# The EU in the world | 2020 edition



STATISTICAL BOOKS

eurostat

■ **EU-27**   ■ **16 non-EU G20 members**

*The boundaries shown and the designations used on this map do not imply official endorsement or acceptance by the European Union.*

## G20 members

| EU-27 | Indonesia |
| Germany | Japan |
| France | Mexico |
| Italy | Russia |
| Argentina | Saudi Arabia |
| Australia | South Africa |
| Brazil | South Korea |
| Canada | Turkey |
| China | United Kingdom |
| India | United States |

# The EU in the world | 2020 edition

# Foreword

*The EU in the world 2020* is the sixth edition of this publication. Each year, the content and structure are revised to take account of the availability of indicators and their importance in the light of political, social, economic and environmental developments.

*The EU in the world 2020* provides a selection of important and interesting statistics on the European Union (EU) — considered as a single entity — in comparison with the 16 non-EU members of the Group of Twenty, a leading forum of the world's major economies, more commonly referred to as the G20. As such, this publication complements two other flagship publications of Eurostat: *Key figures on Europe* which focuses on the EU and its Member States; the *Eurostat Regional yearbook* which focuses on the regions of the EU.

Drawing from the vast amount of data available at Eurostat and from other international and national sources, we aim to give an insight into people and society, the economy and business, and the environment and natural resources within the EU as compared with other major world economies.

I hope that you will find this publication engaging 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, namely, all members of the G20. It complements information found in two of Eurostat's flagship publications, *Key figures on Europe* and the *Regional yearbook*, as well as the hundreds of articles available from Eurostat's *Statistics Explained* web portal. *The EU in the world 2020* 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: https://ec.europa.eu/eurostat

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: https://ec.europa.eu

## For more information please consult

Eurostat website: https://ec.europa.eu/eurostat

# Contents

# Introduction

*The EU in the world* is published every second year with annual data. This 2020 edition only describes the situation in the EU and the G20 Member States up to the year 2018 at the most. As a consequence, first findings of any COVID-19 related implications will only be possible in the 2022 edition of *The EU in the world*, with the full scale of the crisis being revealed in later editions only.

## 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. Eurostat does not work alone. 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 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. Between November 2008 and June 2019, the G20 held 14 Leaders' Summits to seek agreements on worldwide economic matters. The next G20 Leaders' Summit will be held in Riyadh (Saudi Arabia) in November 2020.

The G20 brings together the world's major advanced and emerging economies, comprising 19 country members and the EU. The country members include three EU Member States (Germany, France and Italy), and 16 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, the United Kingdom and the United States. The EU (coloured blue) and the 16 non-EU members from the rest of the world (coloured orange) are shown in the fold out map inside the cover page. In 2018,

the G20 members covered approximately 60 % of the world's land area, generated 88 % of the world's gross domestic product (GDP) and were home to 63 % of the world's population.

## Publication structure and coverage

*The EU in the world 2020* provides 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 and society, economy and business, and environment and natural resources — which together contain 14 different chapters.

The publication aims to present information for the EU-27 (the EU of 27 Member States ([1])), occasionally the euro area (based on 19 members), as well as 16 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-27 and for the 16 other non-EU G20 members. In the text, statements such as 'among G20 members' refer (unless otherwise specified) to the EU-27 as a whole and the 16 non-EU members of the G20.

Please note that some of the countries that are not members of the G20, and therefore not covered by this publication, are larger (in terms of population, economy, land area and other measures) than some of the G20 countries. For example, Pakistan, Nigeria and Bangladesh have the fifth, seventh and eighth largest populations in the world, but are not G20 members and therefore not covered by this publication.

([1]) Since 1/2/2020 the United Kingdom is no longer a member of the EU. It is nevertheless a G20 member and is included in this publication alongside the other non-EU G20 members.

## SPATIAL DATA COVERAGE

The EU-27 and euro area (EA-19) aggregates that are provided in *The EU in the world 2020* 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-27 refers to a sum or an average for all 27 current Member States regardless of when they joined the EU. The harmonised consumer price index (see Figure 7.12 in the chapter on economy and finance) 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 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. In order to try to present data for a common reference period, in exceptional cases data for more recent reference periods that were available at the time of the data extractions have not been shown for a small number of G20 members.

The order of the G20 members used in the tables in this publication follows the alphabetical order of the members' names in English; in most of the maps and 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.

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## 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.

### Data for the EU, euro area and the United Kingdom

Almost all of the indicators presented for the EU, the euro area and the United Kingdom have been drawn from Eurobase, Eurostat's online database. Eurobase is updated regularly, so there may be differences between the data presented in this publication and data that are subsequently downloaded. In exceptional cases some indicators for the EU and the United Kingdom 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. 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 G20 members that are not part of the EU, other than the United Kingdom, the data presented in this publication have generally been compiled by a range of official international organisations listed 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 comparable datasets across the G20 members.

### Data extraction and processing

The statistical data presented in this publication were extracted during January and February 2020 and the accompanying text was drafted in February and March 2020.

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. 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 number of inhabitants. Where necessary and available, these size measures have been extracted from United Nations' databases.

**Table 1:** Exchange rates, 2008-2018
(1 EUR = … national currency)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Argentine peso | 4.640 | 5.211 | 5.186 | 5.744 | 5.838 | 7.274 | 10.767 | 10.253 | 16.340 | 18.742 | 32.912 |
| Australian dollar | 1.7416 | 1.7727 | 1.4423 | 1.3484 | 1.2407 | 1.3777 | 1.4719 | 1.4777 | 1.4883 | 1.4732 | 1.5797 |
| Brazilian real | 2.6737 | 2.7674 | 2.3314 | 2.3265 | 2.5084 | 2.8687 | 3.1211 | 3.7004 | 3.8561 | 3.6054 | 4.3085 |
| Canadian dollar | 1.5594 | 1.5850 | 1.3651 | 1.3761 | 1.2842 | 1.3684 | 1.4661 | 1.4186 | 1.4659 | 1.4647 | 1.5294 |
| Chinese renminbi-yuan | 10.2236 | 9.5277 | 8.9712 | 8.9960 | 8.1052 | 8.1646 | 8.1857 | 6.9733 | 7.3522 | 7.6290 | 7.8081 |
| Indian rupee | 63.614 | 67.361 | 60.588 | 64.886 | 68.597 | 77.930 | 81.041 | 71.196 | 74.372 | 73.532 | 80.733 |
| Indonesian rupiah | 14 165 | 14 444 | 12 042 | 12 207 | 12 046 | 13 858 | 15 749 | 14 870 | 14 721 | 15 118 | 16 803 |
| Japanese yen | 152.45 | 130.34 | 116.24 | 110.96 | 102.49 | 129.66 | 140.31 | 134.31 | 120.20 | 126.71 | 130.40 |
| Mexican peso | 16.291 | 18.799 | 16.737 | 17.288 | 16.903 | 16.964 | 17.655 | 17.616 | 20.667 | 21.329 | 22.705 |
| Russian rouble | 36.421 | 44.138 | 40.263 | 40.885 | 39.926 | 42.337 | 50.952 | 68.072 | 74.145 | 65.938 | 74.042 |
| Saudi riyal (¹) | 5.5155 | 5.2305 | 4.9714 | 5.2200 | 4.8180 | 4.9804 | 4.9819 | 4.1606 | 4.1509 | 4.2364 | 4.4288 |
| South African rand | 12.059 | 11.674 | 9.698 | 10.097 | 10.551 | 12.833 | 14.404 | 14.172 | 16.265 | 15.049 | 15.619 |
| South Korean won | 1 606.1 | 1 772.9 | 1 531.8 | 1 541.2 | 1 447.7 | 1 453.9 | 1 398.1 | 1 256.5 | 1 284.2 | 1 276.7 | 1 299.1 |
| Turkish lira | 1.9064 | 2.1631 | 1.9965 | 2.3378 | 2.3135 | 2.5335 | 2.9065 | 3.0255 | 3.3433 | 4.1206 | 5.7077 |
| Pound sterling (United Kingdom) | 0.79628 | 0.89094 | 0.85784 | 0.86788 | 0.81087 | 0.84926 | 0.80612 | 0.72584 | 0.81948 | 0.87667 | 0.88471 |
| United States dollar | 1.4708 | 1.3948 | 1.3257 | 1.3920 | 1.2848 | 1.3281 | 1.3285 | 1.1095 | 1.1069 | 1.1297 | 1.1810 |

(¹) Estimates based on a conversion from the exchange rate to the United States dollar.

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

## Data presentation

Many of the data sources used to produce *The EU in the world 2020* 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 figures. Where appropriate, breaks in series are indicated in the footnotes provided under each map or figure.

The term billion is used to signify a thousand million and a trillion is used to signify a thousand billion.

## Online glossary

Many terms and abbreviations in the online and portable document format (PDF) versions of this publication are linked to the glossary pages (https://ec.europa.eu/eurostat/statistics-explained/index.php/Thematic_glossaries) of Eurostat's Statistics Explained website (https://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 (https://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 United Kingdom, the EFTA countries; and the candidate countries. Furthermore, a number of databases provide statistical information for key indicators related to other non-member countries, notably for potential candidates and the European neighbourhood policy (ENP) countries.

## 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 map 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, https://ec.europa.eu/eurostat/product?code=<data_code>&mode=view , where <data_code> is to be replaced by the online data code in question (for example, replacing <data_code> with nama_10_gdp). Online data codes can also be fed into the 'Search' function on Eurostat's website,

| Type a keyword, a publication title, a dataset title... | 🔍 |
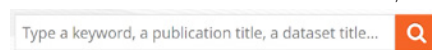
which is found in the upper-right corner of the Eurostat homepage, at https://ec.europa.eu/eurostat.

Note that the data on Eurostat's website are frequently updated and that the description above presents the situation as of April 2020.

[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.

# A

# People and society

# 1. Population

## Population size and population density

In 2018, the world's population was 7.63 billion inhabitants. The most populous countries in the world were China and India (both G20 members): China's population was 1.43 billion and India's was 1.35 billion. There were 446 million inhabitants in the EU-27 in 2018 (the third highest number among G20 members), followed by the United States with 327 million inhabitants, Indonesia with 268 million inhabitants and Brazil with 209 million inhabitants.

China accounted for 18.7 % of the world's population in 2018 and India for 17.7 % (see Map 1.1). In other words, over one third of the world's population lived in these two countries. The remaining G20 members accounted for 26.8 % of the world's population giving a cumulative share for all G20 members of 63.3 %.
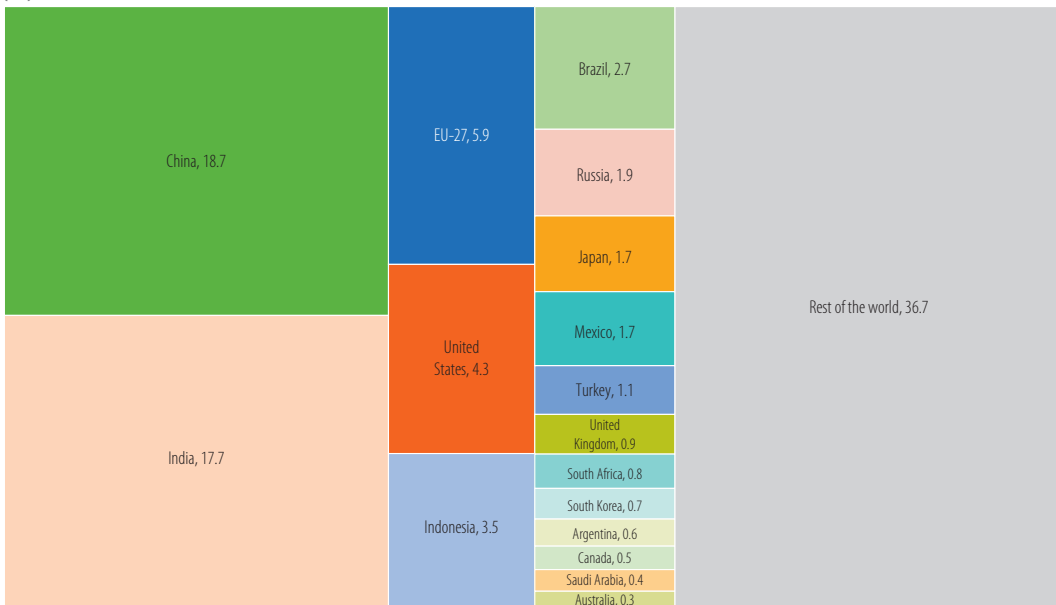
The latest United Nations population projections suggest that the pace at which the world's population is expanding will slow in the coming decades. Nevertheless, the total number of inhabitants worldwide is projected to approach 11 billion by 2100, representing an overall increase of 42.5 % compared with 2018, equivalent to average growth of 0.4 % each year. The number of inhabitants within the 16 non-EU members of the G20 is projected to decrease overall by 3.1 % between 2018 and 2100 (equivalent to an annual decrease of less than 0.1 %) while the EU-27's population is projected (by

Eurostat) to decrease by 8.6 % overall during the same period (equivalent to an annual average decrease of 0.1 %). 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 2018 and 2100 is projected to be in Australia and Canada (the only G20 countries where populations are projected to grow at a rate above the world average), while the populations of South Korea, Japan, China, Brazil and Russia — like that of the EU-27 — are projected to be smaller in 2100 than they were in 2018.

The G20's share of the world's population is projected to fall from 63.3 % in 2018 to 43.0 % by 2100 (see Map 1.2). The EU-27's share of the world's population is projected to decline by 2.1 percentage points from 5.9 % to 3.8 %. China's share is projected to fall by 8.9 points, from 18.7 % to 9.8 % between 2018 and 2100. Equally, although India's population is projected to increase, the rate of increase is projected to be lower than the world average and as such its share of the world total is projected to fall 4.4 points between 2018 and 2100, from 17.7 % to 13.3 % . In a similar vein, Brazil's share of the world's population is projected to fall from 2.7 % to 1.7 % over the same period while Japan's is projected to fall from 1.7 % to 0.7 %. None of the other G20 members are projected to see their share of the world's population increase or decrease by 1.0 percentage points or more.

**Map 1.1:** World population, 2018

(%)
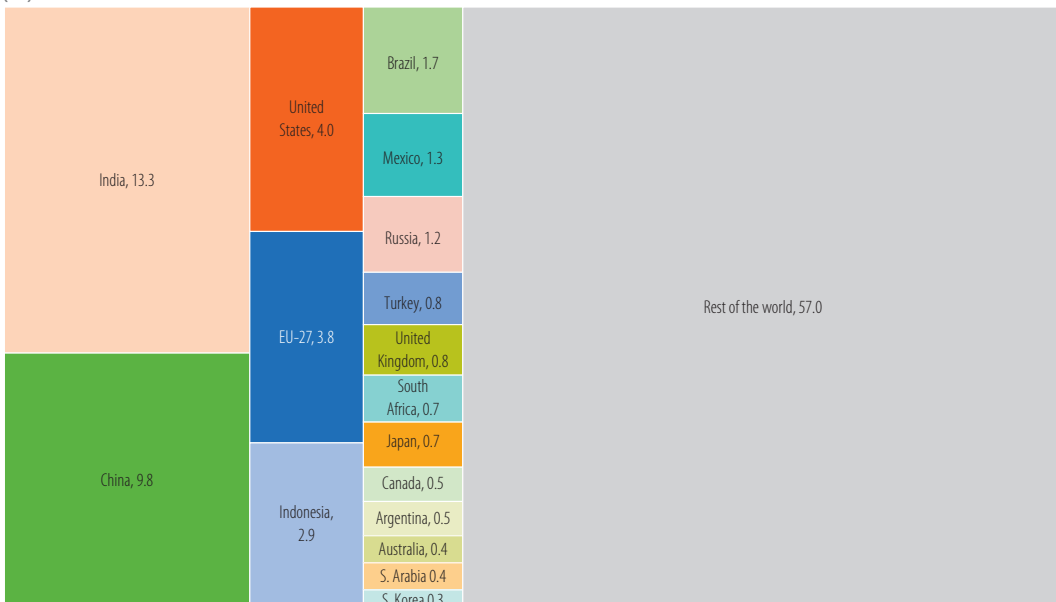


*Source:* Eurostat (online data code: demo_gind) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)
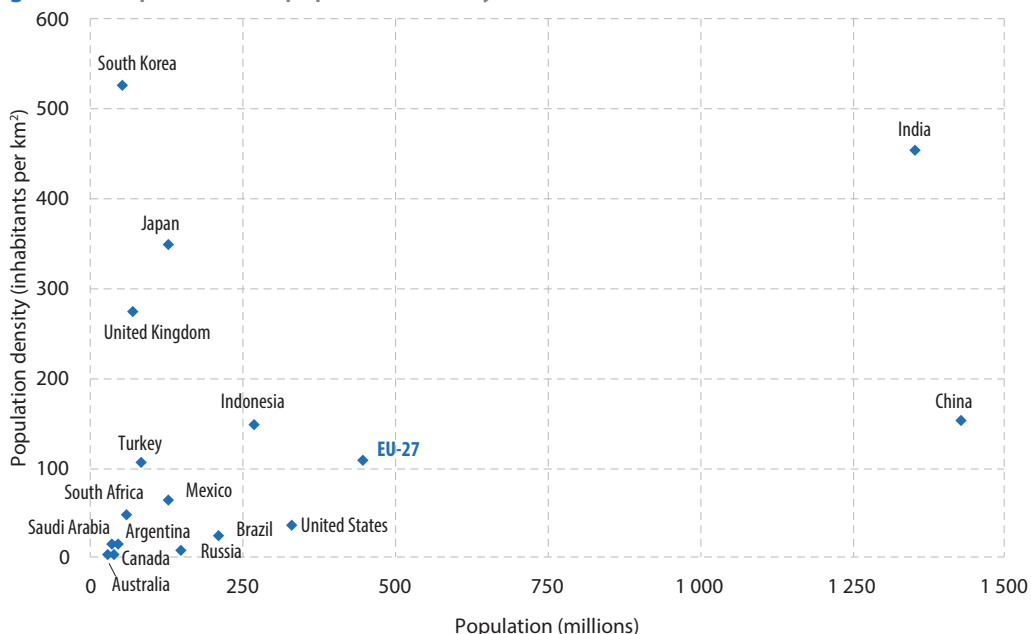
**Map 1.2:** Projected world population, 2100

(%)



*Source:* Eurostat (online data code: proj_19np) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

As well as having the largest overall populations, Asia also had the most densely populated G20 members (see Figure 1.1), namely South Korea, India and Japan, each with more than 300 inhabitants per km² (of land area) in 2018. These were followed by the United Kingdom, China, Indonesia, the EU-27 and Turkey with averages of more than 100 inhabitants per km². Australia, Canada and Russia were the least densely populated G20 members, with less than 10 inhabitants per km² on average.

**Figure 1.1:** Population and population density, 2018



*Source:* Eurostat (online data codes: demo_gind and tps00003), the Food and Agriculture Organisation of the United Nations (FAOSTAT: Inputs) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)
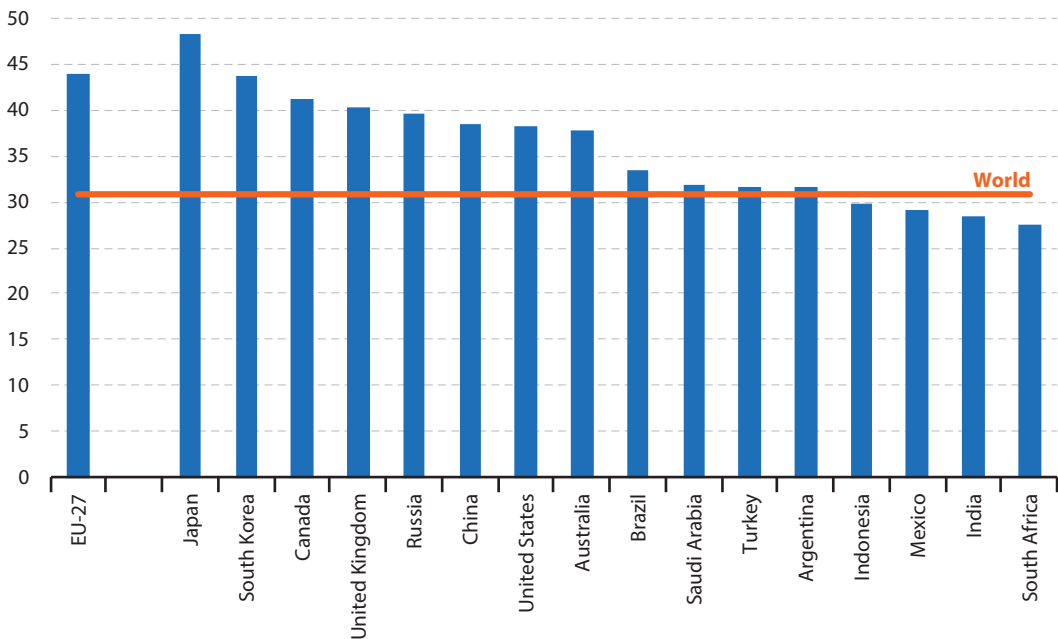
## Population age structure

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.

The median age is the age that divides a population into two groups that are numerically equivalent: half of the population is younger and the other half

older. The median age of the world's population was projected to be 30.9 years in 2020 (see Figure 1.2). Only four of the G20 members were projected to have a median age below this average, namely South Africa, India, Mexico and Indonesia (where median ages were predicted to range from 27.6 to 29.7 years). By contrast, the EU-27 was projected to have a median age of 43.9 years in 2020 which was higher than in any of the other G20 members with the exception of Japan (48.4 years).

**Figure 1.2:** Median age, projections for 2020
(years)



*Source:* Eurostat (online data codes: demo_pjanind and proj_19ndbi) and the United Nations Department of Economic and Social Affairs, Population Division, (World Population Prospects 2019)

Figure 1.3 clearly shows how different the age structures of some of the G20 countries' populations are from each other and from the world average.

Age groups covering young people generally accounted for the largest shares of the world's population in 2018, whereas in the EU-27 the share of the age groups below those aged 45-49 years in 2018 generally gets progressively smaller approaching the youngest age groups. This population structure in the EU-27 reflects in part 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 (resulting from high fertility rates in several European countries up to the mid-1960s). Another notable difference between the population pyramid for the EU-27 and that for the whole world was the relatively high gender imbalance among older age groups in the EU-27 compared with 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.

The age pyramid for China in 2018 had some similarities to that for the EU-27, particularly the relatively lower share of the total population that was accounted for by the younger generations. There were however several differences. There were two clear peaks in the shares in China, one around 25-34 years and the other around 45-54 years, with notably smaller shares for the age groups between these. Another notable difference compared with the EU-27 was the much smaller proportion of the population that was accounted for by older people and particularly those aged 80 years and over: in this respect the top of the age pyramid for
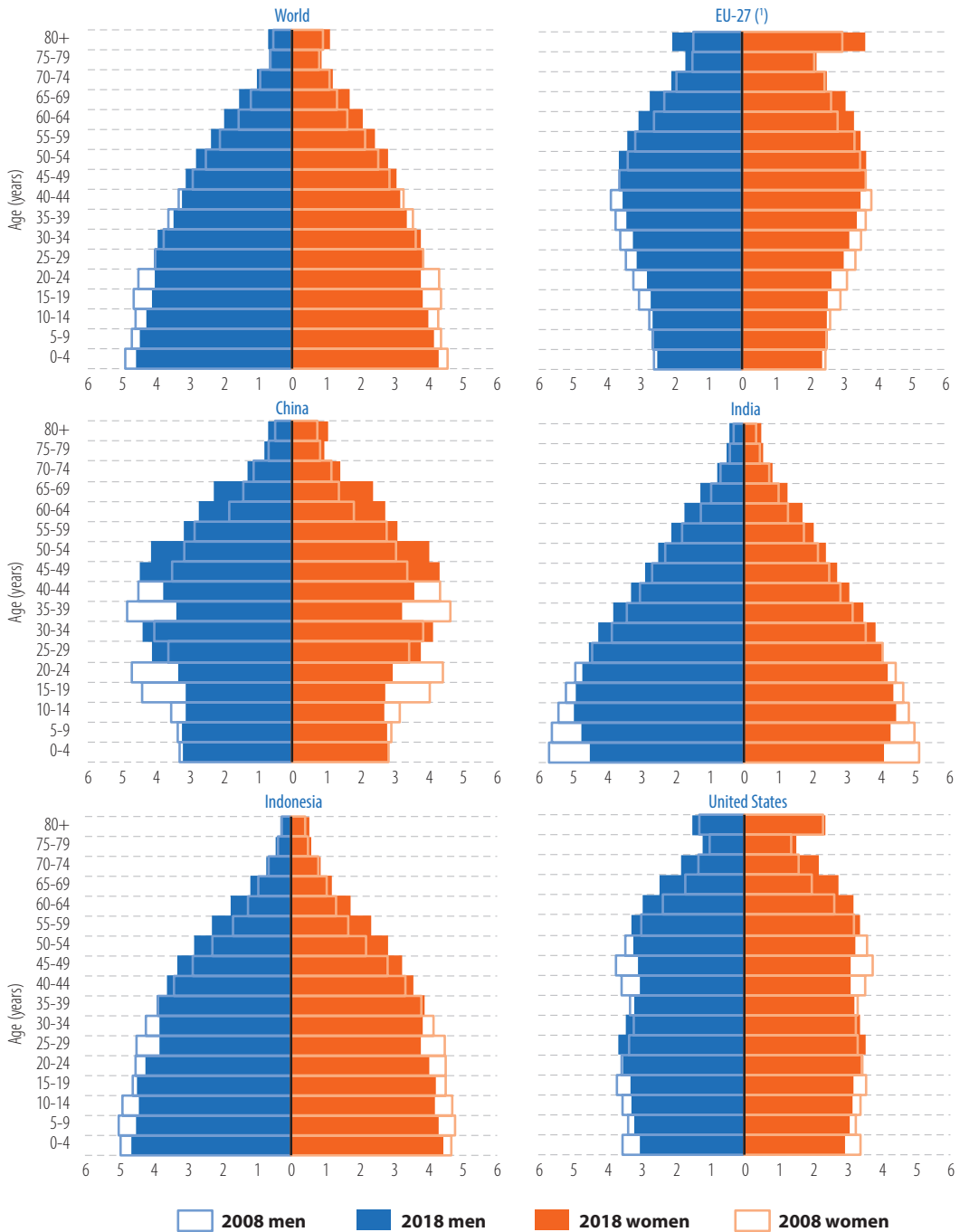
China was quite similar to the age pyramid for the world.

In broad terms, the age pyramid for India in 2018 was quite similar to that for the whole of the world. Looking in more detail, the relative weight of older people in the total population of India was relatively small compared with the world total. This pattern was apparent for men aged 45 years and over and for women aged 40 years and over; conversely, most of the younger age groups accounted for a relatively high share of the total population. In the age groups for people aged 10-29 years the shares In India were notably larger than for the world as a whole. Unlike the pyramid for the whole of the world, the shares of the two youngest age groups in the Indian population (those aged 0-4 and 5-9 years) were smaller than the share recorded for the age group covering children aged 10-14 years, reflecting lower fertility rates during the most recent decade.

The shape of the age pyramid for Indonesia in 2018 was very similar to that for the world. The main difference was the relatively low share of the Indonesian population that was aged 55 years and over; this was particularly notable among the oldest age group, namely for people aged 80 years and over.

In the United States, the age structure of the population was broadly similar to that in the EU-27. Nevertheless, as in China, there were two peaks in the age distribution, one around 20-34 years of age and the other around 50-59 years of age, with smaller shares for the intervening age groups. In general when compared with the EU-27, the United States had a relatively high share of its population aged less than 35 years, while older age groups tended to account for a smaller share of the population.

**Figure 1.3:** Age pyramids, 2008 and 2018
(% of total population)



World

EU-27 (¹)

China

India

Indonesia

United States

| | 2008 men | | 2018 men | | 2018 women | | 2008 women |

(¹) Population on 1 January.

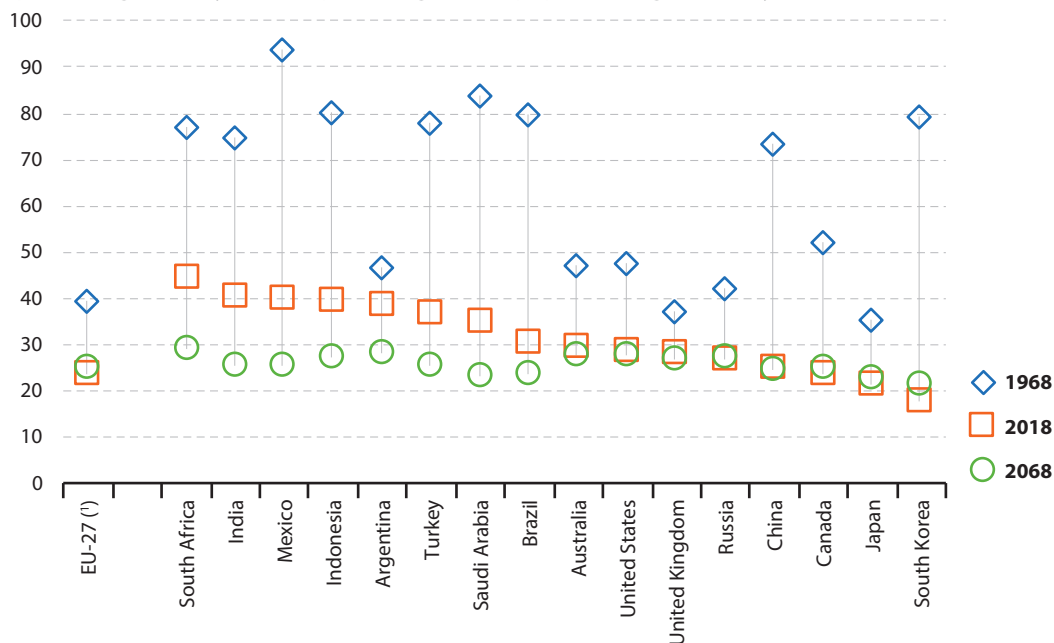*Source:* Eurostat (online data code: demo_pjangroup) and the World Bank (Health Nutrition and Population Statistics)

The young and old age dependency ratios shown in Figures 1.4 and 1.5 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 to 64 years).

In 2018, the young-age dependency ratio ranged from 17.9 % in South Korea to more than double this ratio in South Africa (44.3 %). The latest value for the EU-27 (23.5 %) was lower than in all G20 members except for South Korea and Japan. By far the highest old-age dependency ratio in 2018 was the 46.2 % 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 30.8 % in the EU-27.

Saudi Arabia had by far the lowest old-age dependency ratio (4.6 %) among G20 members, with South Africa (8.1 %) recording the next lowest ratio.

In percentage point terms, the fall in the young-age dependency ratio for the EU-27 between 1968 and 2018 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 2018 than in 1968, reflecting a large increase in the size of its working-age population.

**Figure 1.4:** Young-age dependency ratio, 1968, 2018 and 2068
(persons aged 0-14 years as a percentage of the population aged 15-64 years)



Note: ranked on the ratio for 2018.

(¹) 1968: estimate made for the purpose of this publication.

*Source:* Eurostat (online data codes: demo_pjanind and proj_19ndbi) and the United Nations Department of Economic and Social Affairs, Population Division, (World Population Prospects 2019)

With relatively low fertility rates the young-age dependency ratio is projected to be lower still in 2068 than it was in 2018 in several G20 members, dropping by 15 percentage points in South Africa and India. By contrast, the young-age dependency ratio is projected to increase in a small number of G20 members, with the largest increase projected in South Korea (up 3.6 points). In the EU-27, the young-age dependency ratio was projected to increase from 23.5 % in 2018 to 24.8 % by 2068.

Old-age dependency ratios are projected to rise in all of the 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-27's old-age dependency ratio is projected to increase from 30.8 % in 2018 to 52.8 % by 2068; as such, it is projected to be considerably lower than in South Korea (88.0 %) or Japan (75.2 %) in 2068.

**Figure 1.5:** Old-age dependency ratio, 1968, 2018 and 2068
(persons aged 65 years or more as a percentage of the population aged 15-64 years)



Note: ranked on the ratio for 2018.

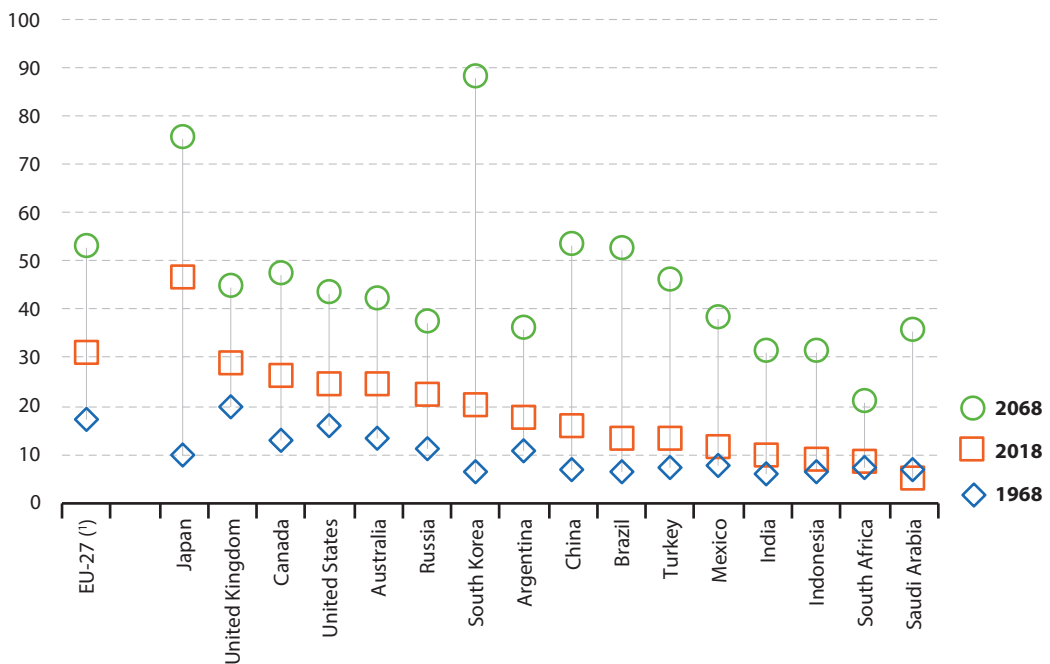(¹) 1968: estimate made for the purpose of this publication.

*Source:* Eurostat (online data codes: demo_pjanind and proj_19ndbi) and the United Nations Department of Economic and Social Affairs, Population Division, (World Population Prospects 2019)
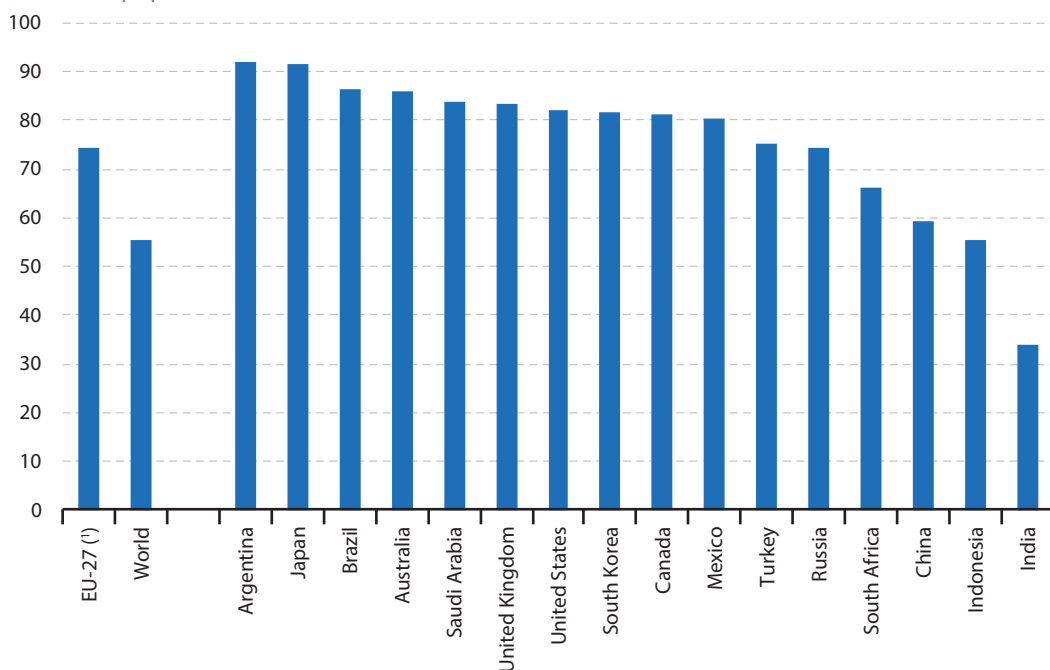
## Urban populations

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 regional, national and global economies. Although cities are motors for economic growth, they are also confronted by a wide range of (potential) problems, like crime, traffic congestion, pollution and various social inequalities.

Nearly three quarters (74.5 %) of the EU-27 population lived in an urban area in 2018; this share was considerably above the world average of 55.3 % (see Figure 1.6). Nevertheless, across 11 of the non-EU G20 members, the share of inhabitants living in urban areas was higher than the 74.5 % in the EU-27. This share exceeded 90 % in Argentina (91.9 %) and Japan (91.6 %), while India had by far the lowest share, with just over one third (34.0 %) of its population living in urban areas.

**Figure 1.6:** **Urban population, 2018**
(% of total population)



Note: the remainder of the population is rural.
(¹) Estimate made for the purpose of this publication.
*Source:* the World Bank (World Development Indicators)

In 2018, 8 of the 10 largest urban agglomerations in the world were located in G20 members — see Figure 1.7. Asian urban agglomerations made up a majority of the top 10, with São Paulo (Brazil), Mexico City (Mexico) and Cairo (Egypt) completing the list. The two largest countries in the world, China and India, each had two cities in the top 10 — Delhi and Mumbai from India as well as Shanghai and Beijing from China — as did Japan (Tokyo and Osaka). Extending the study to the top 30 urban agglomerations, 22 were located in G20 members, including Paris (France) from the EU as well as Istanbul (Turkey) and Moscow (Russia) from elsewhere in Europe.

**Figure 1.7:** Top 30 global urban agglomerations, 2018
(million inhabitants)
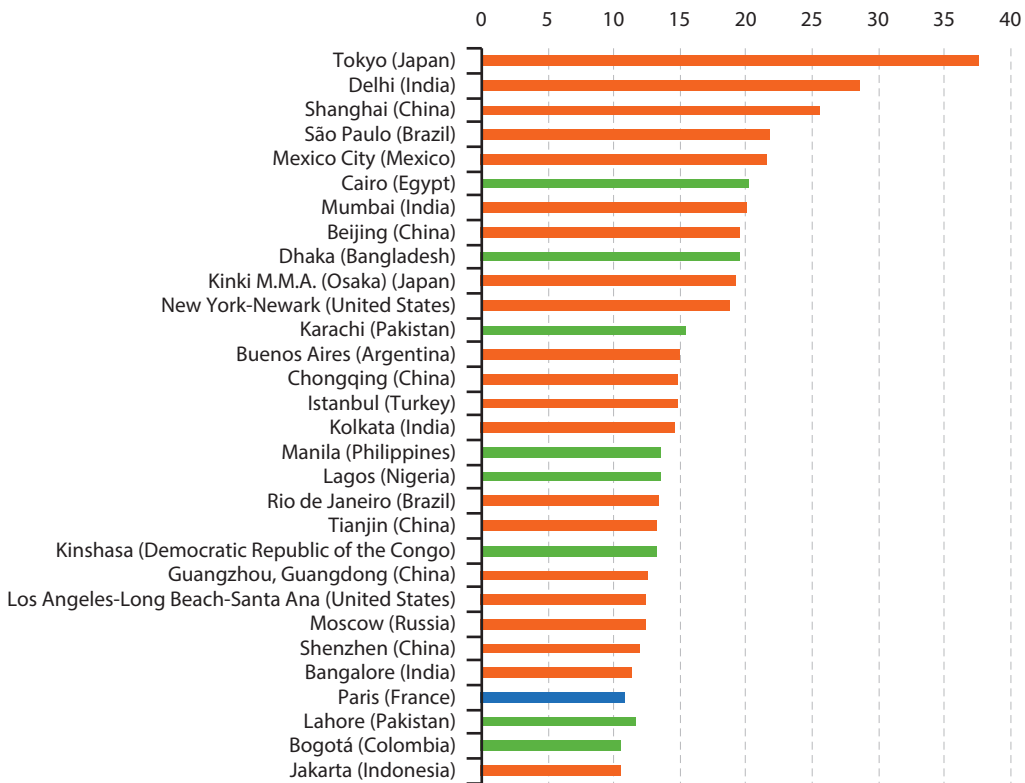


Note: data are based on national definitions. Cities shown in orange are in countries that are non-EU G20 members, cities shown in blue are in the EU, while cities shown in green are in countries that are not G20 members.

*Source:* The World's Cities in 2018 — Data Booklet — United Nations Department of Economic and Social Affairs, Population Division

# 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.

One element of natural change is the number of births which is reflected in measures of fertility. The most widely used indicator of fertility is the total fertility rate: this is the mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given

year. A total fertility rate of around 2.1 live births per woman is considered to be the replacement level in developed countries: in other words, the average number of live births per woman required to keep the size of the population constant in the absence of migration.

Fertility rates in the EU steadily declined from the mid-1960s through to the turn of the century. However, at the beginning of the 2000s, the EU's total fertility rate displayed signs of rising again. This development stopped in 2008 since when the rate for the EU-27 has been between 1.51 and 1.57 children per woman.

Among the G20 members, South Africa reported the highest total fertility rate in 2017, with 2.43 live births per woman (the same rate as the world average). The next highest rates were observed in Saudi Arabia (2.37 live births per woman), Indonesia (2.34), Argentina (2.28), India (2.24) and Mexico (2.16);

**Figure 1.8:** Fertility rate and projected median age of the population, 2017 and 2020
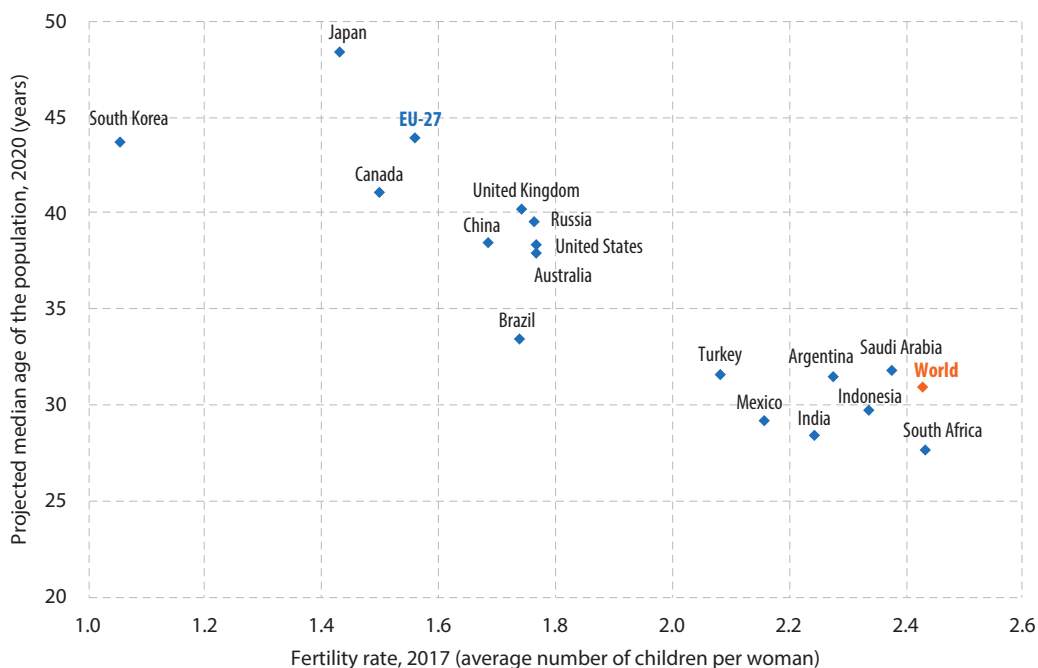


*Source:* Eurostat (online data codes: demo_find, demo_pjanind and proj_19ndbi), the World Bank (World Development Indicators) and the United Nations Department of Economic and Social Affairs, Population Division, (World Population Prospects 2019)

these were the only G20 members with a total fertility rate that was above the 2.1 replacement level for developed countries. Elsewhere among the G20 members, the total fertility rate was lowest in Japan (1.43) and South Korea (1.05).

As can be seen from Figure 1.8, unsurprisingly, countries with low fertility rates tended to have a relatively high median age for their population, while those with higher fertility rates tended to have a relatively low median age.

In 2017, the crude birth rate (the ratio of the number of live births to the population) for the EU-27 was 9.7, which was among the lowest rates recorded across the G20 members: only Japan (7.6) and South Korea (7.0) recorded lower birth rates. By contrast, the crude birth rate in South Africa (20.9) was more than double the average rate for the EU-27 and above the world average (18.7).

In 2017, the highest crude death rates (the ratio of the number of deaths to the population) were recorded in Russia, Japan and the EU-27 — each with ratios of more than 10.0. In the case of South Africa the relatively high crude death rate reflected, at least in part, an HIV/AIDS epidemic which resulted in a large number of deaths among relatively young persons; the difference between crude birth and death rates in South Africa was almost the same as the world average despite the notably higher birth rate.

When the death rate exceeds the birth rate there is negative natural population change; this situation was experienced in Japan and the EU-27 in 2017. The reverse situation, natural population growth — due to a higher birth (than death) rate — was observed for all of the remaining G20 members (see Figure 1.9) with the largest differences recorded in Saudi Arabia, Indonesia and  Mexico.

**Figure 1.9:** Natural population change, 2017
(per 1 000 inhabitants)
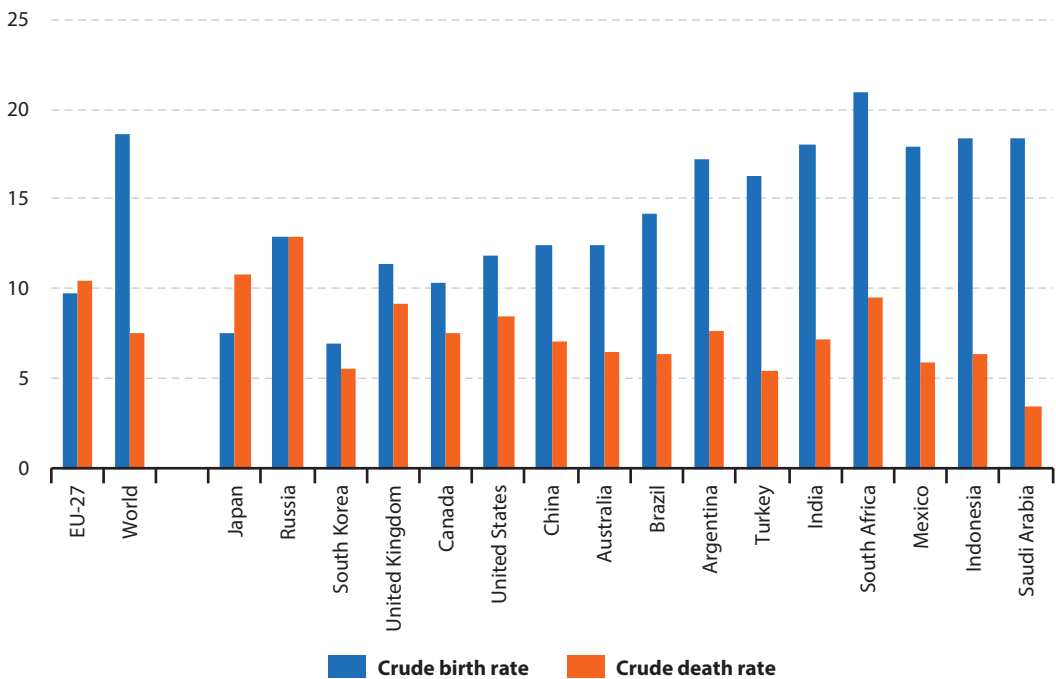


Note: ranked on the difference between birth and death rates. More recent data are available from Eurobase for the EU-27 and the United Kingdom.

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

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

The net migration rate is the level of net migration (inward migration minus outward migration) expressed in relation to the overall size of the population. Between 2010 and 2015, four G20 members — Mexico, India, Indonesia and China — recorded negative net migration rates (see Figure 1.10), while

Brazil and Argentina recorded approximately balanced situations, as immigration and emigration were almost equal. On the other hand, all of the other G20 members — including the EU-27 — experienced positive net migration, with the highest net migration rates in Canada, Australia and Saudi Arabia. This situation was somewhat different to the previous five-year period, as between 2005 and 2010 Argentina and South Korea had also experienced negative net migration, while Turkey had observed a relatively balanced position.

**Figure 1.10:** Net migration rate, 2005-2010 and 2010-2015
(per 1 000 inhabitants)
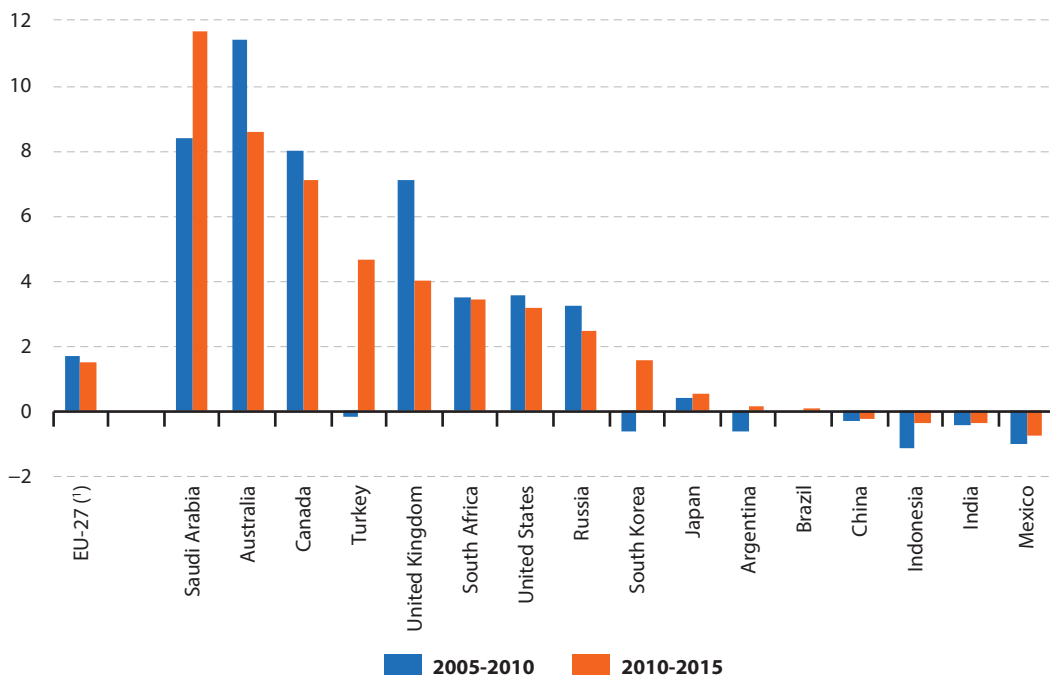


(¹) Estimates based on United Nations national data.

*Source:* the United Nations Department of Economic and Social Affairs, Population Division, (World Population Prospects 2019)

## Asylum

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.

As of the beginning of 2018, the United Nations High Commissioner for Refugees (UNHCR) reported that there were 3.0 million

asylum seekers across the world and a further 1.0 million applied during the first half of the year. According to the UNHCR, there were 358 thousand applications for asylum during the first half of 2018 in the EU-27. The highest numbers of applications were from Syria (44 thousand), Afghanistan (27 thousand) and Iraq (23 thousand). Over the same period, the largest numbers of asylum applications in the EU from citizens of other G20 members were from citizens of Turkey (9.4 thousand), Russia (9.2 thousand) and China (2.6 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 1.11 shows that, among the G20 members, Turkey had by far the highest number of arrivals of refugees (relative to its population size) in the first half of 2018; the ratio in Turkey was 7.2 times as high as in the EU-27 and reflected its location close to many of the principal countries of origin for refugees. Aside from Turkey and the EU-27, there were relatively high numbers of refugee arrivals relative to population size in Canada and Australia.

**Figure 1.11:** Flows of asylum seekers and refugees, first half 2018
(per 1 000 inhabitants)
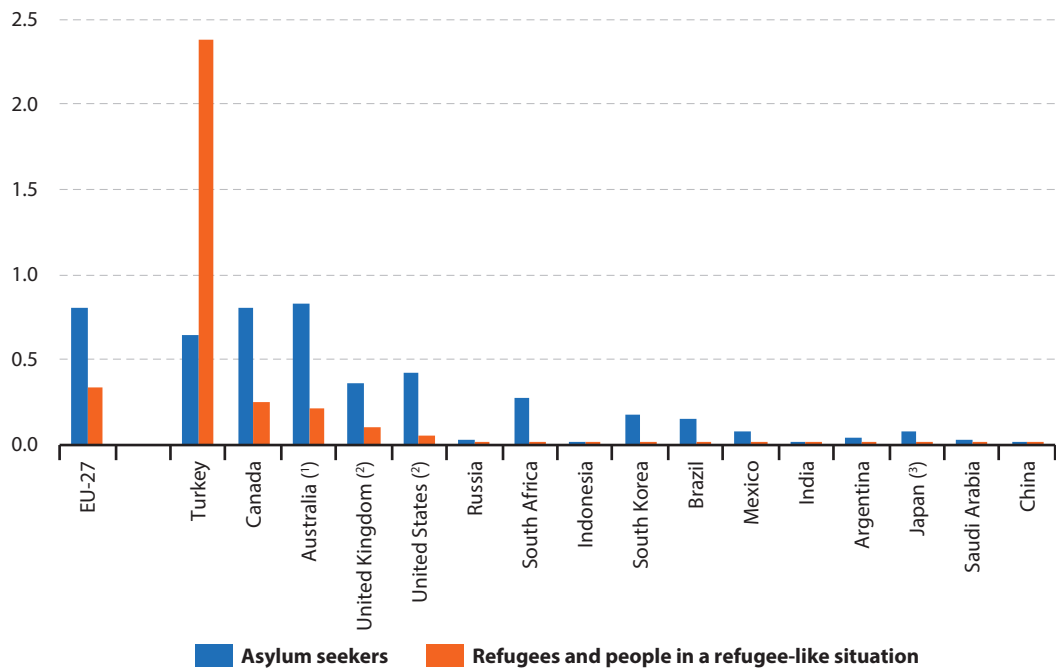


Note: ranked on refugees and people in a refugee-like situation.

