Sustainable development in the European Union

Monitoring report on progress towards the SDGs in an EU context

2022 edition

EUROSTAT SUPPORTS THE SDGs

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Foreword of Commissioner Gentiloni

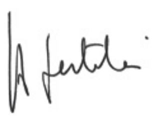
Despite the challenges brought about by the COVID-19 pandemic and more recently Russia's invasion of Ukraine, the European Commission has been focusing on concrete actions to bring tangible progress in the areas of the Sustainable Development Goals (SDGs). Several deeply transformative initiatives have been launched since the beginning of this mandate, such as the European Green Deal, the Climate Law and the European Pillar of Social Rights Action Plan. Numerous initiatives have been adopted, concerning both internal and external action, taking into account the SDG angle. Prompted by the pandemic, the EU adopted at record speed NextGenerationEU, an unprecedented common instrument intended to quickly respond to the downturn and build back better over the medium term, accelerating the green and digital transitions.

Creating a sustainable and resilient Europe requires substantial financial resources. The Recovery and Resilience Facility offers an extraordinary opportunity for investment in reforms in our common European priorities with tangible benefits for citizens across the EU. The six pillars of the Recovery and Resilience Facility are closely aligned with the SDGs, ranging from the green transition to smart, sustainable and inclusive growth as well as including policies for the next generation, such as education and skills.

The needs of future generations are an inherent part of sustainable development. To support the generation that suffered the most in the pandemic, the European Commission declared 2022 the 'European Year of Youth'. The European Year of Youth will renew the positive impetus for young people, especially for those with fewer opportunities, by mainstreaming youth policy across all relevant Union policy fields.

Sustainable development continues to be further mainstreamed into the EU's policymaking and economic coordination processes. For the first time, the EU SDG monitoring report 2022 is aligned with the publication of the Spring package of the European Semester. This year's European Semester Country Reports for the first time include a dedicated chart that monitors every Member State's individual performance on the SDGs. Actions at all levels, from local, regional and national to European, are necessary to achieve a better and more sustainable future.

This monitoring report on the SDGs is our latest contribution to the debate on the future of Europe and the role of the EU in the world. Knowing where we stand, identifying the most pressing sustainability challenges and critically examining our performance, is essential to ensure a sustainable Europe in a sustainable world.



Paolo Gentiloni,
Commissioner, European Commission
Responsible for Economy and for Eurostat

Foreword of Eurostat's Director-General

This publication is the sixth edition of Eurostat's monitoring report on the Sustainable Development Goals (SDGs). It provides a quantitative assessment of the progress of the European Union (EU) towards reaching the SDGs. This 2022 edition is based on a set of around 100 indicators that have been selected taking into account their policy relevance from an EU perspective as well as their availability, country coverage, data freshness and quality. Many of the selected indicators have already been used to monitor existing policies, such as the European Pillar of Social Rights. The EU SDG indicator set is aligned with — but not identical to — the UN list of global SDG indicators. This allows the EU SDG indicators to focus on monitoring EU policies and phenomena particularly relevant in the European context.

This report begins with a synopsis of the EU's overall progress towards achieving the SDGs, followed by a presentation of the policy background at global and EU levels and the way the SDGs are monitored at EU level. The detailed monitoring results are presented in 17 chapters, one for each of the SDGs, showing the progress the EU has achieved in implementing the 17 SDGs over the past five- to 15-year period and pointing to areas where further effort is needed. Moreover, the report analyses how the pandemic has influenced the EU on its way towards achieving the SDGs and gives an overview regarding the status and progress of EU Member States towards achieving the SDGs. It closes with an improved analysis of the spillover effects of EU consumption and its impacts on the ability of other countries to achieve the SDGs and makes a quantitative analysis of the interlinkages between the goals.

I believe that the 2022 monitoring report will inspire European citizens, policy-makers, researchers and businesses to undertake sound sustainable development actions, particularly as part of the recovery from the COVID-19 crisis, so that European societies can become more resilient to future challenges.

Mariana Kotzeva
Director-General, Eurostat

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Data coverage and direct links to Eurostat's database:

The data presented in this publication were extracted in early April 2022. Additionally, the release of EU Labour Force Survey (LFS) data for 2021 was taken into account as far as data were available by the end of April 2022.

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

https://ec.europa.eu/eurostat/data/database

For more information please consult:

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Synopsis

Synopsis

The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), adopted by the United Nations (UN) in September 2015, is the world's roadmap for achieving sustainable development in this decade. The European Union (EU) has fully committed itself to delivering on the 2030 Agenda, and the SDGs form an intrinsic part of the European Commission's work programme and the Political Guidelines of Commission's President Ursula von der Leyen ([1]).

Monitoring is an essential component in realising the 2030 Agenda's vision, both globally and in the EU, by assessing and visualising the progress made so far towards the 17 SDGs. Since 2017, Eurostat has been preparing annual reports monitoring the progress towards the SDGs in the EU context. This 2022 edition is the sixth report in this series, analysing the EU's progress towards the goals based on the official EU SDG indicator set.

Reflecting the timespan of the 2030 Agenda, this report aims to present an objective assessment of whether the EU — according to the selected indicators — has progressed towards the SDGs over the past 15-year period. Additionally, short-term trends over the most recent five-year period of available data are presented to provide an indication of whether a trend has been persistent or has shown a turnaround at a certain point in time. The report consequently focuses on the trends over the past five- to 15-year periods. Given the time lag of the available data, these mainly refer to the periods up to 2020 or 2021. More recent developments due to the ongoing COVID-19 pandemic or those caused by Russia's invasion of Ukraine are therefore at best only partly reflected in the available data.

How has the EU progressed towards the SDGs?

This synopsis chapter provides a statistical overview of progress towards the SDGs in the EU. Because a long-term assessment is not possible for a number of indicators due to limited data availability, the progress at goal-level presented below is assessed over the most recent five-year period ('short-term') based on the EU SDG indicators. The figure on the next page shows the pace at which the EU has progressed towards each of the 17 goals over this short-term period according to the selected indicators. The method for assessing indicator trends and aggregating them at the goal-level is explained in Annex II.

As in previous years, the EU continued to make the strongest progress towards fostering peace and personal security within its territory and improving access to justice and trust in institutions (SDG 16).

Overview of EU progress towards the SDGs over the past 5 years, 2022
(Data mainly refer to 2015–2020 or 2016–2021)

Significant progress was also visible for the goals on reducing poverty and social exclusion (SDG 1), on the economy and the labour market (SDG 8), on clean and affordable energy (SDG 7) and on innovation and infrastructure (SDG 9). It is important to note that in the area of poverty (SDG 1), available data partly refer to the period up to 2019 only and therefore do not yet fully take into account the pandemic's impacts. In contrast, the favourable assessment of SDG 7 is strongly influenced by a remarkable reduction in energy consumption in 2020 as a result of COVID-19 related restrictions on public life and lower economic activity.

The EU has also achieved good progress towards the goals on health and well-being (SDG 3), life below water (SDG 14) and gender equality (SDG 5). Progress towards the remaining nine goals was markedly slower, as shown in the figure on the previous page, with few goals even experiencing slightly unsustainable overall trends over the most recent five-year period of available data. For each of the goals, the following section provides a brief overview of the main indicator trends standing behind the goal-level assessment.

Summary at goal level

The goals are presented in order of average indicator trend assessments, from best to worst.

All of the indicators for **SDG 16 'Peace, justice and strong institutions'** show clearly favourable trends for the EU over the past five years, putting the goal again on top of the ranking. Life in the EU has become safer over the past few years, as deaths due to homicide or assault and the perceived occurrence of crime, violence and vandalism in European neighbourhoods have both fallen considerably. Furthermore, government expenditure on law courts has increased. Despite the Commission's growing concern over the independence of the justice system in certain countries, the majority of EU citizens continue to perceive this independence is intact. Citizens' confidence in EU institutions — the European Commission, the European Parliament and the European Central Bank — has grown considerably since 2015.

The EU's situation regarding **SDG 1 'No poverty'** is characterised by considerable improvements in all poverty dimensions monitored in this report as well as an increasing share of people being able to meet their basic needs. However, due to the time lag of the statistics on income and living conditions (EU-SILC), the data do not yet fully reflect the impact of the COVID-19 pandemic ([2]). In the area of multidimensional poverty, trends in the five-year period up to 2020 show that fewer people were affected by income poverty ([3]), suffered from severe material and social deprivation or lived in (quasi-)jobless households. This resulted in a marked improvement concerning the overall risk of poverty or social exclusion across the EU. In the area of basic needs, the shares of people overburdened by their housing costs or facing severe housing deprivation have fallen since 2015.

SDG 8 'Decent work and economic growth' shows clear signs of recovery after the pandemic's impact on the economy and the labour market. After the contraction of the EU economy in 2020, real GDP per capita grew significantly in 2021, although it remained slightly below pre-pandemic levels. More recently, and especially since the Russian invasion of Ukraine, the overall economic picture has, however, been marked by higher uncertainty. The economic recovery of 2021 is also reflected in the labour market, with the EU's employment rate reaching a new record high of 73.1 % in 2021. The share of young people neither in employment nor in education and training (NEET) also fell in 2021, but progress over the past five years has not yet been strong enough to put the EU on track towards meeting its respective 2030 target. The EU's long-term unemployment rate increased slightly in 2021 but remains below the levels recorded before 2018. In the area of decent work, both the incidence of fatal work accidents and the share of 'working poor' had been falling in the period up to 2019.

The goal-level assessment of **SDG 7 'Affordable and clean energy'** is strongly influenced by the measures taken in response to the COVID-19 pandemic and the related restrictions on public life and lower economic activity. Due to a remarkable drop in energy consumption in 2020, the EU was able to reach its 2020 energy efficiency target and, based on the progress achieved so far, including the pandemic's effects in 2020, appears to be on track towards its 2030 target. The reduction in energy consumption also positively affected progress in energy supply, resulting in an increase in the share of renewable energies and a slight reduction in the EU's dependence on energy imports from non-EU countries. The EU thus also met its 2020 renewable energy target and appears to be on track to reach its 2030 target. The five-year trend in access to affordable energy is also favourable, despite a recent increase in the share of people who cannot afford to keep their home adequately warm in 2020. It is important to note that the increase in energy prices already observed in 2021 is not yet reflected in these data.

SDG 9 'Industry, innovation and infrastructure' is characterised by favourable trends in most of its indicators. As regards R&D and innovation, the EU has seen continued growth in its R&D expenditure (both in absolute terms and in relation to GDP) as well as in the share of R&D personnel in the labour force and the share of young people with tertiary education. Also, patent applications to the European Patent Office have risen considerably over the past five years, despite a temporary decline in 2020. As regards the sustainability transformation of the EU's industrial sector, the air emissions intensity of the manufacturing sector — referring to the sector's fine particulate matter emissions relative to its gross value added (GVA) — has improved, and the GVA of the environmental goods and services sector has increased since 2014. Developments are mixed in the area of sustainable infrastructure. While both passenger and freight transport have shifted further away from environmentally friendly modes such as buses, trains or inland waterways, the share of households enjoying high-speed internet connections has grown considerably since 2016.

The assessment of **SDG 3 'Good health and well-being'** does not yet fully reflect the impact of the COVID-19 pandemic, mostly due to the time lag of mortality-related data. Available data in the area of healthy lives described in this report, referring to healthy life expectancy and self-perceived health, thus still show moderately favourable trends. The health determinants monitored in this report are not directly affected by COVID-19 and show largely positive developments. Concerning external health determinants, the share of people suffering from noise disturbance and the years of life lost due to exposure to air pollution by fine particulate matter have fallen in recent years. Trends in lifestyle-related risk factors are mixed; even though the share of smokers has fallen, the share of obese and overweight people has risen in the EU. Concerning causes of death, avoidable mortality (referring to both preventable and treatable causes of death) as well as deaths due to HIV, tuberculosis and hepatitis have fallen continuously in the period 2012 to 2017 (which is the most recent five-year period of available EU data for these two indicators). Moreover, fewer people died in accidents at work or on roads, although the reduction in road traffic deaths was too slow to meet the respective 2020 target. Trends in access to health care are still favourable, even though the share of people reporting unmet needs for medical care has stagnated since 2017.

Due to improved data availability, it is for the first time possible to present a goal-level assessment for **SDG 14 'Life below water'**. Trends in marine conservation and sustainable fisheries are generally favourable. The area of marine protected areas has more than doubled since 2012, although it needs to be acknowledged that the available data do not provide an indication of the sites' conservation status nor the effectiveness of the protection they offer to species and habitats. Model-based indicators on sustainable fisheries provide an improving picture as regards the trends of fish stock biomass and fishing pressure in EU marine waters, referring to both the North-East Atlantic and the Mediterranean and Black Sea (although the situation in the latter remains less favourable). Trends in the area of ocean health are, however, mixed. While the share of coastal bathing sites with excellent water quality has increased in the EU Member States, trends in the share of EU marine waters affected by eutrophication cannot be assessed due to strong annual fluctuations. Due to the absorption of carbon dioxide (CO_2) into the world's oceans, the mean surface seawater acidity continues to increase, and in 2020 reached a new unprecedented high over pre-industrial levels.

SDG 5 'Gender equality' shows quite favourable developments in most of the areas monitored. In the area of employment, women's hourly earnings are slowly catching up with those of men, and the gender employment gap has narrowed slightly since 2016. Moreover, while a much higher share of women than men remain outside the labour force due to caring responsibilities, this gender gap has also narrowed in recent years. Women also continue to increasingly occupy leadership positions, as shown by considerable growth in both the shares of women in national parliaments and in senior management positions of the largest listed companies. Despite these improvements, however, the gender situation remains far from parity in both areas. In the area of education, the gender gap is reversed, with more young women than men attaining secondary and tertiary education. For both early school leaving and tertiary education, these gaps have widened since 2016, indicating that young men are continuing to fall further behind women in terms of educational attainment levels.

The indicators used for monitoring **SDG 11 'Sustainable cities and communities'** show largely favourable developments concerning the quality of life in cities and communities, whereas the picture is more mixed for sustainable mobility and environmental impacts. Trends for severe housing deprivation, exposure to noise and the occurrence of crime, violence and vandalism in the neighbourhood have been clearly favourable over the past few years. Additionally, the years of life lost due to exposure to air pollution by fine particulate matter have decreased, even though the respective 2030 target might be difficult to reach. Developments were less clear-cut for other aspects of SDG 11. Already before the pandemic public passenger transport modes (buses and trains) were losing shares to cars, a development that is likely to be exacerbated by the COVID-19 crisis. Despite a strong drop in road traffic deaths in 2020, the target of halving this number compared with 2010 has been missed. Also, settlement areas have kept spreading, not only in absolute terms but also per capita, meaning that land take has increased faster than the EU population. Additionally, the increase in the EU's recycling rate of municipal waste has slowed in recent years, putting the EU off track to meeting its respective target by 2030.

Developments in the area of **SDG 10 'Reduced inequalities'** reveal a mixed but on average moderately favourable picture. The assessment of income inequalities within the EU is affected by methodological changes in the EU-SILC surveys of several countries, in particular Germany and France, indicating that the gap between the rich and the poor in the EU is generally wider than suggested by the data previously available. Data on the risk of poverty or social exclusion are less affected and show a continued narrowing of the gap between rural and urban areas in EU countries. Data on economic disparities between EU countries also show a mixed picture, with a divergence between Member States in terms of

GDP per capita since the onset of the pandemic. The labour market integration of migrants from outside the EU largely improved alongside the economic recovery in 2021, with the gap between non-EU citizens and EU home-country nationals narrowing for young people neither in employment nor in education and training (NEET) and the employment rate. Available data on income poverty refer to the situation before the pandemic and also show a narrowing of the gap between non-EU-citizens and home-country nationals since 2015.

Trends concerning **SDG 12 'Responsible consumption and production'** have been somewhat mixed over the past few years. The EU's material footprint, which estimates the global demand for the extraction of materials induced by the consumption of goods and services within the EU, has grown since 2014. Similarly, and despite a slight drop in 2020, consumption of hazardous chemicals has grown since 2015. The average CO_2 emissions efficiency of new passenger cars has improved considerably in 2020, but further progress will be necessary to meet the EU targets. Trends in waste generation and management are also mixed. While total waste generation (excluding mineral wastes) has grown since 2014, the improvements in the circular material use rate point to an increased recycling and recovery of waste in the EU. On a positive note, the gross value added in the environmental goods and services sector has risen considerably since 2014.

SDG 4 'Quality education' is characterised by divergent developments between the indicators monitoring participation in education and those monitoring education outcomes. Concerning participation in education, the EU is on track to meet its 2030 targets for early leavers from education and training and tertiary educational attainment. Adult learning has also increased since 2016. The share of children participating in early childhood education has grown slowly in the EU since 2015, and stronger progress will be necessary in the coming years to meet the respective 2030 target. Trends have been quite unfavourable for educational outcomes and skills. The proportion of low achieving pupils in reading, maths and science as measured in the OECD's PISA study increased between 2015 and 2018, moving the EU further away from its target of reducing these shares to 15 % by 2030. In addition, the share of adults with at least basic digital skills is stagnating, making the achievement of the target of raising this share to 80 % by 2030 unlikely.

The overall assessment of progress towards **SDG 13 'Climate action'** is moderately positive, even though the trends in the monitored areas — climate mitigation, adaptation and finance — show a somewhat mixed picture. While, according to provisional estimates for 2020, the EU has already reduced its net greenhouse gas (GHG) emissions by about 31 % since 1990 ([4]), further progress will be required to meet the new 55 % reduction target for 2030, especially since GHG emissions are expected to increase again in 2021 with the economic recovery. It is important to note that this assessment does not take into account further developments such as the pathways and planned measures outlined in the National Energy and Climate Plans (NECPs) of the Member States. Additionally, the carbon removals achieved by the land use and forestry sector (LULUCF) that contribute to the overall net GHG emissions have declined in recent years. The CO_2 emissions efficiency of new passenger cars improved considerably in 2020, but further progress will be necessary to meet the EU targets. Concerning climate impacts and adaptation, the monetary losses from weather- and climate-related disasters have continued to rise in recent years. On a positive note, the number of signatories to the Covenant of Mayors for Climate and Energy continues to grow. Moreover, the EU's contribution to climate finance for developing countries has increased continuously over the past few years.

Monitoring **SDG 2 'Zero hunger'** in an EU context focuses on malnutrition, the sustainability of agricultural production and its environmental impacts. Concerning malnutrition, there has been a clear increase in the share of obese people in the EU since 2014. In contrast, trends concerning the viability and sustainability of agricultural production have been favourable over the past five years. The labour productivity of the EU's agricultural sector has improved and public investments in agricultural R&D have increased. In addition, the area under organic farming has grown steadily, although stronger progress will be required to meet the target for 25 % of the EU's total farmland to be farmed organically by 2030. The use of more hazardous pesticides has also fallen since 2014, but too slowly to reach the 50 % reduction target by 2030. Furthermore, some adverse impacts of agricultural production remain visible in the EU, most notably the rising nitrate concentrations in EU groundwater bodies and the continued and dramatic decline of common farmland birds. On a more positive note, the EU land area at risk of severe soil erosion by water has decreased slightly, as have the ammonia emissions from agriculture.

The overall assessment of EU developments regarding **SDG 17 'Partnerships for the goals'** is more or less neutral. While imports from developing countries continued to grow, the overall financial support from the EU to these countries has fallen in recent years. This decrease is mainly a result of strong annual fluctuations in private flows, while official development assistance (ODA) has grown steadily. In 2020, the EU's ratio of ODA to gross national income (GNI) reached a new record high, which is a result of increased ODA spending in the context of the COVID-19 pandemic combined with a decline in GNI for the same reason. Additionally, after an interruption to trade flows by the COVID-19 pandemic, the value of EU imports from developing countries grew considerably in 2021. Concerning financial governance within the EU, the EU's overall debt-to-GDP ratio fell slightly in 2021 after reaching a record high in 2020 as a consequence of the COVID-19 crisis and related public spending. Moreover, the already low share of environmental taxes in total tax revenues has declined even further. On a more positive note, there has been a strong increase in the share of households enjoying high-speed internet connections, contributing to achieving the EU's 2030 connectivity objectives.

Similar to SDG 14, improved data availability for the first time allow a goal-level assessment of **SDG 6 'Clean water and sanitation'**. Available data paint a rather mixed picture for the EU for this goal, with an overall neutral assessment (on average no progress over the past five years). On the positive side, the share of people without appropriate sanitation facilities in their households has been steadily decreasing in the EU, and connectivity to at least secondary waste water treatment has improved. However, trends regarding water quality are less favourable in the EU. While biochemical oxygen demand in rivers has fallen more or less steadily, phosphate concentrations have risen recently. Similarly, nitrate concentrations in European groundwater bodies have increased in recent years. While average nitrate concentrations remain within EU drinking-water standards (50 milligrams per litre), serious problems at the regional or local level still exist. Additionally, the share of inland bathing sites with excellent water quality has fallen in the EU Member States since 2017. Trends in water exploitation cannot be assessed due to the seasonal variability of the water balance.

The indicators selected for **SDG 15 'Life on land'** show some slight improvements combined with a few clearly negative developments that result in an overall slightly negative goal-level assessment. While both the EU's forest area and terrestrial protected areas have increased slightly, pressures on biodiversity from land take, including soil sealing by impervious materials, continued to intensify. The resulting habitat loss is one of the reasons for the long-term decline in common birds and grassland butterflies. Trends for pollutants in EU water bodies are mixed, with decreases in biochemical oxygen demand occurring alongside increases in phosphate concentrations in rivers, while the EU land area at risk of severe soil erosion by water has shrunk slightly since 2010. The overall assessment of SDG 15 in this report confirms the results of other stocktaking reports and evaluations, which conclude that the conversation status of ecosystems and biodiversity in the EU is unfavourable, and that the negative impacts of EU consumption patterns on (global) biodiversity are considerable ([5]).

Summary of COVID-19 impacts

Previous editions of the EU SDG monitoring report have shown that even before the COVID-19 pandemic, progress towards the SDGs in the EU was uneven, with some areas requiring more attention and action. The pandemic has made the achievement of the 2030 Agenda and the SDGs even more challenging, both for the EU and globally ([6]). While the annual data used in the EU SDG monitoring report so far only partly reflect the impacts of the pandemic, short-term data published in the European Statistical Recovery Dashboard provide a more detailed picture of how COVID-19 and the related contingency measures are affecting the EU in its attempts to achieve the SDGs. A dedicated COVID-19 section in this report (see page 29) makes use of these short-term data, showing the monthly and quarterly impacts of the pandemic throughout 2020 and 2021.

Increased mortality and the health implications of COVID-19 are the most obvious negative consequences of the pandemic, while the degree of social scarring is yet uncertain. As indicated in the goal-level summaries provided in this chapter, the lockdown measures put in place to halt the spread of the virus negatively influenced the EU's economy and labour market, which in turn put additional pressure on vulnerable population groups. Even though some positive effects on the environment — including reductions in energy use and GHG emissions — are visible, it is possible that these short-term trends are temporary and that consumption patterns will return to pre-crisis levels in the pandemic's aftermath. While economic activity in the EU appeared to have stabilised after the disruption caused by the COVID-19 pandemic, the continued disturbance of supply chains and the Russian invasion of Ukraine have introduced heightened uncertainty to the economic situation, which is, for example, reflected in the increased inflation rate in part due to rising energy prices. Moreover, some of the long-term effects of the COVID-19 pandemic on the EU economy, labour market, education and poverty, as well as on environmental issues, still remain to be seen. The same is true for the effects of a possible protracted war in Ukraine.

Notes

(1) See the introduction on page 19 for a more detailed overview of the EU policy context related to the SDGs. The relevant EU policies for a specific SDG are presented in the 'policy context' sections at the beginning of the respective thematic chapters.
(2) Current data from EU SILC were collected in 2020. In addition to having a considerable impacts on people's lives, COVID-19 also posed greater difficulties for national statistical offices to administer surveys, which might influence the reliability of the 2020 data from EU-SILC. Moreover, trends at EU level are partly influenced by a methodological change in the German EU SILC approach, which resulted in a better representation of young, poor and people with a migration background in the data for Germany, leading to higher rates for many poverty-related indicators and a break in time series mainly between 2019 and 2020 for several of these.
(3) Data on people's income collected in 2020 refer to the year 2019 and therefore still refer to the pre-COVID situation.
(4) 2020 data for GHG emissions presented in this report have been calculated based on the approximated estimates for greenhouse gas emissions published by the European Environment Agency on https://www.eea.europa.eu/data-and-maps/data/approximated-estimates-for-greenhouse-gas-emissions-3.
(5) See European Environmental Agency (2015), *State of nature in the EU: biodiversity still being eroded, but some local improvements observed*; European Commission (2015), *Mid-term review of the EU Biodiversity Strategy to 2020, COM(2015) 0478 final*; and Díaz et al. (2019), *Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on biodiversity and Ecosystem Services*.
(6) UN (2021), *The Sustainable Development Goals Report 2021*; and SDSN and IEEP (2020), *The 2020 Europe Sustainable Development Report: Meeting the Sustainable Development Goals in the face of the COVID-19 pandemic*, Sustainable Development Solutions Network and Institute for European Environmental Policy, Paris and Brussels.

Introduction

About this publication

Sustainable development objectives have been at the heart of European policy-making for a long time, firmly anchored in the European Treaties (1) and a mainstream part of key projects, sectorial policies and initiatives. The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), adopted by the United Nations (UN) in September 2015, have given a new impetus to global efforts for achieving sustainable development. The EU and its Member States are committed to this historic global framework agreement and to playing an active role in maximising progress towards the SDGs.

