

The EU in the world

2016 edition



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The EU in the world

2016 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. *The EU in the world 2016* is the fourth edition in its current format. However the content and structure of the publication have been continuously revised in order to include some new indicators each year.

The EU in the world 2016 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 vast 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 compared with the world's other major economies. I hope that this publication will provide you with some interesting information 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.

Have an enjoyable read!



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 organizations and on Eurostat's website.

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Production

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Data extraction period

The data presented in this publication was largely extracted during March 2016.

An online data code available under for each table/figure with data from Eurostat 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>.

For more information please consult

Eurostat website: <http://ec.europa.eu/eurostat>



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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
Australian Bureau of Statistics	http://www.abs.gov.au
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
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
General Authority for Statistics (Saudi Arabia)	http://www.stats.gov.sa/en
Statistics South Africa	http://www.statssa.gov.za
Statistics Korea	http://kostat.go.kr/portal/eng/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 statement is: 'Trusted statistics. Informed Europeans. Better decisions. We provide high-quality statistics for 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:

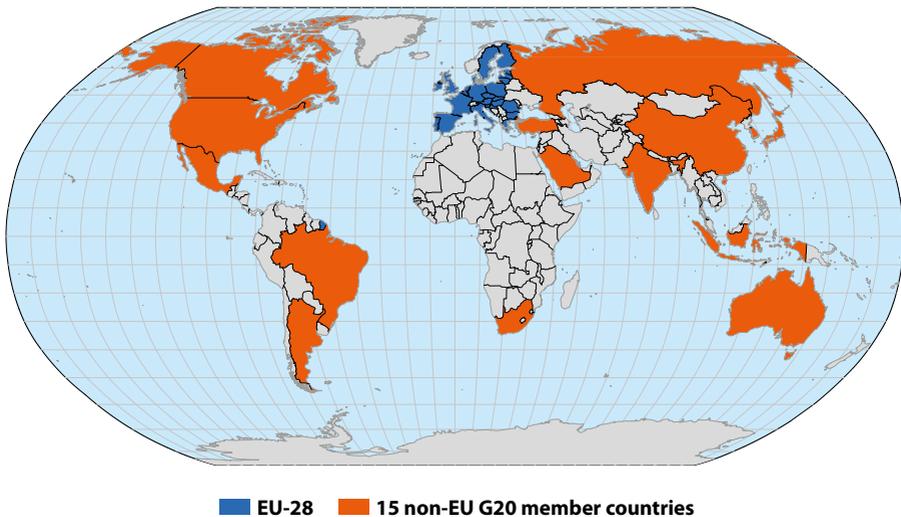
- classifications — such as the [International standard classification of education \(ISCED\)](#) for education levels and fields of study and the [International standard industrial classification \(ISIC\)](#) for the classification of economic activities
- manuals — for example, the [system of national 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 2016, the G20 held 10 Leaders’ Summits to seek agreements on global economic matters.

Map 1: EU-28 and G20 countries



Administrative boundaries: © EuroGeographics © UN-FAO
Cartography: Eurostat — GISCO, 05/2016

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 countries from the rest of the world, namely: Argentina, Australia, Brazil, Canada, China (¹), India, Indonesia, Japan, Mexico,

Russia, Saudi Arabia, South Africa, South Korea, Turkey and the United States. The EU (coloured blue) and the 15 non-EU members from the rest of the world (orange) are shown in Map 1. The G20 members covered 61 % of the world's land area, generated 85 % of global [gross domestic product \(GDP\)](#), and were home to 64 % of the world's population in 2014.

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 19 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 cover image of this publication is a picture of the night skyline of the city of Hangzhou in Eastern China. The 2016 G20 Leaders' Summit will be held in Hangzhou in September 2016. The images used to separate the chapters of this publication show a picture from each of the remaining 14 non-EU G20 members.

Spatial data coverage

The EU-28 aggregates are provided and in the case of some financial indicators the euro area ([EA-19](#)) aggregates area also included. The EU aggregates 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-19 are consistently presented for the 19 current members of the euro area.

(¹) In the case of data for China, and if not mentioned otherwise, the statistical data refer only to mainland China (not including the administrative regions of Hong Kong and Macao).

When available, information is also presented for a world total or an extra-EU-28 total for flow statistics; in the event that data for the world is not available this heading has been excluded from tables and figures.

If data for a given [reference period](#) are not available for a particular country, then efforts have been made to fill tables and figures with data for previous 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 usually 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). In a few cases data for the EU has also been extracted from other international sources for comparability reasons, and for these cases the Eurobase code is included as reference for further information. The latest available data is sometimes not used for the sake of comparability between all G20 members however, but the links to Eurobase direct the reader to the tables that contain the updated information.

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 most common freshest available data and as a result more recent data may be found in both Eurostat database and international databases.

The international data sources include:

Organisation	Data source(s)
The United Nations (UN) and its agencies	
The United Nations Population Division – Department of Economic and Social Affairs	World Population Prospects: The 2015 Revision, DVD edition
The Food and Agriculture Organisation (FAO) of the United Nations	FAOSTAT; CountrySTAT; FishStatJ; Global Forest Resources Assessment Country Reports, 2015
The International Labour Organisation (ILO)	ILOSTAT; Social Security Expenditure Database - multiple sources
The United Nations High Commissioner for Refugees (UNHCR)	Online population database – mid-year statistics
United Nations Statistics Division	Economic Statistics Branch, National Accounts Official Country Data; Social indicators, Education, Literacy; National Accounts Main Aggregates database
World Health Organisation (WHO)	World Health Statistics, Global Health Observatory data repository
The United Nations Educational, Scientific and Cultural Organization (UNESCO)	UIS: Education; UIS: Science & Technology
Department of Economic and Social Affairs	Comtrade
United Nations Industrial Development Organisation	Indstat
United Nations World Tourism Organisation	UNWTO Tourism Highlights (2006 and 2015 editions)
United Nations Conference on Trade and Development	Maritime transport indicators
United Nations Framework Convention on Climate Change (UNFCCC)	Online database
United Nations Environment Programme (Ozone Secretariat)	Online database
The Organisation for Economic Co-operation and Development (OECD)	Social Expenditure database; National Accounts at a Glance; Health care resources; Non-medical determinants of health; Education at a Glance; Labour force statistics; Main Economic Indicators; International Transport Forum; Environment statistics
The World Bank	Poverty and Inequality database World Development Indicators; World Development Indicators and Health Nutrition and Population Statistics; International Comparison Program database;
The International Monetary Fund (IMF)	World Economic Outlook database; Price, Production and Labour selected indicators; International Financial Statistics
World Intellectual Property Organisation (WIPO)	Online database
International Telecommunication Union	Online database
American Association of Port Authorities	World port rankings and port authority data
International Organisation of Motor Vehicle Manufacturers (OICA)	Vehicles in use
Airports Council International (ACI)	Online database
International Civil Aviation Organization	Online database
International Energy Agency	Online database

DATA EXTRACTION AND PROCESSING

The statistical data presented in this publication were extracted during March 2016 and the accompanying text was drafted between April and June 2016.

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) (referred to as 'international USD') 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 United Nations Population Division, and GDP data from the World Bank.

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:

<i>Italic</i>	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, the former Yugoslav Republic of Macedonia, Serbia and Turkey).

Furthermore, a number of datasets provide statistical information for key indicators related to other non-member countries such as:

- potential candidates — Bosnia and Herzegovina and Kosovo (2);
- 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 (3), 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 (4), 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 June 2016.

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 from that present statistical analysis and data on specific or cross-cutting topics; news releases with recent information; methodological documents or studies; as well as promotional compact guides.

(2) 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.

(3) 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_13nprms.

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



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:

- *The European Union and the African Union — A statistical portrait — 2015 edition*
- *Basic figures on the European Neighbourhood Policy — South countries — 2015 edition*
- *Enlargement countries — Demographic statistics — 2015 edition*
- *Basic Figures on enlargement countries — 2015 edition*
- *Basic figures on the European Neighbourhood Policy-East countries — 2015 edition*
- *European Neighbourhood Policy-East countries — Statistics on living conditions — 2015 edition*

1

Population





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

Population size, density and projections

Between 1960 and 2015 the share of the world's population living in G20 members fell from 73.6% to 63.9%

In 2015, the world's population reached 7.3 billion inhabitants and continued to grow. Although all members of the G20 recorded higher population levels in 2015 than they did more than 50 years before, between 1960 and 2015 the share of the world's population living in G20 members fell from 73.6% to 63.9%. Russia recorded the smallest overall population increase (19.7%) during these 55 years, followed by the EU-28 (25.0%), while the fastest population growth among G20 members was recorded in Saudi Arabia, with close to a seven-fold increase (an average annual growth rate of 3.8%), linked to the high fertility and migration rates.

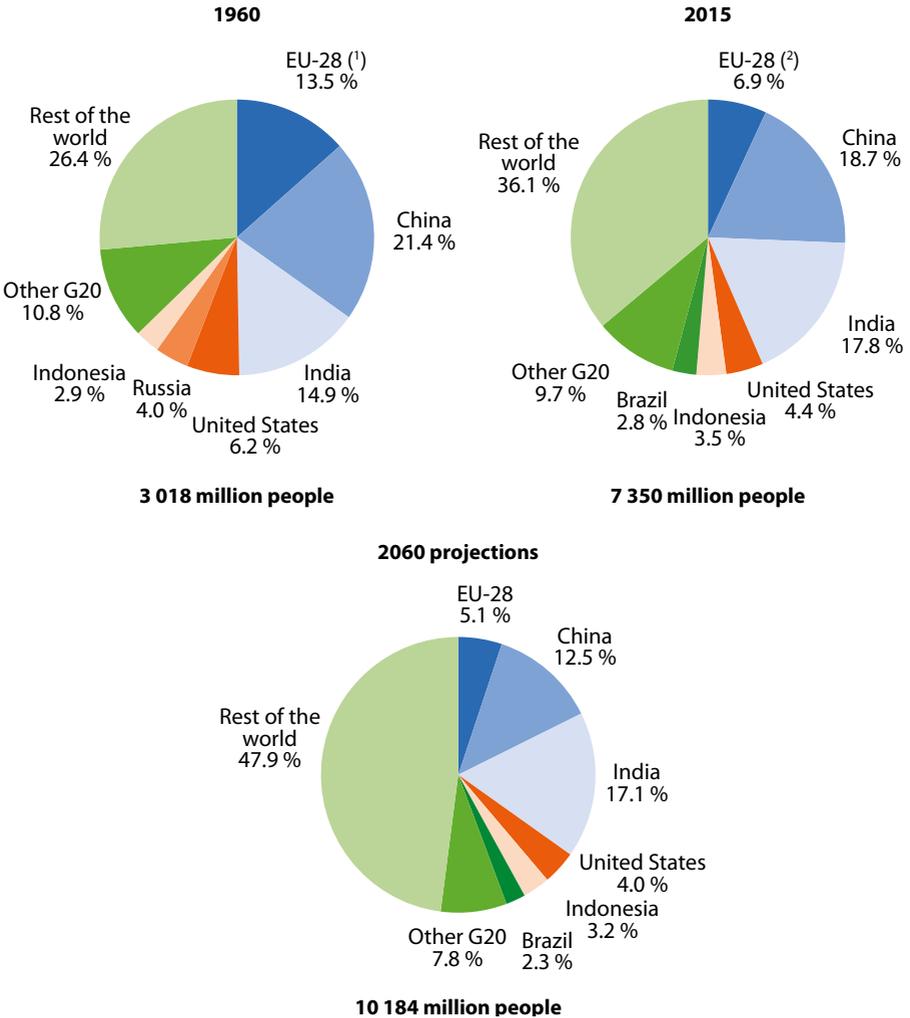
The most populous countries in the world in 2015 were China and India, together accounting for almost 36.6% of the world's population (see Figure 1.1) and 57.2% of the population in the

G20 members. The population of the EU-28 in 2015 was 508.5 million inhabitants, 6.9% of the world's total.

The global number of inhabitants is projected to reach around 10 billion by 2060

The latest United Nations population projections suggest that the pace at which the world's population is expanding will slow down in the coming decades from an average 1.6% per year since 1960 to 0.7% per year until 2060; however, the total number of inhabitants is projected to reach around 10 billion by 2060, representing an overall increase of 38.6% compared with 2015 (see Table 1.1). 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 14.0% between 2015 and 2060 while the EU-28's population is projected (by Eurostat) to increase by only 2.9% over the same period. This will translate into a reduction of the G20 share of the total global population, from 63.9% in 2015 to 52.1% in 2060 (see Figure 1.1).

Figure 1.1: Share of world population, 1960, 2015 and 2060
(%)



Note: Projections for EU-28 on the basis of main convergence scenario, for non-EU G20 member projections on the basis of medium fertility variant, 2015–2100.

(¹) 1960 population excluding French overseas departments and territories.

(²) Provisional estimates. Break in the series.

Source: Eurostat (online data codes: [demo_gind](#) and [proj_13nps](#)), United Nations Population Division, Department of Economic and Social Affairs (World Population Prospects: the 2015 Revision)

The population of many developing countries is likely to continue growing at a rapid pace. For almost all of the G20 members a growth in population is expected between 2015 and 2060 with the largest projected increases in Saudi Arabia and Australia (both + 0.9% per year). The projections foresee a decline from 2015 to 2060 in the population only four countries: Japan (– 0.5% per year), Russia (– 0.3%), China (– 0.2%) and South Korea (– 0.1%).

As well as having the largest populations, Asia had the most **densely populated** G20 members, namely South Korea (515.0 inhabitants per km²), India (435.7 inhabitants per km²) and Japan (347.8 inhabitants per km²), followed by China and Indonesia and then the EU-28 and Turkey with more than 100 inhabitants per km². Australia was the least densely populated G20 member (3.1 inhabitants per km²), followed by Canada (3.9 inhabitants per km²) and Russia (8.8 inhabitants per km²).

Table 1.1: Population and population density, 1960, 2015 and 2060

	Population (millions)			Population density (inhabitants per km ²)	Average annual growth rate (%)	Average annual growth rate (%)
	1960	2015	2060 projections	2015	1960–2015	2015–2060
EU-28 ⁽¹⁾	406.7	508.5	522.9	116.9	0.4	0.1
World	3 018.3	7 349.5	10 184.3	54.0 ⁽²⁾	1.6	0.7
Argentina	20.6	43.4	57.5	15.7	1.4	0.6
Australia ⁽²⁾	10.3	24.0	35.8	3.1	1.5	0.9
Brazil	72.5	207.8	236.0	24.7	1.9	0.3
Canada	17.9	35.9	45.5	3.9	1.3	0.5
China	644.5	1 376.0	1 276.8	145.9	1.4	–0.2
India	449.7	1 311.1	1 745.2	435.7	2.0	0.6
Indonesia	87.8	257.6	326.0	140.5	2.0	0.5
Japan	92.5	126.6	101.4	347.8	0.6	–0.5
Mexico	38.2	127.0	166.1	64.5	2.2	0.6
Russia	119.9	143.5	124.6	8.8	0.3	–0.3
Saudi Arabia	4.1	31.5	47.7	14.4	3.8	0.9
South Africa	17.4	54.5	67.2	44.5	2.1	0.5
South Korea	25.1	50.3	47.9	515.0	1.3	–0.1
Turkey	27.6	78.7	96.9	100.7	1.9	0.5
United States	186.2	321.8	403.5	34.9	1.0	0.5

Note: EU-28 projections on the basis of main convergence scenario. G20 member country projections on the basis of medium fertility variant, 2015–2100.

⁽¹⁾ 1960: population excluding French overseas departments and territories. Provisional estimates for 2015.

⁽²⁾ Including Christmas Island, Cocos (Keeling) Islands and Norfolk Island.

⁽³⁾ Using the surface area used in the United Nations calculation for 2014.

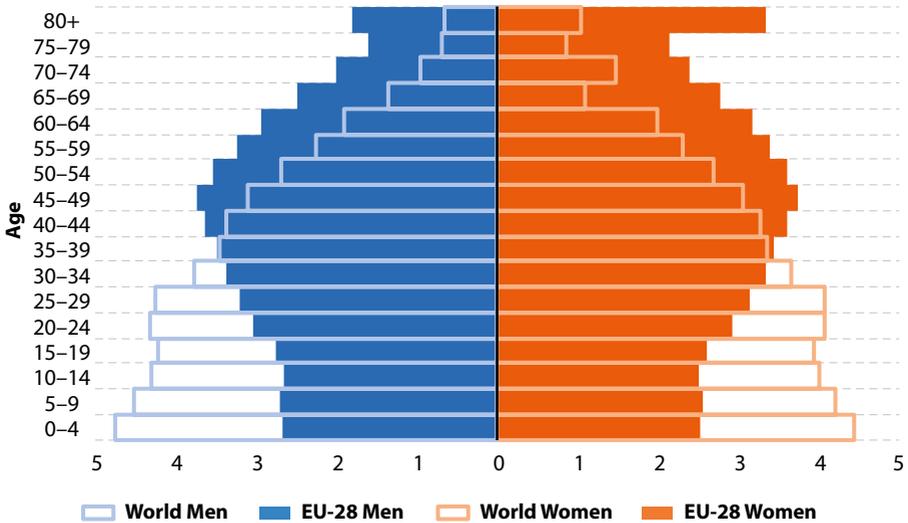
Source: Eurostat (online data codes: [demo_gind](#), [proj_13npms](#) and [tps00003](#)), United Nations Department of Economic and Social Affairs (World Population Prospects: the 2015 Revision)

Population age structure and projections

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.

Figure 1.2: Age pyramids, 2014
(% of total population)



Note: EU-28: Provisional estimates.

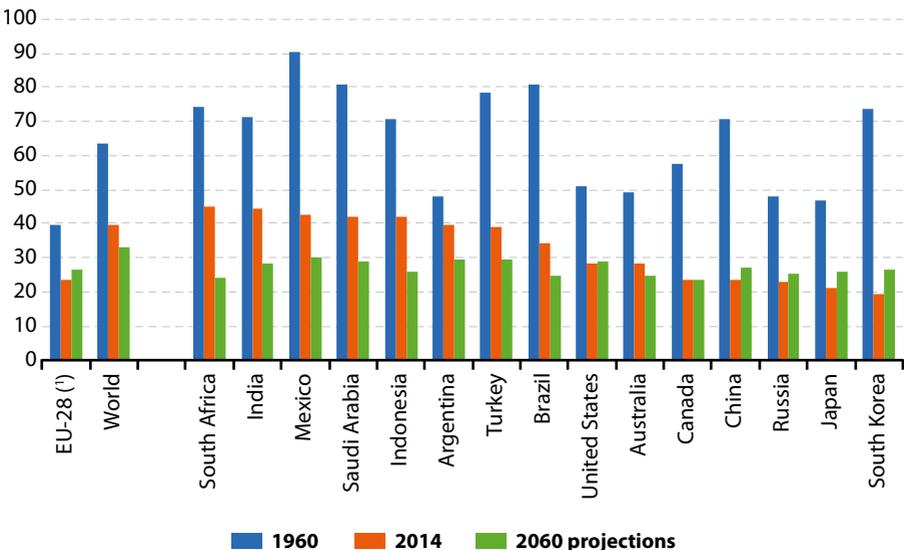
Source: Eurostat (online data code: [demo_pjangroup](#)) and the World Bank (Health Nutrition and Population Statistics)

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 increases slightly in the age group 5–9 and is stable 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 article and the article on [health](#), for example, fertility, [migration](#) and life expectancy.

Japan had by far the highest old-age dependency ratio in 2014

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 2014, the young-age dependency ratio ranged from 19.6% in South Korea to more than double this ratio in South Africa (45.1%), with the ratio in the EU-28 (23.7%) lower than in most G20 members. By far the highest old-age dependency ratio in 2013 was the 41.9% observed in Japan, indicating that there were more than two people aged 65 and over for every five people aged 15 to 64 years; the next highest old-age dependency ratio was 28.1% in the EU-28.

Figure 1.3: Young-age dependency ratio, 1960, 2014 and 2060
(population aged 0–14 as a percentage of the population aged 15–64)



(1) Provisional estimates for 2014 and break in the series.

Source: Eurostat (online data codes: [demo_pjanind](#) and [proj_13hpms](#)), World Bank (Health Nutrition and Population Statistics) and United Nations Department of Economic and Social Affairs (World Population Prospects: the 2015 Revision)



The fall in the **young-age dependency ratio** for the EU-28 between 1960 and 2014 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 2014 than in 1960, reflecting a large increase in the working age population in this country.

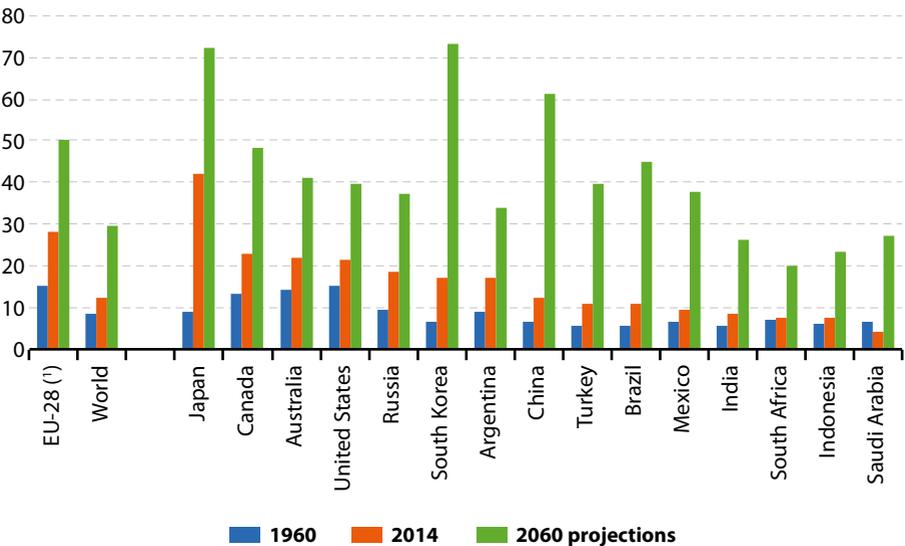
Lower young-age dependency ratios and higher old-age dependency ratios projected for 2060

With relatively low fertility rates the young-age dependency ratio is projected to be lower in

2060 than it was in 2014 in several G20 members, dropping by more than 10 **percentage points** in South Africa, India, Indonesia, Saudi Arabia, Mexico and Argentina. Projected increases for this ratio are relatively small, peaking at 7.0 percentage points in South Korea. In the EU-28, the young-age dependency ratio is projected to increase from 23.7% in 2014 to 26.5% by 2060, but will remain well below the world average of 33.2%, and the same goes for all of the projections for the G20 members.

Old-age dependency ratios are projected to continue to rise in all G20 members, suggesting for the future an increased burden in providing for social expenditure related to population ageing (for example, for pensions, healthcare and institutional care). The EU-28's old-age

Figure 1.4: Old-age dependency ratio, 1960, 2014 and 2060
(population aged 65 or more as a percentage of the population aged 15–64)



(*) Provisional estimates for 2014 and break in the series.

Source: Eurostat (online data codes: [demo_pjanind](#) and [proj_13npms](#)), World Bank (Health Nutrition and Population Statistics) and United Nations Department of Economic and Social Affairs (World Population Prospects: the 2015 Revision)

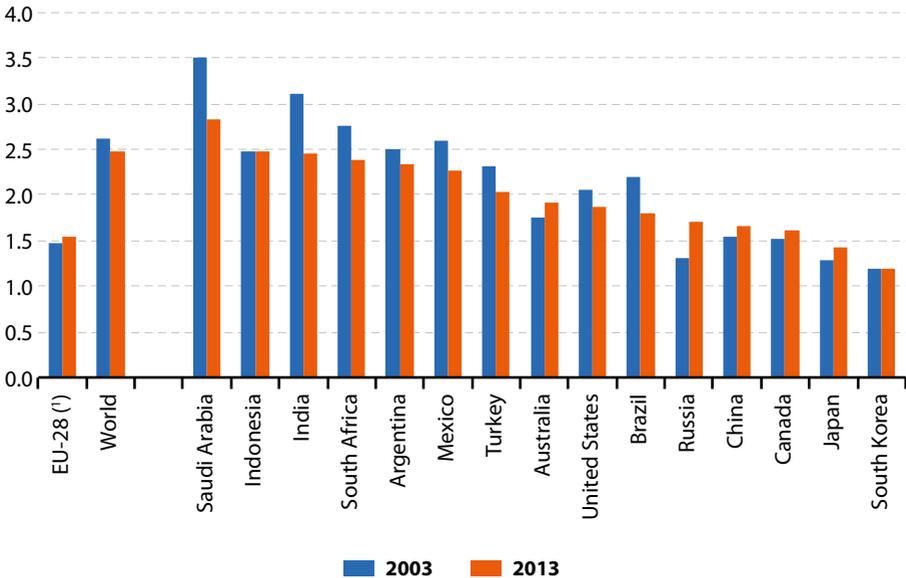
dependency ratio is projected to increase from 28.1% in 2014 to 50.2% by 2060, when it is projected to be 20.7 percentage points above the world average, but considerably lower than in South Korea (73.0%) and Japan (72.4%).

Natural population change

Natural change results from the difference between the number of **live births** and the number of **deaths** and along with the **net effect of migration** it is one of the components of the total population change.

Natural change is dependent on the **fertility rate** which 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

Figure 1.5: Fertility rate, 2003 and 2013
(average number of births per woman)



(¹) Provisional estimates for 2013.

Source: Eurostat (online data code: [demo_find](#)) and the World Bank — Health Nutrition and Population Statistics: Population estimates and projections

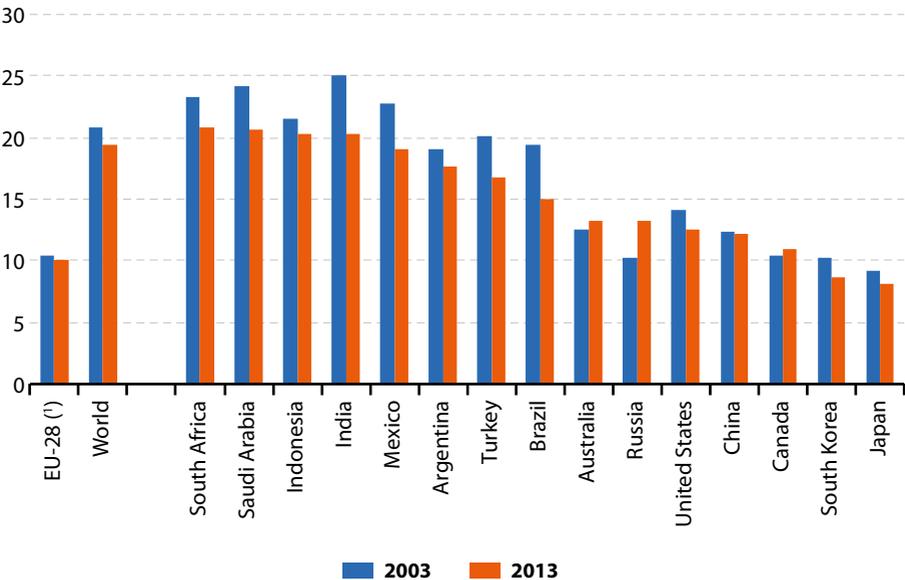
of women within society and the roles of men and women within families. In the most recent decade for which data are available, a slight increase in the fertility rate for the EU-28 was observed.

Fertility rates fell between 2003 and 2013 in eight non-European G20 members, most notably in Saudi Arabia, India and Brazil. Russia recorded the largest increase, rising from 1.3 births per woman in 2003 to 1.7 births per woman in 2013. The average fertility rate in the EU-28 in 2013 was 1.5 births per woman, lower than in all of the other G20 members except for Japan and South Korea (see Figure 1.5).

The crude birth rate in the EU-28 was among the lowest across the G20 members

The **crude birth rate** (the ratio of the number of births to the population) in the EU-28 in 2013 was slightly lower than in 2003, and remained among the lowest across the G20 members, with only South Korea and Japan recording lower birth rates (see Figure 1.6). Crude birth rates recorded in South Africa, Saudi Arabia, Indonesia and India in 2013 were more than double the average rate for the EU-28.

Figure 1.6: Crude birth rate, 2003 and 2013
(per 1 000 population)



(*) Provisional estimates for 2013.

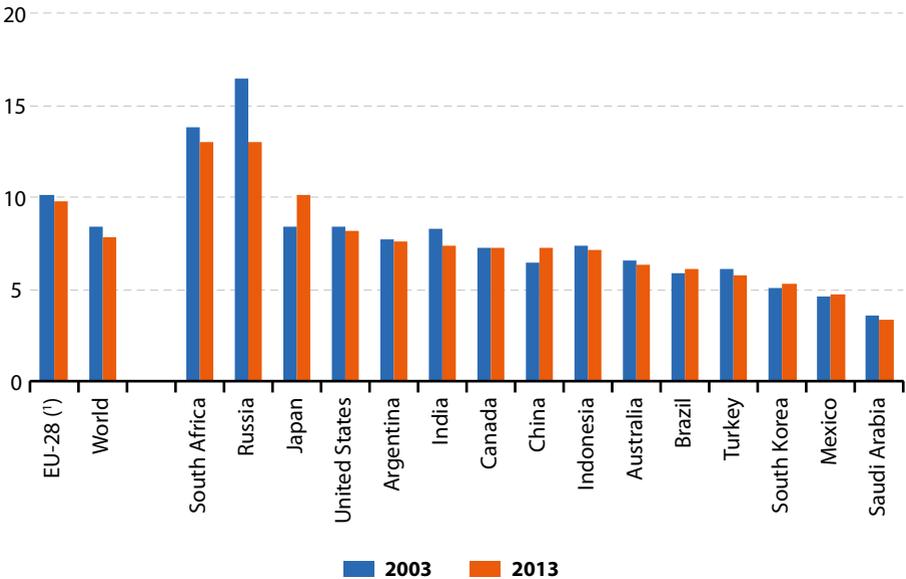
Source: Eurostat (online data code: [demo_gind](#)) and the World Bank (World Development Indicators)



When the death rate exceeds the birth rate there is negative natural population change; this situation was experienced in Japan in 2013, while birth and death rates were almost balanced in Russia and the EU-28. The reverse situation, natural population growth due to a higher birth rate, was observed for all of the remaining G20 members (see Figures 1.6 and 1.7) with the largest differences (over 10 percentage points) recorded in Saudi Arabia, Mexico, Indonesia,

India, Turkey and Argentina. 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 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 death rate, 2003 and 2013
(per 1 000 population)



(1) Provisional estimates for 2013.

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

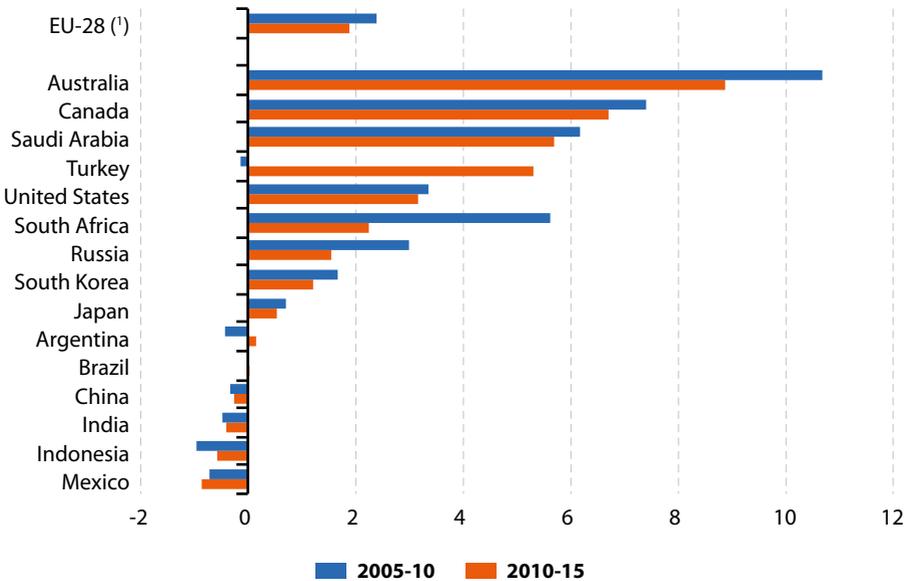


Migration and asylum

The net migration rate is the difference between immigrants and emigrants of a country in a period of time. A positive value represents more people entering the country than leaving it, while a negative value means more people leaving than entering it. From 2010 to 2015, only four countries China, India, Indonesia and

Mexico recorded negative net migration rates (see Figure 1.8). On the other hand, all other G20 countries including the EU-28 experienced positive net migration. This situation was broadly similar to that observed five years earlier, between 2005 and 2010, with the exception of Turkey and Argentina which had then registered a negative net migration in contrast to the more recent pattern for net inward migration.

Figure 1.8: Net migration rate, 2005–10 and 2010–15
(per 1 000 population)



(*) Net migration includes statistical adjustment and migrant flows between EU Member States. Annual averages for 2005–10 and 2010–14 include breaks in the series. 2010–14 for EU-28 (provisional estimates).

Source: Eurostat (online data code: tsdde230) and United Nations, Department of Economic and Social Affairs, Population Division (2015) World Population

More than one quarter of people living in Australia were foreign-born while close to one third of residents in Saudi Arabia were foreign citizens

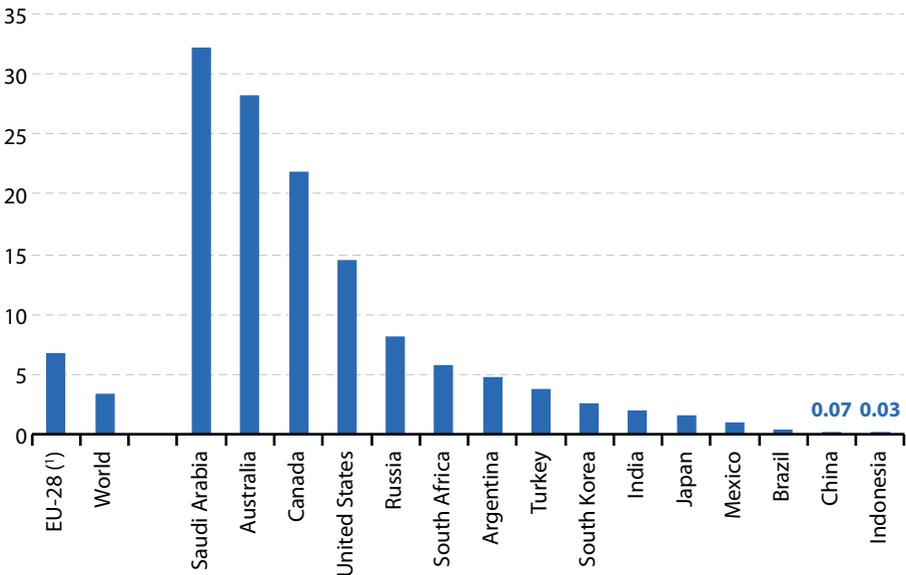
Some 6.8% of the population living in the EU-28 in 2015 had been born outside of the EU, around 34.3 million people (see Figure 1.9). While the share in Russia (8.1%) was above the share in the EU, in the United States (14.5%) it was more than twice as high as the share in the EU, in Canada (21.8%) more than three times as high, and in Australia (28.2%) and Saudi Arabia (32.3%) more

than four times as high. The G20 members with the lowest shares of foreign-born citizens were China (0.07%) and Indonesia (0.03%).

In 2015, the [United Nations High Commissioner for Refugees](#) reported that there were 2.12 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).

Figure 1.9: Share of foreign-born population, 2015

(%)



Note: Migrant population is considered as foreign born, except for China, Japan, South Korea and Saudi Arabia, where the citizenship was considered. In India, Indonesia, Mexico, Saudi Arabia, South Africa and Turkey the refugees were also taken into account.

(¹) EU-28: intra-EU migrants not taken into account.

Source: Eurostat (online data code: [migr_pop3ctb](#)) and United Nations, Department of Economic and Social Affairs, Population Division (2015) World Population

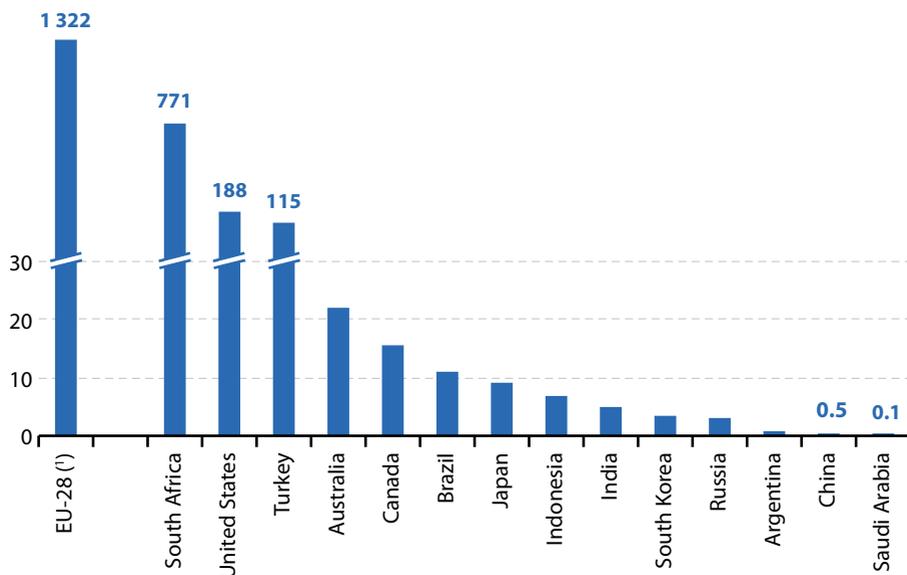


In 2014 there were 627 thousand asylum applicants (from non-member countries) in the EU-28, increasing to 1 322 thousand in 2015 (see Figure 1.10). Among those seeking asylum in the EU-28 in 2015, the highest number were from Syria (368 thousand), followed by Afghanistan, Iraq, Kosovo, Albania and Pakistan (each accounting for between 48 and 181 thousand asylum seekers). The highest numbers of asylum applicants into the EU-28 from G20 members

came from Russia (22 thousand), China (6.2 thousand) and India (5.0 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 2015 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, 2015
(thousand applicants)



Note: Data not available for Mexico.

(*) EU-28 data only includes asylum seekers from non-member countries.

Source: Eurostat (online data code: [migr_asyappctza](#)) and the United Nations High Commissioner for Refugees, the UN Refugee Agency, Population Statistics, (UNHCR Statistical Online Population Database — Mid-year statistics)

2

Living conditions



Introduction

The data on living conditions and social protection shown in this article 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.

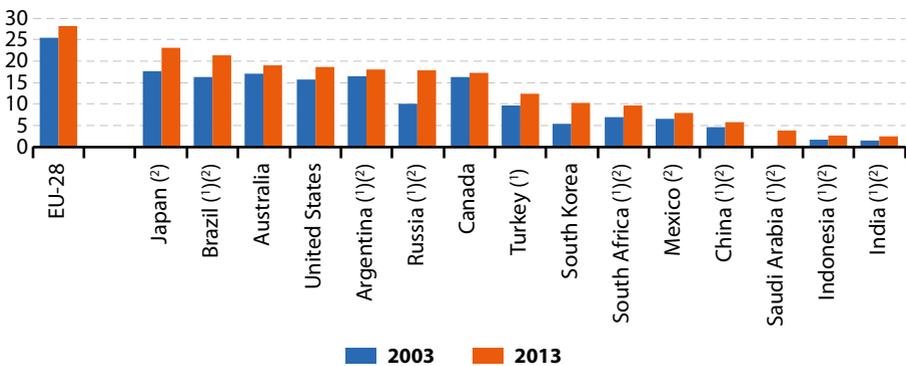
Main findings

Social protection expenditure

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 2.1 shows the level of [social protection expenditure](#) in the G20 members relative to [GDP](#). The EU-28 recorded the highest level of expenditure on social protection in 2013, ahead of Japan

(2011 data) and Brazil (2010 data), which were the only other G20 members (among the members for which data are available) with a ratio above 20%. Saudi Arabia, Indonesia and India (all 2010 data) recorded social protection expenditure below 5% of GDP. Social protection expenditure relative to GDP raised in all G20 countries between 2003 and 2013, with the most significant increase in South Korea (+ 89%) and Russia (+ 77%).

Figure 2.1: Public expenditure on social protection benefits, 2003 and 2013
(% of GDP)



(¹) 2003: Brazil, Argentina, Russia, Turkey, South Africa, China, Indonesia and India: data from 2000.

(²) 2013: Japan: data from 2011. Brazil, Argentina, Russia, South Africa, Saudi Arabia, Indonesia, India: 2010 data. Mexico: 2012 data. China: 2008 data.