(1) Asylum seekers: based on the number of applications lodged for protection visas.
(2) Asylum seekers: data refer to the number of cases or mix of the number of persons and the number of cases.
(3) Estimates.

*Source:* Eurostat (online data code: demo_gind), the United Nations High Commissioner for Refugees (Population Statistics) and the United Nations Department of Economic and Social Affairs, Population Division, (World Population Prospects 2019); data for the number of asylum applicants with a different definition are published by Eurostat (online data code: migr_asyappctza)

# 2. Health

## Expenditure on health

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. 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.

Among G20 members, the United States had by far the highest expenditure on health relative to gross domestic product (GDP), 17.1 % in 2016, almost double the 9.9 % recorded in the EU-27 (see Figure 2.1). Brazil, Japan and Canada each reported double-digit ratios in 2016. Spending on health in Turkey, India and Indonesia was less than 5.0 % of GDP.

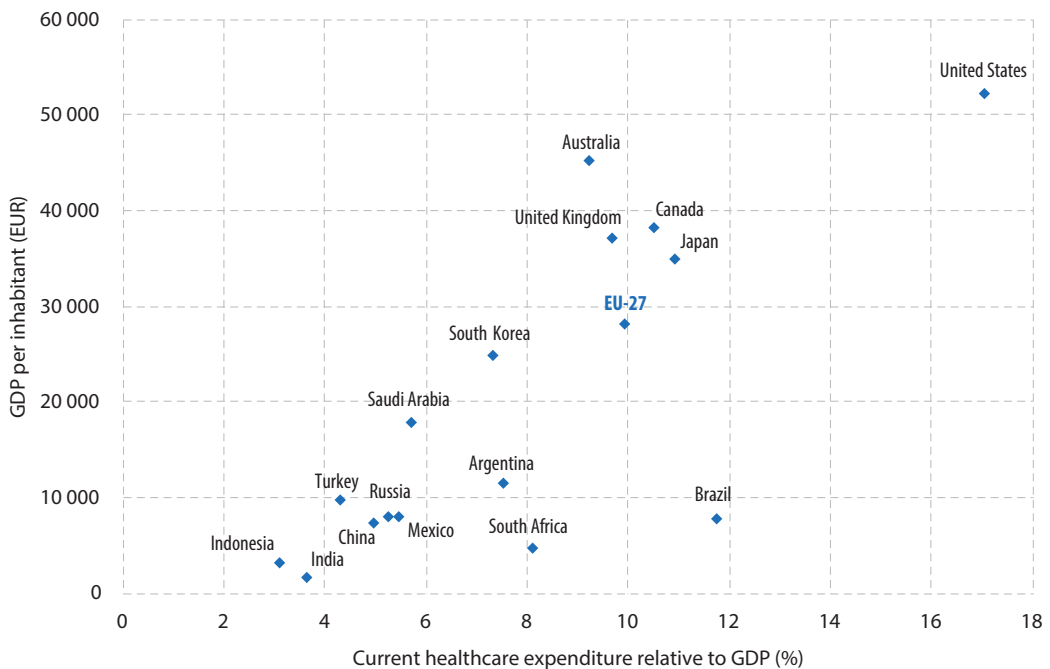**Figure 2.1:** Current healthcare expenditure, 2016
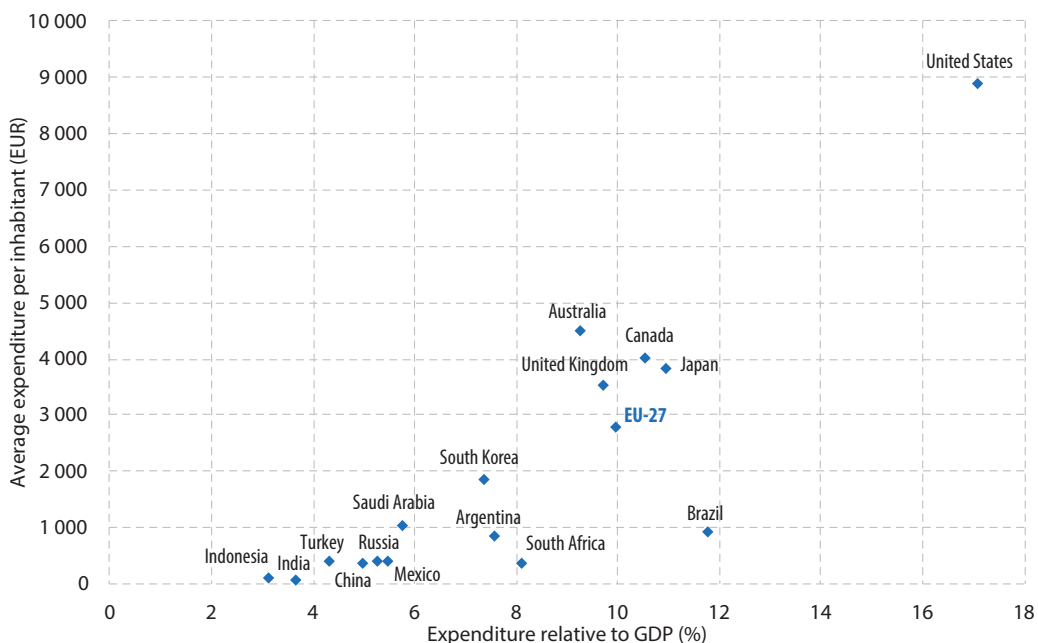


Note: more recent data are available from Eurobase for the United Kingdom.

*Source:* Eurostat (online data codes: hlth_sha11_hf, demo_gind and nama_10_gdp) and the World Bank (World Development Indicators)

Figure 2.1 also shows the absolute level of health expenditure per inhabitant in 2016. The information presented confirms the notably higher level of expenditure on health in the United States, where an average of EUR 8.9 thousand was spent per inhabitant. Expenditure in the range of EUR 3.6-4.5 thousand per inhabitant was recorded in Australia, Canada, Japan and the United Kingdom, followed by the EU-27 with average expenditure of EUR 2.8 thousand per inhabitant. By contrast, Indonesia and India recorded by far the lowest levels of health expenditure relative to population size among the G20 members, with averages of EUR 101 and EUR 57 per inhabitant respectively.

The different relative positions of the G20 members when comparing the two indicators shown in Figure 2.1 reflects differences in GDP per inhabitant. This is shown in Figure 2.2 where the ratio of expenditure on health relative to GDP is plotted against GDP per inhabitant. In general, G20 members with low levels of GDP per inhabitant in 2016 reported low ratios of healthcare expenditure relative to GDP, but there were exceptions. For example, Brazil reported a relatively high ratio of healthcare expenditure relative to GDP (11.8 %; second only to the United States), despite having the fifth lowest GDP per inhabitant. Equally, South Africa recorded a relatively high ratio of healthcare expenditure relative to GDP (8.1 %) given that it had the third lowest GDP per inhabitant.

**Figure 2.2:** Current healthcare expenditure and GDP, 2016



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom.

*Source:* Eurostat (online data codes: hlth_sha11_hf, demo_gind, nama_10_gdp and nama_10_pc) and the World Bank (World Development Indicators)

## Life expectancy

Among the G20 members, the highest life expectancy at birth in 2017 was recorded in Japan (84 years), while life expectancy was also above 80 years in South Korea, Australia, Canada, the United Kingdom and the EU-27. In two G20 members, life expectancy at birth in 2017 remained below 70 years: it stood at 69 years in India and 64 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 2018, 20 % of the population aged 15-49 years had the human immunodeficiency virus (HIV). In all G20 members, life expectancy was higher for females than for males (see Figure 2.3): this gender gap ranged from two years in India to seven years in Argentina, South Africa and Brazil, with a notably larger gap of 10 years in Russia.

**Figure 2.3:** Life expectancy at birth, 2017
(years)
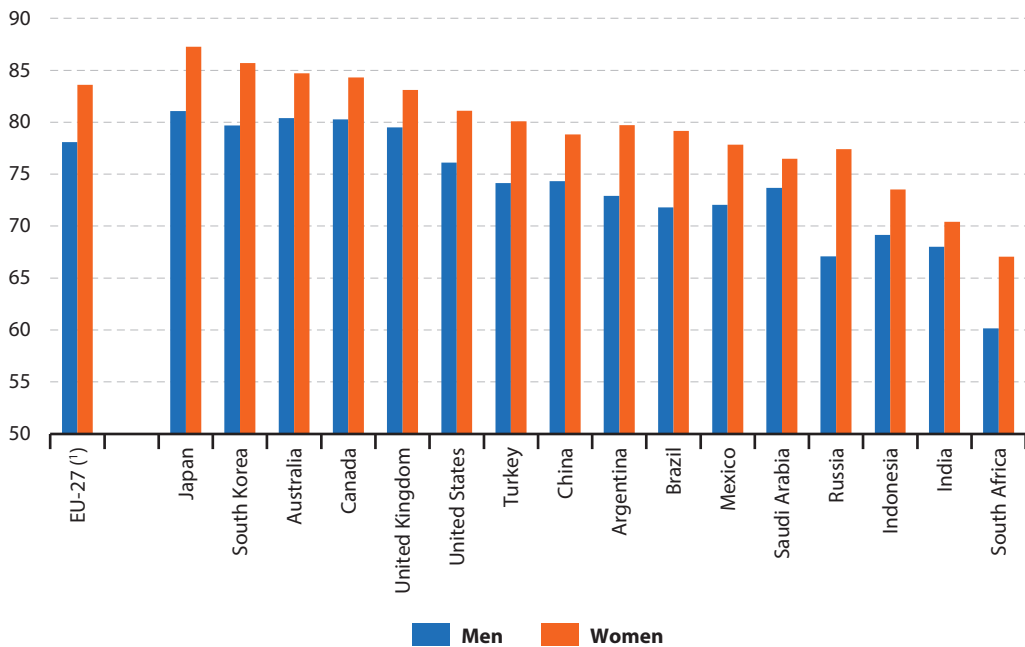


Note: ranked on the life expectancy for both sexes combined.

(¹)  Provisional.

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

In line with the data for life expectancy, the highest expected number of healthy life years at birth among the G20 members in 2016 was in Japan (75 years), while in Canada, Australia, South Korea, the United Kingdom and the EU-27, the expected number of healthy life years for men and women combined was also higher than 70 years. In South Africa (56 years) and India (59 years), the expected number of healthy life years at birth in 2016 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

with only one exception from almost no difference in Saudi Arabia to no more than five years in each of the remaining G20 members; in Russia the gap was eight years (see Figure 2.4).

Combining the data presented in Figures 2.3 and 2.4 indicates that, on average, people living in all G20 members could expect to live between 86 % and 90 % of their life free from disability (in other words, in a healthy state), with the lowest share recorded in Turkey and the highest in Mexico. In the EU-27, the share was 88 %.

**Figure 2.4:** Healthy life expectancy at birth, 2016
(years)
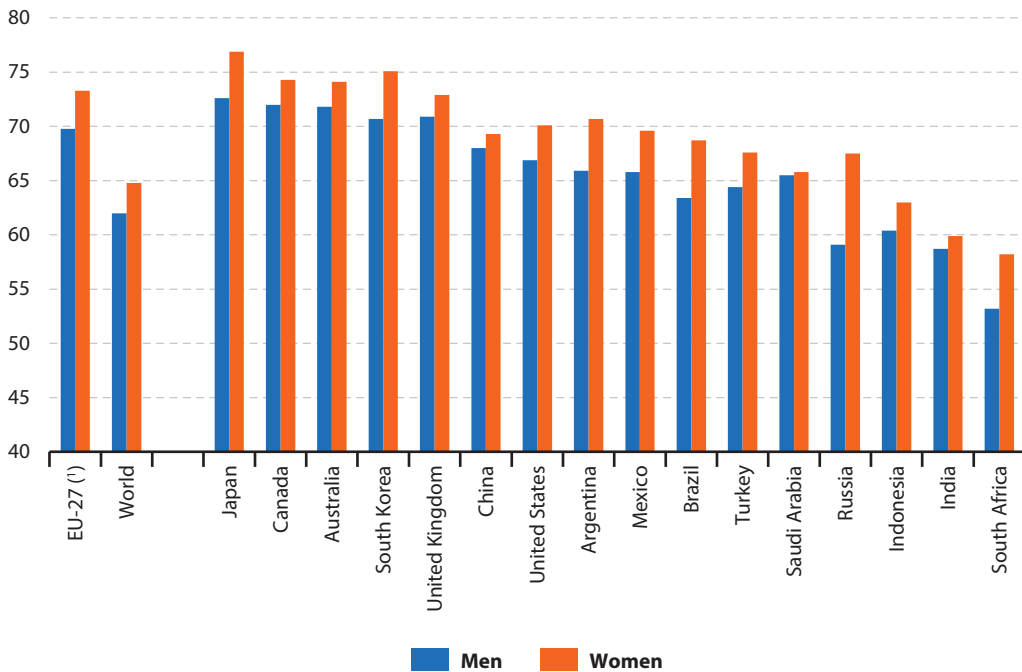


Note: ranked on the healthy life expectancy for both sexes combined.

(¹) Estimates based on World Health Organisation national data.
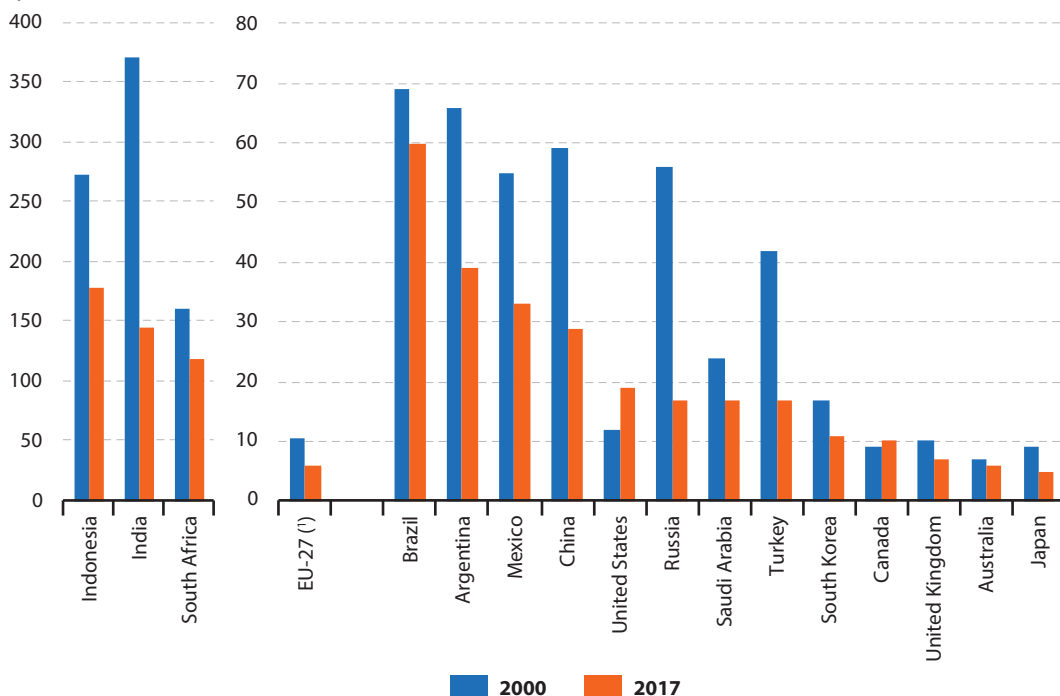
*Source:* the World Health Organisation (Global Health Observatory); data with a different definition are published by Eurostat (online data code: hlth_hlye)

## 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 , expressed per 100 000 live births (see Figure 2.5). While this ratio was relatively low in about half of the G20 members in 2017, it exceeded 100 per 100 000 live births in Indonesia (177), India (145) and South Africa (119), and was 60 per 100 000 live births in Brazil. The lowest ratios in 2017 — below 10 maternal deaths per 100 000 live births — were reported in the United Kingdom, the EU-27, Australia and Japan.

**Figure 2.5:** Maternal mortality ratio, 2000 and 2017
(per 100 000 live births)



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

(¹)  Estimates based on World Health Organisation national data.

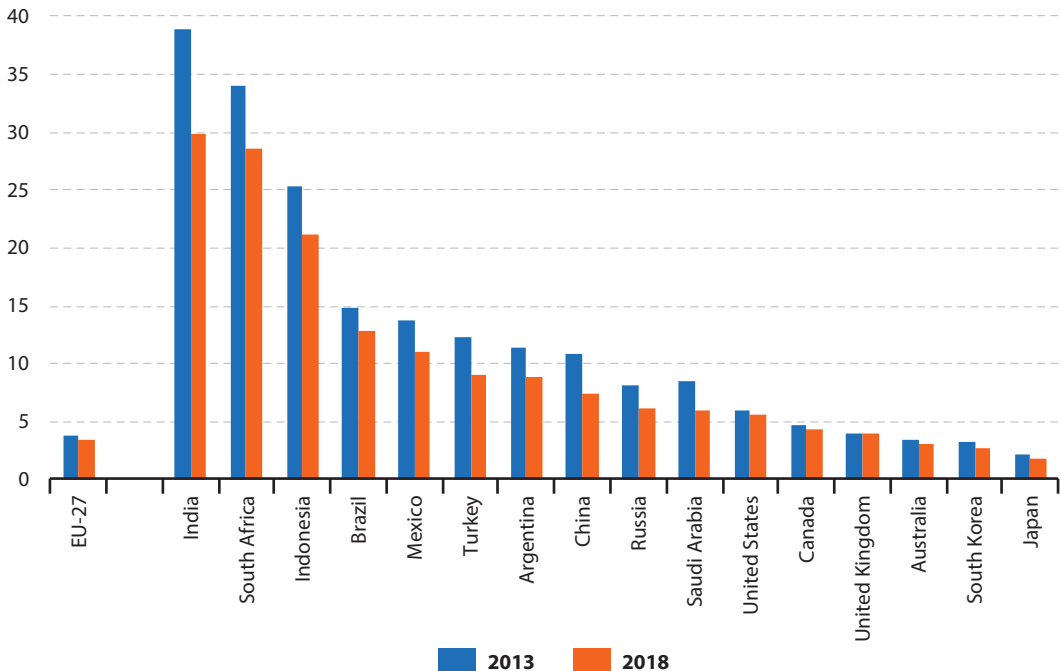*Source:* the World Health Organisation (Global Health Observatory)

Between 2000 and 2017, the maternal mortality ratio fell in most G20 members, the exceptions being the United States, where the ratio increased considerably in relative terms (up by almost 60 %), and Canada, where an already low ratio rose slightly. Elsewhere, particularly large falls in the maternal mortality ratio were observed in India and Indonesia, as well as in South Africa, Russia, China, Argentina, Turkey and Mexico.

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 but one of the G20

members recorded falls in infant mortality rates between 2013 and 2018 (as shown in Figure 2.6), the exception being the United Kingdom where the rate was unchanged. The largest relative falls were recorded by China, Saudi Arabia and Turkey, where infant mortality rates fell by more than one quarter.

The latest data available, for 2018, show that the lowest infant mortality rates among G20 members were recorded in Japan, South Korea, Australia, the EU-27, the United Kingdom and Canada, all under 5 deaths per 1 000 live births. By contrast, infant mortality rates in South Africa and India were more than six times as high, with rates of 29 and 30 deaths per 1 000 live births. Indonesia had the third highest infant mortality rate, while Brazil and Mexico were the only other G20 members to record double-digit rates in 2018.

**Figure 2.6:** Infant mortality rate, 2013 and 2018
(per 1 000 live births)



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

# Healthcare resources

Key indicators for measuring healthcare personnel are based on their number expressed per 100 000 inhabitants. With the notable exception of Argentina, there were more nurses and midwives than there were physicians in all of the G20 members. Relative to population size, the largest numbers of nurses and midwives in 2017 were recorded in Australia, the United States (data exclude midwives), Japan (2016 data) and Canada, all with at least 1 000 nurses and midwives per 100 000 inhabitants.

The variation between the G20 members in the number of is the total number of physicians was relatively low in comparison with the other personnel indicators shown in Figure 2.7. The highest number of physicians relative to the overall population size in 2017 among the G20 members was recorded in Russia, followed closely by Argentina and then the EU-27 and Australia. At the other end of the range, South Africa, India and Indonesia recorded less than 100 physicians per 100 000 inhabitants; note that for India (as well as for China) the definition used differs.

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 2017, while in Brazil there were 124 dentists per 100 000 inhabitants in the same year. The average for the EU-27 was 74 dentists per 100 000 inhabitants.

**Figure 2.7:** Healthcare personnel, 2017
(per 100 000 inhabitants)



| | Nurses and midwives | Physicians | Dentists |
|---|---|---|---|
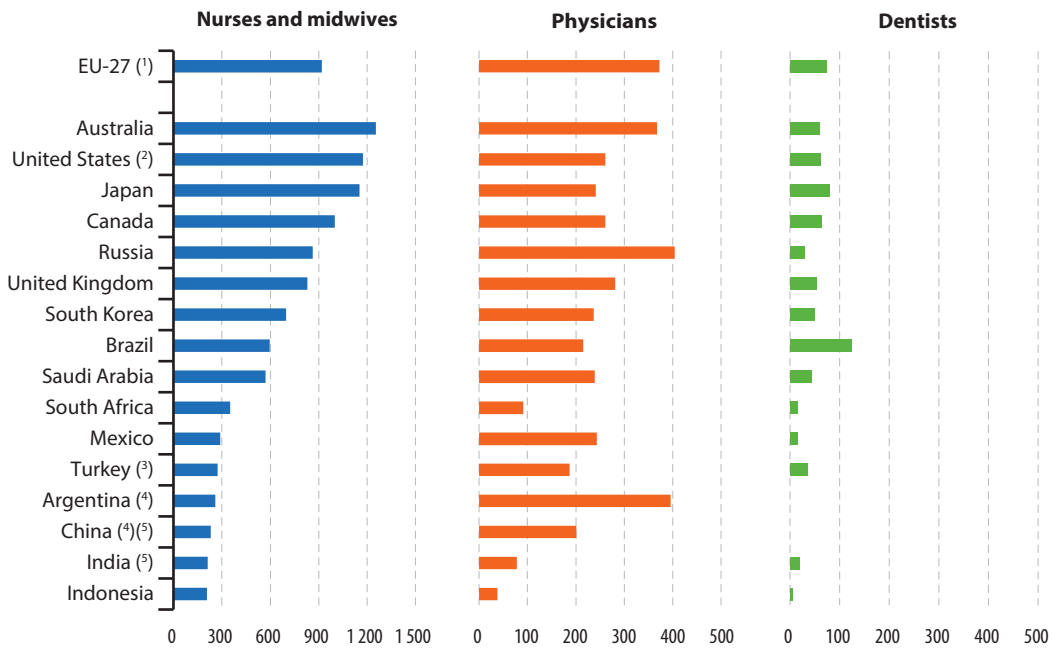
Note: a different scale is used for nurses and midwives. Ranked on nurses and midwives. Nurses and midwives: 2016 for Japan, Mexico, Russia and Saudi Arabia, and 2015 for China. Physicians: 2016 for Japan and Saudi Arabia. Dentists: 2016 for Japan and Saudi Arabia, and 2014 for Russia; Argentina and China not available. More recent data are available for some types of personnel for some countries from the WHO or the OECD.

(1) Includes 2016 data for Denmark and Sweden as well as 2014 data for Finland. Nurses and midwives: practising except Belgium, Ireland and Spain (licensed to practice) and France, Portugal and Slovakia (professionally active). Physicians: practising except Czechia, Greece and Portugal (licensed to practice) and Slovakia (professionally active). Dentists: practising except Ireland, Greece, Spain and Portugal (licensed to practice) and Slovakia (professionally active).

(2) Nurses and midwives: excluding midwives. Nurses and dentists: professionally active.

(3) Personnel: professionally active.

(4) Number of dentists: not available.

(5) Physicians: definition differs.

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

## Non-medical health determinants

Figures 2.8 to 2.10 provide information on three non-medical health determinants, namely alcohol consumption, smoking and being overweight. The highest annual alcohol consumption in 2016 among G20 members was recorded for Russia (11.7 litres of alcohol per inhabitant aged 15 years and over), the United Kingdom (11.5 litres) and the EU-27 (11.3 litres). They were closely followed by Australia, South Korea, Argentina and the United States with annual alcohol consumption in the range of 9.8-10.6 litres per inhabitant. Relatively low average levels of alcohol consumption were recorded for India and Turkey, while the lowest levels were recorded in Indonesia (0.8 litres) and Saudi Arabia (0.2 litres); these low levels are influenced, to a large degree, by predominant religious beliefs in these countries. In all G20 members the average alcohol consumption in 2016 was greater among men than among women. In relative terms, the widest gender gap was recorded in Turkey where the average consumption by men was 9.3 times as high as that by women. The narrowest gender differences were recorded for Russia and Saudi Arabia where men on average men consumed about three times as much alcohol as women.

**Figure 2.8:** Average annual alcohol consumption, 2016
(litres per person aged 15 years and over)
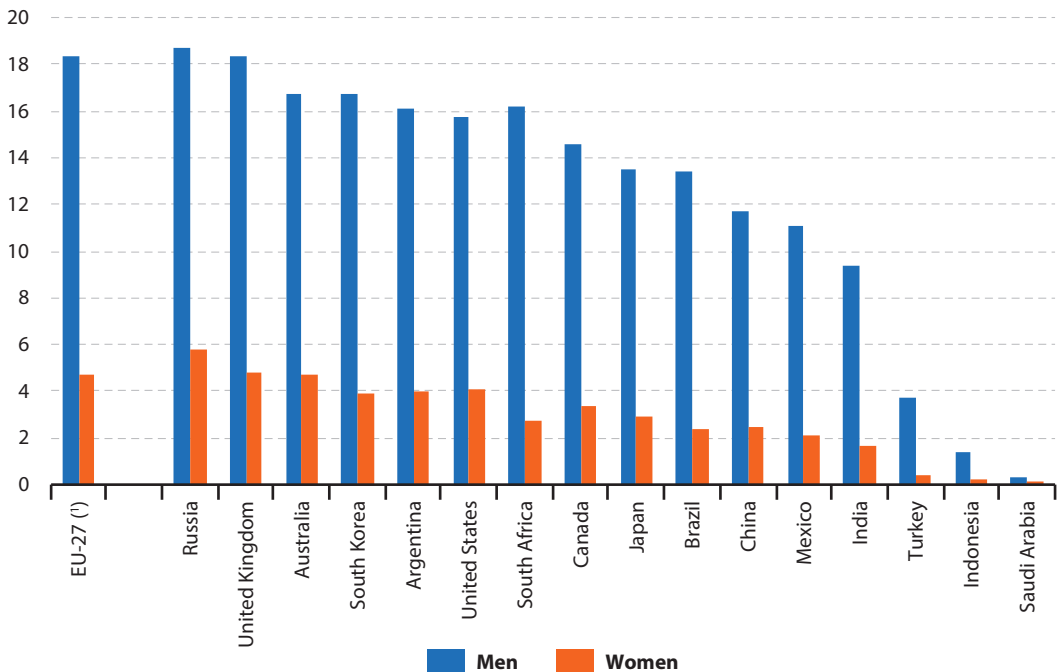


(¹) Estimates based on World Health Organisation national data.
*Source:* the World Health Organisation (Global Health Observatory)

Indonesia reported the highest proportion of daily smokers: two fifths (40 %) of the population aged 15 years and over smoked in 2015. One quarter or more of the adult population in Russia (2016 data), Turkey (2016 data) and China (2015 data) smoked daily, while one fifth of the adult population smoked on a daily basis in the EU-27 (2014 data), and slightly less than one fifth in South Africa (2015 data), Japan, South Korea and the United Kingdom. Elsewhere, the incidence of daily smoking was at most 12 %, with a low of 8 % recorded in Mexico (note that the definition differs). In all G20 members the proportion of daily smokers in 2017 was greater among men than among women. The widest gender gap was recorded in Indonesia where 76 % of all men aged 15 years and over were daily smokers compared with just 4 % of women (2015 data). The narrowest gender differences were recorded for Canada, the United Kingdom, Australia (2016 data) and the United States.

**Figure 2.9:** Daily smokers, 2017
(% share of persons aged 15 years and over)
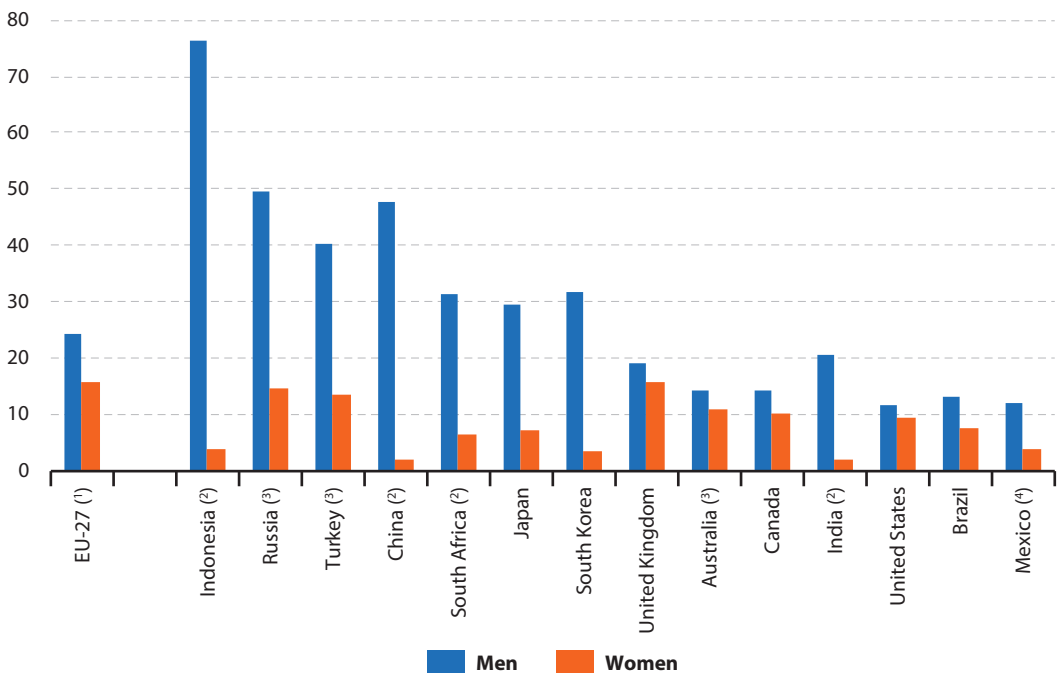


Note: ranked on the proportion for both sexes combined. Argentina and Saudi Arabia: not available.

(¹) 2014.
(²) 2015.
(³) 2016.
(⁴) Definition differs.

*Source:* Eurostat (online data code: hlth_ehis_sk1e) and the OECD (Non-medical determinants of health)

The most frequently used measure for assessing whether someone is overweight (pre-obese 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 above 25 are considered as overweight: those between 25 and 30 are considered as pre-obese and those with an index over 30 are considered obese.

The highest proportions of men that were overweight in 2016 were observed for the United States (75 % of the male population), Australia and Canada (both 73 %) — see Figure 2.10; note that the data presented may be based on measured results or self-reported data. By contrast, the highest proportions of overweight women were recorded in Saudi Arabia and Turkey (both 70 %), followed by the United States and Mexico (both 66 %). By contrast, a relatively low proportion of men were overweight in Indonesia (25 %) and India (18 %), while for women the lowest proportions were recorded in Japan (25 %) and India (21 %).

The proportion of overweight men was greater than the proportion of overweight women in a small majority of G20 members, with this gap between the sexes reaching more than 10 points in the EU-27, Australia and Canada. In the G20 members where the proportion of overweight women was higher than the proportion of overweight 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 compared with the pre-obese proportion. Five Asian G20 members — China, India, Indonesia, Japan and South Korea — recorded particularly low proportions of their populations who were considered obese, less than 10 % for both men and for women. The share of obese men was smaller than the share of pre-obese men in all of the G20 members. Among women, this pattern was repeated in a majority of the G20 members, but not in Russia and Canada where the shares of pre-obese and obese women 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 pre-obese.

**Figure 2.10:** Overweight, 2016
(% share of persons aged 18 years and over)



Men, obese    Women, obese

Men, pre-obese    Women, pre-obese
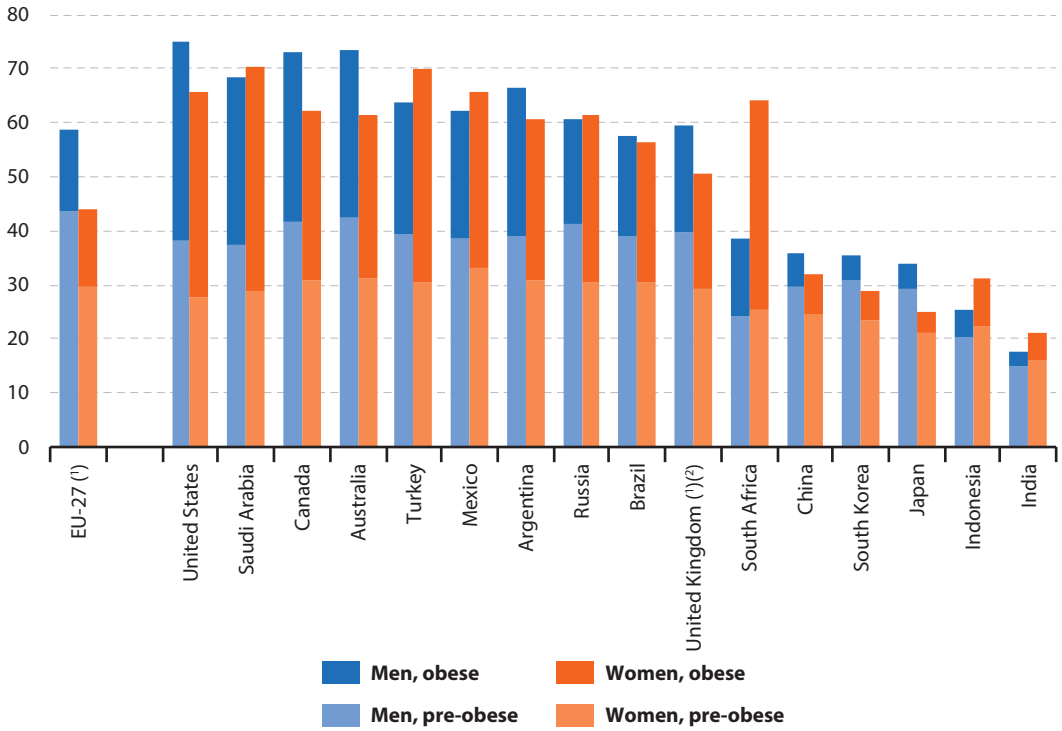
Note: ranked on the proportion for both sexes combined. Estimates.

(¹)  2017.
(²)  Low reliability.

*Source:* Eurostat (online data code: ilc_hch10) and the World Health Organisation (Global Health Observatory)

# 3. Education and training

## Educational expenditure

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 factors, by differences in price levels and the number of pupils and students; in turn, the latter is influenced, to some extent, by the age structure of the population (see the chapter on population for more information).

Figure 3.1 provides information on the level of public expenditure on education relative to gross domestic product (GDP). Among the G20 members this was highest in 2016 in Brazil at 6.2 % (2015 data) and South Africa (5.9 %); note that no recent data are available for Saudi Arabia (where a ratio of 5.9 % was recorded in 2006). With a value of 5.0 %, the ratio in the EU-27 was in the middle of the range for the G20 countries. Between the two years presented in Figure 3.1, there was an increase in the level of public expenditure on education relative to GDP in all but one of the G20 members, most notably (in percentage point terms) in Argentina and Brazil (2006-2015). The one exception was Russia where the ratio of public expenditure on education relative to GDP fell from 3.9 % in 2006 to 3.7 % in 2016.

**Figure 3.1:** Public expenditure on education, 2006 and 2016
(% of GDP)
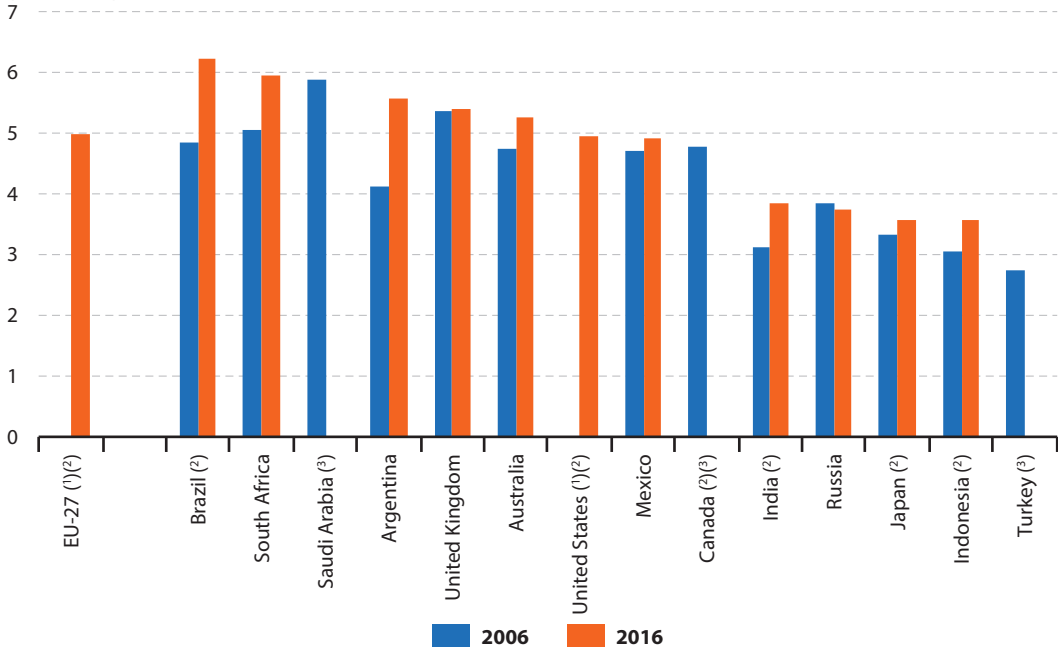


Note: more recent data are available for some countries from UNESCO. China and South Korea: not available.

(¹) 2006: not available.
(²) Canada: 2005 instead of 2006. India: 2013 instead of 2016. Japan and the United States: 2014 instead of 2016.
    EU-27, Brazil and Indonesia: 2015 instead of 2016.
(³) 2016: not available.

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

## Numbers of teachers and pupils

Figure 3.2 presents 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 for the number of pupils per teacher was 23.4 in 2017. Among the G20 members, higher averages were observed in India, South Africa (2015 data) and Mexico, while lower ratios were observed elsewhere, in particular across the EU-27 (14.3), the United States (14.2) and Saudi Arabia (11.7; 2016 data).

Worldwide, the average pupil-teacher ratio for lower secondary education was notably lower than for primary education in 2017 as was also the case in the EU-27 and in nearly all of the non-EU G20 members. The only exceptions were Turkey and the United States where pupil-teacher ratios within lower secondary education were slightly higher than within primary education. India, Mexico, Brazil and Turkey reported average pupil-teacher ratios within lower secondary education that were above the world average (16.8), with India reporting a particularly high ratio (25.9 pupils per teacher). The EU-27 reported an average of 12.0 pupils per teacher in lower secondary education, with only Saudi Arabia (2014 data) reporting a lower ratio.

**Figure 3.2:** Pupil-teacher ratios in education, 2017
(average number of pupils per teacher)
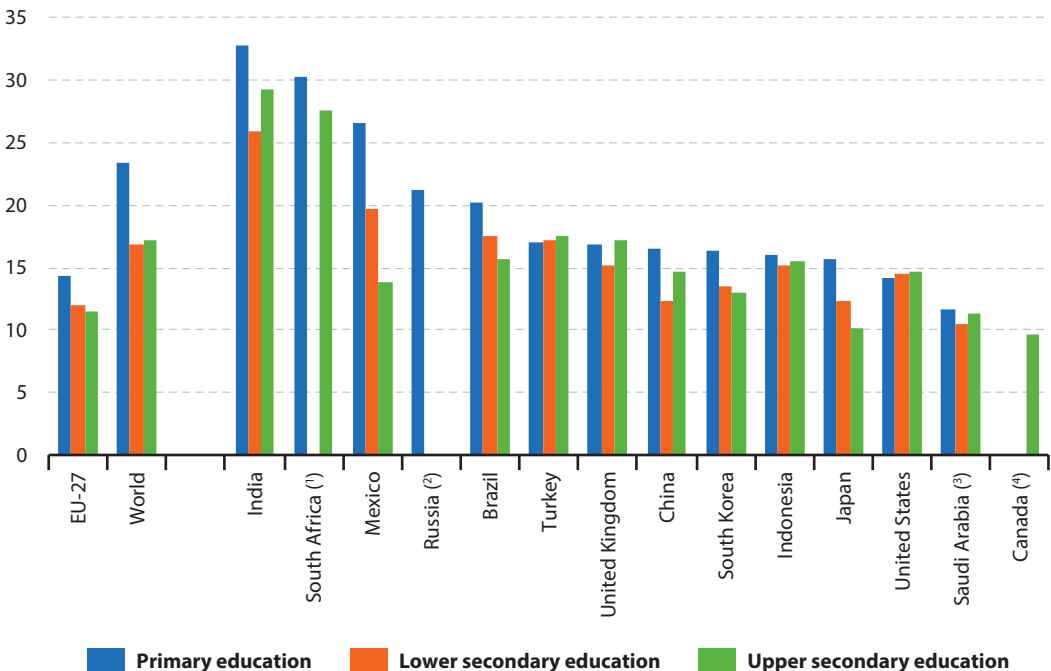


Note: more recent data are available for some countries from UNESCO. Argentina and Australia: not available.

(¹) 2015. Lower secondary education: not available.
(²) Lower and upper secondary: not available.
(³) Primary education: 2016. Lower and upper secondary education: 2014.
(⁴) Primary and lower secondary education: not available.

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

The average pupil-teacher ratio for lower secondary education worldwide was slightly lower than the ratio for upper secondary education. A lower ratio for lower secondary than for upper secondary education was apparent in a majority of the G20 members, with only the EU-27, South Korea, Brazil, Japan and Mexico having higher pupil-teacher ratios for lower secondary education.

Within upper secondary education, India, South Africa (2015 data) and Turkey were the only G20 members to report average pupil-teacher ratios that were above the world average (17.2 pupils per teacher in 2017), while in the United Kingdom this ratio was equal to the world average. Canada reported the lowest ratio of pupils per teacher within upper secondary education (9.7). Aside from Canada, the only G20 members with pupil-teacher ratios for upper secondary education that were lower than in the EU-27 (11.5) were Japan (10.2) and Saudi Arabia (11.4; 2014 data).

## School enrolment

Figure 3.3 presents enrolment ratios for 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 primary education.

Worldwide, primary education net enrolment ratios were 88.2 % for girls and 90.3 % for boys in 2017, with all G20 members

reporting higher ratios except for Turkey and South Africa. The highest primary education net enrolment ratio was recorded in Canada at 99.9 %, with the United Kingdom and Argentina reporting ratios of 99.5 % and 99.2 %, followed by South Korea (97.3 %). In the EU-27, the ratio was 94.7 %. Among the G20 members, Indonesia and Turkey reported the largest differences between net enrolment ratios for boys and girls, with the ratio for boys exceeding that for girls by 4.5 and 1.4 percentage points respectively. Elsewhere the gap — whether from higher rates for girls as in Australia and Russia (2016 data) or higher rates for boys as reported elsewhere — was less than 1.0 points.

**Figure 3.3:** Primary education net enrolment ratio, 2017
(% of total population of primary school age)
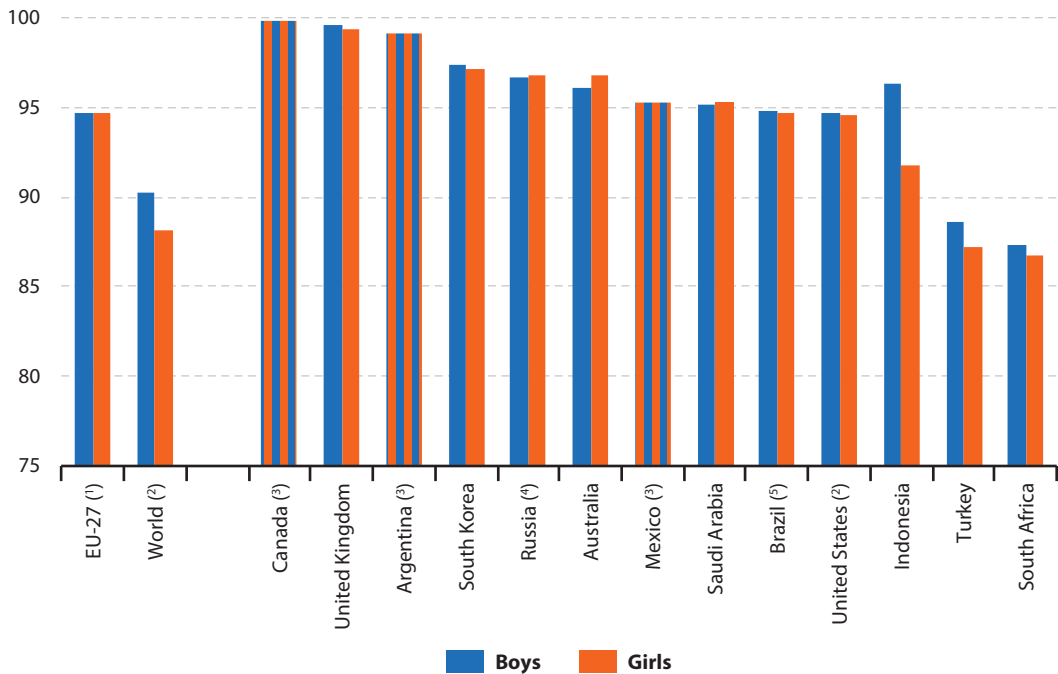


Note: ranked on the ratio for both sexes combined. More recent data are available for some countries from UNESCO. China, India and Japan: not available.

(1) Estimates based on UNESCO data.
(2) Estimates.
(3) Ratio for boys and girls combined.
(4) 2016.
(5) 2015.

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

## Educational attainment

Figure 3.4 shows the proportion of the population aged 25 years and over having completed at least upper secondary education and the proportion having completed (at least one stage of) tertiary education. Note that the age coverage is narrower for the EU-27 (25-64 years), the United Kingdom (25-64 years) and Australia (25-74 years).

In the United States, the United Kingdom, Australia and the EU-27, the proportion of men and women having completed at least upper secondary education was over 75.0 %, while in South Korea (2015 data) it was also over 75.0 % for men. The proportion of men in the EU-27 in 2018 having completed at least upper secondary education was 77.4 %, while the corresponding value for women was slightly higher, at 78.2 %. In 2018, the proportion of men and women with an upper secondary level of educational attainment was less than 40.0 % in Mexico and Indonesia, while the rate for women in Turkey (2017 data) was also less than 40.0 %. Brazil, the United Kingdom, the EU-27 and the United States were the only G20 members where the proportion of men having completed at least upper secondary education was lower than the equivalent proportion for women. In seven other G20 members, attainment rates for men were higher than those for women, with the largest gender gaps observed in South Korea (12.4 percentage point gap; 2015 data) and Turkey (13.0 points gap; 2017 data).

Tertiary education is generally provided by universities and other higher education institutions. In 2018, between one quarter and one third of the EU-27 adult population had completed tertiary education, 28.6 % of men and 32.9 % of women (see Figure 3.4). Among the non-EU G20 members, the rate of tertiary educational attainment was over 40.0 % for both sexes in the United Kingdom and the United States, while it was over 40.0 % for men in South Korea (2015 data) and for women in Australia. The lowest tertiary educational attainment rates were observed in Indonesia, where 10.0 % of people had completed tertiary education. The largest gender gap in tertiary educational attainment was recorded in South Korea (2015 data), where the proportion for men having completed tertiary education was 9.5 percentage points higher than for women, while the largest gender gap with a higher proportion of women than men having completed tertiary education was observed in Australia.

**Figure 3.4:** Educational attainment, 2018
(% of population aged 25 years and over having completed at least the specified level of education)

### Upper secondary education



### Tertiary education



**Men**　　**Women**
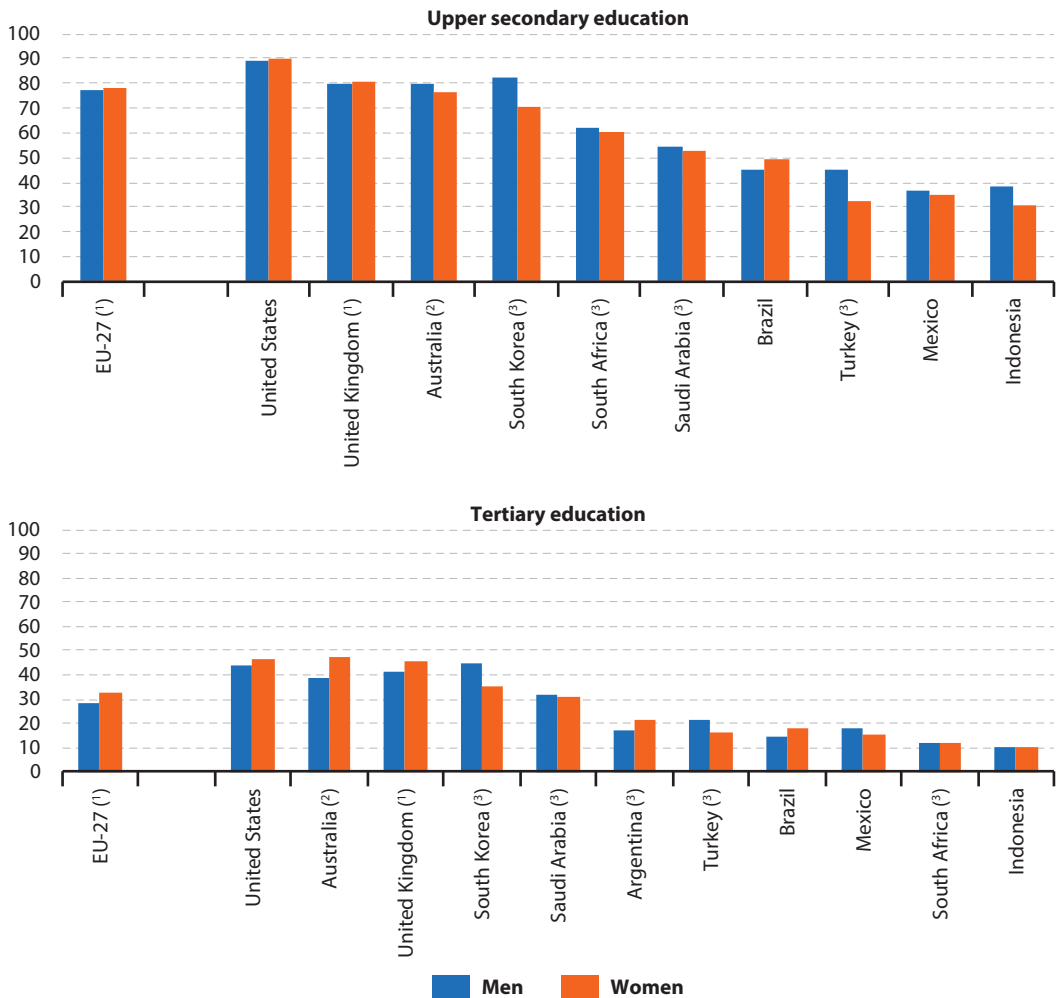
Note: ranked on the total ratio for both sexes combined. Canada, China, India, Japan and Russia: not available.
Argentina: upper secondary not available.

(¹)　Persons aged 25-64 years.
(²)　Persons aged 25-74 years.
(³)　South Korea: 2015.Argentina: 2016. Saudi Arabia, South Africa and Turkey: 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

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 NEETs 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), and 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 3.5 shows the NEET rate of 15-24 years olds in 2018. Among the G20 members, this ranged from 2.9 % in Japan to 31.6 % in South Africa. The EU-27 had a rate of 10.5 %, higher only than in the United Kingdom, Australia (2017 data) and Japan. Canada was the only G20 member to report a larger proportion of young men (rather than young women) who were not in employment, education or training. By far the largest gender gap for this indicator was observed in India, where 48.3 % of young women were not in employment, education or training in 2018, compared with 14.3 % for young men; the next largest gaps were observed in Mexico, Saudi Arabia (2015 data) and Turkey.

