The EU in the world | 2018 edition

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Foreword

The first Eurostat publication to carry the title *The EU in the world* was a special edition, produced in 2010 for World Statistics Day. *The EU in the world 2018* is the fifth edition of this publication in its current format. The content and structure have been revised each year to include several new indicators.

The EU in the world 2018 provides a selection of important and interesting statistics on the European Union — considered as a single entity — in comparison with the 15 non-EU members of the Group of Twenty, a leading forum of the world's major economies, more commonly referred to as the 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, economy and environment as compared with other major world economies.

I hope that you will find this publication interesting and useful both for your work and your daily life.

Mariana Kotzeva
Director-General, Eurostat

Abstract

This publication provides a statistical portrait of the European Union in relation to the other major economies of the world, in other words, all members of the G20 group of countries. It complements information found in two of Eurostat's main publications, *Key figures on Europe* and the *Regional yearbook*, as well as the hundreds of articles available from Eurostat's *Statistics Explained* web portal. It may be viewed as an introduction to European and international statistics and provides a starting point for those who wish to explore the wide range of data that are freely available from a variety of international organisations and on Eurostat's website at:
http://ec.europa.eu/eurostat

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Data extraction period

The data presented within this publication were extracted during March and April 2018.

An online data code available under most tables/figures can be used to access directly 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's website: http://ec.europa.eu/eurostat/

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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 EU 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 enlargement 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 are enshrined in law.

Cooperation on statistics with international and worldwide organisations

In a globalised world, statistical organisations are working to define and implement common concepts, classifications and methods for making worldwide 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 worldwide statistical system that strives to use a common language, international methods and standards to produce comparable data at regional, national and international levels.

Examples of the results of this work include :

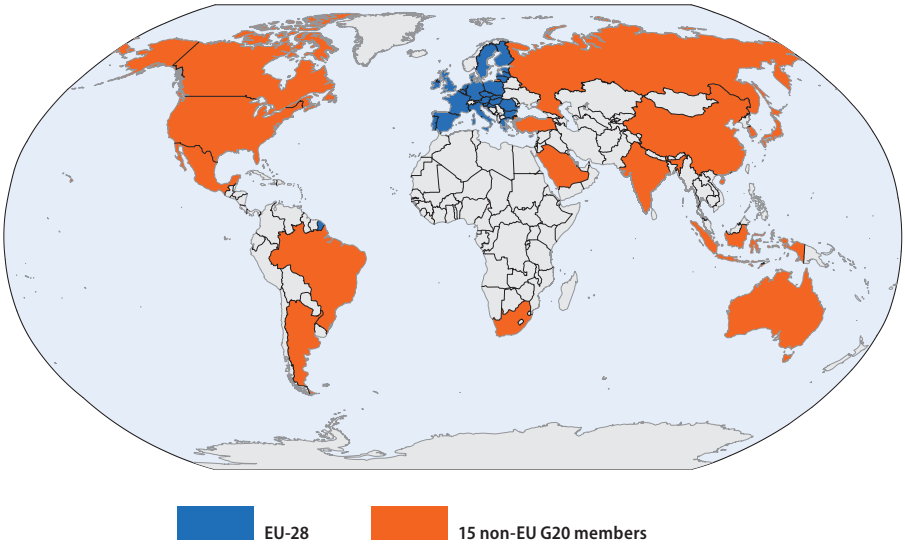
- classifications — such as the International standard classification of education for various levels of education and the International standard industrial classification for economic activities;
- manuals — for example, the system of national accounts, the Canberra handbook on household income statistics 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 world's 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 2018, the G20 held 12 Leaders' Summits to seek agreements on worldwide economic matters.

The G20 brings together the world's major advanced and emerging economies, comprising 19 country members and the EU. The country members include four EU Member States (Germany, France, Italy and the United Kingdom), and 15 non-EU members from the rest of the world: Argentina, Australia, Brazil, Canada, China, 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 (coloured orange) are shown in Map 1. The G20 members covered 60 % of the world's land area and generated 86 % of the world's gross domestic product (GDP) in 2016, and were home to 64 % of the world's population in 2015.

Map 1: EU-28 and G20 members



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 three main parts — people, economy and environment — which together contain 13 different chapters.

The publication aims to present information for the EU-28 (the EU of 28 Member States), occasionally the euro area (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 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.

The cover image for this publication is a picture from Argentina: the next G20 Leaders' summit will be held there in November and December 2018 , while the other images are from various continents where G20 members are located.

SPATIAL DATA COVERAGE

The EU-28 and euro area (EA-19) aggregates that are provided include information for all of the Member States or estimates for missing information; any incomplete totals or estimates that have been compiled 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 — 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. The harmonised consumer price index (see Figure 6.12) is an exception and reflects changes in the composition of the EU. In a similar vein, the data for the EA-19 are consistently presented for the 19 current members of the euro area.

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

If data for a reference period are not available for a particular country, then efforts have been made to fill tables and figures with data for previous reference years (these exceptions are footnoted), normally going back up to three years, but sometimes longer.

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

DATA SOURCES

The indicators presented are often compiled according to international — sometimes worldwide — 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 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 have been extracted from international sources, for example, when values are converted using purchasing power parities (based on constant price dollar series), or for comparability reasons. Also in exceptional cases, in order to improve comparability, data have been presented for the EU for the same reference year as

used for the non-EU G20 members despite fresher data being available for the EU-28. Some of the data presented for the euro area are sourced from the European Central Bank.

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 compiled by a range of official international organisations presented in an annex. In a few cases the data available from these international sources have been supplemented by data for individual members from national statistics authorities or other national official sources. 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 dataset for the G20 members.

The data sources that have been used are presented in an annex.

Data extraction and processing

The statistical data presented in this publication were extracted during March and April 2018 and the accompanying text was drafted in April 2018.

Many of the international sources from which data were extracted present monetary data in national currencies and/or United States dollars (USD), whereas Eurostat data are normally presented in national currencies and/or euro (EUR). Monetary data for the G20 members from the rest of the world have been converted into euro using current exchange rates. Data that are expressed in USD having been converted from national currencies using purchasing power parities (PPPs) have been left in dollar based purchasing power standards (referred to in this publication as international USD). The use of PPPs rather than market exchange rates for conversion reflects differences in purchasing power between countries, in other words differences in price levels. 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 for the size of a country, for example, in relation to the total population. Where necessary, these size measures have been extracted from the United Nations' databases.

Data presentation

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

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

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

Online glossary

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

Access to Eurostat data

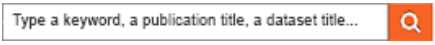
The simplest way to access Eurostat's broad range of statistical information is through the Eurostat website (http://ec.europa.eu/eurostat). Eurostat provides users with free access to its databases and all of its publications in PDF format via the internet. The website is updated daily and gives access 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, the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey).

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

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

EUROSTAT ONLINE DATA CODE(S) — EASY ACCESS TO THE FRESHEST DATA

Eurostat online data codes, such as tps00001 and nama_10_gdp ([2]), allow users easy access to the most recent data on Eurobase. 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 details page ([3]).

Note that the data on Eurostat's website is frequently updated and that the description above presents the situation as of April 2018.

([1]) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
([2]) There are two types of online data codes: Tables accessed using the TGM interface, for example tps00001, tepsr_sp320 or sdg_03_20; Databases accessed using the Data Explorer interface, for example nama_10_gdp and sts_inpr_a.(
([3]) The dataset details page can also be accessed by using a hyper-link, for example, http://ec.europa.eu/eurostat/en/web/products-datasets/-/<data_code>, where <data_code> is to be replaced by the online data code in question.

Eurostat publications and Statistics Explained

Eurostat produces a variety of publications.

Statistics Explained is designed to be a user-friendly wiki-based online publishing system where a large selection of Eurostat's online publications, analysis and background methodological information is made available.

Eurostat's publications are organised in several collections: statistical books 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.

All publications are available in electronic formats free-of-charge from the Eurostat website. Some Eurostat publications, including this publication, 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:

- Globalisation patterns in EU trade and investment;
- 40 years of EU-ASEAN cooperation — 2017 edition;
- Key figures on enlargement countries — 2017 edition;
- The European Union and the African Union — A statistical portrait — 2018 edition;
- Euro-Mediterranean statistics — 2015 edition.

A People

1. Population

Population size and population density

Between 1965 and 2015 the share of the world's population living in G20 members fell from 73.0 % to 63.9 %

In 2015, the world's population was 7.4 billion inhabitants. The most populous countries in the world were China and India, together accounting for 37 % of the world's population and 57 % of the population in the G20 members: China's population was 1.4 billion and India's was 1.3 billion. There were 509.4 million inhabitants in the EU-28 in 2015, some 6.9 % of the world total. The three next largest G20 members in 2015 were the United States with 320.0 million inhabitants, Indonesia with 258.2 million inhabitants and Brazil with 206.0 million inhabitants.

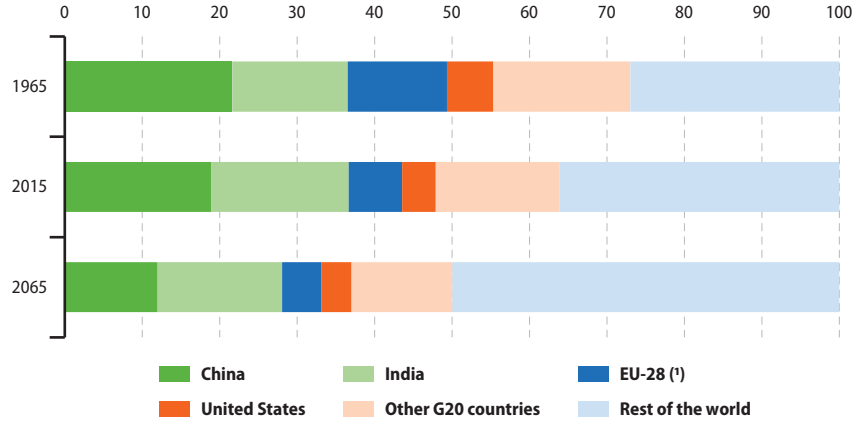
Although all members of the G20 recorded higher population levels in 2015 than they did 50 years earlier, the share of the world's population living in G20 members fell from 73.0 % in 1965 to 63.9 % by 2015. Among the G20 members, the EU-28's share fell the most between 1965 and 2015, as can be clearly see in Figure 1.1, down 5.9 percentage points. Other G20 members that saw their share of the world total fall by 1.0 points or more were China (−2.7 points), Russia (−1.8 points), the United States (−1.6 points) and Japan (−1.2 points). By contrast, the largest increase was observed in India, as its share of the world's population increased by 2.8 points.

The latest United Nations population projections suggest that the pace at which the world's population is expanding will slow in the coming decades; nevertheless, the total number of inhabitants is projected to reach more than 10 billion by 2065, representing an overall increase of 41.0 % compared with 2015, equivalent to average growth of 0.7 % each year.

The G20's share of the world's population is projected to fall further, from 63.9 % in 2015 to 50.0 % by 2065. The EU-28's share of the world's population is projected to fall much less in the 50 years from 2015 than it did in the previous 50 years, declining by 1.9 points from 6.9 % in 2015 to 5.0 % by 2065. By contrast, the pace at which China's share will decline is projected to increase, as its share is projected to fall by 6.9 points, from 18.9 % in 2015 to 12.0 % by 2065. Having increased strongly between 1965 and 2015, India's share is also projected to fall between 2015 and 2065, down 1.6 points from 17.7 % in 2015 to 16.1 % by 2065. None of the other G20 members are projected to see their share of the world's population increase or decrease by 1.0 points or more.

Table 1.1 provides population data for all of the G20 members for 1965 and 2015 as well as projections for 2065. As already noted, all members of the G20 recorded higher population levels in 2015 than they did 50 years earlier. Russia recorded the smallest overall population increase during the period 1965-2015, 13.8 %, equivalent to an annual average growth of 0.3 %. The next slowest growth was in the EU-28, the 19.5 % overall growth equivalent to an annual average of 0.4 %. These developments can be contrasted with the situation in Saudi Arabia, as during the period under consideration it had the fastest population growth among G20 members: its population was six and a half times as high in 2015 as in 1965, equivalent to annual average growth of 3.8 %.

Figure 1.1: Population, 1965, 2015 and 2065
(% of world total)



Note: annual averages (mid-year estimates).

(1) Provisional. 2015: break in series.

Source: Eurostat (online data codes: demo_gind and proj_15npms) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

The slowdown in population growth projected between 2015 and 2065 will be particularly apparent for developed and emerging economies. The number of inhabitants within the 15 non-EU members of the G20 is projected to increase overall by 11.4 % between 2015 and 2065 (an annual average of 0.2 %) while the EU-28's population is projected (by Eurostat) to increase overall by 2.5 % over the same period (an annual average of 0.05 %). The populations of many developing countries, in particular those in Africa, are likely to continue growing at a rapid pace. Among the G20 members, the fastest population growth between 2015 and 2065 is projected to be in Australia and Saudi Arabia (the only G20 countries with projected population growth above the world average), while the populations of China, South Korea, Russia and Japan are projected to be smaller in 2065 than they were in 2015.

As well as having the largest overall populations, Asia also had the most densely populated G20 members (see Table 1.1), namely South Korea, India and Japan, each with more than 300 inhabitants per km^2 (of land area). These were followed by China and Indonesia and then the EU-28 and Turkey with, on average, more than 100 inhabitants per km^2.

Despite the projection of rapid population growth, Australia is expected to remain the least densely populated G20 member through until 2065, although its population density will approach that of Canada; in 2015, both had a population density below 4.0 inhabitants per km^2.

Table 1.1: Population and population density, 1965, 2015 and 2065

	Population — mid-year estimates (millions)			Average annual growth rate (%)		Population density (inhabitants per km^2)
	1965	2015	2065	1965-2015	2015-2065	2015
EU-28	426.3	*509.4*	*522.2*	0.4	*0.0*	*117.1*
World	3 339.6	7 383.0	*10 409.8*	1.6	*0.7*	56.7
Argentina	22.3	43.4	*57.8*	1.3	*0.6*	15.9
Australia	11.4	23.8	*36.4*	1.5	*0.9*	*3.1*
Brazil	83.5	206.0	*226.0*	1.8	*0.2*	24.6
Canada	19.7	35.9	*47.4*	1.2	*0.6*	3.9
China	722.6	1 397.0	*1 248.1*	1.3	*−0.2*	146.1
India	497.7	1 309.1	*1 675.7*	2.0	*0.5*	440.3
Indonesia	100.3	258.2	*324.6*	1.9	*0.5*	142.5
Japan	98.4	128.0	*99.5*	0.5	*−0.5*	348.8
Mexico	44.6	125.9	*167.2*	2.1	*0.6*	64.8
Russia	126.5	143.9	*128.0*	0.3	*−0.2*	8.8
Saudi Arabia	4.8	31.6	*46.3*	3.8	*0.8*	14.7
South Africa	19.9	55.3	*76.3*	2.1	*0.6*	45.6
South Korea	28.9	50.6	*46.3*	1.1	*−0.2*	523.3
Turkey	31.0	78.3	*95.8*	1.9	*0.4*	101.7
United States	199.8	319.9	*412.1*	0.9	*0.5*	35.1

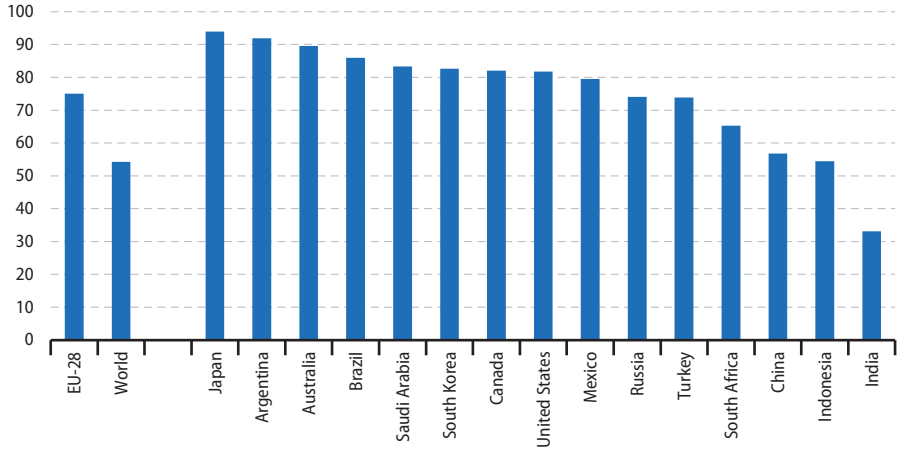
Source: Eurostat (online data codes: demo_gind, proj_15npms and tps00003), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

Urban population

The growth of urban areas reflects the transition from rural to urban areas resulting from a move away from agriculture-based economies to industrial and post-industrial economies. Urban areas are often characterised by their high concentrations of population, economic activity, employment and wealth. The daily flow of commuters into many cities suggests that numerous opportunities exist in these hubs of innovation, distribution and consumption, many of which act as focal points within their regional and national economies and in some cases even worldwide. Although cities are motors for economic growth, they are also confronted by a wide range of problems, like crime, traffic congestion, pollution and various social inequalities. Furthermore, within many cities it is possible to find people who enjoy a comfortable lifestyle living in close proximity to others who may face considerable challenges, for example, in relation to affordable/adequate housing or poverty — herein lies the 'urban paradox'.

Three quarters (75.0 %) of the EU-28 population lived in an urban area in 2016, considerably above the world average of 54.3 % (see Figure 1.2). Nevertheless, the share of inhabitants living in urban areas was higher than in the EU-28 in nine of the non-EU G20 members, exceeding 90 % in Japan (93.9 %) and Argentina (91.9 %) and approaching 90 % in Australia. In Russia and Turkey the urban share was just below three-quarters , while in South Africa it was close to two thirds and in China and Indonesia it was just over a half. Among the G20 members, India had by far the lowest share, with around one third (33.1 %) of its population living in urban areas.

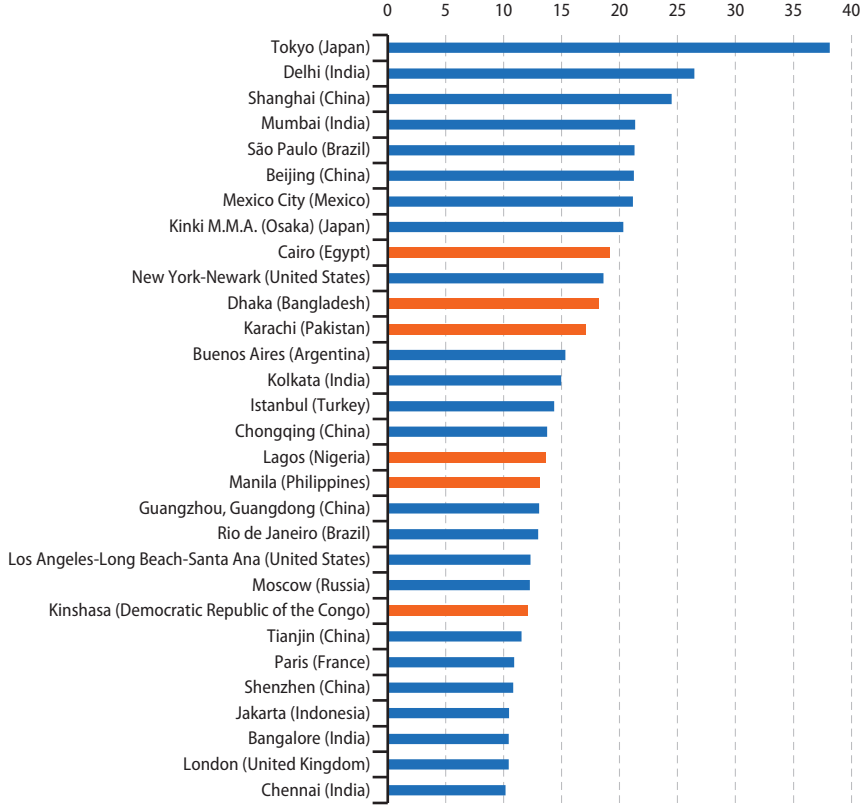
Figure 1.2: Urban population, 2016
(% of total population)



Source: the World Bank (World Development Indicators)

In 2016, 9 of the 10 largest urban agglomerations in the world were located in G20 members, with Cairo (Egypt) the only exception — see Figure 1.3. Asian urban agglomerations made up a majority of the top 10, with São Paulo (Brazil), Mexico City (Mexico), Cairo and New York-Newark (United States) completing the list. Extending the study to the top 30 urban agglomerations, 24 were in G20 members, including Paris and London from the EU as well as Istanbul and Moscow from elsewhere in Europe. The largest cities in G20 members that did not figure among the top 30 worldwide included: Seoul (South Korea, 9.8 million), Johannesburg (South Africa, 9.4 million), Riyadh (Saudi Arabia, 6.4 million), Toronto (Canada, 6.0 million) and Sydney (Australia, 4.5 million).

Figure 1.3: Top 30 global urban agglomerations, 2016
(millions)



Note: data are based on national definitions. Cities shown in orange are in countries that are not G20 members.

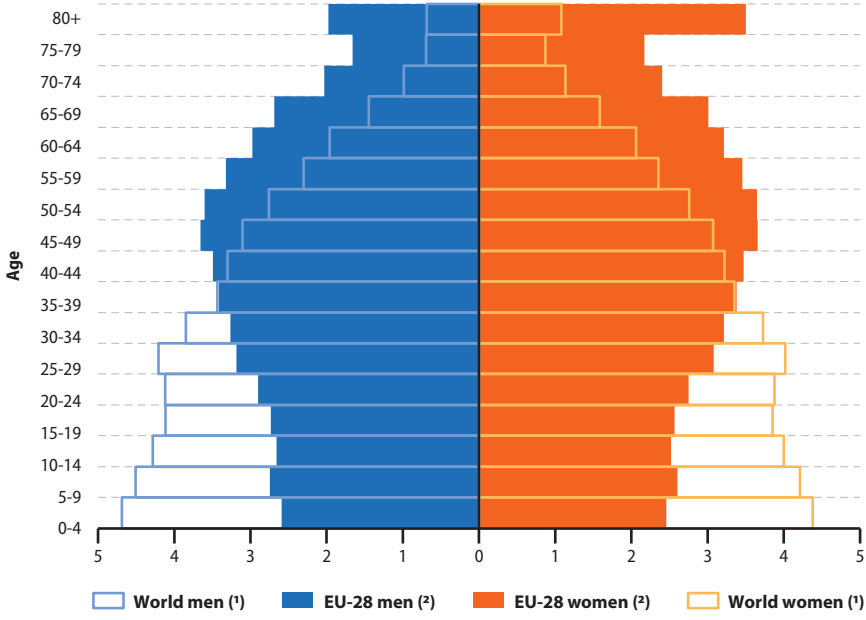
Source: The World's Cities in 2016 — Data Booklet — United Nations, Department of Economic and Social Affairs, Population Division

Population age structure

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 1.4 clearly 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, whereas for the EU-28 the share of the age groups below those aged 45-49 years generally gets progressively smaller approaching the youngest age groups. The structure in the EU-28 reflects falling fertility rates over several decades and a modest increase about 5-10 years ago, combined with the impact of the baby-boomer age groups 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 in the age group 5-9 and decreases again in the age group 0-4. Another notable difference is the greater gender imbalance within the EU-28 among older age groups than is typical for the world as a whole. Some of the factors influencing age structure are presented in the rest of this chapter and the chapter on health, for example, fertility, migration and life expectancy.

Figure 1.4: Age pyramids, 1 January 2017
(% of total population)



(1) Annual average, 2016.
(2) Provisional.

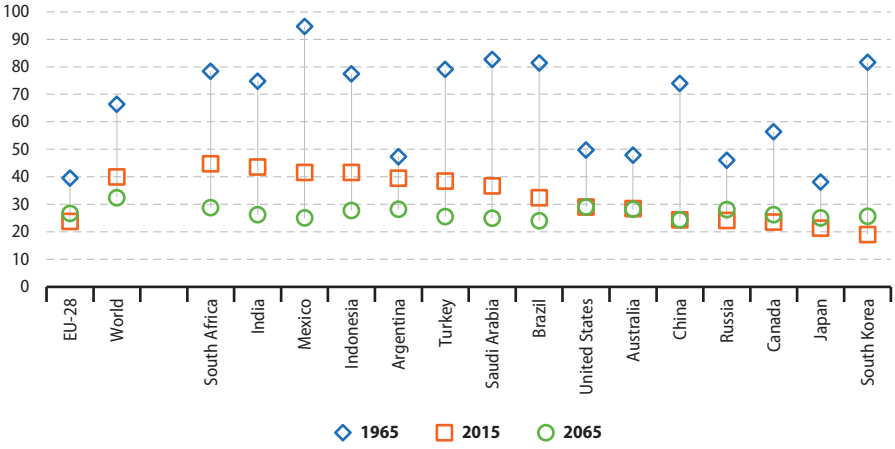
Source: Eurostat (online data code: demo_pjangroup) and the World Bank (Health Nutrition and Population Statistics)

Japan had by far the highest old-age dependency ratio in 2015

The young and old age dependency ratios shown in Figures 1.5 and 1.6 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 2015, the young-age dependency ratio ranged from 19.0 % in South Korea to more than double this ratio in South Africa (44.8 %), with the latest value (23.8 %) for the EU-28 lower than in most G20 members. By far the highest old-age dependency ratio in 2015 was the 42.7 % 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 28.8 % in the EU-28. Saudi Arabia had by far the lowest old-age dependency ratio (4.3 %) in 2015 among G20 members.

In percentage point terms, the fall in the young-age dependency ratio for the EU-28 between 1965 and 2015 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 young and old-age dependency ratios were lower in 2015 than in 1965, reflecting a large increase in the size of its working-age population.

Figure 1.5: Young-age dependency ratio, 1965, 2015 and 2065
(population aged 0-14 as a percentage of the population aged 15-64)

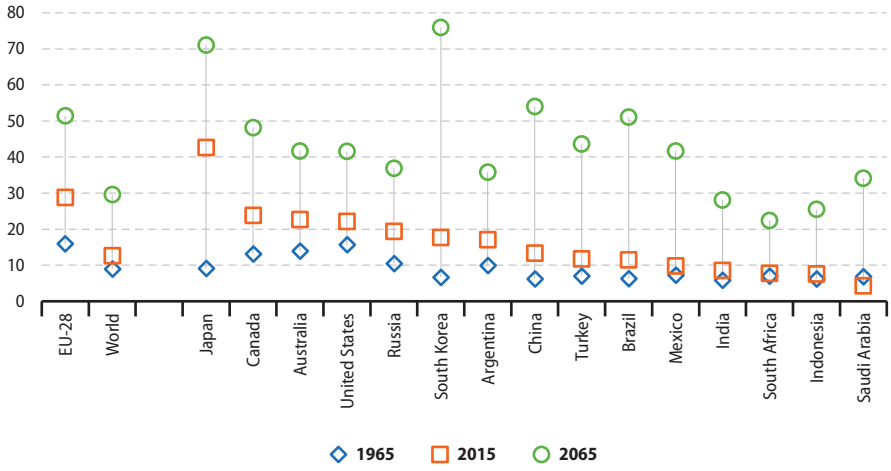


Source: Eurostat (online data codes: demo_pjanind and proj_15npms) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

With relatively low fertility rates the young-age dependency ratio is projected to be lower in 2065 than it was in 2015 in several G20 members, dropping by more than 10 points in India, Mexico, South Africa, Indonesia, Turkey, Saudi Arabia and Argentina. Projected increases for this ratio are relatively small among G20 members, peaking at 6.6 points in South Korea. In the EU-28, the young-age dependency ratio is projected to increase from 23.8 % in 2015 to 26.7 % by 2065, but will remain well below the world average of 32.4 %, as it will in all G20 members.

Old-age dependency ratios are projected to continue to rise in all G20 members, suggesting that there will be an increasing need to provide for social expenditure related to population ageing (for example, for pensions, healthcare and long-term care). The EU-28's old-age dependency ratio is projected to increase from 28.8 % in 2015 to 51.4 % by 2065, when it is projected to be 21.8 points above the world average, but considerably lower than in South Korea (76.0 %) or Japan (71.1 %).

Figure 1.6: Old-age dependency ratio, 1965, 2015 and 2065
(population aged 65 or more as a percentage of the population aged 15-64)



Source: Eurostat (online data codes: demo_pjanind and proj_15npms) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

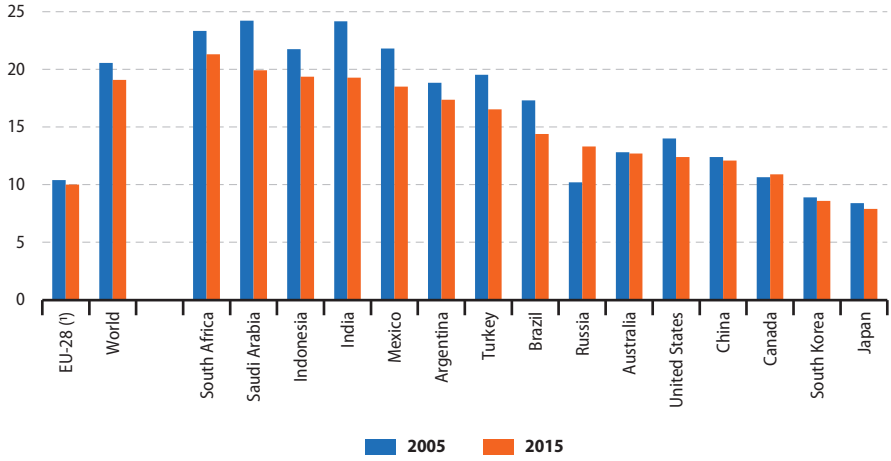
Population change

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

The crude birth rate in the EU-28 in 2015 was among the lowest across the G20 members

In 2015, the crude birth rate (the ratio of the number of live births to the population) for the EU-28 was slightly lower than in 2005; this rate remained among the lowest recorded across the G20 members, with only South Korea and Japan recording lower birth rates. By contrast, crude birth rates in South Africa and Saudi Arabia were around double the average rate for the EU-28.

Figure 1.7: Crude birth rate, 2005 and 2015
(per 1 000 population)



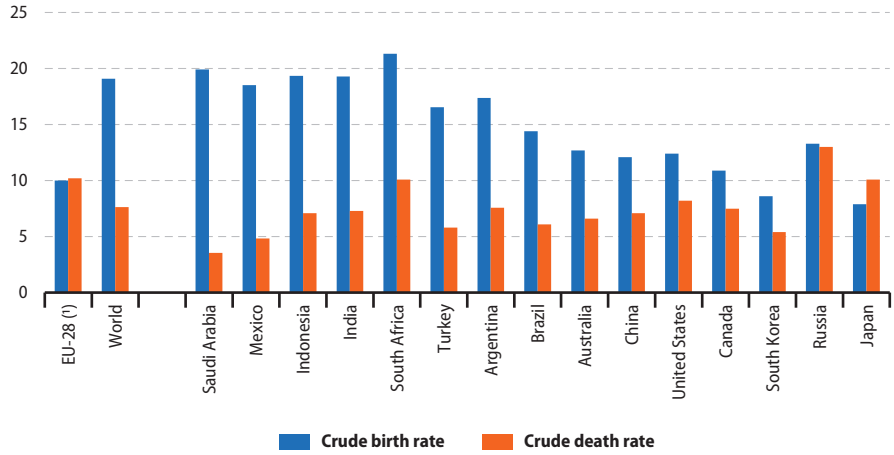
(') Break in series. 2015: provisional.

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

The highest crude death rates (the ratio of the number of deaths to the population) in 2015 were recorded in Russia, the EU-28, South Africa and Japan; in the case of South Africa this reflected in part an HIV/AIDS epidemic which has resulted in a large number of deaths among relatively young persons, such that that the difference between crude birth and death rates in South Africa was slightly below the world average despite the above average birth rate.

When the death rate exceeds the birth rate there is negative natural population change; this situation was experienced in Japan in 2015. The reverse situation, natural population growth — due to a higher birth rate — was observed for all of the remaining G20 members (see Figure 1.8) with the largest differences recorded in Saudi Arabia, Mexico, Indonesia, India, South Africa and Turkey.

Figure 1.8: Natural population change, 2015
(per 1 000 population)



Note: ranked on the difference between birth and death rates.

(') Provisional.

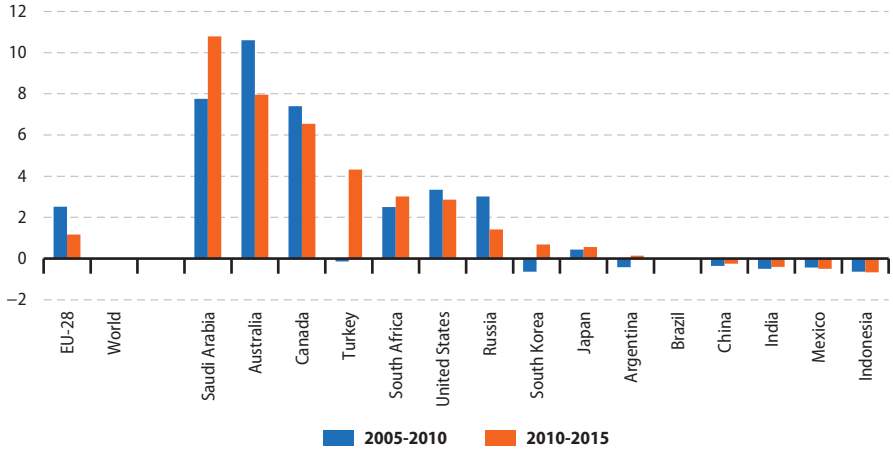
Source: Eurostat (online data code: demo_gind) and the World Bank (World Development Indicators)

The level of net migration is the difference between the number of immigrants and the number of emigrants during a period of time; a positive value represents more people entering the country than leaving it.

The net migration rate compares the level of net migration with the overall size of the population. Between 2010 and 2015, four G20 members — Indonesia, Mexico, India and China — recorded negative net migration rates (see Figure 1.9), while Brazil recorded a balanced situation, as immigration and emigration were broadly equal.

On the other hand, all other G20 members including the EU-28 experienced positive net migration, with particularly high net migration rates in Turkey, Canada, Australia and Saudi Arabia. This situation was somewhat different to that observed five years earlier, between 2005 and 2010, as during that period seven G20 members had experienced negative net migration, including Turkey which in the most recent five year period had one of the highest rates of positive net migration (in part, fuelled by the crisis in Syria).

Figure 1.9: Net migration rate, 2005-2010 and 2010-2015
(per 1 000 population)



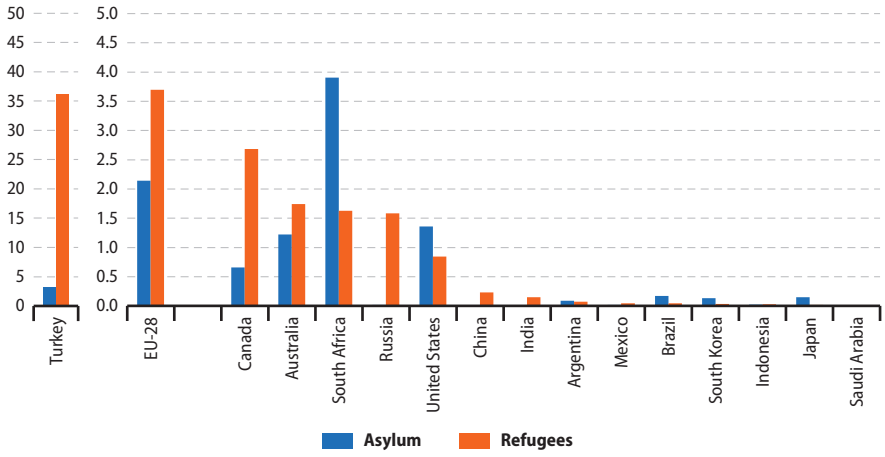
Source: the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

Asylum

In 2016, the United Nations High Commissioner for Refugees (UNHCR) reported that there were at least 19.9 million asylum seekers 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). An asylum seeker is someone who is seeking international protection but whose claim for refugee status has not yet been determined. In 2016, according to the UNHCR there were at least 1.1 million asylum seekers in the EU-28: the highest numbers were from Afghanistan (224 thousand), Syria (145 thousand) and Iraq (111 thousand), followed by Nigeria, Pakistan and Iran (each accounting for around 50 thousand asylum seekers). The biggest numbers of asylum seekers in the EU-28 from other G20 members came from Russia (28 thousand), Turkey (12 thousand), India (6 thousand) and China (6 thousand).

Refugees include individuals recognised under the 1951 Convention relating to the Status of Refugees as well as under a number of other protocols and conventions, including people enjoying temporary protection or living in a refugee-like situation. Figure 1.10 shows that, among the G20 members in 2016, Turkey had by far the highest number of refugees (relative to its population size); the ratio in Turkey was around 10 times as high as in the EU-28 and reflected its location close to the countries of origin of many of the refugees. Aside from Turkey and the EU-28, there were relatively high numbers of refugees relative to the population size in Canada, Australia, South Africa (many of whom originated from Somalia, the Democratic Republic of Congo or Ethiopia), Russia (nearly all of whom were from Ukraine) and the United States.

Figure 1.10: Asylum seekers and refugees, 2016
(number per 1 000 inhabitants)



Note: excluding confidential data. Different scales used for the two parts of the figure.

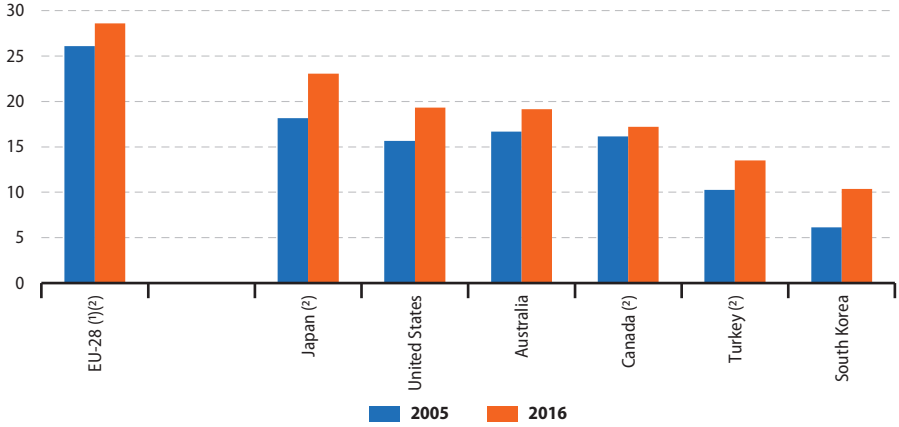
Source: Eurostat (online data code: demo_gind) and the United Nations High Commissioner for Refugees (Population Statistics); data for the number of asylum applicants with a different definition are published by Eurostat (online data code: migr_asyappctza)

2. Living conditions

Social protection expenditure and poverty

Social protection encompasses all actions by public or private bodies intended to relieve households and individuals from the burden of a defined set of risks or needs. Figure 2.1 shows the level of social protection expenditure relative to gross domestic product (GDP) for the G20 members in 2015. The EU-28 (2014 data) recorded the highest expenditure on social protection (using this measure), ahead of Japan (2013 data) which was the only other G20 member (among those for which data are available) with a ratio above 20 %. South Korea (2016 data) recorded social protection expenditure of 10.4 %, the lowest among the six non-EU G20 members for which data are available. In these six countries, social protection expenditure relative to GDP increased between the years shown in Figure 2.1, as it also did in the EU-28. The largest increases in percentage point terms were in Japan (4.9 points; 2005-2013) and South Korea (4.2 points; 2005-2016).

Figure 2.1: Public expenditure on social protection, 2005 and 2016
(% of GDP)



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

(1) Provisional. 2005: EU-27.
(2) Japan: 2013 instead of 2016. EU-28 and Turkey: 2014 instead of 2016. Canada: 2015 instead of 2016.

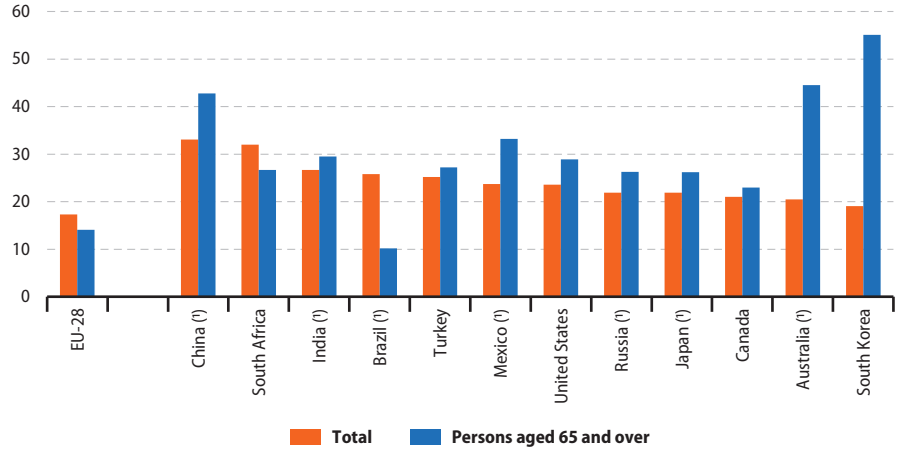
Source: Eurostat (online data code: spr_exp_sum) and the OECD (Social Expenditure Database)

The overall poverty rate was lower in the EU-28 in 2015 than in any of the other G20 members

Figure 2.2 shows the poverty rate, calculated as the proportion of the population with an income (after taxes and transfers) below the poverty threshold, where the threshold is set independently in each country as 60 % of the median income level (again, after taxes and transfers). In 2015, the EU-28 had the lowest poverty rate among the G20 members, at 17.3 %. The only other G20 member with a poverty rate below one fifth was South Korea, while the rate was above one quarter in Turkey, Brazil (2013 data) and India (2011 data), and closer to one third in South Africa and China (2011 data).

Among persons aged 65 and over the poverty rate in the EU-28 was 14.1 % in 2015, therefore lower than the overall rate for the total population. This situation was quite unusual, in that the only other G20 members to record a lower poverty rate for older people (than for the total population) were Brazil and South Africa. A particularly large difference between the overall poverty rate and that for older people was observed in South Korea, which had the lowest overall rate (among the non-EU G20 members) but the highest rate for older people. The lowest poverty rate for older people was recorded in Brazil (10.2 %; 2013 data), which was the only non-EU G20 member with a rate lower than that observed in the EU-28.

Figure 2.2: Poverty rate, 2015
(%)



Note: this indicator measures the proportion of the population living in poverty after taxes and transfers, defined as people living below 60 % of the median income level. Argentina, Indonesia and Saudi Arabia: not available.

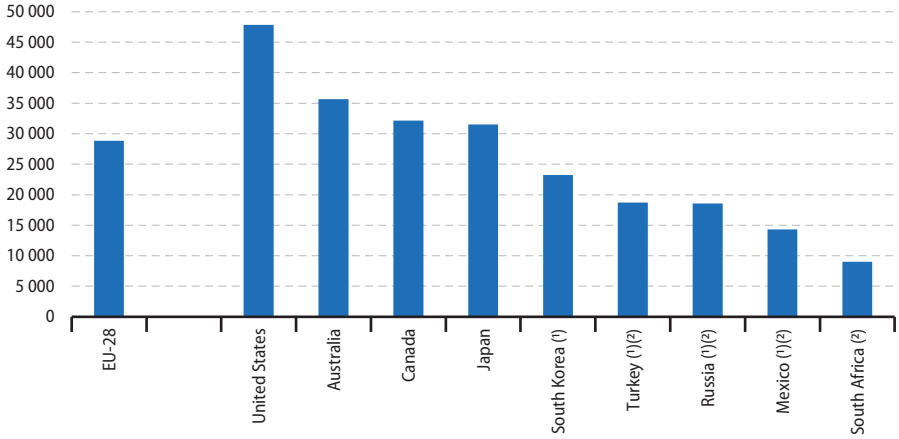
(1) China, India and Russia: 2011. Japan: 2012. Brazil: 2013. Australia and Mexico: 2014.

