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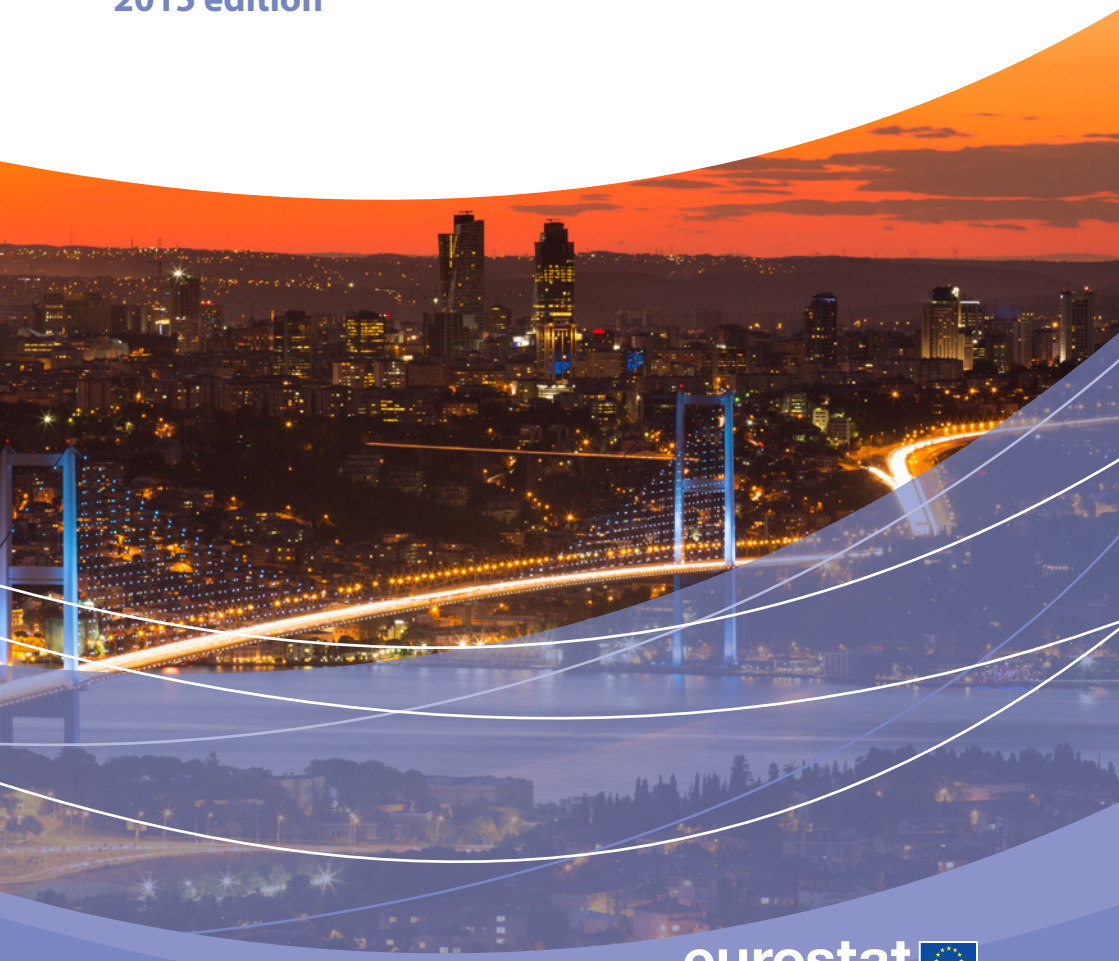
Statistical books

The EU in the world

2015 edition



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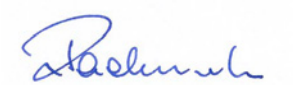
Foreword

The first Eurostat publication to carry the name *The EU in the world* was a special edition produced in 2010 for World Statistics Day. Following on from the 2013 and 2014 editions, *The EU in the world 2015* is the third edition of this publication in its current format. The content of this edition has been revised and includes several new indicators.

The EU in the world 2015 provides you with a selection of important and interesting statistics on the EU in comparison with the 15 non-EU members of the Group of Twenty (G20). Drawing from the huge amount of data available at Eurostat and from other international and national sources, we aim to give an insight into European society, the economy and the environment in comparison with the major economies from the rest of the world. I hope that you will find here information of interest both for your work and for your daily life.

Eurostat is the statistical office of the European Union. Working together with national statistical authorities in the European statistical system (ESS), we produce high quality statistics on Europe.

I wish you an enjoyable reading experience!



Walter Radermacher

Director-General, Eurostat

Chief Statistician of the European Union

Abstract

This publication provides a statistical portrait of the European Union in relation to the rest of the world. It complements information found in the continuously updated online publication *Europe in figures — Eurostat yearbook* and in the *Eurostat regional yearbook*. It may be viewed as an introduction to European and international statistics and provides a starting point for those who wish to explore the wide range of data that are freely available from a variety of international organisations and on Eurostat's website at http://ec.europa.eu/eurostat

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Data extraction period

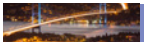
The data presented within this publication were largely extracted during March 2015.

An online data code available under each table/figure can be used to directly access the most recent data on Eurostat's website.

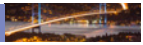
All statements on policies within this publication are given for information purposes only. They do not constitute an official policy position of the European Commission and are not legally binding. To know more about such policies, please consult the European Commission's website at: http://ec.europa.eu

Acknowledgements

The editors-in-chief of this statistical book would like to thank all their colleagues who were involved in its preparation.



Contents

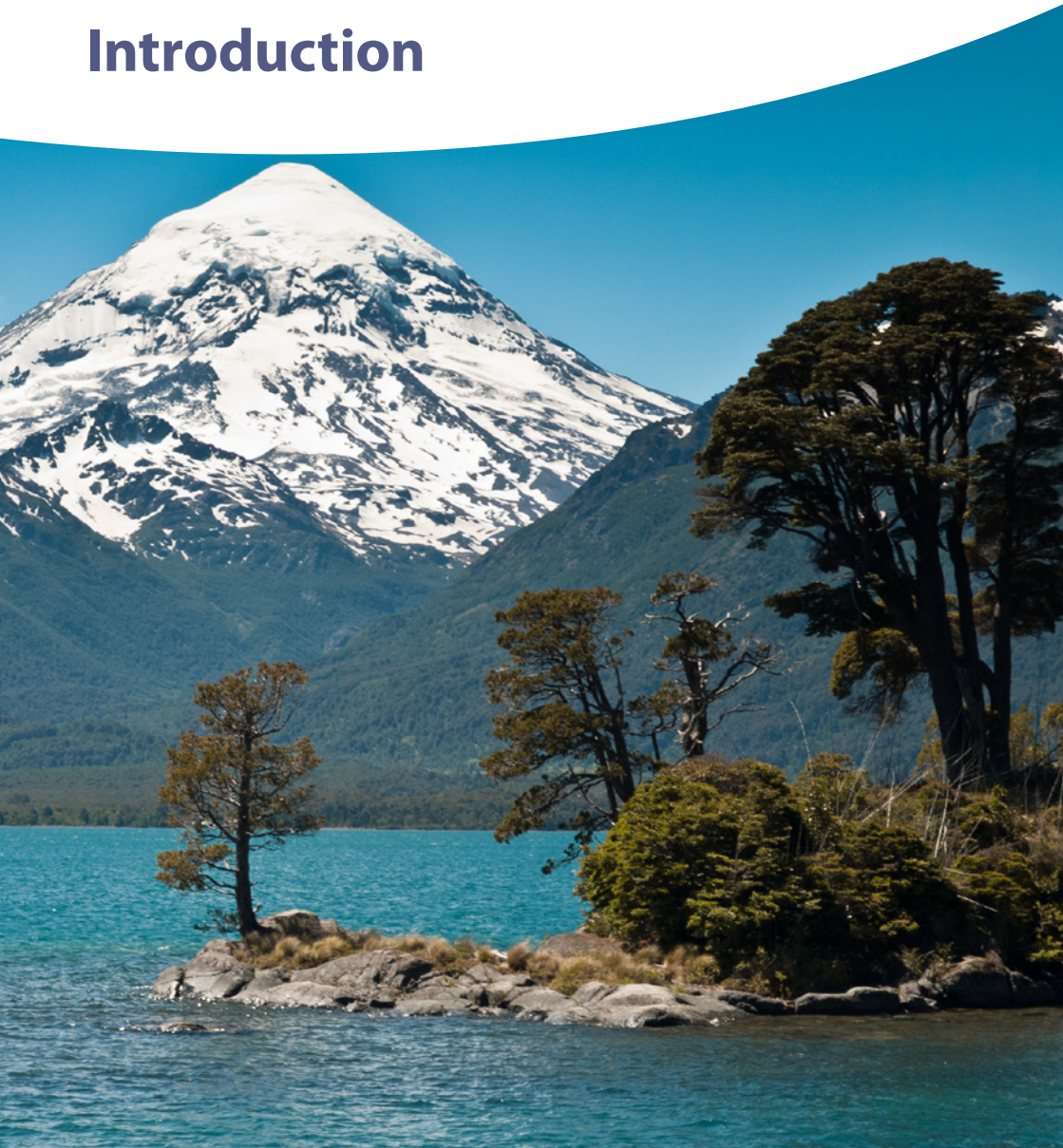


National statistical authorities

The following list provides links to national statistics authorities of the individual countries included in this publication. Where available, the links below are to the English language page of the websites.

Authority	Website
National Institute of Statistics and Censuses (Argentina)	http://www.indec.gov.ar/el-indec_eng.asp
Brazilian Institute of Geography and Statistics	http://www.ibge.gov.br/english
Statistics Canada	http://www.statcan.gc.ca/start-debut-eng.html
National Bureau of Statistics of China	http://www.stats.gov.cn/english
Census and Statistics Department (Hong Kong special administrative region)	http://www.censtatd.gov.hk/home/index.jsp
Statistics and Census Service (Macao special administrative region)	http://www.dsec.gov.mo/default.aspx?lang=en-US
Ministry of Statistics and Programme Implementation (India)	http://mospi.nic.in/mospi_new/site/home.aspx
Statistics Indonesia	http://www.bps.go.id
Statistics Bureau (Japan)	http://www.stat.go.jp/english/index.htm
National Institute of Statistics and Geography (Mexico)	http://www.inegi.org.mx (in Spanish)
Federal State Statistics Service (Russia)	http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/en/main/
Ministry of Economy and Planning (Saudi Arabia)	http://www.mep.gov.sa/themes/GoldenCarpet/index.jsp
Statistics South Africa	http://www.statssa.gov.za
Statistics Korea	http://kostat.go.kr/portal/english/index.action
Turkish Statistical Institute	http://www.turkstat.gov.tr/Start.do
United States Census Bureau	http://www.census.gov
Bureau of Labor Statistics (United States)	http://www.bls.gov

Introduction



Eurostat and the European statistical system

Eurostat is the statistical office of the European Union (EU), situated in Luxembourg. Its task is to provide the EU with statistics at a European level that enable comparisons between countries and regions. Eurostat's mission is 'to be the leading provider of high quality statistics on Europe'. 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 Community policies;
- to disseminate statistics to the European public and enterprises and to all economic and social agents involved in decision-making;
- to 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;
- to improve the functioning of the European Statistical System (ESS), to support the EU Member States, and to assist in the development of statistical systems at an international level.

Since the creation of a European statistical office in 1952, there has always been a realisation that the planning and implementation of European policies must be based on reliable and comparable statistics. As a result, the ESS was built-up gradually to provide comparable statistics across the EU.

The ESS is a partnership between Eurostat and the national statistical offices and other national authorities responsible in each EU Member State for the development, production and dissemination of European statistics; this partnership includes the member countries of the European Free Trade Association (EFTA). The ESS also coordinates its work with candidate countries and with other European Commission services, agencies, the European Central Bank (ECB) and international organisations such as the United Nations (UN), the International Monetary Fund (IMF), the World Bank and the Organisation for Economic Co-operation and Development (OECD).

Eurostat and its partners in the ESS aim to provide relevant, impartial, reliable and comparable statistical data. Indeed, access to high quality statistics and Eurostat's obligation for trustworthiness is enshrined in law.

Cooperation on statistics with international and global organisations

In a globalised world, statistical organisations are working to define and implement common concepts, classifications and methods for making global comparisons of official statistics. European and international standards have been developed through joint work conducted by national statistical systems and international organisations such as the European Commission, the UN, the IMF, the World Bank and the OECD. This work has led to the formation of a global statistical system that uses a common language, international methods and standards to produce comparable data at regional, national and international level.

Examples of the results of this work include :

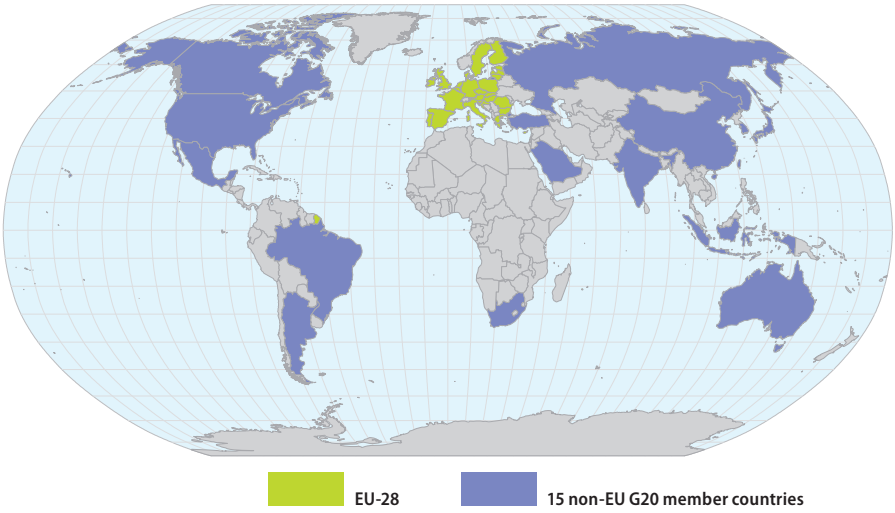
- classifications — such as the International standard classification of education (ISCED) for education levels and fields of study and the International standard industrial classification for the classification of economic activities;
- manuals — for example, the system of national accounts, the Canberra handbook on household income statistics and the Frascati manual for research and development statistics.

The Group of Twenty or G20

In September 1999, the finance ministers and central bank governors of the Group of Seven (or G7) members announced their intention to 'broaden the dialogue on key economic and financial policy issues'. The establishment of the G20 recognised the considerable changes in the international economic landscape, such as the growing importance of emerging economies, or the increasing integration of the global economy and financial markets. In November 2008, during the financial and economic crisis, the leaders of the G20 members convened for the first time in Washington D.C. (the United States). Between November 2008 and March 2015, the G20 held nine Leaders' Summits to seek agreements on global economic matters.

The G20 brings together the world's major advanced and emerging economies, comprising 19 country members and the EU. The country members include four EU Member States (Germany, France, Italy and the United Kingdom), and 15 non-EU members from the rest of the world, namely: Argentina, Australia, Brazil, Canada, China, India, Indonesia, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey and the United States. The EU (coloured green) and the 15 non-EU members from the rest of the world (purple) are shown in Map 1. The G20 members covered 60.8 % of the world's land area, generated 85.2 % of global gross domestic product (GDP), and were home to 64.3 % of the world's population in 2013.

Map 1: EU-28 and G20 countries



Publication structure and coverage

The EU in the world provides users of official statistics with a snapshot of the wealth of information that is available on Eurostat's website and the websites of other international organisations. The publication provides a balanced set of indicators, with a broad cross-section of information; it is composed of an introduction and 13 main chapters.

The publication aims to present information for the EU-28 (the EU of 28 Member States), occasionally the euro area (generally based on 18 members), as well as 15 other major advanced or emerging economies from around the world, in other words, all members of the G20. Note that data are generally presented for the EU-28 aggregate and for the 15 other non-EU G20 members. In the text, statements such as 'among G20 members' refer (unless otherwise specified) to the EU-28 as a whole and the 15 non-EU members of the G20. When information for the EU-28 aggregate is not available, then data and comments for the four G20 members which are also EU Member States — Germany, France, Italy and the United Kingdom — have been included instead, presented in protocol order in tables or ranked in figures.

The image used for the cover is a picture of the Bosphorus bridge that connects Europe and Asia: the 2015 G20 Leaders summit will be held in Antalya, Turkey in November 2015. The images used to separate the chapters of this publication show a picture from each of the non-EU G20 members, presented in alphabetical order (in English), starting with Argentina and finishing with the United States.

Each chapter begins with two infographics presenting selected data from that chapter. In general, each infographic shows information for the EU-28 for the chosen indicator as well as for the two G20 members with the highest values and the two with the lowest values. Note that the sizes of the symbols do not offer a precise representation of the underlying data values, but illustrate the highest and lowest values.

QUALITY OF LIFE

On 1 June 2015, Eurostat released a flagship publication on quality of life. A selection of indicators related to this subject can be found in the present publication in the following chapters:

- living conditions (Figure 2.2 and Table 2.1 on household consumption, Figures 2.3 to 2.5 on income, Figure 2.7 on poverty and Figure 2.8 on accommodation);
- health (Figures 3.2 and 3.3 on life and healthy life expectancy and Figures 3.4 to 3.6 on non-medical health determinants);
- education (Figures 4.4 to 4.8 on enrolment and Figure 4.9 on young people not in employment, education or training); and
- the labour market (Figures 5.4 and 5.5 and Tables 5.1 to 5.3 on unemployment).

POPULATION AND HOUSING CENSUS

In the second half of 2015, Eurostat plans to release a flagship publication on the population and housing census that was conducted across the EU in 2011. Chapter 1 of the present publication focuses entirely on population statistics. Some other subjects which will appear in the flagship publication that are also presented in The EU in the world can be found in the chapter on living conditions which includes information on household size (Figure 2.1) and accommodation (Figure 2.8) and the chapter on health which includes information on life and healthy life expectancy (Figures 3.2 and 3.3).

Spatial data coverage

The EU-28 and euro area (EA-18) aggregates that are provided include information for all of the Member States or estimates for missing information; any incomplete totals that are created are systematically footnoted. Time series for these geographical aggregates are based on a fixed set of Member States for the whole of the time period (unless otherwise indicated) — any time series for the EU-28 refers to a sum or an average for all 28 current Member States regardless of when they joined the EU. In a similar vein, the data for the EA-18 are consistently presented for the 18 members of the euro area before January 2015; Lithuania joined the euro area on 1 January 2015 as the 19th member.

When available, information is also presented for a world total; in the event that data for the world is not available this heading has been excluded from tables and figures.

If data for a reference period are not available for a particular country, then efforts have been made to fill tables and figures with data for previous reference years (these exceptions are footnoted).

The order of the G20 members used in this publication follows the alphabetical order of the members' names in English; in some of the figures the data are ranked according to the values of a particular indicator. The data for China presented in this publication systematically exclude Hong Kong and Macao (unless otherwise stated).

Data sources

The indicators presented are often compiled according to international — sometimes global — standards, for example, UN standards for national accounts and the IMF's standards for balance of payments statistics. Although most data are based on international concepts and definitions there may be certain discrepancies in the methods used to compile the data.

EU and euro area data

Almost all of the indicators presented for the EU and the euro area have been drawn from Eurobase, Eurostat's online database. Eurobase is updated regularly, so there may be differences between the data presented in this publication and data that are subsequently downloaded. In exceptional cases some indicators for the EU and selected EU Member States have been extracted from international sources, for example, when values are expressed in purchasing power parities (PPPs) (based on constant price dollar series).

G20 members from the rest of the world

For the 15 G20 members that are not part of the EU, the data presented in this publication have generally been extracted from a range of international sources listed overleaf. In a few cases the data available from these international sources have been supplemented by data for individual members from national statistics authorities. For some of the indicators a range of international statistical sources are available, each with their own policies and practices concerning data management (for example, concerning data validation, correction of errors, estimation of missing data, and frequency of updating). In general, attempts have been made to use only one source for each indicator in order to provide a comparable analysis between the members. Equally, efforts have been made to use the freshest available data and as a result the latest reference year may vary between the members.

The international data sources include:

Organisation	Data source(s)
The United Nations (UN) and its agencies	
The Food and Agriculture Organisation (FAO) of the United Nations	CountrySTAT; FAOSTAT; FishStatJ
The International Labour Organisation (ILO)	ILOSTAT
The United Nations	Comtrade
The United Nations Conference on Trade and Development (UNCTAD)	UNCTADstat; Maritime transport indicators; Review of maritime transport
The United Nations Department of Economic and Social Affairs (UN DESA)	Demographic statistics; Trends in International Migrant Stock; World Fertility Report; World Population Prospects
The United Nations Educational, Scientific and Cultural Organization (UNESCO)	UIS: Science & Technology; UIS: Education
The United Nations Environment Programme (UNEP)	Ozone Secretariat; World Conservation Monitoring Centre
The United Nations Framework Convention on Climate Change (UNFCCC)	Main website
The United Nations High Commissioner for Refugees (UNHCR)	UNHCR Statistical Online Population Database
The United Nations Industrial Development Organisation (UNIDO)	Indstat
The United Nations Statistics Division (UNSD)	Economic Statistics Branch; National Accounts Main Aggregates Database
The United Nations World Tourism Organisation (UNWTO)	Tourism highlights
The World Intellectual Property Organisation (WIPO)	WIPO Statistics Database
The International Monetary Fund (IMF)	Balance of payments and international investment position statistics; World Economic Outlook; International Financial Statistics
The World Bank	World DataBank: Health Nutrition and Population Statistics; Poverty and Inequality Database; World Development Indicators; World Health Statistics
The Organisation for Economic Co-operation and Development (OECD)	OECD.StatExtracts; Factbook; Education at a Glance; Environment; Green growth; Health care resources; Income Distribution and Poverty; Labour force statistics; Main Economic Indicators; National Accounts at a Glance; Non-medical determinants of health; Social Expenditure Database; Social Protection and Well-Being; International transport forum
The International Energy Agency (IEA)	Energy balances; Electricity
The International Telecommunication Union (ITU)	Main website

For transport statistics:

- data concerning ports have been extracted from the World port rankings of the American Association of Port Authorities supplemented by information from individual port authorities;
- data concerning airports have been compiled from the World annual traffic report of the Airports Council International (ACI) supplemented by information available from individual airports, regional or national civil aviation authorities;
- data concerning the number of passenger cars has been extracted from the International Organisation of Motor Vehicle Manufacturers (OICA).

Data extraction and processing

The statistical data presented in this publication were extracted during March 2015 and the accompanying text was drafted in March and April 2015.

Many of the international sources from which data were extracted present monetary data in national currencies and/or United States dollars (USD), whereas Eurostat data are normally presented in national currencies and/or euro (EUR). Monetary data for the G20 members from the rest of the world have been converted into euro using current exchange rates. Data that are expressed in USD having been converted from national currencies using purchasing power parities (PPPs) have been left in dollar based purchasing power standards (PPS). Equally, time series for indicators expressed in constant prices have not been converted from the original currency (whether for national currencies or in USD).

Several indicators have been standardised by expressing their values relative to an appropriate measure of the size of a country, for example, in relation to the surface or land area, the total population or the size of the economy (gross domestic product - GDP). Where necessary, these size measures have been extracted from United Nations data sources, namely surface and land area data from the Food and Agriculture Organisation, population data from the World Bank, and GDP data from the United Nations Statistics Division.

Data presentation

Many of the data sources contain metadata that provide information on the status of particular values or data series. In order to improve readability, only the most significant information has been included as footnotes under the tables and figures. The following symbols are used, where necessary:

Italic	data value is forecasted, provisional or estimated and is likely to change;
billion	a thousand million;
trillion	a thousand billion;
:	not available, confidential or unreliable value;
–	not applicable.

Where appropriate, breaks in series are indicated in the footnotes provided under each table and figure.

Online glossary

Many terms and abbreviations in the online and portable document format (PDF) versions of this publication are linked to the glossary pages (http://ec.europa.eu/eurostat/statistics-explained/index.php/Thematic_glossaries) of Eurostat's Statistics Explained website (http://ec.europa.eu/eurostat/statistics-explained).

Access to Eurostat data

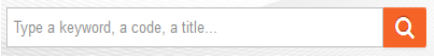
The simplest way to access Eurostat's broad range of statistical information is through the Eurostat website (http://ec.europa.eu/eurostat). Eurostat provides users with free access to its databases and all of its publications in PDF via the internet. The website is updated daily and gives access to the latest and most comprehensive statistical information available on: the EU and euro area; the EU Member States; the EFTA countries (Iceland, Liechtenstein, Norway and Switzerland); and the candidate countries (Albania, Montenegro, Iceland, the former Yugoslav Republic of Macedonia, Serbia and Turkey).

Furthermore, a number of databases provide statistical information for key indicators related to other non-member countries, notably:

- potential candidates — Bosnia and Herzegovina and Kosovo ([1]);
- the European neighbourhood policy (ENP) countries
  - ENP-East — Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine;
  - ENP-South — Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia.

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

Eurostat online data codes, such as tps00001 and nama_10_gdp ([2]), allow users easy access to the most recent data in the Eurobase database on Eurostat's website. In this publication these online data codes are given as part of the source below each table and figure that makes use of Eurobase data. In the PDF version of this publication, the reader is led directly to the freshest data when clicking on the hyper-links for each online data code. Readers can access the freshest data by typing a standardised hyper-link 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 in question. 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 are hyper-links which take users to a dataset detail page ([3]), which provide information about each dataset.

Note that the data on Eurostat's website is frequently updated and that the description above presents the situation as of May 2015.

([1]) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

([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_10_gdp and proj_13npms.

([3]) The dataset detail page can also be accessed by using a hyper-link, for example, http://ec.europa.eu/eurostat/en/web/products-datasets/-/<data_code>, where <data_code> is to be replaced by the online data code in question.

Eurostat publications and Statistics Explained

Eurostat produces a variety of publications, which are all available on the Eurostat website in PDF format, free of charge as well as the vast majority being available on Statistics Explained.

Statistics Explained is designed to be a user-friendly wiki-based online publishing system where a large amount of Eurostat's information is available. It also contains online publications in many statistical domains, both statistical and methodological ones. Examples are the present publication, the Eurostat yearbook, Eurostat's Regional yearbook, Monitoring sustainable development and Quality of life indicators.

Eurostat's publications are organised in several collections.

Statistical books are publications in A4, B5 or A5 format with statistical analysis and data on specific or cross-cutting topics.

News releases provide recent information on the euro-indicators (for example GDP, inflation and unemployment) and other statistical themes (such as agriculture, environment, social topics, regions, research and development).

Statistics in focus are relatively short publications presenting summaries of the main results of statistical surveys, studies or analyses. These are available as online publications in Statistics Explained and are also downloadable as PDF files.

Statistical working papers are related to on-going statistical methodological developments and applied statistical studies, including significant strategic analyses written by Eurostat staff.

Manuals and guidelines are dedicated to publications containing methodologies, guidelines and standards which are actually applied in the European Statistical System (ESS).

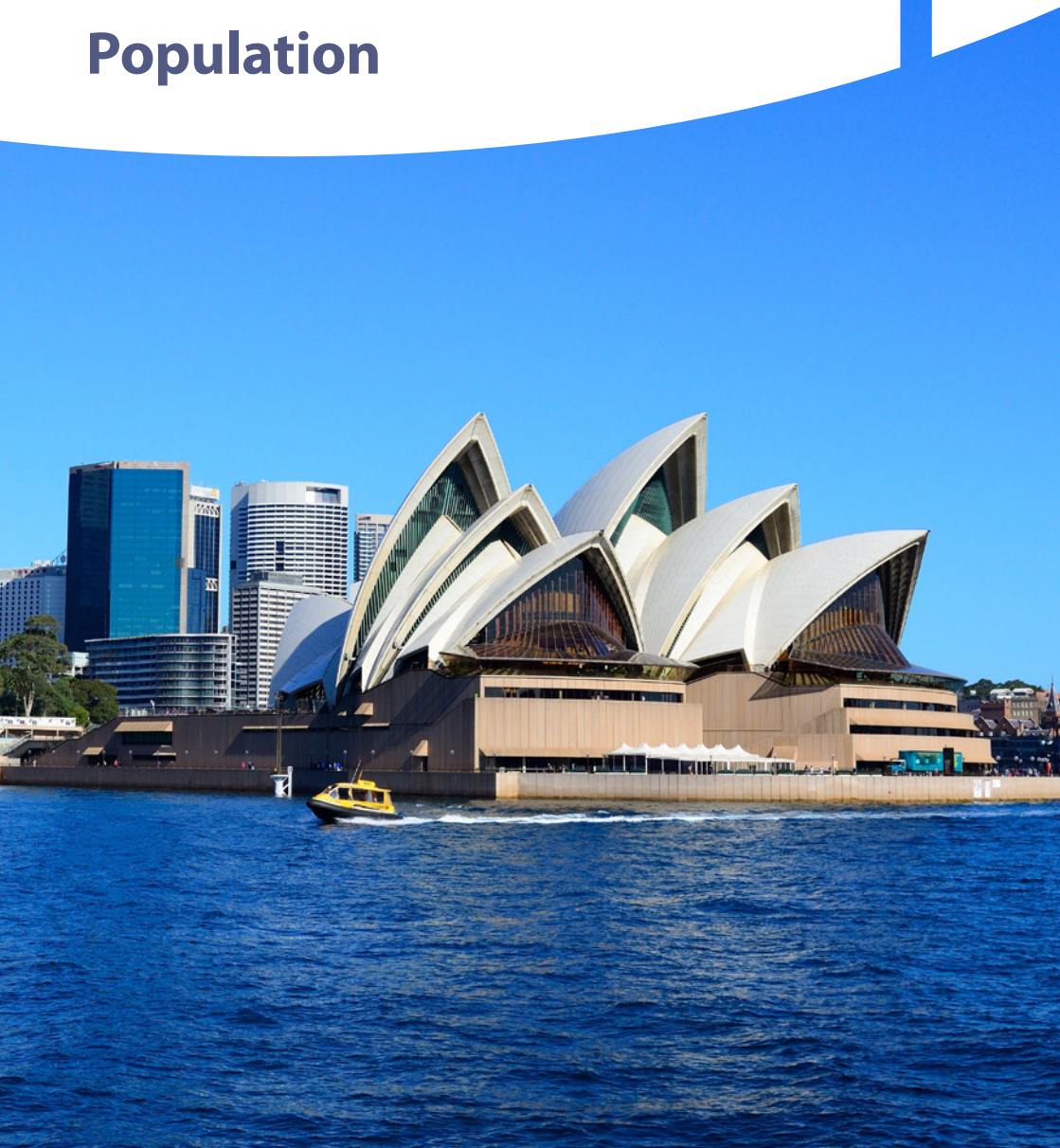
Compact guides are leaflets offering basic figures and guidance on how to obtain more information from the Eurostat website.

All publications are available in electronic formats free-of-charge from the Eurostat website. Some Eurostat publications, including this publication in English, are also printed; these can be ordered from the website of the EU bookshop (http://bookshop.europa.eu). The bookshop is managed by the Publications Office of the European Union (http://publications.europa.eu). Most printed publications are also free-of-charge.

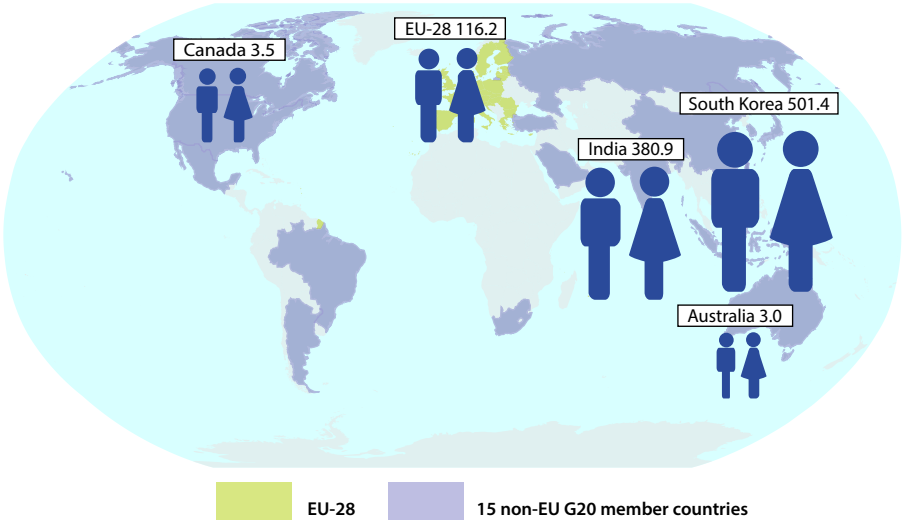
While the majority of Eurostat's publications focus on the EU, the EU Member States and their regions, a number of publications focus on the EU's neighbours or countries further afield. Recent examples include:

- *Key figures on the enlargement countries — 2014 edition*
- *Euro-Mediterranean statistics — 2013 edition*
- *Asia-Europe Meeting (ASEM) — A statistical portrait — 2014 edition*
- *The European Union and the African Union — 2014 edition*

1 Population

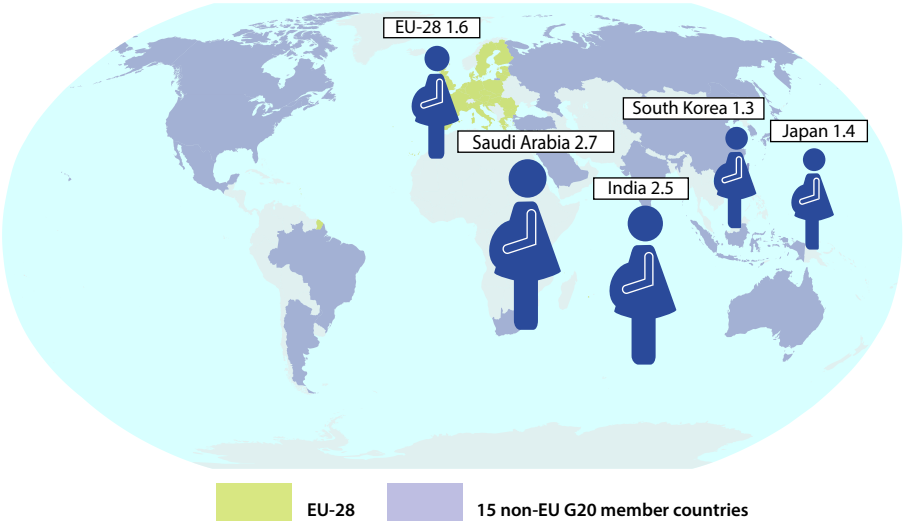


Population density, 2013
(inhabitants per km²)



For more information see Table 1.1 on page 20.

Fertility rate, 2012
(average number of births per woman)



For more information see Figure 1.6 on page 24.

Introduction

As a population grows or contracts, its structure changes. In many developed economies the population's age structure has become older as post-war baby-boom generations reach retirement age. Furthermore, many countries have experienced a general increase in life expectancy combined with a fall in fertility, in some cases to a level below that necessary to keep the size of the population constant in the absence of migration. If sustained over a lengthy period, these changes can pose considerable challenges associated with an ageing society which impact on a range of policy areas, including labour markets, pensions and the provision of healthcare, housing and social services.

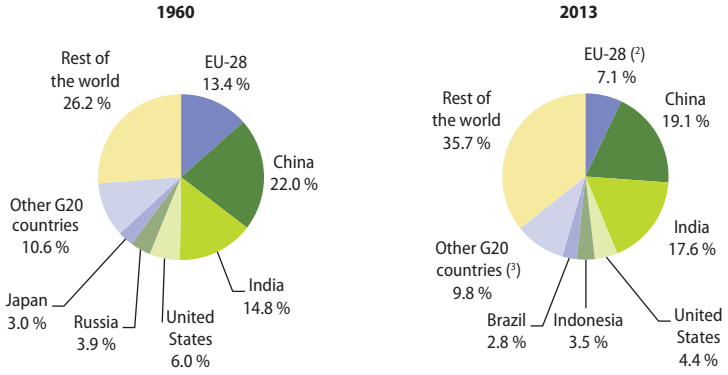
Main findings

In 2013, the world's population reached 7.1 billion inhabitants and continued to grow.

Although all members of the G20 recorded higher population levels in 2013 than they did more than 50 years before, between 1960 and 2013 the share of the world's population living in G20 members fell from 73.8 % to 64.3 %. Russia recorded the smallest overall population increase (19.7 %) during these 53 years, followed by the EU-28 (23.9 %), while the fastest population growth among G20 members was recorded in Saudi Arabia, with a seven-fold increase.

The most populous countries in the world in 2013 were China and India, together accounting for almost 37 % of the world's population (see Figure 1.1) and 57 % of the population in the G20 members. The population of the EU-28 in 2013 was 506.0 million inhabitants, 7.1 % of the world's total.

Figure 1.1: Share of world population, 1960 and 2013 (1)
(%)



(1) Shares do not always sum to 100 % due to rounding. Annual averages (mid-year estimates).
(2) Provisional.
(3) Australia: provisional.

Source: Eurostat (online data code: demo_gind) and the World Bank (Health Nutrition and Population Statistics)

As well as having the largest populations, Asia had the most densely populated G20 members, namely South Korea, India and Japan — each with more than 300 inhabitants per km² (of land area), followed by China and Indonesia and then the EU-28 with more than 100 inhabitants per km².

Table 1.1: Population and population density, 1960, 1985 and 2013

	Population — mid-year estimates (millions)			Population density (inhabitants per km²) (²)		
	1960	1985	2013	1960	1985	2013
EU-28 (¹)	408.4	468.9	*506.0*	102.8	118.0	*116.2*
Argentina	20.6	30.3	41.4	7.4	10.9	14.9
Australia	10.3	15.8	*23.1*	1.3	2.0	*3.0*
Brazil	72.8	136.2	200.4	8.5	16.0	23.5
Canada	17.9	25.9	35.2	1.8	2.6	3.5
China	667.1	1 051.0	1 357.4	69.5	109.5	141.4
India	449.6	781.7	1 252.1	136.8	237.8	380.9
Indonesia	88.7	162.5	249.9	46.4	85.0	130.8
Japan	92.5	120.8	127.3	244.8	319.6	336.9
Mexico	38.7	77.9	122.3	19.7	39.6	62.3
Russia	119.9	143.9	*143.5*	7.0	8.4	8.4
Saudi Arabia	4.1	13.3	28.8	1.9	6.2	13.4
South Africa	17.4	31.3	*53.0*	14.3	25.7	43.5
South Korea	25.0	40.8	50.2	252.0	411.1	501.4
Turkey	27.6	49.2	74.9	35.2	62.8	95.6
United States	180.7	237.9	316.1	18.8	24.7	32.2
World	3 036.4	4 839.8	7 124.5	22.6	36.1	53.1

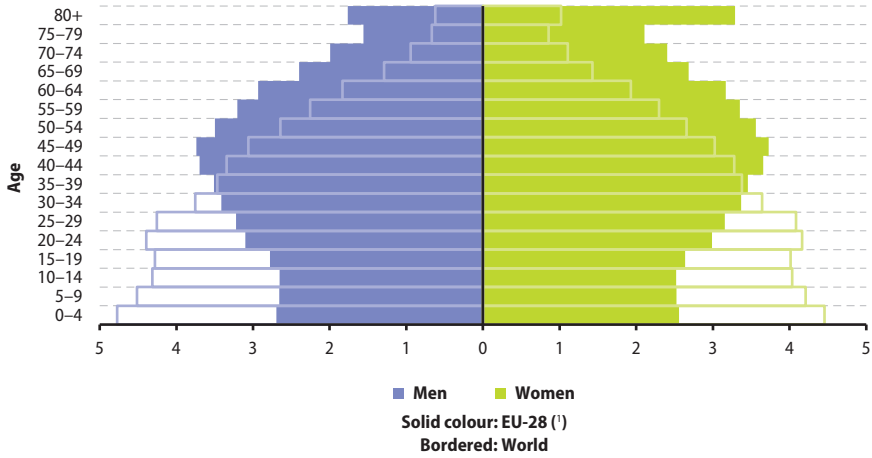
(¹) 1960 and 1985 population and population density: excluding French overseas departments and territories.
(²) G20 members (other than EU-28): 1961 data for land area used instead of 1960; 2012 data for land area used instead of 2013.

Source: Eurostat (online data codes: demo_gind and tps00003), the World Bank (Health Nutrition and Population Statistics), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2012 Revision)

Ageing society represents a major demographic challenge for many economies and may be linked to a range of issues, including, persistently low levels of fertility rates and significant increases in life expectancy during recent decades.

Figure 1.2 shows how different the age structure of the EU-28's population is from the average for the whole world. Most notably the largest shares of the world's population are among the youngest age classes, reflecting a population structure that is younger, whereas for the EU-28 the share of the age groups below those aged 45–49 years generally gets progressively smaller approaching the youngest cohorts. The structure in the EU-28 reflects falling fertility rates over several decades and a modest increase in the most recent decade, combined with the impact of the baby-boomer cohorts on the population structure (resulting from high fertility rates in several European countries up to the mid-1960s). This overall pattern of a progressively smaller share of the population in the younger age groups in the EU-28 stops at the age group 10–14, below which the share stabilises in the age group 5–9 and increases slightly in the age group 0–4. Another notable difference is the greater gender imbalance within the EU-28 among older age groups than is typical for the world as a whole. Some of the factors influencing age structure are presented in the rest of this chapter and Chapter 3, for example, fertility, migration and life expectancy.

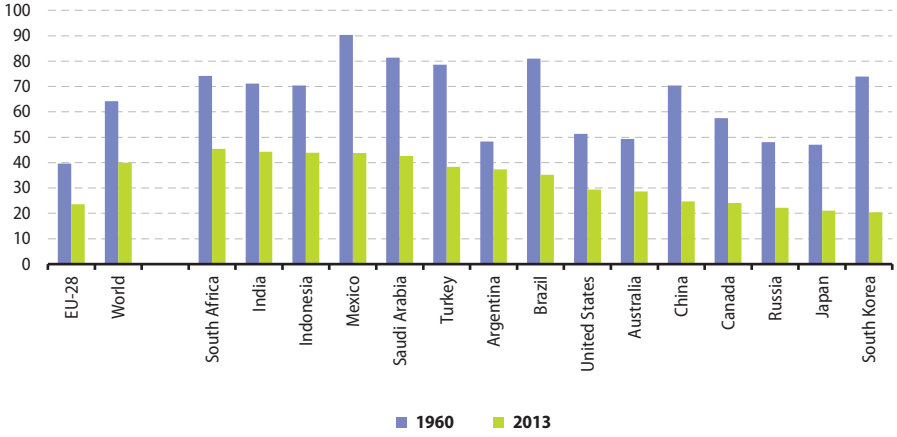
Figure 1.2: Age pyramids, 2013
(% of total population)



(1) Data for 1 January 2013.

Source: Eurostat (online data code: demo_pjangroup) and the World Bank (Health Nutrition and Population Statistics)

Figure 1.3: Young-age dependency ratio, 1960 and 2013
(population aged 0–14 as a percentage of the population aged 15–64)



Source: Eurostat (online data code: demo_pjanind) and the World Bank (Health Nutrition and Population Statistics)

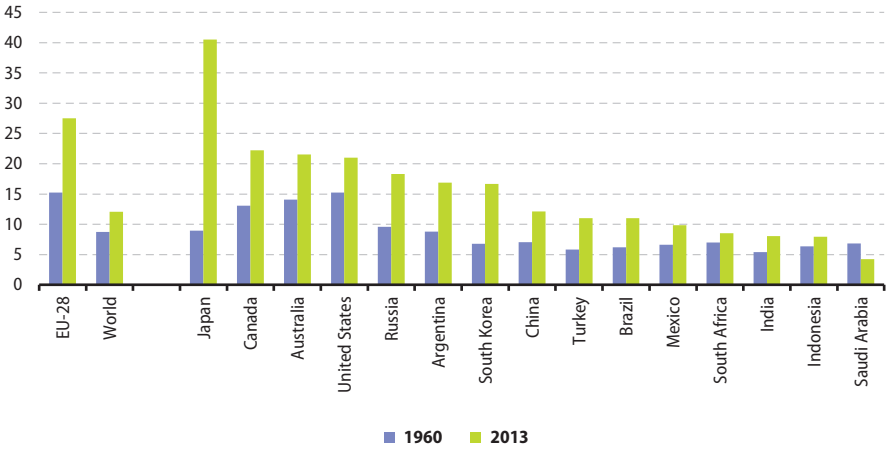
The young and old age dependency ratios shown in Figures 1.3 and 1.4 summarise the level of support for younger persons (aged less than 15 years) and older persons (aged 65 years and over) provided by the working age population (those aged 15–64 years).

In 2013, the young-age dependency ratio ranged from 20.4 % in South Korea to more than double this ratio in South Africa (45.4 %), with the ratio in the EU-28 (23.6 %) lower than in most G20 members. By far the highest old-age dependency ratio in 2013 was the 40.5 % observed in Japan, indicating that there were two people aged 65 and over for every five people aged 15 to 64 years; the next highest old-age dependency ratio was 27.5 % in the EU-28.

The fall in the young-age dependency ratio for the EU-28 between 1960 and 2013 more than cancelled out an increase in the old-age dependency ratio. Most of the G20 members displayed a similar pattern, with two exceptions: in Japan the increase in the old-age dependency ratio exceeded the fall in the young-age dependency ratio; in Saudi Arabia both the young and old-age dependency ratios were lower in 2013 than in 1960, reflecting a large increase in the working age population in this country.

Figure 1.4: Old-age dependency ratio, 1960 and 2013

(population aged 65 or more as a percentage of the population aged 15–64)

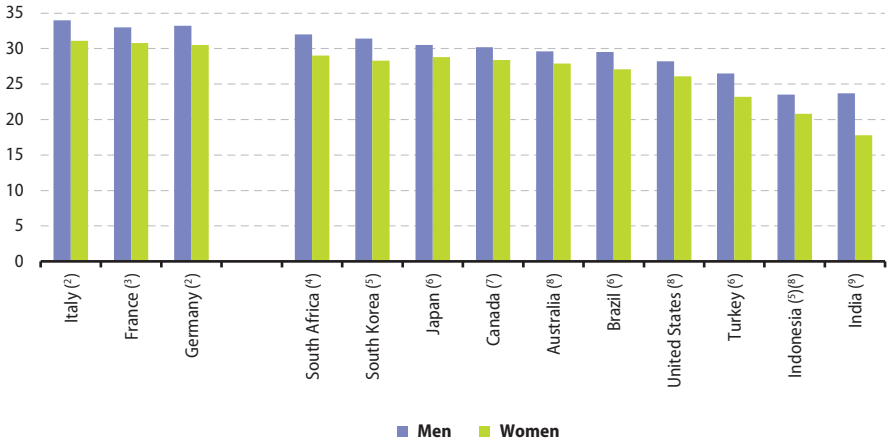


Source: Eurostat (online data code: demo_pjanind) and the World Bank (Health Nutrition and Population Statistics)

Indicators for marriage provide information in relation to family formation. Marriage, as recognised by the law of each country, has long been considered as marking the formation of a family unit. Among the G20 members for which data are available (see Figure 1.5) there was a large range in the average age at the time of first marriage, particularly for women. Outside of the EU, for men the average ranged from just under 24 years in India and Indonesia (both based on the median age rather than the mean) to 32.0 years in South Africa (also based on the median age). In all three of the G20 EU Member States shown in Figure 1.5, the average age at first marriage for men was higher than in any of the other G20 members, in all three cases around 33–34 years. A similar pattern could be observed for women. Outside of the EU, the averages for the G20 members ranged from 26.1 years in the United States (also based on the median age) to 29.0 years in South Africa, with Turkey, Indonesia and India below this range and the three available G20 EU Member States above this range. In all of the members shown in Figure 1.5 the average age for men at first marriage was higher than for women, with the largest gender differences reported for India and the smallest for Japan, Australia and Canada.

Figure 1.5: Average age at first marriage ([1])

(years)



([1]) EU-28, the United Kingdom, Argentina, China, Mexico, Russia and Saudi Arabia: not available. Ranked on an average of the values for men and women.
([2]) 2013.
([3]) 2011.
([4]) Median age. 2008.
([5]) 2007.
([6]) 2010.
([7]) 2004.
([8]) Median age.
([9]) Median age. 2005–06.

Source: Eurostat (online data code: demo_nind) and the United Nations Department of Economic and Social Affairs (World Fertility Report 2012)

The fertility rate is the mean number of children who would be born to a woman during her lifetime, if she were to spend her childbearing years conforming to the age-specific fertility rates that have been measured in a given year. Fertility rates in industrialised countries have fallen substantially over several decades and have been accompanied by a postponement of motherhood, which may in part be attributed to increases in the average length of education of women, increased female employment rates, and changes in attitudes towards the position of women within society and the roles of men and women within families. In the most recent decade for which data are available, a slight increase in the fertility rate for the EU-28 was observed.

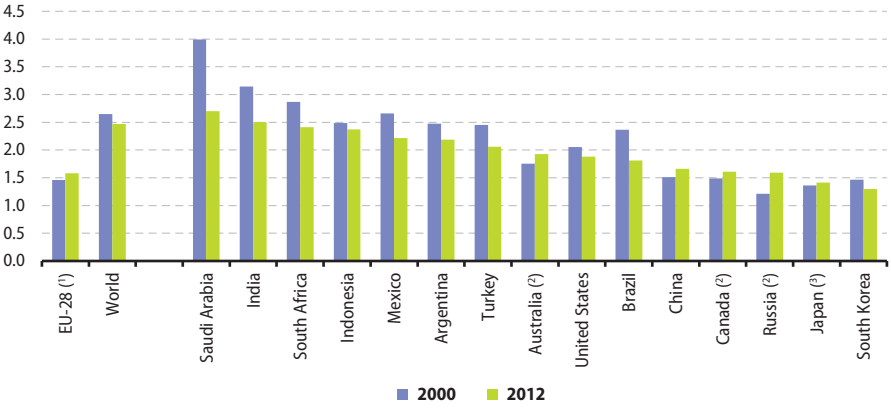
Fertility rates fell between 2000 and 2012 in more than half of all of the G20 members, most notably in Saudi Arabia, India, Brazil, South Africa and Mexico. Russia recorded the largest increase, rising from 1.2 births per woman in 2000 to 1.6 births per woman in 2012. The average fertility rate in the EU-28 in 2012 was 1.6 births per woman, lower than in all of the other G20 members except for Japan and South Korea.

There are two distinct components of population change: the natural change that results from the difference between the number of live births and the number of deaths; and the net effect of migration, in other words, the balance between people coming into and people leaving a territory. Since many countries do not have accurate figures on immigration and emigration, net migration may be estimated as the difference between the total population change and the natural population change.

The crude birth rate (the ratio of the number of births to the population) in the EU-28 in 2012 was slightly lower than in 2000, and remained among the lowest across the G20 members, with only South Korea and Japan recording lower birth rates. Crude birth rates recorded in India and South Africa in 2012 were around double the average rate for the EU-28.