**Figure 3.5:** Persons not in employment, education or training, 2018
(% share of persons aged 15-24 years)
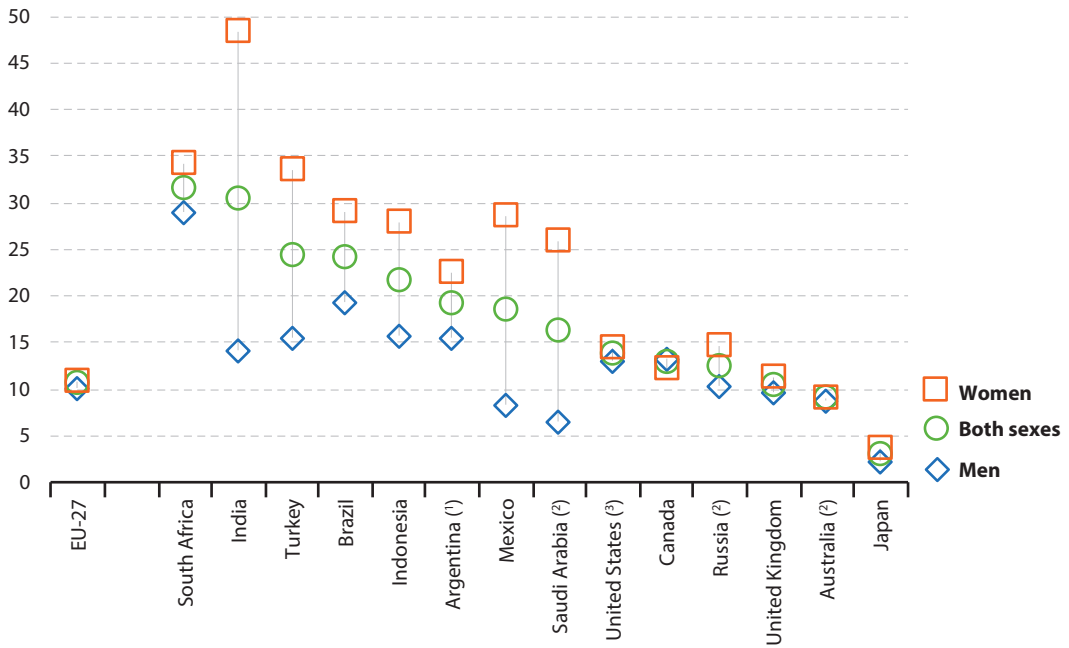


Note: ranked on the total ratio for both sexes combined. China and South Korea: not available.

(¹) Main cities or metropolitan areas.
(²) Saudi Arabia: 2015. Russia: 2016. Australia: 2017.
(³) Persons aged 16-24 years.

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

# 4. Labour market

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

## Employment rate

In 2018, the employment rate, calculated as the share of employed persons in the working-age population (defined here as persons aged 15-64 years), was 67.7 % in the EU-27; this rate was roughly in the middle of a ranking of the G20 members. South Africa and India were the only G20 members where less than half of the working-age population were in employment in 2018, with rates of 43.3 % and 47.7 %

respectively. In the United States (persons aged 16-64 years), Russia, Canada, Australia and the United Kingdom the employment rate was between 70 % and 75 %, while the highest employment rate among G20 members was recorded in Japan, at 76.8 %.

The most recent data (see Figure 4.1) show that the EU-27's employment rate for men (73.0 %) was lower than in most of the G20 members in 2018, although it was somewhat higher than in Turkey and Brazil and considerably higher than in South Africa. Elsewhere, employment rates for men ranged from 73.9 % in India to 80.1 % in Indonesia, with Japan (83.9 %) above this range. For women, the EU-27 employment rate of 62.3 % was higher than in a majority of the other G20

**Figure 4.1:** Employment rate of persons aged 15-64 years, 2018
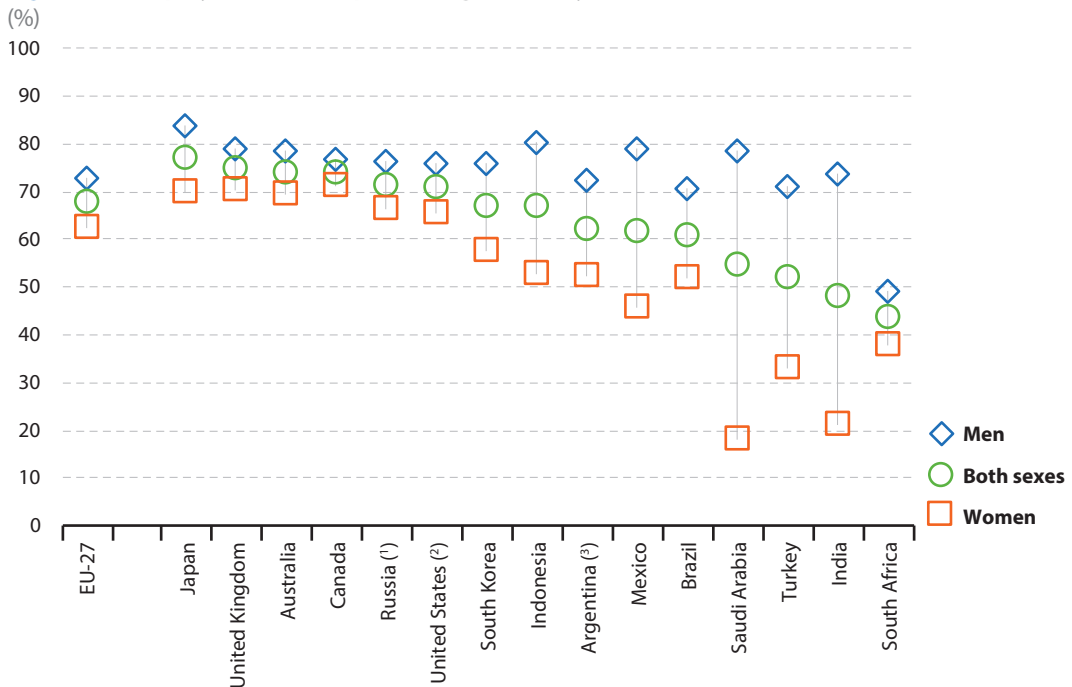


Note: ranked on the total rate for both sexes combined. China: not available.

(¹) Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.

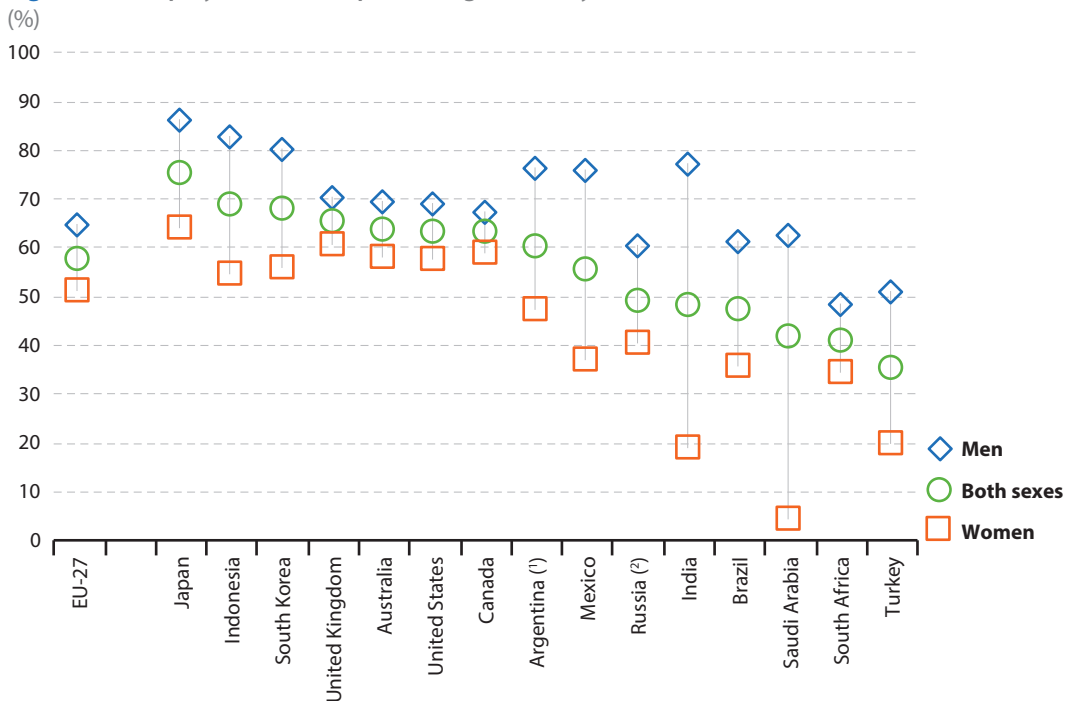(²) Persons aged 16-64 years.

(³) Main cities or metropolitan areas.

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

members, although a higher proportion of women were employed in the United States (16-64 years), Russia, Australia, Japan and the United Kingdom, with a peak of 71.0 % recorded in Canada. By contrast, employment rates for women were below 50 % in Mexico, South Africa, Turkey and India, and were lowest in Saudi Arabia at 17.9 %.

The gender gap for the employment rate was 10.7 percentage points in favour of men across the EU-27, with the United States (16-74 years), Russia, Australia, the United Kingdom and Canada reporting narrower gaps. By far the largest gender gaps were in India and Saudi Arabia, where the employment rates for men were 53.0 points higher than those for women in the former and 60.5 points higher in the latter.

Focusing on older workers, defined here as those aged 55-64 years, Figure 4.2 presents information for an age group that may have lower employment rates because of early retirement or because of difficulties finding employment after being unemployed. In the EU-27, the overall employment rate for persons aged 55-64 years was 57.8 % in 2018, some 9.9 percentage points lower than the employment rate for the whole of the working-age population. The gender gap in employment rates for older workers was 13.4 points in the EU-27, somewhat larger than the gap for recorded for the working-age population. These two characteristics — a lower employment rate for older workers and a larger gender gap for older workers — were common to most G20 members. Indonesia, South Korea and India were

**Figure 4.2:** Employment rate of persons aged 55-64 years, 2018

(%)



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

(¹) Main cities or metropolitan areas.
(²) Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.
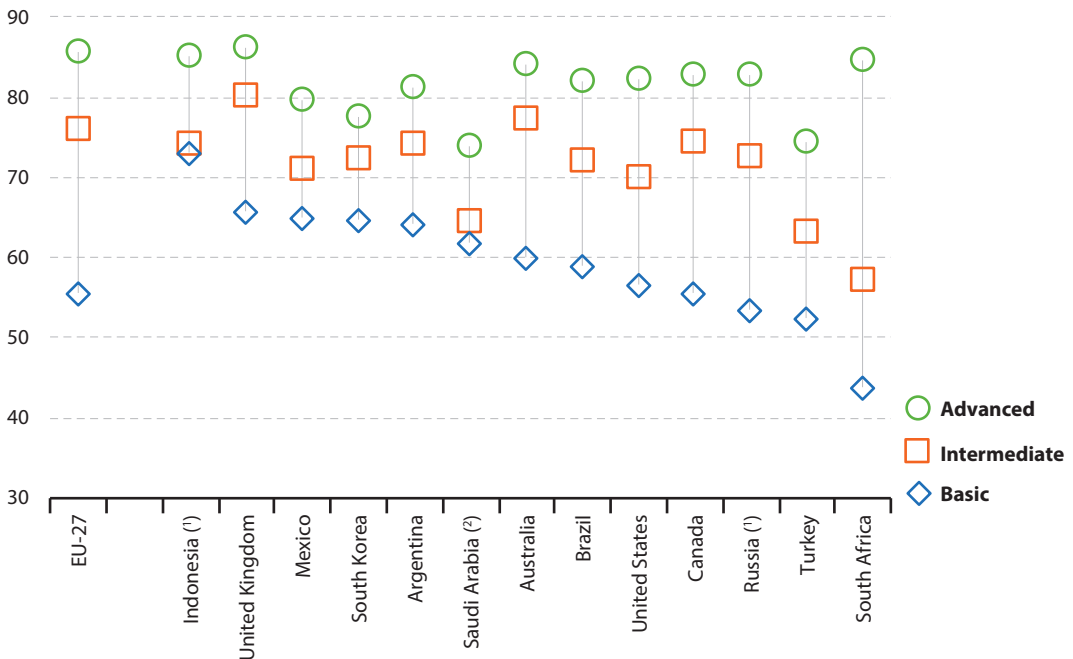
*Source:* Eurostat (online data code: lfsa_ergaed) and the International Labour Organisation (ILOSTAT)

the only G20 members to report a higher employment rate for older workers, while only in Turkey and Saudi Arabia was the gender gap narrower for older workers.

Employment rates according to the highest completed level of education are shown in Figure 4.3, though restricted to the age group 25-64 years in order to focus on the adult working-age population after the vast majority of people have completed their initial education. Among the G20 members, all recorded a lower adult employment rate for the group of persons having completed

at a basic level of education (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 an advanced level of education (tertiary education). The difference between the employment rates for these two different levels of education was 30.1 percentage points across the EU-27 in 2018; this gap was only higher in South Africa (40.7 points), whereas it was less than 15.0 points in Mexico, South Korea, Saudi Arabia (2016 data) and Indonesia (2017 data).

**Figure 4.3:** Employment rate of persons aged 25-64 years, by education level, 2018
(%)



Note: ranked on the employment rate for basic education. China, India and Japan: not available.
(¹) 2017.
(²) 2016.
*Source:* Eurostat (online data code: lfsa_ergaed) and the OECD (Education at a Glance)

In 2018, the share of employees (aged 15-64 years) in the EU-27 with a temporary contract was 15.5 %. The share of temporary employees varies greatly among other G20 members: the highest percentages of employees having a temporary contract were recorded in Indonesia (78.8 %) and India (77.0 %), followed by Mexico (53.3 %). Elsewhere the share was below 15 %. The lowest shares of temporary contracts — all below 10 % — were observed in Russia (7.8 %), Japan (7.5 %; 2015 data for employees aged 15 years and over) and the United Kingdom (5.5 %).

A comparison of the incidence of temporary employment between men and women shows that the gender gap was relatively small in the EU-27 in 2018, with the share for women 1.2 percentage points higher than for men. Among the non-EU G20 members only the United Kingdom recorded a narrower gap (0.7 points), also with a higher share for women. Equally, Canada, South Africa, South Korea and Japan (2015 data) recorded higher shares of temporary employment among women than among men, while the reverse was true for the remaining G20 members (see Figure 4.4). The largest gender differences were in India (where the share of temporary employment was 5.9 points higher among men than women) and Japan (where the gap was 5.0 points, with a higher share for women).

**Figure 4.4:** Temporary employment, 2018
(% share of employees aged 15-64 years)
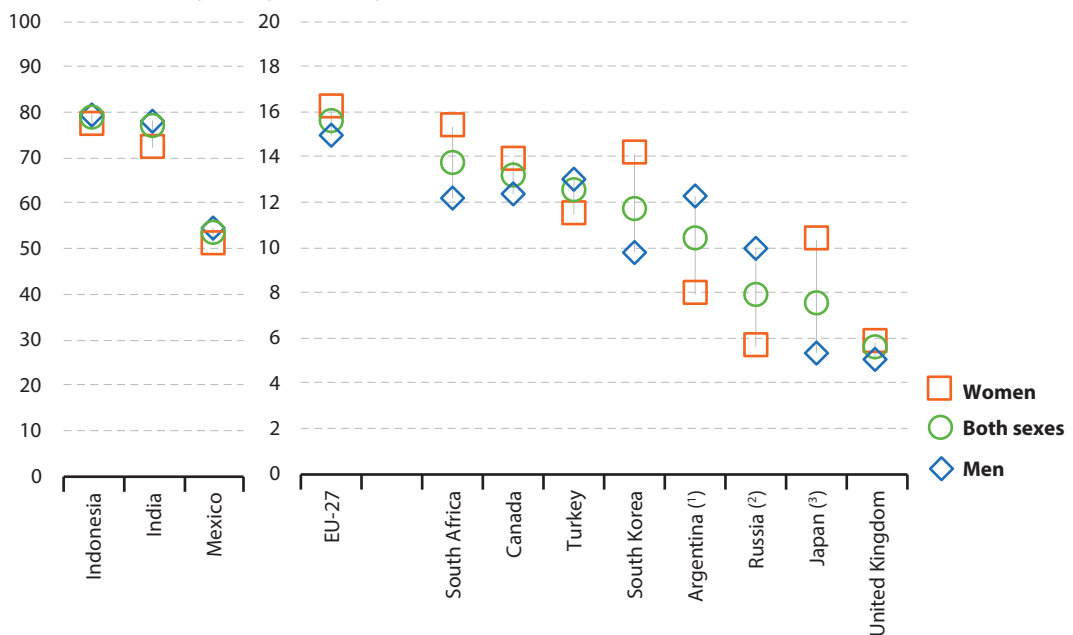


Note: more recent data are available for some countries from the ILO. Different scales are used in the two parts of the figure. Australia, Brazil, China, Saudi Arabia and United States: not available.

(¹) Main cities or metropolitan areas.
(²) Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.
(³) 2015. Employees aged 15 years and over.

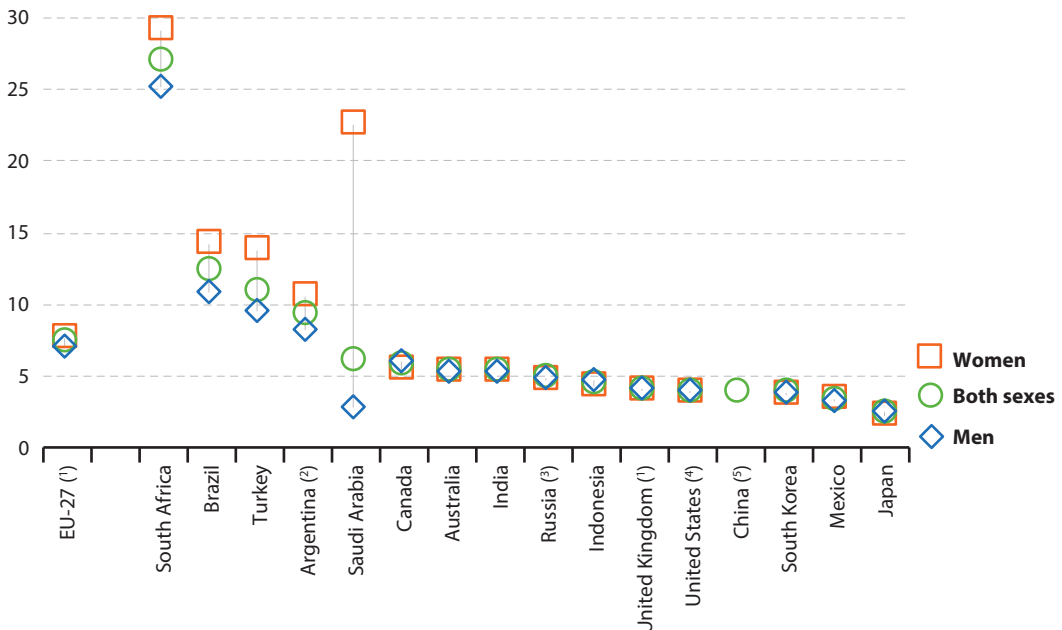*Source:* Eurostat (online data code: lfsa_etpgan) and the International Labour Organisation (ILOSTAT)

# Unemployment rates

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 2018, the unemployment rate for persons aged 15-74 years in the EU-27 was 7.3 %. Among the other G20 members, the unemployment rate for persons aged 15 years and over ranged in 2018 from 2.4 % in Japan to 6.0 % in Saudi Arabia, with Argentina (9.2 %; main cities and metropolitan areas only), Turkey (10.9 %), Brazil (12.3 %) and South Africa (26.9 %) above this range.

In the EU-27, unemployment rates for men and women were relatively similar, 7.6 % for women and 7.0 % for men in 2018 (see Figure 4.5). In most of the G20 members, the difference between the unemployment rates for men and women was also less than 1.0 percentage points in 2018, generally with a slightly higher rate for men than for women. By contrast, larger gender gaps, always with a higher unemployment rate for women, were observed in Argentina (2.3 points), Brazil (3.4 points), South Africa (3.9 points), Turkey (4.3 points) and Saudi Arabia (19.7 points). Saudi Arabia recorded the second lowest unemployment rate for men (2.9 %), higher only than that in Japan (2.6 %), combined with the second highest unemployment rate for women (22.6 %), lower only than the rate in South Africa (29.1 %).

**Figure 4.5:** Unemployment rate of persons aged 15 years and over, 2018



Note: ranked on the total unemployment rate for both sexes combined.

(¹) Persons aged 15-74 years.
(²) Main cities or metropolitan areas.
(³) Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.
(⁴) Persons aged 16 years and over.
(⁵) Persons aged 16 years and over. Urban areas only. Registered unemployment. Data by sex: not available

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

In a small majority of G20 members, unemployment rates in 2018 were highest among persons (aged 15 years and over) who had completed at most a basic level of education. However, in Indonesia the highest unemployment rate was recorded among persons having completed at most an intermediate level of education, while in India, Mexico, Saudi Arabia (2014 data) and South Korea the highest unemployment rates were recorded among persons having completed an advanced level of education; in Turkey the unemployment rates were the same for people with intermediate and advanced levels of education and lower for those with a basic level (see Figure 4.6).

In 6 of the 13 G20 members for which a complete set of data are available, the lowest unemployment rates were observed among persons who had completed an advanced level of education. In another six, the lowest rate was recorded among persons having completed at most a basic level of education; Russia was the exception, as its lowest unemployment rate was observed for persons having completed at most an intermediate level of education.

**Figure 4.6:** Unemployment rate of persons aged 15 years and over, by education level, 2018 (%)
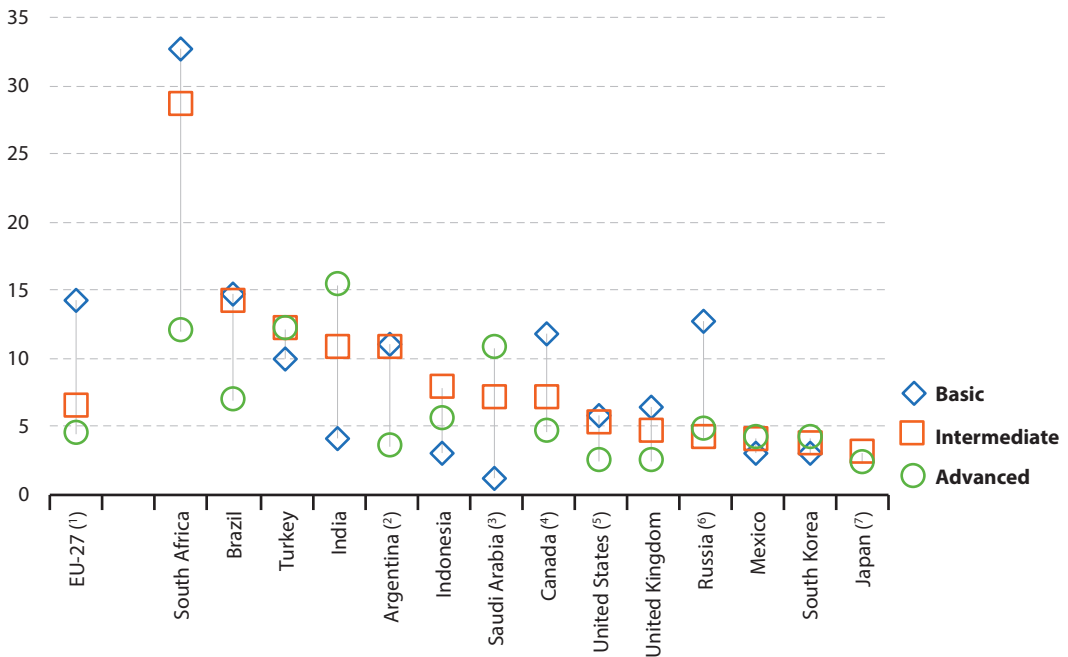


Note: ranked on intermediate. Australia and China: not available.

(¹)  Persons aged 15-74 years.
(²)  Main cities or metropolitan areas.
(³)  2014.
(⁴)  ISCED level 4 included in advanced rather than intermediate.
(⁵)  Persons aged 16 years and over.
(⁶)  Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.
(⁷)  Intermediate includes also basic.

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

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 2018, while in Indonesia and Canada this share was also below 6.0 % (see Figure 4.7). Elsewhere, the share of the long-term unemployed in total unemployment ranged from 13.4 % in the United States (persons aged 16 years and over) to over 40 % in Saudi Arabia (2016 data) and the EU-27, while the highest share was recorded in South Africa at 68.9 %.

Figure 4.8 focuses on the youth unemployment rate, in other words the unemployment rate for persons aged 15-24 years. It should be remembered that a large share of persons in this age range are outside the labour market and are 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.

**Figure 4.7:** **Long-term unemployment, persons aged 15 years and over, 2018**
(% of all unemployment)
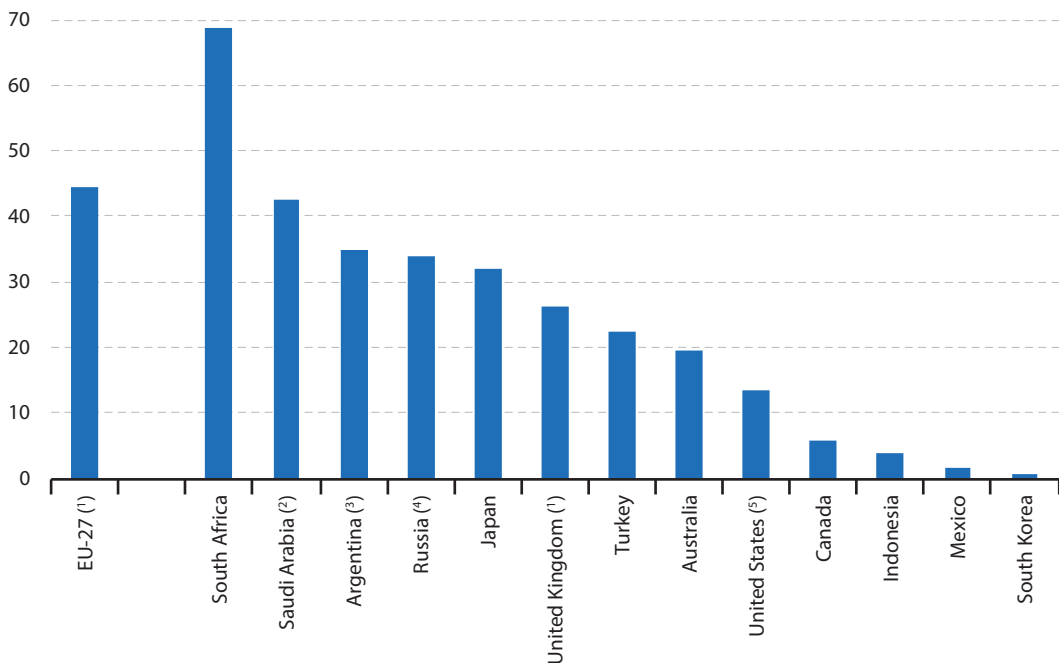


Note: Brazil, China and India, not available.

(¹) Persons aged 15-74 years.

(²) 2016.

(³) Main cities or metropolitan areas.

(⁴) Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.

(⁵) Persons aged 16 years and over.

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

Among the G20 members, South Africa and Brazil had the highest unemployment rates for young men in 2018. In South Africa, almost half (49.2 %) of the male youth labour force was unemployed, while in Brazil the rate was just over one quarter (25.3 %). The EU-27's unemployment rate for young men (16.5 %) was close to the median for the G20 members shown in Figure 4.8 and this was also the case for the youth unemployment rate for women (15.7 %). Saudi Arabia (62.6 %) and South Africa (58.8 %) had the highest unemployment rates for young women among the G20 members. Three G20 members reported unemployment rates both for young men and for young women

below 10.0 % in 2018: Japan, Mexico and the United States, with the rate for young women in Canada also below 10.0 %.

Within the EU-27, there was relatively little difference in youth unemployment rates when looking at figures by sex, with the rate for young men 0.8 percentage points higher than the rate for young women in 2018. Several G20 members reported much higher youth unemployment rates for women than for men: indeed, rates for young women were between 6.9 and 9.6 points higher than those for young men in Argentina (main cities and metropolitan areas only), Turkey, Brazil and South Africa, with this gap reaching 42.7 points in Saudi Arabia.

**Figure 4.8:** Youth (persons aged 15-24 years) unemployment rate, 2018
(%)
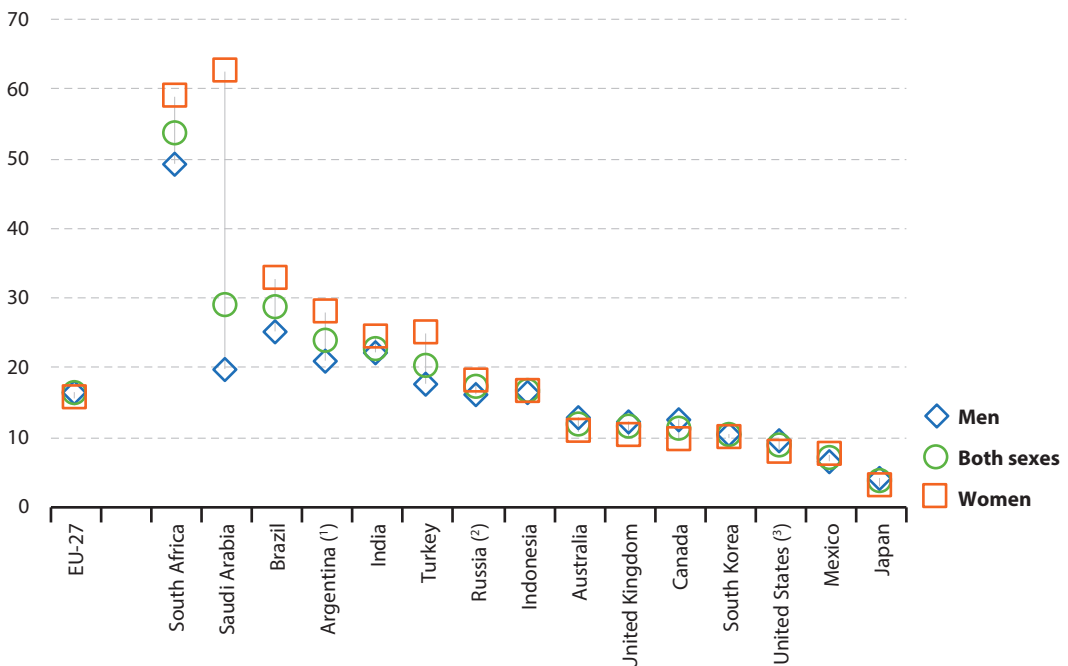


Note: ranked on the youth unemployment rate for both sexes combined. China: not available.

(¹)  Main cities or metropolitan areas.
(²)  Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.
(³)  Persons aged 16-24 years.

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

# 5. Living conditions

## Households

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.

Many countries compile detailed information on households every 5 or 10 years, through a census or inter census survey and so the most recent data on household composition for several G20 members often refers to a

reference year around 2010 or 2015. Figure 5.1 shows that more than one quarter of all households in Japan (2015 data), the EU-27 (2018 data), the United Kingdom (2018 data), Canada (2016 data), South Korea (2015 data), the United States (2010 data) and Russia (2010 data) were single person households, whereas this was the case for less than one tenth of all households in Mexico (2010 data), Indonesia (2010 data) and India (2011 data). Households composed of five or more persons were relatively uncommon in the United Kingdom, the EU-27, South Korea, Japan, Canada and Russia, all reporting that less than one tenth of households were this large; by contrast, nearly half (49.5 %) of all Indian households were composed of at least five people.

**Figure 5.1:** Households by the number of household members (% of total)
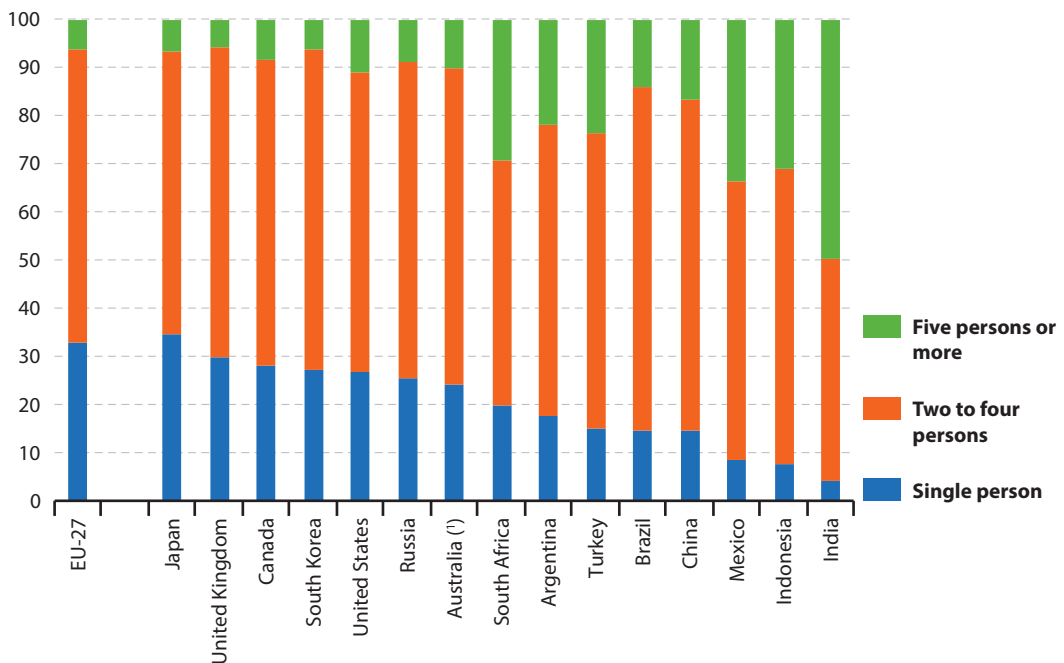


Note: Saudi Arabia, not available. Argentina, China, Indonesia, Mexico, Russia and the United States: 2010. India: 2011. South Africa: 2013. Brazil: 2014. Japan and South Korea: 2015. Australia and Canada: 2016. Turkey: 2017. EU-27 and the United Kingdom (provisional): 2018.

(1) The shares have been calculated relative to an adjusted total excluding households of unknown size. Households of unknown size together account for 6.5 % of all households.
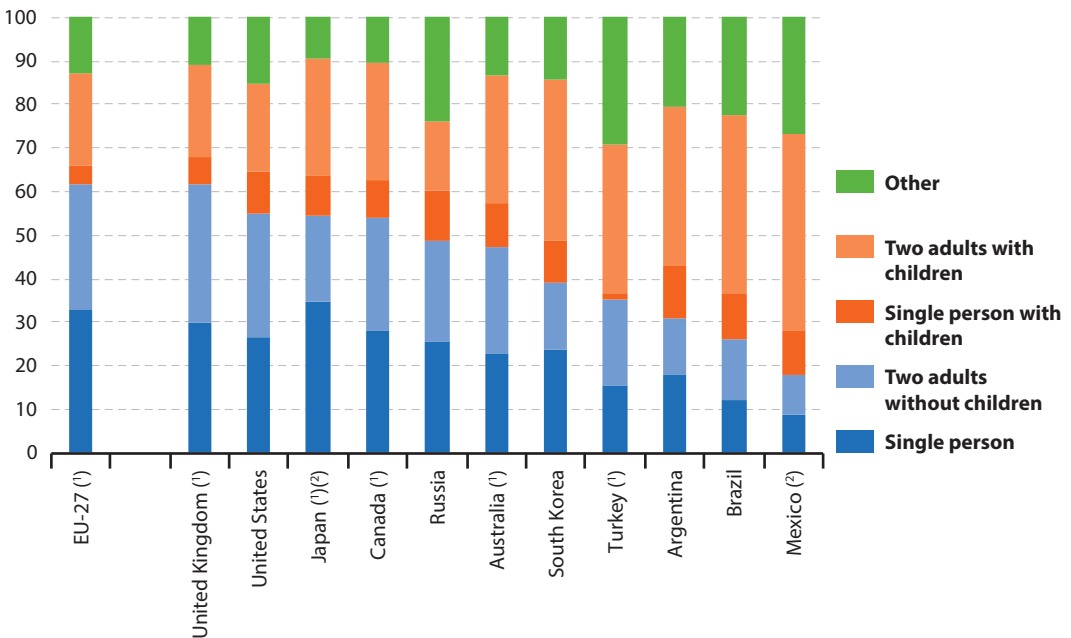
*Source:* Eurostat (online data code: ilc_lvph03), the United Nations Department of Economic and Social Affairs, Statistics Division (Demographic Statistics; Demographic and Social Statistics) and national surveys

In Brazil (2014 data) and China (2010 data), single 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 nearly the case in South Korea despite its relatively high share of single person households.

Figure 5.2 presents a similar analysis focusing on types of households rather than a simple count of the number of household members. In 2018, one third (32.8 %) of private households in the EU-27 were composed of a single person (normally an adult) living alone and more than one quarter (28.8 %) were composed of two adults living without children (see Figure 5.2).

The combined share of households composed of a single person or two adults living without children was 61.6 % in the EU-27, the same share as in the United Kingdom and this was higher than in any of the other G20 members, the next highest cumulative share being 54.9 % in the United States. Consequently, the combined share of households composed of a single person with children and households composed of two adults with children in the EU-27 was relatively low, at 25.4 %, lower than in any of the non-EU G20 members. By contrast, these two common types of household with children made up more than half of all households in Mexico (55.1 %) and Brazil (51.6 %).

**Figure 5.2:** Types of households, 2010
(% of total)



Note: ranked on the combined share of a single person and two persons without children. Argentina, China, India, Indonesia, Saudi Arabia and South Africa, not available.

(¹) Japan: 2015. Australia and Canada: 2016. Turkey: 2017. EU-27 (estimates) and the United Kingdom (provisional): 2018.
(²) Other includes unknown.

*Source:* Eurostat (online data code: ilc_lvph02), the United Nations Department of Economic and Social Affairs, Statistics Division (Demographic Statistics; Demographic and Social Statistics) and national surveys

## Social protection expenditure

Social protection encompasses all actions by public or private bodies intended to relieve households and individuals from the burden of a defined set of risks or needs. Figure 5.3 shows the level of social protection expenditure relative to gross domestic product (GDP) for the G20 members in 2007 and 2017. The EU-27 recorded the highest expenditure on social protection (using this measure) in 2017 (28.2 % of GDP), ahead of the United Kingdom and Japan (2015 data)

which were the only other G20 members with ratios above 20 %. Mexico recorded social protection expenditure of 7.5 % (2016 data), the lowest among the non-EU G20 members. In these eight countries, social protection expenditure relative to GDP increased between the years shown in Figure 5.3, as it also did in the EU-27. The largest increases in percentage point terms were in Japan (4.2 points; 2007-2015), South Korea (3.5 points) and the United States (3.0 points).

**Figure 5.3:** Public expenditure on social protection, 2007 and 2017
(% of GDP)
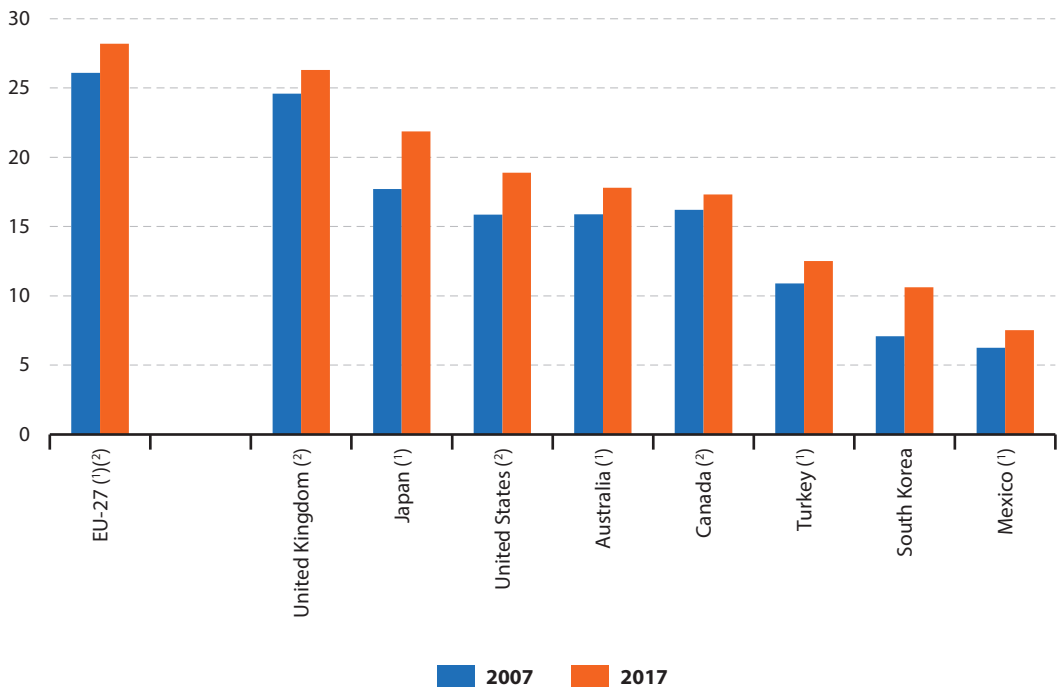


Note: more recent data are available for some countries from the OECD. Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia and South Africa, not available.

(¹)  EU-27: 2008 instead of 2007. Japan: 2015 instead of 2017. Australia, Mexico and Turkey: 2016 instead of 2017.
(²)  2017: estimate or provisional.

*Source:* Eurostat (online data code: spr_exp_sum) and the OECD (Social expenditure database)

# Household income

Figure 5.4 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. The proportion of income received by the highest quintile was just under two fifths (38.3 %) in the EU-27 in 2017; in all of the other G20 members this proportion exceeded two fifths. Mexico (2016 data) and Brazil reported that the highest quintile received more than half of all income, with this share even higher in South Africa, as the highest quintile accounted for more than two thirds (68.2 %; 2014 data) 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 5.4, this ratio ranged, among the G20 members, from 4.9 in the EU-27 and 5.4 in the United Kingdom to 9.4 in the United States (2016 data), with Mexico (11.1; 2016 data), Brazil (18.1) and South Africa (28.4; 2014 data) above this range.

**Figure 5.4:** Income quintile shares, 2017
(%)
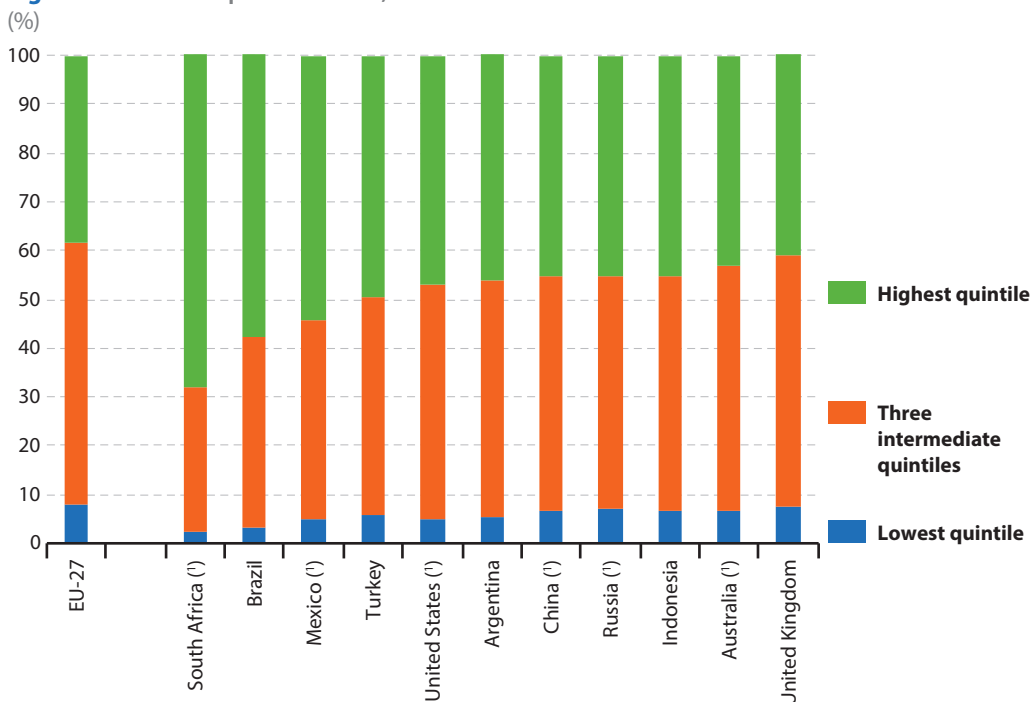


Note: ranked on the share of the highest quintile. More recent data are available from Eurobase for the EU-27 and the United Kingdom. Australia, Canada, India, Japan, Saudi Arabia and South Korea: not available. There are methodological differences between the sources.

(¹) Australia and South Africa: 2014. China and Russia: 2015. Mexico and the United States: 2016.

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

The Gini coefficient is another measure of income distribution. It shows the extent to which the distribution of income deviates from a perfectly equal distribution. A coefficient of 0 expresses perfect equality where everyone has the same income, while a coefficient of 100 expresses full inequality where only one person has all the income.

In 2017, the EU-27 had a Gini coefficient of 30 which was lower than in any of the non-EU G20 members (see Figure 5.5). Elsewhere the United Kingdom, Australia (2014 data), Russia (2015 data), Indonesia and China (2016 data) also recorded coefficients below 40. The highest Gini coefficients among the G20 members were recorded in Brazil (53) and South Africa (63; 2014 data), confirming the relatively high inequality of income distribution observed through the income quintile share ratio.

**Figure 5.5:** Gini coefficient, 2017

(%)



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom. Canada, India, Japan, Saudi Arabia and South Korea: not available. There are methodological differences between the sources.

(¹)  Australia and South Africa: 2014. Russia: 2015. China, Mexico and the United States: 2016.

*Source:* Eurostat (online data code: ilc_di12) and the World Bank (Poverty and Equity Database)
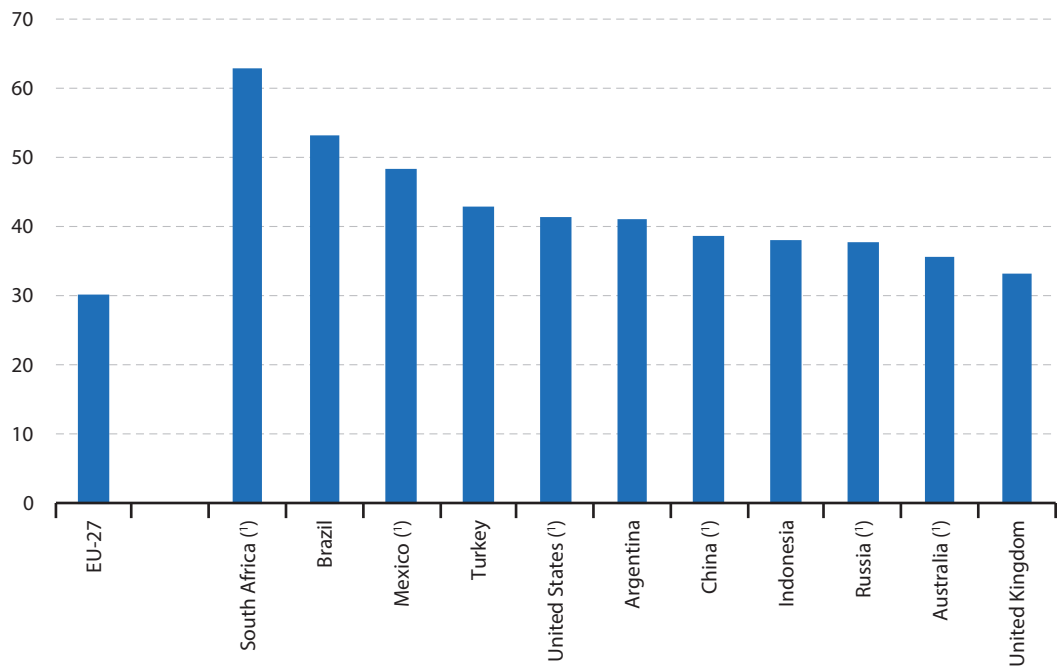
Figure 5.6 shows the proportion of people at risk of poverty (hereafter referred to as the poverty rate), calculated as the proportion of the population with an income (after taxes and transfers) below the poverty threshold, where the threshold is set in each country as 60 % of the median income level (again, after taxes and transfers). In 2017, the EU-27 had the lowest poverty rate among the G20 members, at 16.9 %. Other G20 members with a poverty rate around or below one fifth were the United Kingdom (17.0 %), Canada (19.0 %), Australia (19.9 %; 2016 data) and Russia (20.1 %; 2016 data), while the rate was one quarter or higher in the United States (25.0 %) and Turkey (25.2 %; 2015 data), and closer to one third in South Africa (32.0 %; 2015 data).

Among persons aged 65 years and over the poverty rate in the EU-27 was 14.7 % in 2017, 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 South Africa and the United Kingdom, although the two rates were almost the same in the latter. Particularly large differences between the overall poverty rate and that for older people were observed in South Korea and Australia. As noted above, Australia had one of the lowest overall poverty rates among the G20 members but the second highest poverty rate for older people (41.8 %; 2016 data), lower only than in South Korea (52.2 %). The lowest poverty rates for older people were recorded in the EU-27 (14.7 %) and the United Kingdom (16.9 %).

**Figure 5.6:** Poverty rate, 2017
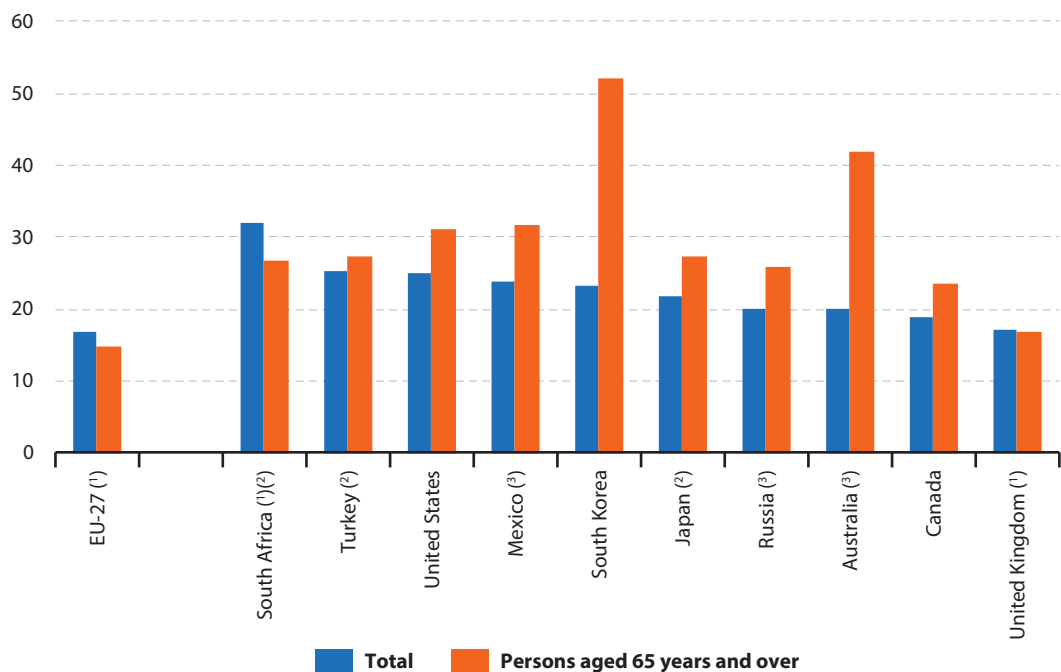
(%)



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom. Argentina, Brazil, China, India, Indonesia and Saudi Arabia: not available. 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. There are methodological differences between the sources.

(¹) Estimate or provisional.
(²) 2015.
(³) 2016.

*Source:* Eurostat (online data code: ilc_li02) and the OECD (Income distribution and poverty)

# Household expenditure

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 5.7 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

**Figure 5.7:** Household consumption expenditure by category, 2018
(% of total household consumption expenditure)



Note: ranked on housing, water, electricity, gas and fuels. Argentina, China and Russia: not available.

(¹) Indonesia: 2015. Brazil and India: 2016. Australia, Japan, Mexico, South Korea and the United States: 2017.

(²) Provisional. Also includes NPISH final consumption expenditure.

(³) Housing, water, electricity, gas & fuels includes also furnishings, household equipment etc. Health includes also education. Transport includes also communications.

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

expenditure was normally devoted to food, non-alcoholic beverages and tobacco 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 the United Kingdom, Canada and Australia.

**Figure 5.7 (continued):** Household consumption expenditure by category, 2018
(% of total household consumption expenditure)



Note: ranked on housing, water, electricity, gas and fuels. Argentina, China and Russia: not available.

(¹)  Indonesia: 2015. Brazil and India: 2016. Australia, Japan, Mexico, South Korea and the United States: 2017.

(²)  Provisional. Also includes NPISH final consumption expenditure.
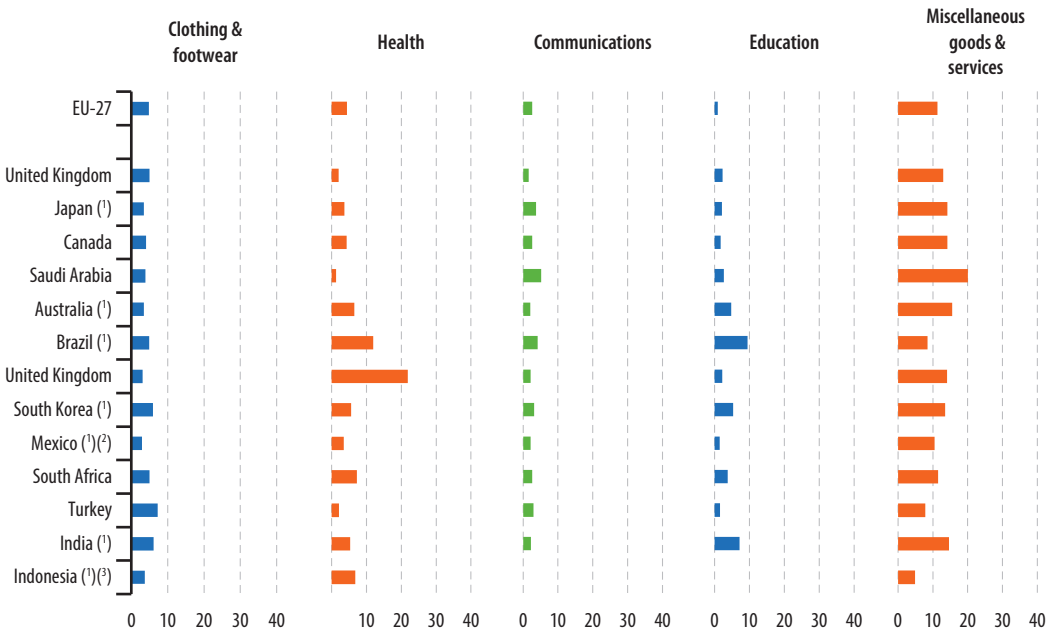
(³)  Housing, water, electricity, gas & fuels includes also furnishings, household equipment etc. Health includes also education. Transport includes also communications.