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

Household income and expenditure

Figure 2.3 presents information on income levels compiled by the OECD. Household adjusted disposable income reflects a household's gross income including social transfers in-kind received (such as education and healthcare) minus taxes on income and wealth and social security contributions. Furthermore, these data have been adjusted to reflect differences in purchasing power between countries, in other words differences in price levels. This adjustment is done by converting data in national currencies to a common currency — United States dollars in this case — using purchasing power parities (PPPs) rather than market exchange rates. In 2016, the United States had the highest annual household adjusted income per inhabitant among the G20 members, followed at some distance by Australia, Canada, Japan and the EU-28.

Figure 2.3: Gross household adjusted disposable income, 2016
(international USD per inhabitant)



Note: Argentina, Brazil, China, India, Indonesia and Saudi Arabia, not available.

(1) Estimate.
(2) South Africa: 2014. Mexico, Russia and Turkey: 2015.

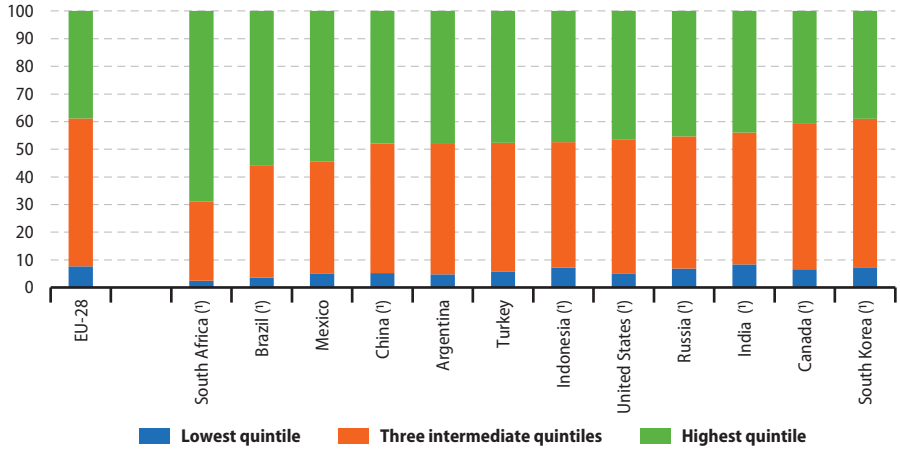
Source: the OECD (National Accounts at a Glance)

The widest inequalities in income distribution in 2014 were recorded in South Africa, while the EU-28 and South Korea had the most equitable distributions

Figure 2.4 presents the distribution of income based on income shares, showing the proportion of all income received by the 20 % of the population with the highest incomes (the top or highest quintile), the proportion received by the 20 % of the population with the lowest incomes (the bottom or lowest quintile), and the proportion received by the three intermediate quintiles. Whereas the proportion of income received by the highest quintile was lowest in 2014 in the EU-28 (38.8 %) and South Korea (39.0 %; 2012 data), in all other G20 members for which data are available this proportion exceeded two fifths of the total. Mexico and Brazil (2015 data) reported that the top quintile received more than half of all income while South Africa (2011 data) reported by far the largest proportion among the G20 members as the highest quintile accounted for more than two thirds (68.9 %) of all income.

A commonly used measure for studying income distribution is the income quintile share ratio, which is calculated as the ratio of the proportion of income received by the highest quintile compared with the proportion received by the lowest quintile. Based on the data presented in Figure 2.4, this ratio ranged in 2014 from 5.0 in the EU-28 and 5.3 in South Korea to 10.0 or more in Argentina, Mexico and Brazil (2015 data), and peaked at 27.6 in South Africa (2011 data).

Figure 2.4: Income quintile shares, 2014
(%)



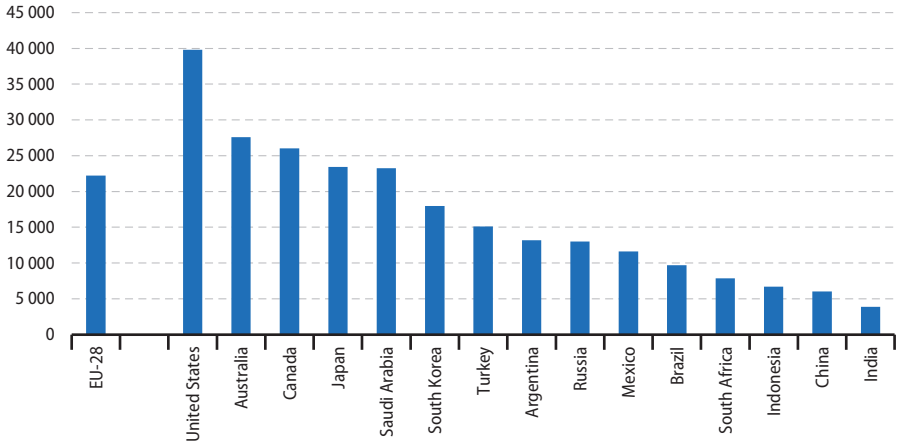
Note: Australia, Japan and Saudi Arabia, not available. Ranked on the share of the highest quintile.

() India and South Africa: 2011. China and South Korea: 2012. Canada, Indonesia and the United States: 2013. Brazil and Russia: 2015.

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

Household consumption expenditure is the expenditure made by households to acquire goods and services and includes payments of indirect taxes (VAT and excise duties). Figure 2.5 shows that household consumption expenditure per inhabitant in 2016 was highest among the G20 members in the United States, Australia, Canada, Japan and Saudi Arabia, followed by the EU-28. It should be noted that these data have been adjusted to reflect differences in purchasing power as countries with high levels of household consumption expenditure per inhabitant often tend to have relatively higher price levels too.

Figure 2.5: Final consumption expenditure of households, 2016
(international USD per inhabitant)



Source: Eurostat (online data codes: nama_10_gdp and demo_gind), the United Nations Statistics Division (National Accounts Main Aggregates Database), the OECD (purchasing power parities) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

The share of total expenditure on food and non-alcoholic beverages was particularly low in 2015 in the United States

Table 2.1 provides information on 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 potentially influence expenditure patterns. In most G20 members the highest proportion of expenditure was normally devoted to food and non-alcoholic beverages on one hand or housing (including also expenditure for water and fuels) on the other. A notable exception to this general pattern was the United States where household expenditure on health had the highest share. The share of expenditure on food and non-alcoholic beverages was particularly low in the United States, as it was to a lesser extent in Canada and Australia.

Table 2.1: Household consumption expenditure by category, 2015
(% of total household consumption expenditure)

	Food & non-alcoholic beverages	Alcoholic beverages, tobacco	Clothing & footwear	Housing, water, electricity, gas & other fuels	Furnishings, household equipment etc.	Health	Transport	Communications	Recreation & culture	Restaurants & hotels	Education	Miscellaneous goods & services
EU-28 (1)	12.2	3.9	4.9	24.5	5.5	3.9	12.9	2.5	8.5	8.6	1.2	11.5
Argentina (1)	33.2		8.7	10.2	7.3	5.6	18.6		8.3		2.9	5.2
Australia	9.8	3.4	3.2	24.0	4.2	6.5	10.0	2.2	10.0	6.7	4.7	15.4
Brazil (1)	17.4	2.7	6.4	22.9	9.6	7.0	9.7	5.5	0.9	6.5	2.6	8.8
Canada (1)	9.2	3.4	4.2	24.4	5.4	4.3	15.2	2.6	8.2	7.1	1.7	14.2
China (1)(2)	29.3		7.5	22.2	6.2	7.1	13.8		11.4			2.6
India (1)	30.6	2.5	7.4	16.0	3.1	4.1	13.7	2.2	0.9	2.2	3.9	13.4
Indonesia	38.2		3.7	13.4	:	6.8	23.4	:	:	9.6	:	4.9
Japan	15.2	2.2	3.9	25.5	4.1	3.7	10.0	3.6	8.0	7.9	2.0	13.9
Mexico	23.4	2.8	3.2	18.8	5.6	3.9	20.1	3.0	4.8	4.2	1.5	8.7
Russia (1)	29.5	8.1	8.9	9.5	5.0	4.0	13.2	4.4	5.4	3.5	1.3	7.2
Saudi Arabia (1)	18.4		5.6	21.2	7.3	1.7	9.1	6.3	2.8	5.3	2.5	19.7
South Africa (1)	21.4	4.8	5.2	14.8	6.6	7.2	15.5	2.8	4.6	2.7	3.4	10.9
South Korea	13.4	2.6	6.1	18.4	2.9	5.2	12.3	3.5	8.3	8.3	5.5	13.5
Turkey	21.7	3.0	7.5	15.6	8.1	2.1	16.0	3.3	5.7	7.8	1.5	7.7
United States	6.4	2.0	3.3	18.8	4.2	21.7	9.3	2.5	9.1	6.7	2.3	13.7

(1) Argentina: financial year 2012/13. Russia and Saudi Arabia: 2013. Brazil and India: 2014. EU-28, Canada, China and South Africa: 2016.
(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

Households

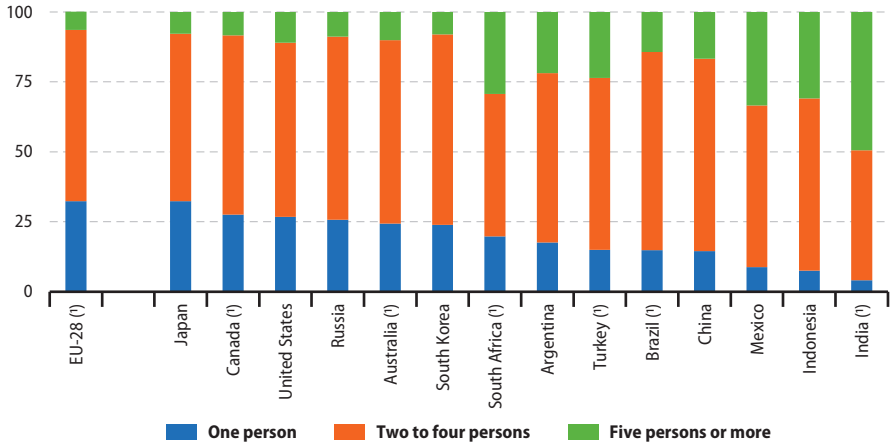
Nearly half of households in India in 2011 were composed of five or more persons, compared with just 6.5 % of households in the EU-28 in 2016

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, economic and cultural factors.

Figure 2.6 shows that in 2010 more than one quarter of all households in the EU-28 (2016 data), Japan, Canada (2011 data), the United States and Russia were one person households, whereas this was the case for less than one tenth of households in Mexico, Indonesia and India (2011 data). Households with five or more persons were relatively uncommon in the EU-28, Japan, South Korea, Canada, Russia and Australia (2011 data), all reporting that at most one tenth of households were this large; by contrast nearly half (49.5 %) of all Indian households were composed of at least five people.

In Brazil and China, one person households and large households were both relatively uncommon, with more than two thirds of all households composed of two to four people, as was also the case in South Korea despite its relatively high share of one person households.

Figure 2.6: Households by the number of household members, 2010
(% of total)



Note: Saudi Arabia, not available.

(1) Australia, Canada and India: 2011. South Africa: 2013. Brazil: 2014. EU-28 and Turkey: 2016.

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

3. Health

Expenditure on health

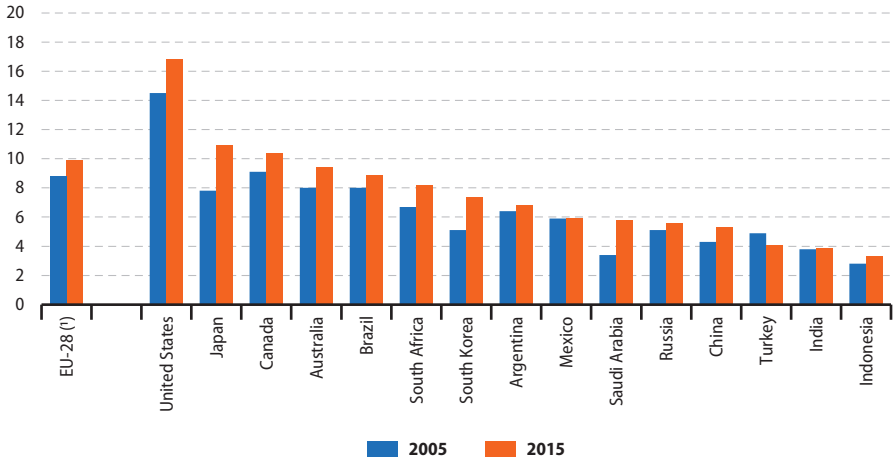
Lowest health expenditure per inhabitant in 2015 in India

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 gross domestic product (GDP), 16.8 % in 2015 (see Figure 3.1). Six other G20 members committed between 8 % and 11 % of their GDP to health in 2015: Japan, Canada, the EU-28 (excluding Malta), Australia, Brazil and South Africa. These were followed by a group of six members — South Korea, Argentina, Mexico, Saudi Arabia, Russia and China — where health expenditure was between 5 % and 7 % of GDP. The remaining G20 members — Turkey, India and Indonesia — spent 3-4 % of their GDP on health.

Between 2005 and 2015 the level of expenditure on health relative to GDP increased in all G20 members except for Turkey. The largest increases in percentage point terms were reported for Japan, Saudi Arabia, South Korea and the United States.

Figure 3.1: Health expenditure, 2005 and 2015
(% of GDP)

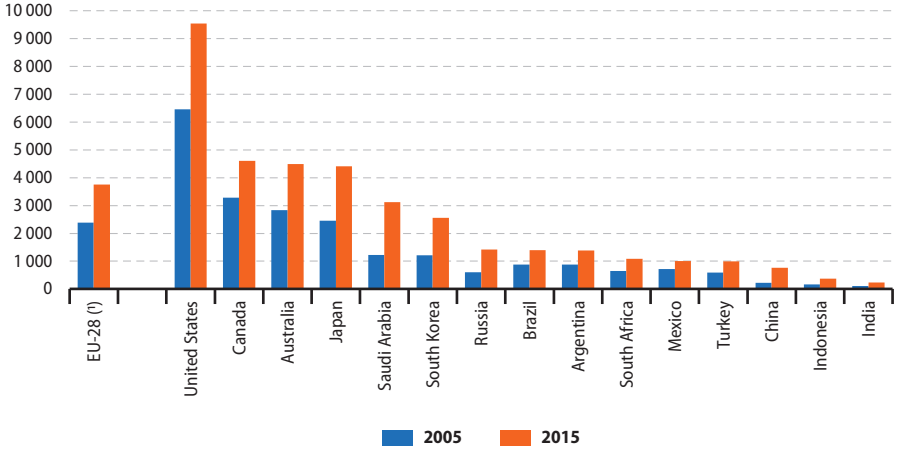


(1) 2005: estimate. 2015: EU-28 excluding Malta.

Source: Eurostat (online data codes: hlth_sha11_hf and nama_10_gdp) and the World Health Organisation (Global Health Observatory)

Figure 3.2 shows the absolute level of health expenditure per inhabitant; note that this is shown in United States dollars, having been converted using purchasing power parities rather than market exchange rates and so reflects differences in general (rather than specifically for healthcare) price levels among the G20 members. The information presented confirms the notably higher level of expenditure on health in the United States, as well as relatively high levels in Canada, Australia, Japan, the EU-28, Saudi Arabia and South Korea. By contrast, Indonesia and India recorded by far the lowest levels of health expenditure per inhabitant among the G20 members.

Figure 3.2: Health expenditure, 2005 and 2015
(international USD per inhabitant)



(1) Estimates.

Source: the World Health Organisation (Global Health Observatory); Eurostat data are also available (online data code: hlth_sha11_hf)

Healthcare resources

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 515 in the EU-28 in 2015. Comparing the most recent data for G20 members, this ratio for the EU-28 was the fourth highest, a long way below the ratios observed in Japan, South Korea and Russia; the lowest availability of hospital beds relative to the size of the population was in India, with 70 beds per 100 000 inhabitants (see Table 3.1).

One of the key indicators for measuring healthcare personnel is the total number of physicians, expressed per 100 000 inhabitants. The variation between the G20 members in the number of physicians was relatively low in comparison with the other personnel indicators shown in Table 3.1. The highest number of physicians relative to the overall population size among the G20 members was recorded in Russia, followed closely by Argentina and then China, the EU-28 and Australia. South Africa, India and Indonesia recorded less than 100 physicians per 100 000 inhabitants.

Among the three indicators concerning healthcare personnel, the number of dentists per 100 000 inhabitants showed the greatest variation among the G20 members when taking account of their relatively low overall number. For example, Indonesia recorded an average of 5 dentists per 100 000 inhabitants in 2015, while in Brazil there were more than 120 dentists per 100 000 inhabitants in 2010. The average for the EU-28 was 70 dentists per 100 000 inhabitants in 2015.

Table 3.1: Main indicators for health resources
(per 100 000 inhabitants)

	Number of hospital beds		Number of physicians		Number of nurses and midwives		Number of dentists	
	Latest year	Value	Latest year	Value	Latest year	Value	Latest year	Value
EU-28 (1)	2015	515	2015	*352*	2015	869	2015	*70*
Argentina	2014	500	2013	391	2013	421	:	:
Australia	2014	380	2015	350	2016	1 257	2015	58
Brazil	2014	220	2013	185	2013	744	2010	122
Canada (2)	2012	270	2015	254	2015	984	2016	64
China	2012	420	2015	363	2015	234	:	:
India	2011	70	2016	76	2016	209	2016	15
Indonesia	2015	120	2012	20	2015	130	2015	5
Japan	2012	1 340	2014	237	2014	1 124	2014	80
Mexico	2015	150	2015	223	2015	265	2015	13
Russia	2013	820	2015	398	2015	868	:	:
Saudi Arabia	2014	270	2014	257	2014	521	2014	40
South Africa	2010	231	2016	82	2016	523	2016	22
South Korea	2015	1 150	2016	233	2016	690	2016	48
Turkey	2013	270	2014	175	2015	262	2015	32
United States (3)	2013	290	2014	257	2015	1 130	2016	61

(1) Physicians: practising except Greece and Portugal (licensed to practice) and Slovakia (professionally active); 2013 data for the Czech Republic; 2014 data for Finland and Sweden. Nurses and midwives: practising except Spain (licensed to practice) and France, Portugal and Slovakia (professionally active); 2014 data for Belgium, Denmark, the Netherlands, Finland and Sweden. Dentists: practising except Ireland, Greece, Spain and Portugal (licensed to practice) and Slovakia (professionally active); 2014 data for Denmark, Finland and Sweden.
(2) Dentists: professionally active.
(3) Nurses and midwives: excluding midwives; rounded value. Nurses and midwives and dentists: professionally active.

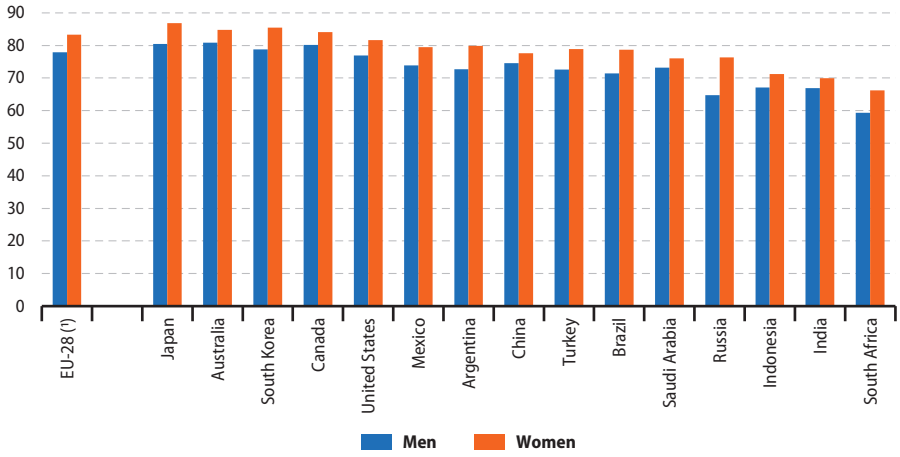
Source: Eurostat (online data codes: demo_gind, hlth_rs_bds, hlth_rs_prs1 and hlth_rs_prsns), the World Health Organisation (Global Health Observatory) and the OECD (Health care resources)

Life expectancy

The gender gap in life expectancy at birth in 2015 was far higher in Russia than in other G20 members

Among the G20 members, the highest life expectancy at birth in 2015 was recorded in Japan (84 years), while life expectancy also reached or passed 80 years in Australia, South Korea, Canada and the EU-28. In three G20 members, life expectancy at birth remained in 2015 below 70 years: 69 years in Indonesia, 68 years in India and 63 years in South Africa. The relatively low life expectancy for South Africa may be largely attributed to the impact of an HIV/AIDS epidemic: in 2016, 19 % of the population aged 15-49 had the human immunodeficiency virus (HIV). In all G20 members, life expectancy was higher for females than for males (see Figure 3.3): this gender gap ranged from three years in Saudi Arabia, India and China to seven years in South Korea, South Africa, Argentina and Brazil, with a much larger gap (12 years) in Russia.

Figure 3.3: Life expectancy at birth, 2015 (years)



Note: ranked on the life expectancy for both sexes combined.

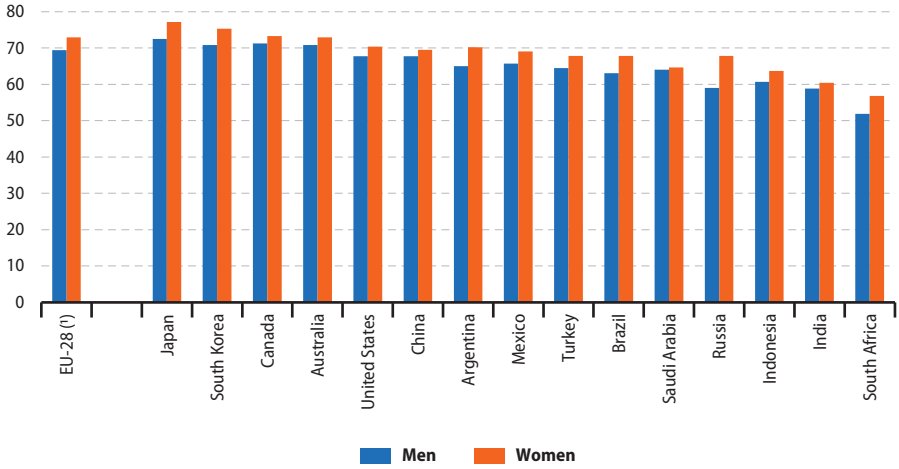
(1) Provisional.

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

In line with the data for life expectancy, the highest expected number of healthy life years at birth among the G20 members in 2015 was in Japan (75 years), while in South Korea, Canada, Australia and the EU-28, the expected number of healthy life years for men and women combined also passed 70 years. In South Africa (54 years), the expected number of healthy life years at birth in 2015 was notably lower than in other G20 members. The gender gap in terms of healthy life years was generally narrower than in terms of life expectancy, ranging from one to five years in all G20 members except Russia where it reached nine years (see Figure 3.4).

Combining the data presented in Figures 3.3 and 3.4 indicates that healthy life (years) made up 86 % to 90 % of life expectancy at birth in all non-EU G20 members, with the lowest share in Saudi Arabia and the highest in China.

Figure 3.4: Healthy life expectancy at birth, 2015
(years)



Note: ranked on the healthy life expectancy for both sexes combined.

(1) Estimates based on World Health Organisation data.

Source: the World Health Organisation (Global Health Observatory); data with a different definition are published by Eurostat (online data code: hlth_hlye)

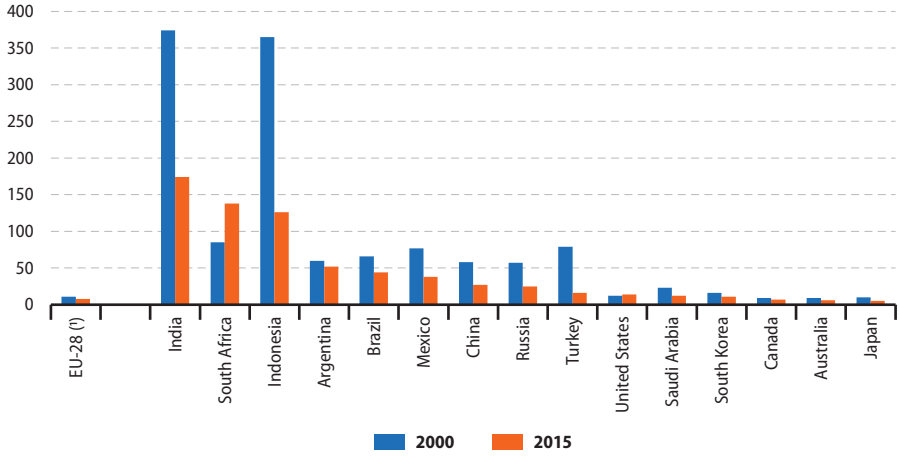
Mortality

Almost all maternal deaths — those related to pregnancy and childbirth — occur in emerging and developing countries, with maternal mortality rates generally higher in their rural areas and among poorer communities. Most maternal deaths are preventable and according to the World Health Organisation the main causes are: severe bleeding (mostly bleeding after childbirth); infections (usually after childbirth); high blood pressure during pregnancy (pre-eclampsia and eclampsia); complications from delivery; and unsafe abortions.

The maternal mortality ratio shows the ratio between the number of maternal deaths and the number of live births (see Figure 3.5). While this ratio was relatively low in about half of the G20 members in 2015, it exceeded 100 per 100 000 live births in India, South Africa and Indonesia, was just above 50 per 100 000 live births in Argentina, and was at least 25 per 100 000 live births in Brazil, Mexico, China and Russia. The lowest ratios in 2015 — below 10 maternal deaths per 100 000 live births — were reported in the EU-28, Canada, Australia and Japan.

Between 2000 and 2015, the maternal mortality ratio fell in most G20 members, the exceptions being South Africa, where the rate increased greatly, and the United States, where an already quite low ratio rose slightly. Elsewhere, particularly large falls in the maternal mortality ratio were observed in China, Russia, Mexico, Turkey, Indonesia and India.

Figure 3.5: Maternal mortality ratio, 2000 and 2015
(per 100 000 live births)



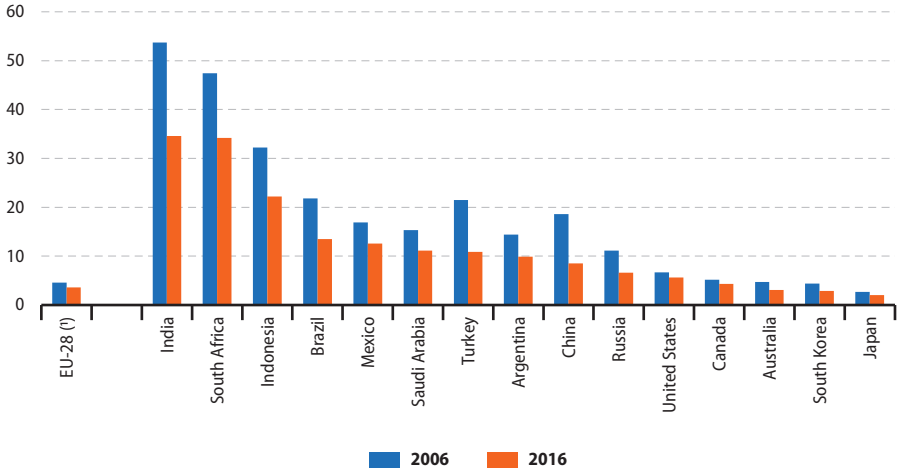
(1) Estimates.

Source: the World Health Organisation (Global Health Observatory)

The infant mortality rate presents the ratio between the number of deaths of children aged less than one year and the number of live births in the same reference period; the resulting value is generally expressed per 1 000 live births. The progress made in medical healthcare services is reflected in the rapid decrease of infant mortality rates; indeed, all of the G20 members recorded falls in infant mortality rates between 2006 and 2016, as shown in Figure 3.6. The largest relative falls were recorded by China and Turkey, where the infant mortality rates fell by around 50 %.

The latest data available, for 2016, show that the lowest infant mortality rates among G20 members were recorded in Japan, South Korea, Australia, the EU-28 and Canada, all under 5.0 deaths per 1 000 live births. By contrast, infant mortality rates in South Africa and India were more than eight times as high as in these five G20 members with the lowest rates, and were more than 10 deaths per 1 000 live births above the rate in Indonesia which had the third highest rate.

Figure 3.6: Infant mortality rate, 2006 and 2016
(per 1 000 live births)



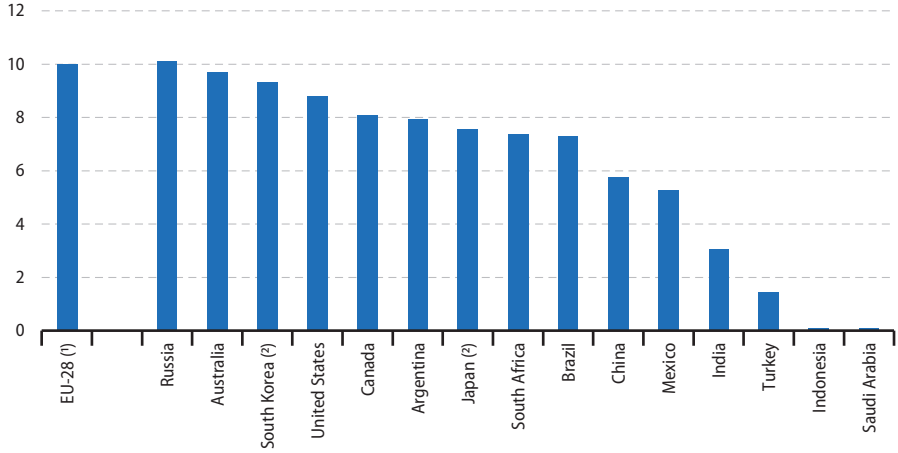
(1) 2015 instead of 2016.

Source: Eurostat (online data code: demo_minfind) and the World Health Organisation (Global Health Observatory)

Non-medical health determinants

Figures 3.7 to 3.9 provide information on three non-medical health determinants, namely alcohol consumption, smoking and being overweight or obese. Russia and the EU-28 recorded the highest annual alcohol consumption among G20 members in 2014, around 10 litres of alcohol per inhabitant, closely followed by Australia and South Korea. Relatively low average levels of alcohol consumption were recorded for India and Turkey, and the lowest average levels for Indonesia and Saudi Arabia; these low levels may be influenced to a large degree by the predominant religious beliefs in these countries.

Figure 3.7: Average annual alcohol consumption, 2014
(litres per inhabitant aged 15 years and over)



(1) Excluding Bulgaria, Croatia, Cyprus, Malta and Romania; coverage corresponds to 93.5 % of the EU-28 population.

(2) 2013.

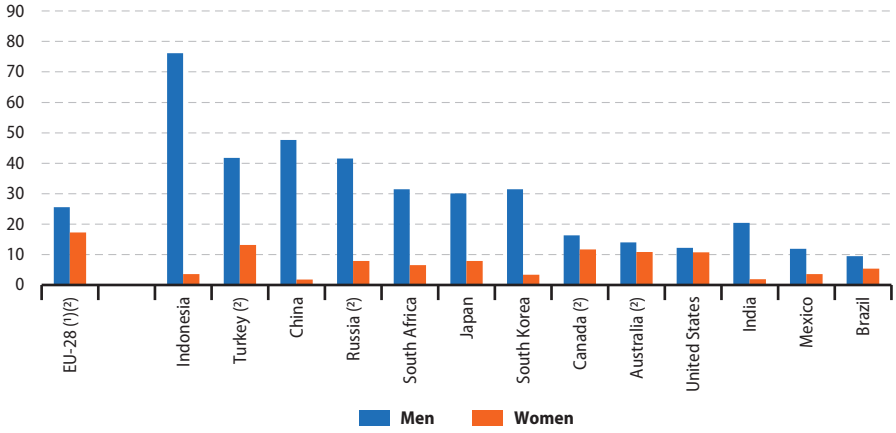
Source: the OECD (Non-medical determinants of health) and the World Health Organisation (Global Health Observatory)

Indonesia reported the highest proportion of daily smokers, with two fifths (40 %) of the population aged 15 and over smoking in 2015. Around one quarter of the population of this age in Turkey (2014 data), China and Russia (2016 data) smoked daily, as did around one fifth in the EU-28, South Africa, Japan and South Korea. Elsewhere, the incidence of daily smoking was below 15 %, and reached lows of 8 % in Mexico and 7 % in Brazil. In all G20 members the proportion of daily smokers was greater for men than for women. The widest gender differences were recorded in Indonesia — where more than three quarters (76 %) of all men aged 15 and over were daily smokers compared with just 4 % of women — China, Russia (2016 data), Turkey (2014 data), South Korea, South Africa, Japan and India. The narrowest gender differences were recorded for Canada (2014 data), Brazil, Australia (2016 data) and the United States (where the proportion of daily smokers was almost balanced between the sexes).

Lowest proportions of people being overweight or obese in 2016 were in India, both for men and for women

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 Organisation, adults with a BMI between 25 and 30 are considered as overweight and those with an index over 30 are considered obese. Note that the data presented in Figure 3.9 may be based on measured results or self-reported data.

Figure 3.8: Daily smokers, 2015
(% share of persons aged 15 years and over)



Note: ranked on the proportion for both sexes combined. Argentina and Saudi Arabia, not available.

(1) Estimates.
(2) EU-28, Canada and Turkey: 2014. Australia and Russia: 2016.

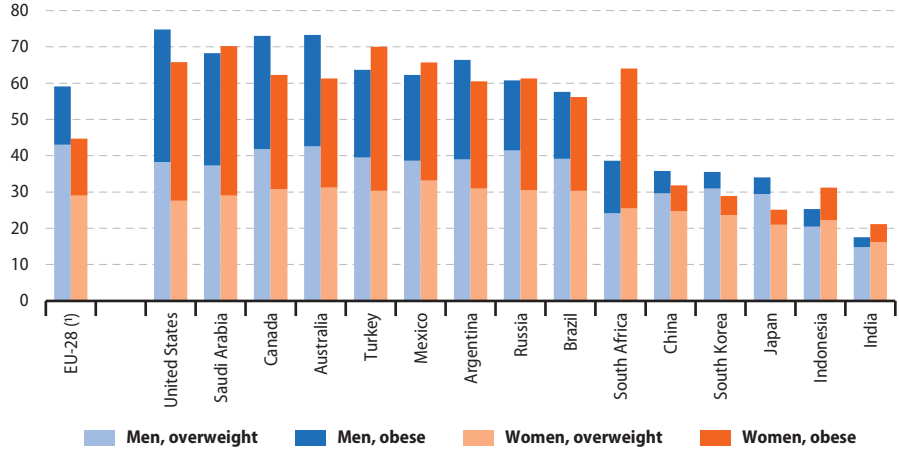
Source: the OECD (Non-medical determinants of health)

The highest proportions of men that were either obese or overweight were observed for the United States (75 % of the male population), Australia and Canada (both 73 %). By contrast, the highest proportions for women were observed for Saudi Arabia and Turkey (both 70 %), followed by the United States (66 %). By far the lowest proportions for men were observed for Indonesia (25 %) and India (18 %), while for women the lowest proportions were recorded in Japan (25 %) and India (21 %).

The proportion of overweight or obese men was greater than the equivalent proportion of women in a small majority of G20 members, with this gap between the sexes rising to more than 10.0 points in the EU-28, Australia and Canada. In the G20 members where the proportion of overweight or obese people was higher for women than for men, the differences were generally quite small, with the notable exception of South Africa where the gap was 25 points.

Among the G20 members there is far greater variability in the proportion of the population who were obese than among the proportion who were overweight. China, India, Indonesia, Japan and South Korea recorded particularly low proportions of their populations who were considered obese, all less than 10 % for both men and for women. Among men, the proportion considered to be obese was smaller than the proportion that were overweight in all G20 members. Among women this situation was also observed in a majority of the G20 members, but not in Canada and Russia where the two proportions were nearly the same, nor in Turkey, the United States, Saudi Arabia and South Africa where the proportion of women who were obese was notably larger than the proportion that were overweight.

Figure 3.9: Obesity and overweight, 2016
(% share of persons aged 18 years and over)



Note: ranked on the proportion for both sexes combined. Estimates.

(1) 2014.

Source: Eurostat (online data code: hlth_ehis_bm1e) and the World Health Organisation (Global Health Observatory)

4. Education and training

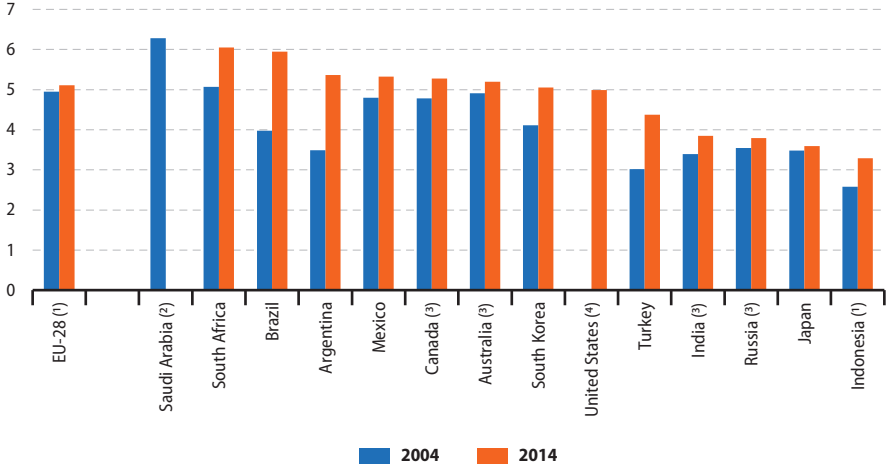
Educational expenditure

Public educational expenditure relative to GDP was highest in 2014 in South Africa and Brazil, around 6 %

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, among other things, by differences in price levels and the numbers of pupils and students, the latter influenced to a large extent by the proportion of young people in the population (see Chapter 1 for more information).

Figure 4.1 provides information on the level of public expenditure on education relative to gross domestic product (GDP). Among the G20 members this was highest in 2014 in South Africa at 6.0 % and Brazil at 5.9 %; note that no recent data are available for Saudi Arabia (where a ratio of 6.3 % was recorded in 2004). In a majority of

Figure 4.1: Public expenditure on education, 2004 and 2014
(% of GDP)



Note: China, not available.

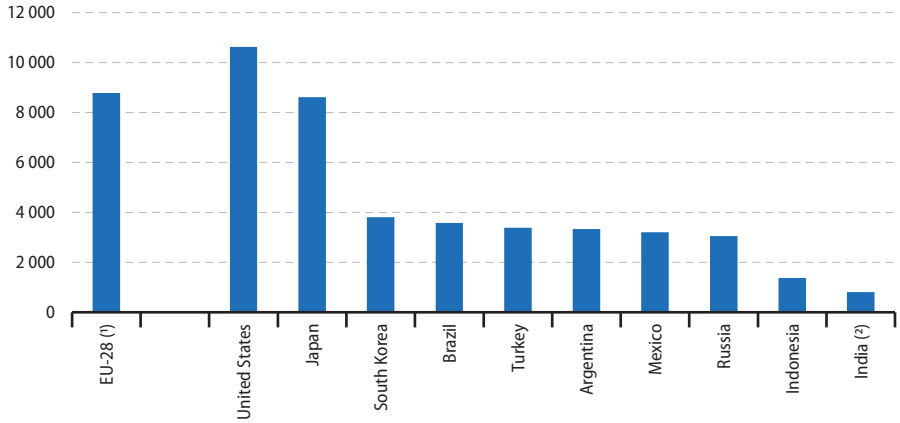
(1) 2004: estimate.
(2) 2014: not available.
(3) Australia and Canada: 2005 instead of 2004. Canada: 2011 instead of 2014. Russia: 2012 instead of 2014. India: 2013 instead of 2014.
(4) 2004: not available.

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

G20 members the ratio of public expenditure on education relative to GDP was between 5.0 % and 6.0 %, but was below this range in Turkey (4.4 %), falling to less than 4.0 % in India (2013 data), Russia (2012 data), Japan and Indonesia. With a value of 5.1 %, the EU-28 ranked more or less in the middle of the G20 members for this ratio. Between the two years presented in Figure 4.1, there was an increase in the level of public expenditure on education relative to GDP in all of the G20 members, most notably (in percentage point terms) in Brazil and Argentina.

Figure 4.2 presents the average public expenditure per pupil or student in education. This measure is less influenced by the proportion of young people within the population and these data have been adjusted to reflect differences in purchasing power so that it is less influenced by differences in price levels. In 2014, the United States recorded by far the highest average among the G20 members for which data are available, followed by the EU-28 and Japan with quite similar levels of expenditure that were more than twice as high as in any other G20 member. By far the lowest levels of average expenditure per pupil or student were reported for Indonesia and India (2013 data).

Figure 4.2: Public expenditure on education, 2014
(international USD per student)



Note: Australia, Canada, China, Saudi Arabia and South Africa, not available.

(1) 2014: excluding Denmark and Croatia; 2013 data for Hungary; 2015 data for number of pupils for Greece, Luxembourg and the Netherlands.
(2) 2013.

Source: Eurostat (online data codes: educ_uoe_fine02 and educ_uoe_enra01) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

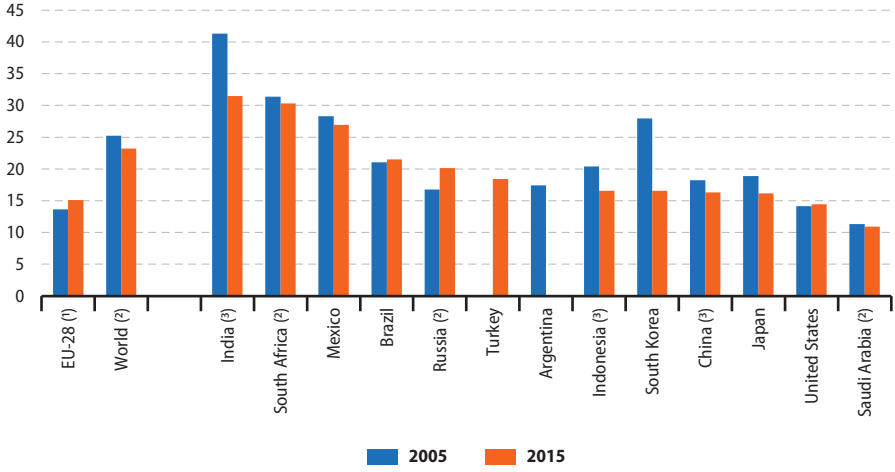
Numbers of teachers and pupils

India had by far the highest pupil-teacher ratios in 2015 for primary and secondary education

Figures 4.3 and 4.4 present pupil-teacher ratios for primary and secondary education among the G20 members. These ratios are calculated by dividing the number of pupils and students by the number of educational personnel: note they are calculated based on a simple headcount and do not take account of the intensity (for example, full or part-time) of study or teaching.