When the death rate exceeds the birth rate there is negative natural population change;

Figure 1.6: Fertility rate, 2000 and 2012
(average number of births per woman)

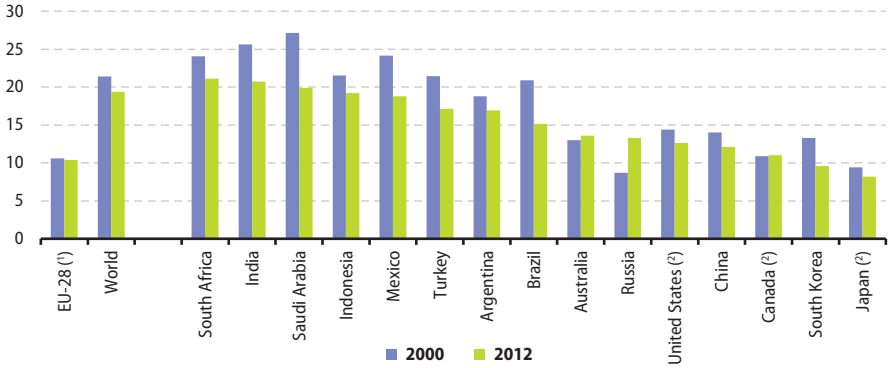


(1) Data for 2001 instead of 2000. Break in series.
(2) 2012: estimates.
(3) 2012: provisional.

Source: Eurostat (online data code: demo_find) and the World Bank (World Development Indicators)

this situation was experienced in Japan in 2012, while birth and death rates were balanced in Russia. The reverse situation, natural population growth due to a higher birth rate, was observed for all of the remaining G20 members (see Figures 1.7 and 1.8) with the largest differences recorded in Saudi Arabia, Mexico, Indonesia, India and Turkey. The highest crude death rates (the ratio of the number of deaths to the population) were recorded in Russia and South Africa, in the latter case reflecting in part an HIV/AIDS epidemic which has resulted in a high number of deaths among relatively young persons, such that that the difference between crude birth and death rates in South Africa was below the world average despite the high birth rate.

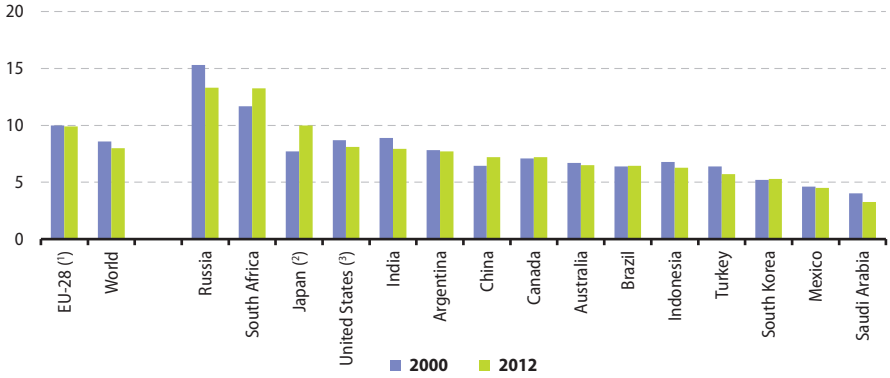
Figure 1.7: Crude birth rate, 2000 and 2012
(per 1 000 population)



(1) Break in series.
(2) 2012: provisional.

Source: Eurostat (online data code: demo_gind) and the World Bank (World Development Indicators)

Figure 1.8: Crude death rate, 2000 and 2012
(per 1 000 population)



(1) Break in series.
(2) 2012: provisional.
(3) 2012: estimates.

Source: Eurostat (online data code: demo_gind) and the World Bank (World Development Indicators)

The combined effect of natural population change and net migration including statistical adjustment (which refers to changes observed in the population figures which have not been attributed to births, deaths, immigration or emigration) can be seen in the total change in population levels. During the five years between 2005 and 2010 all of the G20 members, except Russia, experienced an increase in their population numbers. Russia's declining population resulted from net inward migration being smaller than the negative natural population change. Argentina, Brazil, China, India, Indonesia, Mexico and Turkey experienced negative net migration that was less than the positive increase from natural population change. The EU-28, Australia, Canada, Saudi Arabia, South Africa, South Korea and the United States experienced the cumulative effects of positive natural population change and net migration. This situation was broadly similar to that observed 10 years earlier, between 1995 and 2000, with the notable exception of Saudi Arabia which had then experienced relatively strong outward net migration in contrast to the more recent pattern for net inward migration, although in 1995–2000 this was outweighed by higher natural population growth.

Table 1.2: Population change, annual averages for July 1995 to June 2000 and July 2005 to June 2010

(per 1 000 population)

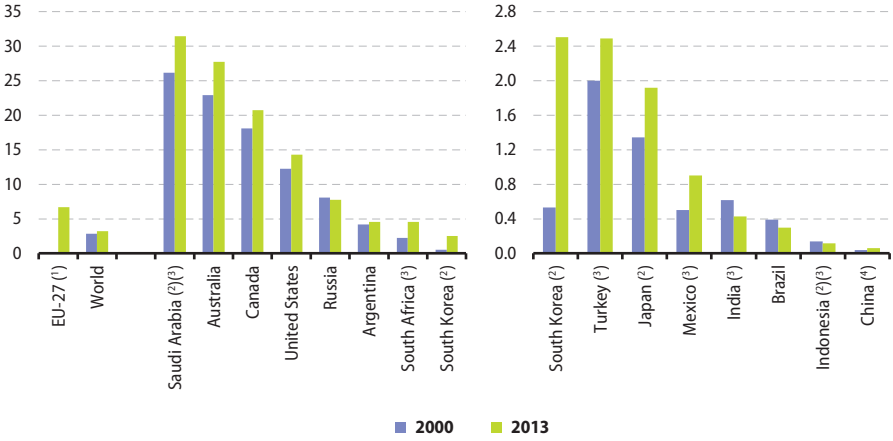
	Total population change		Natural population change		Net migration	
	1995–2000	2005–10	1995–2000	2005–10	1995–2000	2005–10
EU-28 (1)	1.9	3.2	0.4	1.0	1.4	2.2
Argentina	11.5	8.7	11.8	9.8	−0.3	−1.0
Australia	12.2	17.6	6.6	6.9	5.6	10.6
Brazil	15.0	9.5	15.1	10.0	−0.1	−0.5
Canada	9.4	11.3	4.3	3.7	5.1	7.5
China	6.8	6.2	6.9	6.5	−0.1	−0.3
India	17.3	13.5	17.4	14.0	−0.1	−0.5
Indonesia	14.7	13.9	14.9	14.6	−0.2	−0.6
Japan	2.0	0.6	1.9	−0.1	0.0	0.7
Mexico	17.0	12.5	20.7	16.1	−3.7	−3.6
Russia	−2.5	−0.4	−5.6	−3.6	3.1	3.1
Saudi Arabia	16.3	19.8	25.4	18.6	−9.1	1.2
South Africa	15.9	12.9	15.1	7.3	0.7	5.6
South Korea	5.8	6.0	8.1	4.5	−2.3	1.4
Turkey	15.3	12.6	15.8	12.7	−0.5	−0.1
United States	12.0	9.2	5.9	5.8	6.1	3.4
World	13.0	12.0	13.0	12.0	–	–

(1) Net migration includes statistical adjustment and migrant flows between EU Member States. Annual averages for 1996–2000 and 2006–10. Break in series.

Source: Eurostat (online data code: demo_gind) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2012 Revision)

Some 6.7 % of the population living in the EU-27 in 2013 had been born outside of the EU, around 33.5 million people. While the share in Russia (7.7 %) was just above the share in the EU, that in the United States (14.3 %) was more than twice as high as the share in the EU, in Canada (20.7 %) more than three times as high, and in Australia (27.7 %) and Saudi Arabia (31.4 %; foreign citizens) more than four times as high. The G20 members with the lowest shares of foreign-born citizens were Indonesia (foreign citizens) and China. Between 2000 and 2013, the share of foreign-born citizens increased in most G20 members, the exceptions being Russia, India, Brazil and Indonesia (no data available for the EU).

Figure 1.9: Share of foreign-born citizens in the population, 2000 and 2013
(%)



(1) 2000: not available. Share of citizens born outside of the EU-27.
(2) Data for foreign citizens rather than foreign-born citizens.
(3) Includes refugees.
(4) Estimates.

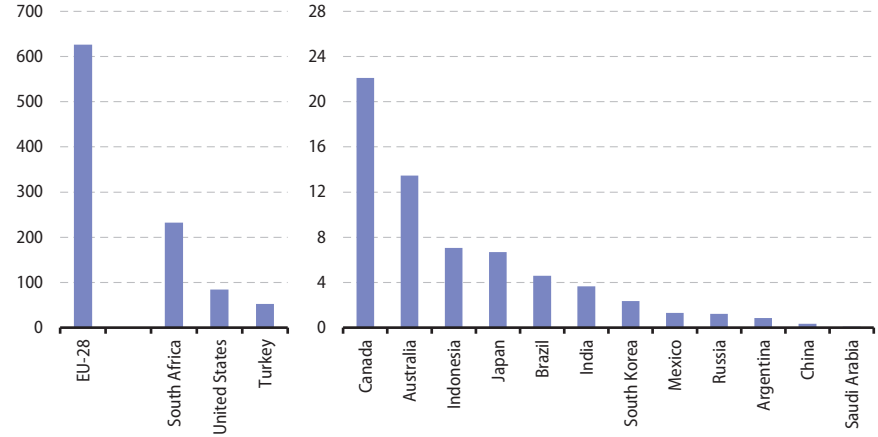
Source: Eurostat (online data code: migr_pop6ctb) and the United Nations Department of Economic and Social Affairs (Trends in International Migrant Stock: the 2013 Revision)

In 2013, the United Nations High Commissioner for Refugees reported that there were 1.17 million asylum applicants across the world. Asylum is a form of protection given by a state on its territory. It is granted to a person who is unable to seek protection in their country of citizenship and/or residence in particular for fear of being persecuted for various reasons (such as race, religion or opinion).

In 2013 there were 435 thousand asylum applicants (from non-member countries) in the EU-28, increasing to 626 thousand in 2014. Among those seeking asylum in the EU-28 in 2014, the highest number were from Syria (122 thousand), followed by Afghanistan, Kosovo, Eritrea and Serbia (each accounting for between 31 and 41 thousand asylum seekers). The highest numbers of asylum applicants into the EU-28 from G20 members came from Russia (19.7 thousand), China (5.2 thousand) and Turkey (5.1 thousand); note that the data for China include applicants from Hong Kong.

Figure 1.10 shows that aside from the EU-28, there were relatively high numbers of asylum seekers in 2013 in South Africa (many of whom originated from Zimbabwe, the Democratic Republic of Congo and Ethiopia) and to a lesser extent in the United States and Turkey.

Figure 1.10: Asylum seekers (1)
(thousand applicants)



(1) EU-28: 2014; asylum-seekers from non-member countries. Other G20 members: 2013.

Source: Eurostat (online data code: migr_asyappctza) and the United Nations High Commissioner for Refugees (UNHCR Statistical Online Population Database)

The latest United Nations population projections suggest that the pace at which the world's population is expanding will slow in the coming decades; however, the total number of inhabitants is projected to reach almost 10 billion by 2060, representing an overall increase of 39.8 % compared with 2013. The slowdown in population growth that this represents will be particularly apparent for developed and emerging economies as the number of inhabitants within the G20 — excluding the EU — is projected to increase by 15.0 % between 2013 and 2060 while the EU-28's population is projected (by Eurostat) to increase by 3.5 % over the same period. The population of many developing countries, in particular those in Africa, is likely to continue growing at a rapid pace.

Among the G20 members, the fastest population growth between 2013 and 2060 is projected to be in Australia and Saudi Arabia, while the populations of Russia, Japan, China and South Korea are projected to be smaller by 2060 than they were in 2013. Despite the projection of rapid population growth, Australia is expected to remain the least densely populated G20 member through until 2060 when it will draw level with Canada.

With relatively low fertility rates the young-age dependency ratio (population aged less than 15 as a percentage of the population aged 15 to 64) is projected to be lower in 2060 than it was in 2013 in several G20 members, dropping by more than 10 percentage points in Mexico, Saudi Arabia, India, Indonesia, South Africa, Turkey and Brazil. Projected increases for this ratio are relatively small, peaking at 5.3 percentage points in Russia. In the EU-28, the young-age dependency ratio is projected to increase from 23.6 % in 2013 to 26.5 % by 2060, but will remain well below the world average of 33.1 %, as it will in all G20 members.

Table 1.3: Projections for population and density, 2013 to 2060 (1)

	Total population (millions)			Population density (inhabitants per km²)		
	2013	2040	2060	2013 (2)	2040	2060
EU-28	*506.0*	*523.5*	*523.5*	*116.2*	*120.2*	*120.2*
Argentina	41.4	*49.3*	*52.0*	14.9	*17.7*	*18.7*
Australia	23.1	*31.0*	*36.1*	3.0	*4.0*	*4.7*
Brazil	200.4	*229.4*	*228.4*	23.5	*26.9*	*26.8*
Canada	35.2	*43.0*	*47.1*	3.5	*4.3*	*4.7*
China	1 357.4	*1 435.5*	*1 313.3*	141.4	*149.6*	*136.8*
India	1 252.1	*1 565.5*	*1 643.5*	380.9	*476.2*	*500.0*
Indonesia	249.9	*311.3*	*325.6*	130.8	*163.5*	*171.0*
Japan	127.3	*114.5*	*102.5*	336.9	*303.1*	*271.3*
Mexico	122.3	*151.8*	*156.9*	62.3	*77.5*	*80.1*
Russia	143.5	*127.0*	*115.0*	8.4	*7.4*	*6.7*
Saudi Arabia	28.8	*38.2*	*41.3*	13.4	*17.8*	*19.2*
South Africa	53.0	*60.9*	*65.1*	43.5	*49.9*	*53.3*
South Korea	50.2	*52.3*	*49.0*	501.4	*525.1*	*491.9*
Turkey	74.9	*91.8*	*95.3*	95.6	*117.1*	*121.7*
United States	316.1	*383.2*	*417.8*	32.2	*39.8*	*43.4*
World	*7 124.5*	*9 038.7*	*9 957.4*	53.1	*66.4*	*73.1*

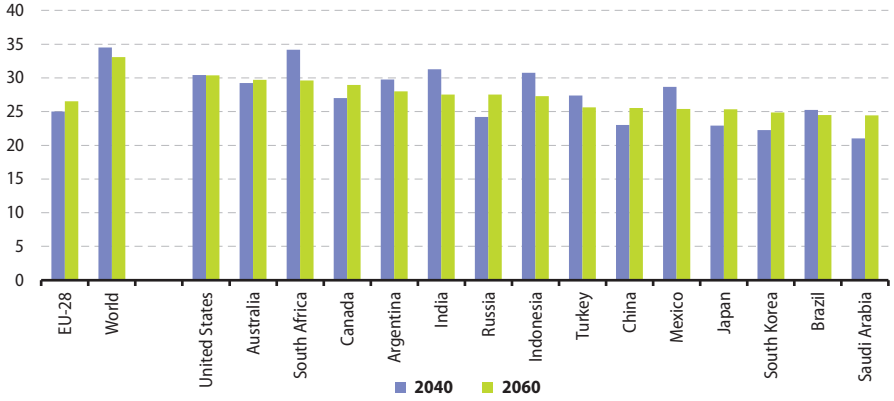
(1) EU-28 population projections made on the basis of Europop2013 convergence scenario. All remaining projections are made on the basis of the UN's medium fertility projection variant.
(2) Non-EU G20 members: 2012 data for land area used instead of 2013.

Source: Eurostat (online data codes: demo_gind, tps00003 and proj_13npms), the World Bank (Health Nutrition and Population Statistics) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2012 Revision)

Old-age dependency ratios (population aged 65 or more as a percentage of the population aged 15 to 64) are projected to continue to rise in all G20 members, suggesting that there will be an increasing burden to provide for social expenditure related to population ageing (for example, for pensions, healthcare and institutional care). The EU-28's old-age dependency ratio is projected to increase from 27.5 % in 2013 to 50.2 % by 2060, when it is projected to be 21.9 percentage points above the world average, but considerably lower than in South Korea or Japan.

Figure 1.11: Projections for young-age dependency ratio, 2040 and 2060 ([1])

(population aged 0–14 as a percentage of the population aged 15–64)

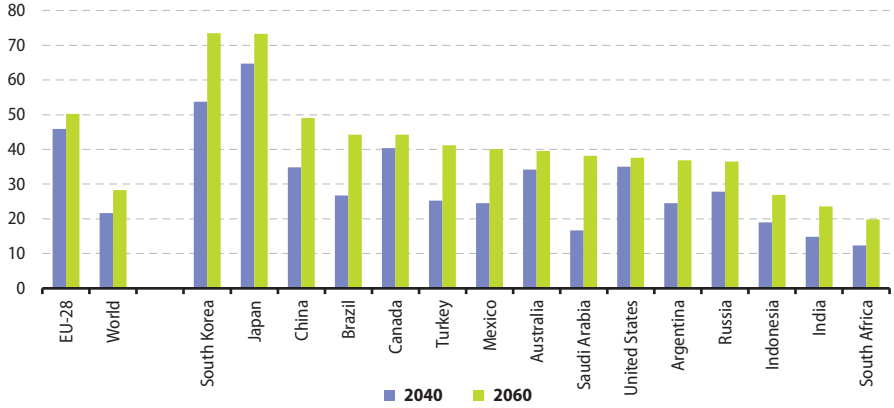


([1]) EU-28 projections made on the basis of Europop2013 convergence scenario. All remaining projections are made on the basis of the UN's medium fertility projection variant.

Source: Eurostat (online data code: proj_13npms) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2012 Revision)

Figure 1.12: Projections for old-age dependency ratio, 2040 and 2060 ([1])

(population aged 65 or more as a percentage of the population aged 15–64)



([1]) EU-28 projections made on the basis of Europop2013 convergence scenario. All remaining projections are made on the basis of the UN's medium fertility projection variant.

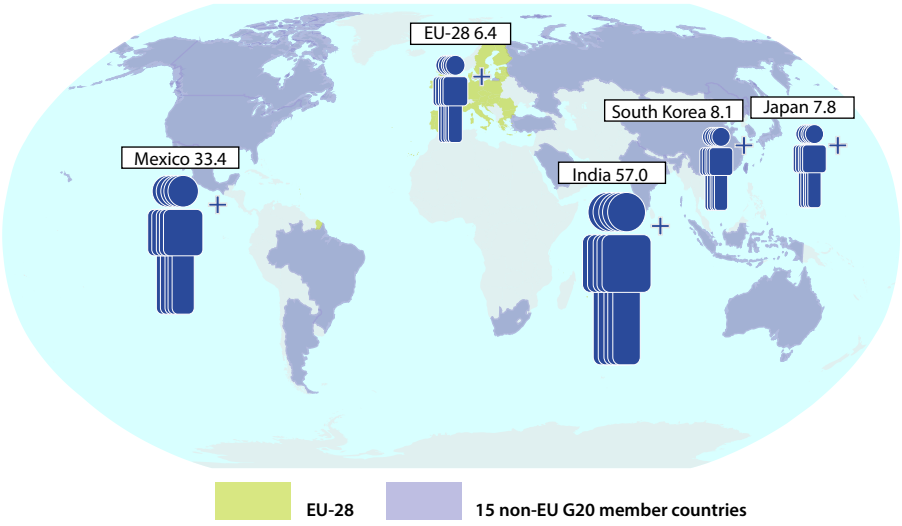
Source: Eurostat (online data code: proj_13ndbims) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2012 Revision)

Living conditions

2

Households with five or more members

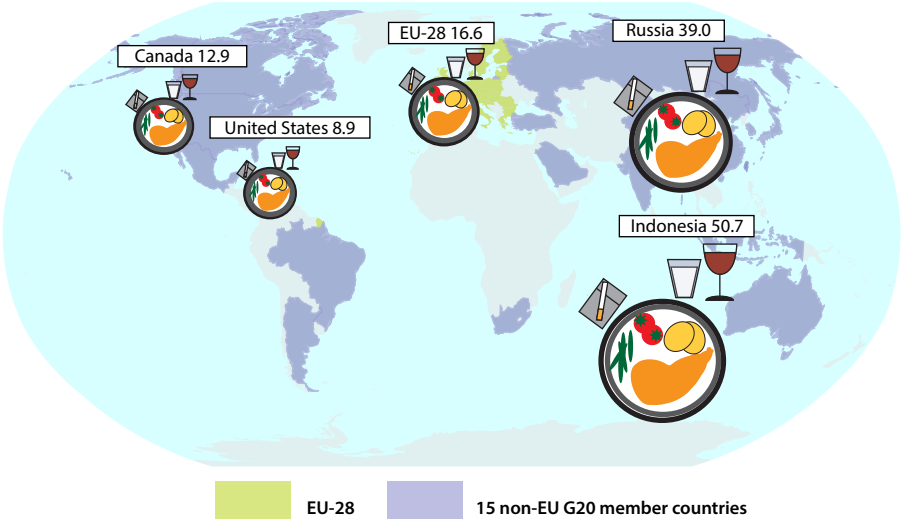
(% of total)



For more information see Figure 2.1 on page 33.

Household consumption expenditure on food, beverages and tobacco, 2013

(% of total household consumption expenditure)



For more information see Table 2.1 on page 35.

Introduction

The data on living conditions and social protection shown in this chapter aim to provide a picture of the social situation covering indicators related to income, expenditure, poverty and social protection. The distribution of income is often used to measure inequalities in society. On the one hand, differences in income may provide an incentive to individuals to improve their situation (for example, through looking for a new job or acquiring new skills). On the other hand, crime, poverty and social exclusion are often linked to income inequalities.

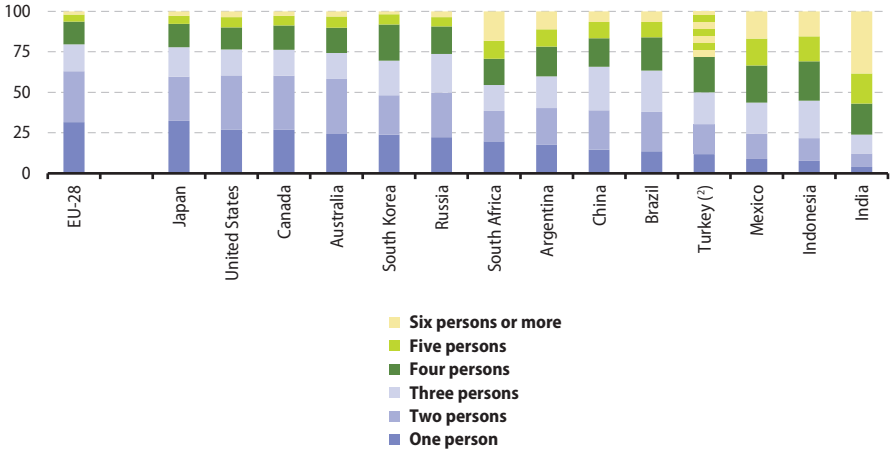
Main findings

Many statistical analyses of social and living conditions focus on households, in other words a person or group of persons living together (but separate from others), regardless of whether they are family members or not. Many factors influence household formation, for example, marriage, divorce, fertility and life expectancy, as well as geographical mobility, and economic and cultural factors.

Figure 2.1 shows that more than half of all households in the EU-28, the United States, Canada, Japan and Australia were one and two person households, whereas the majority of households in India, Mexico, Indonesia and Turkey had four or more persons. More than three quarters (76.2 %) of households in India had four or more persons, compared with one fifth (20.3 %) in the EU-28 and less than one quarter in Canada, the United States and Japan.

In Japan and South Africa the most common type of households were one-person households, whereas in Argentina, South Korea, Russia, the EU-28, the United States, Canada and Australia two-person households

Figure 2.1: Analysis of households by the number of household members ([1])
(% of total)



([1]) Saudi Arabia: not available. Ranked on one person households. EU-28 and South Africa: 2013. Brazil: 2012. Australia and Turkey: 2011. Argentina, China, Indonesia, Japan, Mexico and South Korea: 2010. The United States: 2009. Canada: 2006. Russia: 2002. India: 2001.
([2]) Five persons and six persons or more are combined.

Source: Eurostat (online data code: ilc_lvph03), the United Nations Department of Economic and Social Affairs (Demographic statistics) and national surveys

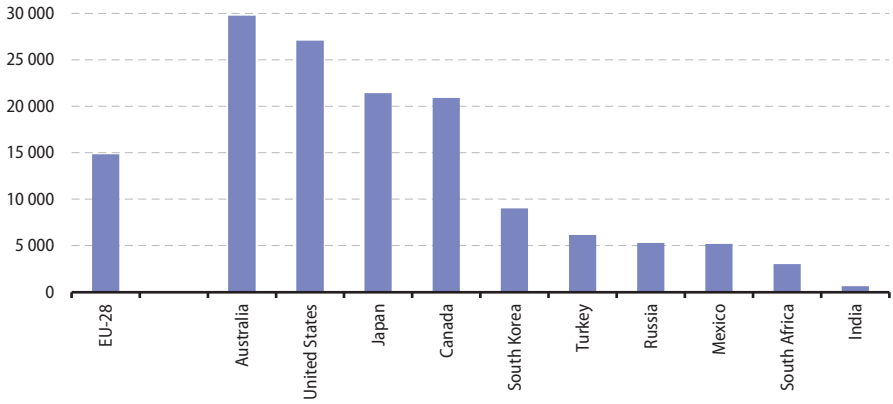
were most common. In Mexico, Brazil and China three-person households were most common, while four-person households were most common in Indonesia, five and more person households were most common in Turkey, and six and more person households were most common in India.

Household consumption expenditure is the expenditure made by households to acquire goods and services and includes indirect taxes (VAT and excise duties).

Figure 2.2 shows that among the G20 members household consumption expenditure per inhabitant was highest in Australia, the United States, Japan and Canada, followed by the EU-28. It should be noted that these data do not reflect differences in purchasing power and that countries with high levels of household consumption expenditure per inhabitant tend to have higher prices.

Table 2.1 provides an analysis of the distribution of household consumption expenditure for various purposes. Factors such as culture, income, weather, household composition, economic structure and degree of urbanisation can all influence expenditure patterns. In most G20 members the highest proportion of expenditure was normally devoted to food and non-alcoholic beverages on one hand or housing (including also expenditure for water and fuels) on the other. A notable exception to this general pattern was the United States where household expenditure on health had the highest share. The share of expenditure on food and non-alcoholic beverages was particularly low in the United States, as it was to a lesser extent in Canada and Australia.

Figure 2.2: Final consumption expenditure of households (1)
(EUR per inhabitant)



(1) EU-28, Canada, South Africa and Turkey: 2013. Australia, Japan, Mexico, Russia, South Korea and the United States: 2012. India: 2011. Argentina, Brazil, China, Indonesia and Saudi Arabia: not available. Australia, Canada, Mexico and the United States: based on 2008 SNA. EU-28: based on ESA 2010.

Source: Eurostat (online data codes : nama_10_gdp and demo_gind), the United Nations Statistics Division (Economic Statistics Branch, National Accounts Official Country Data) and the World Bank (Health Nutrition and Population Statistics)

Table 2.1: Analysis of household consumption expenditure (1)

(% of total household consumption expenditure)

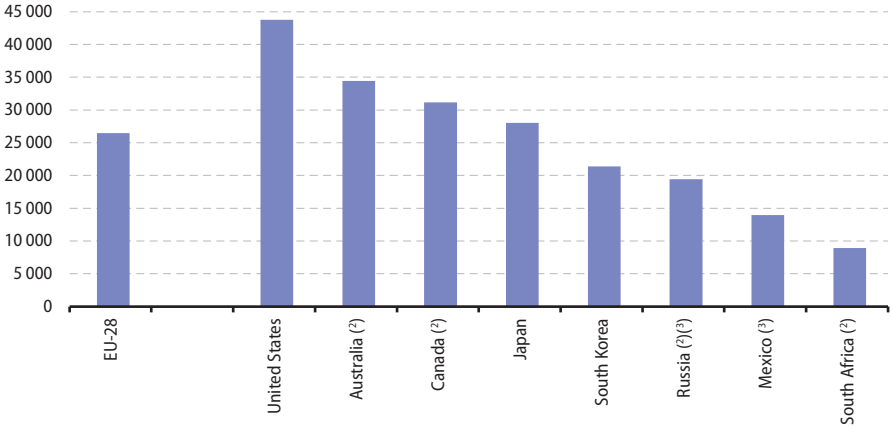
	Food & non-alcoholic beverages	Alcoholic beverages, tobacco	Clothing & footwear	Housing, water, electricity, gas & other fuels	Furnishings, household equipment etc.	Health	Transport	Communications	Recreation & culture	Education	Restaurants & hotels	Miscellaneous goods & services
EU-28 (2)	12.4	4.1	5.0	24.7	5.5	3.8	12.8	2.6	8.8	1.1	8.2	11.1
Argentina	:	:	:	:	:	:	:	:	:	:	:	:
Australia	10.0	3.5	3.2	23.8	4.2	6.2	10.8	2.4	10.0	4.4	6.6	15.1
Brazil	:	:	:	:	:	:	:	:	:	:	:	:
Canada	9.4	3.5	4.1	24.7	5.5	4.4	15.5	2.5	8.5	1.6	7.0	13.4
China (3)	36.2		10.9	8.9	6.7	6.4	14.7			12.2		3.9
India	29.9	3.2	7.5	13.2	3.9	3.7	15.9	1.1	1.5	1.3	2.6	16.1
Indonesia	50.7		2.1	20.2	:	3.4	:	:	:	4.0	:	:
Japan	13.7	2.6	3.4	25.3	3.9	4.6	11.8	3.0	9.2	2.2	6.5	13.8
Mexico	23.4	2.6	3.0	20.4	5.3	4.1	19.0	3.5	4.6	1.5	4.0	8.6
Russia	30.7	8.3	9.2	10.3	5.0	3.7	12.5	4.7	5.2	1.1	3.4	6.0
Saudi Arabia	17.9	0.5	5.6	21.2	7.3	1.7	9.1	6.3	2.8	2.5	5.3	19.7
South Africa	26.2		5.2	15.6	6.6	9.6	16.3		3.8	3.1	2.4	11.1
South Korea	13.6	2.1	5.2	16.5	3.3	6.6	12.0	4.3	7.8	6.7	8.2	13.8
Turkey	24.8		4.9	18.2	7.4	2.9	20.2		3.7	1.3	6.7	9.8
United States	6.8	2.1	3.4	18.7	4.2	20.9	10.2	2.4	8.9	2.4	6.4	13.5

(1) EU-28, Canada, Indonesia, Saudi Arabia, South Africa and Turkey: 2013. Australia, China, Japan, Mexico, South Korea and the United States: 2012. India and Russia: 2011. Australia, Canada, Mexico and the United States: based on 2008 SNA. EU-28: based on ESA 2010.
(2) Excluding Croatia and Romania.
(3) Urban households only.

Source: Eurostat (online data code: nama_10_co3_p3), the United Nations Statistics Division (Economic Statistics Branch, National Accounts Official Country Data) and national household surveys

Figure 2.3 presents information on income levels compiled by the OECD. Household adjusted disposable income reflects a household's gross income including social transfers in-kind received (such as education and healthcare) minus taxes on income and wealth and social security contributions. Furthermore, these data have been adjusted to reflect differences in purchasing power (in other words differences in price levels). The adjustment to reflect price level differences is done by converting data in national currencies to a common currency unit using purchasing power parities (PPPs) rather than market exchange rates. The United States had the highest annual household adjusted income per inhabitant, followed at some distance by Australia, Canada, Japan and the EU.

Figure 2.3: Gross household adjusted disposable income per inhabitant, 2013 (1)
(USD converted with purchasing power parities)



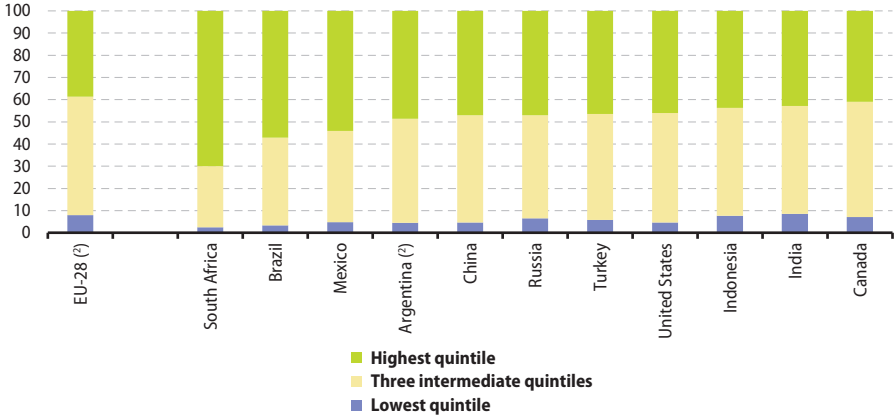
(1) Data have been adjusted to reflect price differences between countries. Argentina, Brazil, China, India, Indonesia, Saudi Arabia and South Africa: not available.
(2) Estimate.
(3) 2012.
Source: OECD (National Accounts at a Glance)

Income generally has a major impact on an individual's living conditions. Figure 2.4 presents the distribution of income based on income shares, showing the proportion of all income received by the 20 % of the population with the highest income (the highest quintile), the proportion received by the 20 % of the population with the lowest income (the lowest quintile), and the proportion received by the three intermediate quintiles. Whereas in the EU-28 the proportion of income received by the highest quintile was 38.6 %, in all other G20 members for which data are available this proportion exceeded two fifths (40 %) of the total. The highest quintile received 70 % of all income in South Africa, by far the highest proportion among the G20 members.

A commonly used measure for studying income distribution is the income quintile share ratio, which is calculated as the ratio of the proportion of income received by the highest quintile compared with the proportion received by the lowest quintile. Between the two years shown in Figure 2.5 (see footnotes for exceptions), the income quintile share ratio nearly halved in Argentina and fell by 30 % in Brazil, while it increased by more than one third in Indonesia and South Africa.

Figure 2.4: Income quintile shares (1)

(%)

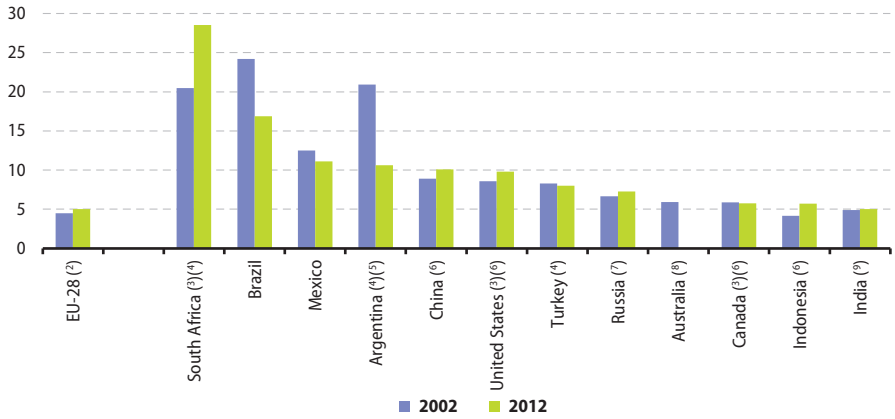


(1) EU-28: 2013. Brazil and Mexico: 2012. Argentina, South Africa and Turkey: 2011. Canada, China, India, Indonesia and the United States: 2010. Russia: 2009. Australia, Japan, Saudi Arabia and South Korea: not available.
(2) Urban areas only.

Source: Eurostat (online data code: ilc_di01) and the World Bank (Poverty and Inequality Database)

Figure 2.5: Development of the income quintile share ratio in the last decade (1)

(ratio)



(1) The indicator shows the ratio of the proportion of total national income that is earned by the top 20 % of income earners compared with the proportion of total national income that is earned by the bottom 20 % of income earners. Japan, Saudi Arabia and South Korea: not available.
(2) Data for 2001 (EU-25) instead of 2002. Data for 2013 instead of 2012. Estimates.
(3) Data for 2000 instead of 2002.
(4) Data for 2011 instead of 2012.
(5) Urban areas only.
(6) Data for 2010 instead of 2012.
(7) Data for 2009 instead of 2012.
(8) Data for 2001 instead of 2002. 2012: not available.
(9) Data for 2005 instead of 2002. Data for 2010 instead of 2012.

Source: Eurostat (online data code: ilc_di11), the World Bank (Poverty and Inequality Database) and OECD (Income Distribution and Poverty)

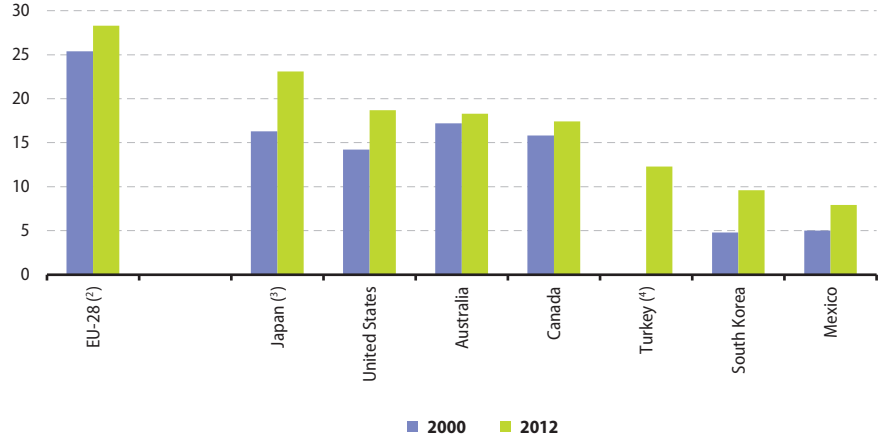
Social protection encompasses all actions by public or private bodies intended to relieve households and individuals from the burden of a defined set of risks or needs.

Figure 2.6 shows the level of social protection expenditure in the G20 members relative to GDP. The EU-28 recorded the highest expenditure on social protection (using this measure) in 2012, ahead of Japan which was the only other G20 member (among the members for which data are available) with a ratio above 20 %. South Korea and Mexico recorded social protection expenditure of 10 % of GDP or lower. In general, social protection expenditure relative to GDP increased between 2000 and 2012.

Figure 2.7 shows the poverty rate, calculated as the proportion of the population with an income (after taxes and transfers) below the poverty threshold, where the threshold is set independently in each country as 60 % of the median income level. The four EU members of the G20 shown in the figure rank among the five G20 members (for which data are available) with the lowest poverty rates, joined by Canada. By this measure the highest poverty rates were in Mexico and Turkey. Between 2000 and 2013 the poverty rate rose most strongly in Germany, from 10.0 % to 16.1 %.

Figure 2.6: Public expenditure on social protection benefits, 2000 and 2012 (1)

(% of GDP)

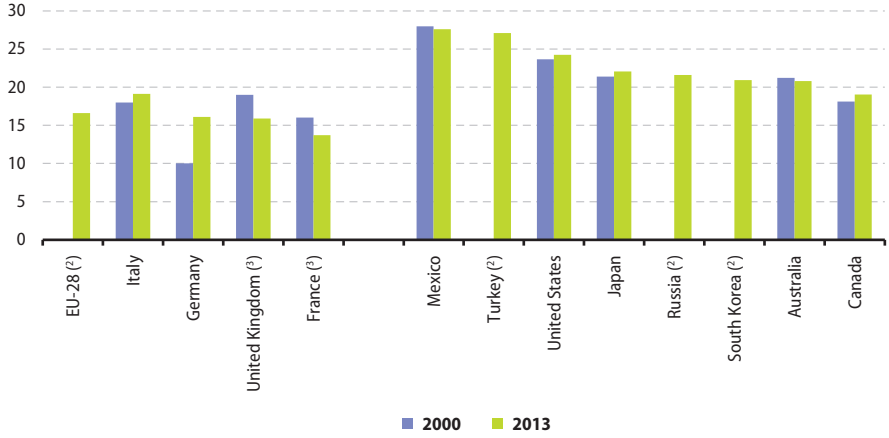


(1) Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia and South Africa: not available.
(2) 2000: EU-25. 2012: provisional.
(3) Data for 2011 instead of 2012.
(4) 2000: not available.

Source: Eurostat (online data code: spr_exp_sum) and OECD (Social Expenditure Database)

Figure 2.7: Development of the poverty rates after taxes and transfers in the last decade (1)

(%)



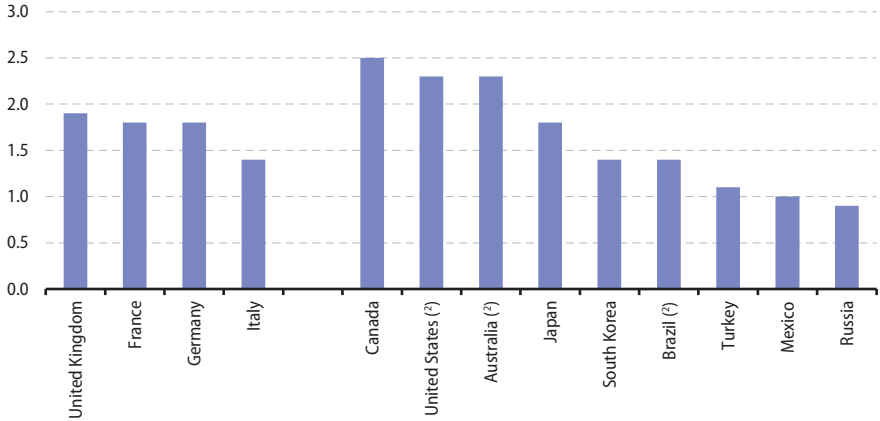
(1) This indicator measures the proportion of the population living in poverty after taxes and transfers — as defined by those living below 60 % of the median income level. Australia and Mexico: data for 2012 instead of 2013. Canada, South Korea, Turkey and the United States: data for 2011 instead of 2013. Russia: data for 2010 instead of 2013. Japan: data for 2009 instead of 2013. Argentina, Brazil, China, India, Indonesia, Saudi Arabia and South Africa: not available.
(2) 2000: not available.
(3) Break in series.

Source: Eurostat (online data code: ilc_li02) and OECD (Income Distribution and Poverty)

Overcrowding is an issue related to housing quality: Figure 2.8 shows an indicator compiled by the OECD as part of its Better Life Initiative (launched in 2011) based on the number of rooms per person in a dwelling. Canada, Australia and the United States had the highest ratio, averaging over two rooms per person, followed by three of the EU G20 members (Italy was the exception) and Japan with ratios of 1.8 or 1.9. The lowest ratios, where there was an average of one room or less per person, were recorded for Mexico and Russia. More information on housing conditions in the EU Member States is available on Eurobase (Eurostat's online database) in the living conditions databases which form part of the income and living conditions subtheme.

Figure 2.8: Accommodation — average number of rooms, 2012 (1)

(average number of rooms per person per dwelling)

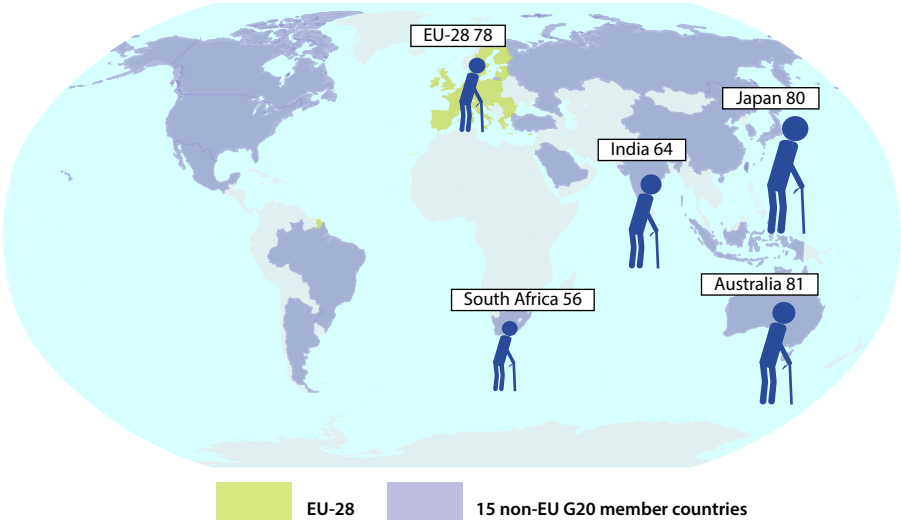


(1) Excluding kitchenettes, bathrooms, toilets and garages. Argentina, China, India, Indonesia, Saudi Arabia and South Africa: not available.
(2) Estimate.

Source: OECD (Social Protection and Well-being; Better Life Index — Edition 2014)

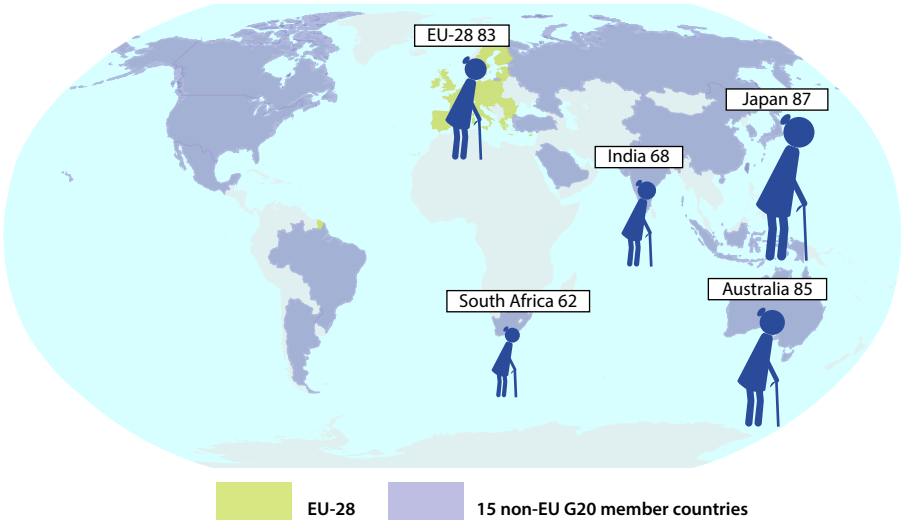
3 Health

Life expectancy at birth, men, 2012
(years)



For more information see Figure 3.2 on page 46.

Life expectancy at birth, women, 2012
(years)



For more information see Figure 3.2 on page 46.

Introduction

Health issues cut across a range of topics — including the provision of healthcare and protection from illness and accidents, such as consumer protection (food safety issues), workplace safety, environmental or social policies. The health statistics presented in this publication address public health issues such as healthcare expenditure, provision and resources as well as the health status of populations and causes of death.

In many developed countries life expectancy at birth has risen rapidly during the last century due to a number of factors, including reductions in infant mortality, rising living standards, improved lifestyles and better education, as well as advances in healthcare and medicine. Life expectancy at birth is one of the most commonly used indicators for analysing mortality and reflects the mean (additional) number of years that a person of a certain age can expect to live, if subjected throughout the rest of their life to the current mortality conditions.

Indicators of health expectancies, such as healthy life years (also called disability-free life expectancy) have been developed to study whether extra years of life gained through increased longevity are spent in good or bad health. These focus on the quality of life spent in a healthy state, rather than total life spans. Disability-free life expectancy is the number of years that a person is expected to continue to live in a healthy condition, in other words without limitation in functioning and without disability.

Main findings

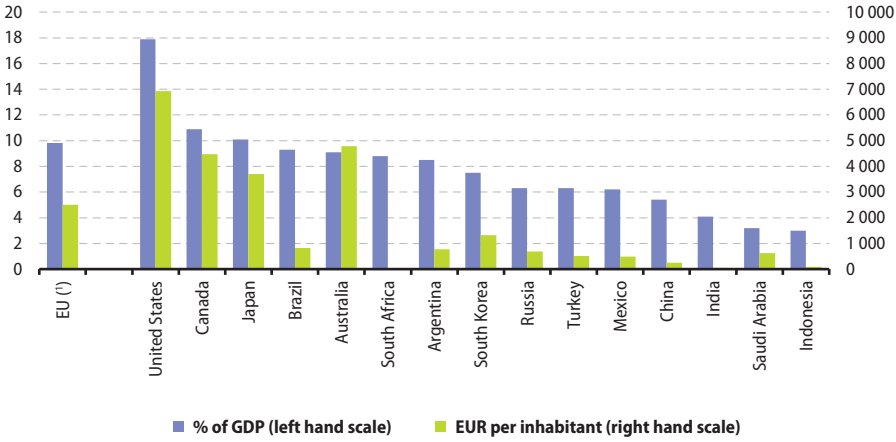
Healthcare systems are organised and financed in different ways. Monetary and non-monetary statistics may be used to evaluate how a healthcare system aims to meet basic needs for healthcare, through measuring financial, human and technical resources within the healthcare sector.

Public expenditure on healthcare is often funded through government financing (general taxation) or social security funds. Private expenditure on healthcare mainly comes from direct household payments (also known as out-of-pocket expenditure) and private health insurance.

The United States had by far the highest expenditure on health relative to GDP, 17.9 % in 2012. Eight other G20 members committed between 8 % and 11 % of their GDP to health in 2012: Canada, Japan, the EU (incomplete data, see Figure 3.1 for details), Brazil, Australia, South Africa, Argentina and South Korea. These were followed by a smaller grouping of Russia, Turkey and Mexico (just over 6 % of GDP). China spent 5.4 % of its GDP on health with the remaining G20 members spending 4 % or less of GDP; the lowest relative expenditure was recorded for Indonesia (3.0 %).

Figure 3.1 also shows the absolute level of health expenditure per inhabitant — note that this is shown at current exchange rates and so does not reflect differences in price levels of healthcare among the G20 members. This shows relatively high levels of expenditure per inhabitant in the United States, Australia, Canada, Japan and the EU, whereas Indonesia, India and South Africa recorded by far the lowest levels of health expenditure per inhabitant among the G20 members.

Figure 3.1: Expenditure on health, 2012



(1) EU-28 excluding Ireland, Italy, Malta and the United Kingdom. 2010 data for Latvia; 2011 data for Bulgaria, Portugal, Slovenia and Slovakia.

Source: Eurostat (online data codes: hlth_sha_hf, nama_10_gdp and demo_gind) and the World Health Organisation (World Health Statistics)

The need for hospital beds may be influenced by the relative importance of in-patient care on one hand and day care and out-patient care on the other, as well as the use of technical resources. The number of hospital beds per 100 000 inhabitants averaged 535 in the EU-28 in 2011. Focusing just on G20 members for which recent data are available, this ratio for the EU-28 was the third highest among G20 members, a long way behind Japan and South Korea; the lowest availability of hospital beds relative to the size of the population was in Indonesia, with 60 beds per 100 000 inhabitants (see Table 3.1).

One of the key indicators for measuring healthcare personnel is the total number of physicians, expressed per 100 000 inhabitants. The variation between the G20 members in the number of physicians was relatively low in comparison with the other personnel indicators in Table 3.1. The highest number of physicians relative to the overall population size among the G20 members was recorded in Russia, followed by the EU, just ahead of Australia. South Africa, Saudi Arabia, India and Indonesia recorded less than 100 physicians per 100 000 inhabitants.

Among the three indicators concerning healthcare personnel, the number of dentists per 100 000 inhabitants showed the greatest variation (when taking account of their relatively low number) among the G20 members. For example, India and Indonesia recorded an average of 10 dentists per 100 000 inhabitants (in 2012), while in Canada and Brazil there were more than 100 dentists per 100 000 inhabitants (in 2008 and 2009 respectively). The average for the EU was 66 dentists per 100 000 inhabitants (in 2012).