Source: Eurostat (online data code: [spr_exp_sum](#)); OECD (Social Expenditure Database) and ILO (Social Security Expenditure Database - multiple sources)



Household structure

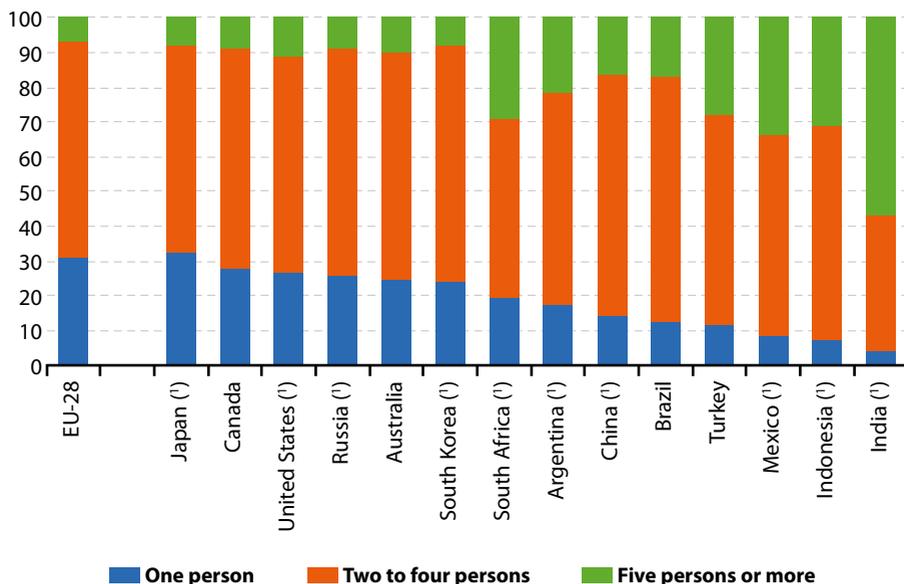
Over half of households in India had five or more persons, compared with less than 10% in the EU-28

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 2.2 shows that more than half of all households in the EU-28 in all G20 members (except India) were two- to four-person households, making them the most common among G20 members. The majority of households in India (57.0%) had five or more persons, compared with less than one tenth in Russia, Canada, South Korea, Japan and the EU-28.

Figure 2.2: Households by the number of household members, 2011
(% of total)



Note: ranked on 'One person'. Data not available for Saudi Arabia.

(¹) India: 2001 data. Japan, United States, Russia, South Korea, Argentina, China, Mexico and Indonesia: 2010 data. South Africa: 2013 data.

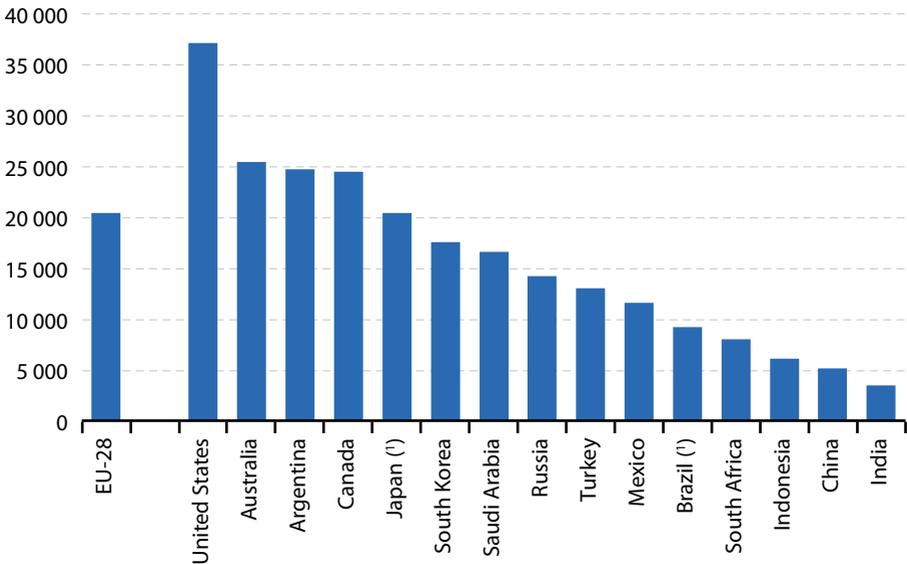
Source: Eurostat (online data code: ilc_lvph03), the United Nations Department of Economic and Social Affairs (Demographic statistics) and national surveys

Household expenditure and income

Household consumption expenditure is the expenditure made by households to acquire goods and services and includes indirect taxes (VAT and excise duties). Figure 2.3 presents expenditure statistics that have been adjusted to reflect differences in price levels across countries. The adjustment to reflect price level differences

is done by converting data in national currencies to a common currency unit using [purchasing power parities \(PPPs\)](#) expressed in terms of international USD rather than market exchange rates. Among the G20 members household consumption expenditure per inhabitant was highest in the United States, Australia, Argentina and Canada, followed by the EU-28 and Japan (all above 20 000 international USD per inhabitant).

Figure 2.3: Final consumption expenditure of households, 2014
(international USD per inhabitant)



(!) 2013 exchange rates were used to calculate the indicator.

Source: Eurostat (online data codes: [nama_10_gdp](#) and [demo_gind](#)), the United Nations Statistics Division (National Accounts Estimates of main aggregates) United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition



The share of expenditure on food and beverages was particularly low in the United States

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 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 by far the highest share. The share of expenditure on food and beverages was particularly low in the United States, as it was to a lesser extent in Canada and Australia.

Table 2.1: Household consumption expenditure by type of expenditure, 2014
(% of total household consumption expenditure)

	Food, beverages, tobacco and narcotics	Clothing and footwear	Housing, water, electricity, gas and other fuels	Furnishings, household equipment and routine maintenance of the house	Health	Transport and communication	Recreation and culture	Education	Restaurants and hotels	Miscellaneous goods and services
EU-28	16.4	5.0	24.4	5.4	3.9	15.5	8.6	1.2	8.2	11.5
Australia ⁽¹⁾	13.5	3.2	23.9	4.1	6.2	12.8	9.7	4.5	6.6	15.4
Brazil	19.2	6.6	20.4	10.4	6.2	16.6	1.6	2.2	5.9	10.8
Canada	12.6	4.1	24.7	5.4	4.3	18.4	8.3	1.6	7.0	13.6
China ⁽¹⁾⁽²⁾	36.2	10.9	8.9	6.7	6.4	14.7	2.7	4.9	4.6	3.9
India ⁽¹⁾	33.1	6.7	14.7	3.9	3.8	16.3	1.0	2.8	2.3	15.5
Indonesia	50.0	1.9	20.8	0.0	3.3	:	1.5	3.9	:	18.6
Japan ⁽¹⁾	16.8	3.7	24.9	4.2	4.6	14.7	9.1	2.1	6.4	13.5
Mexico ⁽¹⁾	26.0	3.1	19.9	5.4	4.0	22.7	4.7	1.5	4.0	8.7
Russia ⁽¹⁾	37.5	8.9	9.5	5.0	4.0	17.6	5.4	1.3	3.5	7.2
Saudi Arabia	18.4	5.6	21.2	7.3	1.7	15.4	2.8	2.5	5.3	19.7
South Africa	25.4	4.8	14.6	6.0	7.8	18.8	4.2	3.4	2.6	12.4
South Korea	15.4	6.3	18.6	2.8	5.0	15.9	8.3	5.8	8.4	13.5
Turkey	25.9	4.6	18.3	7.5	3.1	20.7	3.9	1.3	6.9	7.7
United States ⁽¹⁾	8.7	3.4	18.8	4.2	21.1	12.6	9.1	2.4	6.4	13.3

Note: data not available for Argentina.

(1) Australia, India, Japan, Mexico, Russia and United States: 2013 data. China: 2012 data.

(2) 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

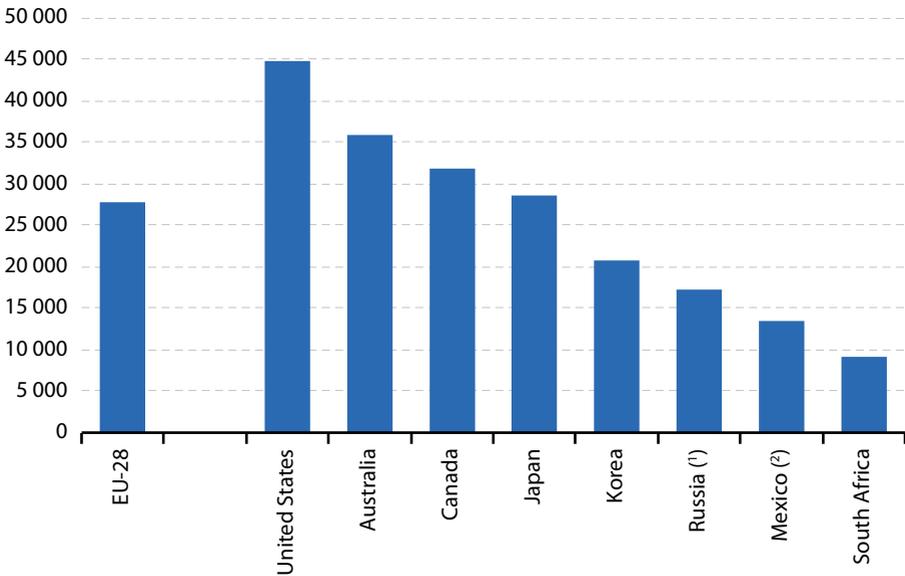
Disposable income was highest in the United States, Australia and Canada

Figure 2.4 presents information on income levels compiled by the OECD and Eurostat (for the EU-28) presented in international USD like in the case of Figure 2.3. 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.

The United States had the highest annual household adjusted income per inhabitant, followed at some distance by Australia, Canada, Japan and the EU-28.

Figure 2.4: Gross household adjusted disposable income per inhabitant, 2014
(international USD)



Note: data have been adjusted to reflect price differences between countries. Data not available for Argentina, Brazil, China, India, Indonesia, Saudi Arabia and Turkey.

(1) Estimated data for 2013.

(2) 2012 data.

Source: Eurostat (online data code: [tec00113](#)) and OECD (National Accounts at a Glance)



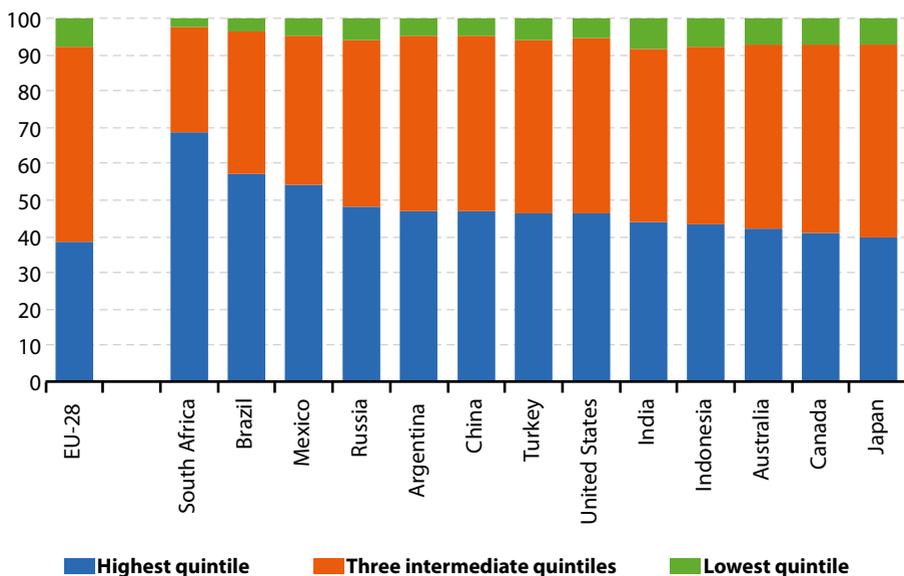
The share of income accounted for by the highest income quintile was lowest in the EU-28 and highest in South Africa

Income generally has a major impact on an individual's living conditions. Figure 2.5 presents the distribution of income for 2013 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 38.5%, in all other G20 members for which data are available this proportion equalled or exceeded 40% of the total, except Japan (39.7%, 2008 data). The highest quintile received 68.9% of all income in South Africa (2011 data), by far the highest proportion among the G20 members.

Figure 2.5: Distribution of income by quintiles, 2013

(%)



Note: ranked on 'Highest quintile'. Data not available for Saudi Arabia and South Korea.

(1) Japan: 2008 data. China, Indonesia, Australia and Canada: 2010 data. South Africa and India: 2011 data. Mexico and Turkey: 2012 data.

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

3

Health



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.

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.

Main findings

Expenditure on health

Lowest health expenditure per inhabitant in India and Indonesia

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.

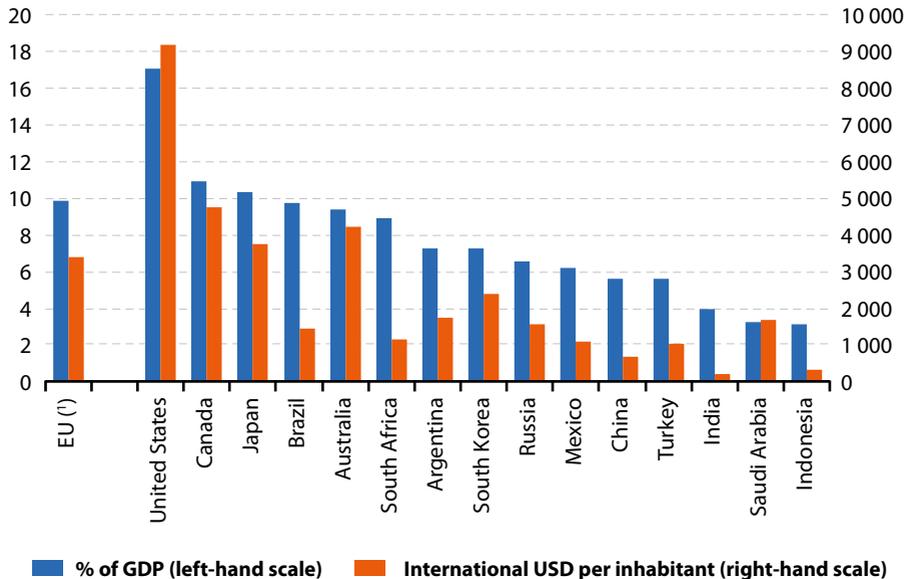
The United States had by far the highest expenditure on health relative to [GDP](#), 17.1 % in 2013. Six other G20 members committed more than 8.0 % of their GDP to health in 2013: Canada,

Japan, the EU (incomplete 2012 data, see Figure 3.1 for details), Brazil, Australia and South Africa. These were followed by a group of six other countries in the range of 5.0 % to 8.0 %. The remaining G20 members spending 4 % or less of GDP were India (4.0 %), Saudi Arabia (3.2 %) and the lowest relative expenditure was recorded for Indonesia (3.1 %).

Figure 3.1 also shows the absolute level of health expenditure per inhabitant shown in [purchasing power parities \(PPPs\)](#), used as an adjustment to reflect price level differences by converting data in national currencies to a common currency unit using rather than market exchange rates. This shows relatively high levels of expenditure per inhabitant in the United States and to a lower degree in Canada, Australia, Japan and the EU, whereas China, Indonesia and India recorded by far the lowest levels of health expenditure per inhabitant among the G20 members.



Figure 3.1: Expenditure on health, 2013



Note: ranked on % of GDP.

(¹) EU-28: 2012 data excluding Ireland, Italy, Malta and the United Kingdom. Latvia: 2010 data. Bulgaria, Portugal, Slovenia and Slovakia: 2011 data.

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

Healthcare resources

Hospital beds per 100 000 inhabitants in Japan and South Korea were over double than those in the EU-28

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 526 in the EU-28 in 2013. This ratio for the EU-28 was the fourth highest among G20 members, a long way behind Japan (1 332) and South Korea (1 096); the lowest availability of hospital beds relative to the size of the population was in India, with 50 beds per 100 000 inhabitants (see Table 3.1).

Table 3.1: Main indicators for health resources, 2013 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	2013	526	2013	338	2013	694	2013	67
Argentina	2012	470	2013	386	2004	48	2004	92
Australia	2012	375	2011	327	2011	1 065	2011	54
Brazil	2012	232	2013	189	2013	760	2010	122
Canada	2012	268	2010	207	2011	929	2008	126
China	2013	330	2011	149	2011	166	2005	4
India	2013	50	2012	70	2011	171	2012	10
Indonesia	2013	98	2012	20	2012	138	2012	10
Japan	2013	1 332	2010	230	2012	1 149	2010	79
Mexico	2013	161	2011	210	2011	253	2011	12
Russia	2013	907	2012	490	2012	750	2006	32
Saudi Arabia	2012	210	2012	249	2012	487	2010	10
South Africa	2010	229	2013	78	2013	511	2013	20
South Korea	2013	1 096	2012	214	2012	501	2012	45
Turkey	2013	265	2011	171	2011	240	2011	29
United States	2012	293	2011	245	2005	982	2000	163

(1) EU-28: data excluding Greece, the Netherlands and Portugal and based on 2012 data for Denmark, Slovakia and Sweden.

(2) EU-28: data excluding Greece, Ireland and Italy and based on 2012 data for Denmark, Slovakia and Finland and 2011 data for the Netherlands and Sweden.

(3) EU-28: data excluding the Czech Republic, Ireland, Greece, Italy, the Netherlands, Austria and Portugal and based on 2012 data for Denmark, Slovakia, Finland and Sweden.

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

One of the key indicators for measuring healthcare personnel is the total number of **physicians**, expressed per 100 000 inhabitants. The highest number of physicians relative to the overall population size among the G20 members was recorded in Russia (490, 2012 data), followed by Argentina (386), just ahead of the estimate for EU-28 (338) and Australia (327, 2011 data). South Africa, India and Indonesia (both 2012 data) recorded less than 100 physicians per 100 000 inhabitants. The variation between the G20 members in the number of nurses and midwives was relatively high in comparison with the other personnel indicators in Table 3.1, with

more than 1 000 nurses and midwives in Japan (2012 data) and Australia (2011 data), 694 (estimated) in the EU-28, and under 200 in India and China (both 2011 data), Indonesia (2012 data) as well as Argentina (2004 figures).

All G20 members presented a number of dentists per 100 000 inhabitants below 200 and only three of them (United States 2000 data, Canada 2008 data and Brazil 2010 data) recorded a ratio above 100. China (2005 data) recorded an average of 4 dentists per 100 000 inhabitants. The estimated average for the EU-28 was 67 dentists per 100 000 inhabitants.

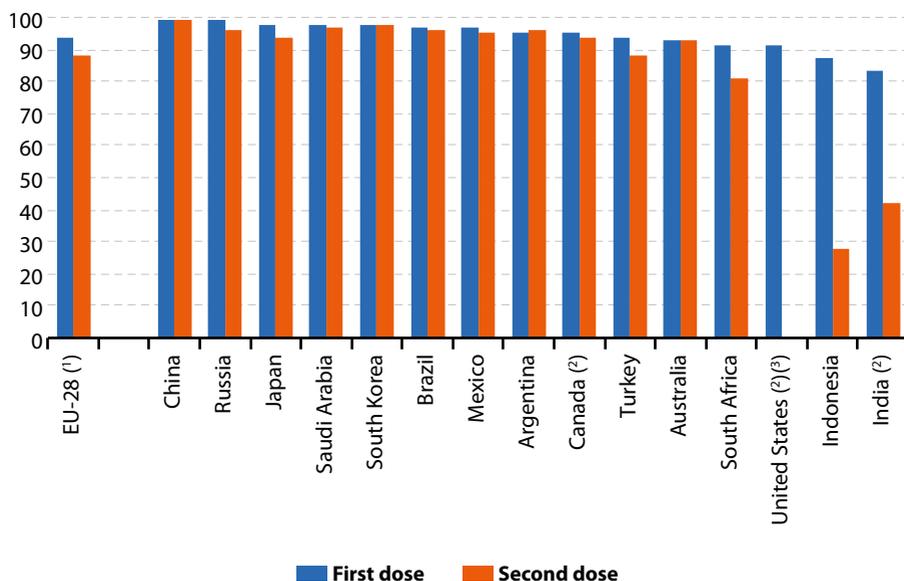


Immunisation is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease (1).

Figure 3.2 presents the coverage of measles vaccination among children aged 0–1 in 2014,

which was above 90 % among all G20 members in the case of the first dose, with the exception of Indonesia (87 %) and India (83 %, 2013 data). The second dose was above 80 % in the G20 countries, again with the exception of India and Indonesia where it was below 50 % (taking into account the missing data for the United States).

Figure 3.2: Coverage of measles vaccination among children aged 0–1, 2014
(% of the specified population)



Note: Second dose estimates are provided for the age cohort according to the administration recommended in national immunisation schedule. Ranked on 'First dose'.

(1) Data for second dose in EU was estimated using the 0–1 age group (also used for the first dose) and does not include data for Ireland, Italy or Finland.

(2) Canada, India and the United States: 2013 data.

(3) Second dose data not available.

Source: World Health Organization, Global Health Observatory data repository.

(1) In: WHO: Health topic, Immunization — <http://www.who.int/topics/immunization/en/>

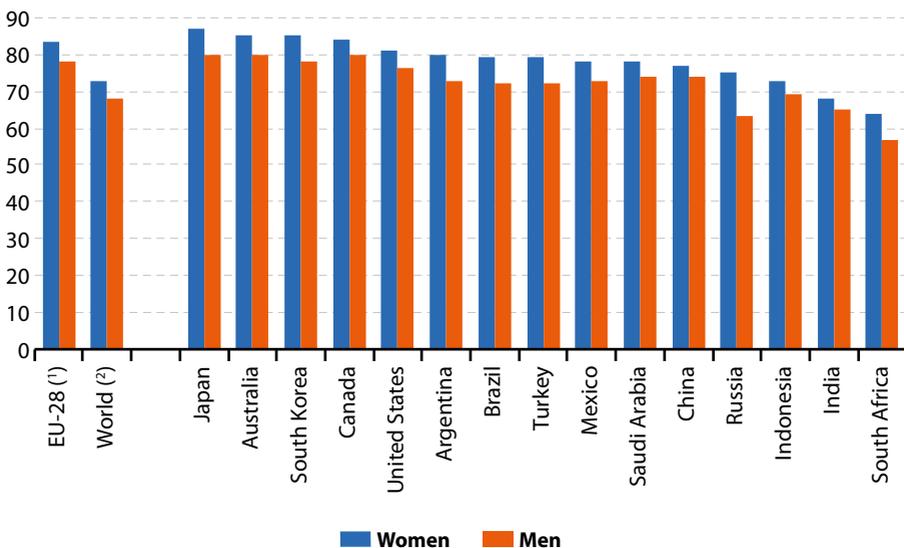
Mortality

The gender gap in life expectancy at birth was far higher in Russia than in other G20 members

Among the G20 members, the highest life expectancy at birth in 2013 was in Japan both for women (87 years) and men (80 years) (see Figure 3.3). In Australia and Canada life expectancy also reached 80 years for men. In Australia, South Korea, Canada, the EU-28, the United States and Argentina the women could expect to live

80 years or more. In two G20 members, life expectancy at birth remained in 2013 below 70 years for both women and men, ranging from 68 years (women) and 65 years (men) in India and, to 64 years (women) and 57 years (men) 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 women than for men: the gap ranged from three years in China and India to twelve years in Russia while in the EU-28 it was six years.

Figure 3.3: Life expectancy at birth by sex, 2013
(years)



Note: ranked on 'Women'.

(1) For healthy life expectancy at birth, the Eurostat methodology used for EU-28 data differs from the methodology used by the WHO.

(2) 2012 data.

Source: Eurostat (online data code: [demo_mlexpec](#)) and the World Health Organization (World Health Statistics)

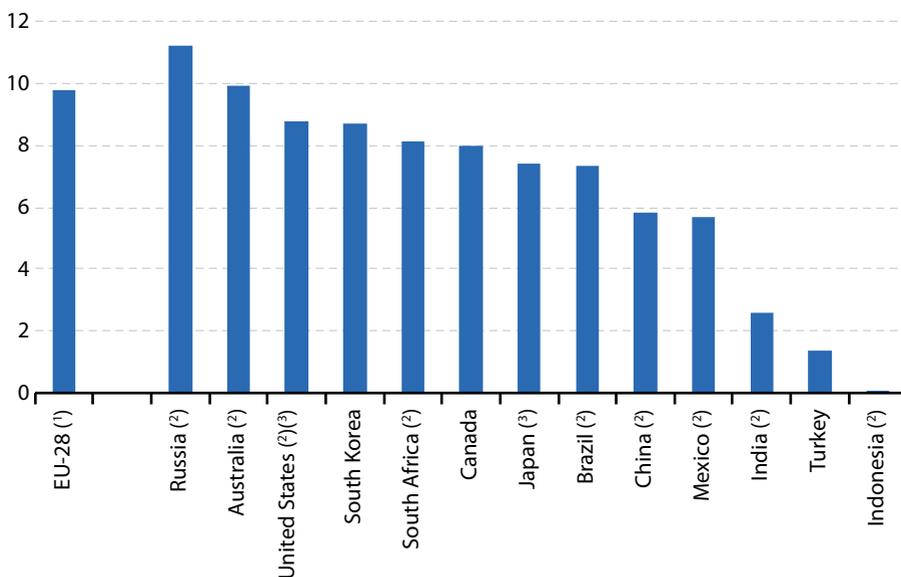


Non-medical health determinants

Figures 3.4 to 3.7 provide information on three non-medical health determinants, namely alcohol consumption, smoking and obesity. Russia, Australia and EU-28 estimates recorded the highest annual alcohol consumption among

G20 members in 2012 (2013 for the EU), at 9.8 litres or more of alcohol per inhabitant (see Figure 3.4). The lowest average levels of alcohol consumption were recorded for India, Turkey and Indonesia, and may be influenced to some degree by the predominant religious beliefs in these countries.

Figure 3.4: Average annual alcohol consumption, persons aged 15 and over, 2013
(litres per inhabitant over 15 years of age)



Note: data not available for Argentina and Saudi Arabia.

(1) Estimated with latest available data and excluding Bulgaria, Romania, Croatia, Cyprus, Malta and Romania.

(2) China and Indonesia: 2010 data. Brazil and India: 2011 data. Australia, Mexico, Russia, South Africa and the United States: 2012 data.

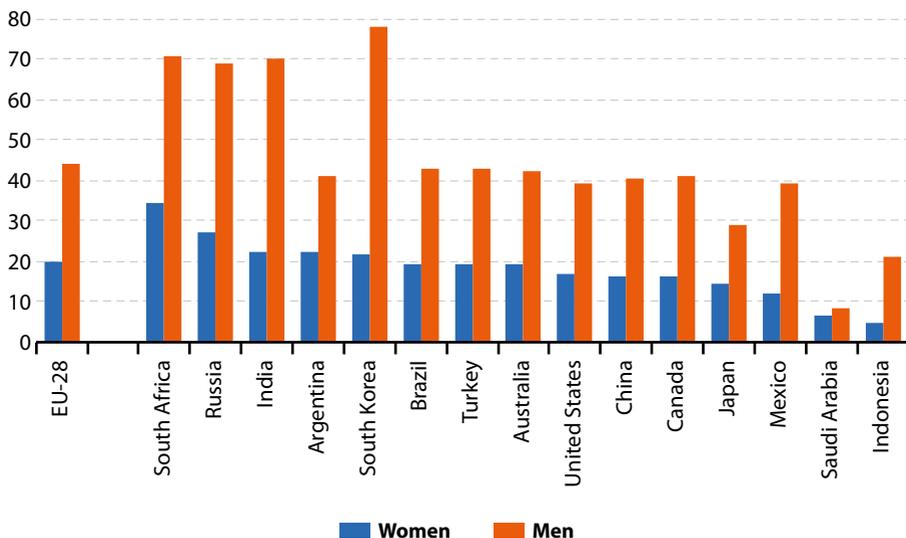
(3) United States: persons aged 14 and over. Japan: persons aged 20 and over.

Source: OECD (Non-medical determinants of health)

Alcoholic beverages have different volume percentages of alcohol, depending on the amount of pure ethanol contained in a given quantity of the drink. Given the specific weight of alcohol of 0.793 g/cm³ (at 20 °C), per capita consumption in litres of pure ethanol per year can be converted into grams per day. As shown in Figure 3.5, in all G20 countries, the average daily intake in grams of alcohol was higher for men than for women, although it varied from

1.3 times larger in Saudi Arabia, to 2.2 times in the EU-28, to 3.6 times in South Korea and 4.6 times in Indonesia. Saudi Arabia presented the lowest average daily intake of alcohol per inhabitant for men (8.6 grams) and Indonesia had the lowest intake for women (4.5 grams), while the highest values were in South Africa for women (34.6 grams) and South Korea for men (77.7 grams).

Figure 3.5: Average daily intake in grams of alcohol, by sex, 2010
(grams per inhabitant per day)



Note: ranked on 'Women'.

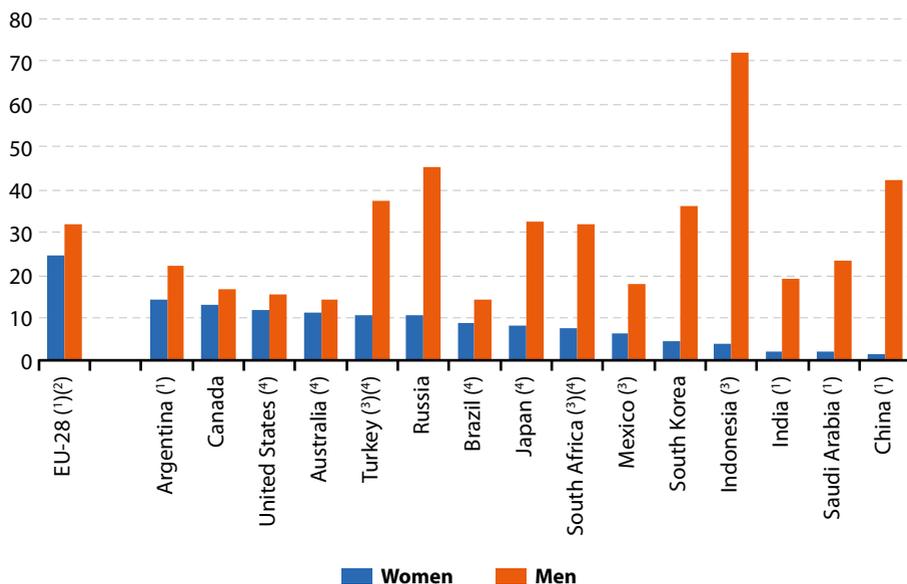
Source: World Health Organization, Average daily intake of alcohol per day, 2010



The estimates for Indonesia indicate that the country has by far the highest proportion of daily smokers — more than one third (37.9%) of the population aged 15 and over — with an incidence mainly in the male population (71.8%, compared to women at 4.0%). More than a quarter of the population in the EU-28 (28.1% estimated for 2012) are daily smokers, while in Russia, South Korea and China, the estimates are close to a quarter of the population.

The incidence of daily smoking among the populations of the other G20 members was below 20%. In all G20 members shown in Figure 3.6 the proportion of men who were daily smokers was greater than the proportion of women. The widest gender gap was by far the 68 percentage points (pp) recorded in Indonesia followed by China, Russia and South Korea, all with at least 30 pp more among men than women. The narrowest gender differences were recorded for Canada, the United States and Australia.

Figure 3.6: Daily smokers, by sex, 2013
(% of the population aged 15 and over)



Note: ranked on 'Women'.

(1) EU-28: 2012 estimates; Argentina, China, India and Saudi Arabia: 2013 estimates from the World Health Organization.

(2) EU-28 does not include Cyprus.
(3) 2012 data.

(4) Japan: persons aged 20 and over. Brazil, South Africa, Turkey and the United States: persons aged 18 and over. Australia: persons aged 14 and over.

Source: OECD (Non-medical determinants of health) and World Health Organization (Global Health Observatory data repository)

Lowest proportions of obesity in Japan and South Korea

The most frequently used measure for assessing whether 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 Organization**, adults with a BMI between 25 and 30 are overweight and those with an index over 30 are obese.

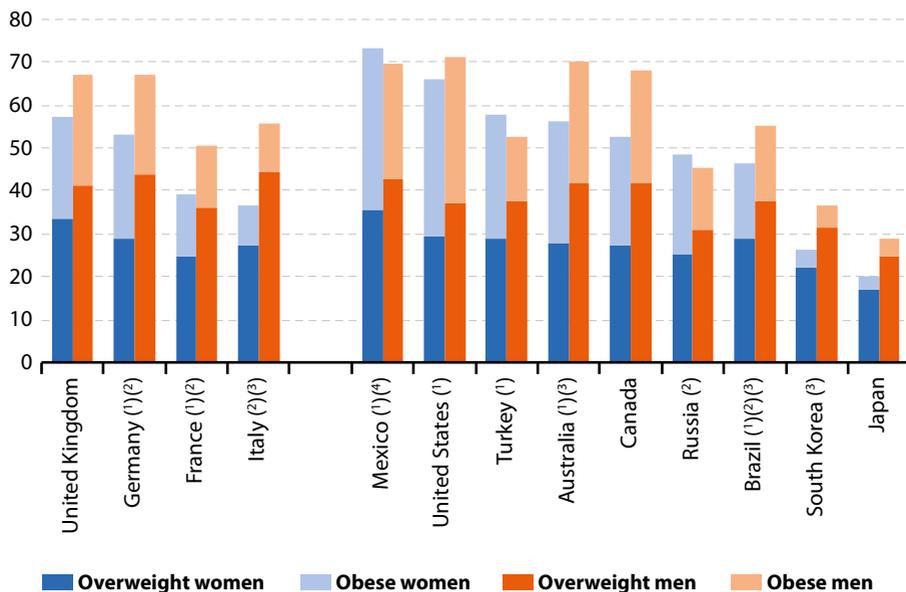
The data presented in Figure 3.7 mainly concern measured results, although for some members only self-reported data are available. Among this selection of G20 members, the highest proportions of the population that were either obese or overweight were observed in Mexico for women (73.0%) and the United States for men (71.2%). The highest shares within the EU-28 (no EU-28 aggregate available) were in the United Kingdom for both women and men (57.1% and 67.1% respectively). Germany recorded the same share for men (67.1%). By far the lowest proportions were observed for Japan for both women and men (20.3% and 28.6% respectively), taking into account that overweight data was not available for South Africa, India, Indonesia and China.

The proportion of men who were overweight was greater than the equivalent proportion of women in all G20 members shown in Figure 3.7. But in the case of obesity, the proportion of obese women was higher in nine out of the 13 countries with available data.

Among the G20 members for which data are available there was far greater variability in the proportion of the population who were obese than among the population who were overweight. Japan (3.4% for women and 4.1% for men) and South Korea (4.2% for women and 5.1% for men) recorded particularly low proportions of the population that were obese, while Mexico reported the highest proportions for women (37.5%) and the United States for men (33.9%). In Turkey and Mexico there were large gender differences in the proportion of the population that were obese, with the proportions for women particularly high: 14 pp more for Turkish women and 11 pp more for Mexican women when compared to the male population. The widest gender differences in the opposite sense (more obese men) were recorded in Italy, which presented 9% of obese women and 12% of obese men.



Figure 3.7: Proportion of the population aged 15 and over who are obese or overweight, by sex, 2013
(% of the specified population)



Note: ranked on 'Women' (total). Data for overweight people not available for China, India, Indonesia and South Africa.

(¹) Germany, France, Mexico and the United States: 2012. Australia and Turkey: 2011. Brazil (overweight): 2005.

(²) Based on self-reported rather than measured data.

(³) Australia: persons aged 18 and over. Brazil: persons aged 20 and over. South Korea: persons aged 19 and over.

(⁴) Estimates.

Source: OECD (Non-medical determinants of health)

4

Education and training



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 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 \(ISCED\)](#) (1). 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

Educational expenditure

Public educational expenditure relative to GDP was highest in South Africa at 6.4%

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.

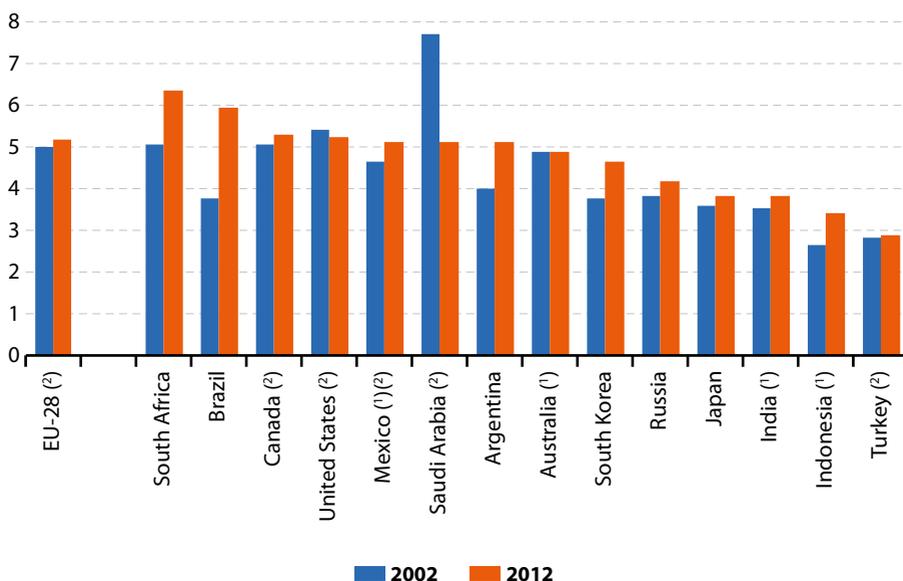
(1) As from 2014 onwards, the 2011 version of the ISCED classification is used in the European Union and some of the G20 countries but not all. However the aggregated levels used here are not affected by the [changes](#) which occurred in more detailed subcategories.



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 6.4%, followed by Brazil at 5.9%. At the other end of the scale were Japan and India at 3.8%, Indonesia at 3.4%, and 2.9% in Turkey (2006 data). The EU-28, at 5.2%, ranked among the remaining group of G20 members whose public expenditure on education accounted for 4.2% to 5.3% of GDP. Within the last decade there has

been an increase in the expenditure committed to education in most G20 countries. Saudi Arabia and the United States were the exceptions: the percentage of GDP spend on education decreased by 2.5 **percentage points (pp)** in Saudi Arabia (2002 to 2008) and by 0.2 pp in the United States (2002 to 2011). While Brazil, South Africa and Argentina presented an increase in the percentage of GDP invested in education between 2002 and 2012 of over 1.0 pp.

Figure 4.1: Public expenditure on education, 2002 and 2012
(% of GDP)



Note: data not available for China.

(¹) 2002: Australia:2000 data. Indonesia: 2002 estimate. India: 2003 data.

(²) 2012: Turkey: 2006 data. Saudi Arabia: 2008 data. Canada, the United States and Mexico: 2011 data.

EU-28 does not include Greece.

Source: Eurostat (online data code: *educ_figdp*, *educ_uoe_fine06*) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

Numbers of teachers and pupils

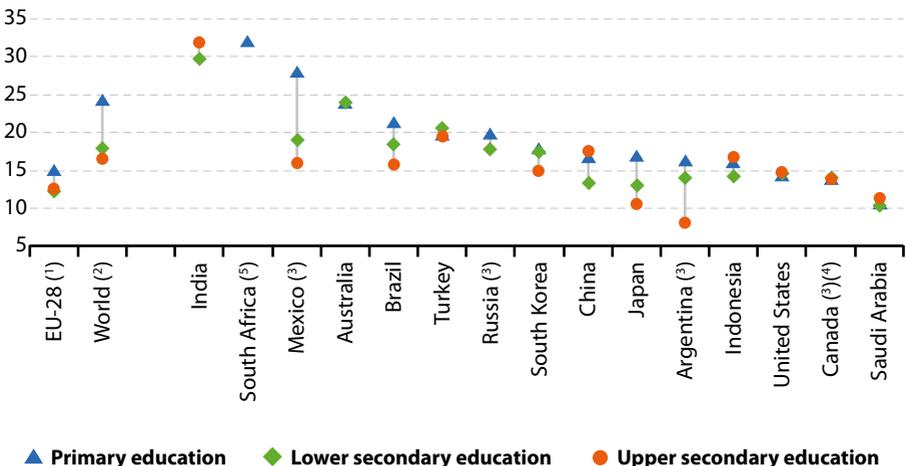
In general, pupil-teacher ratios were lowest for upper secondary education and highest for primary education

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 work 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 2013, 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 Australia, the United States, Canada (2010 data) and Saudi Arabia, and to a lesser extent, Indonesia and Turkey. The largest gaps between primary and secondary pupil-teacher ratios were presented in Mexico (2012 data) and Argentina (2008 data).

Figure 4.2: Pupil-teacher ratios in primary and secondary education, 2013
(average number of pupils per teacher)



Note: ranked on 'Primary education'.

(1) EU-28 data excluding Denmark and the Netherlands.

(2) World: estimates.

(3) Argentina: 2008 data. Canada: 2010 data; aggregate. Mexico and Russia: 2012 data.

(4) Aggregate: value for primary and secondary education.

(5) Primary education: estimate; secondary education: not available.

