the European Parliament and of the Council of 6 May 2009 on statistical returns in respect of carriage of goods and passengers by sea (OJ L 141 of 6.6.2009)
- *Aviation passengers, freight and traffic:* Regulation (EC) No 437/2003 of the European Parliament and of the Council of 27 February 2003 on statistical returns in respect of the carriage of passengers, freight and mail by air (OJ L 66 of 11.3.2003)

- *Road accidents:* Council Decision 93/704/EC of 30 November 1993 (OJ L 329 of 30.12.1993)

2. The 'Common Questionnaire' of Eurostat, UNECE and ITF, which is used to collect, on a voluntary basis, annual aggregated data covering many aspects of inland modes of transport (rail, road, inland waterways and pipelines). Other voluntary agreements cover the collection of other types of data such as regional transport indicators.

The main dissemination channel used for Eurostat data is the online database which covers, starting from the early 1980s, millions of transport figures from EU Member States plus, to a lesser extent, statistics from EFTA, Mediterranean and candidate countries. Some miscellaneous publications in paper and electronic formats are also available, such as the '*Statistics in Focus*' http://ec.europa.eu/eurostat/web/transport/publications.

These are the main definitions. More can be found in the glossary of Statistics Explained http://ec.europa.eu/eurostat/statistics-explained/index.php/Category:Environment_glossary.

Annex C: Glossary of terms used in the environment section

CO_2 equivalent

CO_2 equivalent is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

Domestic extraction

Domestic extraction is one indicator derivable from Eurostat's economy-wide Material Flow Accounts. Domestic extraction is the amount of raw materials (without water and air) extracted from the domestic natural environment and further processed in the economy.

Domestic material input (DMI)

Domestic material input (DMI) is one indicator derivable from Eurostat's economy-wide Material Flow Accounts. DMI measures the amount of materials (without water and air) which is actually being made available in an economy to produce goods and services (output). It is composed of the domestic extraction used plus the simple mass weight of imported goods.

Domestic material consumption (DMC)

Domestic material consumption (DMC) is one indicator derivable from Eurostat's economy-wide Material Flow Accounts.

DMC measures the amount of materials (without water and air) which is actually used by the categories of domestic final demand (consumption by households and government, and gross fixed capital formation). DMC is defined and calculated as domestic material input minus the simple mass weight of exports.

Environmental domains

The scope of environmental protection is defined according to the Classification of Environmental Protection Activities (CEPA 2000), which distinguishes nine environmental domains: protection of ambient air and climate (CEPA 1); wastewater management (CEPA 2); waste management (CEPA 3); protection and remediation of soil, groundwater and surface water (CEPA 4); noise and vibration abatement (CEPA 5); protection of biodiversity and landscape (CEPA 6); protection against radiation (CEPA 7); research and development (CEPA 8) and other environmental protection activities (CEPA 9).

For the purpose of this publication the domains CEPA 4-9 are published under 'Other domains (protection of soil, groundwater; noise abatement; protection of biodiversity, landscape and other)'.

Environmental protection expenditure

Environmental protection expenditure (EPE) is the money spent on activities directly aimed at the prevention, reduction and elimination of pollution or any other degradation of the environment.

Total EPE is made up of current expenditure and investment. For the public sector the total EPE also includes subsidies and other transfers given to other sectors.

Main environmental protection sectors are:

- *Public sector:* it includes central, regional and local governments, authorities, communities and government agencies mainly classified under NACE Rev. 2 division 84. Data reported are net of any transfers between these government bodies.
- *Specialised producers of environmental services:* these are enterprises (both privately and publicly owned) and separately identified departments of large municipalities mainly classified under NACE Rev. 2 divisions and groups 37, 38.1, 38.2 and 39. Their main activity is the production of environmental protection services.
- *Industry:* it includes all producer units classified under NACE Rev. 2 sections B, C, D and division E36. Expenditures of the water supply industry (NACE Rev. 2 division 36) only relate to production of drinking water and do not include expenditures for the treatment of wastewater generated by other companies.

Environmental protection investments

Investment for environmental protection includes all outlays in a given year (purchases and own-account production) for machinery, equipment, plant, buildings and land used for environmental protection purposes. It is the sum of two categories:

- *End-of-pipe (pollution treatment) investments:* these are investments to collect and remove pollutants (e.g. air emissions, effluents or solid waste) after their creation, prevent the spread of and measure the level of the pollution, and treat and dispose of pollutants generated by the operating activity of the company.
- *Investments in integrated technologies (pollution prevention investments):* these are investments which lead to a modified or adapted production process.

Environmental taxes by economic activities

According to the Regulation (EU) on European environmental economic accounts, environmental taxes are taxes whose tax base is a physical unit (or a proxy of a physical unit) of something that has a proven, specific negative impact on the environment, and which is identified in ESA 2010 as a tax. Carbon dioxide taxes are included under energy as they are often an integral part of general energy taxes. General value added tax (VAT) is excluded.