The von der Leyen Commission has made sustainability an overriding political priority for its mandate. All SDGs feature in one or more of the six headline ambitions for Europe announced in the Political Guidelines (2), making all Commission work streams, policies and strategies conducive to achieving the SDGs. Key elements of the Commission's 'whole of government' approach for delivering on the 2030 Agenda include the design of deeply transformative policies such as the 'European Green Deal' (3) and the integration of the SDGs into the European Semester. The European Green Deal aims to transform the Union into a modern, resource-efficient and competitive economy where climate and environmental challenges are addressed and turned into opportunities, while making the transition just and inclusive for all. The Commission's overall approach towards implementing the SDGs is described in the staff working document (SWD) 'Delivering on the UN's Sustainable Development Goals — A comprehensive approach' (4).

Eurostat supports this approach through regular monitoring and reporting on progress towards the SDGs in an EU context. This publication is the sixth edition of Eurostat's series of monitoring reports, which provide a quantitative assessment of the EU's progress towards reaching the SDGs. This publication is based on the EU SDG indicator set, which includes indicators relevant to the EU and enables the monitoring of progress towards the goals in the context of long-term EU policies. It is aligned as far as appropriate with the UN list of global indicators, but it is not completely identical. This allows the EU SDG indicators to focus on monitoring EU policies and on phenomena particularly relevant in a European context.

The Eurostat monitoring report is a key tool for facilitating the coordination of SDG-related policies at both EU and Member State levels. As part of this process, it promotes the ongoing assessment and monitoring of progress in implementing the SDGs, and helps to highlight their cross-cutting nature and the links between them.

This 2022 edition of the EU SDG monitoring report begins with a synopsis of the EU's overall progress towards the SDGs, followed by a presentation of the policy background at the global and EU levels and the way the SDGs are monitored at EU level (see the following pages in this chapter). The detailed monitoring results are presented in 17 chapters, one for each of the 17 SDGs. This is preceded by an analysis how the pandemic has influenced the EU on its way towards achieving the SDGs and followed by a 'country profiles' chapter on status and progress of EU Member States towards the SDGs. The report closes with an analysis of the interlinkages between the SDGs and spillover effects (5). The Annexes contain notes on methods and sources.

2 Monitoring sustainable development

2.1 The 2030 Agenda for Sustainable Development

'Development which meets the needs of the current generations without compromising the ability of future generations to meet their own needs' (6). This is the definition of sustainable development that was first introduced in the Brundtland report (7) by the World Commission on Environment and Development (WCED) in 1987, and it is the one most widely used nowadays. Following the Brundtland report were several important milestones in the international pursuit of sustainable development: the Rio Declaration on Environment and Development (1992), the World Summit for Social Development (1995), the Programme of Action of the International Conference on Population and Development (ICPD) (1994), the Beijing Platform for Action (1995), the Millennium Declaration (from which the Millennium Development Goals were derived), the World Summit on Sustainable Development (2002), the 2005 World Summit outcome (8) and the UN Conference on Sustainable Development (Rio+20) in 2012. Together, they paved the way for the 2030 Agenda (9) (see Figure 0.1).

In September 2015, the UN General Assembly (UNGA) adopted the 'Transforming our world: the 2030 Agenda for Sustainable Development' document (10). The 2030 Agenda is the current global sustainable development agenda. At the core of the 2030 Agenda is a list of 17 SDGs (see Figure 0.2) and 169 related targets to end poverty, protect the planet and ensure prosperity and peace. The Agenda also calls for a revitalised global partnership to ensure its implementation. The SDGs are unprecedented in terms of significance

Figure 0.1: Important milestones on the road to the Agenda 2030

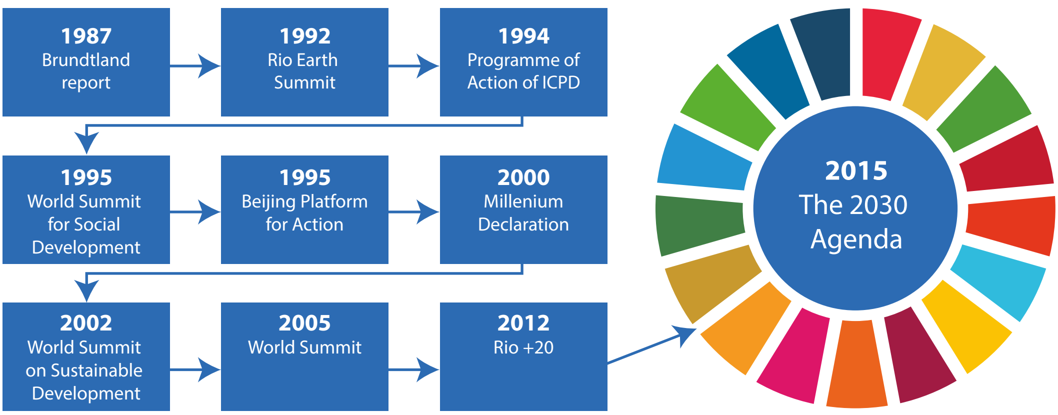


Figure 0.2: The UN Sustainable Development Goals

and scope and go far beyond the UN Millennium Development Goals by setting a wide range of economic, social and environmental objectives and calling for action by all countries, regardless of their level of economic development. The Agenda emphasises that strategies for ending poverty and promoting sustainable development for all must go hand-in-hand with actions that address a wider range of social needs and which foster peaceful, just and inclusive societies, protect the environment and help tackle climate change. Although the SDGs are not legally binding, governments are expected to take ownership and establish national frameworks for achieving the 17 goals.

Monitoring of the SDGs takes place at various levels: global, regional, national, local and thematic. The UN High-Level Political Forum (HLPF) is the UN's central platform to follow up and review the 2030 Agenda and the SDGs at the global level. To this end, the 2030 Agenda encourages UN member states to conduct voluntary national reviews of progress towards the SDGs ([11]). Regular reviews by the HLPF are voluntary, state-led, and undertaken by both developed and developing countries. In view of this, many countries are updating their national sustainable development strategies based on the 2030 Agenda ([12]).

In order to follow up and review the goals and targets, a set of global indicators was designed by an Inter-Agency and Expert Group (IAEG-SDGs) under the supervision of the UN Statistical Commission ([13]). In July 2017, the UNGA adopted a global SDG indicator list, including 232 indicators ([14]). However, only 59 % of these are currently classified as tier 1 indicators by the UN, meaning data are available and published by more than 50 % of countries globally. For a further 39 % of indicators data are available only for less than half of the countries worldwide (tier 2), and the remaining ones have multiple tiers (meaning that different components of the indicator are classified into different tiers). Data gaps still exist for a number of indicators and across several countries. Filling these gaps requires financial resources as well as knowledge sharing and investments in human capital. To continuously improve global SDG monitoring, annual refinements of indicators are included in the indicator framework as they occur. In addition, a comprehensive review of the indicator framework in early 2020 resulted in the approval of 36 major changes to the global SDG indicator list including additions and deletions. Therefore, the revised global indicator framework now consists of 231 indicators. Another such review is planned for 2025.

Every year, the UN releases a Report of the Secretary-General on 'Progress towards the Sustainable Development Goals', followed by an SDG report for the broader public. The latter provides an overview of progress on each of the 17 SDGs based on selected indicators from the global indicator framework (15).

Achieving the SDGs around the world critically depends on a global partnership to mobilise the means of implementation, including financial and non-financial resources. Therefore, in addition to the definition of goals and targets and the development of a global indicator list, the mobilisation of resources for sustainable development is another important element of the 2030 Agenda. A milestone in the intergovernmental negotiations on financing sustainable development was the Third International Conference on Financing for Development, which took place in July 2015 in Addis Ababa, Ethiopia. The conference adopted an outcome document that presents concrete actions for mobilising means of implementation as an integral part of the 2030 Agenda, the Addis Ababa Action Agenda (16).

The global indicator framework used to monitor the implementation of the 2030 Agenda is complemented by indicators at the level of UN world regions and at national level. For example, indicator sets have been developed for the Asia-Pacific region (17), for Africa (18) and for Latin America and the Caribbean (19). At the European level, the UN Economic Commission for Europe (UNECE) selected 80 indicators from the global list based on relevance for the region and data availability for a newly developed UNECE SDG Dashboard (20). The UNECE also published a first edition of a Roadmap on Statistics for Sustainable Development Goals in July 2017 (21) and a second edition in February 2022 (22). The latest roadmap aims to provide guidance to members of national statistical systems and other stakeholders on how to best navigate the complex task of measuring the achievement of the 2030 Agenda's goals and targets. The roadmap covers different aspects such as national coordination, reporting on global SDG indicators, tracking progress at various levels, quality assurance, leave no one behind, communication, Voluntary National Reviews and capacity development. The EU SDG indicator set as described in section 2.3 is in line with the UNECE roadmaps.

2.2 Sustainable development in the European Union

Sustainable development has long been a core principle for the European Union, enshrined in its Treaties since 1997, and a priority objective for the EU's internal and external policies. The EU actively contributed to the design of the 2030 Agenda, welcomed its adoption and committed to implementing the SDGs and fully integrating the goals into the European policy framework (23).

Sustainable development is also an overriding political priority for the von der Leyen Commission, which is reflected in the six headline ambitions for Europe announced in the Political Guidelines (24) (see Figure 0.3). Each Commissioner is responsible for ensuring that the policies under his or her oversight reflect the Sustainable Development Goals, while the college of Commissioners is jointly responsible for implementing the 2030 Agenda. The President set out a 'whole-of-government approach' towards the implementation of the SDGs.

Several major policy documents have shaped the EU's approach to implementing the SDGs. A communication from 2016 'Next steps for a sustainable European future: European action for sustainability' (25) announced the integration of the SDGs into the European policy framework. As a consequence, the EU has been monitoring the implementation of the SDGs since 2017 via annual SDG monitoring reports. In addition, a reflection paper 'Towards a Sustainable Europe by 2030' from 2019 (26) highlighted the complex challenges the EU is facing and identified the competitive advantages that implementing the SDGs would offer the EU. Since late 2019, the von der Leyen Commission has presented many transformative policies aimed at delivering on the many aspects of sustainability in the EU and beyond. The EU's approach to implementing the 2030 Agenda is briefly summarised in the following pages and

Figure 0.3: The European Commission Priorities

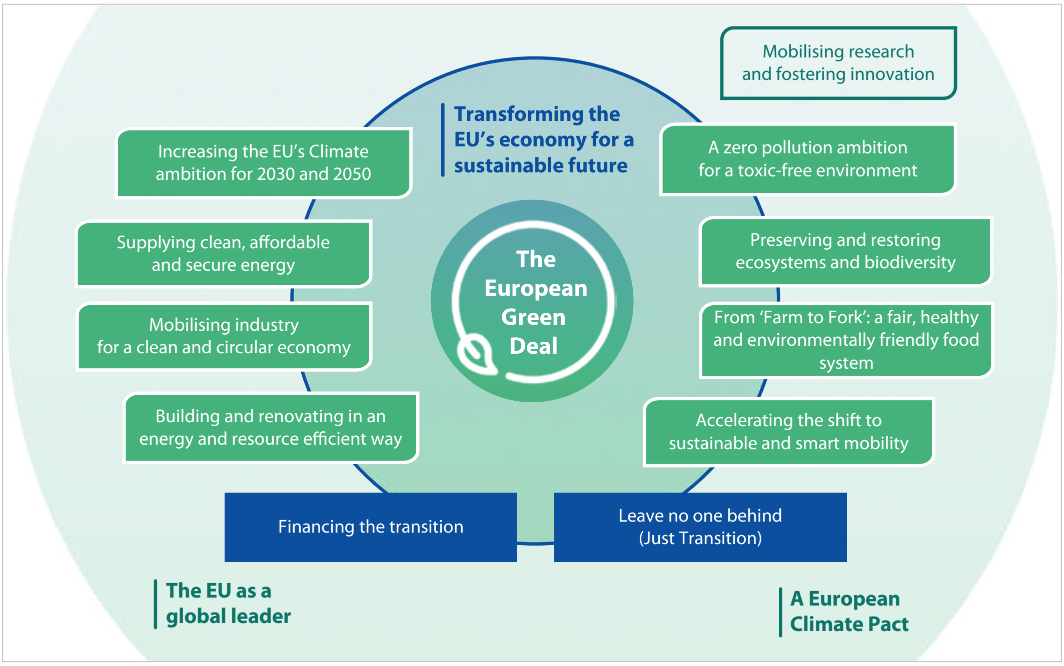
described in detail in a staff working document (SWD) 'Delivering on the UN's Sustainable Development Goals — A comprehensive approach' ([27]). For a complete overview of the European Commission's activities related to SDG implementation, see the Commission's website on the EU's holistic approach to sustainable development.

The European Green Deal ([28]), adopted in December 2019, is the EU's new growth strategy and aims to transform the Union into a climate-neutral society while leaving no one behind (see Figure 0.4). It aims to create a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases by 2050 and where economic growth is decoupled from resource use. It also aims to protect, conserve and enhance the EU's natural capital and to protect the health and well-being of citizens from environment-related risks and impacts. It is also an integral part of the Commission's strategy to implement the 2030 Agenda and the SDGs.

In March 2020, a new Circular Economy Action Plan ([29]) was adopted by the European Commission, introducing measures along the entire life cycle of products. The new Plan focuses on design and production for a circular economy, with the aim of ensuring that the resources used are kept in the EU economy for as long as possible.

In May 2020, another important initiative that lies at the heart of the European Green Deal was adopted — the Farm to Fork Strategy ([30]).

Figure 0.4: The European Green Deal



The strategy aims to make food systems in the EU fair, healthy and environmentally friendly by ensuring sustainable food production, processing, distribution and consumption and by minimising food loss.

The EU Biodiversity strategy for 2030 ([31]), also adopted in May 2020 as a part of the Green Deal, aims to put Europe's biodiversity on a path to recovery by 2030, and contains specific actions and commitments, such as establishing a large EU-wide network of protected areas on land and at sea, launching an EU nature-restoration plan and introducing measures to tackle the global biodiversity challenge.

The 2030 Climate Target Plan ([32]) from September 2020 envisions reductions in greenhouse gas emissions to at least 55 % below their 1990 level by 2030 and sets Europe on a responsible path to becoming climate-neutral by 2050. This ambition was legally enshrined in July 2021 with the adoption of the European Climate Law ([33]). Under the heading of 'Delivering the European Green Deal', the Commission put forward several legislative proposals, actions and targets for making Europe the first climate-neutral continent. These relate to the necessary transformation of our economies and societies, sustainable transport, clean energy, renovation of buildings, enhancing natural carbon sinks, and boosting global climate action. The proposed Council Recommendation on ensuring a fair transition towards climate neutrality ([34]) sets out specific guidance to help Member States devise and implement policy packages to address the relevant employment and social aspects linked to the transition in a comprehensive manner.

The Sustainable and Smart Mobility Strategy ([35]), adopted in December 2020, lays the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises.

The Zero Pollution Action Plan ([36]), released in May 2021, calls for air, water and soil pollution to be reduced to levels no longer considered harmful to health and natural ecosystems, respecting the boundaries with which the planet can cope, thereby creating a toxic-free environment.

The European Pillar of Social Rights Action Plan [37] outlines concrete actions to further implement the 20 principles of the European Pillar of Social Rights as a joint effort by the Members States and the EU, with the active involvement of social partners and civil society. It also proposes employment, skills and poverty reduction headline targets for the EU to be achieved by 2030. The new 2030 headline targets are consistent with the UN Sustainable Development Goals and set the common ambition for a strong Social Europe.

Meanwhile, the 2021 update of EU's new Industrial Strategy [38] supports the twin transition to a green and digital economy. It seeks to ensure that the European industry leads the way in delivering the EU's goals for a green, inclusive and resilient future. The strategy aims to boost support to the renewable energy and climate transition, while reinforcing the EU's strategic autonomy.

Building on the European Green Deal, the 8th Environment Action Programme (EAP), adopted in March 2022, anchors the Member States' commitment to environmental and climate action until 2030, guided by a long-term vision to 2050 of well-being for all, while staying within the planetary boundaries. The 8th EAP has six priority objectives related to climate neutrality, climate adaptation, circular economy, zero pollution, protecting and restoring biodiversity, and reducing environmental and climate pressures related to production and consumption. In addition, the programme sets out an enabling framework and a monitoring framework to measure progress towards the required systemic change.

Over the past few years, the EU has adopted numerous other policies covering topics related to the SDGs. Global Gateway is a European strategy to mobilise infrastructure investments of up to EUR 300 billion across the world. In early 2020, the EU launched its 'Team Europe' [39] package to support partner countries in the fight against the coronavirus pandemic and its consequences. The European Democracy Action Plan [40] was adopted in the same year to empower citizens and build more resilient democracies across the EU.

Furthermore, EU cohesion policy, including the European Regional Development Fund (ERDF), the European Social Fund+ (ESF+), the Cohesion Fund and the Just Transition Fund (JTF), is also strongly aligned with the SDGs. It contributes to strengthening economic, social and territorial cohesion in the EU and correcting imbalances between countries and regions. It delivers on the Union's political priorities, especially the green and digital transition.

In line with the Political Guidelines [41], the SDGs have also been integrated into the European Semester. This year, the SDG monitoring report is for the first time published at the same time as the spring package. Moreover, each European Semester country report includes an annex discussing the country's status, compared to the EU average, and progress in each SDG area. The publication of the Annual Sustainable Growth Survey (ASGS) 2022 in November 2021 launched the 2022 European Semester cycle. The ASGS confirmed the ongoing gradual shift of economic policy coordination from dealing with the COVID crisis to laying the foundations for a transformational and inclusive recovery and stronger resilience, in line with the EU's strategy of competitive sustainability.

The national Recovery and Resilience Plans are structured around six thematic pillars as mentioned in the Regulation on the Recovery and Resilience Facility: green transition; digital transformation; economic cohesion, productivity and competitiveness; social and territorial cohesion; health, economic, social and institutional resilience; policies for the next generation. In doing so, they also cover the four dimensions of competitive sustainability outlined in the 2022 ASGS: (1) environmental sustainability, (2) productivity, (3) fairness and (4) macroeconomic stability. In the context of Europe's climate ambitions, all recovery and resilience plans need to focus strongly on both reforms and investments supporting the green transition. Each plan will have to include a minimum of 37 % of the allocated funds to climate action and 20 % for digital spending. The so-far approved plans have gone even beyond this and, on average, will spend around 40 % on climate-related measures and more than 26 % on digital transition.

2.3 Monitoring sustainable development in the EU

The European Commission is committed to monitoring progress towards the SDGs in the EU context. Since the adoption of the first EU SDG indicator set in May 2017, Eurostat has led the further development of the indicator framework in close cooperation with other Commission services, the European Environment Agency and Member State organisations in the European Statistical System (ESS), involving also Council Committees and Working Parties as well as the civil society.

The EU SDG indicator set is structured along the 17 SDGs and covers the social, economic, environmental and institutional dimensions of sustainability as represented by the Agenda 2030. Each SDG is covered by six main indicators. They have been selected to reflect the SDGs' broad objectives and ambitions. Thirty-one indicators are 'multi-purpose', meaning they are used to monitor more than one goal. This allows the link between different goals to be highlighted and enhances the narrative of this monitoring report. Sixty-seven of the current EU SDG indicators are aligned with the UN SDG indicators.

The indicators have been selected to take into account their policy relevance from an EU perspective, availability, country coverage, data freshness and quality. Elements of the 2030 Agenda that are less relevant to the EU internally because they focus on other parts of the world, for instance where targets specifically refer to developing countries, are not considered. The EU SDG indicator set is open to regular reviews to consider new policy developments and include new indicators as methodologies, technologies and data sources evolve over time. The reviews involve many Commission services, European agencies such as the European Environment Agency (EEA), Member State institutions in the ESS, Council Committees and Working Parties as well as the civil society.

The reviews have also produced a list of indicators 'on hold' for possible future updates of the set. In this regard, Eurostat is working with other services of the European Commission and the EEA on the use of new data sources, whenever they contribute to the increased availability, quality, timeliness and disaggregation of data. These are for example the integration of earth observation data and information from Copernicus, the European Earth Observation and Monitoring Programme ([42]).

Based on the most recent EU SDG indicator set, the SDG monitoring reports also provide an assessment of trends vis-à-vis SDG-related EU objectives and targets, visualised by arrow symbols. The assessment method considers whether an indicator has moved towards or away from the sustainable development objective, as well as the speed of this movement. Two different approaches are used for this assessment, depending on whether an explicit quantified and measurable target exists for the EU (or not). These two approaches are explained in detail in Annex II (see page 355). The assessment is usually done for the past 15- and 5-year periods of available data, providing an indication of whether a trend has been persistent or has shown a turnaround at a certain point in time.

The trend assessments presented in the EU SDG monitoring reports are based on the indicators selected for the EU SDG indicator set and the applied methodology. Depending on the scope of report and the applied methodology, the assessment can differ from other reports of the European Commission or the EEA for example when these assessments also take into account planned measures or projections instead of past trends only.

Notes

(1) *Articles 3 (5) ad 21 (2) of the Treaty on European Union (TEU).*
(2) Ursula von der Leyen (2019), *A Union that strives for more — My agenda for Europe. Political Guidelines for the next European Commission 2019–2024*.
(3) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.
(4) European Commission (2020), *Delivering on the UN's Sustainable Development Goals — A comprehensive approach*, SWD(2020) 400 final, Brussels.
(5) Spillover effects are knock-on consequences of the actions and developments in one country (or the EU) onto other countries (or outside the EU).
(6) World Commission on Environment and Development (1987), *Our Common Future.*
(7) Named after the former Norwegian prime minister Gro Harlem Brundtland, who acted as chair of the World Commission on Environment and Development.
(8) The 2005 World Summit was a follow-up to the Millennium Summit; see *Resolution adopted by the General Assembly on 16 September 2005: 2005 World Summit Outcome*.
(9) United Nations General Assembly (2015), *Resolution adopted by the General Assembly on 25 September 2015: Transforming our world: the 2030 agenda for sustainable development*, A/RES/70/1, paragraphs 10 and 11.
(10) United Nations General Assembly (2015), *Resolution adopted by the General Assembly on 25 September 2015: Transforming our world: the 2030 agenda for sustainable development*, A/RES/70/1.
(11) 'Conduct regular and inclusive reviews of progress at the national and sub-national levels, which are country-led and country-driven' (paragraph 79) of '*Transforming our world: the 2030 Agenda for Sustainable Development'*. The UN Department of Economic and Social Affairs (DESA) has established an online platform to compile inputs from countries participating in the national voluntary reviews of the annual session of the HLPF. See: https://sustainabledevelopment.un.org/hlpf.
(12) Information about the national sustainable development strategies of European countries can be found on the European Sustainable Development Network (ESDN) website: https://www.esdn.eu/country-profiles as well as on the Eurostat website at https://ec.europa.eu/eurostat/web/sdi/links.
(13) The United Nations Statistical Commission, established in 1947, is the highest body of the global statistical system. It brings together the Chief Statisticians from member states from around the world. It is the highest decision-making body for international statistical activities, especially the setting of statistical standards, the development of concepts and methods and their implementation at the national and international level.
(14) United Nations General Assembly (2017), *Resolution adopted by the General Assembly on 6 July 2017: Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development*, A/RES/71/313.
(15) United Nations Economic and Social Council (2021), *Report of the Secretary-General on progress towards the Sustainable Development Goals*; United Nations (2021), *The Sustainable Development Goals Report 2021.*
(16) See: United Nations (2015), *Outcome document of the Third International Conference on Financing for Development: Addis Ababa Action Agenda*, A/CONF.227//L.1.
(17) United Nations, Asian Development Bank, and United Nations Development Programme (2017), *Asia-Pacific Sustainable Development Goals Outlook*, United Nations, Bangkok.
(18) African Union Economic Commission for Africa, African Development Bank, and United Nations Development Programme (2017), *2017 Africa Sustainable Development Report: Tracking Progress on Agenda 2063 and the Sustainable Development Goals*, Economic Commission for Africa, Addis Ababa.
(19) Nicolai, S., Bhatkal, T., Hoy, C., and Aedy, T. (2016), *Projecting progress: the SDGs in Latin America and the Caribbean*, Overseas Development Institute, London.
(20) UNECE (2020), *UNECE launches Dashboard to track regional progress on SDGs*.
(21) The Road map was developed by a Conference of European Statisticians Steering Group on Statistics for SDGs, coordinated by the UN ECE and to which Eurostat participates. See United Nations Economic and Social Council (2017), *Conference of European Statisticians' Road Map on Statistics for Sustainable Development Goals, First Edition*.
(22) UNECE (2022), *Road Map on Statistics for Sustainable Development Goals — Second Edition*.
(23) European Commission (2016), *Next steps for a sustainable European future: European action for sustainability*, COM(2016) 739 final, Brussels.
(24) Ursula von der Leyen (2019), *A Union that strives for more — My agenda for Europe. Political Guidelines for the next European Commission 2019–2024*.
(25) European Commission (2016), *Next steps for a sustainable European future: European action for sustainability*, COM(2016) 739 final, Brussels.
(26) European Commission (2019), *Reflection Paper 'Towards a Sustainable Europe by 2030'*, COM(2019)22, Brussels.
(27) European Commission (2020), *Delivering on the UN's Sustainable Development Goals — A comprehensive approach*, SWD(2020) 400 final, Brussels.
(28) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.
(29) European Commission (2020), *A new Circular Economy Action Plan: For a cleaner and more competitive Europe*, COM(2020) 98 final, Brussels.
(30) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM(2020) 381 final, Brussels.
(31) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final, Brussels.
(32) European Commission (2020), *Stepping up Europe's 2030 climate ambition — Investing in a climate-neutral future for the benefit of our people*, COM(2020) 562 final, Brussels.

([33]) *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')*.

([34]) European Commission (2021), *Proposal for a Council Recommendation on ensuring a fair transition towards climate neutrality*, COM(2021) 801 final, Brussels.

([35]) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM(2020) 789 final, Brussels.

([36]) European Commission (2021), *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' — Pathway to a Healthy Planet for All*, COM(2021) 400 final, Brussels.

([37]) European Commission (2021), *The European Pillar of Social Rights Action Plan*, COM(2021) 102 final, Brussels.

([38]) European Commission (2021), *Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery*, COM(2021) 350 final, Brussels.