Within primary education, the world average number of pupils per teacher was 23.2 in 2015. Among the G20 members, higher averages were observed in India, South Africa and Mexico, while lower ratios were observed elsewhere, in particular across the EU-28 (15.1), the United States (14.5) and Saudi Arabia (10.9). Between 2005 and 2015 the average number of pupils per teacher in primary education fell by 2.0 pupils per teacher worldwide. This pattern of falling pupil-teacher ratios was repeated in most G20 members, the exceptions being the United States, Brazil, the EU-28 and Russia.

Figure 4.3: Pupil-teacher ratios in primary education, 2005 and 2015
(average number of pupils per teacher)



Note: Australia and Canada, not available.

(1) 2005: including data for 2004 for Denmark and for 2006 for Estonia.
(2) 2005: estimate.
(3) India: 2003 instead of 2005. China: 2006 instead of 2005. Indonesia: 2014 instead of 2015.

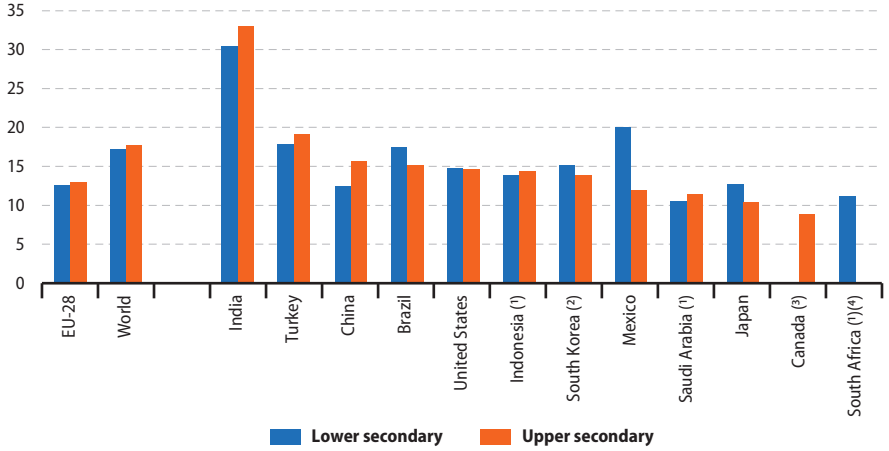
Source: Eurostat (online data codes: educ_enrl1tl, educ_pers1d, educ_iste and educ_uoe_perp04) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

Worldwide, the average pupil-teacher ratio for lower secondary education was slightly lower than for upper secondary education in 2015 and this was also the case in the EU-28. This pattern was also apparent in a majority of the non-EU G20 members, with only South Korea, Japan, Brazil and Mexico having a higher average for lower secondary education.

Within lower secondary education, India, Mexico, Turkey and Brazil reported average pupil-teacher ratios that were above the world average (17.2), with India reporting particularly high values (30.5 pupils per teacher). Japan and the EU-28 reported averages of 12.6 pupils per teacher in lower secondary education, with China, South Africa (2010 data), and Saudi Arabia (2014 data) reporting even lower ratios.

Within upper secondary education, India and Turkey were the only G20 members to report average pupil-teacher ratios that were above the world average, while Canada reported the lowest average ratio (8.8 pupils per teacher). Aside from Canada, Japan, Saudi Arabia (2014 data) and Mexico had average pupil-teacher ratios for upper secondary education that were lower than in the EU-28.

Figure 4.4: Pupil-teacher ratios in secondary education, 2015
(average number of pupils per teacher)



Note: Argentina, Australia and Russia, not available.

(1) South Africa: 2010. Saudi Arabia: 2014. Indonesia: 2016.
(2) Lower secondary: estimate.
(3) Lower secondary: not available.
(4) Upper secondary: not available.

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

School enrolment

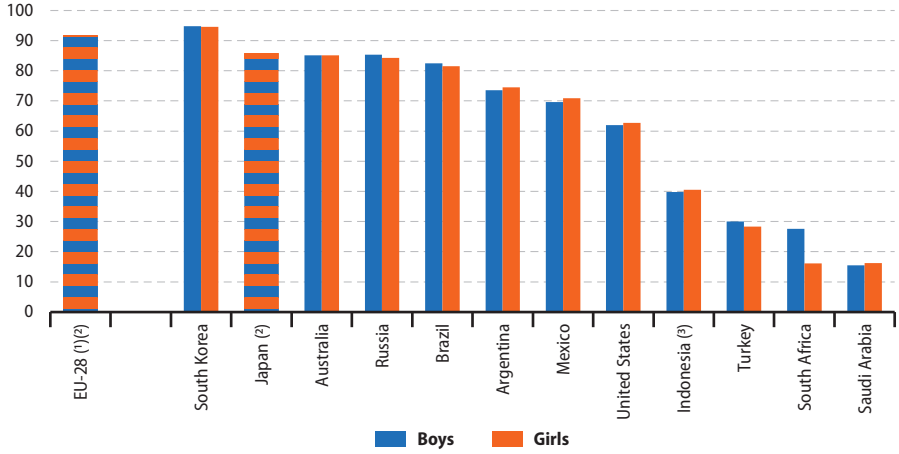
There were more boys than girls enrolled in primary education across each of the G20 members.

Net enrolment rates in pre-primary and primary education in 2015 notably higher for boys than girls in South Africa

Figures 4.5 and 4.6 present enrolment ratios for pre-primary and primary education. These net enrolment ratios 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; as such, they cannot exceed 100 % as they do not include under or over age children being enrolled in the selected level of education.

In 2015, the pre-primary education net enrolment rate was highest in South Korea at 94.7 %. Most G20 members reported pre-primary net enrolment rates that were above 60 %, although notably lower rates were reported for Indonesia (2014 data), Turkey, South Africa and Saudi Arabia. For the EU-28 a slightly different indicator is presented, showing that 91.8 % of four year olds were in pre-primary education; note that this figure for the EU should be interpreted with care as some younger children might also be in pre-primary education and some four year olds may already be in primary education. Among the non-EU G20 members, only South Africa reported a large difference (11.5 points) between pre-primary education net enrolment rates for boys and girls, with a much higher rate for boys than for girls in

Figure 4.5: Pre-primary education net enrolment ratio, 2015
(% of total population of pre-primary school age)



Note: ranked on the total ratio for both sexes combined. The pre-primary education net enrolment ratio (NER) is the number of boys and girls of pre-primary school age that are enrolled in pre-primary education, expressed as a percentage of the total population in that age group. Canada, China and India: not available.

(1) 2013. Proportion of four year olds in pre-primary education. Note that some four year olds are already in primary education.

(2) Ratio for boys and girls combined.

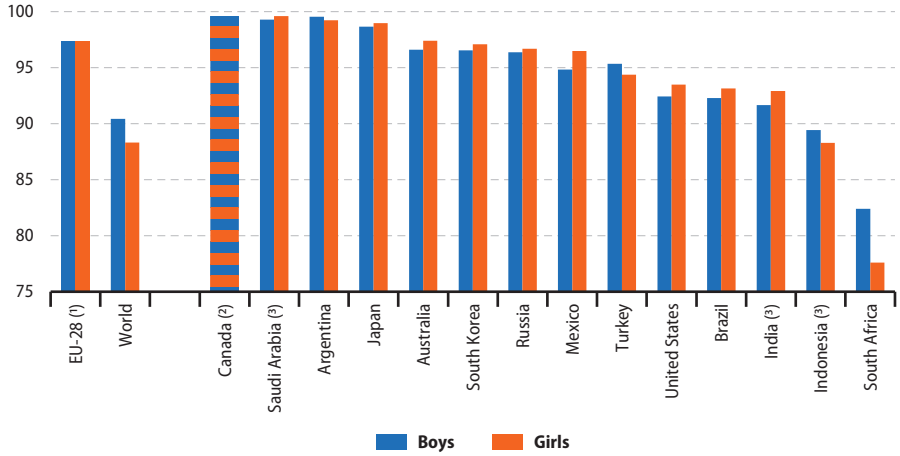
(3) 2014.

Source: Eurostat (online data code: educ_uoe_enrp07) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

2015. In Indonesia (2014 data), Saudi Arabia, the United States, Argentina and Mexico, the pre-primary education net enrolment rate for girls was higher than for boys.

Unsurprisingly, primary education net enrolment rates were higher than pre-primary education rates in all G20 members for which data are available. Worldwide, primary education net enrolment rates were 88.3 % for girls and 90.4 % for boys in 2015, with all G20 members reporting higher rates except for South Africa and Indonesia (2014 data). The highest primary education net enrolment rate was recorded in Canada at 99.6 %, with Saudi Arabia (2012 data) and Argentina reporting rates of 99.4 %, followed by Japan (98.8 %) and the EU-28 (97.4 %). Among the non-EU G20 members, South Africa again reported the largest difference between net enrolment rates for boys and girls, although the gap (4.8 points) for primary education was much smaller than for pre-primary education. Elsewhere the gap — whether from higher rates for boys as in Indonesia (2014 data) and Turkey or higher rates for girls as in the United States, India (2013 data) and Mexico — was less than 2.0 points.

Figure 4.6: Primary education net enrolment ratio, 2015
(% of total population of primary school age)



Note: China, not available. Ranked on the ratio for both sexes combined

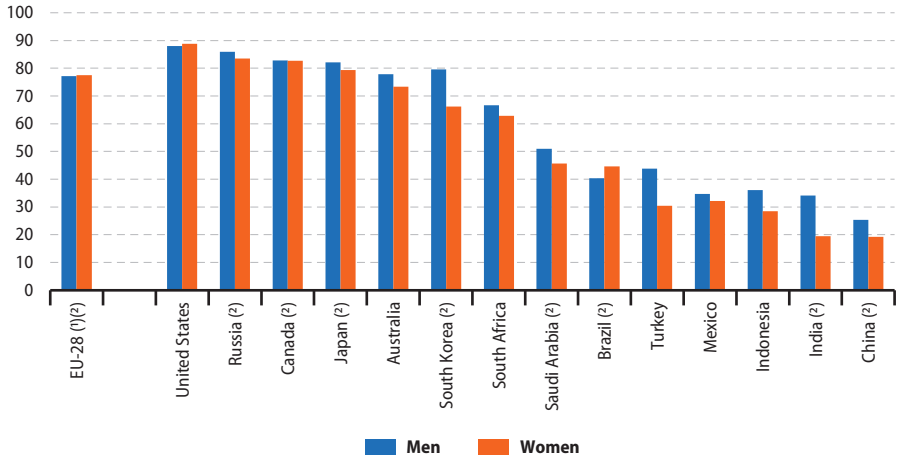
(1) Excluding the Czech Republic, Austria and Slovakia; coverage corresponds to 95.5% of the EU-28 population.
(2) Ratio for boys and girls combined.
(3) Saudi Arabia: 2012. India: 2013. Indonesia: 2014.

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

Educational attainment

Figure 4.7 shows the percentage of population aged 25 years and over in 2015 having completed at least upper secondary education. In the United States, Russia (2010 data) and Canada (2011 data) this share was over 80.0 % for both men and women, while in Japan (2010 data) it was also over 80.0 % for men; in the EU-28 the shares for men and women were 77.2 % and 77.5 % in 2017. Attainment rates for upper secondary educational attainment were under 40.0 % for both men and women in Mexico, Indonesia, India (2011 data) and China (2010 data), with the rate for women in Turkey also less than 40.0 %. Brazil, the United States and the EU-28 were the only G20 members for which data are available where the share of men aged 25 or over having completed at least upper secondary education was lower than the equivalent share for women. In all other G20 members attainment rates for men were higher than those for women, with the largest gender gaps — all in the range of 13-15 points — observed in Turkey, South Korea (2010 data) and India (2011 data).

Figure 4.7: Upper secondary educational attainment, 2015
(% of total population aged 25 and over having completed at least upper secondary education)



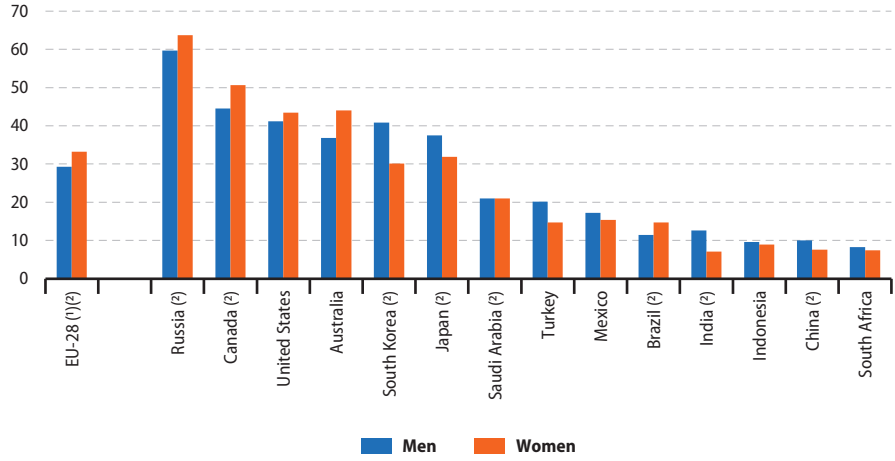
Note: ranked on the ratio for both sexes combined. Argentina: not available.

(1) Persons aged 25-64. Provisional.
(2) China, Japan, Russia and South Korea: 2010. Canada and India: 2011. Saudi Arabia: 2013. Brazil: 2014. EU-28: 2017.

Source: Eurostat (online data code: edat_lfse_03) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

Tertiary education is generally provided by universities and other higher education institutions. In 2017, slightly less than one third of the EU-28 adult population (aged 25 and over) had completed tertiary education, 29.3 % for men and 33.2 % for women (see Figure 4.8). Among the non-EU G20 members, the share of tertiary educational attainment was much higher in Russia (2010 data), at 59.7 % for men and 63.7 % for women. In 2015, five other G20 members reported ratios that were over 30.0 % for both men and women: Canada (2011 data), the United States, Australia, South Korea (2010 data) and Japan (also 2010 data). The lowest tertiary educational attainment levels were found in Indonesia and South Africa, where fewer than one in ten men and women had completed tertiary education; India (2011 data) and China (2010 data) also reported shares below 10.0 % for women. The largest gender gap in tertiary educational attainment was recorded in South Korea (2010 data), where the share for men was 10.7 points higher than for women, while the largest gender gaps where a higher share of women than men had complete tertiary education were observed in Canada (2011 data) and Australia.

Figure 4.8: Tertiary educational attainment, 2015
(% of total population aged 25 and over having completed tertiary education)



Note: ranked on the ratio for both sexes combined.

(1) Persons aged 25-64. Provisional.
(2) China, Japan, Russia and South Korea: 2010. Canada and India: 2011. Saudi Arabia: 2013. Brazil: 2014. EU-28: 2017.

Source: Eurostat (online data code: edat_lfse_03) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Education)

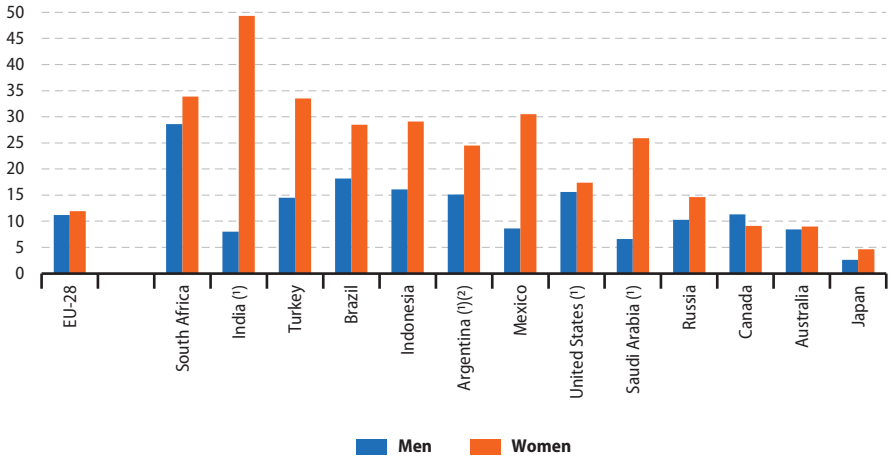
Not in employment, education or training

Japan and Australia had the lowest proportion of young people not in employment, education or training in 2016

Traditional analyses of the labour market focus on employment and unemployment, but for younger people many are still in education. As a result, labour market policies for young people often focus on those who are not in employment, education or training, abbreviated as NEETs. Factors that influence 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 and training; labour market factors related to unemployment and economic inactivity (being neither employed nor unemployed); cultural issues, such as the likelihood of taking on caring responsibilities with an extended family and/or the typical age of starting a family.

Figure 4.9 indicates the proportion of 15-24 years olds that were not enrolled in education (school or formal training) nor employed in 2016. Among the G20 members this ranged from 3.5 % in Japan, through 8.7 % in Australia, 10.2 % in Canada and 11.6 % in the EU-28 to 24.0 % in Turkey, 27.5 % in India (2012 data) and 31.2 % in South Africa. Canada was an exception among the G20 members for which data are available, as it was the only one where a larger proportion of young men were not in employment, education or training, rather than young women. By far the largest gender gap for this indicator was observed in India, where 49.3 % of young women were not in employment, education or training in 2012, compared with 8.0 % for young men; the next largest gaps were observed in Mexico, Saudi Arabia (2014 data) and Turkey.

Figure 4.9: Persons not in employment, education or training, 2016
(% share of persons aged 15-24 years)



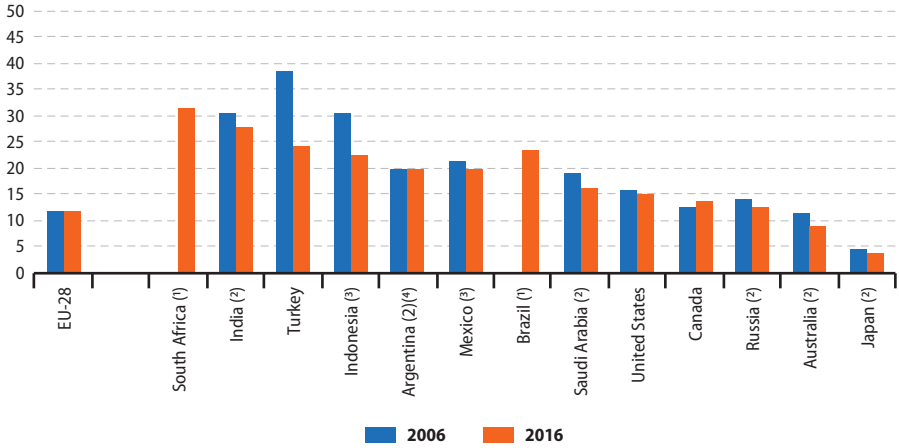
Note: ranked on the total ratio for both sexes combined. China and South Korea: not available.

(1) India and the United States: 2012. Argentina and Saudi Arabia: 2014.
(2) Provisional. Urban households.

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

The proportion of 15-24 year-olds in the EU-28 that were not enrolled in education (school or formal training) nor employed was almost the same in 2016 (11.6 %) as it had been in 2006 (11.7 %) — see Figure 4.10. However, during the intervening years the proportion had not been stable: initially it fell to 10.9 % in 2008 and then rose during the global financial and economic crisis and its aftermath to peak at 13.2 % in 2012, before decreasing each of the next four years to 11.6 % by 2016. Most G20 members for which data are available recorded a lower proportion of young people not in employment, education or training in 2016 than had been the case 10 years earlier, the exceptions being Canada (up 1.1 points) and Argentina (up 0.2 points between 2006 and 2014).

Figure 4.10: Persons not in employment, education or training, 2006 and 2016
(% share of persons aged 15-24 years)



Note: China and South Korea, not available.

(1) 2006: not available.
(2) India: 2005 instead of 2006. Australia, Japan, Russia and Saudi Arabia, 2009 instead of 2006. India: 2012 instead of 2016. Argentina: 2014 instead of 2016. Saudi Arabia: 2015 instead of 2016.
(3) Break in series.
(4) Urban households.

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

5. Labour market

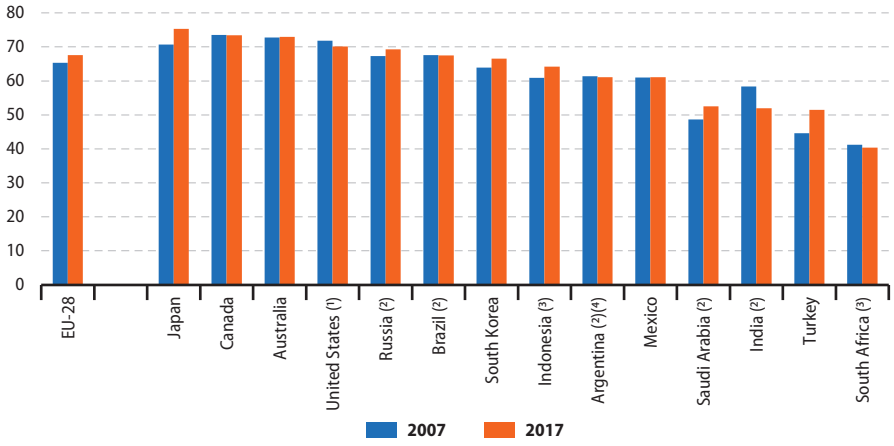
Particular care should be taken when comparing labour market data between different countries, given there are often differences in the age criteria used to calculate employment rates. Furthermore, care should be taken if the data are not for the same year, as is the case in most of the analyses presented in this chapter.

Employment rate

The employment rate, calculated as the share of employed persons in the total population of working age (defined here as persons aged 15-64 years), was 67.6 % in 2017 in the EU-28. Between 2007 and 2017 the employment rate for the EU-28 increased 2.3 percentage points from 65.3 % (see Figure 5.1). The EU-28 employment rate in 2016 was roughly in the middle of a ranking of the G20 members. South Africa was the only G20 member where less than half of the working-age population were in employment in the latest year for which data are available, with a rate as low as 40.4 % in 2017. In the United States, Australia and Canada the employment rate was between 70 % and 75 %, while a rate of 75.3 % was recorded in Japan.

Between the two years shown in Figure 5.1 the employment rate fell by 6.4 points in India (between 2005 and 2012), far more than in any other G20 member; the next largest fall was 1.7 points in the United States. By contrast, the employment rate rose by 2.0 points or more in six European and Asian G20 members, with the highest increase in Turkey (up 6.9 points).

Figure 5.1: Employment rate of persons aged 15-64 years, 2007 and 2017
(%)



Note: China, not available.

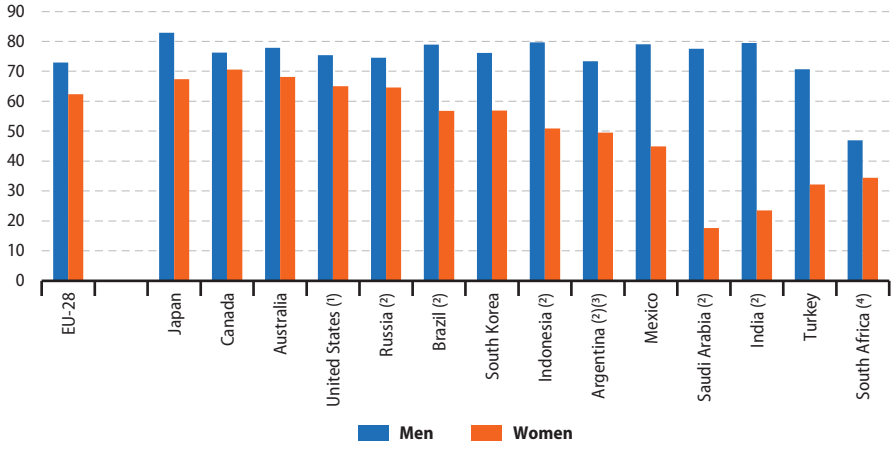
(1) Persons aged 16-64.
(2) India: 2005 instead of 2007. Brazil and Saudi Arabia: 2009 instead of 2007. Argentina and Russia: 2010 instead of 2007. India: 2012 instead of 2017. Argentina and Brazil: 2014 instead of 2017. Russia and Saudi Arabia: 2015 instead of 2017.
(3) Persons aged 15 years and more.
(4) Urban households.

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

The most recent data (see Figure 5.2) show that the EU-28's employment rate for men (72.9 %) was lower than in most of the G20 members for which data are available in 2017, although it was just higher than in Turkey and considerably higher than in South Africa (note that data for the latter covers all men aged 15 years and over). Elsewhere, employment rates for men ranged from 73.4 % in Argentina (2014 data) to 79.7 % in Indonesia (2016 data), with Japan (82.9 %) above this range. For women the 62.4 % employment rate in the EU-28 was higher than the rates recorded in a majority of the other G20 members in 2017, although higher rates were recorded in Russia (2015 data), the United States, Japan and Australia, with a peak of 70.6 % recorded in Canada. By contrast, employment rates for women were close to or below one third in Saudi Arabia (2015 data), India (2012 data), Turkey and South Africa (all women aged 15 years and over), while the rates in Mexico and Argentina (2014 data) were also below one half.

The gender gap for the employment rate was 10.5 points in favour of men across the EU-28, with only Canada, Australia, Russia and the United States reporting narrower gaps. By far the largest gender gaps were in India and Saudi Arabia, both over 50 points.

Figure 5.2: Employment rate of persons aged 15-64 years, 2017
(%)



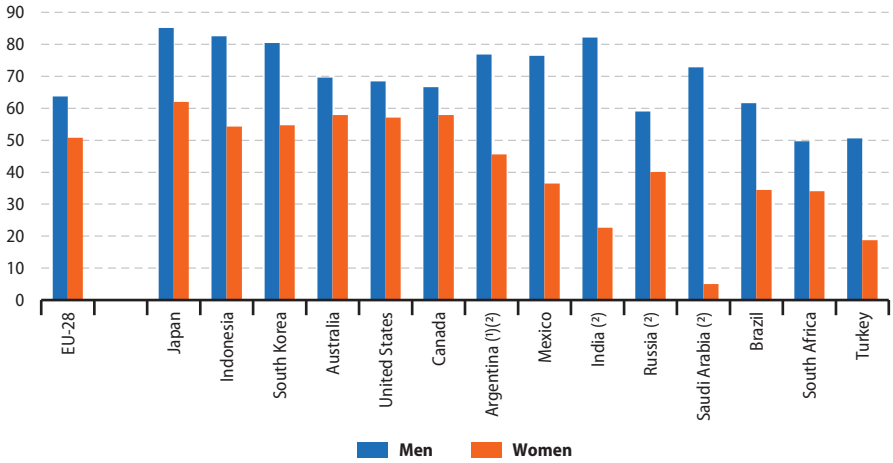
Note: ranked on the total rate for both sexes combined. China, not available.

(1) Persons aged 16-64.
(2) India: 2012. Brazil and Argentina: 2014. Indonesia: 2016. Russia and Saudi Arabia: 2015.
(3) Urban households.
(4) Persons aged 15 years and over.

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

Focusing on older workers, those aged 55-64 years, Figure 5.3 looks at an age group that may have lower employment rates because of early retirement or because of difficulties returning to employment after being unemployed. In the EU-28, the overall employment rate for this age group was 57.1 % in 2017, 10.5 points lower than the employment rate for the whole working-age population. The gender gap in employment rates for older workers was 12.9 points in the EU-28, somewhat larger than the gap for the overall employment rate. These two characteristics — a lower employment rate for older workers and a larger gender gap for older workers — were common to most non-EU G20 members. Indonesia, South Korea and South Africa were the only G20 members to report a higher employment rate for older workers than for all people of working age (although there was no difference in the two rates in India), while only in Turkey was the gender gap narrower for older workers.

Figure 5.3: Employment rate of persons aged 55-64 years, 2017
(%)



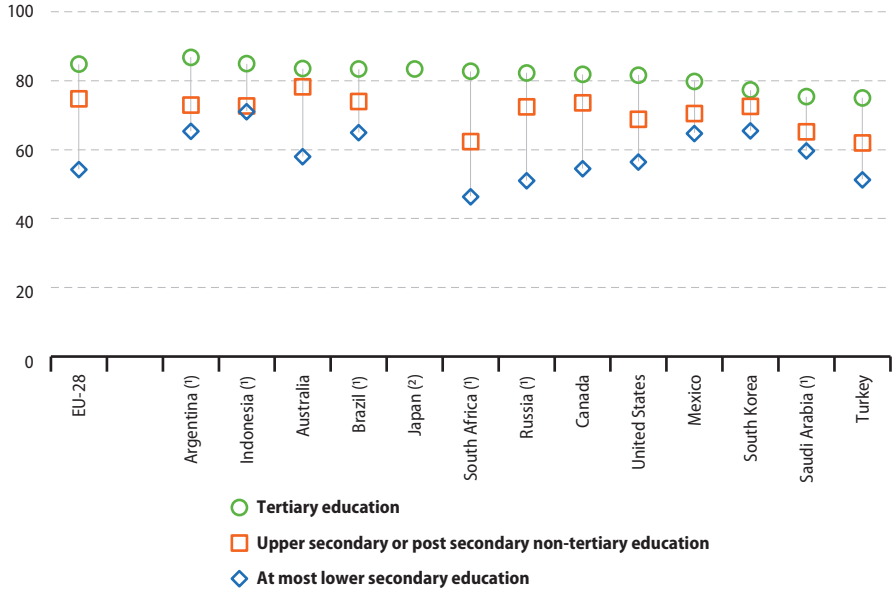
Note: ranked on the total rate for both sexes combined. China, not available.

(1) Urban households.
(2) India: 2012. Argentina: 2014. Saudi Arabia: 2015. Russia: 2016.

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

Employment rates according to the highest completed level of education are shown in Figure 5.4, with this restricted to the age group 25-64 in order to focus on the adult working-age population. Among the G20 members for which data are available, all recorded a lower adult employment rate for the group of persons having completed at most a lower secondary level of education; equally, each of the G20 members recorded a higher adult employment rate for the group of persons having completed tertiary education. The difference between the employment rates for these two different levels of education was 30.5 points across the EU-28 in 2016; this gap was only higher in South Africa and Russia (both 2015 data), whereas it was 15.0 points or less in Mexico, Indonesia (2015 data) and South Korea.

Figure 5.4: Employment rate of persons aged 25-64 years, by education level, 2016
(%)



Note: China and India, not available.

(1) Argentina and Saudi Arabia: 2014. Brazil, Indonesia, Russia and South Africa: 2015.
(2) At most lower secondary education and upper secondary or post secondary non-tertiary education: not available.

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

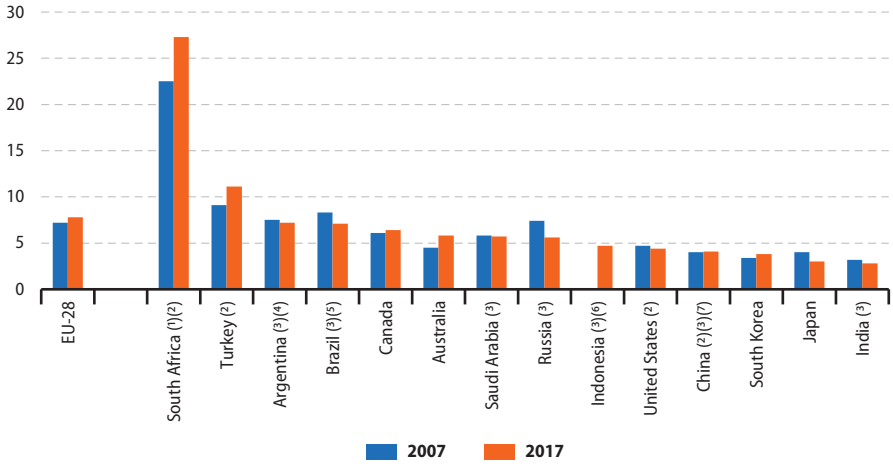
Unemployment rate

The unemployment rate is calculated as the number of unemployed persons as a proportion of economically active persons (otherwise referred to as the labour force, comprising all employed and unemployed persons). In 2017, the unemployment rate for persons aged 15-64 years in the EU-28 was 7.8 %. Among the other G20 members, the unemployment rate in 2017 ranged from 2.8 % in India (2012 data) to 7.2 % in Argentina (2014 data), with Turkey (11.1 %) and South Africa (27.3 %) above this range.

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. Comparing the two years presented in Figure 5.5 the most recent unemployment rate was higher in half of the G20 members than the rate recorded for the earlier reference year and was consequently lower in the other half, although the differences in China and Saudi Arabia were very small. It should be remembered that the financial and economic crisis occurred between the years shown and in many G20 countries the unemployment rate initially increased strongly and then subsided during the period under consideration.

The overall effect of these changes in the EU-28 was that the unemployment rate was 0.6 points higher in 2017 than it had been in 2007. In Turkey, the rate in 2017 was 2.0 points higher than in

Figure 5.5: Unemployment rate, 2007 and 2017
(% for persons aged 15-64 years)



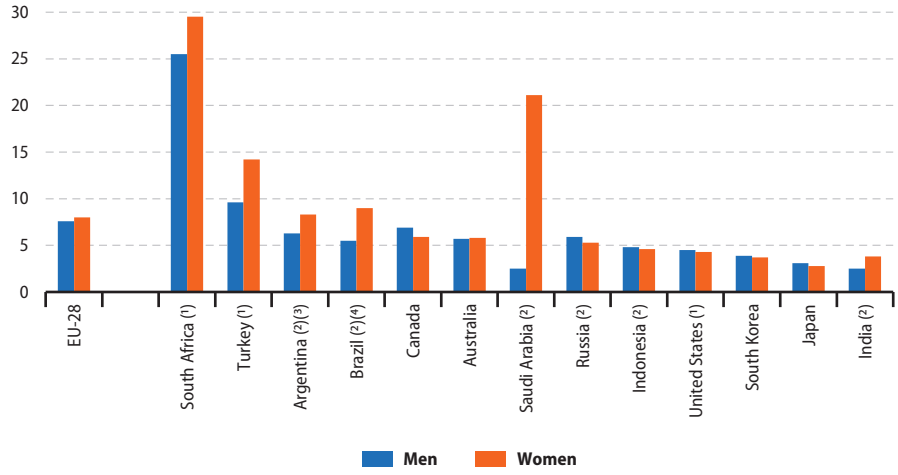
(1) 2007: unemployment definition based on not in employment and currently available.
(2) China and South Africa: persons aged 15 years and over. Turkey: 2017, persons aged 15-74. United States: persons aged 16-64 years.
(3) India: 2005 instead of 2007. Argentina and Russia: 2010 instead of 2007. India: 2012 instead of 2017. Argentina, Brazil and China: 2014 instead of 2017. Russia and Indonesia: 2015 instead of 2017. Saudi Arabia: 2016 instead of 2017.
(4) Urban households. Provisional.
(5) 2014: unemployment definition based on not in employment and currently available.
(6) 2007: not available.
(7) Registered unemployment. Urban areas.

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

2007, while in South Africa it was 4.8 points higher. Elsewhere the difference was smaller or the unemployment rate in the latest year was lower than at the beginning of the period studied, with downward movements most notable in Japan, Brazil and Russia.

In the EU-28, unemployment rates for men and women were relatively similar, 7.6 % for men and 8.0 % for women in 2017 (see Figure 5.6). In Australia, South Korea, Indonesia (2015 data), the United States and Japan, the difference between male and female unemployment rates was also less than 0.5 points in 2017. In most other G20 members, the gender gap was between 0.5 and 5.0 points, but in Saudi Arabia the unemployment rate for women was 18.6 points higher than for men (2016 data).

Figure 5.6: Unemployment rate by sex, 2017
(% for persons aged 15-64 years)



Note: ranked on the total unemployment rate for both sexes combined. China, not available.

(1) South Africa: persons aged 15 years and over. Turkey: persons aged 15-74. United States: persons aged 16-64 years.
(2) India: 2012. Argentina and Brazil: 2014. Indonesia and Russia: 2015. Saudi Arabia: 2016.
(3) Urban households. Provisional.
(4) Unemployment definition based on not in employment and currently available.

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

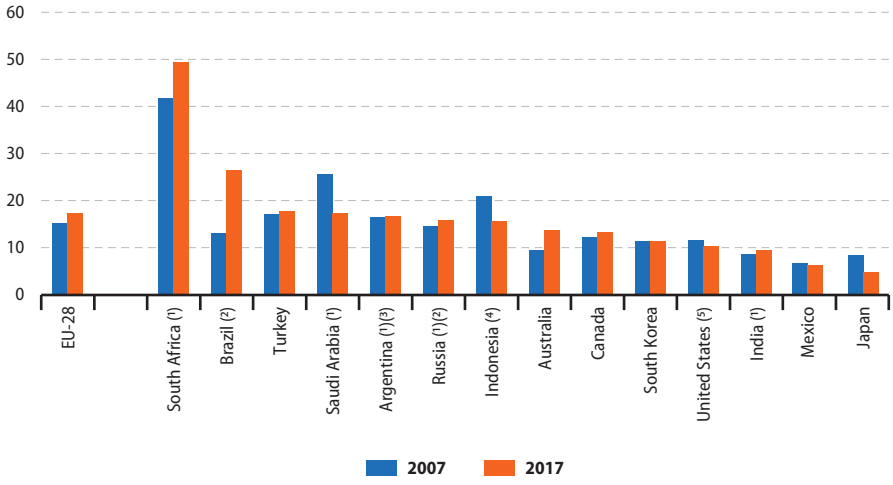
Male youth unemployment rate in the EU-28 increased between 2007 and 2017

The impact of the financial and economic crisis on youth unemployment rates attracted particular attention. The data presented in Figures 5.7 and 5.8 for young men and young women show the change in the youth unemployment between 2007 and 2017 (or the nearest available year). As for Figure 5.5 it should be borne in mind that unemployment rates rose sharply in many countries at the beginning of the crisis and have generally fallen since their peak. Furthermore, 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 not available for work, while some may undertake other activities outside of the labour market, such as travel or voluntary work.

A small majority of G20 members (for which data are available) recorded higher youth unemployment rates in the latest year shown in Figures 5.7 and 5.8 than for the previous reference period shown, with Brazil (2007-2017; note there is a break in series) and South Africa (2008-2017) recording the largest percentage point increases.

South Africa and Brazil had the highest male youth unemployment rates in 2017 among the G20 members, reflecting the large increases observed in the rates for these two countries over the last decade. In South Africa almost half (49.3 %) of the male youth labour force was unemployed in 2017, while in Brazil the rate was

Figure 5.7: Male youth (persons aged 15-24 years) unemployment rate, 2007 and 2017 (%)



Note: China, not available.

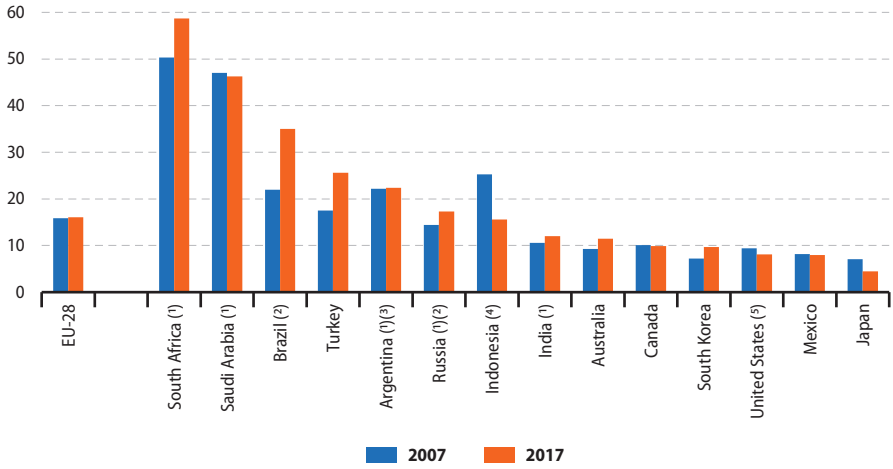
(1) India: 2005 instead of 2007. Argentina and South Africa: 2008 instead of 2007. India: 2012 instead of 2017. Argentina: 2014 instead of 2017. Russia and Saudi Arabia: 2016 instead of 2017.
(2) Break in series.
(3) Urban households. provisional.
(4) 2007: unemployment definition based on not in employment and currently available. Break in series.
(5) Persons aged 16-24 years.

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

just over one quarter (26.5 %). The EU-28 had the fourth highest male youth unemployment rate (17.4 %). South Africa also had the highest female youth unemployment rate among the G20 members, as close to three fifths (58.7 %) of the female youth labour force was unemployed in 2017. Saudi Arabia had the second highest female youth unemployment rate (46.3 %; 2016 data). Five G20 members reported female youth unemployment rates below 10.0 % in 2017: Canada, South Korea, the United States, Mexico and Japan.

There was relatively little difference in youth unemployment rates in the EU-28 when analysed by sex, with the rate for males 1.3 points higher than the rate for females in 2017. Several G20 members reported much higher youth unemployment rates for females than males in 2017: youth unemployment rates for females were between 5.7 and 9.4 points higher than for males in Argentina (2014 data), Turkey, Brazil and South Africa, with this gap rising to 28.9 points in Saudi Arabia (2016 data).

Figure 5.8: Female youth (persons aged 15-24 years) unemployment rate, 2007 and 2017 (%)



Note: China, not available.

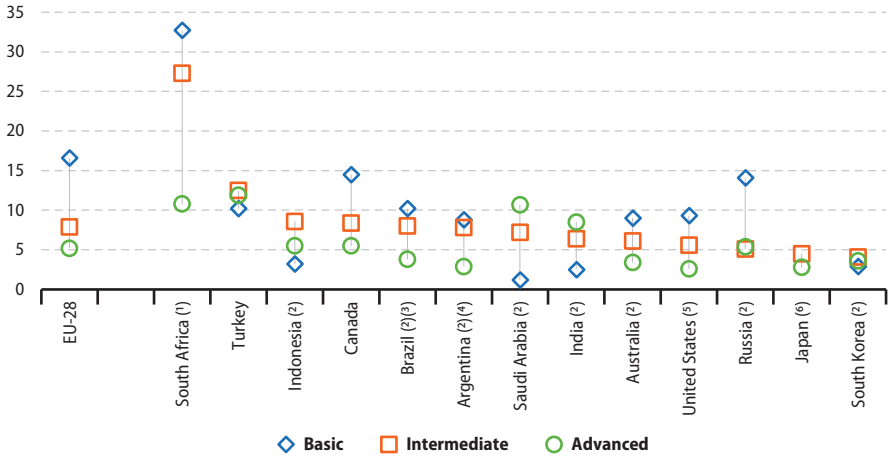
(1) India: 2005 instead of 2007. Argentina and South Africa: 2008 instead of 2007. India: 2012 instead of 2017. Argentina: 2014 instead of 2017. Russia and Saudi Arabia: 2016 instead of 2017.
(2) Break in series.
(3) Urban households. provisional.
(4) 2007: unemployment definition based on not in employment and currently available. Break in series.
(5) Persons aged 16-24 years.

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

In a majority of G20 members the lowest unemployment rates in 2016 were recorded for persons having completed tertiary education

In a small majority of G20 members, unemployment rates in 2016 were highest among persons aged 15-64 years who had completed at most a basic level of education. However, in Indonesia (2015 data), South Korea (2015 data) and Turkey the highest unemployment rates were recorded among persons having completed an intermediate level of education, while in India (2012 data) and Saudi Arabia (2014 data) the highest unemployment rates were recorded among persons having completed an advanced level of education (see Figure 5.9). Equally, a small majority of G20 members reported their lowest unemployment rates among persons who had completed an advanced level of education.