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

# 6. Digital society

## Broadband subscriptions

Broadband telecommunications transfer data at high speeds. The technologies most widely used for fixed broadband internet access are digital subscriber line (DSL) and its variations (xDSL), cable modem (connection to a local television line) or fibre.

Relative to population size, the number of fixed broadband subscriptions among the G20 members was quite diverse (see Figure 6.1). South Korea had 42 subscriptions per 100 inhabitants in 2018, followed by the United Kingdom with 40 and Canada with 39. Several other G20 members — the EU-27, the United States, Japan, Australia and China — reported between 29 and 34

subscriptions per 100 inhabitants. At the other end of the ranking, Turkey, Brazil and Mexico (15 or 16 per 100 inhabitants) had fixed broadband subscription rates that were close to the world average (14 per 100 inhabitants) while Indonesia, South Africa and India had 3, 2 and 1 subscriptions per 100 inhabitants respectively. Between 2008 and 2018, 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 22 subscriptions per 100 inhabitants), Saudi Arabia, Russia (both 16 subscriptions per 100 inhabitants more), the EU-27 and the United Kingdom (both 12 subscriptions per 100 inhabitants more).

**Figure 6.1:** **Fixed broadband subscriptions, 2008 and 2018**
(per 100 inhabitants)
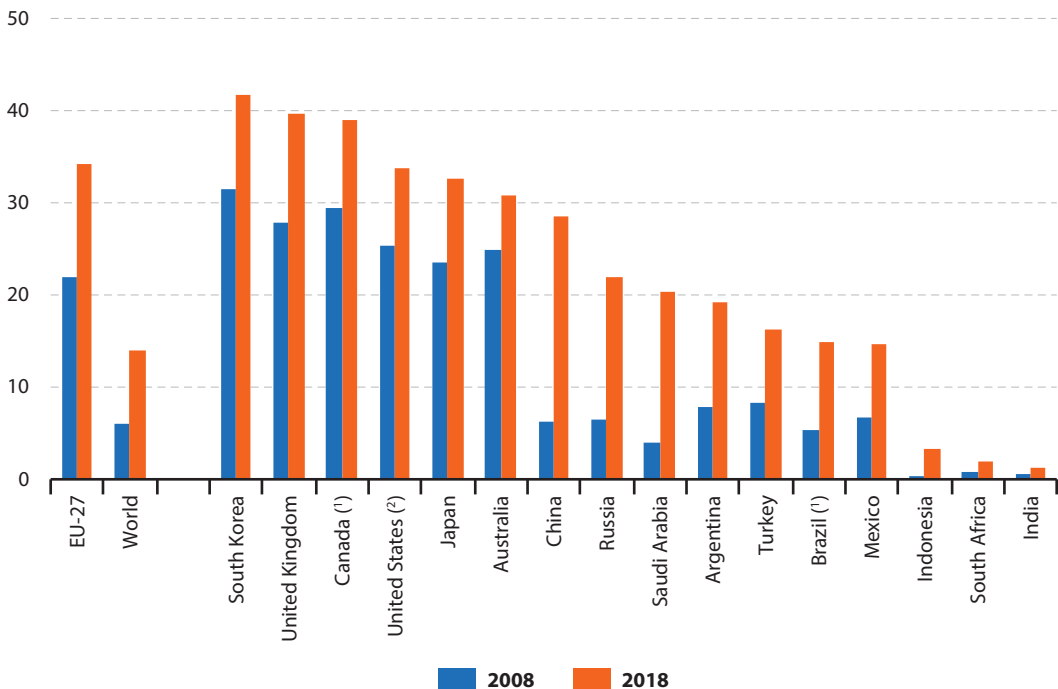


Note: includes estimates.

(¹) 2008: transfer rate differs from standard.
(²) Transfer rate differs from standard.

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

## Internet use

ICTs have become widely available to the general public, both in terms of accessibility as well as cost. By 2018 internet use had become almost universal in several G20 members, for example South Korea, the United Kingdom and Saudi Arabia where respectively 96 %, 95 % and 93 % of people had used the internet within the three months prior to being surveyed, as had 91 % of individuals in Japan and Canada (2017 data), 87 % of individuals in the United States and Australia (both 2017 data), 84 % in the EU-27 and 81 % in Russia (see Figure 6.2). Around half (51 %) of individuals worldwide had used the internet within the three months prior to being surveyed, with only Indonesia (40 %) and India (34 %; 2017 data) reporting lower shares among the G20 members.

Between 2008 and 2018, the share of people having used the internet within the three months prior to being surveyed increased worldwide by 28 percentage points. In terms of the growth of internet use the G20 members can be split into two groups: those that had shares in 2008 that were already above 50 % recorded growth between 2008 and 2018 that was slower than the world average; those with lower shares of internet use in 2008 reported growth above the world average. Particularly rapid increases between 2008 and 2018 were observed for Saudi Arabia (up 57 points), Russia (54 points), South Africa (48 points; 2008-2017), Argentina (46 points; 2008-2017) and Mexico (44 points). For comparison, the increase in the EU-27 was 25 points while the United States had the smallest increase (up 13 points; 2008-2017) among G20 members.

**Figure 6.2:** Individuals using the internet within the previous three months, 2008 and 2018



(%)
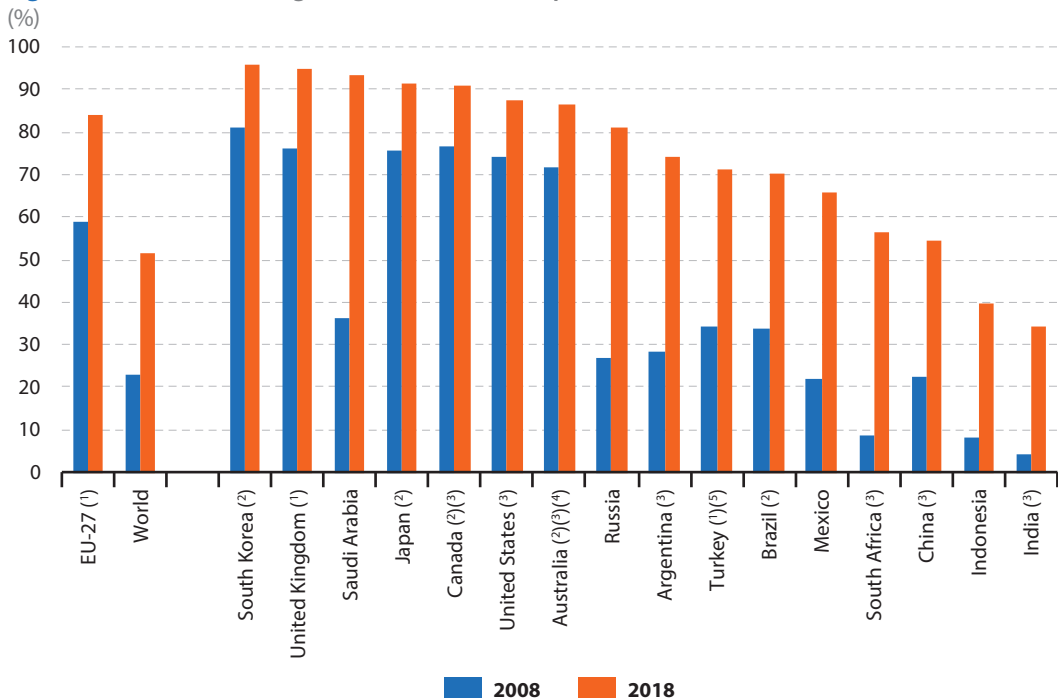
Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom.

(1) Persons aged 16-74 years.
(2) South Korea: 2008, persons aged 3 years and over. Japan: 2008, persons aged 6 years and over. Canada: 2008, persons aged 16 years and over; 2018, persons aged 18 years and over. Australia: persons aged 15 years and over. Brazil: 2008, persons aged 10 years and over.

(3) 2017.
(4) 2017: accessed the internet for personal use in a typical week.
(5) 2008: accessed the internet in the previous 12 months.

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

# B Economy and business

# 7. Economy and finance

## National accounts

In 2018, the total economic output of the world, as measured by gross domestic product (GDP), was valued at EUR 72.6 trillion, of which the G20 members accounted for 86.2 %. Map 7.1 shows the shares of the G20 members in world GDP for 2008 as well as for 2018; it should be noted that 2008 was the beginning of the global financial and economic crisis. The G20 members' combined share of world GDP was 0.8 percentage points higher in 2008 than it was in 2018.

In 2018, the United States accounted for a 24.0 % share of the world's GDP. Although the United States' share in 2018 was 0.9 percentage points less than it had been in 2008, it moved ahead of the EU-27 whose share fell from 25.6 % in 2008 to 18.6 % in

2018. 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 7.2 % in 2008 to 15.9 % in 2018, moving ahead of Japan (7.9 % in 2008 and 5.8 % in 2018). To put the rapid pace of recent Chinese economic growth into context, in current price terms China's GDP in 2018 was EUR 8 399 billion higher than it was in 2008, an increase greater than the combined GDP in 2018 of the nine smallest G20 economies (Canada, Russia, Australia, Mexico, Indonesia, Saudi Arabia, Turkey, Argentina and South Africa). The share of world GDP contributed by India also increased greatly, such that it moved from the ninth largest G20 economy in 2008 (leaving aside the three G20 EU Member States) to become the sixth largest by 2018 with a share of 3.2 %, just behind the 3.3 % share of the United Kingdom.

**Map 7.1:** World GDP

(%)

**2008**

| | | Brazil, 2.7 | |
|---|---|---|---|
| EU-27, 25.6 | Japan, 7.9 | Russia, 2.6 | |
| | | Canada, 2.4 | |
| | China, 7.2 | India, 2.0 | Rest of the world, 13.0 |
| | | Mexico, 1.7 | |
| | | Australia, 1.7 | |
| United States, 23.1 | | South Korea,1.6 | |
| | United Kingdom,4.6 | Turkey, 1.2 | |
| | | Indonesia, 0.9 | |
| | | Saudi Arabia, 0.8 | |
| | | Argentina, 0.6 | |
| | | South Africa, 0.4 | |

**2018**

| | | India, 3.2 | |
|---|---|---|---|
| United States, 24.0 | China, 15.9 | Brazil, 2.2 | |
| | | South Korea, 2.0 | |
| | | Canada, 2.0 | |
| | | Russia, 1.9 | Rest of the world, 13.8 |
| | | Australia, 1.7 | |
| EU-27, 18.6 | Japan, 5.8 | Mexico, 1.4 | |
| | | Indonesia, 1.2 | |
| | | Saudi Arabia, 0.9 | |
| | United Kingdom, 3.3 | Turkey, 0.9 | |
| | | Argentina, 0.6 | |
| | | South Africa, 0.4 | |

*Source:* Eurostat (online data codes: nama_10_gdp and ert_bil_eur_a) and the United Nations Department of Economic and Social Affairs, Statistics Division (Analysis of Main Aggregates)

Figure 7.1 shows the real rate of change (based on price adjusted data) of GDP in the latest year for which data are available (2018 compared with 2017) as well as the 10-year annual average rate of change between 2008 and 2018; it should be remembered that much of the financial and economic crisis occurred during the early part of this period. The lowest 10-year rates of change were generally recorded in developed economies such as Japan, Russia, Argentina and the EU-27, while the highest growth rates were recorded in several Asian economies, most notably in India and China. Looking at the rate of change between 2017 and 2018, Argentina stands out as it recorded a contraction in its economic output in 2018. At the other end of the scale three G20 members stood out with notably faster

growth, with annual increases of 5.2 % in Indonesia, 6.6 % in China and 6.8 % in India. For comparison, the annual growth rate of GDP in 2018 for the whole world was 3.1 %, with the EU-27 recording slightly slower growth (2.1 %).

Among the G20 members, the highest gross national income (GNI) per inhabitant in 2018 was recorded in the United States, ahead of Saudi Arabia. Note that the conversion to United States dollars used for this indicator in Figure 7.2 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 3.1 times as high as the average GNI for the whole

**Figure 7.1:** Real change in GDP, 2008-2018
(%)



Legend: ■ Annual average rate of change 2008-2018 ■ Change 2017-2018
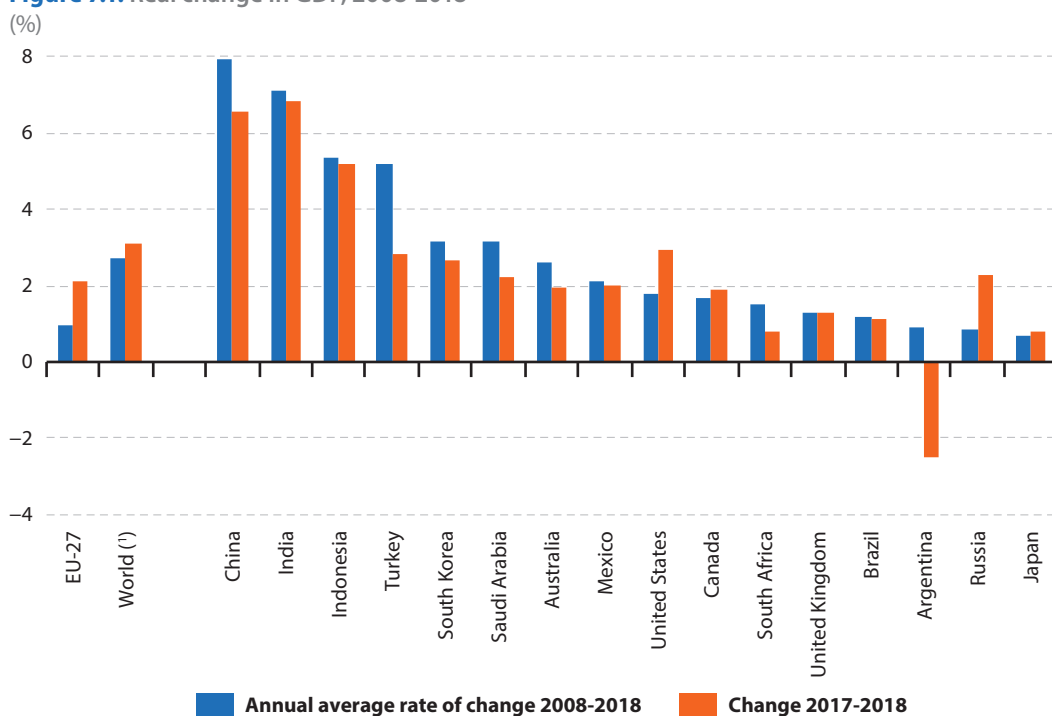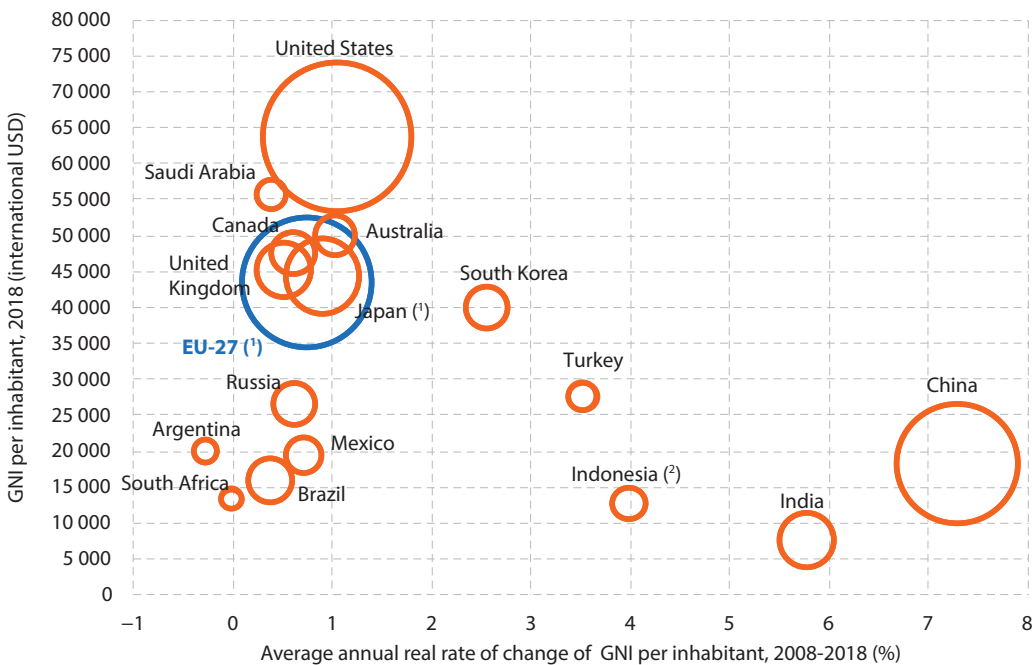
(¹) Based on United States dollars.

*Source:* Eurostat (online data code: nama_10_gdp) and the United Nations Department of Economic and Social Affairs, Statistics Division (Analysis of Main Aggregates)

world (USD 17.9 thousand per inhabitant). Australia, Canada, the United Kingdom, Japan, the EU-27 and South Korea each recorded average GNI per inhabitant that was more than double the world average. By contrast, four G20 members recorded levels of GNI per inhabitant that were below the world average, namely 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 2008 to 2018; this was most notably the case in China, India and Indonesia

(eight years from 2010 to 2018). By contrast, members with relatively high GNI per inhabitant at the start of the period under consideration generally recorded fairly low levels of economic growth; this was most notably the case in the United Kingdom, Canada, the EU-27 (nine years from 2008 to 2017), Japan (nine years from 2008 to 2017), Australia and the United States. The main exceptions to this pattern are clustered towards the bottom left corner of Figure 7.2, with relatively low growth and relatively low levels of GNI per inhabitant — in this group are Argentina, South Africa, Brazil, Russia and Mexico.

**Figure 7.2:** GNI per inhabitant and annual average real rate of change of GNI per inhabitant, 2008-2018 and 2018



Note: GNI per inhabitant is presented in international United States dollars (USD) for 2018. The relative size of each bubble reflects the value of GNI in current prices for 2018. The average annual rate of change is calculated using constant 2010 prices in USD.

Reading note: the EU-27's annual average real rate of change of GNI per inhabitant between 2008 and 2018 was 0.7 % (shown on the horizontal axis), while its GNI per inhabitant in 2018 was USD 43 470 (shown on the vertical axis). The overall size of the EU-27 economy (GNI in current prices) was USD 16.0 trillion in 2018 (represented by the size of the large blue circle).

[1] Average annual real rate of change of GNI per inhabitant: 2008-2017.
[2] Average annual real rate of change of GNI per inhabitant: 2010-2018.

*Source:* 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. Note that the data presented in Figures 7.3 and 7.4 for some G20 members relate only to the expenditure of some but not all levels of public administration.

The level of general government expenditure in relation to GDP peaked among the G20 members in 2018 at 45.8 % in the EU-27 (in the euro area it was higher still, at 47.0 %), followed by 41.0 % in the United Kingdom and 40.7 % in Canada. For the majority of G20 members the ratio of government expenditure of GDP exceeded 30 %, with only four below this level: India, Mexico, South Korea and Indonesia.

**Figure 7.3:** General government expenditure and GDP, 2018
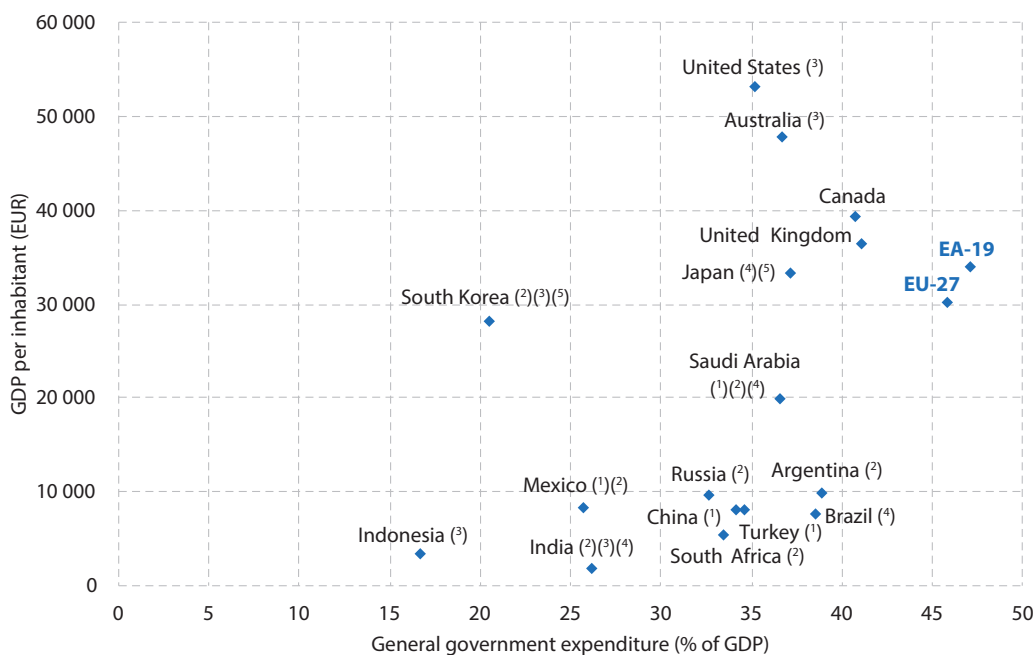


(¹) Not including state governments.
(²) Not including local governments.
(³) Not including social security funds.
(⁴) GDP per inhabitant: estimate.
(⁵) General government expenditure: estimate.

*Source:* Eurostat (online data codes: gov_10a_main and nama_10_pc ) and the International Monetary Fund (World Economic Outlook database)

Three of the four members with relatively low ratios of government expenditure to GDP also had relatively low GDP per inhabitant, the exception being South Korea. By contrast, among the members where government expenditure relative to GDP exceeded 30 %, the level of GDP per inhabitant ranged from EUR 5 380 per inhabitant in South Africa (the third lowest among the G20 members) to EUR 53 234 per inhabitant in the United States (the highest).

Most G20 members had a government deficit in 2018; only South Korea and Russia recorded surpluses as can be seen from Figure 7.4. Deficits below 3.0 % of GDP were observed in Canada, the EU-27 (and the euro

area), Australia, Indonesia, Mexico and the United Kingdom. The largest deficits were recorded in India (6.4 % of GDP) and Brazil (7.2 % of GDP).

Japan had by far the highest government debt relative to GDP in 2018, 237.1 % (see Figure 7.4). The United States joined Japan with a level of government debt that was higher than GDP, as its ratio was 104.3 %. Canada (89.9 %) had the next highest level of government debt relative to GDP in 2018, followed by Brazil, Argentina, the United Kingdom and the EU-27, all with ratios above 75 %. The lowest ratios of government debt to GDP were reported in Saudi Arabia and Russia, both below 20.0 % of GDP.

**Figure 7.4:** General government deficit/surplus and debt, 2018
(% of GDP)
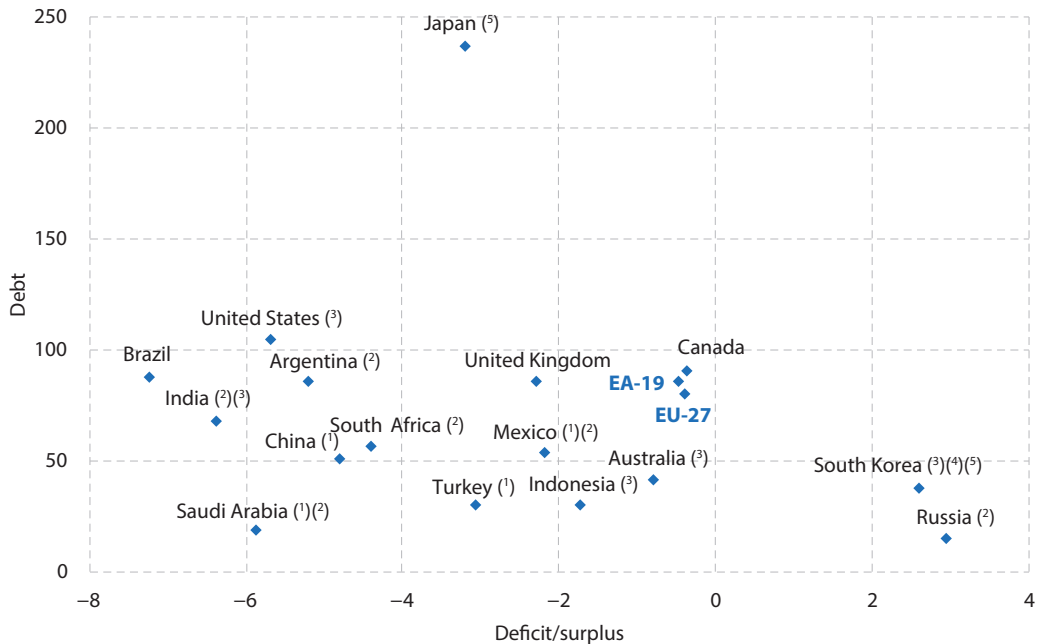


(1) Not including state governments.
(2) Not including local governments.
(3) Not including social security funds.
(4) Deficit/surplus: not including local governments.
(5) Estimates.

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

# Consumer prices and interest rates

Consumer price indices reflect the developments over time in the prices of consumer goods and services acquired, used or paid for by households, and thereby provide a measure of inflation. They aim to cover the whole set of goods and services consumed within the territory of a country by the population. The rate of change in consumer price indices between 2017 and 2018 is presented in Figure 7.5 along with the 10-year annual average rate of change between 2008 and 2018.

The worldwide inflation rate in 2018 was 3.6 %, slightly higher than the 2.8-3.2 % rates reported between 2015 and 2017. Among the G20 members, the lowest rates of change for consumer prices in 2018 were growth of 1.0 % in Japan and 1.5 % in South Korea. Annual price changes ranged between 1.9 % and 5.0 % in most of the other G20 members, including the EU, greatly exceeding this range in Turkey (16.3 %) and Argentina (34.3 %).

Average price developments over a 10-year period indicate that the high inflation rate in Argentina for 2018 was representative of a more sustained period of rapid price increases, with annual inflation averaging 17.7 % between 2008 and 2018. 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 8.9 % in Turkey, 7.5 % in Russia and 7.4 % in India. By contrast, Japan had clearly the lowest annual average inflation rate among the G20 members between 2008 and 2018, just 0.3 %, with the next lowest rates in the EU (1.5 %), the United States and Canada (both 1.6 %).

**Figure 7.5:** Consumer price indices, 2008-2018

(%)



■ **Annual average rate of change 2008-2018**     ■ **Change 2017-2018**
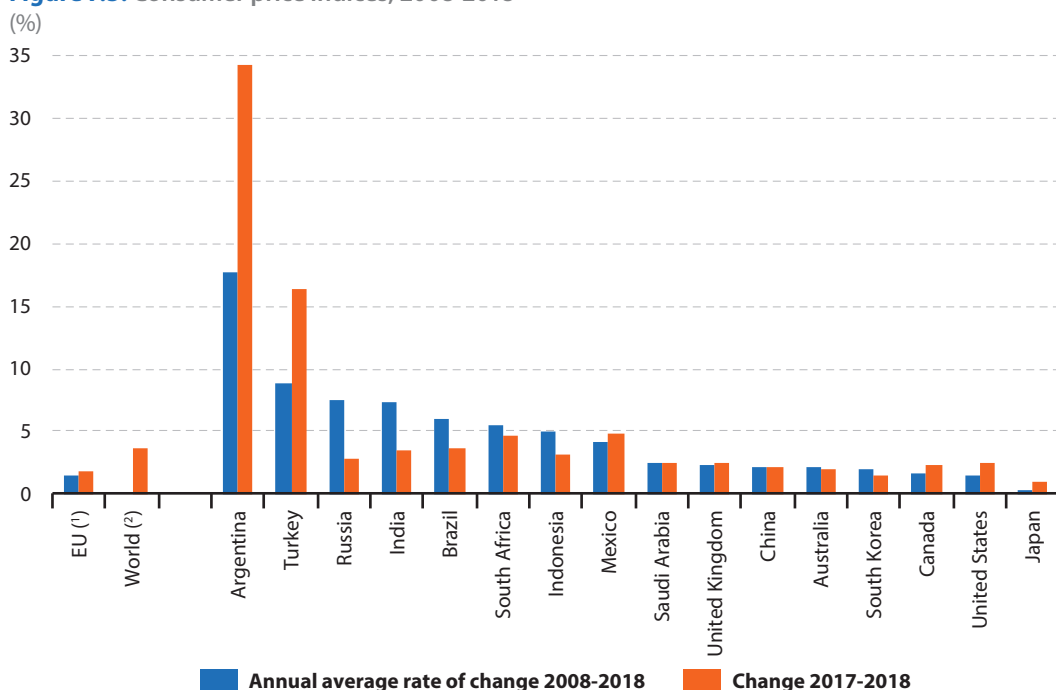
(¹)  The data refer to the official EU aggregate, its country coverage changes in line with the addition or departure of EU Member States and integrates or detaches them using a chain-linked index formula.
(²)  Annual average rate of change 2008-2018: not available.

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

Lending interest rates varied greatly between the G20 members in 2018 and did so to a somewhat greater extent than they had done 10 years earlier. Historically low interest rates were recorded in the euro area (0.25 %) and the United Kingdom (0.50 %; 2014 data) while the latest lending interest rate in Japan (0.99 %; 2017 data) was also relatively low. Elsewhere, rates ranged from 2.70 % in Canada (2017 data) to 10.54 % in Indonesia, with the rates in Argentina (37.39 %) and Brazil (39.08 %) exceeding this

range. In all but one of the G20 members (see Figure 7.6), interest rates were lower in 2018 than they had been in 2008. The exception was Argentina where rates increased by 17.9 percentage points over this period. The largest percentage point falls in interest rates between 2008 and 2018 were in Brazil (down 8.2 points) and South Africa (down 5.0 points). For comparison, the rate in the euro area fell 2.8 points over the same period.

**Figure 7.6:** Lending interest rates — rate for short and medium-term financing needs of the private sector, 2008 and 2018



(%)
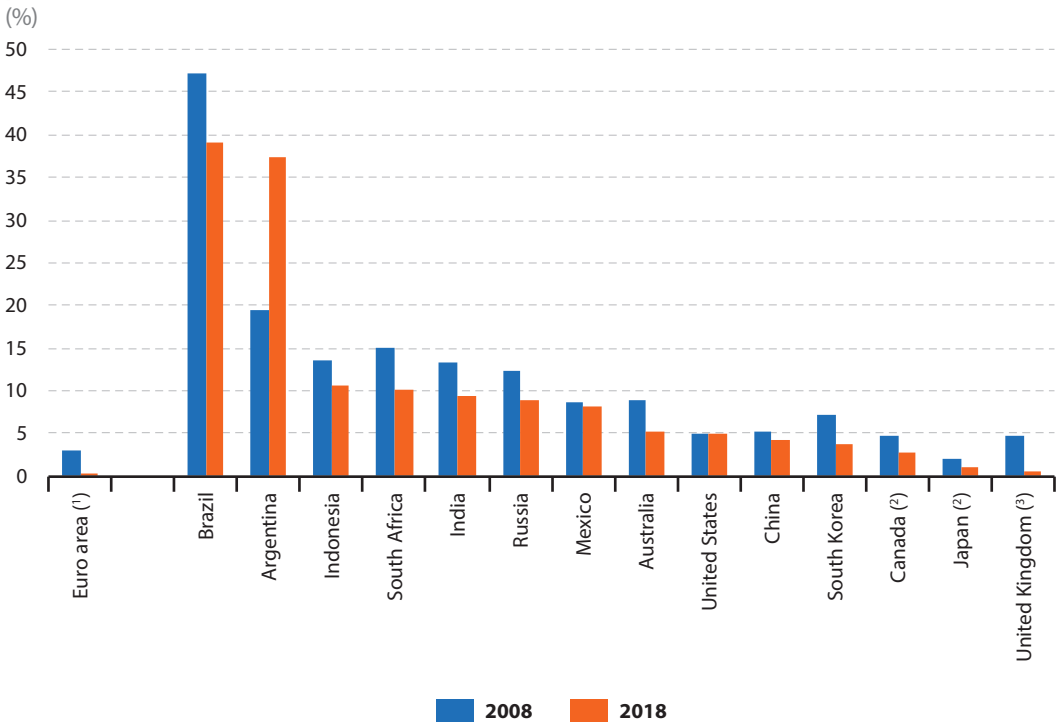
Note: Saudi Arabia and Turkey, not available.

(¹) Definition differs: ECB marginal lending facility end of year rate.
(²) 2017 instead of 2018.
(³) 2014 instead of 2018.

*Source:* the European Central Bank and the World Bank (World Development Indicators)
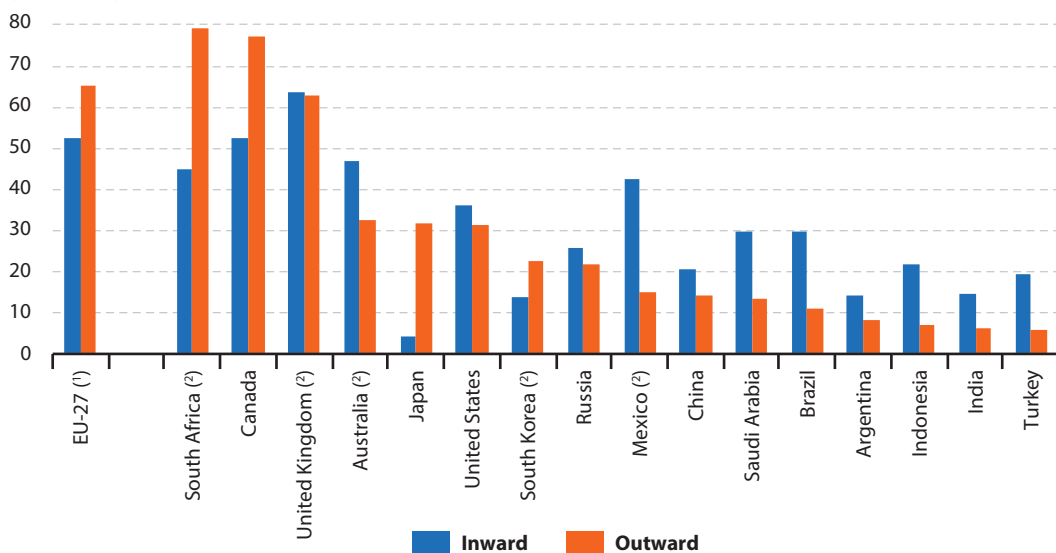
# Foreign direct investment

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. Figure 7.7 and Map 7.2 provide information concerning FDI stocks, in other words the value of all foreign direct investment assets, not the flows during a particular year. South Africa (2017 data), Canada, the EU-27 and the United Kingdom (2017 data) had by far the highest levels of outward stocks relative to the size of their economies in 2018, all in excess of 60 % of their GDP. The United Kingdom (2017 data) had the highest level of inward stocks relative to GDP and was one of only three G20 members — the others being the EU-27 and Canada — where inward stocks were valued at more than 50 % of their GDP.

The lowest levels of outward stocks relative to GDP in 2018 were held by Argentina, Indonesia, India and Turkey, all less than 10.0 % of GDP, while the lowest levels of inward stocks were in Japan (4.1 % of GDP), which is often characterised as a relatively closed economy. Five G20 members had outward stocks of FDI that outweighed their inward stocks: South Africa (2017 data), Japan, Canada, the EU-27 and South Korea (2017 data). Inward and outward stocks were nearly balanced in the United Kingdom with inward stocks slightly higher. Elsewhere among the G20 members, inward stocks of FDI exceeded outward stocks and the largest percentage point differences between inward and outward stocks of FDI relative to GDP were observed in Mexico (2017 data), Brazil, Saudi Arabia, Indonesia, Australia (2017 data) and Turkey.

The data in Map 7.2 are based on the absolute value of FDI stocks held by G20 members and show shares in the world total. The EU-27 had the highest level of inward stocks (including FDI stocks between different EU Member States), accounting for 25.5 % of the world's outward stocks in 2017; it also had the largest share of inward stocks, some 31.7 % of the world total. The United States, China and the United Kingdom were the second, third and fourth ranked G20 members both as investors abroad (in other words, outward investment) and as recipients of FDI (in other words inward investment) in their own economies.

**Figure 7.7:** Stocks of foreign direct investment, 2018
(% of GDP)



(¹) Extra-EU stocks.
(²) 2017.
*Source:* Eurostat (online data codes: bop_fdi6_pos and nama_10_gdp) and the OECD (FDI stocks)

**Map 7.2:** World stocks of foreign direct investment, 2017
(%)

### Inward

| | | | |
|---|---|---|---|
| EU-27 (¹), 25.5 | China, 8.2 | Brazil, 1.9 | Rest of the world, 22.5 |
| | | Mexico, 1.5 | |
| | | Russia, 1.3 | |
| | United Kingdom, 5.4 | India, 1.1 | |
| United States, 23.5 | | Indonesia, 0.7 | |
| | | Saudi Arabia, 0.7 | |
| | Canada, 3.2 | South Korea, 0.6 | |
| | | Japan, 0.6 | |
| | | Turkey, 0.6 | |
| | Australia, 2.0 | S. Africa, 0.5 | |
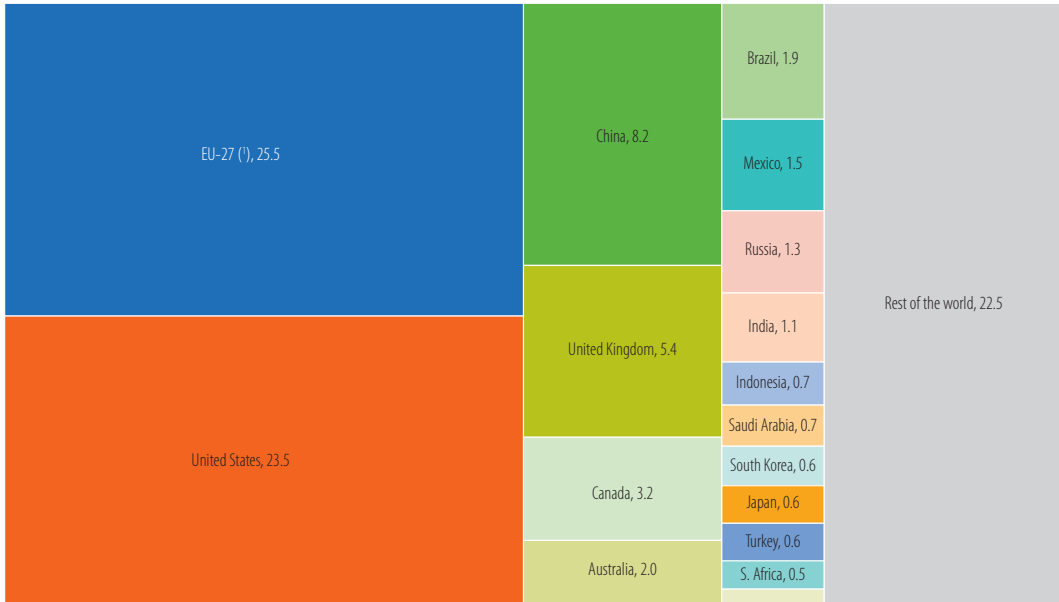
Note: Argentina, 0.2 %.

### Outward

| | | | |
|---|---|---|---|
| EU-27 (¹), 31.7 | China, 5.6 | Australia, 1.4 | Rest of the world, 16.3 |
| | United Kingdom, 5.5 | Russia, 1.2 | |
| | | South Korea, 1.1 | |
| United States, 24.4 | Japan, 4.7 | South Africa, 0.9 | |
| | | Brazil, 0.8 | |
| | | Mexico, 0.5 | |
| | Canada, 4.6 | India, 0.5 | |
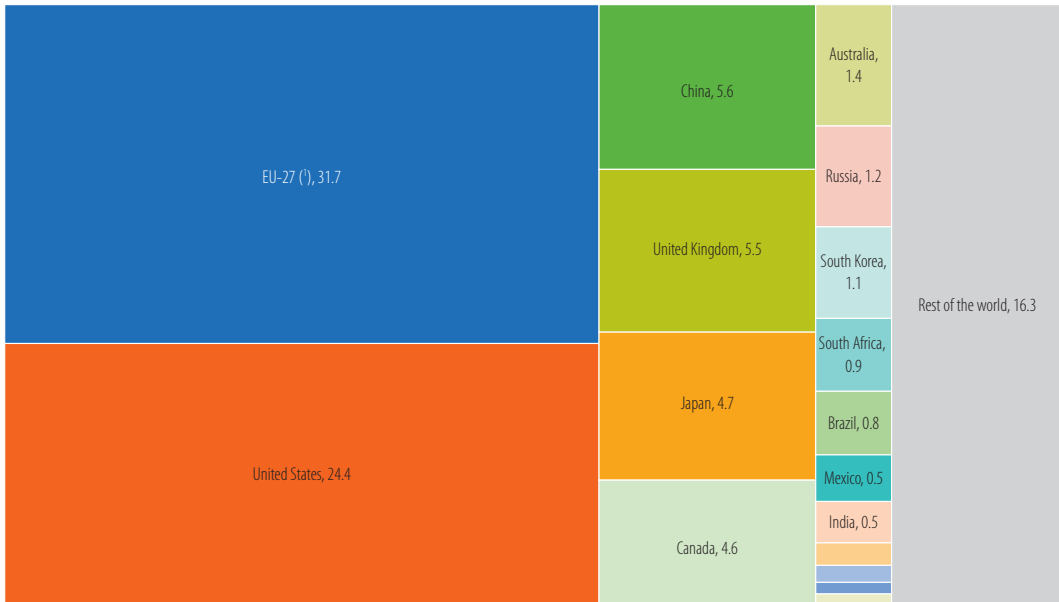
Note: Saudi Arabia, 0.3 %; Indonesia, 0.2 %; Turkey, 0.1 %; Argentina, 0.1 %.

(¹) Includes intra and extra-EU stocks of the EU Member States.

*Source:* the OECD (FDI stocks)

## Official development assistance

Official development assistance (ODA) concerns government aid designed to promote the economic development and welfare of developing countries. Loans and credits for military purposes are excluded. Aid may be provided bilaterally or channelled through a multilateral development agency. The OECD maintains a list of developing countries and territories with income per inhabitant below a certain threshold and only aid to these countries — currently around 150 in number — counts as ODA. A long-standing United Nations target

is that developed countries should devote 0.7 % of their gross national income to ODA.

Figure 7.8 shows Turkey (0.95 % of gross national income) and the United Kingdom (0.70 %) were the only G20 members whose ODA met or exceeded the United Nations target in 2017, with Germany (0.67 %) — one of three EU Member States that are G20 members — close to the target; the two other EU Member States that are G20 members reported somewhat lower ratios, 0.43 % for France and 0.30 % for Italy. Among the other non-EU G20 members, the ratio of ODA to gross national income ranged from 0.08 % to 0.26 %.

**Figure 7.8:** Official development assistance net disbursements relative to gross national income, 2017
(% of GNI)
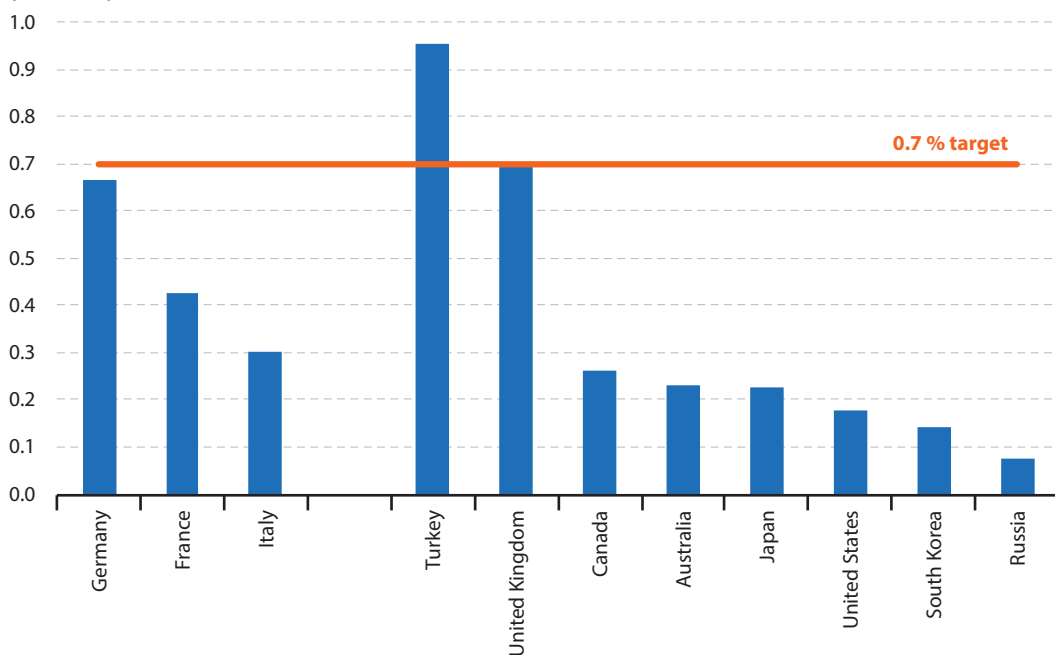


Note: Argentina, Brazil, China, India, Indonesia, Mexico, Saudi Arabia and South Africa, not available.
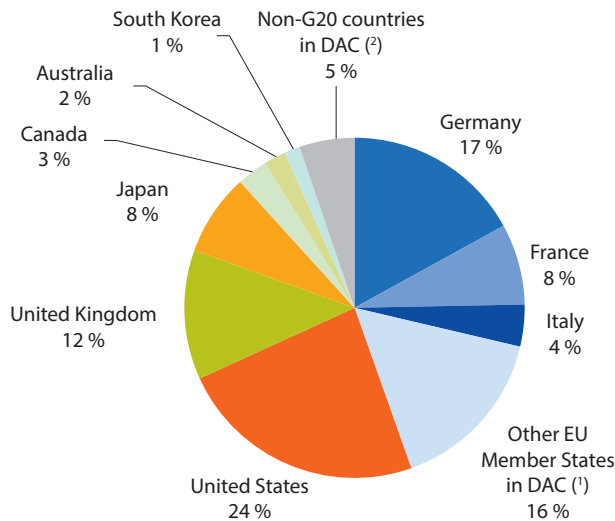*Source:* the OECD (Development finance data)

The second analysis of ODA which is presented in Figure 7.9 shows the origin of contributions from members of the OECD's Development Assistance Committee (DAC). The combined contributions of the 14 EU Member States that are members of the DAC was 45 % of the total ODA provided by DAC members. Germany provided 17 % of the ODA by all DAC members, France 8 %, Italy 4 % and the other 13 EU Member States that are not individually G20 members together provided 16 %. The non-EU G20 members provided 50 % of the DAC total with most of this provided by the United States (24 % of the DAC total), the United Kingdom (12 %) and Japan (8 %). Three countries that are members of the DAC but not members of the G20 or the EU — New Zealand, Norway and Switzerland — together contributed 5 % of the ODA by DAC members.

**Figure 7.9:** Official development assistance, 2017
(% of net disbursements by OECD Development Assistance Committee (DAC) donors)



(¹) Belgium, Denmark, Ireland, Greece, Spain, Luxembourg, the Netherlands, Austria, Portugal, Finland and Sweden.
(²) New Zealand, Norway and Switzerland. The total excludes disbursements by EU institutions.

*Source:* the OECD (Development finance data)

# 8. 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-27 accounted for more than a quarter of world trade in goods in 2018 (see Map 8.1). Goods exported from the EU-27 to non-member countries (extra-EU trade) accounted for 12.0 % of global exports, while goods exported to other EU Member States (intra-EU trade) accounted for 16.8 %

of global exports. In a similar vein, goods imported into the EU-27 from non-member countries accounted for 10.7 % of global imports, while goods imported from other EU Member States accounted for 16.7 % of global imports.

Leaving aside intra-EU trade and focusing on extra-EU trade, the EU-27's share of world trade in goods was the largest in terms of exports, with China having a slightly smaller share (11.5 %), and second largest in terms of imports, behind the United States (12.5 %). The United States had the third largest share of world exports of goods (8.0 %) and China (9.9 %) the third largest share of world imports, with Japan recording the fourth largest shares for both exports (3.5 %) and imports (also 3.5 %). South Korea, the United Kingdom, Canada, Mexico and Russia had the next largest shares of world exports (between 2.1 % and 3.0 %), while the United Kingdom, India, South Korea, Canada and Mexico had shares of world imports that were between 2.3 % and 3.2 %.

**Map 8.1:** World trade in goods, 2018
(%)

**Exports**

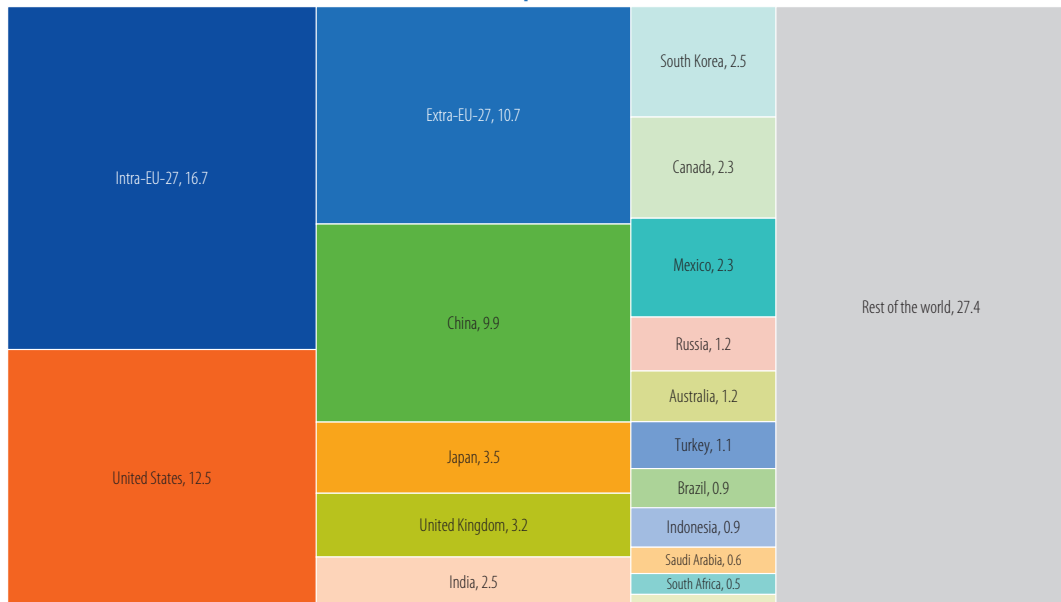| | | |
|---|---|---|
| Intra-EU-27, 16.8 | China, 11.5 | Canada, 2.2 |
| | | Mexico, 2.2 |
| | | Russia, 2.1 |
| | United States, 8.0 | India, 1.6 |
| | | Saudi Arabia, 1.4 |
| Extra-EU-27, 12.0 | | Australia, 1.2 |
| | Japan, 3.5 | Brazil, 1.1 |
| | South Korea, 3.0 | Indonesia, 0.9 |
| | | Turkey, 0.8 |
| | United Kingdom, 2.2 | South Africa, 0.4 |

Rest of the world, 28.7
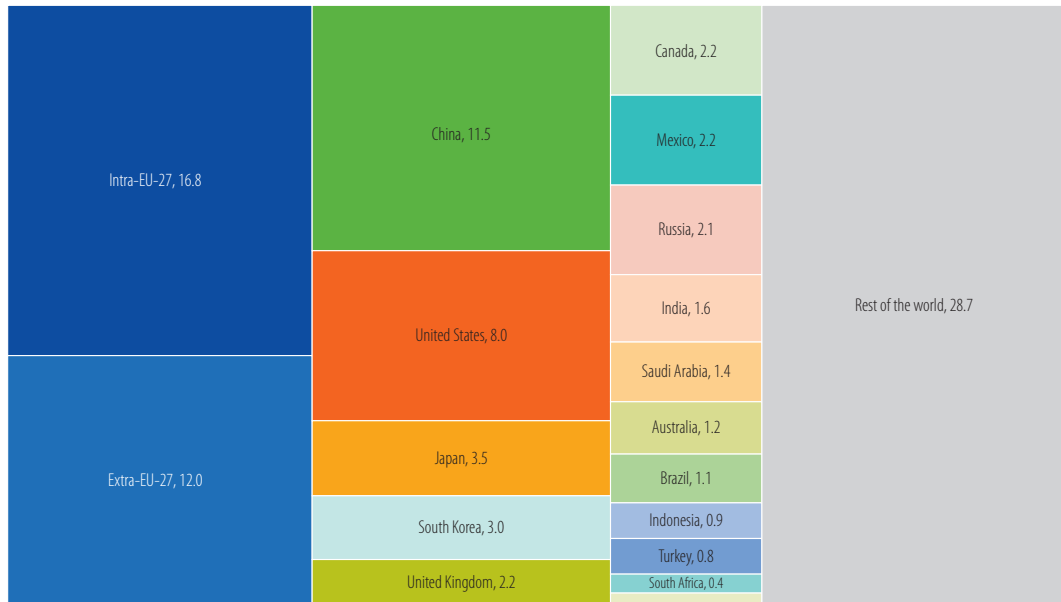
Note: Argentina, 0.3 %.

**Imports**

| | | |
|---|---|---|
| Intra-EU-27, 16.7 | Extra-EU-27, 10.7 | South Korea, 2.5 |
| | | Canada, 2.3 |
| | China, 9.9 | Mexico, 2.3 |
| | | Russia, 1.2 |
| | | Australia, 1.2 |
| United States, 12.5 | Japan, 3.5 | Turkey, 1.1 |
| | | Brazil, 0.9 |
| | United Kingdom, 3.2 | Indonesia, 0.9 |
| | | Saudi Arabia, 0.6 |
| | India, 2.5 | South Africa, 0.5 |

Rest of the world, 27.4

Note: Argentina, 0.3 %.