([39]) European Commission (2020), *Communication on the Global EU response to COVID-19*, JOIN(2020) 11 final, Brussels.

([40]) European Commission (2020), *Communication on the European democracy action plan*, COM(2020) 790 final, Brussels.

([41]) Ursula von der Leyen (2019), *A Union that strives for more — My agenda for Europe. Political Guidelines for the next European Commission 2019–2024*.

([42]) For example, the handbook '*Satellite Earth Observations in support of the Sustainable Development Goals*' by the Committee on Earth Observation Satellites (CEOS) and the European Space Agency (ESA) was officially released at the 49th session of the UN Statistical Commission. This handbook promotes and highlights the contribution of Earth observations to the realisation of the 2030 Agenda for Sustainable Development, its goals and targets, and to the SDG Global Indicator Framework.

The COVID-19 pandemic: detecting impacts and monitoring the recovery

The still-ongoing COVID-19 pandemic has had a significant impact on every aspect of life worldwide, from public health, economic and social stability to the environment. It affects the 2030 Agenda and the SDGs broadly, influencing all three dimensions of sustainability and threatening the achievement of the global goals. While the pandemic's full-scale effects remain to be seen, data collected by Eurostat and published in the European Statistical Recovery Dashboard provide some indications of how COVID-19 and the related contingency measures are affecting the EU in its attempts to achieve the SDGs. In order to further monitor the situation, Eurostat has set up a dedicated section on COVID-19.

The analysis in this chapter is done in the SDG monitoring context, using breakdowns of the EU SDG indicators as well as short-term indicators such as quarterly greenhouse gas emissions for illustrating the environmental effects of the lockdown. As 2022 is the European Year of Youth, with the aim of building a greener, more inclusive and digital future, the impact of the pandemic on young people is highlighted ([1]).

Vaccination campaign helped to reduce infection and mortality rate linked to COVID-19 in 2021

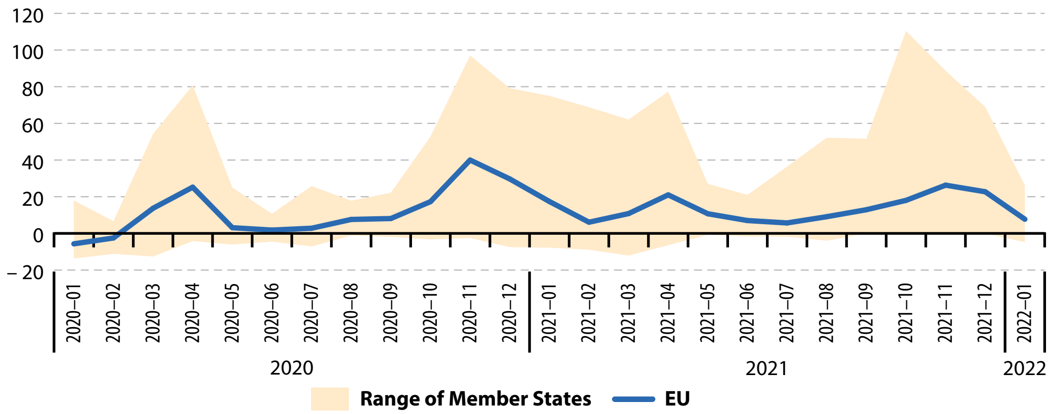
With more than 128 million COVID-19 cases in the EU and more than a million deaths linked to the virus ([2]), public health (SDG 3) concerns remain one of the most important effects of the pandemic. In total, from March to December 2020, 580 000 more deaths occurred in the EU compared with the same period in 2016 to 2019 ([3]). In the 12 months of 2021, excess mortality went down to about 560 000 additional deaths compared with the 2016 to 2019 average ([4]).

While there is no confirmation that all excess deaths are due to COVID-19, there exists a clear link between excess mortality and the pandemic's outbreak. Data show that while there were no additional deaths in 2020 compared with the 2016 to 2019 average for people under 20 years of age, excess mortality reached 12.9 % and 16.6 % for people aged 60 to 79 and people aged 80 or over, respectively ([5]). The situation was similar in 2021, with no additional deaths for young people and an excess mortality of 14.3 % (age group 60 to 74) and 9.2 % (people aged 80 or over), compared with the 2016 to 2019 average.

Despite a much higher number of detected COVID-19 cases in the EU in 2021 compared with 2020, the number of additional deaths in 2021 was lower. Wide deployment of COVID-19 vaccines in the EU Member States from the beginning of 2021 and strengthened health system capacities had a major impact in reducing fatality rates ([6]). By April 2022, three-quarters of the total EU population were vaccinated with at least one dose, 73 % with two doses and slightly more than half had received a booster ([7]).

Changes in mortality conditions also had an impact on overall life expectancy in the EU, which decreased by 0.9 years, from 81.3 years in 2019 to 80.4 years in 2020. The change was slightly stronger for men (– 1.0 years) than for women (– 0.8 years).

Figure C.1: Excess mortality, EU, 2020–2022
(% of additional deaths compared with average monthly deaths in 2016–2019)



Note: Provisional data.
Source: Eurostat (online data code: demo_mexrt)

Life expectancy at age 65 also decreased by about a year in 2020 ([8]).

The COVID-19 pandemic also had a profound impact on mental health. Multiple studies across countries show that symptoms of anxiety and depression increased throughout the pandemic ([9]). Young people's mental health was disproportionally affected by the COVID-19 crisis ([10]) because risk factors such as unemployment or lower income are more prevalent in this age group. Before the pandemic, in 2019, 6.0 % of people aged 15 to 24 had symptoms of depression, compared with 7.0 % for the total population in the EU ([11]). While there is no EU-level data available for 2020 and 2021, data from Belgium, France and the United States suggest that in March 2021 the prevalence of symptoms of anxiety and depression among young people had doubled compared with before the crisis and was considerably higher than in the general population ([12]).

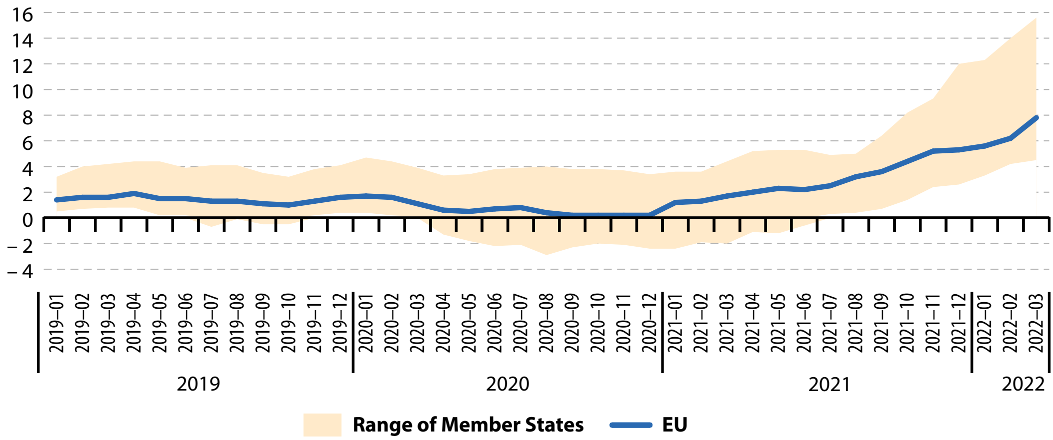
Inflation in the EU has been on the rise since early 2021

Following the lockdown measures put in place by EU Member States in order to halt the spread of the virus, the EU's economy (SDG 8) showed negative trends in 2020. Real GDP per capita dropped by 6.0 % in 2020 compared with 2019. Industrial production ([13]) (SDG 12) decreased by 7.4 % ([14]) and EU imports from other countries (SDG 17) fell by 11.5 % in 2020 compared with 2019 ([15]).

However, by 2021 the economic indicators had bounced back to almost pre-pandemic levels. Starting from the second quarter of 2021, GDP in the EU had been increasing, which resulted in an annual growth of real GDP per capita by 5.4 % in 2021 compared with 2020. Industrial production returned to pre-pandemic values by the end of 2020 and did not fluctuate significantly throughout 2021, leading to an annual increase of 8.1 % in 2021 compared with the previous year ([16]). Similarly, extra-EU imports increased by 23.4 % from 2020 to 2021 ([17]).

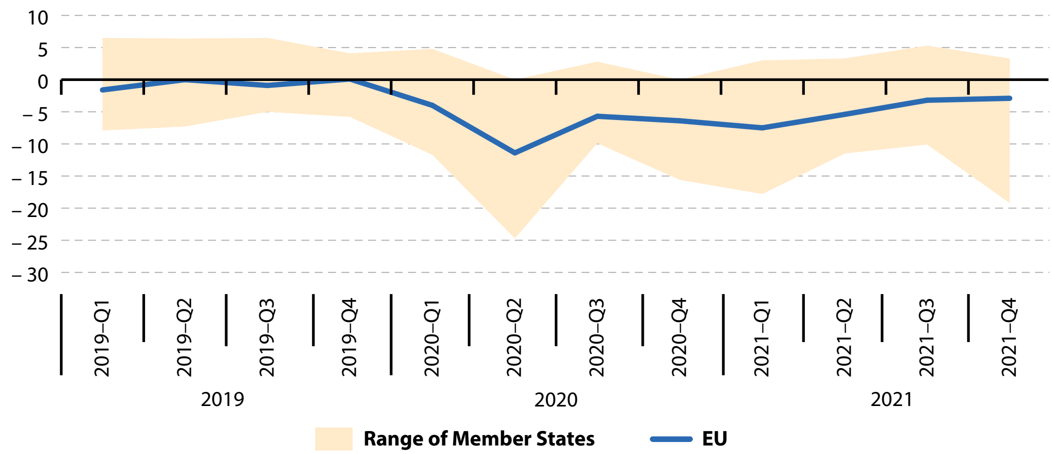
While many economic indicators have shown positive trends, the inflation rate has been on the rise in the EU since the beginning of 2021, increasing from 0.2 % in December 2020 to 7.8 % in March 2022 ([18]). This led to an annual inflation rate of 2.9 % in 2021 compared with 0.7 % in 2020 ([19]). This was a result of rising energy prices leading to increased consumer prices, global supply chain disruptions, reopening of the service sector and monetary and fiscal stimulus ([20]). The increase in the inflation rate has been particularly strong for energy, including electricity, gas, liquid and solid fuels and heat energy ([21]). As a result, food and

Figure C.2: Inflation rate, EU, 2019–2022
(annual rate of change in %)



Source: Eurostat (online data code: PRC_HICP_MANR)

Figure C.3: General government surplus/deficit, EU, 2019–2021
(% of GDP)



Source: Eurostat (online data code: GOV_10Q_GGNFA)

housing sectors (including electricity, gas and other fuels) experienced the highest inflation in 2021. The elevated inflation might weigh on purchasing power, potentially pushing more people towards poverty.

Throughout the pandemic, government measures aimed at mitigating the economic and social impacts of the COVID-19 pandemic led to an increase in the EU budget deficit, which reached a high of 11.4 % of GDP in the second quarter of 2020 (see Figure C.3). The economic recovery of 2021 and the unwinding of the emergency support measures ([22]), however, helped to decrease the deficit to 2.9 % of GDP by the fourth quarter of 2021. After peaking at 92.3 % of the EU's GDP in the first quarter of 2021, the EU's general government gross debt to GDP ratio (SDG 17) had dropped to 88.2 % by the fourth quarter of the same year, which is still higher than the pre-pandemic level of 77.5 % in the fourth quarter of 2019 ([23]).

The EU's labour market is recovering after being hit by the COVID-19 pandemic

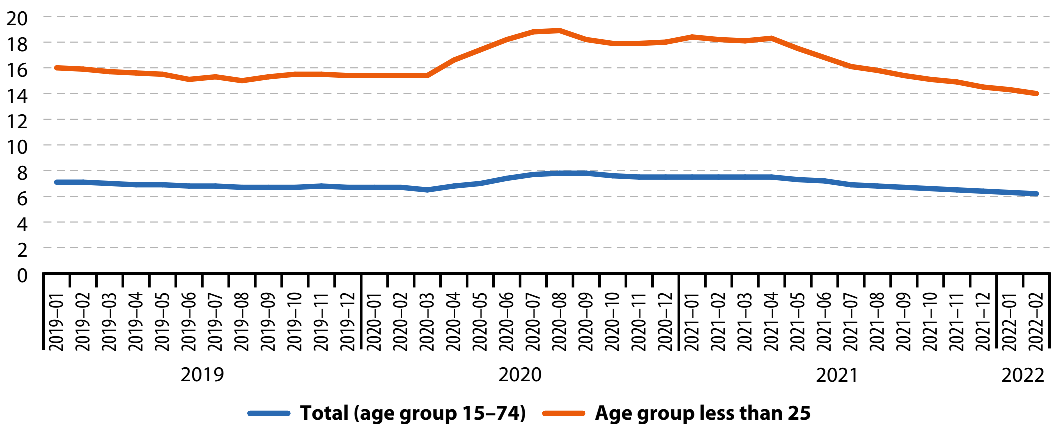
Measures introduced at the EU level ([24]) and by EU Member States cushioned the most negative effects of the pandemic on the EU's labour market. Thanks to that, the labour market situation in the EU in general has recovered to the pre-pandemic levels. However, young people were among the most affected by the pandemic because they more often work on temporary contracts than older age groups (SDG 8). In addition, they were most affected by the prolonged closure of schools in many Member States.

After a 1.9 percentage point drop in the second quarter of 2020, the total employment rate of the population aged 20 to 64 gradually increase, reaching 74.0 % by the fourth quarter of 2021 — the highest value observed since 2019. As a result of this strong recovery, the annual employment rate for the total population reached 73.1 % in 2021, exceeding its pre-pandemic level. Following similar trends to the employment rate, the total unemployment rate (age group 15 to 74) also peaked at 7.8 % in August 2020, before falling to 6.2 % in March 2022, which was even lower than the values observed before the pandemic. The unemployment rate for young people aged 15 to 24 increased more sharply than the total rate, reaching 18.9 % in August 2020. However, by March 2022 it had fallen back to 14.0 %, which was below the pre-pandemic level but still more than twice the total rate. In 2021, the annual unemployment rate was 7.0 % for the age group 15 to 74 and 16.6 % for young people aged 15 to 24 ([25]).

The share of young people aged 15 to 29 neither in employment nor in education and training (NEET) increased from 12.9 % in the fourth quarter of 2019 to 15.0 % in the second quarter of 2020. Thus, even at the peak of the COVID-19 crisis, the NEET rate was still lower than during the years following the financial crisis in 2009 to 2015. Moreover, already by the fourth quarter of 2021, the NEET rate had dropped to 12.7 %, which is the lowest quarterly value observed since 2009 and corresponds to almost 9 million young people. This resulted in an annual NEET rate of 13.1 % in 2021, 0.5 percentage points higher than in 2019.

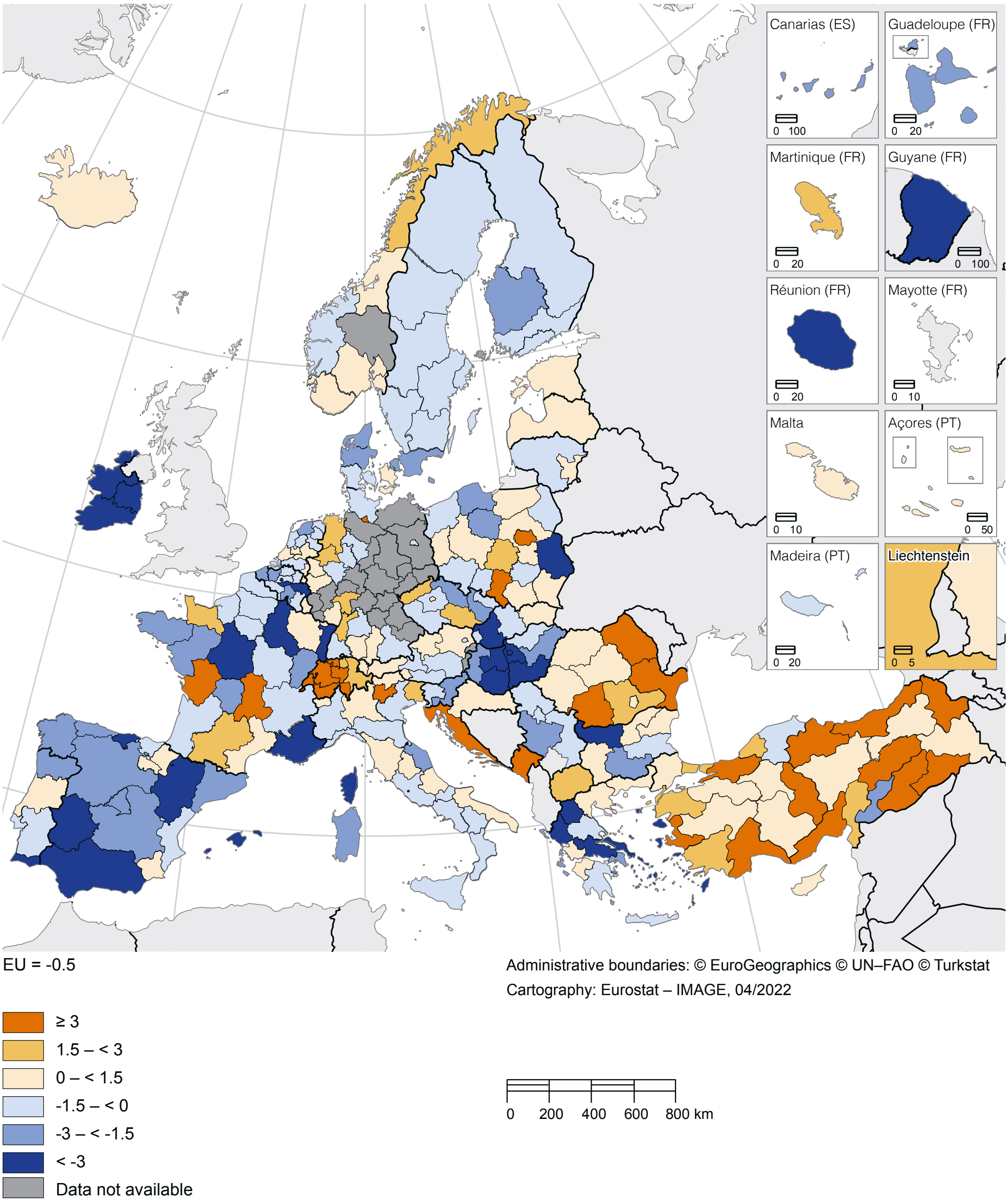
When segregated by sex (SDG 5), data show there were no significant differences between men and women in terms of reduced employment or increased unemployment in the EU in 2020. The gender employment gap has slightly narrowed since the beginning of the pandemic, reaching 10.6 percentage points in the fourth quarter of 2021, compared with 11.2 percentage points at the end of 2019. However, during the

Figure C.4: Unemployment rate, by age group, EU, 2019–2022
(% of labour force)



Note: Seasonally adjusted data.
Source: Eurostat (online data codes: UNE_RT_M)

Map C.1: Young people neither in employment nor in education and training (NEET), by NUTS-2 region, EU, 2020–2021
(percentage points difference between 2020 and 2021)



Note: Change 2019–2020 for Kontinentalna Hrvatska (HR) and all regions in Norway (except Innlandet, Trøndelag and Nord-Norge) as well as Montenegro, North Macedonia and Turkey.

Source: Eurostat (online data code: edat_lfse_22) pandemic women experienced a steeper fall in working hours than men due to differences in the representation of women and men in sectors and occupations affected by the crisis, gender differences in the use of teleworking, and the fact that women took on the larger share of care responsibilities ([26]).

Despite the cushioning effect of public measures, the COVID-19 pandemic has affected different population groups unevenly. Migrants, Roma and other marginalised communities and people with a minority ethnic background, persons with disabilities, workers with low skills or with temporary contracts, and the self-employed were disproportionally hit by the pandemic and stalled economic activities ([27]).

Positive effects of lockdown measures on the EU's environment

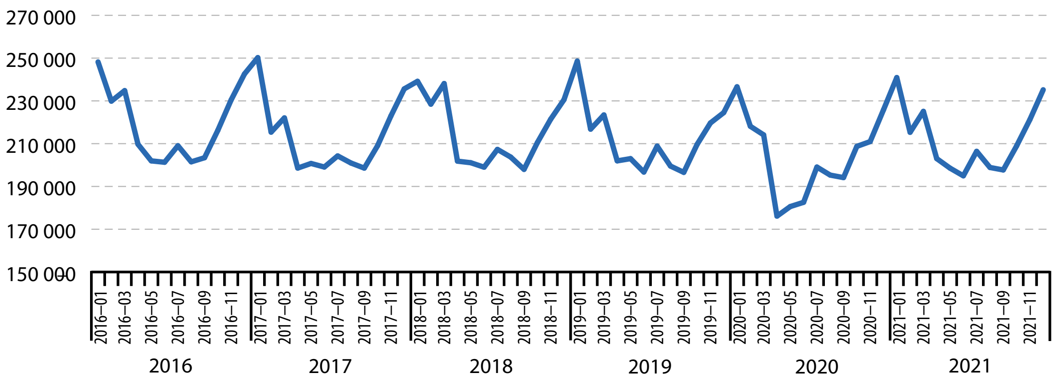
The COVID-19 crisis and the related lockdown measures resulted in a short-term improvement in some indicators used as proxies to monitor health of the environment, such as energy use and greenhouse gas (GHG) emissions (SDG 13 and SDG 7). At the same time, there is evidence of adverse effects of the pandemic on the environment (SDG 12 and SDG 15) in the form of increased pollution from single-use plastics (such as masks, gloves and take-away food containers) ([28]).

Restrictions on many social and economic activities imposed due to lockdown measures led to a drop in energy consumption in 2020 (SDG 7). This is illustrated by the trends in electricity consumption, which decreased by 12.8 % in April 2020 compared with April 2019. However, as Figure C.5 shows, this fall seems to have been a one-time effect that did not change the overall pattern, as by 2021 electricity consumption had almost returned to pre-pandemic levels.

One of the sectors most severely affected by the pandemic has been transport, which is a key source of GHG emissions. This is, for example, illustrated by the number of commercial air flights, which dropped by 91.2 % in April 2020 compared with April 2019. In March 2022, air traffic still remained 26.6 % lower than in the same month of 2019 (SDG 9).

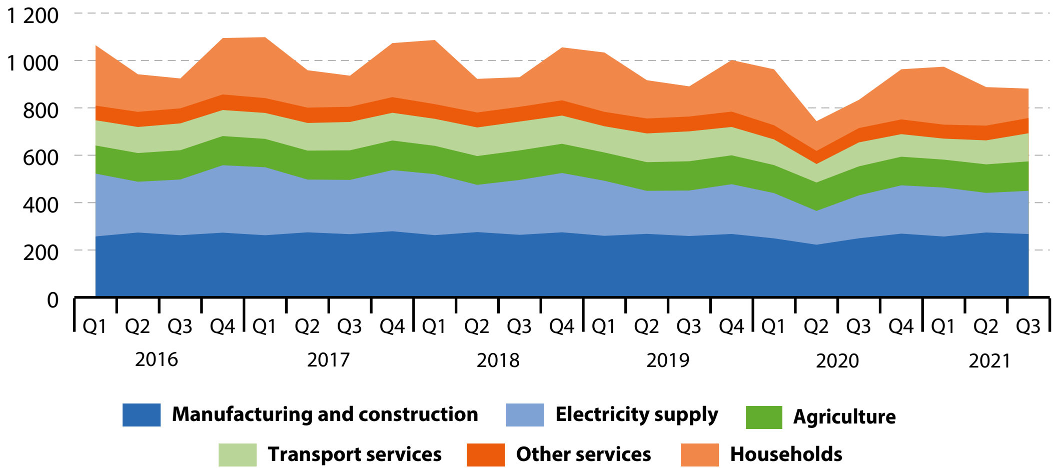
Together with decreases in other economic activities, this reduction in transport led to an 18.9 % drop in GHG emissions in the second quarter of 2020 compared with the same quarter of 2019. GHG emissions in transport services as well as households' emissions experienced the strongest declines, by 35.8 % and 22.3 %, respectively. Following the economic recovery in 2021, GHG emissions also increased again and in

Figure C.5: Electricity consumed by end-users, EU, 2016–2021
(gigawatt-hours)



Source: Eurostat (online data code: NRG_CB_EIM)

Figure C.6: Quarterly greenhouse gas emissions, by economic activity, EU, 2016–2021
(million tonnes of CO_2-equivalent)



Note: Estimated data.
Source: Eurostat (online data code: ENV_AC_AIGG_Q)

the third quarter of 2021 were 5.7 % higher than a year earlier. However, in the first three quarters of 2021 GHG emissions were still lower than before the pandemic, indicating that despite the effect of the economic rebound between the second quarters of 2020 and 2021 the EU's GHG emissions have continued their long-term downward trend ([29]).

Conclusions and outlook

Even before the COVID-19 pandemic, progress towards the SDGs in the EU was uneven, with some areas requiring more focused attention and action. The pandemic has made achieving the 2030 Agenda and the SDGs even more challenging, both for the EU and globally ([30]). Increased mortality and the short- and long-term health implications of COVID-19 are the most obvious negative consequences of the pandemic. The lockdown measures put in place to halt the spread of the virus negatively influenced the EU's economy and labour market, which in turn put additional pressure on vulnerable population groups. Even though some positive effects on energy use and GHG emission are visible, the data suggest these were temporary and that consumption patterns are starting to return to pre-crisis levels.

On the other hand, the EU's response ([31]) to the crisis shows that it has been possible to mitigate the economic and social impacts of the pandemic. Already in the third quarter of 2020, many economic and labour market indicators showed signs of recovery and by 2021 they had almost reached their pre-pandemic levels.

The long-term effects of the COVID-19 pandemic on the EU economy, labour market, education and poverty, as well as on environmental issues, however, remain to be seen. With more data becoming available, future SDG monitoring reports might present a more detailed and nuanced picture about the consequences of the pandemic.