Figure 5.9: Unemployment rate of persons aged 15-64 years, by education level, 2016
(%)



Note: ranked on intermediate. China: not available.

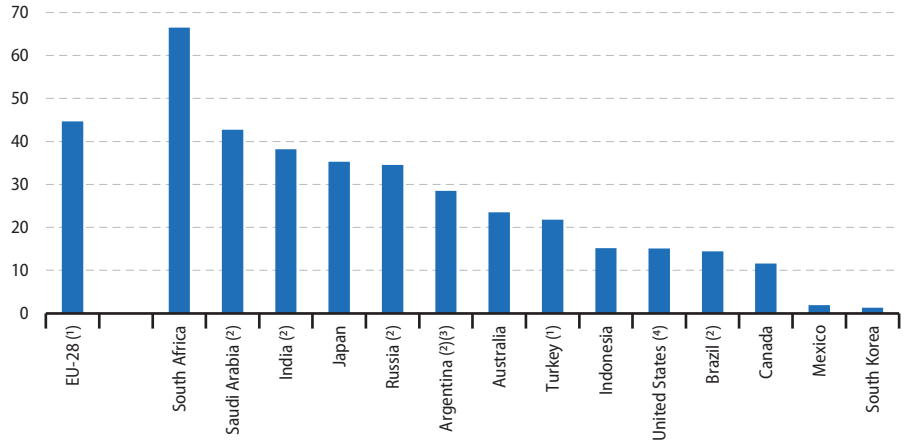
(1) Persons aged 15 years and over.
(2) India: 2012. Australia: 2013. Argentina, Brazil and Saudi Arabia: 2014. Indonesia, Japan, Russia and South Korea: 2015.
(3) Unemployment definition based on not in employment and currently available.
(4) Urban households. Provisional.
(5) Persons aged 16 years and over.
(6) Intermediate includes also basic.

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

Close to two thirds of the unemployed in South Africa in 2017 had been unemployed for a year or more

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, South Korea and Mexico reported that long-term unemployment accounted for less than 2.0 % of all unemployed persons in 2017 (see Figure 5.10). Elsewhere, this share ranged from 11.6 % in Canada to 28.5 % in Argentina (2014 data), with shares over one third in Russia (2016 data), Japan and India (2010 data), over two fifths in Saudi Arabia (2016 data) and the EU-28, and close to two thirds (66.5 %) in South Africa.

Figure 5.10: Long-term unemployment, persons aged 15 years and over, 2017
(% of all unemployment)



Note: China, not available.

(1) Persons aged 15-74 years.
(2) India: 2010. Brazil: 2013. Argentina: 2014. Russia and Saudi Arabia: 2016.
(3) Urban households. Provisional.
(4) Persons aged 15-64 years.

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

B

Economy

6. Economy and finance

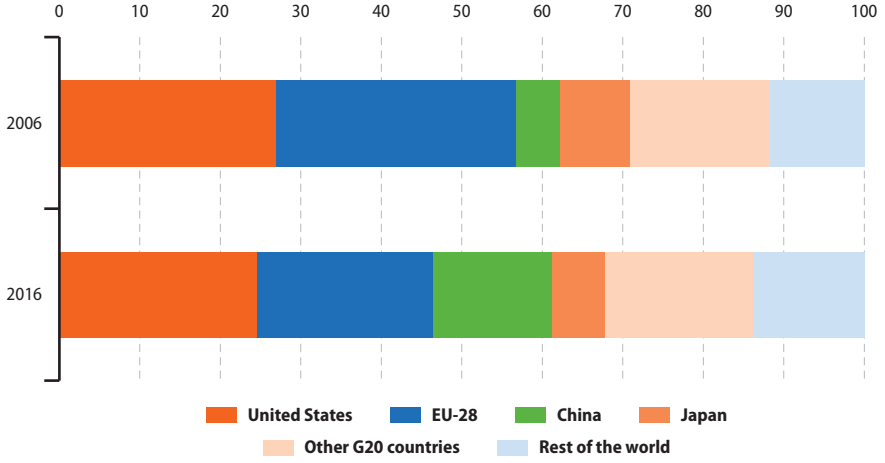
National accounts

G20 members accounted for 86.2 % of the world's GDP in 2016

In 2016, the total economic output of the world, as measured by gross domestic product (GDP), was valued at almost EUR 68.3 trillion, of which the G20 members accounted for 86.2 %, some 2.2 percentage points less than in 2006. The United States accounted for a 24.6 % share of the world's GDP in 2016, moving ahead of the EU-28 whose share fell to 21.8 % (see Figure 6.1); note these relative shares are based on current price series in euro terms, reflecting market exchange rates.

The Chinese share of world GDP rose from 5.4 % in 2006 to 14.8 % in 2016, moving ahead of Japan (6.5 % in 2016). To put the rapid pace of recent Chinese growth into context, in current price terms China's GDP in 2016 was EUR 7 925 billion higher than it was in 2006, an increase equivalent to the combined GDP in 2016 of the nine smallest G20 economies (South Korea, Australia, Russia, Mexico, Indonesia, Turkey, Saudi Arabia, Argentina and South Africa). The share of world GDP contributed by India also increased greatly, such that it moved from the 10th largest G20 economy in 2006 (leaving aside the four G20 EU Member States) to become the fifth largest by 2016.

Figure 6.1: GDP, 2006 and 2016
(% of world total)

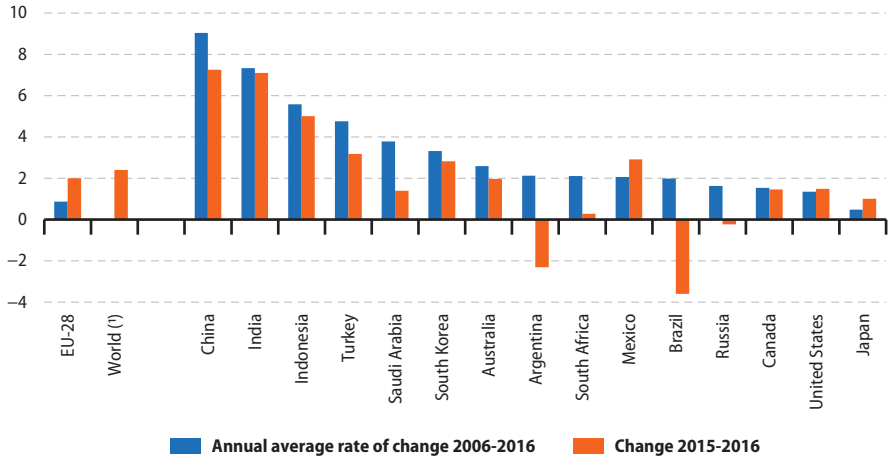


Source: Eurostat (online data codes: nama_10_gdp and ert_bil_eur_a) and the United Nations Statistics Division (National Accounts Main Aggregates Database)

China and India had the highest GDP growth between 2006 and 2016

Figure 6.2 shows the real rate of change (based on price adjusted data) of GDP in the latest year for which data are available (2016 compared with 2015) as well as the 10 year annual average rate of change between 2006 and 2016; it should be remembered that the financial and economic crisis occurred during this 10 year period. The lowest 10 year rates of change were generally recorded in developed economies such as Japan, the EU-28, the United States and Canada, as well as in Russia, while the highest growth rates were recorded in several Asian economies, most notably in India and China. Analysing the rate of change for 2016 compared with 2015, three G20 members stand out, as Brazil, Argentina and Russia recorded a contraction in their economic output in 2016. The annual growth rate in 2016 for the world was 2.4 %, with the EU-28 recording slightly slower growth (2.0 %).

Figure 6.2: Real change in GDP, 2006-2016
(%)



(1) Annual average rate of change 2006-2016: not available.

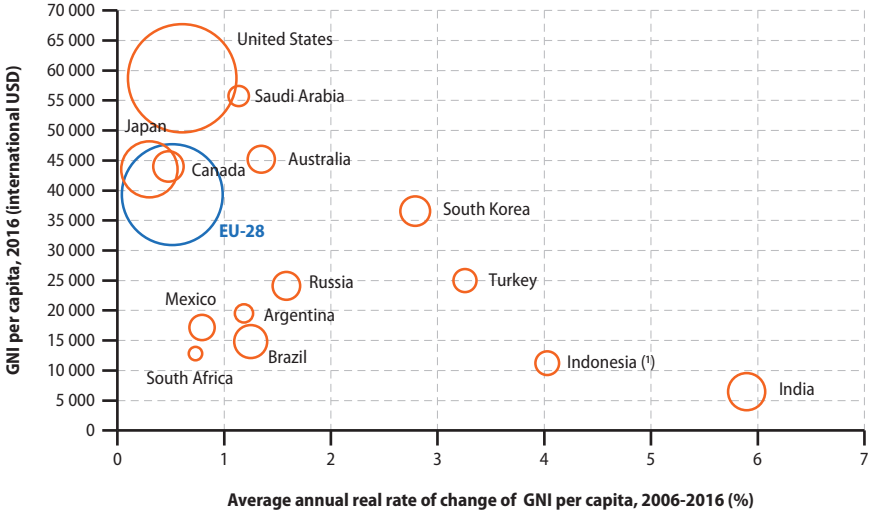
Source: Eurostat (online data code: nama_10_gdp) and the United Nations Statistics Division (National Accounts Main Aggregates Database)

Among the G20 members, the highest gross national income (GNI) per inhabitant in 2016 was recorded in the United States, ahead of Saudi Arabia. Note that the conversion to United States dollars 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 levels of income per inhabitant in the United States and in Saudi Arabia were 3.6 and 3.4 times as high as the average GNI for the whole world (USD 16.2 thousand per inhabitant). Australia, Canada, Japan, the EU-28 and South Korea recorded average GNI per inhabitant that was more than double the world average. By contrast, five G20 members recorded levels of GNI per inhabitant that were below the world average, namely China (1), Brazil, South Africa, Indonesia and India.

In broad terms, members with relatively low GNI per inhabitant recorded relatively high economic growth over the 10 years from 2006 to 2016; this was most notably the case in India and Indonesia (note the rate of change covers the period from 2010-2016). By contrast, members with relatively high GNI per inhabitant at the start of the period under consideration recorded fairly low levels of economic growth; this was most notably the case in the EU-28, Canada and Japan. The main exceptions to this pattern are clustered towards the bottom left corner of Figure 6.3, with relatively low growth and relatively low levels of GNI per inhabitant — in this group are South Africa, Mexico, Argentina, Brazil and Russia.

(1) China is not shown in Figure 6.3 as the average annual real rate of change is not available.

Figure 6.3: GNI per capita and annual average real rate of change of GNI, 2006-2016 and 2016



Note: China, not available. GNI per capita is presented in international United States dollars for 2016. The relative size of each bubble reflects the value of GNI in current prices in euros for 2016. The average annual rate of change is calculated using constant 2010 prices.

Reading note: the EU-28's annual average real rate of change of GNI per capita between 2006 and 2016 was 0.5 % (shown on the horizontal axis), while its GNI per capita in 2016 was USD 39 300 (shown on the vertical axis). The overall size of the EU-28 economy (GNI in current prices) was EUR 14.8 trillion in 2016 (represented by the size of the large blue circle).

(1) Average annual real rate of change of GNI per capita: 2010-2016.

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

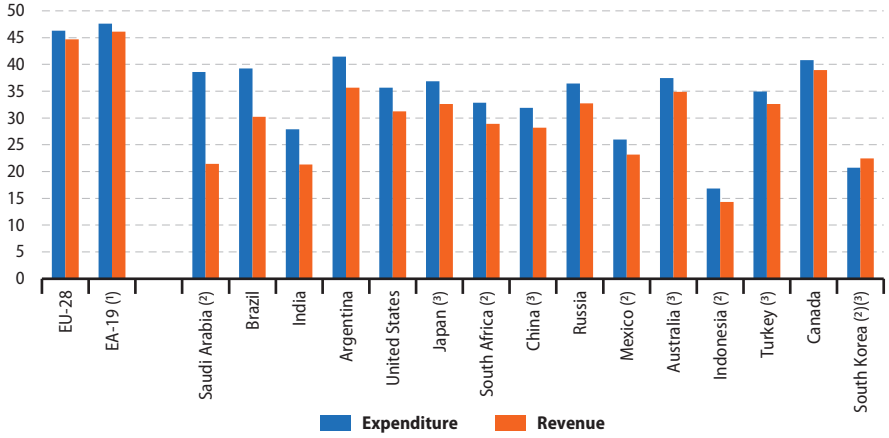
General government finances

The financial and economic crisis of 2008 and 2009 resulted in considerable media exposure for government finance indicators. The importance of the general government sector — in other words all levels of government, from central to the most local level — in the economy may be measured in terms of general government revenue and expenditure (which is often presented in relation to GDP). Subtracting expenditure from revenue results in a basic measure of the government surplus/deficit (public balance), providing information on 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 for government and public sector agencies. These external obligations are the debt or outstanding (unpaid) financial liabilities arising from past borrowing.

The sum of general government revenue and expenditure in relation to GDP peaked among the G20 members in 2016 at 91.05 % in the EU-28 (in the euro area it was higher still, at 93.7 %), followed by 79.8 % in Canada and 77.2 % in Argentina. The lowest sum of these ratios was in Indonesia (31.2 % of GDP). Note that the data for Mexico, Saudi Arabia and South Korea relate only to the expenditure and revenue of some levels of public administration as opposed to all levels.

Most G20 members had a government deficit in 2016; only South Korea recorded a surplus as can be seen from the difference between revenue and expenditure as shown in Figure 6.4 and also directly from the deficit data shown in Figure 6.5.

Figure 6.4: General government income and expenditure, 2016
(% of GDP)



Note: ranked on the difference between expenditure and revenue.

(1) Provisional.
(2) Saudi Arabia, South Africa and South Korea: central government only. Mexico: excluding state and local governments. Indonesia: excluding social security funds.
(3) Estimates.

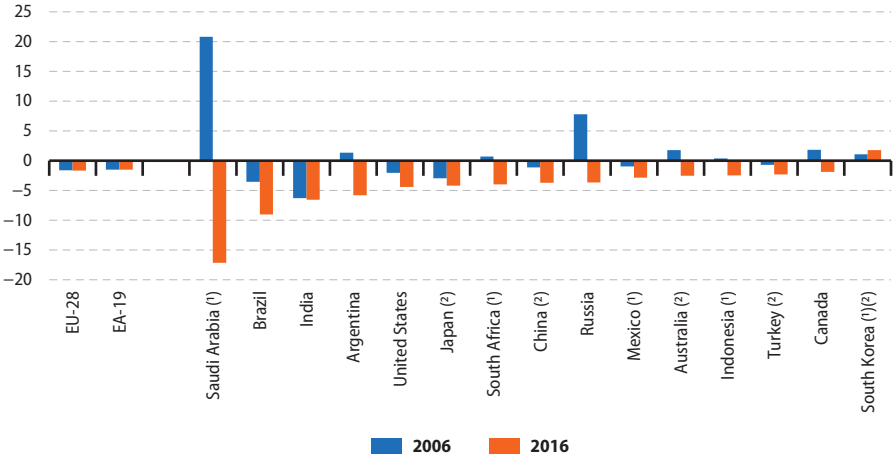
Source: Eurostat (online data code: gov_10a_main) and the International Monetary Fund (World Economic Outlook database)

In 2016, deficits between 5.0 % and 9.0 % of GDP were recorded in Argentina, India and Brazil, while the highest deficit among the G20 members was in Saudi Arabia at 17.2 % of GDP.

Relative to GDP, Saudi Arabia moved from the largest government surplus in 2006 among the G20 members to the largest government deficit in 2016

Comparing data for 2006 with 2016, South Korea increased its government surplus relative to GDP, while Saudi Arabia moved from having the largest surplus (20.8 % of GDP) in 2006 to the largest deficit (17.2 % of GDP) in 2016, reflecting a large fall in revenues, in part related to changes in oil prices. Indonesia, Canada, Australia, South Africa, Argentina and Russia also moved from surpluses in 2006 to deficits in 2016. All other G20 members had deficits in both years and in all cases the deficits in 2016 were larger relative to GDP than they had been in 2006, although the differences were relatively small for the EU-28 and India.

Figure 6.5: General government deficit/surplus, 2006 and 2016
(% of GDP)



(1) Saudi Arabia, South Africa and South Korea: central government only. Mexico: excluding state and local governments. Indonesia: excluding social security funds.
(2) 2016: estimates.

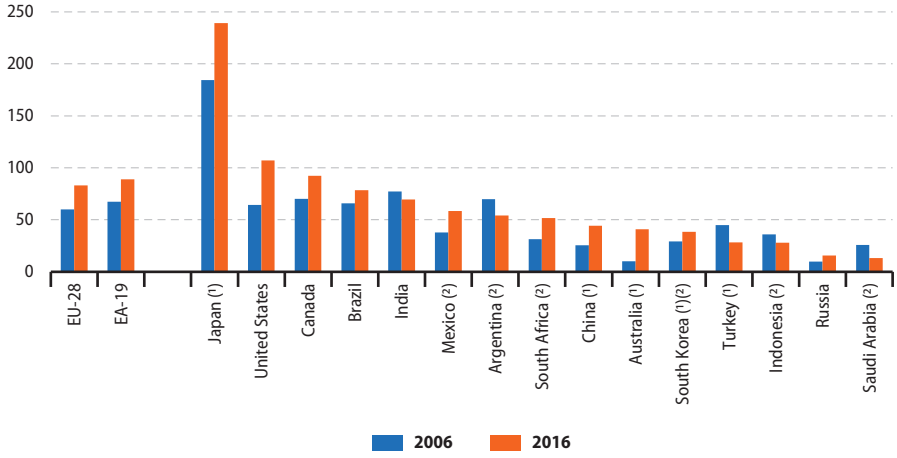
Source: Eurostat (online data code: gov_10dd_edpt1) and the International Monetary Fund (World Economic Outlook database)

Japan and the United States recorded the largest increases in government debt between 2006 and 2016 and had the largest levels of debt relative to GDP in 2016

Japan had by far the highest government debt relative to GDP, both in 2006 and 2016: in 2006, Japanese government debt was 184.3 % of GDP while by 2016 this had expanded to 239.3 % (see Figure 6.6). Between 2006 and 2016 the United States joined Japan with a level of government debt that was higher than GDP, as its ratio moved from 64.2 % to 107.1 %. These two increases, 55.0 points for Japan and 42.9 points for the United States, were the largest increases in the government debt to GDP ratios among the G20 members.

Canada (92.4 %) and the EU-28 (83.2 %) had the next highest levels of government debt relative to GDP in 2016 and both of their ratios also increased between 2006 and 2016. In fact, only five G20 members recorded lower ratios of government debt to GDP in 2016 than they had in 2006: India, Indonesia, Saudi Arabia, Argentina and Turkey. In 2016, the lowest ratios of government debt to GDP were reported in Russia and Saudi Arabia, both below 20.0 % of GDP.

Figure 6.6: General government debt, 2006 and 2016
(% of GDP)



(1) 2016: estimates.
(2) Argentina, Saudi Arabia, South Africa and South Korea: central government only. Mexico: excluding state and local governments. Indonesia: excluding social security funds.

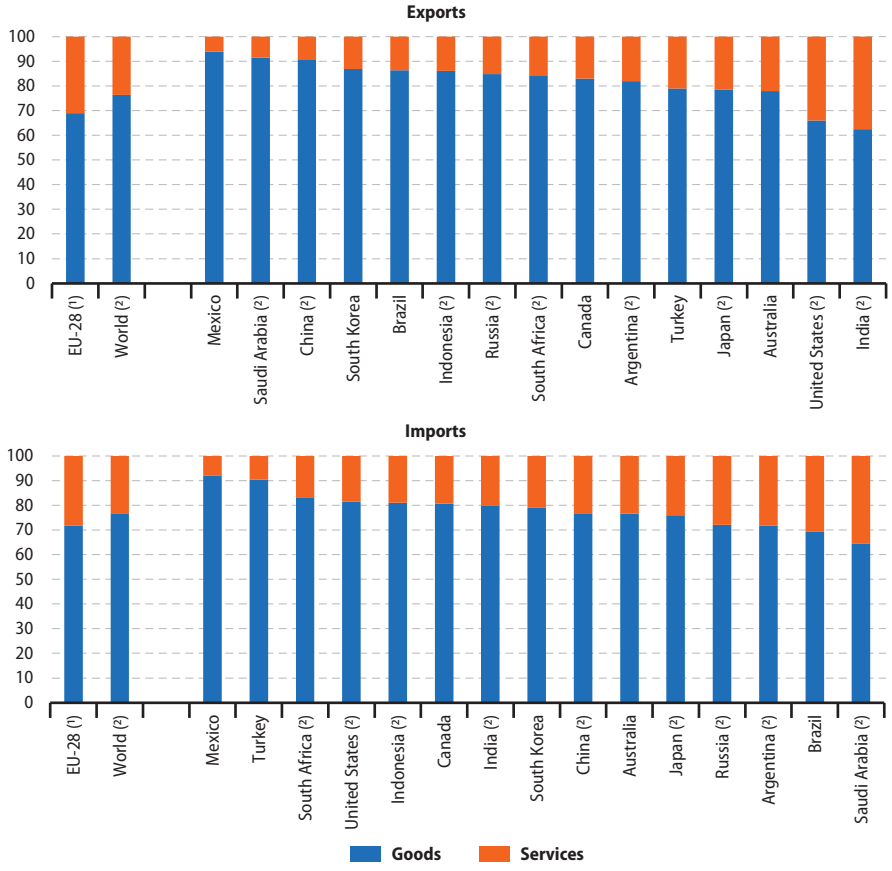
Source: Eurostat (online data code: gov_10dd_edpt1) and the International Monetary Fund (World Economic Outlook database)

Balance of payments

Trade in goods and services normally accounts for the largest share of credits and debits in the current account of the balance of payments. Figure 6.7 shows the relative importance of these two items in 2017, with exports reflecting balance of payments credits and imports reflecting the level of debits.

In terms of exports, the service oriented economies of India (2016 data), the United States (2016 data) and the EU-28 can be clearly seen, with services accounting for more than 30.0 % of exports: in all other G20 members the services share of total exports was below the world average of 23.6 %. Services contributed less than 10.0 % of all exports that originated from China (2016 data), Saudi Arabia (2016 data) and Mexico.

Figure 6.7: Goods and services shares of international trade, 2017
(%)



(1) Extra-EU trade.
(2) 2016.

Source: Eurostat (online data code: bop_eu6_q) and the International Monetary Fund (Balance of Payments and International Investment Position Statistics)

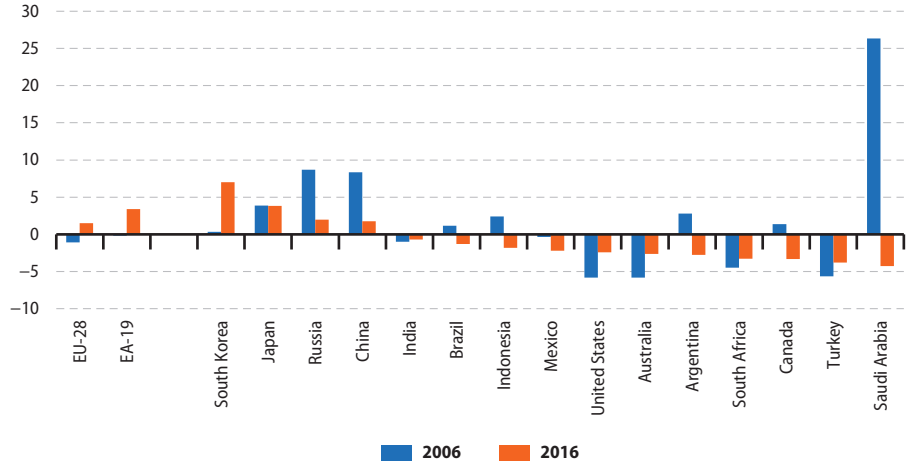
Turning to imports, services accounted for a share above the world average (23.6 %) in Saudi Arabia, Brazil, the EU-28, Argentina, Russia and Japan (all 2016 data except for the EU-28 and Brazil). As such, the EU-28 was the only G20 member where the relative importance of trade in services was above the world average for exports and for imports. Services represented less than 10.0 % of total imports into Turkey and Mexico in 2017, the lowest shares among the G20 members.

South Korea recorded the largest current account surplus relative to GDP in 2016

Among the G20 members, the largest current account surplus in 2016 in relative terms was recorded by South Korea, where this ratio peaked at 7.0 % of GDP (see Figure 6.8). The largest current account deficit in relative terms was recorded by Saudi Arabia at 4.3 % of GDP.

The current account balances of Argentina, Brazil, Canada, Indonesia and Saudi Arabia moved from surpluses to deficits between 2006 and 2016, while the EU-28 moved from a deficit to a surplus. When expressed in relation to GDP, the deficits of Australia, India, South Africa, Turkey and the United States narrowed during the period under consideration, while in Mexico the deficit expanded. In South Korea, the current account surplus relative to GDP expanded while the surpluses of China, Japan and Russia narrowed. However, by far the largest change was observed in Saudi Arabia, as its current account balance moved from a surplus of 26.3 % of GDP in 2006 to a deficit of 4.3 % in 2016.

Figure 6.8: Current account balance, 2006 and 2016
(% of GDP)



Source: Eurostat (online data codes: bop_eu6_q and nama_10_gdp) and the International Monetary Fund (World Economic Outlook database)

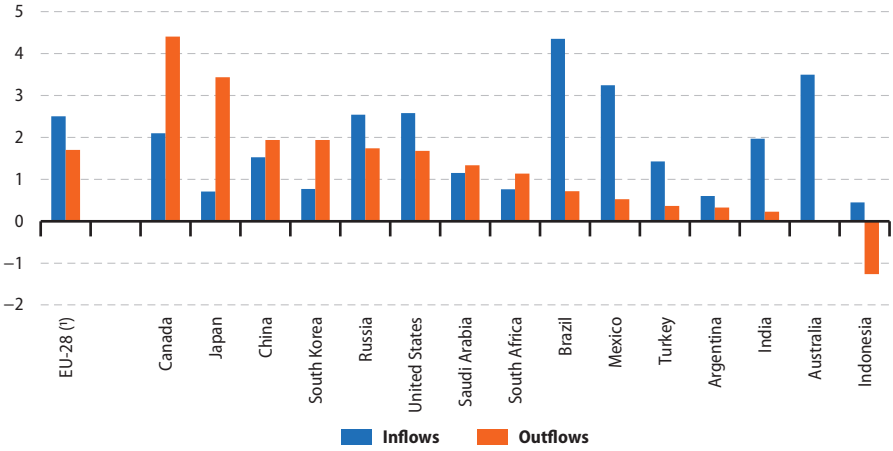
Foreign direct investment

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 largest differences between inflows and outflows of FDI relative to GDP in 2016 were recorded in Australia and Brazil

Among the G20 members, FDI outflows exceeded FDI inflows in 2016 in Japan, Canada, South Korea, China, South Africa and Saudi Arabia (see Figure 6.9). The largest difference between inflows and outflows relative to GDP were recorded in Australia and Brazil, where inflows exceeded outflows by 3.5-3.6 points. Relative to GDP, the highest inflows of FDI were recorded by Brazil, Australia and Mexico, while outflows of FDI relative to GDP were highest from Canada and Japan. Outflows from Indonesia were negative in 2016, indicating that the amount of disinvestment of previous outflows of investment from Indonesia outweighed new outward investment from Indonesia.

Figure 6.9: Flows of foreign direct investment, 2016
(% of GDP)



Note: ranked on outflows.

(1) Extra-EU flows.

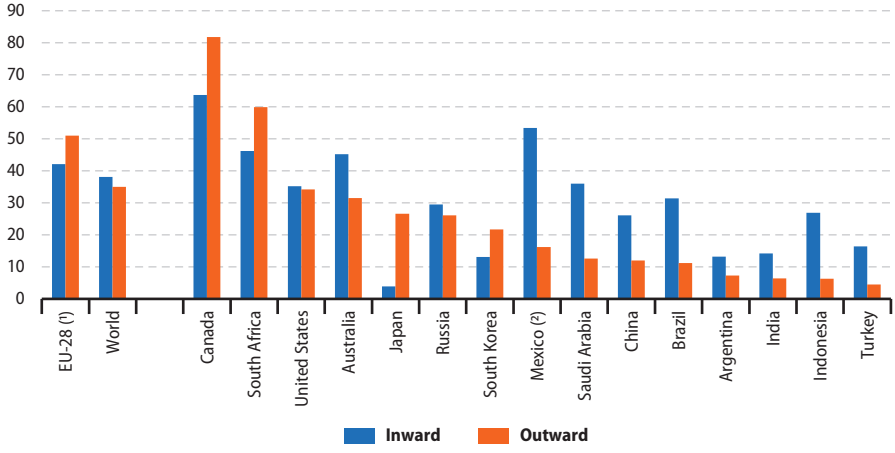
Source: Eurostat (online data code: bop_fdi6_ind) and the World Bank (World Development Indicators)

The largest difference between inward and outward stocks of FDI relative to GDP in 2016 was recorded in Mexico

Figures 6.10 and 6.11 provide information concerning FDI stocks, in other words the value of all foreign direct investment assets, not just the flows during the previous year. Canada, South Africa and the EU-28 had by far the highest levels of outward stocks relative to the size of their economies in 2016, all in excess of half of their GDP. Canada also had the highest level of inward stocks relative to GDP and was one of only two G20 members — the other being Mexico (2015 data) — where inward stocks were valued at more than half of GDP; these figures are influenced at least in part by their proximity to the United States which was a major investor.

The lowest levels of outward stocks relative to GDP were held by Argentina, India, Indonesia and Turkey, all less than 10.0 % of GDP, while the lowest levels of inward stocks were in Japan (3.9 % of GDP), which is often characterised as a relatively closed economy. Five G20 members had outward stocks of FDI that outweighed their inward stocks: Japan, Canada, South Africa, the EU-28 and South Korea. Inward and outward stocks were nearly balanced in the United States with outward stocks slightly higher. The G20 members with the highest ratios of net inward stocks of FDI (greater levels of inward rather than outward stocks) relative to GDP included Brazil, Indonesia, Saudi Arabia and Mexico (2015 data).

Figure 6.10: Stocks of foreign direct investment, 2016
(% of GDP)

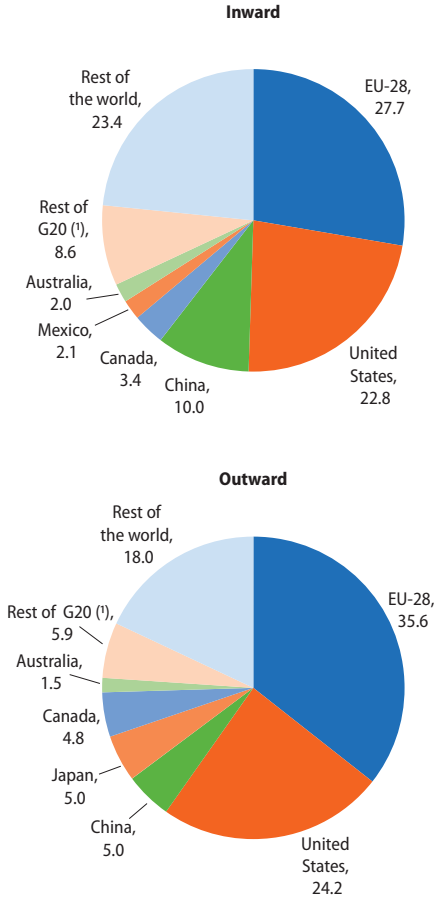


(1) Extra-EU stocks.
(2) 2015.

Source: Eurostat (online data code: bop_fdi6_ind) and the OECD (FDI stocks)

The data in Figure 6.11 are based on the absolute value of FDI stocks held by G20 members rather than their value relative to GDP. The EU-28 had the highest level of outward stocks, accounting for 35.6 % of the world's outward stocks in 2016; it also had the largest share of inward stocks, some 27.7 % of the world total. The United States and China were the second and third ranked G20 members both as investors abroad and as recipients of FDI in their own economies.

Figure 6.11: Shares of world stocks of foreign direct investment, 2016
(% of total)



Note: the figure shows the top six G20 members with the highest values of inward and outward investment.

(1) Includes 2015 data for Mexico.

Source: the OECD (FDI stocks)

Consumer prices, interest and exchange rates

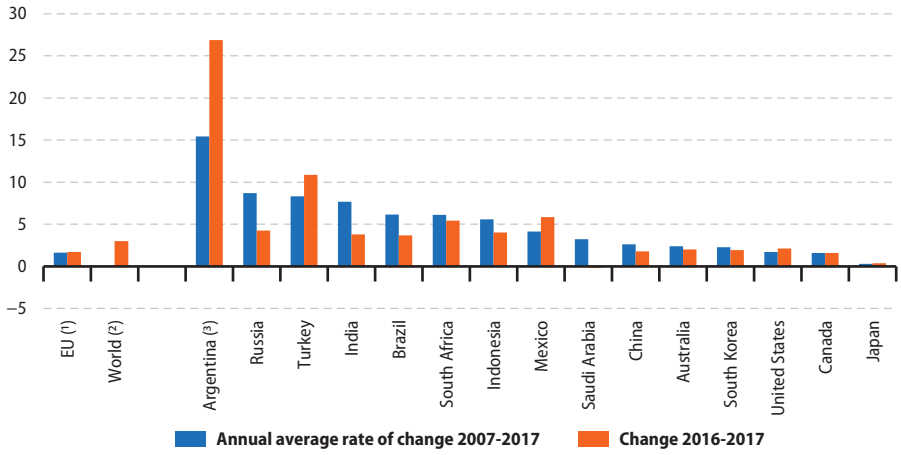
The latest annual rate of change in consumer price indices — between 2016 and 2017 — is presented in Figure 6.12 along with the 10 year annual average rate of change between 2007 and 2017. Consumer price indices indicate the change over time in the prices of consumer goods and services acquired, used or paid for by households. They aim to cover the whole set of goods and services consumed within the territory of a country by the population.

The worldwide inflation rate in 2017 was 3.0 %, slightly higher than the 2.8 % rate that was reported in 2015 and 2016 and also slightly higher than the inflation rate had been in 2009 (at the height of the financial and economic crisis), but otherwise lower than in all other years since the beginning of the time series in 1980.

In 2017, rates of change for consumer prices ranged from very slight deflation (a change of −0.2 %) in Saudi Arabia to inflation of less than 3.0 % in about half of the G20 members. Prices increased within the range of 3.7 % to 5.9 % in Brazil, India, Indonesia, Russia, South Africa and Mexico, while much higher inflation rates were reported for Turkey (10.9 %) and Argentina (26.9 %).

Average price developments over a 10 year period indicate that the high inflation rate in Argentina for 2017 was representative of a more sustained period of high price increases, with annual inflation averaging 15.4 % between 2007 and 2017. The next highest annual average inflation rates were a little more than half the rate recorded in Argentina, as prices rose by an annual average of 8.7 % in Russia and 8.3 % in Turkey, followed by 7.7 % in India during the period from 2007 to 2017. By contrast, Japan had clearly the lowest annual average inflation rate among the G20 members between 2007 and 2017, just 0.3 %, with the next lowest rates in Canada, the EU-28 (both 1.6 %) and the United States (1.7 %).

Figure 6.12: Consumer price indices, 2007-2017



Note: estimates apart from EU.

(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) Annual average rate of change 2007-2017: not available.

(3) Break in series. Coverage is limited to the Greater Buenos Aries Area for some years.

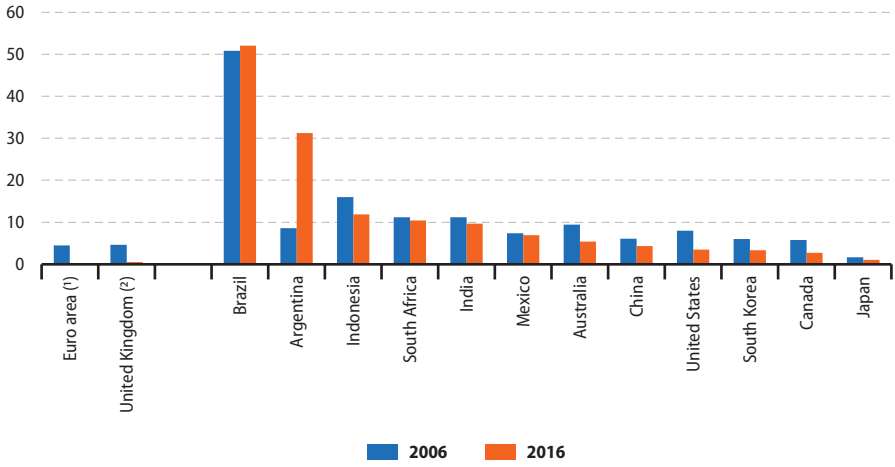
Source: Eurostat (online data code: prc_hicp_aind) and the International Monetary Fund (World Economic Outlook database)

The largest falls in interest rates between 2006 and 2016 were in the United States and the euro area

Lending interest rates varied greatly between the G20 members in 2016 and did so to a somewhat greater extent than they had done 10 years earlier. Historically low interest rates — below 1.0 % — were recorded in the euro area and the United Kingdom (2014 data), while the latest lending interest rate in Japan was 1.0 %. Elsewhere, rates ranged from 2.7 % in Canada to 11.9 % in Indonesia, with the rates in Argentina (31.2 %) and Brazil (52.1 %) exceeding this range. In all but two of the G20 members for which data are available (see Figure 6.13), interest rates were lower in 2016 than they had been in 2006: in Argentina, rates increased by 22.6 points over this period, while in Brazil they increased by 1.3 points. The largest percentage point falls in interest rates between 2006 and 2016 were was in the euro area (down 4.3 points) and the United States (down 4.4 points).

Figure 6.13: Lending interest rates — rate for short and medium-term financing needs of the private sector, 2006 and 2016

(%)



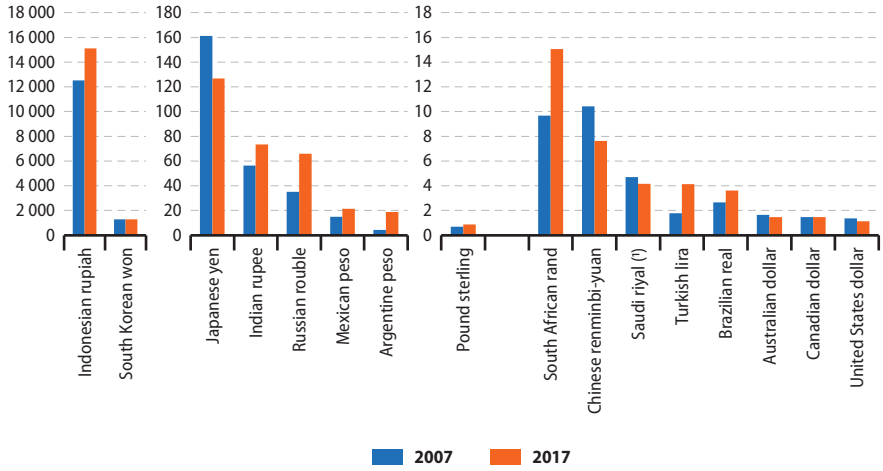
Note: Russia, Saudi Arabia and Turkey, not available.

(1) Definition differs: ECB marginal lending facility.
(2) 2014 instead of 2016.

Source: the European Central Bank and the World Bank (World Development Indicators)

Among the G20 members, the peso in Argentina devalued the most between 2007 and 2017 relative to the euro (see Figure 6.14), depreciating by 77.2 %. Other currencies of G20 members that depreciated strongly between these years included the Turkish lira (56.6 %), the Russian rouble (46.9 %) and the South African rand (35.8 %). Six currencies of G20 members appreciated against the euro between 2007 and 2017, ranging from a small appreciation of 0.2 % for the Canadian dollar, through increases of 11.0 % and 13.5 % for the Australian dollar and the Saudi riyal (between 2007 and 2016), to larger increases for the United States dollar (21.3 %), the Japanese yen (27.3 %) and the Chinese renminbi-yuan (36.6 %).

Figure 6.14: Annual average exchange rates, 2007 and 2017
(1 EUR = … national currency)



Note: different scales used for the three parts of the figure.

(1) 2016 instead of 2017. Estimates based on a conversion from exchange rates to the United States dollar.

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

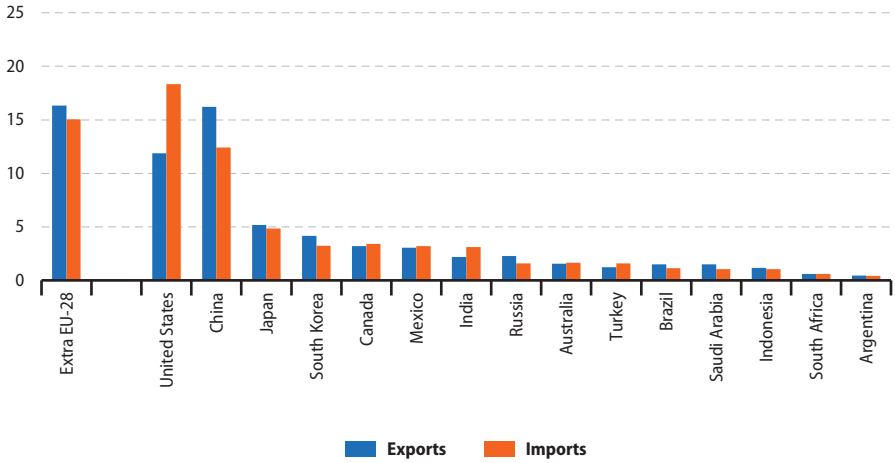
7. International trade

Balance of payments — share of world 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.

The EU-28 accounted for around one sixth of world trade in goods in 2016, with a 16.3 % share of exports and a 15.0 % share of imports (see Figure 7.1).

Figure 7.1: Trade in goods, 2016
(% of world total)



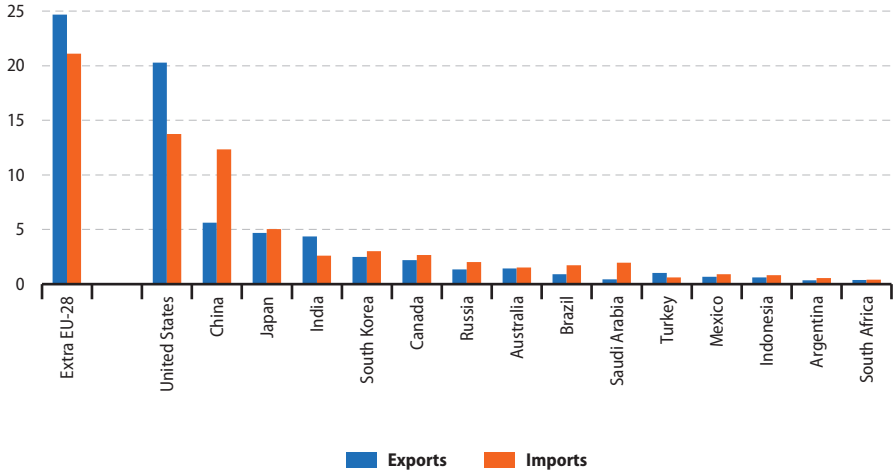
Note: the value of trade between EU Member States has been subtracted from the world total when calculating shares of world trade.