Table 3.1: Main indicators for health resources, 2012 or earlier

(per 100 000 inhabitants)

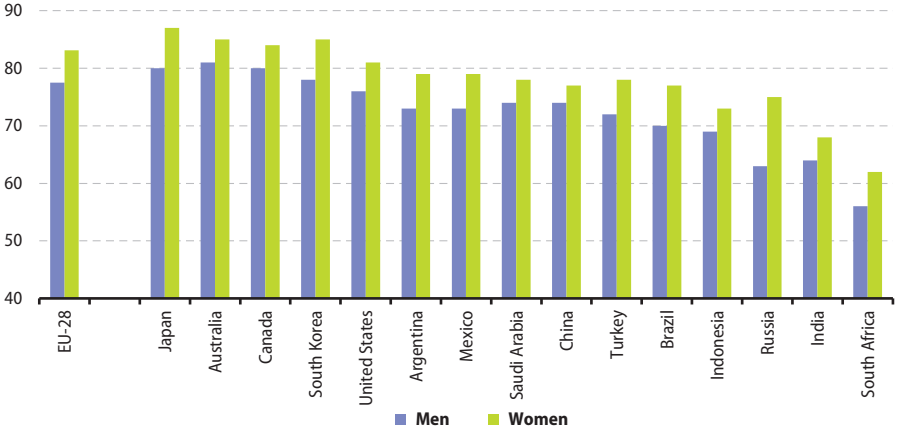
	Number of hospital beds		Number of physicians (1)		Number of nurses and midwives (2)		Number of dentists (3)	
	Latest year	Value	Latest year	Value	Latest year	Value	Latest year	Value
EU-28	2011	535	2012	*342*	2012	869	2012	*66*
Argentina	2010	450	2004	316	2004	48	2004	92
Australia	2009	380	2011	327	2011	1 065	2011	54
Brazil	2010	240	2013	189	2013	760	2009	118
Canada	2009	320	2010	207	2011	929	2008	126
China	2009	420	2010	146	2010	151	2005	4
India	2005	90	2012	70	2011	171	2012	10
Indonesia	2010	60	2012	20	2012	138	2012	10
Japan	2009	1 370	2010	230	2012	1 149	2010	79
Mexico	2009	160	2011	210	2011	253	2011	12
Russia	2006	970	2012	491	2006	852	2006	32
Saudi Arabia	2009	220	2009	77	2009	234	2009	9
South Africa	2005	280	2013	78	2012	490	2013	20
South Korea	2009	1 030	2012	214	2012	501	2012	45
Turkey	2009	250	2011	171	2011	240	2011	29
United States	2009	300	2011	245	2005	982	2000	163

(1) EU-28: estimate based on data for 2012 other than Greece, the Netherlands and Sweden (all 2011) and Denmark (2009).
(2) EU-28: excluding Cyprus and Sweden; estimate based on data for 2012 other than Germany, Ireland, the Netherlands and Finland (all 2011) and Denmark and Greece (2009).
(3) EU-28: estimate based on data for 2012 other than Greece, the Netherlands, Finland and Sweden (all 2011) and Denmark (2009).

Source: Eurostat (online data codes: demo_gind, hlth_rs_bds, hlth_rs_prs1 and hlth_rs_prsns), the World Health Organisation (World Health Statistics) and OECD (Health care resources)

Figure 3.2: Life expectancy at birth, 2012 (1)

(years)

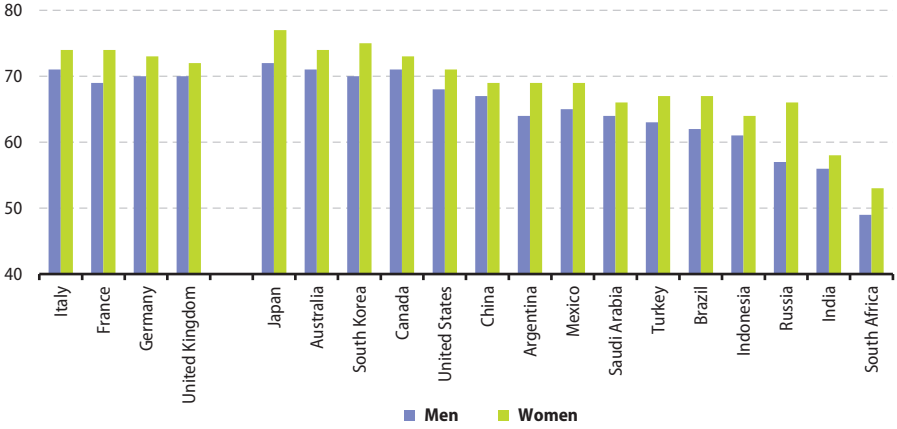


(1) Note: y-axis does not start at 0. Ranked on the life expectancy for the whole population.

Source: Eurostat (online data code: demo_mlexpec) and the World Health Organisation (World Health Statistics)

Figure 3.3: Healthy life expectancy at birth, 2012 (1)

(years)



(1) Note: y-axis does not start at 0. Ranked on the healthy life expectancy for the whole population.

Source: the World Health Organisation (World Health Statistics)

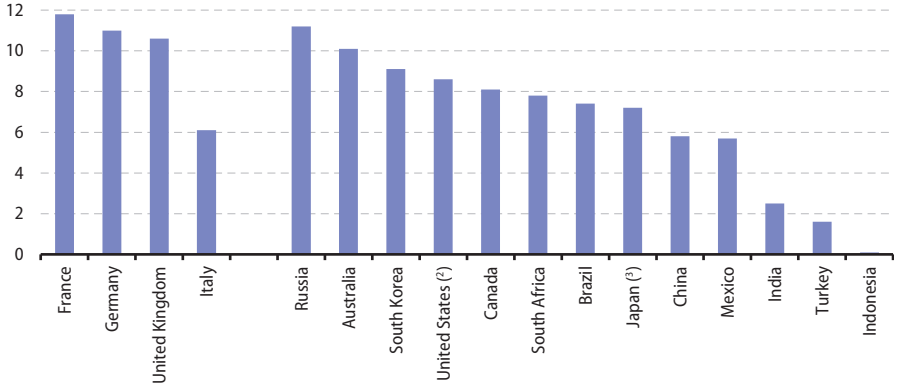
Among the G20 members, the highest life expectancy at birth in 2012 was in Japan (84 years), while in Australia, Canada, South Korea and the EU-28 life expectancy also reached or passed 80 years. In three G20 members, life expectancy at birth remained in 2012 below 70 years, ranging from 69 years in Russia and 66 years in India, to 59 years in South Africa. The relatively low life expectancy for South Africa may be largely attributed to the impact of an HIV/AIDS epidemic. In all G20 members life expectancy was higher for females than for males: the gap ranged from three years in China to seven years in Brazil, South Korea and Japan, with the 12 year gap in Russia well above this range.

In line with the data for life expectancy, the highest expected number of healthy life years at birth among the G20 members in 2012 was in Japan (75 years), while in Australia, South Korea, Canada, the four G20 EU Member States and the United States the expected number of healthy life years also reached or passed 70 years. In India (57 years) and South Africa (51 years), the expected number of healthy life years at birth in 2012 was notably lower than in other G20 members. The gender gap in terms of health life years was generally narrower than in terms of life expectancy, ranging from two to five years in all G20 members except Russia where it reached nine years.

Combining the data presented in Figures 3.2 and 3.3 indicates that healthy life (years) made up 86 % to 89 % of life expectancy at birth in most G20 members, with this proportion reaching 90 % in South Korea and 91 % in China.

Figures 3.4–3.6 provide information on three non-medical health determinants, namely alcohol consumption, smoking and overweight/obesity. France, Russia, Germany, the United Kingdom and Australia recorded the highest annual alcohol consumption among G20 members in 2011 or 2012, at 10 litres or more of alcohol per inhabitant. The lowest average levels of alcohol consumption were recorded for Turkey, Indonesia and India, and may be influenced to some degree by the predominant religious beliefs in these countries.

Figure 3.4: Annual alcohol consumption, persons aged 15 and over (1)
(litres per inhabitant)

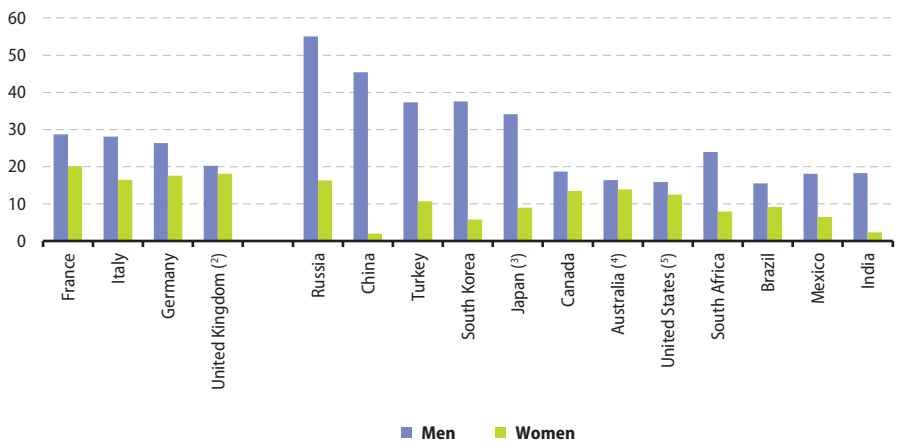


(1) Germany, France, Canada, Japan, South Korea, Turkey and the United States: 2012. The United Kingdom, Australia, Russia and the United States: 2011. Italy, Brazil, China, India, Indonesia and South Africa: 2010. Argentina and Saudi Arabia: not available.
(2) Persons aged 14 and over.
(3) Persons aged 20 and over.

Source: OECD (Non-medical determinants of health)

Russia reported by far the highest proportion of daily smokers, just over one third (34 %) of the population aged 15 and over. Around one quarter of the population in France, China and Turkey smoked daily, with the incidence of daily smoking among the populations of G20 members dropping below 15 % in the United States, South Africa, Brazil, Mexico and India. In all G20 members shown in Figure 3.5 the proportion of men who were daily smokers was greater than the proportion of women. The widest gender differences were recorded in China — where nearly half of all males were daily smokers compared with just 2 % of females — followed by Russia, South Korea, Turkey and Japan. The narrowest gender differences were recorded for the United States, Australia and the United Kingdom.

Figure 3.5: Proportion of the population aged 15 and over who are daily smokers ([1])



([1]) France, Italy, Brazil, Canada, Japan, Mexico, South Korea, Turkey and the United States: 2012. The United Kingdom: 2011. Australia, China and India: 2010. Germany, Russia and South Africa: 2009. Argentina and Saudi Arabia: not available. Ranked on the proportion for the whole population.
([2]) England only. Persons aged 16 and over.
([3]) Persons aged 20 and over.
([4]) Persons aged 14 and over.
([5]) Persons aged 18 and over.

Source: OECD (Non-medical determinants of health)

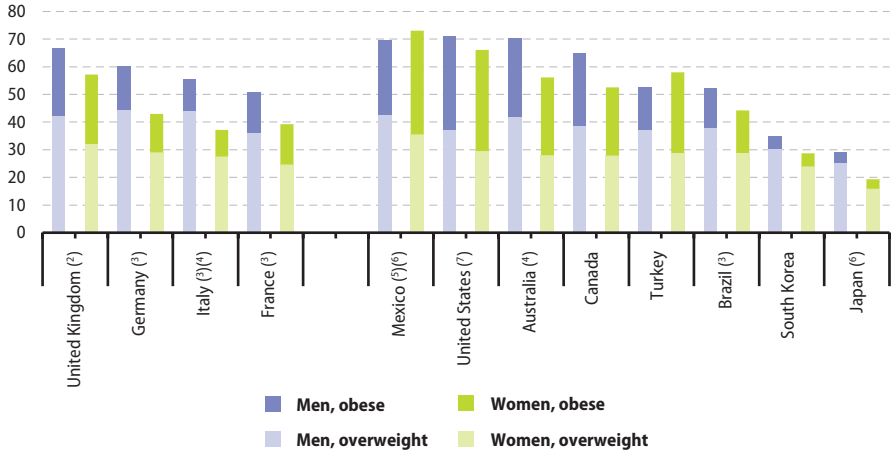
The most frequently used measure for assessing whether is someone is overweight or obese is based on the body mass index (BMI), which evaluates weight in relation to height. According to the World Health Organisation, adults with a BMI between 25 and 30 are overweight and those with an index over 30 are obese.

The data presented in Figure 3.6 mainly concern measured results, although for some members only self-reported data are available. Among this relatively small selection of G20 members, the highest proportions of the population that were either obese or overweight were observed for Mexico (71 %) and the United States (69 %). By far the lowest proportions were observed for South Korea (32 %) and Japan (24 %).

The proportion of men who were overweight or obese was greater than the equivalent proportion of women in all G20 members shown in Figure 3.6, except for Turkey and Mexico. The widest gender differences were recorded in Australia and Canada.

Among the G20 members for which data are available there is far greater variability in the proportion of the population who are obese than among the population who are overweight. Japan and South Korea recorded particularly low proportions of the population that were obese, while the United States reported the highest proportions. In Turkey and Mexico there were large gender differences in the proportion of the population that were obese, with the proportions for females particularly high.

Figure 3.6: Proportion of the population aged 15 and over who are obese or overweight ([1])



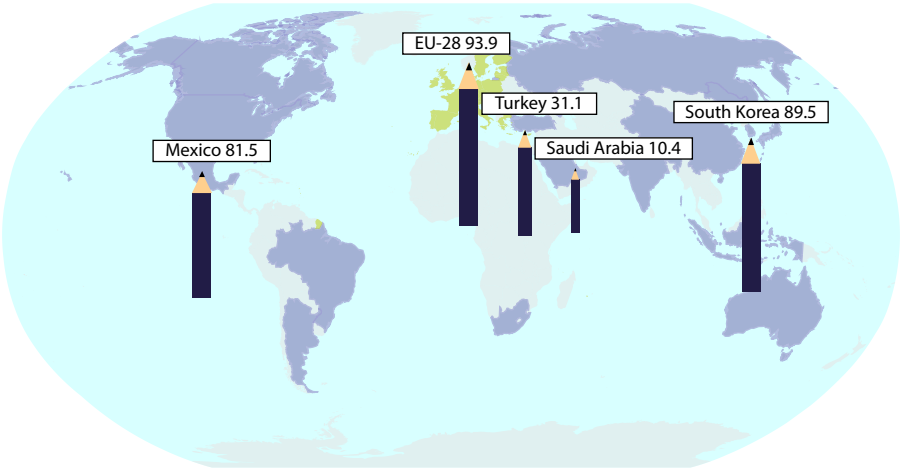
([1]) France, Italy, the United Kingdom, Japan, Mexico, South Korea and the United States: 2012. Australia and Turkey: 2011. Brazil and Canada: 2010. Germany: 2009. Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia and South Africa: not available. Ranked on the proportion for males and females combined.
([2]) England only. Persons aged 16 and over.
([3]) Based on self-reported rather than measured data.
([4]) Persons aged 18 and over.
([5]) Estimates.
([6]) Persons aged 20 and over.
([7]) Persons aged 20–74.

Source: OECD (Non-medical determinants of health)

4 Education and training

Pre-primary education net enrolment ratio, boys

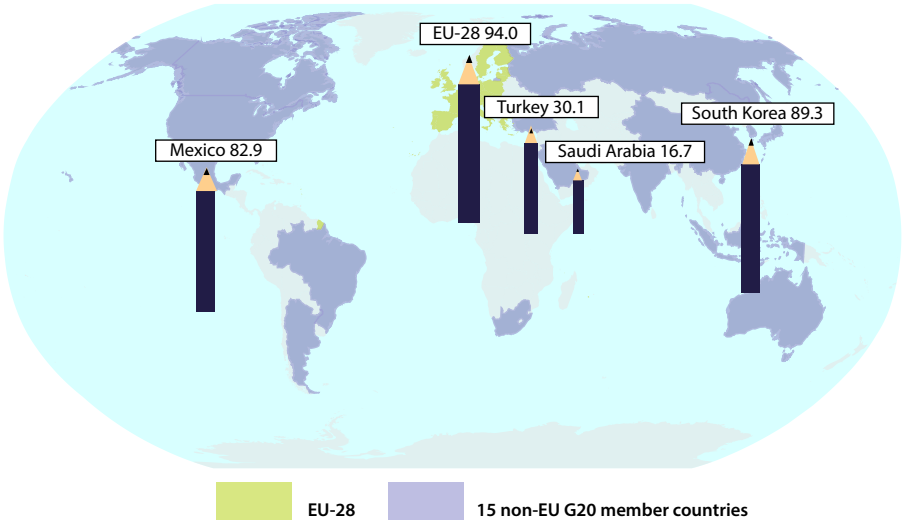
(% of total population of pre-primary school age)



For more information see Figure 4.4 on page 58.

Pre-primary education net enrolment ratio, girls

(% of total population of pre-primary school age)



For more information see Figure 4.4 on page 58.

Introduction

Education and training help foster economic growth, enhance productivity, contribute to people's personal and social development, and reduce social inequalities. In this light, education and training has the potential to play a vital role in both an economic and social context. Education statistics cover a range of subjects, including: expenditure, personnel, participation rates and attainment. The standards for international statistics on education are set by three international organisations: the Institute for Statistics of the United Nations Educational, Scientific and Cultural Organisation; the OECD; and Eurostat.

The classification used to distinguish different levels of education is the International Standard Classification of Education (ISCED). The version used in this publication is ISCED 1997 which has seven levels of education.

- Level 0 pre-primary education — for children aged at least three years.
- Level 1 primary education — begins between five and seven years of age.
- Level 2 lower secondary education — usually, the end of this level coincides with the end of compulsory education.
- Level 3 upper secondary education — entrance age is typically 15 or 16 years.
- Level 4 post-secondary non-tertiary education — between upper secondary and tertiary education; serves to broaden the knowledge of level 3 graduates.
- Levels 5 and 6 first and second stages of tertiary education — includes programmes with academic and occupational orientations as well as those that lead to an advanced research qualification.

Main findings

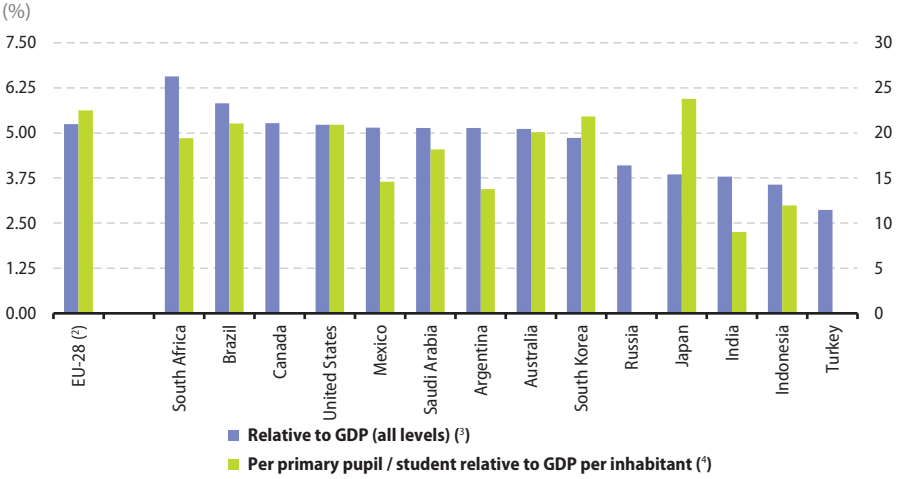
The level of educational enrolment depends on a wide range of factors, such as the age structure of the population, legal requirements concerning the start and duration of compulsory education, and the availability of educational resources.

Public expenditure on education includes spending on schools, universities and other public and private institutions involved in delivering educational services or providing financial support to students. The cost of teaching increases significantly as a child moves through the education system, with expenditure per pupil/student considerably higher in universities than in primary schools.

Comparisons between countries relating to levels of public expenditure on education are influenced by differences in price levels and by numbers of pupils and students.

Figure 4.1 provides information on the level of public expenditure relative to gross domestic product (GDP). Among the G20 members this was highest in 2012 in South Africa at 6.6 %, while it was less than 5.0 % in South Korea and Russia, below 4.0 % in Japan, India and Indonesia, and below 3.0 % in Turkey. The EU-28 ranked among a group of G20 members whose public expenditure on education accounted for 5.1 % to 5.8 % of GDP. Figure 4.1 also presents the average public expenditure per pupil or student in education in relation to GDP per inhabitant. This measure is similar to the relative size of public education expenditure compared with GDP, but is adjusted for the proportion of pupils and students within the whole population, in other words the share of the population on which that relative expenditure is focused. From this indicator it can be seen that — when the relatively small number of pupils and students within the whole population is taken into account — the EU-28's public expenditure on education relative to GDP was the second highest among the G20 members after Japan. Apart from Japan and the EU, South Korea, Brazil, the United States and Australia recorded relatively high values for this indicator.

Figure 4.1: Public expenditure on education, 2012 (1)

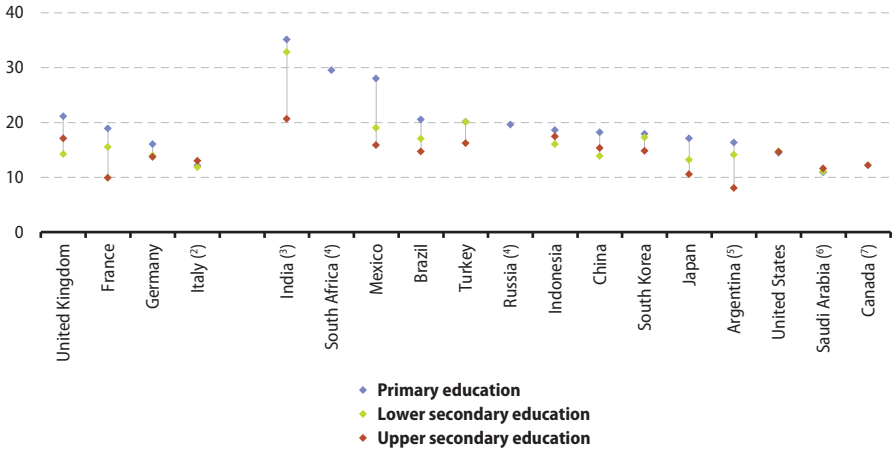


(1) Ranked on expenditure relative to GDP for all levels. China: not available.
(2) Estimates.
(3) EU-28, Australia, Canada, Mexico, South Korea and the United States: 2011. Brazil: 2010. Russia and Saudi Arabia: 2008. Turkey: 2006.
(4) EU-28, Australia, India, Mexico, South Korea and the United States: 2011. Brazil: 2010. Saudi Arabia: 2007. Canada, Russia and Turkey: not available.

Source: Eurostat (online data codes: educ_figdp and educ_fipubin) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

Figure 4.2 shows the pupil-teacher ratio for primary and secondary education among the G20 members. These ratios are calculated by dividing the number of full-time equivalent pupils and students by the number of full-time equivalent educational personnel. A full-time equivalent is a unit to measure employed persons or students in a way that makes them comparable although they may work or study a different number of hours per week. The unit is obtained by comparing the number of hours worked or studied by a person with the average number of hours of a full-time worker or student. A full-time person is therefore counted as one unit, while a part-time person gets a score in proportion to the hours they work or study. In 2012, the average number of pupils per teacher was generally lowest for upper secondary education and highest for primary education, with the main exceptions recorded for members where the ratios were very similar across all three levels of education, such as in Saudi Arabia, and to a lesser extent, Indonesia, China, Italy and the United Kingdom. Overall, Saudi Arabia had the lowest pupil-teacher ratios and India the highest.

Figure 4.2: Pupil-teacher ratios, 2012 (1)
(average number of pupils per teacher)



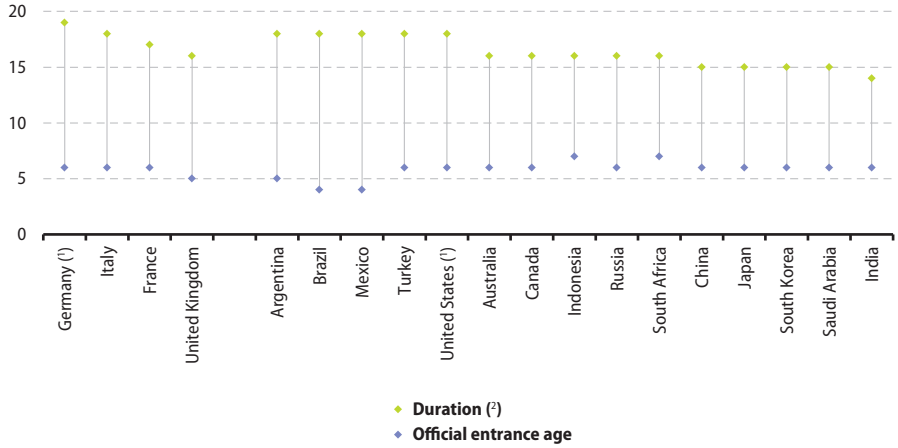
(1) Australia: not available. Ranked on primary education.
(2) Non-standard definition.
(3) 2011. Primary education: estimate.
(4) Secondary education: not available.
(5) 2008.
(6) Secondary education: 2009, estimates.
(7) Primary and lower secondary education: not available. Upper secondary education: 2011.

Source: Eurostat (online data code: educ_iste) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

The earliest starting age for compulsory education among G20 members was four years old in Brazil and Mexico, while the latest was seven years old in Indonesia and South Africa. Among the G20 EU Member States the starting age was five in the United Kingdom (four in Northern Ireland) and six elsewhere. The duration of compulsory education in G20 members ranged from eight years in India to 14 years in Brazil and Mexico. As a result the earliest leaving age was around 14 in India and reached 18 or 19 in the United States, Turkey, Mexico, Brazil, Argentina, Italy and Germany.

Figure 4.3: Official entrance age to and duration of compulsory education, 2013

(years)



(1) 2012.
(2) The green marker shows the approximate minimum leaving age (based on the official entrance age and compulsory duration).

Source: the United Nations Educational, Scientific and Cultural Organisation (UIS)

There were more boys than girls in primary education in all G20 members (see Table 4.1). The imbalance in primary education enrolment generally remained stable or narrowed between 2002 and 2012, with China, the United States, South Africa and Brazil the only G20 members reporting an increase.

Within lower secondary education, boys also outnumbered girls in all G20 members except in Mexico, while for upper secondary education there were a few more exceptions, namely Brazil, Argentina and South Africa, as well as Mexico. Australia, Brazil and Saudi Arabia reported an increasing gender imbalance within their lower and upper secondary education systems between 2002 and 2012, regardless of whether it was in favour of girls (as was the case in Brazil for upper secondary education) or in favour of boys. For lower secondary education, Russia and the EU-28 also reported an increasing imbalance in favour of boys, while for upper secondary education Japan and South Korea reported an increasing imbalance in favour of boys and Argentina an increasing imbalance in favour of girls. India reported a particularly large narrowing of the gender imbalance between 2002 and 2012 in all three stages of education shown in Table 4.1, as did Turkey, particularly in upper secondary education. A gender imbalance in schools may simply reflect a gender imbalance in the school age population, or it may result from differences in enrolment rates.

Table 4.1: Gender ratios for school enrolments, 2002 and 2012

(male/female ratio)

	Primary education		Lower secondary education		Upper secondary education	
	2002	2012	2002	2012	2002	2012
EU-28 (1)	1.06	1.05	1.06	1.07	0.95	1.04
Argentina	1.05	1.05	1.05	1.01	0.94	0.86
Australia	1.06	1.06	1.05	1.09	1.12	1.13
Brazil	1.09	1.11	0.99	1.03	0.86	0.85
Canada (2)	1.05	1.05	1.06	1.06	1.02	1.08
China	1.11	1.16	1.12	1.12	*1.16*	1.11
India (3)	1.26	1.09	1.39	1.12	1.56	1.24
Indonesia	1.06	1.06	1.01	1.01	1.10	1.02
Japan	1.05	1.05	1.05	1.05	1.03	1.04
Mexico	1.05	1.04	0.96	0.95	0.97	0.98
Russia (4)	1.06	1.04	1.03	1.04	1.06	1.14
Saudi Arabia	*1.04*	1.02	*1.05*	*1.12*	*1.12*	*1.17*
South Africa	1.04	1.06	0.96	1.02	0.91	0.91
South Korea	1.13	1.09	1.11	1.09	1.10	1.13
Turkey	1.11	1.06	1.22	1.06	1.69	1.12
United States	1.04	1.06	1.08	1.04	1.05	1.04
World	1.14	1.10	1.13	1.09	1.16	1.11

(1) Data for 2003 instead of 2002.
(2) Data for 2000 instead of 2002. Data for 2011 instead of 2012.
(3) Data for 2011 instead of 2012.
(4) Gender ratio for upper secondary education: data for 2003 instead of 2002.

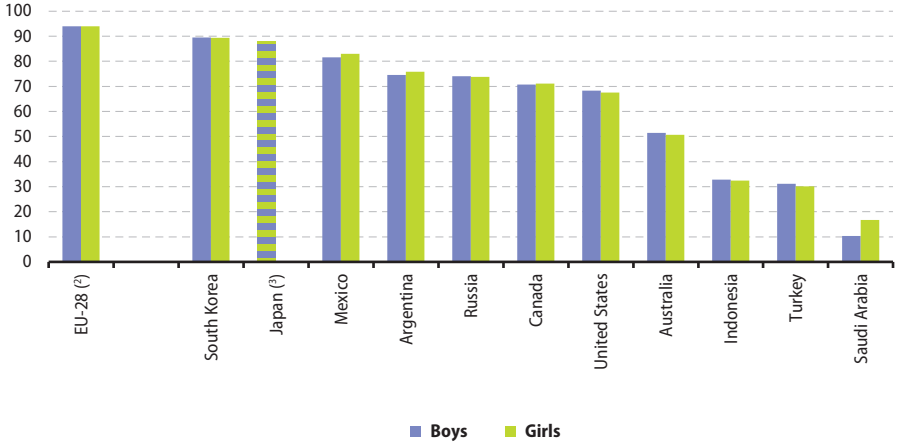
Source: Eurostat (online data code: educ_enrl1tl) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

Figures 4.4 to 4.8 present enrolment ratios for various education levels. Three types of enrolment ratios are presented, namely net, adjusted net and gross ratios. Net ratios (shown in Figures 4.4 and 4.5 for pre-primary and primary education) compare the number of pupils/students of the appropriate age group enrolled at a particular level of education with the size of the population of the same age group; these ratios cannot exceed 100 %. Adjusted net ratios (shown in Figures 4.6 and 4.7 for lower and upper secondary) look at the age group corresponding to a particular level of education and show the share that are in any level of primary or secondary education, in other words including those who are enrolled in levels for which they are formally too young or too old; again these cannot exceed 100 %. Gross ratios (shown in Figure 4.8 for tertiary education) compare the number of pupils/students enrolled at a particular level with the size of the population of the appropriate age group (or approximation thereof); these ratios can exceed 100 % due to under or over age children being enrolled in the selected level of education.

The EU has set a target of 95 % participation in early childhood education by 2020 (Education and training 2020). This indicator relates to the share of the population which participates in early education among those aged between four years and the age when compulsory education starts. In 2002, the early childhood education rate in the EU-28 was 87.7 % and this rose to 93.9 % by 2012. Figure 4.4 presents the early childhood education rate for boys and girls for the EU-28 and a similar indicator, the net enrolment ratio for pre-primary education,

Figure 4.4: Pre-primary education net enrolment ratio (1)

(% of total population of pre-primary school age)



(1) Ranked on the total ratio (for boys and girls combined). The pre-primary education net enrolment ratio (NER) is the number of boys and girls of pre-primary school age that are enrolled in pre-primary education, expressed as a percentage of the total population in that age group. Saudi Arabia: 2013. EU-28, Argentina, Indonesia, Japan, Mexico, Russia, Turkey and the United States: 2012. Canada and South Korea: 2011. Australia: 2010. Brazil, China, India, Japan and South Africa: not available.

(2) Participation in early childhood education rate.

(3) Ratio for boys and girls combined.

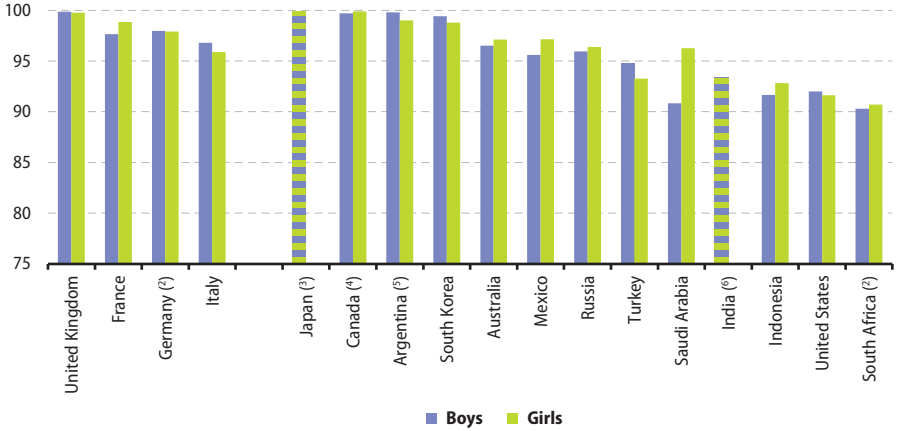
Source: Eurostat (online data code: tps00179) and the United Nations Educational, Scientific and Cultural Organisation (UIS)

for other G20 members. In 2012, the net enrolment ratio in pre-primary education was particularly low in Saudi Arabia (13 % in 2013), and was also below one third in Turkey (31 %) and Indonesia (33 %). Elsewhere, the ratio ranged from 51 % in Australia (2010 data) to 90 % in South Korea (2011 data). In the EU-28, the early childhood education rate was fractionally higher for girls than for boys. In most G20 members the gender gap for the net enrolment ratio was relatively small, with the exception of Saudi Arabia where there was a particularly large gap in favour of girls.

Moving on from pre-primary education, enrolment in primary education was effectively universal in Japan, Canada (1999 data) and the United Kingdom for both boys and girls, with ratios of 98 % or higher also recorded for Argentina (2003 data), South Korea and France (see Figure 4.5). Among the other G20 members, the primary education net enrolment ratio for boys and girls fell below 95 % in Turkey, India, Indonesia, the United States and South Africa, while for boys it was also below this share in Saudi Arabia. As for pre-primary education, primary education enrolment ratios for boys and girls were quite similar in all G20 members with the exception of Saudi Arabia.

Figure 4.5: Primary education net enrolment ratio, 2012 (1)

(% of total population of primary school age)



(1) Note: y-axis does not start at 0. Ranked on the total ratio (for boys and girls combined). The primary education net enrolment ratio (NER) is the number of boys and girls of primary school age that are enrolled in primary education, expressed as a percentage of the total population in that age group. Brazil and China: not available.
(2) Estimates.
(3) Ratio for boys and girls combined.
(4) 1999.
(5) 2003.
(6) Ratio for boys and girls combined. 2011.

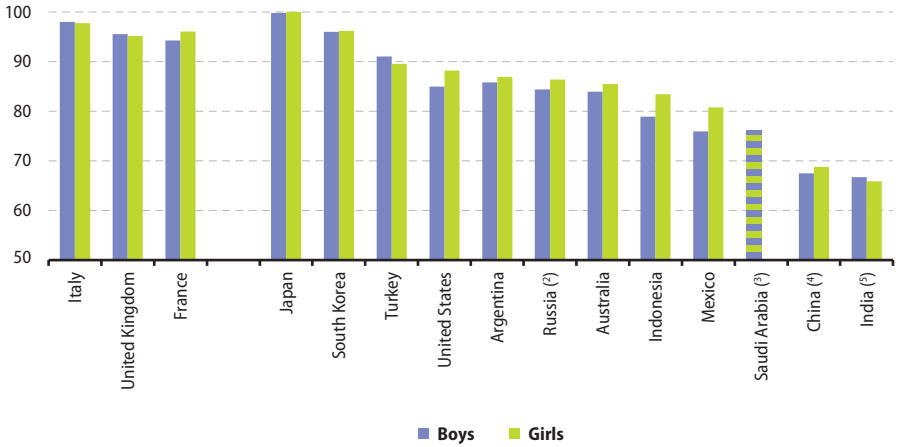
Source: the United Nations Educational, Scientific and Cultural Organisation (UIS) and the United Nations Statistics Division (Social indicators, Education, Literacy)

Figures 4.6 and 4.7 present the adjusted net enrolment ratios for lower and upper secondary education. For both of these levels Japan reported the highest ratios, with universal enrolment in lower secondary education and a 97.2 % ratio for upper secondary education. Net enrolment ratios below 80 % were recorded for lower secondary education in Indonesia (boys only), Mexico (boys only), Saudi Arabia, China (2006 data) and India (2011 data). In a similar manner, ratios below 80 % were recorded for Turkey, Indonesia and Mexico for upper secondary education.

Gender differences were somewhat more pronounced for lower and upper secondary education than for either pre-primary or primary education.

In most of the G20 members shown in Figure 4.6 the ratios for girls were higher than for boys, with the exceptions of Turkey, India, the United Kingdom and Italy. The ratios for upper secondary education showed an even clearer picture, with only Turkey and South Korea reporting higher ratios for boys. For lower secondary education, the largest gender gaps were observed for Mexico, Indonesia and the United States, while for upper secondary education Argentina and Turkey had by far the largest gender gaps, the former in favour of girls and the latter in favour of boys.

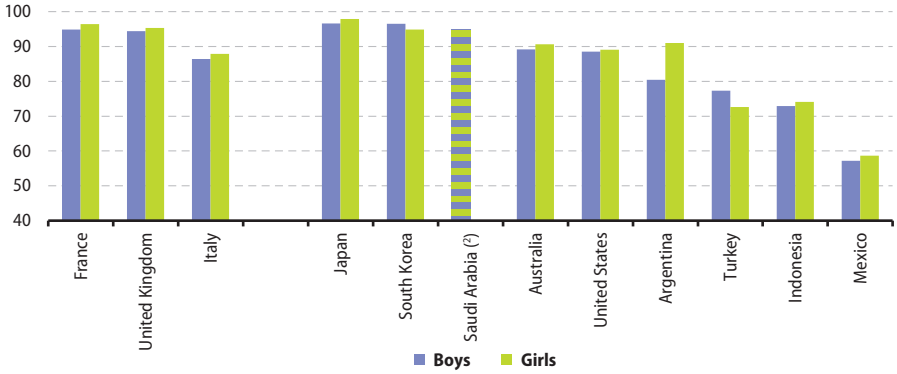
Figure 4.6: Lower secondary education adjusted net enrolment ratio, 2012 (1)
(% of total population of lower secondary school age)



(1) Note: y-axis does not start at 0. Ranked on the total ratio (for boys and girls combined). The lower secondary education adjusted net enrolment ratio (NER) is the number of boys and girls of lower secondary school age that are enrolled in primary or secondary education, expressed as a percentage of the total population in that age group. Germany, Brazil, Canada and South Africa: not available.
(2) 2008.
(3) Ratio for boys and girls combined. Estimate.
(4) 2006.
(5) 2011.

Source: the United Nations Educational, Scientific and Cultural Organisation (UIS)

Figure 4.7: Upper secondary education adjusted net enrolment ratio, 2012 (1)
(% of total population of upper secondary school age)



(1) Note: y-axis does not start at 0. Ranked on the total ratio (for boys and girls combined). The upper secondary education adjusted net enrolment ratio (NER) is the number of boys and girls of upper secondary school age that are enrolled in primary or secondary education, expressed as a percentage of the total population in that age group. Germany, Brazil, Canada, China India, Russia and South Africa: not available.
(2) Ratio for boys and girls combined. Estimate.

Source: the United Nations Educational, Scientific and Cultural Organisation (UIS)

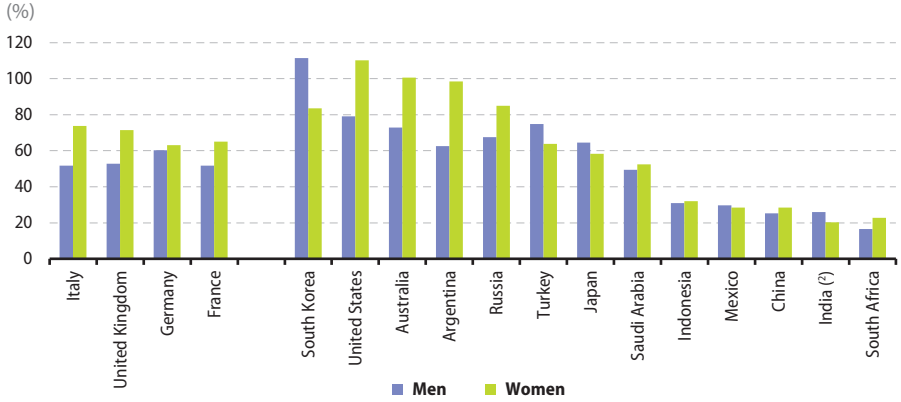
Tertiary education is generally provided by universities and other higher education institutions. In 2012, there were 20.2 million tertiary education students in the EU-28; worldwide, tertiary education enrolment was 196 million. The gross enrolment ratio shown in Figure 4.8 is calculated as a share of the five-year age group starting from the official secondary school graduation age and as such is influenced by the proportion of people who undertake tertiary studies as well as by the average length of these studies. Unlike the secondary education ratios, these ratios varied greatly among the G20 members: the highest ratios, in excess of 90 %, were recorded in South Korea and the United States; Australia, Argentina and Russia also recorded ratios over 75 %; a group of members, including the four G20 EU Member States, recorded ratios between 50 % and 70 %; in Indonesia, Mexico and China the ratios were between 25 % and 33 %; the lowest gross enrolment ratios for tertiary education were in India and South Africa, both below 25 %.

Most G20 members, including all four G20 EU Member States, reported higher gross enrolment ratios for tertiary education for women than for men, with the largest gender gaps in favour of women reported by Argentina, the United States and Australia. By contrast, enrolment rates were higher for men in Mexico, India, Japan, Turkey and, most notably, South Korea.

Traditional analyses of the labour market focus on employment and unemployment, but for younger people many are still in education. Labour market policies for young people often focus on those who are not in employment, education or training, abbreviated as NEETs. Factors that affect the proportion of young people not in employment, education or training include the length of compulsory education, types of available educational programmes, access to tertiary education, as well as labour market factors related to unemployment and economic inactivity (being neither employed nor unemployed).

Figure 4.9 indicates the proportion of 15–24 years olds that were not enrolled in education (school or formal training) nor employed in 2013. Among the G20 members this ranged from 5 % or less in Australia (2010 data) and Japan, through 12 % for Russia (2012 data) and 13 % for the EU-28 to 24 % in Indonesia, 26 % in Turkey, 27 % in India (2012 data) and 31 % in South Africa.

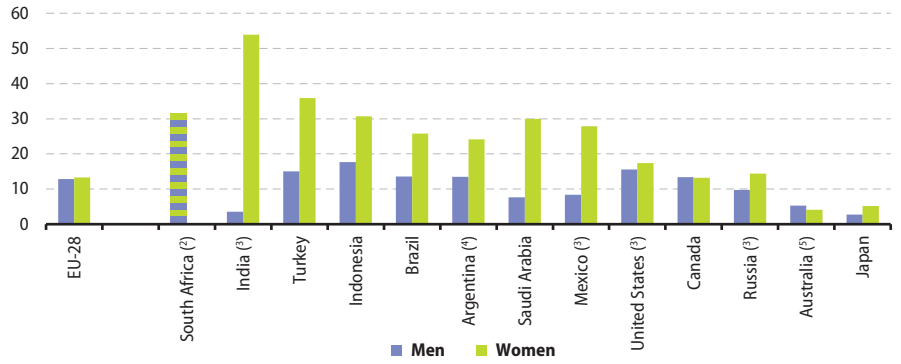
Figure 4.8: Tertiary education gross enrolment ratio, 2012 (1)



(1) Ranked on the total ratio (for men and women combined). The gross enrolment rate for tertiary education is the number of students enrolled in tertiary education (regardless of age) expressed as a percentage of the population in the 5-year age group starting from the official secondary school graduation age. Note that this rate may exceed 100 %.
(2) 2011.

Source: the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

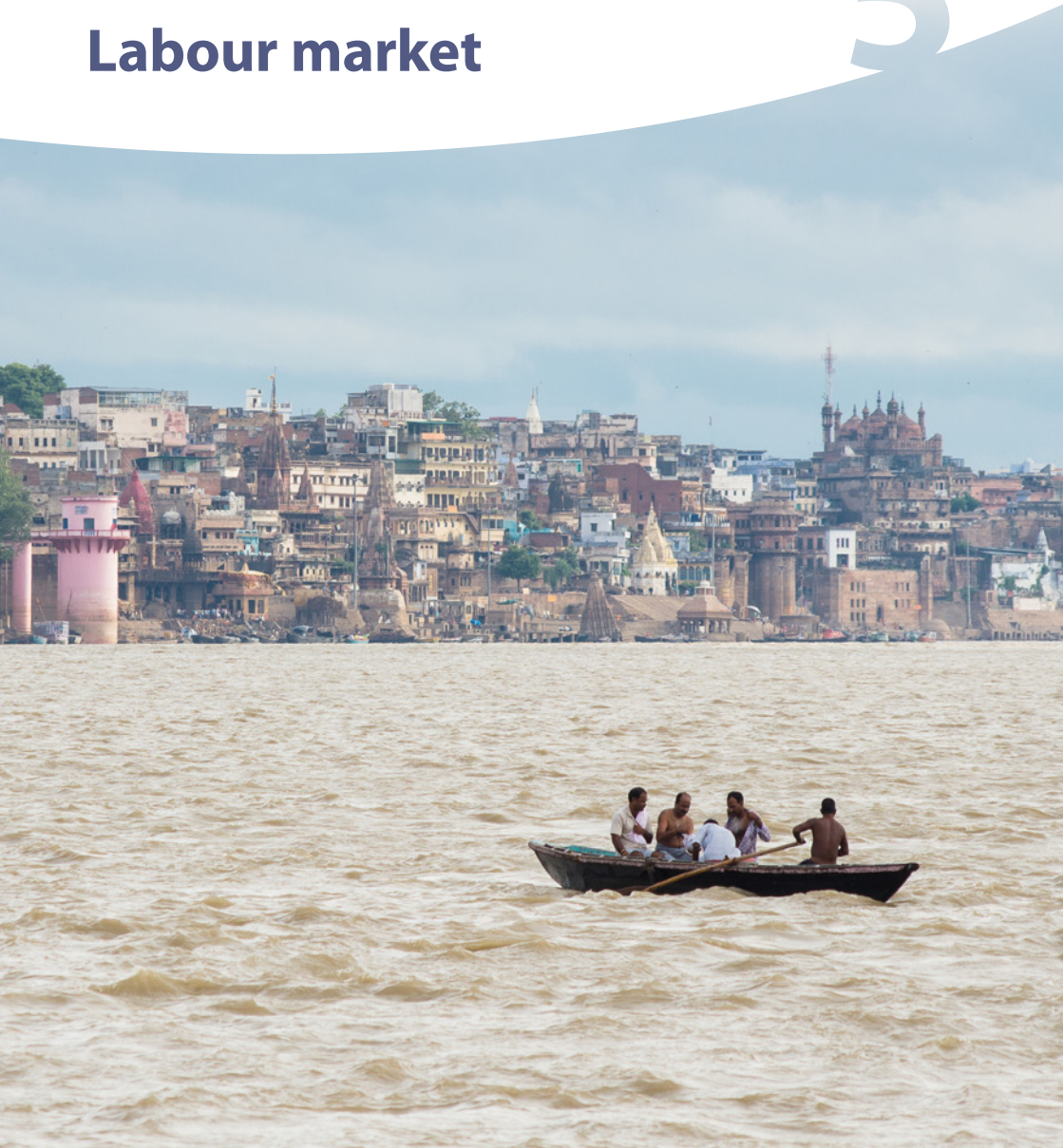
Figure 4.9: Proportion of 15–24 year-olds not in employment, education or training, 2013 (1)



(1) China, India and South Korea: not available.
(2) Ratio for men and women combined.
(3) 2012.
(4) 2012. Urban areas only.
(5) 2010.

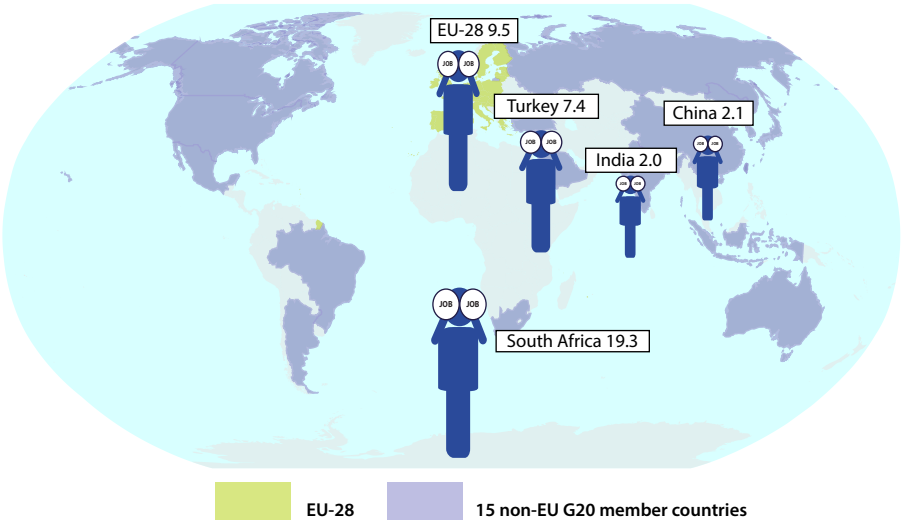
Source: Eurostat (online data code: yth_empl_150) and the International Labour Organisation (ILOSTAT)

5 Labour market



Unemployment rate of men aged 25–64

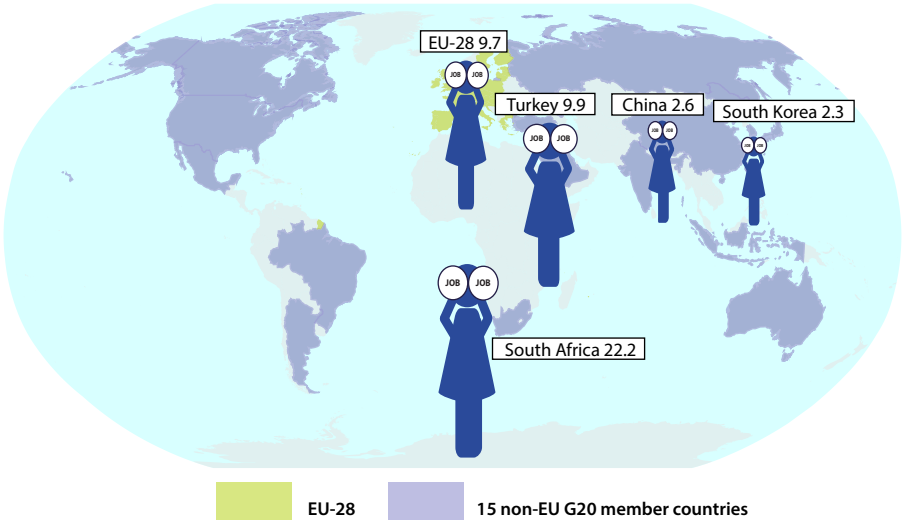
(%)



For more information see Figure 5.4 on page 70.

Unemployment rate of women aged 25–64

(%)



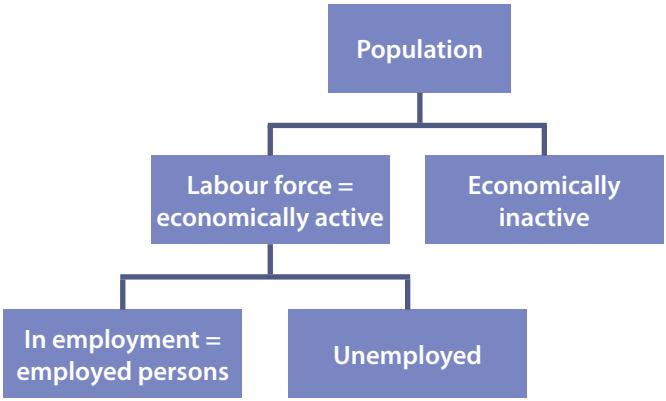
For more information see Figure 5.4 on page 70.