Source: Eurostat (online data code: [educ_uoe_perp04](#)) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

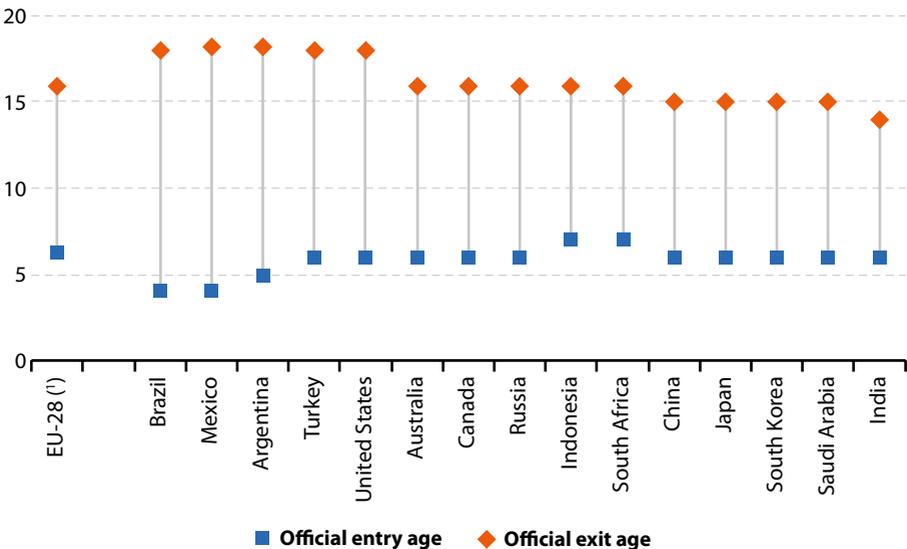


In the case of primary education India, South Africa (2011 data) and Mexico had pupil-teacher rates above the world average, while the EU-28 average presented figures below the estimated values for the world. The pupil-teacher ratio was the highest also in India in lower secondary education, followed by Australia and Turkey both with ratios over 20 students per teacher. For upper secondary education the ratio pupil/teacher was 32.1 in India, far above the ratios of Turkey, China and Indonesia that were also above the world average. Overall, India had the highest pupil-teacher ratios, in the three levels of education while Saudi Arabia had the lowest in primary education (10.5) and lower secondary (10.4) and Argentina in upper secondary education (8.0).

Starting school and duration

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 (see Figure 4.3). Among the EU Member States the starting age varied from four in Luxembourg and Northern Ireland (United Kingdom) to seven in Croatia, Estonia, Finland, Lithuania, Sweden and Romania. The duration of compulsory education in G20 members ranged from eight years in India, to 14 years in Brazil and Mexico, compared to an average of 10 years in the EU-28 (ranging from 8 to 12). As a result the earliest leaving age was around 14 in India and reached 18 in the United States, Turkey, Mexico, Brazil and Argentina, and 16 in the EU-28 (ranging from 14 to 18).

Figure 4.3: Official entrance age and exit age of compulsory education, 2014
(years)



Note: ranked on 'Official exit age'.

(*) EU-28 estimates based on the latest available data (2013 and 2014).

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

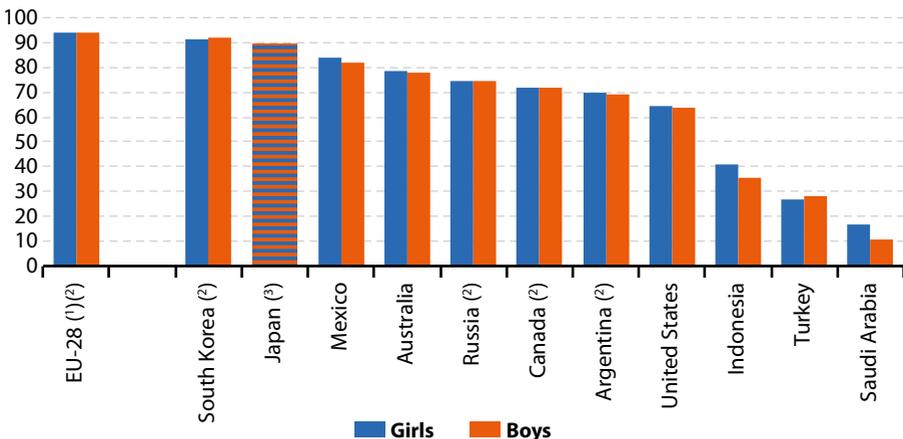
School enrolment

Figures 4.4 to 4.7 present **enrolment ratios** for various education levels. Two types of enrolment ratios are presented, namely 'net' and 'adjusted net' ratios. Net ratios (shown in Figures 4.4, 4.5 and 4.7 for pre-primary, primary and upper secondary 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 Figure 4.6 for lower secondary education) 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 %.

Pre-primary education has increasingly been recognised as having a crucial role in preparing children for the rest of their school lives. More and more educational systems are including early childhood education as compulsory. 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 — the largest share among the available data from the G20 countries (see Figure 4.4). South Korea, Japan and Mexico presented

Figure 4.4: Pre-primary education net enrolment ratio, by sex, 2013
(% of total population of pre-primary school age)



Note: ranked on 'Girls'. 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. Data not available for: Brazil, China, India and South Africa.

⁽¹⁾ Participation in early childhood education rate.

⁽²⁾ EU-28, Russia, Canada and Argentina: 2012 data. South Korea: 2014 data.

⁽³⁾ Aggregated data for boys and girls.

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



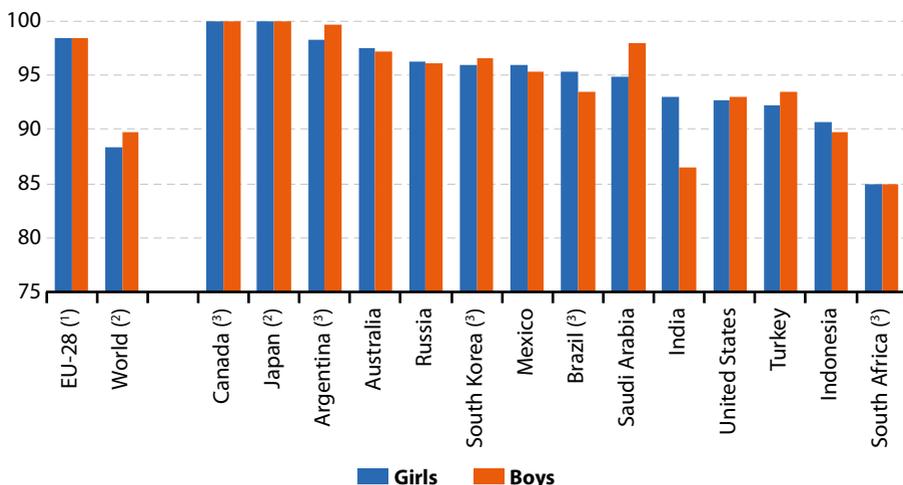
enrolment ratios above 80%. For three G20 countries — Indonesia, Turkey and Saudi Arabia — less than half of the early childhood population was enrolled in pre-primary schools, with Saudi Arabia having the lowest rate (10.4% of boys and 16.7% of girls).

Figure 4.4 depicts higher pre-primary enrolment rates for girls than for boys in almost all countries, with only Turkey, Russia and South Korea having higher rates among boys (data by sex is not available for Japan). In Saudi Arabia, Indonesia and Mexico, the female enrolment rates were at least 1.5 pp higher than male enrolment rates, with Saudi Arabia presenting the largest gender gap: 6.3 pp higher for girls.

Primary education was effectively universal in Canada and Japan

Moving on from pre-primary education, enrolment in primary education was effectively universal in Canada (1999 data) and Japan for both boys and girls, with ratios of 98% or higher also recorded for Argentina (2012 data) and the EU-28 (see Figure 4.5). Among the other G20 members, the primary education net enrolment ratio fell below 93% in Turkey, the United States, Indonesia, India and South Africa. 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 (with more boys enrolled) and India (with more girls enrolled).

Figure 4.5: Primary education net enrolment ratio, by sex, 2013
(% of total population of primary school age)



Note: ranked on 'Girls'. 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. Data not available for China.

(1) Estimates calculated for the purpose of this publication based on UNESCO data.

(2) Estimates.

(3) Canada: 1999 data. Argentina: 2012 data. South Korea: 2014 data. Brazil: 2005 data. South Africa: 2009 data.

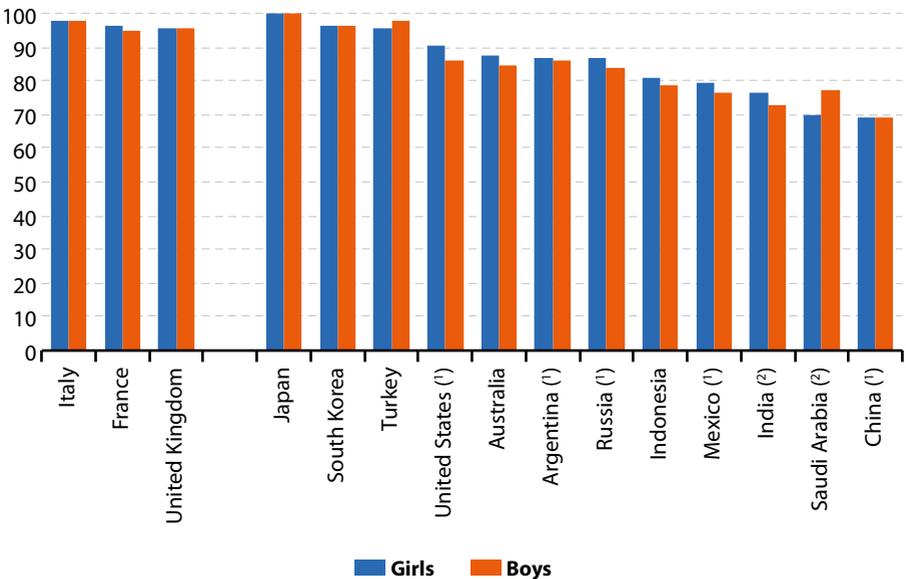
Source: the United Nations Educational, Scientific and Cultural Organisation (UIS) and the United Nations Statistics Division (Social indicators, Education, Literacy)



Figure 4.6 presents the adjusted net enrolment ratios in 2013 for lower secondary education, which include all lower secondary aged children regardless of the grade they are enrolled in. Japan reported the highest ratios, with close to universal enrolment. Adjusted net enrolment ratios below 80 % for both boys and girls were recorded for lower secondary education in

Mexico (2012 data), India, Saudi Arabia and China (2006 data). Regarding the gender gap within the enrolment rates in lower secondary school, only Saudi Arabia, Turkey and Italy presented higher male enrolment rates, while the opposite happened in all the other countries with available data.

Figure 4.6: Lower secondary education adjusted net enrolment ratio, by sex, 2013
(% of total population of lower secondary school age)



Note: ranked on 'Girls'. 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. Data not available for EU-28, Germany, Brazil, Canada and South Africa.

(1) China: 2006 data. Russia: 2008 data. The United States, Argentina and Mexico: 2012 data.

(2) Estimated.

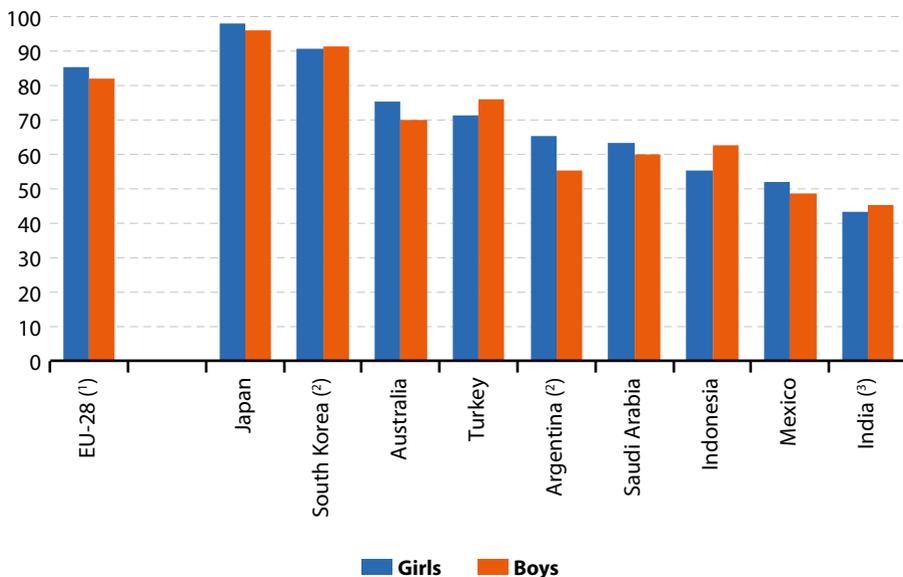
Source: the United Nations Educational, Scientific and Cultural Organisation (UIS)



In Figure 4.7 Japan was again in the lead regarding the net enrolment ratios of upper secondary education for both boys and girls, followed closely by South Korea which also presents rates above 90%. The EU-28 was next in the rank, presenting a total enrolment rate of 83.5%. On the other hand, in Mexico (boys only) and India less 50% or less of the upper secondary aged children were enrolled in this level of education. As for the gender gaps,

the situation differs from the lower secondary education. In Saudi Arabia there were more girls enrolled than boys (contrary to the situation in lower secondary education). In India the situation in upper secondary was also inverse from the one in lower, with higher enrolment rates for boys in upper secondary. Argentina presented the highest gender gap among the net enrolment rates in upper secondary education: 65.4% for girls and 55.1% for boys in 2012.

Figure 4.7: Upper secondary education net enrolment ratio, by sex, 2013
(% of total population of upper secondary school age)



Note: ranked on 'Girls'. 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. Data not available for Brazil, Canada, China, Russia, South Africa and the United States.

(1) Estimates calculated for the purpose of this publication based on UNESCO data.

(2) South Korea: 2014 data. Argentina: 2012 data.

(3) Estimated.

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

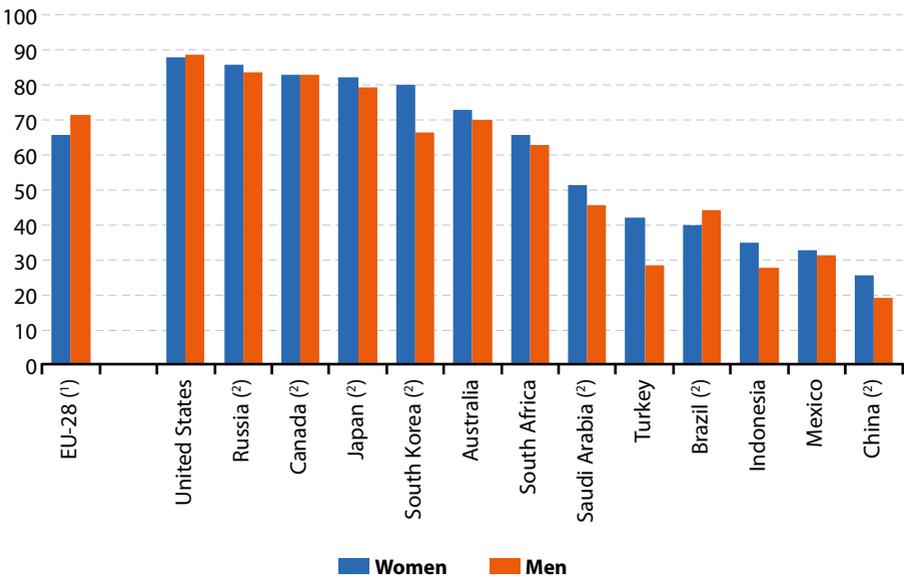


The United States and Russia had the highest rates for secondary educational attainment

Figure 4.8 shows the percentage of population aged 25 years and over having completed upper secondary education in 2014. In the United States, Russia (2010 data) and Canada (2011 data) the share was over 80% for both the male and female populations. In Indonesia, Mexico and China (2010 data), the upper secondary attainment rates were under 35%.

The United States, the EU-28 and Brazil formed a group of countries where the share of men aged 25 or over having completed upper secondary education was higher than the share of women obtaining that degree. In all other countries where data was available the female shares were higher, and the largest gaps were in Turkey and South Korea (2010 data), both presenting a difference of over 13 pp.

Figure 4.8: Secondary educational attainment by sex, 2014
(% of total population aged 25 and over having completed upper secondary education)



Note: ranked on 'Women'. The highest ISCED level of education successfully completed by an individual. This is usually measured with respect to the highest educational programme successfully completed, which is typically certified by a recognised qualification. Recognised intermediate qualifications are classified at a lower level than the programme itself. Data not available for Argentina and India.

(1) Estimates calculated for the purpose of this publication based on UNESCO data.
(2) Russia, Japan, South Korea and China: 2010 data. Canada: 2011 data. Saudi Arabia and Brazil: 2013 data.

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

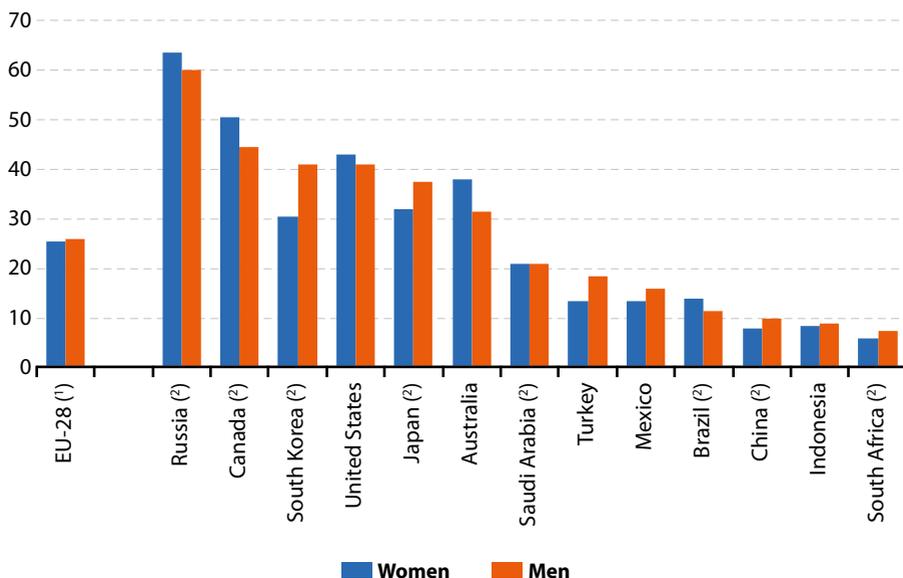


Tertiary education is generally provided by universities and other higher education institutions. In 2014, slightly over one quarter of the EU-28 adult population (aged 25 and over) had obtained a degree in tertiary education (25.3% for women and 25.9% for men). Russia (2010 data) presented a 63.7% share for women and a 59.7% share for men, and along with five other G20 member, reported ratios for tertiary education attainment over 30.0% (see Figure 4.9).

The lowest tertiary educational attainment levels were found in Indonesia and South Africa (2012 data) with shares below 10.0% in both countries for women and men.

The largest gender gaps in favour of women were reported by Canada and Australia, while more countries reported gender gaps in favour of men, out of which South Korea, Japan (2010 data) and Turkey presented differences in the range of 10.7 pp to 5.3 pp.

Figure 4.9: Tertiary educational attainment by sex, 2014
(% of total population aged 25 and over having completed tertiary education)



Note: ranked on 'Women'. The highest ISCED level of education successfully completed by an individual. This is usually measured with respect to the highest educational programme successfully completed, which is typically certified by a recognised qualification. Recognised intermediate qualifications are classified at a lower level than the programme itself. Data not available for Argentina and India.

(1) Estimates calculated for the purpose of this publication based on UNESCO data.

(2) Russia, Japan, South Korea and China: 2010 data. Canada: 2011 data. South Africa: 2012 data. Saudi Arabia and Brazil: 2013 data.

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

Not in employment, education or training

Japan and Australia had the lowest proportion of young people not in employment, education or training

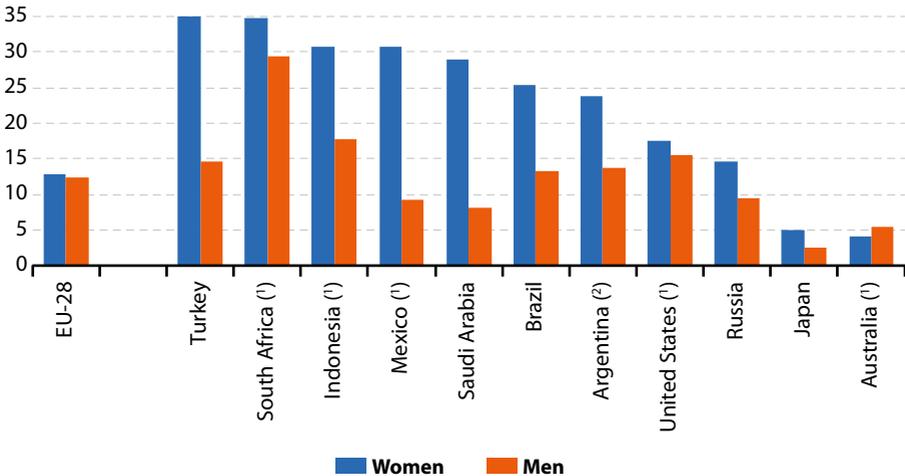
Traditional analyses of the labour market focus on employment and unemployment, but for younger people many are still in education. Labour market policies for young people often focus on those who are *not in employment, education or training*, abbreviated as NEETs. Factors that affect the proportion 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 4.10 indicates the proportion of 15–24 year olds that were not enrolled in education (school or formal training) nor employed in 2014. Among the G20 members with available data this ranged from 5 % or less in Australia (2010 data) and Japan, through 12 % for Russia and 13 % for the EU-28 to 24 % in Indonesia, 25 % in Turkey, and 31 % in South Africa. With the exception of Australia, where the NEET ratio was higher for men, all other countries reported higher rates among women. The gender gap within the NEETs was far larger than in the case of the previous indicators on enrolment, with Mexico and Saudi Arabia having presented the female rates more than three times as high as the male rates.

Figure 4.10: Proportion of 15–24-year-olds not in employment, education or training (NEET), 2014

(% of the specified population)



Note: ranked on 'Women'. Data not available for China, India and South Korea. Canada not included: data not comparable.

(1) Australia: 2010 data. Mexico and the United States: 2012 data. South Africa and Indonesia: 2013 data.

(2) Data on urban areas only.

Source: Eurostat (online data code: [yth_empl_150](#)) and the International Labour Organization (ILOSTAT)

5

Labour market

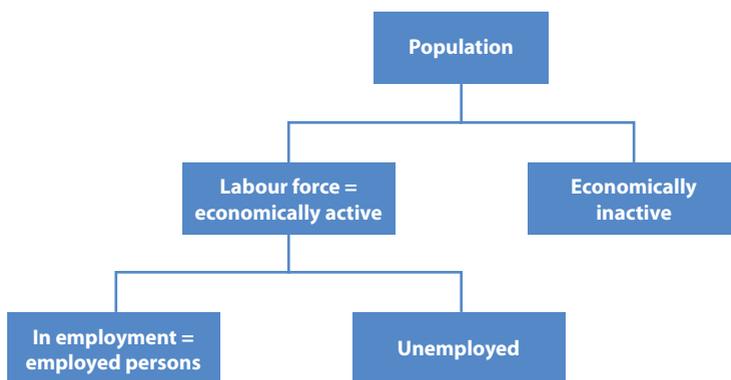


Introduction

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

Activity rate

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 article. The global financial and economic crisis impacted strongly on the labour market and this can be seen clearly in employment and unemployment indicators.

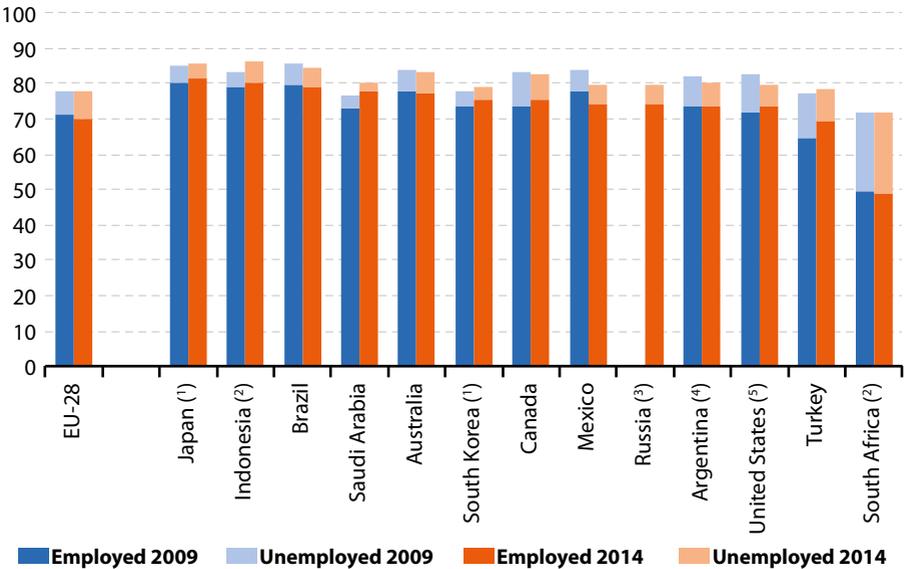


The activity rate is the share of **economically active persons** (also known as the labour force) in the total population of a particular age (in this publication the age range 15–64 has been used). The economically active population comprises **employed** and **unemployed persons**.

The activity rate of men was higher than the corresponding rate for women in all G20 members

In 2014, the activity rate stood at 72.3 % for the EU-28, with the rate for men (78.1 %) higher than that for women (66.5 %). Between 2009 and 2014 the rate for men was quite stable from 77.9 % to 78.1 % while for women there was an increase from 64.1 % to 66.5 % (see Figures 5.1 and 5.2).

Figure 5.1: Activity rate for men — employed and unemployed, 2009 and 2014
(% of the population aged 15–64)



Note: ranked on 'Employed 2014'. 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. Data not available for China and India.

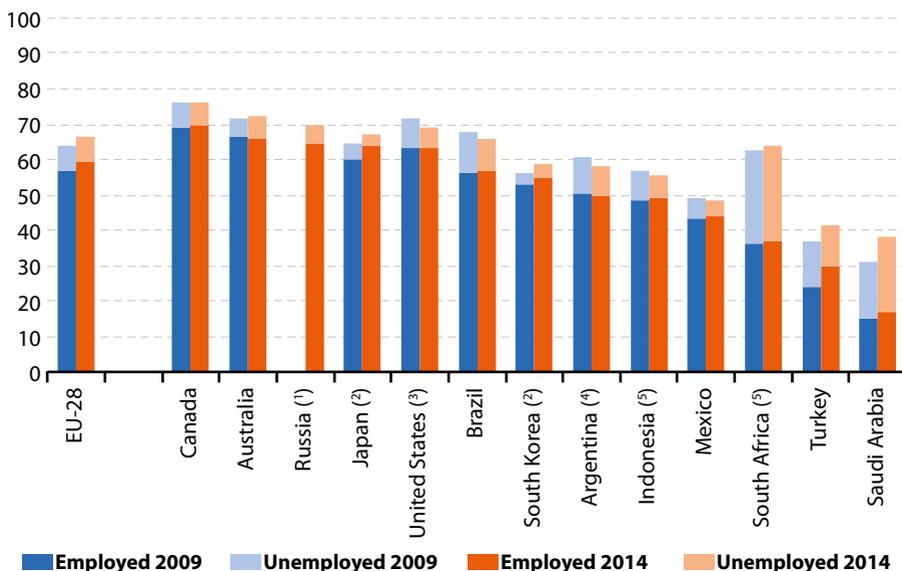
- (1) 2009: Japan and South Korea: 2011 data.
- (2) 2014: Indonesia and South Africa: 2013 data.
- (3) Data not available for 2009.
- (4) Geographical coverage: main cities or metropolitan areas.
- (5) Non standard age group excluding age 15.

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

For the G20 members the activity rate in 2014 among men aged 15–64 ranged from 72.0% in South Africa (2013 data) to 86.3% in Indonesia (2013 data). 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 and in South Africa (2013 data) was the difference between male and female activity

rates less than 10 percentage points (pp). By contrast, the gender difference was 31 pp in Mexico and Indonesia (2013 data), reached 37 pp in Turkey, and peaked at 42 pp in Saudi Arabia. These high gender differences reflected particularly low activity rates for women in these G20 members, as can be seen in Figure 5.2. In Saudi Arabia the activity rate in 2014 for women was 38.3%, in Turkey it was 41.6% and in Mexico it was 48.8%, whereas in all other G20 members the latest activity rate for women exceeded 50%.

Figure 5.2: Activity rate for women — employed and unemployed, 2009 and 2014
(% of the population aged 15–64)



Note: ranked on 'Employed 2014'. 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. Data not available for China and India.

(1) Data not available for 2009.

(2) 2009: Japan and South Korea: 2011 data.

(3) Non standard age group excluding age 15.

(4) Geographical coverage: main cities or metropolitan areas.

(5) 2014: Indonesia and South Africa: 2013 data.

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



Employment rate

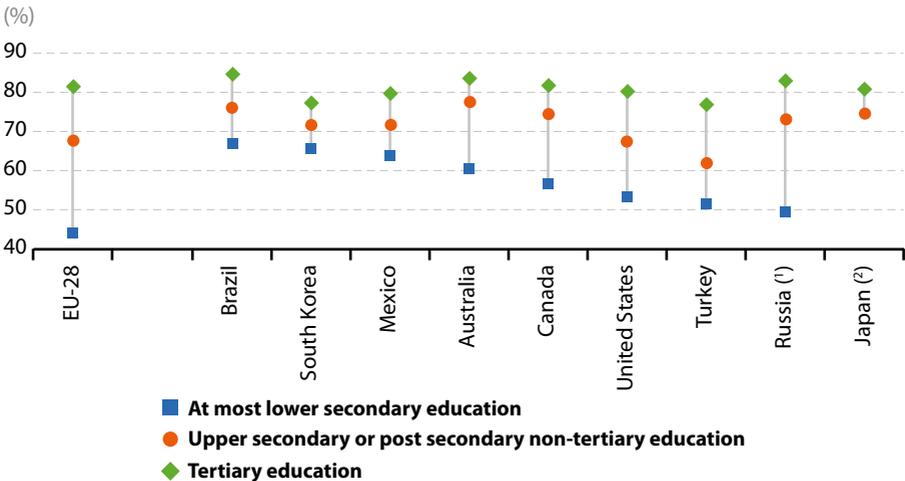
The employment rate, calculated as the share of employed persons in the total population of working age, was 64.9% in 2014 in the EU-28. Between 2009 and 2014 the employment rate for the EU-28 decreased for men from 71.0% to 70.1% and increased for women from 57.0% to 59.6% (see Figures 5.1 and 5.2).

The EU-28's employment rate for men in 2014 was the third lowest within the G20 members for which data are available in Figure 5.1, although only marginally above the rate in Turkey. Elsewhere, employment rates for men ranged from 73.5% in the United States to 80.1% in Indonesia (2013 data) with Japan (81.6%) above this range. For women (Figure 5.2) the range in employment rates was similar to that for the activity rate, with Saudi Arabia, Turkey, South Africa (2013 data), Mexico, Indonesia (2013 data)

and Argentina (urban areas) 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 (data not available for Japan); 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 pp in the EU-28 and in Russia (2012 data), whereas it was below 20 pp in Brazil, Mexico and South Korea.

Figure 5.3: Employment rate, persons aged 25–64, by education level, 2013



Note: ranked on 'At most lower secondary education'. Data not available for Argentina, China, India, Indonesia, Saudi Arabia and South Africa.

(1) 2012 data.

(2) Data not available for 'At most lower secondary education'.

Source: Eurostat (online data codes: [lfsa_argan](#), [lfsa_egan](#) and [lfsa_uگان](#)) and the International Labour Organisation (ILOSTAT)

Unemployment levels and rates

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 2014, the number of unemployed persons (aged 15–64) in the EU-28 was 24.7 million, equivalent to an unemployment rate of 10.4%. Among the other G20 members, the unemployment rate in 2014 ranged from 3.6% in South Korea to 10.1% in Turkey, with South Africa (25.1%) considerably above it.

South Korea had the lowest unemployment among the G20

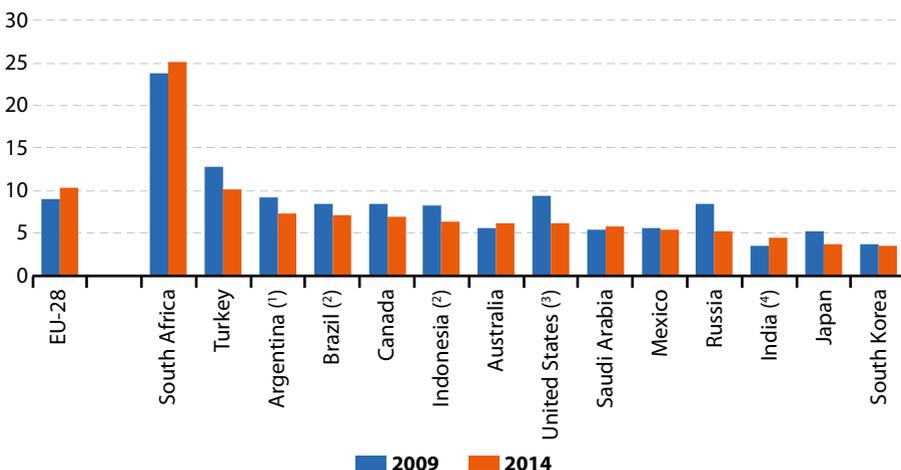
The level of unemployment and the unemployment rate reflect economic

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.

In most of the G20 members the unemployment rates were lower in 2014 compared to 2009, however there was an increase of the unemployment rates that varied from 1.4 pp in the EU-28 to 0.4 pp in Saudi Arabia during the same period which also affected South Africa, India (2010 and 2013 data) and Australia (see Figure 5.4). Russia, the United States, and Turkey presented decreases in unemployment above 2.5 pp.

Figure 5.4: Unemployment rate, persons aged 15–64, 2009 and 2014

(%)



Note: Data not available for China.

(1) Geographical coverage: main cities or metropolitan areas.

(2) Brazil: two criteria unemployment definition (not in employment and currently available).

Indonesia: unemployment includes discouraged jobseekers.

(3) Non standard age group excluding age 15.

(4) Data from last year's edition of this publication; 2009: 2010 data; 2014: 2013 data.

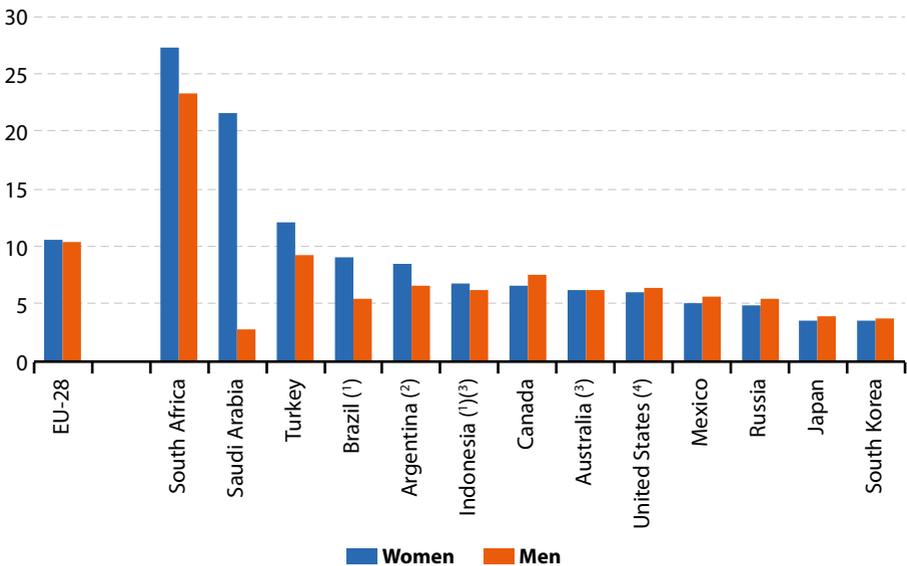
Source: Eurostat (online data code: [lfsa_urgan](#)) and the International Labour Organisation (ILOSTAT)



In the EU-28, unemployment rates for men and women (aged 15–64) were relatively similar, 10.3% for men and 10.5% for women in 2014 (see Figure 5.5). In Indonesia (2013 data), Australia (2015 data), the United States, Japan and South Korea the difference between the unemployment rates for men and women was

also less than 0.5 pp. In Canada, Mexico and Russia, the difference was between 0.5 and 1.0 pp (with lower unemployment for women), but in Argentina, Turkey, Brazil, South Africa and Saudi Arabia the unemployment rates for women were between 1.9 and 18.8 pp higher than for men.

Figure 5.5: Unemployment rate, persons aged 15–64, by sex, 2014
(%)



Note: ranked on 'Women'. Data not available for China and India.

(1) Brazil: two criteria unemployment definition (not in employment and currently available).

Indonesia: unemployment includes discouraged jobseekers.

(2) Geographical coverage: main cities or metropolitan areas.

(3) Indonesia: 2013 data. Australia: 2015 data.

(4) Non standard age group: excluding age 15.

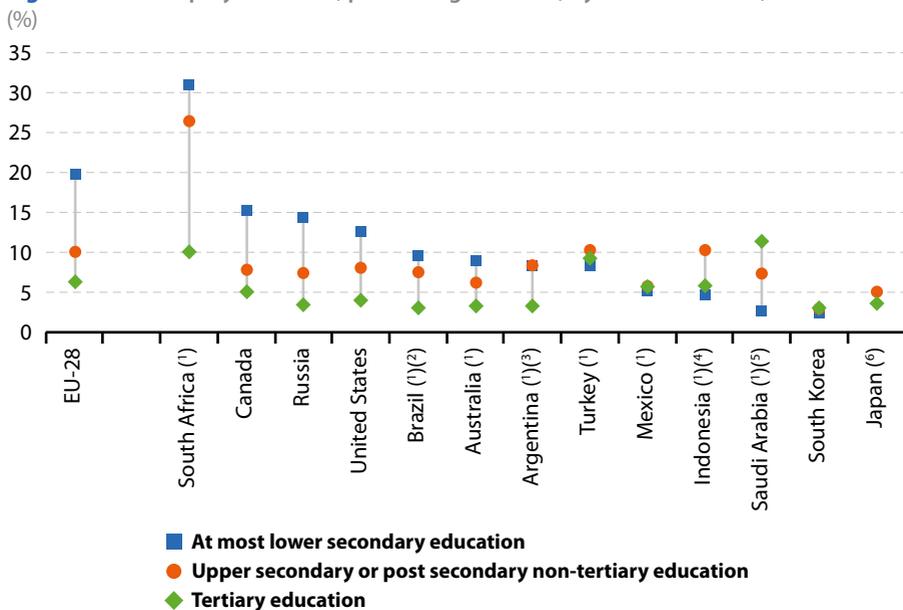
Source: Eurostat (online data code: ifsa_organ) and the International Labour Organisation (ILOSTAT)

The lowest unemployment rates were generally recorded for persons having completed tertiary education

A comparison for 14 G20 members indicates that adult unemployment rates in 2013 were most often highest among persons who had at most completed lower secondary education. Saudi Arabia (2009 data) and South Korea were exceptions to this rule, as their highest unemployment rates were recorded among

persons having completed tertiary education. In Turkey, Mexico, Indonesia and Japan the highest unemployment rates were among the population with an intermediate level (upper secondary or *post-secondary non-tertiary* education) (see Figure 5.6). Apart from Mexico, South Korea, Turkey, Indonesia and Saudi Arabia (2009 data), the lowest adult unemployment rates were recorded for persons having completed tertiary education.

Figure 5.6: Unemployment rate, persons aged 15–64, by education level, 2013



Note: ranked on 'At most lower secondary education'. Data not available for China and India.

(1) Non standard education level (less than basic): Pre-primary — levels 0 (ISCED 1997).

(2) Unemployment definition: two criteria (not in employment and seeking).

(3) Geographical coverage: main cities or metropolitan areas.

(4) Unemployment definition concept: including discouraged jobseekers.

(5) 2009 data.

(6) Non standard education level: including 0–2.

Source: Eurostat (online data code: [lfsa_urgaed](#)) and the International Labour Organisation (ILOSTAT)



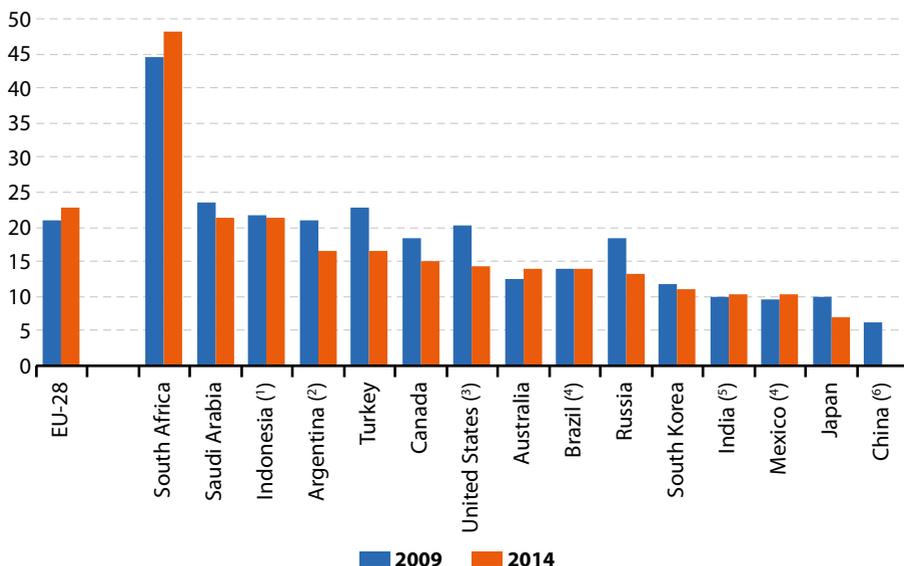
Youth unemployment rates in the EU-28 increased between 2009 and 2014

Figures 5.7 and 5.8 present analyses of the **youth unemployment rate**, which is calculated as the percentage of economically active persons in the age group 15–24 that were 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 2014, the youth unemployment rate in the EU-28 was 22.2%. Among the other G20 members, the youth unemployment rate in 2014 ranged from 10.0% in South Korea to 30.2% in Saudi Arabia, with Japan (6.2%) below this range and South Africa (51.3%) considerably above it. All G20 members recorded a higher youth unemployment rate than their overall unemployment rate (2010 data). The largest differences between youth and overall unemployment rates in 2014, all in excess of 20 pp, were recorded in Saudi Arabia and South Africa, while differences in excess of 10 pp were also recorded in Indonesia, the EU-28 and Argentina.