Source: Eurostat (online data code: bop_eu6_q) and the International Monetary Fund (Balance of Payments and International Investment Position Statistics)

The EU-28's share of world trade in goods was the largest in terms of exports, with China having almost exactly the same share (16.2 %), and second largest in terms of imports, behind the United States (18.3 %). The United States had the third largest share of world exports of goods and China the third largest share of imports, with Japan recording the fourth largest shares for both exports and imports. Canada and South Korea had the fifth and sixth largest shares of exports and import of goods, with Canada having more imports and South Korea more exports, while Mexico had the seventh largest share.

Turning to services (see Figure 7.2), the EU-28's contribution to world trade was even greater, totalling 24.7 % of exports and 21.1 % of imports. As such, the EU-28's extra-EU trade in services was clearly larger than that of any of the other G20 members, both in terms of exports and imports. Regardless of whether analysing exports or imports, the United States had the second largest share of the world's trade in services, followed by China and Japan. South Korea, Canada and then India had the next largest shares of imports, whereas India had a higher share of exports than South Korea or Canada.

Figure 7.2: Trade in services, 2016
(% of world total)



Note: the value of trade between EU Member States has been subtracted from the world total when calculating shares of world trade.

Source: Eurostat (online data code: bop_eu6_q) and the International Monetary Fund (Balance of Payments and International Investment Position Statistics)

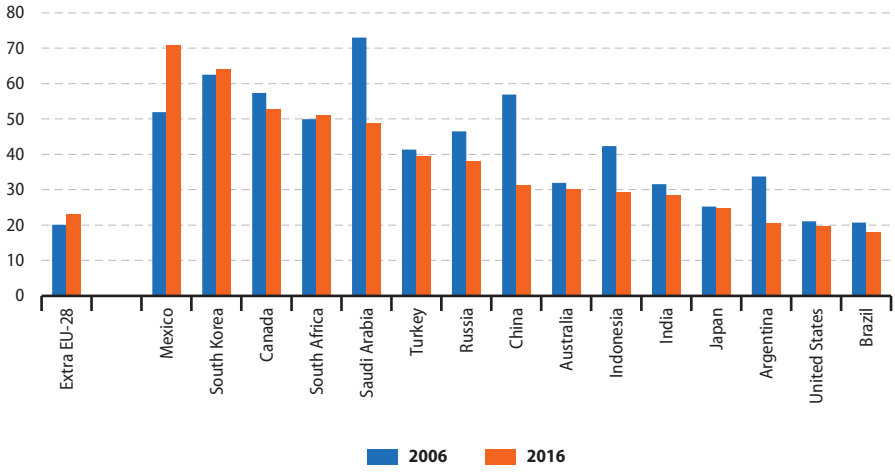
Trade in goods

The second part of this chapter focuses specifically on trade in goods. Figure 7.3 uses balance of payments and national accounts data to show the relative importance of trade in goods compared with gross domestic product (GDP). Thereafter, the focus is on data from statistics of international trade in goods.

The level of international trade in goods relative to overall economic activity (the ratio of traded goods to GDP) may be expected to be considerably higher for relatively small countries that are more integrated in the world's economy as a result of not producing a full range of goods (and services), as can be seen, for example, with Mexico (70.7 %) and South Korea (64.1 %) in Figure 7.3. By contrast, Brazil reported the lowest ratio of trade in goods (shown here as the sum of exports and imports of goods) to GDP (18.0 %) in 2016 among the G20 members. The equivalent ratio for the EU-28 was 23.1 %; note that the latter excludes intra-EU trade.

Comparing 2006 with 2016, the ratio of trade in goods to GDP increased notably in Mexico and to a smaller extent in the EU-28 and a much smaller extent in South Korea and South Africa. Elsewhere the ratio declined, with relatively large decreases in Indonesia and Argentina and particularly large decreases in Saudi Arabia and China.

Figure 7.3: International trade in goods, 2006 and 2016
(% of GDP)



Note: sum of imports and exports relative to GDP.

Source: Eurostat (online data codes: bop_eu6_q and nama_10_gdp), the International Monetary Fund (Balance of Payments and International Investment Position Statistics) and the OECD (Annual national accounts - main aggregates)

The EU-28 ran a trade surplus for goods equal to EUR 22.9 billion in 2017. Table 7.1 shows the flows and balance of trade in goods for the EU-28 with the other G20 members and with all non-EU countries. In 2017, the EU-28 had relatively large trade deficits with China (EUR 176 billion) and Russia (EUR 59 billion), and smaller ones with several other Asian countries: Japan, Indonesia, India and South Korea. The EU-28 had trade surpluses larger than EUR 10 billion with Australia, Turkey, Mexico and Saudi Arabia while its largest trade surplus for goods was with the United States (EUR 120 billion).

Between 2007 and 2017, the EU-28's trade balance for goods with Brazil, Argentina and South Africa developed from a deficit into a surplus, whereas this situation was reversed with India. During the same period, all of the other trade surpluses of the EU-28 with G20 members expanded. By contrast, the deficits for trade in goods with Russia and China increased, while the deficits with Indonesia, South Korea and Japan contracted.

In 2017, the EU-28's largest trade partner (exports and imports combined) for goods among G20 members was the United States, followed by China, Russia, Turkey and Japan, all with total trade in excess of EUR 100 billion. The EU-28's smallest trade partners were Indonesia and Argentina.

Together, the G20 members accounted for 59.4 % of the EU-28's exports of goods in 2017 and 63.4 % of its imports. Looking at the individual flows, the EU-28's largest export market in 2017 was the United States, followed at some distance by China, whereas for the EU-28's imports from these two countries their positions were reversed. The next largest trading partners for goods were the same, regardless whether analysing exports or imports: Russia, Turkey, Japan, South Korea and India. Argentina had the smallest share of EU-28 trade among the G20 members, both for exports and for imports. The EU-28's main export market outside of the G20 was Switzerland which was the destination for 8.0 % of the EU-28's exports in 2017. Switzerland (5.9 %) and Norway (4.2 %) provided the largest shares of the EU-28's imports from countries outside of the G20.

Table 7.1: EU-28 trade in goods by partner, 2007 and 2017
(EUR billion)

	2007			2017		
	EU-28 exports to partner	EU-28 imports from partner	Balance	EU-28 exports to partner	EU-28 imports from partner	Balance
World (extra-EU-28)	1 234.5	1 450.9	−216.4	1 878.8	1 855.9	22.9
Argentina	6.0	8.5	−2.6	9.9	8.2	1.7
Australia	23.9	13.5	10.4	34.6	13.0	21.6
Brazil	21.3	32.9	−11.6	32.2	31.1	1.1
Canada	25.4	24.3	1.1	37.7	31.4	6.3
China	71.8	233.9	−162.0	198.2	374.6	−176.4
India	29.2	26.7	2.5	41.7	44.1	−2.4
Indonesia	5.4	12.8	−7.4	10.1	16.6	−6.5
Japan	43.7	79.3	−35.5	60.5	68.6	−8.1
Mexico	21.0	12.2	8.8	37.9	23.7	14.2
Russia	89.2	147.7	−58.5	86.2	145.1	−58.9
Saudi Arabia	20.0	18.7	1.3	33.1	21.6	11.5
South Africa	20.4	22.1	−1.6	24.5	23.1	1.4
South Korea	24.7	41.7	−17.0	49.8	50.0	−0.2
Turkey	52.8	47.4	5.5	84.7	69.7	15.0
United States	259.6	178.0	81.6	375.5	255.5	120.0

Source: Eurostat (online data code: ext_lt_maineu)

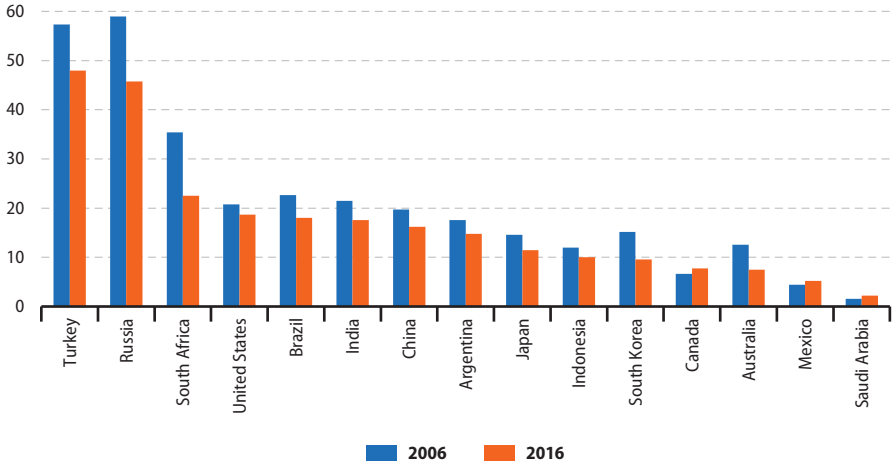
Between 2007 and 2017, the G20 members' share of EU-28 exports increased, up 1.6 percentage points from 57.9 %, while their share of EU-28 imports also increased, up 1.4 points from 62.0 %. Concerning EU-28 exports, China's share rose 4.7 points from 5.8 % to 10.5 %, while the share destined for South Korea increased 0.6 points and the share to Mexico by 0.3 points. The largest fall was recorded for Russia, whose share of EU-28 exports of goods fell 2.6 points from 7.2 % to 4.6 %, reflecting at least in part sanctions imposed in relation to the Ukraine crisis. Concerning the EU-28's imports of goods, China again recorded the largest increase, up 4.1 points from 16.1 % in 2007 to 20.2 % in 2017. The United States' share of EU-28 imports increased by 1.5 points and the shares coming from India, Turkey (both up 0.5 points) and Mexico (up 0.4 points) also increased. As for exports, Russia's share of EU-28 imports fell (from 10.2 % to 7.8 %), again reflecting in part sanctions, but also reflecting changes in oil and gas prices, which are among the main products imported by the EU-28 from Russia.

Figures 7.4 and 7.5 show the reverse situation, namely the importance of the EU-28 as a trading partner for the other G20 members in terms of international trade in goods; data are available for 2006 and 2016.

Nearly half of all goods exported from Turkey and Russia in 2016 were destined for the EU-28

Some 48.0 % of all goods exported from Turkey in 2016 were destined for the EU-28, which was the case for a similarly high share (45.8 %) of goods exported from Russia. By contrast, one tenth or less of the goods exported from Indonesia, South

Figure 7.4: EU-28 as the destination of exports of goods from G20 partners, 2006 and 2016
(% share of all exports of goods)

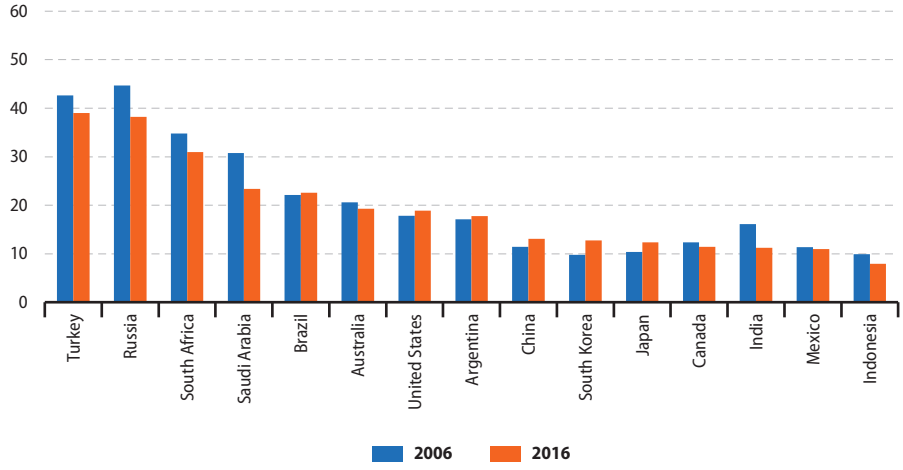


Source: the United Nations (Comtrade)

Korea, Canada, Australia, Mexico or Saudi Arabia were destined for the EU-28. Between 2006 and 2016 the EU-28 became a less important export market in relative terms for most of the G20 members, as only Canada, Mexico and Saudi Arabia recorded increases in the shares of their exports destined for the EU-28, with decreases of more than 5.0 points recorded in Australia, South Korea and Turkey and more than 10.0 points in South Africa and Russia.

The EU-28 was the source of nearly two fifths of all goods imported into Turkey and Russia in 2016, close to one third of the imports into South Africa, and between one quarter and one fifth of the goods imported into Saudi Arabia and Brazil. Indonesia was the only G20 member for which the EU-28 supplied less than 10.0 % of its total imports in 2016. Between 2006 and 2016 the importance of the EU-28 as a source of imports increased in relative terms in South Korea (up 3.0 points), Japan (2.0 points), China (1.6 points) and the United States (1.1 points), as well as in Argentina and Brazil. Elsewhere, the share of the EU-28 in the total imports of each of the G20 members fell, most notably in in Turkey (down 3.6 points), South Africa (3.8 points), India (4.9 points), Russia (6.4 points) and Saudi Arabia (7.4 points).

Figure 7.5: EU-28 as the origin of imports of goods into G20 partners, 2006 and 2016
(% share of all imports of goods)



Source: the United Nations (Comtrade)

Trade in services

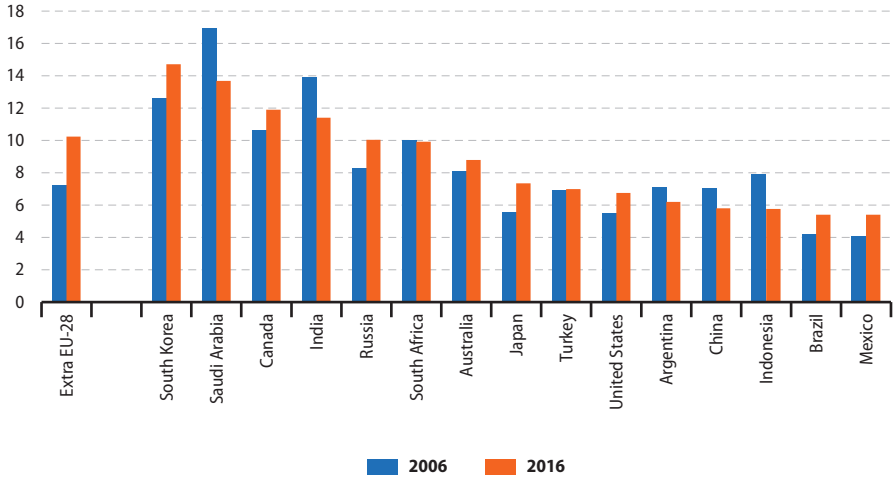
The final part of this chapter focuses on trade in services. Figure 7.6 uses balance of payments and national accounts data to show the relative importance of trade in services compared with GDP and can be compared with a similar calculation that was presented for goods in Figure 7.3. Thereafter, the focus is on balance of payments data.

The ratio of trade in services to GDP was highest in 2016 in South Korea

The level of international trade in services (exports and imports combined) relative to overall economic activity (GDP) was higher in South Korea in 2016 than in any of the other G20 members, reaching 14.7 %. The next highest ratios were 13.7 % in Saudi Arabia, 11.9 % in Canada, 11.4 % in India, and around 10 % in the EU-28, Russia and South Africa. Brazil and Mexico recorded the lowest levels for this ratio (5.4 %).

Comparing 2006 with 2016, the ratio of trade in services to GDP increased by 3.1 points in the EU-28, the largest increase among the G20 members, with South Korea (2.1 points) recording the second highest increase. A small majority of G20 members reported an increase in the ratio of trade in services to GDP between 2006 and 2016, although this was not the case in South Africa where there was a relatively small decrease or in Argentina, China, Indonesia, India or Saudi Arabia where there were larger decreases.

Figure 7.6: International trade in services, 2006 and 2016
(% of GDP)



Note: sum of imports and exports relative to GDP.

Source: Eurostat (online data codes: bop_eu6_q and nama_10_gdp), the International Monetary Fund (Balance of Payments and International Investment Position Statistics) and the OECD (Annual national accounts - main aggregates)

The EU-28 was the world's largest exporter and importer of services in 2016

As already noted, the EU-28 was the world's largest exporter and importer of services in 2016: extra-EU exports were valued at EUR 845 billion and imports at EUR 712 billion, resulting in a trade surplus for services of EUR 133 billion (see Table 7.2). The EU-28 had trade surpluses for services in 2016 with all G20 members except for Turkey, India and the United States; note that no data are available for Saudi Arabia.

Between 2011 and 2016, the EU-28's extra-EU trade surplus for services contracted slightly, down 1.9 %, resulting from somewhat stronger growth (in current prices) in imports of services (48.1 %) than for exports of services (37.1 %). Between 2011 and 2016, the EU-28's deficits for trade in services with Turkey and India narrowed, while its surplus with the United States turned into a deficit. Elsewhere the EU-28's surpluses for trade in services with South Africa and Brazil narrowed, most notably with Brazil, while with the remaining G20 members the EU-28's surpluses expanded, particularly with Japan, China, South Korea and Argentina in relative terms.

Table 7.2: EU-28 trade in services with G20 partner countries, 2011 and 2016
(EUR billion)

	2011			2016		
	EU-28 exports to partner	EU-28 imports from partner	Balance	EU-28 exports to partner	EU-28 imports from partner	Balance
World (extra-EU-28)	616.1	480.5	135.6	844.9	711.8	133.1
Argentina	3.7	2.3	1.4	4.6	2.2	2.4
Australia	16.3	7.8	8.5	18.8	8.3	10.5
Brazil	16.7	6.7	10.0	13.5	7.9	5.6
Canada	15.6	10.4	5.2	18.5	11.8	6.7
China	21.8	17.8	4.0	38.3	29.6	8.8
India	11.2	13.6	−2.4	13.6	15.3	−1.7
Indonesia	3.3	1.8	1.5	4.0	2.2	1.8
Japan	20.2	15.5	4.7	31.0	18.0	13.0
Mexico	7.1	3.6	3.5	9.8	5.0	4.8
Russia	25.5	12.6	12.9	24.7	11.3	13.5
South Africa	7.4	4.4	3.0	7.8	5.0	2.8
South Korea	7.9	4.7	3.2	12.6	6.6	6.0
Turkey	9.2	15.0	−5.9	11.8	13.9	−2.1
United States	152.4	145.3	7.1	218.0	219.3	−1.3

Note: Saudi Arabia, not available.

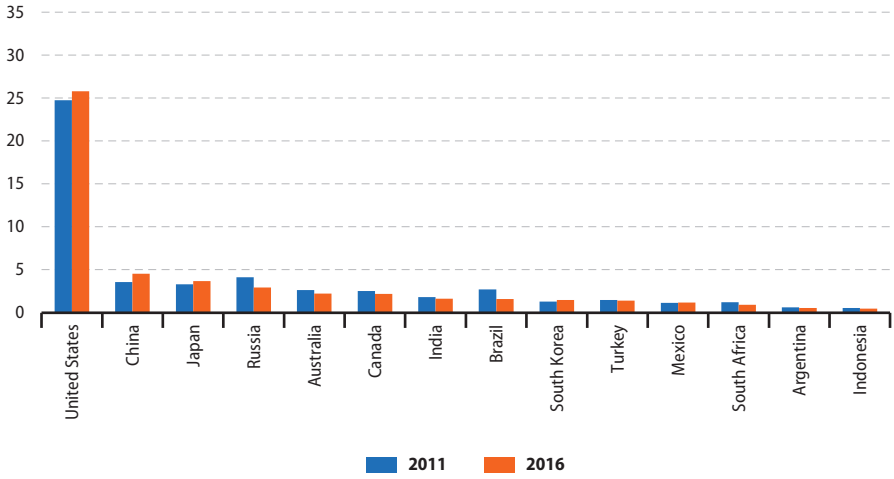
Source: Eurostat (online data code: bop_its6_det)

In 2016, the G20 members (excluding Saudi Arabia) accounted for half of the EU-28's extra-EU trade in services: 50.5 % of exports and 50.1 % of imports, considerably less than the G20's shares of the EU-28's exports and imports of goods. Among countries outside of the G20, Switzerland was a major partner of the EU-28 for trade in services, with a 13.6 % share of EU-28 exports in 2016 and a 13.2 % share of imports. A similar proportion of the EU-28's trade in services was with offshore financial centres, which accounted for 10.7 % of the EU-28's exports in 2016 and 15.3 % of its imports.

The United States was by far the EU-28's largest partner for trade in services in 2016

However, one of the G20 members — the United States — was the single largest partner for the EU-28 for trade in services, as can be seen from Figures 7.7 and 7.8: more than one quarter (25.8 %) of the EU-28's exports of services were destined for the United States in 2016, while more than three tenths (30.8 %) of the EU-28's imports originated in the United States. In relative terms, the United States was a more important partner for the EU-28 for trade in services (combining exports and imports) than it was for trade in goods, while the reverse was true most notably for China, Russia and Turkey.

Figure 7.7: EU-28 exports of services to non-member countries, 2011 and 2016
(% share of all extra-EU-28 exports of services)

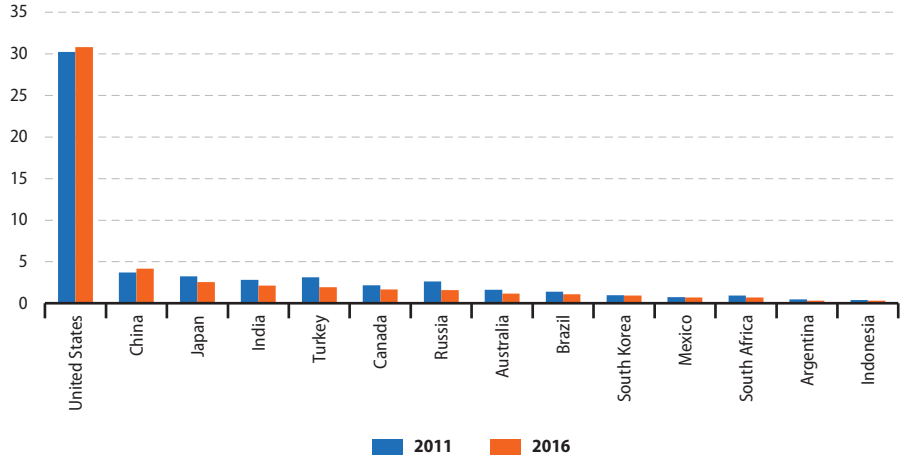


Note: Saudi Arabia, not available.

Source: Eurostat (online data code: bop_its6_det)

Between 2011 and 2016, the share of EU-28 exports of services destined for the United States expanded by 1.1 points and there was a similar increase (1.0 points) in the share going to China and smaller increases for Japan and South Korea as destinations. These changes were mirrored by falls in the shares of EU-28 exports of services elsewhere (except Mexico whose share was unchanged), with the largest falls in exports destined for Brazil (down 1.1 points) and Russia (down 1.2 points). A broadly similar picture was observed for the shares of the EU-28's imports of services, with increases for the United States (0.6 points) and China (0.4 points), no change in the share for Mexico, and falling shares elsewhere, most notably for Russia (down 1.0 points) and Turkey (down 1.2 points).

Figure 7.8: EU-28 imports of services from non-member countries, 2011 and 2016
(% share of all extra-EU-28 imports of services)



Note: Saudi Arabia, not available.

Source: Eurostat (online data code: bop_its6_det)

8. Agriculture, forestry and fisheries

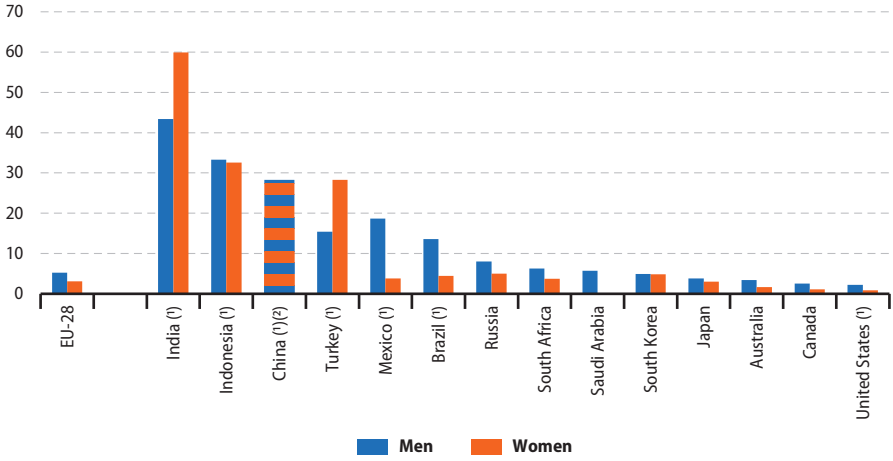
Labour force

Less than one tenth of the labour force was active in agriculture, forestry and fisheries in most G20 members in 2016

In most G20 members, less than one tenth of the labour force was active in agriculture, fishing and forestry in 2016, according to data from the United Nations' Food and Agricultural Organisation (FAO). Nevertheless, this share exceeded one quarter in China (28.3 %; 2015 data), reached one third in Indonesia (33.0 %; 2015 data) and approached half in India (47.0 %; 2012 data). The share of the labour force active in agriculture, forestry and fisheries in the EU-28 was 4.3 %.

In the vast majority of G20 members, the share of the labour force active in agriculture, forestry and fisheries was higher for men than for women (see Figure 8.1). This was most notably the case in Mexico (2017 data) where there was a difference of 14.8 points between the shares for men and women and in Brazil (2017 data) where the difference was 9.2 points. In the EU-28, 5.2 % of men in the labour force worked in these activities compared with 3.1 % of women, a difference of 2.1 points. The two exceptions among the G20 members were Turkey (2017 data) and India (2012 data), as the proportions of women working in agriculture, forestry and fisheries were 12.9 points and 16.5 points higher than for men. In India, three fifths (59.9 %) of women worked in these activities, by far the highest share among the G20 members.

Figure 8.1: Agriculture, forestry and fisheries, 2016
(% of total employment)



Note: Argentina, not available. Ranked on the overall share for both sexes combined.

(1) India: 2012. China and Indonesia: 2015. Brazil, Mexico, Turkey and the United States: 2017.
(2) Analysis by sex: not available.

Source: Eurostat (online data code: lfsa_egan2) and the International Labour Organisation (ILOSTAT)

Agricultural area

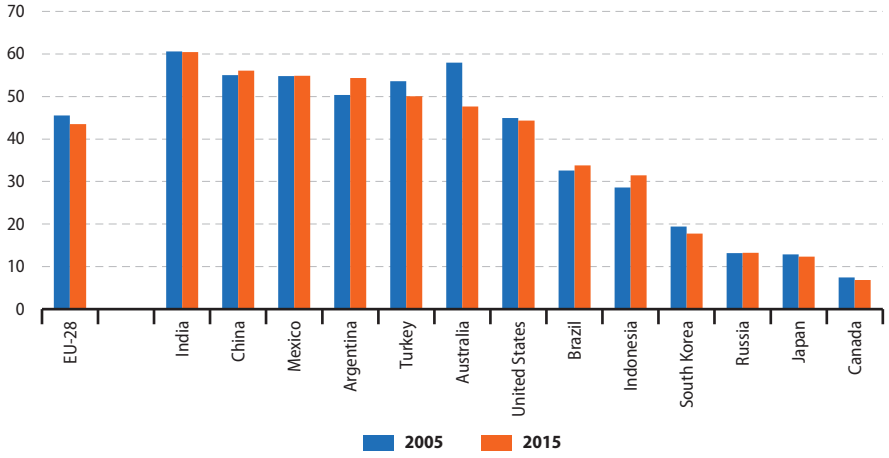
The agricultural area of the EU-28 in 2015 was greater than its forest area

The total agricultural area (including unused agricultural land) of the EU-28 was 184.6 million hectares (100 hectares is one km^2) in 2015, some 43.5 % of its total land area. Among the G20 members, the most extensive total agricultural areas in 2015 were recorded for China (529 million hectares) and the United States (406 million hectares).

The ratio of the total agricultural area to the total land area (shown in Figure 8.2) can be compared with a similar ratio for forests (shown in Figure 8.7), from which it can be seen that the EU's agricultural share of the land area was 5.5 percentage points larger. Among the G20 members, the ratio of the total agricultural area to the total land area reached three fifths in India (60.4 %) and was between half and three fifths in China, Mexico, Argentina and Turkey; note that comparable data are not available for Saudi Arabia and South Africa. By contrast, this share was below one fifth in South Korea, Russia and Japan and below one tenth in Canada.

The ratio of the total agricultural area to the total land area fell in a small majority of G20 members between 2005 and 2015, although there were increases of 4.0 points in Argentina, 2.8 points in Indonesia, 1.2 points in Brazil and 1.1 points in China, as well as smaller increases (0.1 points) in Russia and Mexico. South Korea (−1.6 points), Turkey (−3.5 points) and Australia (−10.3 points) reported the largest decreases.

Figure 8.2: Agricultural area, 2005 and 2015
(% of land area)



Note: Saudi Arabia and South Africa not included due to lack of comparable land use data. Estimates.
Source: the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs)

Agricultural products

The production of a range of different crops across the G20 members is presented in Table 8.1 with the total production of cereals (relative to the size of the population) shown in Figure 8.3. Crop production refers to the harvested quantity of production. The United States was the largest producer of maize among the G20 members in 2016, while the EU-28 had the highest wheat production, followed by China, India, Russia and the United States. Rice production in G20 members was dominated by China, India and Indonesia, while sugar cane production was particularly high in Brazil and to a lesser extent in India and China.

Between 2006 and 2016, world production of all of the crops shown in Table 8.1 increased, most notably the harvest of maize increasing overall by 49.7 % and the harvest of sugar cane increasing overall by 33.4 %. The production of maize increased in nearly all G20 members, with the largest increase among the G20 members in Russia where output more than trebled while the largest increase among the bigger producers was in Argentina where output more than doubled. Brazil reported the largest increase for sugar cane in relative and absolute terms, its output increasing by 61.0 %, while Argentina and South Africa both recorded relatively large decreases in output, 16.9 % and 25.7 % respectively. The three largest producers of rice saw output increase between 2006 and 2016, rising overall by 41.9 % in Indonesia, 15.3 % in China and 14.1 % in India. Like maize, wheat production increased in most G20 members, although among the largest producers it fell by 11.4 % in Australia. Among the other G20 members harvesting more than 10 million tonnes of wheat, Russia's output increased most, up 63.1 %. China strengthened its position as the largest producer of potatoes, its output expanding by 83.4 %.

Table 8.1: Production of selected crops, 2006 and 2016
(million tonnes)

	Sugar cane		Maize		Rice		Wheat		Potatoes	
	2006	2016	2006	2016	2006	2016	2006	2016	2006	2016
EU-28	0.0	0.0	58.3	62.8	2.6	2.9	127.5	142.7	57.0	55.9
World	1 417.4	1 890.7	707.9	1 060.1	640.7	741.0	614.5	749.5	297.1	376.8
Argentina	*26.5*	*22.0*	14.4	39.8	1.2	1.4	12.7	18.6	1.9	1.8
Australia	37.1	34.4	0.4	0.4	1.0	0.3	25.2	22.3	1.2	1.1
Brazil	477.4	768.7	42.7	64.1	11.5	10.6	2.5	6.8	3.2	3.9
Canada	:	:	9.0	12.3	:	:	25.3	30.5	5.1	*4.3*
China	97.1	*122.7*	151.6	*231.7*	181.7	*209.5*	108.5	*131.7*	54.0	*99.1*
India	281.2	348.4	15.1	26.3	139.1	*158.8*	69.4	93.5	29.2	43.8
Indonesia (1)	29.2	*27.2*	11.6	*20.4*	54.5	*77.3*	:	:	1.0	1.2
Japan	1.3	1.6	*0.0*	*0.0*	10.7	8.0	0.8	0.8	2.6	2.2
Mexico	50.7	56.4	21.9	28.3	0.3	0.3	3.4	3.9	1.5	1.8
Russia	:	:	3.5	15.3	0.7	1.1	44.9	73.3	28.3	31.1
Saudi Arabia	:	:	0.1	*0.1*	*0.0*	*0.0*	2.6	0.8	0.5	*0.4*
South Africa	20.3	15.1	6.9	*7.8*	*0.0*	*0.0*	2.1	1.9	1.9	2.2
South Korea	:	:	0.1	*0.1*	6.3	5.6	0.0	*0.0*	0.6	*0.6*
Turkey	:	:	3.8	6.4	0.7	0.9	20.0	20.6	4.4	4.8
United States	29.6	29.9	267.5	384.8	8.8	10.2	49.2	62.9	20.0	20.0

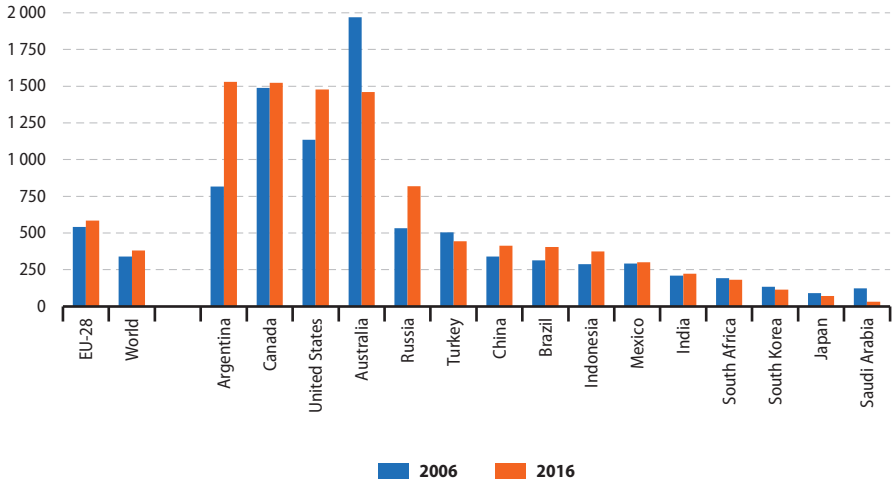
(1) Sugar cane: unofficial data.

Source: Eurostat (online data code: apro_cpnh1) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production)

Cereals production increased strongly in Argentina such that by 2016 it had the largest output per inhabitant among the G20 members

Worldwide production of cereals per inhabitant increased overall by 12.0 % between 2006 and 2016, with the increase in the EU-28 around two thirds this rate, with growth of 8.3 %. The fastest increase in cereals production per inhabitant during this 10 year period was reported by Argentina, rising overall by 87.4 % to reach a level of 1 529 kg per inhabitant, the highest level among all G20 members in 2016, just ahead of Canada (1 523 kg per inhabitant); the United States (1 477 kg per inhabitant) and Australia (1 460 kg per inhabitant) were the only other G20 members with a production of cereals exceeding 1 000 kg per inhabitant (see Figure 8.3). Russia recorded the second largest increase in cereals output per inhabitant, up overall by 53.2 % between 2006 and 2016, while increases between 20 % and 30 % were observed in Indonesia, the United States, Brazil and China.

Figure 8.3: Production of cereals, 2006 and 2016
(kg per inhabitant)



Note: estimates.

Source: Eurostat (online data codes: apro_cpnh1 and demo_gind), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

The EU-28 had the largest production of milk in 2016 among G20 members in absolute terms and relative to population size

The production level for a selection of animal products is presented in Table 8.2, focusing on meat and milk. Meat production covers the carcass weight of slaughtered animals whose meat is declared fit for human consumption. The G20 members produced nearly four fifths (79.1 %) of the 330 million tonnes of meat produced worldwide in 2016, with China, the EU-28, the United States and Brazil collectively producing 62.3 % of the world total. The G20 members were particularly specialised in the production of pig meat, accounting for 87.8 % of the world total, while the lowest share for G20 members for the types of meat shown in Table 8.2 was 56.2 % for sheep and goat meat.

Half or more of the total meat production in Argentina and Australia was cattle meat, while similar levels of specialisation were recorded in China and South Korea for pig meat, and in Saudi Arabia, Indonesia, Turkey, Japan, South Africa and Brazil for poultry meat. The EU-28 was the largest producer of milk (169 million tonnes) among the G20 members, just ahead of India (159 million tonnes), with the United States (96 million tonnes) clearly the third largest producer. In several countries, the relatively low levels of meat production in general and of some types of meat in particular reflects to some degree the predominant religious beliefs.

Table 8.2: Meat and milk production, 2016
(thousand tonnes)

	Total meat production	of which:				Milk production
		Bovine meat	Pig meat	Poultry meat	Sheep and goat meat	
EU-28	47 472	7 898	23 648	14 514	877	168 824
World	329 890	69 800	118 169	120 302	14 932	798 476
Argentina	5 220	2 644	522	1 973	63	9 895
Australia	4 694	2 361	377	1 213	715	7 719
Brazil	27 441	9 284	3 514	14 498	123	33 878
Canada	4 579	1 133	2 048	1 357	15	7 517
China	85 987	7 351	54 130	18 080	4 615	41 559
India	7 192	2 522	316	3 426	740	159 396
Indonesia	3 168	561	342	2 147	115	1 491
Japan	4 095	464	1 279	2 345	0	7 396
Mexico	6 554	1 879	1 376	3 116	100	11 826
Russia	9 899	1 619	3 368	4 141	213	30 752
Saudi Arabia	857	44	:	634	127	2 703
South Africa	3 425	1 109	242	1 840	192	3 515
South Korea	2 394	277	1 216	895	2	1 705
Turkey	3 348	989	:	1 933	424	18 116
United States	44 624	11 470	11 320	21 483	70	96 385

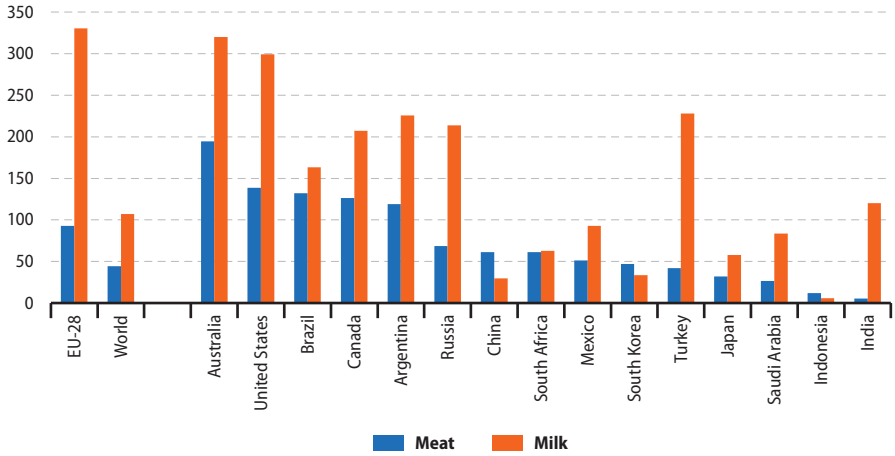
Note: may include official, semi-official, unofficial, estimated or calculated data.

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

Australia had the largest production of meat in 2016 among G20 members relative to population size

Figure 8.4 presents information on the levels of meat and milk production relative to population size: worldwide 2.4 times as much milk was produced as meat, averaging 107 kg of milk per inhabitant and 44 kg of meat. Average production per inhabitant in the EU-28 was higher, approximately double the world average for meat and treble the world average for milk. In most G20 members, meat production per inhabitant exceeded the world average, the exceptions being India, Indonesia, Saudi Arabia, Japan and Turkey. Averages above 100 kg per inhabitant were recorded in Argentina, Canada, Brazil and the United States, while the highest level of meat production per inhabitant was in Australia, 195 kg per inhabitant. Behind the EU-28, Australia was the only other G20 member to produce more than 300 kg of milk per inhabitant in 2016, although production was close to this level in the United States. At the other end of the range, less than 50 kg of milk per inhabitant was produced in South Korea and China, while the lowest milk production of all G20 members was 5.7 kg per inhabitant in Indonesia.

Figure 8.4: Meat and milk production, 2016
(kg per inhabitant)



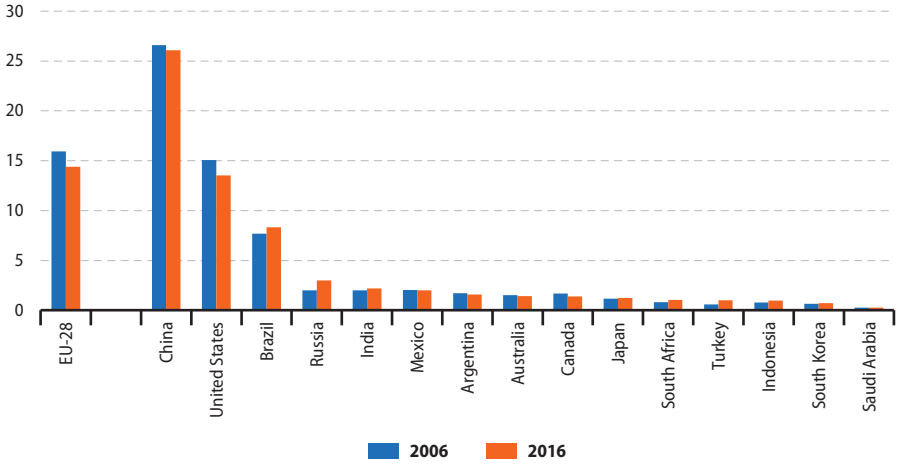
Note: may include official, semi-official, unofficial, estimated or calculated data. Ranked on the production of meat.

Source: Eurostat (online data codes: apro_mk_farm and demo_gind), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

China alone contributed 26.1 % of world meat production in 2016 (see Figure 8.5), considerably more than the next largest shares among G20 members, 14.4 % for the EU-28, 13.5 % for the United States and 8.3 % for Brazil: none of the other G20 members produced more than 3.0 % of the world's meat.

Comparing 2006 and 2016, the EU-28's share of world meat production fell 1.6 points and the United States reported a similar fall, down 1.5 points. China's share fell by 0.5 points and Canada's by 0.3 points. By contrast, Turkey's share increased by 0.4 points and Brazil's by 0.6 points, while Russia's share increased by 1.0 points, which was a particularly large increase in relative terms as its share in 2006 had been just 2.0 %.

Figure 8.5: Meat production, 2006 and 2016
(% of world total)



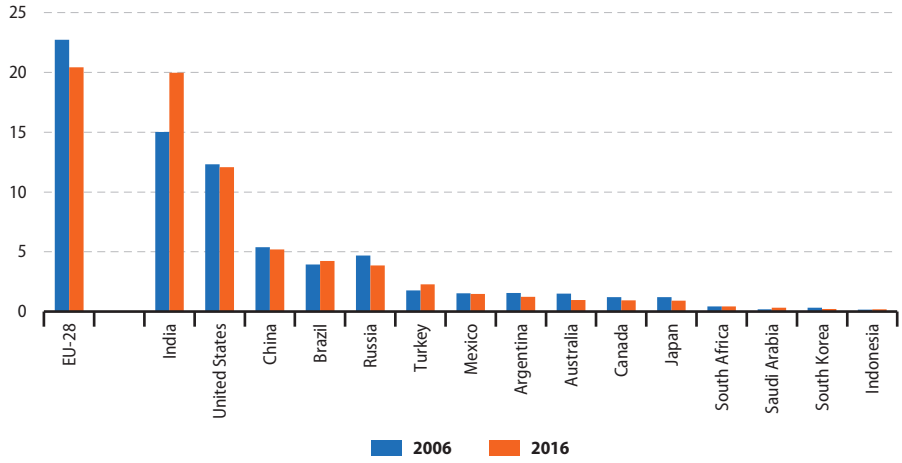
Note: may include official, semi-official, unofficial, estimated or calculated data.

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

A similar calculation for milk production (as shown in Figure 8.6) confirms that milk production was concentrated in a similar group of G20 members, led by the EU-28 (20.4 % of the world total), India (20.0 %) and the United States (12.1 %), which collectively produced more than half (52.5 %) of all milk produced worldwide.