Introduction

Labour market statistics measure the involvement of individuals and businesses in the labour market, where the former generally offer their labour in return for remuneration, while the latter offer employment. Market outcomes — for example, employment, unemployment, wage levels and labour costs — of these relationships affect not only the economy, but directly the lives of practically every person.

The economically active population, also known as the labour force, is made up of employed persons and the unemployed. Employed persons include employees as well as employers, the self-employed and family workers (persons who help another member of the family to run a farm, shop or other form of business). Persons in employment are those who did any work for pay or profit or were not working but had a job from which they were temporarily absent. The amount of time spent working is not a criterion and so full-time and part-time workers are included as well as persons on temporary contracts (contracts of limited duration).

Members of the population who are neither employed nor unemployed are considered to be economically inactive.



Main findings

Particular care should be taken when comparing labour market data between different countries, given there are often differences in the age criteria used to calculate activity and employment rates.

Furthermore, care should be taken if the most recent data are not for the same year, as is the case in most of the analyses presented in this chapter. The global financial and economic crisis impacted strongly on the labour market and this can be seen clearly in employment and unemployment indicators.

The activity rate is the share of economically active persons (also known as the labour force) in the total population of a particular age (in this publication the age range 15–64 has been used). The economically active population comprises employed and

unemployed persons. In 2013, the activity rate stood at 72.0 % for the EU-28, with the rate for men (77.9 %) higher than that for women (66.0 %). Between 2009 and 2013 the rate for men increased slightly from 77.6 % to 77.9 % while for women the increase was greater, from 64.1 % to 66.0 %.

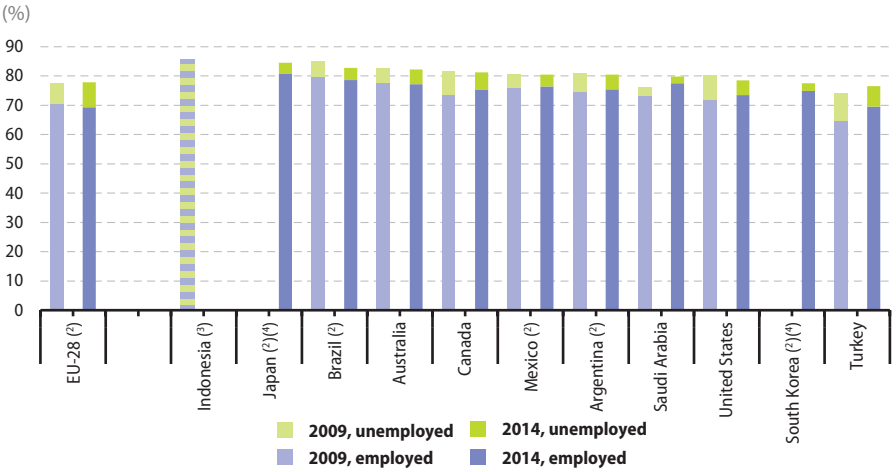
For the G20 members the activity rate among men aged 15–64 ranged from 76.6 % in Turkey (2014 data) to 82.8 % in Brazil (2013 data), with Japan (84.5 %; 2013 data) above this range. The activity rate of men was higher than the corresponding rate for women in all G20 members, in other words, a greater proportion of the male population aged 15–64 was economically active than the proportion of the equivalent female population. Only in Canada was the difference between male and female activity rates less than 10 percentage points. By contrast, the gender difference was 34 percentage points in Mexico, reached 43 percentage points in Turkey, and peaked at 62 percentage points in Saudi Arabia. These high gender differences reflected particularly low activity rates for women in these members, as can be seen in Figure 5.2. In Saudi Arabia the activity rate for women was 17.7 % in 2014, in Turkey it was 33.6 % in 2014 and in Mexico it was 46.4 % in 2013, whereas in all other G20 members (for which recent data are shown in Figure 5.2) the latest activity rate for women exceeded 50 %.

The employment rate, calculated as the share of employed persons in the total population of working age, was 64.1 % in 2013 in the EU-28. Between 2009 and 2013 the employment rate for the EU-28 decreased for men from 70.6 % to 69.4 % and increased for women from 58.3 % to 58.8 % (see Figures 5.1 and 5.2).

The EU-28's employment rate for men in 2013 was lower than in any of the other G20 members for which data are available in Figure 5.1, although only marginally below the rate in Turkey. Elsewhere, employment rates for men ranged from 73.5 % in the United States to 78.6 % in Brazil with Japan (80.7 %) above this range. For women the range in employment rates was similar to that for the activity rate, with Saudi Arabia, Turkey and Mexico recording the lowest rates, while all other G20 members reported rates over 50 %. The highest employment rate for women was recorded in Canada, 69.4 % in 2014.

An analysis of employment rates by highest level of completed education is shown in Figure 5.3, with this restricted to the age group 25–64 in order to focus on the adult working-age population. Among the 10 G20 members in the figure, all recorded a lower adult employment rate for the group of persons having completed at most a lower secondary level of education; equally, all recorded a higher adult employment rate for the group of persons having completed tertiary education. The difference between the lowest and highest adult employment rates for these education levels exceeded 30 percentage points in the EU-28 and in Russia, whereas it was below 20 percentage points in Brazil, Mexico and South Korea.

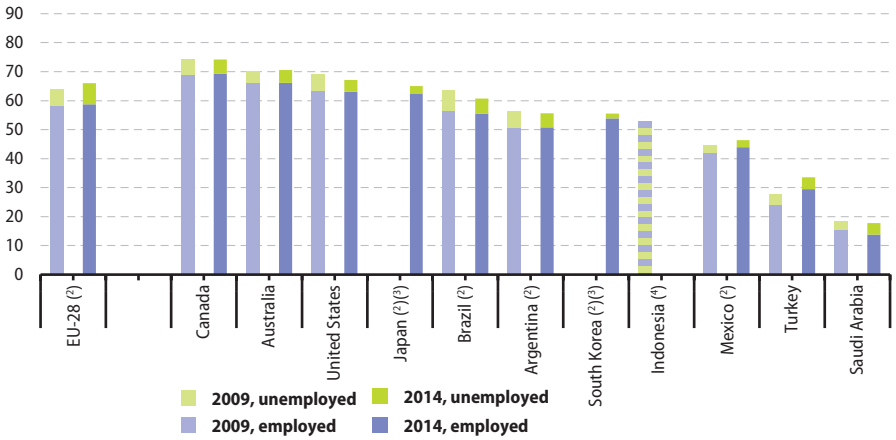
Figure 5.1: Activity rate for men — employed and unemployed as a share of the working age (15–64) population, 2009 and 2014 (1)



(1) Note: the share of the unemployed in the population should not be confused with the unemployment rate; the former is the share of the unemployed in the whole population whereas the latter is the share of the unemployed in the labour force. China, India, Russia and South Africa: not available.
(2) 2013 instead of 2014.
(3) Employed and unemployed combined as a share of the working population. 2014: not available.
(4) 2009: not available

Source: Eurostat (online data codes: lfsa_argan, lfsa_egan and lfsa_ugan) and the International Labour Organisation (ILOSTAT)

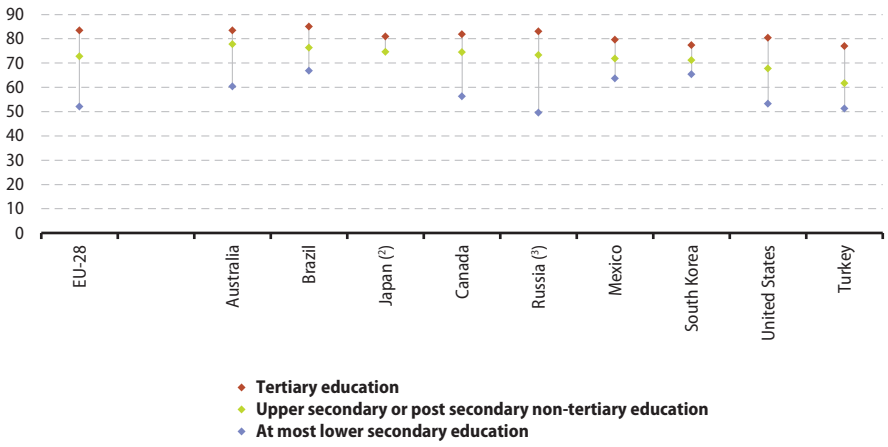
Figure 5.2: Activity rate for women — employed and unemployed as a share of the working age (15–64) population, 2009 and 2014 (1)



(1) Note: the share of the unemployed in the population should not be confused with the unemployment rate; the latter is the share of the unemployed in the labour force. China, India, Russia and South Africa: not available.
(2) 2013 instead of 2014.
(3) 2009: not available.
(4) Employed and unemployed combined as a share of the working population. 2014: not available.

Source: Eurostat (online data codes: lfsa_argan, lfsa_egan and lfsa_ugan) and the International Labour Organisation (ILOSTAT)

Figure 5.3: Employment rate of persons aged 25–64, by education level, 2013 (1)



(1) Ranked on upper secondary or post secondary non-tertiary education. Argentina, China, India, Indonesia, Saudi Arabia and South Africa: not available.
(2) At most lower secondary education: not available.
(3) 2012.

Source: Eurostat (online data code: lfsa_ergaed) and OECD (Education at a Glance)

The unemployment rate is calculated as the number of unemployed persons as a proportion of economically active persons (the labour force comprising all employed and unemployed persons). In 2013, the number of unemployed persons (aged 15–74) in the EU-28 was 26.1 million, equivalent to an unemployment rate of 10.8 %. Among the other G20 members, the unemployment rate in 2013 ranged from 4.0 % in China to 8.8 % in Turkey, with South Korea (3.1 %) below this range and South Africa (24.9 %) considerably above it.

The level of unemployment and the unemployment rate reflect economic developments, with unemployment generally rising after a fall in output and then falling again after output starts to increase; this lag between rising output and falling unemployment may be quite lengthy. The time series presented in Table 5.1 shows the impact of the global financial and economic crisis. In 2009, all G20 members (based on available data) except for Indonesia witnessed a rise in their respective unemployment rates. In 2010, the development in unemployment rates was more varied: South Africa, the EU-28, the United States, Saudi Arabia and South Korea recorded further increases in their unemployment rates, while the rate fell most strongly in Turkey, Russia and Argentina. By 2011 unemployment rates appeared to have stabilised or were falling again with only Saudi Arabia recording an increase. In 2012, this pattern reversed slightly as unemployment rates increased again in the EU-28 and to a lesser extent in South Africa and Australia and in 2013 the increase in unemployment rates spread to a larger number of G20 members, most notably India and Turkey as well as Australia, Brazil, the EU-28, Mexico and Saudi Arabia.

Table 5.1: Unemployment rate and unemployed persons, persons aged 15 and over, 2006–13

	Unemployment rate (%)								Unemployed persons (thousands)
	2006	2007	2008	2009	2010	2011	2012	2013	2013
EU-28 (1)	8.2	7.2	7.0	8.9	9.6	9.6	10.5	10.8	26 129
Argentina (2)	9.5	8.5	7.8	8.6	7.7	7.2	7.2	7.1	836
Australia	4.8	4.4	4.2	5.6	5.2	5.1	5.2	5.7	687
Brazil (3)	8.4	8.1	:	8.3	:	6.7	6.2	6.5	6 637
Canada	6.3	6.0	6.1	8.3	8.1	7.5	7.3	7.1	1 347
China (4)	4.1	4.0	4.2	4.3	4.1	4.1	4.1	4.0	9 260
India (5)	:	:	:	:	3.5	:	2.5	4.5	13 734
Indonesia	10.3	9.1	8.4	7.9	7.3	6.7	6.2	6.1	7 280
Japan	4.1	3.9	4.0	5.1	5.1	4.5	4.3	4.0	2 652
Mexico (6)	3.2	3.4	3.9	5.4	5.3	5.2	4.7	4.9	2 567
Russia (7)	7.2	6.1	6.3	8.5	7.5	6.6	5.5	5.5	4 137
Saudi Arabia	6.3	5.7	5.1	5.4	5.5	5.8	5.6	5.7	642
South Africa (8)	22.6	22.3	22.8	23.9	24.9	24.7	25.1	24.9	4 691
South Korea (9)	3.5	3.2	3.2	3.6	3.7	3.4	3.2	3.1	807
Turkey (10)	8.8	8.9	9.8	12.6	10.7	8.8	8.2	8.8	2 442
United States (11)	4.6	4.6	5.8	9.3	9.6	8.9	8.1	7.4	11 460

(1) Persons aged 15–74.
(2) Main cities and metropolitan areas.
(3) Persons aged 10 and over without work and seeking work.
(4) Persons aged 16 and over. Urban areas only. Registered unemployed.
(5) No minimum age. Unemployed persons: 2010.
(6) Persons aged 14 and over.
(7) Persons aged 15–72.
(8) Persons aged 15–64.
(9) 2013: persons aged 15–64.
(10) Persons aged 15–74.
(11) Persons aged 16 and over.

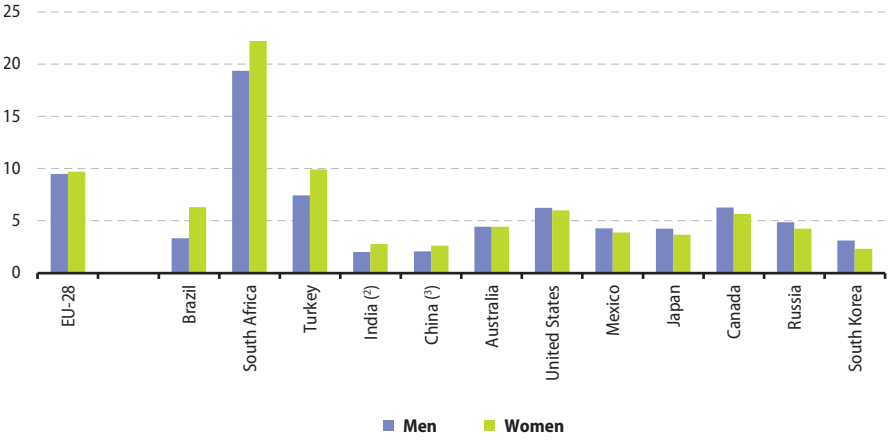
Source: Eurostat (online data codes: lfsa_urgan and lfsa_ugan) and the International Labour Organisation (ILOSTAT)

In the EU-28, adult unemployment rates for men and women (aged 25–64) were relatively similar, 9.5 % for men and 9.7 % for women in 2013 (see Figure 5.4). In Australia, the United States and Mexico, the difference between the adult unemployment rates for men and women was also less than 0.5 percentage points. In most other G20 members, the difference was between 0.5 and 1.0 percentage points, but in Turkey, South Africa and Brazil the adult unemployment rates for women were between 2.5 and 3.0 percentage points higher than for men.

A comparison for 10 G20 members indicates that adult unemployment rates in 2013 were most often highest among persons who had at most completed lower secondary education. Turkey and Brazil were exceptions to this rule, as their highest unemployment rates were recorded among persons having completed upper secondary or post-secondary non-tertiary education, while in Mexico and South Korea the highest rates were recorded among persons having completed tertiary education (see Figure 5.5).

Apart from Mexico and South Korea, the lowest adult unemployment rates were recorded for persons having completed tertiary education.

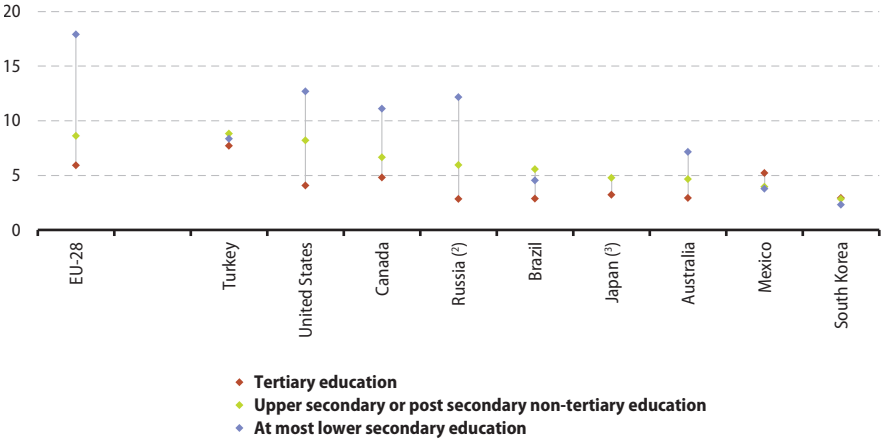
Figure 5.4: Unemployment rate of persons aged 25–64, by sex, 2013 (1)



(1) Ranked on the percentage point difference between the rates for men and women. Argentina, China, India, Indonesia, Japan, Saudi Arabia and South Africa: not available.
(2) 2012.
(3) 2010.

Source: Eurostat (online data code: lfsa_urgan) and OECD (Labour force statistics)

Figure 5.5: Unemployment rate of persons aged 25–64, by education level, 2013 (1)



(1) Ranked on upper secondary or post secondary non-tertiary education. Argentina, China, India, Indonesia, Saudi Arabia and South Africa: not available.
(2) 2012.
(3) At most lower secondary: not available.

Source: Eurostat (online data code: lfsa_urgaed) and OECD (Education at a Glance)

Tables 5.2 and 5.3 present analyses of the youth unemployment rate, which is calculated as the percentage of economically active persons in the age group 15–24 that are unemployed. It should be remembered that a large share of persons between the ages of 15 and 24 years are outside the labour market and therefore not economically active; for example, young people are more likely to be studying full-time and therefore are not available for work, while some may undertake other activities outside of the labour market, such as travel.

In 2013, the number of unemployed young persons (aged 15–24) in the EU-28 was 5.6 million, equivalent to a youth unemployment rate of 23.5 %. Among the other G20 members, the youth unemployment rate in 2013 ranged from 9.3 % in Mexico and South Korea to 31.3 % in Indonesia, with Japan (6.8 %) below this range and South Africa (51.1 %) considerably above it. All G20 members recorded a higher youth unemployment rate than their overall unemployment rate. The largest differences between youth and overall unemployment rates in 2013, all in excess of 20 percentage points, were recorded in Saudi Arabia, Indonesia and South Africa, while differences in excess of 10 percentage points were also recorded in Argentina and the EU-28.

The impact of the global financial and economic crisis on youth unemployment rates has attracted particular attention. The time series presented in Table 5.2 shows the sharp increase in the EU-28 youth unemployment rate in 2009 and a continued pattern of rising youth unemployment through until the latest reference period of 2013. All G20 members (for which data are available) recorded an increase in youth unemployment rates in 2009, the increases exceeding 4.0 percentage points in the EU-28, Turkey, Russia and the United States. By 2010, youth unemployment rates had started to fall in several G20 members — most notably in Turkey — and in 2011 and 2012 this rate fell in most G20 members (for which data are available). Developments

Table 5.2: Youth unemployment rate and unemployed youths, 2006–13

	Youth unemployment rate (%)								Unemployed youth (thousands)
	2006	2007	2008	2009	2010	2011	2012	2013	2013
EU-28	17.4	15.6	15.6	19.9	21.0	21.6	23.1	23.5	5 576
Argentina (1)	23.4	:	18.8	21.2	19.4	18.7	18.3	19.4	342
Australia	10.0	9.4	8.8	11.5	11.6	11.4	11.7	12.2	253
Brazil (2)	17.8	16.8	:	17.8	:	15.3	14.6	15.0	2 861
Canada	11.7	11.2	11.6	15.4	14.9	14.3	14.4	13.7	394
China (3)	:	:	:	:	6.4	:	:	:	7 005
India (3)	:	:	:	:	10.2	:	:	:	7 247
Indonesia	:	:	:	:	20.7	21.9	19.3	31.3	4 085
Japan	8.0	7.7	7.3	9.2	9.3	8.2	8.1	6.8	356
Mexico	6.2	6.7	7.5	9.9	9.6	9.7	8.9	9.3	953
Russia	15.7	14.5	14.1	18.7	17.2	15.5	14.8	13.8	1 060
Saudi Arabia	:	29.8	29.3	30.0	:	29.9	28.3	29.5	259
South Africa	:	:	45.5	48.1	50.5	49.8	51.5	51.1	1 353
South Korea	10.0	8.8	9.3	9.9	9.8	9.6	9.0	9.3	155
Turkey	16.4	17.2	18.5	22.8	19.7	16.7	15.7	16.9	760
United States (4)	10.5	10.5	12.8	17.6	18.4	17.3	16.2	15.5	3 324

(1) Main cities and metropolitan areas.
(2) Persons without work and seeking work.
(3) Unemployed youth: 2010.
(4) Persons aged 16–24.

Source: Eurostat (online data codes: lfsa_urgan and lfsa_ugan), the International Labour Organisation (ILOSTAT) and OECD (Labour force statistics)

changed in 2013 as a majority of G20 members reported an increase in youth unemployment rates, most notably Indonesia.

There was relatively little difference in youth unemployment rates in the EU-28 when analysed by sex (see Table 5.3), with the rate for males 1.4 percentage points higher than the rate for females. The United States and Canada reported the largest gender gaps among the G20 members where youth unemployment rates for males were higher than for females, whereas several G20 members reported much higher youth unemployment rates for females than males: in Brazil and Argentina the youth unemployment rates for females were more than 6 percentage points higher than for males; in Saudi Arabia the difference was close to 35 percentage points. In Indonesia and India, youth unemployment accounted for more than half of all unemployment, a share that was below one fifth in Japan and South Korea.

Persons who have been unemployed for one year or more are considered as long-term unemployed. Prolonged periods of unemployment may be linked with reduced employability of the unemployed person, while lengthy periods of unemployment may have a sustained impact on an individual's income and social conditions. Among the G20 members (subject to data availability, see Table 5.3), Mexico and South Korea reported long-term unemployment rates close to zero, while this rate reached 5.1 % in the EU-28 and 16.4 % in South Africa. In the EU-28 the long-term unemployed accounted for nearly half of all unemployed, a share that reached nearly two thirds in South Africa.

Table 5.3: Youth and long-term unemployment, 2013

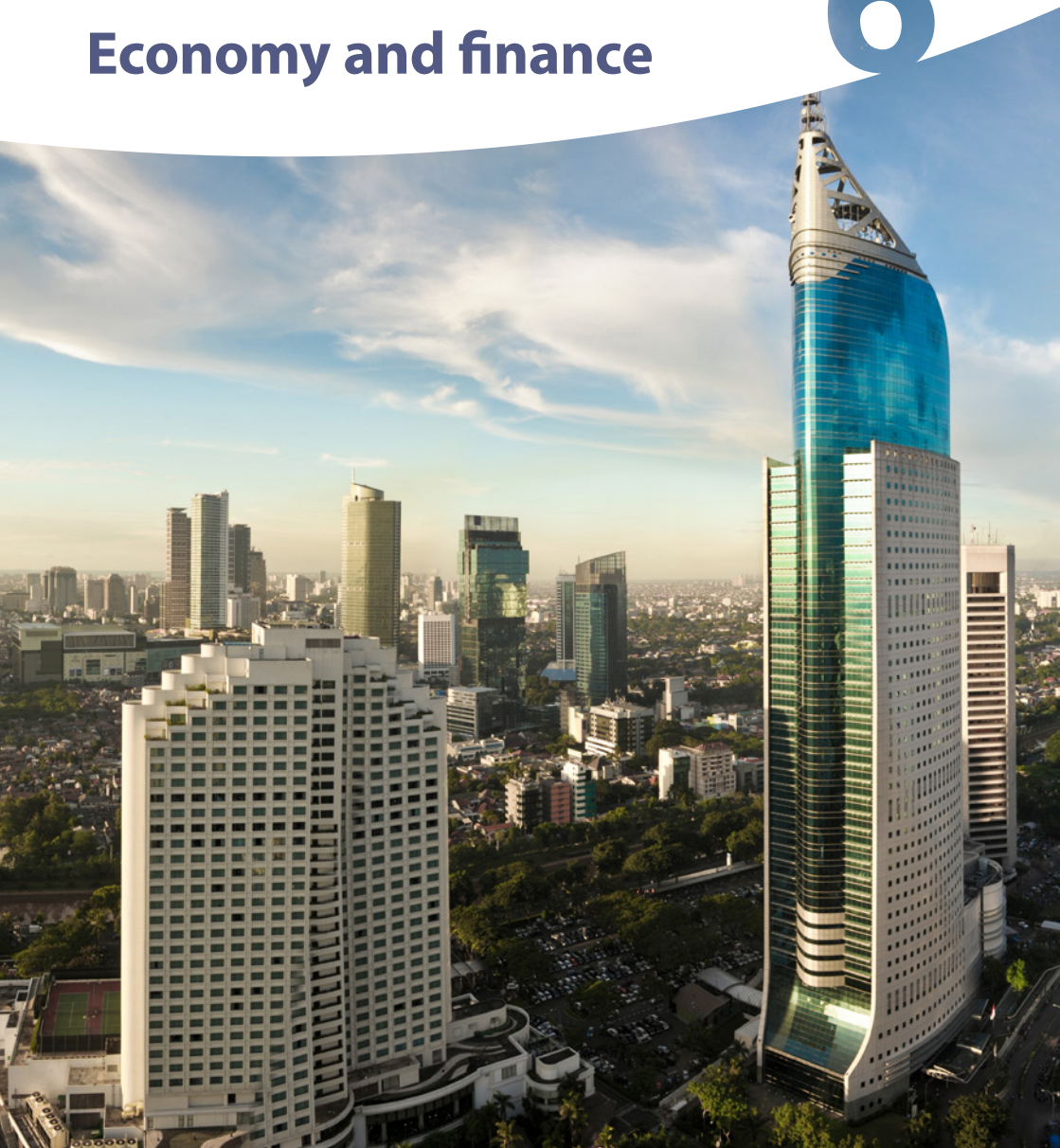
(%)

	Youth unemployment (persons aged 15–24)				Long-term unemployment (persons aged 15 and over)	
	Rate			Share in all unemployment	Rate	Share in all unemployment
	Total	Men	Women			
EU-28 (1)	23.5	24.1	22.7	21.3	5.1	47.4
Argentina (2)	19.4	17.0	23.5	40.9	1.9	26.6
Australia	12.2	13.0	11.3	36.8	1.1	19.2
Brazil (3)	15.0	12.3	18.7	43.1	:	:
Canada	13.7	15.2	12.2	29.3	0.9	12.3
China (4)	6.3	6.4	6.5	33.1	:	:
India (4)	10.2	9.8	11.5	52.8	:	:
Indonesia	31.3	19.5	21.4	56.1	:	:
Japan	6.8	7.7	6.0	13.4	1.6	39.1
Mexico (5)	9.3	8.6	10.7	37.1	0.1	1.6
Russia (6)	13.8	13.3	14.5	25.6	1.7	31.0
Saudi Arabia	29.5	21.1	55.3	40.4	1.1	19.9
South Africa (7)	51.1	:	:	28.9	16.4	65.9
South Korea (8)	9.3	9.8	9.0	19.2	0.0	0.3
Turkey (1)	16.9	15.5	19.7	31.1	1.9	21.6
United States (9)	15.5	17.1	13.9	29.0	1.9	25.9

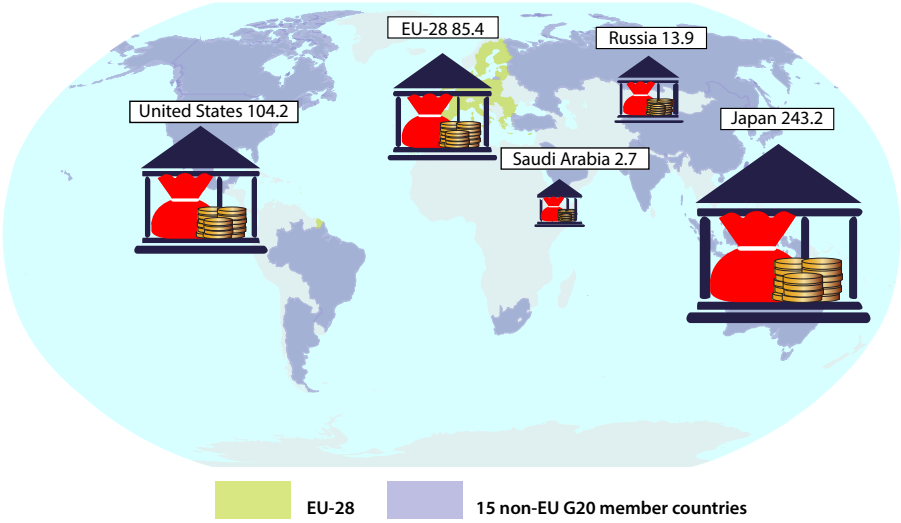
(1) Long–term unemployment: persons aged 15–74.
(2) Main cities and metropolitan areas.
(3) Persons without work and seeking work.
(4) 2010.
(5) Long-term unemployment: persons aged 14 and over.
(6) Long-term unemployment: persons aged 15–72.
(7) Long-term unemployment: persons aged 15–64.
(8) Long-term unemployment: 2012.
(9) Youth unemployment: persons aged 16–24. Long-term unemployment: persons aged 16 and over.

Source: Eurostat (online data codes: lfsa_urgan, lfsa_ugan and une_ltu_a), the International Labour Organisation (ILOSTAT) and OECD (Labour force statistics)

6 Economy and finance

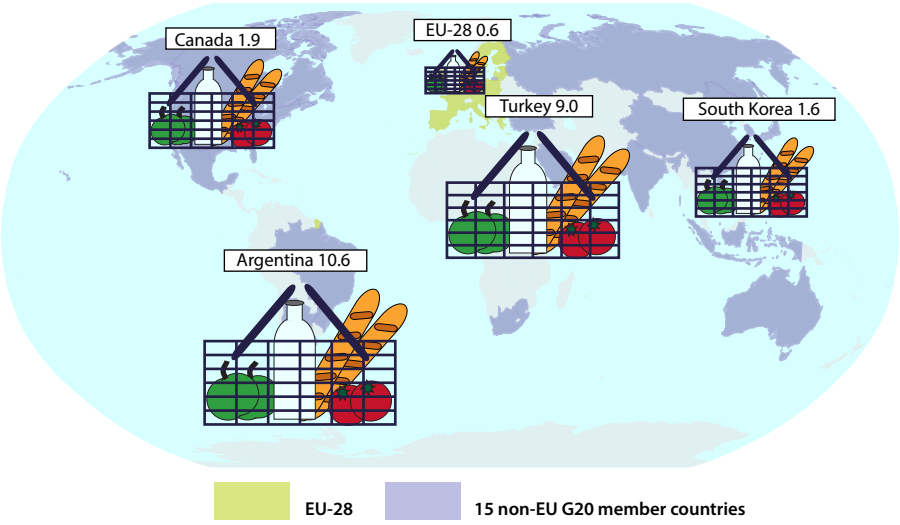


General government debt, 2013
(% of GDP)



For more information see Table 6.1 on page 79.

Consumer price indices, 2014
(annual change, %)



For more information see Figure 6.10 on page 85.

Introduction

An analysis of the economic situation can be performed using a wide range of statistics, covering areas such as national accounts, government finance, exchange rates and interest rates, consumer prices, and the balance of payments. These indicators are also used in the design, implementation and monitoring of economic policies.

Gross domestic product (GDP) is the most commonly used economic indicator and it provides a measure of the size of an economy. It is the sum of the gross value added of all resident institutional units ('domestic' production) engaged in production, plus any taxes, and minus any subsidies, on products not included in the value of their outputs. It is also equal to i) the sum of the final uses of goods and services (all uses except intermediate consumption), minus the value of imports of goods and services; ii) the sum of primary incomes distributed by resident producer units. By contrast, gross national income (GNI) is the sum of gross primary incomes receivable by residents, in other words, GDP less income payable to non-residents plus income receivable from non-residents ('national' concept).

GDP per inhabitant is often used as a broad measure of living standards, although there are a number of international statistical initiatives to provide alternative and more inclusive measures (such as GDP and beyond). GDP at constant prices is intended to allow comparisons of economic developments over time, as the impact of price developments (inflation) has been removed. The use of a time series of GDP in constant prices shows the volume (or 'real') change in GDP. Equally, international comparisons can be facilitated when indicators are converted from national currencies into a common currency using purchasing power parities (PPPs) which reflect price level differences between countries rather than market exchange rates.

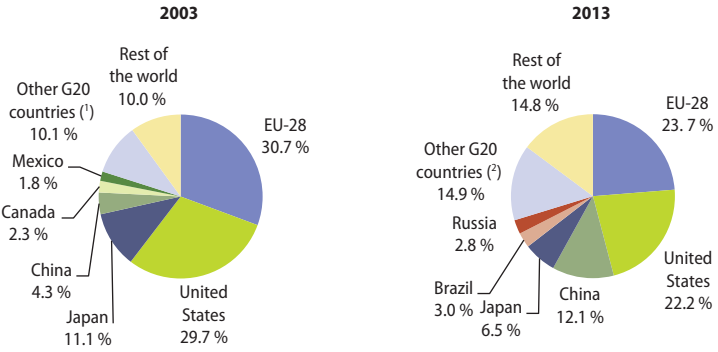
Main findings

In 2013, the total economic output of the world, as measured by GDP, was valued at almost EUR 57.0 trillion, of which the G20 members accounted for 85.2 %, 4.8 percentage points less than in 2003. The EU-28 accounted for a 23.7 % share of the world's GDP in 2013, while the United States' share was 22.2 % (see Figure 6.1); note these relative shares are based on current price series in euro terms, reflecting market exchange rates.

The Chinese share of world GDP rose from 4.3 % in 2003 to 12.1 % in 2013, moving ahead of Japan (6.5 %). To put the rapid pace of recent Chinese growth into context, in current price terms China's GDP in 2013 was EUR 5 454 billion higher than it was in 2003, an increase equivalent to the combined GDP in 2013 of the seven smallest G20 economies (South Korea, Mexico, Indonesia, Turkey, Saudi Arabia, Argentina and South Africa). The shares of global GDP contributed by Brazil and Russia also increased greatly, such that they moved from the 10th and 11th largest G20 economies in 2003 (leaving aside the four G20 EU Member States) to become the fifth and sixth largest G20 economies in 2013.

Figure 6.2 shows the real growth rate (based on constant price data) of GDP in the EU-28 compared with the other G20 members between 2003 and 2013 — note the different scales used for the three parts of the figure. The lowest rates of change were generally recorded by the developed economies such as Japan, the EU-28, the United States and Canada, while the highest rates were recorded in the two Asian economies of China and India.

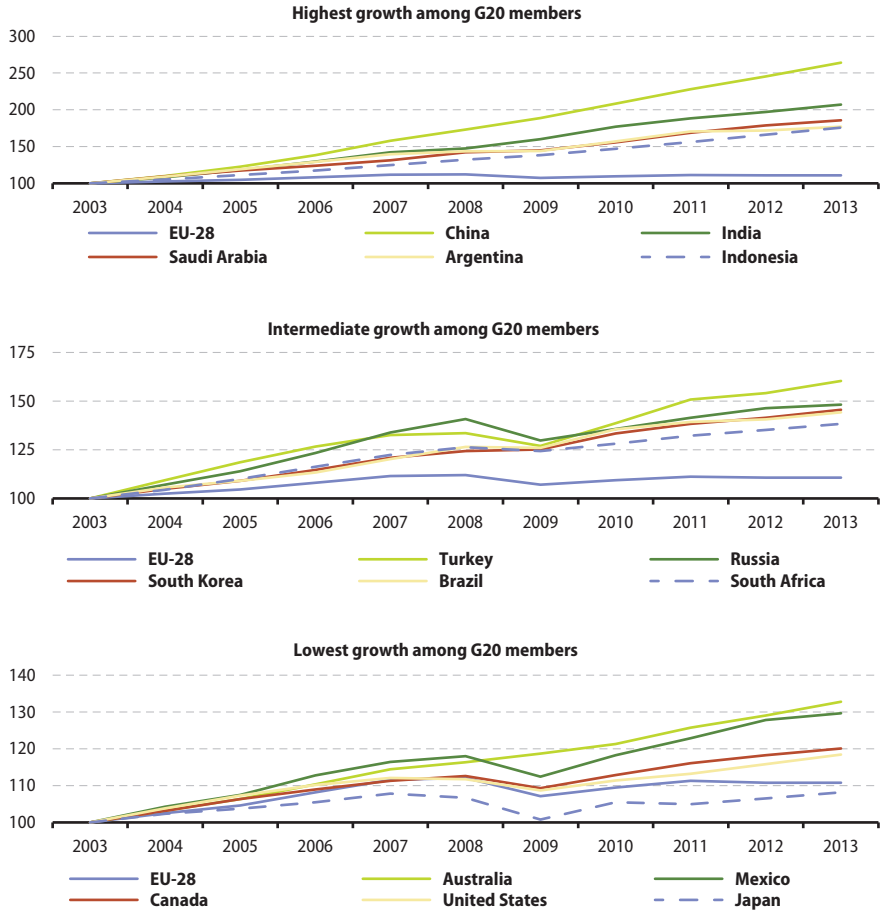
Figure 6.1: Share of world GDP, 2003 and 2013
(%)



(1) Brazil, India, Australia, South Korea, Indonesia, Russia, Turkey, Saudi Arabia, Argentina and South Africa.
(2) India, Canada, Australia, Mexico, South Korea, Indonesia, Turkey, Saudi Arabia, Argentina and South Africa.

Source: Eurostat (online data code: nama_10_gdp) and the United Nations Statistics Division (National Accounts Main Aggregates Database)

Figure 6.2: GDP at constant (2005) prices, 2003–13 ([1])
(2003 = 100)



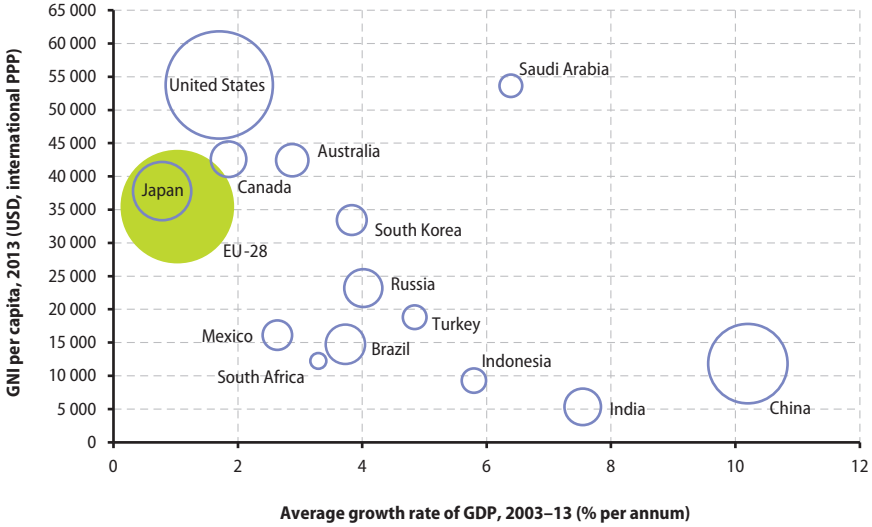
([1]) Note the differences in the range of the y-axes between the different parts of the figure. The EU-28 series is shown in all three parts of the figure for the purpose of comparison. Data for the EU-28 are based on chain linked volumes with index 2005 = 100. Data for all other countries are based on 2005 constant prices.

Source: Eurostat (online data code: nama_10_gdp) and the United Nations Statistics Division (National Accounts Main Aggregates Database)

Among the G20 members, the highest GNI per inhabitant in 2013 was recorded in the United States, marginally higher than in Saudi Arabia. Note that the conversion to United States dollars used for this indicator in Figure 6.3 is based on PPPs rather than market exchange rates and so reflects differences in price levels between countries. The average level of income per inhabitant in the United States and in Saudi Arabia was 3.7 times as high as the average GNI for the world (USD 14.3 thousand per inhabitant). Canada and Australia also recorded average GNI per inhabitant that was more than three times the world average, followed by Japan, the EU-28 and South Korea where it was more than twice as high. By contrast, five G20 members recorded levels of GNI per inhabitant that were around or below the world average, namely Brazil, South Africa, China, Indonesia and India.

In broad terms, members with relatively low GNI per inhabitant recorded relatively high economic growth over the 10 years from 2003–13; this was most notably the case in China and India. By contrast, members with relatively high GNI per inhabitant recorded fairly low levels of economic growth over the same period; this was most notably the case in Japan and the EU-28. Saudi Arabia reported an atypical pattern of development, combining a relatively high level of GNI per inhabitant (that by the end of the period was almost as high as that in the United States) with the third highest growth in GDP during the period 2003–13 among the G20 members, an average of 6.4 % per year. The reverse situation could be observed in Mexico which reported relatively low growth (2.6 % per year) with a relatively low level of GNI per inhabitant.

Figure 6.3: Growth rate of constant price GDP and GNI per inhabitant, 2003–13 and 2013 (1)



(1) Argentina: not available. GNI per inhabitant is presented in United States dollars using purchasing power parity (PPP) rates for 2013. The relative size of each bubble reflects the value of GDP in current prices for 2013.

Reading note: the EU-28's 10-year annual average growth rate of GDP between 2003 and 2013 was 1.0 % (shown on the horizontal axis), while its GNI per inhabitant in 2013 was 35 500 (shown on the vertical axis). The overall size of the EU-28 economy (GDP in current prices) was EUR 13.5 trillion in 2013 (represented by the size of the large green circle).

Source: Eurostat (online data code: nama_10_gdp), the United Nations Statistics Division (National Accounts Main Aggregates Database) and the World Bank (World Development Indicators)

The financial and economic crisis of 2008–09 resulted in considerable media exposure for government finance indicators. The importance of the general government sector in the economy may be measured in terms of general government revenue and expenditure in relation to GDP. Subtracting expenditure from revenue results in a basic measure of the government surplus/deficit (public balance), which measures government borrowing/lending for a particular year; in other words, borrowing to finance a deficit or lending made possible by a surplus. General government debt (often referred to as national debt or public debt) refers to the consolidated stock of debt (external obligations) at the end of the year of the government and public sector agencies. The external obligations are the debt or outstanding (unpaid) financial liabilities arising from past borrowing. Typically, these indicators are expressed in relation to GDP.

The average of general government revenue and expenditure in relation to GDP peaked among the G20 members in 2013 at 46.9 % in the EU-28 (in the euro area it was higher still, at 48.0 %), followed by 43.0 % in Canada and 42.1 % in Saudi Arabia. The lowest ratio was in Indonesia (19.0 %). Note that the data for Mexico, Saudi Arabia and South Korea relate only to the expenditure and revenue of central government as opposed to all levels of public administration (general government).

Most G20 members had a government deficit in 2013; only two — South Korea and Saudi Arabia — recorded a surplus (see Table 6.1). Some of the G20 members with the highest government deficits had the highest levels of government debt and this was notably the case for Japan and the United States. Equally, Saudi Arabia had the lowest level of government debt and was one of the two members with

Table 6.1: General government finances, 2003 and 2013

(% of GDP)

	Expenditure		Revenue		Deficit / surplus		Gross debt	
	2003	2013	2003	2013	2003	2013	2003	2013
EU-28 (1)	45.6	48.5	44.0	45.3	–1.6	–3.2	:	85.4
EA-18 (2)	46.1	49.4	44.6	46.5	–1.5	–2.9	:	90.9
Argentina	25.4	36.8	21.7	34.1	–3.7	–2.8	116.5	41.0
Australia	35.0	37.4	36.0	33.9	1.0	–3.5	13.2	28.6
Brazil	39.0	41.1	33.8	37.9	–5.2	–3.3	74.6	66.2
Canada	43.6	44.5	43.7	41.4	0.1	–3.0	76.6	88.8
China	18.3	29.1	15.9	28.2	–2.4	–0.9	37.2	39.4
India	28.5	27.0	18.2	19.8	–10.3	–7.2	84.2	61.5
Indonesia	19.8	20.1	18.6	18.0	–1.2	–2.1	60.5	26.1
Japan	36.2	*40.0*	28.4	*31.8*	–7.8	*–8.2*	169.6	*243.2*
Mexico (3)	22.5	27.1	20.2	23.3	–2.3	–3.8	44.7	46.4
Russia	34.9	37.9	36.4	36.6	1.4	–1.3	30.4	13.9
Saudi Arabia (3)	34.8	37.8	40.1	46.5	5.3	8.7	79.5	2.7
South Africa	26.5	33.2	24.6	28.8	–1.9	–4.4	36.9	45.2
South Korea (4)	19.1	*20.9*	20.7	*21.6*	1.6	*0.7*	20.4	*33.9*
Turkey	41.4	38.1	31.0	36.5	–10.4	–1.5	67.7	36.3
United States	34.2	36.6	29.1	30.9	–5.0	–5.8	58.5	104.2

(1) Data for 2006 instead of 2003.
(2) Data for 2006 (EA-16) instead of 2003.
(3) Central government instead of general government.
(4) Expenditure, revenue and deficit / surplus: central government instead of general government.

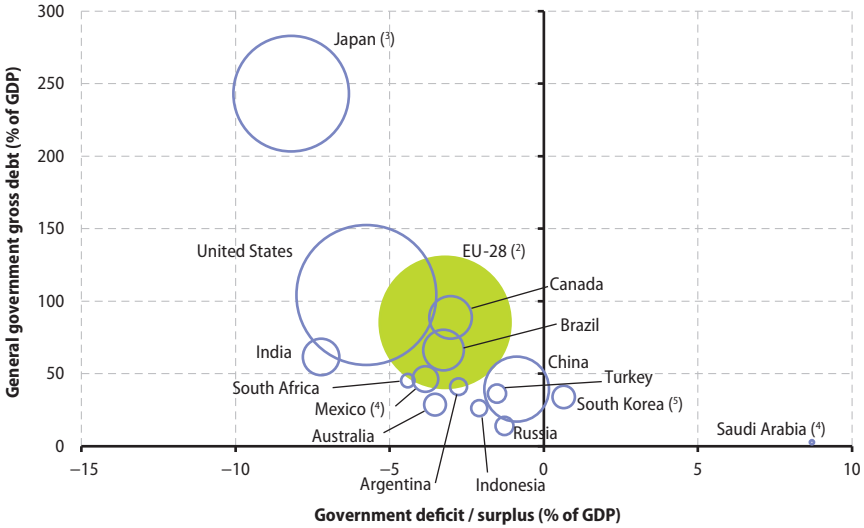
Source: Eurostat (online data codes: gov_10a_main and gov_10dd_edpt1) and the International Monetary Fund (World Economic Outlook database)

a government surplus in 2013. India and to a lesser extent Australia deviated somewhat from this pattern, with relatively low levels of government debt combined with relatively high deficits. This can be seen in Figure 6.4 which plots the deficit/surplus against the debt (both relative to GDP), showing the absolute size of general government debt in terms of the size of each bubble. In 2013, government debt ranged from EUR 11 billion in Saudi Arabia to EUR 13.2 trillion in the United States. In the United States the ratio of gross debt to GDP exceeded 100 %, while in Japan it was 243 %.

Comparing data for 2008 with 2013 (see Figure 6.5), the surpluses recorded by Saudi Arabia and South Korea both contracted, substantially in the case of Saudi Arabia. Russia and Indonesia moved from surpluses (small in the case of Indonesia) to deficits, while China moved from a balanced position to a government deficit. The government deficits of the EU-28 (between 2010 and 2013), India, the United States and Turkey contracted, while those in the remaining G20 members expanded, most notably in South Africa and Japan.

Five of the G20 members recorded a fall in their levels of government debt relative to GDP between 2008 and 2013, namely India, Argentina, Turkey, Indonesia and Saudi Arabia (see Figure 6.6). All other G20

Figure 6.4: Government deficit/surplus and general government debt, 2013 (1)



(1) The size of each bubble reflects the overall debt of each economy.
(2) Excessive deficit procedure data.
(3) Estimates.
(4) Central government instead of general government.
(5) Deficit / surplus: central government instead of general government. Estimates.

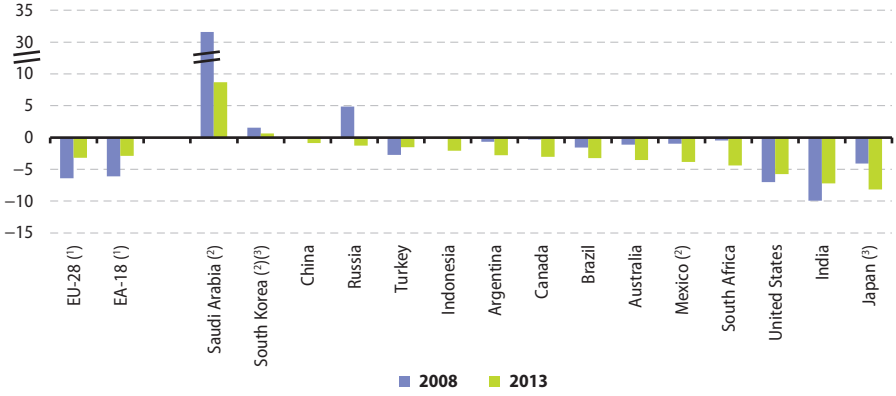
Reading note: in 2013 the EU-28's government deficit was 3.2 % of GDP (shown on the horizontal axis), while its general government gross debt was 85.4 % of GDP (shown on the vertical axis). The overall size of the general government gross debt was EUR 11.6 trillion (represented by the size of the green circle).

Source: Eurostat (online data code: gov_10dd_edpt1) and the International Monetary Fund (World Economic Outlook database)

members recorded higher levels of general government gross debt relative to GDP in 2013 than in 2008, ranging from an increase of 2.8 percentage points in Brazil to an increase of 18.0 percentage points in Canada and South Africa, with the United States (increase of 31.4 percentage points) and Japan (51.4 percentage points) above this range.

Figure 6.5: General government deficit / surplus, 2008 and 2013

(% of GDP)

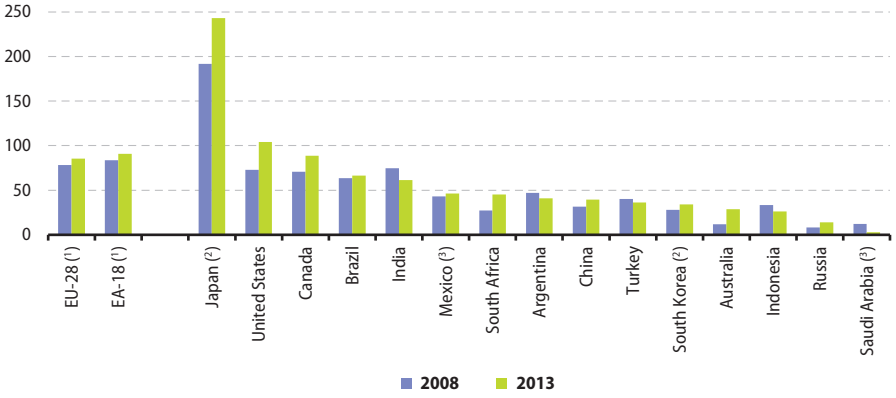


(1) Data for 2010 instead of 2008.
(2) Central government instead of general government.
(3) 2013: estimate.