*Source:* Eurostat (online data codes: bop_eu6_q and bop_c6_a) and the International Monetary Fund (Balance of Payments and International Investment Position Statistics)
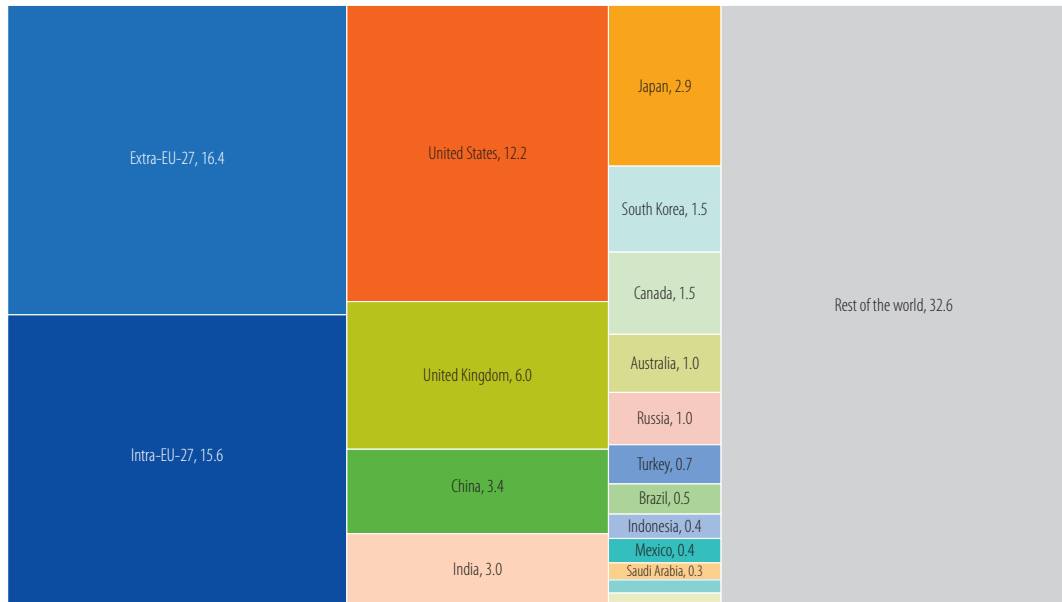
Turning to services (see Map 8.2), the EU-27's contribution to world trade was even greater. Extra-EU trade accounted for 16.4 % of world exports of services and intra-EU trade for 15.6 %, while extra-EU trade accounted for 14.8 % of world imports of services and intra-EU trade for 15.8 %. The EU-27's 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 world trade in services (12.2 % of exports and 9.0 % of imports), followed by China and the United Kingdom, with China having a larger share of imports (8.3 %) and the United Kingdom a larger share of exports (6.0 %). India, Japan and South Korea had the next largest shares both of exports and of imports.
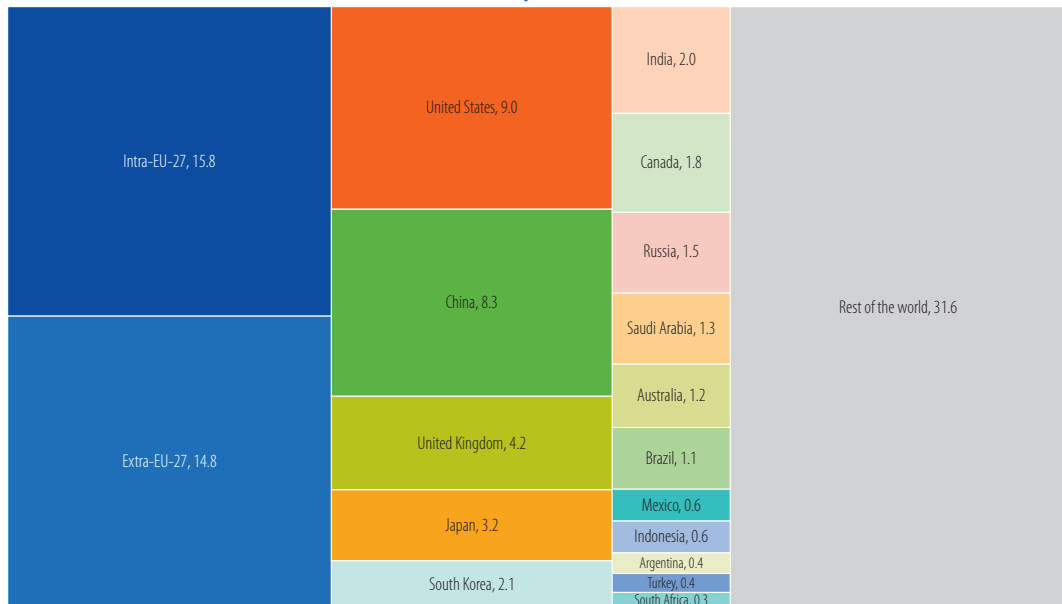
**Map 8.2:** World trade in services, 2018
(%)

### Exports



| Extra-EU-27, 16.4 | United States, 12.2 | Japan, 2.9 | Rest of the world, 32.6 |
| | | South Korea, 1.5 | |
| | | Canada, 1.5 | |
| Intra-EU-27, 15.6 | United Kingdom, 6.0 | Australia, 1.0 | |
| | | Russia, 1.0 | |
| | China, 3.4 | Turkey, 0.7 | |
| | | Brazil, 0.5 | |
| | | Indonesia, 0.4 | |
| | India, 3.0 | Mexico, 0.4 | |
| | | Saudi Arabia, 0.3 | |

Note: South Africa, 0.2 %; Argentina, 0.2 %.

### Imports



| Intra-EU-27, 15.8 | United States, 9.0 | India, 2.0 | Rest of the world, 31.6 |
| | | Canada, 1.8 | |
| | China, 8.3 | Russia, 1.5 | |
| | | Saudi Arabia, 1.3 | |
| | | Australia, 1.2 | |
| Extra-EU-27, 14.8 | United Kingdom, 4.2 | Brazil, 1.1 | |
| | | Mexico, 0.6 | |
| | Japan, 3.2 | Indonesia, 0.6 | |
| | | Argentina, 0.4 | |
| | South Korea, 2.1 | Turkey, 0.4 | |
| | | South Africa, 0.3 | |

*Source:* Eurostat (online data codes: bop_eu6_q and bop_c6_a) 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 8.1 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 international trade in goods statistics.

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 (74.9 %) and South Korea (66.4 %) in Figure 8.1. By contrast, among the G20 members the United States reported the lowest ratio of trade in goods (shown here as the sum of exports and imports of goods) to GDP

(20.6 %) in 2018. The equivalent ratio for the EU-27 was 29.6 %; note that the latter only includes extra-EU trade.

Comparing 2008 with 2018, the ratio of trade in goods to GDP increased notably in Mexico and to a smaller extent in Turkey and a much smaller extent in the EU-27, the United Kingdom, Brazil and Japan. Elsewhere the ratio declined, with relatively large decreases in Indonesia, Argentina, India, South Africa, South Korea and China, and a particularly large decrease in Saudi Arabia.

The EU-27 had a trade surplus for goods equal to EUR 152.1 billion in 2018. Figure 8.2 shows the trade in goods between the EU-27 and the other G20 members and with the rest of the world. In 2018, the EU-27 had relatively large trade deficits with China (EUR 154 billion) and Russia (EUR 79 billion), and smaller ones with several other Asian countries: Indonesia, South Korea, Japan

**Figure 8.1:** International trade in goods, 2008 and 2018
(% of GDP)
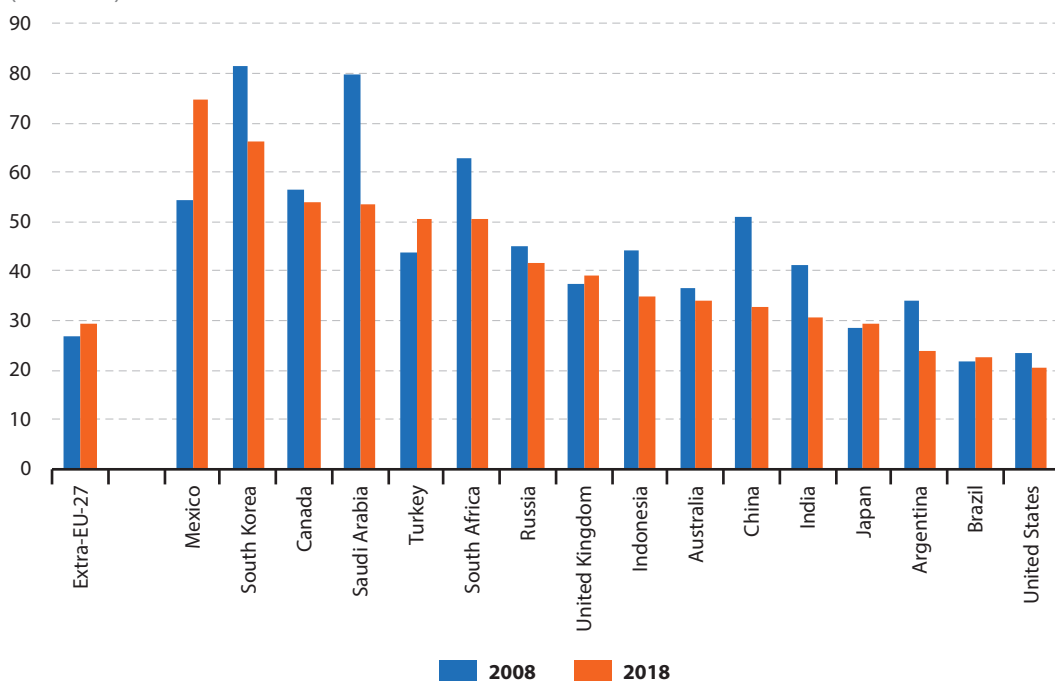


Note: sum of imports and exports relative to GDP.

*Source:* Eurostat (online data codes: bop_eu6_q, bop_c6_a and nama_10_gdp), the International Monetary Fund (Balance of Payments and International Investment Position Statistics) and the United Nations Department of Economic and Social Affairs, Statistics Division (Analysis of Main Aggregates)

and Saudi Arabia. The EU-27 had trade surpluses for goods between EUR 14 billion and EUR 23 billion with Mexico, Canada and Australia, while its largest trade surpluses for goods were with the United Kingdom (EUR 124 billion) and the United States (EUR 138 billion).

In 2018, the EU-27's largest trade partner (exports and imports combined) for goods among the G20 members was the United States, followed by China, the United Kingdom, Russia, Turkey and Japan, all with total trade in excess of EUR 100 billion.

Together, the G20 members accounted for 65.7 % of the EU-27's exports of goods in 2018 and 66.6 % of its imports. Looking at the individual flows, the EU-27's largest export markets in 2018 were the United States and the United Kingdom, followed at some distance by China, whereas for the EU-27's imports from these three countries the positions were different, with China the largest supplier, followed by the United States and then the United Kingdom. The next largest trading partners for goods were the same, regardless whether analysing exports or imports: Russia, Turkey, Japan,

**Figure 8.2:** EU-27 trade in goods with G20 partners, 2018
(EUR billion)
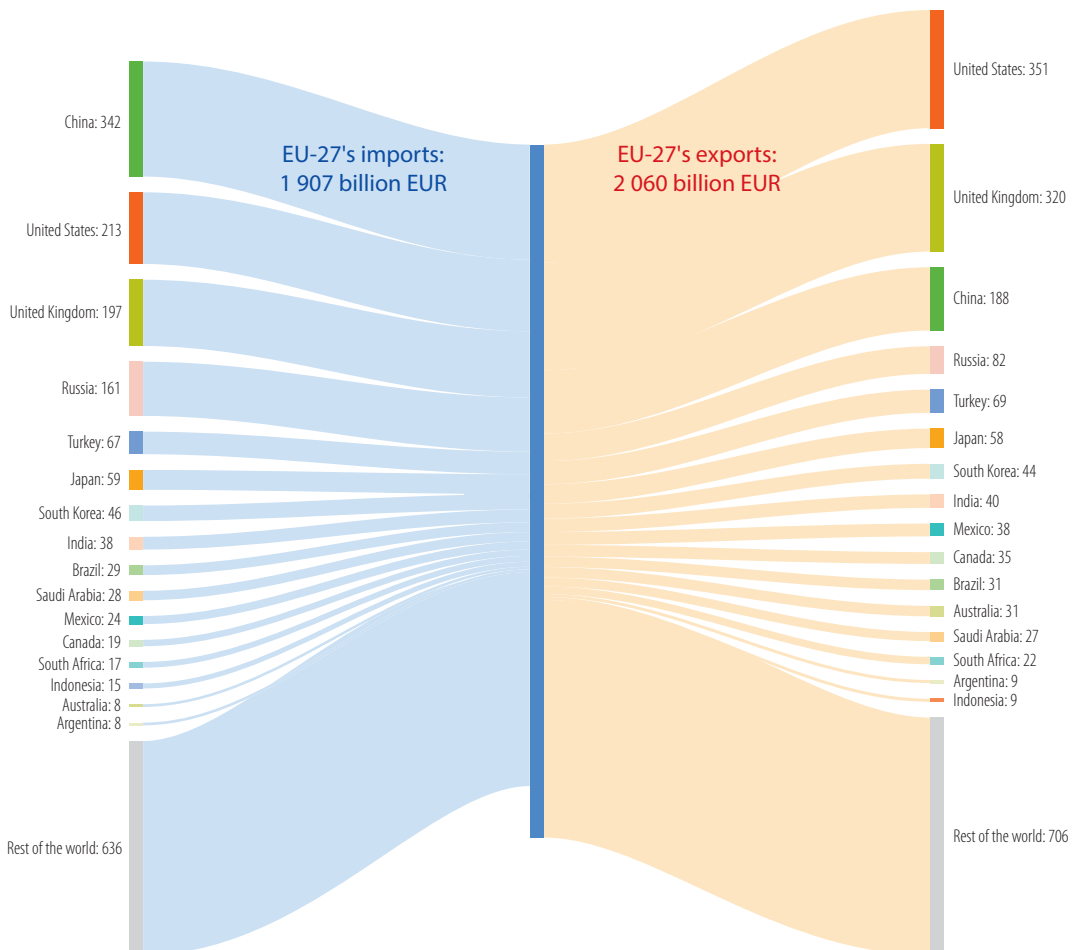


Note: extra-EU trade.

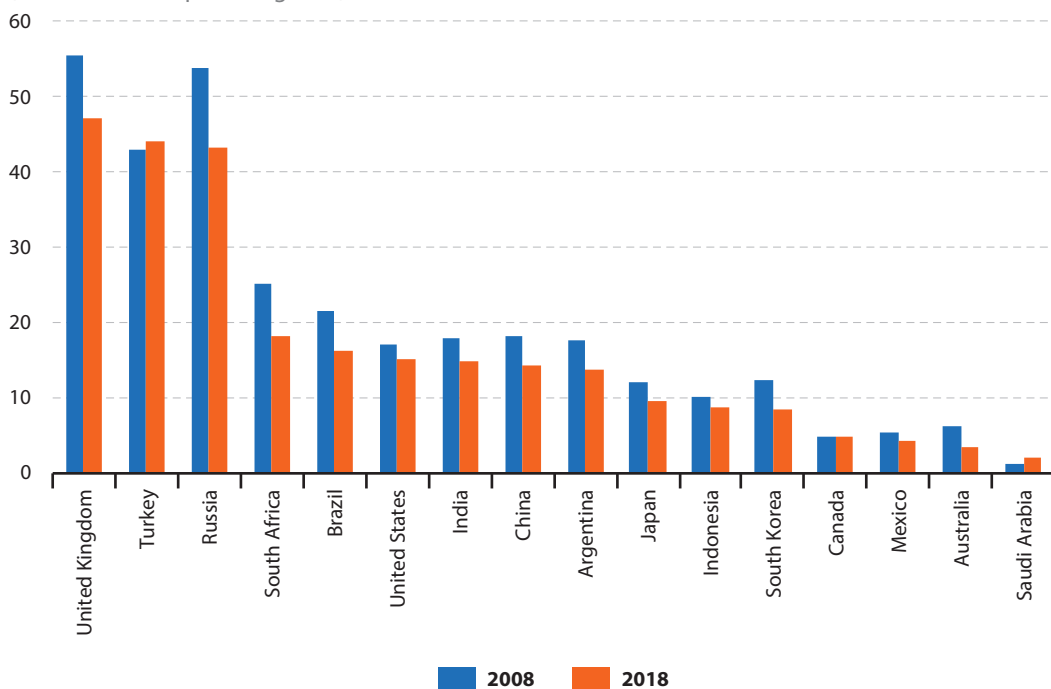*Source:* Eurostat (online data code: ext_st_eu27_2020sitc)

South Korea and India. Indonesia had the smallest share of the EU-27's exports to the G20 members, while Argentina had the smallest share of the EU-27's imports from the G20 members.

Figures 8.3 and 8.4 show the reverse situation, namely the importance of the EU-27 as a trading partner for the other G20 members in terms of international trade in goods; data are available for 2008 and 2018.

Some 47.1 % of all goods exported from the United Kingdom in 2018 were destined for the EU-27, which was the case for slightly

smaller shares from Turkey (44.1 %) and Russia (43.3 %). By contrast, less than one tenth of the goods exported from Japan, Indonesia, South Korea, Canada, Mexico, Australia or Saudi Arabia were destined for the EU-27. Between 2008 and 2018 the EU-27 became a less important export market in relative terms for most of the G20 members, as only Turkey and Saudi Arabia recorded increases in the shares of their exports destined for the EU-27, while there was no notable change for Canada. Decreases of more than 5.0 percentage points were recorded in Brazil, South Africa, the United Kingdom and Russia.

**Figure 8.3:** EU-27 as the destination of exports of goods from G20 partners, 2008 and 2018
(% share of all exports of goods)



*Source:* Eurostat (online data code: ext_st_28msbec) and the United Nations (Comtrade)

The EU-27 was the source of more than half (52.8 %) of all goods imported into the United Kingdom in 2018, around one third of the imports into Russia (35.4 %) and Turkey (32.9 %). India (8.9 %) and Indonesia (6.9 %) were the only G20 members for which the EU-27 supplied less than one tenth of their total imports in 2018. Between 2008 and 2018 the importance of the EU-27 as a source of imports increased in relative terms in Japan, the United States and South Korea, in all of which the EU-27 gained just above 2.0 percentage points of the share of imports. Smaller increases were observed in Argentina, the United Kingdom, Canada and China. Elsewhere, the share of the EU-27 in the total imports of each of the G20 members fell, most notably in Russia (down 5.4 points), India (down 3.1 points) and Saudi Arabia (down 2.3 points).

**Figure 8.4:** EU-27 as the origin of imports of goods into G20 partners, 2008 and 2018
(% share of all imports of goods)
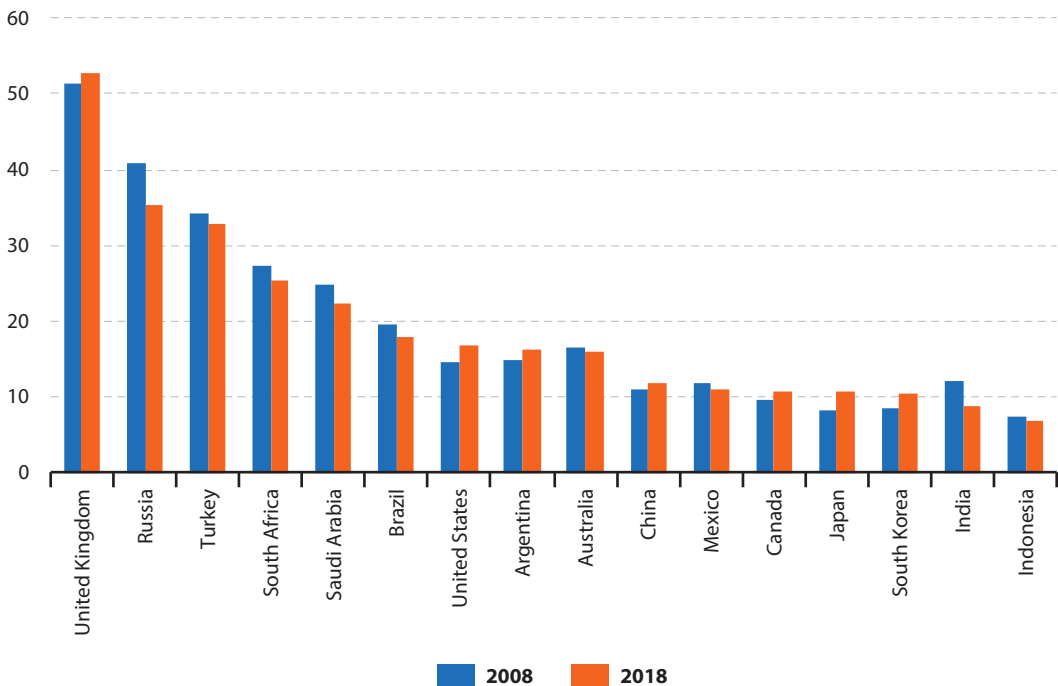


*Source:* Eurostat (online data code: ext_st_28msbec) and the United Nations (Comtrade)

## Trade in services

The final part of this chapter focuses on trade in services. Figure 8.5 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 8.1. Thereafter, the focus is on balance of payments data.

The level of international trade in services (exports and imports combined) relative to overall economic activity (GDP) was higher in the United Kingdom in 2018 than in any of the other G20 members, reaching 23.5 %. The next highest ratios were 13.8 % in South Korea, 13.2 % in Saudi Arabia, 12.9 % in the EU-27 (only extra-EU27), just above 12.5 % in Canada. The lowest levels for this ratio were recorded in Brazil, China and Mexico, all less than 6.0 %.

Comparing 2008 with 2018, the ratio of trade in services to GDP increased by 4.8 points in the United Kingdom, the largest increase among the G20 members, with the EU-27 (up 3.5 points) recording the second highest increase. A majority of G20 members reported an increase in the ratio of trade in services to GDP between 2008 and 2018, although this was not the case in India, China, Indonesia, South Africa, Saudi Arabia or South Korea where there were decreases.

As already noted, the EU-27 was the second largest exporter and importer of services relative to GDP in 2018 among the G20 members. In absolute terms, extra-EU exports were valued at EUR 969 billion and imports at EUR 824 billion, resulting in a trade surplus for services of EUR 145 billion. The EU-27 had trade surpluses for services in 2018 with all G20 members except for India,

**Figure 8.5:** International trade in services, 2008 and 2018
(% of GDP)
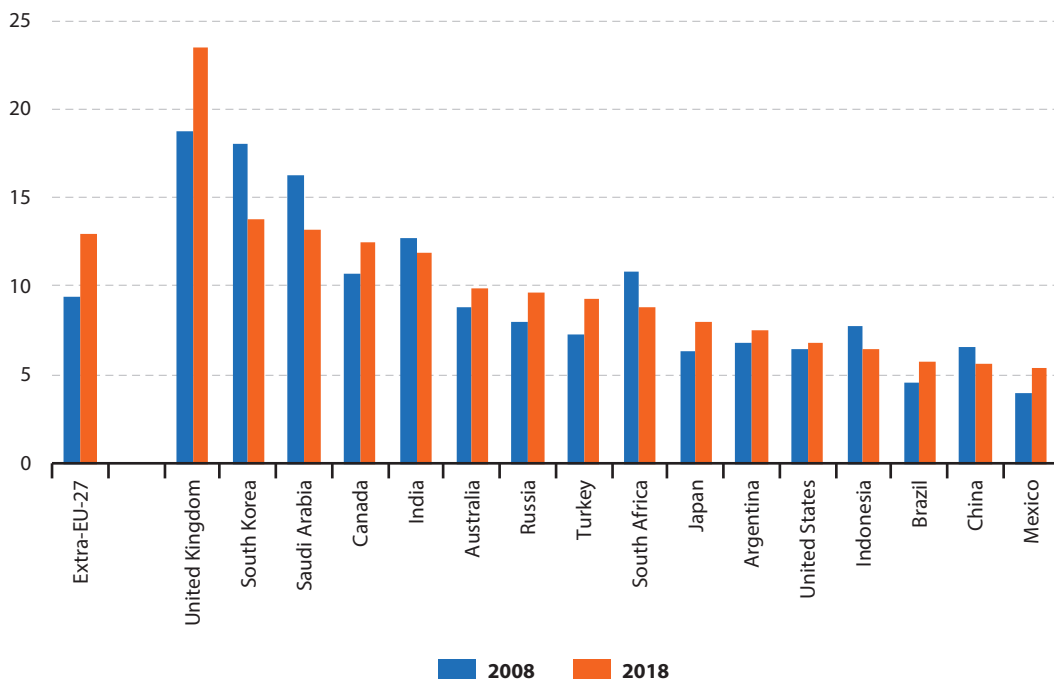


Note: sum of imports and exports relative to GDP.

*Source:* Eurostat (online data codes: bop_eu6_q, bop_c6_a and nama_10_gdp), the International Monetary Fund (Balance of Payments and International Investment Position Statistics) and the United Nations Department of Economic and Social Affairs, Statistics Division (Analysis of Main Aggregates)
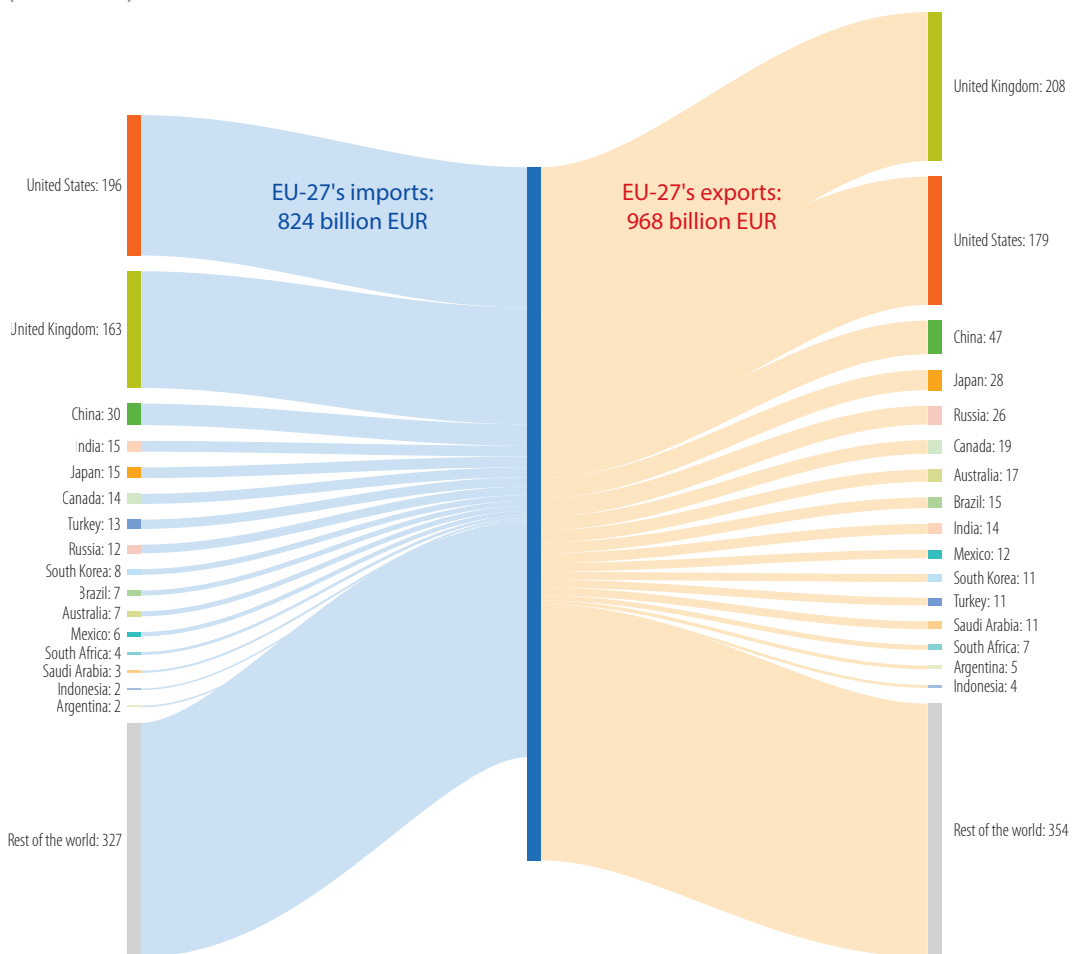
Turkey and the United States. The EU-27's trade surplus for services with the United Kingdom was valued at EUR 45.1 billion in 2018, the largest of its trade surpluses with any of the G20 members.

In 2018, the EU-27's largest trade partners (exports and imports combined) for services among the G20 members were, by far, the United States and the United Kingdom (see Figure 8.6), both with total trade in excess

of EUR 370 billion. The EU-27's smallest trade partners for services among the G20 members were the same as for goods, namely Argentina and Indonesia.

In 2018, the G20 members accounted for more than 60 % of the EU-27's extra-EU trade in services: 63.4 % of exports and 60.3 % of imports, slightly less than the G20's shares of the EU-27's exports and imports of goods.

**Figure 8.6:** EU-27 trade in services with G20 partners, 2018
(EUR billion)



Note: extra-EU trade.
*Source:* Eurostat (online data code: bop_its6_det)

However, two of the G20 members — the United Kingdom and the United States — were the largest partners for the EU-27 for trade in services, as can be seen from Figures 8.7 and 8.8: more than one fifth (21.5 %) of the EU-27's exports of services were destined for the United Kingdom in 2018 and 18.5 % for the United States, while close to one quarter (23.8 %) of the EU-27's imports of services originated in the United States and 19.7 % in the United Kingdom. In

relative terms, the United Kingdom and the United States were more important partners for the EU-27 for trade in services (combining exports and imports) than they were for trade in goods as, to a lesser extent, were Canada and Australia. Argentina's share of the EU-27's exports and imports of goods was similar to its share of the EU-27's exports and imports of services. The remaining G20 members had a larger share of the EU-27's trade in goods than its trade in services and

**Figure 8.7:** EU-27 exports of services to G20 partners, 2013 and 2018
(% share of all extra-EU-27 exports of services)
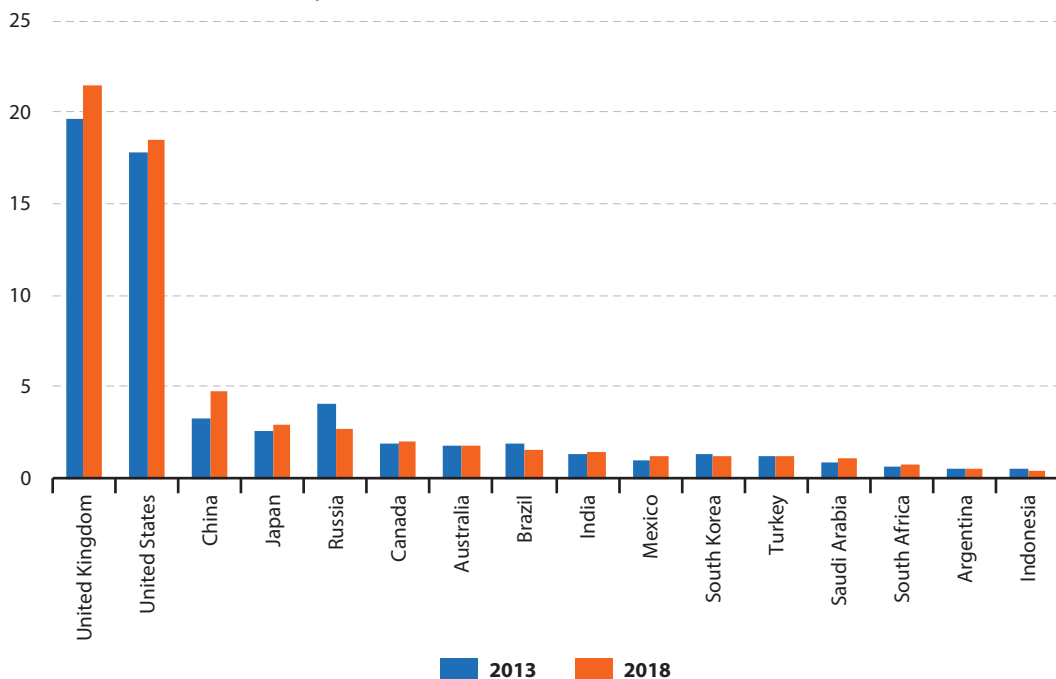


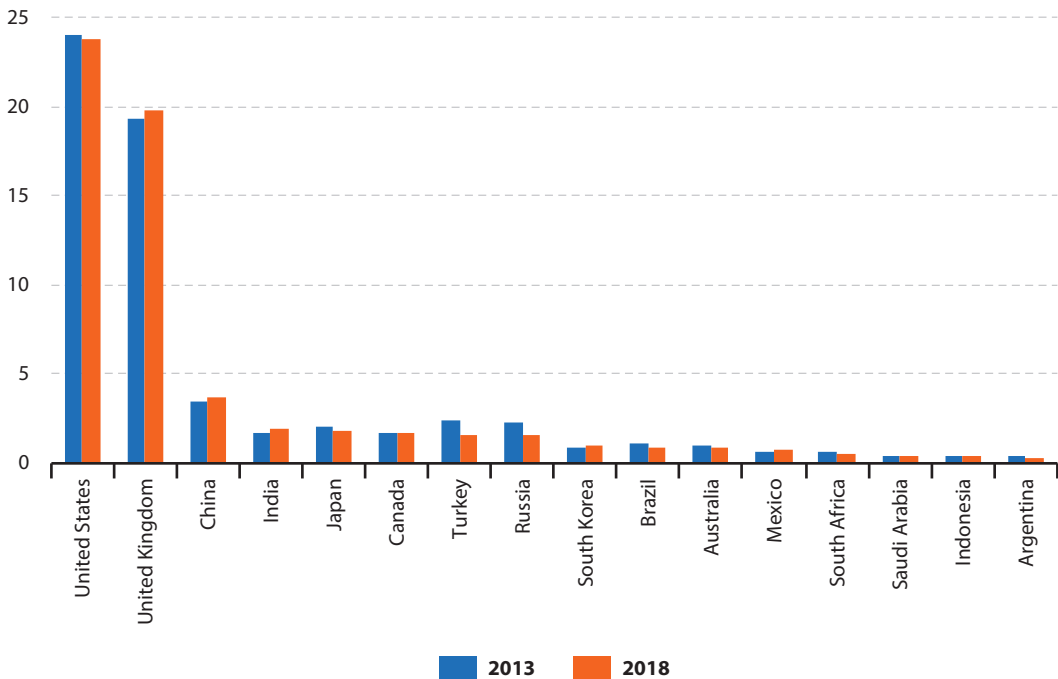*Source:* Eurostat (online data code: bop_its6_det)

this was most notably the case for China, Russia and Turkey.

Between 2013 and 2018, the share of EU-27 exports of services destined for the United Kingdom expanded by 1.9 percentage points and there was an increase of 1.6 points in the share going to China as well as smaller increases for the United States, Saudi Arabia, Japan, Mexico and India as destinations. These changes were mirrored by falls in the

shares of EU-27 exports of services destined for Turkey, Indonesia, South Korea, Brazil and most strongly Russia (down 1.4 points). A broadly similar picture was observed for the EU-27's imports of services, although with the notable difference that the United States' share of imports fell. Increases in shares were largest for the United Kingdom (0.4 points) and China (0.3 points), while decreases in the share of imports were largest for Russia and Turkey (both down 0.8 points).

**Figure 8.8:** EU-27 imports of services from G20 partners, 2013 and 2018
(% share of all extra-EU-27 imports of services)



*Source:* Eurostat (online data code: bop_its6_det)

# 9. Business

## Structure of the economy

Figure 9.1 illustrates the economic structure in the G20 economies, using national accounts data to group economic activities into five broad headings based on the ISIC Rev.3 classification. In 2018, services contributed at least 70 % of the total gross value added in the economies of the United States, the United Kingdom, Brazil, the EU-27, Canada, Australia and Japan — see Figure 9.1. In all of the other G20 countries, services was also the largest of the five activity groupings shown and accounted for more than half of total gross value added except in Saudi Arabia (48.1 %) and Indonesia (45.2 %). Manufacturing was the second largest activity in value added terms in most of the G20 members. Exceptions were Saudi Arabia, Australia and Russia where mining and utilities was the second largest activity. India

and Indonesia were the only G20 members where agriculture, hunting, forestry, fishing contributed more than one tenth of total gross value added and Indonesia was the only one where construction contributed more than one tenth of total gross value added.

Figure 9.2 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).

**Figure 9.1:** Gross value added by economic activity, 2018
(% of total gross value added)
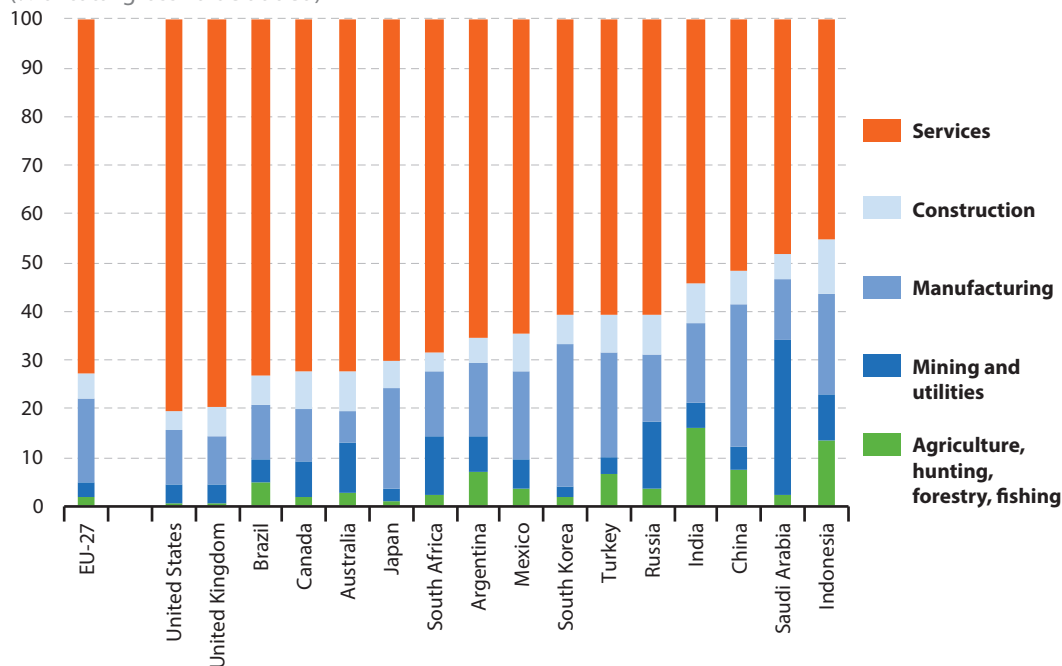


Note: based on ISIC Rev.3.

*Source:* the United Nations Department of Economic and Social Affairs, Statistics Division (Analysis of Main Aggregates)

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-27, large enterprises employed 46.1 % of the total industrial workforce in 2017. The lowest employment shares for large enterprises were observed in South Korea (definition differs) and Turkey, with shares just over one quarter and one third respectively. Japan (2016 data; definition differs), Australia (2016 data; definition differs) and the United Kingdom all recorded employment shares within the industrial workforce for large enterprises that were similar to that in the EU-27 and under half. Elsewhere the share ranged from 50.0 % in Brazil (2014 data) and 52.1 % in Canada (2016 data; definition differs) to 65.2 % in the United States (2015 data; definition differs) and 85.2 % in Russia (definition differs).

**Figure 9.2:** Enterprise size class shares of industrial employment, 2017
(% of the total number of persons employed)
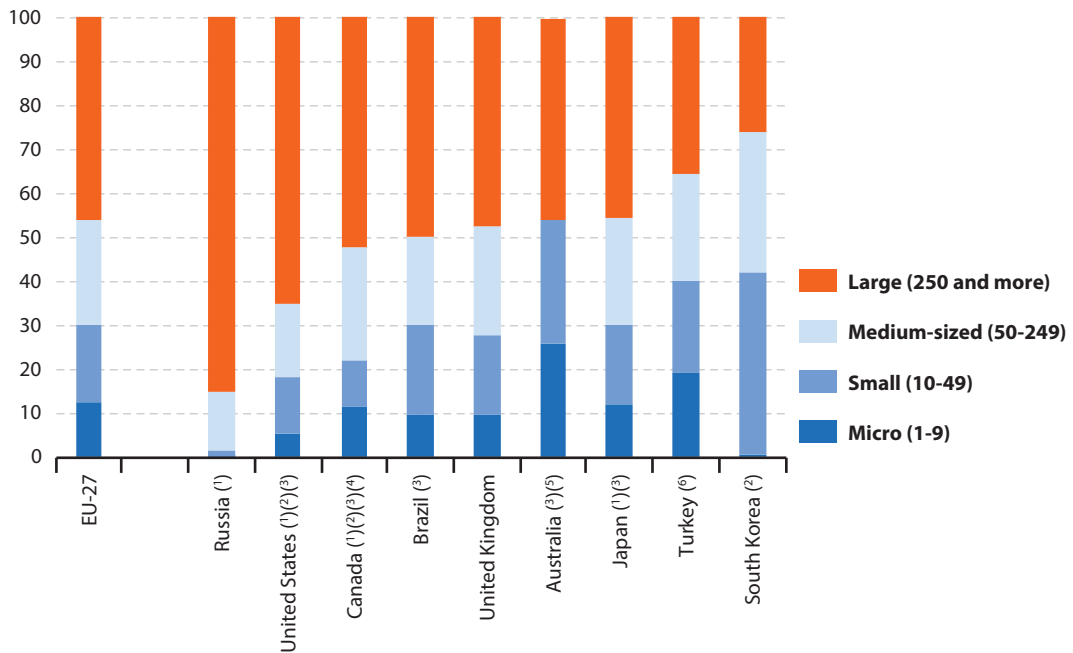


Note: ranked on the share for large enterprises. Argentina, China, India, Indonesia, Mexico, Saudi Arabia and South Africa: not available. Size classes defined in terms of the number of persons employed.

(¹) Share of the total number of employees.
(²) Size classes based on the number of employees.
(³) Brazil: 2014. The United States: 2015. Australia, Canada and Japan: 2016.
(⁴) Micro includes enterprises with 1-19 employees, small includes enterprises with 20-49 employees, medium-sized includes enterprises with 50-299 employees and large includes enterprises with 300 and more employees.
(⁵) Micro includes enterprises with 1-19 persons employed, small includes enterprises with 20-199 persons employed and large includes enterprises with 200 and more persons employed.
(⁶) Micro includes enterprises with 1-19 persons employed and small includes enterprises with 20-49 persons employed.

*Source:* Eurostat (online data code: sbs_sc_sca_r2) and the OECD (SDBS structural business statistics (ISIC Rev. 4))
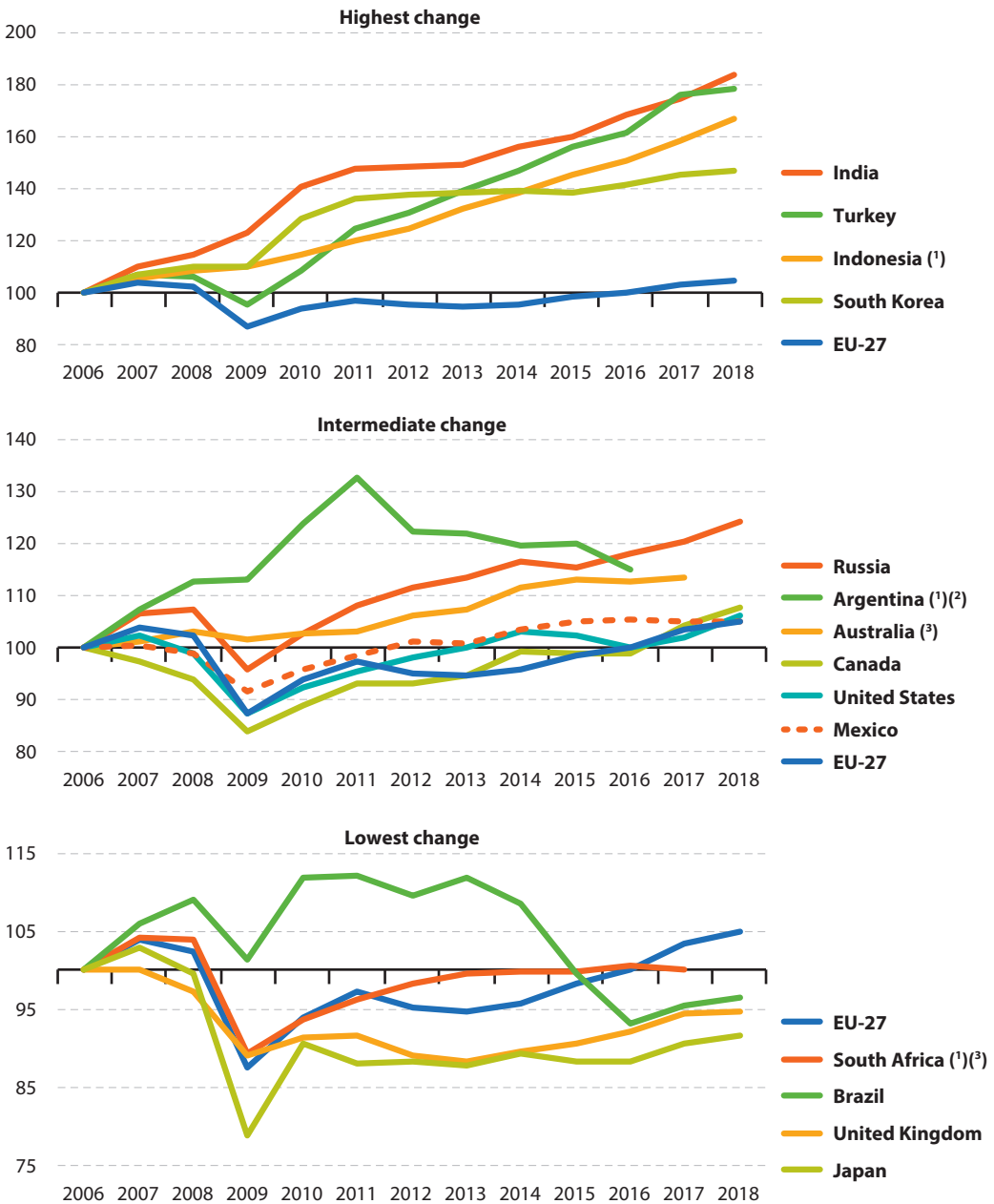
## Short-term business statistics

The line graphs presented in Figures 9.3 and 9.4 illustrate developments for the industrial production index and for the domestic industrial output price index. The indices presented are calculated from annual indices but the underlying series are normally monthly or quarterly data which facilitate a rapid assessment of the economic climate. These figures show the developments for the G20 members; for ease of readability these figures have been presented in several parts with the EU-27 shown in all parts for the purpose of comparison.

For the industrial production index the time series shown starts in 2006 in order to illustrate the impact of the global financial and economic crisis. The impact of the crisis on industrial activities and the subsequent recovery was substantial in several G20 members and this is reflected in the time series shown. Four of the G20 members — Japan, the United Kingdom, Brazil and South Africa — had lower levels (in real terms) of industrial output in 2018 (latest data are for 2017 for South Africa) than they had at their pre-crisis peak: 2007 for South Africa, Japan and the United Kingdom, 2008 for Brazil. In Brazil, industrial output in 2018 was 11.6 % lower than it had been in 2008. By comparison, 2018 was the first year that the level of industrial output in the EU-27 was higher (by 0.9 %) than it had been in 2007, which was the pre-crisis peak level of output. Turning to the G20 members that experienced rapid industrial growth during the years shown in Figure 9.3 — South Korea, Indonesia, Turkey and India — only Turkey recorded an actual fall in output during the crisis, whereas the others experienced a slowdown in industrial activity. After falls in 2008 and 2009, Turkey's industrial output rebounded in 2010 to surpass the 2007 peak and by 2018 Turkish industrial output was 66.5 % higher than it had been in 2007. Over a comparable period, in other words between 2007 (after which growth slowed for a year or two) and 2018, industrial output increased by 37.7 % in South Korea, 58.0 % in Indonesia (manufacturing only) and 66.5 % in India.

**Figure 9.3:** Industrial production index, 2006-2018
(2006 = 100)

**Highest change**



- India
- Turkey
- Indonesia (¹)
- South Korea
- EU-27

**Intermediate change**



- Russia
- Argentina (¹)(²)
- Australia (³)
- Canada
- United States
- Mexico
- EU-27

**Lowest change**



- EU-27
- South Africa (¹)(³)
- Brazil
- United Kingdom
- Japan

Note: different scales used for the three parts of the figure. Argentina, China and Saudi Arabia: not available. The EU-27 is shown in all three parts of the figure for the purpose of comparison.

(¹) Manufacturing only.
(²) 2017 and 2018: not available.
(³) 2018: not available.

*Source:* Eurostat (online data code: sts_inpr_a), the International Monetary Fund (International Financial Statistics) and the OECD (Main economic indicators)

Looking at just the latest annual rates of change, between 2017 and 2018, Indonesia recorded the fastest growth in industrial production, up 5.5 %, just ahead of India (5.2 %) and the United States (4.1 %). All G20 members recorded growth in industrial output in 2018; in the EU-27, an increase of 1.3 % was observed.
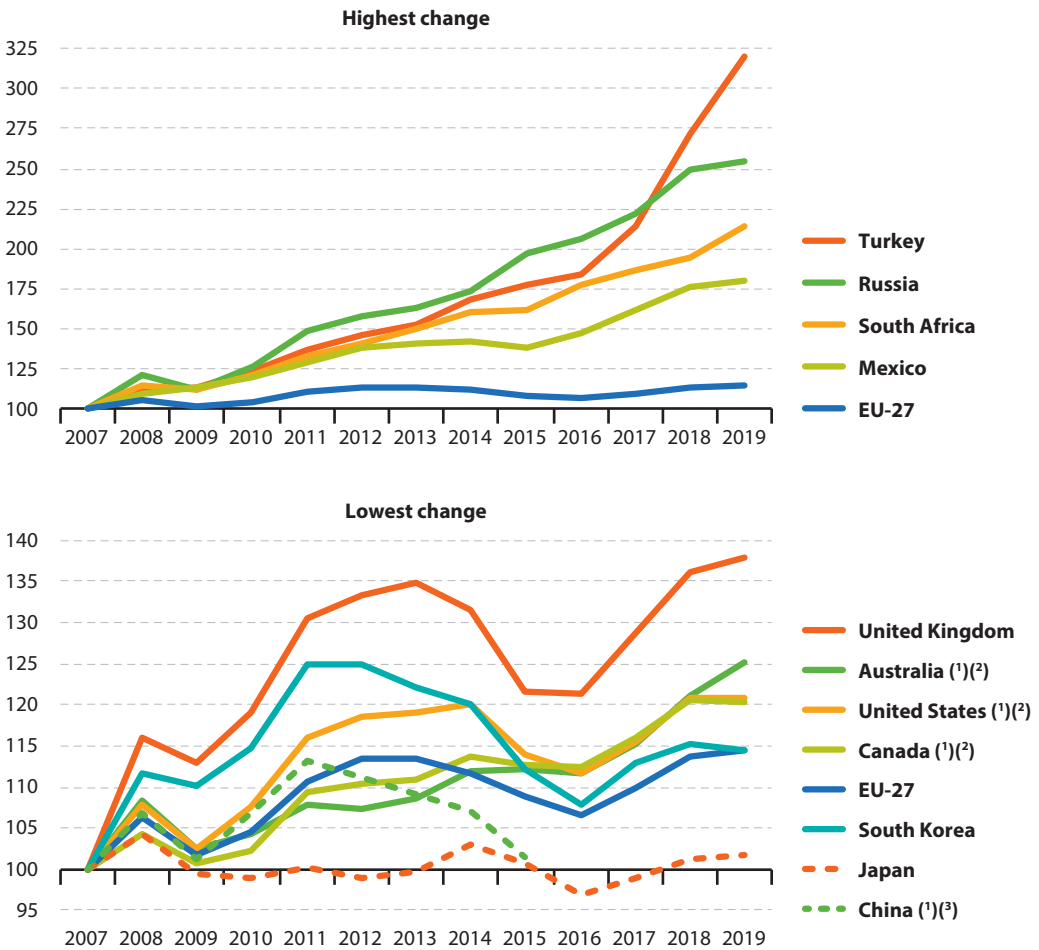
The domestic industrial producer price index is a business cycle indicator whose objective is to measure the development of transaction prices of industrial activities within the domestic market. For this indicator the time series shown starts in 2007, again in order to illustrate the impact of the global financial and economic crisis — prices continued to rise during the early stages of the crisis and it was not until 2009 that there was a slowdown or fall in prices. As such, whereas output generally peaked in 2007, prices generally peaked in 2008.

As was the case for production, not all of the G20 members recorded an actual fall in industrial producer prices during the crisis: Mexico and Turkey recorded increases every year during the period from 2007 to 2019. All of the other G20 members shown in Figure 9.4 recorded a fall in prices between 2008 and 2009. Japan was the only G20 member that still had lower domestic industrial producer prices in 2019 than at the peak level early in the crisis: industrial prices in Japan were 2.5 % lower in 2019 than they had been in 2008, equivalent to an average fall of 0.2 % per year. Comparing the peak price level in 2008 with 2019, increases were relatively subdued — less than 20 % overall and at most 1.6 % per year on average — in South Korea, the EU-27, the United States, Canada, Australia ([1]) and the United Kingdom. Elsewhere, average domestic industrial producer prices rose between 2008 and 2019 more rapidly, ranging from 4.5 % per year in Mexico to 9.9 % in Turkey. The latest annual rates of change (2019 compared with 2018) confirm that industrial producer prices rose at a rapid pace in Turkey, up 17.6 %, followed at some distance by an increase of 10.2 % in South Africa, while prices fell slightly in Canada and South Korea.

([1])  The data for Australia, Canada and the United States only cover manufacturing and relate to a total rather than domestic producer price index.