Figure 5.7: Male youth unemployment rate, 2009 and 2014

(%)



(1) 2013 data instead of 2014.

(2) Main cities and metropolitan areas.

(3) Persons aged 16–24. 2013 data.

(4) Persons without work and seeking work.

(5) 2010 data instead of 2009 and 2012 data instead of 2014.

(6) Data not available for 2014. 2010 data instead of 2009.

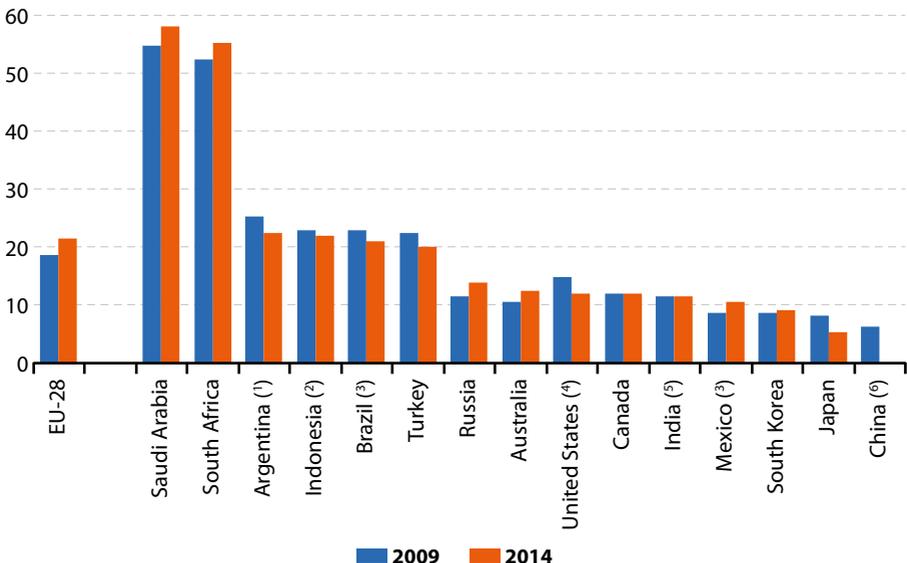
Source: Eurostat (online data codes: *lfsa_urgan* and *lfsa_ugan*), the International Labour Organisation (ILOSTAT) and OECD (Labour force statistics)

In 2014 there was relatively little difference in youth unemployment rates in the EU-28 when analysed by sex (see Figures 5.7 and 5.8), with the rate for men 1.4 pp higher than the rate for women. Canada and the United States (2013 data) reported the largest gender gaps among the G20 members where youth unemployment rates for men were higher than for women, whereas several G20 members reported much higher youth unemployment rates for women than men: in Brazil, South Africa and Argentina the youth unemployment rates for women were more than 5 pp higher than for men; in Saudi Arabia the difference was 36.7 pp.

The EU-28 and four G20 members recorded an increase in male youth unemployment rates from 2009 to 2014, the increases exceeded 1.5 pp in the EU-28 and Australia, peaked at 3.4 pp in South Africa, and presented increases below 1.0 pp in India (between 2010 and 2012) and Mexico. Among young women, the highest increments were recorded in Saudi Arabia (+ 3.2 pp), South Africa (+ 2.9 pp) and also the EU-28 (+ 2.8 pp), but also affected Russia (+ 2.6 pp), Australia and Mexico (both with a 2.1 pp increase), The increment of female youth unemployment was less significant in in South Korea (+ 0.6 pp) and India (+ 0.1 pp from 2010 to 2012).

Figure 5.8: Female youth unemployment rate, 2009 and 2014

(%)



(1) Main cities and metropolitan areas.

(2) 2013 data instead of 2014.

(3) Persons without work and seeking work.

(4) Persons aged 16–24, 2013 data.

(5) 2010 data instead of 2009 and 2012 data instead of 2014.

(6) Data not available for 2014. 2010 data instead of 2009.

Source: Eurostat (online data codes: [ifsa_urgan](#) and [ifsa_uغان](#)), the International Labour Organisation (ILOSTAT) and OECD (Labour force statistics)



In the other G20 members (with the exception of China where data was not available in 2014) there was a decrease in youth employment rates from 2009 to 2014 that was generally more intense than the increases mentioned above. In Turkey, the United States (2013 data) and Russia the male youth employment rates were at least 5.0 pp lower in 2014 compared with 2009. For female youth unemployment the highest reductions stood at 3.0 pp in Argentina, 2.7 pp in both Japan and the United States (2013 data), and 2.3 pp in Turkey. In all the other G20 members the decrease in female youth unemployment was below 2.0 pp.

South Africa had the highest long-term unemployment rate

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 5.1), Mexico and South Korea (2012 data) reported long-term unemployment rates close to zero, while this rate reached 5.1 % in the EU-28 and 14.4 % in South Africa. In the EU-28 the long-term unemployed accounted for nearly half of all unemployed, a share that reached nearly three fifths in South Africa.

Table 5.1: Long-term unemployment, 2014
(%)

	Long-term unemployment rate	As a percentage of total unemployment
EU-28 ⁽¹⁾	5.1	49.5
Argentina ⁽²⁾	1.6	23.0
Australia	1.3	21.8
Canada	0.9	12.9
Japan	1.4	37.6
Mexico	0.1	1.2
Russia ⁽³⁾	1.5	28.1
Saudi Arabia ⁽³⁾	1.1	19.9
South Africa	14.4	57.8
South Korea ⁽³⁾	0.0	0.3
Turkey	2.0	20.6
United States	1.4	23.0

Note: data not available for Brazil, China, India and Indonesia.

(1) EU-28: non standard age group: persons aged 15–74. Russia: non standard age group: persons aged 15–72.

(2) Argentina: main cities and metropolitan areas; data from 2013.

(3) Saudi Arabia: 2013 data. South Korea: 2012 data.

Source: Eurostat (online data code: [une_ltu_a](#)), the International Labour Organisation (ILOSTAT) and OECD (Labour force statistics)

6

Economy and finance



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 — named 'International USD' for the purpose of this publication) which reflect price level differences between countries rather than market exchange rates.



Main findings

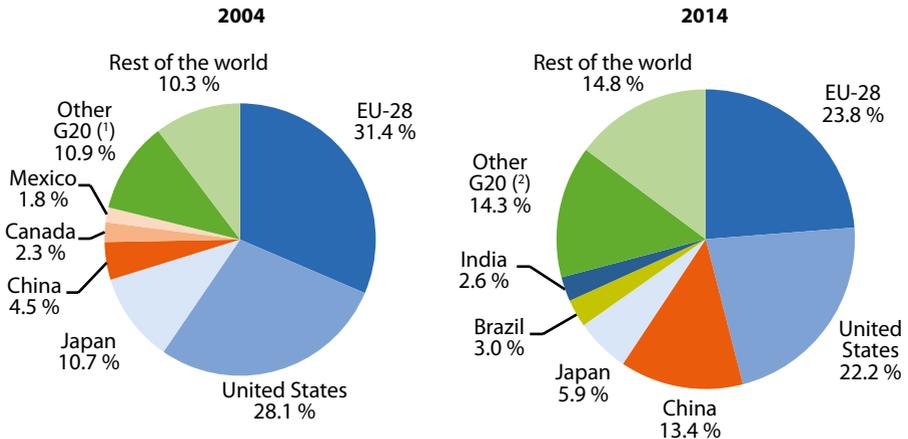
National accounts

G20 members accounted for 85 % of the world's GDP in 2014

In 2014, the total economic output of the world, as measured by **gross domestic product (GDP)**, was valued at EUR 58.7 trillion, of which the G20 members accounted for 85.2%, 4.5 **percentage points (pp)** less than in 2004. The **EU-28** accounted for a 23.8% share of the world's GDP in 2014, while the United States' share was 22.2% (see Figure 6.1); note these relative shares are based on current price series, reflecting market exchange rates. The Chinese share of world GDP rose from 4.5% in 2004 to 13.4% in 2014, moving ahead of Japan (5.9% in 2014). To put the rapid

pace of recent Chinese growth into context, in current price terms China's GDP in 2014 was EUR 6.4 trillion higher than it was in 2004, an increase higher than the combined GDP of the eight smallest G20 economies in 2014 (Australia, South Korea, Mexico, Indonesia, Turkey, Saudi Arabia, Argentina and South Africa). The shares of global GDP contributed by Brazil, India and Russia also grew significantly; an increase of 1.5 pp pushed Brazil from the tenth place in 2004 to the fifth place in 2014 (leaving aside the four G20 EU Member States), while an increase of 1.0 pp helped India and Russia become respectively the sixth and seventh largest G20 economies in 2014, up from the 8th and 11th place in 2004.

Figure 6.1: Share of world GDP, 2004 and 2014
(%)



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

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

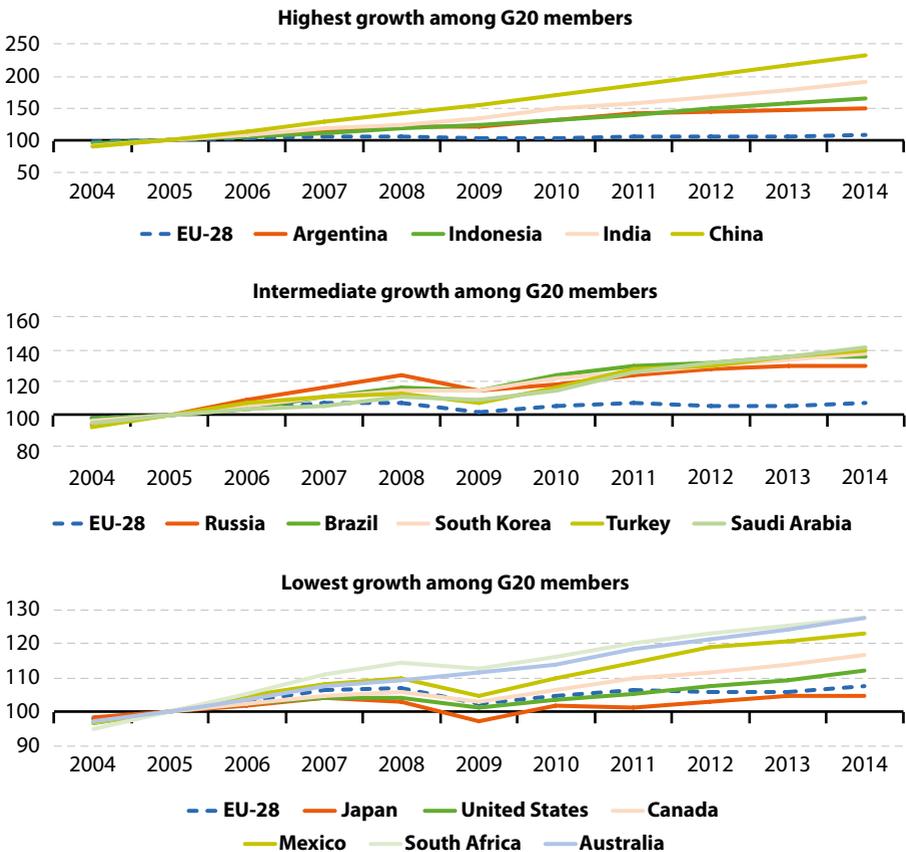
Source: Eurostat (online data code: [nama_10_gdp](#)) and the United Nations Statistics Division (National Accounts Main Aggregates Database)

China and India had the highest GDP growth between 2004 and 2014

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 2004 and 2014 — note the different

scales used for the three parts of the figure. The lowest rates of change were recorded by 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 6.2: GDP at constant prices, 2004–14
(2005 = 100)



Note: 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.

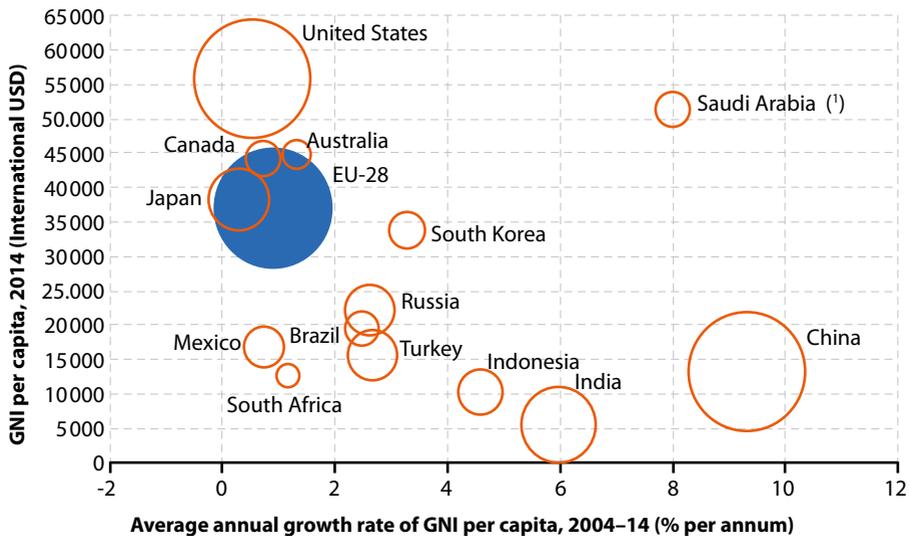
Source: Eurostat (online data code: [nama_10_gdp](#)) and the United Nations Statistics Division (National Accounts Main Aggregates Database)



Among the G20 members, the highest gross national income (GNI) per capita in 2014 was recorded in the United States, followed by Saudi Arabia (2013 data). Note that the conversion to United States dollars (USD) used for this indicator in Figure 6.3 is based on purchasing power parities (PPPs) rather than market exchange rates and so reflects differences in price levels between countries. The average level of income per capita in the United States was 3.7 times

as high as the average GNI for the world. Saudi Arabia, Canada and Australia also recorded average GNI per capita that was at least 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 capita that were around or below the world average, namely Brazil, China, South Africa, Indonesia and India.

Figure 6.3: GNI per capita (2014) and average annual growth of GNI per capita (2004–14)



Note: GNI per inhabitant is presented in international US dollar at current prices for 2014. The relative size of each bubble reflects the value of GNI in PPP international USD for 2014. The EU-28's 10-year annual average growth rate of GDP between 2004 and 2014 was 0.9 % (shown on the horizontal axis), while its GNI per inhabitant in 2014 was 37 007 (shown on the vertical axis). The GNI was 18.7 trillion international USD in 2014 (represented by the size of the large orange circle). Data not available for Argentina.

(!) Saudia Arabia GNI per capita: 2013 data.

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

In broad terms, members with relatively low GNI per capita recorded relatively high economic growth over the 10 years from 2004–14; this was most notably the case in China and India. By contrast, members with relatively high GNI per capita in 2014 recorded fairly low levels of economic growth over the same period; this was most notably the case in Japan, the United States, Canada and the EU-28. Saudi Arabia reported an atypical pattern of development, combining a relatively high level of GNI per capita (that by the end of the period was almost as high as that in the United States) with the second highest growth in GNI per capita during the period 2004–14 among the G20 members, an average of 8.0% per year. The reverse situation could be observed in Mexico which reported relatively low growth of GNI per capita (0.7% per year) with a relatively low level of GNI per capita.

General government finances

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 2014 at 46.7% in the EU-28 (in the euro area it was higher still, at 48.1%), followed by 38.9% in Japan, 38.8% in Russia (in 2013) and 38.6% in Canada. The lowest ratio was recorded in Mexico (24.5%, in 2013). Note that the data for Argentina, Brazil, China, India, Indonesia, Saudi Arabia and South Africa are not available.

Most G20 members recorded a government deficit in 2014

Most G20 members had a government deficit in 2014. South Korea was the only country that recorded a surplus (see Table 6.1), while Mexico and Russia, two countries for which data are not available for 2014, recorded a surplus in 2013. Some of the G20 members with the highest government deficits had as well the highest levels of government debt and this was notably the case for Japan and the United States. Mexico and Turkey (data for 2013 and 2011 respectively) were among countries with moderate debt levels and deficit/surplus close to a balance. Three countries had government gross debts higher than their GDP in 2014; the ratio of gross debt to GDP stood at 108% in Canada, 123% in the United States up to 247% in Japan.

South Korea recorded an increase in government surplus between 2004 and 2014

Comparing data for 2004 with 2014 (see Figure 6.4), South Korea was the only G20 country (among those for which data are available), which saw its surplus expanding, while the surpluses of Russia and Mexico shrank close to a balanced position (2013 data for both). Turkey (period from 2006 to 2011), Canada and Australia moved from smaller surpluses to deficits. The government deficit of the United States slightly decreased, whereas the deficit of Japan remained essentially at the same level. The same was true for the EU-28, even though the deficit of the euro area also slightly decreased.



Table 6.1: General government finances, 2004 and 2014
(% of GDP)

	Expenditure		Revenue		Deficit / surplus		Gross debt	
	2004	2014	2004	2014	2004	2014	2004	2014
EU-28	46.1	48.2	43.2	45.2	-2.9	-3.0	61.2	86.8
EA-19	46.7	49.4	43.8	46.8	-3.0	-2.6	68.4	92.1
Australia	35.0	36.4	36.0	33.6	1.0	-2.8	36.2	64.2
Canada	38.8	39.4	39.8	37.8	1.0	-1.6	91.3	107.7
Japan	36.6	42.0	30.7	35.8	-5.9	-6.2	178.8	246.6
South Korea	29.6	32.0	29.9	33.2	0.2	1.2	:	:
Mexico (1)	19.1	24.4	20.7	24.5	1.6	0.1	38.0	44.9
Russia (1)	33.4	37.4	39.5	40.2	6.0	0.6	:	:
Turkey (1)(2)	33.0	37.4	33.7	36.6	0.8	-0.8	:	39.0
United States	36.4	38.1	30.9	33.1	-5.4	-4.9	79.2	123.3

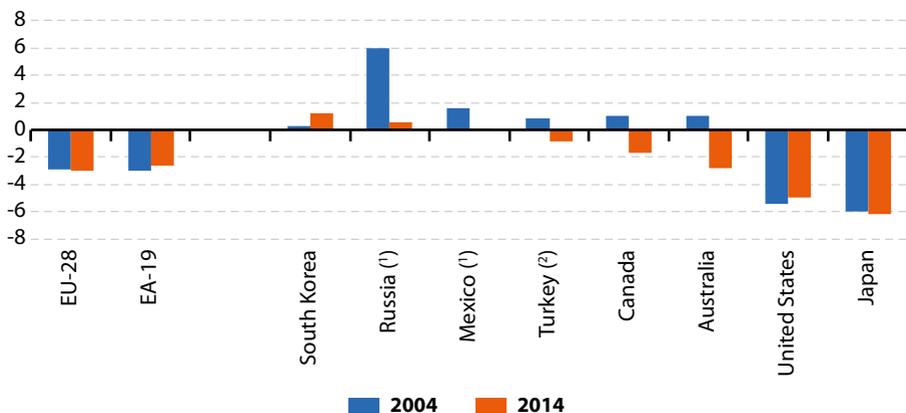
Note: data not available for Argentina, Brazil, China, India, Indonesia, Saudi Arabia and South Africa

(1) 2014 'Expenditure', 'Revenue' and 'Deficit/surplus': Turkey (2011 data); Mexico and Russia (2013 data).

(2) 2004 'Expenditure', 'Revenue' and 'Deficit/surplus': Turkey (2006 data).

Source: Eurostat (online data codes: [gov_10a_main](#) and [gov_10dd_edpt1](#)) and OECD National Accounts at a glance

Figure 6.4: General government deficit / surplus, 2004 and 2014
(% of GDP)



Note: data not available for Argentina, Brazil, China, India, Indonesia, Saudi Arabia and South Africa.

(1) 2014: Turkey (2011 data), Mexico and Russia (2013 data).

(2) 2004: Turkey (2006 data).

Source: Eurostat (online data codes: [gov_10a_main](#) and [gov_10dd_edpt1](#)) and OECD National Accounts at a glance

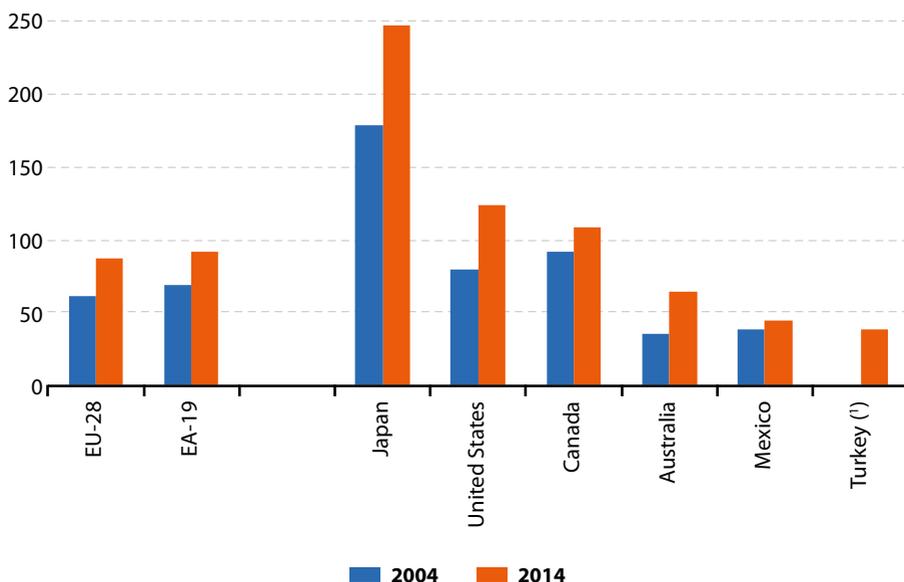
Japan and the United States recorded the largest increases in government debt between 2004 and 2014

All G20 members for which data are available recorded higher levels of general government

gross debt relative to GDP in 2014 than in 2004, ranging from an increase of 6.8 pp in Mexico to an increase of 28.0 pp in Australia, with the United States (increase of 44.1 pp) and Japan (67.8 pp) above this range (see Figure 6.5).

Figure 6.5: General government debt, 2004 and 2014

(% of GDP)



Note: data not available for Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia, South Africa and South Korea.

(¹) 2004 data not available.

Source: Eurostat (online data codes: gov_10a_main and gov_10dd_edpt1) and OECD National Accounts at a glance



Balance of payments

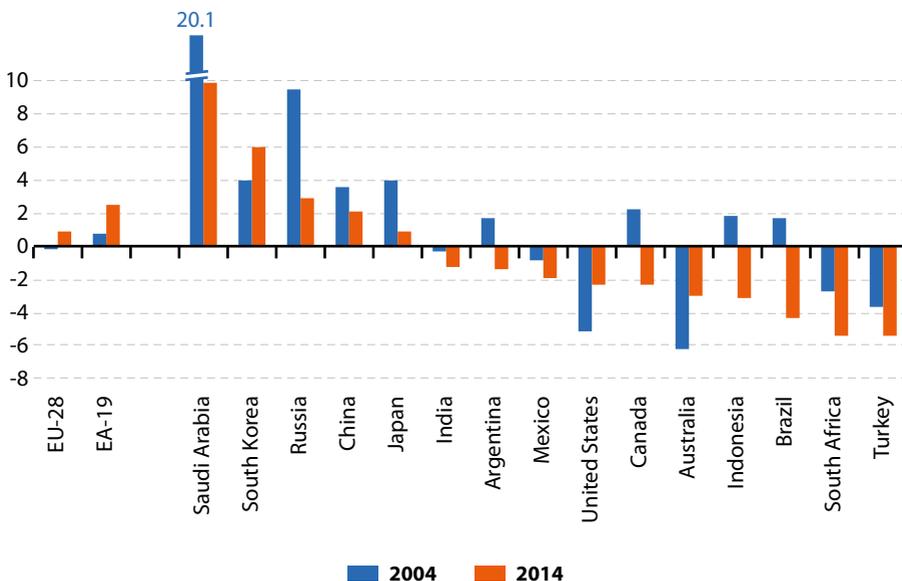
Saudi Arabia recorded the largest current account surplus relative to GDP

The current account of the [balance of payments](#) provides information on international transactions in goods and services (see the article on [international trade](#) 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 2014 in absolute terms was EUR 208.8 billion for China, while in relative terms the current account surplus peaked in

Saudi Arabia at 9.8% of GDP (see Figure 6.6). The largest current account deficit in 2014 was EUR 295.1 billion for the United States, while Turkey's deficit represented 5.5% of GDP.

The current account balance of Argentina, Canada, Indonesia and Brazil moved from surpluses to deficits between 2004 and 2014, while the EU-28 moved from a small deficit to a surplus. The deficits of Australia and the United States narrowed over the period under consideration, while they expanded for Mexico, South Africa and Turkey. In South Korea the surplus expanded while those of Saudi Arabia, Russia, China and Japan narrowed.

Figure 6.6: Current account balance, 2004 and 2014
(% of GDP)



Source: Eurostat (online data codes: [bop_eu6_q](#) and [nama_10_gdp](#)), OECD (Key Short-Term Economic Indicators) and the International Monetary Fund (World Economic Outlook database)

Foreign direct investment

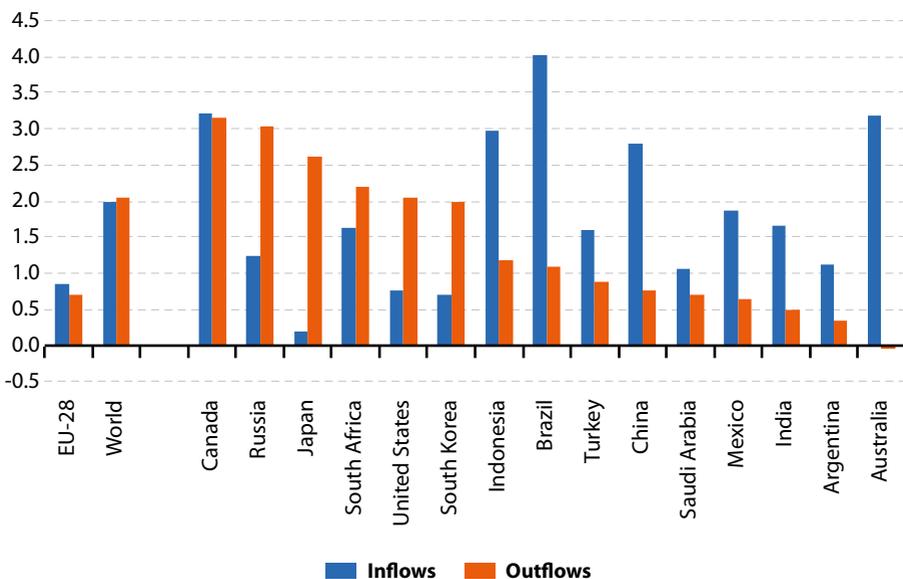
Foreign direct investment (FDI) is characterised by investment in new foreign plant/offices, or by the purchase of existing assets that belong to a foreign enterprise. FDI differs from portfolio investment as it is made with the purpose of having a lasting interest, by acquiring control or an effective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

The highest inflows of FDI were recorded in the emerging markets and resource rich members

Among the G20 members, FDI outflows exceeded inflows in 2014 in Russia, Japan, South

Africa, the United States and South Korea (see Figure 6.7). Relative to GDP, the highest inflows of FDI were recorded into Brazil, Canada and Australia, a mixture of emerging economies and resource rich members. Outflows of FDI relative to GDP were highest from Canada and Russia, followed at some distance by Japan and South Africa. 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 6.7: Flows of foreign direct investment, 2014
(% of GDP)



Note: ranked on 'Outflows'. As of 2013 a new methodology (BPM6) was implemented with differences compared to earlier methodology (BPM5) which may partly explain significant changes in the indicators when comparing with earlier periods. A special purpose entity (SPE) is included.

Source: Eurostat (online data code: [nama_10_gdp](#)) and the World Bank (World Development Indicators)



Table 6.2 introduces the stocks and flows of FDI into and out of the EU-28. The United States maintained in 2014 their position as the main partner for the EU-28 with respectively 34.5 % of outward stocks and 39.5% of inward stocks from the rest of the world.

In terms of FDI flows, the picture is quite different. EU-28's FDI outflows towards the United States recorded a negative value in 2014, which means that disinvestment (of investment

made abroad in previous years) exceeded new investment in the United States; the same holds true in the opposite direction, albeit to a lesser extent. The highest values of EU-28's outward FDI were recorded in 2014 with Brazil and Canada, while Canada was also the largest source of FDI inflows into the EU-28. 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.

Table 6.2: Flows and stocks of foreign direct investment with selected partners, EU-28, 2014
(million EUR)

	FDI Stocks		FDI flows	
	Outward stocks	Inward stocks	Outflows	Inflows
World (extra-EU-28)	5 748 568.4	4 582 548.5	96 071.2	118 943.5
Argentina	35 195.1	1 306.6	1 715.1	96.4
Australia	115 330.9	26 383.5	1 750.1	656.5
Brazil	343 594.5	113 618.9	30 362.5	1 036.4
Canada	274 653.5	165 859.8	23 357.1	13 860.8
China	144 214.9	20 715.7	9 195.9	7 737.8
India	38 485.8	6 691.4	5 288.0	1 067.3
Indonesia	25 806.9	-2 458.1	1 761.1	1 347.5
Japan	72 957.8	166 281.6	397.3	6 936.1
Mexico	119 158.2	28 326.0	8 996.0	4 669.1
Russia	171 544.6	74 444.3	-448.4	4 725.1
Saudi Arabia	17 769.2	13 591.7	2 702.2	-666.0
South Africa	56 539.5	8 375.3	2 761.0	1 059.3
South Korea	43 720.4	20 251.6	5 629.2	4 436.1
Turkey	64 902.9	8 343.5	2 776.7	1 817.2
United States	1 985 269.7	1 810 771.8	-69 780.1	-20 297.6
Rest of the world ⁽¹⁾	2 239 426.1	2 120 044.6	69 594.4	90 465.6
- Offshore financial centers	853 827.9	1 226 284.9	42 538.6	47 384.6

(¹) Non EU-28 and non G20 members, including the offshore financial centers.

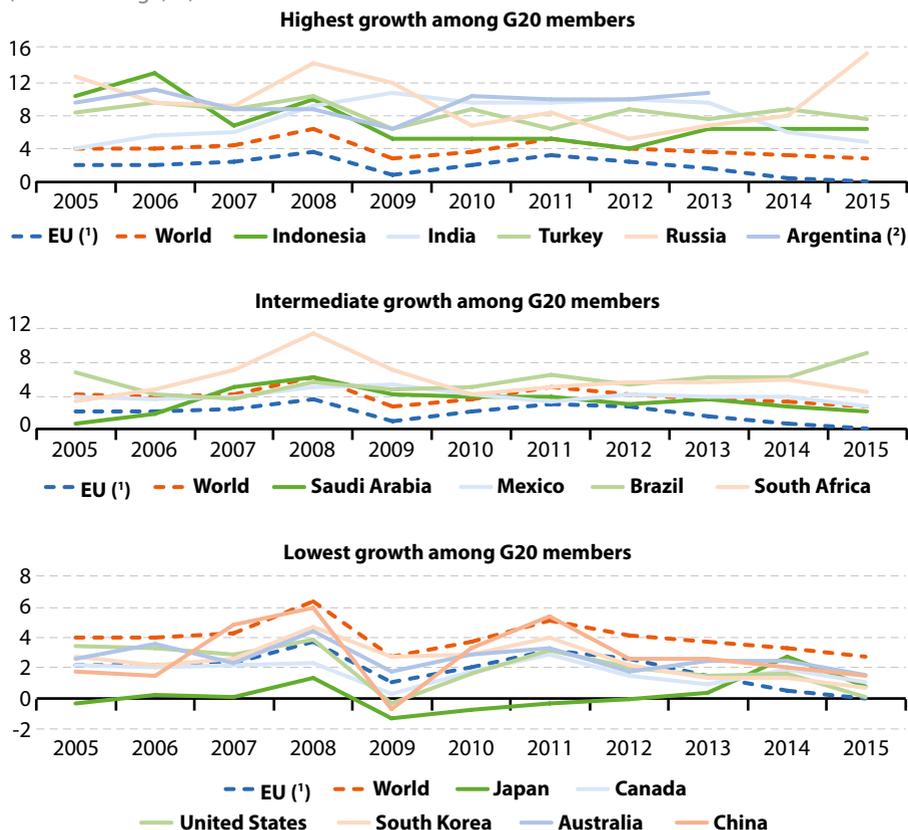
Source: Eurostat (online data code: [bop_fdi6_geo](#))

Consumer prices, interest and exchange rates

Figure 6.8 shows the annual rate of change in consumer price indices (CPIs) between 2005 and 2015 for the G20 members and the world. Note the different scales used for the three parts

of the figure. 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.

Figure 6.8: Consumer price indices, 2005–15
(annual change, %)



Note: 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.

(¹) 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.

(²) 2014 and 2015: not available.

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



The worldwide **inflation rate** increased between 2005 and 2008 (to peak at 6.4%) before dropping sharply during the global financial and economic crisis. Inflation increased again to peak at 5.2% in 2011 before declining to finish in 2015 at the rate of 3.2%, lower than 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.

Prices more than doubled in Argentina, Russia, Turkey and India between 2005 and 2015

Between 2005 and 2015, the general level of prices more than doubled in Argentina (2013 data), Russia, Turkey and India. The inflation rate was particularly high in Russia in both 2008 (14.1%) and 2015 (15.5%), in Indonesia in 2006 (13.1%) as well as in South Africa (11.5%) in 2008. Apart from Russia, inflation rates among the G20 members ranged in 2015 from a low of 0.0% in the EU-28 to 9.0% in Brazil. Note that the data for Argentina in 2014 and 2015 are not available.

The EU recorded relatively low inflation rates over the 2005–15 period with an average of 1.9%; Canada (1.7%) and Japan (0.3%) were the only countries recording averages that were lower, while an average inflation rate in the United States (2.1%) was close to the EU level.

By far the largest fall in interest rates between 2004 and 2014 was in Brazil

Central bank short-term interest rates varied greatly between the G20 members in 2014, but to a somewhat lesser extent than they had done 10 years earlier. Rates were below 1.00% in the euro area and in the United Kingdom and were 1.22% in Japan. Elsewhere, rates ranged from 3.00% in Canada to 12.61% in Indonesia, with the rates in Argentina (24.01%) and Brazil (32.01%) exceeding this range. In nearly all G20 members interest rates were lower in 2014 than they had been in 2004, with the exception of China where the rates were essentially the same (increase of 0.02%) and Argentina, where the rates rose by some 17 pp to 24.01%. By far the largest fall in interest rates during this period was in Brazil.

Among the G20 members, the peso in Argentina, rand in South Africa, lira in Turkey, rupee in India, rouble in Russia and rupiah in Indonesia devalued the most between 2004 and 2014 relative to the euro (see Table 6.3). By contrast, the Chinese renminbi, Brazilian real, the Australian and Canadian dollars and South Korean won appreciated relative to the euro during this 10-year period. Relative to the United States dollar, the euro appreciated by 6.8% between 2004 and 2014.

Table 6.3: Interest and exchange rates, 2004 and 2014

	Central bank: short-term official lending rates (%)		Exchange rates (1 EUR = ... national currency) ⁽²⁾		Exchange rates (1 USD = ... national currency) ⁽³⁾	
	2004	2014	2004	2014	2004	2014
EA ⁽¹⁾	1.25	0.05	1.00	1.00	0.81	0.75
United Kingdom	4.38	0.50	0.68	0.81	0.55	0.61
Argentina	6.78	24.01	3.67	10.77	2.92	8.08
Australia	8.85	5.95	1.69	1.47	1.36	1.11
Brazil	54.93	32.01	3.64	3.12	2.93	2.35
Canada	4.00	3.00	1.62	1.47	1.30	1.11
China	5.58	5.60	10.30	8.19	8.28	6.14
India	10.92	10.25	56.30	81.04	45.32	61.03
Indonesia	14.12	12.61	11 127.34	15 748.92	8 938.85	11 865.21
Japan	1.77	1.22	134.44	140.31	108.19	105.94
Mexico	7.44	3.55	14.04	17.66	11.29	13.29
Russia	11.44	11.14	35.82	50.95	28.81	38.38
Saudi Arabia	–	–	–	–	3.75	3.75
South Africa	11.29	9.13	8.01	14.40	6.46	10.85
South Korea	5.90	4.26	1 422.62	1 398.14	1 145.32	1 052.96
Turkey	–	–	1.78	2.91	1.43	2.19
United States	4.34	3.25	1.24	1.33	1.00	1.00

(1) Lending rate: refinancing rate; end of year rate. 2005: EA-12, 2014: EA-18.

(2) Exchange rates: annual averages, based on the business day rates.

(3) Exchange rates: annual averages, based on the monthly average rates.

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

7

International trade



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

Trade intensity

In 2014 trade in goods and services close to a third of the EU-28's GDP

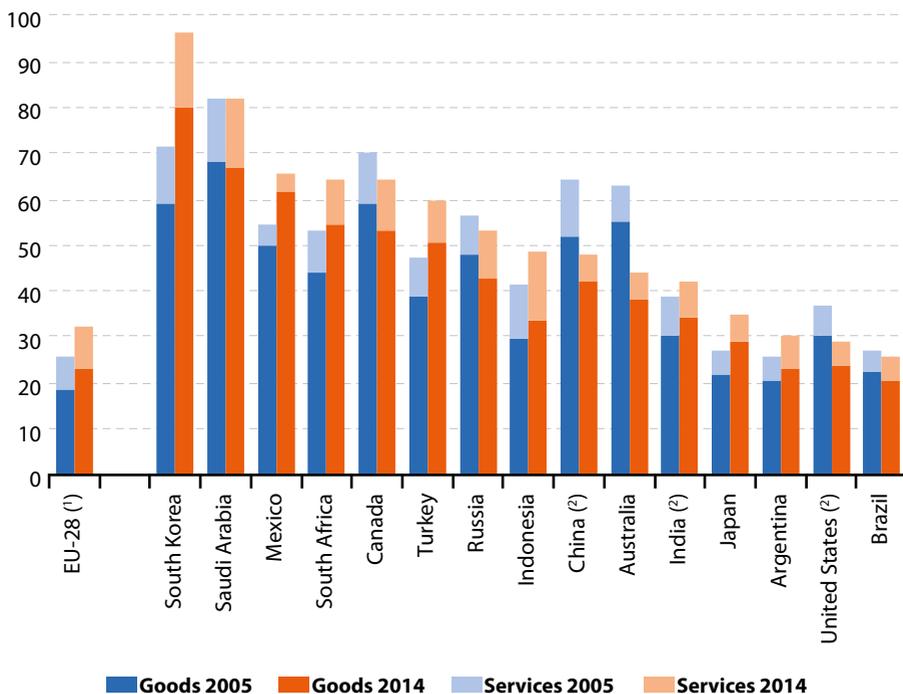
The level of international trade relative to overall economic activity (the ratio of traded **goods and services** to GDP) may be expected to be considerably higher for relatively small countries that are more integrated in the global economy as a result of not producing a full range of goods and services, as can be seen, for example, with South Korea and Saudi Arabia 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%; 2013 data) among the G20 members, higher only than that in

Argentina (29.3%) and Brazil (25.8%). While trade in goods dominates international trade, trade in services has grown strongly: trade in services was equivalent to 14.8% of GDP in India, 14.6% in Saudi Arabia and reached 15.7% of GDP in South Korea.

Comparing 2005 with 2014, the ratio of trade in goods and services to GDP increased notably in South Korea (+ 24.8%) and to a smaller extent in Turkey, Mexico and South Africa (all over 10%). Conversely, the largest falls in this ratio were observed in Australia (– 19.0%), China (– 15.8%, 2013 data), the United States (– 7.5%, 2013 data) and Canada (– 5.9%), reflecting faster growth in GDP than in trade between these two years.



Figure 7.1: International trade in goods and services, 2005 and 2014
(% of GDP)



Note: ranked on total of 'Goods 2014' and 'Services 2014'. Sum of imports and exports of goods and services of an economy, measured as debits and credits, relative to its gross domestic product (GDP). Higher values indicate higher integration within the international economy.

(1) Extra-EU flows only for EU-28 (trade between EU Member States not included), while flows with the rest of the world are measured for other countries.