Source: Eurostat (online data code: gov_10dd_edpt1) and the International Monetary Fund (World Economic Outlook database)

Figure 6.6: General government debt, 2008 and 2013

(% of GDP)



(1) Data for 2010 instead of 2008.
(2) 2013: estimate.
(3) Central government instead of general government.

Source: Eurostat (online data code: gov_10dd_edpt1) and the International Monetary Fund (World Economic Outlook database)

The current account of the balance of payments provides information on international transactions in goods and services (see Chapter 7 for more details), as well as income from employment and from investment, and current transfers with the rest of the world. Among the G20 members, the largest current account surplus in 2013 in absolute terms was EUR 182.8 billion for China, while in relative terms the current account surplus peaked in Saudi Arabia at 17.7 % of GDP (see Figure 6.7). The largest current account deficit in 2013 was EUR 400.3 billion for the United States, while Turkey's deficit represented 7.9 % of GDP.

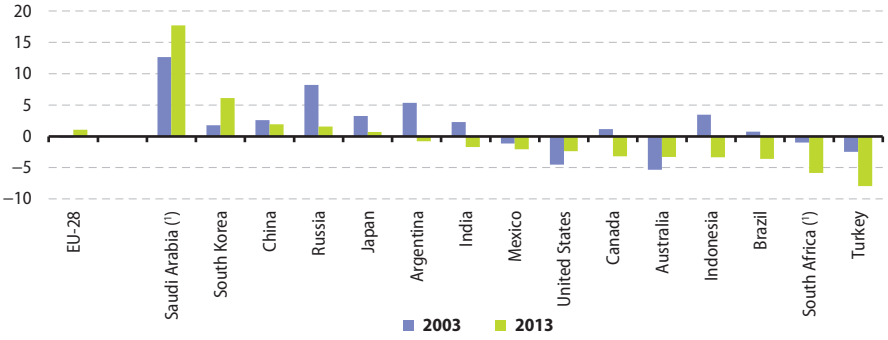
The current account balances of Argentina, Brazil, Canada, India and Indonesia moved from surpluses to deficits between 2003 and 2013, while the EU-28 moved from a deficit to a surplus. The deficits of Australia and the United States narrowed over the period under consideration, while they expanded for Turkey, South Africa and Mexico; in South Korea and Saudi Arabia the surpluses expanded while those of Russia, Japan and China narrowed.

Foreign direct investment (FDI) is characterised by investment in new foreign plant/offices, or by the purchase of existing assets that belong to a foreign enterprise. FDI differs from portfolio investment as it is made with the purpose of having a lasting interest, by acquiring control or an effective voice in the management of the direct investment enterprise.

Among the G20 members, FDI outflows exceeded inflows in 2013 in the EU-28, Russia, Japan, the United States and South Korea (see Figure 6.8). Relative to GDP, the highest inflows of FDI were recorded into China, Canada, Brazil, Russia, Australia and Mexico, a mixture of emerging economies and resource rich members. Outflows of FDI relative to GDP were highest from Russia, followed at some distance by Japan, the EU-28, Canada, the United States and South Korea. As such, Canada figured among the G20 members with the highest inflows and outflows. Australia recorded negative outflows of FDI, indicating that disinvestment (of investment made abroad in previous years) outweighed new investment abroad.

Figure 6.9 presents an analysis of the destination and source of FDI flows into and out of the EU-28. In some cases disinvestment can be identified, for example EU-28 disinvestment from Russia and Canada and the disinvestment of offshore financial centres from the EU-28. As such,

Figure 6.7: Current account balance, 2003 and 2013
(% of GDP)



(1) 2013: estimate.

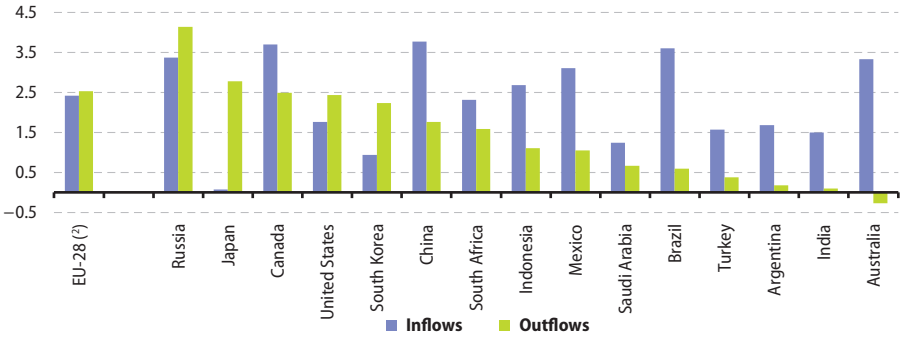
Source: Eurostat (online data codes: bop_q_eu, bop_q_euro and nama_10_gdp) and the International Monetary Fund (World Economic Outlook database)

the percentages shown are percentages of the total net outflows and net inflows. FDI flows are dominated by the United States: the level of the EU-28's outward FDI to the United States in 2013 was equivalent to 46.6 % of all net outflows, while inflows from the United States were equivalent to 95.7 % of all net inflows. A relatively large part of the EU-28's FDI flows were with offshore financial centres (an aggregate composed of 38 financial centres across the world), as well as with developed countries outside of the G20, notably Switzerland.

An analysis of the EU-27's FDI stocks as of the end of 2012 (see Map 1) presents a broadly similar picture to that in terms of flows, with the United States the main partner for the EU. Among the G20 members, Canada, Brazil, Russia, Australia and China were the next most common destinations for EU-27 FDI.

Figure 6.8: Flows of foreign direct investment, 2013 (1)

(% of GDP)

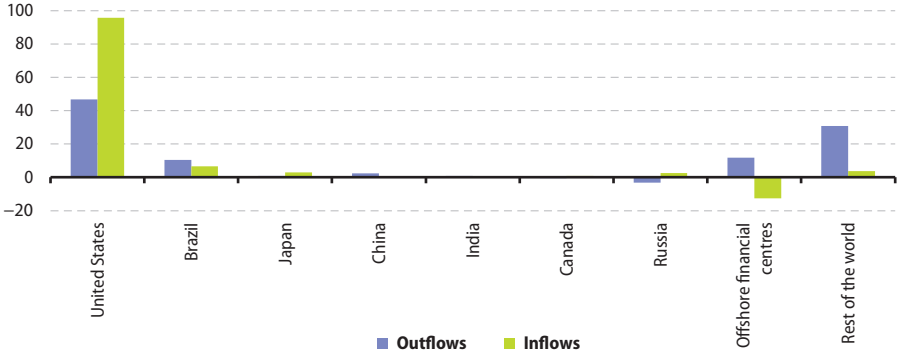


(1) Ranked on outflows.
(2) Provisional.

Source: Eurostat (online data codes: bop_fdi_main and nama_10_gdp) and the World Bank (World Development Indicators)

Figure 6.9: Flows of foreign direct investment with selected partners, EU-28, 2013 (1)

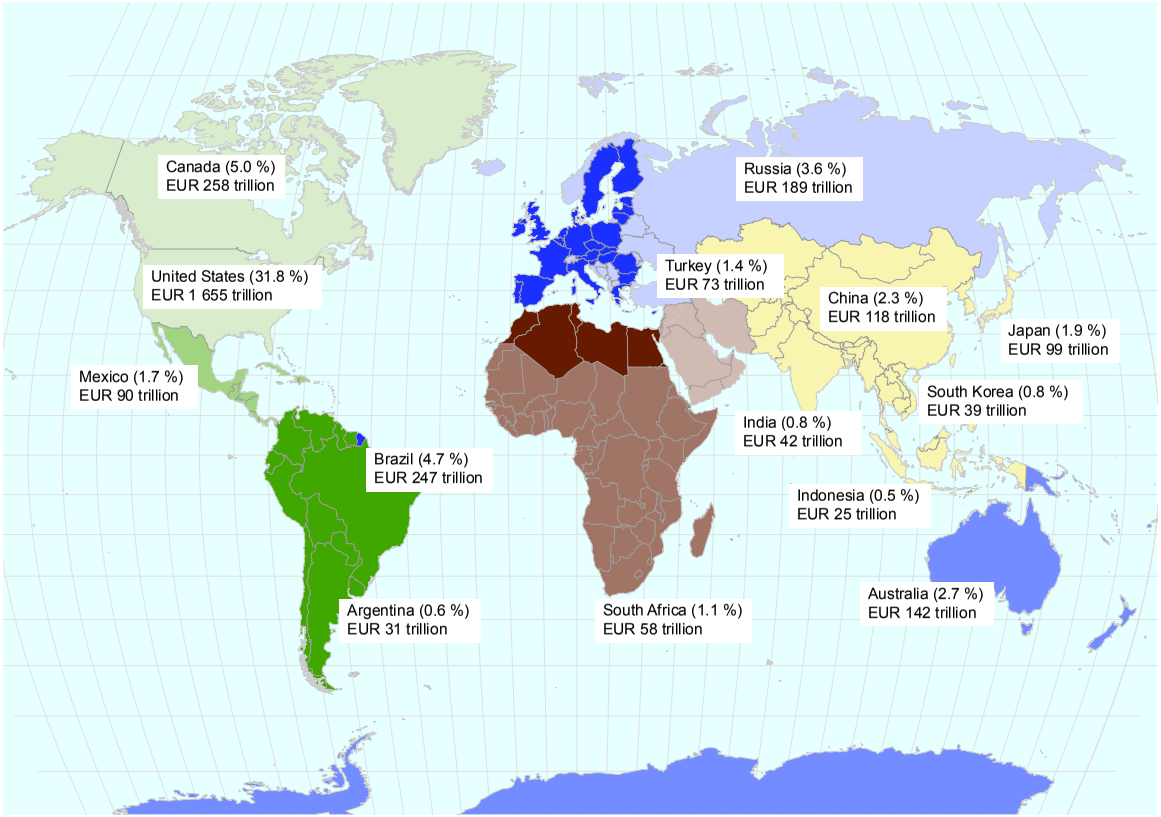
(% of extra-EU-28 total)



(1) Provisional. Ranked on the average of outflows and inflows.

Source: Eurostat (online data code: bop_fdi_main)

Map 6.1: Outward stocks of FDI, EU-27, end 2012 (1)



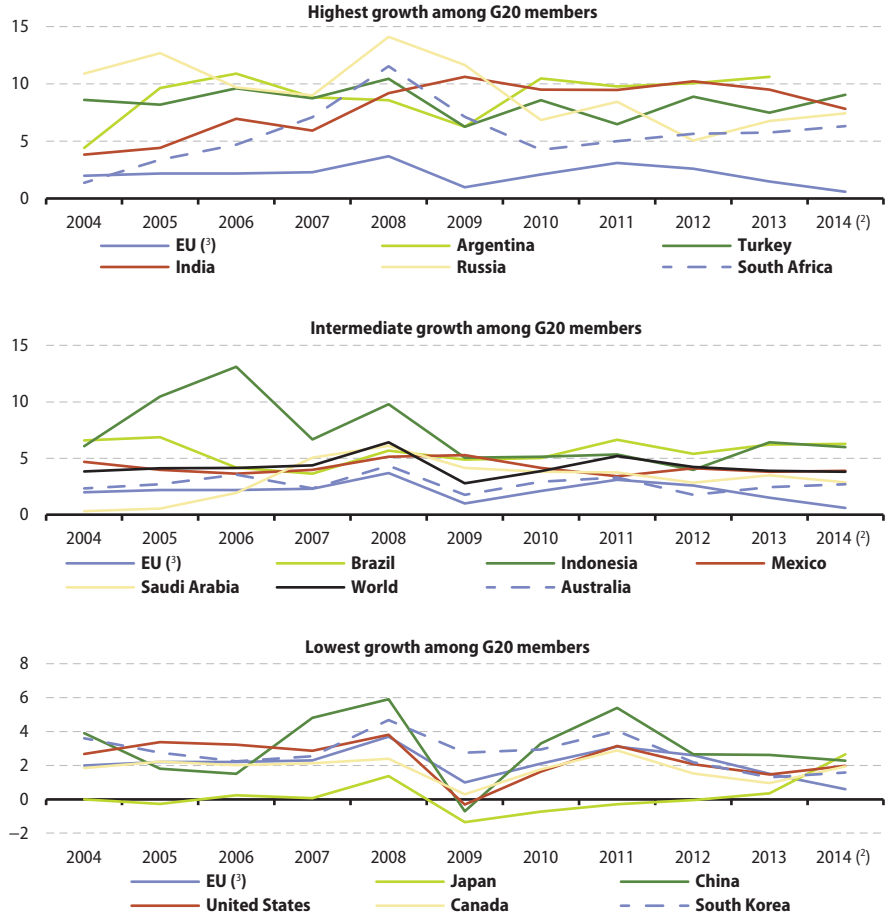
(1) Saudi Arabia: not available.

Source: Eurostat (online data code: bop_fdi_main)

Figure 6.10 shows the annual rate of change in consumer price indices (CPIs) between 2004 and 2014 for the G20 members and the world. Consumer price indices indicate the change over time in the prices of consumer goods and services acquired, used or paid for by households. They aim to cover the whole set of goods and services consumed within the territory of a country by the population. The worldwide inflation rate increased between 2004 and 2008 (to peak at 6.4 %) before dropping sharply during the global financial

Figure 6.10: Consumer price indices, 2004–14 (1)

(annual change, %)



(1) Note the differences in the range of the y-axes between the different parts of the figure. The EU series is shown in all three parts of the figure for the purpose of comparison.

(2) Estimates apart from EU.

(3) The data refer to the official EU aggregate, its country coverage changes in line with the addition of new EU Member States and integrates them using a chain-linked index formula.

Source: Eurostat (online data code: prc_hicp_aind) and the International Monetary Fund (World Economic Outlook database)

and economic crisis. Inflation increased again to peak at 5.2 % in 2011 before declining to finish in 2014 at the same rate (3.8 %) as it had been 10 years earlier. For several years during this period Japan recorded negative annual inflation rates, indicating falling consumer prices (deflation), a situation that was mirrored in China and the United States in 2009 during the financial and economic crisis. Between 2004 and 2014, high price increases were recorded in Russia and Argentina, and to a lesser extent in Turkey, India and Indonesia. The average inflation rate was particularly high in Russia in 2008 (14.1 %) and in Indonesia in 2006 (13.1 %). By contrast, the EU recorded relatively low inflation rates between 2004 and 2014 (2.1 %), with only Canada (1.8 %) and Japan (0.2 %) recording averages that were lower.

In 2014, inflation rates among the G20 members ranged from a low of 0.6 % in the EU-28 to 7.8 % in India with Turkey's 9.0 % rate above this range. 2014 data are not available for Argentina, but in 2013 the inflation rate was 10.6 %.

Central bank short-term interest rates varied greatly between the G20 members in 2013, but to a somewhat lesser extent than they had done 10 years earlier. Rates were below 1.0 % in the euro area and in the United Kingdom and were 1.30 % in Japan. Elsewhere, rates ranged from 3.00 % in Canada to 11.66 % in Indonesia, with the rates in Argentina (17.15 %) and Brazil (27.39 %) exceeding this range. In nearly all G20 members interest rates were lower in 2013 than they had been in 2003, with the exception of China where the rate rose 0.69 percentage points to 6.00 %. By far the largest fall in interest rates during this period was in Brazil.

Among the G20 members, the pesos in Argentina and Mexico devalued the most between 2003 and 2013 relative to the euro (see Table 6.2). By contrast, the Australian and Canadian dollars, Brazilian real, Chinese renminbi and Japanese yen appreciated relative to the euro during this 10-year period. Relative to the United States dollar, the euro and the South Korean won also appreciated in value between 2003 and 2013, the value of the euro being 15 % higher in 2013 than it had been in 2003.

Table 6.6.2: Interest and exchange rates, 2003 and 2013

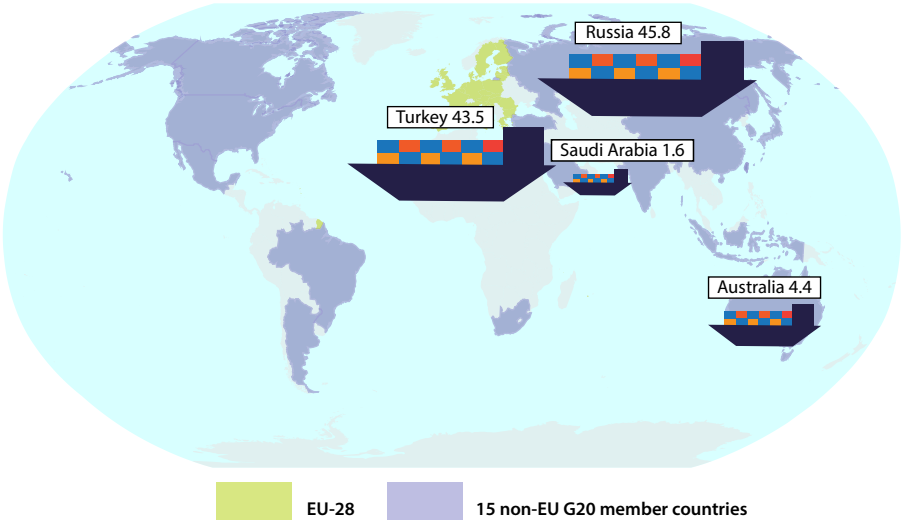
	Central bank: short-term official lending rates (%)		Exchange rates (1 EUR = … national currency)		Exchange rates (1 USD = … national currency)	
	2003	2013	2003	2013	2003	2013
EA (1)	2.00	0.25	1.0000	1.0000	0.8860	0.7532
United Kingdom	3.69	0.50	0.6920	0.8493	0.6125	0.6397
Argentina	19.15	17.15	3.3358	7.2743	2.9006	5.4594
Australia	8.41	6.18	1.7379	1.3777	1.5419	1.0358
Brazil	67.08	27.39	3.4701	2.8687	3.0775	2.1561
Canada	4.69	3.00	1.5817	1.3684	1.4011	1.0298
China	5.31	6.00	9.3626	8.1646	8.2770	6.1958
India	11.46	10.29	52.610	77.930	46.583	58.598
Indonesia	16.94	11.66	9 685.5	13 857.5	8 577.1	10 461.2
Japan	1.82	1.30	130.97	129.66	115.93	97.60
Mexico	7.02	4.25	12.214	16.964	10.789	12.772
Russia	12.98	9.47	34.670	42.337	30.692	31.837
Saudi Arabia	:	:	:	:	3.7500	3.7500
South Africa	14.96	8.50	8.5317	12.8330	7.5647	9.6551
South Korea	6.24	4.64	1 346.9	1 453.9	1 191.6	1 094.9
Turkey	:	:	1.6949	2.5335	1.5009	1.9038
United States	4.12	3.25	1.1312	1.3281	1.0000	1.0000

(1) Lending rate: refinancing rate; end of year rate. 2003: EA-12. 2013: EA-18.

Source: Eurostat (online data code: ert_bil_eur_a), European Central Bank and the World Bank (World Development Indicators)

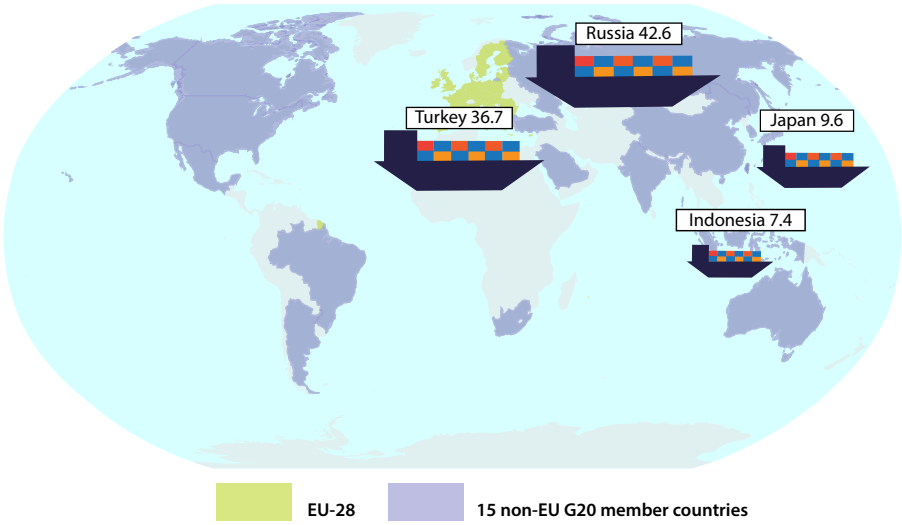
7 International trade

Share of EU-28 as the destination of exports of goods by G20 partners
(% share of all exports)



For more information see Figure 7.3 on page 92.

Share of EU-28 as the origin of imports of goods by G20 partners
(% share of all imports)



For more information see Figure 7.4 on page 92.

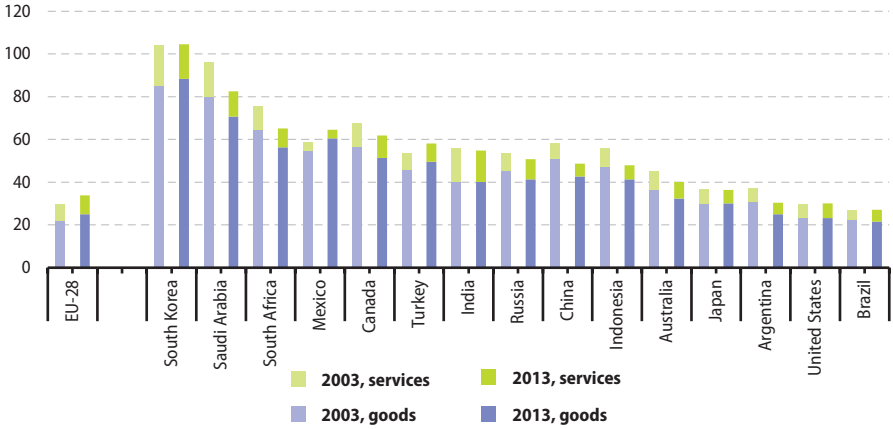
Introduction

There are two main sources of international trade statistics: the first is balance of payments statistics which register all the transactions of an economy with the rest of the world: the second is international trade in goods which provides detailed information on the value and quantity of international trade. The current account of the balance of payments provides information on international transactions in goods and services, as well as income (from employment and investment) and current transfers. For all these transactions, the balance of payments registers the value of credits and debits. A credit is an inflow in relation to the provision of goods, services, income and current transfers and is similar to an export. A debit is an outflow made for the acquisition of goods, services, income and current transfers and is similar to an import.

Main findings

The level of international trade relative to overall economic activity (the ratio of traded goods and services to GDP) may be expected to be considerably higher for relatively small countries that are more integrated in the global economy as a result of not producing a full range of goods and services, as can be seen, for example, with Saudi Arabia and South Korea in Figure 7.1. By contrast, the United States reported the second lowest ratio of international trade (shown here as the sum of exports and imports of goods and services) to GDP (30.0 %) in 2013 among the G20 members, higher only than that in Brazil (27.0 %). While trade in goods dominates international trade, trade in services has grown strongly: trade in services was equivalent to 14.6 % of GDP in India and reached 16.2 % of GDP in South Korea.

Figure 7.1: Trade integration, 2003 and 2013 (1)
(% of GDP)



(1) Sum of imports and exports relative to GDP (based on balance of payments data). EU-28: extra-EU flows. Other countries: flows with the rest of the world.

Source: Eurostat (online data codes: bop_q_eu and nama_10_gdp) and the World Bank (World Development Indicators)

Comparing 2008 with 2013, the ratio of trade in goods and services to GDP increased notably in Mexico, Turkey and the EU-28 and to a smaller extent in South Korea and the United States. Elsewhere this ratio fell, with China, South Africa and Saudi Arabia reporting the largest falls, reflecting faster growth in GDP than in trade between these two years.

Relative to GDP, Saudi Arabia recorded by far the largest international trade surplus (goods and services combined) in 2013 among the G20 members, its large surplus in goods outweighing its deficit in services by an amount equivalent to 21.1 % of GDP (see Table 7.1). Russia (5.9 % of GDP) and South Korea (5.6 % of GDP) recorded the next largest trade surpluses, followed by China, the EU-28 and Argentina; the EU-28 recorded a surplus for both goods and services. At the other end of the scale, Turkey's large goods deficit outweighed its smaller surplus for services to produce a total deficit equivalent to 6.9 % of GDP, larger in relative terms than that for India (−4.9 %).

Table 7.1: Trade in goods and services, 2013 (1)

(% of GDP)

	Goods			Services		
	Credits	Debits	Balance	Credits	Debits	Balance
EU-28	12.6	12.4	0.2	5.1	3.8	1.3
Argentina	13.4	11.6	1.8	2.3	3.0	−0.7
Australia	16.3	16.0	0.3	3.4	4.3	−0.9
Brazil	10.8	10.7	0.1	1.7	3.8	−2.1
Canada	25.5	25.9	−0.4	4.6	5.9	−1.3
China	23.2	19.4	3.8	2.3	3.6	−1.3
India	17.0	23.1	−6.1	7.9	6.7	1.2
Indonesia	21.0	20.3	0.7	2.6	4.0	−1.4
Japan	14.1	15.9	−1.8	2.8	3.5	−0.7
Mexico	30.2	30.3	−0.1	1.6	2.5	−1.0
Russia	25.0	16.3	8.7	3.3	6.1	−2.8
Saudi Arabia	50.2	20.5	29.8	1.6	10.2	−8.7
South Africa	27.1	29.3	−2.2	4.0	4.7	−0.6
South Korea	47.3	41.1	6.2	7.8	8.4	−0.6
Turkey	19.9	29.6	−9.7	5.7	2.9	2.8
United States	9.5	13.7	−4.2	4.1	2.8	1.3

(1) EU-28: extra-EU flows. Other countries: flows with the rest of the world.

Source: Eurostat (online data codes: bop_q_eu and nama_10_gdp) and the World Bank (World Development Indicators)

The EU-28 ran a trade surplus for goods equal to EUR 54.6 billion in 2013. Table 7.2 shows the flows and balance of trade in goods for the EU-28 with the other G20 members. In 2013, the EU-28 had relatively large trade deficits with China and Russia, while its largest surplus was with the United States. Between 2003 and 2013, the EU-28's trade balance for goods with Argentina, Brazil, South Africa and South Korea developed from a deficit into a surplus, whereas this situation was reversed with India. During the same period, the EU-28's trade deficit for goods with Russia and China increased substantially, more than doubling, while the deficits with Japan and Indonesia contracted. The EU-28's trade surplus for goods with Turkey, Saudi Arabia, Australia, the United States and Mexico increased between 2003 and 2013, while that with Canada contracted.

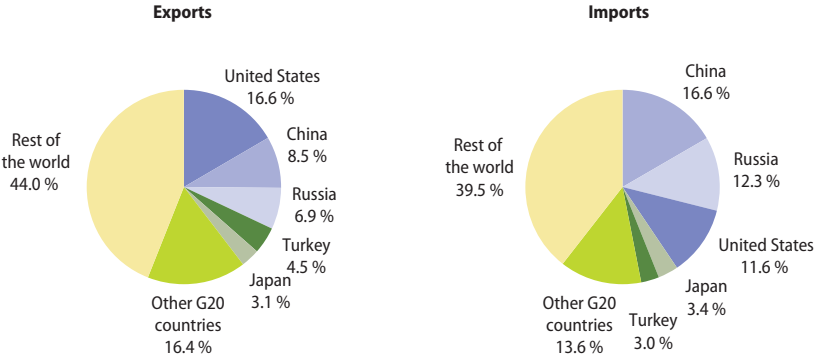
Table 7.2: EU-28 trade in goods by partner, 2003 and 2013
(EUR million)

	2003			2013		
	EU-28 exports to partner	EU-28 imports from partner	Balance	EU-28 exports to partner	EU-28 imports from partner	Balance
Argentina	2 687	6 358	−3 671	10 004	8 144	1 860
Australia	17 532	9 043	8 489	32 096	10 170	21 926
Brazil	12 399	19 212	−6 813	40 057	33 028	7 028
Canada	21 588	15 997	5 591	31 629	27 248	4 381
China	41 477	106 579	−65 102	148 269	280 055	−131 786
India	14 579	14 104	475	35 872	36 799	−928
Indonesia	4 236	10 576	−6 341	9 712	14 391	−4 680
Japan	41 040	72 607	−31 567	54 040	56 530	−2 490
Mexico	14 398	6 554	7 844	27 429	17 534	9 894
Russia	37 270	71 283	−34 013	119 775	206 478	−86 702
Saudi Arabia	13 661	12 997	665	33 684	30 183	3 501
South Africa	13 594	15 073	−1 479	24 488	15 541	8 947
South Korea	16 450	26 144	−9 693	39 970	35 840	4 130
Turkey	30 870	27 367	3 504	77 750	50 383	27 366
United States	227 427	158 449	68 978	288 239	195 989	92 250
World (extra-EU-28)	861 931	935 282	−73 351	1 737 022	1 682 390	54 632

Source: Eurostat (online data code: ext_lt_maineu)

Figure 7.2 analyses the importance of the other G20 members for the EU-28's trade in goods. Close to three fifths (56.0 %) of all EU-28 exports of goods in 2013 were destined for G20 members, most notably the United States (16.6 % share), China (8.5 %) and Russia (6.9 %). The EU-28's main export market outside of the G20 was Switzerland which was the destination for 9.8 % of the EU-28's exports. Collectively, the G20 members provided just over three fifths (60.5 %) of the EU-28's imports of goods, with China (16.6 %), Russia (12.3 %) and the United States (11.6 %) the main origins; Switzerland (5.6 %) and Norway (5.4 %) provided similar shares of the EU-28's imports.

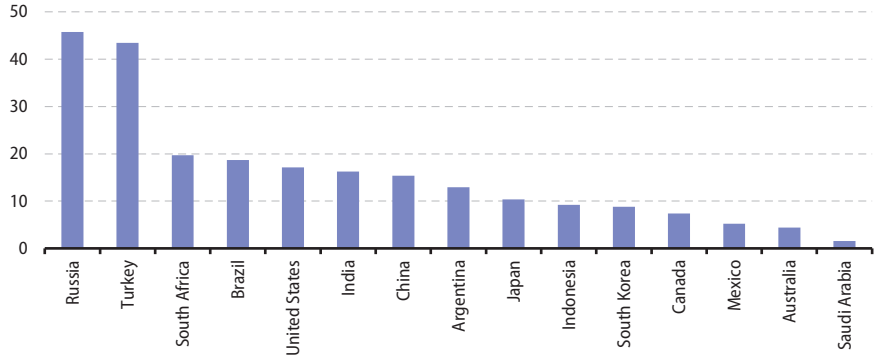
Figure 7.2: Share of G20 trading partners for EU-28 exports and imports of goods, 2013
(% share of extra-EU-28 exports and imports)



Source: Eurostat (online data code: ext_lt_maineu)

Figures 7.3 and 7.4 show the reverse situation, namely the importance of the EU-28 as a trading partner for the other G20 members in terms of international trade in goods; data are available for either 2013 or 2014. Some 46 % of all goods exported from Russia were destined for the EU-28, whereas this was the case for less than one tenth of the goods exported from Indonesia, South Korea, Canada, Mexico, Australia or Saudi Arabia. The EU-28 was the source of more than one fifth of all goods imported into Brazil, Saudi Arabia, South Africa and Turkey and more than two fifths of goods imported into Russia; the EU-28 supplied less than one tenth of all goods imported into Japan and Indonesia.

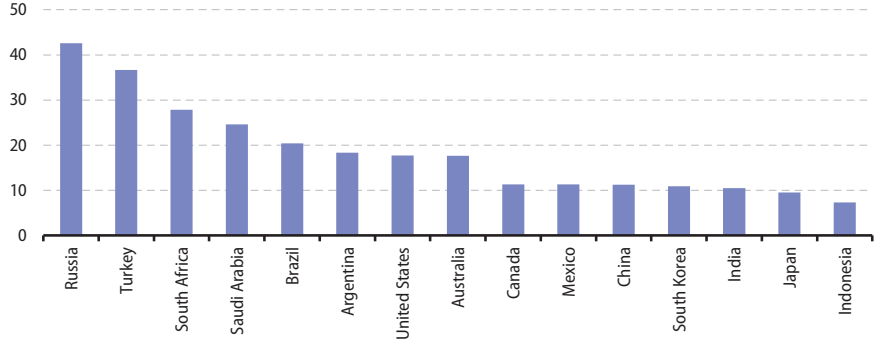
Figure 7.3: Share of EU-28 as the destination of exports of goods by G20 partners (1)
(% share of all exports)



(1) Australia, Brazil, Canada, India, Japan, South Africa, Turkey and the United States: 2014. Argentina, China, Indonesia, Mexico, Russia, Saudi Arabia and South Korea: 2013.

Source: the United Nations (Comtrade)

Figure 7.4: Share of EU-28 as the origin of imports of goods by G20 partners (1)
(% share of all imports)



(1) Australia, Brazil, Canada, India, Japan, South Africa, Turkey and the United States: 2014. Argentina, China, Indonesia, Mexico, Russia, Saudi Arabia and South Korea: 2013.

Source: the United Nations (Comtrade)

The EU-28 was the world's largest exporter and importer of services in 2013, with a trade surplus of EUR 173.2 billion. The EU-28 had trade surpluses in services in 2013 with all the G20 members listed in Table 7.3; note that no data are available for those G20 members that are not shown. A relatively high share of the EU-28's trade in services was with the United States, and the exports and imports combined to produce a surplus of EUR 12.4 billion in 2013. The EU-28's trade in services with Russia produced a larger surplus, EUR 14.7 billion. Between 2008 and 2013 the EU's surpluses with all G20 members expanded, most notably with the United States.

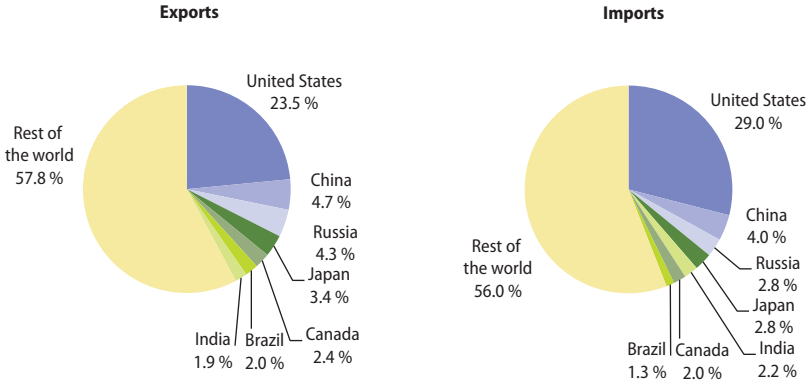
Table 7.3: EU-28 trade in services with selected G20 partner countries, 2008 and 2013
(EUR billion)

	2008			2013		
	EU-28 exports to partner	EU-28 imports from partner	Balance	EU-28 exports to partner	EU-28 imports from partner	Balance
Brazil	10.2	6.4	3.9	*14.0*	*6.4*	*7.7*
Canada	12.2	9.5	2.7	*16.4*	*10.0*	*6.4*
China	20.5	15.3	5.2	*32.4*	*20.7*	*11.7*
India	9.0	8.2	0.8	*12.7*	*11.2*	*1.5*
Japan	19.8	16.5	3.3	*23.3*	*14.1*	*9.2*
Russia	21.8	14.1	7.7	*29.2*	*14.5*	*14.7*
United States	135.2	134.1	1.1	*160.7*	*148.2*	*12.4*
World (extra-EU-28)	526.6	451.3	75.3	*684.4*	*511.2*	*173.2*

Source: Eurostat (online data code: bop_its_ybk)

The analysis of the EU-28's trading partners shown in Figure 7.5 for services can be compared with the similar analysis for goods (see Figure 7.2). The importance of the United States as a trading partner for the EU-28 for services is notably higher than it was for goods, whereas the reverse was true for China and Russia. Among countries outside of the G20, Switzerland was an important partner for trade in services as it was the destination for 12.1 % of the EU-28's exports of services and the origin for 12.2 % of the EU-28's imports in 2013: as a destination for exports this was just below the combined share for Russia, China and Japan, while for imports it was larger than the combined share for the same three G20 members plus India.

Figure 7.5: Selected G20 trading partners for EU-28 exports and imports of services, 2013 (1)
(% share of extra-EU-28 exports and imports)



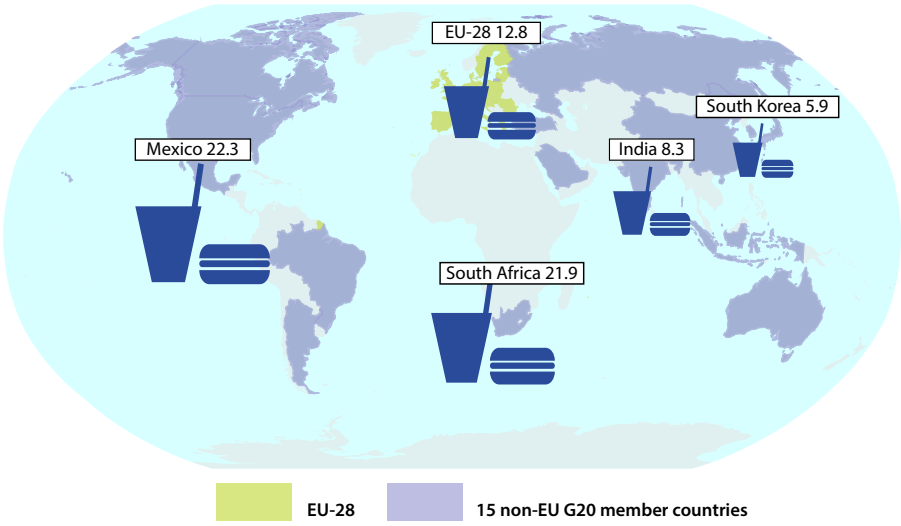
(1) Provisional.

Source: Eurostat (online data code: bop_its_ybk)

Industry, trade and services

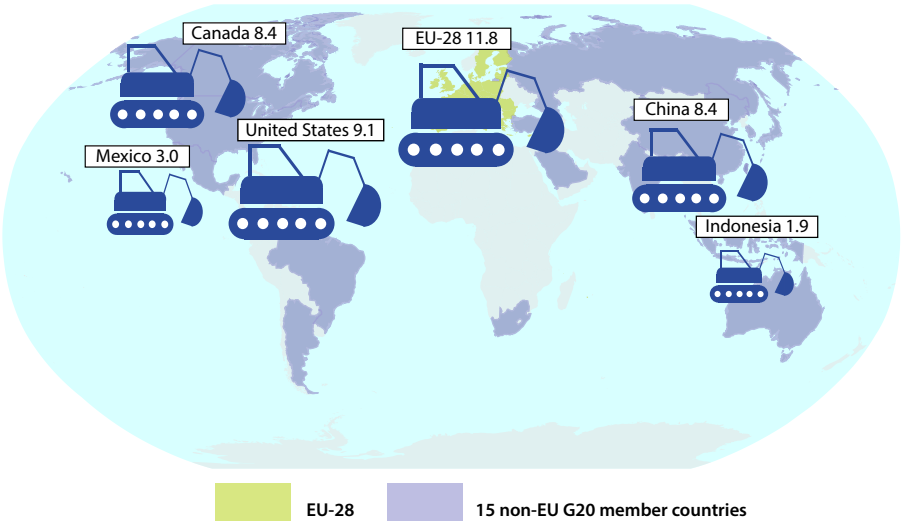
8

Relative importance of food and beverage manufacturing, 2012
(% share of manufacturing)



For more information see Figure 8.3 on page 102.

Relative importance of manufacturing of machinery and equipment n.e.c., 2012
(% share of manufacturing)



For more information see Figure 8.3 on page 102.

Introduction

Industrial activities such as manufacturing are integrated with many service activities such as transport and communications, distribution and business services, which in turn depend on industry to produce the equipment and hardware they use.

Creating a positive climate in which entrepreneurs and businesses can flourish is considered by many as the key to generating growth and jobs; this is all the more important in a globalised economy, where some businesses have considerable flexibility to select where they wish to operate.

The EU is a major tourist destination, with five of its Member States and one of its candidate countries among the world's top 10 destinations for holidaymakers, according to data from the United Nations World Tourism Organisation. Tourism has the potential to contribute towards employment and economic growth, especially in rural, peripheral or less-developed areas.

Main findings

The line graphs presented in Figures 8.1 and 8.2 illustrate developments for the industrial production index and for industrial output prices using key short-term business statistics. The statistics presented here are annual indices but the underlying series are normally monthly or quarterly data which facilitate a rapid assessment of the economic climate. These short-term statistics show developments over time and so may be used to calculate rates of change.

The industrial production index is a business cycle indicator which aims to measure changes in value added at factor cost over a given reference period. It does this by measuring changes in the volume of output and activity at close and regular intervals, usually monthly. As a volume index it has been adjusted to remove price changes.

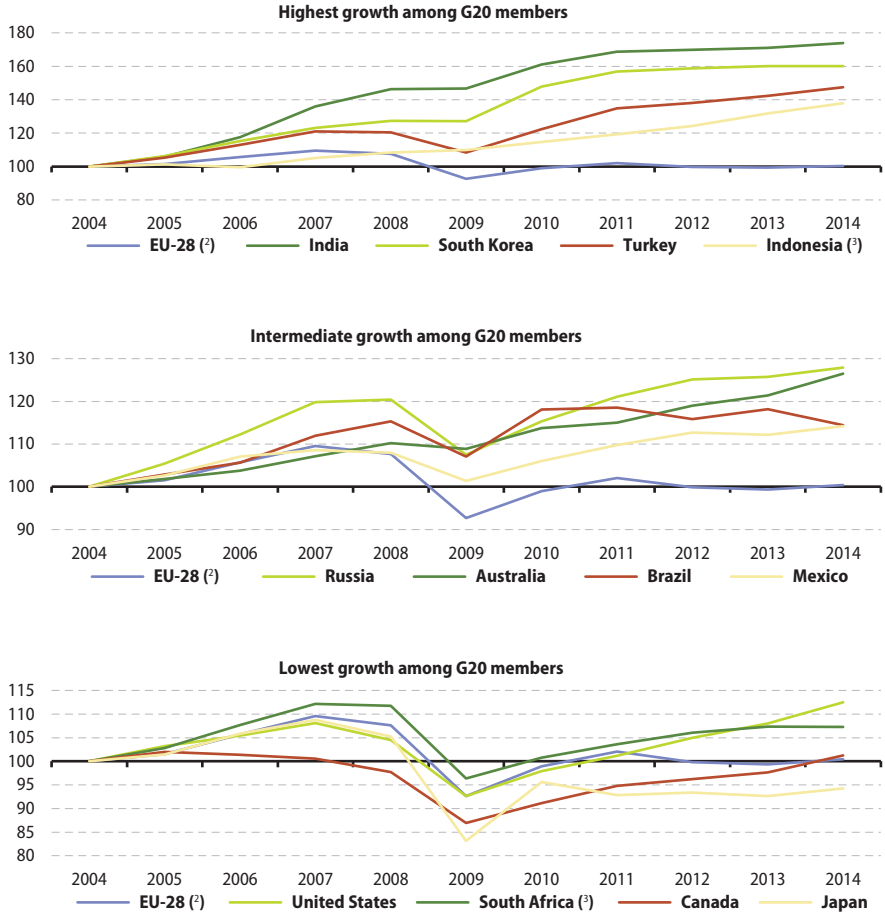
The impact of the global financial and economic crisis on industrial activities and the subsequent recovery can be clearly seen for these two indicators. In the years leading up to the crisis there was growth in industrial output in all G20 members except for Canada. From the second half of 2007, many economies started to experience a contraction in output alongside an acceleration of price growth. Annual rates of change for the industrial production index turned negative for some G20 members in 2008, notably the United States, Japan and the EU-28. In 2009, most of the other G20 members (note that no data are available for Argentina, China or Saudi Arabia) also reported negative rates of change for industrial production, the exceptions being India (0.2 % growth) and Indonesia (1.5 %), while industrial output remained relatively unchanged in South Korea. By 2010, annual rates of change had turned positive for all G20 members, although they were reversed again in Japan in 2011 in part as a consequence of the tsunami in March 2011. Over the following years several of the G20 members once again reported falling industrial activity: Brazil and the EU-28 in 2012; Japan, the EU-28 and Mexico in 2013; Brazil and South Africa in 2014. In all three of the latest years (2012–14) Indonesia reported the highest growth in industrial output among the G20 members.

The crisis was remarkable not just for its global scale, but also for the depth of the downturn, particularly in industrial activities. In 2009, industrial output fell by more than 10 % in Russia, Canada, the United States, South Africa and the EU-28 and by as much as 21.0 % in Japan.

As well as clearly illustrating the impact of the financial and economic crisis, Figure 8.1 shows the contrasting developments of industrial activity across the G20 members and includes the time series for the EU-28 in all three parts of the figure; note that different scales are used on the y-axis for each part of the figure. Rapid industrial growth was apparent in India and South Korea, and to a somewhat lesser extent in Turkey, Indonesia, Russia and Australia. By contrast, industrial output in 2014 in Japan, the EU-28 and South Africa had not returned to the peak levels achieved in 2007. In Japan, industrial output in 2014 remained 13.4 % below its 2007 peak level.

The industrial producer price index (also called the industrial output price index), is a business cycle indicator whose objective is to measure the development of transaction prices of economic activities. The output price index for an economic activity measures the average price development of all goods and related services resulting from that activity.

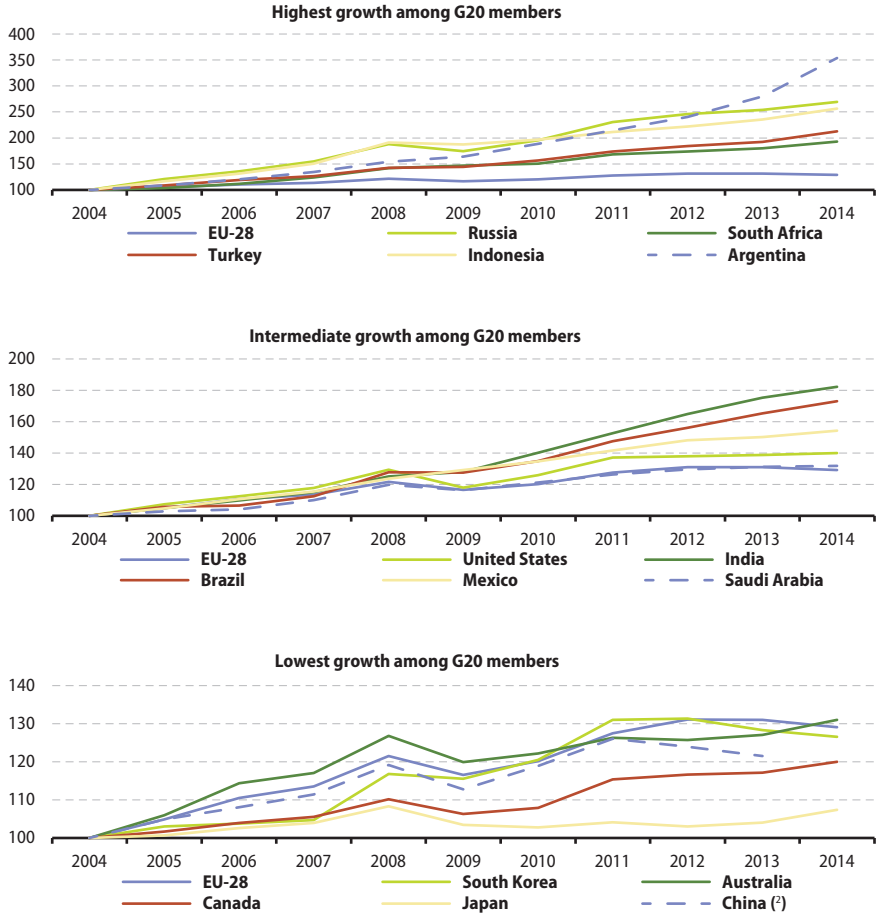
Figure 8.1: Industrial production index, 2004–14 (1)
(2004 = 100)



(1) Note the differences in the range of the y-axes between the different parts of the figure. The EU-28 series is shown in all three figures for the purpose of comparison. Argentina, China and Saudi Arabia: not available. All series rescaled from 2010 = 100 to 2004 = 100.
(2) Estimates.
(3) Data for manufacturing instead of industry.

Source: Eurostat (online data code: sts_inpr_a) and OECD (Main Economic Indicators)

Figure 8.2: Industrial producer price index (domestic), 2004–14 ([1])
(2004 = 100)



([1]) Note the differences in the range of the y-axes between the different parts of the figure. The EU-28 series is shown in all three figures for the purpose of comparison. China: not available. All series rescaled from 2010 = 100 to 2004 = 100.
([2]) Total producer price index.

Source: Eurostat (online data code: sts_inppd_a), the International Monetary Fund (International Financial Statistics) and OECD (Main Economic Indicators)

Industrial output price increases accelerated in the period leading up to the financial and economic crisis, as prices rose in 2008 by more than 10 % in South Korea, Turkey, Brazil, South Africa and Argentina and by more than 20 % in Russia and Indonesia. Often this rapid increase in prices reflected the rising cost of energy, food and other natural resources, as increased demand, particularly from developing countries, outstripped supply. In 2009, many G20 members recorded a fall in output prices, although prices continued to rise in Argentina, Mexico, South Africa, India and Turkey, albeit at a pace that was more modest than that experienced in 2008. The largest falls in output prices in 2009 were recorded in China, Australia, Russia and the United States, where industrial output prices fell by more than 5.0 %.

Nearly all G20 members recorded rising industrial output prices for all years from 2010 through to 2014, although prices fell by somewhat (2.3 % or less) in one or two years in some members: the EU-28 in 2014, Australia in 2012, China in 2012 and 2013, Japan in 2012 and South Korea in 2013 and 2014.

Over the period from 2004 to 2014, industrial output prices more than doubled in Turkey, Indonesia and Russia, while they more than trebled in Argentina equivalent to an annual growth rate of 13.5 %. Despite falling prices in 2009 and 2014, EU-28 industrial output prices increased, on average, by 2.6 % per year between 2004 and 2014, while industrial output prices in Japan rose by an average of just 0.7 % per year.

Structural business statistics (SBS) provide a snapshot of the business economy for a particular year, mainly focused on the level of inputs (such as labour and goods and services) and the level of output, in particular value added. Value added can be calculated as the production value minus intermediate consumption or as the gross operating surplus plus personnel costs. Data are often available at a very detailed level, for several hundred industrial, construction and services activities. The analysis presented in Figure 8.3 focuses on manufacturing divisions: for the EU-28 the dataset used was composed of the 24 manufacturing divisions of the NACE Rev. 2 classification (for the purpose of analysis the divisions for food and beverages have been aggregated), while for the other G20 members the ISIC Rev.3 classification was used which has 23 manufacturing divisions.

The three largest manufacturing activities in the EU-28 in 2012 were the manufacture of food (including also beverages), machinery and equipment not elsewhere classified, and fabricated metal products. Figure 8.3 shows the relative importance of these three activities for each of the G20 members for which data are available.