**Figure 9.4:** Industrial producer price index (domestic), 2007-2019
(2007 = 100)

### Highest change



- Turkey
- Russia
- South Africa
- Mexico
- EU-27

### Lowest change



- United Kingdom
- Australia ($^1$)($^2$)
- United States ($^1$)($^2$)
- Canada ($^1$)($^2$)
- EU-27
- South Korea
- Japan
- China ($^1$)($^3$)

Note: different scales used for the three parts of the figure. Argentina, Brazil, India, Indonesia and Saudi Arabia: not available. The EU-27 is shown in both parts of the figure for the purpose of comparison.

($^1$)  Total producer price index.
($^2$)  Manufacturing.
($^3$)  2016-2019: not available.

*Source:* Eurostat (online data code: sts_inppd_a) and the OECD (Main economic indicators)
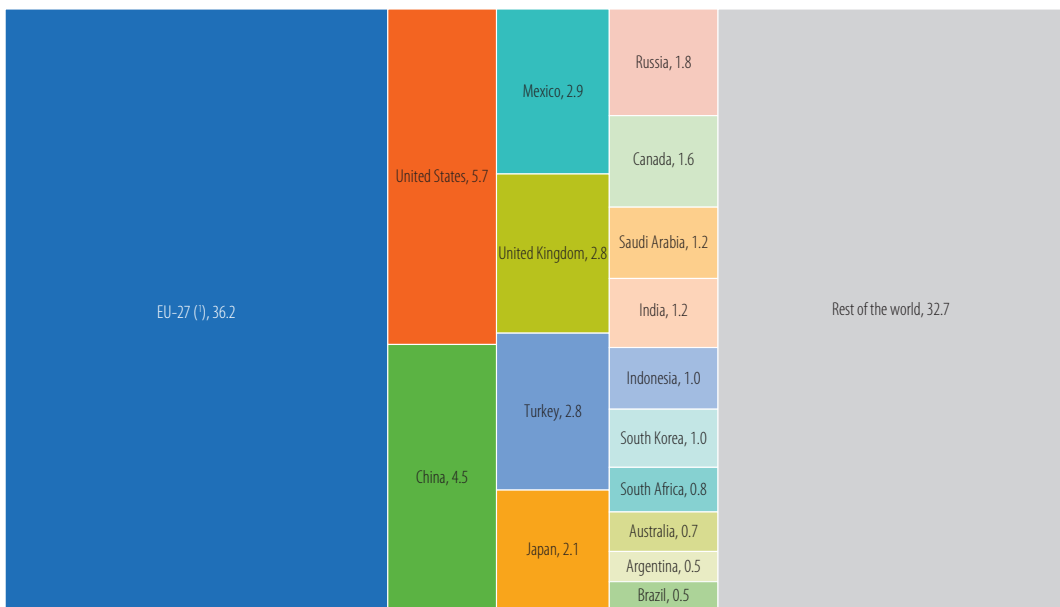
## Tourism

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), regardless of the purpose of travel, including people travelling for business, pleasure or other reasons. 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.

There were around 1.34 billion international tourist arrivals worldwide in 2017, among which 485 million were in the EU-27 (see Map 9.1): note that this EU-27 total includes arrivals in EU Member States of tourists from other Member States. As such, the EU-27 received 36.2 % of all international tourist arrivals worldwide, more than half the 67.3 % share received by all G20 members. The next largest G20 tourism markets in terms of international tourist arrivals were the United States (77 million arrivals, 5.7 % of the world total) and China (61 million, 4.5 %). Shares between 2 % and 3 % were observed for Mexico, the United Kingdom, Turkey and Japan.

**Map 9.1:** International tourist arrivals at frontiers, 2017
(%)



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.

($^1$) Includes intra-EU arrivals.

*Source:* the World Bank (World Development Indicators)

Relative to population size, there were 1 087 international tourist arrivals per 1 000 inhabitants in the EU-27 (including intra-EU arrivals) in 2017, by far the highest ratio among the G20 members, nearly double the next highest ratios which were around 570 per 1 000 inhabitants in the United Kingdom and Canada and more than six times the world average of 179 per 1 000 inhabitants (see Figure 9.5). Most of the remaining G20 members received between 150 and 490 international tourist arrivals per 1 000 inhabitants in 2017, with some of the G20's most populous countries — Indonesia, China, Brazil and India — well below this range.

Between 2007 and 2017, the number of international arrivals in the EU-27 of tourists (including intra-EU arrivals) relative to the size of the population increased by 34 % from 809 per 1 000 inhabitants to 1 087 per 1 000 inhabitants. Worldwide, the number of international tourist arrivals relative to population size increased by 30 % between these years. Japan's ratio increased greatly, more than trebling, while the ratio of international tourist arrivals to population more than doubled in India and Indonesia. In the United States, Turkey, Brazil, the United Kingdom, Saudi Arabia, China, Russia and Canada, growth for this ratio that was below the world average, while the ratio fell 2.5 % in South Africa.

**Figure 9.5:** International tourist arrivals at frontiers, 2007 and 2017
(number per 1 000 inhabitants)
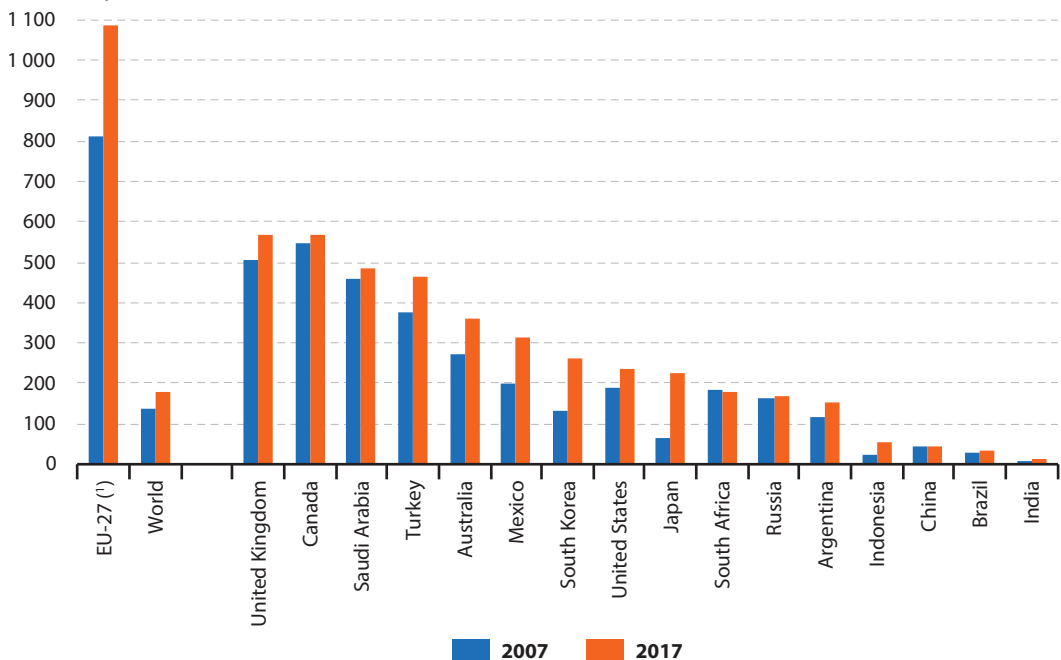


Note: for some countries there may be differences in the definitions used. Data may refer to visitors rather than tourists, thereby including some or all same-day visitors, cruise passengers, and crew members. Data collection methods may vary, with data collected from border statistics or from tourism 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) Includes intra-EU arrivals.

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

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. International tourism receipts worldwide were valued at EUR 1.35 trillion in 2017, among which EUR 395 billion were

in the EU-27 (see Map 9.2): note that this EU-27 total includes not only receipts from outside of the EU, but also receipts from intra-EU tourism. As such, the EU-27 received 29.3 % of all international tourism receipts worldwide, more than the share received by any of the other G20 members, which collectively received 39.4 % of the world total. The next largest G20 tourism market in terms of international tourism receipts was the United States (16.5 % of the world total). Shares between 2.1 % and 3.4 % were observed for the United Kingdom, Australia, Japan, China and Turkey.

**Map 9.2:** **International tourism receipts, 2017**
(%)
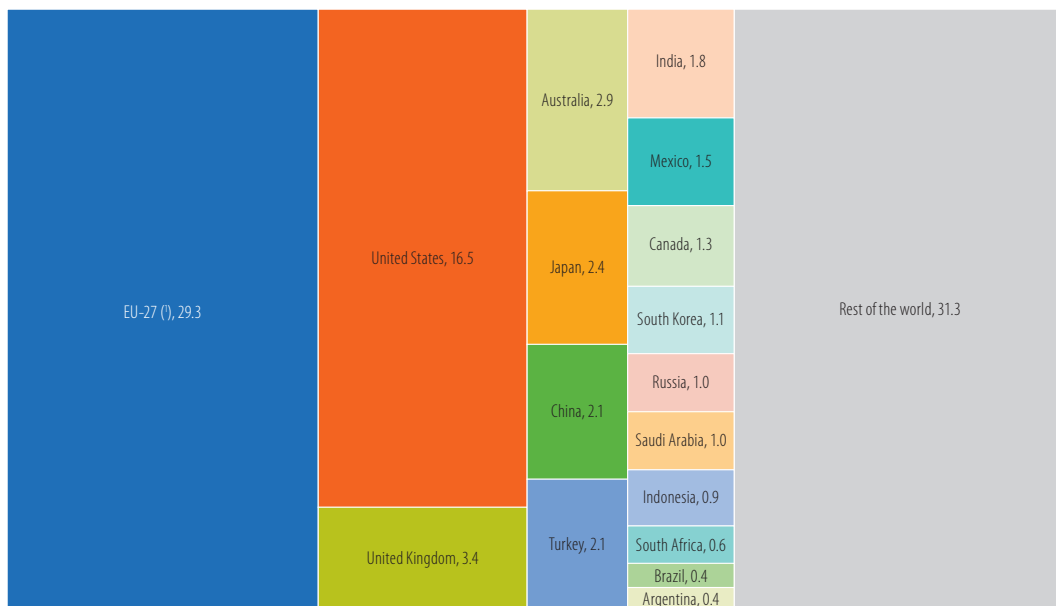


(¹) Extra- and intra-EU receipts.
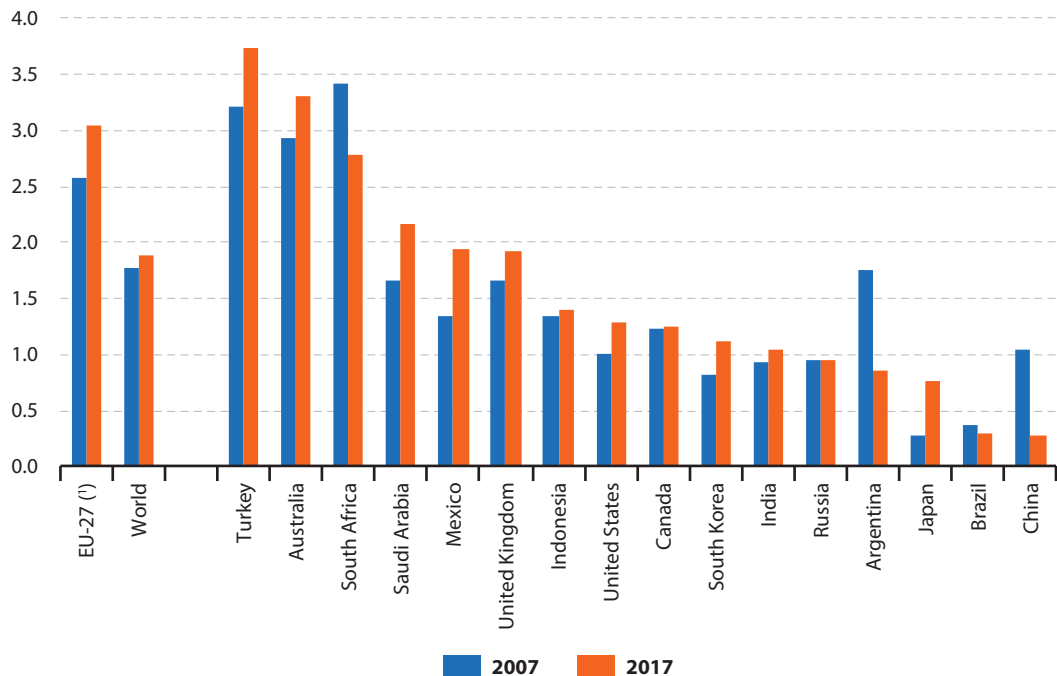*Source:* the World Bank (World Development Indicators)

These international tourist receipts were valued at 3.7 % of GDP in Turkey, 3.3 % in Australia, 3.0 % in the EU-27 (including extra- and intra-EU receipts) and 2.8 % in South Africa, the highest such ratios in 2017 among the G20 members (see Figure 9.6). In most of the other G20 members, international tourism receipts ranged from 0.8 % to 2.2 % of GDP, although Brazil and China (both 0.3 %) were below this range; the world average was 1.9 %.

Between 2007 and 2017, the ratio of international tourism receipts to GDP increased by 0.1 points worldwide and by 0.5 points in the EU-27. Among the non-G20 members this ratio fell in Argentina (0.9 points), China (down 0.8 points) and South Africa (down 0.6 points) while it was relatively unchanged (an increase or decrease of at most 0.1 points) in Brazil, Russia, Canada, Indonesia and India. Growth in this ratio was strongest in Japan, Saudi Arabia, Turkey (all up 0.5 points) and Mexico (up 0.6 points). In relative terms, the largest increase was in Japan, where international tourist receipts more than doubled from 0.3 % of GDP in 2007 to 0.8 % in 2017. The largest relative decrease was in China, where GDP growth outstripped the growth in international tourism receipts such that the ratio in 2017 (0.3 %) was just over one quarter of its level in 2007 (1.0 %).

**Figure 9.6:** International tourism receipts, 2007 and 2017
(% of GDP)



(¹) Extra- and intra-EU receipts.

*Source:* the World Bank (World Development Indicators)

# 10. Research and development

## 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.

GERD in the EU-27 was EUR 280 billion in 2017 and EUR 295 billion in 2018. The relation between the level of GERD and gross domestic product (GDP) is known as R & D intensity (see Figure 10.1), and it stood in the EU-27 at 2.15 % in 2017. By far the highest R & D intensity in 2017 among the G20 members was in South Korea, where GERD was equivalent to 4.55 % of GDP. Japan, the United States and China show

that they also recorded relatively high R & D intensities, all above 2.00 % and therefore also above the world average of 1.68 % (2016 data). Indonesia recorded the lowest R & D intensity among the G20 members, with GERD equivalent to 0.24 % of GDP.

An alternative calculation based on R & D expenditure can also be seen in Figure 10.1, namely the level of GERD relative to population size. 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 EUR 1 000. Australia (2015 data), Canada, the EU-27 and the United Kingdom completed the group of G20 members with relatively high GERD per inhabitant, all in the range of EUR 590-890. Among the other G20 members, only China, Saudi Arabia (2013 data), Russia and Brazil (2016 data) recorded GERD of at least EUR 100 per inhabitant, while this indicator was below EUR 10 per inhabitant in Indonesia.

**Figure 10.1:** Gross domestic expenditure on research and development, 2017
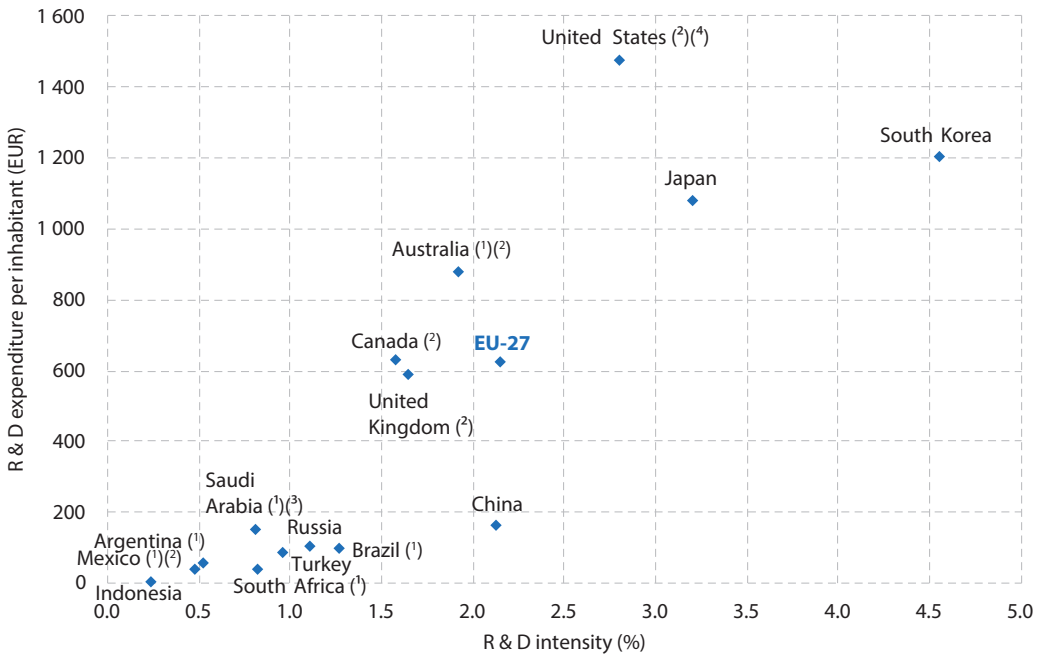


Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom and more recent data are available for some countries from UNESCO. India: not available.

(¹) Saudi Arabia: 2013. Australia: 2015. Argentina, Brazil, Mexico and South Africa: 2016.

(²) Provisional or estimate.

(³) Based on R&D budget, not expenditure.

(⁴) Definition differs.

*Source:* Eurostat (online data codes: rd_e_gerdtot and ert_bil_eur_a), the United Nations Educational, Scientific and Cultural Organisation (UIS: Science & Technology), the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019) and the World Bank (World Development Indicators)

Looking at R & D expenditure by the source of funds describes the sector of origin of the R & D funding rather than the sector where the R & D was performed. Funding for R & D may come from the following sectors: business enterprises, government, higher education institutions, private non-profit making organisations and abroad.

Nearly three fifths (59 %) of total R & D expenditure within the EU-27 in 2017 was funded by business enterprises, while three tenths (30 %) was funded by government and a further 9 % from abroad (foreign funds) — see Figure 10.2. Funding by the higher education and private non-profit sectors was relatively small, each around 1 % of the total. China (79 %), Japan (78 %), South Korea (76 %) and the United States (64 %) all reported larger shares of funding from the business enterprise sector than was observed in the EU-27 and smaller shares from the

government sector. The United Kingdom (2016) was the only other G20 member that reported a majority (52 %) of R & D funding originating from the business enterprise sector. In five G20 members the share of funding from the business enterprise sector was lower than that from the government sector, with the business enterprise sector's share at 39 % in South Africa (2016 data), 30 % in Russia, 21 % in Mexico (2016 data), 18 % in Argentina (2016 data) and 8 % in Indonesia.

The higher education sector provided more than 5 % of funding in only two G20 members, its share reaching 12 % in Canada and 13 % in Turkey. Funding from abroad only exceeded 6 % in the EU-27 (9 %), Canada (11 %), South Africa (12 %; 2016 data) and the United Kingdom (16 %; 2016 data). The highest share of funding that came from private non-profit making organisations was recorded in Mexico, at 6 % (2016 data).

**Figure 10.2:** Source of funds for gross domestic expenditure on research and development, 2017 (%)
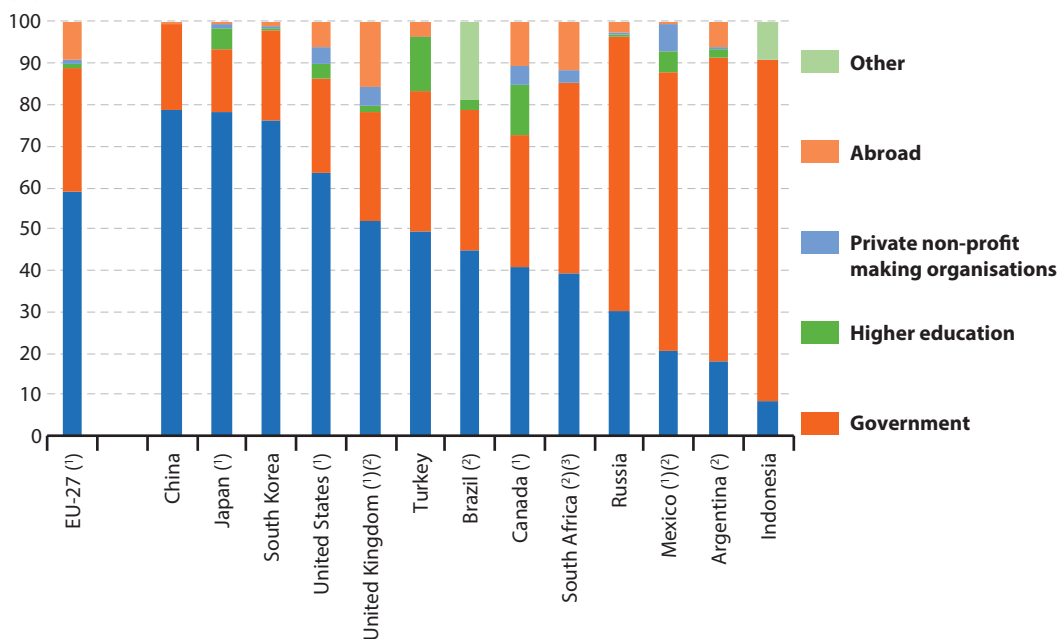


Note: more recent data are available for some countries from UNESCO. Australia, India and Saudi Arabia: not available.

(¹) Estimates or provisional.
(²) 2016.
(³) The share for higher education is included elsewhere.

*Source:* Eurostat (online data code: rd_e_fundgerd) 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). 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 by a person with the average number of hours of a full-time worker. 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.

Figure 10.3 puts the figures on the size of the R & D workforce into context, showing them relative to the overall size of the workforce. In 2017, R & D personnel made up 1.76 % of all employment in South Korea, the highest share among the G20 members. The share of 1.41 % observed for the EU-27 was the second highest share, followed closely by the United Kingdom (1.38 %) and Japan (1.35 %). Canada and Russia were the only other G20 members to record shares over 1.00 % and in fact the next highest share was 0.54 % in Turkey. Shares of 0.11 % were observed for Mexico (2013 data) and India (2015 data) while the lowest share, 0.05 %, was recorded for Indonesia. A minority of the G20 members experienced a decrease in the R & D share of the workforce between 2007 and 2017, with falls of less than 0.10 percentage points in

**Figure 10.3:** Research and development personnel, 2007 and 2017
(% of total employment, based on full-time equivalents)
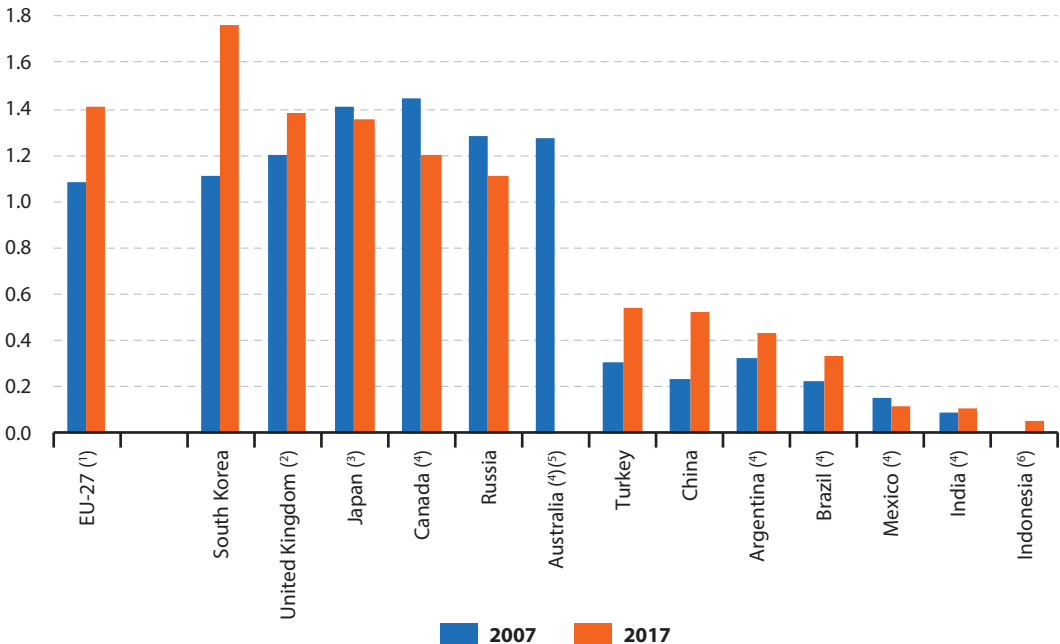


Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom. Saudi Arabia and the United States: not available.

(¹) 2007: estimate.
(²) 2007: estimate. 2017: provisional.
(³) Definition differs.

(⁴) India: 2005 instead of 2007. Australia: 2008 instead of 2007. Mexico: 2013 instead of 2017. Brazil: 2014 instead of 2017. India: 2015 instead of 2017. Argentina and Canada: 2016 instead of 2017.
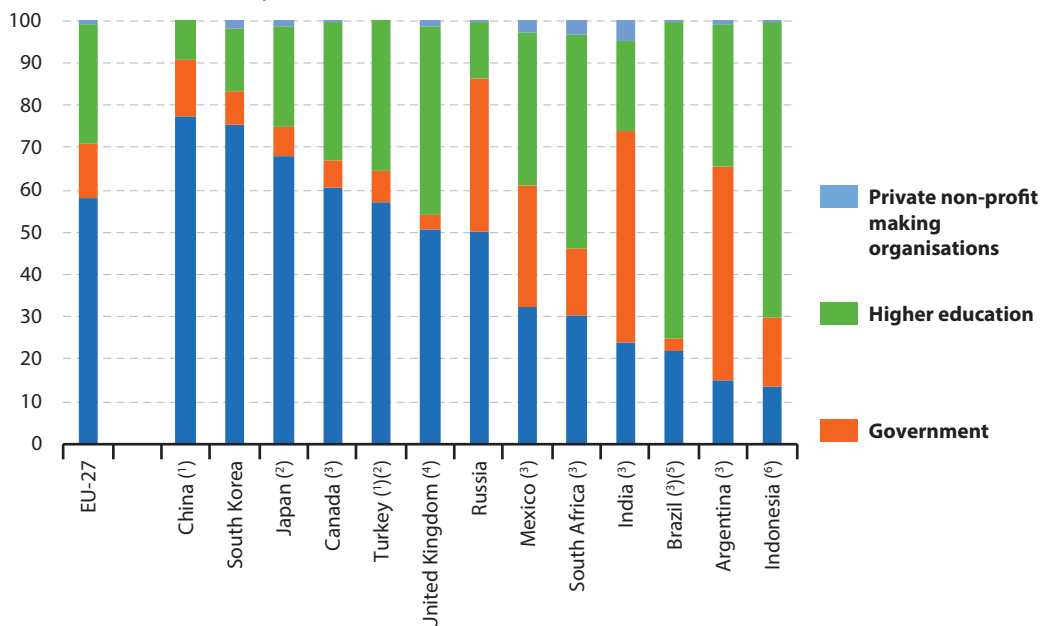(⁵) 2017: not available.
(⁶) 2007: not available.

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

Mexico (2007-2013) and Japan and larger falls in Russia (down 0.17 points) and Canada (0.24 points; 2007-2016). Increases in excess of 0.20 percentage points were observed in Turkey (up 0.23 points), China (0.29 points), the EU-27 (0.33 points) and most notably South Korea (0.65 points).

Based on where they perform their work, R & D personnel can be classified to the following sectors: business enterprises, government, higher education institutions and private non-profit making organisations. In 2017, more than half (58 %) of all R & D personnel (in full-time equivalents) in the EU-27 were employed in the business enterprise sector, around one quarter (28 %) 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 75 % in South Korea and was also higher than in the EU-27 in Japan (68 %) and Canada (60 %). By contrast, less than one third of all R & D personnel worked in the business enterprise sector in Mexico (2013 data), South Africa (2015 data), India (2015 data), Brazil (2014 data), Argentina (2016 data) and Indonesia. In Brazil and Indonesia, the higher education sector was the dominant employer, with 74 % and 70 % of the total respectively; South Africa was the only other G20 member where the share of R & D personnel in this sector exceeded one half. In Argentina and India, 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, 2017**
(%, based on full-time equivalents)



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom. Australia, Saudi Arabia and the United States: not available.

(¹) Private non-profit making organisations: not available.
(²) Definition differs.
(³) Mexico: 2013. Brazil: 2014. India and South Africa: 2015. Argentina and Canada: 2016.
(⁴) Provisional.

(⁵) Breakdown incomplete: shares have been rescaled to sum to 100 %.
(⁶) Higher education: excluding other supporting staff, technicians and equivalent staff.

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

# C Environment and natural resources

# 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.

## Air transport

Worldwide, the number of air passengers carried in 2018 was around 4.2 billion, an overall increase of 92 % compared with 2008. Relative to the size of the population, the number of air passengers worldwide in 2008 was 327 per 1 000 inhabitants and this ratio increased by 71 % to 557 per 1 000 inhabitants in 2018 (see Figure 11.1).

In 2018, the highest ratio of air passengers to population among the G20 members

was 3 028 per 1 000 inhabitants in Australia, followed by 2 717, 2 487 and 2 412 per 1 000 inhabitants in the United States, the United Kingdom and Canada respectively. Four other G20 members — South Korea, the EU-27 (incomplete data), Turkey and Saudi Arabia — also reported more passengers carried than their number of inhabitants. At the other end of the ranking, India reported 121 air passengers per 1 000 inhabitants in 2018, far less than the ratio of 406 per 1 000 inhabitants in Argentina which was the next lowest ratio among the G20 members.

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 2008 and 2018 all of the G20 members recorded faster growth for the number

**Figure 11.1:** **Number of air passengers carried, 2008 and 2018**
(per 1 000 inhabitants)
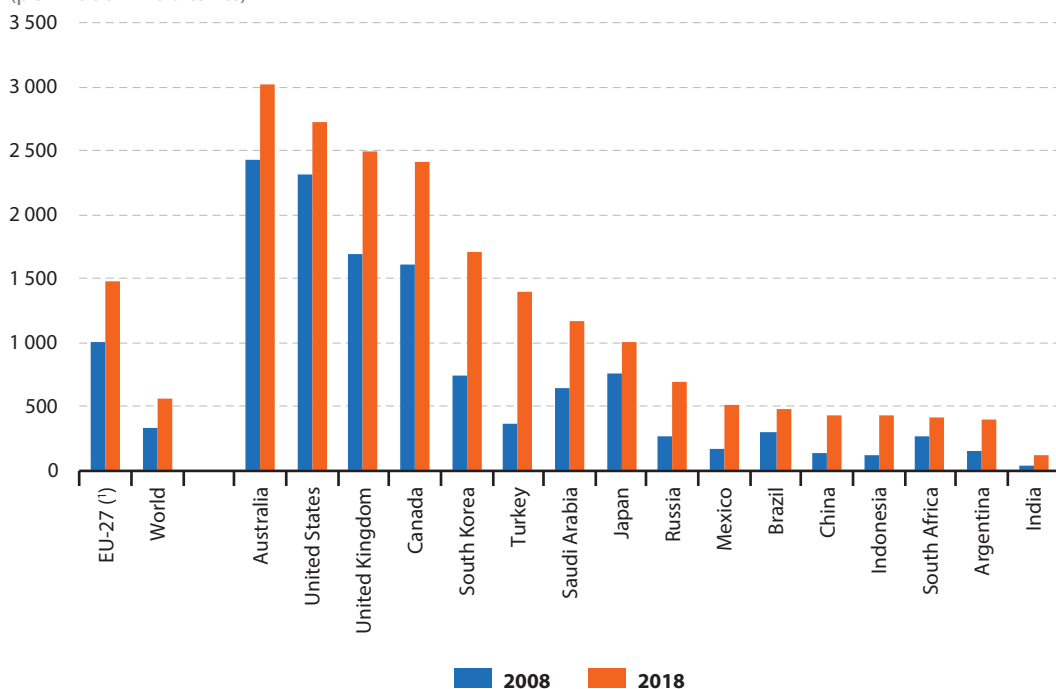


(¹) Excluding Denmark and Sweden; 2017 data for Slovakia.

*Source:* the World Bank (World Development Indicators); data with a different definition are published by Eurostat (online data codes: avia_paoc and demo_gind)

of air passenger than for inhabitants, such that the ratio shown in Figure 11.1 increased. During this period, the number of passengers relative to population size grew (in percentage terms) most strongly in Turkey where it nearly quadrupled, while it also more than trebled in Indonesia, China and Mexico and more than doubled in India, Argentina, Russia and South Korea. The weakest overall growth was reported for the United States where the ratio of air passengers to population size was 18 % higher in 2018 than it had been in 2008; for comparison, the next lowest growth was 25 % in Australia.

In terms of passenger numbers, the busiest airport in the world in 2017 was Hartsfield-Jackson Atlanta in the United States, with 103.9 million passengers, followed by Beijing Capital International in China with 95.8 million (see Figure 11.2). The busiest airport outside of the G20 members was Dubai International in the United Arab Emirates with 88.2 million passengers in 2017. Paris Charles de Gaulle in France had 69.5 million passengers, making it the busiest passenger airport in the EU-27. Apart from Dubai International, Changi airport in Singapore was the only other airport in the top 20 that was not located in one of the G20 members.

**Figure 11.2:** Top 20 airports for passengers, 2017
(million passengers)
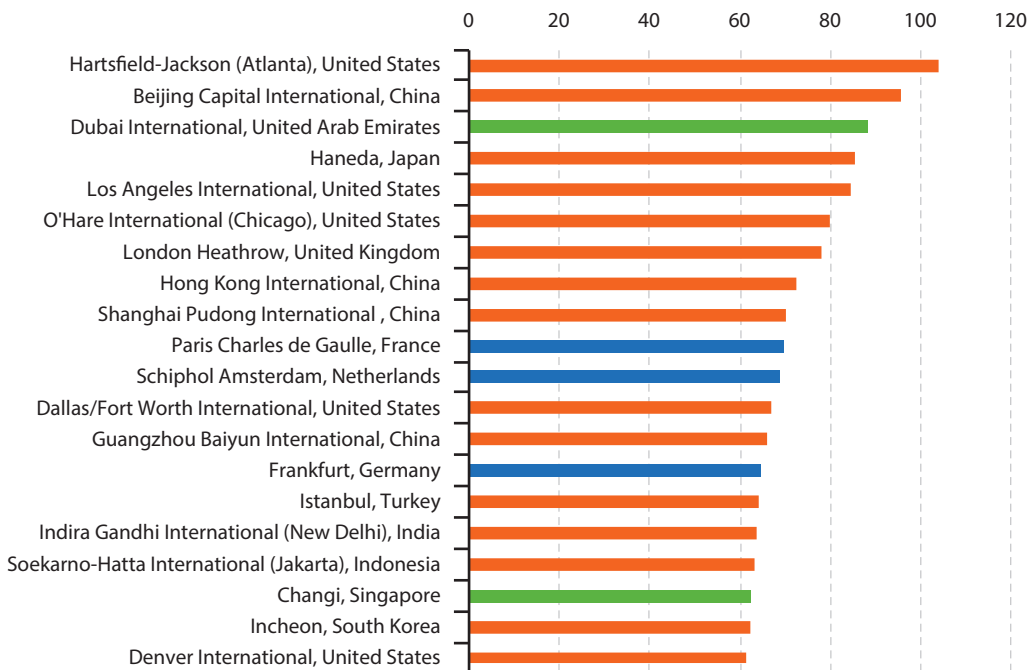


Note: airports shown in orange are in countries that are non-EU G20 members, airports shown in blue are in the EU, while airports shown in green are in countries that are not G20 members.

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

## Maritime transport

The world's maritime fleet (civilian seagoing ships for carrying freight or passengers) reached 1.98 billion deadweight tonnes (DWT) in 2019, according to the United Nations Conference on Trade and Development. Deadweight tonnage is the weight measure of a vessel's carrying capacity and includes cargo, fuel and stores.

The EU-27's maritime fleet in 2019 was considerably larger than in any of the other G20 members; in fact, it accounted for a larger share (15.8 %) of the world total than the fleets of all of the other G20 members combined (14.5 %). 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.

As well as showing the shares of the world's merchant fleet, Figure 11.3 also shows the average vessel size. To some extent this is influenced by the different types of vessels in each country's fleet. Saudi Arabia, which had the largest average vessel size (35.1 DWT) of the G20 members, has a fleet dominated by oil tankers: these represented 84 % of the DWT of its fleet compared with a world average of 29 %. The United Kingdom had the second largest average vessel size (31.5 DWT) among G20 members, with its fleet having the second highest DWT share (20 %) of container ships among G20 members after the United States (25 %); the

**Figure 11.3:** Merchant fleet by flag of registration, 2019
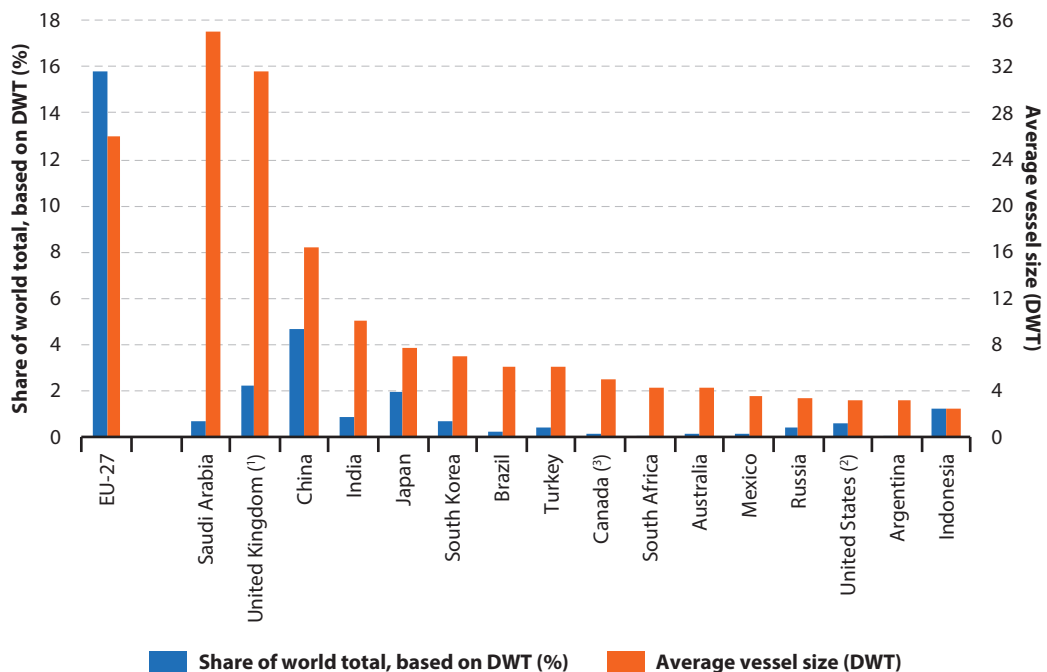


Note: ranked on average vessel size. Deadweight tonnage (DWT) is the weight measure of a vessel's carrying capacity. It includes cargo, fuel and stores. Data refer to the beginning of the year. Data concern seagoing propelled merchant ships (for freight or passengers) of 100 gross tons and above. The data exclude inland waterway vessels, fishing vessels, military vessels, yachts, and offshore fixed and mobile platforms and barges (with the exception of floating production, storage and offloading vessels and drillships).

(¹) Includes the Isle of Man.
(²) Includes the Great Lakes Fleet and the United States Reserve Fleet.
(³) Includes the Great Lakes Fleet.

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

world average DWT share for container ships was 13 %. With an average vessel size of 26.0 DWT, the EU-27 was the only other G20 member with an average vessel size above the world average of 20.5 DWT and it had a similar share for container ships (20 % of the total DWT) and a share for oil tankers (34 %) that was also above the world average.

The United Nations Conference on Trade and Development provides port call and

performance statistics. According to these data, worldwide there were 4.1 million arrivals of merchant ships of 1 000 gross tons and above in 2018. Ports in the EU-27 recorded 1.3 million arrivals of such vessels in 2018, close to one third (31.2 %) of the world total (see Figure 11.4). Collectively ports in the other G20 members recorded 1.7 million arrivals, such that the G20 share of the world total was close to three quarters (73.5 %).

**Figure 11.4:** Number of arrivals of vessels in ports, 2018
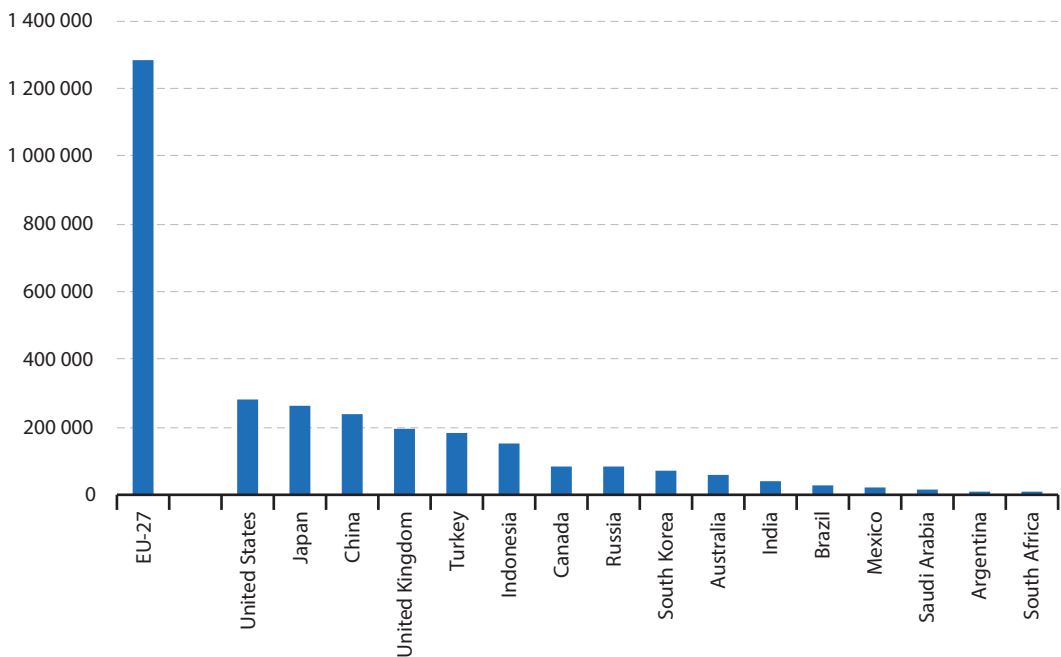


Note: includes arrivals of vessels of 1 000 gross tons and above.

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

## Road transport

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 (see Figure 11.5). 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 the two years shown,

the most notable development was the increase in the amount of Indian road freight: the level in 2017 was just over twice as high as the level in 2008. China also reported strong growth, with road freight (relative to population size) nearly doubling between 2008 and 2017. The United Kingdom, the United States (2008-2017) and Japan were the only G20 members (for which data are available) reporting a fall for this indicator, although in the two last cases this may be influenced by a break in series.

**Figure 11.5:** Road freight transport, 2008 and 2018
(tonne-km per inhabitant)
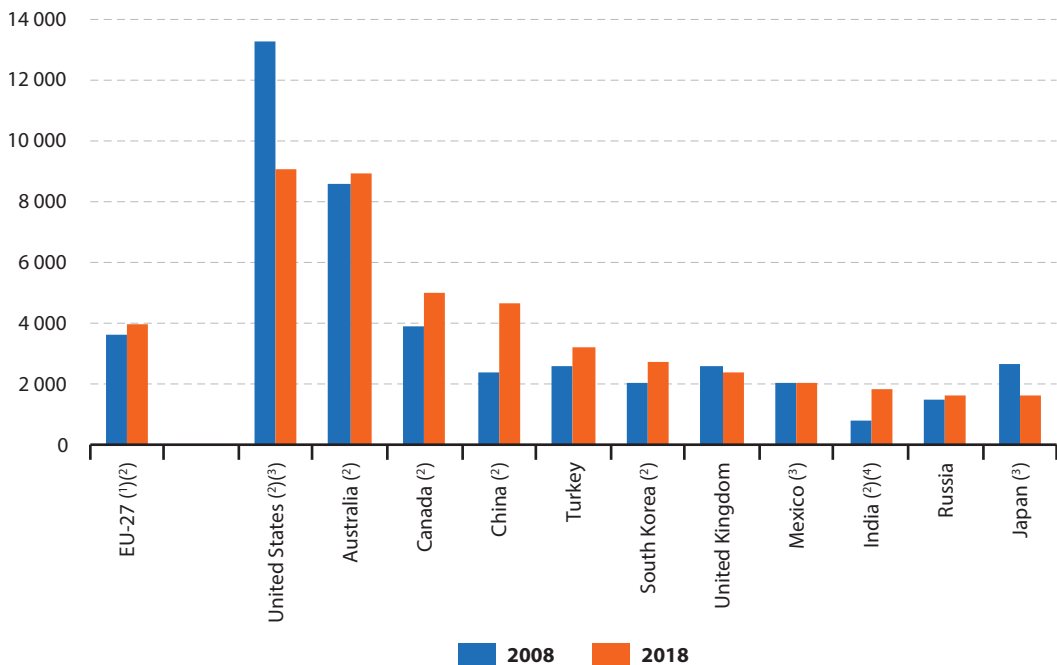


Note: Argentina, Brazil, Indonesia, Saudi Arabia and South Africa, not available.

(¹) 2010 instead of 2008.
(²) 2017 instead of 2018.
(³) Break in series.
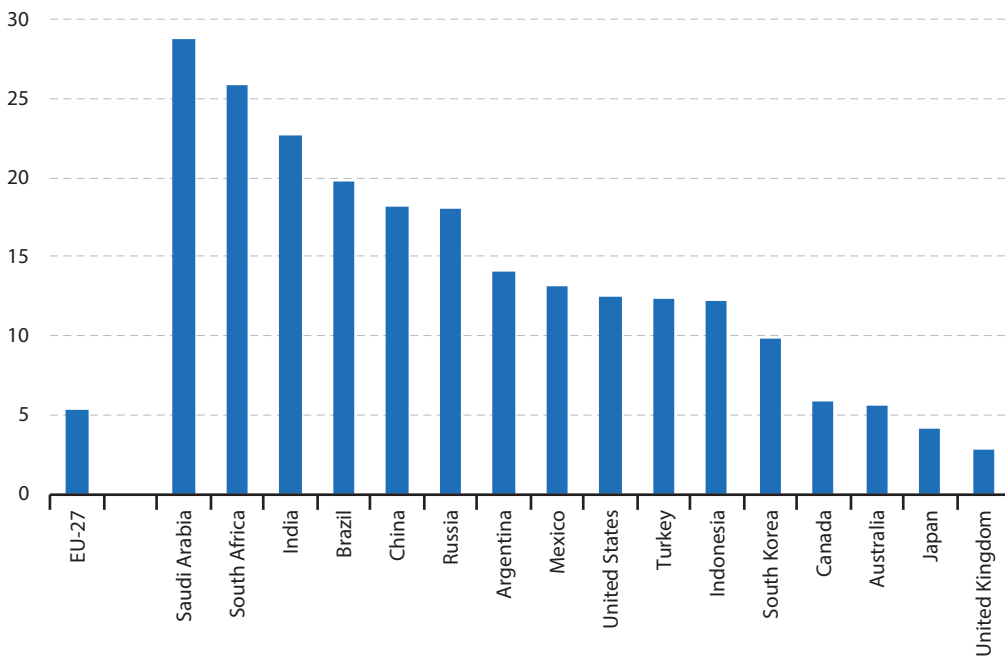(⁴) 2017: estimate.

*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, Population Division (World Population Prospects 2019)

Mobility often comes at a cost, not just in terms of paying for transport and a potential impact on the environment, but also the risk of injury or death through transport accidents. An evaluation of the risk of death in a road traffic accident may be best expressed as a ratio of the number of road traffic deaths relative to the distance passengers have been transported, in other words relative to the number of passenger-kilometres or vehicle-kilometres. In the absence of reliable data on road traffic performance, Figure 11.6 uses a ratio of road traffic deaths per 100 000 inhabitants.

Among the G20 members, the highest incidence of road traffic deaths relative to population size in 2016 was observed in Saudi Arabia where there were 29 such deaths per 100 000 inhabitants. This was followed by South Africa (26 per 100 000 inhabitants), India (23 per 100 000 inhabitants) and Brazil (20 per 100 000 inhabitants). In Figure 11.6 it can be seen that five G20 members recorded ratios of road traffic deaths relative to population size that were notably lower than in the rest of the G20, ranging from 6 deaths per 100 000 inhabitants in Canada and Australia, through 5 and 4 deaths per 100 000 inhabitants in the EU-27 and Japan to 3 deaths per 100 000 inhabitants in the United Kingdom.

**Figure 11.6:** Road traffic deaths, 2016
(per 100 000 inhabitants)



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom. Argentina, Brazil, Indonesia, Saudi Arabia and South Africa, not available.

*Source:* Eurostat (online data codes: tran_sf_roadse and demo_gind), the World Health Organisation and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

## Rail transport

The extent of the use of rail transport among G20 members in 2018 is presented in Figures 11.7 and 11.8. 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. Argentina (2017 data) and Turkey had a relatively low overall use of rail transport. In Canada and the United States, rail transport was focused mainly on freight transport, while passenger transport was dominant in Japan (2017 data), the United Kingdom, India (2017 data) and South Korea. A relatively high use of rail transport for both freight and passengers was observed in Russia, Australia (2016 data for freight) and the EU-27.

Between 2008 and 2018, rail passenger transport (relative to the number of inhabitants) increased in the EU-27 (see Figure 11.7 for the precise coverage) by 11.0 %. In relative terms, a much larger increase (the 2018 ratio was 8 times as high as the 2008 ratio) was observed in Mexico, although the level of rail passenger transport remained low. Turkey, Indonesia (2008-2017), India (2008-2017) and the United Kingdom recorded larger increases than in the EU-27 during this

**Figure 11.7:** Rail passenger transport, 2008 and 2018
(passenger-km per inhabitant)
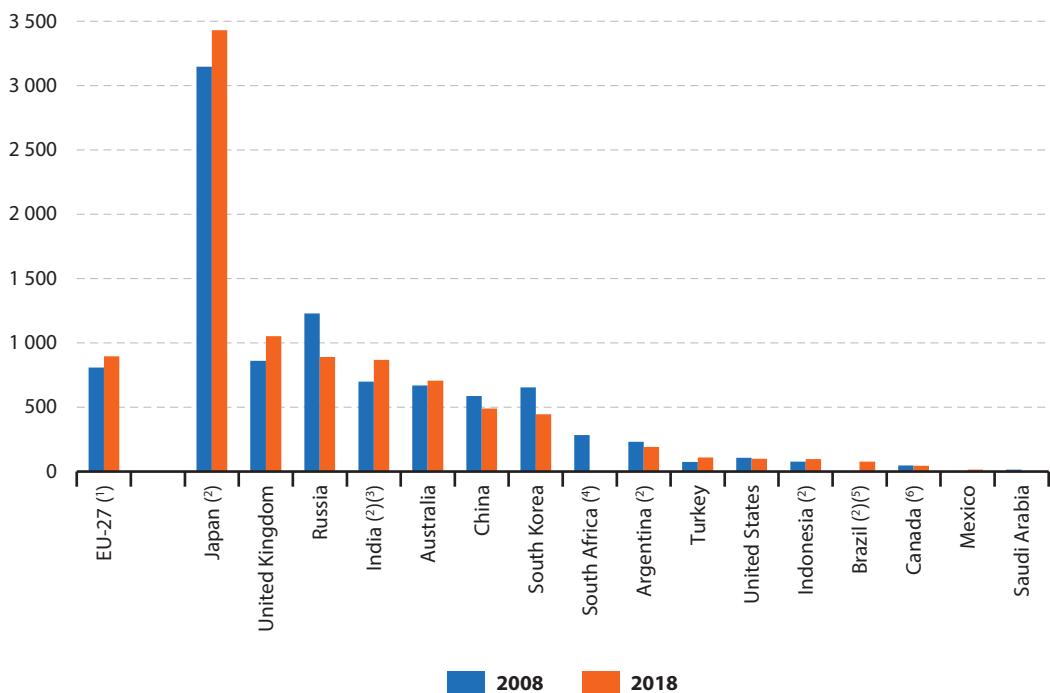


Note: data for some countries may be limited to International Union of Railways (UIC) members.

(¹) Excluding Belgium, Hungary and the Netehrlands. 2018: including 2017 data for Poland.
(²) 2017 instead of 2018.
(³) 2017: estimate.
(⁴) 2007 instead of 2008. 2018: not available.
(⁵) 2008: not available.
(⁶) 2018: provisional.