Notes

(1) Also see Eurostat's new interactive tool 'Young Europeans' launched in May 2022.
(2) By 14 April 2022, https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea.
(3) Eurostat (2021), *580 000 excess deaths between March and December 2020*.
(4) Source: own calculations based on Eurostat (online data code: demo_r_mwk_20). Data refer to EU excluding Ireland.
(5) Ibid.
(6) OECD (2021), *Health at a Glance 2021: OECD Indicators*, OECD Publishing, Paris.
(7) European Centre for Disease Prevention and Control (2022), COVID-19 Vaccine Tracker.
(8) Source: Eurostat (online data code: demo_mlexpec).
(9) OECD (2021), *Health at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, p. 5.
(10) Id., p. 56.
(11) Source: Eurostat (online data code: hlth_ehis_mh1i).
(12) OECD (2021), *Supporting young people's mental health through the COVID-19 crisis*, OECD Policy Responses to Coronavirus (COVID-19), OECD Publishing, Paris.
(13) Industrial production covers the following sectors: mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply.
(14) Source: Eurostat (online data code: sts_inpr_a).
(15) Source: own calculations based on Eurostat (online data code: ext_lt_intertrd).
(16) Source: Eurostat (online data code: sts_inpr_a).
(17) Source: own calculations based on Eurostat (online data code: ext_lt_intertrd).
(18) Source: Eurostat (online data code: PRC_HICP_MANR).
(19) Source: Eurostat (online data code: PRC_HICP_AIND).
(20) European Commission (2021), *European Economic Forecast, Autumn 2021*, Institutional Paper 160, p. 14.
(21) Source: Eurostat (online data code: PRC_HICP_MANR).
(22) European Commission (2021), *European Economic Forecast, Autumn 2021*, Institutional Paper 160, p. 34.
(23) Source: Eurostat (online data code: GOV_10Q_GGDEBT).
(24) European Commission (2022), *Coronavirus response*.
(25) Source: Eurostat (online data code: une_rt_a).
(26) European Commission (2021), *Proposal for a Joint Employment Report 2022*, COM(2021) 743 final, Brussels.
(27) European Commission (2021), *Employment and Social Developments in Europe 2021*.
(28) EEA (2021), *Impacts of COVID-19 on single-use plastic in Europe's environment*.
(29) Eurostat (2021), *Eurostat releases for the first time estimates of quarterly EU greenhouse gas emissions*.
(30) UN (2020), *The Sustainable Development Goals Report 2020*; and SDSN and IEEP (2020), *The 2020 Europe Sustainable Development Report: Meeting the Sustainable Development Goals in the face of the COVID-19 pandemic*, Sustainable Development Solutions Network and Institute for European Environmental Policy, Paris and Brussels.
(31) European Commission (2022), *Coronavirus response*.

1 End poverty in all its forms everywhere

SDG 1 calls for the eradication of poverty in all its manifestations. It envisions shared prosperity, a basic standard of living and social protection benefits for people everywhere, including the poorest and most vulnerable. The goal seeks to ensure equal rights and access to economic and natural resources.

Poverty harms people's lives and hampers social cohesion and economic growth. It limits people's opportunities to achieve their full potential, actively participate in society and gain access to quality services. It is usually associated with poor health, low salaries, unemployment and low educational outcomes, which can be both drivers and impacts of poverty. Poverty is a multidimensional phenomenon and has a tendency to persist over time and to be transmitted across generations. This means that children born into poverty bear a higher risk of poverty in adult life than the average population ([1]). Coordinated policy interventions — such as effective income redistribution, education, health, active labour market inclusion and access to high quality, integrated social services — can help address poverty, and thereby prevent long-term loss of economic productivity from whole groups of society and encourage inclusive and sustainable growth.

Table 1.1: Indicators measuring progress towards SDG 1, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Multidimensional poverty			
◎ People at risk of poverty or social exclusion	:	↑ (1)	page 45
People at risk of income poverty after social transfers	↘ (1)(2)	↗ (1)	page 47
Severe material and social deprivation rate	:	↑	page 48
People living in households with very low work intensity	:	↑	page 49
In work at-risk-of-poverty rate	↓ (2)	↗	page 50
Basic needs			
Housing cost overburden rate	↗ (2)	↑	page 51
Self-reported unmet need for medical care (*)	↑ (2)	↑	SDG 3, page 82
Severe housing deprivation rate (*)	↑ (2)	↑	SDG 11, page 209

(*) Multi-purpose indicator.
(1) Assessment arrow shown in grey because trend is influenced by a methodological change in the German EU-SILC survey.
(2) Past 10-year period.

Table 1.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
◎	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 1 'No poverty'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Multidimensional poverty

The European Pillar of Social Rights (2) promotes upward convergence towards better living and working conditions in Europe. The European Pillar of Social Rights Action Plan sets a target to reduce the number of people at risk of poverty or social exclusion by 15 million by 2030, including at least 5 million children (3).

The reinforced Youth Guarantee (4) strengthens prevention and activation of young people from vulnerable groups and will help reduce poverty or social exclusion among young people.

The European Child Guarantee (5) helps to ensure that in Europe every child in need has effective and free access to quality early childhood education and care, education, school meals, healthcare, adequate housing and healthy nutrition.

The proposal for a Directive on adequate minimum wages in the European Union (6) aims to improve working and living conditions, including through addressing in-work poverty.

The proposal for a Council Recommendation on ensuring a fair transition towards climate neutrality (7) provides policy guidance for addressing relevant employment and social aspects.

The Strategy for the Rights of Persons with Disabilities 2021–2030 (8) aims to reduce the risk of poverty for people with disabilities through measures, for example in the field of employment, health, accessibility or education, in cooperation with EU Member States and civil society.

The European Social Fund Plus (ESF+) (9) is a key financial instrument for implementing the European Pillar of Social Rights. The Fund will also be one of the cornerstones of EU socio-economic recovery from the coronavirus pandemic.

Basic needs

The Fund for European Aid to the Most Deprived (FEAD) (10) supports EU countries' actions in providing food, clothing and other essential goods as well as non-material social inclusion measures to the poorest in society. In April 2020, new amendments to the FEAD Regulation entered into force, introducing specific measures for addressing the COVID-19 crisis.

The affordable housing initiative is part of the Commission's renovation wave strategy for Europe, which aims to promote greener buildings, create jobs and improve lives. The initiative should ensure social and affordable housing facilities also benefit from the renovation wave.

No poverty in the EU: overview and key trends

Monitoring SDG 1 in an EU context involves tracking aspects related to multidimensional poverty and basic needs. In recent years, the EU has made significant progress in almost all aspects of poverty tracked in this chapter, as shown in Table 1.1. However, a slight deterioration of the situation is visible in 2020, which can be partly linked to the first effects of the COVID-19 pandemic and a methodological change in the German EU-SILC survey approach. The pandemic has had considerable impacts on people's lives, however, its impacts are not yet fully reflected in the data shown in this chapter because some of the 2020 data from EU-SILC refer to the pre-pandemic year 2019 only. In addition, COVID-19 also made it more difficult for national statistical offices to administer surveys, which might influence the reliability of the 2020 data from EU-SILC ([11]). The German methodological change, on the other hand, resulted in a better representation of young, poor and people with a migration background in the data for Germany, leading to higher rates for many poverty-related indicators ([12]). Due to the size of the country, these effects are also visible in the EU-level data.

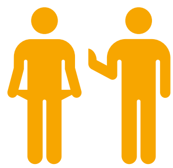
Multidimensional poverty

SDG 1 does not only call for the eradication of extreme poverty but also for poverty in all its dimensions to be halved by 2030. This global goal has a universal approach to reducing poverty. The EU also employs a multidimensional measure of poverty and in its European Pillar of Social Rights Action Plan has set a target to reduce the number of people at risk of poverty or social exclusion by at least 15 million by 2030 compared with the situation in 2019. Of these 15 million people, at least 5 million should be children.

The EU's at-risk-of-poverty-or-social-exclusion (AROPE) indicator is based on three sub-dimensions: income poverty, severe material and social deprivation and very low work intensity. Through this multidimensional approach, the indicator shows which share of the population is at risk of exclusion and marginalisation from economic and social activities. In 2021, the AROPE indicator was modified and the new EU 2030 target was based on the revised definition. The definition of the 'severe material deprivation' indicator was adjusted to also consider social aspects such as leisure activities and social relationships in addition to the material aspects of deprivation. In addition, the definition of 'very low work intensity' — referring to people living in (quasi-)jobless households — was adjusted, including extending the monitored age group from 0–59 to 0–64 years. As a consequence, the two components, and thus the whole AROPE indicator presented in this report, are not comparable with the data in previous reports.

The EU is currently on track to meet its 2030 target to reduce the number of people at risk of poverty or social exclusion

In 2020, 96.6 million people, equalling 21.9 % of the EU population, were at risk of poverty or social exclusion. This represents an 8.0 % decrease since 2015, when 104.9 million people (or 24.0 % of the population) had been at risk. If the EU can maintain the pace of this decrease over the next decade, the target to lift at least 15 million people out of poverty or social exclusion by 2030 will be within reach.



96.6
million people in the EU were at risk of poverty or social exclusion in 2020

The number of children aged less than 18 who are at risk of poverty or social exclusion amounted to 19.6 million in 2020, corresponding to 24.2 % of the population of this age group. This is a 12.0 % decrease compared with five years earlier, when 22.3 million children were at risk across the EU. However, in order to meet the sub-target of lifting at least 5 million children out of this situation by 2030, the pace of this development would need to speed up over the next decade.

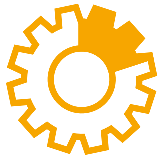
Income poverty was the most widespread form of poverty in the EU

75.2 million people in the EU were at risk of income poverty in 2020

Income poverty was the most prevalent form of poverty in the EU in 2020, affecting 75.2 million people or 17.1 % of the population. This means that after social transfers these people had an equivalised disposable income of less than 60 % of the national equalised median income. The equivalised disposable income is the total income of a household — after tax and other deductions — that is available for spending or saving, divided by the number of household members ([13]). With a considerable gap, the second most frequent form of poverty was severe material and social deprivation, which refers to people unable to afford seven or more items out of a list of 13 considered by most people to be desirable or even necessary for an adequate life (see page 48 for the full list). This form of poverty affected 29.3 million people or 6.8 % of the EU population in 2020. In the same year, 27.0 million people aged less than 65 (equalling 8.2 % of the population of this age group) were affected by very low work intensity, which refers to people living in (quasi-)jobless households where the adults worked no more than 20 % of their total work potential during the past year.

29.3 million people in the EU were affected by severe material and social deprivation in 2020

The three dimensions of poverty or social exclusion covered by the at-risk-of-poverty-or-social-exclusion indicator represent three related but distinct concepts that can overlap, meaning that some people might be affected by two or even all three dimensions at the same time. Income poverty is a relative measure and reflects whether someone's (equivalised disposable) income is below 60 % of the equivalised median income in their country. In other words, the at-risk-of-poverty rate depends on the median income level in a given country or region. This means that even during times of increasing median income, the relative poverty rate might remain stable or even increase, depending on changes in income distribution across the overall population. Rates of severe material and social deprivation (indicating a lack of resources to cover certain material and social needs) and people living in households with very low work intensity (jobless or quasi-jobless households) are likely to decrease during economic recoveries when people are generally better off financially and the labour market situation has improved. Of all of the 96.6 million people at risk of poverty or social exclusion in the EU in 2020, 28.8 million (29.9 %) were affected by more than one dimension of poverty, and 6.3 million (6.5 %) were affected by all three forms ([14]).



27.0 million people in the EU were living in (quasi-)jobless households in 2020

To reduce poverty, governments provide a wide range of measures, such as income support though various benefits (for example, unemployment benefits, sickness and invalidity benefits, and minimum income benefits), tax policies and provision of enabling, social and employment services. The impact of the transfers can be assessed by comparing the at-risk-of-poverty rate before and after social transfers, excluding pensions. In the EU, social transfers reduced the share of people at risk of income poverty in 2020 from 25.4 % ([15]) to 17.1 %, which corresponds to a reduction of 32.7 % ([16]).

Considerable differences in poverty rates exist within the EU

The aggregated EU figure for the multidimensional risk-of-poverty-or-social-exclusion rate masks considerable differences between Member States, whose national rates ranged from 11.5 % in Czechia to 35.8 % in Romania in 2020. While Czechia ranked among the best performing countries for all three components, other countries show striking differences in their situation in terms of income poverty, severe material and social deprivation and very low work intensity, illustrating that good performance in one indicator does not necessarily go hand in hand with a similar performance in another one. Romania, for example, had the second highest share of income poverty after social transfers and the highest share of severely materially and socially deprived people in 2020, while at the same time its share of (quasi-)jobless households was among the lowest across the EU. Denmark and Finland are other examples with striking differences with regard to the three components. Both countries were among the best performers for severe material and social deprivation and income poverty after social transfers but had a relatively high share of (quasi-)jobless households, being within the upper third of countries. These examples show that the drivers behind the Member States' at-risk-of-poverty-or-social-exclusion rates can be quite heterogeneous, depending on the national context.

Children and young people are particularly affected by poverty and social exclusion

Analysing the risk of poverty or social exclusion by age group reveals that young people are generally most affected by this situation. People aged 20 to 24 were most at risk in 2020, with 28.0 % of this age group living in households being at risk of poverty or social exclusion. This is 6.1 percentage points higher than the rate of the total EU population (21.9 %). Children aged 0 to 17 were also more affected than the overall EU population, with a rate of 24.2 % living in households being at risk of poverty or social exclusion. In line with the total EU trend, the poverty or social exclusion rates for both groups have decreased since 2015 ([17]).

Children aged 0 to 17 show a similar pattern for the three poverty dimensions as the total population, with income poverty being the most prevalent form, followed by material and social deprivation and quasi-joblessness. In 2020, 19.5 % of children aged 0 to 17 were living in households affected by income poverty after social transfers, 8.3 % were living in households troubled by severe material and social deprivation, and 7.2 % were living in (quasi-)jobless households ([18]).

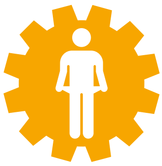
Children's risk of poverty or social exclusion is largely determined by the situation of their parents. Two major factors are education and household composition: parents with a lower level of education are usually earning less. In 2020, 60.3 % of children aged 0 to 17 whose parents had at most lower secondary education were at risk of poverty or social exclusion, with very young children aged 0 to 5 being most affected, with a rate of 63.7 %. Children (aged 0 to 17) with more highly educated parents fared significantly better, with 28.2 % of children whose parents had a mid-level education and 9.5 % of children with highly educated parents at risk. Similarly, single-parent households with one or more dependent children had a much higher at-risk rate (42.1 % in 2020) than other household types ([19]). A major reason is the lack of a (potential) second earner ([20]).

Poverty is more likely to affect people who are unemployed, migrants, disabled or poorly educated

Identifying situations that can make people more vulnerable to being at the risk of poverty and social exclusion is important for creating sound policies that prevent and fight poverty. Figure 1.4 shows which sub-groups of people were most at risk of poverty or social exclusion in 2020. It can be seen that, in addition to the case of children and young people discussed in the previous section, unemployment, migration, disability and low education levels were also key risk factors. Not surprisingly, the group with the highest at-risk-of-poverty-or-social-exclusion rate were unemployed people, of which two-thirds (66.2 %) were in this situation. Nearly half (47.9 %) of non-EU citizens living in the EU were at risk of poverty and social exclusion, far more than EU home-country nationals (19.9 %). The situation was quite similar when looking at country of birth, with 40.8 % of adults born in non-EU countries being in that situation, compared with only 19.5 % of those born in the reporting EU countries. Moreover, about one-third of people with severe disabilities (34.6 %) or low education levels (34.7 %) were at risk of poverty or social exclusion. People living in rural areas (23.2 %) were slightly more affected than those in urban areas (22.3 %). Women (22.9 %) were more affected than men (20.9 %) ([21]).

In-work poverty has increased in the past ten years, with a peak in 2016

Poverty can also affect employed people. The share of people unable to escape the risk of income poverty despite being employed — the so-called working poor — has generally grown over the past ten years. In 2020, the in-work poverty rate was 9.4 %, an increase of 0.9 percentage points compared with 2010 when it stood at 8.5 %. The rate has, however, fallen since its peak in 2016, resulting in a moderate 0.3 percentage point improvement in the share of the working poor over the past five years, down from 9.7 % in 2015 ([22]). Rates varied considerably across the EU in 2020, with the lowest share of working poor recorded in Finland (3.1 %) and the highest in Romania (14.9 %) and Luxembourg (11.9 %).



9.4 %
of employed people in the EU were at risk of income poverty in 2020

The likelihood of a person becoming working poor varies according to their type of work and education level. Low-skilled workers and people who work part-time or on temporary contracts are generally the most affected ([23]).

Basic needs

Being at risk of poverty can have a severe impact on a person's ability to meet their basic needs such as being able to afford adequate housing or receive medical treatment when needed.

Fewer people are overburdened by their housing costs or face severe housing deprivation

The European Commission has declared access to affordable accommodation a fundamental need and right ([24]). Meeting basic human needs is central to social sustainability and housing is a key dimension of need. The costs for housing often account for the largest component of many households' expenditure and determine what is left of a household's budget for satisfying other essential needs and expenses, such as education, medical treatment, food or energy. Nevertheless, people suffering from poverty are far more often restricted to sub-optimal housing than the overall population. Households experiencing problems with housing adequacy, safety and affordability and access to basic services such as sanitation, heating and lighting are often considered to be living in extreme poverty.

Housing affordability can be analysed through the housing cost overburden rate, which is defined as the share of the population living in households where the total housing costs (net of housing allowances) represent more than 40 % of the total disposable household income. The EU's housing cost overburden rate has been on a downward path since 2013, when 11.6 % of the population were affected, falling to 9.4 % in 2019. In 2020, however, the rate increased to 10.0 %, which can be attributed to the change in the German EU-SILC methodology. Poor people are particularly prone to being overburdened by their housing costs. In 2020, 38.4 % of people with an income below the poverty threshold spent 40 % or more of their household disposable income on housing, compared with only 4.2 % of the richer population (referring to people with an income above the poverty threshold) ([25]). Similarly, people with disabilities are more likely to be overburdened by housing costs. Data are only available for people aged 16 or over and show that in 2020, 12.2 % of people with severe and 9.8 % of people with some activity

10.0 %
of the EU population were overburdened by their housing costs in 2020

4.2 %
of the EU population faced severe housing deprivation in 2020

limitation were in this situation, compared with 8.2 % of people with no activity limitation (26).

The severe housing deprivation rate is an indicator of inadequate housing, referring to people living in an overcrowded household (27) that faces housing deprivation such as a leaking roof, lacking sanitation facilities (bath, shower, indoor flushing toilet) or a dwelling considered too dark. In 2020, 4.2 % of the EU population faced severe housing deprivation, a 1.1 percentage point improvement compared with 2015. Among people living in income poverty, 9.2 % were affected by this situation in 2020, compared with only 3.2 % of the richer population (28).

An analysis by degree of urbanisation reveals that city dwellers in particular are more likely to be overburdened by their housing costs, while severe housing deprivation is more common in rural areas. In 2020, 12.2 % of people living in cities spent 40 % or more of their household disposable income on housing, compared with only 9.8 % for towns and suburbs and 7.3 % for rural areas. In contrast, 4.8 % of the rural population faced severe housing deprivation in 2020, compared with 4.6 % for cities and 3.2 % for towns and suburbs (29).

People who self-report unmet needs for medical care most commonly cite costs as the reason

1.8 %
of the EU population reported unmet needs for medical care in 2020

Access to health care services may help break the spiral of poor health that contributes to, and results from, poverty and exclusion. In turn, this may contribute to increased productivity, improved quality of life and reduced costs associated with social protection systems. Barriers to accessing health services include costs, distance and waiting time. In 2020, 1.8 % of the EU population aged 16 and above reported unmet needs for medical care, an improvement of 1.5 percentage points compared with 2015. Cost was the main reason given for impeded access to health care services, indicated by 1.1 % of the EU population. People with lower incomes face a much higher share of unmet needs for medical care. While only 0.2 % of the richest 20 % of the population reported unmet care needs due to financial constraints, 2.6 % of people in the poorest quintile reported that this was the case (30).

Presentation of the main indicators

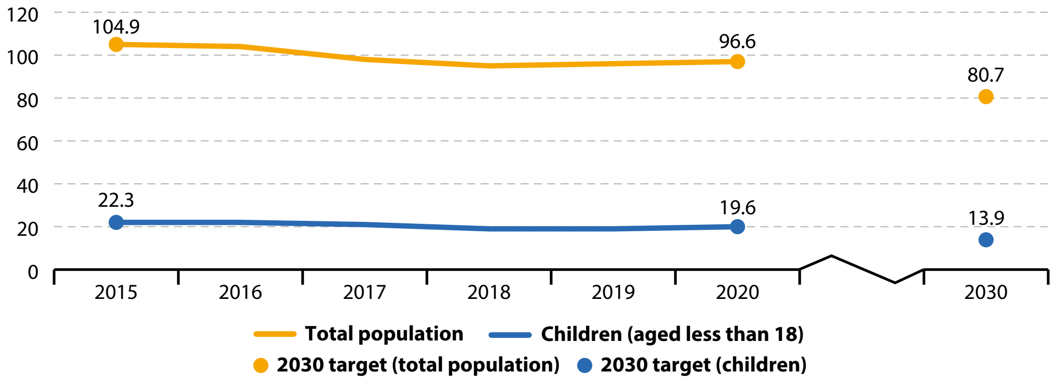
People at risk of poverty or social exclusion

LONG TERM Time series too short

SHORT TERM 2015–2020

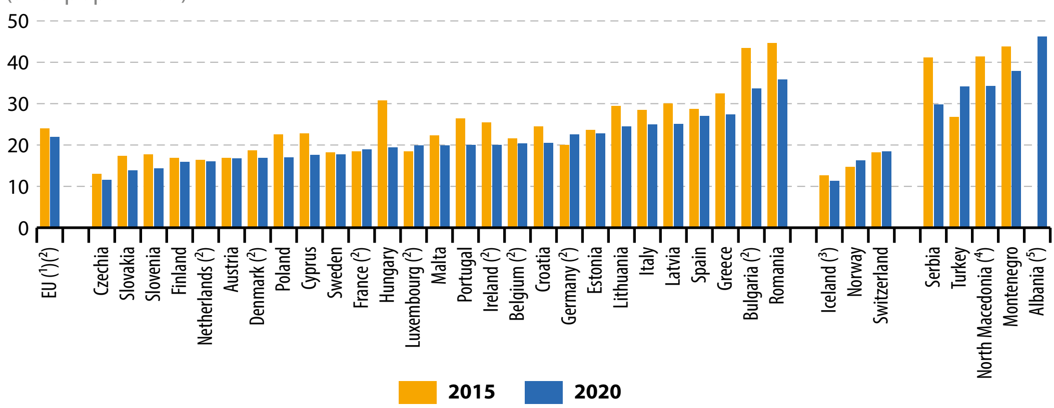
While a household's income is a key determinant of its standard of living, other aspects can prevent people from fully participating in society such as an impeded access to labour markets or material deprivation. To reflect these different dimensions of poverty or social exclusion, the broad indicator 'at risk of poverty or social exclusion' measures the number of people affected by at least one of the following three forms of poverty or social exclusion: income poverty, severe material and social deprivation and very low work intensity (see pages 47–49 for a detailed description of these components). Data on the three components are derived from the EU Statistics on Income and Living Conditions (EU-SILC).