Environmental taxes are broken down by economic activities from the perspective of the entities paying the taxes:

- producers, in a breakdown by the classification of economic activities, NACE Rev.2 (A*64 aggregation level as set out in the transmission programme for data of ESA 2010),
- households,
- non-residents.

Global warming potential (GWP)

The global warming potential is the estimated potential of a greenhouse gas contributing to global warming in the atmosphere. It is based on its effect over a 100-year time horizon. These substances have individual GWP ranging from 1 (carbon dioxide), 21 (methane), 310 (nitrous oxide) to 23 900 (sulphur hexafluoride). Hydrofuorocarbons and perfluorocarbons comprise a large number of different gases that have different GWPs (IPCC, 1996).

Greenhouse gases (GHG)

These emissions are reported under the 1992 United Nations Framework Convention on Climate Change and, for the EU Member States, under the Decision 280/2004/EC. According to the Kyoto Protocol anthropogenic emissions of the six greenhouse gases (the 'Kyoto basket') are aggregated using the global warming potential: carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and hydrofuorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

Implicit tax rate on energy

The indicator expresses energy tax revenue in relation to final energy consumption calculated for a calendar year. Energy tax revenues are measured in euro (deflated) and the final energy consumption in tonnes of oil equivalent (toe). The indicator measures

the taxes levied on the use of energy which contributes to foster energy efficiency.

Energy tax revenue is the sum of taxes on energy products used for both mobile and stationary purposes.

Final energy consumption includes energy consumed in the transport, industrial, commercial, agricultural, public and households sectors but excludes deliveries to the energy transformation sector and to the energy industries themselves. The different energy products are aggregated on the basis of their net calorific value, and expressed in tonnes of oil equivalent.

NACE

Nomenclature statistique des activités économiques dans la Communauté Européenne; in English: Statistical classification of economic activities in the European Community. NACE is organised in sections and sub-sections.

Sections of NACE rev 2

A Agriculture, forestry and fishing

B Mining and quarrying

C Manufacturing

D Electricity, gas, steam and air conditioning supply

E Water supply; sewerage, waste management and remediation activities

F Construction

G Wholesale and retail trade; repair of motor vehicles and motorcycles

H Transportation and storage

I Accommodation and food service activities

J Information and communication

K Financial and insurance activities

L Real estate activities

M Professional, scientific and technical activities

N Administrative and support service activities

O Public administration and defence; compulsory social security

P Education

Q Human health and social work activities

R Arts, entertainment and recreation

S Other service activities

T Activities of households as employers

U Activities of extraterritorial organisations and bodies

Raw material consumption (RMC)

Raw material consumption (RMC) is an indicator estimate based on Eurostat's economy-wide material flow accounts in combination with economic data and modelling. RMC is the amount of raw materials (without water and air) which is extracted domestically and abroad to produce the goods and services used by the categories of domestic final demand (consumption by households and government, and gross fixed capital formation). RMC is defined and calculated as raw material input minus the exported goods expressed in tonnes raw material equivalents.

Raw material equivalents (RME)

Raw material equivalents are a measurement concept in Eurostat's economy-wide material flow accounts related to traded goods. Traded goods (imports and exports) are usually reported in simple mass weight as they pass the border. Raw material equivalents are the amount of extracted raw materials (without water and air) which was necessary to produce the traded good. Imports and exports expressed in raw material equivalents are components of the RMI and RMC indicators.

Raw material input (RMI)

Raw material input (RMI) is an indicator estimate based on Eurostat's economy-wide material flow accounts in combination with economic data and modelling. RMI is the amount of raw materials (without water and air) which is extracted domestically and abroad, to be used in the economy to produce goods and services (output). It is composed of the raw materials domestically extracted and the imported goods expressed in tonnes raw material equivalents.

Stage of manufacturing

Traded goods are classified according to their stage of manufacturing. The following three stages of manufacturing are defined:

- *raw products:* raw materials like products produced by primary industries such as agriculture, forestry, fishing, and mining;
- *semi-manufactured products:* products which are further processed raw products but do not yet constitute finished products; they obviously need to be further processed;
- *finished products:* products which are finalised, i.e. are not processed or transformed anymore; note that finished products are potentially used for final consumption by households, governments etc. but also as intermediate input to industries.

In operational terms the stage of manufacturing is defined by a correspondence list between CN (combined nomenclature) and the three groupings above — developed by Eurostat and the European Statistical System.

Current expenditure for environmental protection

Current expenditure includes the use of energy, material, maintenance and personnel for producing environmental services in-house. Current expenditure also comprises the money spent to buy environmental services from specialised producers.

Waste

Waste means any substance or object which the holder discards or intends or is required to discard. Municipal waste generated 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 estimate has been made of the amount of waste generated.