(2) 2013 data instead of 2014.

Source: Eurostat (online data codes: [bop_eu6_q](#) and [nama_10_gdp](#)) and the World Bank (World Development Indicators)

Trade in goods

The EU-28 ran a trade surplus for goods equal to EUR 11.1 billion in 2014. Table 7.1 shows the flows and balance of trade in goods for the EU-28 with the other G20 members. The EU-28 ran by far its largest **trade surplus** in goods with the United

States in 2014 (EUR 102.3 billion) followed by Australia (EUR 20.4 billion) and Turkey (EUR 20.3 billion). At the other end of the scale, it recorded its largest trade deficit in goods with China (EUR 137.5 billion), followed by Russia (EUR 79.2 billion).

Table 7.1: EU-28 International trade in goods by partner, 2004 and 2014
(billion EUR)

	2004			2014		
	Exports to partner	Imports from partner	Balance	Exports to partner	Imports from partner	Balance
World (extra-EU-28)	945.2	1.027.4	-82.2	1.703.0	1 691.9	11.1
Argentina	3.7	6.3	-2.6	8.2	7.7	0.5
Australia	19.9	8.8	11.1	29.6	9.2	20.4
Brazil	14.2	21.8	-7.6	36.9	31.2	5.7
Canada	22.1	16.5	5.7	31.6	27.4	4.2
China	48.4	129.2	-80.8	164.6	302.1	-137.5
India	17.2	16.4	0.7	35.6	37.1	-1.5
Indonesia	4.8	10.5	-5.7	9.5	14.4	-4.9
Japan	43.5	74.9	-31.5	53.3	56.6	-3.3
Mexico	14.7	6.9	7.8	28.4	18.0	10.4
Russia	46.1	84.9	-38.8	103.2	182.4	-79.2
Saudi Arabia	12.7	16.3	-3.6	35.1	28.7	6.4
South Africa	16.1	15.8	0.2	23.3	18.5	4.8
South Korea	17.9	30.8	-12.9	43.2	38.8	4.4
Turkey	40.2	32.9	7.3	74.7	54.4	20.3
United States	235.7	159.7	76.0	311.6	209.3	102.3

Source: Eurostat (online data code: [ext_lt_maineu](#))

Between 2004 and 2014, the EU-28's trade balance for goods with Argentina, Brazil, Saudi Arabia 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, while the deficits with Japan and Indonesia contracted. The EU-28's trade surplus for goods with Australia, South Africa, Turkey, Australia, the United States and Mexico increased between 2004 and 2014, while that with Canada contracted.

Around 45 % of the goods exported from Russia were destined for the EU-28, while 41 % of the goods imported by Russia originated in the EU-28

Figures 7.2 and 7.3 show the importance of the EU-28 as a trading partner for the other G20 members in terms of international trade in goods. Some 45.1 % of all goods exported from Russia and 43.5 % of those exported from Turkey in 2014 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. Compared with



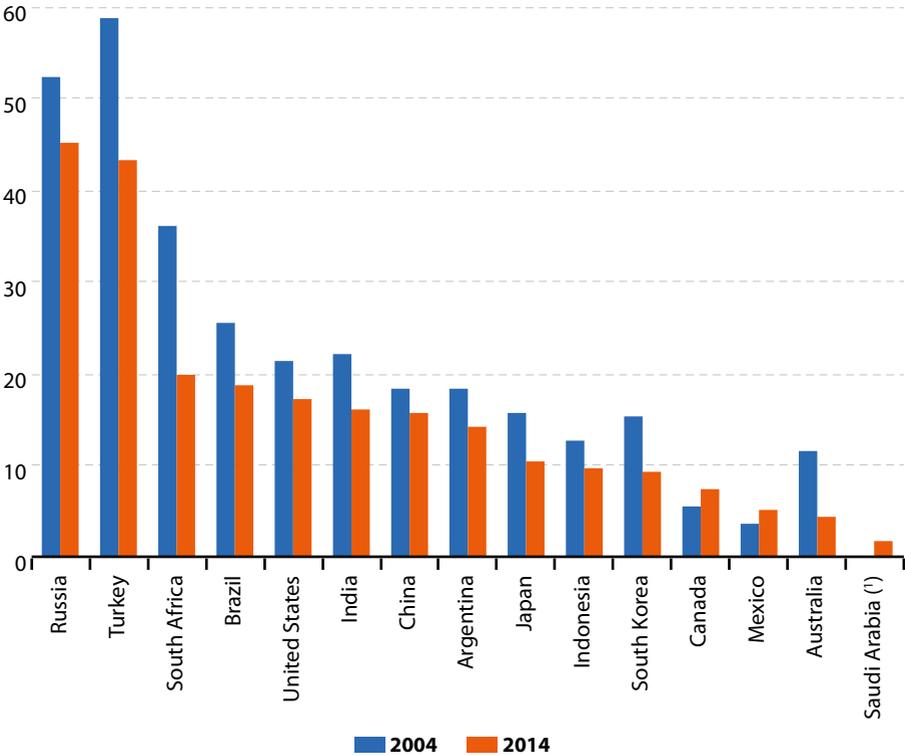
2004, the EU-28's role as a destination of traded goods decreased in all but two G20 countries (Canada and Mexico). The largest decreases were recorded in South Africa (– 16.6 pp) and Turkey (– 15.4 pp).

The EU-28 was the source of more than one fifth of all goods imported into Turkey, South Africa, Saudi Arabia and Brazil in 2014 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. Compared with 2004, the EU's importance as a source of imports decreased in all G20 members, except in Mexico and South Korea (both + 0.1 pp). The largest decreases were recorded in South Africa and in Turkey (both – 12.9 pp).

Figure 7.2: Share of EU-28 as the destination of exports of goods by G20 partners, 2004 and 2014

(% of all exports)

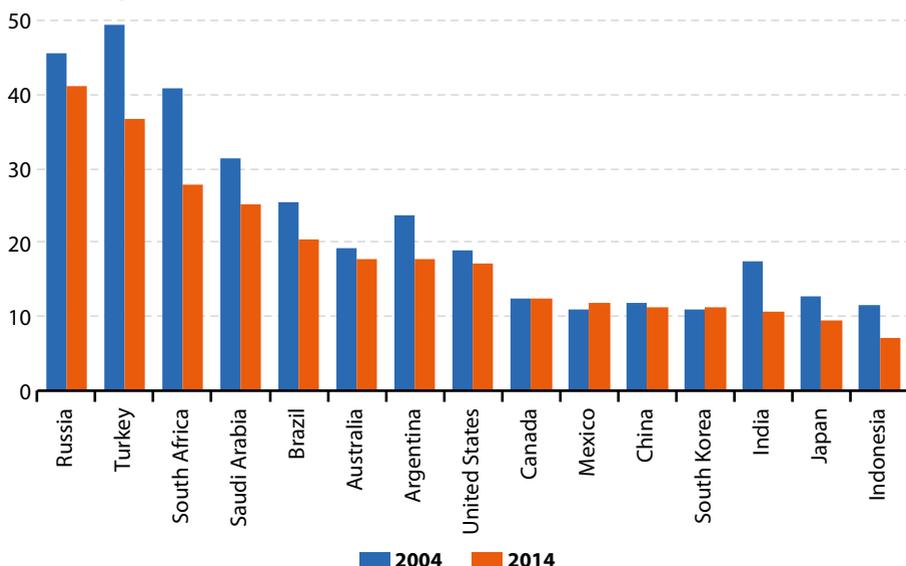


(¹) Not available for 2004.

Source: the United Nations (Comtrade)

Figure 7.3: Share of EU-28 as the origin of imports of goods by G20 partners, 2004 and 2014

(% of all imports)



Source: the United Nations (Comtrade)

Trade in services

The EU-28 was the world's largest exporter and importer of services in 2014

The EU-28 was the world's largest exporter and importer of services in 2014, with a trade surplus of EUR 162.9 billion. The EU-28 had trade surpluses in services in 2014 with all the G20 members listed in Table 7.2, except Turkey (note that no data are available for Saudi Arabia and

South Korea). A relatively high share of the EU-28's trade in services was with the United States, which produced a surplus of EUR 6.6 billion in 2014. The EU-28's largest surplus for trade in services, however, was recorded with Russia: EUR 16.5 billion. Between 2010 and 2014 the EU's trade surpluses increased with all G20 members (except Brazil) while trade deficits were either resorbed (United States, India) or reduced (Turkey).



Table 7.2: EU-28 international trade in services by partner, 2010 and 2014
(billion EUR)

	2010			2014		
	Exports to partner	Imports from partner	Balance	Exports to partner	Imports from partner	Balance
World (extra-EU-28)	569.5	461.6	107.8	764.9	602.0	162.9
Argentina	3.5	2.3	1.2	4.1	2.0	2.1
Australia	14.6	7.4	7.2	18.6	7.8	10.8
Brazil	14.5	6.0	8.5	15.0	7.5	7.5
Canada	14.8	10.0	4.8	16.5	11.4	5.1
China	19.5	17.2	2.3	29.1	22.9	6.2
India	10.8	11.7	-0.9	12.3	12.1	0.3
Indonesia	2.9	1.5	1.4	4.1	1.9	2.2
Japan	19.1	14.1	5.0	25.7	15.2	10.5
Mexico	6.1	3.3	2.8	7.9	3.9	4.1
Russia	21.9	12.0	10.0	29.0	12.5	16.5
South Africa	6.7	4.4	2.3	7.4	4.5	2.9
Turkey	8.3	14.3	-6.0	11.0	15.7	-4.7
United States	140.1	142.1	-2.0	197.0	190.4	6.6

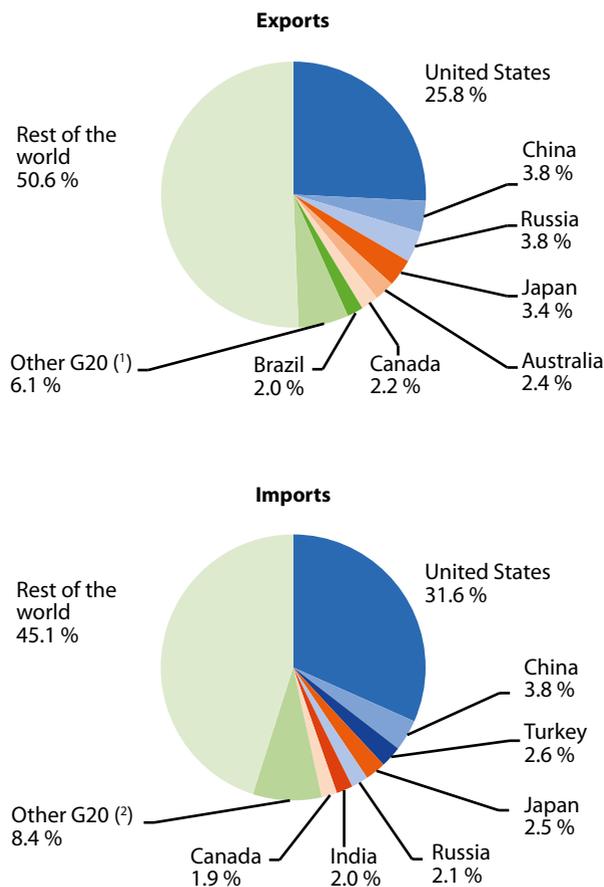
Note: data not available for Saudi Arabia and South Korea.

Source: Eurostat (online data code: [bop_its6_det](#))

Figure 7.4 analyses the EU-28's trading partners for services in 2014. Both in terms of exports and imports, the G20 members accounted for around half of the EU-28 trade in services. On the export side, the United States (25.8%) was

the largest trading partner for the EU-28 for services, followed by China and Russia. In terms of imports, the EU-28's main trading partners for services were the United States (31.6%), China and Turkey.

Figure 7.4: EU-28 International exports and imports of services by main partners, 2014
 (% share of extra-EU-28 exports and imports)



(¹) Argentina, India, Indonesia, Mexico, South Africa and Turkey. Not including Saudi Arabia or South Korea.

(²) Argentina, Australia, India, Indonesia, Mexico and South Africa. Not including Saudi Arabia or South Korea.

Source: Eurostat (online data code: [bop_its6_det](#))

8

Industry, trade and services



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

Short-term business statistics

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 **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

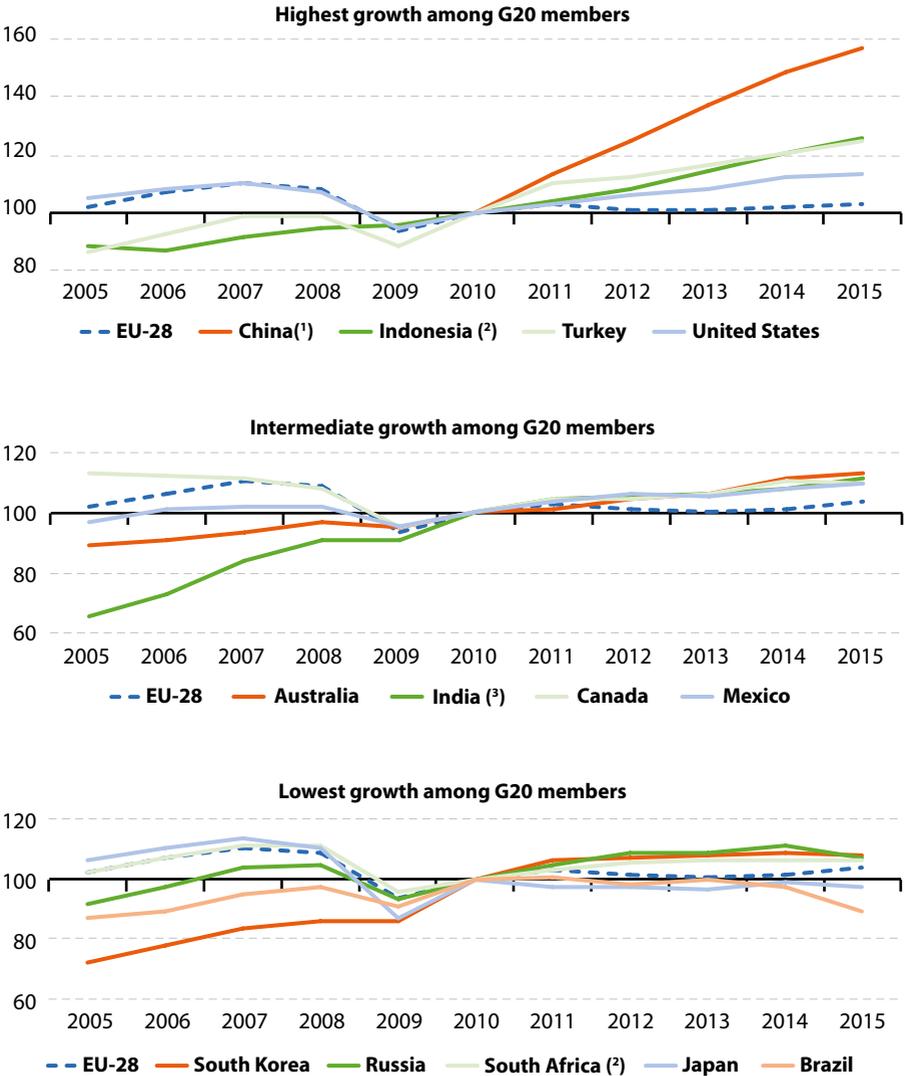
services resulting from that activity. Often rapid increase in prices reflect the rising cost of energy, food and other natural resources, as increased demand, particularly from developing countries, outstrip supply.

In all five of the latest years (2010–15) China reported the highest growth in industrial output among the G20 members

The impact of the global financial and economic crisis on industrial activities and the subsequent recovery can clearly be seen for the two indicators mentioned above in most of the G20 countries. 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, Canada, 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)



Figure 8.1: Industrial production index, average annual growth rate, 2005–15
(2010 = 100)



Note: different ranges in y-axis in between different parts of the figure. The EU-28 is shown in all three parts of the figure for the purpose of comparison. The Argentina and Saudi Arabia: not available.

(1) Data not available from 2005–09.

(2) Data for manufacturing instead of industry.

(3) 2005: break in the series.

Source: Eurostat (online data code: sts_inpr_a), OECD (Main Economic Indicators — Production and Sales) and IMF, International Financial Statistics (Price, Production and Labour selected indicators)

and Indonesia (1.4%), 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 in 2014 and Brazil, Russia, Canada, Japan and South Korea in 2015. In all five of the latest years (2010–15) China reported by far the highest growth in industrial output among the G20 members.

By 2014, industrial output in Japan, the EU-28, Canada and South Africa had yet to return to pre-crisis levels

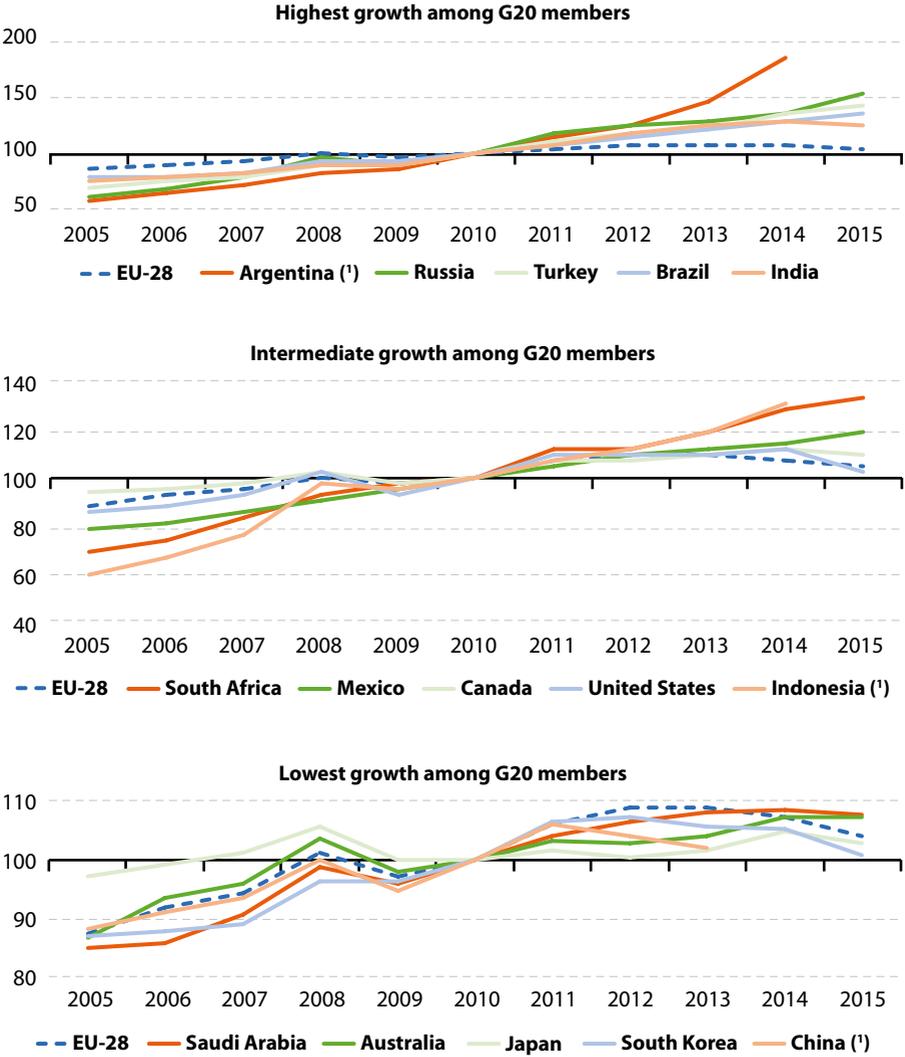
The crisis was remarkable not just for its global scale, but also for the depth of the downturn, particularly in industrial activities. In 2009, industrial output fell by more than 10% in South Africa, the EU-28, Canada, the United States and Russia, and by as much as 23.1% in Japan. As well as clearly 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 China, India and South Korea, and to a somewhat lesser extent in Turkey, Indonesia, Russia and Australia. By contrast, industrial output in 2015 in Japan, the EU-28, Canada, Brazil and South Africa had not returned to the peak levels achieved in 2007. In Japan, industrial output in 2014 remained 16.1% below its 2007 peak level.

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 Argentina, Turkey, Brazil, and South Africa and by more than 16% in Russia and Indonesia (see Figure 8.2). Often this rapid price increase 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 the United States, Russia, Australia, Japan and China, 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 (2.0% or less) in some members: the EU-28 and South Korea in 2013, 2014, Australia in 2012, China in 2012 and 2013, Japan in 2012. In 2015, steeper decreases were observed in the United States (8.0%), South Korea (4.2%), India (3.6%) and the EU-28 (3.5%). The industrial producer price index grew from 2014 to 2015 in six of the G20 members for which data are available with a maximum of 17.0% in Russia.

Over the period from 2005 to 2015, industrial output prices more than doubled in Indonesia, Turkey and South Africa, while they more than trebled in Argentina and Russia. Despite falling prices in 2009 and 2014, EU-28 industrial output prices increased, on average, by 1.8% per year between 2005 and 2015.



Figure 8.2: Industrial producer price index (domestic), average annual growth rate, 2005–15 (2010 = 100)



Note: different ranges in y-axis in between different parts of the figure. The EU-28 is shown in all three parts of the figure for the purpose of comparison.

(¹) Total production price index not available in 2015 for Argentina, China and Indonesia, and in 2014 for China.

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

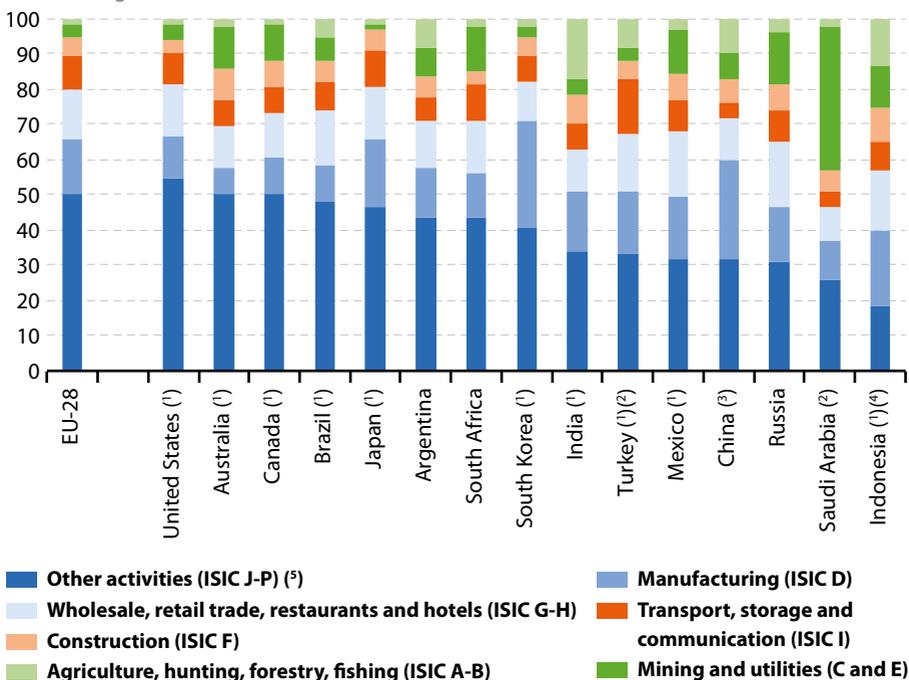
Structural business statistics

Structural business statistics 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. Gross value added (GVA) 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 gross value added by economic activity using the ISIC Rev.3 classification which groups activities into seven categories.

Figure 8.3: Gross value added by economic activity at current prices, 2014

(% of total gross value added)



Note: ISIC Rev. 3 classification. Countries ranked on share of 'Other activities' in their country's total valued added. Economical activities ranked by their share in the total of the G20 members.

(1) 'Other activities' excludes computer and related activities and radio/TV activities, includes travel agencies and landscaping care; 'Agriculture, hunting, forestry, fishing' excludes irrigation canals and landscaping care; 'Manufacturing' excludes recycling and publishing activities; 'Wholesale, retail trade, restaurants and hotels' excludes repair of personal and household goods; 'Transport, storage and communication' excludes travel agencies, includes publishing activities, computer and related activities and radio/TV activities.

(2) FISIM has not been allocated to intermediate consumption by economic activity.

(3) At producers' prices.

(4) Refers to gross domestic product.

(5) 'Other activities' include: financial intermediation; real estate, renting and business activities; public administration and defence; compulsory social security; education; health and social work; other community, social and personal service activities; and private households with employed persons.

Source: United Nations Statistics Division, National Accounts estimates of main aggregates



'Other activities' include the economic activities dealing with financial intermediation; real estate, renting and business activities; public administration and defence; compulsory social security; education; health and social work; other community, social and personal service activities; and also private households with employed persons. In 2014, this group represented at least half of the GVA of the economies of the United States, Australia, Canada and the EU-28 (see Figure 8.3). In most of the other G20 countries 'other activities' also held the lion's share, except in Saudi Arabia with mining as the main activity in terms of GVA and Indonesia with manufacturing as the most important sector.

Apart from Indonesia, where it was the largest sector, 'manufacturing' was the second highest economic activity in terms of share of the GVA in the EU-28 and in six other G20 members. 'Manufacturing' represented more than one fifth of the economies of South Korea, China and Indonesia and between 14.0% and 20.0% in Japan, Turkey, India, the EU-28 and Argentina. With the exception of Australia, where 'manufacturing' represented 7.2% of the economy's GVA, in all other G20 members, it equated to at least 10.0%.

In Russia, Mexico, Brazil, South Africa, the United States and Canada it was the 'wholesale, retail trade, restaurants and hotels' sector that ranked second in the percentage of GVA. Australia's economy, also dominated by 'other activities' (50.4%), had a slightly higher share in the 'mining and utilities' sector (12.0%) compared with the remaining sectors. India, and Indonesia were the only G20 countries in which 'agriculture, hunting, forestry and fishing' had at least 10.0% of the economy's GVA, and China presented a share of 9.5%. The fourth largest sector amongst the G20 countries was 'transport storage and communication' which represented over 10.0% of the economy of Japan and South Africa, and reached 15.5% in Turkey where the importance of this sector is related to the public investment in transport systems (1).

The volume of China's manufacturing production increased by more than 11 % per year between 2005 and 2014

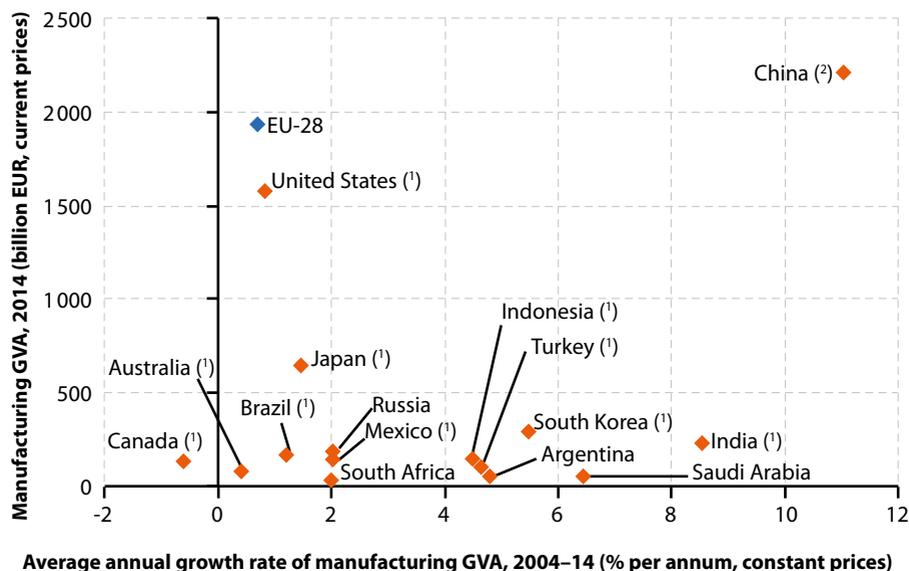
Among the G20 members, China presented the highest manufacturing GVA in 2014, reaching EUR 2 204 billion (at producer prices), closely followed by the EU-28 with EUR 1 932 billion and the United States with EUR 1 579 billion. In all other G20 members production levels did not exceed EUR 650 billion (see Figure 8.4).

(1) World Bank — Turkey Transport Sector Expenditure Review Synthesis Report, 2012

The analysis of value added at constant prices eliminates the effect of inflation allowing for a focus on the volume of production. Between 2004 and 2014, there was a general increase in the volume of industrial production in all G20 members except Canada. The largest increase was by far in the Chinese industry that saw its manufacturing GVA grow at an average rate of 11.0% a year from 2005 to 2014. The GVA

of manufacturing industries also doubled in India during the 2004–14 decade, with an [average annual growth rate](#) in volume of 8.5%. Figure 8.4 presents an intermediate group of countries including Saudi Arabia, South Korea, Argentina, Turkey and Indonesia where annual growth ranged between 4% and 7%. In all the other G20 members the manufacturing GVA increased at most by 2% a year.

Figure 8.4: Manufacturing — gross value added and annual growth rate of gross value added, 2004–14



Note: the EU-28's annual average growth rate between 2004 and 2014 of GVA for manufacturing activities was 0.7% (shown on the horizontal axis). The EU-28 GVA was EUR 1 932 billion in 2014 (shown on the vertical axis).

(¹) 'Manufacturing' excludes recycling and publishing activities.

(²) At producers' prices for current prices series. 2005 data for constant prices series instead of 2004.

Source: Eurostat (online data code: [demo_gind](#)), United Nations, National Accounts Estimates of Main Aggregates and United Nations Population Division, Department of Economic and Social Affairs (World Population Prospects: the 2015 Revision)



Food and beverages manufacturing was the largest main manufacturing activity in the G20

The analysis presented in Figure 8.5 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 list of industrial sectors represent the top 10 categories of the G20 aggregate which correspond to slightly over two thirds of the total manufacturing value added, the remaining industrial sectors are grouped into the category 'others'.

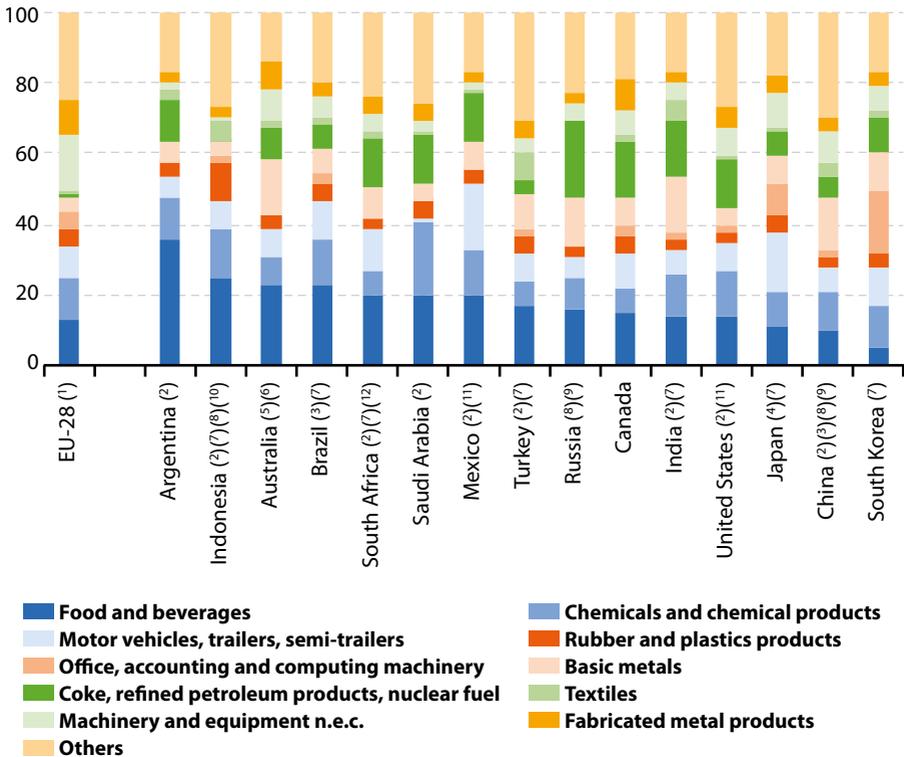
The three largest manufacturing activities in terms of valued added in the G20 were 'food and beverages', 'chemicals and chemical products' and 'motor vehicles, trailers, semi-trailers'. In Argentina, more than one third of the industrial value added belonged to the 'food and beverage sector' in 2002. More recent data for Indonesia, Australia and Brazil revealed that the 'food and beverage' industries made up one fifth of the manufacturing sector. In South Africa, Mexico and Turkey the 'food and beverage' industry also top ranked.

'Chemicals and chemical products' were the leading industries in Saudi Arabia (21.1 % in 2006) and the United States (13.7 % in 2008). In Japan the specialisation was in 'motor vehicles, trailers, semi-trailers' (17.8 % in 2012), which also came in second in the Mexican manufacturing

structure (18.8% in 2010). 'Rubber and plastic products' were significant for Indonesia (10.7%), as in South Korea it was 'office, accounting and computing machinery' (which includes electronic devices such as microcomputers and communication equipment) that had the highest share. China was the G20 member with the highest shares of value added in 'basic metals' (14.9%). Russia (21.6%), India (16.7%) and Canada (15.4%) formed the group of countries where 'coke, refined petroleum products and nuclear fuel' were the largest contributor to the industrial sector's total value added. In Turkey and Indonesia, textiles had relatively high shares of the manufacturing value added in 2013. 'Machinery and equipment' had the highest share in Japan (10.2%) and 'fabricated metal products' in Australia (7.6%).

Diversification is considered an advantage for the economic structure of a country, as opposed to an over-specialised economy. As seen above, the three dominant manufacturing sectors 'food and beverages', 'chemicals and chemical products' and 'motor vehicles, trailers, semi-trailers' made up more than half of the industrial production in Argentina and Mexico, and more than one third in the EU-28, Indonesia, Australia, Brazil, South Africa, Saudi Arabia, the United States and Japan. Industrial production was more diversified in Turkey, where it took six sectors to reach 50% of the values added, and where the 'other' industrial sectors also had the highest share (30.6%), while in Argentina and Mexico, more than 50% of the value added was produced in only three industrial sectors, and the 'other' manufacturing categories.

Figure 8.5: Value added of manufacturing activities, 2012 or latest year
(% of total manufacturing)



Note: countries ranked on 'Food and beverages'. Sectors ranked on their total share in the G20 total.

(1) EU-28 data based on divisions of the NACE Rev. 2. Data for other countries based on divisions of the ISIC Rev.3.

(2) China, India, and Indonesia: 2011 data. Mexico and South Africa: 2010 data. Turkey: 2009 data. United States: 2008 data. Saudi Arabia: 2006 data. Argentina: 2002 data.

(3) Sum of available data.

(4) Japan: total manufacturing excludes publishing. South Africa: total manufacturing includes estimates of informal sectors

(5) Australia and South Africa: 'Food and beverage's includes 'Tobacco'.

(6) Australia: 'Textiles' includes 'wearing apparel, fur' and 'leather, leather products and footwear'. 'Machinery and equipment n.e.c.' include 'Office, accounting and computing machinery', 'Electrical machinery and apparatus', 'Radio, television and communication equipment' and 'Medical, precision and optical instruments'. 'Motor vehicles, trailers, semi-trailers' includes 'Other transport equipment'.

(7) Brazil, India, Indonesia, Japan, South Korea and Turkey: 'Office, accounting and computing machinery' includes 'Radio, television and communication equipment' and 'Medical, precision and optical instruments'.

(8) China, Indonesia and Russia: 'Coke, refined petroleum products, nuclear fuel' excludes processing of nuclear fuel.

(9) China and Russia: 'Machinery and equipment n.e.c.' excludes weapons and ammunition.

(10) Indonesia: 'Chemicals and chemical products' includes processing of nuclear fuel.

(11) Mexico and the United States: 'Coke, refined petroleum products, nuclear fuel' includes refined petroleum products only.

(12) South Africa: 'Coke, refined petroleum products, nuclear fuel' includes also basic chemicals. 'Chemicals and chemical products' data are aggregated from incomplete 3- and/or 4-digit level of ISICs.

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



Tourism

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).

The EU-28's tourist arrivals increased between 2004 and 2014 by almost 80 %

There were around 1 133 million international tourist arrivals worldwide in 2014 (?), among which 455 million (40.2%) were recorded in the EU-28 — the EU-28 therefore remained the world's major tourist destination although it should be noted that the EU total includes arrivals in EU Member States of tourists from other EU Member States. When only tourists from non-EU countries are considered, the EU-28 still had 112 million arrivals, a number that still exceeds those of all G20 countries combined. In other words, in 2014 there was one extra-EU tourist for every five EU residents.

The number of extra-EU tourist arrivals in the EU-28 increased by 50 million between 2004 and 2014 with the world share raising from 8.2% to 9.9% (see Figure 8.6). Apart from Canada and South Africa, all G20 members reported an increase in the number of tourist arrivals between 2004 and 2014. The United States, Japan, Turkey and Indonesia recorded the largest relative increases (all with at least a 50% growth)

and South Korea presented more than double the number of tourist arrivals in 2014 compared with 2004.

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.

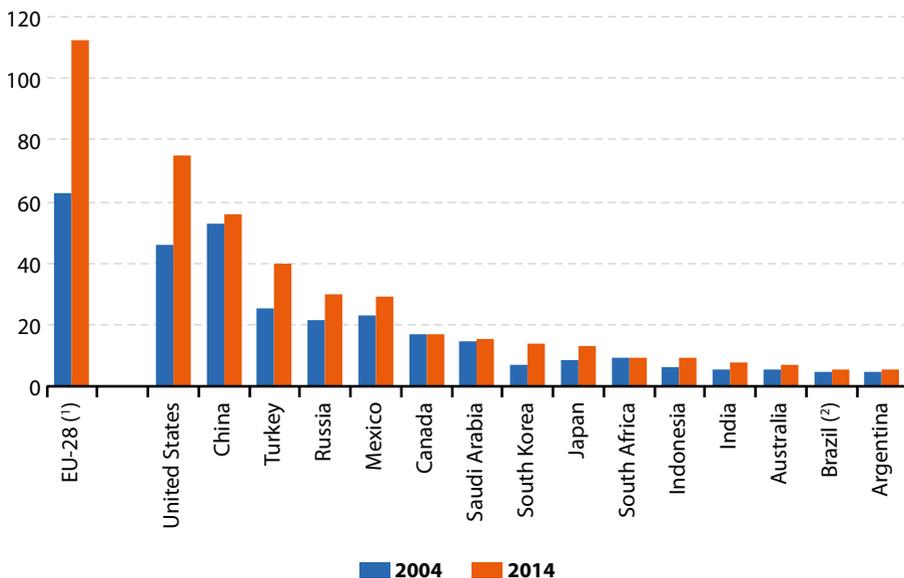
Among the G20 members, tourists from the United States and Russia spent the most number of nights in tourist accommodation in the EU-28

Tourist accommodation establishments refer to any 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, etc.) and private tourist accommodation (for example, rented accommodation).

(?) UNWTO Tourism Highlights — 2015 edition.

Figure 8.6: International tourist arrivals at frontiers or tourist accommodation establishment, 2004 and 2014

(millions)



Note: EU-28 data refer to arrivals at tourist accommodation establishments. For all non-EU countries data refer to international visitor arrivals at frontiers. Data for Australia, Japan and South Korea include same-day visitors, all other non-EU countries exclude same-day visitors.

(1) Does not include intra-EU arrivals. EU-28: estimated data for 2004.

(2) 2014: 2013 data.

Source: Eurostat (online data code: [tour_occ_arnew](#)) and the United Nations World Tourism Organisation (UNWTO Tourism Highlights — 2006 and 2015 editions)

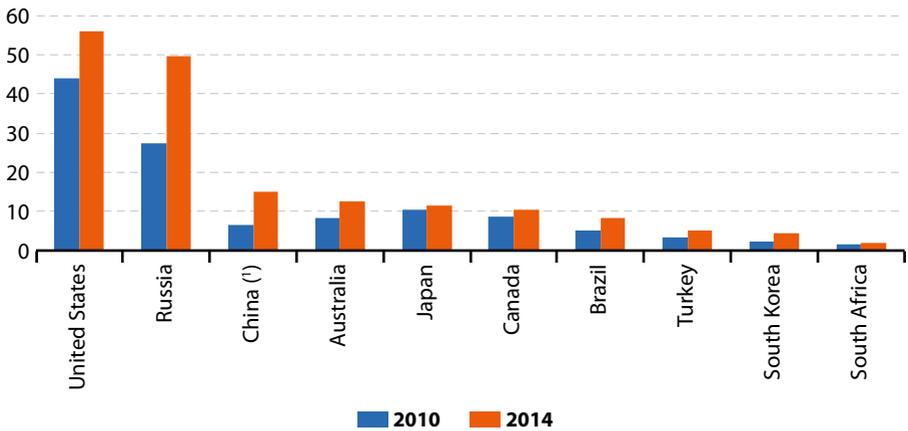
The total number of nights spent in tourist accommodation in the EU-28 from all countries of the world was 2 688 million in 2014, of which 2 356 million (or 87.4%) from EU-28 Member States. Tourists from the 10 G20 members accounted for around half of the nights spent by extra-EU tourists in the EU-28 (see Figure 8.7); collectively they accounted for 6.5% of all nights spent in tourist accommodation in the EU-28. Tourists from two G20 members (United States and Russia) made up 61% of this total.