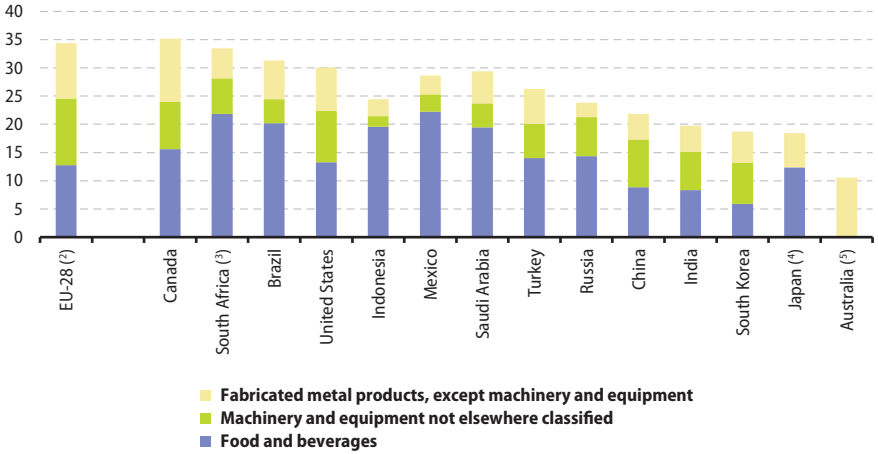
In all of the G20 members except for South Korea, food and beverages was the largest of these three manufacturing activities. In fact, it was the largest of all manufacturing activities in several G20 members, the exceptions being: Russia and the United States where it was the second largest, China where it was the third largest, India and Japan where it was the fourth largest, and South Korea where it was the sixth largest.

Collectively these three activities contributed 34.4 % of manufacturing value added in the EU-28, a share surpassed in Canada (35.2 %). These three activities provided less than one fifth of manufacturing value added in India (19.7 %) and South Korea (18.7 %).

In India and the United States, the largest manufacturing activity was the manufacture of chemicals and chemical products, while in China it was the manufacture of basic metals, in Japan it was the manufacture of motor vehicles, trailers and semi-trailers, in Russia it was fuel processing, and in South Korea it was the manufacture of office, accounting and computing machinery.

Figure 8.3: Relative importance of the EU-28's three largest manufacturing activities (based on value added), 2012 or latest year (1)

(% share of manufacturing)



(1) EU-28 data based on divisions of the NACE Rev. 2 classification. Data for other countries based on divisions of the ISIC Rev.3 classification. EU-28: 2012. Australia, Brazil, Canada, Indonesia and Russia: 2011. India, Japan, Mexico and South Africa: 2010. South Korea and Turkey: 2009. The United States: 2008. China: 2007. Saudi Arabia: 2006. Argentina: not available.
(2) Estimates.
(3) The manufacture of food and beverages includes also tobacco manufacturing.
(4) Machinery and equipment not elsewhere classified: not available.
(5) Machinery and equipment not elsewhere classified and food and beverages: not available.

Reading note: the three largest manufacturing activities in the EU-28 (in terms of value added) are shown in the figure: NACE Rev. 2 Divisions 28, 10 and 25. The bar chart shows the relative importance of these three activities in each of the G20 countries based on ISIC Rev.3: Divisions 29, 15+16 and 28.

Source: Eurostat (online data code: sbs_na_ind_r2) and the United Nations Industrial Development Organisation (Indstat)

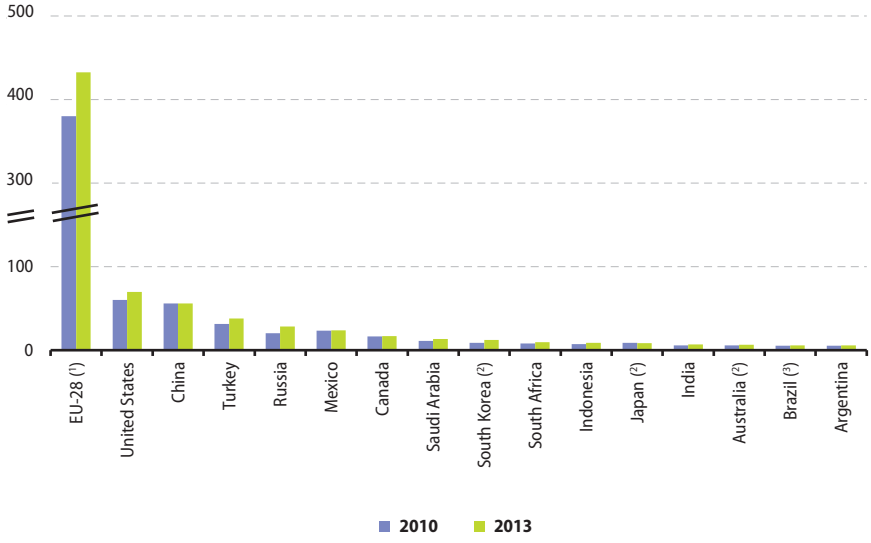
A tourist (also known as an overnight visitor) is a visitor who stays at least one night in collective or private tourist accommodation in a specified geographical area. Tourists include residents (domestic tourists) and non-residents (international tourists).

There were around 1.09 billion international tourist arrivals worldwide in 2013, among which 433 million were in the EU-28 (see Figure 8.4): it should be noted that the EU total includes arrivals in EU Member States of international tourists from other EU Member States. The number of international tourist arrivals in the EU-28 increased by 52.7 million (or 13.9 %) between 2010 and 2013, but the EU-28's share of worldwide tourist arrivals dropped from 40.1 % to 39.8 % over the same period. Apart from Japan, all G20 members reported an increase in their number of tourist arrivals between 2010 and 2013, with Russia and South Korea recording the largest relative increases, both with growth that was close to 40 %.

Tourism is crucial for many countries, offering employment opportunities and a considerable revenue stream; this is particularly true for a number of developing and emerging economies which have been transformed by a vibrant tourism industry. Note that tourism statistics cover business travellers and those who travel for leisure. Equally, it is important to bear in mind that international tourists are classified according to their country of residence, not according to their citizenship. As such, citizens residing abroad who return to their country of citizenship on a temporary visit are included as international tourists.

Figure 8.4: International tourist arrivals at frontiers, 2010 and 2013

(millions)



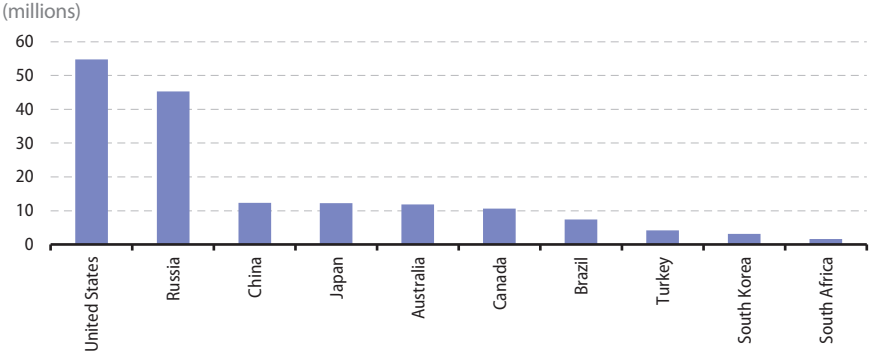
(1) Includes intra-EU arrivals.
(2) Includes same-day visitors.
(3) Data for 2012 instead of 2013.

Source: the United Nations World Tourism Organisation (UNWTO Tourism Highlights — 2014 edition)

Tourist accommodation establishments refer to every type of establishment or dwelling where tourists can be lodged. It covers both collective tourist accommodation establishments (hotels and similar establishments, holiday dwellings, tourist campsites, marinas, health establishments, work and holiday camps, public means of transport and conference centres, and so on) and private tourist accommodation (for example, rented accommodation).

The total number of nights spent in tourist accommodation in the EU-28 from all countries of the world (including nights spent by residents) was 2.6 billion in 2012, of which 2.3 billion (or 87.4 %) were from EU-27 Member States. Around half of the nights spent in tourist accommodation in the EU-28 by tourists from outside the EU-27 were by tourists from the 10 G20 members shown in Figure 8.5; collectively they accounted for 6.3 % of all nights spent

Figure 8.5: Number of nights spent in tourist accommodation by country of origin, EU-28, 2012



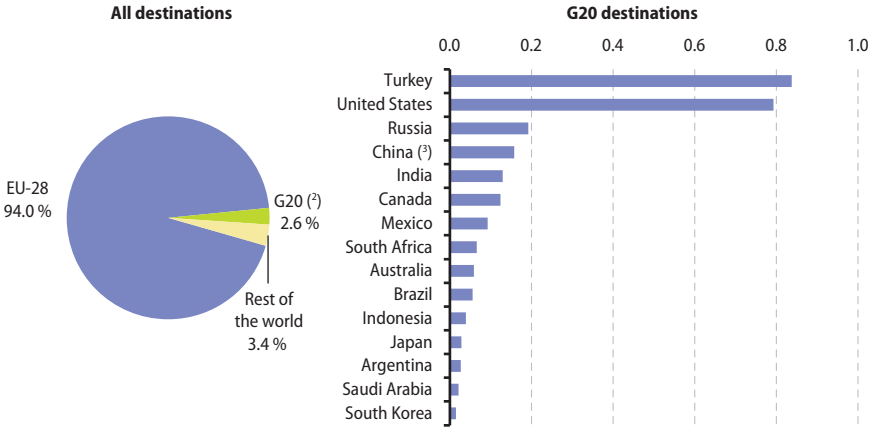
Source: Eurostat (online data code: tour_occ_ninraw)

in tourist accommodation in the EU-28. Tourists from two G20 members made up a large part of this total, as tourists from the United States spent 54.8 million nights in tourist accommodation in the EU-28, while those from Russia spent 45.3 million nights.

Figure 8.6 focuses on the reverse situation, namely trips by EU-28 residents. The total number of trips worldwide by EU-28 residents (excluding trips by Swedish residents) was 1.2 billion in 2012, of which 94.0 % were within the EU-28 itself, 2.6 % in G20 members outside of the EU-28, and 3.4 % in the rest of the world. In 2012, there were two main destinations outside of the EU-28 for EU-28 tourists, Turkey and the United States, each receiving over 9 million trips from EU-28 residents, around 0.8 % of all trips by EU-28 residents.

Data from the balance of payments concerning travel show that the EU-28 had a trade surplus for these services valued at EUR 13.8 billion in 2013 (see Table 8.1), reversing the EUR 16.1 billion deficit recorded five years earlier. In the balance of payments, travel covers primarily the goods and services acquired by (or on behalf of) business and personal travellers (non-residents) during visits of less than one year. Travel does not include international transport (which is part of the transportation heading of balance of payments). The EU-28's travel surplus in 2013 resulted from credits (similar to exports) of EUR 101.4 billion and debits (similar to imports) of EUR 87.5 billion: in both cases this was the second highest level among the G20 members, behind the United States for credits and behind China for debits.

Figure 8.6: Destination of trips made by EU-28 residents, 2012 (1)
(% of all trips)



(1) Excluding trips of Swedish residents.
(2) The G20 members other than those in the EU (Germany, France, Italy and the United Kingdom).
(3) Including Hong Kong.

Source: Eurostat (online data code: tour_dem_ttw)

Among the other G20 members, seven recorded a surplus for travel services in 2013 and eight a deficit. The largest deficits were reported by China, Russia, Brazil and Canada, while the largest surpluses were recorded by the United States and Turkey, both with larger surpluses than that recorded for the EU-28. Between 2008 and 2013, Argentina and China moved from a trade surplus for travel services to a trade deficit. Between these years, India's travel surplus expanded greatly in relative terms, while the surpluses recorded for Indonesia and Australia contracted. Brazil and Russia's travel deficits approximately trebled, while the deficits of Japan and South Korea narrowed.

Table 8.1: Travel services balance of payments, 2008 and 2013
(EUR billion)

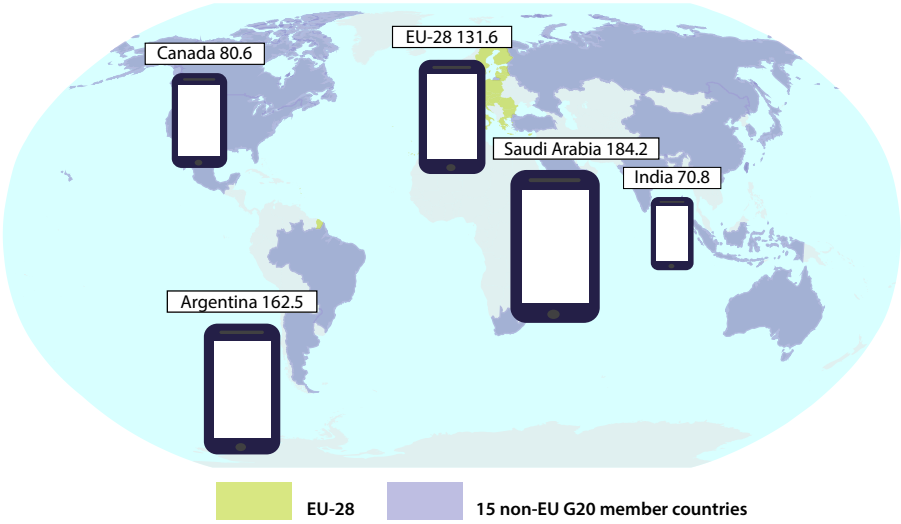
	Credits		Debits		Net	
	2008	2013	2008	2013	2008	2013
EU-28	74.3	101.4	90.4	87.5	−16.1	13.8
Argentina	3.2	3.2	3.1	4.2	0.1	−0.9
Australia	16.3	23.4	13.3	21.4	3.0	2.1
Brazil	3.9	5.0	7.5	18.8	−3.5	−13.8
Canada	10.7	13.3	18.5	26.5	−7.9	−13.2
China	27.8	38.9	24.6	96.8	3.2	−57.9
India	8.0	13.9	6.5	8.7	1.5	5.1
Indonesia	5.0	6.9	3.8	5.8	1.2	1.1
Japan	7.4	11.4	19.0	16.5	−11.6	−5.1
Mexico	9.1	10.5	5.8	6.9	3.3	3.6
Russia	8.1	9.0	15.8	40.2	−7.7	−31.2
Saudi Arabia	4.0	5.8	10.3	13.3	−6.3	−7.5
South Africa	5.4	7.0	3.0	2.6	2.4	4.4
South Korea	6.6	11.0	13.0	16.3	−6.3	−5.3
Turkey	15.9	21.1	2.6	3.6	13.3	17.5
United States	90.9	130.4	62.9	78.8	28.0	51.5

Source: Eurostat (online data code: bop_q_eu) and the International Monetary Fund (Balance of payments and international investment position statistics)

Research and communication

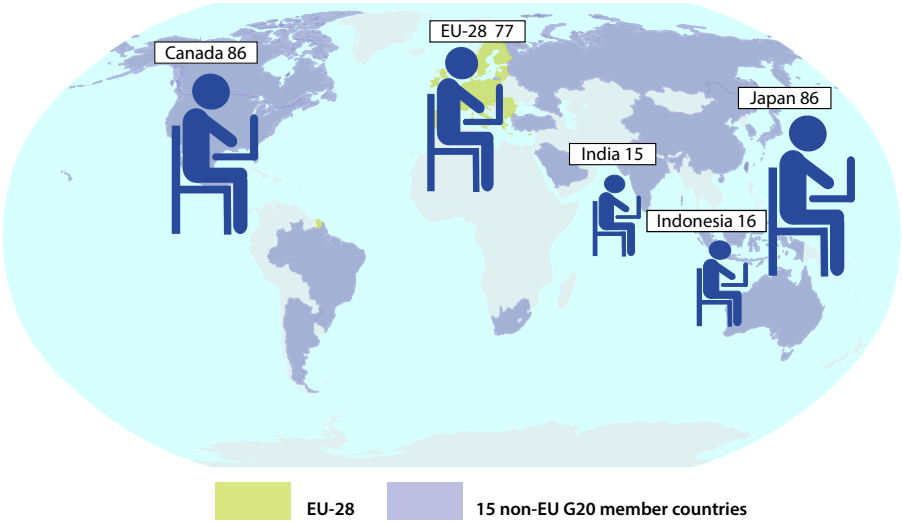
9

Mobile cellular subscriptions, 2013
(per 100 inhabitants)



For more information see Figure 9.8 on page 116.

Individuals using the internet, 2013
(% of total)



For more information see Table 9.1 on page 117.

Introduction

Practical applications of science are integrated in almost every moment of our lives, for example, in household appliances, medicine, and health, transport, communications and entertainment. Research and development (R & D) and innovation underlie such applications and are often considered as some of the primary driving forces behind competitiveness, economic growth and job creation.

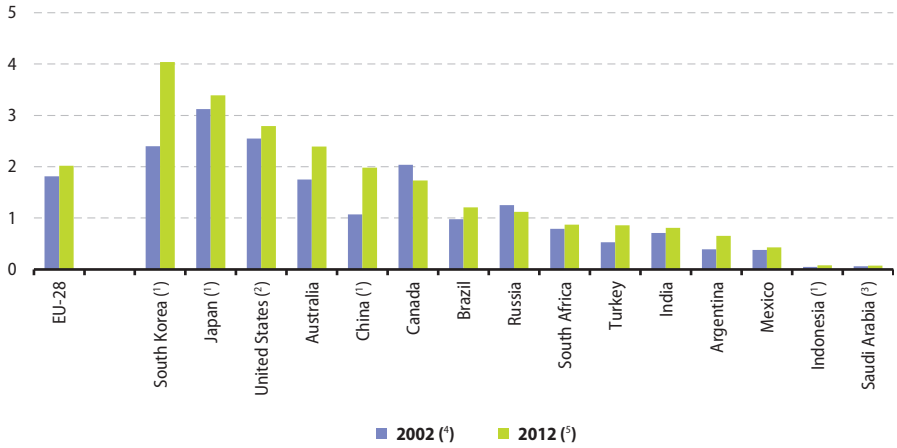
Main findings

R & D includes creative work carried out on a systematic basis in order to increase the stock of knowledge of man, culture and society, and the use of this knowledge to devise new applications. Gross domestic expenditure on research and development (GERD) is a key measure of the level of R & D activity. It includes R & D that is funded from abroad, but excludes payments made abroad.

GERD in the EU-28 was estimated at around EUR 272 billion in 2013. The relation between the level of GERD and gross domestic product (GDP) is known as R & D intensity, and in 2013 it stood at 2.02 % in the EU-28. By far the highest R & D intensity among the G20 members was in South Korea, where GERD was equivalent to 4.04 % of GDP in 2011. The latest data for Japan, the United

Figure 9.1: Gross domestic expenditure on research and development relative to GDP, development in the last decade

(% of GDP)



(1) Break in series.
(2) Excluding most or all capital expenditure.
(3) Partial data.
(4) Saudi Arabia and South Africa: 2003. Indonesia: 2001. EU-28: estimate.
(5) EU-28: 2013. Argentina, Brazil, India, Japan, Mexico, South Korea and Turkey: 2011. Australia: 2010. Indonesia, Saudi Arabia and South Africa: 2009. Includes estimates and provisional data.

Source: Eurostat (online data code: rd_e_gerdtot) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

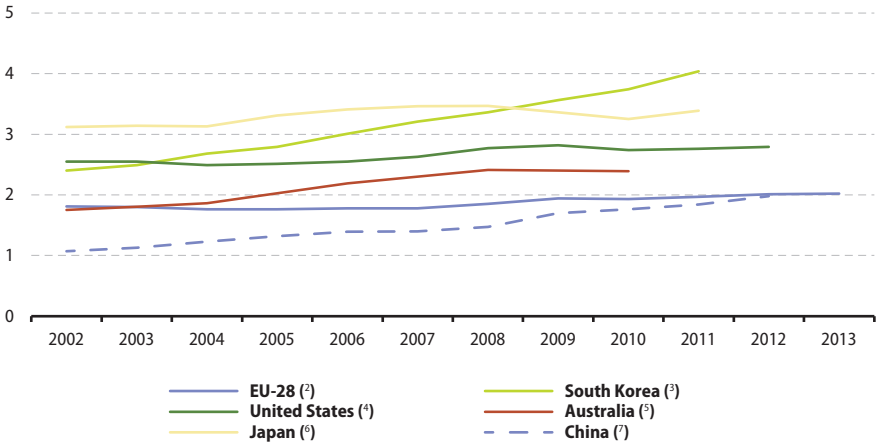
States and Australia shows that they also recorded relatively high R & D intensities, all in the range 3.39 % to 2.39 % while the R & D intensity of China (1.98 %) was somewhat below this level. Saudi Arabia and Indonesia recorded by far the lowest R & D intensities among the G20 members, with GERD of less than 0.10 % of GDP.

R & D intensity was higher in 2012 (or latest year) than in 2002 in nearly all G20 members (see Figure 9.1) — with declines only in Canada and Russia. The largest increase (in percentage point terms) in R & D intensity between the years shown in Figure 9.1 was in South Korea, with relatively large increases also recorded in China and Australia.

Figure 9.2 shows the upward development of R & D intensity in the six G20 members with the highest R & D intensities. The increase in R & D intensity in the EU-28 came mainly in recent years, as this indicator remained relatively unchanged between 2001 and 2007. Alongside the economic downturn during the financial and economic crisis there was an increase in the EU-28's R & D intensity in 2008 and 2009: in 2008 this was due to a 4.5 % increase in GERD outstripping GDP growth, while the fall in GERD (−1.1 %) in 2009 was less than the sizeable contraction of GDP in that year. During the years shown in Figure 9.2, China's R & D intensity increased faster than that of the EU-28 such that by 2012 these were almost the same level.

Figure 9.2: Gross domestic expenditure on research and development relative to GDP, 2002–13 ([1])

(% of GDP)



([1]) Development of R & D intensity over the most recent 10 years in the six G20 members with the highest R & D intensities.
([2]) 2002, 2003 and 2013: estimates.
([3]) 2002–2006: excluding humanities and social sciences.
([4]) Excluding most or all capital expenditure. 2012: provisional.
([5]) Data available for even years only; values shown for odd years are based on linear interpolation between even reference periods. 2010: estimate.
([6]) 2008: break in series.
([7]) 2009: break in series.

Source: Eurostat (online data code: rd_e_gerdtot) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

An alternative analysis of R & D expenditure can be seen in Figure 9.3, namely the level of GERD relative to population size. This indicator provides a very clear distinction between G20 members. The United States, Japan and Australia stand out with GERD per inhabitant close to EUR 1 000. Canada, South Korea and the EU-28 completed the group of G20 members with relatively high GERD per inhabitant, all above EUR 500. Among the other G20 members, only Russia (EUR 122 per inhabitant) and Brazil (EUR 109 per inhabitant) recorded GERD in excess of EUR 100 per inhabitant, while this indicator dropped below EUR 10 per inhabitant in India, Saudi Arabia and Indonesia.

Figure 9.3: Gross domestic expenditure on research and development per inhabitant, development in the last decade

(EUR per inhabitant)

(1) Excluding most or all capital expenditure.
(2) Break in series.
(3) Partial data.
(4) Saudi Arabia and South Africa: 2003. Indonesia: 2001. EU-28: estimate.
(5) EU-28: 2013. Argentina, Brazil, India, Japan, Mexico, South Korea and Turkey: 2011. Australia and South Africa: 2010. Indonesia and Saudi Arabia: 2009. Includes estimates and provisional data.

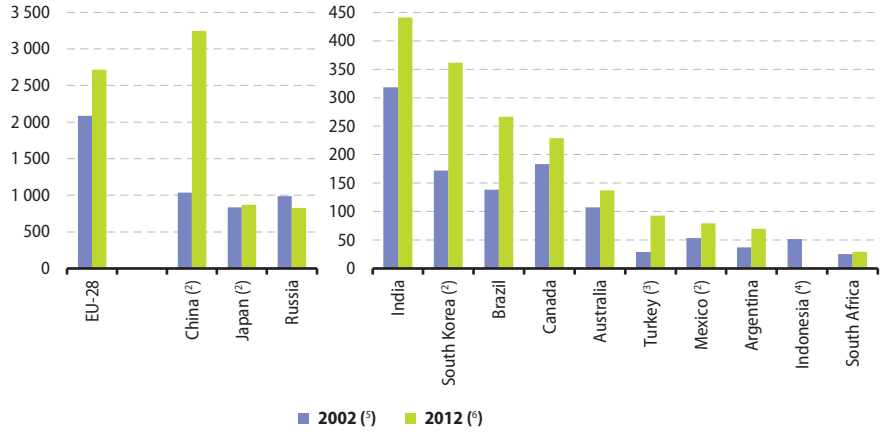
Source: Eurostat (online data code: rd_e_gerdtot) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

R & D personnel include all individuals employed directly in the field of R & D, covering not only researchers, but also technicians and equivalent staff as well as supporting staff (such as managers, administrators and clerical staff).

The number of people working in R & D in the EU-28 — when converted into full-time equivalents — was 2.7 million in 2013. A full-time equivalent is a unit to measure employed persons or students in a way that makes them comparable although they may work or study a different number of hours per week. The unit is obtained by comparing the number of hours worked or studied by a person with the average number of hours of a full-time worker or student. A full-time person is therefore counted as one unit, while a part-time person gets a score in proportion to the hours they work or study. Among the other G20 members with data available (see Figure 9.4), China had the largest R & D workforce, numbering 3.2 million full-time equivalents. The next largest R & D workforces among the other G20 members were in Japan and Russia (both over 800 thousand full-time equivalents).

The number of R & D personnel in China and Turkey more than trebled between the years shown in Figure 9.4, while in South Korea the number more than doubled, and in Brazil and Argentina it nearly doubled. Note the break in series reported for South Korea and China. In the EU-28 the number increased by 30 %, while Russia was the only G20 member to record a fall in its number of R & D personnel during this period.

Figure 9.4: Research and development personnel, development in the last decade ([1])
(thousand full-time equivalents)



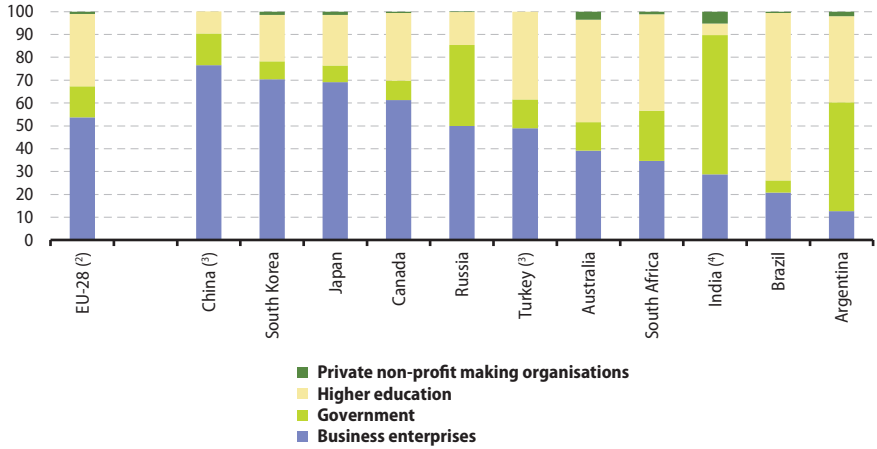
([1]) Saudi Arabia and the United States: not available.
([2]) Break in series.
([3]) Underestimate.
([4]) 2012: not available.
([5]) South Africa: 2003. Indonesia: 2001. India: 2000. EU-28: estimate.
([6]) EU-28: 2013. Argentina, Canada, Japan, Mexico, South Korea and Turkey: 2011. Brazil, India and South Africa: 2010. Australia: 2008. Includes estimates and provisional data.

Source: Eurostat (online data code: rd_p_persocc) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

R & D personnel can be classified to the following sectors: business, government, higher education institutions, and private non-profit organisations. More than half (54 %) of all R & D personnel in the EU-28 were employed in the business enterprise sector, around one third (32 %) in higher education and most of the remainder in the government sector (14 %) — see Figure 9.5 The share of R & D personnel in the business enterprise sector was around 70 % in South Korea and Japan and peaked at 77 % in China. By contrast, less than one third of R & D personnel were in the business enterprise sector in India, Brazil and Argentina. In Brazil, the higher education sector was the dominant employer, with 73 % of the total; in none of the other G20 members did the share of R & D personnel in this sector exceed one half. In India and Argentina the government sector employed a greater share of R & D personnel than any other sector, 61 % and 48 % respectively. The share of R & D personnel in the private non-profit sector was generally small, peaking at 5 % in India and 4 % in Australia.

Figure 9.5: Research and development personnel (1)

(%, based on full-time equivalents)



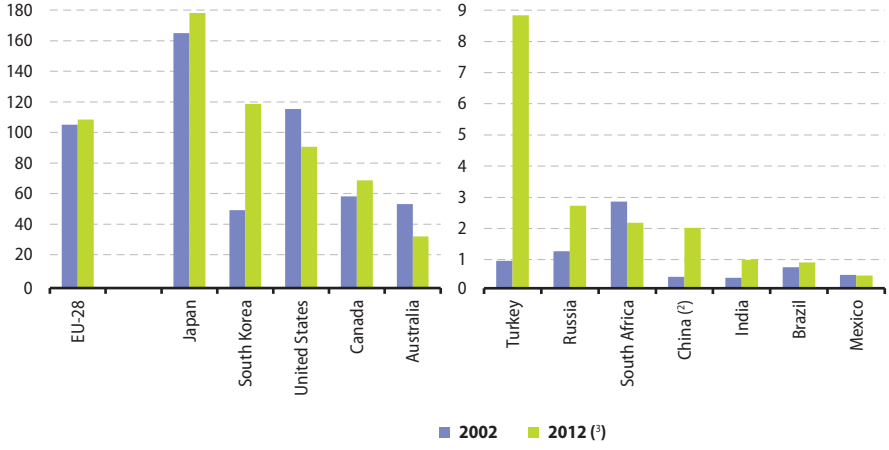
(1) EU-28: 2013. China and Russia: 2012. Argentina, Canada, Japan, South Korea and Turkey: 2011. Brazil, India and South Africa: 2010. Australia: 2008. Indonesia, Mexico, Saudi Arabia and the United States: not available.
(2) Estimates.
(3) Private non-profit making organisations: not available.
(4) Higher education: estimate.

Source: Eurostat (online data code: rd_p_persocc) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

As well as offering protection, patents result in inventions becoming public and can be seen as an important source for providing technical information. A patent application is for an invention, in other words a new solution to a technical problem which satisfies the criteria of novelty, inventiveness (must involve a non-obvious inventive step) and industrial applicability. A patent is an intellectual property right, a public title of industrial property that gives its owner the exclusive right to use their invention in the technical field for a limited number of years.

Statistics for patent applications to the European Patent Office (EPO) (see Figure 9.6) refer to applications filed in a particular year, regardless of whether the patent was granted or not. Patent applications are assigned to a country based on the inventor's place of residence. There is a high propensity to make use of patents in Japan and South Korea within their national economies and further afield. Indeed, there were more patent applications per inhabitant to the EPO made from Japan and South Korea than there were from within the EU-28. Relative to population, the number of patent applications to the EPO increased between 2002 and 2012 in percentage terms most strongly in Turkey and China (between 2002 and 2008), although the numbers remained low. Among the G20 members with a relatively high number of patent applications per inhabitant, the strongest increase between these years was observed for South Korea, while the strongest decreases were in Australia and the United States.

Figure 9.6: Patent applications to the European patent office, 2002 and 2012 (1)
(per million inhabitants)



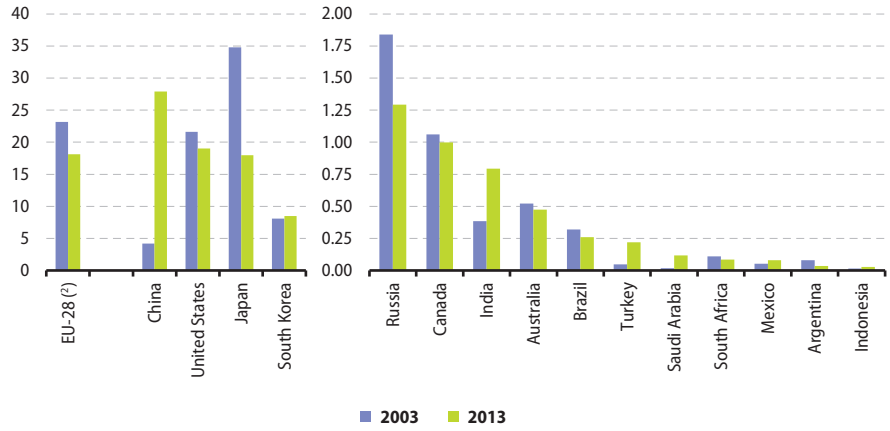
(1) Argentina, Indonesia and Saudi Arabia: not available.
(2) 2008 instead of 2012.
(3) Estimates.

Source: Eurostat (online data code: pat_ep_ntot)

The UN's World Intellectual Property Organisation (WIPO) provides statistics on global patent applications (not just those to the EPO) and estimates that around 2.6 million patent applications were made in 2013. China's share of global patent applications increased between 2003 and 2013 by 23.7 percentage points to move from fifth highest among the G20 members to the top of the ranking (see Figure 9.7), displacing Japan in 2012. Among the other G20 members with relatively large shares only South Korea also recorded an increase (of 0.4 percentage points) to reach 8.5 %. Japan's share of global patent applications fell between 2003 and 2013 by 16.8 percentage points, while the share of the EU-28 (−5.0 %), the United States (−2.6 %) and Russia (−0.5 %) also contracted. As a result, the United States moved from having the third largest share of global patent applications in 2003 to the second largest in 2013, while the EU-28 moved from second to third place and Japan from first to fourth place.

Figure 9.7: Share of world patent applications, 2003 and 2013 (1)

(%)



(1) Estimates. Country of origin based on the residence of the applicant.
(2) Sum of data for the 28 EU Member States.

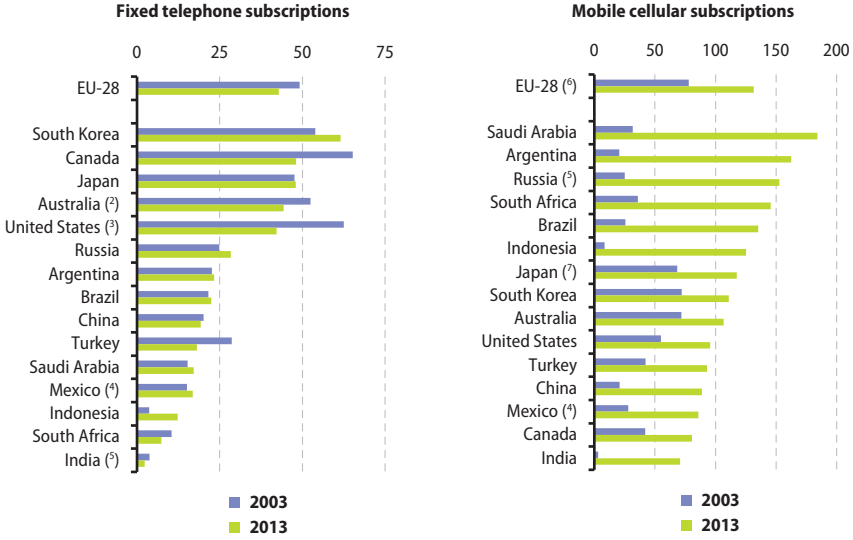
Source: the World Intellectual Property Organisation (WIPO Statistics Database)

Telecommunication networks and services are the backbone of the information society. Individuals, enterprises and public organisations alike depend increasingly on convenient, reliable and high-speed telecommunication networks and services. During recent years a shift in the importance of various services can be noted, from wired to wireless networks and from voice to data services.

The number of fixed telephone subscriptions relative to the size of the population increased between 2003 and 2013 in half of the G20 members shown in Figure 9.8 and fell in the other half. The largest increases were recorded in South Korea and Indonesia, while the largest decreases were in the United States and Canada, and to a lesser extent in Turkey, Australia and the EU-28.

A mobile phone subscription refers to the use of public mobile telecommunication systems (also called mobiles or cellphones) using cellular technology. Active pre-paid cards are treated as subscriptions and people may have more than one subscription. In all G20 members, the number of mobile subscriptions relative to population size increased between 2003 and 2013 — suggesting that markets are not yet saturated — with Saudi Arabia and Argentina experiencing the strongest absolute growth to top the rankings with more than 160 subscriptions per 100 inhabitants by

Figure 9.8: Telephone subscriptions, 2003 and 2013 (1)
(per 100 inhabitants)



(1) Note the range for the x-axes is different for the two individual figures.
(2) 2003: excludes ISDN. 2013: includes payphones, excludes VOIP.
(3) 2003: local loops.
(4) 2013: preliminary.
(5) Break in series.
(6) 2003: EU-27.
(7) Including Personal Handyphone System (PHS). 2013: including data cards.

Source: Eurostat (online data codes: isoc_tc_ac2, isoc_tc_mcsupe and isoc_tc_ftteli) and the International Telecommunication Union

2013. Despite massive growth in percentage terms, India had the lowest number of mobile subscriptions relative to its population size in 2013, as was the case in 2003. By 2013, all of the G20 members registered at least 70 mobile subscriptions per 100 inhabitants, with more than half registering more subscriptions than inhabitants (indicating that some users had more than one subscription).

Table 9.1 shows that there was also widespread growth between 2003 and 2013 in the use of the internet, even among G20 members with already high usage in 2003. By 2013, Japan, Canada, South Korea, the United States and Australia topped the ranking of internet use, with more than four in every five inhabitants online, with the EU-28 just below this level (77 %). By this measure, Indonesia and India had the lowest internet use among G20 members.

Broadband refers to telecommunications in which a wide band of frequencies is available to send data. Broadband telecommunication lines or connections transport data at high speeds. The technologies most widely used for fixed broadband internet access are digital subscriber line (DSL) and its variations (xDSL), or cable modem (connection to a local television line). The number of fixed broadband subscriptions relative to population size was more diverse, with South Korea and Canada exceeding 30 subscriptions per 100 inhabitants and the EU-28 just below this level (29.8 per 100 inhabitants) whereas in Indonesia and India this ratio was below 2 subscriptions per 100 inhabitants. Between 2003 and 2013, all G20 members reported growth in fixed broadband subscriptions, with the strongest growth in absolute terms reported for Australia and the EU-28.

Table 9.1: ICT access and usage by individuals, 2003 and 2013

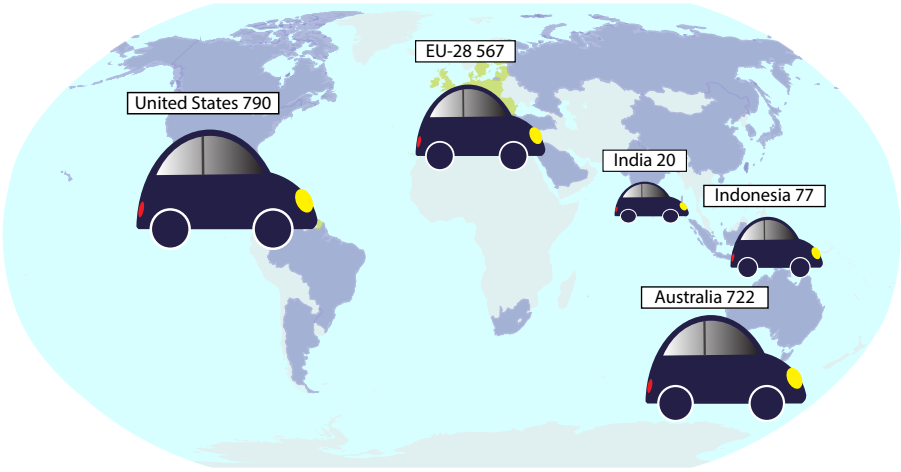
	Individuals using the internet (% of total)		Fixed broadband subscriptions (per 100 inhabitants)	
	2003	2013	2003	2013
EU-28 (1)	47	77	8.2	29.8
Argentina	12	60	0.7	14.4
Australia (2)	63	83	2.6	25.0
Brazil	13	52	0.5	*10.1*
Canada	64	86	14.3	33.2
China (3)	6	46	0.9	13.6
India	2	15	0.0	1.2
Indonesia	2	16	0.0	1.3
Japan (4)	48	86	11.8	28.9
Mexico (5)	13	43	0.4	10.9
Russia (6)	8	61	0.2	16.6
Saudi Arabia	8	61	0.2	7.4
South Africa	7	49	0.0	3.1
South Korea (7)	66	85	24.0	38.0
Turkey (8)	12	46	0.3	11.2
United States	62	84	9.5	*29.3*

(1) Data for EU-27 for 2004 instead of 2003. Use of the internet: persons aged 16 to 74.
(2) Use of the internet: data for 2005 instead of 2003.
(3) Use of the internet, 2013: persons aged 6 or more.
(4) Use of the internet, 2003: PC based only. Use of the internet, 2013: persons aged 15–74.
(5) Use of the internet, 2003: persons aged 6 or more, estimate.
(6) Use of the internet, 2013: persons aged 15–72.
(7) Use of the internet: persons aged 3 or more.
(8) Use of the internet: persons aged 16 to 74.

Source: Eurostat (online data codes: isoc_ci_eu_i and isoc_tc_fbsupe) and the International Telecommunication Union

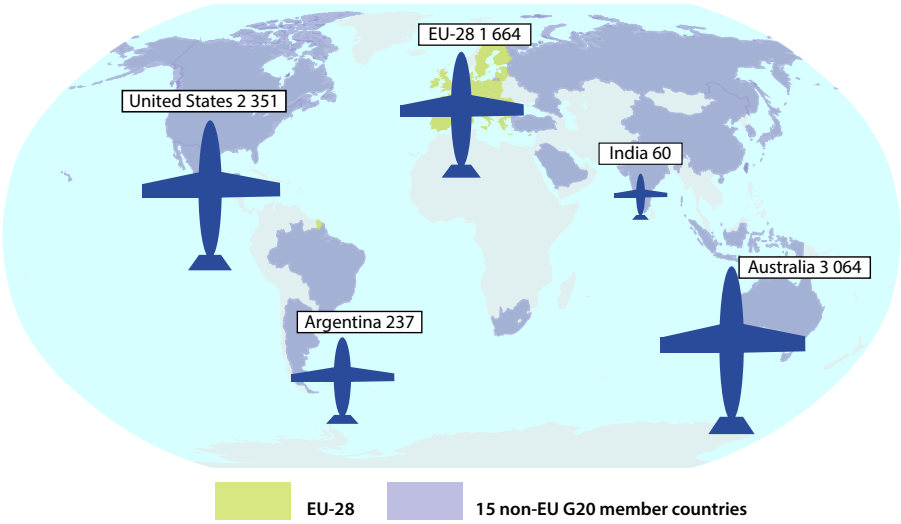
10 Transport

Number of passenger cars relative to population, 2013
(per 1 000 inhabitants)



For more information see Figure 10.3 on page 124.

Number of air passengers carried, 2013
(per 1 000 inhabitants)



For more information see Figure 10.5 on page 126.

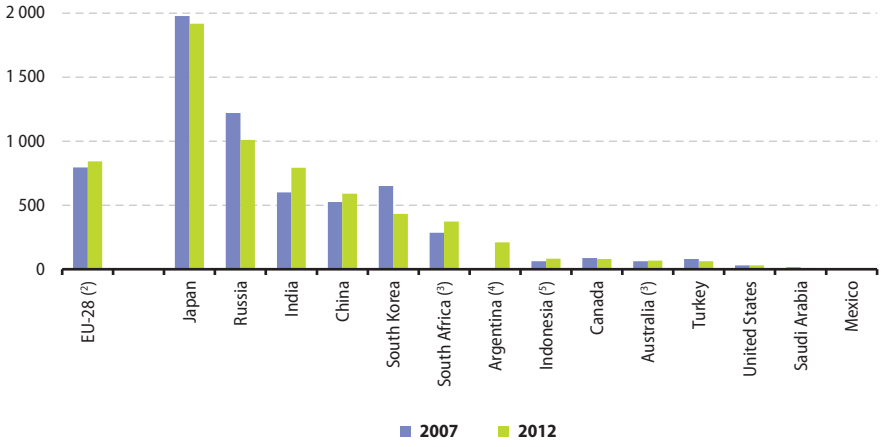
Introduction

An efficient and well-functioning passenger and freight transport system is often viewed as being vital for business and individuals. Some of the key issues related to transport are its environmental impact, efficiency and safety. This chapter presents transport statistics on the quantity of freight and number of passengers that are moved, as well as providing some information on the maritime fleet, the stock of passenger cars, and the largest ports and airports. The level of transport, in particular international transport, can be related to a wide variety of issues, including trade liberalisation, globalisation, higher motorisation rates, and tourism.

Main findings

Concerning the use of rail transport (see Figures 10.1 and 10.2), the G20 members can be split into several groups depending on the extent to which this mode is used for passenger and/or freight transport. Saudi Arabia, Indonesia, Turkey and to a lesser extent Argentina generally had a relatively low use of rail transport. In the United States, Mexico, Canada, Australia and South Africa, rail transport was focused mainly on freight transport, while passenger transport was dominant in Japan, South Korea and India. A relatively high use of rail transport for both freight and passengers was observed in Russia, China and the EU-28.

Figure 10.1: Rail passenger transport, 2007 and 2012 (1)
(passenger-km per inhabitant)



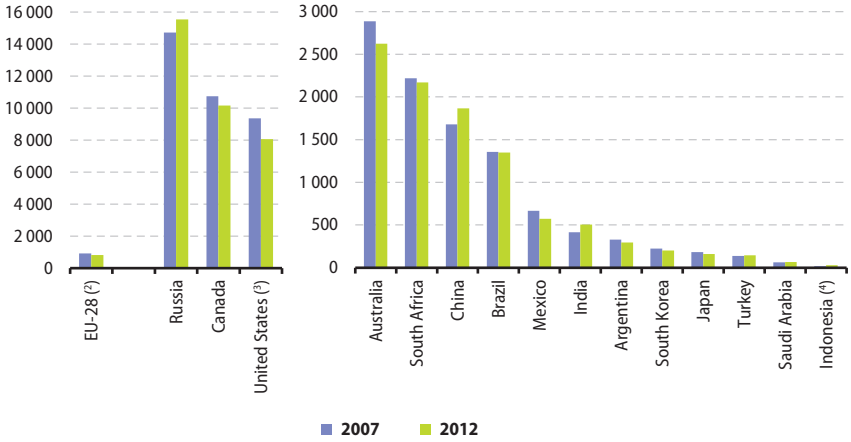
(1) Data for some countries may be limited to International Union of Railways (UIC) members. Brazil: not available.
(2) 2012: estimate including data for 2011 for Belgium, excluding the Netherlands.
(3) Data for 2010 instead of 2012.
(4) 2007: not available.
(5) Data for 2008 instead of 2007.

Source: Eurostat (online data codes: rail_pa_total and demo_gind) and the World Bank (World Development Indicators and Health Nutrition and Population Statistics)

Comparing 2007 with 2012, a particularly large percentage increase in passenger rail services was recorded in Mexico (although the overall level of passenger rail services remained low), with smaller but nevertheless large increases also recorded in Indonesia (between 2008 and 2012), India, South Africa (between 2007 and 2010) and China. Estimates for the EU-28 show a 6 % increase in rail passenger transport per inhabitant.

Relative to the size of the population, rail freight transport in 2012 was smaller than it had been in 2007 in most G20 members, notably in the United States and Mexico where it decreased by 14 %; estimates for the EU-28 show an 11 % fall in rail freight transport per inhabitant between 2007 and 2012. By contrast, rail freight transport increased by 55 % in Indonesia, by 22 % in India and by 11 % in China.

Figure 10.2: Rail freight transport, 2007 and 2012 (1)
(tonne-km per inhabitant)



(1) Data for some countries may be limited to International Union of Railways (UIC) members.
(2) 2012: estimate including data for 2011 for Belgium and Luxembourg.
(3) 2007: refers to class 1 railways only.
(4) Data for 2008 instead of 2007.

Source: Eurostat (online data codes: rail_go_typeall and demo_gind) and the World Bank (World Development Indicators and Health Nutrition and Population Statistics)

The world's maritime fleet (see Table 10.1) increased from 864 million deadweight tonnes (DWT) in 2004 to 1.69 billion DWT in 2014, equivalent to average growth of 7.0 % per year. Deadweight tonnage is the weight measure of a vessel's carrying capacity and includes cargo, fuel and stores. Between 2004 and 2014 the maritime fleets of South Africa, Brazil, Russia, Australia, Argentina and Saudi Arabia contracted, while the other G20 members recorded an expansion, notably in Indonesia, China, South Korea, the EU-28, Mexico and India. The EU-28's maritime fleet grew by 4.1 % per year during this 10-year period and remained the largest among the G20 members in 2014 with 18.5 % of the world total. It should be noted that there are several smaller countries outside of the G20 that accounted for a large share of the world maritime fleet in 2014, notably Panama (21.1 %), Liberia (12.1 %) and the Marshall Islands (9.0 %) — all associated with flags of convenience. In 2012, the world's largest freight port in terms of the quantity of goods handled was Shanghai in China, while the largest in the EU-28 was Rotterdam in the Netherlands. For maritime

freight, goods handled covers goods loaded and unloaded, in other words goods placed on a merchant ship for transport by sea or goods taken off a merchant ship.

The EU plays a leading role in international maritime freight transport and this can be seen from Table 10.2. Just under one fifth (19.5 %) of the goods loaded and unloaded worldwide in 2013 were handled in EU-28 ports. The weight of maritime freight coming into the EU-28 was around 1.5 times the weight of outward freight, reflecting in part the different types of goods entering and leaving the EU-28 by sea.

Table 10.1: Maritime fleet and ports, 2004, 2012 and 2014

	Maritime fleet size (deadweight tonnage, thousand DWT) (1)		Largest port, 2012	
	2004	2014	Name of port and quantity of goods handled (thousand tonnes)	
EU-28	208 577	313 015	Rotterdam	405 260
Argentina (2)	489	466	San Lorenzo-Puerto San Martín	41 541
Australia	2 277	1 913	Port Hedland	288 443
Brazil	5 139	3 165	Tubarão	133 606
Canada (3)	3 124	3 326	Vancouver	123 877
China	26 825	73 892	Shanghai	644 759
India	11 363	15 465	Jawaharlal Nehru (Nhava Sheva)	64 826
Indonesia	4 809	15 004	Kotabaru	44 662
Japan (4)	16 577	20 845	Nagoya	202 556
Mexico	1 252	1 753	Lázaro Cárdenas	30 672
Russia	9 902	6 827	Novorossiysk	83 021
Saudi Arabia	1 962	1 936	Jeddah	62 724
South Africa	107	63	Richards Bay	90 240
South Korea (5)	10 434	17 340	Busan	298 689
Turkey	7 542	9 187	İzmit (Kocaeli)	60 558
United States (3)	11 616	12 479	South Louisiana	228 677
World	863 667	1 691 628	Shanghai	644 759

(1) Deadweight tonnage is the weight measure of a vessel's carrying capacity. It includes cargo, fuel and stores. Data refer to the beginning of the year. Canada and the United States: break in series.
(2) Largest port: 2011.
(3) Break in series.
(4) Largest port: freight tonnes.
(5) Largest port: revenue tonnes.