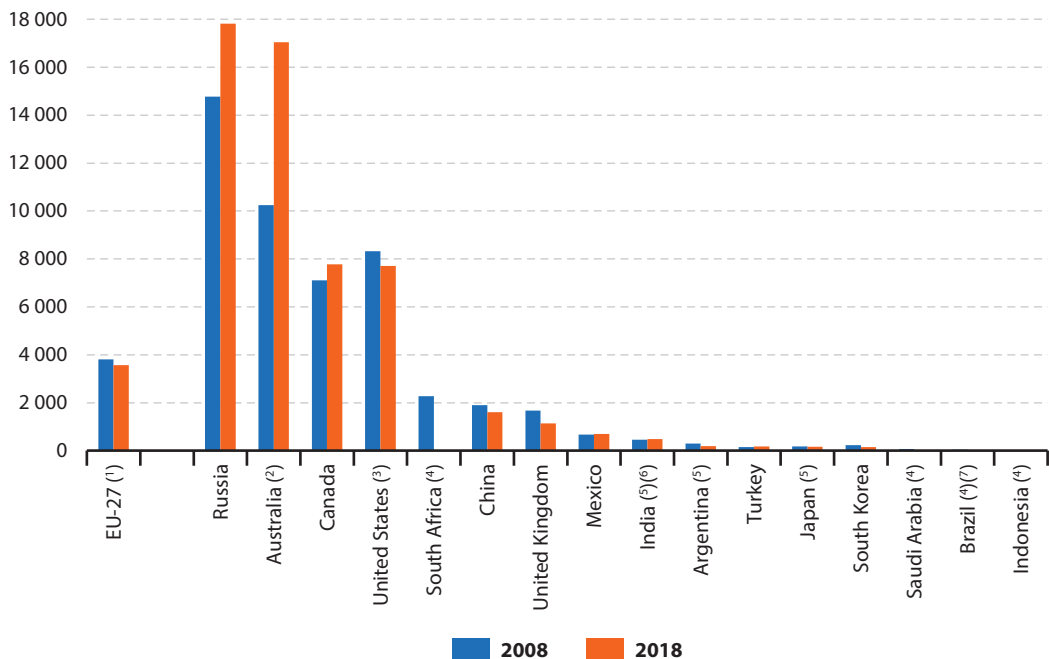*Source:* Eurostat (online data codes: rail_pa_total and demo_gind), the World Bank (World Development Indicators), the OECD (International transport forum) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

period, while Japan (2008-2017) and Australia reported smaller increases. The remaining G20 members reported a lower ratio of passenger-km per inhabitant in 2018 than 10 years earlier, with the largest decrease in percentage terms in Saudi Arabia and the largest decrease in absolute terms in Russia.

Rail freight transport (relative to the number of inhabitants) decreased between 2008 and 2018 in the EU-27 (excluding Belgium)

by 6.0 %. In relative terms, larger decreases were observed in Argentina (2008-2017), South Korea, the United Kingdom, China and the United States (note that there is a break in series). A smaller decrease was observed in Japan (2008-2017). Elsewhere, the remaining G20 members reported a higher ratio of tonne-km per inhabitant in 2018 than 10 years earlier, with the largest increase in percentage and absolute terms in Australia (2008-2016).

**Figure 11.8:** Rail freight transport, 2008 and 2018
(tonne-km per inhabitant)



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

(¹) Excluding Belgium.
(²) 2016 instead of 2018.
(³) Break in series.
(⁴) 2018: not available.
(⁵) 2017 instead of 2018.
(⁶) 2017: estimate.
(⁷) 2007 instead of 2008.

*Source:* Eurostat (online data codes: rail_go_total and demo_gind), the World Bank (World Development Indicators), the OECD (International transport forum) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)
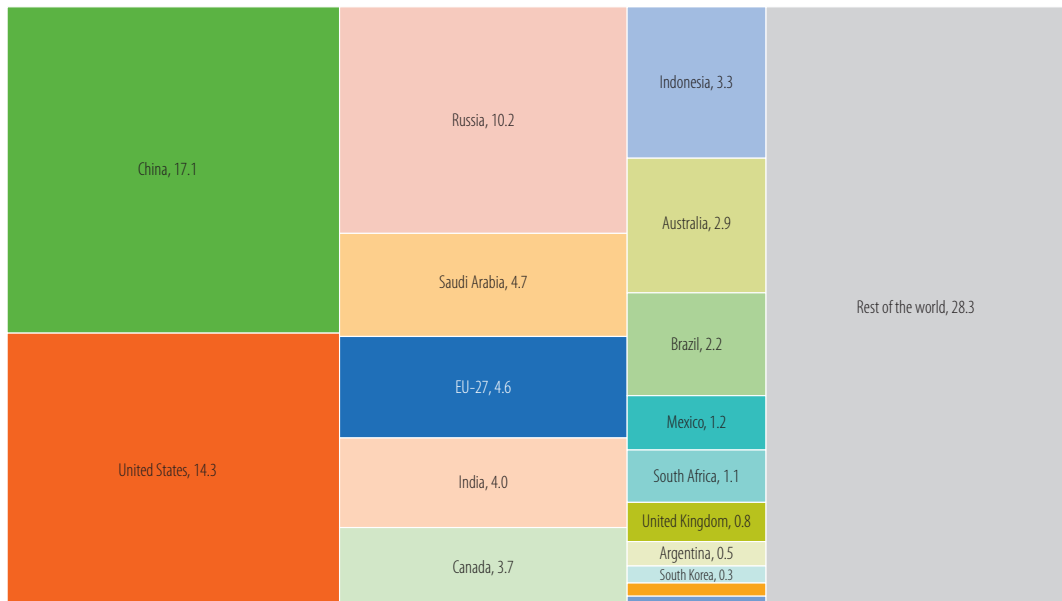
# 12. Energy

## 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-27 totalled 641 million tonnes of oil equivalent (toe) in 2017, while worldwide production reached 13.65 billion toe.

In 2017, the G20 members' share of the world total for primary production was 71.7 % (see Map 12.1). The EU-27's share of world production was 4.6 %. Among the

G20 members, four recorded higher levels of production than the EU-27 as can be seen from Map 12.1: China's share of world primary energy production was 17.1 %, the United States' share was 14.3 % and Russia's share was 10.2 %, while the 4.7 % share from Saudi Arabia was just above that recorded for the EU-27.

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.

**Map 12.1:** World primary production of energy, 2017
(%)



Note: Japan, 0.3 %; Turkey, 0.3 %. More recent data are available from Eurobase for the EU-27 and the United Kingdom.

*Source:* Eurostat (online data code: nrg_bal_s) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Statistics Yearbook and Energy Balances)

For many of the G20 members, the mix of energy sources for primary production in 2017 was dominated by just one energy type (see Figure 12.1).

Crude oil was dominant in Saudi Arabia and Mexico, accounting for 85 % and 68 % of primary production respectively. In South Africa, 91 % of all primary production came from solid fuels (for example, coal and lignite), with this source accounting for more than half of production in China, Australia and Indonesia. In South Korea, nuclear energy contributed by far the largest share (79 %), and in Japan (after the suspension of the operation of many nuclear plants) the main source of primary production was renewables (55 %). 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, the United Kingdom 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.

Primary production in the EU-27 was more varied than in nearly all of the other G20 members with only crude oil among the five types of energy sources shown in Figure 12.1 failing to attain at least a 10 % share of total production in 2017, while none of the other types of energy saw their share reach one third. Only the United States among the other G20 members reported production spread across four or five energy sources in a manner similar to that in the EU-27, albeit more focused on fossil fuels. This varied pattern of primary energy production in the EU-27 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.

**Figure 12.1:** Primary production by energy type, 2017
(% of total production)
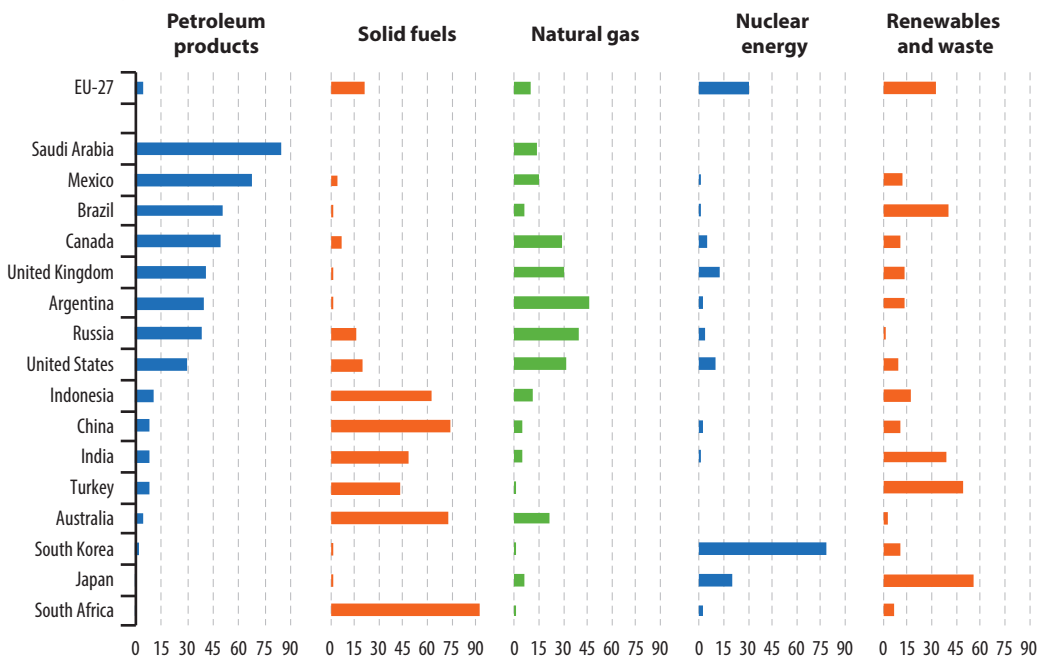


Note: ranked on the share of petroleum products. More recent data are available from Eurobase for the EU-27 and the United Kingdom. Shares do not always sum to 100 % as some smaller other sources are not shown.
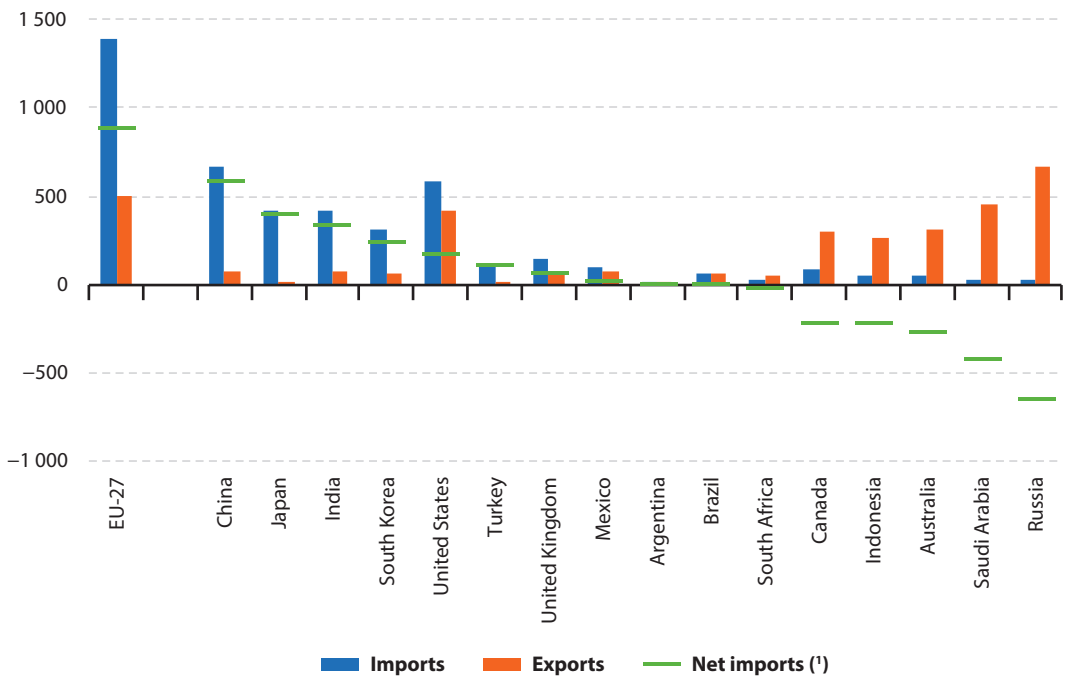*Source:* Eurostat (online data code: nrg_bal_s) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Balances)

## Trade in energy products

The main difference between levels of primary energy production and total energy supply is international trade: a shortfall of production needs to be met by net imports (the balance of imports minus exports) and a production surplus is generally accompanied by net exports.

Among the G20 members, the largest net exporters of energy in 2017 were Russia and Saudi Arabia, while net exports from Australia, Indonesia and Canada were also substantial (see Figure 12.2); South Africa also recorded a small trade surplus for energy products. The largest net importer of energy among the G20 members was the EU-27, followed by China, Japan, India, South Korea and the United States.

**Figure 12.2:** **Energy imports and exports, 2017**
(million tonnes of oil equivalent)



Note: ranked on net imports. More recent data are available from Eurobase for the EU-27 and the United Kingdom.

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

*Source:* Eurostat (online data code: nrg_bal_s) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Balances)

A study of the composition of gross energy imports (see Figure 12.3) shows that petroleum products (including crude oil) tended to dominate energy imports in the majority of 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.

**Figure 12.3:** Gross imports by type of energy, 2017
(% of gross imports)
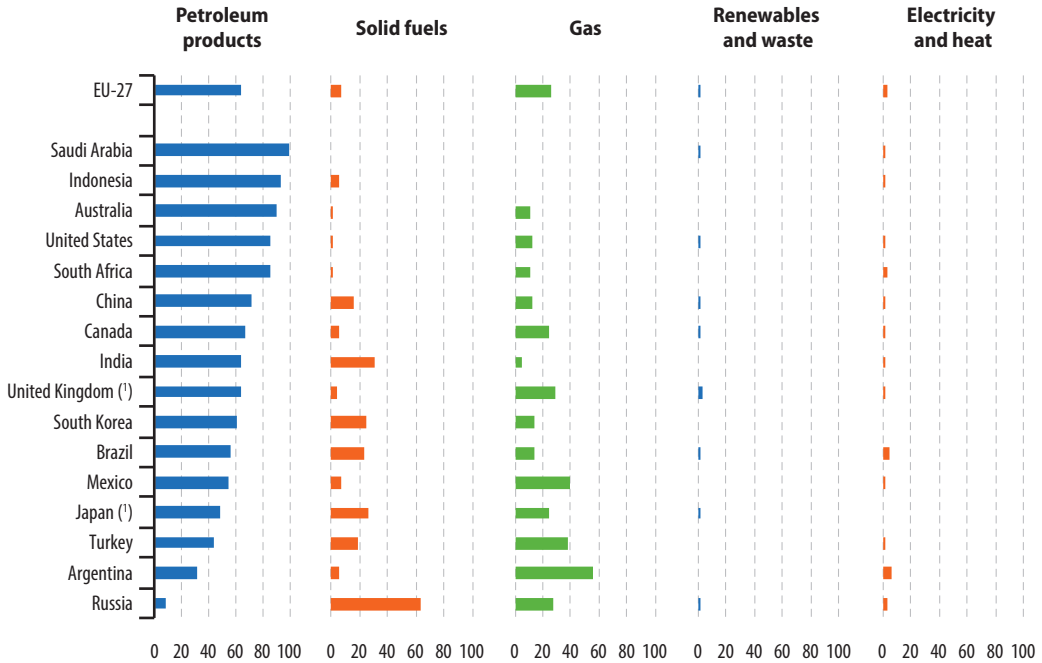


Note: ranked on petroleum products. More recent data are available from Eurobase for the EU-27 and the United Kingdom.
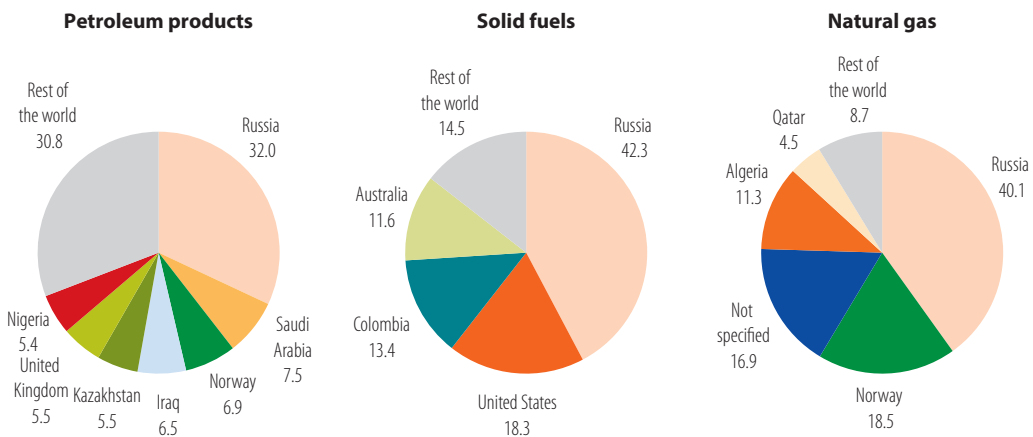
([1]) Biofuels and waste: estimate.

*Source:* Eurostat (online data code: nrg_bal_s) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Balances)

As noted above, the EU-27 was dependent on imports to meet its needs for energy. Figure 12.4 identifies the main countries of origin for the EU-27's gross imports of fossil fuels from non-member countries. Russia was the single largest supplier of EU-27 imports for all three fossil fuel categories in 2018, providing 32 % of petroleum products, 42 % of solid fuels, and 40 % of natural gas. Saudi Arabia was the second largest supplier of petroleum products, while Norway was the third largest supplier of these products

as well as the second largest supplier of natural gas. Imports of solid fuels and of natural gas into the EU-27 were particularly concentrated among the largest suppliers. For example, the top four providers of solid fuels together supplied 86 % of the EU-27's imports from all non-EU countries. By contrast, despite the large share of imports from Russia, the supply of petroleum products was less concentrated, as the top seven providers together supplied 69 % of the EU-27's imports from non-EU countries.

**Figure 12.4:** Main origins of extra-EU imports, EU-27, 2018
(%)



**Petroleum products**

Rest of the world 30.8
Russia 32.0
Nigeria 5.4
United Kingdom 5.5
Kazakhstan 5.5
Iraq 6.5
Norway 6.9
Saudi Arabia 7.5

**Solid fuels**

Rest of the world 14.5
Russia 42.3
Australia 11.6
Colombia 13.4
United States 18.3

**Natural gas**

Rest of the world 8.7
Qatar 4.5
Algeria 11.3
Not specified 16.9
Russia 40.1
Norway 18.5

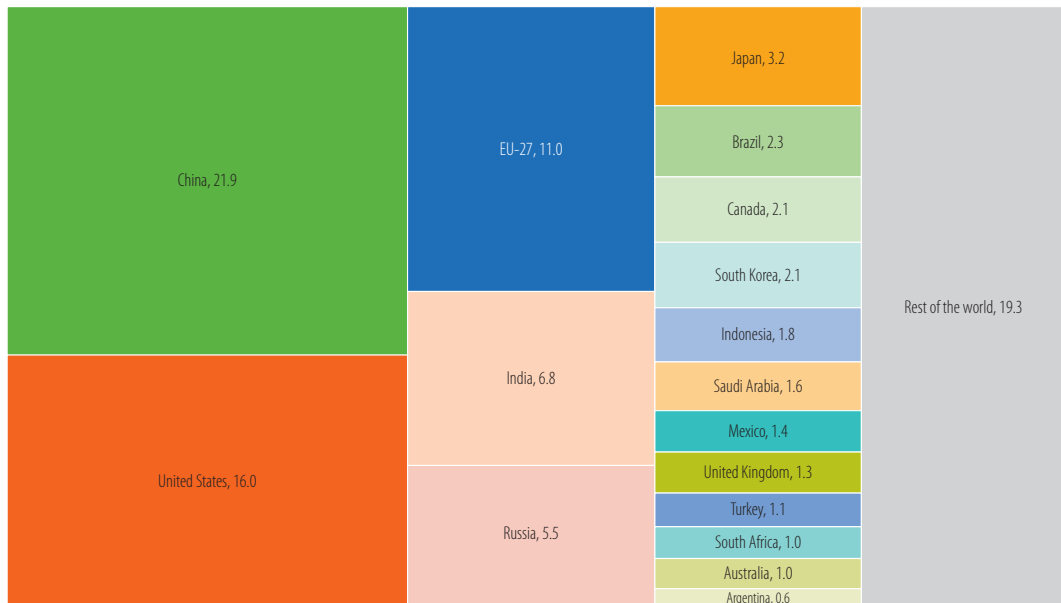*Source:* Eurostat (online data codes: nrg_ti_sff, nrg_ti_oil and nrg_ti_gas)

# Total energy supply

Total energy supply is the total energy demand of a country or region; it represents the quantity of energy necessary to satisfy inland consumption of the geographical entity under consideration. This covers consumption by the energy sector itself, distribution and transformation losses, and final energy consumption by end users.

Global total energy supply was 13.2 billion toe in 2017, of which the G20 members accounted for around four fifths (81 %), significantly higher than their collective share of primary production. China consumed one fifth (22 %) of the world energy total in 2017 (see Map 12.2), more than any other G20 member, followed by the United States (16 %) and the EU-27 (11 %); these three members together consumed nearly half (49 %) of all energy worldwide.

**Map 12.2:** World total energy supply, 2017
(%)



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom.

*Source:* Eurostat (online data code: nrg_bal_s) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Statistics Yearbook and Energy Balances)

In 2017, total energy supply was entirely made up of fossil fuels in Saudi Arabia: 54.9 % from petroleum products and 45.1 % from gas (see Figure 12.5). Petroleum products, solid fuels and gas provided more than 90 % of total energy supply in Australia, South Africa and Japan, and between 80 % and 90 % in China, Russia, Mexico, Argentina, Turkey, South Korea and the United States. In the EU-27, the share of these sources was 71 %; the only G20 members to record lower shares were Indonesia (70 %) and Brazil (57 %).

The EU-27 and South Korea had the highest shares of nuclear energy in total energy supply, both 13.6 %. South Korea's share of nuclear energy in total energy supply was considerably lower than the equivalent share for primary production, indicating South Korea's high dependency on imported fossil

fuels, notably petroleum products and solid fuels. The next highest shares of nuclear energy in total energy supply were observed in the United Kingdom, the United States, Canada and Russia.

As for primary production, Brazil, Indonesia and India recorded high shares for biofuels and waste in total energy supply, all over 20 %. By contrast, Russia and Saudi Arabia recorded the lowest shares for biofuels and waste in total energy supply.

Figure 12.6 reveals the extent to which total energy supply was met by net imports as opposed to primary production for countries that were net importers, in other words the energy dependency. For net exporters it shows the size of their net exports relative to their own needs (the total energy supply). Among the G20 members, Japan, South

**Figure 12.5: Total energy supply by type of energy, 2017**
(% of total energy supply)
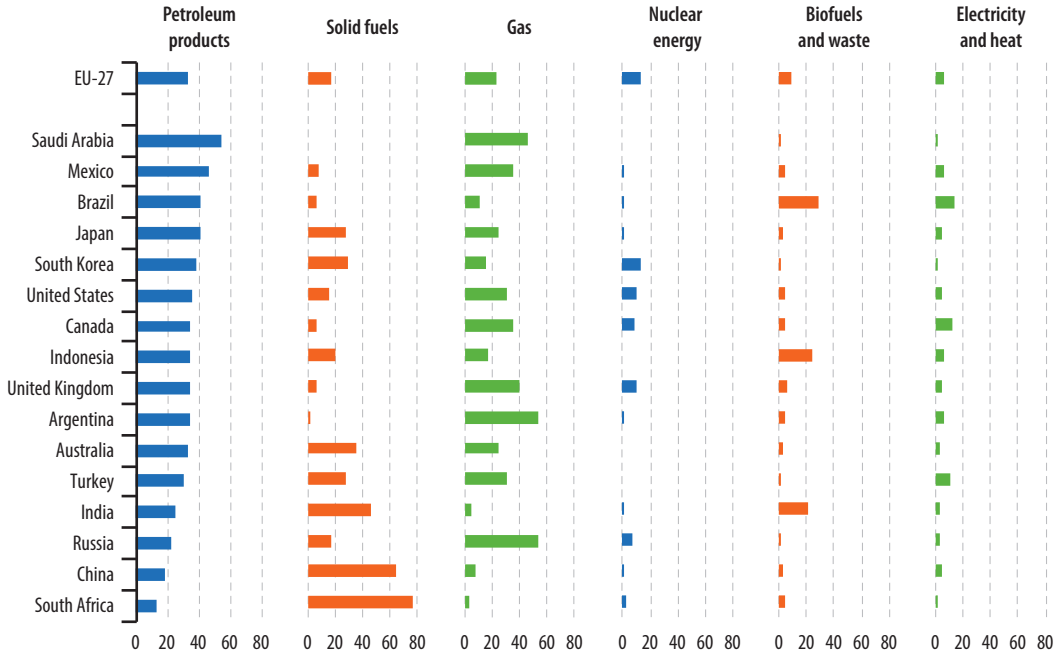


Note: ranked on petroleum products. More recent data are available from Eurobase for the EU-27 and the United Kingdom.

*Source:* the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Balances); data with a different definition are published by Eurostat (online data code: nrg_bal_s)

Korea, Turkey and the EU-27 all recorded net imports that covered more than half of their total energy supply. Energy dependency ratios of 20 % or lower were recorded in 2017 for China, Argentina, Mexico, the United States and Brazil. By contrast, Australia's and Saudi Arabia's net exports were around twice as high as their total energy supply.

Between 2012 and 2017, Mexico moved from being a net exporter to being a net importer of energy, despite a contraction in its total energy supply. During the same period, the dependence on imports increased in India, Argentina, Turkey, China, the EU-27 and South Korea, as their net imports grew more rapidly than their energy supply (in the EU-27, total energy supply actually fell slightly during the period under consideration). The

dependency on imports reduced between 2012 and 2017 in Brazil, the United States, the United Kingdom and Japan: net imports fell in all of these countries, while total energy supply fell less strongly in Japan and the United Kingdom and continued to expand in Brazil and the United States.

Relative to its total energy supply, net exports decreased between 2012 and 2017 in Saudi Arabia, as total energy supply increased faster than net exports. The reverse situation was observed in Canada, as net exports increased faster than total energy supply. In the four other G20 members that were net exporters in 2012 and 2017 — Australia, Indonesia, Russia and South Africa — net exports increased while total energy supply contracted.

**Figure 12.6:** Net imports/exports relative to total energy supply, 2012 and 2017 (%)
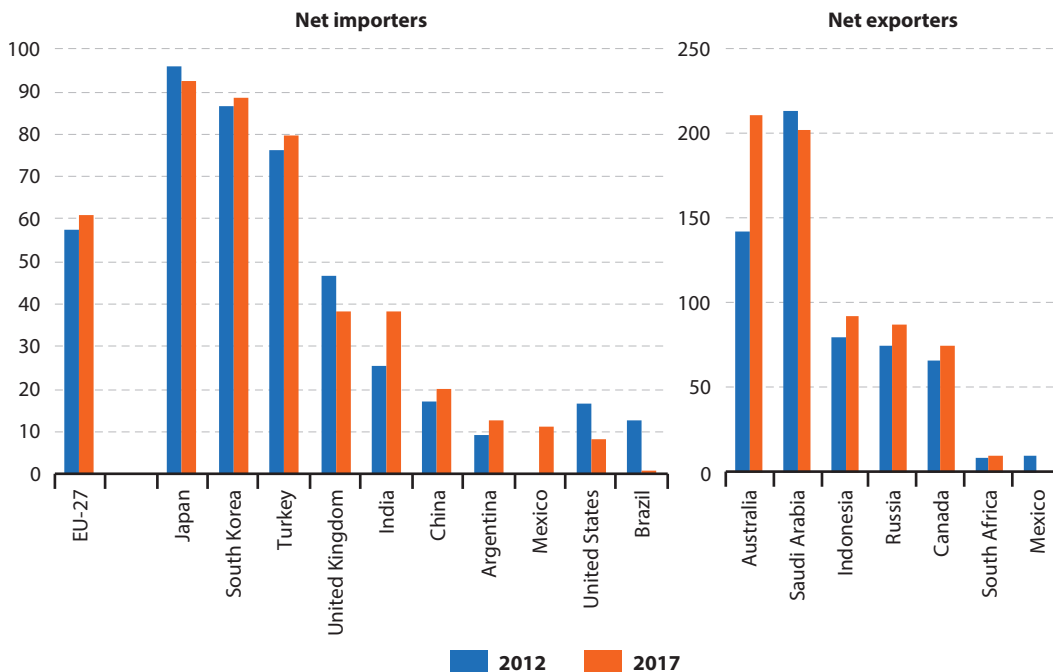


Note: different scales used for the two parts of the figure; Mexico is shown in both parts of the figure a it was a net exporter in 2012 and a net importer in 2017. More recent data are available from Eurobase for the EU-27 and the United Kingdom.

*Source:* Eurostat (online data code: nrg_bal_s) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Balances)
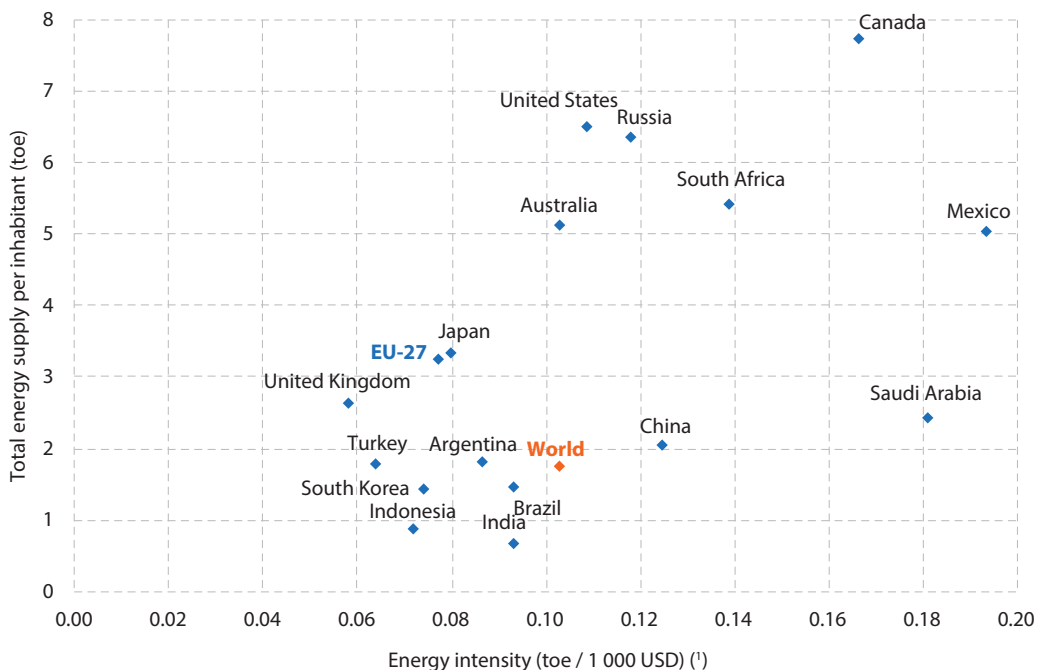
## Energy intensity

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). To facilitate spatial comparisons, GDP is calculated in a common currency (United States dollars are used in Figure 12.7) using purchasing power parities (PPPs) rather than market exchange rates: PPPs are indicators of price level differences across countries.

Mexico, Saudi Arabia and Canada had the most energy intense economies in 2017 among the G20 members, followed by South Africa. By contrast, the United Kingdom, Turkey, Indonesia, South Korea, the EU-27 and Japan had the lowest levels of energy intensity. 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.

Figure 12.7 also shows the level of total energy supply per inhabitant. Six of the G20 members recorded notably higher levels of energy supply per inhabitant than the others, averaging 5.0-7.7 toe per inhabitant in Canada, the United States, Russia, South Africa, Australia and Mexico, whereas energy supply per inhabitant was at most 3.3 toe per inhabitant elsewhere. The lowest levels of energy supply per inhabitant were in Indonesia and India, both below 1.0 toe per inhabitant.

**Figure 12.7: Energy intensity, 2017**



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom.

[1] Energy intensity is the ratio between total energy supply and gross domestic product (GDP). The GDP figures are expressed in United States dollars (USD) converted using purchasing power parities.

*Source:* Eurostat (online data codes: nrg_bal_s and demo_gind), the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Statistics Yearbook and Energy Balances), the World Bank (World Development Indicators) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

# 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 25.6

million gigawatt hours (GWh) in 2017, of which 84 % was generated by G20 members (see Map 12.3). China, the United States and the EU-27 accounted for the highest shares of electricity generation among G20 members, generating 25 %, 17 % and 12 % of the world total respectively.

**Map 12.3:** **World gross electricity generation, 2017**
(%)
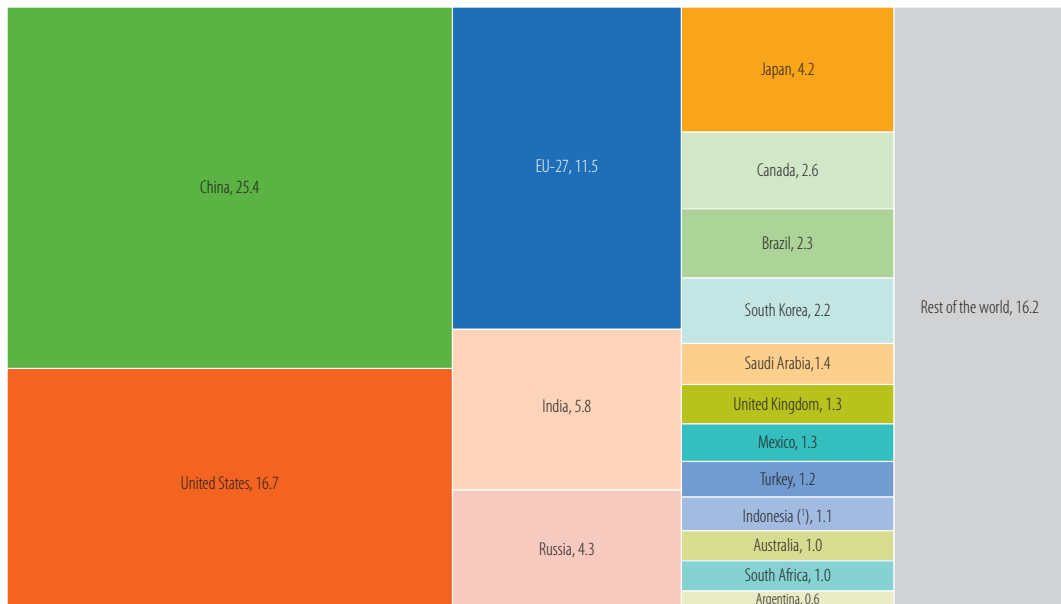


Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom.

(¹) Estimate.

*Source:* Eurostat (online data code: nrg_bal_peh) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Statistics Yearbook)

Combustible fuel power stations generated two thirds (66.7 %) of electricity worldwide in 2017, a share that was surpassed in all but six of the G20 members: the United States, Russia, the United Kingdom, the EU-27, Brazil and Canada. Saudi Arabia generated practically all of its electricity from combustible fuels, with the share close to nine tenths in South Africa (89.0 %) and Indonesia (88.8 %).

Hydro-electric power supplied 16.3 % of the world's electricity in 2017. Notably higher shares were recorded in Brazil (62.9 %), Canada (59.6 %) and Argentina (28.6 %), while shares above the world average were also recorded in Turkey, China and Russia; in the EU-27 the share of electricity generated from hydropower was 10.9 %— see Figure 12.8.

Nuclear power contributed some 25.7 % of the electricity generated in the EU-27 in 2017, which was more than double the world average (10.3 %) and the second highest share among G20 members, behind South Korea (26.2 %).

Figure 12.8 presents data for two other types of renewable energy, namely wind and solar. The G20 members with the highest proportion of gross electricity generation from wind were the United Kingdom (14.8 %) and the EU-27 (10.6 %), where the contribution of this source was more than double the world average (4.4 %). Solar power provided 5.2 % of the electricity generated in Japan, while relatively high shares were also recorded in the EU-27 (3.7 %), the United Kingdom (3.4 %) and Australia (3.1 %), compared with a world average of 1.6 %.

**Figure 12.8:** Gross electricity generation by source, 2017
(% of gross electricity generation)
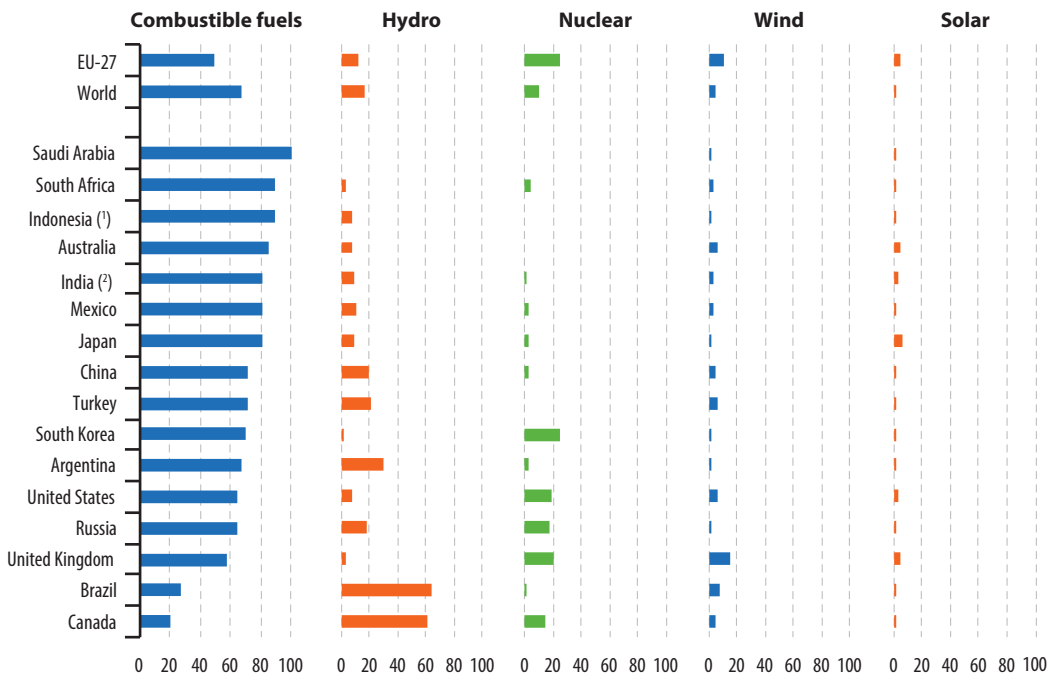


Note: ranked on the share for combustible fuels. More recent data are available from Eurobase for the EU-27 and the United Kingdom. Shares do not always sum to 100 % as some smaller other sources are not shown.
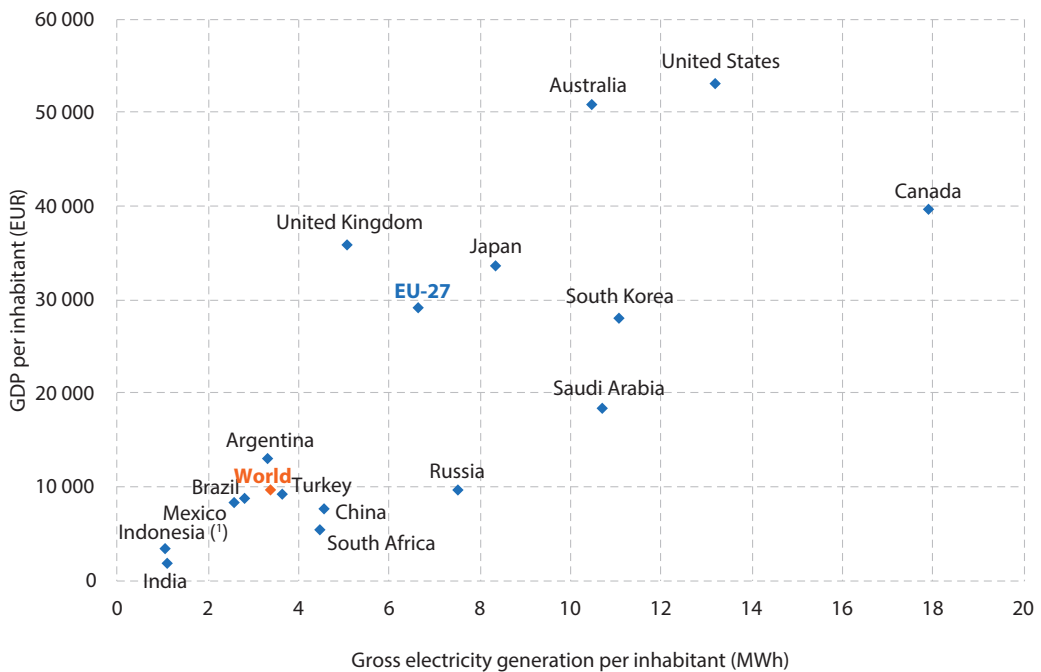
(¹) Estimates.
(²) Other: estimate.

*Source:* Eurostat (online data code: nrg_bal_peh) and the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Statistics Yearbook)

Relative to population size, Canada had by far the highest electricity generation among the G20 members, 17.9 MWh per inhabitant in 2017, around five times as high as the world average (see Figure 12.9). The EU-27 ranked in the middle of the G20 members, with 6.6 MWh of electricity generated per inhabitant in 2017, a little less than double the world average. Argentina, Brazil, Mexico, India and Indonesia were the only G20

members with ratios of electricity generation to population size that were below the world average.

The United Kingdom, Australia, the EU-27, the United States, Japan and Argentina recorded relatively high GDP per inhabitant in contrast to their levels of electricity generation per inhabitant, while the reverse was true in Saudi Arabia, China, India, Russia and South Africa.

**Figure 12.9:** Gross electricity generation and GDP per inhabitant, 2017



Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom.

(¹) Estimates.

*Source:* Eurostat (online data codes: nrg_bal_peh, demo_gind and nama_10_pc), the United Nations Department of Economic and Social Affairs, Statistics Division (Energy Statistics Yearbook), and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019) and Statistics Division (Analysis of Main Aggregates)

# 13. Environment

## Environmental taxes

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 2018, the EU-27 Member States raised EUR 325 billion of revenue from environmental taxes, equivalent to 2.41 % of

gross domestic product (GDP). Figure 13.1 compares the relative importance of environmental taxes among the G20 members (no data available for India, Indonesia, Russia and Saudi Arabia). The highest revenues from environmental taxes, relative to GDP, were in South Korea (2014 data) and South Africa (2017 data) where these taxes were equivalent to 2.80 % and 2.69 % of GDP respectively; the EU-27 ratio (2.41 %) was the next highest. The United Kingdom and Turkey (2.34 % and 2.32 %) were the only other G20 members to record ratios above 2.00 %. The lowest levels were recorded in the United States (0.71 %; 2016 data), China (0.70 %; 2015 data) and Brazil (0.65 %; 2014 data).

**Figure 13.1:** Environment related taxes, 2018
(%)
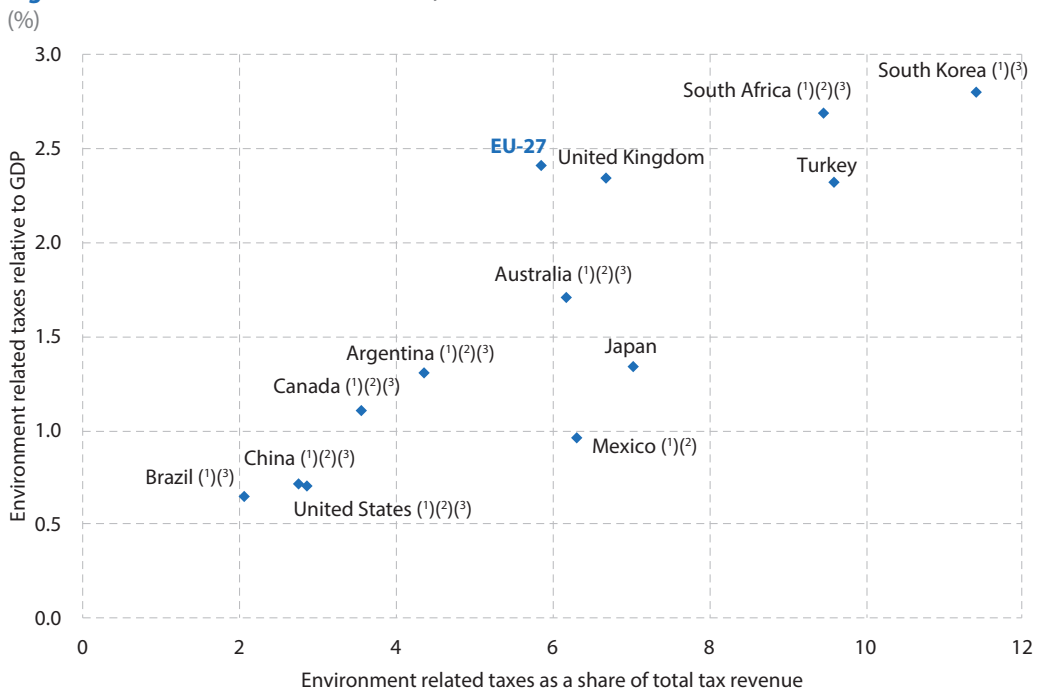


Note: India, Indonesia, Russia and Saudi Arabia, not available.

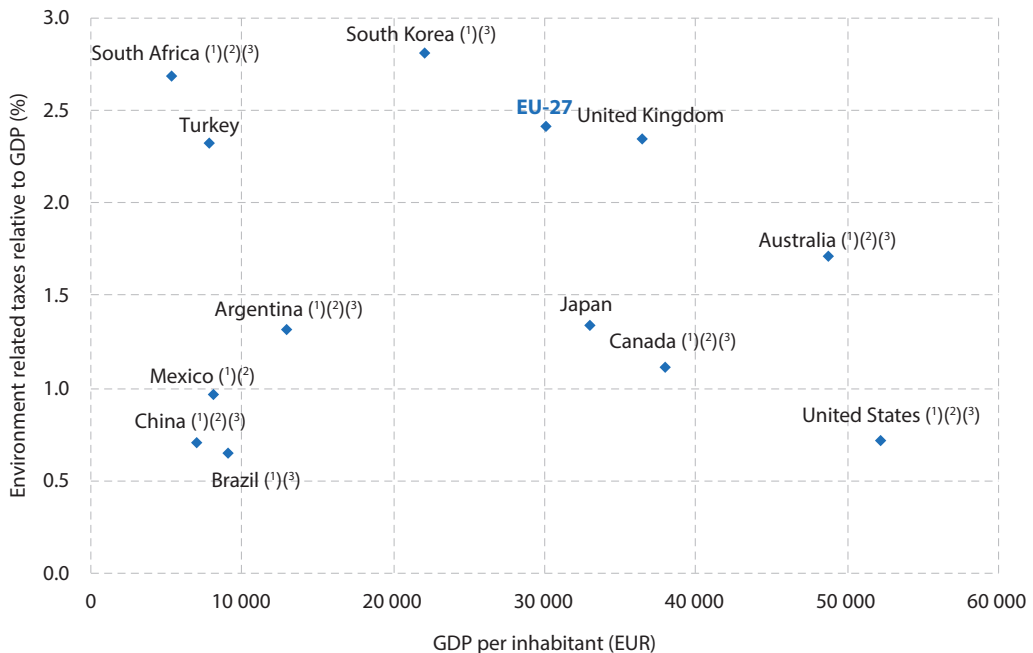(¹) Incomplete data.
(²) Estimate.
(³) Brazil, Canada and South Korea: 2014. China: 2015. Australia and the United States: 2016. Argentina and South Africa: 2017.

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

Revenue from environmental taxes contributed 5.84 % of all tax revenues in the EU-27 in 2018. In South Korea the share of tax revenues derived from environmental taxes was considerably higher than in the other G20 members, reaching 11.39 % (2014 data). The next highest shares were 9.59 % in Turkey and 9.46 % in South Africa (2017 data), followed at some distance by Japan, the United Kingdom, Mexico, Australia (2016 data) and the EU-27 in the range of 5.84 % to 7.03 %. Elsewhere the share of environmental taxes in total tax revenue was below 5.00 %, with Brazil recording the lowest share at 2.04 % (2014 data). As can be seen from Figure 13.1, there is a strong correlation (0.86) between the ratios of environmental taxes to GDP and the shares of environmental taxes within all tax revenue.

Figure 13.2 presents a similar comparison, again based on the ratio of environment related taxes to GDP but comparing this with GDP per inhabitant. Although there is a group of G20 members with relatively low ratios of environment related taxes to GDP combined with relatively low GDP per inhabitant, there is no clear relation between these indicators (the correlation coefficient is very weak at −0.06). For example, South Africa combined the lowest GDP per inhabitant of all G20 members with the second highest ratio of environmental taxes to GDP, while the United States combined the highest GDP per inhabitant with the third lowest ratio of environmental taxes to GDP.

**Figure 13.2:** Environment related taxes and GDP, 2018



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

(¹) Environment related taxes: incomplete data.
(²) Environment related taxes: estimate.
(³) Brazil, Canada and South Korea: 2014. China: 2015. Australia and the United States: 2016. Argentina and South Africa: 2017.

*Source:* Eurostat (online data codes: env_ac_tax, nama_10_pc and ert_bil_eur_a), the OECD (Green growth indicators) and the United Nations Department of Economic and Social Affairs, Statistics Division (Analysis of Main Aggregates)
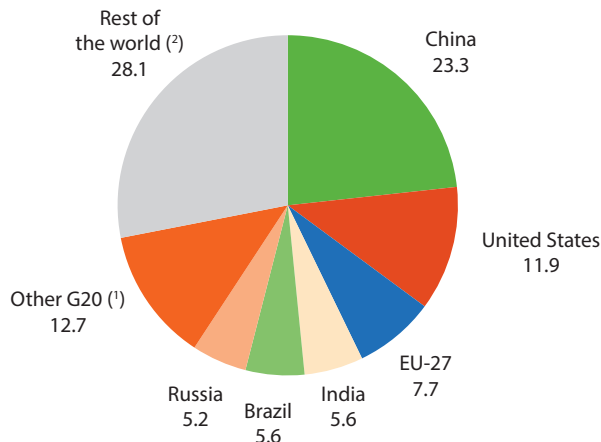
## Air emissions

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 shown in Figure 13.4, based on the latest data which are for 2017. The EU (prior to the accession of Croatia and the withdrawal of the United Kingdom) 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 3.8 % reduction with respect to 2005 levels in Japan; and a 15-25 % reduction with respect to 1990 levels 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.

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. According to the World Bank, worldwide greenhouse gas emissions in 2012 were 53.5 billion tonnes of $CO_2$-equivalents. The G20 members (excluding Saudi Arabia and South Africa) accounted for 71.9 % of the total in 2012 (see Figure 13.3). China (23.3 %) and the United States (11.9 %) were the largest emitters, followed by the EU-27 (7.7 %), India, Brazil (both 5.6 %) and Russia (5.2 %).

**Figure 13.3:** World greenhouse gas emissions, 2012 (%)



(¹) Excluding Saudi Arabia and South Africa.
(²) Including Saudi Arabia and South Africa.
*Source:* the World Bank (World Development Indicators)

Changes in the level of emissions from G20 members are shown in Figure 13.4, separating the Annex I parties from the others. Between 1990 and 2017, the United Kingdom's greenhouse gas emissions fell overall by 41 %, while the emissions from Russia fell by 32 % and those from the EU-27 by 21 %. Turkey's emissions more than doubled, while emissions also increased from the other G20 Annex I parties, although only very slightly from the United States and Japan. Turning to the G20 members that are not Annex I parties, emissions from Saudi Arabia more than trebled between 1990 and 2012 as they also did from China between 1994 and 2014. Emissions from South Korea more than doubled between 1990 and 2016 as they also did from India between 1990 and 2012. Indonesia (1990-2012) was the only G20 member that was not an Annex 1 party to record a fall in emissions.

**Figure 13.4:** Change in greenhouse gas emissions, since 1990
(%)
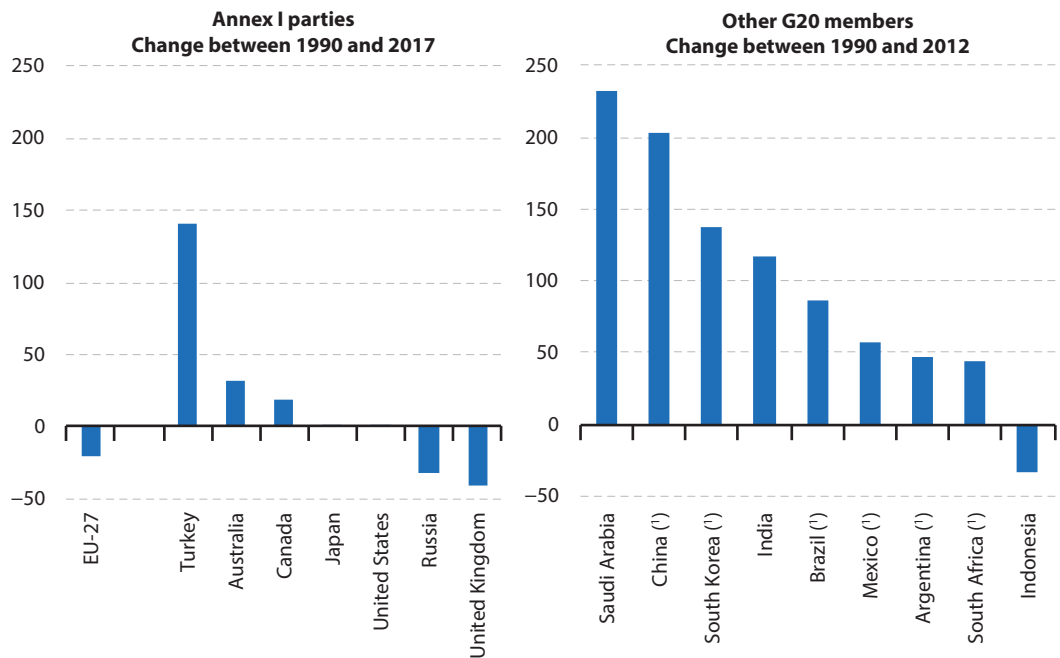


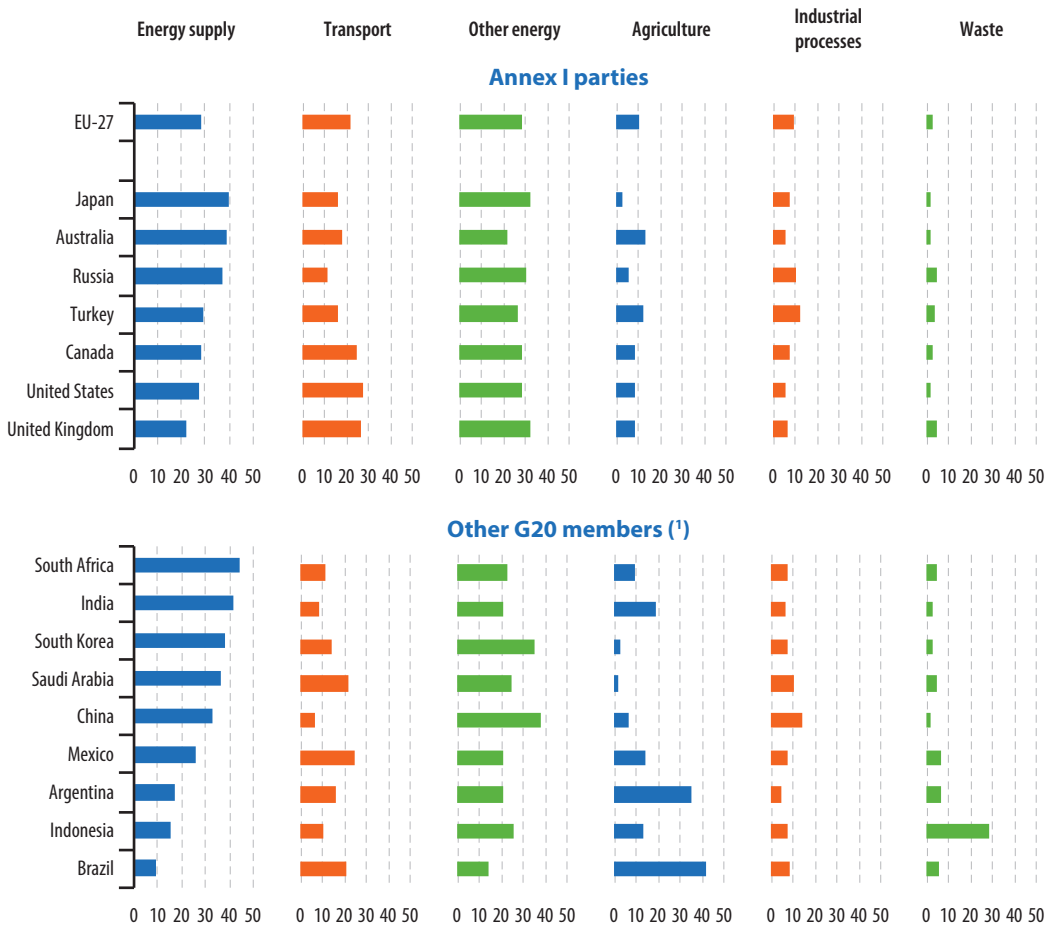Note: without land use, land use change and forestry.