Between 2006 and 2016, the G20's share of world milk production increased slightly, from 74.1 % to 74.8 %. The development of the shares of the two largest milk producers within the G20 — the EU-28 and India — mirrored each other: the EU-28's share of the world total fell by 2.3 points during this period, while that of India increased by 5.0 points. Elsewhere, the changes recorded for these shares were more subdued, ranging from an increase of 0.5 points in Turkey to a fall of 0.5 points in Australia.

Figure 8.6: Milk production, 2006 and 2016
(% of world total)



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

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

Forestry

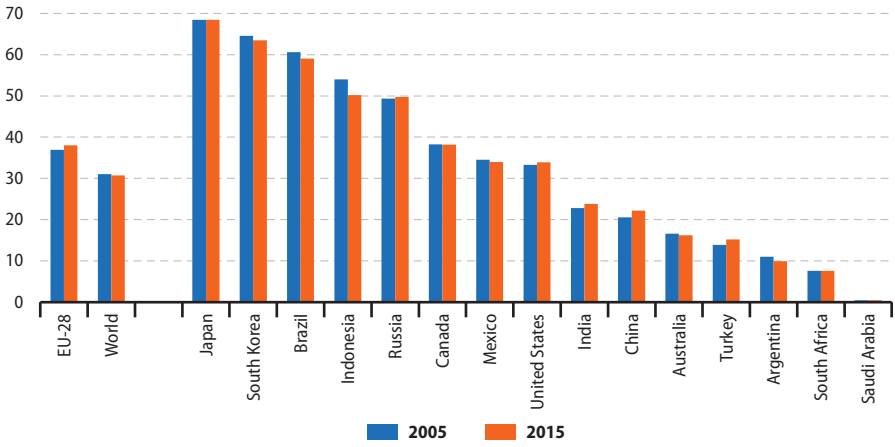
Forests occur under a huge variety of climatic, geographic, ecological and socio-economic conditions and are an essential part of the natural environment. They have an impact on water resources, act as a stabiliser for the Earth's climate, provide shelter to animal and plant life, provide food, medicinal 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.

Among G20 members, between 2005 and 2015 the share of land covered by forests decreased most strongly in Indonesia

Forest cover within the EU-28 extended to 161 million hectares (100 hectares is one km^2) in 2015, around 38.0 % of its total land area (see Figure 8.7), above the world average of 30.7 %. In 2015, more than half of the land area in Japan, South Korea, Brazil and Indonesia was forested, while the share in Russia was just below half. Among the G20 members, Argentina (9.9 %) and South Africa (7.6 %) recorded shares below one tenth while by far the lowest share of land that was covered by forests was in Saudi Arabia (0.5 %).

Between 2005 and 2015, the share of land covered by forests increased by 1.6 points in China, 1.4 points in Turkey and 1.0 points in the EU-28 and India; smaller increases were observed in the United States, Russia and Japan. Worldwide, the share of forests in total land area fell by 0.3 points between 2005 and 2015, with Australia, Mexico, Argentina, South Korea, Brazil and Indonesia recording falls that exceeded the world average: in Brazil the decline in forest area was equal to 1.6 points while in Indonesia it was 3.8 points.

Figure 8.7: Forest area, 2005 and 2015
(% of land area)



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

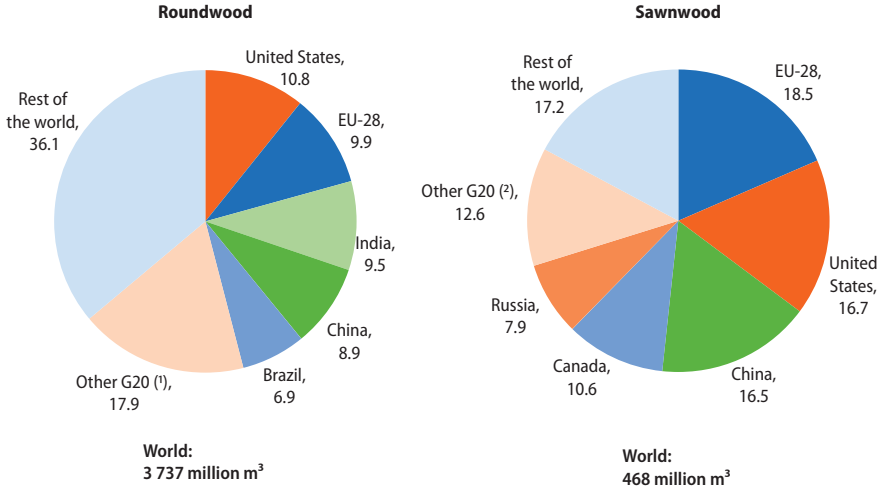
Source: Eurostat (online data code: for_area) and the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs)

The United States and the EU-28 were the largest producers of roundwood and sawnwood in 2016 among the G20 members

Roundwood production (also known as removals) comprises all quantities of wood removed from forests, other wooded land, or other tree felling sites. Roundwood production in the EU-28 was 372 million m^3 (9.9 % of the world total) in 2016, making the EU-28 the second largest producer within the G20 behind the United States which had a 10.8 % world share (see Figure 8.8). India had a 9.5 % share of the world total, followed by China with 8.9 % and Brazil with 6.9 %. In total, G20 members accounted for 63.9 % of roundwood production worldwide in 2016.

The EU-28 was the largest producer of sawnwood, with an output of 86 million m^3 in 2016, equivalent to 18.5 % of the world total. Sawnwood is produced either by sawing lengthways or by a profile-chipping process and, with a few exceptions, is greater than 6 millimetres (mm) in thickness. Sawnwood production in the United States and China was slightly less than in the EU-28, contributing 16.7 % and 16.5 % to the world total. Collectively the G20 members (excluding Saudi Arabia) produced 82.8 % of world sawnwood production, a considerably greater share than for roundwood.

Figure 8.8: Production of roundwood and sawnwood, 2016
(% of world total)



(1) Argentina, Australia, Canada, Indonesia, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea and Turkey.
(2) Argentina, Australia, Brazil, India, Indonesia, Japan, Mexico, South Africa, South Korea and Turkey. Saudi Arabia: not available and therefore included in the value for the rest of the world.

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

Fisheries

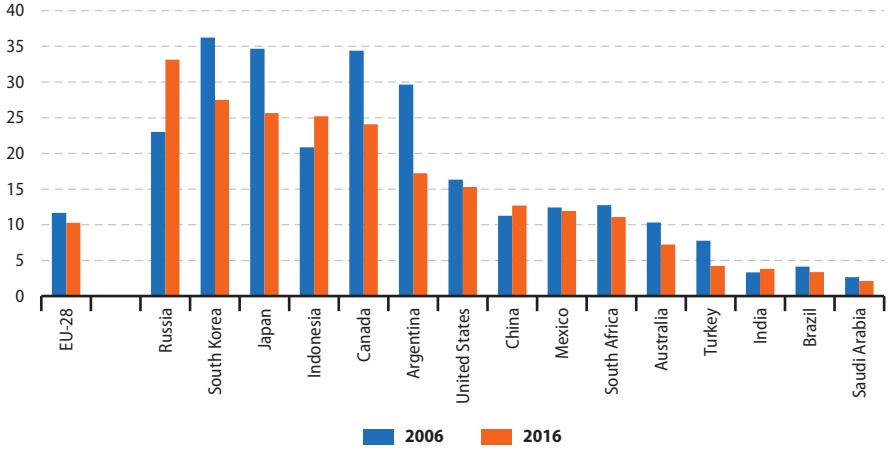
Aside from fish farming, fish are not owned until they have been caught, and so fish stocks continue to be regarded as a common resource, requiring collective management. This has led to a range of policies and international agreements that regulate the amount of fishing, as well as the types of fishing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

The total fish catch by the EU-28 fishing fleet was 5.3 million tonnes in 2016, 9.4 % less than had been caught 10 years earlier. Relative to population size this was equivalent to 10.3 kg per inhabitant in 2016. The largest fish catch relative to population size among G20 members in 2016 was reported for Russia, 33.2 kg per inhabitant, some 3.2 times the level for the EU-28. Five G20 members reported lower levels of fish catch per inhabitant than the EU-28: Australia, Turkey, India, Brazil and Saudi Arabia.

Between 2006 and 2016, the Russian fish catch relative to population size increased by 10.2 kg per inhabitant, far more than in any other G20 member (see Figure 8.9): Indonesia (up 4.3 kg per inhabitant), China (up 1.4 kg per inhabitant) and India (up 0.5 kg per inhabitant) were the only other G20 members to report an increase. South Korea, Japan, Canada and Argentina reported the largest decreases in their fish catches relative to their population size, each down by between 8.8 kg and 12.4 kg per inhabitant.

Figure 8.9: Fish catch, 2006 and 2016
(kg per inhabitant)



Source: Eurostat (online data codes: fish_ca_main and demo_gind), the Food and Agriculture Organisation of the United Nations (Global Capture Production) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

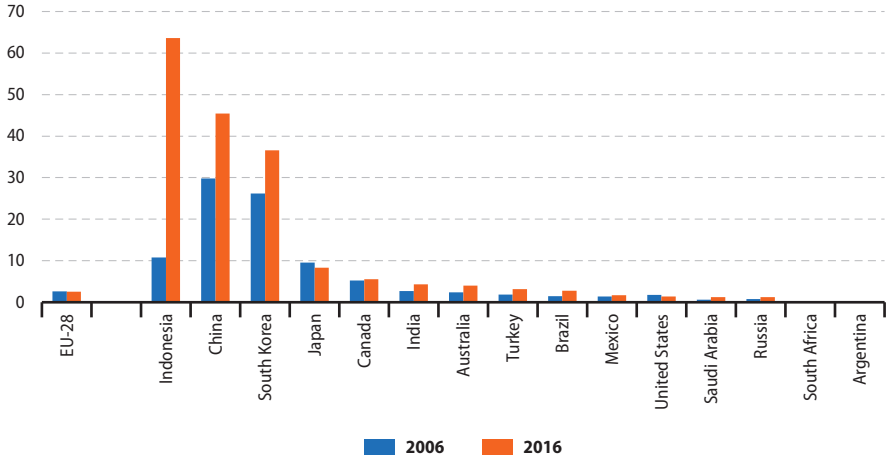
Aquaculture (also known as fish farming) refers to the farming of aquatic (freshwater or saltwater) organisms, such as fish, molluscs, crustaceans and plants for human use or consumption, under controlled conditions. Aquaculture implies some form of intervention in the natural rearing process to enhance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

Aquaculture production in the EU-28 was estimated at 1.3 million tonnes in 2015, equivalent to 2.5 kg per inhabitant. While this was larger than in six of the other G20 members, it was far behind the levels of production observed in three Asian members, namely, South Korea (36.6 kg per inhabitant), China (45.4 kg per inhabitant) and Indonesia (63.6 kg per inhabitant).

Aquaculture production relative to population size fell between 2006 and 2016 in Japan and the United States and very slightly in the EU-28, while there was almost no change in the size of the relatively small levels of aquaculture in South Africa and Argentina. Elsewhere, increases in aquaculture production were greater than population increases, with particularly strong growth in the three Asian members with the highest levels of output per inhabitant, rising by 10.4 kg per inhabitant in South Korea, 15.6 kg per inhabitant in China and 52.8 kg per inhabitant in Indonesia. In relative terms, the highest increase in aquaculture production per inhabitant between 2006 and 2016 was recorded in Indonesia, where output increased approximately six-fold, while in Saudi Arabia and Brazil it nearly doubled.

Relative to population size, the EU-28's combined fish catch and aquaculture production was estimated at 12.8 kg per inhabitant in 2016, a relatively low level compared with most other G20 members. The highest levels of production were witnessed in South Korea and Indonesia, with 64.1 kg per inhabitant and 88.9 kg per inhabitant respectively.

Figure 8.10: Aquaculture production, 2006 and 2016
(kg per inhabitant)



Source: Eurostat (online data codes: fish_aq_q, fish_aq2a and demo_gind), the Food and Agriculture Organisation of the United Nations (Global Aquaculture Production) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

9. Industry, trade and services; tourism

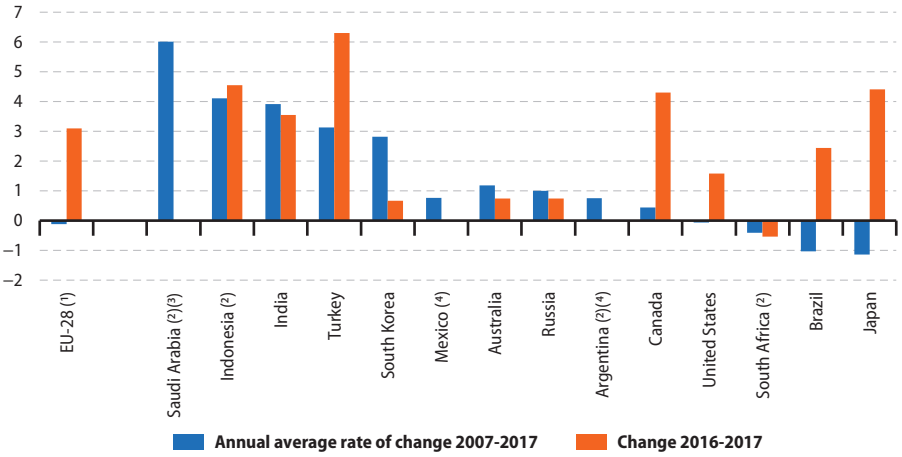
Short-term business statistics

The bar charts presented in Figures 9.1 and 9.2 illustrate developments for the industrial production index and for the domestic industrial output price index using key short-term business statistics. The rates of change presented here are calculated from annual indices but the underlying series are normally monthly or quarterly data which facilitate a rapid assessment of the economic climate.

In five G20 members industrial output in 2017 had still not yet returned to pre-crisis levels

The impact of the financial and economic crisis on industrial activities and the subsequent recovery was substantial in several G20 members and this is reflected in the 10 year annual average rate of change between 2007 and 2017. Five of the G20 members — Japan, Brazil, South Africa (manufacturing only), the United States and the EU-28 — reported negative annual averages for this 10 year period, indicating that in real terms the level of industrial output in 2017 had not

Figure 9.1: Industrial production index, 2007-2017
(%)



Note: ranked on annual average rate of change 2007-2017. China: not available.

(1) Calendar adjusted.
(2) Manufacturing.
(3) Annual average rate of change 2010-2016. Change 2016-2017: not available.
(4) Annual average rate of change 2007-2016. Change 2016-2017: not available.

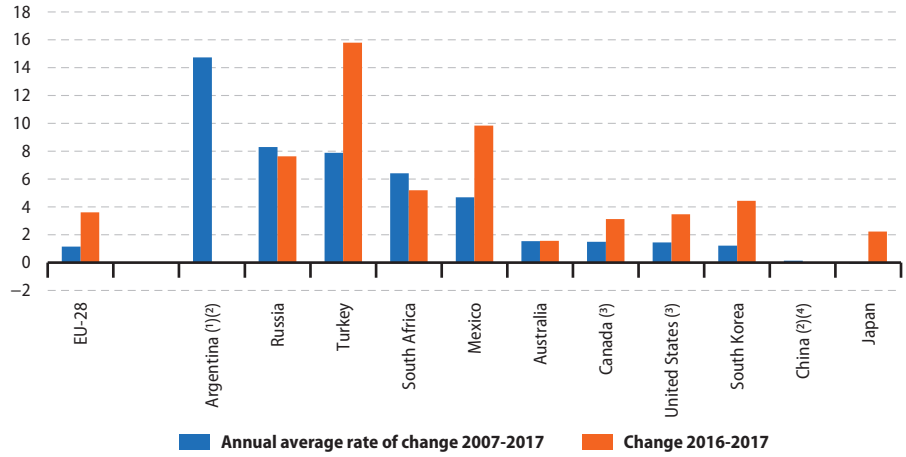
Source: Eurostat (online data code: sts_inpr_a), the International Monetary Fund (International Financial Statistics) and the OECD (Main Economic Indicators)

yet returned to its pre-crisis level observed in 2007. Over the period studied, India (3.9 %) and Indonesia (4.1 %; manufacturing only) reported the third and second fastest annual average growth rates in industrial output among the G20 members, with the fastest growth in Saudi Arabia (6.0 %; manufacturing only; 2010-2016). Looking at the latest annual rate of change, between 2016 and 2017, Turkey recorded the fastest growth in industrial production, up 6.3 %, just over double the growth recorded in the EU-28 (3.1 %). South Africa (manufacturing only) was the only G20 member for which data are available to report a fall in output in 2017.

The domestic industrial producer price index is a business cycle indicator whose objective is to measure the development of transaction prices of industrial activities within the domestic market.

Over the 10 year period from 2007 to 2017, industrial output prices in Japan and China (2007-2015; total industrial producer price index) were almost unchanged, showing an average annual fall of 0.1 % in the former and a rise of the same amount in the latter. The next lowest annual averages over this period among the G20 members for which data are available were price increases of 1.2 % in the EU-28 and South Korea and 1.5 % in the United States, Canada (both manufacturing only) and Australia. Elsewhere, annual average domestic industrial producer prices rose more rapidly, ranging from 4.7 % in Mexico to 14.7 % in Argentina (2007-2014; total industrial producer price index). The latest annual rates of change (2017 compared with 2016) confirm that industrial producer prices rose at a rapid pace in Turkey, up 15.8 %, followed at some distance by an increase of 9.8 % in Mexico.

Figure 9.2: Industrial producer price index (domestic), 2007-2017
(%)



Note: ranked on annual average rate of change 2007-2017. Brazil, India, Indonesia and Saudi Arabia: not available.

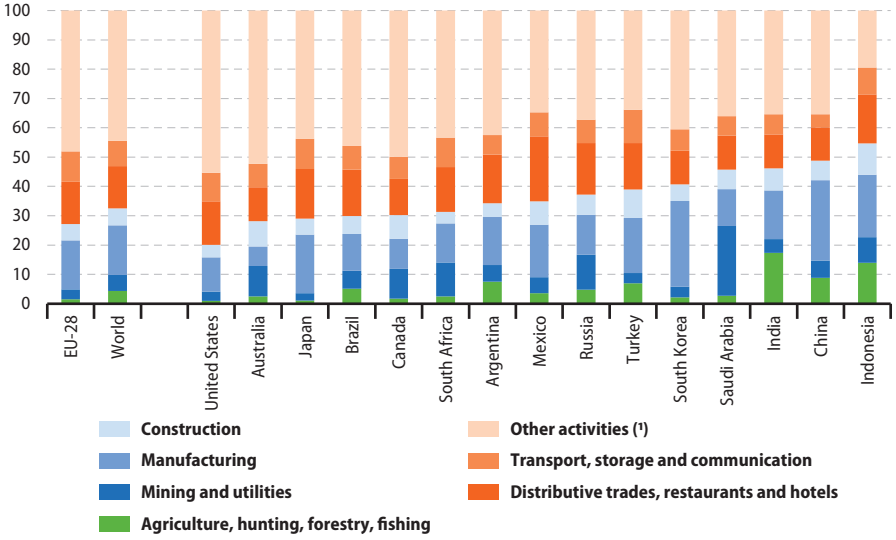
(1) Annual average rate of change 2007-2014. Change 2016-2017: not available.
(2) Total producer price index.
(3) Manufacturing.
(4) Annual average rate of change 2007-2015. Change 2016-2017: not available.

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

Structure of the economy

Figure 9.3 presents illustrates the economic structure in the G20 economies, using national accounts data to group economic activities into seven broad headings based on the ISIC Rev.3 classification; note that the heading of other activities includes a range of service activities, among which, financial intermediation, business, social and personal services, as well as many traditionally public services. In 2016, this disparate group of activities contributed at least half of the total gross value added of the economies of the United States and Australia and their share was close to this level in Canada (49.9 %) and the EU-28 (48.1 %) — see Figure 9.3. Brazil (46.2 %) was the only other G20 member where the share of other activities was above the world average (44.4 %). Nevertheless, in all of the other G20 countries except for Indonesia, other activities were the largest of the seven activity groupings shown; in Indonesia, manufacturing was the largest activity. Elsewhere, manufacturing was the second largest activity in value added terms worldwide, in the EU-28 and in China, Japan, South Korea and Turkey. The gross value added share of manufacturing peaked at 29.3 % in South Korea while it was 6.7 % in Australia, the only G20 member where it was below one tenth. In most of the remaining G20 members distributive trades, hotels and restaurants was the second largest activity in value added terms, although in Saudi Arabia mining and utilities was the second largest activity and in India agriculture, hunting, forestry, fishing was the second largest activity. India and Indonesia were the only G20 members where agriculture, hunting, forestry, fishing contributed more than one tenth of gross value added.

Figure 9.3: Gross value added by economic activity, 2016
(% of total gross value added)



Note: based on ISIC Rev.3. Ranked on the share of services (the three segments shown in orange).

(1) '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.

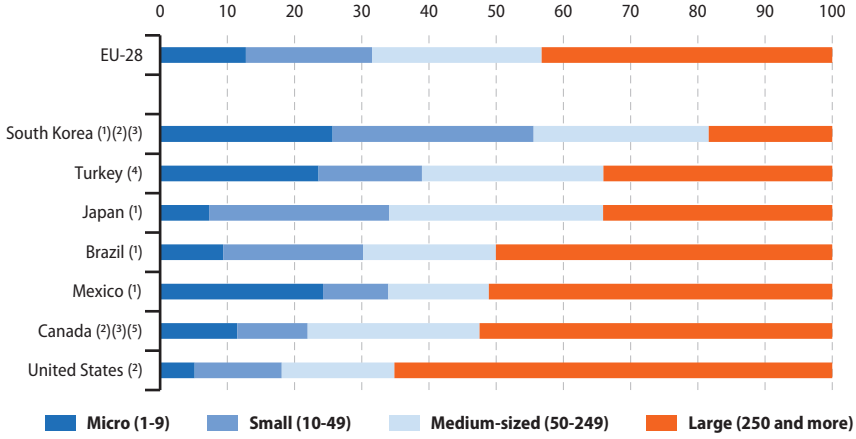
Source: the United Nations Statistics Division (National Accounts Main Aggregates Database)

SMEs and large enterprises

Figure 9.4 focuses on industrial activities, including mining and quarrying, manufacturing and utilities. The data show the share of industrial employment in enterprises of different size classes. These size classes are defined in terms of the number of persons employed and range from micro enterprises with less than 10 persons employed to large enterprises with 250 or more persons employed. Collectively, the enterprises which are not large are often referred to as small and medium-sized enterprises (SMEs).

Large enterprises generally have higher labour productivity than SMEs and so their share of industrial employment tends to be lower than their share of value added. Across the EU-28, large industrial enterprises employed 43.2 % of the total industrial workforce in 2015. The lowest employment shares for large enterprises were observed in South Korea (2014 data; definition differs), Turkey (manufacturing only) and Japan (2014 data), all with lower shares than in the EU-28. By contrast, large enterprises employed more than half of the industrial workforce in Brazil (2014 data), Mexico (2013 data), Canada (definition differs) and the United States (definition differs). Micro enterprises employed a relatively high proportion — close to one quarter — of the industrial workforce in South Korea, Mexico and Turkey.

Figure 9.4: Industrial employment by enterprise size class, 2015
(% of the total number of persons employed)



Note: ranked on the share for large enterprises. Argentina, Australia, China, India, Indonesia, Russia, Saudi Arabia and South Africa: not available. Size classes defined in terms of the number of persons employed.

(1) Mexico: 2013. Brazil, Japan and South Korea: 2014.
(2) Number of employees.
(3) Medium-sized includes enterprises with 50-299 persons employed (employees) and large includes enterprises with 300 and more persons employed (employees).
(4) Manufacturing. Micro includes enterprises with 1-19 persons employed and small includes enterprises with 20-49 persons employed.
(5) Size classes based on the number of employees.

Source: Eurostat (online data code: sbs_sc_sca_r2) and the OECD (SDBS Structural Business Statistics (ISIC Rev. 4))

Tourism

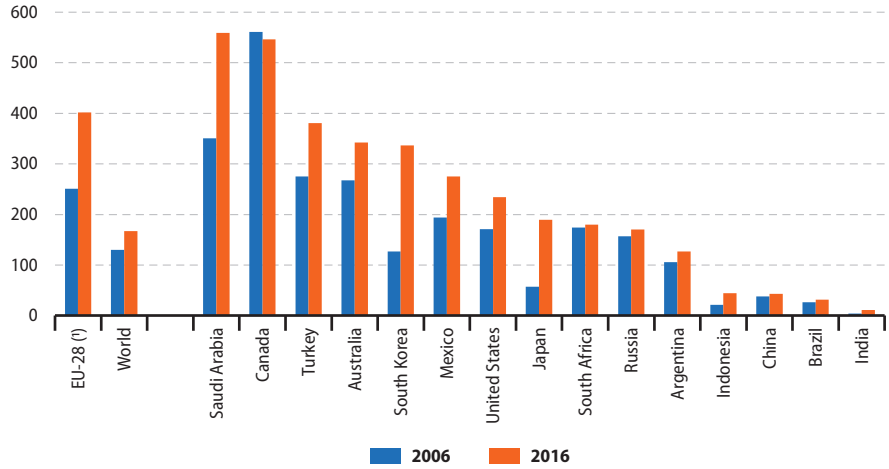
A tourist (also known as an overnight visitor) is a visitor who stays at least one night in collective or private tourist accommodation in a specified geographical area. Tourists include residents (domestic tourists) and non-residents (international tourists). Note that international tourists are classified 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, although in practice not all countries follow this approach.

The number of arrivals of tourists from outside the EU in the EU-28 relative to the size of population increased about 60 % between 2006 and 2016

There were around 1.24 billion international tourist arrivals worldwide in 2016, among which 482 million were in the EU-28: note that this EU total includes arrivals in EU Member States of international tourists from other Member States. Relative to population size, there were 559 and 546 international tourist arrivals per 1 000 inhabitants in Saudi Arabia and Canada in 2016, by far the highest ratio among the G20 members and more than 3 times the world average of 167 per 1 000 inhabitants (see Figure 9.5). The next highest ratios were in Turkey, Australia and South Korea where the ratio was more than double the world average. Most of the remaining G20 members received between 100 and 275 international tourist arrivals per 1 000 inhabitants in 2016, with some of the G20's most populous countries — Indonesia, China, Brazil and India — below this range.

Estimates of the number of international arrivals in the EU-28 of tourists from outside the EU (therefore excluding arrivals in EU Member States of international tourists from other Member States) show an increase of around 60 % between 251 per 1 000 inhabitants in 2006 and 402 per 1 000 inhabitants in 2016. Worldwide, the number of international tourist arrivals relative to population size increased 28.8 % between these years. Japan's ratio increased greatly during this period, more than trebling, while the ratio of international tourist arrivals to population more than doubled in India, South Korea and Indonesia. Australia, Argentina, Brazil, China, Russia and South Africa all observed growth for this ratio that was below the world average, while the ratio fell 2.6 % in Canada.

Figure 9.5: International tourist arrivals at frontiers, 2006 and 2016
(number per 1 000 inhabitants)



Note: for some countries there may be differences in the definitions used. Data may refer to visitors rather than tourists, thereby including some or all same-day visitors, cruise passengers, and crew members. Data collection methods may vary, with data collected from border statistics or from tourism accommodation establishments. Not all means of transport are always covered, sometimes limited to arrivals by air. While tourist arrivals should be based on residence in some cases they may be based on nationality, and therefore include arrivals of foreign residents and exclude arrivals of national non-residents.

(1) Estimate of international tourist arrivals at frontiers based on accommodation statistics and tourism satellite accounts.

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

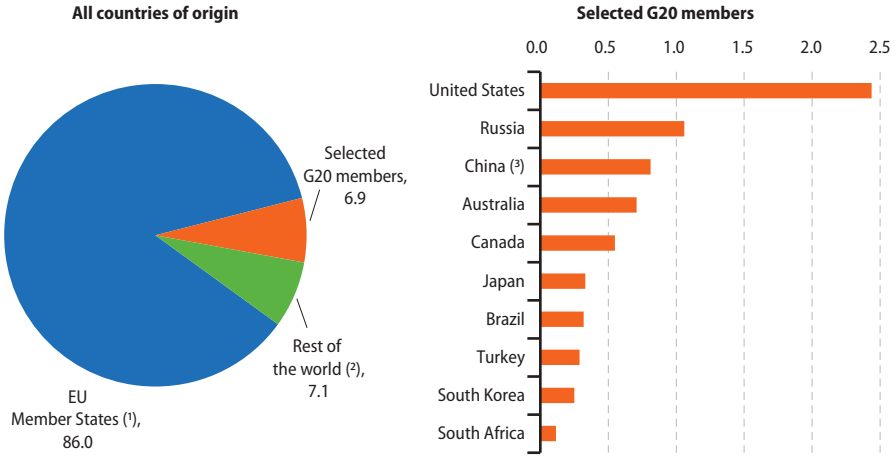
Among the G20 members, in 2016 tourists from the United States spent the most number of nights in tourist accommodation in the EU-28

Tourist accommodation refers to every type of establishment or dwelling where tourists can be lodged, including hotels, short-stay accommodation, campsites, and similar establishments.

The total number of nights spent in tourist accommodation in the EU-28 from all countries of the world (including nights spent by residents) was 3.1 billion in 2016, of which 2.6 billion (or 86.0 %) were from EU-28 Member States. Nearly half of the nights spent in tourist accommodation in the EU-28 by tourists from outside the EU were by tourists from the 10 G20 members shown in the bar chart in Figure 9.6; collectively they accounted for 6.9 % of all nights spent in tourist accommodation in the EU-28. Tourists from the United States spent 74.4 million nights in tourist accommodation in the EU-28 in 2016, 2.4 % of the total.

Figure 9.6 Number of nights spent in tourist accommodation by country of origin, EU-28, 2016

(% of total nights of people from all countries of the world)



(1) Including nights spent by residents in their own Member State.

(2) Including other (not selected) G20 members.

(3) Including Hong Kong.

Source: Eurostat (online data code: tour_occ_ninraw)

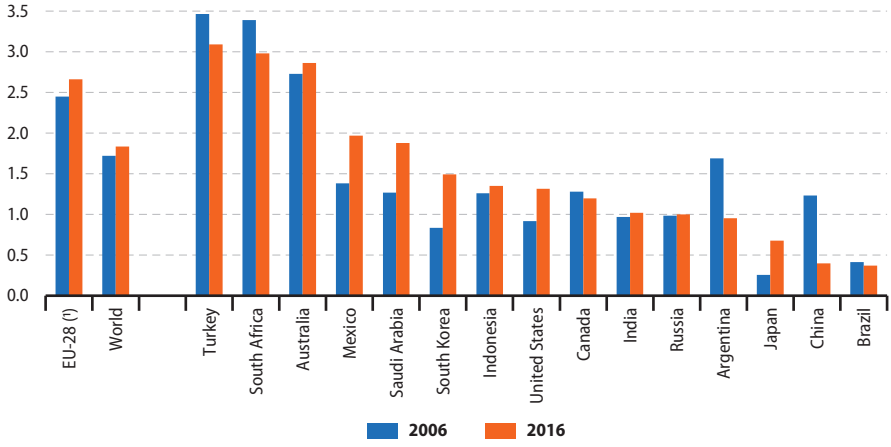
In 2016, Turkey recorded the largest receipts from tourism relative to GDP among the G20 members, although this ratio was lower than in 2006

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 growth in tourism.

International tourism receipts include payments (and prepayments) in a country by international tourists, including payments to domestic carriers for international transport. These receipts were valued at 3.1 % of GDP in Turkey, 3.0 % in South Africa, 2.9 % in Australia and 2.7 % in the EU-28, the highest such ratios among the G20 members in 2016 (see Figure 9.7). In most of the other G20 members, international tourism receipts ranged from 1.0 % to 2.0 % of GDP, with Japan, China and Brazil below this range; the world average was 1.8 %.

Between 2006 and 2016, the ratio of international tourism receipts to GDP increased by 0.1 points worldwide and by 0.2 points in the EU-28. Among the non-G20 members this ratio fell in China (down 0.8 points), Argentina (0.7 points), Turkey and South Africa (both down 0.4 points), while it was relatively unchanged (increase or decrease of at most 0.1 points) in Canada, Brazil, Russia, India, Indonesia and Australia. Growth in this ratio was stronger in the United States, Japan (both up 0.4 points), Mexico, Saudi Arabia (both 0.6 points) and South Korea (0.7 points). In relative terms, the largest increase was in Japan, where international tourist receipts more than doubled from 0.3 % of GDP in 2006 to 0.7 % in 2016; the largest decrease was in China, where GDP growth outstripped the growth in international tourism receipts such that the ratio in 2016 (0.4 %) was approximately one third of its level in 2006 (1.2 %).

Figure 9.7: Tourism receipts, 2006 and 2016
(% of GDP)



(1) Including intra-EU receipts.

Source: the World Bank (World Development Indicators)

10. Science, technology and digital society

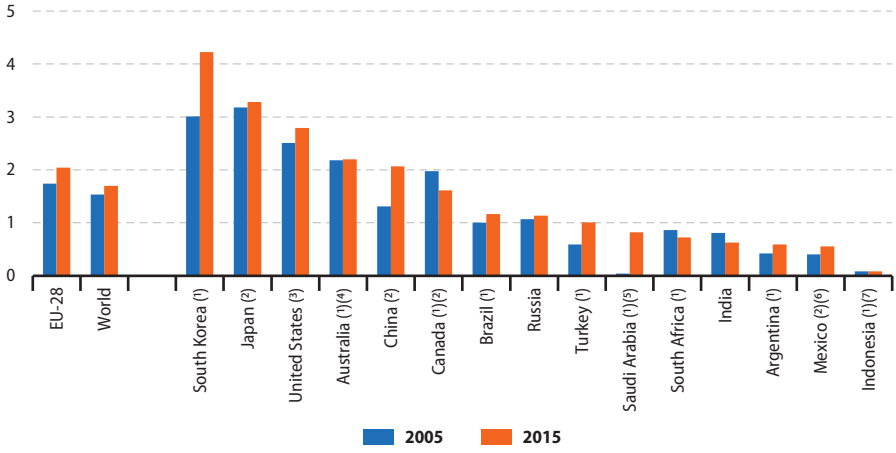
R & D expenditure

Research and development (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 performed in an economy. It includes R & D that is funded from abroad, but excludes payments made abroad.

The highest R & D intensity in 2015 among the G20 members was in South Korea

GERD in the EU-28 was just over EUR 300 billion in 2015. The relation between the level of GERD and gross domestic product (GDP) is known as R & D intensity (see Figure 10.1), and in 2015 it stood at 2.04 % in the EU-28. By far the highest R & D intensity among the G20 members was in South Korea, where GERD was equivalent to 4.23 % of GDP in 2015. The latest data for Japan, the United States, Australia (2013 data) and China show that they also recorded relatively high R & D intensities, all above the EU-28 average

Figure 10.1: Gross domestic expenditure on research and development, 2005 and 2015
(% of GDP)



(1) Australia: 2006 instead of 2005. South Korea: 2007 instead of 2005. Indonesia: 2009 instead of 2005. Australia, Indonesia, Saudi Arabia and South Africa: 2013 instead of 2015. Argentina, Brazil, Canada and Turkey: 2014 instead of 2015.
(2) Break in series.
(3) Excluding most or all capital expenditure.
(4) 2013: estimate.
(5) Based on R&D budget, not expenditure.
(6) 2015: estimate.
(7) Estimates.

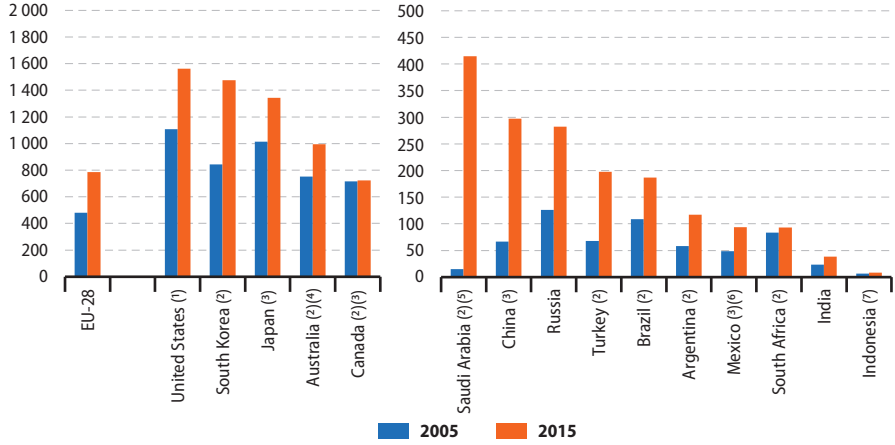
Source: Eurostat (online data code: rd_e_gerdtot) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

and between 2.0 and 3.5 %. Indonesia recorded by far the lowest R & D intensity among the G20 members, with GERD equivalent to less than 0.10 % (2013 data) of GDP.

Between 2005 and 2015, R & D intensity increased worldwide by 0.16 % of GDP and in the EU-28 by 0.30 %. The largest increases among the G20 members were observed for South Korea (1.22 %; 2007-2015), Saudi Arabia (0.78 %; 2005-2013; based on the R & D budget rather than actual expenditure) and China (0.76 %; note that there is a break in series). The only declines shown in Figure 10.1 were in South Africa, India and Canada; note that there is a break in series for Canada.

An alternative calculation based on R & D expenditure can be seen in Figure 10.2, namely the level of GERD relative to population size. For this indicator GERD is presented in a common currency (United States dollars) using purchasing power parities (PPPs) rather than market exchange rates: PPPs are indicators of price level differences across countries. The resulting ratio per inhabitant provides a very clear distinction between G20 members. The United States, South Korea and Japan stand out with GERD per inhabitant in excess of USD 1 300. Australia (2013 data), the EU-28 and Canada (2014 data) completed the group of G20 members with relatively high GERD per inhabitant, all in the range of USD 700-1 000. Among the other G20 members, only Saudi Arabia (2013 data), China and Russia recorded GERD in excess of USD 200 per inhabitant, while this indicator was below USD 10 per inhabitant in Indonesia (2013 data).

Figure 10.2: Gross domestic expenditure on research and development, 2005 and 2015
(international USD per inhabitant)



Note: different scales used for the two parts of the figure.

(1) Excluding most or all capital expenditure.
(2) Australia: 2006 instead of 2005. South Korea: 2007 instead of 2005. Indonesia: 2009 instead of 2005. Australia, Indonesia, Saudi Arabia and South Africa: 2013 instead of 2015. Argentina, Brazil, Canada and Turkey: 2014 instead of 2015.
(3) Break in series.
(4) 2013: estimate.
(5) Based on R&D budget, not expenditure.
(6) 2015: estimate.
(7) 2009: estimate.

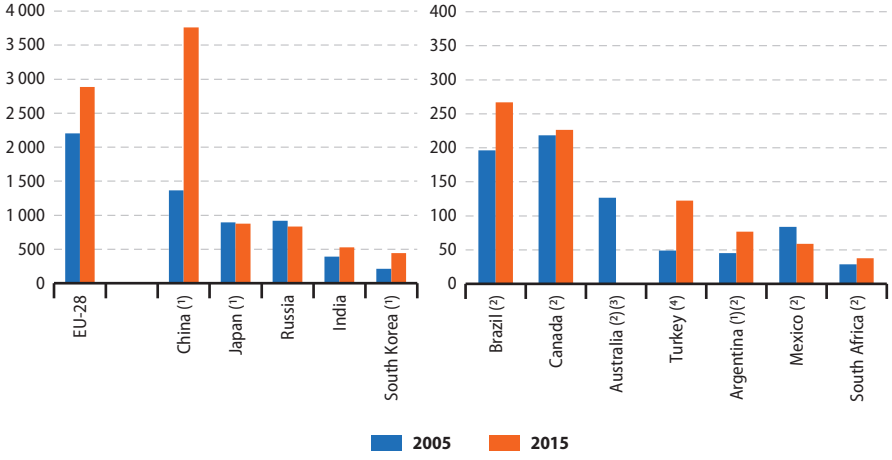
Source: Eurostat (online data code: rd_e_gerdtot) and the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology)

R & D personnel

R & D 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). Among the G20 members shown in Figure 10.3, China had the largest R & D workforce, numbering 3.8 million full-time equivalents in 2015, followed by the EU-28 with an R & D workforce of 2.9 million; note that the United States is among the G20 members for which data are not available. The third and fourth largest R & D workforces were in Japan and Russia, each less than a quarter of the size of the workforce in China and less than a third of that in the EU-28. 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.

The number of R & D personnel in China nearly trebled between 2005 and 2015, although a break in series should be noted, while the R & D workforces of Turkey and South Korea (also a break in series) also more than doubled; in the EU-28 the number of R & D personnel increased by 31 %. Japan, Russia and Mexico (2005-2013) were the only G20 members to record a fall in their number of R & D personnel during the period under consideration.

Figure 10.3: Research and development personnel, 2005 and 2015
(thousand full-time equivalents)



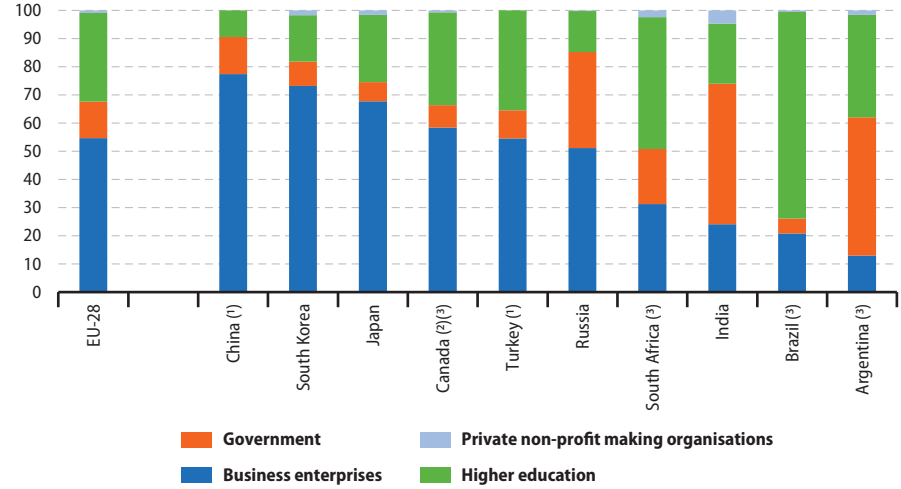
Note: Indonesia, Saudi Arabia and the United States, not available. Different scales used for the two parts of the figure.

(1) Break in series.
(2) Australia: 2006 instead of 2005. Brazil: 2010 instead of 2015. Canada, Mexico and South Africa: 2013 instead of 2015. Argentina: 2014 instead of 2015.
(3) 2015: not available.
(4) 2005: estimate.

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

R & D personnel can be classified to the following sectors: business, government, higher education institutions, and private non-profit making organisations. More than half (55 %) of all R & D personnel in the EU-28 were employed in the business enterprise sector in 2015, around one third (32 %) in higher education and most of the remainder in the government sector (13 %) — see Figure 10.4. The share of R & D personnel in the business enterprise sector peaked at 77 % in China and was around 70 % in South Korea and Japan. By contrast, less than one third of R & D personnel were in the business enterprise sector in South Africa (2013 data), India, Brazil (2010 data) and Argentina (2014 data). In Brazil, the higher education sector was the dominant employer, with 73 % of the total; South Africa was the only other G20 member where the share of R & D personnel in this sector exceeded two fifths. In India and Argentina, the government sector employed around half of all R & D personnel. The share of R & D personnel in the private non-profit making sector was generally small, peaking at 5 % in India.