Figure 1.1: People at risk of poverty or social exclusion, EU, 2015–2020
(million people)



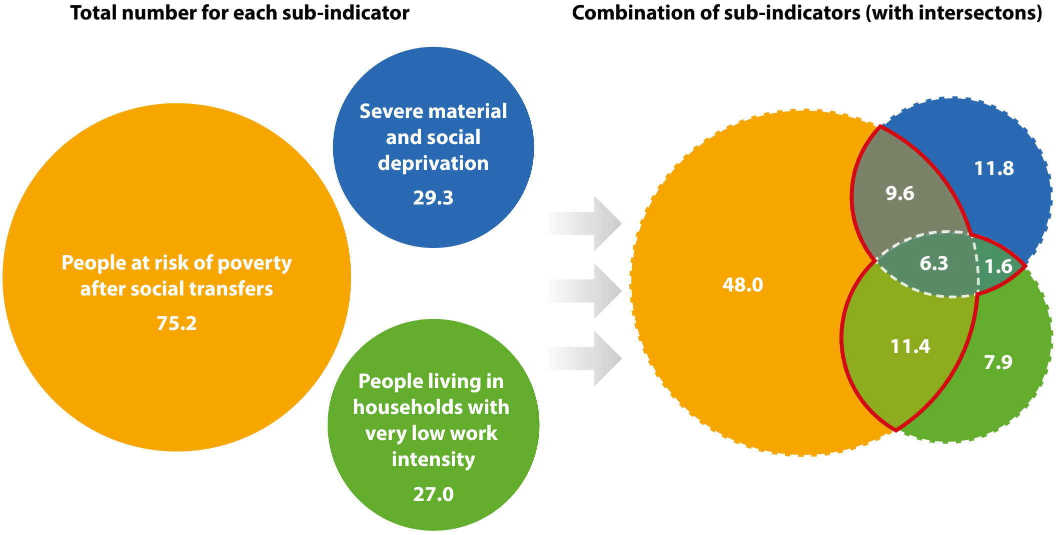
Note: Estimated data; break in time series in 2019.
Compound annual growth rate (CAGR) for the total population: – 1.7 % per year (observed) and – 1.7 % per year (required to meet target) in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by a methodological change in the German EU-SILC survey.
Source: Eurostat (online data code: sdg_01_10)

Figure 1.2: People at risk of poverty or social exclusion, by country, 2015 and 2020
(% of population)



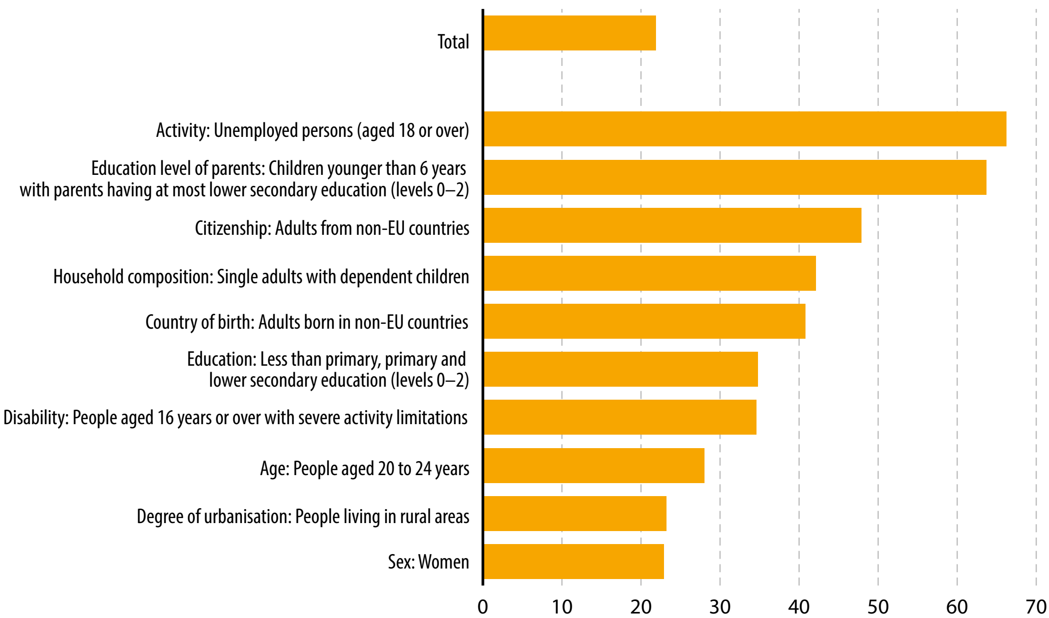
([1]) Estimated data.
([2]) Break(s) in time series between the two years shown.
([3]) 2018 data (instead of 2020).
([4]) 2019 data (instead of 2020).
([5]) No data for 2015.
Source: Eurostat (online data code: sdg_01_10)

Figure 1.3: Aggregation of components of 'People at risk of poverty or social exclusion', EU, 2020
(million people)



Note: Estimated data.
Source: Eurostat (online data code: ilc_pees01n)

Figure 1.4: People most at risk of poverty or social exclusion, by sub-group, EU, 2020
(% of population)

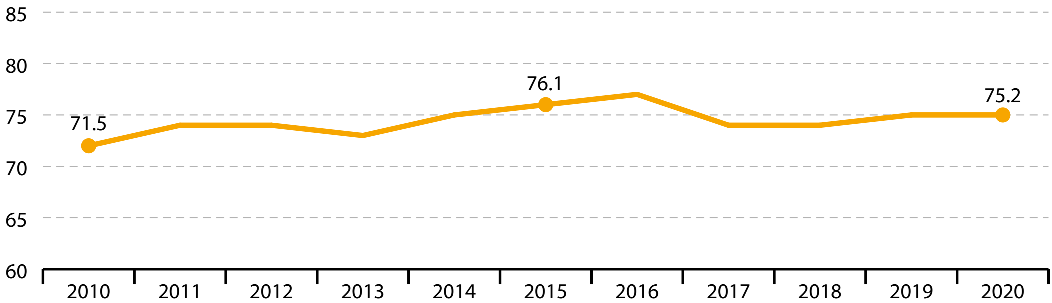


Note: Estimated data; data by disability not yet adjusted to new 2030 target definition.
Source: Eurostat (online data codes: ilc_peps01n, ilc_peps02n, ilc_peps03n, ilc_peps04n, ilc_peps05n, ilc_peps06n, ilc_peps13n, ilc_peps60n and hlth_dpe010)

People at risk of income poverty after social transfers

This indicator measures the number of people with an equivalised disposable income below the risk-of-poverty threshold. This is set at 60 % of the national median equivalised ([31]) disposable income after social transfers. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC).

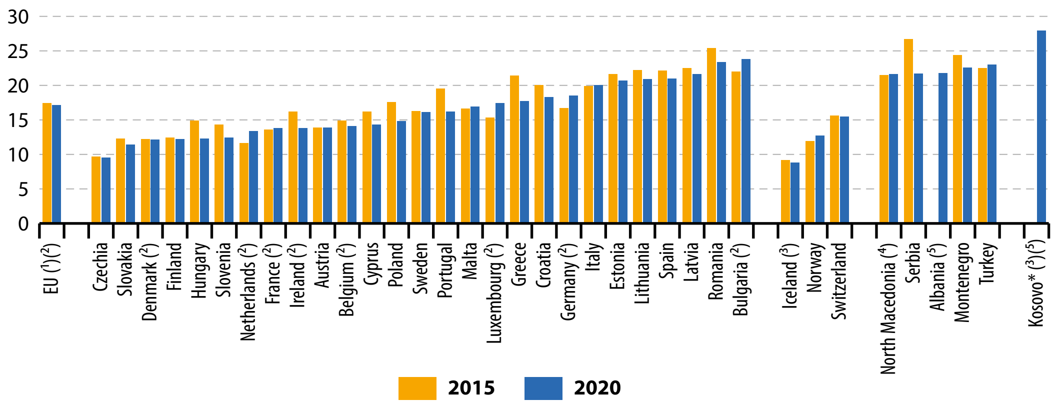
Figure 1.5: People at risk of income poverty after social transfers, EU, 2010–2020
(million people)



Note: Estimated data; break in time series in 2019.
Compound annual growth rate (CAGR): 0.5 % per year in the period 2010–2020; – 0.2 % per year in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by a methodological change in the German EU-SILC survey.

Source: Eurostat (online data code: sdg_01_20)

Figure 1.6: People at risk of income poverty after social transfers, by country, 2015 and 2020
(% of population)



([1]) Estimated data.
([2]) Break(s) in time series between the two years shown.
([3]) 2018 data (instead of 2020).
([4]) 2019 data (instead of 2020).
([5]) No data for 2015.
(*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Source: Eurostat (online data code: sdg_01_20)

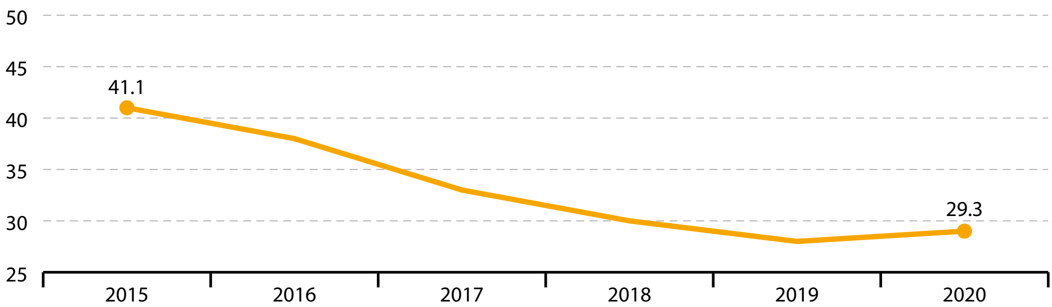
X LONG TERM Time series too short

↑ SHORT TERM 2015–2020

Severe material and social deprivation rate

The indicator shows an enforced lack of necessary and desirable items to lead an adequate life. The indicator distinguishes between individuals who cannot afford a certain good, service or social activities. It is defined as the proportion of the population experiencing an enforced lack of at least 7 out of 13 deprivation items: (1) pay rent, utility bills or loan payments, (2) keep home adequately warm, (3) face unexpected expenses, (4) eat meat, fish or a protein equivalent every second day, (5) a week of holiday away from home, (6) have access to a car/van for personal use, (7) replace worn-out furniture, (8) replace worn-out clothes with some new ones, (9) have two pairs of properly fitting shoes, (10) spend a small amount of money each week on themselves ('pocket money'), (11) have regular leisure activities, (12) get together with friends/family for a drink/meal at least once a month, and (13) have an internet connection. Items 1 to 7 relate to the household level, while the remaining items 8 to 13 relate to the level of the individual. Data for this indicator stem from the EU Statistics on Income and Living Conditions (EU-SILC).

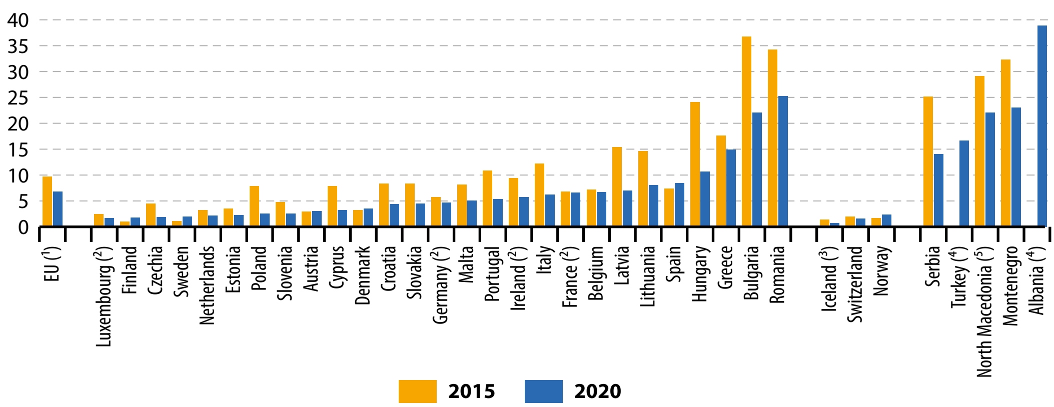
Figure 1.7: Severe material and social deprivation, EU, 2015–2020
(million people)



Note: 2020 data are estimated.
Compound annual growth rate (CAGR): – 6.6 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_01_31)

Figure 1.8: Severe material and social deprivation rate, by country, 2015 and 2020
(% of population)



(1) 2020 data are estimated.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) No data for 2015.
(5) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_01_31)

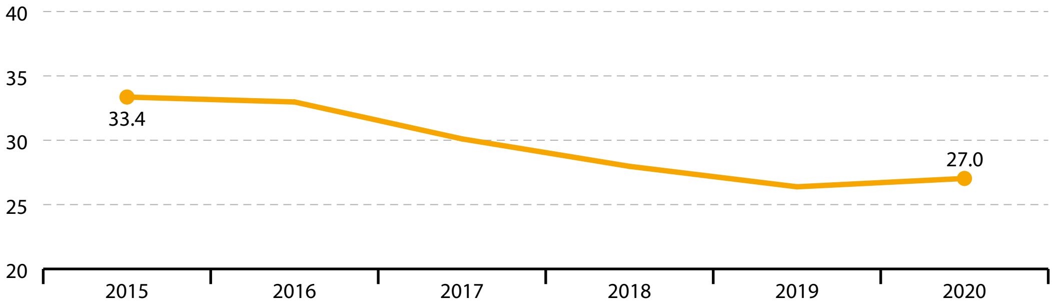
People living in households with very low work intensity

LONG TERM Time series too short

SHORT TERM 2015–2020

This indicator describes the share of people aged less than 65 living in households where the working age adults aged 18 to 64 worked less than 20 % of their total combined potential work-time during the previous 12 months. Students aged 18 to 24 and people who are retired according to their self-defined current economic status or who receive any pension, as well as people in the age bracket 60 to 64 who are inactive and live in a household where the main income is pensions (except survivors' pension) are excluded. The EU Statistics on Income and Living Conditions (EU-SILC) is the data source for this indicator.

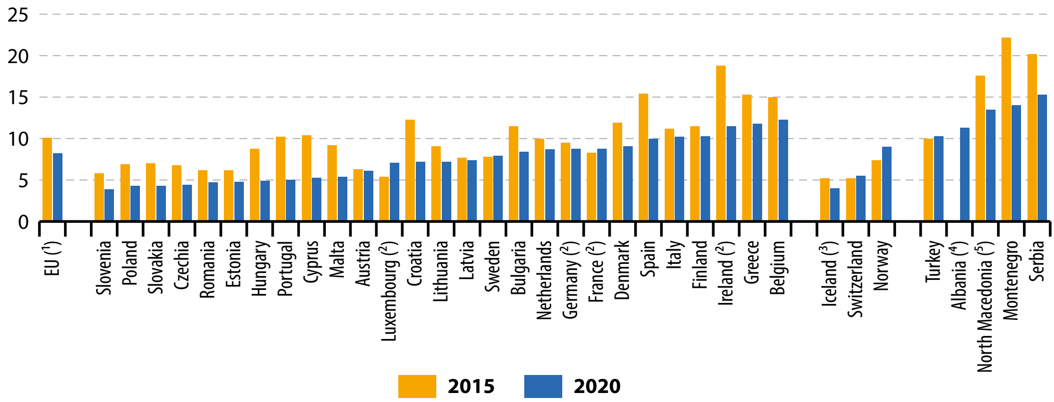
Figure 1.9: People living in households with very low work intensity, EU, 2015–2020
(million people aged less than 65)



Note: 2019 and 2020 data are estimated.
Compound annual growth rate (CAGR): – 4.1 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_01_40)

Figure 1.10: People living in households with very low work intensity, by country, 2015 and 2020
(% of population aged less than 65)



(1) 2020 data are estimated.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) No data for 2015.
(5) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_01_40)

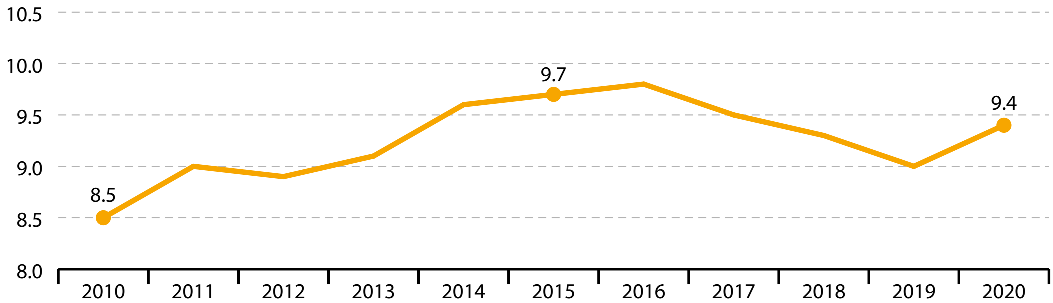
LONG TERM 2010-2020

SHORT TERM 2015–2020

In work at-risk-of-poverty rate

This indicator refers to the share of employed people aged 18 years or over at risk of income poverty (see definition on page 47). People are considered 'employed' if they held a job for more than half of the reference year. Data for this indicator are taken from the EU Statistics on Income and Living Conditions (EU-SILC).

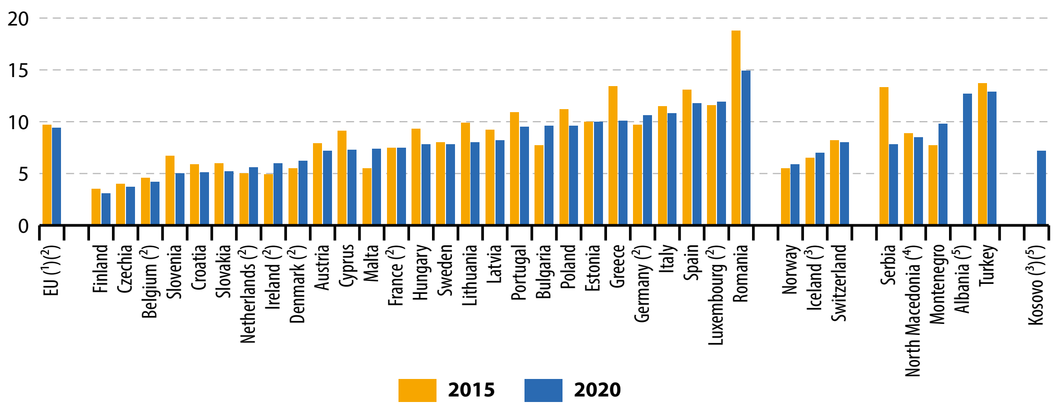
Figure 1.11: In work at-risk-of-poverty rate, EU, 2010–2020
(% of population aged 18 or over)



Note: Estimated data.
Compound annual growth rate (CAGR): 1.0 % per year in the period 2010-2020; – 0.6 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_01_41)

Figure 1.12: In work at-risk-of-poverty rate, by country, 2015 and 2020
(% of population aged 18 or over)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) 2019 data (instead of 2020).
(5) No data for 2015.

Source: Eurostat (online data code: sdg_01_41)

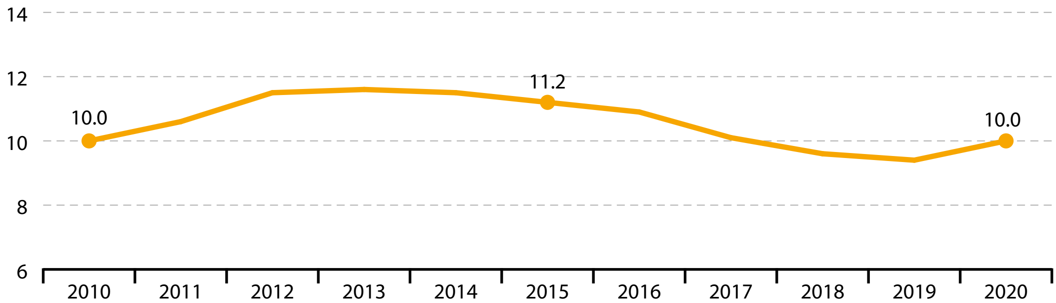
Housing cost overburden rate

LONG TERM 2010–2020

SHORT TERM 2015–2020

The indicator reflects the share of the population living in households where the total housing costs ('net' of housing allowances) represent more than 40 % of the disposable income. This indicator is derived from the EU Statistics on Income and Living Conditions (EU-SILC).

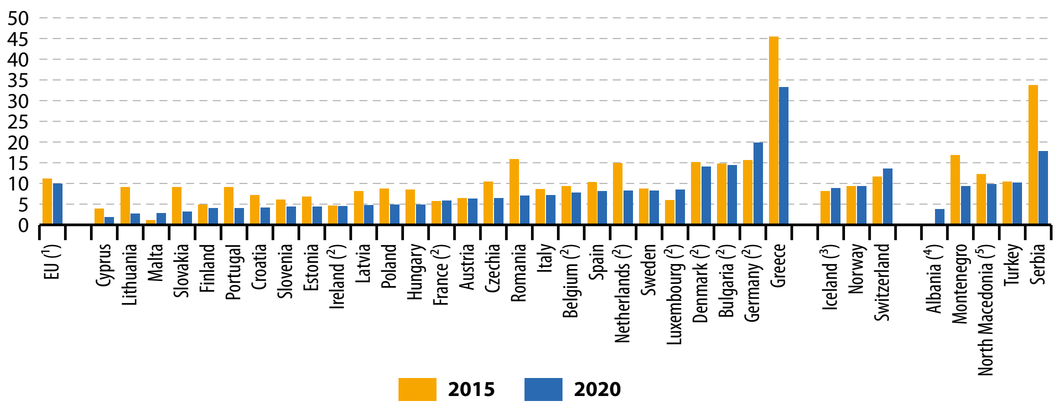
Figure 1.13: Housing cost overburden rate, EU, 2010–2020
(% of population)



Note: Estimated data.
Compound annual growth rate (CAGR): 0.0 % per year in the period 2010–2020; – 2.2 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_01_50)

Figure 1.14: Housing cost overburden rate, by country, 2015 and 2020
(% of population)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) No data for 2015.
(5) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_01_50)

Notes

(1) For more information, see Eurostat (2021), *Statistics Explained, Intergenerational transmission of disadvantage statistics.*
(2) European Commission (2017), *Establishing a European Pillar of Social Rights,* COM(2017) 250 final, Brussels.
(3) European Commission (2021), *The European Pillar of Social Rights Action Plan*, Publication Office of the European Union, Luxembourg.
(4) For more information see: European Commission, *The reinforced Youth Guarantee*.
(5) Council of the European Union (2021), *Council Recommendation (EU) 2021/1004 of 14 June 2021 establishing a European Child Guarantee*.
(6) European Commission (2020), *Proposal for a Directive of the European Parliament and of the Council on adequate minimum wages in the European Union,* COM(2020) 682 final, Brussels.
(7) European Commission (2021), *Proposal for a Council Recommendation on ensuring a fair transition towards climate neutrality*, COM(2021) 801 final, Brussels.
(8) European Commission (2021), *Union of Equality, Strategy for the Rights of Persons with Disabilities 2021–2030*, COM(2021) 101 final, Brussels.
(9) For more information see: European Commission, *A new, stronger European Social Fund Plus.*
(10) For further information see: European Commission, *Fund for European Aid to the Most Deprived (FEAD).*
(11) In some countries 2020 data were collected before the pandemic started, in others during the lockdown and in others after the lockdown. Moreover, some countries were forced to change the data collection mode (for example, from face-to-face interviews to online surveys) in a very short time. Therefore, caution should be exercised when comparing results for the year 2020.
(12) A more detailed explanation of the methodological change is available (in German) on the website of the German Statistical Office (DESTATIS).
(13) Household members are equalised or made equivalent by weighting each according to their age, using the so-called modified OECD equivalence scale. This scale gives a weight to all members of the household (and then adds these up to arrive at the equivalised household size): 1.0 to the first adult; 0.5 to the second and each subsequent person aged 14 and over; 0.3 to each child aged under 14.
(14) The year of reference differs for the three components. Data for the risk of poverty after social transfers and for whether or not someone lives in a household with very low work intensity are based on data from the previous year. The extent to which an individual is severely materially deprived is determined based on information from the year of the survey.
(15) Source: Eurostat (online data code: ilc_li10).
(16) Source: Eurostat (online data code: TESPM050).
(17) Source: Eurostat (online data code: ilc_peps01n).
(18) Source: Eurostat (online data codes: tepsr_spi110, tepsr_spi120 and tepsr_spi130).
(19) Source: Eurostat (online data codes: ilc_peps60n and ilc_peps03n).
(20) Policy Department for Citizens' Rights and Constitutional Affairs (2020), *The situation of single parents in the EU*, Study requested by the FEMM committee of the European Parliament, Directorate-General for Internal Policies Brussels.
(21) Source: Eurostat (online data codes: ilc_peps02n, ilc_peps04n, ilc_peps05n, ilc_peps06n, ilc_peps13n and ilc_peps01n). Further information on vulnerable groups particularly at risk of poverty or social exclusion can be found on Eurostat's Statistics Explained pages related to 'Poverty and social exclusion'.
(22) Data for work at-risk-of-poverty rate are based on data from the previous year. Therefore, the increase between 2019 and 2020 does not take into account the effects of the COVID-19 pandemic but is rather the result of the methodological change in the German EU-SILC survey approach.
(23) European Commission (2020), *Joint Employment Report 2021*, Directorate-General for Employment, Social Affairs and Inclusion, Brussels. The data in this report refer to the EU including the UK.
(24) European Commission (2010), *The European Platform against Poverty and Social Exclusion: A European framework for social and territorial cohesion*, COM(2010) 0758 final.
(25) Source: Eurostat (online data code: ilc_lvho07a).
(26) Source: Eurostat (online data code: hlth_dhc060).
(27) A household is considered overcrowded if it does not have at least one room for the entire household as well as a room for a couple, for each single person above 18, for a pair of teenagers (12 to 17 years of age) of the same sex, for each teenager of different sex and for a pair of children (under 12 years of age).
(28) Source: Eurostat (online data code: ilc_mdho06a).
(29) Source: Eurostat (online data codes: ilc_lvho07d and ilc_mdho06d).
(30) Source: Eurostat (online data code: hlth_silc_08).
(31) The equivalised disposable income is the total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults; household members are equalised or made equivalent by weighting each according to their age, using the so-called modified OECD equivalence scale.

2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

SDG 2 seeks to end hunger and malnutrition and ensure access to safe, nutritious and sufficient food. Realising this goal will largely depend on promoting sustainable production systems and increasing investment in rural infrastructure and agricultural research and development.

2 ZERO HUNGER

eurostat supports the SDGs

Achieving healthy diets and ensuring agricultural systems remain productive and sustainable are the key challenges associated with SDG 2 in the EU. Unlike many areas of the world facing hunger, the EU's central nutritional issue is obesity, which can also harm health and well-being and adversely affect health and social systems, governmental budgets and economic productivity and growth. Furthermore, sustainable and productive agricultural systems are essential for ensuring a reliable supply of nutritious food. This is especially important in the face of challenges such as climate change and population growth. However, although Europe's agricultural productivity has increased in recent decades and there are signs of more environmentally friendly practices being used, certain ongoing negative environmental impacts of farming threaten the long-term sustainability of agricultural production and the ability to provide healthy and sustainable food. In this respect, a shift towards healthier diets has the potential to reduce the pressure on agricultural land and improve biodiversity, while decreasing greenhouse gas emissions and generating significant co-benefits for human health (1).

Table 2.1: Indicators measuring progress towards SDG 2, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Malnutrition			
Obesity rate	:	↓	page 60
Sustainable agricultural production			
Agricultural factor income per annual work unit	↑	↑	page 61
Government support to agricultural R&D	↑	↑	page 62
◎ Area under organic farming	:	↗	page 63
◎ Use of more hazardous pesticides	:	↘	page 64
Environmental impacts of agricultural production			
Ammonia emissions from agriculture	↗	↗	page 65
Nitrate in groundwater (*)	↘ (1)	↘ (1)	SDG 6, page 125
Estimated severe soil erosion by water (*)	↗ (2)	↗ (3)	SDG 15, page 277
Common farmland bird index (*)	↘ (4)	↘ (4)	SDG 15, page 280

(*) Multi-purpose indicator.
(1) Data refer to an EU aggregate based on 19 Member States.
(2) Past 16-year period.
(3) Past 6-year period.
(4) Data refer to an EU aggregate that changes over time depending on when countries joined the Pan-European Common Birds Monitoring Scheme.