(¹)  South Africa: 1990-2007. Argentina: 1990-2014. Brazil and Mexico: 1990-2015. South Korea: 1990-2016. China: 1994-2014.

*Source:* Eurostat (online data code: env_air_gge), the United Nations Framework Convention on Climate Change (UNFCCC), the World Bank (World Development Indicators) and the OECD (Environment)

Figure 13.5 provides information on the source of greenhouse gas emissions. Energy (including energy supply, transport and other energy) accounted for at least 70 % of all greenhouse gas emissions in the G20 members that are Annex I parties. Among the energy sectors, energy supply had the largest share of emissions in Japan, Australia, Russia and Turkey, whereas other energy had the largest share in Canada, the EU-27, the United States and the United Kingdom. The United Kingdom and the United States were the only two G20 members that are Annex I parties where the share of emissions from transport was greater than that from energy supply. Agricultural process accounted for more than 10.0 % of emissions in Australia, Turkey and the EU-27, as did industrial processes in Turkey and Russia. Among the G20 members that are not Annex I parties, waste made a relatively large contribution to the level of greenhouse gas emissions in Indonesia (2000 data) as did agriculture in Brazil (2015 data) and Argentina (2012 data).

**Figure 13.5:** Greenhouse gas emissions, by sector, 2017
(%)



Note: ranked according to emissions related to energy supply. Annex I parties shown separately from other G20 members. Without solvents, land use, land use change and forestry.

(¹) South Africa: 1994. Indonesia: 2000. India: 2010. Argentina and Saudi Arabia: 2012. China: 2014. Brazil and Mexico: 2015. South Korea: 2016.

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

Figure 13.6 provides information on emissions of carbon dioxide calculated relative to the population size. This ratio 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.

Australia, the United States and Canada all reported more than 15.0 tonnes of $CO_2$ emissions per inhabitant in 2017. With 7.0 tonnes of emissions per inhabitant, the EU-27 was at the lower end of the range for an intermediate group where emissions

varied from 7.0 to 12.5 tonnes per inhabitant, including also South Korea (2016 data), Russia and Japan. All of the other G20 members had $CO_2$ emissions below 6.0 tonnes per inhabitant, with Indonesia (2014 data) reporting the lowest intensity, 2.5 tonnes per inhabitant. Between 2007 and 2017, the ratio of emissions to population size decreased by more than 2.0 tonnes per inhabitant in the United States, the United Kingdom, Canada, Australia and by a smaller amount in the EU-27, Japan and Mexico (2007-2015). In the other G20 members, emissions increased, by small amounts (up 0.1-0.7 tonnes per inhabitant) in Argentina (2007-2014), Russia and Turkey and by a larger amount in South Korea (up 1.8 tonnes per inhabitant; 2007-2016).

**Figure 13.6:** **Carbon dioxide emissions, 2007 and 2017**
(tonnes per inhabitant)
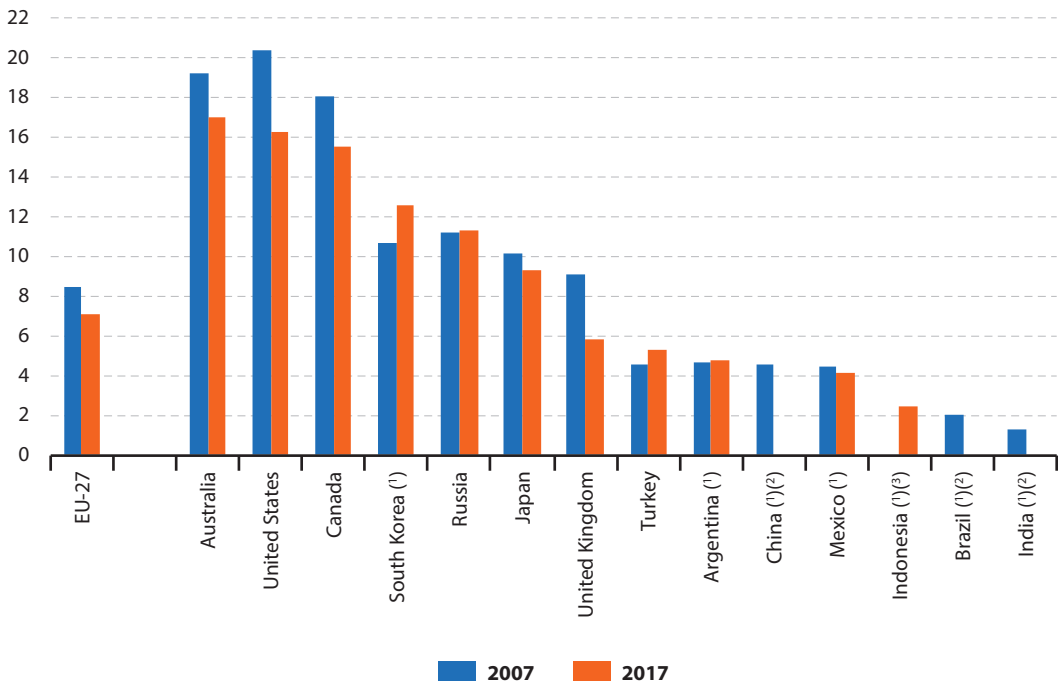


Note: Saudi Arabia and South Africa, not available.

(1) Brazil and China: 2005 instead of 2007. India: 2010 instead of 2007. Argentina and Indonesia: 2014 instead of 2017. Mexico: 2015 instead of 2017. South Korea: 2016 instead of 2017.
(2) 2017: not available.
(3) 2007: not available.

*Source:* Eurostat (online data codes: env_air_gge and demo_gind), the OECD (Environment, Air and climate) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

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.

Across G20 members, there has been a considerable reduction in the consumption of ODS in recent years. As of 2018, the EU-27 and the United Kingdom collectively 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 13.7). Although 6.5 % lower than 10 years earlier, China's consumption of HCFCs in 2018 remained 2.5 times as high as the level of consumption in all of the other G20 members combined.

**Figure 13.7:** **Air pollution — consumption of hydrochlorofluorocarbons (HCFCs), 2008 and 2018** (tonnes of ozone depleting potential)
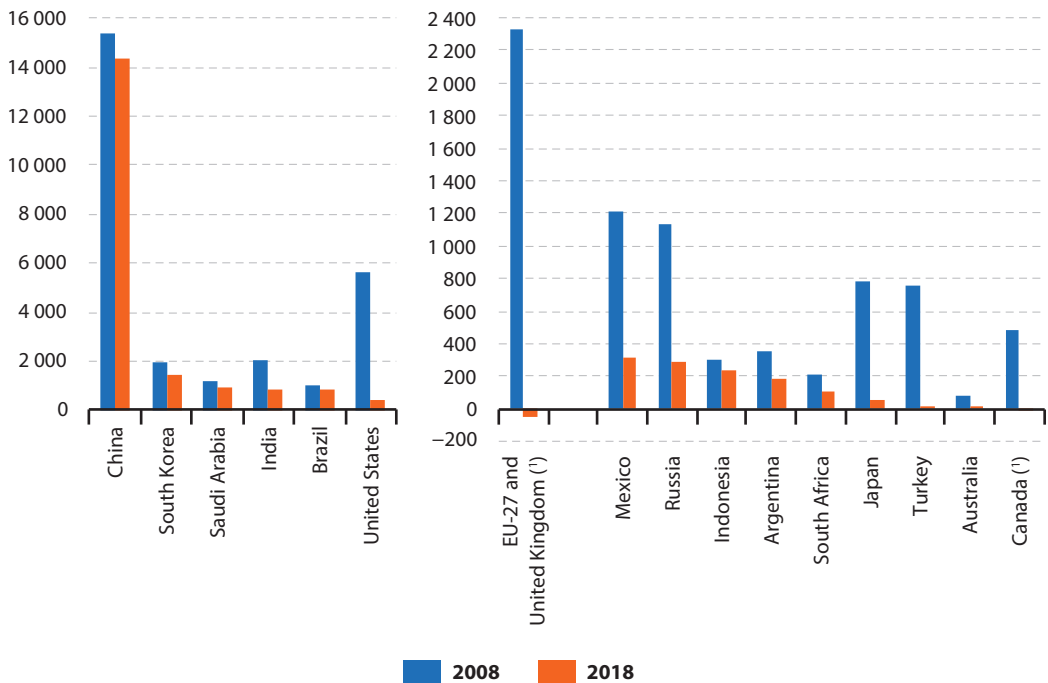


Note: different scales used for the two parts of the figure.

(¹) A negative value indicates that 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.

Figure 13.8 shows that the amount of municipal waste generated in 2007 was particularly low in Indonesia and China, although no recent data are available. The EU-27 average was 482 kg of waste generated per inhabitant in 2017 and the available data indicate a higher level of waste generation in 2015 for both Australia (558 kg per inhabitant) and the United States (742 kg per inhabitant). Among the G20 members with data for both years shown in the figure, decreases in the level of waste generated relative to population size were recorded in all countries except for South Korea where there was a slight increase between 2007 and 2016. In relative terms, the largest decreases were observed for Japan (down 15 %; 2007-2016) and the United Kingdom (down 17 %; 2007-2017).

**Figure 13.8:** Municipal waste generation, 2007 and 2017
(kg per inhabitant)
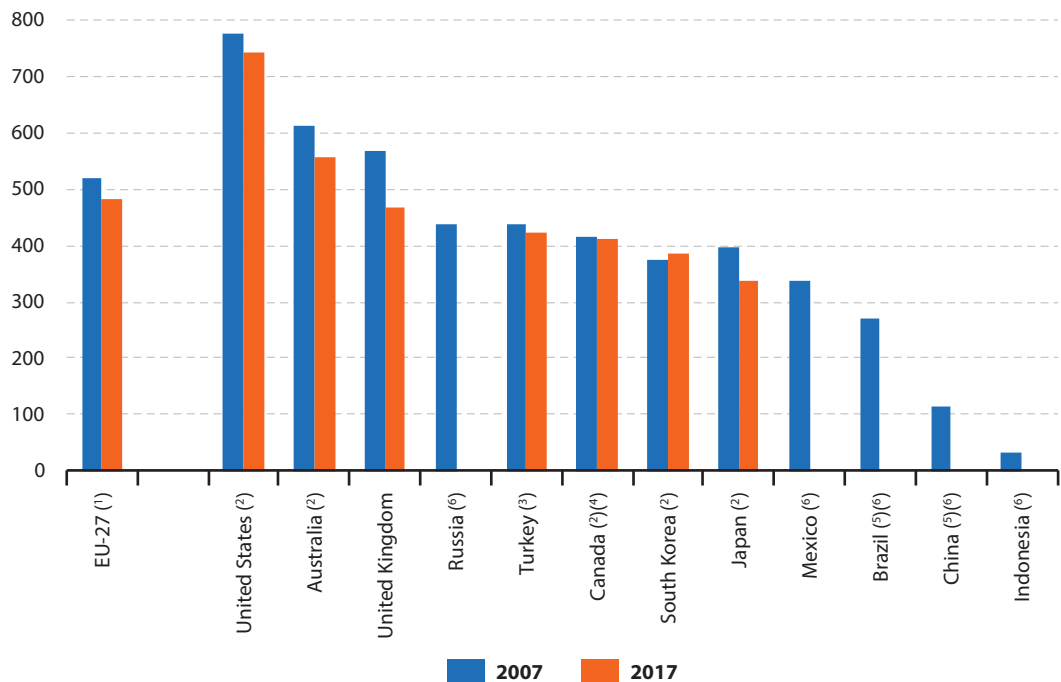


Note: more recent data are available from Eurobase for the EU-27 and the United Kingdom. Argentina, India, Saudi Arabia and South Africa: not available.

(¹) Estimates.
(²) Canada: 2006 instead of 2007. Australia and the United States: 2015 instead of 2017. Canada, Japan and South Korea: 2016 instead of 2017.
(³) 2017: estimate. Break in series.
(⁴) Municipal waste from households only.
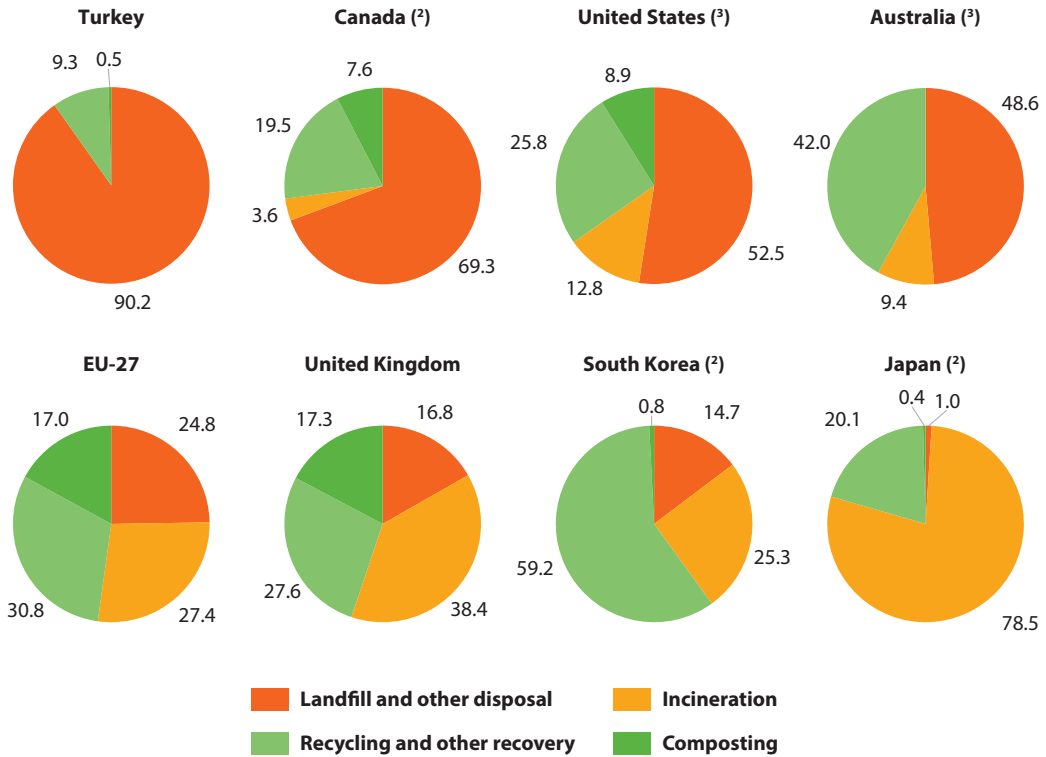(⁵) 2007: not available.
(⁶) Incomplete data.

*Source:* Eurostat (online data code: env_wasmun), the OECD (Environment, Waste) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

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 13.9), Turkey (90.2 %) reported the most frequent use of landfill in 2017 and Japan reported the most frequent use of incineration (78.5 %; 2016 data) to treat municipal waste. In South Korea, almost three fifths (59.2 %) of all municipal waste was recycled in 2016, with the next highest share in Australia (42.0 %; 2015 data), followed by the EU-27 (30.8 %), the United Kingdom (27.6 %) and the United States (25.8 %; 2015 data). In the United Kingdom and the EU-27, 17.3 % and 17.0 % of municipal waste was composted in 2017, approximately double the next highest share among the G20 members, 8.9 % in the United States in 2015.

**Figure 13.9:** Municipal waste treatment, 2017
(%)

**Turkey**

9.3  0.5

90.2

**Canada (²)**

7.6

19.5

3.6

69.3

**United States (³)**

8.9

25.8

52.5

12.8

**Australia (³)**

48.6

42.0

9.4

**EU-27**

17.0    24.8

30.8    27.4

**United Kingdom**

17.3    16.8

27.6    38.4

**South Korea (²)**

0.8    14.7

59.2    25.3

**Japan (²)**

0.4  1.0

20.1

78.5

▮ **Landfill and other disposal**    ▮ **Incineration**

▮ **Recycling and other recovery**    ▮ **Composting**

Note: ranked on landfill. More recent data are available from Eurobase for the EU-27 and the United Kingdom.
Argentina, Brazil, Canada, China, India, Indonesia, Russia, Saudi Arabia and South Africa: not available. Due to
rounding, the sum of the shares does not always equal 100.0 %.

(¹) Estimates.
(²) 2016.
(³) 2015.

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

# 14. Agriculture, forestry and fisheries

## Structure

The total agricultural area of the EU-27 was 161.4 million hectares (100 hectares is one km²) in 2016, some 39.3 % of its land area (see Figure 14.1). Forest cover within the EU-27 extended to 157.8 million hectares in 2015, around 38.4 % of its land area. Among the G20 members, the most extensive total agricultural areas in 2017 were recorded for China (529 million hectares; 56.1 % of the land area) and the United States (406 million hectares; 72.0 %) while the most extensive forest areas were in Russia (815 million hectares; 49.8 %) and Brazil (494 million hectares; 59.0 %).

Among the G20 members, the ratio of the total agricultural area to the land area in 2017 was

72.0 % in the United Kingdom, 60.4 % in India and between 54 % and 56 % in China, Mexico and Argentina. The share of agricultural land within the total land area was below 50.0 % among the other G20 members), below one fifth in South Korea, Russia and Japan, and below one tenth in Canada.

In 2017, more than half of the land area in Japan, South Korea and Brazil was forested, while the shares in Russia and Indonesia were just below half. Among the other G20 members, Australia, Turkey and the United Kingdom recorded shares that were within the range of 10-20 %, while the lowest share of land that was covered by forests was in Argentina (9.9 %).

Comparing these two ratios it can be seen that the agricultural share (2016 data) of the

**Figure 14.1:** Agricultural and forest area, 2017
(% of land area)
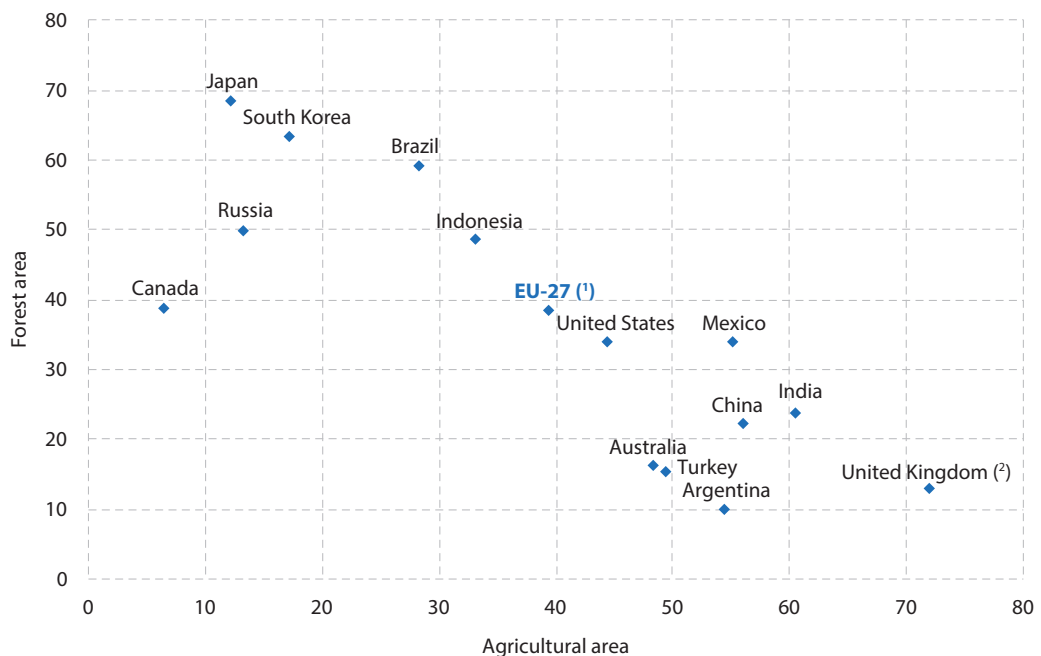


Note: Saudi Arabia and South Africa not included due to lack of comparable land use data. Estimates. May include official, semi-official, estimated or calculated data.

(¹) Agricultural area: 2016. Forest area: 2015.
(²) Forest area: 2015.

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

EU-27's land area was just 0.9 percentage points larger than its forest share (2015 data). The other G20 members reported much less balanced positions between these two ratios. A small majority recorded larger agricultural than forest areas, with the largest difference observed in the United Kingdom where the agricultural area in 2017 was 59.0 points higher than the forest area in 2015. Six of the G20 members — Indonesia, Brazil, Canada, Russia, South Korea and Japan — recorded larger forest than agricultural areas, with the difference in Japan reaching 56.3 points.

In most G20 members, agriculture, forestry and fishing accounted for less than one tenth of total employment in 2018, according to data from the United Nations' International Labour Organisation (ILO). Nevertheless, this share exceeded one quarter in China (27.0 %) and Indonesia (29.6 %) and exceeded two fifths in India (43.3 %). The

employment share of agriculture, forestry and fisheries in the EU-27 was 4.5 %.

In nearly all G20 members — India and Turkey were the only exceptions — the employment share of agriculture, forestry and fisheries in 2018 was higher for men than for women (see Figure 14.2). This was most notably the case in Mexico where there was a difference of 14.8 points between the two shares and in Brazil where the difference was 9.0 points. In the EU-27, 5.5 % of men in employment worked in these activities compared with 3.3 % of women, a difference of 2.2 points. In Turkey and India the proportions of women working in agriculture, forestry and fisheries were 11.2 points and 15.5 points higher than for men. In India, more than half (55.5 %) of all women worked in these activities, by far the highest share among the G20 members.

**Figure 14.2:** Employment in agriculture, forestry and fisheries, 2018
(% of total employment)
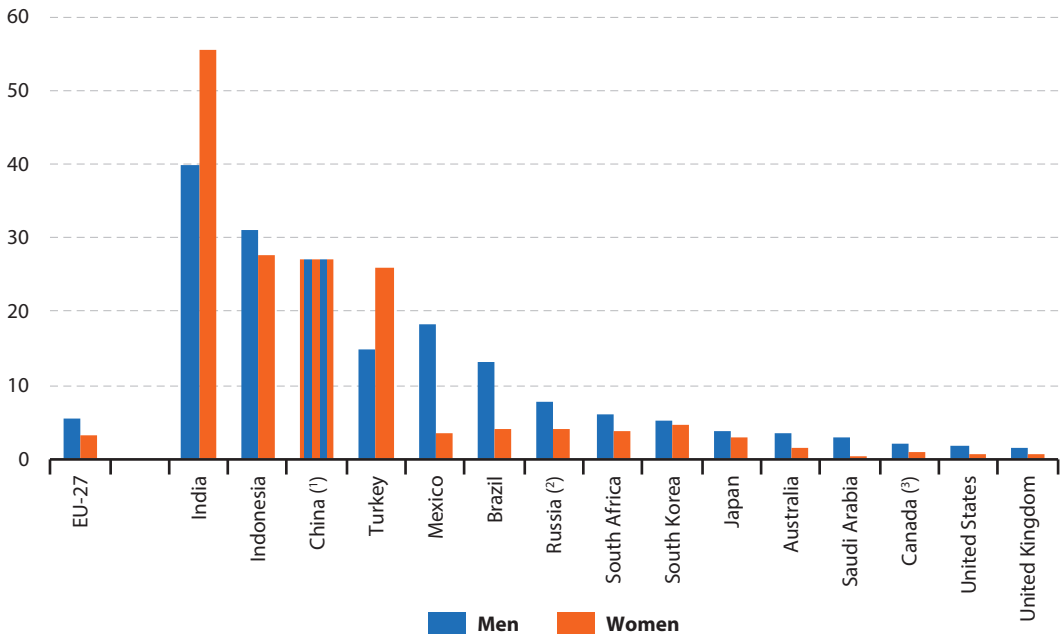


Note: ranked on the overall share for both sexes combined. More recent data are available for some countries from the ILO. Argentina, not available.

(¹) Analysis by sex: not available.
(²) Statistics of the Russian Federation include statistical data for the Autonomous Republic of Crimea and the city of Sevastopol, Ukraine, temporarily occupied by the Russian Federation. The EU does not recognise the illegal annexation of Crimea and Sevastopol to the Russian Federation.
(³) Excluding forestry and fishing.

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

## Agricultural products

The production of a range of different crops across the G20 members is presented in Figure 14.3. Crop production refers to the harvested quantity of production. China was the largest producer of cereals among the G20 members in 2018, followed by the United States, India and the EU-27; together the G20 members accounted for 77.0 % of world production. The United States had the highest maize production, followed by China and the

combined production of G20 members was 84.5 % of the world total. Rice production in G20 members was dominated by China, India and Indonesia, together producing 91.4 % of the G20 total; in tune, the G20 members together produced 65.7 % of the world's rice. China, India and the EU-27 were the largest producers of potatoes; together the G20 members accounted for 70.6 % of the world's potato harvest. Sugar cane production was particularly high in Brazil (747 million tonnes), nearly two fifths of world production.

**Figure 14.3:** World production of selected crops, 2018
(%)
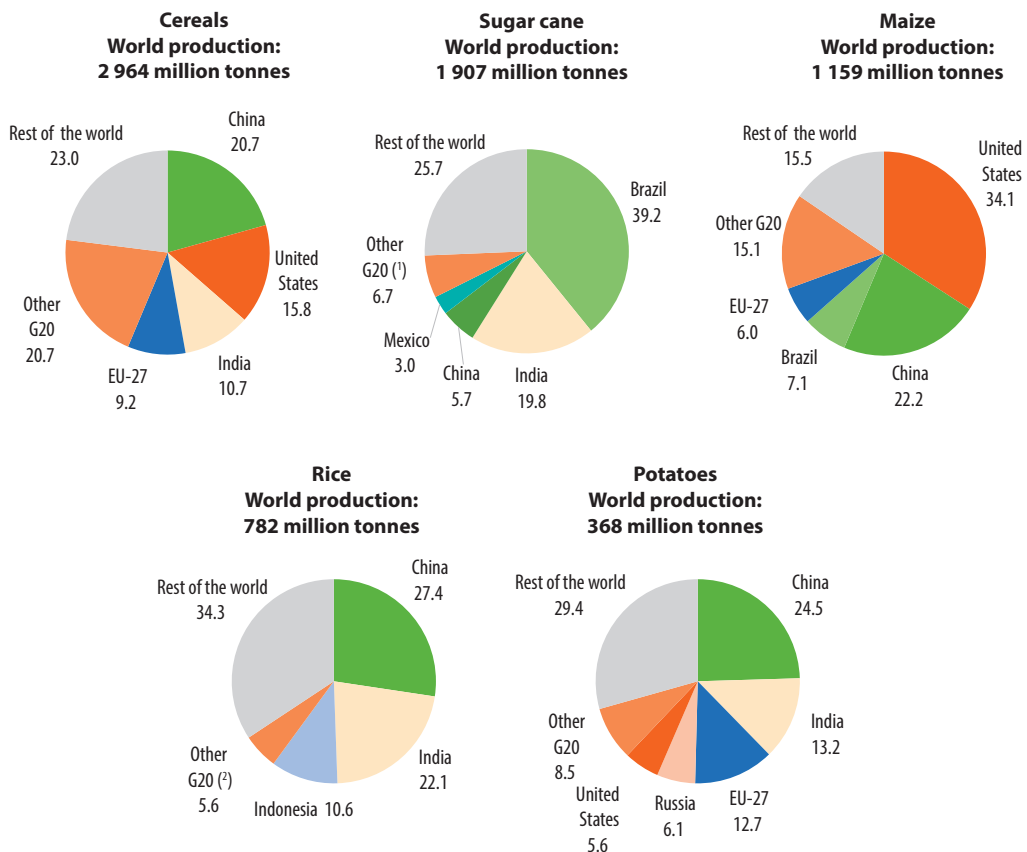


Note: may include official, semi-official, estimated or calculated data.

(¹) Excluding Canada, Russia, Saudi Arabia, South Korea, Turkey and the United Kingdom.
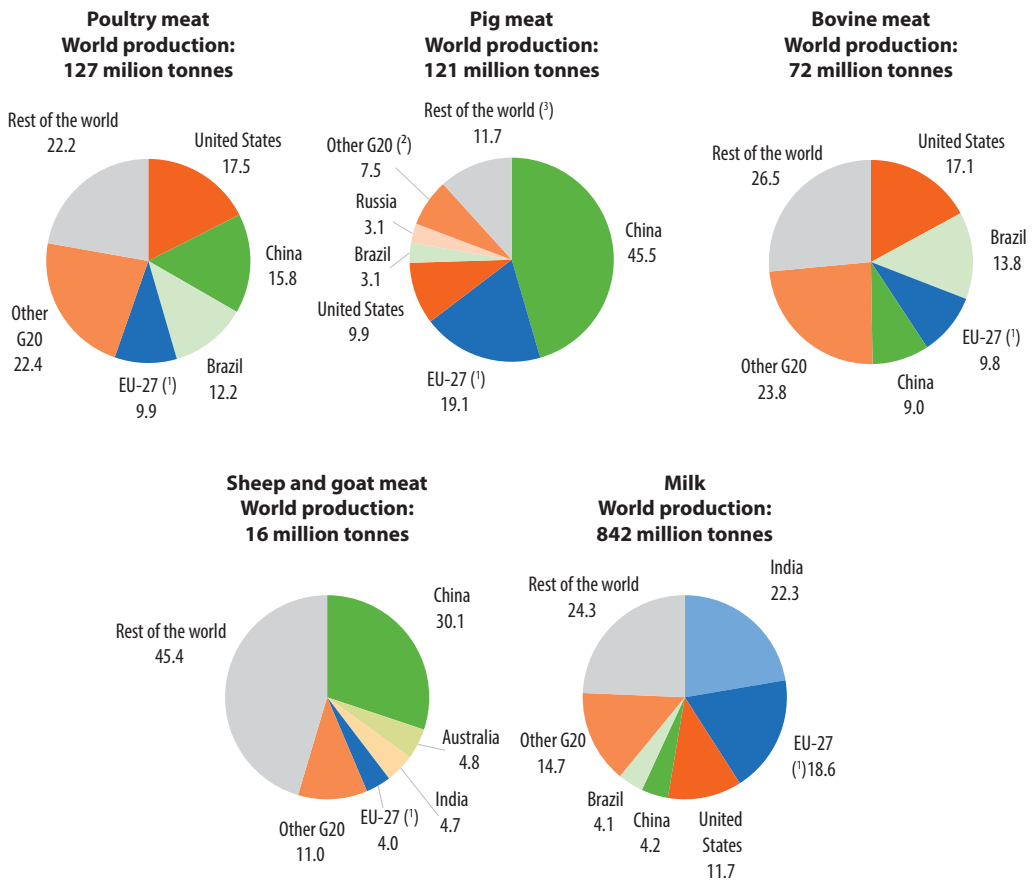(²) Excluding Canada.

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

The share of world production for a selection of meat products and for milk is presented in Figure 14.4. 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 342 million tonnes of meat produced worldwide in 2018, with China, the EU-27, the United States and Brazil collectively producing 60.8 % of the world total. The G20 members were particularly specialised in the production of pig meat,

accounting for 88.3 % of the world total, while the lowest share for G20 members for the types of meat shown in Figure 14.4 was 54.6 % for sheep and goat meat.

China alone contributed 25.7 % of world meat production in 2018, considerably more than the next largest shares among G20 members, 13.7 % for the United States, 12.8 % for the EU-27 and 8.6 % for Brazil: none of the other G20 members produced more than 3.5 % of the world's meat.

**Figure 14.4:** World production of meat and milk, 2018
(%)



**Poultry meat**
**World production:**
**127 milion tonnes**

Rest of the world 22.2
United States 17.5
China 15.8
Brazil 12.2
EU-27 (¹) 9.9
Other G20 22.4

**Pig meat**
**World production:**
**121 million tonnes**

Rest of the world (³) 11.7
Other G20 (²) 7.5
Russia 3.1
Brazil 3.1
United States 9.9
EU-27 (¹) 19.1
China 45.5

**Bovine meat**
**World production:**
**72 million tonnes**

Rest of the world 26.5
United States 17.1
Brazil 13.8
EU-27 (¹) 9.8
China 9.0
Other G20 23.8

**Sheep and goat meat**
**World production:**
**16 million tonnes**

China 30.1
Australia 4.8
India 4.7
EU-27 (¹) 4.0
Other G20 11.0
Rest of the world 45.4

**Milk**
**World production:**
**842 million tonnes**

India 22.3
EU-27 (¹)18.6
United States 11.7
China 4.2
Brazil 4.1
Other G20 14.7
Rest of the world 24.3

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

(¹) Estimates based on FAO data.
(²) Excluding Saudi Arabia and Turkey.
(³) Including Saudi Arabia and Turkey.

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

More than half of the total meat production of the four selected meat products shown in Figure 14.4 in Argentina was cattle meat, while a similar level of specialisation was recorded in China, South Korea and the EU-27 for pig meat, and in Saudi Arabia, Indonesia, Turkey, Japan, South Africa and Brazil for poultry meat. In several countries, the relatively low levels of meat production in general and of some types of meat in particular reflect, at least to some degree, predominant religious beliefs.

Figure 14.5 presents information on the levels of meat and milk production relative to population size. Worldwide 2.5 times as much milk was produced as meat in 2018, averaging 110 kg of milk per inhabitant and 45 kg of meat. Average production per inhabitant in the EU-27 was higher, more than double the world average for meat (98 kg) and more than treble the

world average for milk (351 kg). In most G20 members, meat production per inhabitant exceeded the world average, the exceptions being India, Indonesia, Saudi Arabia, Japan and Turkey, with the last of these only marginally below the world average. Averages above 100 kg per inhabitant were recorded in Canada, Argentina, Brazil and the United States, while the highest level of meat production per inhabitant was in Australia, at 187 kg per inhabitant. Australia produced 373 kg of milk per inhabitant in 2018 which was the highest level among G20 members, ahead of the EU-27's production of 351 kg per inhabitant and the United States' 302 kg per inhabitant. At the other end of the range, less than 50 kg of milk per inhabitant was produced in Saudi Arabia and China, while the lowest milk production of all G20 members was 5.6 kg per inhabitant in Indonesia.

**Figure 14.5:** Meat and milk production, 2018
(kg per inhabitant)
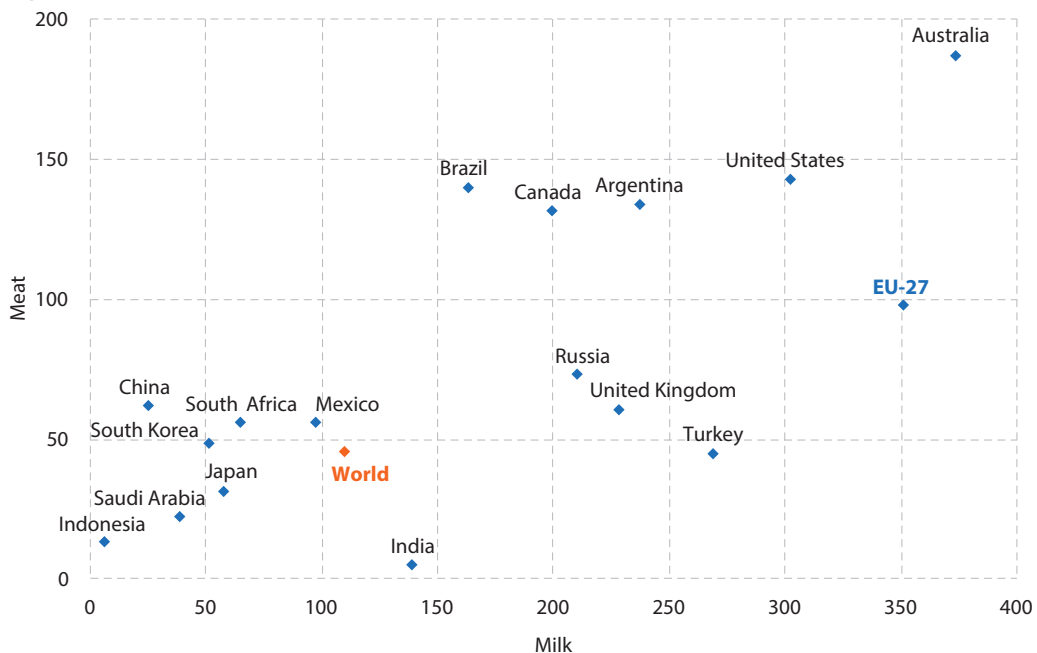


Note: ranked on the production of meat. May include official, semi-official, unofficial, estimated or calculated data.

(¹) Estimates based on FAO data.

*Source:* the Food and Agriculture Organisation of the United Nations (FAOSTAT: Production) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

# 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.

Forest cover within the EU-27 extended to 158 million hectares in 2015, around 38.4 % of its total land area (see Figure 14.1). Between 1990 and 2015, the area increased by 12.6 million hectares, an overall increase of 8.7 %, equivalent to an average of 0.3 % per year.

In absolute terms, the world's forest area declined by 129.1 million hectares between 1990 and 2015. Among the G20 members, the largest decreases were observed in Brazil (down 53.2 million hectares) and Indonesia (down 27.5 million hectares). The largest increase was in China, where the forest area was 51.2 million hectares larger in 2015 than in 1990.

Between 1990 and 2015, the area covered by forests increased on average by 1.1 % per year in China, 0.8 % per year in Turkey, 0.5 % per year in the United Kingdom and 0.4 % per year in India — see Figure 14.6. The world's forest area declined on average by 0.1 % per year between 1990 and 2015. The largest declines in relative terms were in Argentina (down 1.0 % per year) and Indonesia (down 1.1 % per year).

**Figure 14.6:** Annual average change in forest area, 1990-2015
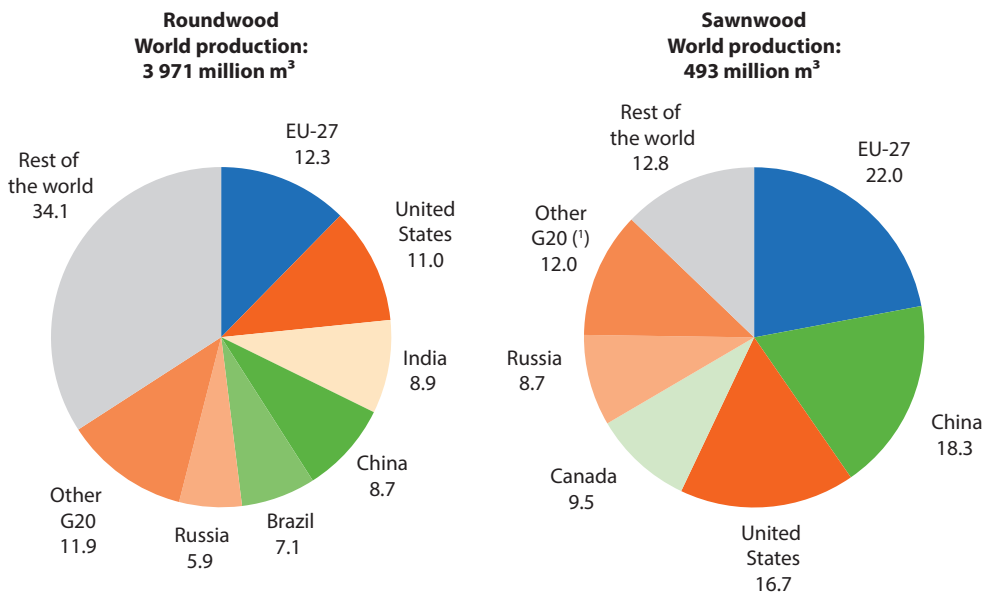


(%)
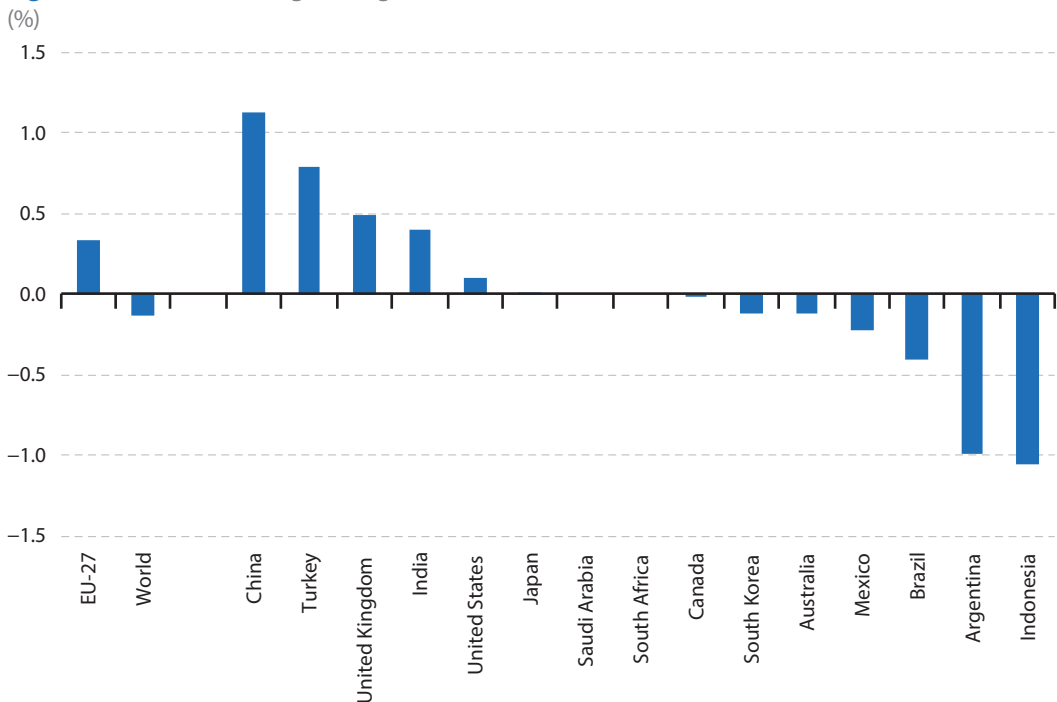
Note: Russia, not available. May include official, semi-official, unofficial, estimated or calculated data.

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

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-27 was 490 million m3 (9.9 % of the world total) in 2018, making the EU-27 the largest producer within the G20 with a 12.3 % world share (see Figure 14.7). The United States had an 11.0 % share of the world total, followed by India, China, Brazil and Russia, all with shares over 5.0 %. In total, G20 members accounted for 65.9 % of roundwood production worldwide in 2018.

The EU-27 was also the largest producer of sawnwood, with an output of 109 million m$^3$ in 2018, equivalent to 22.0 % 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 China and the United States was somewhat less than in the EU-27, contributing 18.3 % and 16.7 % to the world total. Collectively the G20 members (excluding Saudi Arabia) produced 87.2 % of world sawnwood production, a considerably greater share than for roundwood.

**Figure 14.7:** **Production of roundwood and sawnwood, 2018**
(% of world total based on cubic metres)



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

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

## Fisheries

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

regulate the amount of fishing, as well as the types of fishing techniques and gear used to catch fish.

The fish catch refers to all catches of fishery products (including fish, molluscs, crustaceans and other aquatic animals, residues and aquatic plants) taken by all

types and classes of fishing units that are operating in inland, inshore, offshore and high-seas fishing areas: the small quantity of aquatic mammals that are caught have been excluded from the data shown in Figure 14.8 for reasons of comparability. 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-27 fishing fleet was 4.8 million tonnes in 2017, 3.7 % less than had been caught in 2007. Relative to population size this was equivalent to 10.9 kg per inhabitant in 2017. The largest fish catch relative to population size among G20 members in 2017 was reported for Russia, 31.6 kg per inhabitant, some 2.9 times the level for the EU-27. Seven G20 members reported lower levels of fish catch per

inhabitant than the EU-27: China, South Africa, Australia, Turkey, India, Brazil and Saudi Arabia.

Between 2007 and 2017, the fish catch relative to population size increased in Russia by 9.1 kg per inhabitant, far more than in any other G20 member (see Figure 14.8). Indonesia (up 3.3 kg per inhabitant), the United Kingdom (up 1.0 kg per inhabitant), India (up 0.3 kg per inhabitant) and the EU-27 (up 0.2 kg per inhabitant) were the only other G20 members to report an increase. South Korea, Japan and Canada had the largest levels of fish catch relative to population size in 2007 and they reported the largest decreases between 2007 and 2017 in their fish catches relative to their population size, each down by between 8.5 kg and 11.8 kg per inhabitant.

**Figure 14.8:** Fish catch, 2007 and 2017
(kg per inhabitant)
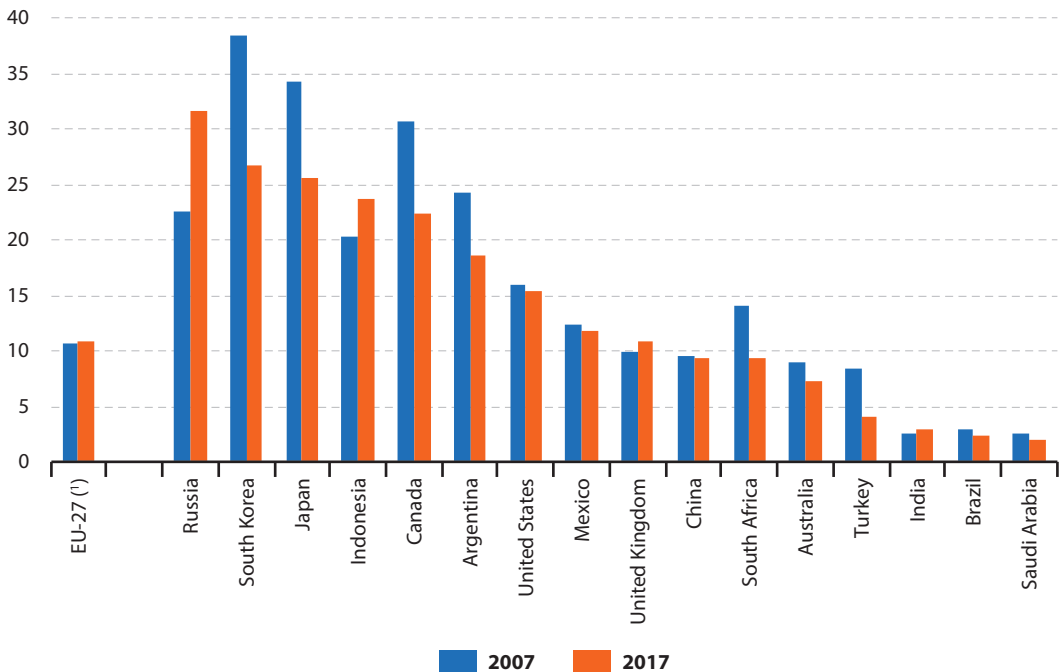


Note: more recent data are available from Eurobase for the United Kingdom. Catches in marine areas of all aquatic organisms except aquatic mammals.

(¹) Estimates based on FAO data.

*Source:* Eurostat (online data code: demo_gind), the Food and Agriculture Organisation of the United Nations (Global Capture Production) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

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-27 was estimated at 2.5 kg per inhabitant (see Figure 14.9). 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 in 2017, namely, South Korea (45.1 kg per inhabitant), China (45.3 kg per inhabitant) and Indonesia (60.1 kg per inhabitant).

Aquaculture production relative to population size fell between 2007 and 2017 in Japan and very slightly in the United States and the EU-27, 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 13.7 kg per inhabitant in China, 16.6 kg per inhabitant in South Korea and 46.6 kg per inhabitant in Indonesia. In relative terms, the highest increase in aquaculture production per inhabitant between 2007 and 2017 was also recorded in Indonesia, where output in 2017 was more than four times as high as it had been in 2007, while in Saudi Arabia production per inhabitant more than doubled.

Relative to population size, the EU-27's combined fish catch and aquaculture production was estimated at 13.4 kg per inhabitant in 2017, a relatively low level compared with most other G20 members. The highest levels of production were witnessed in Indonesia and South Korea, with 83.8 kg per inhabitant and 71.8 kg per inhabitant respectively in 2017.

**Figure 14.9:** Aquaculture production, 2007 and 2017
(kg per inhabitant)
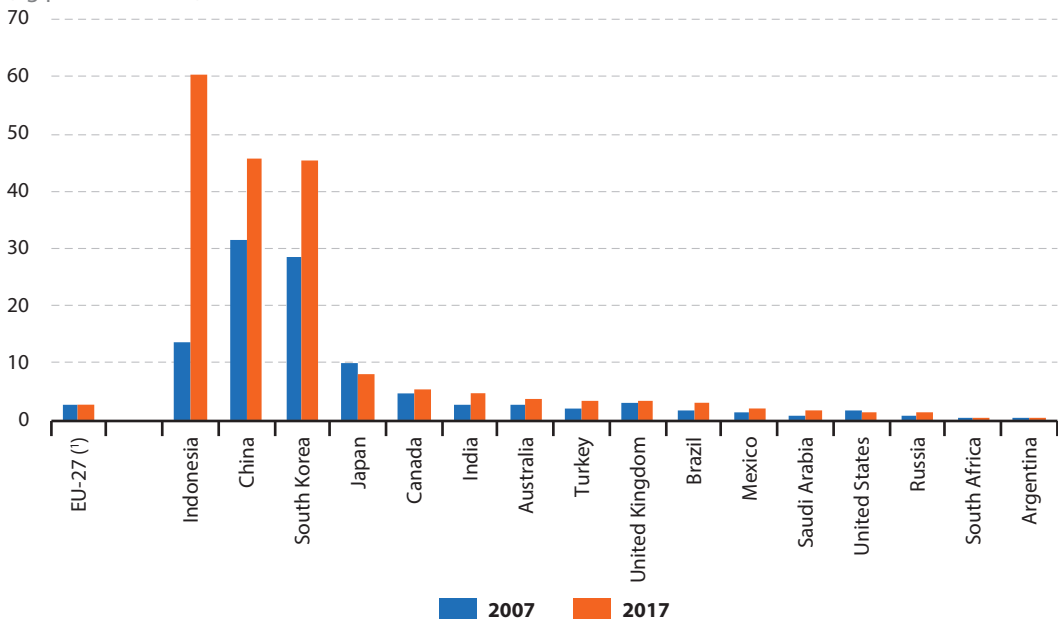


Note: production in inland waters and marine areas of all aquatic organisms except aquatic mamals.

(¹)  Estimates based on FAO data.

*Source:* Eurostat (online data codes: demo_gind), the Food and Agriculture Organisation of the United Nations (Global Aquaculture Production) and the United Nations Department of Economic and Social Affairs, Population Division (World Population Prospects 2019)

# 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 |
| kg | kilogram |
| km | kilometre |
| km² | square kilometre |
| m³ | 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 (from 1 February 2020) |
| 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 |
| DAC | Development Assistance Committee |
| 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 |
| ISIC | International standard industrial classification of all economic activities |
| NEETs | (young people) not in employment, education or training |
| ODA | official development assistance |
| 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.

**Table 1:** National statistical authorities

| Authority | Website |
|---|---|
| National Institute of Statistics and Censuses | 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 | 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://en.www.inegi.org.mx/ |
| 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 |
| Office for National Statistics (United Kingdom) | https://www.ons.gov.uk/ |
| United States Census Bureau | http://www.census.gov/ |
| Bureau of Labor Statistics (United States) | http://www.bls.gov/ |

*Source:* Eurostat

# Data sources

| Organisation | Data source(s) |
|---|---|
| **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; Development finance data; 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; 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) | Analysis of Main Aggregates; Demographic Statistics; Demographic and Social Statistics; National Accounts Official Country Data; Energy Balances; Energy Statistics Yearbook; World Population Prospects; The World's Cities in 2018 — 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) | Population Statistics |
| The World Health Organisation (WHO) | 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 World annual traffic report of the Airports Council International (ACI) has been used for air transport statistics.

# The EU in the world

This publication provides a statistical portrait of the European Union 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 and society — population, health, education and training, the labour market, living conditions and digital society; economy and business — economy and finance, international trade, business, and science, technology and the digital society; environment and natural resources — transport, energy, the environment, and agriculture, forestry and fisheries.

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.

**For more information**
**https://ec.europa.eu/eurostat/**

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