Among the G20 members, Turkey and the United States were the main destinations for tourists from the EU-28

Figure 8.8 focuses on the reverse situation, namely trips by EU-28 residents. The total number of trips worldwide by EU-28 residents was 297 million in 2014, of which 75.2% were within the EU-28 itself, 10.9% in G20 members outside of the EU-28, and 13.9% in the rest of the world. In 2014, 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.

Figure 8.7: Number of nights spent in tourist accommodation by country of origin, EU-28, 2010 and 2014

(millions)



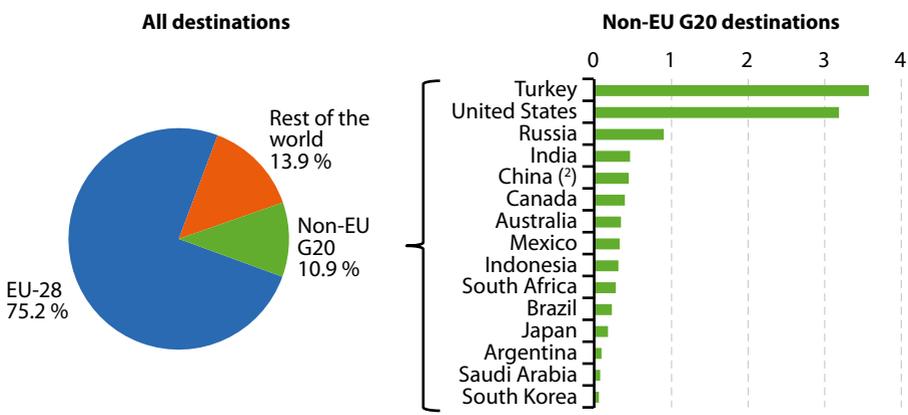
Note: Data not available for Argentina, India, Indonesia, Mexico and Saudi Arabia.

(¹) Including Hong Kong but excluding Macao.

Source: Eurostat (online data code: [tour_occ_ninraw](#))

Figure 8.8: Destination of trips made by EU-28 residents, 2014 (¹)

(% of all trips outside of their country)



(¹) Includes 2013 data for trips of United Kingdom residents.

(²) Including Hong Kong but excluding Macao.

Source: Eurostat Tourism Statistics

9

Research and communication



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 expenditure

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.

The highest R & D intensity among the G20 members was in South Korea

GERD in the [EU-28](#) was estimated at around [EUR 275 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 2.03 % in the EU-28. By far the highest R & D intensity among the G20 members was in South

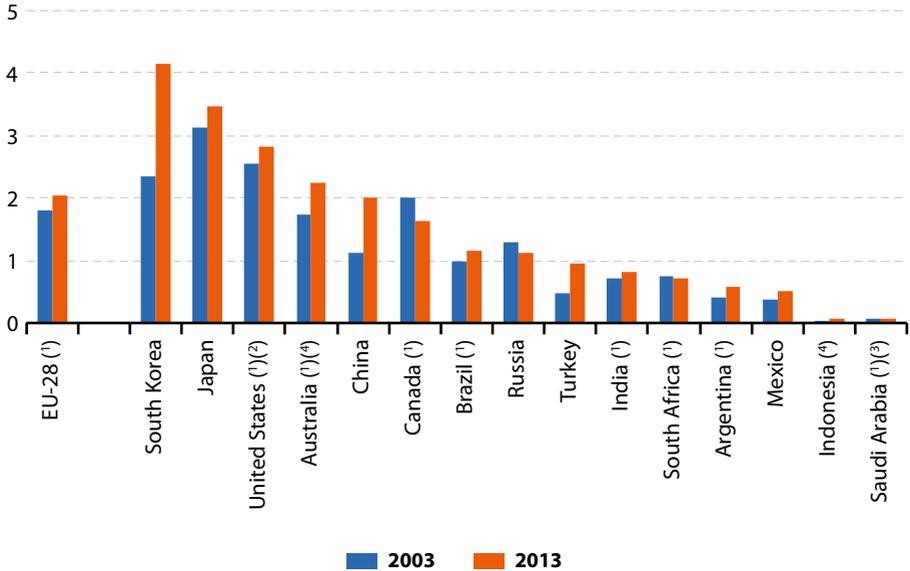
Korea, where GERD was equivalent to 4.15 % of GDP in 2013. The latest data for Japan, the United States (2012 data) and Australia (2011 data) shows that they also recorded relatively high R & D intensities, all in the range of 3.47 % to 2.25 % while the R & D intensity of China (2.01 %) was close to the EU-28 level. Saudi Arabia (2009 data) and Indonesia recorded by far the lowest R & D intensities among the G20 members, with a GERD of less than 0.10 % of GDP.

R & D intensity was higher in 2013 (or latest year) than in 2003 in nearly all G20 members (see [Figure 9.1](#)) — with declines only in Canada, Russia and South Africa (2012 data). The largest increase (in [percentage point \(pp\)](#) terms) in R & D intensity between the years was in South Korea, with a relatively large increase also recorded in China.



Figure 9.1: Gross domestic expenditure on research and development relative to GDP, 2003 and 2013

(% of GDP)



(1) 2013: Saudi Arabia: 2009 data. Australia and India: 2011 data. Argentina, Brazil, South Africa and United States: 2012 data. EU-28 and Canada: provisional data. Indonesia: estimate.

(2) Excluding most or all capital expenditure.

(3) Partial data.

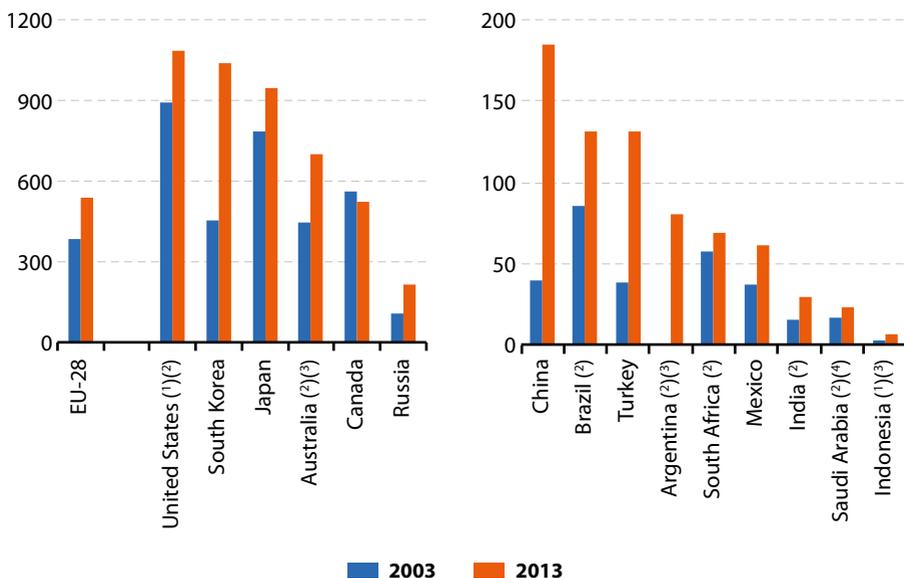
(4) 2003: Indonesia: 2001 data. Australia: 2002 data.

Source: Eurostat (online data code: [rd_e_gerdtot](https://ec.europa.eu/eurostat/tgm/table.do?tab=table)) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

R & D expenditure relative to population size can be seen in Figure 9.2. This indicator provides a very clear distinction between G20 members. The United States (2012 data), South Korea and Japan stand out with a GERD per inhabitant well above EUR 900 per inhabitant. Australia (2011 data), the EU-28 and Canada completed the

group of G20 members with a relatively high GERD per inhabitant, all above EUR 500. Among the other G20 members, GERD was below EUR 100 per inhabitant in Argentina (2011 data), South Africa (2012 data), Mexico, India (2011 data) and Saudi Arabia (2009 data), while it dropped below EUR 10 per inhabitant in Indonesia.

Figure 9.2: Gross domestic expenditure on research and development per inhabitant, 2003 and 2013
(EUR per inhabitant)



Note: the two bar charts have different scales.

(1) United States: excluding most or all capital expenditure. Indonesia: excluding humanities and social sciences in 2001.

(2) 2013: Saudi Arabia: 2009 data. Argentina, Australia and India: 2011 data. Brazil, South Africa and United States: 2012 data. Includes estimates and provisional data.

(3) 2003: Indonesia: 2001 data. Australia: 2002 data. Argentina: data not available.

(4) Partial data.

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



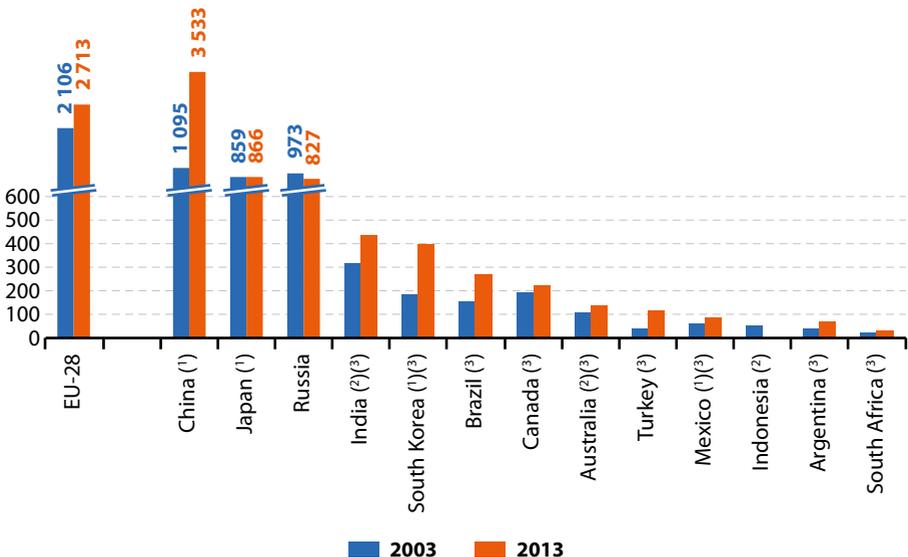
R & D personnel

R & D workforce in the EU-28 was 2.7 million full-time equivalents

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 9.3), China had the largest R & D workforce, numbering 3.5 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).

Figure 9.3: Research and development personnel, 2003 and 2013
(thousand full-time equivalents)



Note: data not available for Saudi Arabia and United States, as well as for Indonesia in 2013.

(1) Break in the series.

(2) 2003: India: 2000 data. Indonesia: 2001 data. Australia: 2002 data.

(3) 2013: Australia: 2008 data. Mexico: 2009 data. Brazil, India : 2010 data. South Korea and Turkey: 2011 data. Argentina, Canada and South Africa: 2012 data. 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)

The number of R & D personnel in China more than trebled between the years shown in Figure 9.3 (note that not all countries publish 2003 and 2013), and nearly trebled in Turkey, 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 almost one third, while Russia was the only G20 member to record a fall in its number of R & D personnel during this period (Indonesia only present one year).

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 9.4. The share of R & D personnel in the business enterprise sector exceeded two thirds in South Korea and Japan and peaked at 78% in China. By contrast, less than one third of R & D personnel were in the business enterprise sector in South Africa (2012 data), India and Brazil (both 2011 data), as well as Argentina (2010 data). 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 9.4: Research and development personnel, by employer, 2013
(%, based on full-time equivalents)



Note: ranked on 'Business enterprises'. Data not available for Indonesia, Mexico, Saudi Arabia and United States.

(1) Private non-profit making organisations: not available.

(2) Australia, Canada and South Africa: 2012 data. Brazil and India: 2011 data. Argentina and Australia (business sector): 2010 data.

(3) Higher education: estimate.

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



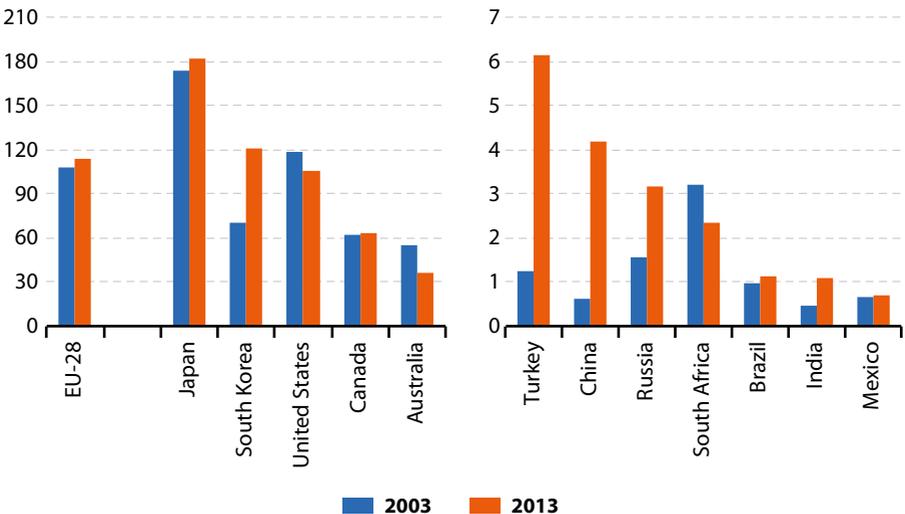
Patents

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 9.5) 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. In 2013 around 140 000 patent applications were submitted to the EPO. 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. 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 9.5: Patent applications to the European patent office, 2003 and 2013
(per million inhabitants)



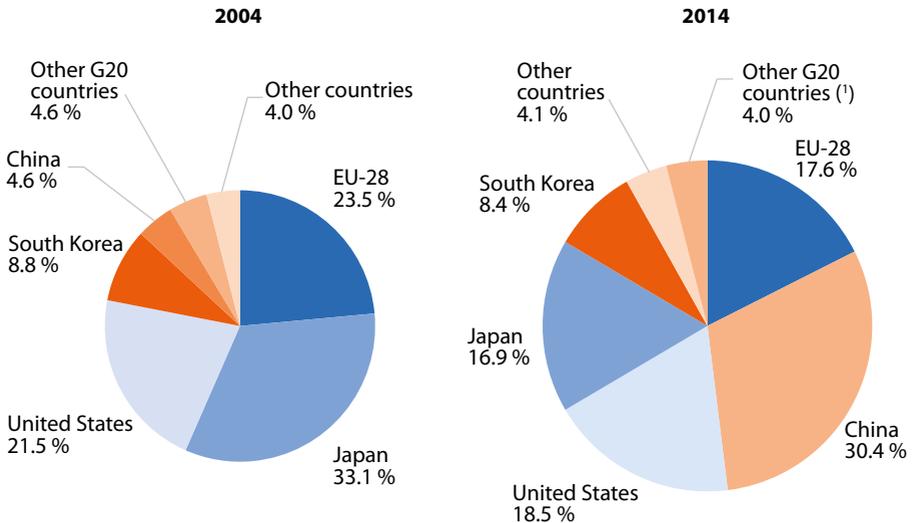
Note: the two bar charts have different scales. Data not available for Argentina, Indonesia and Saudi Arabia. 2013: estimates.

Source: Eurostat (online data code: [pat_ep_ntot](#)) United Nations, Department of Economic and Social Affairs, Population Division – 2015

The UN's [World Intellectual Property Organisation](#) (WIPO) provides statistics on global patent applications (not just those to the EPO) and estimates that around 2.7 million patent applications were made in 2014. China's share of global patent applications increased between 2004 and 2014 from 4% in 2004 to 30% in 2014, placing China in the top rank position among the

G20 members (see Figure 9.6). Japan's share of global patent applications fell between 2004 and 2014 by 16.1 pp, while the share of the EU-28 and the United States decreased by 5.9 pp and 2.9 pp respectively. As a result, the United States' share (18.5%) of the world's patents which displaced the 17.6% of the EU-28 and also Japan's 16.6%.

Figure 9.6: Share of world patent applications, 2004 and 2014
(%)



Note: country of origin based on the residence of the applicant.

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

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

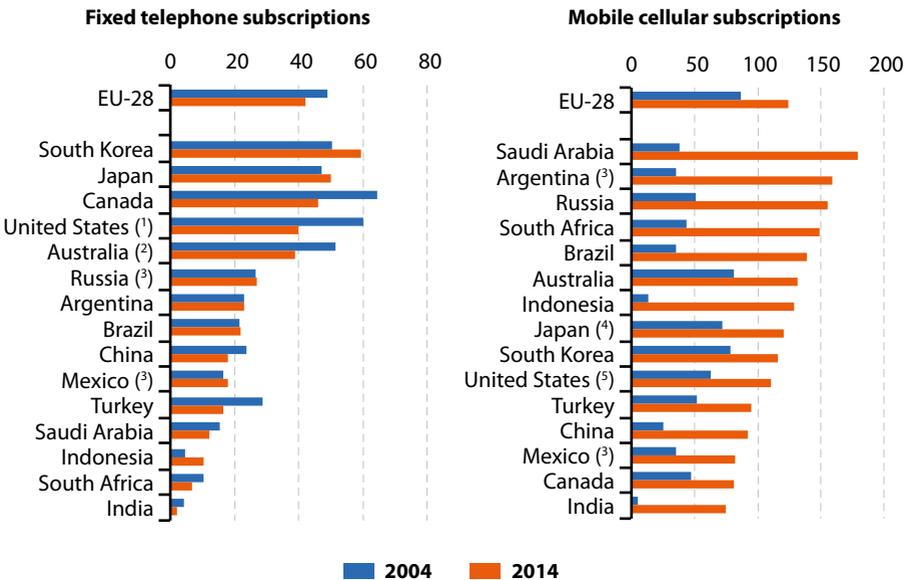


Information society

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 2004 and 2014 in seven of the G20 members shown in Figure 9.7 and fell in the other nine. 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 Australia, Turkey and the EU-28.

Figure 9.7: Telephone subscriptions, 2004 and 2014
(per 100 inhabitants)



Note: the range for the x-axis is different for the two individual figures.

(1) 2004: local loops. 2014: FCC trend-based estimate using recent historical data.

(2) 2004: excludes ISDN.

(3) 2014: preliminary.

(4) Including personal handyphone system (PHS). 2014: including data cards.

(5) Reported CTIA numbers.

Source: the International Telecommunication Union

By 2014, all of the G20 members registered at least 70 mobile telephone subscriptions per 100 inhabitants

A mobile phone subscription refers to the use of public mobile telecommunication systems (also called mobiles or cell phones) 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 2004 and 2014 — suggesting that markets are not yet saturated — with Saudi Arabia (180 subscriptions per 100 inhabitants) and Argentina (158 subscriptions) experiencing the strongest absolute growth to top the rankings by 2014. Despite massive growth in percentage terms

(+ 1 484 %), India had the lowest number of mobile subscriptions relative to its population size in 2014, as was the case in 2004. By 2014, 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 2004 and 2014 in the use of the internet, even among G20 members with already high usage in 2004. By 2014, Japan, the United States, Canada, Australia, South Korea and the EU-28, topped the ranking of internet use, with at least four in every five inhabitants online. By this measure, Indonesia and India had the lowest internet use among G20 members.

Table 9.1: ICT access and usage by individuals aged 15–74, 2004 and 2014
(% of the specified population)

	Individuals using the internet (% of total) ⁽¹⁾		Fixed broadband subscriptions (per 100 inhabitants)	
	2004	2014	2004	2014
EU-28 ⁽¹⁾	47.0	80.0	8.2	29.8
Argentina	16.0	64.7	1.4	15.6
Australia ⁽²⁾	63.0	84.6	5.0	27.7
Brazil	19.1	57.6	1.7	11.7
Canada	66.0	87.1	17.0	35.4
China	7.3	49.3	1.9	14.4
India	2.0	18.0	0.0	1.2
Indonesia	2.6	17.1	0.0	1.2
Japan ⁽³⁾	62.4	90.6	15.4	29.3
Mexico ⁽⁴⁾	14.1	44.4	1.0	10.5
Russia ⁽⁴⁾	12.9	70.5	0.5	17.5
Saudi Arabia	10.2	63.7	0.3	23.4
South Africa	8.4	49.0	0.1	3.2
South Korea ⁽⁴⁾	72.7	84.3	25.5	38.8
Turkey ⁽⁴⁾	14.6	51.0	0.9	11.7
United States	64.8	87.4	12.6	31.1

(1) Individuals using the internet: EU-27 for 2004; persons aged 16–74. Fixed broadband subscriptions: 2003 and 2013 data.

(2) 2005 data instead of 2004.

(3) 2004 data includes users accessing internet through cellphones, PHS and game console

(4) Mexico: persons aged 6 or more. Russia: 2013 data includes persons aged 15–72. South Korea: persons aged 3 or more. Turkey: persons aged 16–74.

Source: Eurostat (online data code: *isoc_ci_eu_i*) and the International Telecommunication Union



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, Canada and the United States exceeding 30 subscriptions per 100 inhabitants

and the EU-28 (2013 data) and Japan just below this level (29.8 and 29.3 per 100 inhabitants respectively) whereas in Indonesia and India this ratio was below 2 subscriptions per 100 inhabitants. All G20 members reported growth in fixed broadband subscriptions within the reference period presented in Table 9.1 (for most countries a ten year period), with the strongest growth in absolute terms reported for Saudi Arabia (2004–14), Australia (2005–14) and the EU-28 (2003–13).

10

Transport



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 article 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

Rail transport

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, Mexico and to a lesser extent Argentina generally had a relatively low use of rail transport. In the United States, Canada and Australia, rail transport was focused mainly on freight transport, while passenger transport was dominant in Japan, India, the EU-28 and South Korea. A relatively high use of rail transport for both freight and passengers was observed in Russia and at a much lower degree in China.

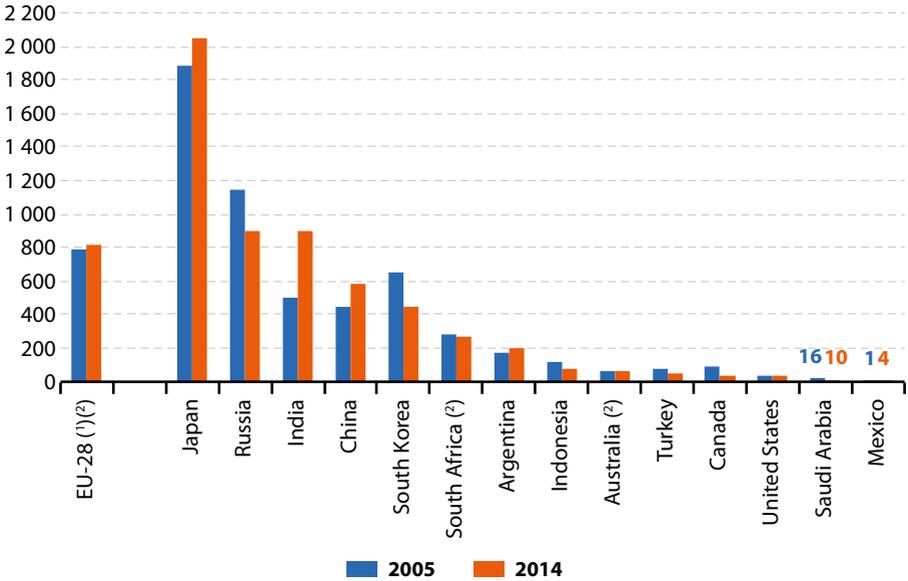
Comparing 2005 with 2014, a particularly large percentage increase in passenger rail services was recorded in India and China. Estimates for

the EU-28 show a 3% increase in rail passenger transport per inhabitant. On the other hand, there was a significant reduction in Canada (– 54%), South Korea (– 31%) and to a lesser degree in Indonesia, Turkey and Russia.

Rail freight transport increased strongly in Russia between 2005 and 2014

Relative to the size of the population, rail freight transport in 2014 was smaller than it had been in 2005 in five G20 members, notably in the United States where it decreased by 18%; estimates for the EU-28 show a 13% fall in rail freight transport per inhabitant. By contrast, rail freight transport increased by 36% in Indonesia, by 34% in India and by 27% in Mexico. In Russia the percentage growth of rail freight transport per inhabitant was 18% from 2005 to 2014, which corresponded to the highest absolute increase: 2 448 tonnes-km (tkm) per inhabitant.

Figure 10.1: Rail passenger transport, 2005 and 2014
(passenger-km per inhabitant)



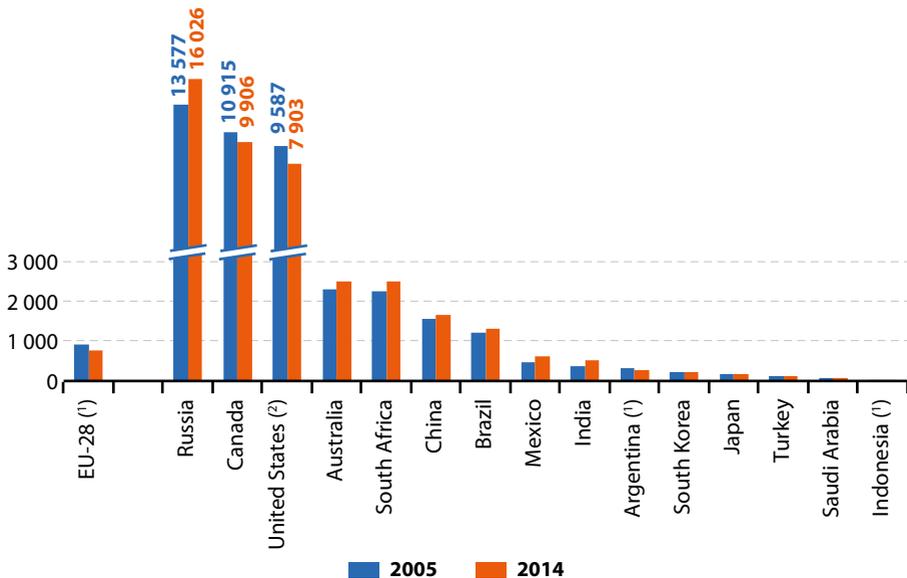
Note: data not available for Brazil.

(1) 2014: estimate including data for 2011 for Belgium, 2013 for Denmark and excluding the Netherlands.

(2) EU-28: 2006 data instead of 2005. South Africa: 2007 data instead of 2005. Australia: 2010 data instead of 2014.

Source: Eurostat (online data codes: *rail_pa_total* and *demo_gind*), the World Bank Transportation, Water, and Information and Communications Technologies Department, Transport Division, and United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision

Figure 10.2: Rail freight transport, 2005 and 2014
(tonne-km per inhabitant)



(1) EU-28: 2007 and 2013. Argentina and Indonesia: 2006 data instead of 2005.

(2) 2005: refers to class 1 railways only.

Source: Eurostat (online data codes: [rail_go_typeall](#) and [demo_gind](#)), the World Bank Transportation, Water, and Information and Communications Technologies Department, Transport Division, and United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision

Maritime transport

The world's maritime fleet (see Table 10.1) increased from 907 million deadweight tonnes (DWT) in 2005 to 1.69 billion DWT in 2014, equivalent to average growth of 7.2% per year. Deadweight tonnage is the weight measure of a vessel's carrying capacity and includes cargo, fuel and stores. Between 2005 and 2014 the maritime fleets of South Africa, Saudi Arabia, Brazil, Australia, Russia and Argentina contracted, while the other G20 members recorded an

expansion, notably in Indonesia and China, as well as at a lower rhythm in South Korea and the EU-28. The EU-28's maritime fleet grew by 4.0% per year during this 9-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.

**Table 10.1: Maritime fleet 2005 and 2014 and largest ports in 2014**

	World maritime fleet (% of total deadweight tonnage) ⁽¹⁾		Largest port, 2014 in total cargo volume	
	2005	2014	Port	Total cargo volume (thousand tonnes)
EU-28	23.4	18.5	Rotterdam	444 733
World	100.0	100.0	Shanghai	678 376
Argentina	0.1	0.0	San Lorenzo-Puerto San Martín	32 929
Australia	0.3	0.1	Port Hedland	446 922
Brazil	0.4	0.2	Santos	111 159
Canada	0.3	0.2	Metro Vancouver	139 629
China	3.3	4.4	Shanghai	678 376
India	1.4	0.9	Paradip	71 000
Indonesia	0.6	0.9	Tanjung Priok	51 200
Japan	1.8	1.2	Nagoya ⁽²⁾	207 621
Mexico	0.1	0.1	Lázaro Cárdenas	33 212
Russia	0.9	0.4	Novorossiysk	70 000
Saudi Arabia	0.3	0.1	Jubail	69 100
South Africa	0.0	0.0	Richards Bay	94 821
South Korea	1.3	1.0	Busan ⁽²⁾	335 411
Turkey	0.8	0.5	İzmit (Kocaeli)	59 000
United States	1.3	0.7	South Louisiana	242 578

(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. Break in series for non-EU countries: inland water way vessels and fishing vessels are excluded from 2011 onwards. Data also include the United States and Canada Great Lakes fleets.

(²) Japan: largest port: freight tonnes. South Korea: 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)

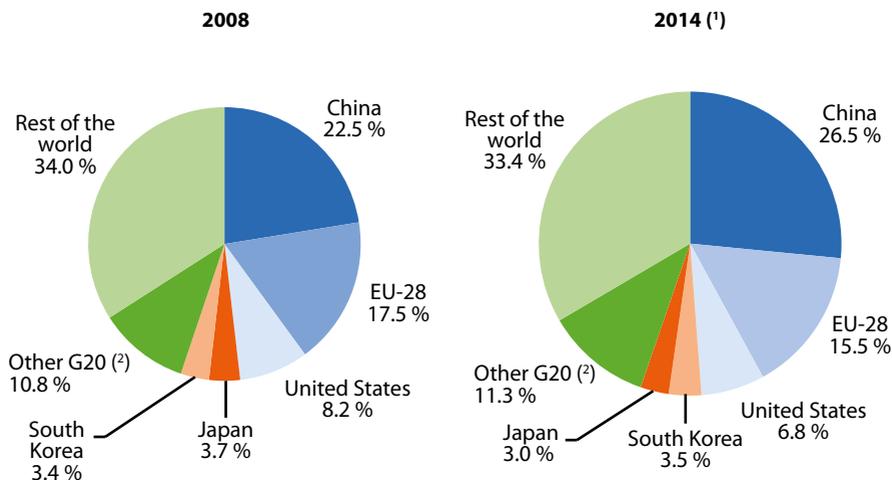
In 2014, the world's largest freight port in terms of the quantity of goods handled was Shanghai in China, while the largest in the EU-28 was Rotterdam in the Netherlands. Goods handled covers goods loaded and unloaded, in other words goods placed on a merchant ship for transport by sea or goods taken off a merchant ship.

More than a quarter of the goods loaded and unloaded worldwide in 2014 were handled in China

China plays a leading role in international maritime freight transport and this can be seen

in Figure 10.3. Over a quarter (26.5%) of the goods (in *twenty-foot equivalent units* — TEU) transported by sea worldwide in 2014 were handled in Chinese ports. Along with the EU-28 (15.5%) and the United States (6.8%) the three top ranking G20 members covered almost half of the containers handled in maritime ports worldwide. From 2008 to 2014 the share of the EU-28 fell by 2.0 percentage points (pp), while China experienced the highest growth in its world share (+ 4.0 pp). All together the G20 members were responsible for around two thirds of the containers handled in the world.

Figure 10.3: Containers handled in ports, 2008 and 2014
(TEU — Twenty-foot equivalent unit)



Note: total number of containers including loading, unloading, repositioning and transshipments.

(¹) Provisional data.

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

Source: United Nations Conference on Trade and Development (Maritime transport indicators)

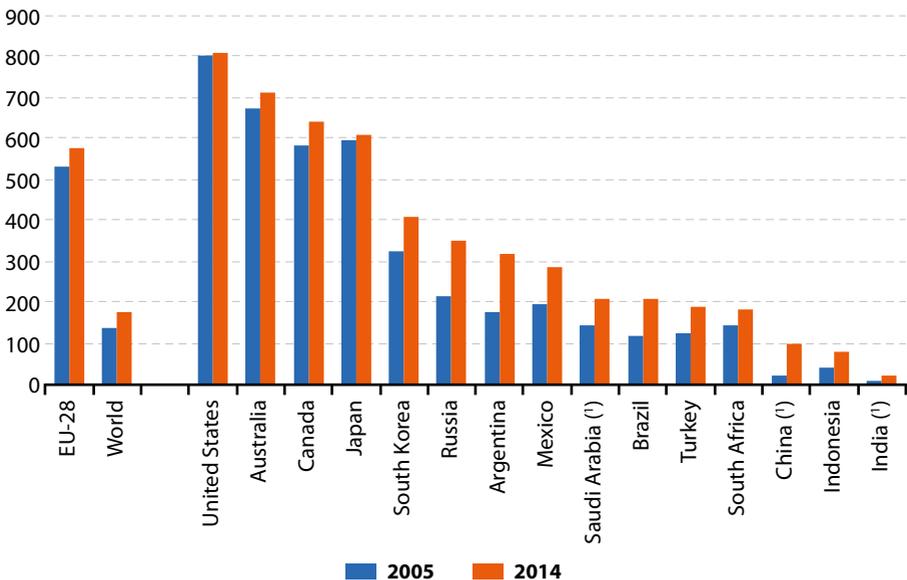
Road transport

More than 600 vehicles for every 1 000 inhabitants in the United States, Australia, Canada and Japan

Among the G20 members, reliance on transport vehicles was highest in 2014 in the United States, Australia, Canada and Japan, all of which had more than 600 vehicles for every 1 000 inhabitants; the EU-28 was close behind with 574 vehicles per 1 000 inhabitants and the lowest ratios were recorded in India and Indonesia, with respectively 22 and 83 vehicles

for every 1 000 inhabitants. Vehicles include all registered vehicles, passenger cars, and commercial vehicles on the road (excluding motor cycles). A general upward trend was observed in all G20 members between 2005 and 2014, notably in China where the number of vehicle per 1000 inhabitants more than quadrupled, as well as in Indonesia and India where the ratio more doubled. The number of vehicles per 1 000 inhabitants also increased by more than 50 % in Argentina, Brazil, Russia and Turkey (see Figure 10.4).

Figure 10.4: Vehicles in use relative to population, 2005 and 2014
(number per 1 000 inhabitants)



Note: vehicles in use are composed of all registered vehicles, passenger cars and commercial vehicles, on the road excluding motor cycles.

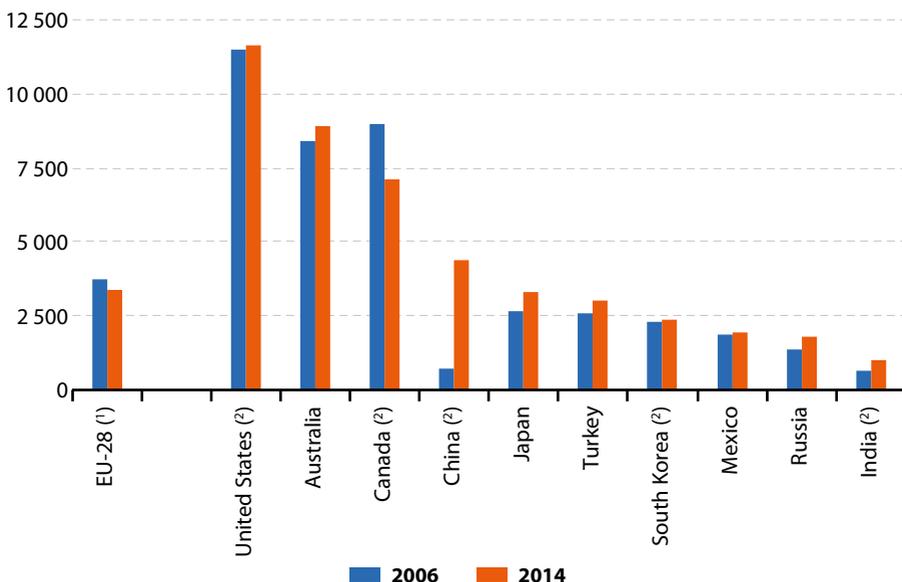
(1) Estimates.

Source: Eurostat (online data code: [demo_gind](#)), the International Organisation of Motor Vehicle Manufacturers and United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision

Relative to the size of its population, the quantity in **tonne-kilometres** of **road freight transport** was particularly high in the United States (2012 data), Australia and Canada (2013 data). A tonne-kilometre (tkm 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, Australia and Canada 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 2006 with 2012 (data for 2014 not available), the most notable development was the increase in the amount of Chinese road freight: this figure increased almost six-fold (see Figure 10.5), equivalent to an annual average growth of about 25.0%. India also reported strong growth, with road freight (relative to population size) increasing by more than 50% between 2006 and 2013. Canada and the EU-28 were the only G20 members (for which data are available) reporting a fall for this indicator.

Figure 10.5: Road freight transport, 2006 and 2014
(tonne-km per inhabitant)



Note: data not available for Argentina, Brazil, Indonesia, Saudi Arabia and South Africa.

(1) 2006: estimated.

(2) 2014: United States and China: 2012 data. Canada, South Korea and India: 2013 data.

Source: Eurostat (online data codes: [road_go_ta_tott](#) and [demo_gind](#)), OECD (International transport forum) and United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision



Air transport

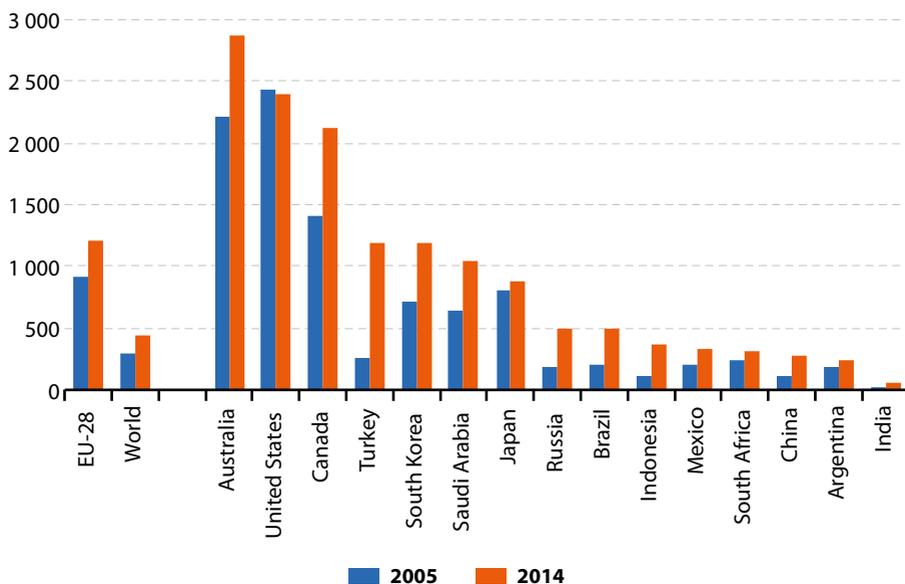
Worldwide, the number of air passengers carried in 2014 was around 3.2 billion, an increase of 63.1% compared with 2005. In the EU-28, air passenger numbers in 2014 reached 608.5 million, an increase of 34.1% compared with 2005, and equivalent to 18.9% of the world total. The United States had 762.6 million passengers (23.7% of the world total) and China had 352.8 million (12.2%).

Between 2005 and 2014, the number of passengers relative to population size more than tripled in Turkey and Indonesia

Relative to the size of the population, the number of air passengers in 2014 was highest among the G20 members in Australia, ahead

of the United States and Canada, all with more than twice as many passengers carried than the overall size of their populations (see Figure 10.6). The number of passengers carried was also over the size of the population in the EU-28, Turkey, South Korea and Saudi Arabia. By contrast, India recorded by far the lowest number of air passengers relative to its population size (64 per 1 000 inhabitants). Between 2005 and 2014, the number of passengers relative to population size grew (in percentage terms) most strongly in Turkey (almost 380% more in 2014 than in 2005) and Indonesia where it more than tripled, while it grew less than 50% in Argentina, the EU-28, Australia, South Africa and Japan. The United States was the only G-20 member that reported a drop (-1.9%) in the number of air passengers carried per 1 000 inhabitants.

Figure 10.6: Number of air passengers carried, 2005 and 2014
(per 1 000 inhabitants)



Note: data for passengers on scheduled flights. World Bank data for the EU-28 has been used for comparability reasons, data is also available in Eurostat (table code: avia_paoc).

Source: World Bank (World Development Indicators)

In terms of passenger numbers, the busiest airport in the world was Hartsfield-Jackson Atlanta, in the United States

In terms of passenger numbers, the busiest airport in the world in 2014 was Hartsfield-Jackson Atlanta in the United States, with

96.2 million passengers, followed by Beijing Capital airport in China with 86.1 million and London Heathrow in the United Kingdom with 73.4 million, making Heathrow the busiest passenger airport in the EU-28 (see Table 10.2).