Table 2.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
◎	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 2 'Zero hunger'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Malnutrition

The EU Action Plan on Childhood Obesity 2014–2020 (2) aimed to help halt the rise in childhood obesity by 2020 by promoting healthy diets. The Commission will evaluate the 2014–2020 EU Action Plan on Childhood Obesity and propose a follow-up.

Europe's Beating Cancer Plan (3) also highlights the importance of addressing obesity and diabetes from an early age.

Sustainable agricultural production

The EU's Common Agricultural Policy (CAP) provides income support, market measures and rural development measures to safeguard farmers' income and increase agricultural productivity in a sustainable way while protecting rural landscapes and the environment.

The EU Farm to Fork Strategy for sustainable food (4) aims to significantly reduce the use and risk of chemical pesticides, reduce nutrient losses and reduce the use of fertilisers and antibiotics. The strategy sets the 2030 targets of achieving 25 % of the EU's total farmland under organic farming and a significant increase in organic aquaculture, a 50 % reduction in the use and risk of chemical pesticides and a 50 % reduction in the use of more hazardous pesticides.

Biodiversity Strategy for 2030 (5) aims to bring back at least 10 % of agricultural area under high-diversity landscape features in order to provide space for wild animals, plants, pollinators and natural pest regulators.

Environmental impacts of agricultural production

The National Emission-reduction Commitments Directive (NEC Directive) (6) sets national emission-reduction commitments for Member States and the EU for five important air pollutants, including ammonia.

The Nitrates Directive (7) protects water quality across Europe by preventing agricultural nitrates from polluting ground and surface waters and by promoting good farming practices.

The new EU soil strategy for 2030 sets out a framework and concrete measures to protect and restore soils, and ensure their sustainable use.

The EU has funded research and improved soil monitoring through projects such as LUCAS, a survey on land cover, land use and agri-environmental indicators run by Eurostat and Copernicus — the EU's Earth Observation and Monitoring Programme.

Zero hunger in the EU: overview and key trends

Monitoring SDG 2 in an EU context focuses on the topics of malnutrition, sustainable agricultural production and the adverse impacts of agricultural production. As Table 2.1 shows, the EU has made progress on improving the sustainability of agricultural production over the past few years. However, there is still room for improvement in terms of the environmental impacts of agriculture, where the picture is mixed.

Malnutrition

Good nutrition means an adequate, well-balanced diet that meets the body's dietary needs. Combined with regular physical activity and the avoidance of excessive alcohol consumption and tobacco use, good nutrition is a cornerstone of good health. While ending hunger and all forms of malnutrition are key objectives of the 2030 Agenda, in Europe and in other parts of the world it is obesity that presents the most serious nutrition-related health issue.

More than half of the EU population is overweight and every sixth person is obese

Obesity is a malnutrition problem related to changing consumption and activity habits. Combining a balanced nutritional diet with an adequately active lifestyle poses a challenge for many people. While the causes of obesity vary for each person, the problem is generally attributed to poor diets that are high in fat, salt and sugar; lifestyle choices characterised by low physical activity and high caloric consumption; and sociological and hereditary factors.

Obesity is a significant health issue in the EU, affecting almost 17 % of the adult population in 2019. It is also a contributing factor in non-communicable diseases, such as cancer, cardiovascular diseases and diabetes. Obesity also disproportionately affects people with lower levels of education and generally tends to increase with age until late in life ([8]). Childhood obesity also remains an important public health problem in Europe, despite childhood obesity rates levelling off in some European countries ([9]).

When considered together with pre-obesity, the situation looks even more severe, with more than half of the adult EU population being overweight in 2019. Patterns in the pre-obesity rate follow patterns in the obesity rate, though pre-obesity affected more than twice as many Europeans as obesity (36.2 % of the adult population) in 2019.

16.5 %
of the EU's adult population were obese in 2019

Between 2014 and 2019, the share of overweight (obese and pre-obese) people rose slightly, from 51.1 % to 52.7 %. This is largely due to an increase in the share of obese people, from 15.4 % in 2014 to 16.5 % in 2019. At the Member State level, 23 EU countries saw a rise in the obesity rate from 2014 to 2019. The obesity rate is highest in Malta, at 28.7 % in 2019, and lowest in Romania and Italy, at 10.9 % and 11.7 %, respectively.

The obesity rate generally increases with age, peaking at age group 65 to 74 years (22.3 % obese in 2019) and decreasing again for people aged 75 and older. Obesity and pre-obesity rates also appear to be decreasing with higher educational levels, with the obesity rates ranging from 11.4 % in 2019 for people with tertiary education to 20.3 % for people with lower secondary education or lower. The obesity rate was also lower among young people aged 18 to 24, with 6.0 % ([10]).

Sustainable agricultural production

Sustainable agricultural production is a key element in making food systems fair, healthy and environmentally friendly. A concerted effort is needed to foster a food-production system that is based on sustainable agricultural practices and produces an adequate supply of food.

Four indicators are used to monitor the strong interlinkages that agricultural production has with the social, economic and environmental dimensions of sustainability. These are: agricultural income and labour productivity; investment in agricultural research and innovation; organic farming; and pesticide risk.

Labour productivity in EU agriculture has increased, as has investment in the future of farming

To ensure its long-term viability, Europe's agricultural sector needs to achieve economic sustainability. Labour productivity is an important component of this and can be measured using the indicator 'agricultural factor income per annual work unit (AWU)'.

36.7 %
growth in EU agricultural factor income per annual work unit between 2010 and 2021

Following a dip during the economic crisis in the late 2000s, agricultural factor income per AWU has been rising in Europe. By 2021 it was 36.7 % higher than it was in 2010. This is mainly due to strong growth between 2009 and 2011 and again between 2016 and 2017, driven partly by increased output values (prices and/or yields) and partly by a reduced labour force.

Agricultural factor income per AWU varies considerably between Member States and farm types. It tends to be higher in countries with more mechanised, input-intensive production systems than in countries using more traditional, labour-intensive methods ([11]).

3.2
billion EUR in government support was spent on agricultural R&D in 2020

Investment in agricultural research and innovation is crucial for decoupling agricultural productivity from environmental impacts. Such investments also help to keep EU farmers competitive and adaptable to challenges such as climate change and feeding a rising population. Overall in the EU, national government support to agricultural research and development has risen in the short term, growing by 23.5 % between 2015 and 2020, reaching EUR 3.2 billion in 2020.

Organic farming is on the rise across the EU, but the pace needs to quicken to reach the 2030 target

Organic farming is one example of a sustainable agricultural management system. It seeks to limit environmental impacts by using agricultural practices that encourage responsible use of energy and natural resources, maintain or enhance biodiversity, preserve regional ecological balances, increase soil fertility and water quality, encourage high animal welfare standards, and enhance the capacity to adapt to climate change.

9.1 %
of the EU's utilised agricultural area was farmed organically in 2020

In the EU, the share of organic farming in total agricultural area grew by 2.5 percentage points between 2015 and 2020, to 9.1 %. Despite this, the take-up of organic farming will need to accelerate significantly to achieve the 25 % target by 2030. Across the EU, Austria leads with more than 25 % of its agricultural area farmed organically, followed by Estonia and Sweden with levels slightly above 20 %, and Italy and Czechia, with levels slightly above 15 %. In all other Member States, organic farming was practised on less than 15 % of agricultural land in 2020.

Despite a decrease in the use of more hazardous pesticides, the EU is not yet on track to meeting its 2030 target

Use of more hazardous pesticides has been decreasing in the EU, but recent progress is below the rate required to achieve the 50 % reduction target set by the Farm to Fork Strategy. Between 2014 and 2019, the use of more hazardous pesticides declined by 9 %. Of the 16 EU Member States for which country-level data are available for these years, half show a decreased use of more hazardous pesticides while the other half show an increased use. The Farm to Fork Strategy has also set a 50 % reduction target for the use and risk of chemical pesticides. While the use and risk of chemical pesticides has been declining gradually in the EU, the rate has been too slow to put the EU on track to meeting the strategy's target by 2030.

9.0 %
reduction in use of more hazardous pesticides in the EU between 2014 and 2019

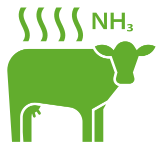
Environmental impacts of agricultural production

Agriculture provides environmental benefits such as maintaining specific farmland ecosystems and diverse landscapes, and by providing carbon sinks. However, considerable increases in agricultural productivity and a move towards industrial agriculture practices have contributed to the degradation of environmental conditions and climate change. The environmental impacts of agriculture include nutrient-related pollution, soil erosion and loss of biodiversity.

Excessive nutrient inputs are threatening the environment and water quality

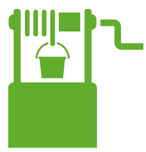
Ammonia emissions and nitrates in groundwater are linked to excessive inputs of nitrogen from agricultural sources such as mineral fertiliser and livestock manure. Manure produced by livestock is rich in nutrients such as nitrogen (ammonia and nitrates) and phosphorus, and is used as a fertiliser alongside chemical fertilisers. If properly treated, its application improves soil structure and enhances soil organic matter content, which positively contributes to carbon sequestration. When mineral fertilisers or manure are not properly handled and spread, however, excess nutrients that are not taken up by plants are released into the environment (as ammonia in air and as nitrates and phosphorus in water). When released into the atmosphere, ammonia pollutes the air and can land on soil and water, where it can harm sensitive vegetation systems, biodiversity and water quality through eutrophication and acidification.

Since the 1990s, Europe has seen significant decreases in its ammonia emissions from agriculture due to reductions in livestock density and nitrogen fertiliser use as well as changes in agricultural practices. In recent years, however, this trend has halted, with ammonia emissions largely levelling off at 3.20 million tonnes over the past eight years. It must be noted that the national and EU totals may mask considerable variations in fertiliser application and livestock densities at regional and local levels.



3.2
million tonnes of ammonia were emitted from agriculture in the EU in 2019

The amount of nitrates in EU groundwater has remained stable at just under 21 milligrams per litre (mg/L) since 2004. However, there has been a slight upward trend in recent years, with the four-year average nitrate concentration reaching 21.2 mg/L in 2019. In addition, hot spots exist where the nitrates concentration is above 50 mg/L, which is the limit set for drinkable water. Several countries among those with the highest ammonia emissions per hectare of utilised agricultural area in Europe, such as Malta, Cyprus, Belgium and Germany, are also struggling the most with high nitrates levels in groundwater (see Figures 2.12 and 6.7).

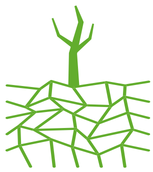


An average of
21.2
milligrams of nitrates were in each litre of groundwater in the EU in 2019

The agricultural sector is also responsible for considerable quantities of greenhouse gas (GHG) emissions [12], accounting for more than 11 % of total GHG emissions in the EU in 2020 [13]. Agricultural emissions are generally linked to the management of agricultural soils, livestock, rice production and biomass burning. While the EU's total GHG emissions have decreased by about 14 % since 2015 (see the chapter on SDG 13 'Climate action' on page 233), emissions from the agricultural sector have fallen much slower, by less than 2 % over the same period. By 2020 they had reached some 385 million tonnes of CO_2 equivalent, which is around 20 % lower than the 1990 level of 488 million tonnes ([14]).

Soil erosion remains a major threat, but signs of improvement exist across the EU

Healthy soils are essential for sustainable and productive agricultural systems. Because soils take years to form, they can be considered a non-renewable resource for food production. One of the biggest threats to soil health in Europe is soil erosion, which can be caused by both wind and water. Though erosion is a natural process, inappropriate land management and other human activities can cause it to accelerate to such an extent that soil can be irreversibly lost. The indicator on estimated soil erosion by water provides a measure of the area at risk of severe soil erosion (leading to the loss of more than 10 tonnes of soil per hectare per year).



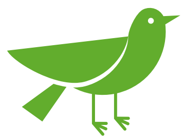
5.3 %
of EU land was estimated to be at risk of severe soil erosion by water in 2016

In the EU, 196 853 square kilometres (km²) of land was at risk of severe soil loss from water erosion in 2016 — an area equal to about 1.5 times Greece's total land area. The risk of severe soil erosion has been decreasing in the EU, in part due to mandatory cross-compliance measures in the EU Common Agricultural Policy (CAP). The share of non-artificial erosive area ([15]) estimated to be at risk of severe soil erosion by water fell from 6.1 % to 5.3 % between 2000 and 2016.

High agricultural productivity can harm biodiversity

Some agricultural landscapes provide valuable and unique habitats for a host of species, both common and threatened. However, biodiversity has suffered under growing pressure from the race to increase productivity and where ecosystem services, which are provided by features that support biodiversity, have not been given economic value or adequate regulatory protection. Species related to agroecosystems are likely to have fared worse without the agri-environmental measures contained in EU policies, primarily the Common Agriculture Policy, but measures have not yet been effective enough to halt overall biodiversity loss in agricultural habitats ([16]).

Farmland bird species depend on agricultural habitats. Because they are relatively visible, they are a good indicator species for monitoring biodiversity. The common farmland bird index measures the relative abundance and diversity of 39 farmland bird species compared with the 2000 base year. Between 2005 and 2020, the EU saw dramatic declines of 17.4 % for common farmland birds. Intensive agricultural practices and the use of pesticides have contributed to the loss of wildlife habitats as well as falling populations of insects, which are an important food source for many farmland birds.



Between 2005 and 2020, common farmland birds in the EU declined by
17.4 %

Presentation of the main indicators

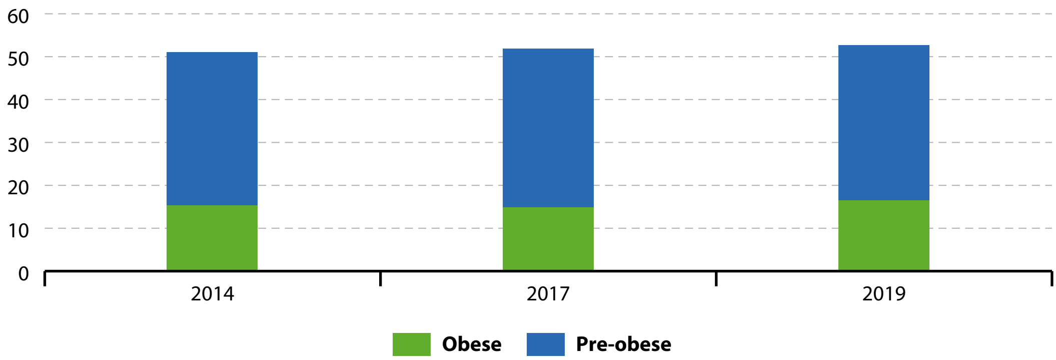
X **LONG TERM** Time series too short

SHORT TERM 2014–2019

Obesity rate

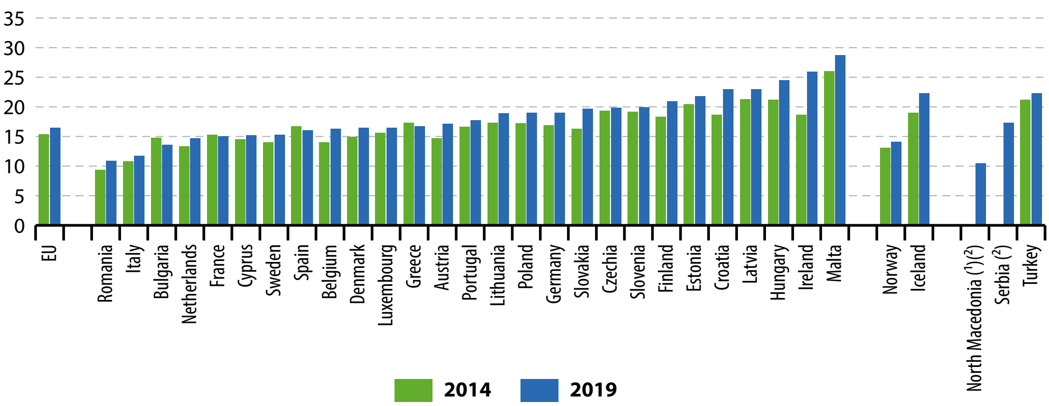
This indicator is derived from the body mass index (BMI), which is defined as the weight in kilograms divided by the square of the height in metres. People aged 18 years or over are considered obese if their BMI is equal to or greater than 30. The category 'pre-obese' refers to people with a BMI between 25 and less than 30. The category 'overweight' (BMI equal or greater than 25) combines the two categories pre-obese and obese. The data presented in this section stem from the European Health Interview Survey (EHIS) and the EU Statistics on Income and Living Conditions (EU-SILC).

Figure 2.1: Obesity rate, by body mass index (BMI), EU, 2014–2019
(% of population aged 18 or over)



Note: 2017 data are estimated.
Compound annual growth rate (CAGR) for obesity: 1.4 % per year in the period 2014–2019.
Source: Eurostat (online data codes: sdg_02_10)

Figure 2.2: Obesity rate, by country, 2014 and 2019
(% of population aged 18 or over)



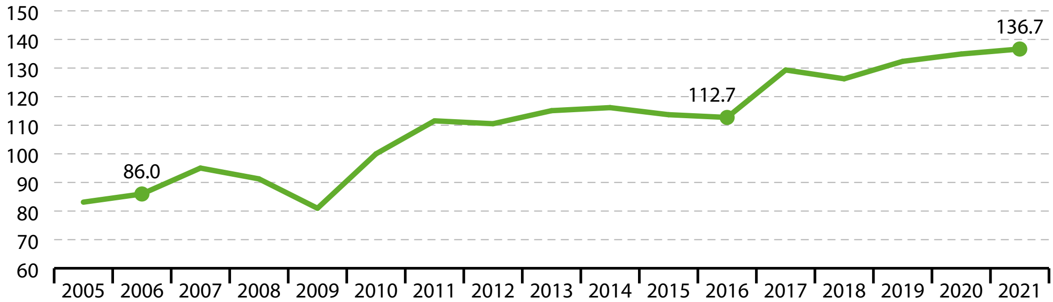
(¹) 2017 data (instead of 2019).
(²) No data for 2014.

Source: Eurostat (online data code: sdg_02_10)

Agricultural factor income per annual work unit

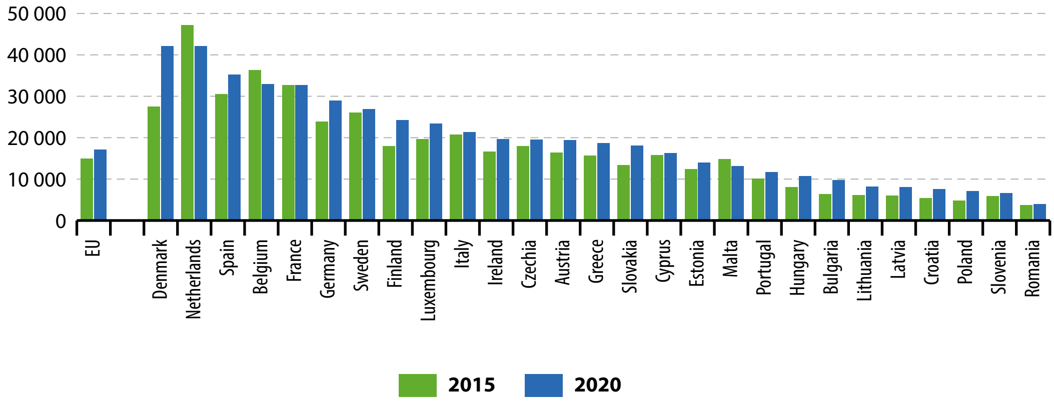
Agricultural factor income measures the income generated by farming, which is used to remunerate borrowed or rented factors of production (capital, wages and land rents) as well as own production factors (own labour, capital and land). Annual work units (AWUs) are defined as full-time equivalent employment (corresponding to the number of full-time equivalent jobs), which is calculated by dividing total hours worked by the average annual number of hours worked in full-time jobs within the economic territory. This can be interpreted as a measure of labour productivity in agriculture. The data stem from the Economic Accounts for Agriculture (EAA), which provide detailed information on agricultural sector income.

Figure 2.3: Agricultural factor income per annual work unit (AWU), EU, 2005–2021
(index 2010=100)



Note: 2021 data are estimated.
Compound annual growth rate (CAGR): 3.1 % per year in the period 2006–2021; 3.9 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_02_20)

Figure 2.4: Agricultural factor income per annual work unit (AWU), by country, 2015 and 2020
(EUR, chain linked volumes (2010))



Note: Caution should be exercised when comparing absolute levels of agricultural factor income per AWU because they are influenced by different calculations depending on national rules and are not specifically designed to be comparable across countries.
Source: Calculations made by the Directorate-General for Agriculture and Rural Development (DG AGRI) based on Eurostat data (online data code: sdg_02_20)

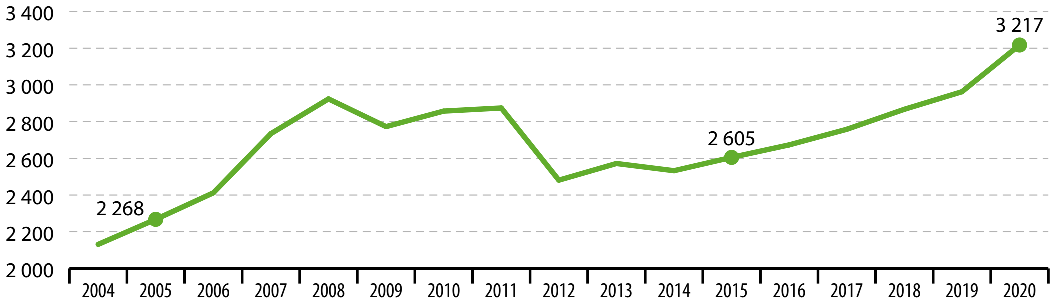
LONG TERM
2005–2020

SHORT TERM
2015–2020

Government support to agricultural R&D

This indicator refers to government budget allocations for R&D (GBARD). GBARD data measure government support to research and development (R&D) activities or, in other words, the level of priority that governments place on the public funding of R&D. GBARD data are built up using the guidelines laid out in the standard practice for surveys of research and experimental development, the OECD's Frascati Manual from 2015.

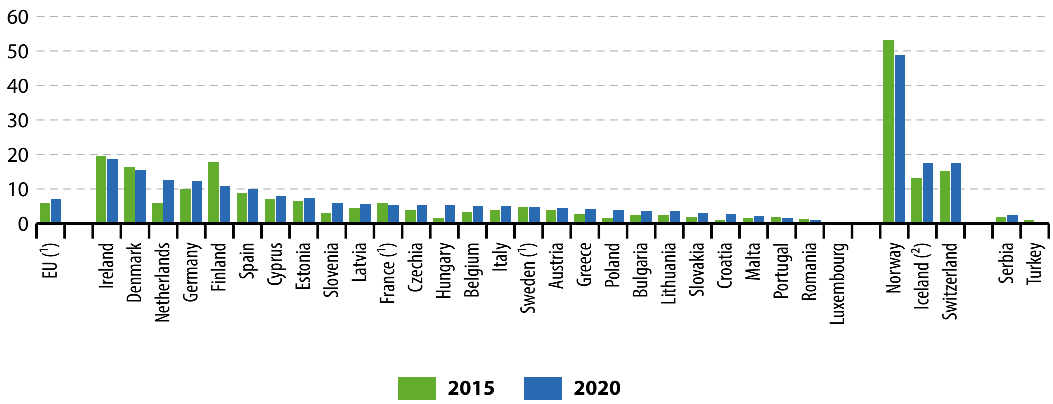
Figure 2.5: Government support to agricultural research and development, EU, 2004–2020
(million EUR)



Note: Estimated data.
Compound annual growth rate (CAGR): 2.4 % per year in the period 2005–2020; 4.3 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_02_30)

Figure 2.6: Government support to agricultural research and development, by country, 2015 and 2020
(EUR per capita)



(¹) Estimated data.
(²) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_02_30)

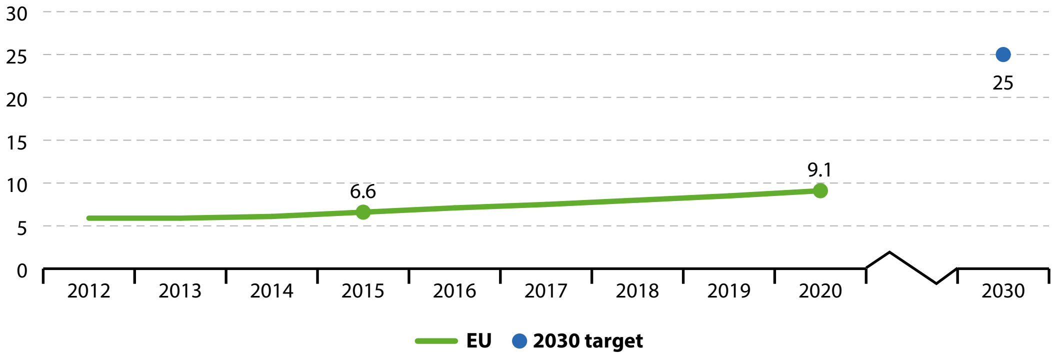
Area under organic farming

This indicator is defined as the share of total utilised agricultural area (UAA) occupied by organic farming (existing organically farmed areas and areas undergoing conversion). Organic farming is a production method that puts the highest emphasis on environmental and wildlife protection and, with regard to livestock production, on animal welfare considerations. It avoids or largely reduces the use of synthetic chemical inputs such as fertilisers, pesticides, additives and medical products.