Figure 10.4: Research and development personnel by sector of performance, 2015
(%, based on full-time equivalents)



Note: Australia, Indonesia, Mexico, Saudi Arabia and the United States, not available.

(1) Private non-profit making organisations: not available.
(2) Business enterprises and private non-profit making organisations: underestimates.
(3) Brazil: 2010. Canada and South Africa: 2013. Argentina: 2014.

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

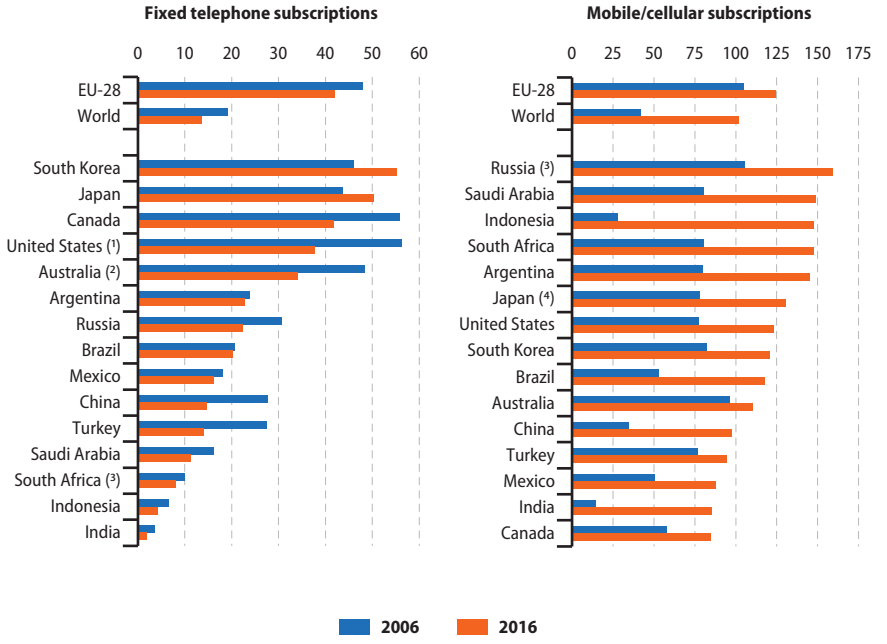
Telecommunications

Telecommunication networks and services are the backbone of the digital society. Individuals, enterprises and public organisations alike depend increasingly on convenient, reliable and high-speed telecommunication networks and services. 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 2006 and 2016 in just two of the G20 members (see Figure 10.5), up by 20 % in South Korea and by 15 % in Japan. Elsewhere, the decreases ranged from less than 20 % in Brazil, Argentina, Mexico, the EU-28 and South Africa, through the world average of 29 %, to closer to 50 % in China, India (both 47 %) and Turkey (49 %).

A mobile phone subscription refers to the use of public mobile telecommunication systems (also called mobiles or cellphones) using cellular technology. Active pre-paid cards are treated as subscriptions and people may have more than one subscription. In all G20 members, the number of mobile subscriptions relative to population size increased between 2006 and 2016 (see Figure 10.6). Indonesia experienced by far the strongest absolute growth, from 28 mobile subscriptions per 100 inhabitants in 2006

Figure 10.5: Telephone subscriptions, 2006 and 2016
(per 100 inhabitants)



Note: the ranges for the x-axes are different for the two parts of the figure.

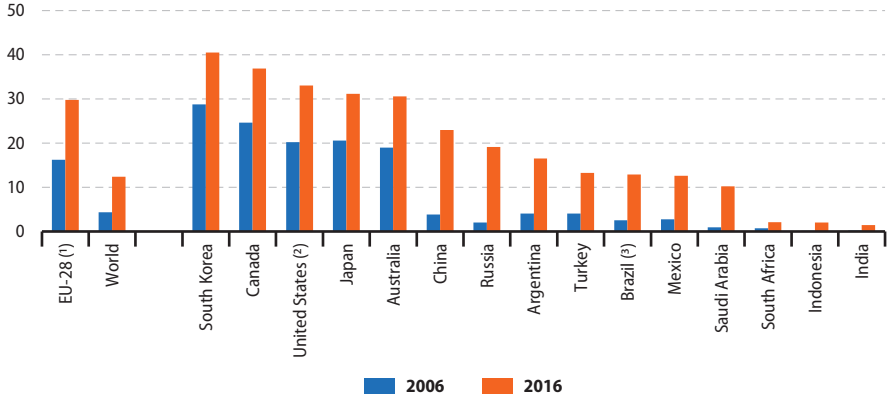
(1) 2006: local loops.
(2) 2006: excludes ISDN.
(3) 2006: estimate.
(4) Including personal handyphone system (PHS). 2016: including data cards.

Source: the International Telecommunication Union

to 148 per 100 inhabitants in 2016, an increase of 120 per 100 inhabitants, which was double the average for the world as a whole, (up from 42 to 102 per 100 inhabitants). India reported the second largest increase in absolute terms, up 71 per 100 inhabitants to reach 85 mobile subscriptions per 100 inhabitants in 2016, moving it from last place in the rankings in 2006 to second last in 2016, overtaking Canada (also 85 per 100 inhabitants in 2016). As such, all of the G20 members registered at least 80 mobile subscriptions per 100 inhabitants in 2016, with Mexico, Turkey and China the only other G20 members alongside Canada and India where there were fewer mobile subscriptions than inhabitants.

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). Like the number of fixed telephone lines in general, relative to population size the number of fixed broadband subscriptions among the G20 members was much more diverse than was the case for mobile subscriptions. South Korea had 40 subscriptions per 100 inhabitants in 2016 while several other G20 members — Canada, the United States, Japan, Australia and the EU-28 (2013 data) — reported between 30 and 37 subscriptions per 100 inhabitants. At the other end of the ranking, Saudi Arabia (10 subscriptions per 100 inhabitants) had a fixed broadband subscription rate that was below the world average (12 per 100 inhabitants) while South Africa, Indonesia and India had 1 or 2 subscriptions per 100 inhabitants. Between 2006 and 2016, all G20 members reported growth in fixed broadband subscriptions relative to population size, with the strongest growth in absolute terms reported for China (an extra 19 subscriptions per 100 inhabitants) and Russia (17 subscriptions per 100 inhabitants more).

Figure 10.6: Fixed broadband subscriptions, 2006 and 2016
(per 100 inhabitants)



Note: includes estimates.

(1) Data for the EU-27 for 2006. 2013 instead of 2016.
(2) Subscriptions with transfer rates exceeding 200 kbit/s in at least one direction.
(3) 2006: subscriptions with transfer rates greater than or equal to 64kbit/s in one or both directions.

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

C Environment

11. Transport

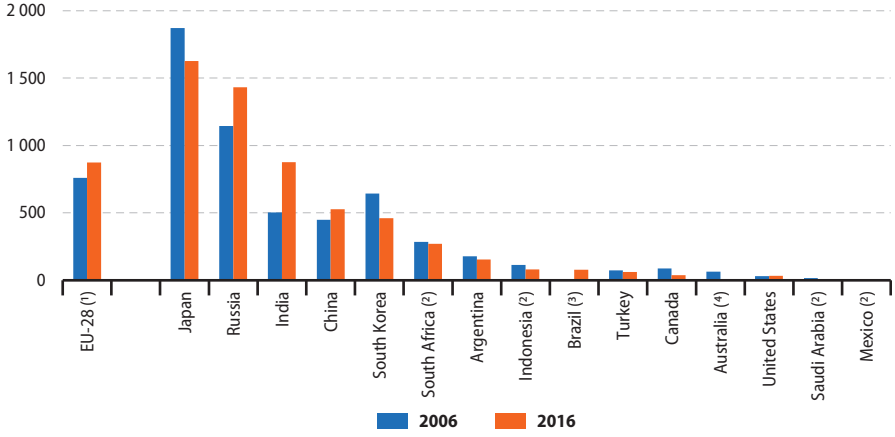
Two particular units are used for transport measurement — tonne-kilometre (tonne-km) and passenger-kilometre (passenger-km) — representing the transport of one tonne of goods (freight) or one passenger over a distance of one kilometre.

Rail transport

Concerning the use of rail transport (see Figures 11.1 and 11.2), 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, Turkey and Indonesia had a relatively low overall use of rail transport. In Canada, the United States, Mexico, Canada, Australia and Brazil, rail transport was focused mainly on freight transport, while passenger transport was dominant in Japan and South Korea. A relatively high use of rail transport for both freight and passengers was observed in Russia, South Africa, China, the EU-28, India and to a lesser extent Argentina.

Comparing the data for the two years shown in Figure 11.1, apart from the increase recorded in Mexico which was large in relative terms but small in absolute terms (despite the strong relative growth it had the lowest value of rail passenger transport relative to population size among the G20 members), growth was strongest in India, up 74 % overall between 2005 and 2015,

Figure 11.1: Rail passenger transport, 2005 and 2015
(passenger-km per inhabitant)



Note: data for some countries may be limited to International Union of Railways (UIC) members.

(1) Estimates
(2) South Africa: 2007 instead of 2005. Indonesia, Mexico, Saudi Arabia and South Africa: 2014 instead of 2015.
(3) 2005: not available.
(4) 2015: not available.

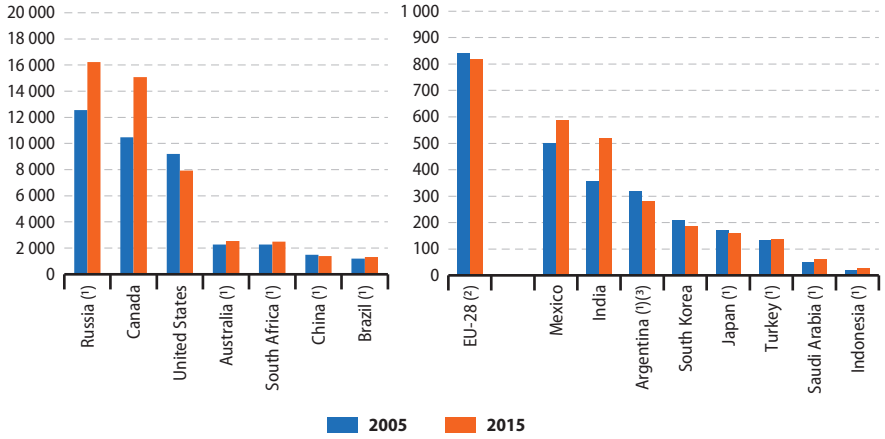
Source: Eurostat (online data codes: rail_pa_total and demo_gind) and the World Bank (World Development Indicators and Health Nutrition and Population Statistics)

while double digit growth rates were observed in Russia, China and the EU-28 during the same period. The United States recorded growth of 9.2 %. The remaining G20 members reported decreases in the use of passenger rail services during this period, with these exceeding 25 % overall in South Korea, Indonesia (2005-2014) and Saudi Arabia (2005-2014) and exceeding 50 % in Canada.

Rail freight transport increased strongly in India and Canada between 2005 and 2015

Turning to rail freight services relative to population size, between 2005 and 2015 the largest percentage increases among the G20 members were recorded in India and Canada, both increasing by more than 40 % overall. Relatively large increases were also observed in Indonesia (2005-2014), Russia (2005-2016), Saudi Arabia (2005-2014) and Mexico, although the overall level of rail freight services relative to population size remained low in both Indonesia and Saudi Arabia. Estimates for the EU-28 show a 3.1 % decrease in rail freight transport per inhabitant, while South Korea, Argentina (2006-2014) and the United States all reported decreases in excess of 10.0 %.

Figure 11.2: Rail freight transport, 2005 and 2015
(tonne-km per inhabitant)



Note: data for some countries may be limited to International Union of Railways (UIC) members. Different scales used for the two parts of the figure.

(1) Argentina, Australia, Brazil, Indonesia, Japan, Saudi Arabia and South Africa: 2014 instead of 2015. China, Russia and Turkey: 2016 instead of 2015.
(2) Estimates.
(3) 2006 instead of 2005.

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

Road transport

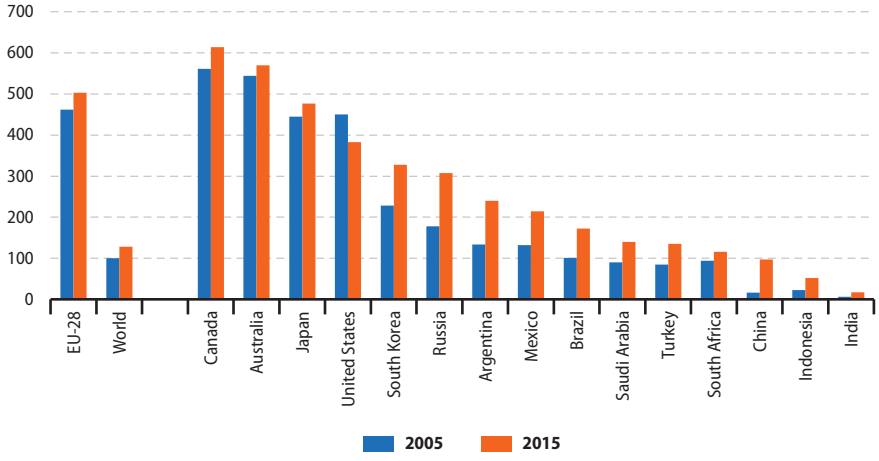
More than 500 passenger cars for every 1 000 inhabitants in 2015 in Canada, Australia and the EU-28

Passenger cars are road motor vehicles, other than mopeds or motor cycles, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver); light commercial vehicles are excluded.

Among the G20 members, ownership of passenger cars was highest in 2015 in Canada, Australia and the EU-28, all of which had more than 500 passenger cars for every 1 000 inhabitants; the lowest ratios were recorded in South Africa, China, Indonesia and India, all below the 128 cars for every 1 000 inhabitants world average.

A general upward trend was observed in nearly all G20 members between 2005 and 2015. In relative terms, by far the fastest growth in the ratio of passenger cars to population was recorded in China, as this ratio was more than six times as high in 2015 as in 2005. The number of passenger cars per 1 000 inhabitants also more than doubled in India and Indonesia (see Figure 11.3). South Africa, Canada, the EU-28, Japan and Australia recorded growth in this ratio that was below the world average (28.3 %), while the United States was the only G20 member to record an actual fall in the ratio of passenger cars to population between 2005 and 2015, down 15.1 % (or 68 passenger cars per 1 000 persons).

Figure 11.3: Number of passenger cars, 2005 and 2015
(per 1 000 inhabitants)

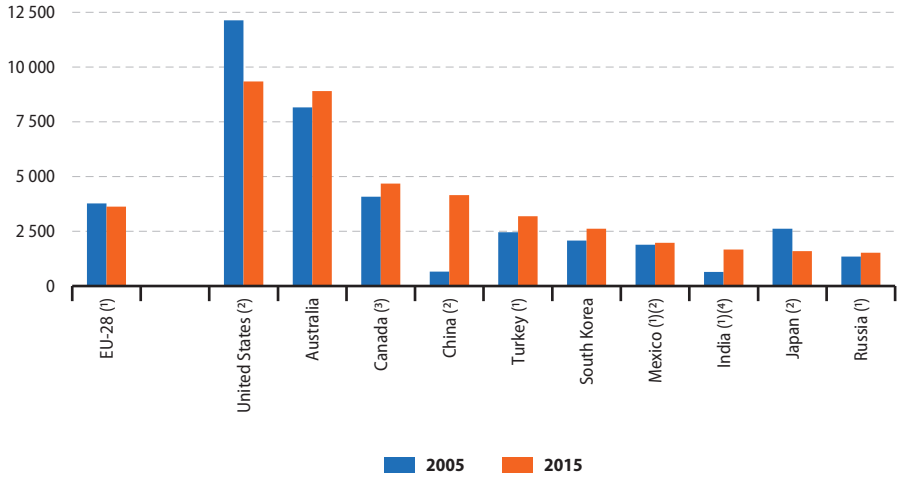


Note: estimates. Passenger cars are road motor vehicles, other than a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). This category may also include pick-ups and micro cars.

Source: Eurostat (online data code: demo_gind), the International Organisation of Motor Vehicle Manufacturers and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

Relative to the size of their populations, the quantity in tonne-km of road freight transport was particularly high in the United States, Australia, Canada and China. These very high figures reflect 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 large land areas. Comparing data for 2005 and 2015, the most notable development was the increase in the amount of Chinese road freight: the level in 2015 was 6.3 times as high as the level in 2005 (although there was a break in series), equivalent to an annual average growth rate of 20.2 %. India also reported strong growth, with road freight (relative to population size) more than doubling between 2005 and 2016. The EU-28 (2008-2016), the United States and Japan were the only G20 members (for which data are available) reporting a fall for this indicator between 2005 and 2015, although in the two last cases this may be influenced by a break in series.

Figure 11.4: Road freight transport, 2005 and 2015
(tonne-km per inhabitant)



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

(1) EU-28: 2008 instead of 2005. EU-28, India, Mexico, Russia and Turkey: 2016 instead of 2015.
(2) Break in series.
(3) 2015: provisional.
(4) 2016: estimate.

Source: Eurostat (online data codes: road_go_ta_tott and demo_gind), the OECD (International transport forum) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

Air transport

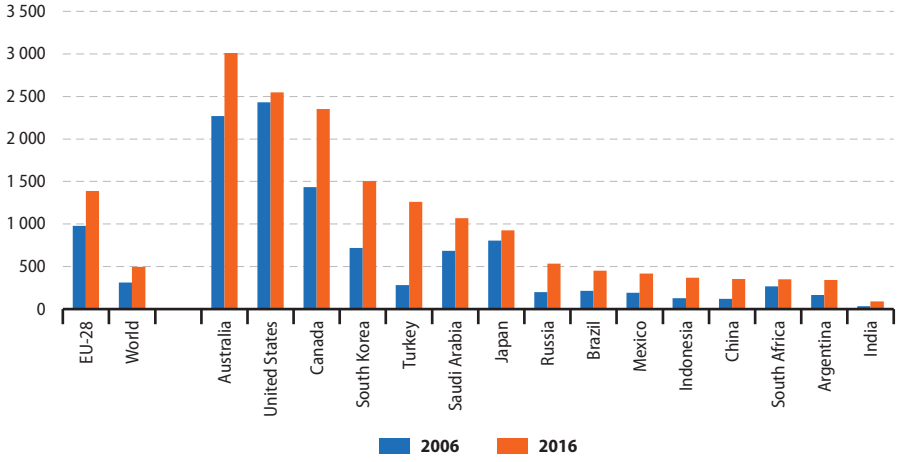
Worldwide, the number of air passengers carried in 2016 was around 3.7 billion, an overall increase of 78 % compared with 2006. Relative to the size of the population, the world number of air passengers in 2006 was 314 per 1 000 inhabitants and this ratio increased by 58 % to 497 per 1 000 inhabitants in 2016 (see Figure 11.5).

In Turkey, the number of air passengers relative to population size was 4.4 times as high in 2016 as in 2006

In 2016, the highest ratio of air passengers to population among the G20 members was 3 009 per 1 000 inhabitants in Australia, followed by the United States and Canada with 2 547 and 2 354 per 1 000 inhabitants respectively. South Korea, the EU-28, Turkey and Saudi Arabia all reported more passengers carried than their number of inhabitants. At the other end of the ranking, India was the only G20 member where there were less than 100 air passengers per 1 000 inhabitants in 2016.

Several G20 members recorded a fall in their number of air passengers in 2008 and/or 2009, at the peak of the financial and economic crisis, but overall between 2006 and 2016 all of the G20 members recorded faster growth for the number of air passenger than for inhabitants, such that the ratio shown in Figure 11.5 increased. During this period, the number of passengers relative to population size grew (in percentage terms) most strongly in Turkey where it more than quadrupled, while it more than doubled in a majority of the G20 members. The weakest overall growth was reported for Japan (15 %) and the United States (5 %).

Figure 11.5: Number of air passengers carried, 2006 and 2016
(per 1 000 inhabitants)



Source: the World Bank (World Development Indicators and Health Nutrition and Population Statistics)

In terms of passenger numbers, the busiest airport in the world in 2016 was Hartsfield-Jackson Atlanta

In terms of passenger numbers, the busiest airport in the world in 2016 was Hartsfield-Jackson Atlanta in the United States, with 104.2 million passengers, followed by Beijing Capital International in China with 94.4 million (see Table 11.1). The busiest airport outside of the G20 members was Dubai International in the United Arab Emirates with 83.7 million passengers in 2016, while London Heathrow in the United Kingdom had 75.8 million passengers, making it the busiest passenger airport in the EU-28.

Table 11.1: Top 20 airports for passengers, 2016

	Airport name	Passenger numbers (millions)
United States	Hartsfield-Jackson (Atlanta)	104.2
China	Beijing Capital International	94.4
United Arab Emirates	Dubai International	83.7
United States	Los Angeles International	80.9
Japan	Haneda (Tokyo)	79.7
United States	O'Hare International (Chicago)	78.0
United Kingdom	London Heathrow	75.8
China	Hong Kong International	70.3
China	Shanghai Pudong International	66.0
France	Paris Charles de Gaulle	66.0
United States	Dallas/Fort Worth International	65.7
Netherlands	Schiphol Amsterdam	63.7
Germany	Frankfurt	60.9
Turkey	Atatürk (Istanbul)	60.4
China	Guangzhou Baiyun International	59.7
United States	John F. Kennedy International (New York)	59.1
Singapore	Changi (Singapore)	58.7
United States	Denver International	58.3
Indonesia	Soekarno-Hatta International (Jakarta)	58.2
South Korea	Incheon (Seoul)	57.8

Note: countries (and their airports) shown in grey are not G20 members.

Source: Eurostat (online data code: avia_paoa) and the Airports Council International (ACI)

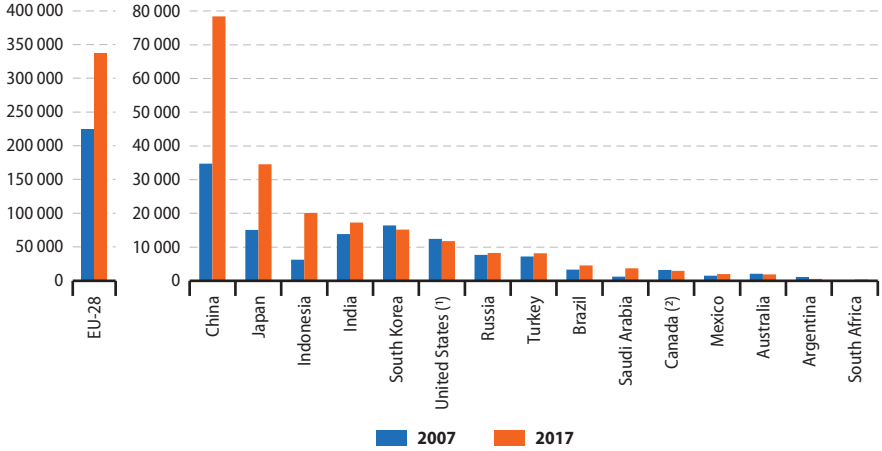
Maritime transport

The world's maritime fleet increased from 1.04 billion deadweight tonnes (DWT) in 2007 to 1.86 billion DWT in 2017, equivalent to annual average growth of 6.0 %. Deadweight tonnage is the weight measure of a vessel's carrying capacity and includes cargo, fuel and stores.

Between 2007 and 2017, the maritime fleets of South Africa and Indonesia more than trebled, while those of Saudi Arabia, Japan and China more than doubled (see Figure 11.6). The fleet in the EU-28 increased by 50.1 % and there were smaller expansions in the fleets of Brazil, Mexico, India, Turkey and Russia. In the remaining five G20 members the size of the maritime fleet contracted, most notably in Argentina where it more than halved (down 53.3 %).

Despite the much stronger growth in some of the other G20 members, the EU-28's maritime fleet in 2017 remained considerably larger than in any of the other G20 members; in fact, it was more than 60 % larger than the fleets of all of the other G20 members combined and accounted for 18.1 % of the worldwide fleet. It should be noted that there are several smaller countries outside of the G20 that account for a large share of the world maritime fleet, notably Panama, Liberia and the Marshall Islands, all associated with flags of convenience.

Figure 11.6: Maritime fleet by flag of registration, 2007 and 2017
(deadweight tonnage, thousand DWT)



Note: 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. 2017: data exclude fishing fleets. Different scales used for the two parts of the figure.

(1) 2017: data include the Great Lakes Fleet and the United States Reserve Fleet.
(2) 2017: data include the Great Lakes Fleet.

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

Shanghai was the largest maritime port in the world in 2016, while Rotterdam was the largest in the EU-28

For maritime freight, goods handled covers goods loaded and unloaded, in other words goods placed on a merchant ship for transport by sea or goods taken off a merchant ship. In 2016, the world's largest freight port in terms of the quantity of goods handled was Shanghai in China, while the largest port in the EU-28 was Rotterdam in the Netherlands. In percentage terms, Dos Bocas in Mexico reported the largest increase between 2011 and 2016 among those ports listed in Table 11.2, more than doubling its quantity of goods handled; growth was probably also high in the relatively new port of Ust-Luga in Russia, near the Gulf of Finland.

Table 11.2: Quantity of goods handled in the largest maritime ports, 2011 and 2016
(thousand tonnes)

	Name of port	2011	2016
EU-28	Rotterdam	404 447	431 944
World	Shanghai	590 439	647 446
Argentina (1)	San Lorenzo-Puerto San Martín	41 541	32 929
Australia	Port Hedland	246 672	484 510
Brazil	Itajaí	128 875	179 914
Canada	Metro Vancouver	122 499	135 538
China	Shanghai	590 439	647 446
India	Paradip	55 969	88 950
Indonesia	Tanjung Priok	:	51 600
Japan (2)	Nagoya	186 305	193 257
Mexico	Dos Bocas	11 635	29 207
Russia	Ust-Luga	:	93 362
Saudi Arabia	Yanbu	:	67 022
South Africa	Richards Bay	86 374	99 422
South Korea (3)	Busan	281 513	349 708
Turkey	Botas	65 523	78 443
United States	South Louisiana	223 633	237 594

(1) 2015 instead of 2016.
(2) Freight tonnes.
(3) Revenue tonnes.

Source: Eurostat (online data code: mar_mg_aa_pwhd), the American Association of Port Authorities (World port rankings) and Secretaría de Comunicaciones y Transportes de México

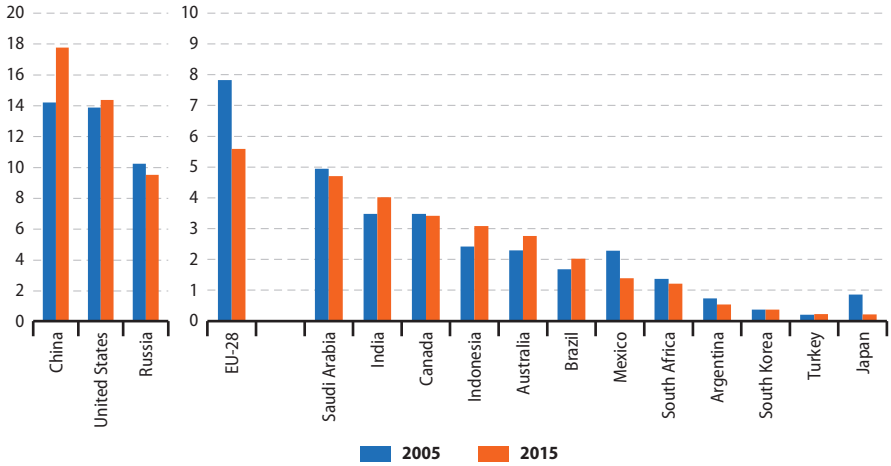
12. Energy

Primary production

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. Primary production of energy in the EU-28 totalled 771 million tonnes of oil equivalent (toe) in 2015 and 757 million toe in 2016, while worldwide production reached 13.79 billion toe in 2015. Among the G20 members, China, the United States and Russia recorded higher levels of production than the EU-28.

Between 2005 and 2015, world primary production of energy increased by 19.4 % while in the EU-28 production fell by 14.8 %. The G20 members' share of the world total increased from 70.9 % in 2005 to 72.0 % in 2015. China's share of world production increased strongly during this period, up 3.6 percentage points (see Figure 12.1). The EU-28's share of world production fell 2.2 points, reflecting supplies becoming exhausted and/or producers considering the exploitation of limited resources uneconomical.

Figure 12.1: Primary energy production, 2005 and 2015
(% of world total)



Note: different scales used for the two parts of the figure.

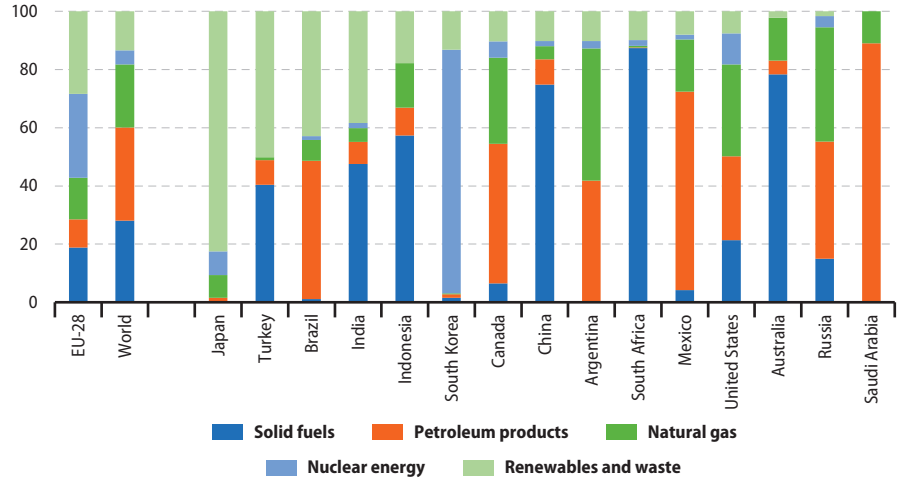
Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

The source of energy production in 2015 in the EU-28 was more balanced than in any of the other G20 members

For many of the G20 members the mix of energy sources for primary production in 2015 was dominated by just one energy type (see Figure 12.2). In South Africa, Australia and China, three quarters or more of primary production came from solid fuels (for example, coal and lignite), while in Indonesia the share of solid fuels was just over half. In Saudi Arabia and Mexico crude oil was dominant, while in South Korea nuclear energy contributed by far the largest share, and in Japan (after the suspension of the operation of many nuclear plants) the main source of primary production was renewables and waste. Production in Turkey, Brazil and India was a mixture from renewables and waste as well as one type of fossil fuel: crude oil for Brazil and solid fuels for India and Turkey. By contrast, Argentina, Canada, Russia and the United States had substantial shares of production spread across two or three types of fossil fuels, with none of them accounting for more than half of their total production. Energy production in the EU-28 was more varied than in any of the other G20 members with only crude oil among the five types of energy sources shown in Figure 12.2 (just) failing to attain at least a 10.0 % share of total production in 2015, while none of the other types of energy saw their share exceed 30.0 %. This balance 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, hydro power, geothermal energy, wind energy, solar energy, wave and tidal power. Non-renewable waste may be industrial or municipal waste.

Figure 12.2: Primary production by energy type (excluding heat), 2015
(% of total production)



Note: ranked on the share of renewables and waste.

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

Trade in energy products

The main difference between levels of primary energy production and gross inland consumption (also known as total primary energy supply) 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.

Among the G20 members, the largest net exporters of energy in 2015 were Russia and Saudi Arabia, while net exports from Australia, Indonesia and Canada were also substantial; South Africa and Mexico also recorded smaller net exports. The largest net importer of energy among the G20 members was the EU-28, followed by China, Japan, India, the United States and South Korea.

Petroleum products dominated energy imports in 2015

A study of the composition of gross energy imports (see Table 12.1) shows that petroleum products (including crude oil) dominated worldwide (67.1 % of all energy imports) and in most G20 members. These products accounted for close to or more than half of all energy imports in each of the G20 members except for Turkey, Argentina and Russia; gas formed a large part of Argentina's and Turkey's energy imports, while in Russia more than half of all energy imports were solid fuels.

Table 12.1: Energy imports and exports, 2015

	Imports	Exports	Net imports (1)	Analysis of gross imports by energy type				
				Solid fuels	Petroleum products	Gas	Renewables and waste	Electricity and heat
	(million toe)			(%)				
EU-28	1 479.6	577.6	902.0	10.2	63.2	23.2	1.1	2.4
World	5 307.9	5 395.5	–	14.9	67.1	16.4	0.4	1.2
Argentina	18.1	4.4	13.7	7.3	36.2	52.2	0.0	4.3
Australia	48.3	297.9	−249.6	0.3	89.0	10.6	0.0	0.0
Brazil	70.4	45.1	25.3	21.1	52.3	21.8	0.6	4.2
Canada	85.2	284.4	−199.2	6.0	72.9	19.1	1.1	0.9
China	547.0	58.0	489.0	19.9	71.1	8.9	0.0	0.1
India	371.3	64.5	306.8	32.1	63.2	4.6	0.0	0.1
Indonesia	53.7	253.0	−199.3	3.8	96.2	0.0	0.0	0.0
Japan	427.8	18.8	409.1	27.6	49.6	22.8	0.0	0.0
Mexico	70.7	72.2	−1.6	7.5	49.6	42.7	0.0	0.2
Russia	27.6	629.5	−601.9	51.8	19.9	26.2	0.0	2.1
Saudi Arabia	30.2	453.3	−423.1	0.0	100.0	0.0	0.0	0.0
South Africa	35.1	55.9	−20.8	1.7	85.9	9.2	0.0	3.2
South Korea	299.8	62.8	237.0	27.1	59.9	13.0	0.0	0.0
Turkey	112.2	8.6	103.6	19.6	44.3	35.5	0.0	0.5
United States	560.6	302.9	257.7	1.1	86.1	11.2	0.4	1.2

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

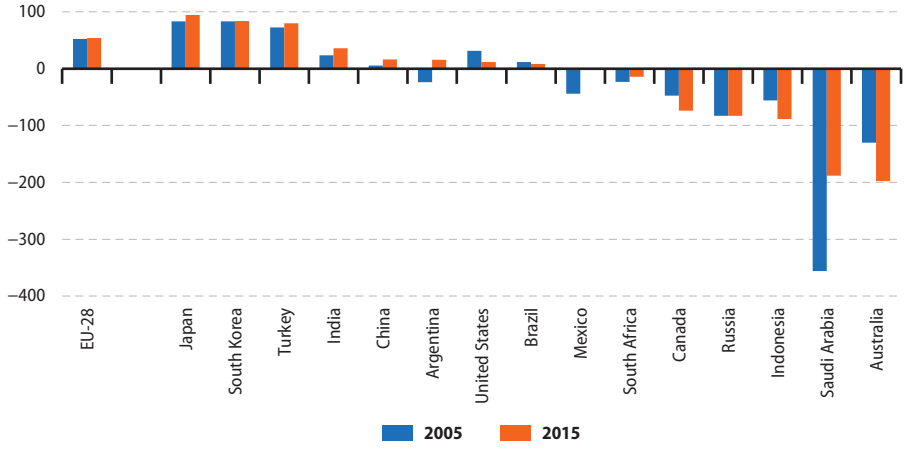
Source: Eurostat (online data code: nrg_100a) and the International Energy Agency (Balances)

In Japan, South Korea, Turkey and the EU-28 more than half of energy needs were met by imports in 2015

The energy dependency indicator shown in Figure 12.3 reveals the extent to which gross inland energy consumption was met by net imports as opposed to primary production: those G20 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 2015, indicating that more than half of their energy needs was met by net imports. Lower, positive dependency ratios were recorded for India, China, Argentina, the United States and Brazil. By contrast, Saudi Arabia's and Australia's net exports were nearly twice as high as their gross inland energy consumption leading to energy dependency ratios that were close to −200 %.

Between 2005 and 2015, 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 Indonesia, Canada and Australia, as their net exports grew more rapidly than their gross consumption (in Australia consumption actually fell slightly), while the negative ratios of South Africa, Saudi Arabia and Mexico decreased, reflecting a fall in net exports while consumption continued to increase; Russia's negative energy dependency ratio was the same in 2015 as it had been in 2005. The United States' positive energy dependency ratio fell between 2005 and 2015, as net imports fell faster than gross consumption (reflecting in part an expansion in domestic production of oil or gas from shale), 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 fell more slowly than gross consumption, and Turkey, India and China also reported increasing positive ratios as net imports grew faster than gross consumption.

Figure 12.3: Energy dependency, 2005 and 2015
(%)



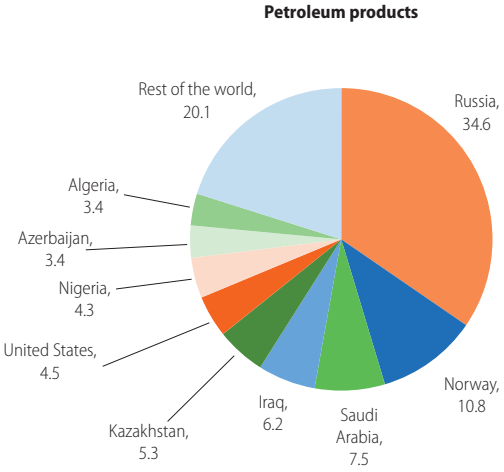
Note: net imports divided by the sum of gross inland energy consumption plus marine bunkers, expressed as a percentage.

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

Russia was the largest supplier of fossil fuels to the EU-28 in 2016

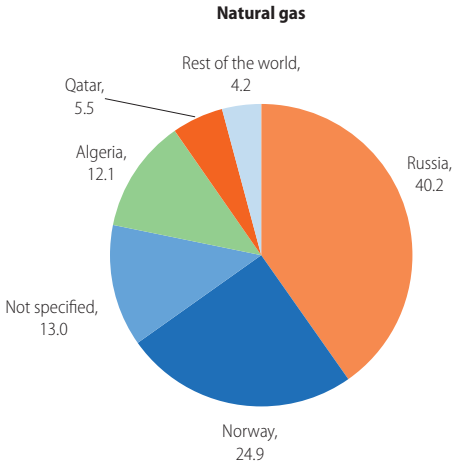
As noted earlier, the EU-28 is one of the most energy dependent members of the G20. Figure 12.4 identifies the main countries of origin of the EU-28's gross imports of fossil fuels from non-member countries. Russia was the single largest supplier of EU-28 imports for all three fossil fuel categories, providing 30 % of solid fuels, 35 % of petroleum products and 40 % of natural gas. Norway was the second largest supplier of petroleum products and natural gas. Imports of solid fuels and of natural gas were particularly concentrated among the largest suppliers, as the top seven providers of solid fuels together supplied 95 % of the EU-28's imports while the top five providers of natural gas supplied 96 % of the total. By contrast, despite the large share of imports from Russia, the supply of petroleum products was less concentrated, as the top nine providers together supplied 80 % of the EU-28's imports.

Figure 12.4a Main origins of extra-EU imports, EU-28, 2016
(%)



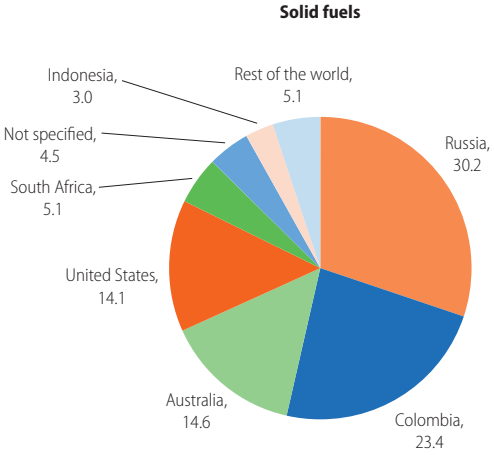
Source: Eurostat (online data codes: nrg_123a, nrg_124a and nrg_122a)

Figure 12.4b: Main origins of extra-EU imports, EU-28, 2016 (%)



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

Figure 12.4c: Main origins of extra-EU imports, EU-28, 2016 (%)



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

Energy consumption

Gross inland consumption 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, and final energy consumption by end users.

Worldwide gross energy consumption was 13.6 billion toe in 2015, of which the G20 members accounted for around four fifths (79 %), significantly higher than their collective share of total energy production. China consumed one fifth (21.8 %) of the world energy total in 2015, more than any other G20 member, followed by the United States (16.0 %) and the EU-28 (11.9 %); these three members together consumed nearly half (49.8 %) of all energy worldwide.

Brazil, Indonesia, India and Canada recorded above average shares for renewables and waste in energy consumption in 2015

In 2015, just over three tenths of worldwide gross consumption of energy was composed of petroleum products, while solid fuels accounted for a slightly lower share, and just over one fifth of the total was gas; combined these three fossil fuels accounted for just over four fifths of world energy consumption (see Table 12.2). Gross inland consumption was entirely satisfied by such fossil fuels in Saudi Arabia and these three fuels provided more than 90 % of gross inland consumption in Japan, Australia and Mexico, and close to this level in China, Argentina and Russia (see Figure 12.5). South Korea had the highest share of nuclear energy in gross inland consumption (just under 16 %), but this share was considerably lower than for primary

Table 12.2: Gross inland consumption, 2015

	Gross inland consumption	Analysis by energy type					
		Solid fuels	Petroleum products	Gas	Nuclear energy	Renewables and waste	Electricity and heat (1)
	(million toe)	(%)					
EU-28	1 629.5	16.1	34.4	22.0	13.6	13.8	0.1
World	13 647.4	28.1	31.8	21.6	4.9	13.6	0.0
Argentina	86.0	1.6	37.4	49.9	2.2	7.9	0.9
Australia	125.3	34.2	33.4	25.7	0.0	6.6	0.0
Brazil	298.0	5.9	39.7	11.8	1.3	40.3	1.0
Canada	270.2	6.8	34.9	32.2	9.8	18.2	−1.9
China	2 973.3	66.7	18.0	5.3	1.5	8.6	0.0
India	851.1	44.5	24.2	5.1	1.1	25.0	0.0
Indonesia	225.4	18.2	31.6	16.8	0.0	33.4	0.0
Japan	429.8	27.3	43.0	23.3	0.6	5.8	0.0
Mexico	187.4	7.3	48.4	34.5	1.6	8.3	0.0
Russia	709.7	16.4	22.1	51.3	7.2	3.1	−0.1
Saudi Arabia	221.7	0.0	67.9	32.1	0.0	0.0	0.0
South Africa	142.0	67.8	15.5	3.0	2.2	11.5	−0.1
South Korea	272.7	29.6	37.7	14.4	15.7	2.5	0.0
Turkey	128.8	26.8	30.1	30.6	0.0	12.3	0.3
United States	2 188.3	17.1	36.3	29.5	9.9	6.9	0.3

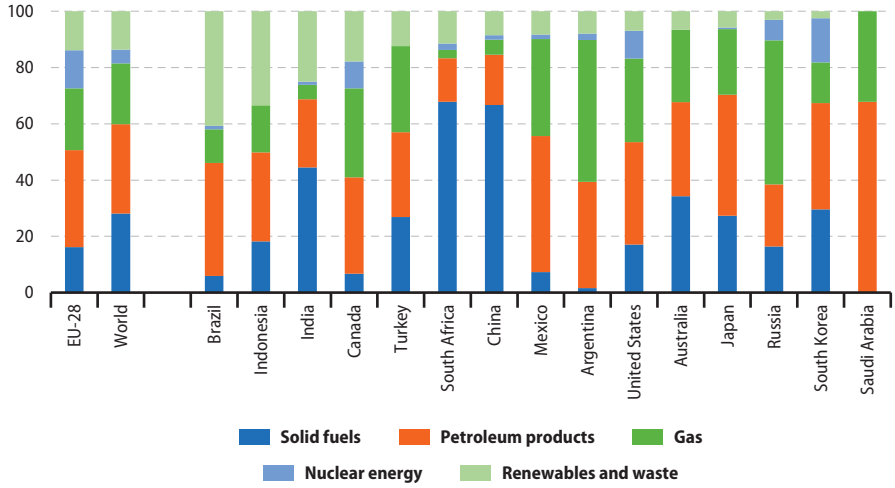
(1) Gross inland consumption of electricity is equal to electricity net imports.