Table 10.2: Largest airports for passengers, 2014

	Name	million passengers	% of all passengers
EU-28	London Heathrow	73.4	2.2
Argentina	Jorge Newberry (Buenos Aires)	10.3	0.3
Australia	Kingsford Smith (Sydney)	38.5	1.2
Brazil	São Paulo-Guarulhos	39.5	1.2
Canada	Toronto Pearson	38.6	1.2
China	Beijing Capital	86.1	2.6
India⁽¹⁾	Indira Gandhi (Delhi)	36.9	1.1
Indonesia	Soekarno-Hatta (Jakarta)	53.9	1.6
Japan	Haneda (Tokyo)	72.8	2.2
Mexico	Benito Juárez (Mexico City)	34.3	1.0
Russia	Moscow Domodedovo	33.0	1.0
Saudi Arabia	King Abdulaziz (Jeddah)	28.0	0.8
South Africa	OR Tambo (Johannesburg)	19.0	0.6
South Korea	Incheon (Seoul)	45.5	1.4
Turkey	Atatürk (Istanbul)	56.9	1.7
United States	Hartsfield-Jackson (Atlanta)	96.2	2.9

(¹) 2013/14.

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

11

Agriculture, forestry and fisheries



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

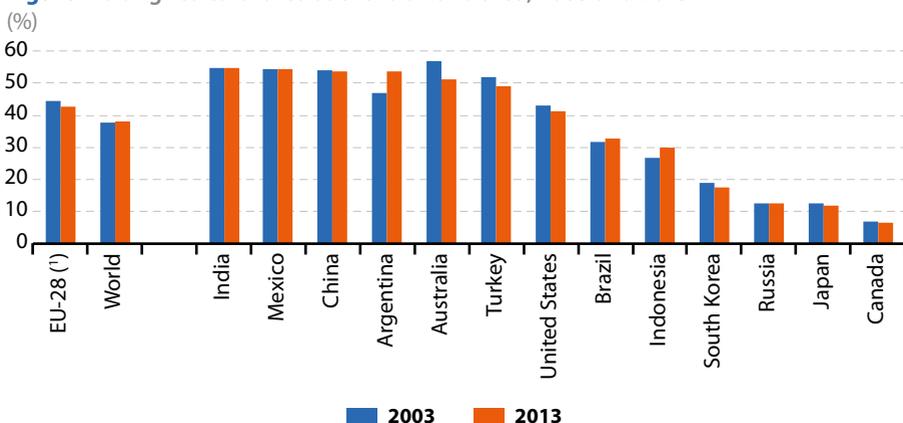
Agricultural area

42.5% of the area of EU-28 was occupied by agriculture

The total agricultural area (including unused agricultural land) of the EU-28 was 186.4 million hectares (100 hectares is one km²) in 2013, 42.5% of its total land area. The ratio of total agricultural area to land area (shown in Figure 11.1) shows that the EU-28's share was above the world

average (37.9%). From 2003 to 2013 there was a 1.9 percentage point (pp) reduction in the share of the EU-28's agricultural land. India, Mexico, China, Argentina and Australia presented a percentage of agricultural land of more than 50% that remained very stable in the last decade (some changes were recorded in Argentina and Australia). In all the other countries the share was under 50%, and in the case of South Korea, Russia, Japan and Canada, agricultural land represented less than 20% of the total area.

Figure 11.1: Agricultural area as share of land area, 2003 and 2013



Note: Saudi Arabia and South Africa not included due to lack of comparable land use data.

(*) Excluding French overseas regions in 2003.

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



Labour force in agriculture

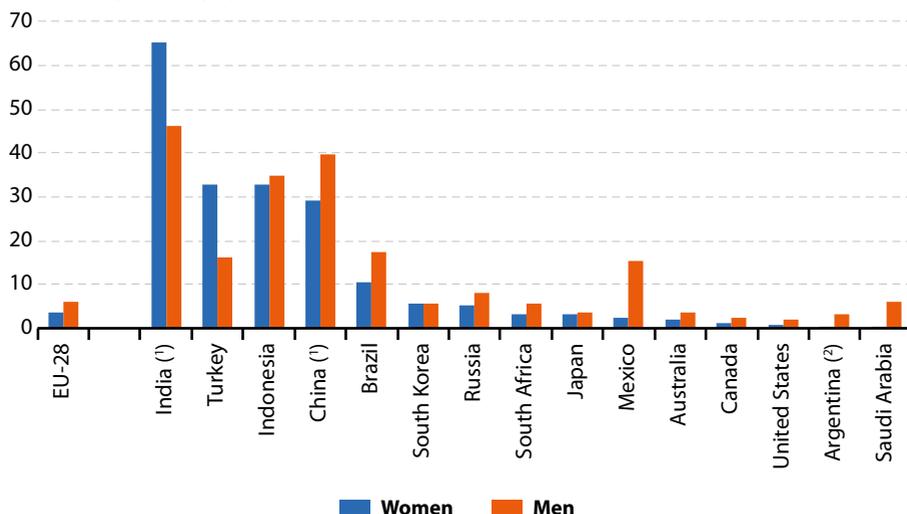
Less than one tenth of the labour force were active in agriculture, hunting, fishing and forestry in most G20 members in 2014

Less than one tenth of the labour force was working in agriculture, hunting, fishing and forestry in most G20 members in 2014. Nevertheless, this share rose to 20.0% (total women and men) or higher in Indonesia, China (2011 data) and Turkey with the highest share registered in India (2010 data) at 51.1%. The share of agriculture hunting, fishing and forestry labour force, in the EU-28 was 5.0% (3.8% for women and 6.0% for men).

In the majority of G20 members, the share of the agricultural hunting, fishing and forestry

labour was higher for men than for women (see Figure 11.2). This was most notably the case in Mexico where there was a difference of 13.1 pp between the shares for men and women. In India 65.3% of the women employed in 2010 worked in agriculture hunting, fishing and forestry compared to 46.1% of men, while in Turkey it was close to one third in 2014 for women, which more than doubled the share of active men. The gender differences in the [employment rates](#) should be taken into account: even in countries where the share of active women in agriculture hunting, fishing and forestry is higher than the share of active men, the number of women working in this sector is lower than the number of men, because in general the number of working women (female employment rate) is lower compared to men.

Figure 11.2: Share of economically active population in agriculture, by sex, 2014
(% of the specified population)



Note: ranked on 'Women'.

(1) India: 2010 data. China: 2011 data.

(2) Geographical coverage: urban areas only.

Source: Eurostat (online data code: [lfsi_grt_a](#)) and ILOSTAT

Agricultural products

The production of a range of selected crops across the G20 members is presented in Table 11.1 which refers to the amount of harvested production. The G20 countries produced close to three quarters of the global harvests of the five selected crops included in Table 11.1 Brazil (38.8%) dominated the production of 'sugar

cane' among the G20 members in 2014, followed by India and China. The United States (35.3%) and China (21.1%) were the largest producers of 'maize'. 'Rice' production in G20 members was dominated by China and India. The EU-28 had the highest 'wheat' production, followed by China. At the top of 'potato' production were China, the EU-28 and India.

Table 11.1: Production of selected crops, 2004 and 2014
(million tonnes)

	Sugar cane		Maize		Rice		Wheat		Potatoes	
	2004	2014	2004	2014	2004	2014	2004	2014	2004	2014
EU-28⁽¹⁾	:	:	73.4	77.2	2.9	2.8	136.8	149.1	71.2	59.0
World⁽²⁾	1 342.1	1 900.0	729.0	1 021.6	607.6	741.0	632.1	729.0	336.2	385.1
Argentina	20.9	24.6	15.0	33.0	1.1	1.6	16.1	13.9	2.0	1.9
Australia	37.0	30.5	0.4	0.4	0.6	0.8	21.9	25.3	1.3	1.2
Brazil	415.2	737.2	41.8	79.9	13.3	12.2	5.8	6.3	3.0	3.7
Canada	:	:	8.8	11.5	:	:	24.8	29.3	5.2	4.6
China	91.0	126.2	130.4	215.8	180.5	208.2	92.0	126.2	72.3	96.1
India	233.9	352.1	14.2	23.7	124.7	157.2	72.2	94.5	27.9	46.4
Indonesia	26.8	28.6	11.2	19.0	54.1	70.8	:	:	1.1	1.3
Japan	1.2	1.2	0.0	0.0	10.9	10.5	0.9	0.9	2.9	2.5
Mexico	48.7	56.7	21.7	23.3	0.3	0.2	2.3	3.7	1.5	1.7
Russia	:	:	3.5	11.3	0.5	1.0	45.4	59.7	35.9	31.5
Saudi Arabia	:	:	0.1	0.1	0.0	:	2.8	0.5	0.4	0.5
South Africa	19.1	18.3	9.7	15.0	0.0	0.0	1.7	1.8	1.8	2.3
South Korea	:	:	0.1	0.1	6.7	5.6	0.0	0.0	0.6	0.6
Turkey	:	:	3.0	6.0	0.5	0.8	21.0	19.0	4.8	4.2
United States	29.0	28.0	299.9	361.1	10.5	10.0	58.7	55.4	20.7	20.1

Note: may include official, semi-official, estimated or calculated data. Only values over 50 000 thousand tonnes are displayed.

(¹) Maize: 2003 data, excluding Denmark and Sweden.

(²) Estimate based on sum of the available data.

Source: Eurostat (online data code: [apro_acs_a](#)) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)



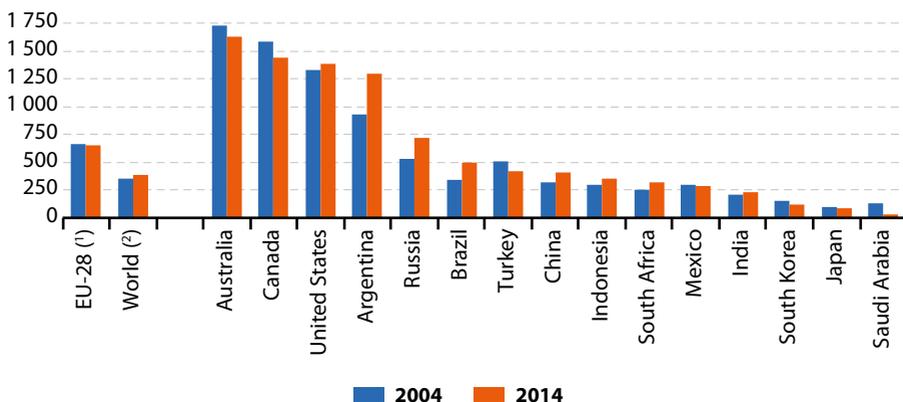
Between 2004 and 2014, the G20 production of the five selected crops increased although 'maize' was the only crop that increased in all the countries. 2014 was a record year for world cereal production reaching over 2.5 billion tonnes ⁽¹⁾, linked to the increase in 'maize' production in both China and the United States as well as the higher 'rice' production in Asia (China, India and Indonesia). 'Potatoes' was the crop with the smallest growth, having decreased in nine G20 members, with the steepest decrease in the EU-28 (-17.1%).

Australia had the highest production of cereals per inhabitant

Four G20 members together produced three quarters of the production of cereals among the

G20 members in 2014, and close to three fifths of the worldwide cereal production, with output in China close to 560 million tonnes, ahead of the United States, the EU-28 and India. Relative to the size of population, Australia had the highest production of cereals in 2014, 1.6 tonnes per inhabitant, followed by Canada, the United States and Argentina, all with more than 1.2 tonne of production per inhabitant. Compared with 2004, cereals production per inhabitant increased by 58.5% to 54.7% in or more in Brazil and Argentina respectively, whereas it fell 72.5% in Saudi Arabia and 17.7% in South Korea (see Figure 11.3).

Figure 11.3: Production of cereals, 2004 and 2014
(kg per inhabitant)



Note: may include official, semi-official, estimated or calculated data.

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

⁽²⁾ Estimate based on sum of the available data.

Source: Eurostat (online data codes: [apro_acs_a](#) and [demo_gind](#)), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production) and United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision

⁽¹⁾ FAO news article: [2014 seen as record year for world cereal production](#).

The production level for a selection of fruits is presented in Table 11.2. Among the G20 members, the EU-28 was by far the largest producer of 'grapes' in 2014, the second largest producer of 'apples', and the third largest producer of 'watermelons'. The cultivation of 'bananas' is not widespread among the G20 members, but India and China together

accounted for 37.7% of the world's production estimated at 106 million tonnes in 2014. China was also the lead producer of 'apples', 'peaches and nectarines' and also watermelons', while Brazil was the top producer of 'oranges' in 2014 with close to one quarter of the world's total harvest.

Table 11.2: Production of selected fruits, 2013
(thousand tonnes)

	Apples	Bananas	Grapes	Oranges	Peaches & nectarines	Watermelons
EU-28	12 122	640	25 331	6 479	569	2 801
World	80 823	105 957	77 181	71 306	20 804	108 961
Argentina	1 245	180	2 881	900	292	127
Australia	289	330	1 763	401	92	160
Brazil	1 231	6 893	1 440	17 550	218	2 164
Canada	382	0	102	:	25	23
China	39 684	12 370	11 650	7 470	11 954	73 189
India	1 915	27 575	2 483	6 426	250	400
Indonesia	:	5 359	:	1 411	0	447
Japan	742	0,1	190	48	125	356
Mexico	859	2 128	350	4 410	161	953
Russia	1 572	:	439	0,1	33	1 420
Saudi Arabia	:	:	150	:	:	371
South Africa	812	390	1 850	1 672	174	65
South Korea	494	:	260	:	193	673
Turkey	3 128	215	4 011	1 781	638	3 887
United States	4 082	7	7 745	7 574	965	1 772

Source: Eurostat (online data code: [apro_acs_a](#)) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)



The EU-28 had the largest production of milk among G20 members

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

bovine meat, while similar levels of specialisation were recorded in China, the EU-28, South Korea and Canada for pig meat, and in Saudi Arabia, Turkey, Indonesia, South Africa and Brazil for poultry meat (see Table 11.3).

Table 11.3: Meat and milk production, 2013
(thousand tonnes)

	Total meat production	of which:				Milk production
		Bovine meat	Pig meat	Poultry meat	Sheep and goat meat	
EU-28	42476	7373	22359	12510	882	156892
World	310380	67706	113035	108669	13962	768641
Argentina	5210	2822	416	1826	:	11796
Australia	4489	2318	361	1098	686	9522
Brazil	26011	9675	3280	12915	116	34408
Canada	4334	1056	1977	1254	17	8394
China	85180	6745	53752	18938	4083	40570
India	6215	2577	354	2358	747	135600
Indonesia	3317	586	743	1872	113	1388
Japan	3276	508	1309	1450	0	7508
Mexico	6122	1807	1284	2846	98	11118
Russia	8544	1633	2816	3463	190	30523
Saudi Arabia	803	52	:	576	130	2338
South Africa	2798	851	216	1504	179	3400
South Korea	2036	336	1007	686	1	2097
Turkey	2995	870	0	1771	351	18224
United States	42642	11698	10510	20085	73	91271

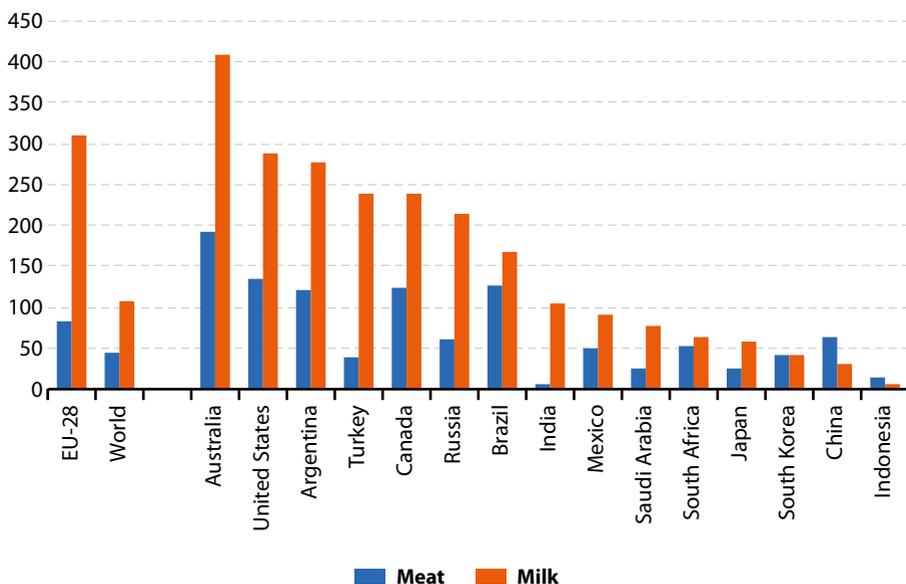
Note: may include official, semi-official, unofficial, estimated or calculated data.

Source: Eurostat (online data codes: [apro_mt_pann](#), [apro_mt_sloth](#) and [apro_mk_pobta](#)) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)

Overall, the level of meat production per inhabitant was highest in Australia, with an average of 193 kg per inhabitant, far ahead of the United States, Argentina, Canada and Brazil where meat production also exceeded 100 kg per inhabitant (see Figure 11.4). The lowest level of meat production was in India, where the average was 4.9 kg per inhabitant; this low level

may to some degree reflect the predominant religious beliefs in this country. Production of milk relative to population size in the EU-28 (311 kg per inhabitant) was the second highest within the G20 members in 2014, with Australia in the lead (409 kg per inhabitant). By far the lowest level of milk production per inhabitant was recorded in Indonesia.

Figure 11.4: Meat and milk production per inhabitant, 2013
(kg per inhabitant)



Note: ranked on 'Milk'. May include official, semi-official, unofficial, estimated or calculated data.

Source: Eurostat (online data code: [apro_mt_pann](#), [apro_mt_sloth](#), [apro_mk_pobta](#) and [demo_gind](#)), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production) and United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision



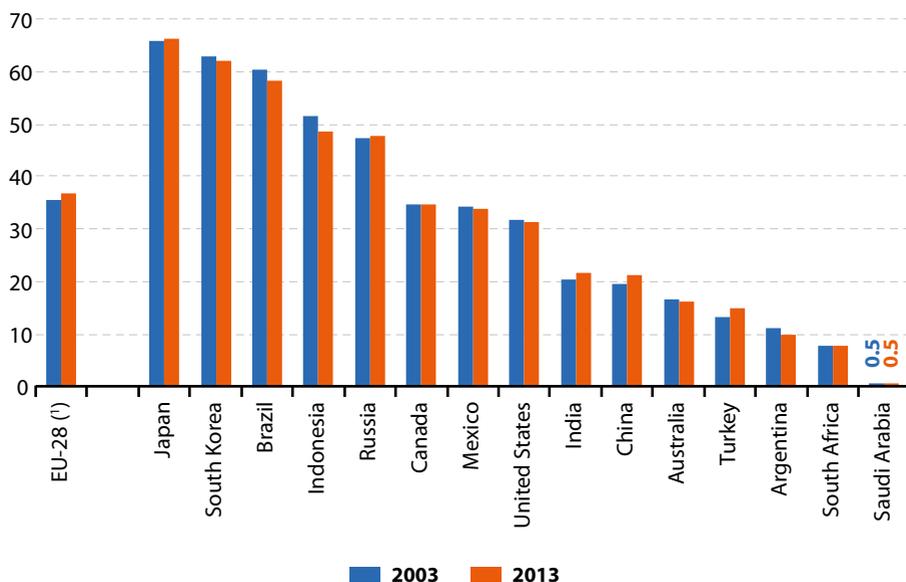
Forestry

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.

In Japan, South Korea and Brazil, forests took up more than 50% of the territory in 2013 while the share in Indonesia and Russia was just below half (see Figure 11.5). In 2003, more than half (51.5%) of Indonesia was made of forest land, but decreased to 48.3% in 2013. In all the other countries forests took up less than 50% of the land, and in Australia, Turkey, Argentina, South Africa and Saudi Arabia the share of forestry in the total land use was 16.0% or below in 2013. Four of the G20 members, China, Turkey and India and the EU-28, there was an increase in the share of forest over 1.0 pp from 2003 to 2013. On the other hand, deforestation affected Indonesia, Brazil, Argentina and South Korea, where the percentage of forest decreased by at least 1.1 pp.

Figure 11.5: Forest as a share of land area, 2003 and 2013

(%)



Note: estimates for 2003 and 2013 for the non-EU G20 members.

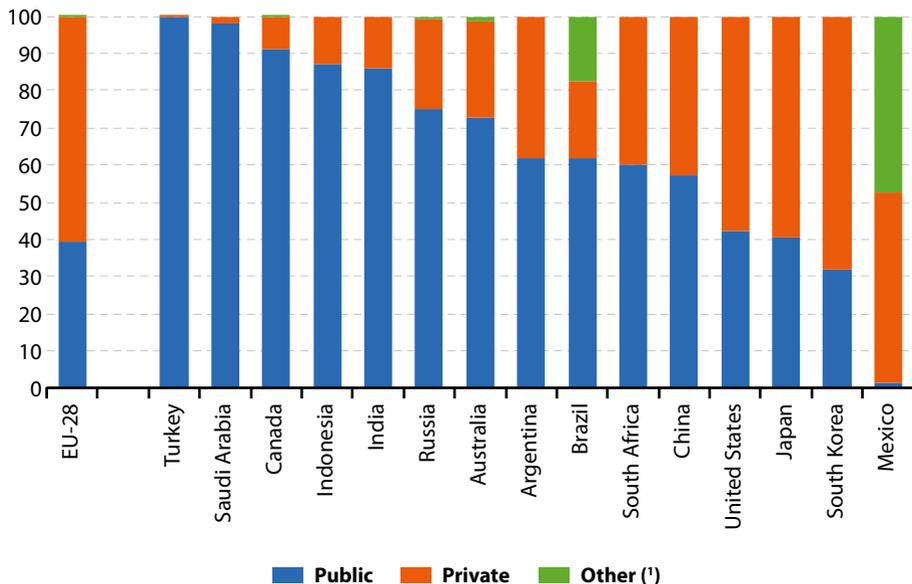
(1) Data for 2003 and 2013 not available; 2005 and 2015 data instead. Excluding French overseas regions.

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

Ownership is a key element in forest management given the all the challenges that arise from having large areas of forest land divided by many landowners. In 2010, 42.1 % or less of forest was state owned in the United

states, Japan, South Korea, Mexico and the EU-28. In the other countries public forests had the highest percentages of the total forest land with values varying from 99.9% in Turkey to 57.4% in China (see Figure 11.6).

Figure 11.6: Public and private ownership of forests, 2010
(% of forest area)



Note: ranked on 'Public'.

(¹) 'Other' includes forest areas where ownership is unknown, unclear or disputed.

Source: the Food and Agriculture Organisation of the United Nations (Global Forest Resources Assessment Country Reports, 2015)



The EU-28 was the largest producer of roundwood and sawnwood among G20 members

Roundwood production in the EU-28 reached 425 million m³ (11.5 % of the world total) in 2014, making the EU-28 the largest producer within the G20 (see Table 11.4) followed by the United States, India and China. 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 was also the largest producer of sawnwood, with an output of 102 million m³ in 2014, equivalent to 23.2% of the world total, followed by the United States and China. 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.

Table 11.4: Production of roundwood and sawnwood, 2004 and 2014
(thousand m³)

	Roundwood		Sawnwood	
	2004	2014	2004	2014
EU-28	416 802	425 351	106 407	101 854
World	3 546 219	3 700 368	425 319	438 734
Argentina	15 004	18 261	1 562	3 614
Australia	31 933	30 044	4 668	4 807
Brazil	243 255	267 653	23 480	15 227
Canada	208 073	154 259	60 952	43 351
China	305 932	338 106	15 381	68 410
India	348 045	356 690	13 661	6 889
Indonesia	128 412	113 020	4 330	4 169
Japan	15 729	21 130	13 603	10 616
Mexico	45 181	44 204	2 962	2 471
Russia	178 400	203 000	21 355	33 900
Saudi Arabia	205	275	:	:
South Africa	33 777	26 406	2 211	1 553
South Korea	4 704	6 675	4 366	2 343
Turkey	16 503	22 835	6 215	6 635
United States	461 739	398 693	93 067	74 803

Note: may include official, semi-official, estimates or calculated data.

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

Fisheries

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 largest fish catch among G20 members was reported for China, some 3.6 times the level for the EU-28

The total fish catch by the EU-28 fishing fleet was 4.8 million tonnes in 2014, 15 % less than the quantity that had been caught 10 years earlier (see Table 11.5). The largest fish catch among G20 members in 2014 was reported for China, some 3.6 times the level for the EU-28. Indonesia and the United States also recorded larger fish catches than the EU-28.

Table 11.5: Fish catches and aquaculture production, 2004 and 2014
(thousand tonnes)

	Total catches		Aquaculture production	
	2004	2014	2004	2014
EU-28 (1)	5 711	4 829	1 325	1 183
Argentina	945	830	2	4
Australia	243	154	44	75
Brazil	746	767	270	563
Canada	1 214	877	145	134
China	421	17 352	35 939	58 797
India	3 391	4 719	2 804	4 884
Indonesia	4 740	6 508	1 469	14 375
Japan	4 453	3 753	1 261	1 020
Mexico	1 289	1 528	104	194
Russia	2 953	4 233	110	164
Saudi Arabia	55	69	11	24
South Africa	910	610	6	6
South Korea	1 662	1 602	840	1 533
Turkey	550	302	94	234
United States	4 995	4 984	608	426

(1) Aquaculture (2013 data): Ireland, France and Romania are estimated; Malta and Portugal are provisional; the Netherlands are forecasted.

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

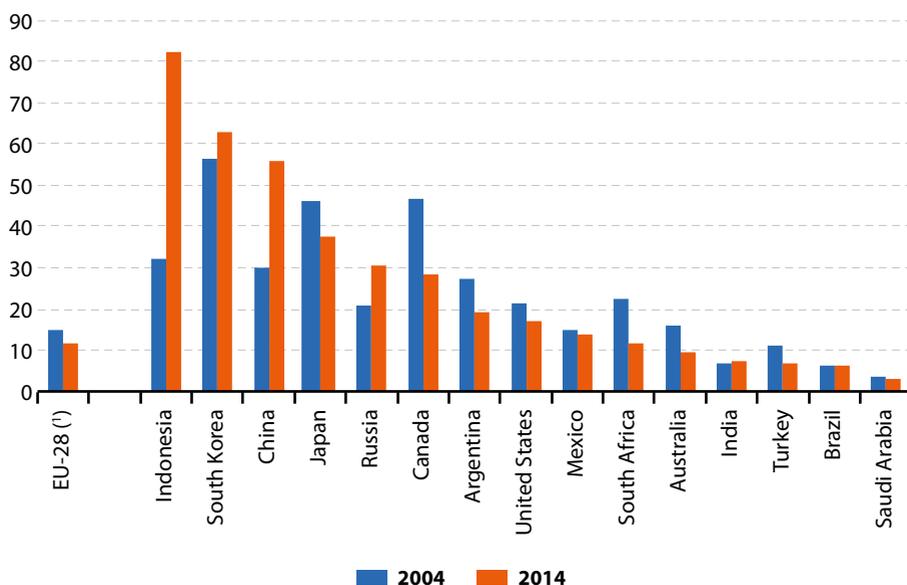


Aquaculture production in the EU-28 was estimated at 1.2 million tonnes in 2014, far behind that of China (58.8 million tonnes), Indonesia and India, as well as somewhat less than that of South Korea. Between 2004 and 2014, aquaculture production fell in Japan, the United States, the EU-28 and Canada, while it increased in all other G20 members, most notably in Indonesia where it increased close to

ten-fold and in Turkey, Argentina, Saudi Arabia and Brazil where it more than doubled.

Relative to population size, the EU-28's combined fish catch and aquaculture production was estimated at 11.8 kg per inhabitant in 2013, a relatively low level compared with most other G20 members (see Figure 11.7). The highest levels of production were in Indonesia and South Korea, both with more than 60 kg per inhabitant.

Figure 11.7: Production (fish catch and aquaculture) per inhabitant, 2004 and 2014
(kg per inhabitant)



(¹) Data for 2013 instead of 2014. Aquaculture: Ireland, France and Romania are estimated; Malta and Portugal are provisional; the Netherlands are forecasted.

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

12

Environment



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

Environmental taxes

Turkey had the highest revenue from environmental taxes relative to GDP

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.

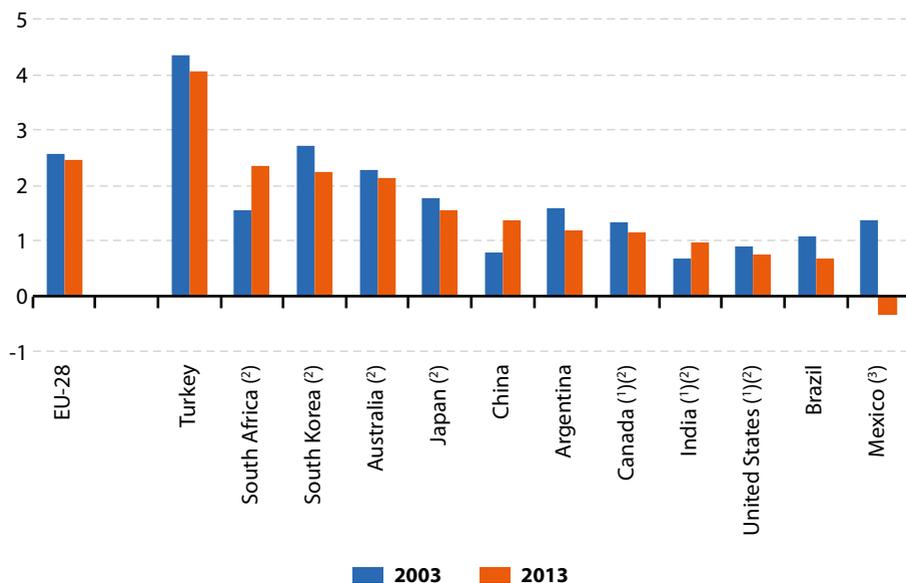
In 2013, the EU-28 Member States raised EUR 332 billion of revenue from environmental taxes,

equivalent to 2.5 % of GDP. Figure 12.1 compares the relative importance of environmental taxes between the G20 members and shows how these developed between 2003 and 2013.

Among the G20 members, the highest revenue from environmental taxes, relative to GDP, was in Turkey where these taxes were equivalent to 4.1 % of GDP in 2013. The negative value for Mexico reflects the system used to stabilise motor fuel, which leads to subsidies when oil prices are high. Between 2003 and 2013, the ratio of environmental taxes to GDP fell in most G20 members, the exceptions being South Africa, China and India.



Figure 12.1: Environment related taxes, 2003 and 2013
(% share of GDP)



Note: data not available for Indonesia, Russia and Saudi Arabia.

(1) 2003: Canada, India: incomplete data. United States: estimated data.

(2) 2013: Australia, Canada, India, Japan, South Africa, South Korea and the United States: estimated data and in some cases incomplete.

(3) The price of fuel is set by the government every month. In cases where the price is set higher than the international reference price it works as a tax. When the price fixed by the government is lower than the international price it is in fact a subsidy, and can lead to the negative value presented for 2013.

Source: Eurostat (online data code: env_ac_tax) and OECD (Environment statistics)

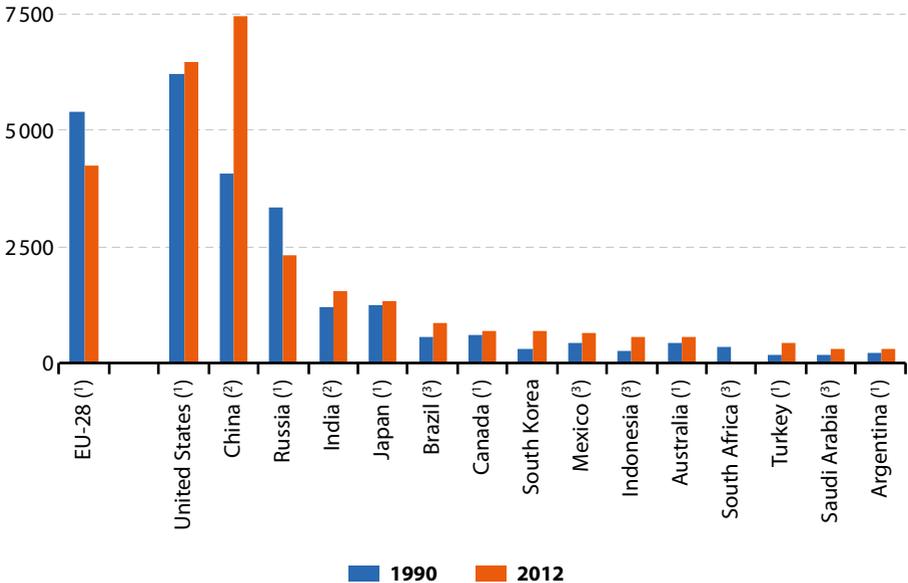
Air emissions

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

CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

The G20 members that are Annex I parties are signalled in Figures 12.2 and 12.3 of those G20 members that are not. The EU is an Annex I party and 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.

Figure 12.2: Greenhouse gas emissions, 1990 and 2012
(million tonnes of CO₂-equivalents)



Note: without emissions related to land use, land use change and forestry.

(1) Annex I (of the Climate Change convention) parties.

(2) 1990: China and India: 1994.

(3) 2012: Argentina, India, Indonesia and Saudi Arabia: 2000; Brazil and China: 2005; Mexico: 2006; South Africa: not available.

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



The second commitment period (2013–20) based on the [Doha Amendment](#) to the Protocol has not entered into force. In 2015 during the UN Climate Change Conference held in Paris the then 196 parties adopted the [Paris Agreement](#) that aims at governing emission reductions from 2020 onwards through national commitments. The Paris Agreement, still under ratification ⁽¹⁾, aims at ‘holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels’ ⁽²⁾.

Between 1990 and 2012 greenhouse gas emissions fell in the EU-28 and in Russia

Emissions of different greenhouse gases are converted to CO₂ 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 around 17.0 billion tonnes of CO₂ equivalents, 10.6% lower than the level in the base year (1990 for most parties).

Among G20 countries, greenhouse gas emissions fell only in Russia (– 32%) and the EU-28 (– 22%) between 1990 and 2012 (see Figure 12.2). Emissions in South Korea, Turkey and Indonesia (1990–2000) more than doubled, while emissions also increased by at least 50% for China (1994–2005), Saudi Arabia (1990–2000) Mexico (1990–2006) and Brazil (1990–2005).

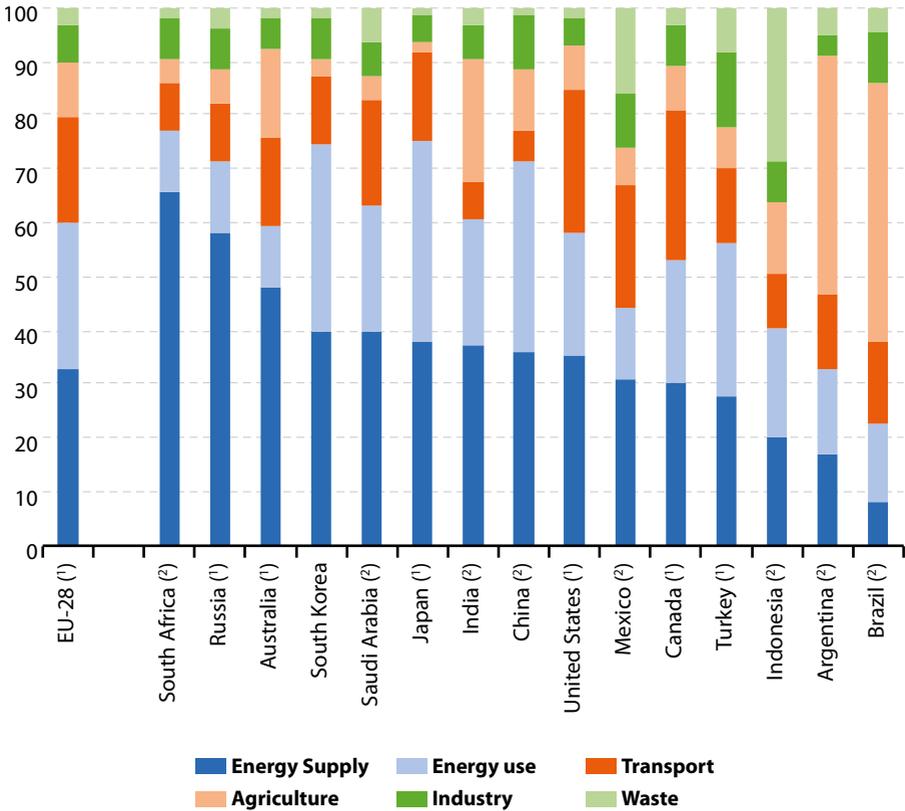
Figure 12.3 provides an analysis of the source of greenhouse gas emissions in 2012 — note that the data for nearly all of the G20 members that are not Annex I parties relate to relatively distant reference years. ‘Energy supply’ was the major source of GHG emission in the EU-28 and had at least a 30% share in most of the G20 members. The exceptions were Turkey and Indonesia (2000 data) where it was ‘energy use’ and also Argentina (2000 data) and Brazil (2005 data) where most of the emissions came from ‘agriculture’. ‘Energy use’ accounted for more than one third of the GHG emissions in South Korea, Japan and China (2005 data) while ‘transport’ was responsible for more than a fifth of the GHG emissions of Canada, the United States and Mexico (2006 data).

(1) At the time of drafting of this publication.

(2) UNFCCC, [Paris Agreement](#).

Figure 12.3: Greenhouse gas emissions by sources, 2012

(%)



Note: countries ranked according to emissions related to energy supply. Emissions from 'Land use, land use change and forestry', 'solvents and other product use' and 'others' are not included.

(1) Parties to Annex I of the Climate Change convention.

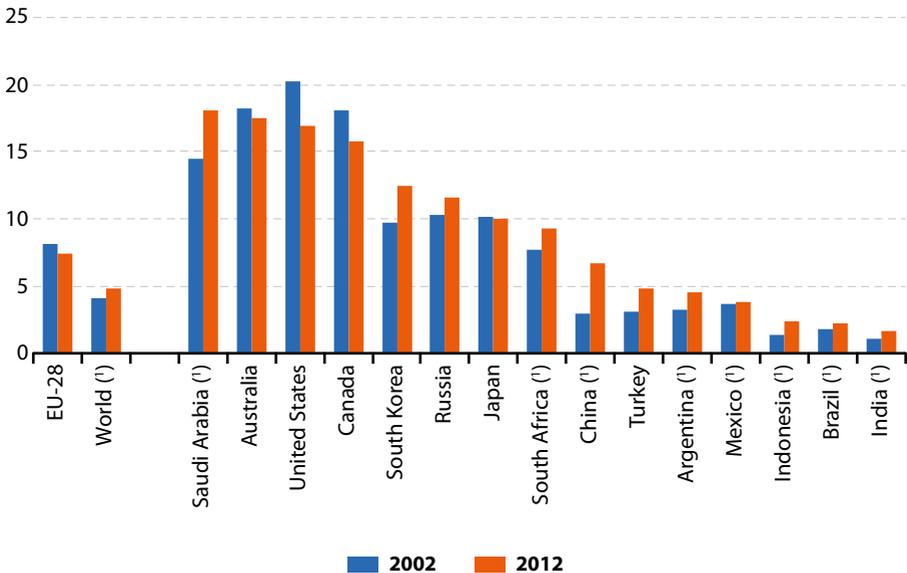
(2) Argentina, India, Indonesia and Saudi Arabia, South Africa: 2000 data. Brazil and China: 2005 data. Mexico: 2006 data.

Source: United Nations Framework Convention on Climate Change (UNFCCC); South Africa's second national communication under the United Nations Framework Convention on Climate Change, 2011. UNFCCC data has been used for the EU-28 for comparability reasons. However data is also available in Eurostat (table code: [env_air_gge](#))

Figure 12.4 provides an analysis of emission intensities of carbon dioxide (CO₂) for 2002 and 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. Saudi Arabia (2011 data), Australia, the United States and Canada all had more than 15.0 tonnes per inhabitant of CO₂ emissions in 2012. With

7.4 tonnes per inhabitant, the EU-28 belonged to an intermediate group where emission varied from 5.0 to 13.0 tonnes per inhabitant including South Korea, Russia, Japan, South Africa (2011 data) and China. All the other G20 members had CO₂ emission under 5.0 tonnes per inhabitant. Between 2002 and 2012, the intensity of emissions decreased in the United States, Canada, the EU-28, Australia and Japan. In all the other G20 members, the emission increased from less than 5.0 % in Mexico (2011 data) to more than 50.0 % in Turkey and Indonesia (2011 data) and peaking at 132.6 % in China (2011 data).

Figure 12.4: Carbon dioxide emissions, 2002 and 2012
(tonnes per inhabitant)



(¹) 2012: World, Argentina, Brazil, China, India, Indonesia, Mexico, Saudi Arabia and South Africa: 2011 data.