Source: Eurostat (online data code: mar_mg_aa_pwhd), the United Nations Conference on Trade and Development (Maritime transport indicators), the American association of port authorities (World port rankings) and port authority data

Table 10.2: Maritime freight transport handled, 2004–13

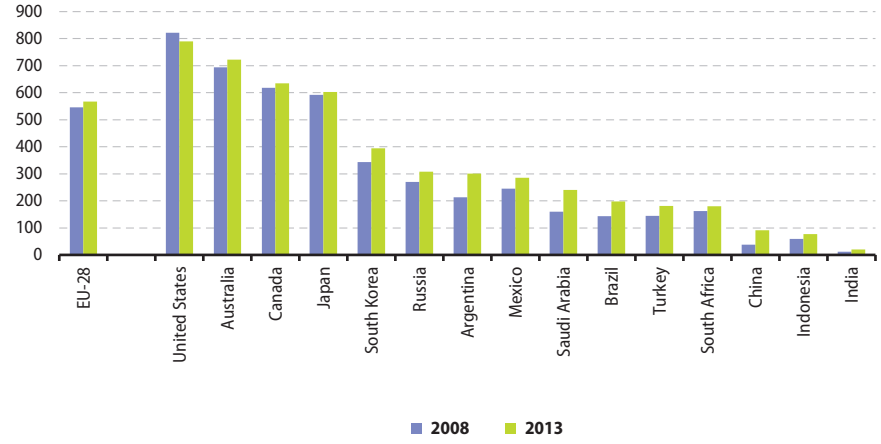
	Weight of goods handled (million tonnes)										(tonnes per inhabitant)
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2013
EU-28											
Total	3 595	3 745	3 862	3 968	3 948	3 469	3 672	3 770	3 739	3 718	7.3
Inwards	2 281	2 359	2 453	2 522	2 518	2 148	2 269	2 328	2 272	2 245	4.4
Outwards	1 315	1 386	1 410	1 446	1 429	1 321	1 404	1 442	1 467	1 473	2.9
World											
Loaded & unloaded	13 545	14 231	15 579	16 178	16 516	15 690	16 853	17 582	18 385	19 053	2.7

Source: Eurostat (online data codes: mar_go_aa and demo_gind) and the United Nations Conference on Trade and Development (UNCTADstat and Review of maritime transport)

Among the G20 members, reliance on cars for passenger transport was highest in 2013 in the United States, Australia, Canada and Japan, all of which had more than 600 passenger cars for every 1 000 inhabitants; the lowest ratios were recorded in India, Indonesia and China, all below 100 cars for every 1 000 inhabitants. Passenger cars are road motor vehicles, other than mopeds or motor cycles, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver).

A general upward trend was observed in all G20 members between 2008 and 2013, except for the United States where the ratio fell by 32 passenger cars per 1 000 persons (−3.9 %) over the five-year period under consideration. In percentage terms, the fastest growth in the ratio of passenger cars to population was recorded in China, as the ratio more than doubled. The number of passenger cars per 1 000 inhabitants also increased strongly in India, Saudi Arabia, Argentina and Brazil (see Figure 10.3).

Figure 10.3: Number of passenger cars relative to population, 2008 and 2013 (1)
(number per 1 000 inhabitants)



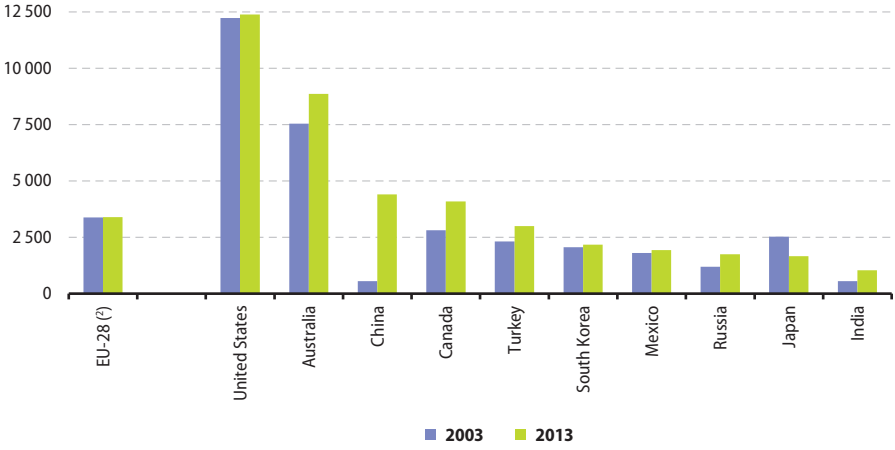
(1) Estimates. Passenger cars are road motor vehicles, other than a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). This category may also include pick-ups.

Source: Eurostat (online data codes: tsdpc340 and demo_gind), the International Organisation of Motor Vehicle Manufacturers and the World Bank (Health Nutrition and Population Statistics)

Relative to the size of its population, the quantity in tonne-kilometres of road freight transport was particularly high in the United States and Australia. A tonne-kilometre (t-km or tonne-km) is a unit of measure of freight transport which represents the transport of one tonne of goods (including packaging and tare weights of intermodal transport units) by a given transport mode over a distance of one kilometre. The very high figure in the United States and Australia reflects not only an extensive use of road freight transport as a mode of freight transport, but also the large distances involved in transporting goods around a large land area. Comparing 2003 with 2013, the most notable development was the increase in the amount of Chinese road freight: this figure increased eight-fold (see Figure 10.4), equivalent to an annual average growth of 23.1 %. India also reported strong growth, with road freight (relative to population size) doubling during this period. Japan was the only G20 member (for which data are available) reporting a fall for this indicator.

Figure 10.4: Road freight transport, 2003 and 2013 (1)

(tonne-km per inhabitant)



(1) Argentina, Brazil, Indonesia, Saudi Arabia and South Africa: not available.
(2) 2003: estimate including data for 2004 for Poland and for 2006 for Bulgaria and Romania; excluding Croatia.

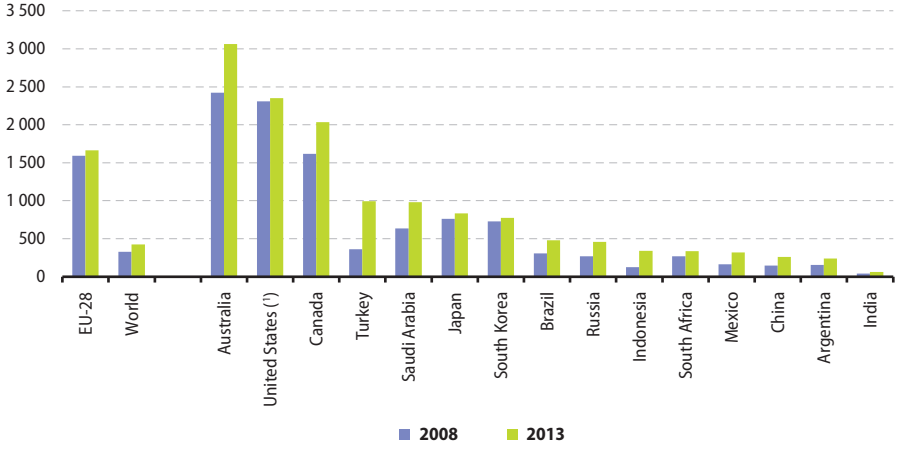
Source: Eurostat (online data codes: road_go_ta_tott and demo_gind), OECD (International transport forum) and the World Bank (Health Nutrition and Population Statistics)

Worldwide, the number of air passengers carried in 2013 was around 3.0 billion, an increase of 4.5 % compared with 2012.

In the EU-28, air passenger numbers in 2013 reached 842.2 million, an increase of 1.7 % compared with 2012, and equivalent to 27.9 % of the world total. The United States had 743.1 million passengers (24.6 % of the world total) and China had 352.8 million (11.7 %). Several G20 members recorded a fall in their respective number of air passengers in 2008 and/or 2009, at the peak of the financial and economic crisis. By 2011, air passenger numbers had returned above their pre-crisis 2007 peaks in all G20 members except for the United States and by 2013 the number of air passengers in the United States was still slightly below the pre-crisis high of 2007. The situation in Japan was more complicated as the rebound in passenger numbers in 2010 was short-lived as numbers fell again in 2011 in the wake of the earthquake and Tsunami off the coast of Tōhoku . Although subsequent growth in 2012 and 2013 brought passenger numbers in Japan once more above their pre-crisis peak, they remained 3.4 % below their 2010 high point.

Relative to the size of the population, the number of air passengers in 2013 was highest among the G20 members in Australia, ahead of the United States and Canada, followed by the EU-28, all with more passengers carried than the overall size of their populations (see Figure 10.5). By contrast, India recorded by far the lowest number of air passengers relative to its population size. Between 2008 and 2013, the number of passengers relative to population size grew (in percentage terms) most strongly in Turkey and Indonesia where it more than doubled, while it also grew more than 50 % in Mexico, China, Russia, Brazil, Saudi Arabia and Argentina. The weakest growth was reported for the United States (1.9 %) and the EU-28 (4.4 %).

Figure 10.5: Number of air passengers carried, 2008 and 2013
(per 1 000 inhabitants)



(1) Major and national air carriers only.

Source: Eurostat (online data codes: avia_paoc and demo_gind) and the World Bank (World Development Indicators and Health Nutrition and Population Statistics)

In terms of passenger numbers, the busiest airport in the world in 2013 was Hartsfield-Jackson Atlanta in the United States, with 94.4 million passengers, followed by Beijing Capital airport in China with 83.7 million and London Heathrow in the United Kingdom with 72.4 million, making Heathrow the busiest passenger airport in the EU-28.

Table 10.3: Largest airports for passengers, 2013

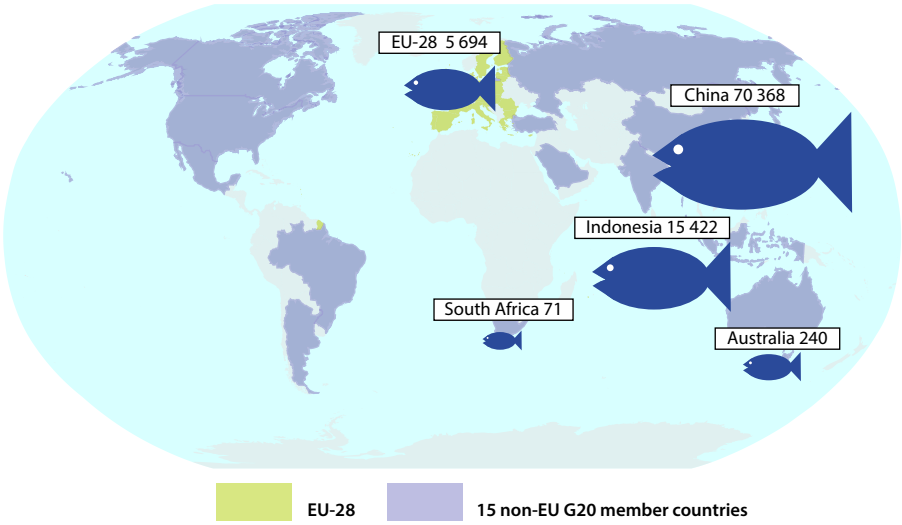
	Name	Passenger numbers (millions)
EU-28	London Heathrow	72.4
Argentina	Ministro Pistarini / Ezeiza Int'l Airport (Buenos Aires)	8.5
Australia	Kingsford Smith (Sydney)	38.3
Brazil	São Paulo-Guarulhos	36.5
Canada	Toronto Pearson	36.1
China	Beijing Capital	83.7
India	Indira Gandhi (Delhi)	36.7
Indonesia	Soekarno-Hatta (Jakarta)	60.1
Japan	Haneda (Tokyo)	68.9
Mexico	Benito Juárez (Mexico City)	31.5
Russia	Moscow Domodedovo	30.8
Saudi Arabia	King Abdulaziz (Jeddah)	26.6
South Africa	OR Tambo (Johannesburg)	18.8
South Korea	Incheon (Seoul)	41.7
Turkey	Atatürk (Istanbul)	51.3
United States	Hartsfield-Jackson (Atlanta)	94.4

Source: Eurostat (online data code: avia_paoa), Airports Council International (ACI), national civil aviation authorities and information from websites of individual airports

Agriculture, forestry and fisheries

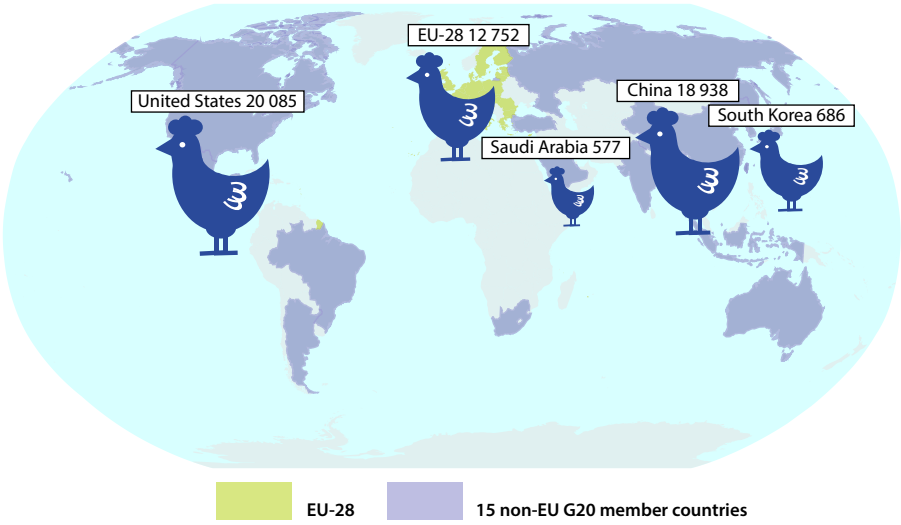
11

Fish catches and aquaculture production, 2012
(thousand tonnes)



For more information see Table 11.2 on page 134.

Poultry meat production, 2013
(thousand tonnes)



For more information see Table 11.5 on page 139.

Introduction

The importance of agriculture, forestry and fishing goes far beyond their simple economic function, reflecting the role of these activities within society and the contribution and impact of their resources on the environment. In this respect, some of the most frequently discussed concerns include the protection of the environment, sustainable practices for farming, forestry and fishing, food safety and security, animal welfare and broader perspectives relating to rural development.

Main findings

Forests occur under a huge variety of climatic, geographic, ecological and socio-economic conditions and are an essential part of the natural environment. They have an impact on water resources, act as a stabiliser for the Earth's climate, provide shelter to animal and plant life, provide food, medicinal and cosmetic resources, genetic breeding stock, seeds for cultivation, wood and similar materials to be used for manufacturing, construction and as a fuel. Forestry also provides employment in many rural areas and diverse opportunities for outdoor recreation attracting tourists.

Roundwood production in the EU-28 reached 435 million m3 (12.1 % of the world total) in 2013, making the EU-28 the largest producer within the G20 (see Table 11.1) followed by India, China and the United States. Roundwood production (also known as removals) comprises all quantities of wood removed from the forest and other wooded land, or other tree felling sites. The EU-28

Table 11.1: Production of roundwood and sawnwood, 1993 and 2013
(thousand m³)

	Roundwood		Sawnwood	
	1993	2013	1993	2013
EU-28 (1)	*316 566*	*434 998*	*74 453*	*100 682*
Argentina	*10 332*	*16 496*	*998*	*3 339*
Australia	*21 910*	*27 592*	*3 187*	*4 593*
Brazil	*205 686*	*269 411*	*16 340*	*15 397*
Canada	*176 193*	*148 183*	*43 219*	*42 859*
China	*363 168*	*347 506*	*25 709*	*63 040*
India	*323 528*	*357 226*	*17 460*	*6 889*
Indonesia	*154 782*	*115 232*	*8 338*	*4 169*
Japan	*25 708*	*21 134*	*26 260*	*10 100*
Mexico	*174 630*	*194 461*	*40 890*	*33 500*
Russia	*41 314*	*44 198*	*2 560*	*2 753*
Saudi Arabia	*134*	*268*	:	:
South Africa	*28 154*	*29 906*	*1 383*	*1 443*
South Korea	*3 742*	*6 339*	*3 249*	*3 113*
Turkey	*18 877*	*20 858*	*5 241*	*6 405*
United States	*470 726*	*334 019*	*83 790*	*69 221*
World	*3 287 484*	*3 591 142*	*394 458*	*420 897*

(1) Excluding French overseas departments and territories.

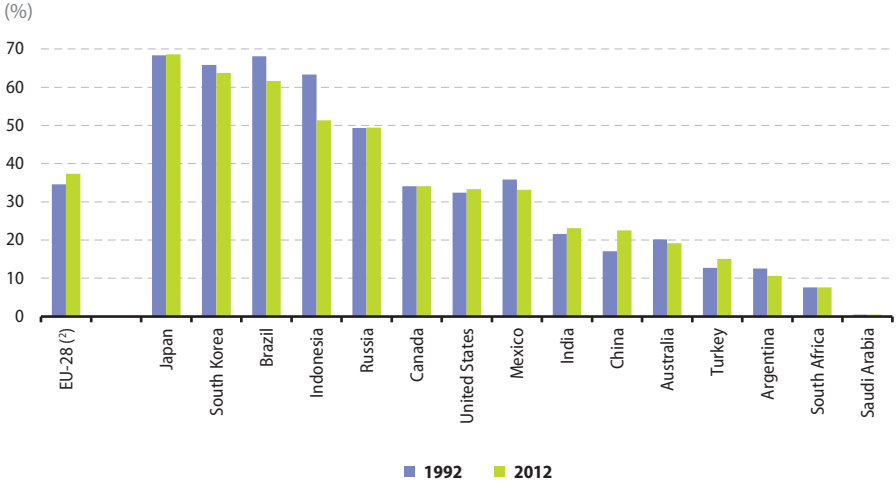
Source: Eurostat (online data codes: for_basic and for_swpan) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Forestry)

was also the largest producer of sawnwood, with an output of 101 million m^3 in 2013, equivalent to 23.9 % of the world total. Sawnwood is produced either by sawing lengthways or by a profile-chipping process and, with a few exceptions, is greater than 6 millimetres (mm) in thickness.

Forest cover within the EU-28 extended to 159.1 million hectares (100 hectares is one km^2) in 2010, around 37.3 % of its total land area (see Figure 11.1). In 2012, more than half of the land area in Japan, South Korea, Brazil and Indonesia was forested, while the share in Russia was just below half. Between 1992 and 2012, the share of land covered by forests increased by 5.4 percentage points in China, 2.7 percentage points in the EU-28 (between 1990 and 2010), 2.3 percentage points in Turkey and 1.5 percentage points in India, with smaller increases recorded for the United States, Japan and Russia. The share of land covered by forests decreased most strongly in Indonesia, down by 12.0 percentage points.

Ownership of forests in 2005 in the EU-28 was split with close to three fifths privately owned and around two fifths publically owned; other forms of ownership accounted for just 1.2 %. Very different ownership patterns can be observed among G20 members (see Figure 11.2) ranging from almost universal public ownership in Russia and Turkey to 69 % private ownership in South Korea. Mexico was the only G20 member where other forms of ownership were common, as the majority of its forests are owned by indigenous and other communities.

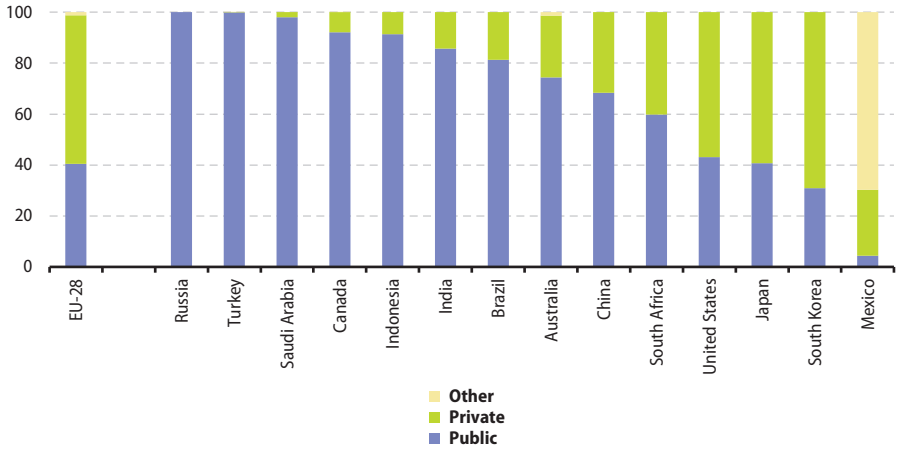
Figure 11.1: Forest as a share of land area, 1992 and 2012 (1)



(1) Estimates.
(2) Data for 1990 instead of 1992. Data for 2010 instead of 2012. Excluding French overseas departments and collectivities. The EU-28 land area includes data for total area for some Member States.

Source: Eurostat (online data codes: for_area and \) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs)

Figure 11.2: Public and private ownership of forests, 2005 (1)



(1) Argentina: not available.

Source: the Food and Agriculture Organisation of the United Nations (CountrySTAT FAO Forestry)

Aside from fish farming, fish are not owned until they have been caught, and so fish stocks continue to be regarded as a common resource, requiring collective management. This has led to a range of policies and international agreements that regulate the amount of fishing, as well as the types of fishing techniques and gear used to catch fish.

The fish catch refers to all catches of fishery products (including fish, molluscs, crustaceans and other aquatic animals, residues and aquatic plants) taken by all types and classes of fishing units that are operating in inland, inshore, offshore and high-seas fishing areas. The catch statistics exclude quantities of fishery products which are caught but which, for a variety of reasons, are not landed.

Aquaculture (also known as fish farming) refers to the farming of aquatic (freshwater or saltwater) organisms, such as fish, molluscs, crustaceans and plants for human use or consumption, under controlled conditions. Aquaculture implies some form of intervention in the natural rearing process to enhance production, including regular stocking, feeding and protection from predators.

The total fish catch by the EU-28 fishing fleet was 4.4 million tonnes in 2012, just over half the quantity that had been caught 10 years earlier (see Table 11.2). The largest fish catch among G20 members in 2012 was reported for China, some 3.7 times the level for the EU-28. Indonesia, the United States and India also recorded larger fish catches than the EU-28.

Table 11.2: Fish catches and aquaculture production, 2002, 2007 and 2012

(thousand tonnes)

	Total catches			Aquaculture production		
	2002	2007	2012	2002	2007	2012
EU-28 (1)	8 250	5 033	4 431	1 347	1 319	*1 263*
Argentina	946	985	738	1	3	3
Australia	207	190	160	39	56	80
Brazil	756	783	843	248	289	708
Canada	1 106	1 045	829	172	153	173
China	*14 427*	14 988	16 425	*31 862*	41 173	53 943
India	3 745	3 859	4 863	2 189	3 115	4 214
Indonesia	4 379	5 039	5 823	1 137	3 137	9 600
Japan	4 504	4 403	*3 743*	1 385	1 284	1 074
Mexico	1 704	1 888	1 681	74	140	144
Russia	1 481	1 475	1 582	101	106	146
Saudi Arabia	3 244	3 484	4 338	7	18	*26*
South Africa	57	66	*65*	*4*	*6*	6
South Korea	794	690	716	794	1 399	1 507
Turkey	567	632	432	61	141	213
United States	4 985	4 770	5 138	499	526	420

(1) Total catches, 2012: including data for 2010 for the Czech Republic, Hungary, Austria and Slovakia. Aquaculture production: data for 2003 instead of 2002; data for 2012 including data for 2011 for Estonia and Italy, for 2010 for Germany, Austria, Slovenia and Finland, and for 2009 for Belgium and Lithuania.

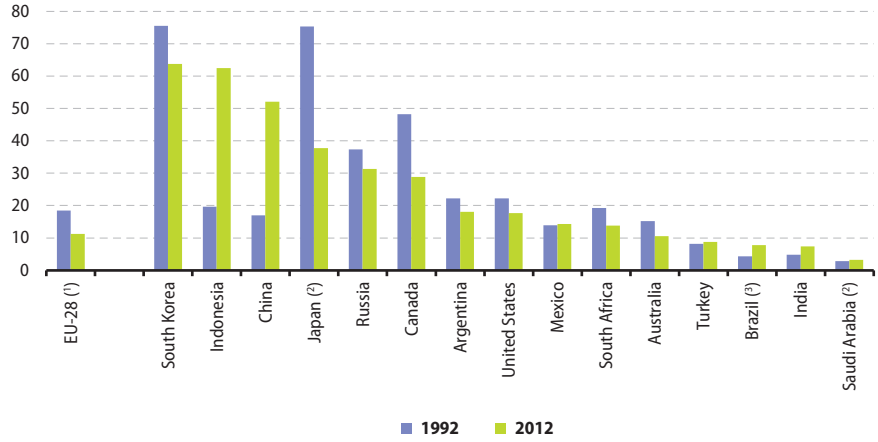
Source: Eurostat (online data codes: tag00076, fish_aq_q and fish_aq2a) and the Food and Agriculture Organisation of the United Nations (FishStatJ)

Aquaculture production in the EU-28 was estimated at 1.3 million tonnes in 2012, far behind that of China (53.9 million tonnes), Indonesia and India, as well as somewhat less than that of South Korea. Between 2002 and 2012, aquaculture production fell in Japan, the United States and the EU-28, while it increased in all other G20 members, most notably in Indonesia where it increased eight-fold, in Saudi Arabia and Turkey where it more than trebled, and in Brazil, Australia and Argentina where it more than doubled.

Relative to population size, the EU-28's combined fish catch and aquaculture production was estimated at 11.3 kg per inhabitant in 2012, a relatively low level compared with most other G20 members (see Figure 11.3). The highest levels of production were in South Korea and Indonesia, both with more than 60 kg per inhabitant.

Less than one tenth of the labour force was active in agriculture, hunting, fishing and forestry in most G20 members in 2014. Nevertheless, this share rose to 30 % or higher in Turkey and Indonesia and was situated above 50 % in India and China. The share of the labour force active in agriculture, hunting, fishing and forestry in the EU-28 was 3.8 % (according to data from the United Nations' Food and Agricultural Organisation).

Figure 11.3: Production (fish catch and aquaculture) per inhabitant, 1992 and 2012
(kg per inhabitant)



(1) 1992: including data for 1993 for the Czech Republic and Slovakia. 2012: for fish catch, including data for 2010 for the Czech Republic, Hungary, Austria and Slovakia; for aquaculture, including data for 2011 for Estonia and Italy, for 2010 for Germany, Austria, Slovenia and Finland, and for 2009 for Belgium and Lithuania.
(2) 2012: estimate.
(3) 1992: estimate.

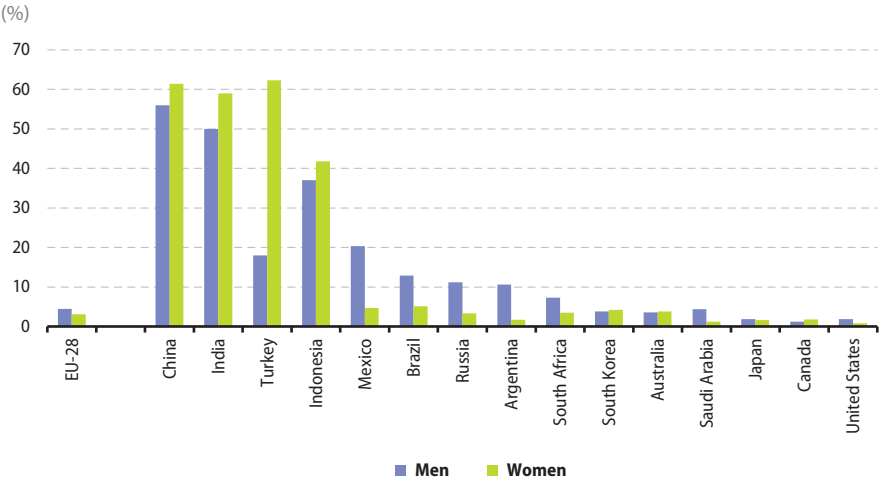
Source: Eurostat (online data codes: fish_ca_00, fish_aq_q, fish_aq2a and demo_gind), the Food and Agriculture Organisation of the United Nations (FishStatJ) and the World Bank (Health Nutrition and Population Statistics)

In a small majority of G20 members, the share of the labour force active in agriculture, hunting, fishing and forestry was higher for men than for women (see Figure 11.4). This was most notably the case in Mexico where there was a difference of 15.6 percentage points between the shares for men and women. In the EU-28, 4.4 % of men in the labour force worked in these activities compared with 3.1 % of women. The highest share of women working in agriculture, hunting, fishing and forestry (62.3 %) was recorded in Turkey, closely followed by China (61.3 %).

The total agricultural area (including unused agricultural land) of the EU-28 was 217.5 million hectares (100 hectares is one km²) in 2010, some 44.0 % of its total land area. The ratio of the total agricultural area to the land area (shown in Figure 11.5) can be compared with a similar analysis for forests (shown in Figure 11.1), from which it can be seen that the EU's total agricultural area share of the land area was nearly 7 percentage points larger. Among the G20 members, the ratio of the total agricultural area to the land area reached four fifths in South Africa and Saudi Arabia, but was less than one tenth in Canada. The ratio of the total agricultural area to the land area fell in most G20 members between 1992 and 2012, with only Argentina, Indonesia, Brazil and Mexico recording any increase. Among the G20 members, the most extensive total agricultural areas in 2012 were recorded for China (more than 500 million hectares), Australia and the United States (both with more than 400 million hectares).

The production of a range of different crops across the G20 members is presented in Table 11.3 with the total production of cereals (relative to the size of the population) shown in Figure 11.6. Crop production refers to the amount of harvested production. The United States was the largest producer of maize

Figure 11.4: Share of economically active population in agriculture, by sex, 2014 (1)



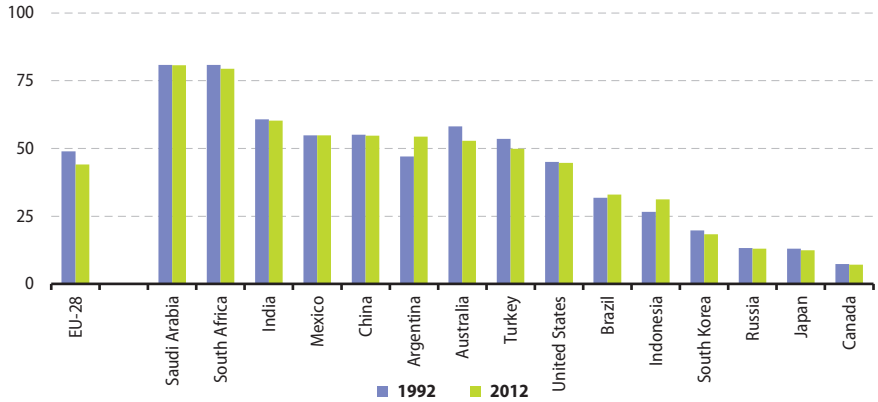
(1) The economically active population in agriculture is the population engaged in or seeking work in agriculture, hunting, fishing or forestry. Estimates.

Source: the Food and Agriculture Organisation of the United Nations (FAOSTAT: Population)

among the G20 members in 2013, while the EU-28 had the highest wheat production, followed by China, India, the United States and Russia. Rice production in G20 members was dominated by China, India and Indonesia, while sugar beet production was high in the EU-28 and sugar cane production high in Brazil, India and China.

Figure 11.5: Agricultural area as share of land area, 1992 and 2012 (1)

(%)



(1) Estimates.

Source: the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs)

Table 11.3: Production of selected crops, 1993 and 2013

(million tonnes)

	Maize		Wheat		Rice		Sugar beet		Sugar cane	
	1993	2013	1993	2013	1993	2013	1993	2013	1993	2013
EU-28 (1)	45.6	67.0	110.5	143.7	2.0	3.1	*144.4*	109.0	:	:
Argentina (2)	10.9	32.1	9.7	9.2	0.6	1.6	:	:	*14.3*	23.7
Australia	0.2	0.5	16.5	22.9	1.0	1.2	:	:	28.0	27.1
Brazil	30.1	80.3	2.2	5.7	10.1	11.8	:	:	244.5	768.1
Canada	6.5	14.2	27.3	37.5	0.0	0.0	0.8	0.6	:	:
China	*103.1*	*218.6*	*106.4*	*121.9*	*179.7*	*205.2*	*12.0*	*9.3*	*69.0*	*128.9*
India	9.6	23.3	57.2	93.5	120.4	159.2	:	:	228.0	341.2
Indonesia (3)	6.5	18.5	:	:	48.2	71.3	:	:	33.0	33.7
Japan	*0.0*	*0.0*	0.6	0.8	9.8	10.8	3.4	3.4	1.6	1.2
Mexico	18.1	22.7	3.6	3.4	0.3	0.2	0.0	0.0	42.9	61.2
Russia	2.4	11.6	43.5	52.1	0.7	0.9	25.5	39.3	:	:
Saudi Arabia (4)	0.0	0.1	3.4	0.6	:	*0.0*	:	:	:	:
South Africa (4)	10.0	12.5	2.0	1.9	*0.0*	*0.0*	:	:	11.2	*18.0*
South Korea	0.1	0.1	0.0	0.0	6.5	5.6	:	:	:	:
Turkey	2.5	5.9	21.0	22.1	0.2	0.9	15.6	16.5	:	:
United States	161.0	353.7	65.2	58.0	7.1	8.6	23.8	29.8	28.2	27.9

(1) Maize: 1993, excluding Denmark, Croatia, Lithuania and Sweden. Wheat: 1993, excluding Croatia; 2013, including data for 2012 for Belgium, Croatia, Portugal and Slovakia. Rice: 2013, including data for 2012 for Italy. Sugar beet: 1993, excluding Croatia.
(2) Sugar cane, 2013: unofficial data.
(3) Sugar cane: unofficial data.
(4) Maize and wheat, 2013: unofficial data.

Source: Eurostat (online data code: apro_cpp_crop) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)

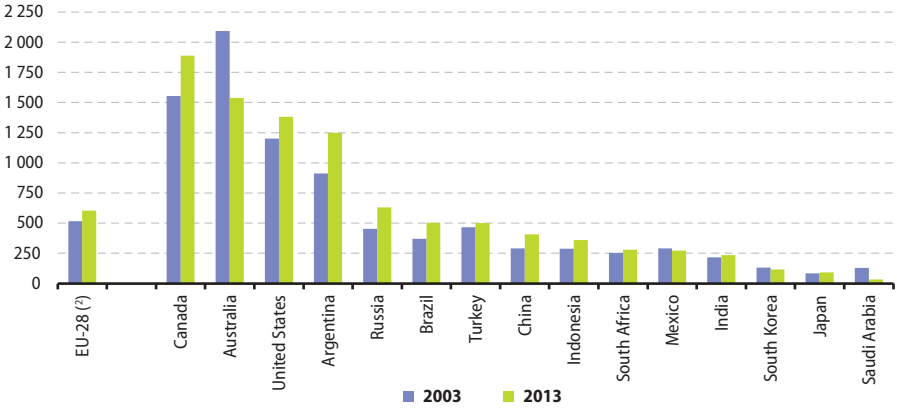
Between 1993 and 2013, the production of sugar beet fell by a quarter in the EU-28 and by a similar amount in China. During the same period, nearly all G20 members reported an increase in maize and rice production. Among the larger producers, Argentina and Brazil's increases in maize production were notable, as were the increases in the United States and China, all more than doubling production, which was also the case in many of the smaller producers. Brazil's increase in sugar cane production was even higher, more than trebling to strengthen its position as the largest sugar cane producer among the G20 members.

Four G20 members together produced three quarters of the production of cereals among the G20 members in 2013, with output in China exceeding 500 million tonnes, ahead of the United States, the EU-28 and India. Relative to the size of population, Canada had the highest production of cereals in 2013, 1.9 tonnes per inhabitant, followed by Australia, the United States and Argentina, all with more than one tonne of production per inhabitant. Compared with 2003, cereals production per inhabitant increased by 35 % or more in China, Russia, Argentina and Brazil, whereas it fell in Mexico, South Korea, Australia and Saudi Arabia.

The production level for a selection of fruits is presented in Table 11.4. Among the G20 members, the EU-28 was by far the largest producer of grapes in 2013, the second largest producer of apples, and the third largest producer of watermelons. The cultivation of coconuts is not widespread among the G20 members, but India and Indonesia together accounted for 48.4 % of the world's production of 62.5 million tonnes in 2013.

Figure 11.6: Production of cereals, 2003 and 2013 (1)

(kg per inhabitant)



(1) Estimates.
(2) 2013: including 2012 data for Italy concerning rice.

Source: Eurostat (online data codes: apro_cpp_crop and demo_gind) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)

Table 11.4: Production of selected fruits, 2013

(thousand tonnes)

	Apples	Grapes	Oranges	Watermelons	Bananas	Coconuts
EU-28	11 744	26 487	6 187	2 781	392	:
Argentina	1 245	2 881	900	127	180	:
Australia	289	1 763	401	160	330	:
Brazil	1 231	1 440	17 550	2 164	6 893	2 890
Canada	382	102		23	:	:
China	39 684	11 650	7 470	73 189	12 370	285
India	1 915	2 483	6 426	400	27 575	11 930
Indonesia	:	:	1 411	447	5 359	18 300
Japan	742	190	48	356	0	:
Mexico	859	350	4 410	953	2 128	1 064
Russia	1 572	439	0	1 420	:	:
Saudi Arabia	:	150	:	371	:	:
South Africa	812	1 850	1 672	65	390	:
South Korea	494	260	:	673	0	:
Turkey	3 128	4 011	1 781	3 887	215	:
United States	4 082	7 745	7 574	1 772	7	:

Source: the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)

Meat production covers the carcass weight of slaughtered animals, whose meat is declared fit for human consumption. Half or more of the total meat production in Argentina and Australia was cattle meat, while similar levels of specialisation were recorded in China, the EU-28 and South Korea for pig meat, and in Saudi Arabia, Turkey, Indonesia, South Africa and Brazil for poultry meat (see Table 11.5). Overall, the level of meat production per inhabitant was highest in Australia, with an average of 194 kg per inhabitant, far ahead of the United States, Argentina, Canada and Brazil where meat production also exceeded

Table 11.5: Meat and milk production, 2013 (1)

(thousand tonnes)

	Total meat production	of which:				Milk production
		Cattle meat	Pig meat	Poultry meat	Sheep and goat meat	
EU-28	44 355	7 271	21 940	12 752	*931*	157 272
Argentina	5 210	2 822	416	1 826	59	11 796
Australia	4 489	2 318	361	1 098	686	9 522
Brazil	26 011	9 675	3 280	12 915	116	34 408
Canada	4 334	1 056	1 977	1 254	17	8 394
China	85 180	6 745	53 752	18 938	4 083	40 570
India	6 215	2 577	354	2 358	747	135 600
Indonesia	3 317	586	743	1 872	113	1 388
Japan	3 276	508	1 309	1 450	0	7 508
Mexico	6 122	1 807	1 284	2 846	98	11 118
Russia	8 544	1 633	2 816	3 463	190	30 523
Saudi Arabia	803	52	:	577	130	2 338
South Africa	2 798	851	216	1 504	179	3 400
South Korea	2 036	336	1 007	686	1	2 097
Turkey	2 995	870	0	1 771	351	18 224
United States	42 642	11 698	10 510	20 085	73	91 271

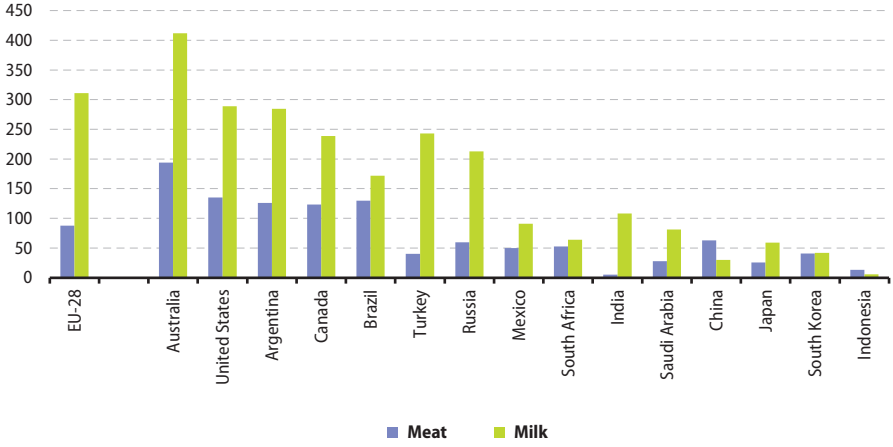
(1) May include official, semi-official, unofficial, estimated or calculated data.

Source: Eurostat (online data code: apro_mt_pann) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)

100 kg per inhabitant (see Figure 11.7). The lowest level of meat production was in India, where the average was 5.0 kg per inhabitant; this low level may to some degree reflect the predominant religious beliefs in this country. In absolute terms, the production of milk in the EU-28 was greater than the level recorded in any other G20 member in 2013; relative to population size it was the second highest after Australia. By far the lowest level of milk production per inhabitant was recorded in Indonesia.

Figure 11.7: Meat and milk production per inhabitant, 2013 (1)

(kg per inhabitant)

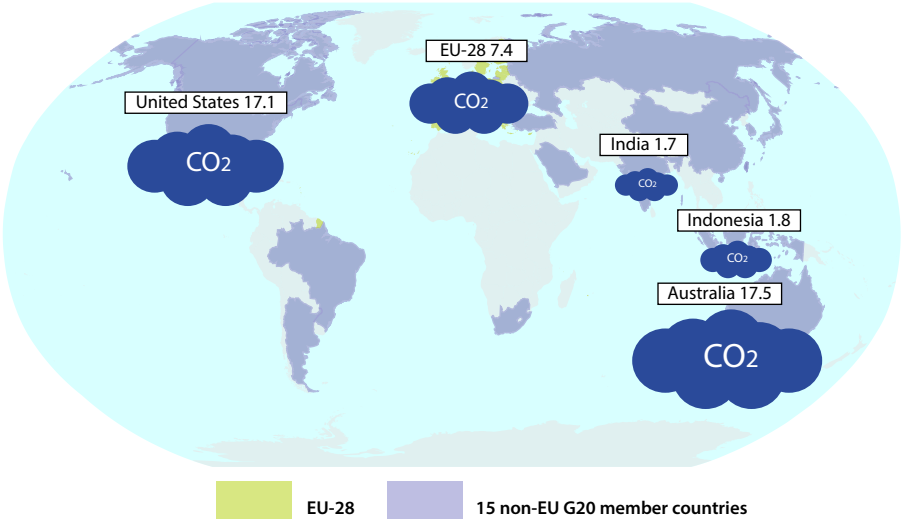


(1) May include official, semi-official, unofficial, estimated or calculated data. Ranked on the combined production of meat and milk.

Source: Eurostat (online data code: demo_gind), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production) and the World Bank (Health Nutrition and Population Statistics)

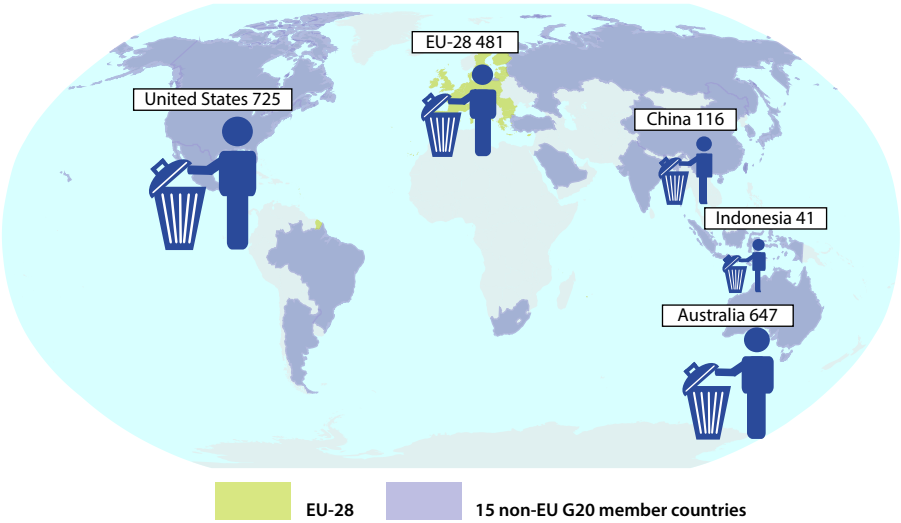
12 Environment

Carbon dioxide emissions
(tonnes per inhabitant)



For more information see Figure 12.3 on page 145.

Municipal waste generated, 2013
(kg per inhabitant)



For more information see Figure 12.8 on page 150.

Introduction

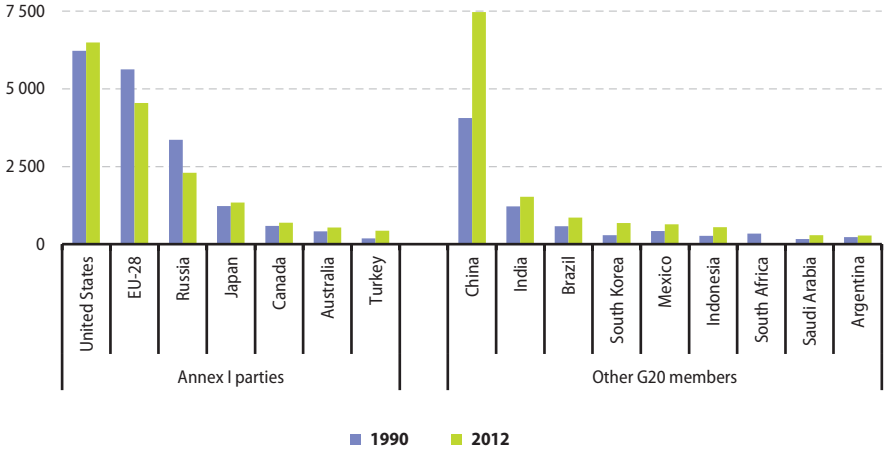
Dramatic events around the world frequently propel environmental issues into the mainstream news, from wide scale floods or forest fires to other extreme weather patterns, such as hurricanes. The world is confronted by many environmental challenges, for example tackling climate change, preserving nature and biodiversity, or promoting the sustainable use of natural resources. The inter-relationship between an economy and a society on one hand and their surrounding environment on the other hand is a factor for many of these challenges and underlies the interest in sustainable growth and development, with positive economic, social and environmental outcomes.

Main findings

Data relating to greenhouse gas (GHG) emissions are collected under the UN's Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol is an international agreement linked to the UNFCCC: it was adopted in 1997 and entered into force in 2005. A total of 192 parties subsequently ratified the Protocol; the United States did not ratify it and Canada subsequently announced its withdrawal. Under the Protocol a list of industrialised and transition economies — referred to as Annex I parties — committed to targets for the reduction of six greenhouse gases or groups of gases, namely carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The G20 members that are Annex I parties are listed separately in Figures 12.1 and 12.2 from those G20 members that are not. The EU is an Annex I party and

Figure 12.1: Greenhouse gas emissions, development since 1990 (1)

(million tonnes of CO_2-equivalents)



(1) Without land use, land use change and forestry. China and India: data for 1994 instead of 1990. Mexico: data for 2006 instead of 2012. Brazil and China: data for 2005 instead of 2012. Argentina, India, Indonesia and Saudi Arabia: data for 2000 instead of 2012. South Africa: 2012, not available.

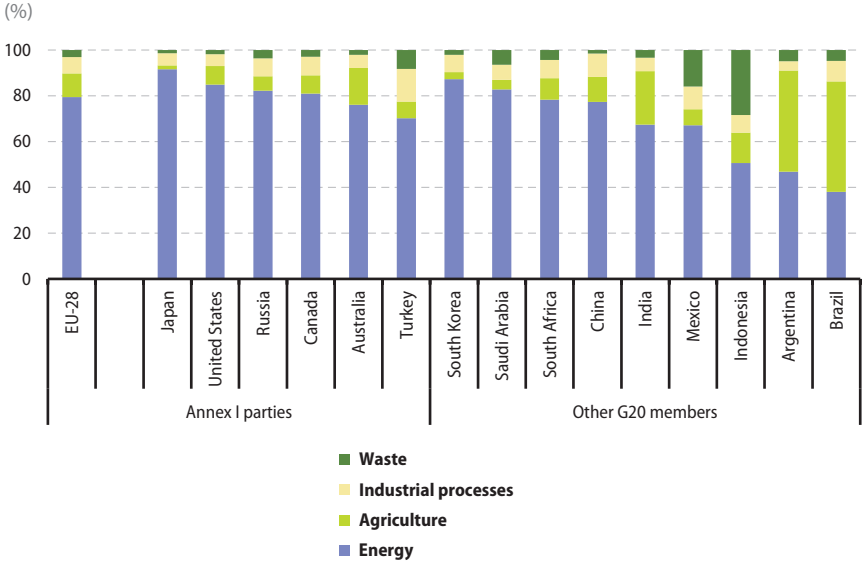
Source: Eurostat (online data code: env_air_gge) and the United Nations Framework Convention on Climate Change (UNFCCC)

was composed of 15 Member States at the time of adoption of the Protocol under which the EU agreed to reduce greenhouse gas emissions by 8 % during the period 2008–12 when compared with their 1990 levels. Among other environmental commitments, the EU-28 has subsequently committed to a 20 % reduction in greenhouse gas emissions by 2020.

Emissions of different greenhouse gases are converted to carbon dioxide equivalents based on their global warming potential to make it possible to compare and aggregate them. Total greenhouse gas emissions by Annex I parties in 2012 were 17.0 billion tonnes of carbon dioxide equivalents, 10.6 % lower than the level in the base year (1990 for most parties). Between 1990 and 2012, Russia's emissions fell by 32 %, while the emissions of the EU-28 fell by 19 % (see Figure 12.1). Turkey's emissions more than doubled, while emissions also increased for Australia (31 %), Canada (18 %), Japan (9 %) and the United States (4 %). Among all of the G20 members, China (2005 data) had the most substantial level of greenhouse gas emissions.

Figure 12.2 provides an analysis of the source of greenhouse gas emissions — note that the data for nearly all of the G20 members that are not Annex I parties relate to relatively distant reference years. While energy accounted for at least 70 % of all greenhouse gas emissions in the G20 members that are Annex I parties, this was not the case for some other G20 members where agriculture and waste often made relatively large contributions to the level of greenhouse gas emissions.

Figure 12.2: Greenhouse gas emissions, analysis by sector (1)

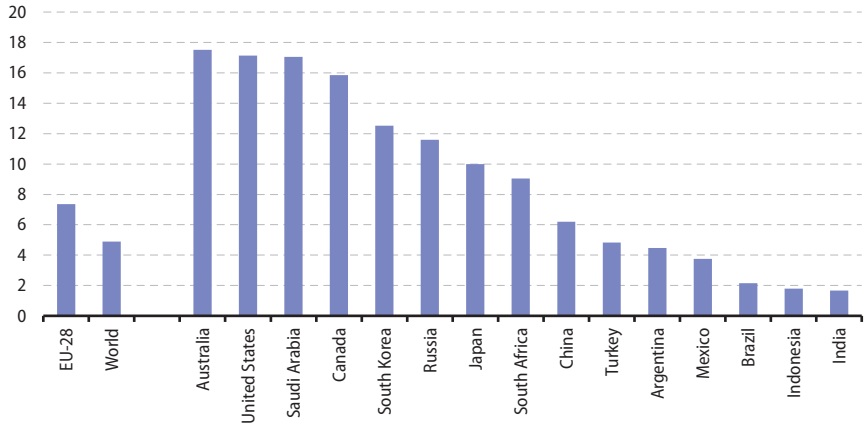


(1) Without solvents, land use, land use change and forestry. EU-28, Australia, Canada, Japan, Russia, South Korea, Turkey and the United States: 2012. Mexico: 2006. Brazil and China: 2005. Argentina, India, Indonesia and Saudi Arabia: 2000. South Africa: 1994.

Source: Eurostat (online data code: env_air_gge) and the United Nations Framework Convention on Climate Change (UNFCCC)

Figure 12.3 provides an analysis of emission intensities of carbon dioxide for 2012. These intensities varied considerably between G20 members reflecting, among other factors, the structure of each economy (for example, the relative importance of heavy, traditional industries), the national energy mix (the share of low or zero-carbon technologies compared with the share of fossil fuels), heating and cooling needs and practices, and the propensity for motor vehicle use.