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

production, indicating South Korea's high dependency on imported fossil fuels, notably petroleum products and solid fuels. The EU-28 had the second highest share of nuclear energy in gross inland consumption, followed by the United States and Canada.

Worldwide, renewables and waste accounted for 13.6 % of gross inland energy consumption. As for primary production, Brazil, Indonesia and India recorded above average shares for renewables and waste in gross inland consumption, as did Canada reflecting its large net exports of fossil fuels. By contrast, 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.

Figure 12.5: Gross inland consumption by energy type, 2015
(% of gross inland consumption)



Note: ranked on the share of renewables and waste. Excluding electricity and heat.

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

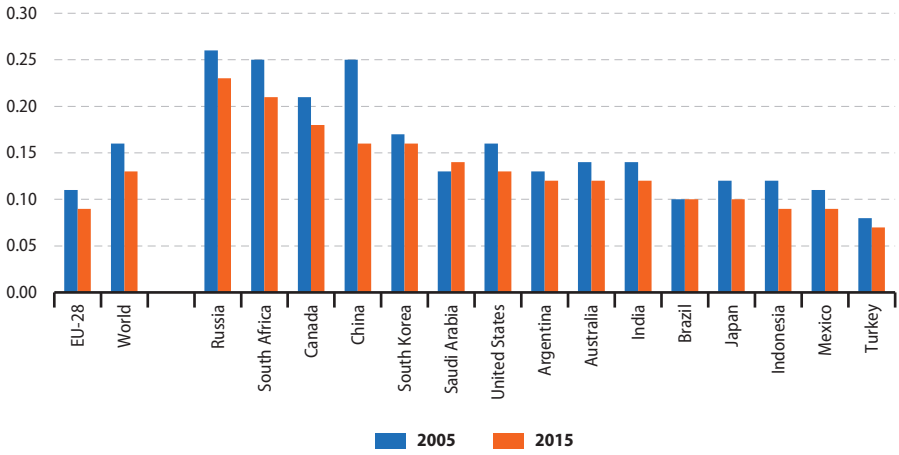
Energy intensity

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 (2010) to remove the effects of inflation. To facilitate spatial comparisons, GDP is calculated in a common currency (United States dollars are used in Figure 12.6) using purchasing power parities (PPPs) rather than market exchange rates: PPPs are indicators of price level differences across countries. It should be noted that the economic structure of an economy plays an important role in determining energy intensity, as post-industrial economies with large service sectors tend to have considerably lower energy use than economies characterised by heavy, traditional, industrial activities.

Energy intensity fell between 2005 and 2015 in nearly all G20 members

Energy intensity fell between 2005 and 2015 for all G20 members (see Figure 12.6) other than Brazil where the energy intensity ratio remained stable and Saudi Arabia where it increased slightly. During this period, substantial energy efficiencies were achieved in the economies of China and Indonesia as their energy intensities fell by more than one fifth, while decreases in the energy intensity of the United States, the EU-28, Mexico, Japan and South Africa were closer to the average observed worldwide. Despite a decrease between 2005 and 2015, Russia maintained its position as having the most energy intense economy among the G20 members, followed by South Africa. By contrast, Brazil, Japan, Mexico, Indonesia, the EU-28 and Turkey had the lowest energy intensities in 2015.

Figure 12.6: Energy intensity, 2005 and 2015
(toe per 1 000 international USD)



Note: ratio between the gross inland consumption of energy and the gross domestic product (GDP).
The GDP figures are expressed in United States dollars converted using 2010 purchasing power parities.

Source: the International Energy Agency (Indicators)

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 24.3 million gigawatt hours (GWh) in 2015 (see Table 12.3), of which 84.2 % was generated by G20 members. In absolute terms, China and the United States had the highest levels of electricity generation among G20 members. A total of 3.2 million GWh of electricity was generated in the EU-28 in 2015 and 3.3 million GWh in 2016.

Solid fuel combustion power stations generated nearly two fifths (39.2 %) of electricity worldwide in 2015; this share was boosted by a high use of these fuels in South Africa, India, China and Australia. Gas-fired power stations generated more than one fifth (22.8 %) of the world's electricity with this fuel providing more than half of the electricity generated in Mexico and Saudi Arabia, nearly half of the total in Russia and Argentina, and nearly two fifths of the total in Japan and Turkey. While oil-fired power stations provided just 4.1 % of the world's electricity, this source was important in Saudi Arabia, providing the 44.2 % of the total that was not produced from gas. Nuclear power contributed some 26.5 % of the electricity generated in the EU-28 in 2015, which was more than double the world's average (10.6 %) and the second highest share among G20 members, behind South Korea (29.8 %).

Table 12.3: Gross electricity generation, 2015

	Total	Analysis by source (1)					
		Solid fuels	Petroleum products	Gas	Nuclear	Hydro (2)	Other renewables & waste
	(GWh)	(%)					
EU-28	3 235 241	24.5	1.9	16.4	26.5	11.5	19.1
World	24 344 520	39.2	4.1	22.8	10.6	16.3	7.0
Argentina	145 447	2.0	15.4	49.3	4.9	26.5	1.9
Australia	252 360	62.9	2.7	20.8	0.0	5.3	8.3
Brazil	581 652	4.7	5.0	13.7	2.5	61.8	12.1
Canada	670 851	9.8	1.2	10.0	15.1	56.8	6.3
China	5 859 958	70.1	0.2	2.5	2.9	19.3	5.0
India	1 383 004	75.3	1.7	4.9	2.7	10.0	5.4
Indonesia	233 984	55.8	8.4	25.2	0.0	5.9	4.8
Japan	1 041 343	33.0	9.8	39.4	0.9	8.8	8.2
Mexico	311 138	10.9	10.1	59.9	3.7	9.9	5.5
Russia	1 067 544	14.9	0.9	49.6	18.3	15.9	0.4
Saudi Arabia	338 336	0.0	44.2	55.8	0.0	0.0	0.0
South Africa	249 655	91.6	0.1	0.0	4.9	1.5	1.9
South Korea	552 876	42.8	2.3	22.2	29.8	1.0	1.6
Turkey	261 783	29.1	0.8	37.9	0.0	25.6	6.3
United States	4 317 159	34.1	0.9	31.8	19.2	6.3	7.6

(1) Other sources not shown.
(2) Includes production from pumped hydro.

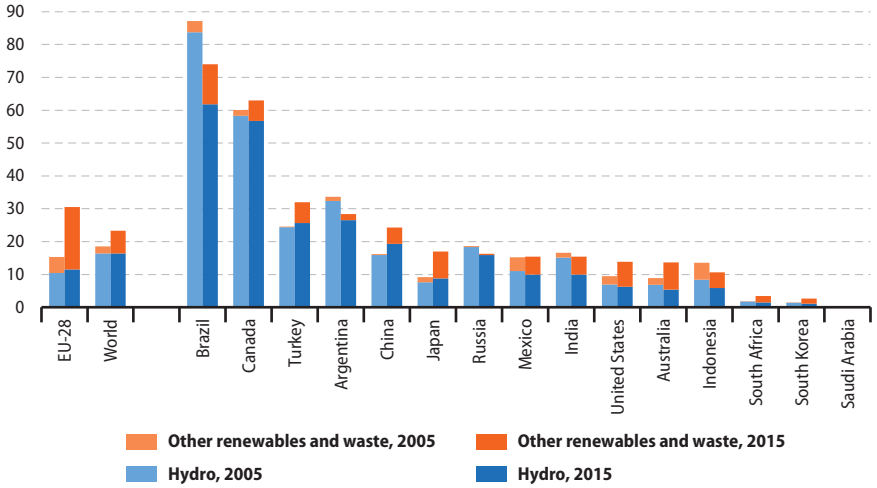
Source: Eurostat (online data code: nrg_105a) and the International Energy Agency (Electricity)

Hydro provided less than half of the EU-28's electricity generated from renewables and waste in 2015

Hydro-electric power, other renewables and waste supplied 23.3 % of the world's electricity in 2015, with a higher share recorded in the EU-28 (30.6 %) — see Figure 12.7. The G20 members with the highest proportion of gross electricity generation from renewables and waste were Brazil (74.0 %) and Canada (63.0 %), while the next highest share was 32.0 % in Turkey. Hydro-electricity provided more than half of the electricity generated from renewables and waste in most G20 members in 2015, the exceptions (which used more waste or other renewables) were: the United States, South Africa, South Korea and Australia; Saudi Arabia had no hydro power and a negligible share of electricity generated from renewables and waste.

Between 2005 and 2015, the share of electricity generated from renewables (including hydro) and waste increased worldwide by 4.8 points, up from 18.5 % to 23.3 %. The largest increases, in percentage point terms, were observed among the G20 members in the EU-28 (15.2 points), China (8.1 points), Japan (7.7 points) and Turkey (7.4 points). In India, Russia, Indonesia, Argentina and most notably Brazil (down 13.2 points), the share from renewables (including hydro) and waste decreased between these years.

Figure 12.7: Renewables and waste, 2005 and 2015
(% of gross electricity generation)



Note: hydro includes pumped hydro.

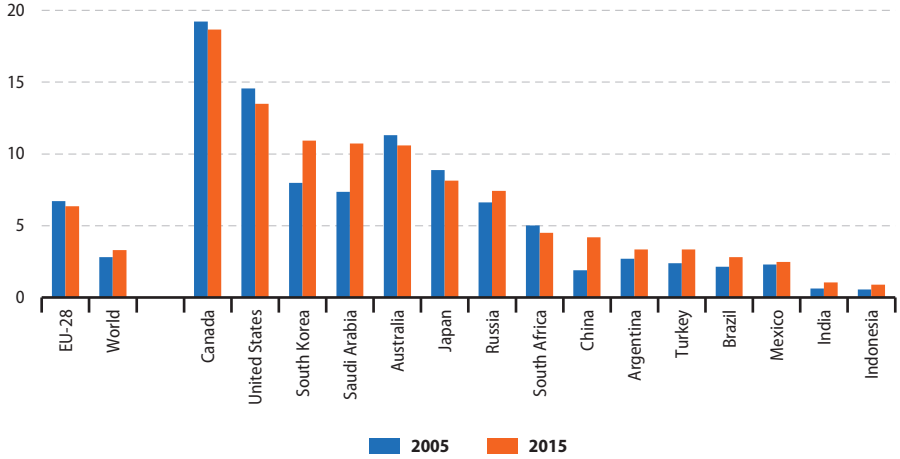
Source: Eurostat (online data code: nrg_105a) and the International Energy Agency (Electricity)

Canada had by far the highest level of electricity generation per inhabitant in 2015 among the G20 members

Relative to population size, Canada had by far the highest electricity generation among the G20 members, 18.7 MWh per inhabitant in 2015, 5.7 times as high as the world average (see Figure 12.8). The EU-28 ranked in the middle of the G20 members, with 6.4 MWh of electricity generated per inhabitant in 2015, a little less than double the world average. Brazil, Mexico, India and Indonesia were the only G20 members with ratios of electricity generation to population size that were below the world average.

Between 2005 and 2015, electricity generation increased worldwide by 0.48 MWh per inhabitant. Among the G20 members this ratio fell in the United States, Japan, Australia, Canada, South Africa and the EU-28, while it increased most strongly in China, South Korea and Saudi Arabia.

Figure 12.8: Gross electricity generation, 2005 and 2015
(MWh per inhabitant)



Source: Eurostat (online data codes: nrg_100a and demo_gind), the International Energy Agency (Electricity) and the United Nations Department of Economic and Social Affairs (World Population Prospects: the 2017 Revision)

13. Environment

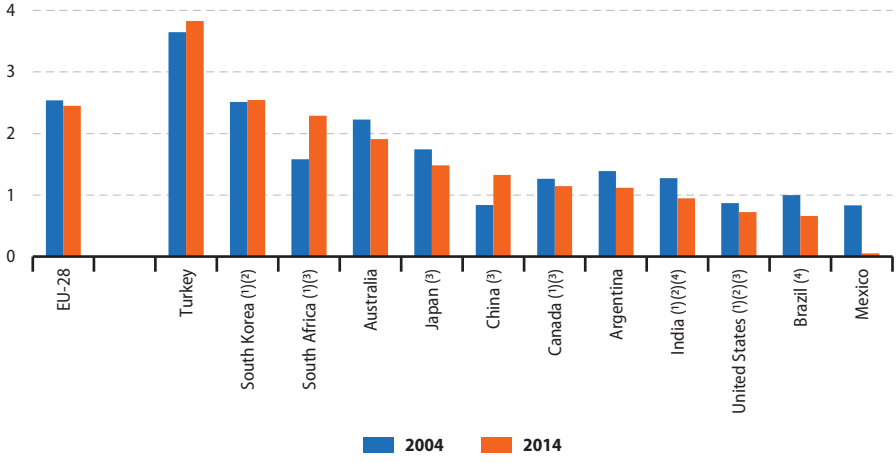
Environmental taxes

Turkey had the highest revenue from environmental taxes in 2014 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 2014, the EU-28 Member States raised EUR 344 billion of revenue from environmental taxes, equivalent to 2.54 % of GDP; by 2016 this value had risen to EUR 364 billion while the ratio was slightly lower 2.45 % of GDP. Figure 13.1 compares the relative importance of environmental taxes between the G20 members and shows how these developed between 2004 and 2014. Among the G20 members (no data available for Indonesia, Russia and Saudi Arabia), the highest revenue from environmental taxes, relative to GDP, was in Turkey where these taxes were equivalent to 3.83 % of GDP in 2014, with South Korea and South Africa reporting

Figure 13.1: Environment related taxes, 2004 and 2014
(% of GDP)



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

(1) Incomplete data.
(2) Break in series.
(3) 2014: estimate.
(4) India: 2005 instead of 2004. Brazil: 2013 instead of 2014.

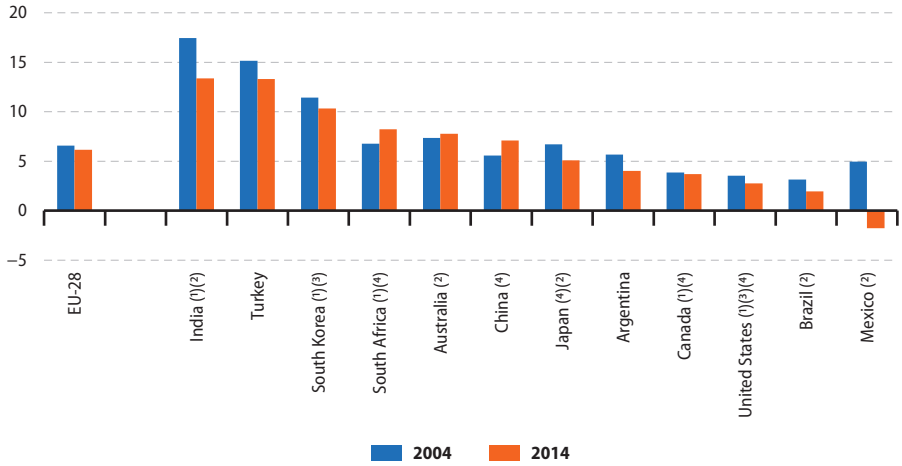
Source: Eurostat (online data code: env_ac_tax) and the OECD (Green growth indicators)

the next highest ratios, 2.54 % and 2.29 % of GDP. Elsewhere among the G20 members, the ratio ranged from 0.66 % to 1.91 % of GDP, with Mexico (0.06 % of GDP) below this range. Between 2004 and 2014, the ratio of environmental taxes to GDP fell in most G20 members, the exceptions being South Korea, Turkey, China and South Africa.

Revenue from environmental taxes contributed 6.15 % of all tax revenues in the EU-28 in 2014, down from 6.59 % in 2004 (see Figure 13.2).

In India and Turkey the share of tax revenues derived from environmental taxes was more than double that observed in the EU-28, and higher than in any other G20 members. The negative value for Mexico in 2013 reflects the system used to stabilise motor fuel prices, which leads to subsidies when oil prices are high. The share of environmental taxes in all tax revenues increased between 2004 and 2014 in China, South Africa and Australia (2004-2013), but decreased elsewhere among the G20 members.

Figure 13.2: Environment related taxes, 2004 and 2014
(% of tax revenue)



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

(1) Incomplete data.
(2) India: 2005 instead of 2004. Australia, Brazil, Japan and Mexico: 2013 instead of 2014.
(3) Break in series.
(4) 2014: estimate.

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

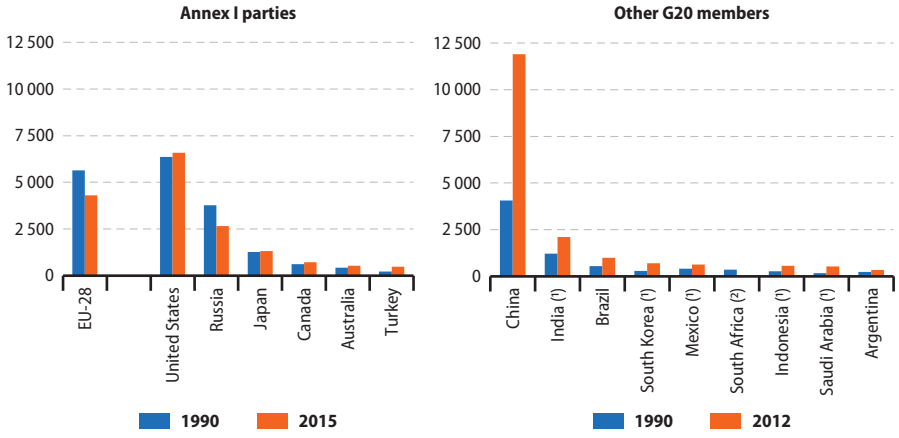
Air emissions

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, adopted in 1997 and entered into force in February 2005. 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. The G20 members that are Annex I parties are listed separately in Figures 13.3 and 13.4 from those G20 members that are not. The Doha Amendment to the protocol concerning the second commitment period (2013-2020) has not entered into force. The EU-28 has committed to a 20 % reduction with respect to 1990 by 2020. Other pledges for reductions by 2020 made by Annex I parties include: a 5-25 % reduction with respect to 2000 levels in Australia; a 17 % reduction with respect to 2005 levels in Canada and the United States; a 25% reduction with respect to 1990 levels in Japan; and a 15-25 % reduction with respect to 1990 in Russia. In 2015, 196 parties adopted the Paris Agreement that aims at governing emission reductions from 2020 onwards through national commitments; this entered into force in November 2016.

Between 1990 and 2015 the EU-28's greenhouse gas emissions fell by 24 %

Emissions of different greenhouse gases are converted to carbon dioxide equivalents based on their global warming potential to make it possible to compare and aggregate them. Between 1990 and 2015, Russia's greenhouse gas emissions fell overall by 30 %, while the emissions of the EU-28 fell by 24 % (see Figure 13.3). Turkey's emissions more than

Figure 13.3: Greenhouse gas emissions, 1990 and 2012 or 2015
(million tonnes of CO_2-equivalents)



Note: without land use, land use change and forestry.

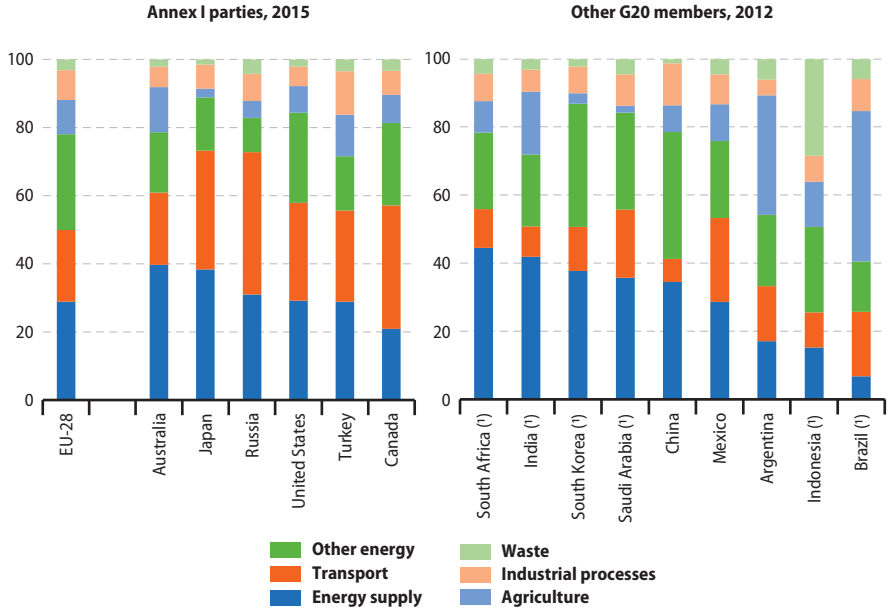
(1) Indonesia: 2000 instead of 2012. India and Saudi Arabia: 2010 instead of 2012. Mexico: 2013 instead of 2012. South Korea: 2014 instead of 2012.
(2) 2012: not available.

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

doubled, while emissions also increased for the other G20 Annex I parties. Among all of the G20 members, China (2012 data) had the highest level of greenhouse gas emissions, its emissions having nearly trebled between 1990 and 2012.

Figure 13.4 provides information on the source of greenhouse gas emissions. Energy (including energy supply and transport) accounted for at least 70 % of all greenhouse gas emissions in the G20 members that are Annex I parties. Among the energy sectors, transport had the largest share of emissions in Russia and Canada while energy supply produced the largest share of emissions in the other Annex I parties shown. Elsewhere, waste made a relatively large contribution to the level of greenhouse gas emissions in Indonesia (2000 data) as did agriculture in Brazil (2010 data) and Argentina.

Figure 13.4: Greenhouse gas emissions, by sector, 2012 or 2015
(%)



Note: without solvents, land use, land use change and forestry. Ranked according to emissions related to energy supply.

(1) South Africa: 1994. Indonesia: 2000. Brazil, India and Saudi Arabia: 2010. South Korea: 2014.

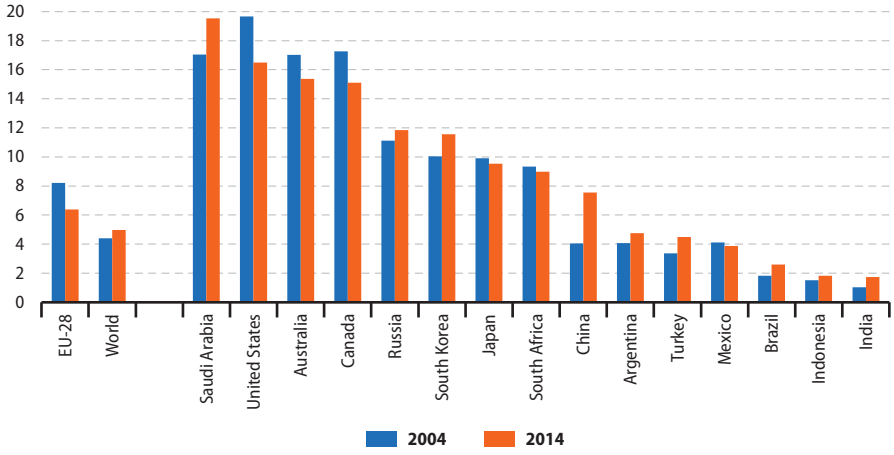
Source: Eurostat (online data code: env_air_gge) and the United Nations Framework Convention on Climate Change (UNFCCC)

Figure 13.5 provides information on emission intensities of carbon dioxide, calculated relative to the population size. 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, the United States, Australia and Canada all had more than 15.0 tonnes per inhabitant of CO_2 emissions in 2014. With 6.4 tonnes of emissions per inhabitant, the EU-28 was at the lower end of the range for an intermediate group where emission varied from 6.4 to 11.9 tonnes per inhabitant, including also Russia, South Korea, Japan, South Africa and China. All of the other G20 members had CO_2 emissions below the world average of 5.0 tonnes per inhabitant. Between 2004 and 2014, the intensity of emissions decreased in the United States, Canada, the EU-28, Australia, Japan, South Africa and Mexico. In the other G20 members, emissions increased, generally by less than 2.0 tonnes per inhabitant, but by more than this in Saudi Arabia (up 2.5 tonnes per inhabitant) and China (up 3.5 tonnes per inhabitant), the latter representing an increase in this ratio of 86.8 %.

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 and include hydrochlorofluorocarbons (HCFCs). These substances are listed in the Montreal Protocol which is designed to phase out their production and consumption.

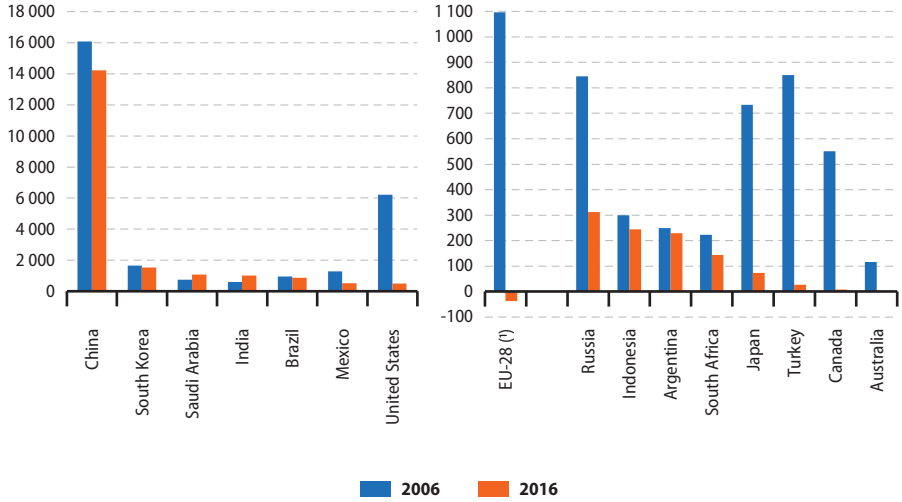
Figure 13.5: Carbon dioxide emissions, 2004 and 2014
(tonnes per inhabitant)



Source: the World Bank (World Development Indicators)

Across G20 members, there has been a considerable reduction in the consumption of ODS in recent years. By 2016, the EU-28 had a negative consumption of HCFCs, indicating that exports and destruction of these substances were greater than the level of production plus imports (see Figure 13.6). Although 11.5 % lower than 10 years earlier, China's consumption of HCFCs in 2016 remained more than double the level of consumption in all of the other G20 members combined.

Figure 13.6: Air pollution — consumption of hydrochlorofluorocarbons (HCFCs), 2006 and 2016
(tonnes of ozone depleting potential)



Note: different scales used for the two parts of the figure.

(1) Negative value indicates exports plus destruction exceeded actual production plus imports.

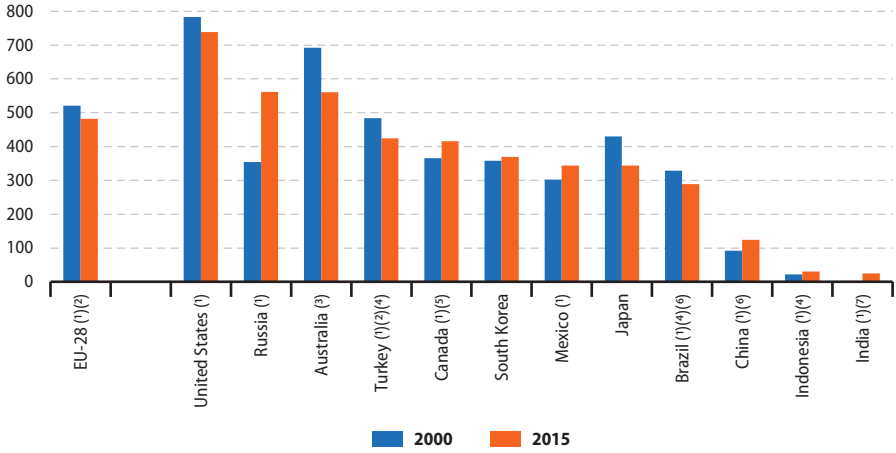
Source: the United Nations Environment Programme (Ozone Secretariat)

Waste

The management and treatment of waste can have serious environmental impacts, taking up space and potentially releasing pollution into the air, water or soil. Municipal waste is collected by or on behalf of municipalities, by public or private enterprises and originates from households, commerce and trade, small businesses, office buildings and institutions (for example, schools, hospitals or government buildings) and some municipal services. For areas not covered by a municipal waste collection scheme the amount of waste generated is estimated.

The amount of municipal waste generated in the G20 members (see Figure 13.7 for details of the latest reference year) was particularly low in India, Indonesia and China, while it was above the EU-28 average of 482 kg per inhabitant in Australia, Russia and the United States. Among the G20 members with data for both years in the figure, decreases in the level of waste generated relative to population size were recorded in Australia, Japan, Turkey, the United States, Brazil and the EU-28 and increases elsewhere, notably in Russia; note that there are breaks in series for some countries.

Figure 13.7: Municipal waste generation, 2000 and 2015
(kg per inhabitant)



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

(1) Indonesia: 2001 instead of 2000. Brazil, China, India, Indonesia and Russia: 2012 instead of 2015. Canada and the United States: 2014 instead of 2015. EU-28, Mexico and Turkey: 2016 instead of 2015.
(2) Estimates.
(3) 2000: estimate.
(4) Break in series.
(5) Municipal waste from households only.
(6) Incomplete data.
(7) Municipal waste from households only. 2000: not available.

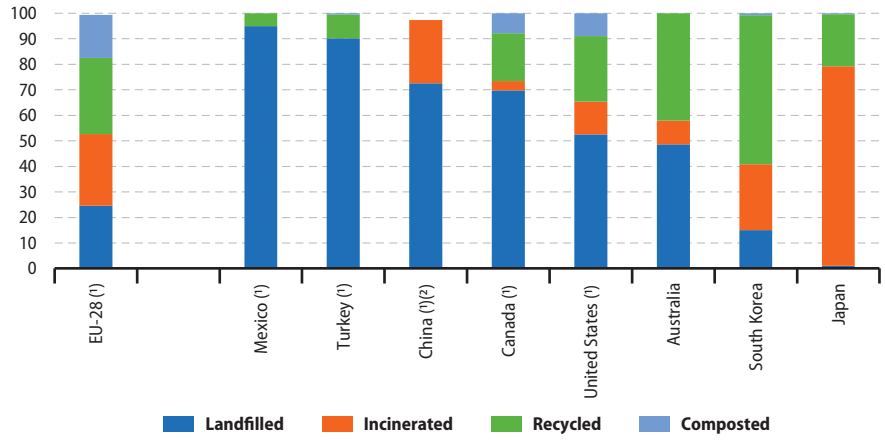
Source: Eurostat (online data code: env_wasmun) and the OECD (Environment, Waste)

Landfilling is the final placement of waste into or onto the land in a controlled or uncontrolled way. 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, while 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.

Among the G20 members with data available (see Figure 13.8), Mexico (95.0 %; 2012 data) and Turkey (90.2 %; 2016 data) reported the most frequent use of landfill and Japan reported the most frequent use of incineration (78.2 %; 2015 data) to treat municipal waste. In South Korea, more than half (58.4 %) of the municipal waste was recycled in 2015, with the next highest share in Australia (42.0 %), followed by the EU-28 (29.8 %; 2016 data) and the United States (25.7 %; 2014 data). In the EU-28, 16.9 % of municipal waste was composted in 2016, approximately double the next highest shares among the G20 members, 8.9 % in the United States and 7.9 % in Canada (both 2014 data).

Figure 13.8: Municipal waste treatment, 2015

(%)



Note: ranked on landfill. Other disposal and other recovery, not shown. Argentina, Brazil, India, Indonesia, Russia, Saudi Arabia and South Africa: not available.

(1) China and Mexico: 2012. Canada and the United States: 2014. EU-28 and Turkey: 2016.
(2) Incomplete data. Recycled and composted: not available.

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

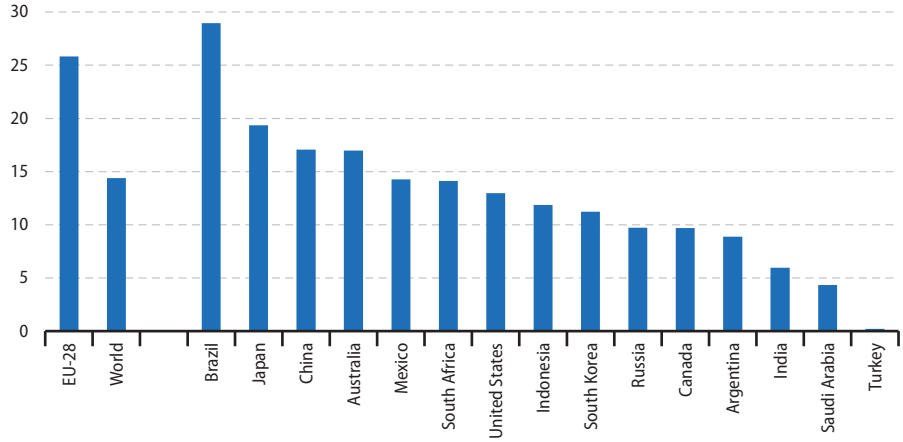
Protected areas

In the EU-28 around 25.8 % of the surface area in 2016 was designated as a protected area as were 17.1 % of territorial waters

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.

According to the World Conservation Monitoring Centre of the United Nations Environment Programme, around 25.8 % of the surface area (land area and inland water bodies) in the EU-28 was designated as a protected area as of 2016, compared with a world average of 14.4 % (see Figure 13.9). Among the other G20 members, the largest shares of surface area that were protected were recorded in Brazil (28.9 %) and Japan (19.4 %), with Brazil also having the largest terrestrial protected area in absolute terms (2.5 million km^2). The lowest shares of terrestrial protected areas among the G20 members were in Saudi Arabia (4.3 %) and Turkey (0.2 %).

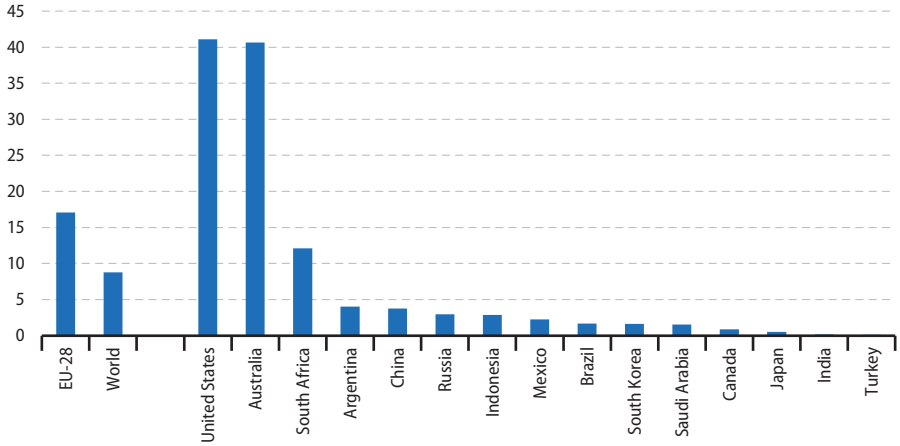
Figure 13.9: Terrestrial protected areas, 2016
(% of surface area)



Source: the World Bank (World Development Indicators) — data from the United Nations Environmental Program and the World Conservation Monitoring Centre, as compiled by the World Resources Institute

According to the same source, 17.1 % of the EU-28's territorial waters were protected marine areas in 2016 (see Figure 13.10), nearly double the world average (8.8 %) and the third highest share among the G20 members, behind the United States (41.1 %) and Australia (40.7 %). These last two countries also had the largest marine protected areas in absolute size, 3.5 million km^2 around the United States and 3.0 million km^2 around Australia, followed by Argentina (1.1 million km^2).

Figure 13.10: Marine protected areas, 2016
(% of territorial waters)



Source: the World Bank (World Development Indicators) — data from the United Nations Environmental Program and the World Conservation Monitoring Centre, as compiled by the World Resources Institute

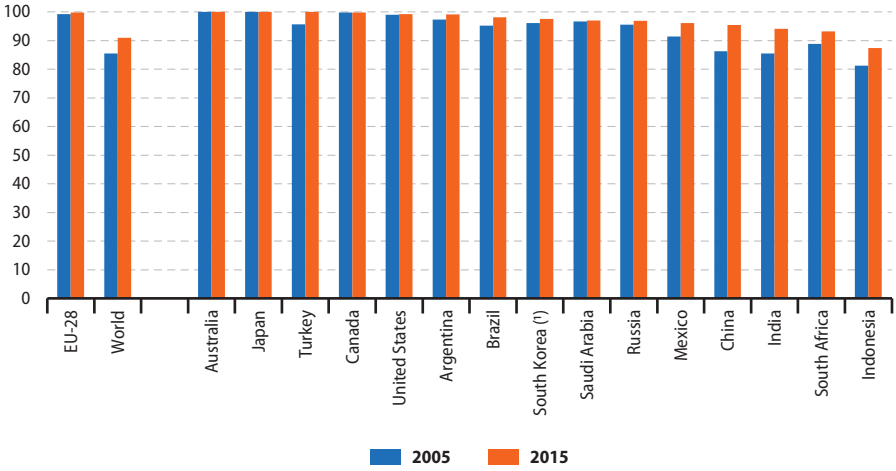
Between 2005 and 2015 China and India reported the largest increases in access to an improved water source

Water is essential for life, for plants and animals, including humans. Among other factors, increased access to safe water can reduce disease, improve health and thereby provide a foundation for social and economic development.

Figure 13.11 provides information on the proportion of the population with access to an improved water source, for example, a piped household water connection, public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater collection. Worldwide, 91 % of the population had access to an improved water source in 2015, up from 86 % in 2005. In several G20 members access to an improved water source was complete (100 %), namely in Australia, Japan, Turkey, the EU-28 and Canada, with proportions between 96 % and 99 % in most other G20 members. India (94 %), South Africa (93 %) and Indonesia (87 %) were the only G20 members where less than 95 % of the population had such an access in 2015.

All of the G20 members that had not already reached complete access in 2005 reported an increase in access between 2005 and 2015, with the largest increases in percentage point terms in China (9.2 points), India (8.6 points) and Indonesia (6.1 points).

Figure 13.11: Population with access to improved water source, 2005 and 2015
(% share of total population)



Note: access to an improved water source includes piped water on premises and other improved drinking water sources.

(1) 2012 instead of 2015.

Source: the World Bank (World Development Indicators)

Annexes

Units, abbreviations and acronyms

Measurement units or scalars

%	per cent
CO_2-equivalents	carbon dioxide equivalents
DWT	deadweight tonnes
EUR	euro
GWh	gigawatt-hour
kbit/s	kilobits per second
kg	kilogram
km	kilometre
km^2	square kilometre
m^3	cubic metre
MWh	megawatt-hour
ODP tonnes	tonnes based on ozone depleting potential
passenger-km	passenger-kilometre
point	percentage point
toe	tonne of oil equivalent
tonne-km	tonne-kilometre
USD	United States dollar

Geographical acronyms

EA	Euro area
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
ENP	European neighbourhood policy
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
HCFC	hydrochlorofluorocarbons
HIV	human immunodeficiency virus infection
ICJ	International Court of Justice
IMF	International Monetary Fund
ISCED	International standard classification of education
ISDN	integrated services digital network
ISIC	International standard industrial classification of all economic activities
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
SME	small and medium-sized enterprise
UIC	International Union of Railways
UN	United Nations
UNFCC	United Nations' Framework Convention on Climate Change
UNSCR	United Nations Security Council resolution

National statistical authorities

The following list provides links to national statistics authorities of the individual G20 members included in this publication. Where available, the links below are to the English language page of the websites concerned.

Authority	Website
National Institute of Statistics and Censuses (Argentina)	https://www.indec.gov.ar/
Brazilian Institute of Geography and Statistics	http://www.ibge.gov.br/english/
Statistics Canada	http://www.statcan.gc.ca/eng/start
National Bureau of Statistics of China	http://www.stats.gov.cn/english/
Ministry of Statistics and Programme Implementation (India)	http://www.mospi.gov.in
Statistics Indonesia	http://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)	https://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/

Data sources

Organisation	Data source(s)
The International Energy Agency (IEA)	Energy balances; Electricity; Indicators
The International Monetary Fund (IMF)	Balance of Payments and International Investment Position Statistics; World Economic Outlook database; International Financial Statistics
The Organisation for Economic Co-operation and Development (OECD)	OECD.StatExtracts; Annual national accounts — main aggregates; Education at a Glance; Environment; FDI stocks; Green growth indicators; Health care resources; Income Distribution and Poverty; International transport forum; Labour force statistics; Main Economic Indicators; National Accounts at a Glance; Non-medical determinants of health; SDBS Structural Business Statistics; Social Expenditure Database
The United Nations (UN) and its agencies	
The Food and Agriculture Organisation (FAO) of the United Nations	FAOSTAT; Global Catch Production; Global Aquaculture Production
The International Labour Organisation (ILO)	ILOSTAT
The International Telecommunication Union (ITU)	Main website
The United Nations	Comtrade
The United Nations Conference on Trade and Development (UNCTAD)	Maritime transport
The United Nations Department of Economic and Social Affairs (UN DESA)	Demographic statistics; World Population Prospects; The World's Cities in 2016 — Data Booklet
The United Nations Educational, Scientific and Cultural Organization (UNESCO)	UIS: Science & Technology; UIS: Education
The United Nations Environment Programme (UNEP)	Ozone Secretariat
The United Nations Framework Convention on Climate Change (UNFCCC)	Main website
The United Nations High Commissioner for Refugees (UNHCR)	UNHCR Statistical Online Population Database
The United Nations Statistics Division (UNSD)	Economic Statistics Branch; National Accounts Main Aggregates Database
The World Health Organisation	Global Health Observatory
The World Bank	World DataBank: Health Nutrition and Population Statistics; Poverty and Equity Database; World Development Indicators

To complement these official statistical sources, the following sources have also been used for transport statistics:

— the World port rankings of the American Association of Port Authorities supplemented by information from individual port authorities;

— the World annual traffic report of the Airports Council International (ACI);

— data concerning the number of passenger cars from the International Organisation of Motor Vehicle Manufacturers (OICA).

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The EU in the world
2018 edition

This publication provides a statistical portrait of the European Union (EU) in relation to the rest of the world. It presents a broad range of indicators for the EU and the non-EU members of the Group of Twenty (G20). It is structured into three parts: people — population, living conditions, health, education and training, and the labour market; economy — economy and finance, international trade, agriculture, forestry and fisheries, industry and services, and research and development and the digital society; environment — transport, energy, and the environment.

The publication complements information found in two of Eurostat's main publications, *Key figures on Europe* and the *Regional yearbook*, as well as the hundreds of articles available from Eurostat's *Statistics Explained* web portal. It may be viewed as an introduction to European and international statistics and provides a starting point for those who wish to explore the wide range of data that are freely available from a variety of international organisations and on Eurostat's website.

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