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

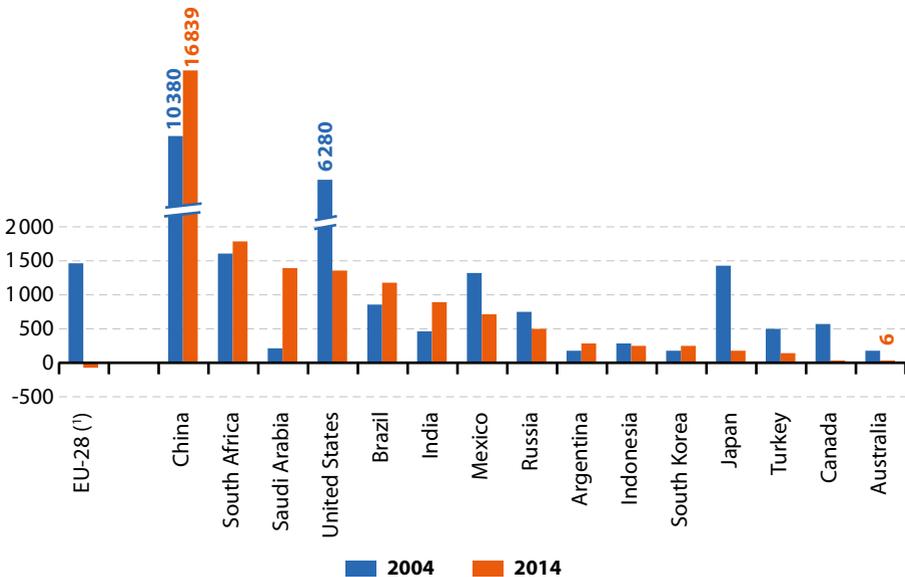
China's production of ozone depleting substances was greater than the production of all other G20 members combined

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 2014, 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 12.5). With an increase of over 60 % between 2004 and 2014, China's consumption of ODS has become greater in 2014 than the consumption in all other G20 members combined.

Figure 12.5: Air pollution, 2004 and 2014
(ODS tonnes)



(¹) Negative values indicate exports plus destruction exceeded actual production plus imports. The EU reports aggregated consumption data for the region and on behalf of the EU Member States.

Source: the United Nations Environment Programme (Ozone Secretariat)



Waste

South Korea recycled more than half of its municipal waste

The management and disposal of waste can have a serious environmental impact, 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 and 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.

Table 12.1: Municipal waste, latest year

	Latest year	Generated waste	Treated waste	Treated waste			
				Landfilled	Incinerated	Recycled	Composted
				(million tonnes)		(% of total treatment)	
EU-28	2013	242.1	236.3	29.9	25.5	26.9	15.4
Australia	2011	14.0	14.0	49.0	:	45.0	:
Brazil ⁽¹⁾	2012	57.9	57.6	:	:	:	:
Canada ⁽²⁾	2012	14.3	33.5	71.0	4.0	18.0	7.0
China ⁽³⁾	2012	170.8	144.9	80.0	18.0	0.0	2.0
India	2012	31.9	:	:	:	:	:
Indonesia	2012	7.7	:	:	:	:	:
Japan	2013	44.9	44.6	1.0	78.0	20.0	0.0
Mexico	2012	42.1	42.1	95.0	0.0	5.0	0.0
Russia	2012	80.6	:	:	:	:	:
South Korea	2013	17.8	17.8	16.0	25.0	59.0	0.0
Turkey	2013	30.9	25.6	99.0	0.0	0.0	1.0
United States	2012	227.6	227.6	54.0	12.0	26.0	9.0

Note: data not available for Argentina, Saudi Arabia and South Africa.

(1) Incomplete data. Data on 'Treated waste' from 2000.

(2) 'Generated waste' includes household waste only.

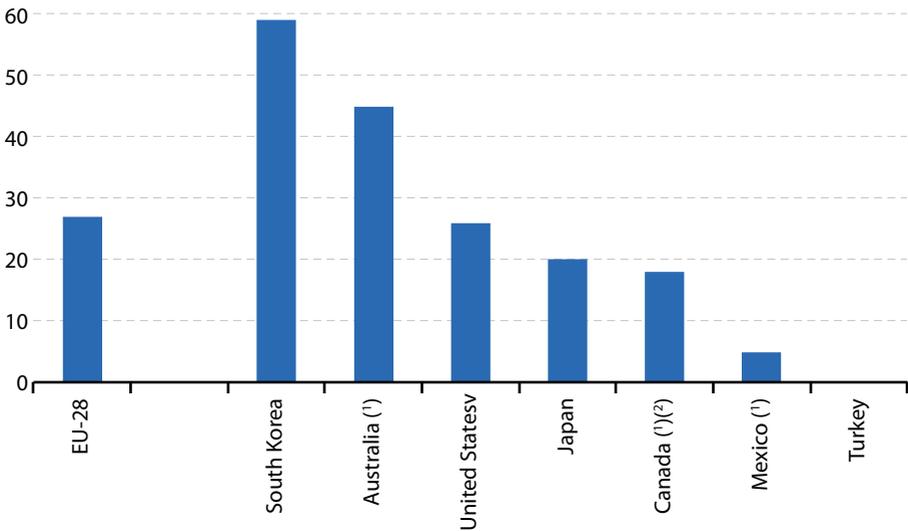
(3) Covers only waste collected in urban areas. Composted share from 2009.

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

Among the G20 members with data available (see Table 12.1), Japan reported the most frequent use of incineration to treat municipal waste (78 %) while Mexico (95 %) and Turkey (99 %) reported the most frequent use of landfill.

In South Korea, more than half (59 %) of the municipal waste was recycled (see Figure 12.6), followed by Australia (45 %) (2011 data). The EU-28 and the United States (2011 data) both recorded shares of just over one quarter.

Figure 12.6: Municipal waste recycled, 2013
(% of treated waste)



Note: data not available for Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia and South Africa.

(1) Canada, Mexico and United States: 2010 data. Australia: 2011 data.

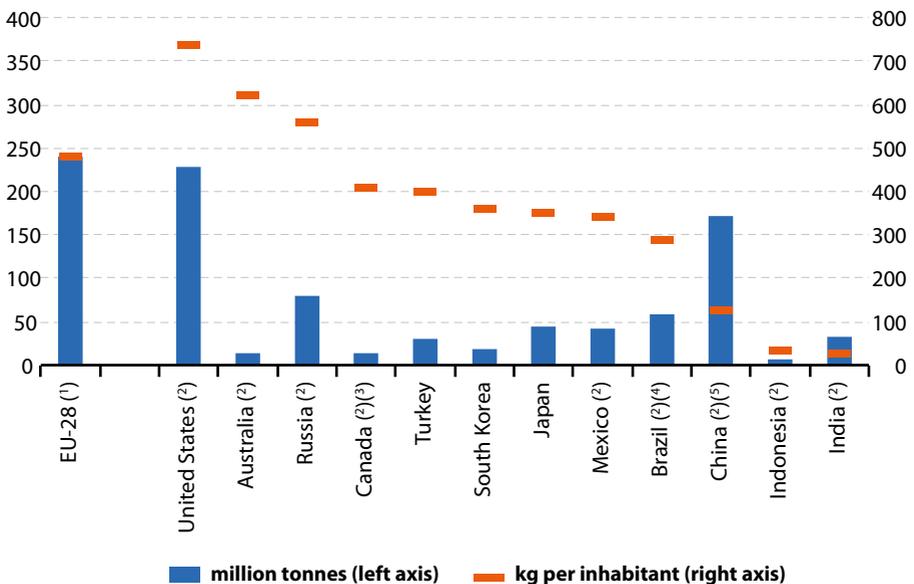
(2) Household waste only.

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

The amount of municipal waste generated ranged from 734 kg per inhabitant in the United States (2010 data) to 25 kg per inhabitant in India (2012 data), with Australia (2011 data) and Russia (2012 data) over the 500 kg per inhabitant threshold and Indonesia (31 kg) (2011 data) closer to India's minimum (see Figure 12.7). Around 478 kg of municipal waste per inhabitant was estimated in the EU-28 for 2013, which also

produced the highest amount of municipal waste (240.9 million tonnes) within the G20 members. This volume was close to the figure for the United States (227.6 million tonnes) (2010 data) but much higher than the Chinese municipal waste production (note that data for China are only referenced for the year 2012 and only cover urban areas).

Figure 12.7: Municipal waste generated, 2013



Note: ranked on 'kg per inhabitant'. Data not available for Argentina, Saudi Arabia and South Africa.

(1) Estimate.

(2) United States: 2010 data. Australia: 2011 data. Brazil, Canada, China, India, Indonesia, Mexico and Russia: 2012 data.

(3) Household waste only.

(4) Incomplete data.

(5) Covers only waste collected in urban areas.

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

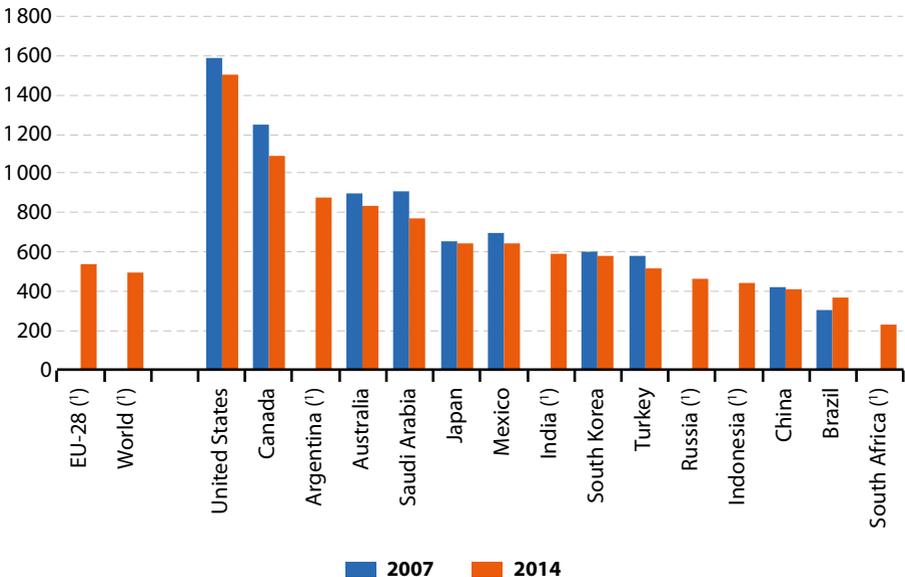
Water use

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 12.8), the United States had the highest annual freshwater withdrawals, its 1 498 m³ per inhabitant was far higher than the 1 090 m³ recorded in Canada which had the next highest withdrawals.

Figure 12.8: Freshwater withdrawals, 2007 and 2014 (m³ per inhabitant)



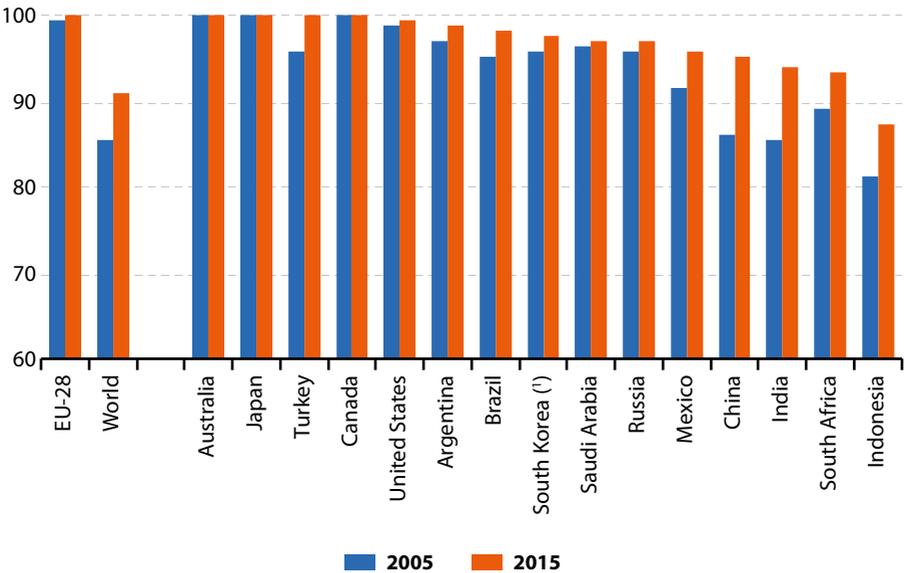
(¹) Data not available in 2007 for EU-28, World, Argentina, India, Indonesia, Russia and South Africa.

Source: Eurostat (online data code: [demo_gind](#)), the World Bank (World Development Indicators) and United Nations Department of Economic and Social Affairs (Population Division)

Figure 12.9 presents the share of the total population with access to improved water sources which include piped water in premises and other improved drinking water sources. All G20 members presented a coverage population connected to improved water sources of more

than 85 %. The EU-28 presented a 99.8% share and in Australia, Japan, Turkey, Canada, the United States and Argentina it was also over 99 %. Indonesia was the only G20 member that had coverage below the world average.

Figure 12.9: Population connected to improved water source, 2005 and 2015
(% of total population)



Note: access to an improved water source includes piped water on premises and other improved drinking water sources. The y-axis does not start at zero.

(*) South Korea: 2012 data instead of 2015.

Source: the World Bank (World Development Indicators)

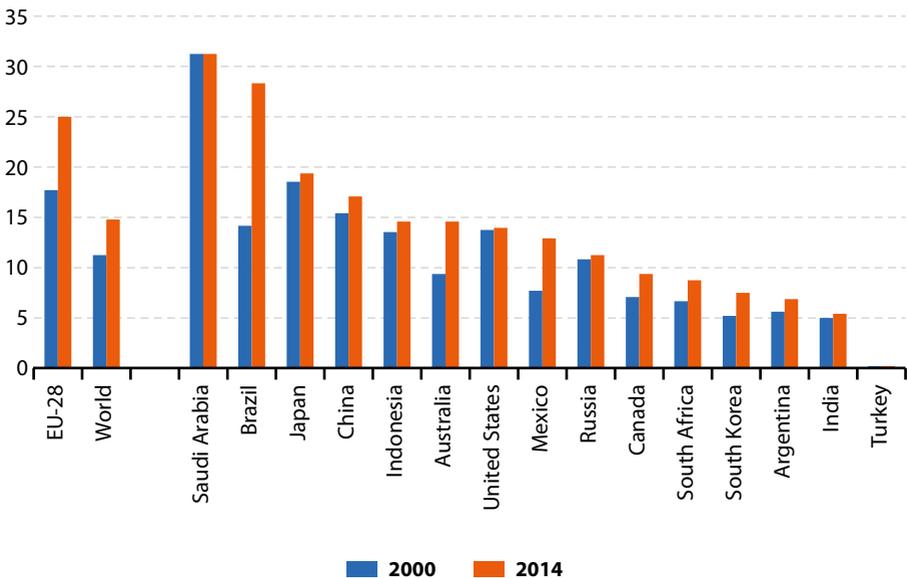
Protected areas

In the EU-28 around 25.1 % of the surface area is designated as a protected area

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).

Figure 12.10: Terrestrial protected areas, 2000 and 2014
(% of surface area)

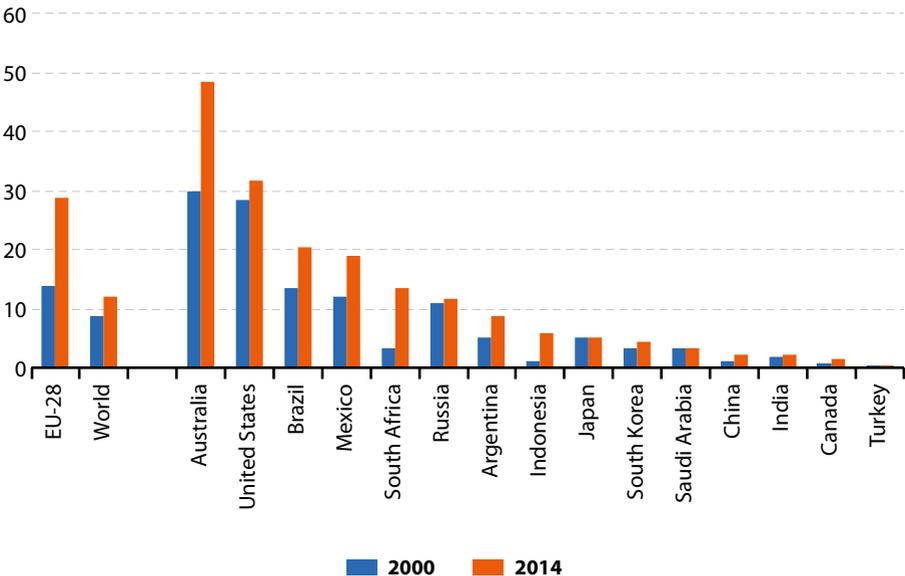


Source: World Bank (World Development Indicators)

In the EU-28 around 25.1 % of the surface area (land area and inland water bodies) was designated as a protected area as of 2014, along with 28.9% of territorial waters (see Figures 12.10 and 12.11). 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 (2.4 million km² in 2014). 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

400 thousand km². Between 2000 and 2014, almost all G20 members reported a rise in the proportion of their protected terrestrial area, with large increases (above 5 percentage points – pp) in Brazil, Mexico, Australia and the EU-28. By contrast, Saudi Arabia and Turkey's share of protected terrestrial areas was the same in 2000 and 2014. As for the share of marine protected areas, there was an increase in all the G20 members from 2000 to 2014, that where above 10 pp in Australia, South Africa and the EU-28.

Figure 12.11: Marine protected areas, 2000 and 2014
(% of territorial waters)



Source: World Bank (World Development Indicators)

13

Energy



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

Key figures

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 790 million tonnes of oil equivalent (toe) in 2013 while worldwide production that year reached 13 594 million toe. The members of the G20 accounted for approximately 72% of the world's energy production, with China, the United States and

Russia recording each a higher production than the EU-28.

Between 2003 and 2013, global primary production of energy increased by 32% (see Table 13.1). China's primary production increased 84% during this period, while output in Indonesia increased by 80%. Japan's production fell by 71%, in large part due to a fall in output from nuclear energy following the Tōhoku earthquake and tsunami on 11 March 2011. The EU-28 had the third largest fall in production (by 16%), reflecting supplies becoming exhausted and/or producers considering the exploitation of limited resources uneconomical.



Table 13.1: Energy available and international trade in energy, 2003 and 2013
(million toe)

	Production		Imports		Exports		Gross inland consumption (¹)	
	2003	2013	2003	2013	2003	2013	2003	2013
EU-28	937.1	790.4	1 349.6	1 441.8	446.5	533.4	1 803.5	1 666.6
World	10 268.5	13 594.1	3 913.0	5 202.9	3 863.0	5 248.6	10 340.9	13 541.3
Argentina	86.1	71.4	1.9	16.7	26.0	4.7	60.9	80.6
Australia	254.1	343.9	28.1	50.9	167.7	260.6	109.5	129.1
Brazil	178.3	252.9	46.7	74.8	21.6	29.1	199.0	293.7
Canada	384.1	435.1	73.5	78.1	209.9	262.7	248.4	253.2
China	1 397.7	2 565.7	136.6	551.9	96.5	48.0	1 426.7	3 009.5
India	379.0	523.3	116.2	327.1	16.4	72.4	471.7	775.4
Indonesia	255.2	460.0	35.1	55.5	123.8	301.3	165.7	213.6
Japan	96.8	28.0	430.5	454.8	6.2	17.8	510.5	454.7
Mexico	229.1	216.5	26.7	54.8	102.5	76.5	149.2	191.3
Russia	1 119.5	1 340.2	28.7	27.4	486.8	620.3	645.3	730.9
Saudi Arabia	506.4	614.5	2.8	24.8	391.7	444.6	112.6	192.2
South Africa	153.4	165.7	22.8	35.1	54.1	54.9	117.7	141.3
South Korea	34.9	43.6	204.2	291.0	32.0	56.9	198.7	263.8
Turkey	24.1	32.3	54.4	95.6	3.1	8.9	74.2	116.5
United States	1 655.8	1 881.0	714.9	582.5	85.8	274.2	2 255.9	2 188.4

(¹) Also known as 'total primary energy supply', it is calculated as follows: primary production + recovered products + net imports + variations of stocks – bunkers.

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

Primary production

The source of energy production in the EU-28 was more varied than in any of the other G20 members

For many of the G20 members the mix of energy sources for primary production in 2013 was dominated by just one type (see Table 13.2 and Figure 13.1). In South Africa, Australia and China close to three quarters or more of primary production came from coal and lignite, while in Indonesia coal and lignite's share was 61 %

and it almost reached half of the production in Turkey and India. In Saudi Arabia and Mexico 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 Turkey was a mixture from **renewables** and **waste** as well as one type of fossil fuel (including coal, oil or natural gas), 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.

Table 13.2: Production of primary energy, 2013

	Production (million toe)	Energy type (excluding heat)				
		Coal & lignite	Oil	Natural gas	Nuclear energy	Renewables & waste
		(% of total primary production)				
EU-28	790.4	19.7	9.1	16.7	28.6	25.9
World	13 594.1	29.1	31.0	21.4	4.8	13.7
Argentina	71.4	0.1	42.3	45.3	2.3	10.0
Australia	343.9	76.7	5.8	15.2	0.0	2.3
Brazil	252.9	1.3	43.5	7.1	1.5	46.5
Canada	435.1	8.1	44.9	30.0	6.2	11.0
China	2 565.7	73.8	8.2	3.9	1.1	12.9
India	523.3	45.5	8.2	5.5	1.7	39.0
Indonesia	460.0	61.1	9.2	13.7	0.0	16.0
Japan	28.0	0.0	2.0	9.8	8.7	79.6
Mexico	216.5	3.5	69.3	18.7	1.4	7.1
Russia	1 340.2	13.7	39.1	42.0	3.4	1.7
Saudi Arabia	614.5	0.0	89.1	10.9	0.0	0.0
South Africa	165.7	87.5	0.1	0.6	2.2	9.5
South Korea	43.5	1.9	1.4	1.0	83.1	12.7
Turkey	32.3	48.5	7.3	1.4	0.0	42.8
United States	1 881.0	25.4	25.3	30.1	11.4	7.8

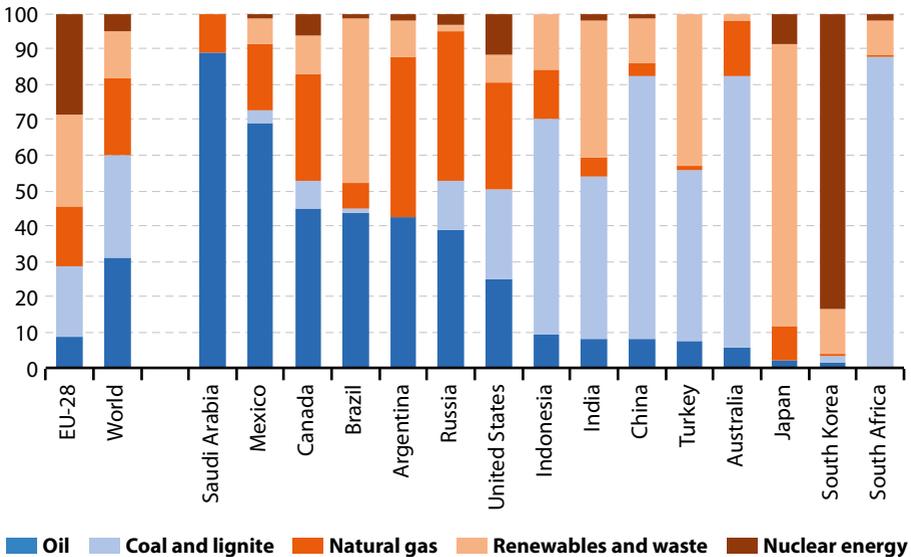
Source: Eurostat (online data code: [nrg_100a](#)) and the International Energy Agency (Balances)

Energy production in the EU-28 was more varied than in any of the other G20 members with only oil among the five types of energy sources (shown in Table 13.2 and Figure 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 13.1: Primary production by energy type (excluding heat), 2013
(% of total production)



Note: ranked according to the share of oil in the primary production. In addition energies are ranked according to their share in the world total.

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

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 non-EU G20 members, the largest net exporters of energy in 2013, i.e. countries where the value of exports exceeded the one of

imports, were Russia (593 million toe) and Saudi Arabia (420 million toe), followed by Indonesia and Australia which both exceeded 200 million toe (see Table 13.3). The largest net importer was the EU-28 (908 million toe), followed by China, Japan and the United States. Between 2003 and 2013, Argentina moved from being a net exporter of energy to a net importer. Among net importers, the United States reduced the gap between exports and imports by 320 million toe during the same period, while this gap increased greatly for China and India. Among net exporters, there were large increases for Indonesia and Russia.

Table 13.3: Energy imports and exports, 2013

	Imports	Exports	Net imports (¹)	Energy type					
				(million toe)	Coal & lignite	Oil	Gas	Renewables & waste	Electricity & heat
					(% total gross imports)				
EU-28	1 441.8	533.4	908.3	11.2	61.8	23.9	0.9	2.1	
World	5 202.9	5 248.6	-45.7	16.0	65.8	16.8	0.3	1.2	
Argentina	16.7	4.7	12.0	4.5	30.6	57.4	0.0	7.6	
Australia	50.9	260.6	-209.7	0.1	88.9	11.0	0.0	0.0	
Brazil	74.8	29.1	45.7	17.8	58.6	18.9	0.1	4.6	
Canada	78.1	262.7	-184.5	6.9	61.4	28.5	1.4	1.9	
China	551.9	48.0	503.9	31.5	60.8	7.5	0.0	0.1	
India	327.1	72.4	254.7	30.9	64.3	4.7	0.0	0.1	
Indonesia	55.5	301.3	-245.8	0.1	99.4	0.0	0.0	0.5	
Japan	454.8	17.8	437.0	26.9	50.3	22.8	0.0	0.0	
Mexico	54.8	76.5	-21.7	7.5	53.3	39.0	0.0	0.2	
Russia	27.4	620.3	-592.9	64.1	9.8	24.6	0.0	1.5	
Saudi Arabia	24.8	444.6	-419.8	0.0	100.0	0.0	0.0	0.0	
South Africa	35.1	54.9	-19.8	1.9	87.0	8.7	0.0	2.3	
South Korea	291.0	56.9	234.1	26.6	57.0	16.4	0.0	0.0	
Turkey	95.6	8.9	86.7	18.7	41.3	39.0	0.4	0.7	
United States	582.5	274.2	308.3	0.9	86.6	11.5	0.0	1.0	

(¹) A negative value for net imports indicates that the country concerned is a net exporter.

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



Oil dominates imports

An analysis of the composition of gross energy imports (see Table 13.3) shows that oil products dominated worldwide (65.8%) 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 (mainly coal and lignite), Argentina (mainly gas) and Turkey (oil and gas together accounted for 80%).

Electricity generation

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 23.4 million **gigawatt hours (GWh)** in 2013 (see Table 13.4), of which 84.6% was generated by G20 members. In absolute terms, China and the United States had the highest levels of electricity generation among G20 members (5.4 respective 4.3 million GWh). A total of 3.3 million GWh of electricity was generated in the EU-28 in 2013.

Table 13.4: Gross electricity generation, 2013

	Total (GWh)	Total per inhabitant (MWh)	Source of energy (¹)					
			Coal & lignite	Oil	Gas	Nuclear	Hydro (²)	Renewables & waste
			(% of total energy generation)					
EU-28	3 302 120	6.5	26.5	1.8	16.4	26.6	13.2	15.4
World	23 405 687	3.3	41.2	4.4	21.6	10.6	16.6	5.6
Argentina	139 467	3.3	2.4	14.2	54.3	4.5	22.5	2.1
Australia	249 060	10.7	64.7	1.4	21.3	0.0	7.3	5.3
Brazil	570 329	2.8	3.8	4.7	12.1	2.6	68.6	8.2
Canada	651 919	18.5	10.0	1.2	10.3	15.8	60.1	2.7
China	5 447 231	4.0	75.5	0.1	1.7	2.0	16.9	3.8
India	1 193 480	0.9	72.8	1.9	5.5	2.9	11.9	5.0
Indonesia	215 590	0.9	51.2	12.4	24.0	0.0	7.9	4.5
Japan	1 045 293	8.2	32.2	14.3	38.4	0.9	8.1	6.0
Mexico	297 079	2.4	10.8	16.1	55.8	4.0	9.4	3.9
Russia	1 059 092	7.4	15.3	0.8	50.0	16.3	17.2	0.3
Saudi Arabia	284 017	9.4	0.0	47.2	52.8	0.0	0.0	0.0
South Africa	256 073	4.8	92.6	0.1	0.0	5.5	1.6	0.2
South Korea	541 996	10.9	41.1	4.0	26.7	25.6	1.5	0.9
Turkey	240 154	3.2	26.6	0.7	43.8	0.0	24.7	4.1
United States	4 306 160	13.6	39.8	0.9	26.9	19.1	6.7	6.5

(¹) Other sources not shown.

(²) Includes production from pumped hydro.

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

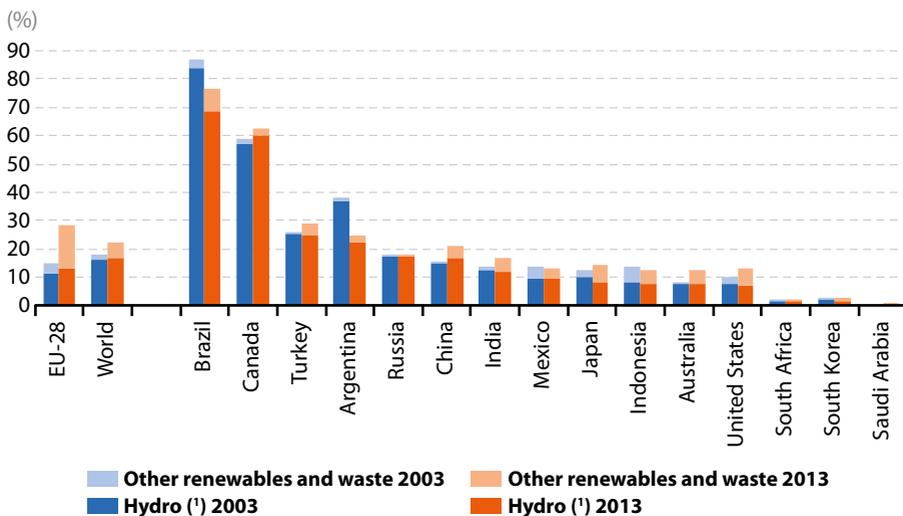
Nuclear power contributed 26.6% of the electricity generated in the EU-28

Coal and lignite-fired power stations generated two fifths of electricity worldwide in 2013; 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 at least half of the electricity generated in Mexico, Argentina, Saudi Arabia and Russia. Nuclear power contributed to 26.6% of the electricity generated in the EU-28 followed closely by South Korea with 25.6%, both which were more than double the world's average at 10.6%.

Hydro provided less than half of the EU-28's electricity from renewables and waste

Hydro-electric power, other renewables and waste supplied 22.2% of the world's electricity in 2013, with a somewhat higher share recorded in the EU-28 in 2013 (28.5%) (see Table 13.4 and Figure 13.2). The G20 members with the highest proportion of gross electricity generation from renewables and waste were Brazil (76.8%) and Canada (62.8%). 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 13.2: Share of renewables and waste in gross electricity generation, 2003 and 2013



Note: ranked on Hydroelectricity in 2013.

(!) Includes production from pumped hydro.

Source: Eurostat (online data code: [nrg_105a](#)) and the International Energy Agency (Electricity)

Energy consumption

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; and statistical differences.

Japan, the EU-28 and the United States were the only G20 members to record lower gross consumption in 2013 than 10 years earlier

Worldwide gross inland energy consumption was 13.5 billion toe in 2013 (see Table 13.5), of which the G20 members accounted for around four fifths (79%), 7 percentage points higher than their collective share of production.

Worldwide gross consumption increased 31 % between 2003 and 2013, with Japan, the EU-28 and the United States the only G20 members to record lower consumption in 2013 than 10 years earlier. China's gross inland consumption more than doubled (111 %), while Saudi Arabia, India and Turkey also recorded increases in excess of 50 %.

Just a bit less than one third of worldwide gross consumption of energy in 2013 derived from 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 (81.4%) of global energy consumption (see Table 13.5). Gross inland consumption was entirely satisfied by such fossil fuels in Saudi Arabia while they provided more than 90 % of gross inland consumption in Japan, Australia, Russia, Mexico and Argentina (see Figure 13.3).

Table 13.5: Gross inland consumption, 2013

	Gross inland consumption ⁽¹⁾ (million toe)	Energy type					
		Coal & lignite	Oil	Gas	Nuclear energy	Renewables & waste	Electricity & heat ⁽²⁾
		(% of total gross inland consumption)					
EU-28	1 666.6	17.2	33.3	23.2	13.6	12.6	0.1
World	13 541.3	28.9	31.1	21.4	4.8	13.8	0.0
Argentina	80.6	0.9	36.0	52.0	2.0	7.5	1.5
Australia	129.1	35.4	35.5	23.0	0.0	6.1	0.0
Brazil	293.7	5.6	41.5	10.9	1.3	39.5	1.2
Canada	253.2	6.9	31.0	34.4	10.6	18.9	-1.7
China	3 009.5	67.3	16.1	4.7	1.0	11.0	0.0
India	775.4	44.0	22.7	5.7	1.2	26.3	0.1
Indonesia	213.6	14.8	35.9	15.3	0.0	33.9	0.1
Japan	454.7	26.7	44.5	23.4	0.5	4.9	0.0
Mexico	191.3	6.5	51.7	32.2	1.6	8.0	0.0
Russia	730.9	14.8	21.9	54.1	6.2	3.2	-0.2
Saudi Arabia	192.2	0.0	65.2	34.8	0.0	0.0	0.0
South Africa	141.3	67.6	16.3	2.9	2.6	11.0	-0.3
South Korea	263.8	29.5	36.6	18.0	13.7	2.1	0.0
Turkey	116.5	27.9	27.2	32.2	0.0	12.2	0.5
United States	2 188.4	19.7	35.7	27.9	9.8	6.7	0.2

(1) Also known as Total primary energy supply.

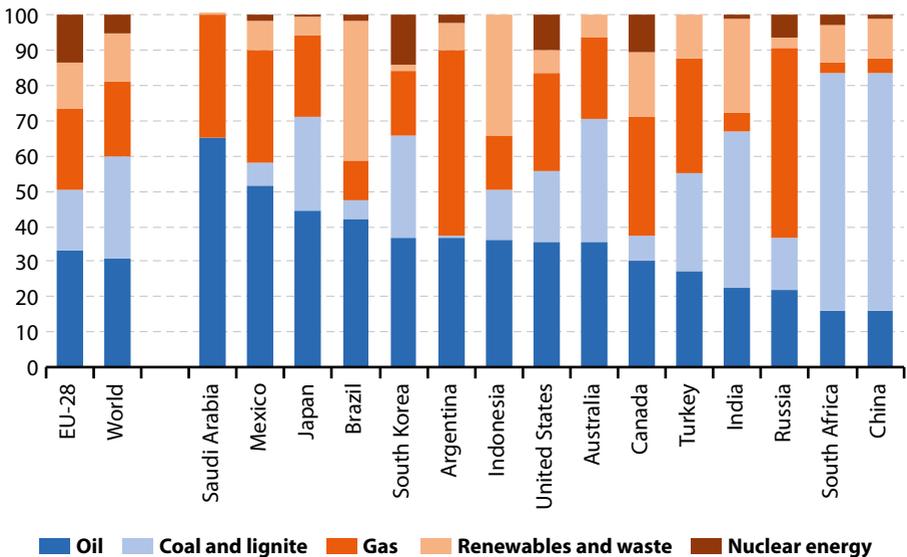
(2) Gross inland consumption of electricity is equal to electricity net imports.

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

South Korea had the highest share of nuclear energy in gross inland consumption in 2013, 13.7%, but this share was considerably lower than for primary production, indicating South Korea's high dependency on imported fossil

fuels, notably oil products. The EU-28 had the second highest share of nuclear energy in gross inland consumption (13.6%), followed by Canada (10.6%) and the United States (9.8%).

Figure 13.3: Gross inland consumption by energy type (excluding heat), 2013
(% of total gross inland consumption)



Note: countries ranked according to the share of oil in gross inland consumption. In addition, nuclear energy is ranked according to their share in the world total.

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

Brazil, Indonesia and India recorded highest shares for renewables and waste

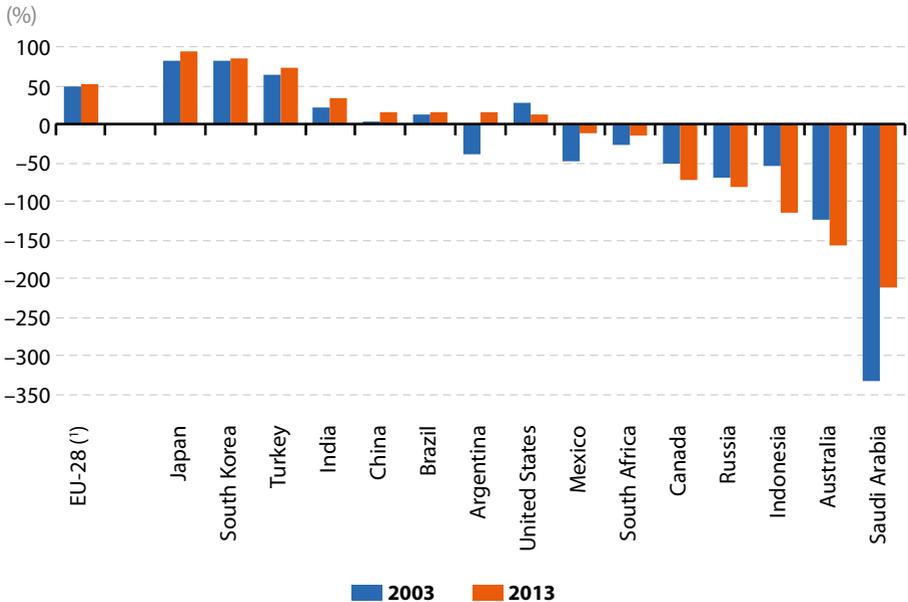
Worldwide, renewables and waste accounted for 13.8% of gross inland energy consumption. As for primary production, Brazil, Indonesia and India recorded above the worldwide average shares for renewables and waste in gross inland consumption, as did Canada reflecting its large net exports of fossil fuels. 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.

Energy dependency

In Japan, South Korea, Turkey and the EU-28 more than half of gross inland consumption was met by imports

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 2013, indicating that more than half of their gross inland energy consumption was met by net imports. By contrast, Indonesia's and Australia's net exports exceeded its gross inland energy consumption, resulting in an energy

Figure 13.4: Energy dependency, 2003 and 2013



Note: energy dependency is calculated as the ratio between net imports and the sum of gross inland energy consumption and bunkers (expressed as a percentage). Countries with negative values are not energy dependent, they produce more energy than they consume.

(!) Only include marine bunkers.

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

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 2003 and 2013 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 Canada, Russia, Indonesia and Australia as their net exports grew more rapidly than their gross consumption, while the negative ratios of Saudi Arabia, Mexico and South Africa 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 2003 and 2013 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.

Energy intensity

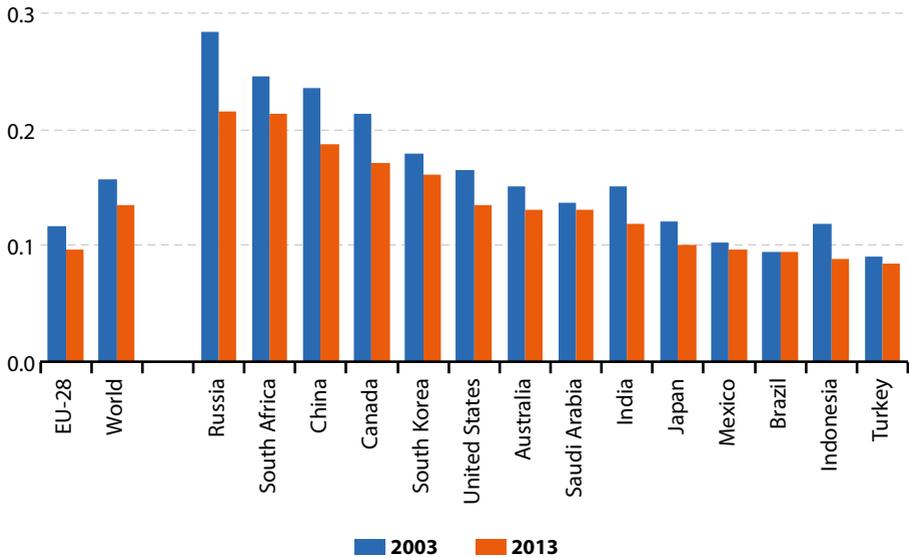
Energy intensity is an indicator of an economy's energy efficiency and relates the quantity of energy consumed to the level of economic

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 or remained stable between 2003 and 2013 in all G20 members

Energy intensity fell between 2003 and 2013 for all G20 members for whom data are available (see Figure 13.5) except for Brazil where the energy intensity ratio remained stable. During this period, substantial energy efficiencies were introduced in the economies of Indonesia, Russia, India, China and Canada 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, Turkey, Indonesia, Brazil, EU-28, Japan and Mexico had the lowest energy intensities.

Figure 13.5: Energy intensity, 2003 and 2013
(toe per 1 000 international USD)



Note: energy intensity is the ratio between the gross inland consumption of energy and the gross domestic product (GDP). The GDP figures are at 2011 constant prices expressed in United States dollars converted using international purchasing power parities. Data not available for Argentina
Source: Eurostat (online data code: [nrg_100a](#)), the International Energy Agency (Balances) and the World Bank, International Comparison Program database

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
EA-19	Euro area of 19 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
ECB	European Central Bank
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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