LONG TERM
Time series too short

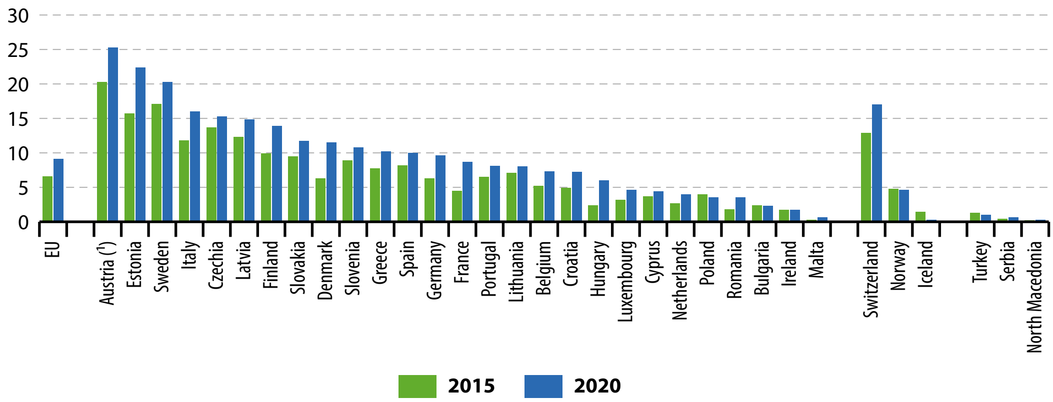
SHORT TERM
2015–2020

Figure 2.7: Area under organic farming, EU, 2012–2020
(% of utilised agricultural area)



Note: 2017–2020 data are estimated or provisional.
Compound annual growth rate (CAGR): 6.7 % per year (observed) and 9.3 % per year (required to meet target) in the period 2015–2020.
Source: Eurostat (online data code: sdg_02_40)

Figure 2.8: Area under organic farming, by country, 2015 and 2020
(% of utilised agricultural area)



([1]) 2019 data (instead of 2020).
Source: Eurostat (online data code: sdg_02_40)

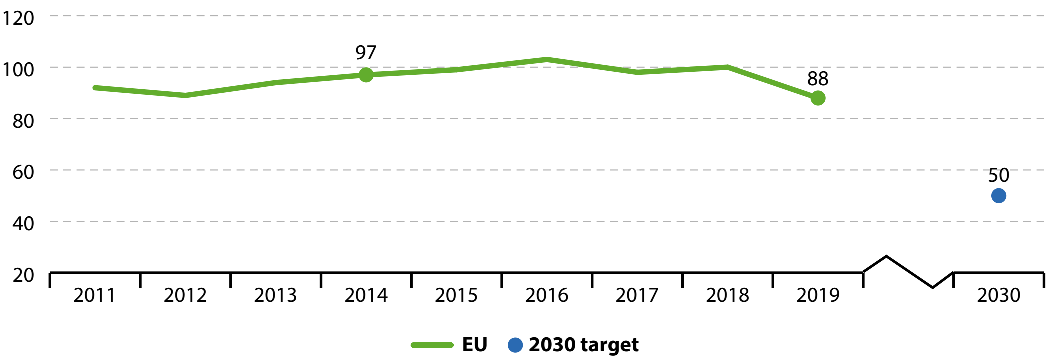
X **LONG TERM** Time series too short

SHORT TERM 2014–2019

Use of more hazardous pesticides

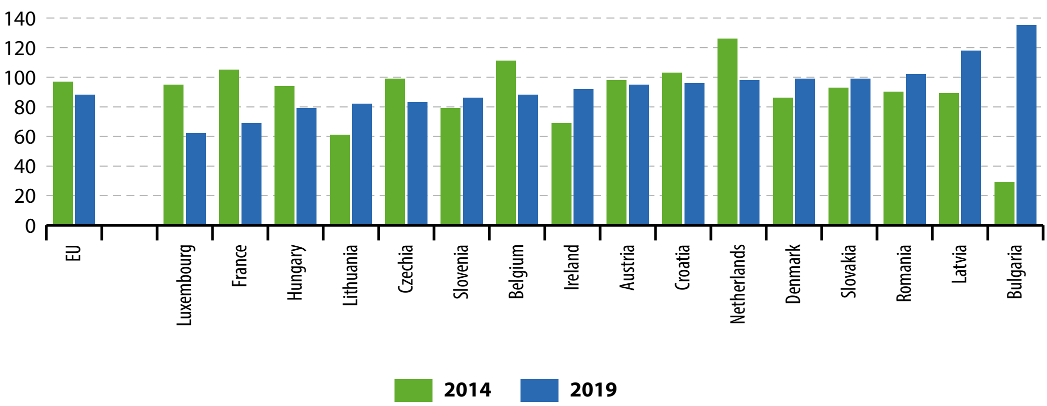
This indicator monitors the trends in the use of more hazardous pesticides in the EU and its Member States. Unsustainable use of pesticides entails risks and impacts on human health and the environment. The indicator is calculated by adding together the quantities of active substances that are approved as candidates for substitution in accordance with Article 24 of Regulation (EC) No 1107/2009 and are placed on the market in plant protection products, as reported under Regulation (EC) No. 1185/2009, each year. The data are presented as an index relative to the average results for the period 2015 to 2017.

Figure 2.9: Use of more hazardous pesticides, EU, 2011–2019
(index 2015–2017 = 100)



Compound annual growth rate (CAGR): – 1.9 % per year (observed) and – 4.1 % per year (required to meet target) in the period 2014–2019.
Source: DG Health and Food Safety (Eurostat online data code: sdg_02_52)

Figure 2.10: Use of more hazardous pesticides, by country, 2014 and 2019
(index 2015–2017 = 100)



Source: DG Health and Food Safety (Eurostat online data code: sdg_02_52)

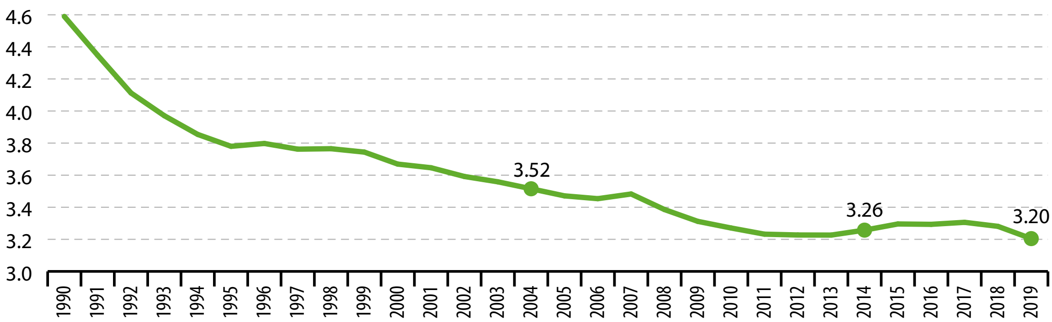
Ammonia emissions from agriculture

LONG TERM 2004–2019

SHORT TERM 2014–2019

This indicator measures ammonia (NH_3) emissions as a result of agricultural production. These emissions result from manure management, applications of inorganic nitrogen fertilisers and animal manure applied to soil, as well as urine and dung deposited by grazing animals. Data for this indicator come from the EU inventory on air pollution compiled by the European Environment Agency (EEA) under the Convention on Long-range Transboundary Air Pollution (LRTAP) and are fully consistent with national air pollution inventories compiled by EU Member States. Data on the utilised agricultural area (UAA) stem from Eurostat's annual crop statistics. The definition of this indicator is based on the CAP indicator C45 Emissions from agriculture.

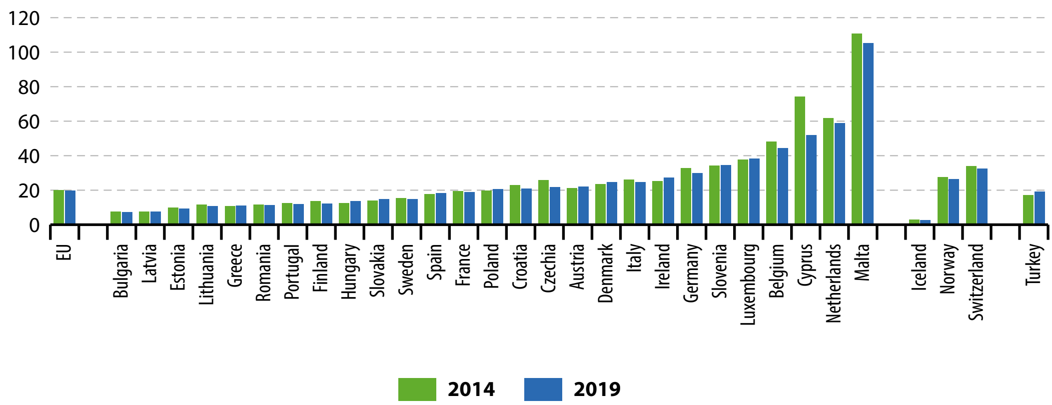
Figure 2.11: **Ammonia emissions from agriculture, EU, 1990–2019**
(million tonnes)



Compound annual growth rate (CAGR): – 0.6 % per year in the period 2004–2019; – 0.3 % per year in the period 2014–2019.

Source: EEA (Eurostat online data code: sdg_02_60)

Figure 2.12: **Ammonia emissions from agriculture, by country, 2014 and 2019**
(kg per ha of utilised agricultural area)



Source: EEA, Eurostat (online data code: sdg_02_60)

Notes

([1]) Clark, Michael A., et al. (2019), *Multiple health and environmental impacts of foods,* Proceedings of the National Academy of Sciences, 116 (46): 23357–23362.
([2]) European Commission (2014), *EU Action Plan on Childhood Obesity 2014–2020*.
([3]) European Commission (2021), *Europe's Beating Cancer Plan*, COM(2021) 44 final.
([4]) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM(2020) 381 final.
([5]) European Commission (2021), *EU's Biodiversity Strategy for 2030*, May 2020.
([6]) European Parliament and Council of the European Union (2016), *Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC*.
([7]) Council of the European Communities (1991), *Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources*.
([8]) Eurostat (online data code: HLTH_EHIS_BM1E).
([9]) World Health Organisation (2021), *WHO European Childhood Obesity Surveillance Initiative (COSI) Report on the fourth round of data collection 2015–2017*.
([10]) Source: Eurostat (online data code: HLTH_EHIS_BM1E).
([11]) Input-intensive agriculture increases agricultural productivity through consumable inputs, such as chemical fertilisers and pesticides, and capital inputs, such as highly mechanised approaches. Mechanised inputs frequently substitute labour inputs as factors of production.
([12]) The main GHG emissions from agricultural practices are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O).
([13]) Data for 2020 are provisional estimates based on the EEA approximated GHG inventory for the year 2020.
([14]) Eurostat (online data code: env_air_gge).
([15]) Generally, artificial, sandy, rocky and icy surfaces as well as wetlands and water bodies are not included in the land area used in calculating the soil-erosion indicator (see online metadata: sdg_15_50).
([16]) European Commission (2016), *Fitness Check of the EU Nature Legislation (Birds and Habitats Directives)*, SWD(2016) 472 final.

3 Ensure healthy lives and promote well-being for all at all ages

SDG 3 aims to ensure health and promote well-being for all at all ages by improving reproductive, maternal and child health; ending epidemics of major communicable diseases; and reducing non-communicable and mental diseases. It also calls for reducing behavioural and environmental health-risk factors.

3 GOOD HEALTH AND WELL-BEING

eurostat supports the SDGs

The World Health Organization (WHO) defines health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' ([1]). Good health is not only of value to the individual as a major determinant of quality of life, well-being and social participation, it also contributes to general social and economic growth. Besides the general availability of health care, health can be determined by individual characteristics and behaviour, such as smoking, excessive alcohol consumption and unhealthy diets, and by external socio-economic and environmental factors, such as living conditions, air quality and noise. These behavioural and external factors are to be addressed by preventive measures. Research is also essential to ensuring good health as well as preventing and tackling diseases. Thus, the ability to achieve the SDG targets on good health and well-being is strongly linked to other areas related to sustainable development. Ensuring that people live long and healthy lives also means reducing the causes of premature deaths, such as unhealthy lifestyles or accidents, improving external health determinants and ensuring access to health care for all.

Table 3.1: Indicators measuring progress towards SDG 3, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Healthy lives			
Healthy life years at birth	↗ (1)	↗ (2)	page 77
People with good or very good self-perceived health	↗ (3)	↗	page 78
Health determinants			
Smoking prevalence	↑ (4)	↑ (5)	page 79
Obesity rate (*)	:	↓	SDG 2, page 60
Population living in households suffering from noise (*)	↑ (3)	↑	SDG 11, page 210
Years of life lost due to $PM_{2.5}$ exposure (*)	↗ (4)	↗	SDG 11, page 211
Causes of death			
Standardised death rate due to tuberculosis, HIV and hepatitis	↑	↑	page 80
Standardised avoidable mortality	:	↑	page 81
Fatal accidents at work (*)	:	↑	SDG 8, page 160
Road traffic deaths (*)	↗	↘	SDG 11, page 212
Access to health care			
Self-reported unmet need for medical care	↑ (3)	↑	page 82

(*) Multi-purpose indicator.
(1) Past 11-year period.
(2) Past 3-year period.
(3) Past 10-year period.
(4) Past 14-year period.
(5) Past 6-year period.

Table 3.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 3 'Good health and well-being'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Healthy lives

The EU4Health programme is the main financial instrument to fund the Union's health initiatives. As part of the future European Health Union, it will boost the EU's preparedness and capacity to respond effectively to health crises, but also to improve the health of the Union's citizens and reduce health inequalities.

From 2020 onwards, the Cohesion policy programmes have been adapted to support the public health response to the COVID-19 pandemic (²).

Health determinants

Europe's Beating Cancer Plan (³) addresses cancer through prevention, early detection, diagnosis and treatment, and quality of life of cancer patients and survivors.

Several EU Directives aim to protect citizens from the hazardous effects of smoking, including the Tobacco Products Directive, the Tobacco Advertising Directive and the Tobacco Taxation Directive.

The Clean Air Policy Package (⁴) and the Zero Pollution Action Plan (⁵) aim to reduce the number of premature deaths linked to air pollution by more than half by 2030.

The Farm to Fork Strategy aims to facilitate the shift to healthy, sustainable diets. The HealthyLifestyle4All initiative is a two-year campaign that aims to link sport and active lifestyles with health, food and other policies.

Causes of death

The European Commission supports Member States in combatting communicable and other diseases through the EU4Health programme and Horizon Europe.

The EU road safety policy framework 2021–2030 sets a target to reduce deaths and serious injuries from road accidents by 50 % by 2030.

Access to health care

Access to health care is one of the 20 principles of the European Pillar of Social Rights and its Action Plan (⁶). Directive 2011/24/EU on patient rights in cross-border health care gives EU citizens the right to access health care in the EU and to be reimbursed.

The Strategy for the rights of persons with disabilities 2021–2030 aims to ensure that all people with disabilities can fully participate in society and the economy.

The planned European Health Data Space will promote access to health data for better health care, research and policy-making, and foster the development, deployment and application of digital services for the provision of health care.

Good health and well-being in the EU: overview and key trends

Monitoring SDG 3 in an EU context focuses on the topics of healthy lives, determinants of health, causes of death and access to health care. As shown in Table 3.1, the EU has made significant progress in almost all health-related spheres analysed in this chapter over the past few years.

The European Commission conducts the State of Health in the EU (7) initiative in close collaboration with the OECD and the European Observatory on Health Systems and Policies. The recurring, two-year cycle of monitoring comprises the 'Health at a Glance: Europe' series, Country Health Profiles for each EU Member State and a Companion Report with the Commission's own assessment of policy levers and priorities.

The COVID-19 pandemic has severely affected the EU and its Member States since 2020. The pandemic has had an unprecedented impact in terms of morbidity and mortality and has put health systems in Europe to the test. The rapid spread of the pandemic has led Member States to implement preventive measures such as stay-at-home policies or other community and physical distancing measures which have impacted not only mental health, but also the well-being of society and the economy more generally (8). As far as data availability allows, the pandemic's impacts are discussed throughout the thematic chapters of this report. Some short-term consequences are also discussed in a dedicated chapter on COVID-19 at the beginning of this report (see page 29).

Healthy lives

The worldwide surge in life expectancy (9) over the past century is a result of various factors, including reduced infant mortality, rising living standards, improved lifestyles and better education, as well as advances in health care and medicine. Life expectancy has increased in EU countries over the past few decades, but progress has slowed in recent years in many countries. The COVID-19 pandemic resulted in a decline in life expectancy in most EU countries in 2020 (10). However, while life expectancy gives an objective assessment of how long people can expect to live, it does not show whether people live their lives in good health. Thus, indicators on healthy life years at birth, focusing on the quality of life spent in a healthy state, as well as on individuals' subjective view of their own well-being, are now included in the analysis.

The EU's healthy life expectancy and people's self-perceived health have increased over the past few years

A child born in the EU in 2020 could on average expect to live 80.4 years, according to a preliminary estimation. However, this figure — as a result of COVID-19 — represents a reversal of the trend for ever-increasing life expectancy at birth, and is almost one year lower than before the pandemic in 2019. When it comes to the number of years a child can expect to live in a healthy condition — that is, without disability and functional limitations — the

A child born in 2019 could on average expect to live

64.6

years in a healthy condition

figure is roughly 17 years lower than overall life expectancy, at 64.6 years in 2019. Between 2016 and 2019, healthy life years increased by 0.6 years (from 64.0 years in 2016), while life expectancy only increased by 0.4 years (from 80.9 years in 2016). This means children born in the EU can expect to live an ever-increasing part of their life in a healthy condition.

69.5 %
of the EU population perceived themselves to be in good or very good health in 2020

Self-perceived health has also improved. Between 2015 and 2020, the share of people perceiving themselves to be in good or very good health increased by 2.8 percentage points. In 2020, 69.5 % of people in the EU judged their health as being either good or very good. However, this share varied strongly between Member States, from 83.7 % to 44.3 %. A considerable difference also exists in the number of healthy life years at birth, which varied by up to 20.2 years between countries in 2019.

In addition, slight differences also exist between rural and urban areas. In 2020, the percentage of people who perceived their health as good or very good was highest in cities (71.4 %), while it was equal to the average in towns and suburbs (69.6 %) and lowest in rural areas (66.8 %) ([11]). Furthermore, the share of people with activity limitations who perceived their health as good or very good was significantly lower than the EU average, especially for people with severe limitations (28.2 % for people with some limitations and 7.9 % for people with severe limitations in 2020) ([12]).

Women have a higher healthy life expectancy than men, but are less likely to assess their health as good

Between 2016 and 2019, the number of healthy life years at birth that women could expect increased by 0.7 years, from 64.4 years to 65.1 years. During the same period, the figure for men rose by 0.6 years, from 63.6 years to 64.2 years. This means women not only had a higher life expectancy overall, but their number of healthy life years also increased slightly faster than men's over the short-term period monitored. This led to a widening of the gender gap from 0.8 years in 2016 to 0.9 years in 2019. In about 80 % of Member States, women could expect a higher number of healthy life years at birth in 2019, while the opposite was the case for the remaining 20 %.

In general, 69.5 % of the EU population perceived themselves to be in good or very good health in 2020. Although women are generally expected to live longer than men (with a gender gap of 5.5 years in 2019), women were less likely than men to rate their health as being good or very good. In 2020, 67.1 % of women and 72.1 % of men considered their health to be good or very good (a gender gap of 5.0 percentage points).

High excess mortality has reduced life expectancy in the EU

The COVID-19 pandemic also considerably influenced death rates in EU Member States throughout 2020 and 2021. The population above the age of 60 years, as well as people from socially disadvantaged groups, were especially affected ([13]). Overall, between January 2020 and February 2022, more than 1.2 million excess deaths occurred in the EU and European Free Trade Association (EFTA) countries compared with the 2016 to 2019 average ([14]). As a consequence, the COVID-19 pandemic reduced life expectancy in 2020 in the majority of Member States, however, with considerable geographical differences. The largest reductions in life expectancy in 2020 compared with 2019 were observed in Spain (–1.6 years) and Bulgaria (–1.5 years), followed by Lithuania, Poland and Romania (–1.4 years each), while the pandemic's influence on life expectancy was less apparent in other Member States. As a result, EU life expectancy at birth, according to provisional estimates based on available Member States' data for 2020, is estimated to have fallen by 0.9 years, from 81.3 years in 2019 to 80.4 years in 2020 ([15]). Men appear to have been hit slightly harder by the pandemic, with a reduction in life expectancy of 1.0 years compared with a reduction of 0.8 years for women. The pandemic's impact on older people was evident, with the expected remaining life years at age 65 falling by 4.0 % between 2019 and 2020 compared with a 1.1 % reduction in overall life expectancy at birth over the same period. Older men were especially impacted, with their remaining life expectancy at age 65 falling by 5.5 %.

Health determinants

Many factors affect the health of individuals and populations. These include socioeconomic aspects, the state of the environment, city design, access to and use of health services, and a person's individual characteristics and behaviour ([16]). Lifestyle-related risk factors, such as an unhealthy diet, physical inactivity, smoking and harmful alcohol consumption, directly affect citizens' quality of life and life expectancy. They also have a negative impact on national health and social systems, government budgets and economic productivity and growth. The health determinants discussed in the following sections are obesity rate, smoking prevalence, noise and air pollution. Roughly speaking, the first two determinants focus on a person's individual characteristics and behaviours and the second two look at external factors. However, multi-dimensional aspects such as consumption patterns or mobility influence all the determinants considered.

More than half of the adult EU population were overweight in 2019

Obesity is a serious public health problem because it significantly increases the risk of chronic diseases, such as cardiovascular disease, type-2 diabetes, hypertension and certain types of cancer. For specific individuals, obesity may also be linked to a wide range of psychological problems. For society as a whole, it has substantial direct and indirect costs that put a considerable strain on health care and social resources. Obesity also leads to more health problems if starting in early childhood ([17]).

In 2019, 16.5 % of people over the age of 18 in the EU were obese ([18]) and another 36.2 % were pre-obese. This means more than half of the population above the age of 18 in the EU were overweight. The share of both obese and pre-obese people increased between 2014 and 2019, by 1.1 percentage points and 0.5 percentage points respectively. The total share of overweight people therefore grew slightly over this period, from 51.1 % in 2014 to 52.7 % in 2019.

16.5 %
of the adult population in the EU were obese in 2019

The obesity rate generally increases with age, peaking at age group 65 to 74 years (22.3 % obese in 2019) and decreasing again for people aged 75 and older. Obesity and pre-obesity rates also appear to be decreasing with higher educational levels, with the obesity rates ranging from 11.4 % in 2019 for people with tertiary education to 20.3 % for people with lower secondary education or lower. The obesity rate was also lower among young people aged 18 to 24, at 6.0 % ([19]). In 2019, there was furthermore a considerable difference between Member States, with values ranging from 10.9 % to 28.7 % for obese people over the age of 18.

Smoking prevalence among the population aged 15 and over has decreased since 2006

Tobacco consumption is considered to be the single most preventable cause of illness and death worldwide. According to the WHO, Europe ([20]) has the highest prevalence of tobacco-smoking adults and one of the highest proportions of deaths attributable to tobacco use ([21]). It is estimated that tobacco use is currently responsible for 16 % of all deaths in adults over 30 in Europe, which is above the global average of 12 %. Many of these deaths occur prematurely, as many types of cancer, cardiovascular and respiratory diseases are linked to tobacco use ([22]).

25 %
of the EU population aged 15 and over were smokers in 2020

Smoking prevalence among the population aged 15 or over fell between 2006 and 2020, from 31 % to 25 %. Nevertheless, this still means a quarter of adults in the EU smoke. More men (28 %) than women (22 %) reported that they smoke in 2020. However, the decline in smoking prevalence is less evident for women than for men, which can partially explain the narrowing gender gap in life expectancy [23]. Demographically, the age group with the highest prevalence of smokers were those aged 25 to 54 (close to 30 %) followed by younger respondents aged 15 to 24 (20 %) and older people aged 55 years and above (18 %). In addition, there appears to be a social gradient related to smoking, with more smokers saying they have trouble paying bills most of the time than smokers who say they (almost) never have trouble paying bills [24].

Perceived disturbance by noise has fallen in the EU

Noise exposure reduces life satisfaction and perception of well-being. The WHO [25] identified noise as the second most significant environmental cause of ill health in western Europe after air pollution [26]. The most harmful effects, such as those on the heart and circulatory system, are thought to arise due to stress reactions in the human body as well as decreased sleep quality, among other interrelated mechanisms. These can lead to premature mortality [27]. In Europe, environmental noise is estimated to cause 12 000 premature deaths per year [28]. Road traffic is the dominant source of environmental noise, but railways, airports and industry also remain important sources of localised noise pollution [29]. The WHO Environmental Noise Guidelines for the European Region [30] provide recommendations for protecting human health from exposure to environmental noise originating from various sources.

17.2 %
of the EU population were affected by noise from neighbours or the street in 2020

The EU has made progress towards reducing noise pollution over the past nine years, with the share of the population feeling affected by noise from neighbours or the street falling from 20.6 % in 2010 to 17.2 % in 2020. Since the assessment of noise pollution is a subjective measure, a fall in the value of the indicator may not necessarily indicate a similar reduction in actual noise-pollution levels [31]. The perception of noise pollution is also unevenly distributed between Member States: the proportion of people suffering from noise in 2020 was smallest in Estonia (8.0 %) and largest in Malta (30.8 %).

Based on noise indicator levels set by the EU Environmental Noise Directive from 2002 and on modelling calculations from 2019, 78.2 million people in EU urban areas were estimated to be exposed to noise from road traffic of 55 decibel (dB) or higher on an annual average for day, evening and night. Another 10.3 million people were estimated to be subjected to excessive noise from railways, 3.0 million from airports and 0.8 million from industry [32].

The years of life lost due to exposure to air pollution by fine particulate matter have fallen in the EU

According to European Environment Agency (EEA) estimates, air pollution is the number-one environmental cause of death in Europe [33]. It can lead to or aggravate many chronic and acute respiratory and cardiovascular diseases. Air pollution has been one of Europe's main environmental policy concerns since the late 1970s. Air pollutants are emitted both naturally and as a result of human activities, mainly those involving fuel combustion. Urban populations are particularly exposed because of the high concentration of human activities and industry in EU cities and the daily flow of commuters. In addition, the most vulnerable citizens remain disproportionately affected by air pollution [34].