Figure 12.3: Carbon dioxide emissions (1)
(tonnes per inhabitant)



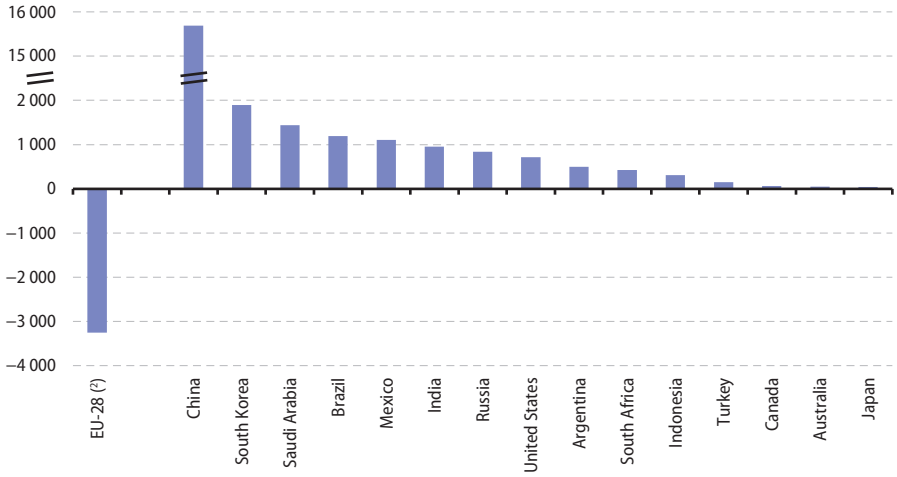
(1) EU-28, Australia, Canada, Japan, Russia, South Korea, Turkey and the United States: 2012. World, Argentina, Brazil, China, India, Indonesia, Mexico, Saudi Arabia and South Africa: 2010.

Source: the United Nations Framework Convention on Climate Change (UNFCCC) and the World Bank (World Development Indicators)

The Gothenburg Protocol is one of several concluded under the United Nations Economic Commission for Europe Convention on Long Range Transboundary Air Pollution; it aims to control transboundary air pollution and associated health and environmental impacts, notably acidification, eutrophication and ozone pollution. Ozone depleting substances (ODS) contribute to ozone depletion in the Earth's atmosphere. These substances are listed in the Montreal Protocol which is designed to phase out their production and consumption.

In the G20 members there has been a considerable reduction in the consumption of ODS in recent years. By 2013, the EU-28 had a negative consumption of ODS, indicating that exports and destruction of these substances were greater than the level of production plus imports (see Figure 12.4). Although only a fraction of what it was 10 years earlier, China's consumption of ODS in 2013 was greater than the consumption in all other G20 members combined.

Figure 12.4: Air pollution, 2013 (1)
(ODS tonnes)



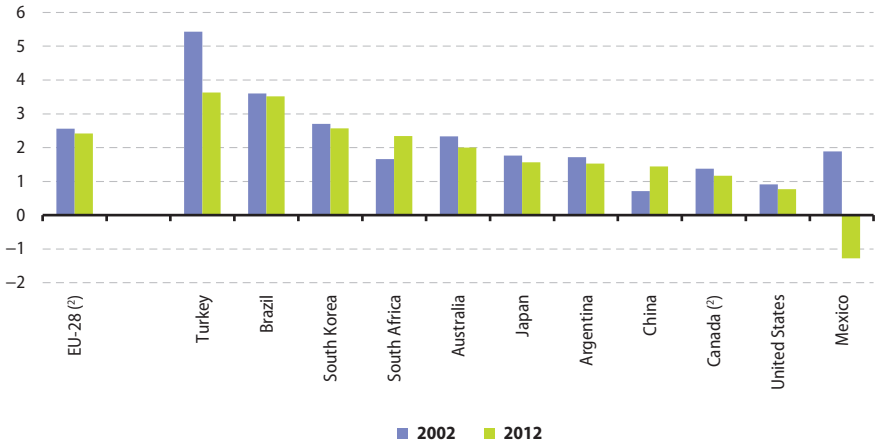
(1) Negative values indicate exports plus destruction exceeded actual production plus imports.
(2) The European Union reports aggregated consumption data for the region and on behalf of the EU Member States.
Source: the United Nations Environment Programme (Ozone Secretariat)

An environmental tax is one whose tax base is a physical unit (or a proxy of one) of something that has a proven, specific negative impact on the environment. Examples are taxes on energy, transport and pollution, with the first two dominating revenue raised through these taxes in nearly all countries. As well as raising revenue, environmental taxes may be used to influence the behaviour of producers or consumers.

In 2012, the EU-28 Member States raised EUR 330 billion of revenue from environmental taxes, equivalent to 2.42 % of GDP. Figure 12.5 compares the relative importance of environmental taxes between the G20 members and shows how these developed between 2002 and 2012. Among the G20 members, the highest revenue from environmental taxes, relative to GDP, was in Turkey and Brazil where these taxes were equivalent to 3 % to 4 % of GDP in 2012. The negative value for Mexico reflects the system used to stabilise motor fuel, which leads to subsidies when oil prices are high. Between 2002 and 2012, the ratio of environmental taxes to GDP fell in most G20 members, the exceptions being South Africa and China.

Figure 12.5: Environment related taxes, 2002 and 2012 (1)

(% share of GDP)



(1) India, Indonesia, Russia and Saudi Arabia: not available.
(2) Data for 2000 instead of 2002.

Source: Eurostat (online data code: env_ac_tax) and OECD (Green growth)

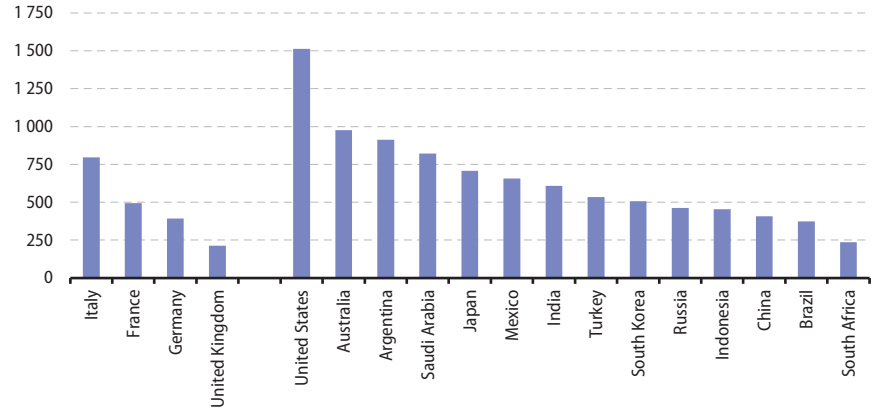
Freshwater withdrawals refer to total water withdrawals, not counting evaporation losses from storage basins. Withdrawals also include water from desalination plants in countries where they are a significant source.

G20 members accounted for approximately two thirds of all freshwater withdrawals worldwide; India, China, the United States and the EU-28 together accounted for more than half. Relative to population size (see Figure 12.6), the United States had the highest annual freshwater withdrawals, its 1 513 m³ per inhabitant was far higher than the 976 m³ recorded in Australia which had the next highest withdrawals. Note that data are not available for Canada which probably also had high levels of freshwater withdrawals.

The management and disposal of waste can have serious environmental impacts, taking up space and potentially releasing pollution into the air, water or soil. Municipal waste is waste that is collected by or on behalf of municipalities, by public or private enterprises, which originated from households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings). Also included is waste from selected municipal services (such as park and garden maintenance and street cleaning services) if managed as waste. For areas not covered by a municipal waste collection scheme the amount of waste generated is estimated.

Landfilling is the final placement of waste into or onto the land in a controlled or uncontrolled way and covers both landfilling in internal sites (by the generator of the waste) and in external sites. Incinerating is the controlled combustion of waste with or without energy recovery. Recycling is any reprocessing of waste material in a production process that diverts it from the waste stream, except reuse as fuel. Both reprocessing as the same type of product and for different purposes should be included. Recycling at the place of generation should be excluded. Composting is a biological process that submits biodegradable waste to anaerobic or aerobic decomposition and that results in a product that is recovered and can be used to increase soil fertility.

Figure 12.6: Freshwater withdrawals (1)
(m³ per inhabitant)



(1) Argentina, Brazil, India and Mexico: 2012. Germany, France, the United Kingdom, China, Saudi Arabia, Turkey and the United States: 2007. Italy, Australia, Indonesia, Japan, Russia, South Africa and South Korea: 2002. Canada: not available.

Source: the World Bank (World Development Indicators)

Among the G20 members with data available (see Table 12.1), Japan reported the most frequent use of incineration to treat municipal waste and Mexico and Turkey the most frequent use of landfill. In South Korea, more than half of the municipal waste was recycled (see Figure 12.7), with the share in Australia (41 %) the next highest, followed by the EU-28 and the United States with shares just over one quarter.

Table 12.1: Municipal waste, latest year

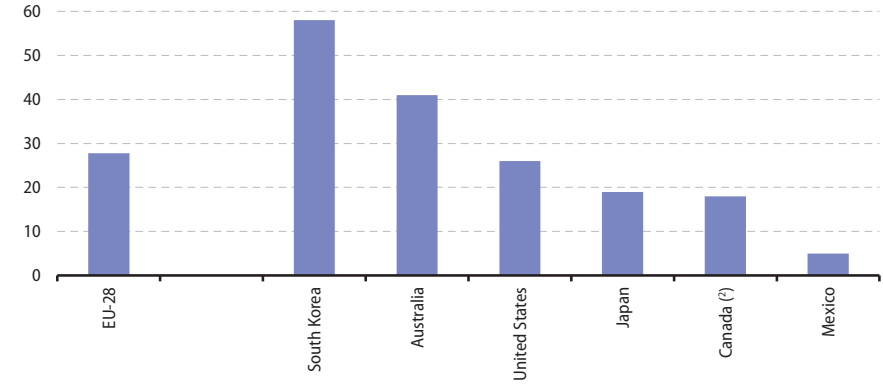
	Latest year	Generated (million tonnes)	Treated			
			Landfilled	Incinerated	Recycled	Composted
			(% of total treatment)			
EU-28	2013	243.3	31	26	28	15
Argentina		:	:	:	:	:
Australia	2009	14.0	58	:	41	:
Brazil	2007	51.4	:	:	:	:
Canada (1)	2010	13.8	72	4	18	7
China	2009	157.3	80	18	:	2
India	2001	17.6	:	:	:	:
Indonesia	2008	9.6	:	:	:	:
Japan	2010	45.4	1	76	19	:
Mexico	2012	42.1	95	:	5	:
Russia	2012	80.6	:	:	:	:
Saudi Arabia		:	:	:	:	:
South Africa		:	:	:	:	:
South Korea	2011	17.9	17	24	58	1
Turkey	2010	29.7	99	0	:	1
United States	2010	226.7	54	12	26	8

(1) Household waste only.

Source: Eurostat (online data code: env_wasmun) and OECD (Environment, Waste)

Figure 12.7: Municipal waste recycled (1)

(% of treated waste)



(1) EU-28: 2013. Mexico: 2012. South Korea: 2011. Canada, Japan and the United States: 2010. Australia: 2009. Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia, South Africa and Turkey: not available.

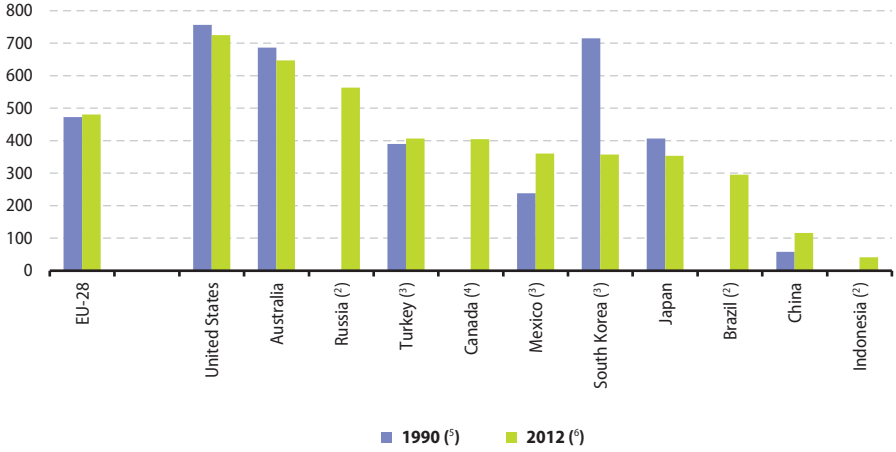
(2) Household waste only.

Source: Eurostat (online data code: env_wasmun) and OECD (Environment, Waste)

The amount of municipal waste generated in 2012 ranged from 295 kg per inhabitant in Brazil to 407 kg per inhabitant in Turkey, with the EU-28, Russia, Australia and the United States above this range and China and Indonesia below it. Among the eight G20 members with data for 1990 and 2012, as shown in Figure 12.8, an analysis over time of the level of waste generated indicates decreases were recorded in South Korea, Japan, Australia and the United States, and increases elsewhere, notably in Mexico and China.

Figure 12.8: Municipal waste generated, development since 1990 ([1])

(kg per inhabitant)



([1]) Argentina, India, Saudi Arabia and South Africa: not available.
([2]) 1990: not available.
([3]) Break in series.
([4]) 1990: not available. Household waste only.
([5]) Australia: 1992, estimate. Mexico: 1991, estimate. Data for EU-27 for 1995 instead of 1990.
([6]) EU-28 and Turkey: 2013. Canada and Japan: 2010. Australia and China: 2009. Indonesia: 2008.

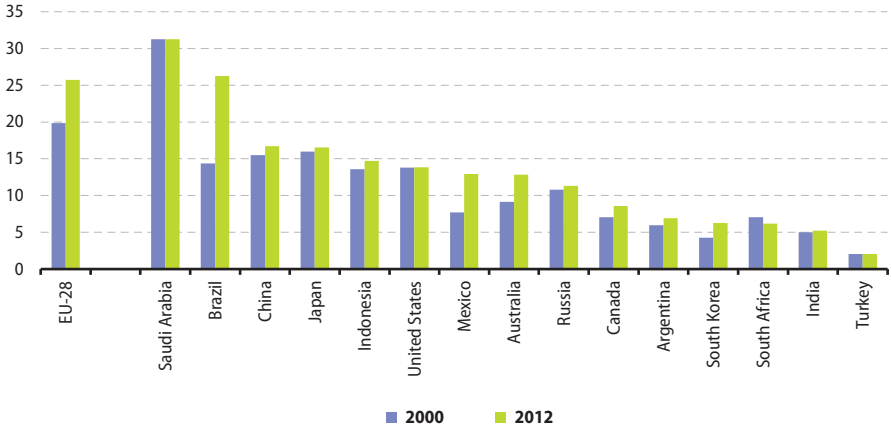
Source: Eurostat (online data code: env_wasmun) and OECD (Environment, Waste)

Terrestrial and marine areas may be protected because of their ecological or cultural importance and they provide a habitat for plant and animal life. Protected areas are areas of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means. Marine protected areas are any area of intertidal or sub tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or the entire enclosed environment. Territorial waters extend at most 12 nautical miles (1 nautical mile is equal to 1 852 metres) from the baseline of a coast (normally the low-water line).

According to the World Conservation Monitoring Centre of the United Nations Environment Programme, in the EU-28 around 25.7 % of the surface area (land area and inland water bodies) was designated as a protected area as of 2012, along with 18.8 % of territorial waters (see Figures 12.9 and 12.10). Among the other G20 members, the largest shares of surface area that were protected were in Brazil and Saudi Arabia, with Brazil having the largest protected area in absolute terms (2.2 million km² in 2012).

Figure 12.9: Terrestrial protected areas, 2000 and 2012

(% of surface area)

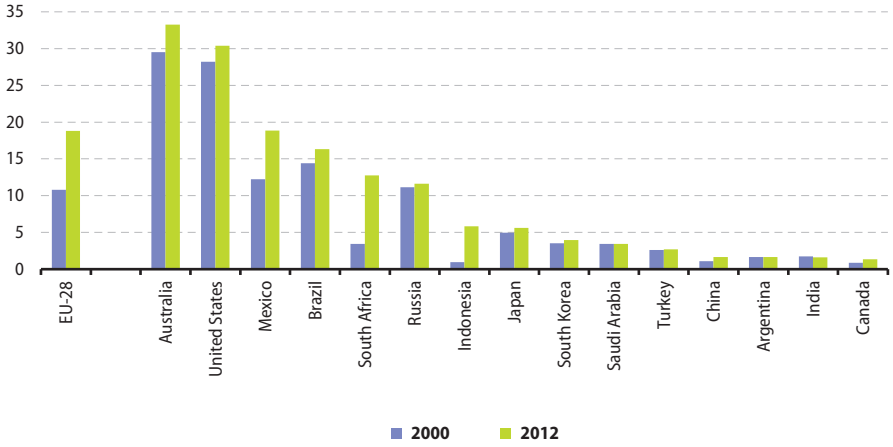


Source: the United Nations Environment Programme (World Conservation Monitoring Centre)

A large proportion of marine areas around the United States and Australia had protected status and these were also the largest protected marine areas in absolute size, each over 240 thousand km². Between 2000 and 2012, South Africa was the only G20 member to report a fall in the proportion of its surface area that was protected, with large increases (in percentage point terms) in Mexico, the EU-28 and Brazil. By contrast, South Africa recorded the largest percentage point increase in the share of its territorial waters that had protected status, with the EU-28 and Mexico also recording relatively high increases.

Figure 12.10: Marine protected areas, 2000 and 2012

(% of territorial waters)

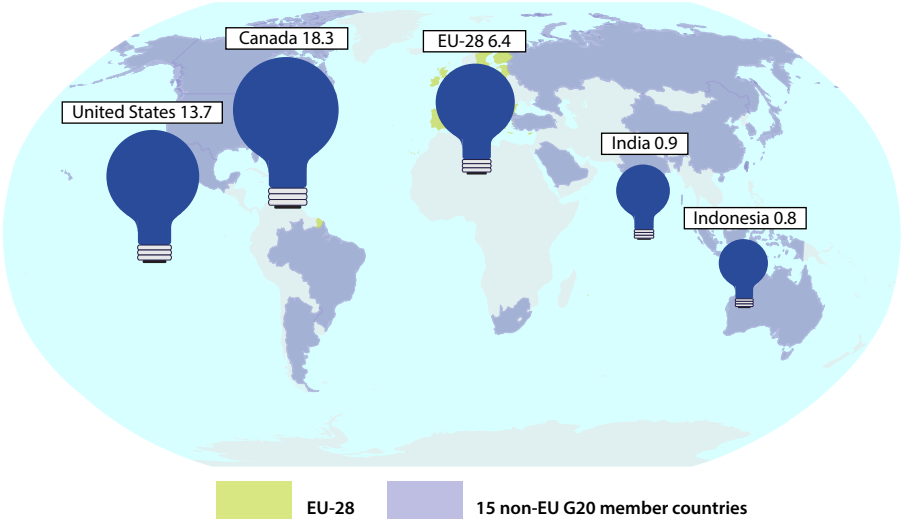


Source: the United Nations Environment Programme (World Conservation Monitoring Centre)

13 Energy

Gross electricity generation

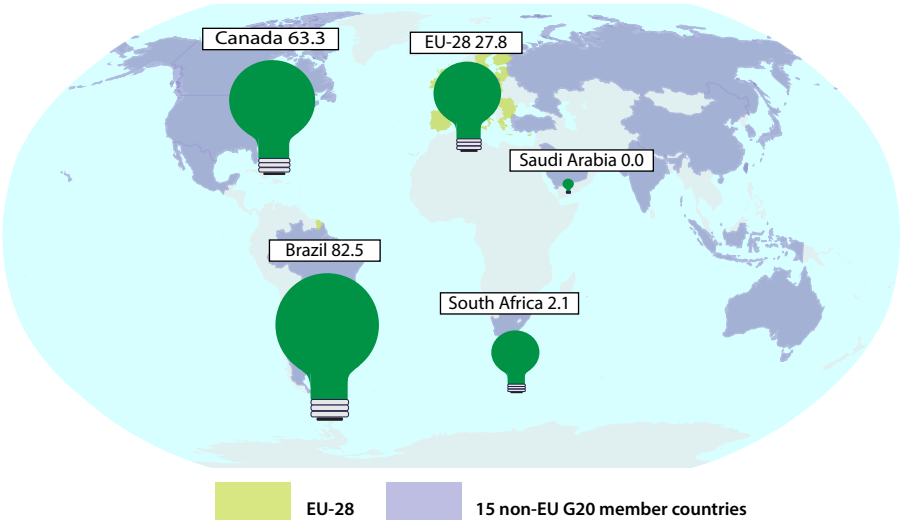
(MWh per inhabitant)



For more information see Table 13.5 on page 164.

Share of renewables and waste in gross electricity generation

(%)



For more information see Figure 13.6 on page 165.

Introduction

A competitive, reliable and sustainable energy sector is considered essential for all advanced economies. The energy sector has been under the spotlight due to a number of issues that have pushed energy up the political agenda, including the volatility of prices, interruptions to energy supplies, and increased attention to anthropogenic (human-induced) effects of energy use on climate change, in particular, increased levels of greenhouse gas emissions.

Main findings

Primary production of energy is any extraction of energy products in a useable form from natural sources. This occurs either when natural sources are exploited (for example, in coal mines, crude oil fields, hydro power plants) or in the fabrication of biofuels. Transforming energy from one form into another is generally not primary production. Primary production of energy in the EU-28 totalled 795 million tonnes of oil equivalent (toe) in 2012 while worldwide production reached 13.46 billion toe in 2012. The members of the G20 accounted for approximately 71 % of the world's energy production, with Russia, the United States and China recording higher production than the EU-28.

Between 2002 and 2012, global primary production of energy increased by 31 % (see Table 13.1). China's primary production doubled during this period, while output in Indonesia increased by 77 % and that of Brazil, Saudi Arabia and India by more than 40 %. Japan's production fell by 71 %, in large part due to a fall in output from nuclear energy following the Tōhoku earthquake and

Table 13.1: Key energy indicators, 2002 and 2012
(million toe)

	Production		Imports		Exports		Gross inland consumption	
	2002	2012	2002	2012	2002	2012	2002	2012
EU-28	941.9	795.3	1 309.4	1 445.6	451.6	522.0	1 760.5	1 685.8
Argentina	82.9	75.2	2.4	14.3	27.0	7.2	56.9	80.2
Australia	254.1	317.4	28.1	47.3	167.7	234.1	109.5	128.3
Brazil	167.4	251.9	51.1	69.1	20.4	35.5	195.8	281.7
Canada	384.1	419.7	73.5	82.8	209.9	251.5	248.4	251.1
China	1 243.6	2 525.3	106.0	511.0	85.5	43.4	1 253.8	2 894.3
India	384.5	544.6	107.6	311.5	10.8	68.3	478.0	788.1
Indonesia	248.3	440.3	32.7	52.8	115.3	279.0	165.2	213.6
Japan	96.7	28.3	430.5	449.4	6.2	14.1	510.4	452.3
Mexico	229.1	219.0	26.7	56.1	102.5	79.0	149.2	188.4
Russia	1 046.3	1 331.6	25.0	27.7	437.4	592.6	623.1	756.6
Saudi Arabia	434.7	625.0	3.0	16.9	318.6	442.5	111.3	200.3
South Africa	143.9	166.1	21.1	32.9	56.5	54.6	110.0	140.0
South Korea	34.9	46.2	204.2	287.4	32.0	58.8	198.7	263.4
Turkey	24.1	30.6	54.4	97.5	3.1	8.6	74.2	116.9
United States	1 655.8	1 806.5	714.9	635.3	85.8	260.4	2 255.9	2 140.6
World	10 288.9	13 461.1	3 910.9	5 145.5	3 862.4	5 181.0	10 359.3	13 371.0

Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

tsunami on 11 March 2011. The EU-28 had the second largest fall in production (−16 %), reflecting supplies becoming exhausted and/or producers considering the exploitation of limited resources uneconomical.

Gross inland consumption (also known as total primary energy supply), is the total energy demand of a country or region. It represents the quantity of energy necessary to satisfy inland consumption of the geographical entity under consideration. This covers: consumption by the energy sector itself; distribution and transformation losses; final energy consumption by end users; statistical differences.

The main difference between levels of primary energy production and gross inland consumption is international trade: a shortfall of production needs to be met by positive net imports (the balance of imports minus exports) and a production surplus is generally accompanied by negative net imports. As well as primary production and international trade, gross inland consumption takes into account changes in stocks and the supply of energy to bunkers (for maritime transport for example).

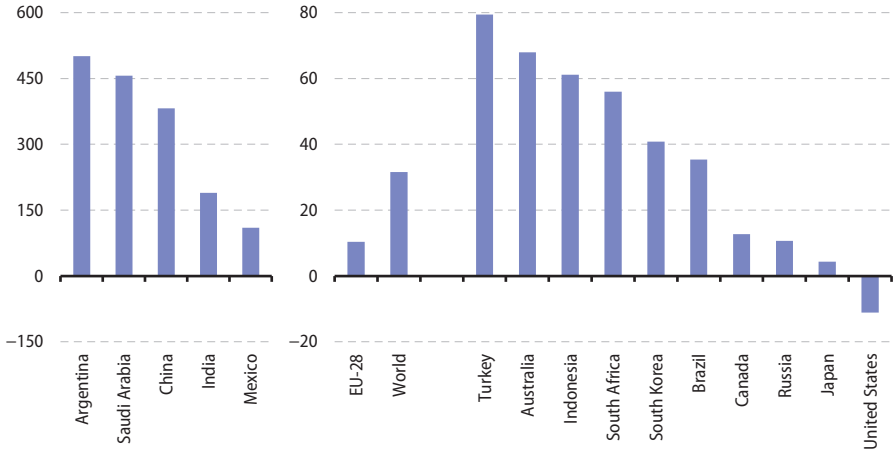
Among the G20 members, the largest net exporters of energy in 2012 were Russia and Saudi Arabia, while net exports from Indonesia, Australia and Canada also exceeded 160 million toe; Mexico and South Africa also recorded smaller net exports. The largest net importer was the EU-28, followed by China, Japan and the United States. Between 2002 and 2012, Argentina moved from being a net exporter of energy to a net importer. During the same period, the United States' net imports declined, while the net imports of China increased greatly as did those of India, South Korea, the EU-28 and Turkey. The net exports of Mexico and South Africa fell between 2002 and 2012, while there were large increases in the net exports of Russia, Indonesia and Saudi Arabia, as well as Australia and Canada.

An analysis of the change in (gross) energy imports between 2002 and 2012 (see Figure 13.1) indicates that only the United States recorded a fall during this period, while Argentina and Saudi Arabia's relatively high percentage increases reflected quite low levels of imports in 2002. In quantity terms, China's imports increased by 405 million toe between 2002 and 2012, equivalent to one third (32.8 %) of the increase in energy imports worldwide, and almost double the increase reported for India (204 million toe).

Worldwide gross energy consumption was 13.4 billion toe in 2012, of which the G20 members accounted for around four fifths (79 %), significantly higher than their collective share of production. Worldwide gross consumption increased 29 % between 2002 and 2012, with Japan, the EU-28 and the United States the only G20 members to record lower consumption in 2012 than 10 years earlier. China's gross inland consumption more than doubled (131 %), while Saudi Arabia, India and Turkey also recorded increases in excess of 50 %.

For many of the G20 members the mix of energy sources for primary production in 2012 was dominated by just one type (see Table 13.2 and Figure 13.2). In South Africa, Australia and China three quarters or more of primary production came from coal and lignite, while in Turkey and Indonesia coal and lignite's share was just over half. In Saudi Arabia and Mexico crude oil was dominant, while in South Korea nuclear energy contributed by far the largest share and in Japan (after the suspension of the operation of many nuclear plants) the main source of primary production was renewables and waste. Production in Brazil, India and

Figure 13.1: Change in gross imports, 2002–12



Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

Table 13.2: Production of primary energy (1)

	Production (million toe)	Analysis by energy type (excluding heat) (%)				
		Coal and lignite	Crude oil	Natural gas	Nuclear energy	Renewables & waste
EU-28	789.7	19.7	9.1	16.7	28.7	25.8
Argentina	75.2	0.1	42.5	45.4	2.2	9.8
Australia	317.4	75.6	7.2	14.9	0.0	2.3
Brazil	251.9	1.0	44.7	6.5	1.7	46.2
Canada	419.7	8.0	44.2	31.0	5.9	10.9
China	2 525.3	74.7	8.2	3.5	1.0	12.5
India	544.6	47.8	8.0	6.1	1.6	36.5
Indonesia	440.3	58.1	10.1	15.3	0.0	16.5
Japan	28.3	0.0	2.3	10.8	14.7	72.3
Mexico	219.0	3.4	69.5	18.4	1.0	7.6
Russia	1 331.6	15.1	39.1	40.6	3.5	1.7
Saudi Arabia	625.0	0.0	89.4	10.6	0.0	0.0
South Africa	166.1	87.9	0.1	0.6	2.1	9.4
South Korea	46.2	2.0	1.6	0.8	84.9	10.7
Turkey	30.6	51.0	7.6	1.7	0.0	39.7
United States	1 806.5	27.4	22.6	30.9	11.6	7.5
World	13 461.1	29.5	31.2	21.2	4.8	13.4

(1) EU-28: 2013. Non-EU G20 members and world: 2012.

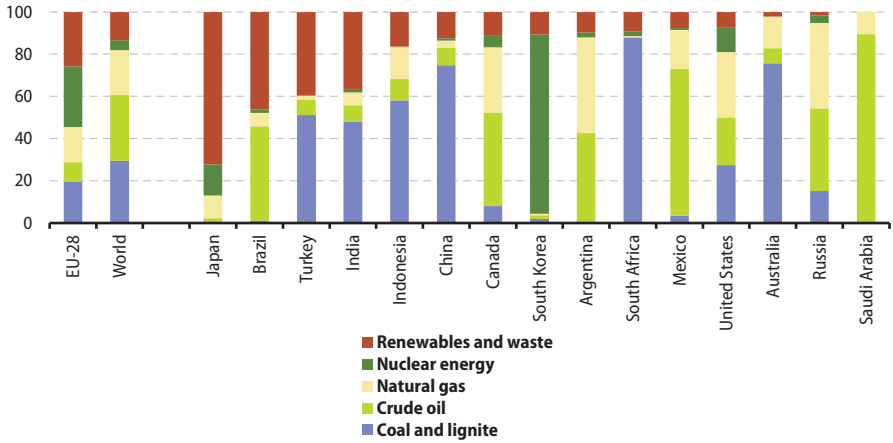
Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

Turkey was a mixture from renewables and waste as well as one type of fossil fuel, crude oil for Brazil and coal and lignite for India and Turkey. By contrast, Argentina, Canada, Russia and the United States had substantial shares of production spread across two or three types of fossil fuels, with none of them accounting for more than half of their total production.

Energy production in the EU-28 was more varied than in any of the other G20 members with only crude oil among the five types of energy sources shown in Table 13.1 failing to attain at least a 10 % share of total production in 2013, while none of them exceeded 30 %. This variety reflects the availability of different fossil fuel deposits and the potential for hydro power among EU Member States as well as differing policies towards nuclear fuels and renewables.

Renewable energy sources are sources that replenish (or renew) themselves naturally and include biomass and renewable wastes, hydropower, geothermal energy, wind energy, solar energy, wave and tidal power. Non-renewable waste may be industrial or municipal waste.

Figure 13.2: Analysis of primary production by energy type (excluding heat) (1)
(%)



(1) Ranked on the share of renewables and waste. EU-28: 2013. Non-EU G20 members and world: 2012.

Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

An analysis of the composition of gross energy imports (see Table 13.3) shows that crude oil and oil products dominated worldwide (66.6 %) and in most G20 members. These products accounted for more than half of all energy imports in each of the G20 members except for Russia, Argentina and Turkey; gas formed a large part of Argentina and Turkey's energy imports, while in Russia more than half of all energy imports were coal and lignite.

Table 13.3: Energy imports and exports (1)

	Imports	Exports	Net imports (2)	Gross imports: analysis by energy type				
				Coal and lignite	Crude oil and oil products	Gas	Renewables and waste	Electricity and heat
	(million toe)			(%)				
EU-28	1 444.0	535.1	908.9	11.4	62.0	23.6	0.9	2.1
Argentina	14.3	7.2	7.1	8.0	34.0	53.1	0.0	4.9
Australia	47.3	234.1	−186.8	0.1	89.4	10.6	0.0	0.0
Brazil	69.1	35.5	33.6	17.7	60.9	15.9	0.4	5.1
Canada	82.8	251.5	−168.7	6.8	59.5	31.5	1.1	1.1
China	511.0	43.4	467.6	30.0	63.3	6.5	0.0	0.1
India	311.5	68.3	243.2	29.1	65.8	5.0	0.0	0.1
Indonesia	52.8	279.0	−226.2	0.1	99.4	0.0	0.0	0.5
Japan	449.4	14.1	435.3	25.2	52.1	22.7	0.0	0.0
Mexico	56.1	79.0	−22.9	7.8	58.6	33.2	0.0	0.4
Russia	27.7	592.6	−564.9	66.0	9.3	23.9	0.0	0.8
Saudi Arabia	16.9	442.5	−425.5	0.0	100.0	0.0	0.0	0.0
South Africa	32.9	54.6	−21.7	5.8	82.2	9.4	0.0	2.6
South Korea	287.4	58.8	228.6	26.5	58.6	14.9	0.0	0.0
Turkey	97.5	8.6	89.0	20.0	40.7	38.8	0.1	0.5
United States	635.3	260.4	374.9	0.9	86.8	11.4	0.0	0.8
World	5 145.5	5181.026	–	15.1	66.6	16.8	0.3	1.1

(1) EU-28: 2013. Non-EU G20 members and world: 2012.
(2) A negative value for net imports indicates that that the country concerned is a net exporter.

Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

Just over three tenths of worldwide gross consumption of energy in 2012 was crude oil and oil products, while coal and lignite accounted for a slightly lower share, and just over one fifth of the total was gas; combined these three fuels accounted for just over four fifths (81.7 %) of global energy consumption (see Table 13.4). Gross inland consumption was entirely satisfied by such fossil fuels in Saudi Arabia and these three fuels provided more than 90 % of gross inland consumption in Japan, Australia, Russia and Mexico, and close to this level in Argentina, Turkey, China and South Africa (see Figure 13.3).

South Korea had the highest share of nuclear energy in gross inland consumption, 14.9 %, but this share was considerably lower than for primary production, indicating South Korea's high dependency on imported fossil fuels, notably crude oil and oil products. The EU-28 had the second highest share of nuclear energy in gross inland consumption (13.6 % in 2013), followed by Canada and the United States (both with 9.8 % shares).

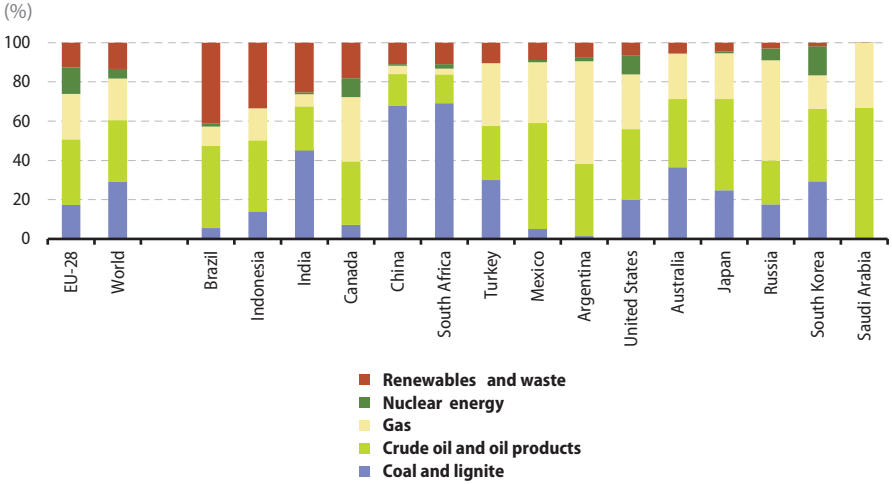
Worldwide, renewables and waste accounted for 13.5 % of gross inland energy consumption. As for primary production, Brazil, Indonesia and India recorded above average shares for renewables and waste in gross inland consumption, as did Canada reflecting its large net exports of fossil fuels. By contrast, the EU-28, Turkey and Japan recorded below average shares of renewables and waste in gross inland energy consumption, despite above average primary production, reflecting their net imports of fossil fuels.

Table 13.4: Gross inland consumption (1)

	Gross inland consumption (million toe)	Analysis by energy type (%)					
		Coal and lignite	Crude oil and oil products	Gas	Nuclear energy	Renewables and waste	Electricity and heat (2)
EU-28	1 666.2	17.2	33.4	23.2	13.6	12.5	0.1
Argentina	80.2	1.4	36.4	51.9	2.1	7.3	0.8
Australia	128.3	36.6	34.6	23.2	0.0	5.6	0.0
Brazil	281.7	5.4	41.5	9.7	1.5	40.7	1.2
Canada	251.1	7.3	32.8	33.2	9.8	18.4	−1.6
China	2 894.3	68.0	16.0	4.2	0.9	10.9	0.0
India	788.1	44.9	22.5	6.2	1.1	25.2	0.1
Indonesia	213.6	13.9	36.1	16.4	0.0	33.4	0.1
Japan	452.3	24.8	46.5	23.3	0.9	4.5	0.0
Mexico	188.4	5.0	54.1	31.0	1.2	8.8	−0.2
Russia	756.6	17.6	22.3	51.2	6.2	2.9	−0.2
Saudi Arabia	200.3	0.0	66.9	33.1	0.0	0.0	0.0
South Africa	140.0	69.3	14.8	2.9	2.4	10.9	−0.3
South Korea	263.4	29.3	36.9	17.1	14.9	1.9	0.0
Turkey	116.9	30.0	27.5	31.9	0.0	10.4	0.2
United States	2 140.6	19.9	36.0	27.8	9.8	6.3	0.2
World	13 371.0	29.0	31.4	21.3	4.8	13.5	0.0

(1) EU-28: 2013. Non-EU G20 members and world: 2012.
(2) Gross inland consumption of electricity is equal to electricity net imports.
Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

Figure 13.3: Analysis of gross inland consumption by energy type (1)



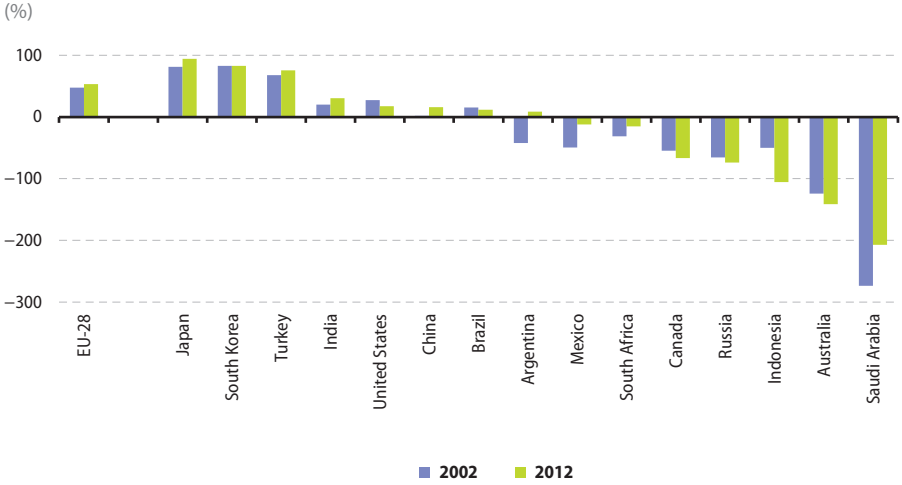
(1) Ranked on the share of renewables and waste. Excluding electricity and heat. EU-28: 2013. Non-EU G20 members and world: 2012.

Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

The energy dependency indicator shown in Figure 13.4 reveals the extent to which gross inland energy consumption was met by net imports — members with a negative value are net exporters. Japan, South Korea, Turkey and the EU-28 all had energy dependency ratios in excess of 50 % in 2012, indicating that more than half of their gross inland energy consumption was met by net imports; lower dependency ratios were recorded for India, the United States, China, Brazil and Argentina. By contrast, Australia's net exports exceeded its gross inland energy consumption, resulting in an energy dependency ratio that was below −100 %, while Saudi Arabia's net exports were more than twice as high as its gross inland energy consumption leading to an energy dependency ratio that was below −200 %.

As already noted, between 2002 and 2012 Argentina moved from being a net exporter to being a net importer of energy, as a result of which its dependency ratio moved from negative to positive. During the same period, negative energy dependency ratios increased in Russia, Canada, Australia and Indonesia as their net exports grew more rapidly than their gross consumption, while the negative ratios of South Africa, Mexico and Saudi Arabia decreased, reflecting a fall in net exports (Mexico and South Africa) or net exports growing at a slower pace than gross consumption (Saudi Arabia). The United States' positive energy dependency ratio fell between 2002 and 2012 as net imports fell faster than gross consumption, while Brazil's positive ratio fell as net imports grew more slowly than gross consumption. The positive energy dependency ratios for the EU-28 and Japan increased as net imports grew while gross consumption fell, and Turkey, India and China also reported increasing positive ratios as net imports grew faster than gross consumption.

Figure 13.4: Energy dependency, development since 2002 (1)



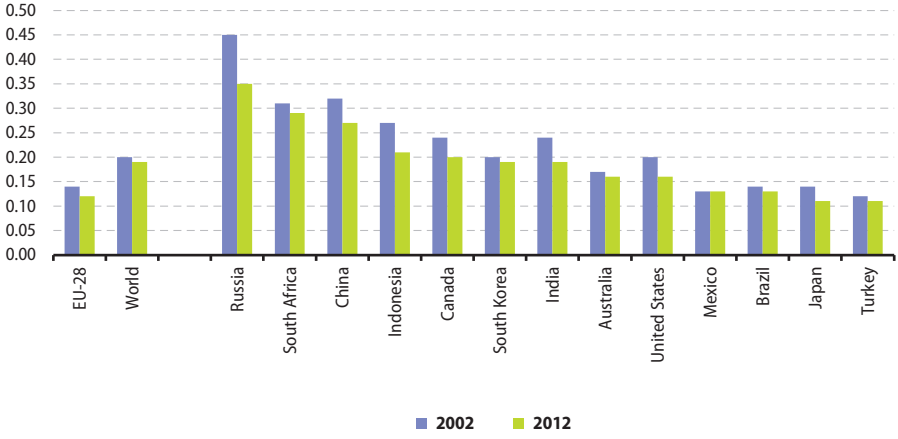
(1) Net imports divided by the sum of gross inland energy consumption plus bunkers, expressed as a percentage. EU-28: 2002 and 2013. Non-EU G20 members: 2002 and 2012.

Source: Eurostat (online data code: tsdcc310) and the International Energy Agency (Balances)

Energy intensity is an indicator of an economy's energy efficiency and relates the quantity of energy consumed to the level of economic output, the latter represented by gross domestic product (GDP). In order to facilitate a comparison over time, GDP is shown in constant prices to remove the effects of inflation. To facilitate spatial comparisons GDP is calculated in a common currency (United States dollars are used in Figure 13.5) using purchasing power parities (PPPs) rather than market exchange rates: PPPs are indicators of price level differences across countries. It should be noted that the economic structure of an economy plays an important role in determining energy intensity, as post-industrial economies with large service sectors tend to have considerably lower energy use than economies characterised by heavy, traditional, industrial activities.

Energy intensity fell between 2002 and 2012 (2011 for some G20 members) for all G20 members for whom data are available (see Figure 13.5) except for Mexico where the energy intensity ratio remained stable. During this period, substantial energy efficiencies were introduced in the economies of Russia, Indonesia, Japan, India and the United States as their energy intensities fell by more than one fifth. Nevertheless, Russia maintained its position as the most energy intense economy among the G20 members. By contrast, Japan, Turkey and the EU-28 had the lowest energy intensities.

Figure 13.5: Energy intensity, development since 2002 (1)
(toe per USD 1 000, international PPP)



(1) Ratio between the gross inland consumption of energy and the gross domestic product (GDP). The GDP figures are at 2005 constant prices expressed in United States dollars converted using international purchasing power parities. EU-28, world, Brazil, China, India, Indonesia, Russia and South Africa: 2002 and 2011. Australia, Canada, Japan, Mexico, South Korea, Turkey and the United States: 2002 and 2012. Argentina and Saudi Arabia: not available.

Source: OECD (Factbook 2014)

Gross electricity generation (also known as gross electricity production), is the total amount of electrical energy produced by transforming other forms of energy, for example nuclear or wind power. Total gross electricity generation worldwide was 22.8 million gigawatt hours (GWh) in 2012 (see Table 13.5), of which 84.1 % was generated by G20 members. In absolute terms, China and the United States had the highest levels of electricity generation among G20 members. A total of 3.3 million GWh of electricity was generated in the EU-28 in 2013.

Coal and lignite-fired power stations generated two fifths of electricity worldwide in 2012; this share was boosted by a high use of these fuels in South Africa, China, India and Australia. Gas-fired power stations generated more than one fifth of the world's electricity with this fuel providing more than half of the electricity generated in Argentina and Mexico and more than two fifths of the total in Russia, Saudi Arabia and Turkey. While oil-fired power stations provided just 5.0 % of the world's electricity, this source was dominant in Saudi Arabia. Nuclear power contributed some 26.9 % of the electricity generated in the EU-28 in 2012, which was more than double the world's average (10.8 %) and the second highest share among G20 members behind South Korea.

Table 13.5: Gross electricity generation (1)

	Total (GWh)	Total per inhabitant (MWh per inhabitant)	Analysis by source (%) (2)					
			Coal and lignite	Oil	Gas	Nuclear	Hydro (3)	Other renew-ables & waste
EU-28	3 261 074	6.4	26.7	1.9	16.6	26.9	12.3	15.5
Argentina	135 207	3.3	2.7	14.8	53.7	4.7	22.0	2.0
Australia	248 941	11.0	68.8	1.6	19.9	0.0	5.7	4.0
Brazil	552 469	2.8	2.6	3.5	8.5	2.9	75.2	7.3
Canada	634 449	18.3	10.0	1.1	10.6	15.0	60.0	3.3
China	4 994 072	3.7	75.8	0.1	1.7	2.0	17.5	2.9
India	1 127 574	0.9	71.1	2.0	8.3	2.9	11.2	4.5
Indonesia	195 895	0.8	48.7	16.7	23.2	0.0	6.5	4.9
Japan	1 034 305	8.1	29.3	17.5	38.4	1.5	8.1	5.1
Mexico	293 862	2.4	11.7	18.9	51.4	3.0	10.8	4.2
Russia	1 070 734	7.5	15.8	2.6	49.1	16.6	15.6	0.3
Saudi Arabia	271 680	9.6	0.0	55.3	44.7	0.0	0.0	0.0
South Africa	257 919	4.9	92.8	0.1	0.0	5.1	1.9	0.2
South Korea	534 618	10.7	44.8	4.0	20.9	28.1	1.4	0.7
Turkey	239 496	3.2	28.4	0.7	43.6	0.0	24.2	3.1
United States	4 290 547	13.7	38.3	0.8	29.5	18.7	7.0	5.8
World	22 752 217	3.2	40.3	5.0	22.4	10.8	16.5	5.0

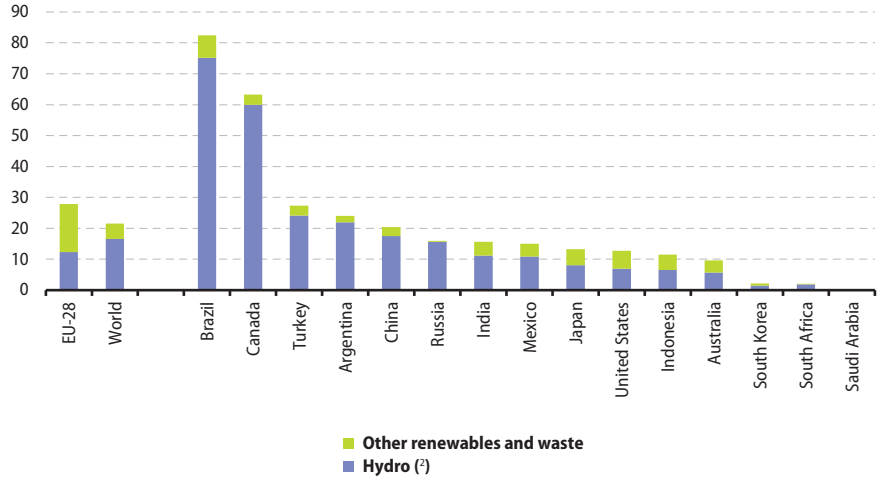
(1) EU-28: 2013. Non-EU G20 members and world: 2012.
(2) Other sources not shown.
(3) Includes production from pumped hydro.

Source: Eurostat (online data codes: ten00087, nrg_105a and demo_gind), the International Energy Agency (Electricity) and the World Bank (World Development Indicators and Health Nutrition and Population Statistics)

Hydro-electric power, other renewables and waste supplied 21.5 % of the world's electricity in 2012, with a somewhat higher share recorded in the EU-28 in 2013 (27.8 %) (see Figure 13.6). The G20 members with the highest proportion of gross electricity generation from renewables and waste were Brazil (82.5 %) and Canada (63.3 %). Hydro-electricity provided more than half of the electricity generated from renewables and waste in all G20 members except for two: in the EU-28 more electricity was generated from waste and renewables other than hydro (than from hydro power) in 2013; Saudi Arabia had no hydro power and a negligible share of electricity generated from renewables and waste.

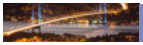
Figure 13.6: Share of renewables and waste in gross electricity generation (1)

(%)



(1) EU-28: 2013. Non-EU G20 members and world: 2012.
(2) Includes production from pumped hydro.

Source: Eurostat (online data codes: ten00087 and nrg_105a) and the International Energy Agency (Electricity)



Abbreviations and acronyms

Currencies and units of measurement

%	per cent
CO_2-equivalents	carbon dioxide equivalents
DWT	deadweight tonnes
EUR	euro
GWh	gigawatt-hour
kg	kilogram
km	kilometre
km^2	square kilometre
m^3	cubic metre
MWh	megawatt-hour
ODS tonnes	tonnes of ozone depleting substances
toe	tonne of oil equivalent
tonne-km	tonne-kilometre
USD	United States dollar

Geographical abbreviations

BRICS	Brazil, Russia, India, China and South Africa
EA	Euro area
EA-18	Euro area of 18 Member States
EFTA	European Free Trade Association
EU	European Union
EU-27	European Union of 27 Member States
EU-28	European Union of 28 Member States
G20	Group of Twenty
G7	Group of Seven

Other abbreviations and acronyms

ACI	Airports Council International
AIDS	acquired immune deficiency syndrome
CO_2	carbon dioxide
ESS	European statistical system
Eurostat	statistical office of the European Union
FDI	foreign direct investment
GDP	gross domestic product
GERD	gross domestic expenditure on research and development
GNI	gross national income
HIV	human immunodeficiency virus infection
ICJ	International Court of Justice
IMF	International Monetary Fund
ISCED	International standard classification of education
ISIC	International standard industrial classification of all economic activities
NACE	statistical classification of economic activities within the European Community
NEETs	(young people) not in employment, education or training
ODS	ozone depleting substances
OECD	Organisation for Economic Co-operation and Development
PDF	portable document format
PPP	purchasing power parities
R & D	research and development
Rev.	revision
UN	United Nations
UNFCC	United Nations' Framework Convention on Climate Change
UNSCR	United Nations Security Council resolution

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