Waste recovery:

Any operation whose principal result is either waste that serves a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in a plant or in the wider economy. Some examples of recovery operations are: solvent reclamation/regeneration, recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes), recycling/reclamation of metals and metal compounds, regeneration of acids or bases, oil re-refining or other reuses of oil.

Waste recycling:

Waste recycling is any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Water

Water net abstraction (= water withdrawal):

Water gross abstraction minus returned water.

Cooling water:

This is water which is used to absorb and remove heat. In the questionnaire cooling water is broken down into cooling water used in the generation of electricity in power stations, and cooling water used in other industrial processes.

Public water supply:

Water supplied by economic units engaged in collection, purification and distribution of water (including desalting of sea water to produce water as the principal product of interest, and excluding system operation for agricultural purposes and treatment of waste water solely in order to prevent pollution). It corresponds to division 41 (NACE/ISIC) independently of the sector involved. Deliveries of water from one public supply undertaking to another are excluded.

Wastewater treatment:

The major aim of wastewater treatment is to remove as much of the pollution (dissolved substances and suspended solids) as possible before the remaining water, called effluent, is discharged back to the environment. Primary treatment typically removes about 60% of suspended solids from wastewater by means of settling. Secondary treatment (biological) removes more than 90% of suspended solids and a considerable part of the nutrients. Tertiary treatment includes targeted removal of nutrients such as phosphorus and nitrogen and practically all suspended and organic matter from wastewater.

Annex D: Calorific values and conversion factors

Calorific values

		kJ (NCV)	kgoe (NCV)
Hard coal	1 kg	>20 000	>0.478
Recovered hard coal	1 kg	13 800 - 28 300	0.330 - 0.676
Patent fuels	1 kg	26 800 - 31 400	0.640 - 0.750
Hard coke	1 kg	28 500	0.681
Brown coal	1 kg	5 600 - 10 500	0.134 - 0.251
Lignite	1 kg	<20 000	<0.478
Peat	1 kg	7 800 - 13 800	0.186 - 0.330
Brown coal briquettes	1 kg	20 000	0.478
Tar	1 kg	37 700	0.900
Benzol	1 kg	39 500	0.943
Oil equivalent	1kg	41 868	1
Crude oil	1 kg	41 600 - 42 800	0.994 - 1.022
Feedstocks	1 kg	42 500	1.015
Refinery gas	1 kg	49 500	1.182
LPG	1 kg	46 000	1.099
Motor spirit	1 kg	44 000	1.051
Kerosenes, jet fuels	1 kg	43 000	1.027
Naphtha	1 kg	44 000	1.051
Gas diesel oil	1 kg	42 600	1.017
Residual fuel oil	1 kg	40 000	0.955
White spirit, industrial spirit	1 kg	43 600	1.041
Lubricants	1 kg	42 000	1.003
Bitumen	1 kg	39 000	0.931
Petroleum cokes	1 kg	32 000	0.764
Other petroleum products (paraffins, waxes, etc.)	1 kg	40 000	0.955
Natural gas	1 MJ (GCV)	900	0.0215
Coke-oven gas	1 MJ (GCV)	900	0.0215
Blast-furnace gas	1 MJ (GCV)	1 000	0.0239
Works gas	1 MJ (GCV)	900	0.0215
Nuclear energy	1 MJ (GCV)	1 000	0.0239
Biomass	1 MJ (GCV)	1 000	0.024
Solar energy	1 MJ (GCV)	1 000	0.024
Geothermal energy	1 MJ (GCV)	1 000	0.024
Hydro energy	1 kWh	3 600	0.086
Wind energy	1 kWh	3 600	0.086
Derived heat	1 MJ (GCV)	1 000	0.024
Electrical energy	1 kWh	3 600	0.086

The tonne of oil equivalent (TOE) is a conventional standardised unit defined on the basis of a tonne of oil with a net calorific value of 41 868 kilojoules/kg. The conversion coefficients from the specific units to kgoe (kilogramme of oil equivalent) are thus computed by dividing the conversion coefficients to the kilojoules by 41 868.

The following prefixes are used for multiples of TOE, joules, watts and watt hours:

kilo (k) = 1 000 or 10^3

mega (M) = 1 000 000 or 10^6

giga (G) = 1 000 000 000 or 10^9

tera (T) = 1 000 000 000 000 or 10^{12}

peta (P) = 1 000 000 000 000 000 or 10^{15}

Energy conversion

From \ To	TJ	Gcal	Mtoe	MBtu	GWh
TJ	1	238.8	2.388×10^{-5}	947.8	0.2778
Gcal	4.1868×10^{-3}	1	1×10^{-7}	3 96.8	1.163×10^{-3}
Mtoe	4.1868×10^{4}	1×10^{7}	1	3.968×10^{7}	11 630
Mbtu	1.0551×10^{-3}	0 252	2.52×10^{-8}	1	2.931×10^{-4}
GWh	3.6	860	8.6×10^{-5}	3 412	1

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