762
life years per 100 000 people were lost due to exposure to $PM_{2.5}$ in the EU in 2019

For example, groups with lower socioeconomic status tend to be disproportionately affected by noise pollution because they often live closest to the source. Children are another disproportionally affected group. Not only do they have higher respiratory rates than adults, which increases their exposure to air pollution, but their developing immune systems and organs make them more vulnerable to both air pollution and noise ([35]). Air pollution also has a significant impact on the economy, by reducing both life expectancy and productivity, and increasing medical cost ([36]).

By 2019, premature deaths due to exposure to fine particulate matter ($PM_{2.5}$) had decreased by 33 % compared with 2005 levels. However, $PM_{2.5}$ remains one of the most harmful components of air pollution for human health, causing more than 300 000 premature deaths in Europe in 2019 ([37]). These premature deaths translate into 762 life years per 100 000 inhabitants lost in the EU due to $PM_{2.5}$ exposure in 2019, compared with 1 131 years lost in 2005 and 911 in 2014. Despite this decrease, the EU might miss its target to reduce the health impacts caused by air pollution by 55 % by 2030 compared with 2005, as set out in the Zero Pollution Action Plan ([38]). This is especially so because, according to the EEA, continuously reducing concentrations of particulate matter in ambient air over the next decade will be a demanding task ([39]). To help accelerate progress, the European Commission intends to revise the EU ambient air quality directives in 2022 in order to align air quality standards with the recommendations of the WHO on air quality ([40]).

In addition to noise and air pollution, the exposure to and possible health impacts of toxic chemicals and pesticides found in the environment and food are coming under increasing scrutiny from scientific and regulatory communities worldwide (see the chapters on SDG 2 'Zero hunger' on page 53 and SDG 12 'Responsible consumption and production' on page 217).

Causes of death

Causes of death are among the oldest medical statistics available and play a key role in the general assessment of health in the EU. The data can be used to determine which preventive and medical curative measures or investment in research might increase a population's life expectancy. The indicators selected for this sub-theme look at deaths due to communicable diseases, avoidable mortality, and fatal accidents on roads and at work.

Developments on avoidable mortality and selected communicable diseases are positive

Avoidable mortality refers to preventable and treatable causes of mortality, including injuries and drug-related diseases, but also to a range of respiratory and infectious diseases and some types of cancer. Trends in this area have been positive in the short term, with preventable mortality falling by 8.6 %, from 175.0 per 100 000 persons in 2012 to 160.0 per 100 000 in 2017. In a similar way, treatable mortality has fallen by 9.5 %, from 101.7 per 100 000 persons to 92.1 in 100 000 over the same period. While the developments were positive in all Member States, the gap of 352.9 persons per 100 000 in 2018 between the highest and the lowest value shows there remains a great deal of variability within the EU, with a visible divide between eastern and western Member States.

252.1
per 100 000 people died prematurely in the EU due to avoidable causes in 2017

Communicable diseases such as HIV, tuberculosis and hepatitis are targeted for action by the Sustainable Development Goals. The EU has also committed to helping Member States achieve the objectives to end HIV/AIDS and tuberculosis by 2030 and to reduce hepatitis ([41]). Deaths due to these three diseases have been falling steadily in the EU. While 5.2 out of 100 000 people died from one of them in 2002, this had fallen to

2.6 per 100 000 people by 2017. The trends were also positive for the three diseases individually: between 2002 and 2017 deaths per 100 000 people fell from 2.2 to 0.8 for tuberculosis, from 1.3 to 0.5 for HIV/AIDS and from 1.7 to 1.3 for hepatitis. It should be noted, however, that in the case of hepatitis, the current calculation of the indicator is likely to underreport deaths due to hepatitis B and C ([42]). In addition, there is a considerable gap between the country with the highest (10.8 deaths per 100 000 people in 2017) and the lowest value (0.5 per 100 000 people).

2.6
per 100 000 people died of HIV, tuberculosis and hepatitis in the EU in 2017

Despite of a drop in road accidents during the pandemic, the EU missed its 2020 target on road traffic deaths

Accidents were one of the most common causes of death within the EU in 2017, leading to more than 152 000 deaths or 3.3 % of all deaths ([43]). These accidents may happen at different places such as homes, leisure venues, on transport or at work. Improving the working environment to protect workers' health and safety is recognised as an important objective by the EU and its Member States in the Treaty on the Functioning of the European Union ([44]).

4.2
per 100 000 persons were killed in road accidents in the EU in 2020

Halving the number of deaths from road-traffic accidents is not only a global target, but also a goal of EU policies ([45]). In 2010, the Commission set the target of halving the overall number of road deaths in the EU by 2020 compared with 2010. For the next decade, the EU road safety policy framework 2021–2030 sets a new 50 % reduction target for deaths and, for the first time, for serious injuries by 2030.

In 2020, roughly 18 800 people were killed in road traffic crashes (equalling 4.2 per 100 000 people), which was down by an unprecedented 17.4 % on 2019, due in part to the lower traffic volumes as a result of the COVID-19 pandemic. Compared with 2010, the number was down 36.5 %, meaning the EU did not meet its target to halve the number of people killed in road traffic crashes by 2020 compared with 2010. However, the EU rate of 4.2 fatalities per 100 000 people compares favourably with the global average of more than 18 per 100 000. Preliminary results for 2021 indicate that fatalities in road accidents remained well below the pre-pandemic level: while in 2021 road deaths rose by 5 % in relation to 2020, they remained almost 13 % lower compared with the pre-pandemic year 2019 ([46]).

1.7
per 100 000 persons employed had fatal accidents at work in the EU in 2019

Fatal accidents, leading to the victim's death within one year, also occur at work. The EU made progress between 2014 and 2019, reducing the number of fatal accidents at work per 100 000 employed persons from 2.0 to 1.7. Although the total incidence rate for fatal accidents at work decreased in 2019, a considerable gender difference remained: the incidence rate of women (0.2) was negligible compared with the rate of men (3.1). Non-fatal accidents can also cause considerable harm, for example by forcing people to live with a permanent disability, leave the labour market or change job. These happened considerably more often than fatal accidents, with an incidence rate of 1 603.1 per 100 000 employed persons in 2019 ([47]).

Access to health care

Access to health care — the timely access to affordable, preventive and curative health care — is high on the political agenda. It is defined as a right in the Charter of Fundamental Rights and is one of the 20 principles of the European Pillar of Social Rights ([48]). Limited access for some population groups, especially people with disabilities, may result in poorer health outcomes and greater health inequalities ([49]). Reducing health inequalities is not only important for equality reasons, but also because it contributes to higher economic and social cohesion ([50]).

Overall, the unmet need for medical care has decreased, but the gap between Member States has widened

In 2020, 1.8 % of the EU population reported an unmet need for medical care because of financial reasons, long waiting lists or the distance to travel. Overall, this share was lower than five years earlier, when it was 3.3 %. However, progress seems to have stalled since 2017, and in some Member States the trend has reversed, showing an increase in the percentage of the population that reported unmet medical need in 2020. While there were already considerable differences between Member States' reported unmet needs for medical care in 2015, the gap has widened by another 0.4 percentage points, reaching 13.0 percentage points in 2020 (up from 12.6 percentage points in 2015). Thus, while Malta reported zero unmet need for medical care in 2020 for the reasons monitored, 13.0 % of the population in Estonia did so.

1.8 %
of the EU population reported an unmet need for medical care in 2020

Moreover, people with disabilities find it more difficult to access healthcare. In 2020, 6.5 % of people with severe activity limitations and 3.6 % of people with some activity limitations reported unmet needs for medical care due to the monitored reasons (financial, waiting list or distance), compared with only 1.0 % of people without disabilities ([51]). This indicates that access to health care remains a challenge not only in certain parts of the EU but also for certain population groups.

Financial constraints are the most common reason why people report unmet needs for medical examination. On average, for 1.1 % of the total EU population in 2020, 'too expensive' was the most prominent reason for reporting unmet medical examination. In rural areas, financial obstacles were slightly more often the reason reported (1.2 %) than in towns or suburbs (1.1 %) and cities (1.0 %). A further 0.7 % reported unmet medical examination because of 'waiting lists', while the situation was more pronounced in cities (0.7 %) than in towns, suburbs or rural areas (0.6 %). Another 0.1 % reported it was 'too far to travel', while again this was more often the reason reported in rural areas (0.2 %) than in towns and suburbs (0.1 %) or cities (0.0 %). It is worth noting that costs were not the main issue across all Member States; in some countries, the majority of people reporting unmet medical examination named long waiting lists as the main reason.

Most European countries have achieved universal coverage for a core set of services, which usually include consultations with doctors, tests, examinations and hospital care. Yet in some countries, coverage of these services might not be universal or patients have to bear the costs of accessing them. Furthermore, across the EU, around a sixth of all health spending was borne directly by households in 2018. Although out-of-pocket payments as a share of total current health expenditure have slightly decreased since 2014 (from 15.9 % to 15.6 % in 2018), a considerable gap of 34.3 percentage points between countries remained in 2018 ([52]). Such out-of-pocket payments can pose a serious problem for low-income households, in particular if combined with reduced financial resources for the health care system caused by an economic crisis ([53]). Moreover, across Member States, between 1.0 % and 19.2 % of households experienced catastrophic spending on health, meaning the out-of-pocket spend on health care exceeds 40 % of a household's disposable income ([54]). Poor households and those who have to pay for long-term treatment such as medicines for chronic illness are at high risk of experiencing financial hardship as a result of having to pay out of their own pockets.

Presentation of the main indicators

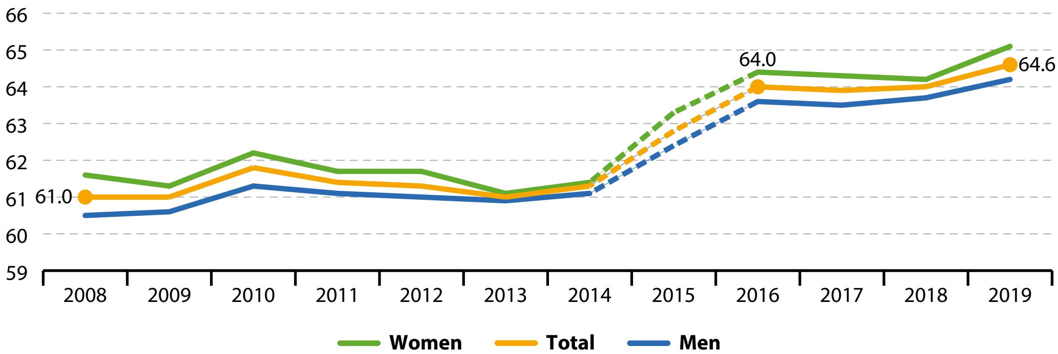
Healthy life years at birth

LONG TERM 2008–2019

SHORT TERM 2016–2019

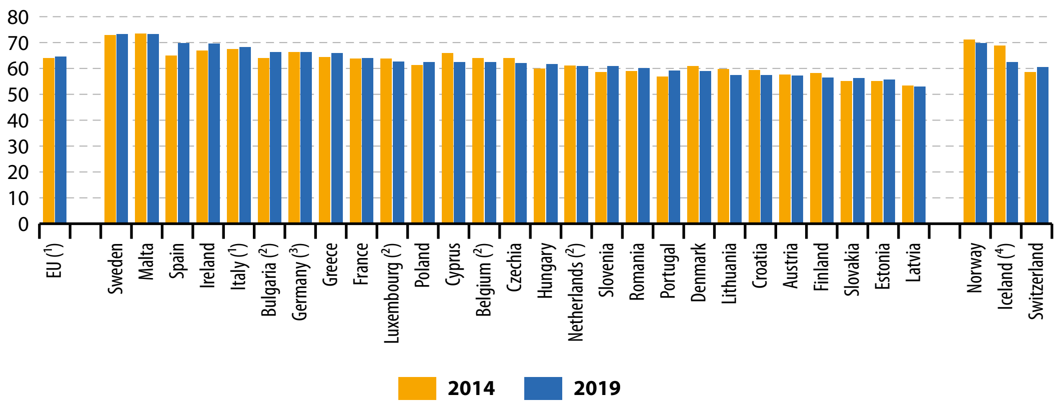
This indicator measures the number of years at birth a person can expect to live in a healthy condition. Healthy life years is a health expectancy indicator which combines information on mortality (death rate) and morbidity (probability of illness).

Figure 3.1: Healthy life years at birth, by sex, EU, 2008–2019
(years)



Note: Breaks in time series in 2015 and 2016.
Compound annual growth rate (CAGR) for the total: 0.5 % per year in the period 2008–2019; 0.3 % per year in the period 2016–2019.
Source: Eurostat (online data code: sdg_03_11)

Figure 3.2: Healthy life years at birth, by country, 2014 and 2019
(years)



(1) 2016 data (instead of 2014).
(2) Break(s) in time series between the two years shown.
(3) 2015 data (instead of 2014).
(4) 2018 data (instead of 2019).
Source: Eurostat (online data code: sdg_03_11)

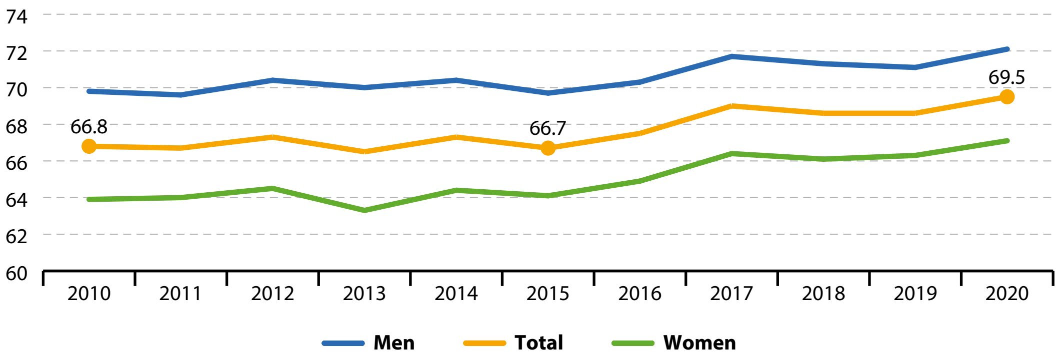
LONG TERM 2010–2020

SHORT TERM 2015–2020

People with good or very good self-perceived health

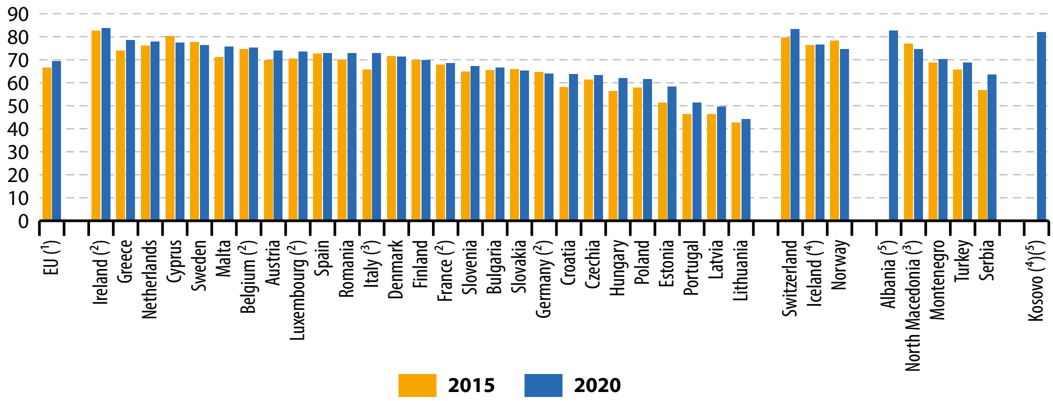
This indicator is a subjective measure of how people judge their health in general on a scale from 'very good' to 'very bad'. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC). Indicators of perceived general health have been found to be a good predictor of people's future health care use and mortality.

Figure 3.3: Share of people with good or very good perceived health, by sex, EU, 2010–2020
(% of population aged 16 or over)



Note: Estimated data.
Compound annual growth rate (CAGR) for the total: 0.4 % per year in the period 2010–2020; 0.8 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_03_20)

Figure 3.4: Share of people with good or very good perceived health, by country, 2015 and 2020
(% of population aged 16 over)



([1]) Estimated data.
([2]) Break(s) in time series between the two years shown.
([3]) 2019 data (instead of 2020).
([4]) 2018 data (instead of 2020).
([5]) No data for 2015.
Source: Eurostat (online data code: sdg_03_20)

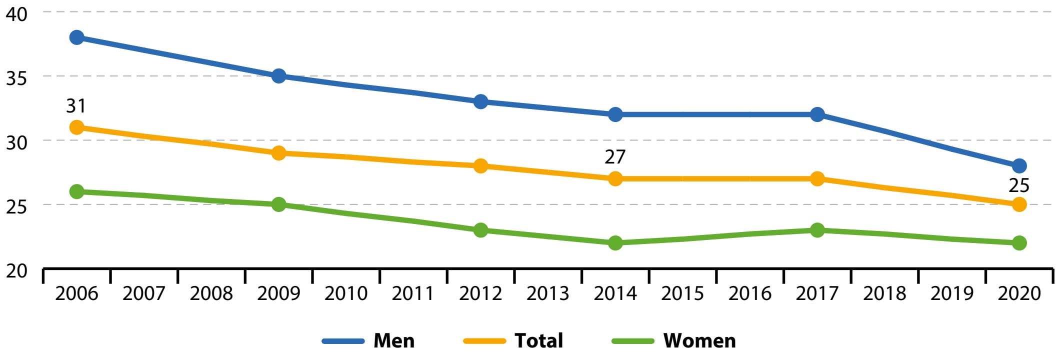
Smoking prevalence

LONG TERM 2006–2020

SHORT TERM 2014–2020

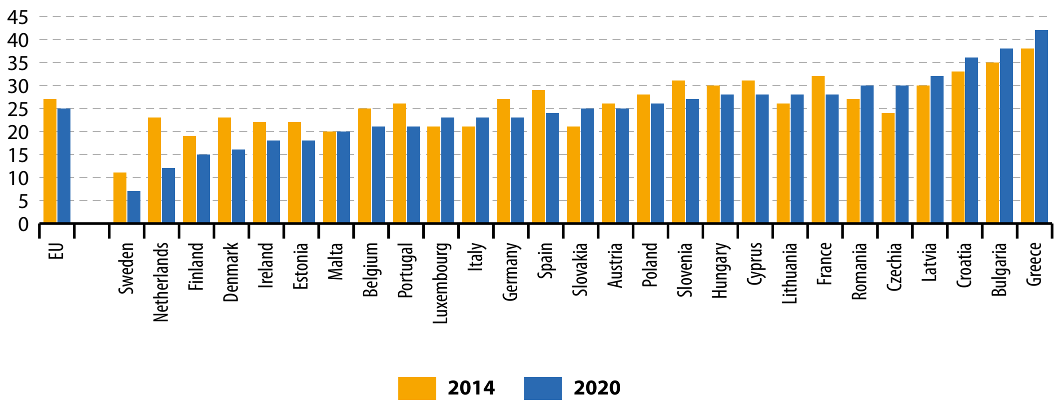
This indicator measures the percentage of the population aged 15 years and over who report that they currently smoke boxed cigarettes, cigars, cigarillos or a pipe (55). It does not include the use of other tobacco and related products such as electronic cigarettes and snuff. The data are collected through a Eurobarometer survey (56) and are based on self-reported use during face-to-face interviews in people's homes.

Figure 3.5: Smoking prevalence, by sex, EU, 2006–2020
(% of population aged 15 or over)



Note: Estimated data. Data were collected in 2006, 2009, 2012, 2014, 2017 and 2020 only; values for 2007, 2008, 2010, 2011, 2013, 2015, 2016, 2018 and 2019 are interpolated; 2012 data excluding Croatia.
Compound annual growth rate (CAGR) for the total: – 1.5 % per year in the period 2006–2020; – 1.3 % per year in the period 2014–2020.
Source: European Commission services (Eurostat online data code: sdg_03_30)

Figure 3.6: Smoking prevalence, by country, 2014 and 2020
(% of population aged 15 or over)



Source: European Commission services (Eurostat online data code: sdg_03_30)

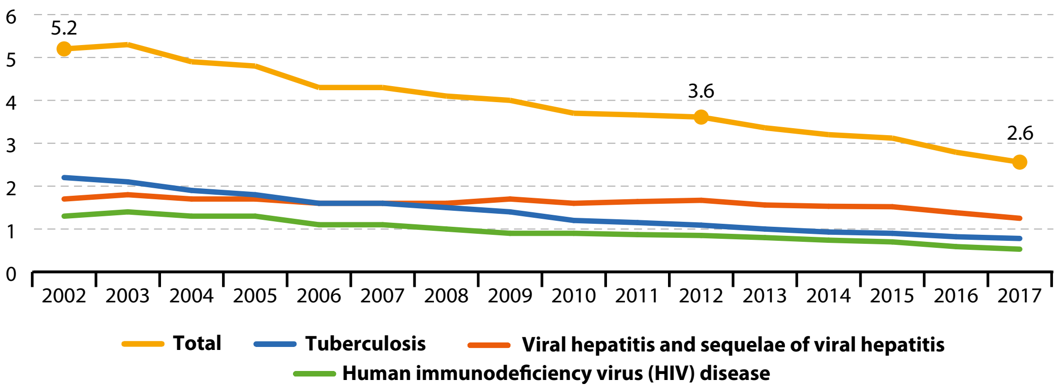
LONG TERM 2002–2017

SHORT TERM 2012–2017

Standardised death rate due to tuberculosis, HIV and hepatitis

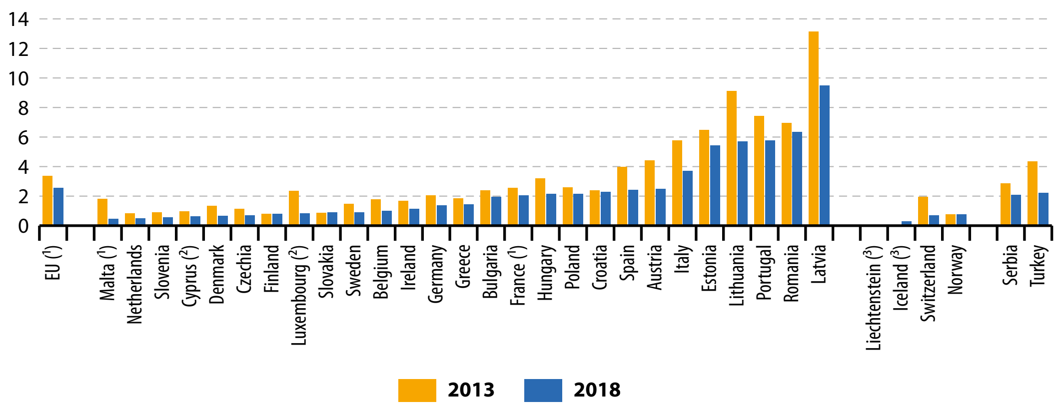
This indicator measures the age-standardised death rate of selected communicable diseases. The rate is calculated by dividing the number of people dying due to tuberculosis, HIV and hepatitis by the total population. This value is then weighted with the European Standard Population ([57]).

Figure 3.7: Standardised death rate due to tuberculosis, HIV and hepatitis, by type of disease, EU, 2002–2017
(number per 100 000 persons)



Note: Data for 2002–2010 are estimated.
Compound annual growth rate (CAGR) for the total: – 4.6 % per year in the period 2002–2017; – 6.6 % per year in the period 2012–2017.
Source: Eurostat (online data code: sdg_03_41)

Figure 3.8: Standardised death rate due to tuberculosis, HIV and hepatitis, by country, 2013 and 2018
(number per 100 000 persons)



Note: 2018 data are provisional.
([1]) 2017 data (instead of 2018).
([2]) 2014 data (instead of 2013).
([3]) No data for 2013.
Source: Eurostat (online data code: sdg_03_41)

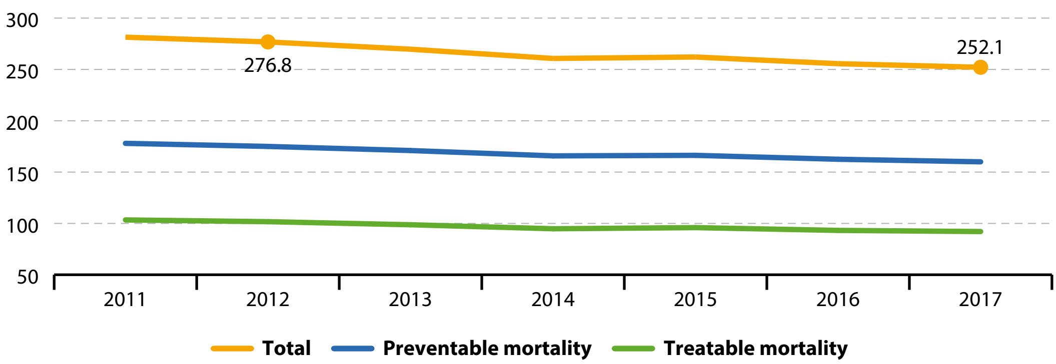
Standardised avoidable mortality

LONG TERM
Time series too short

SHORT TERM
2012–2017

Avoidable mortality covers both preventable and treatable causes of mortality. Preventable mortality refers to mortality that can mainly be avoided through effective public health and primary prevention interventions (i.e. before the onset of diseases/injuries, to reduce incidence). Treatable mortality can mainly be avoided through timely and effective health care interventions, including secondary prevention and treatment (after the onset of diseases to reduce case-fatality). The total avoidable mortality rate includes a number of infectious diseases, several types of cancers, endocrine and metabolic diseases, as well as some diseases of the nervous, circulatory, respiratory, digestive and genitourinary systems, some diseases related to pregnancy, childbirth and the perinatal period, a number of congenital malformations, adverse effects of medical and surgical care, a list of injuries and alcohol and drug related disorders.

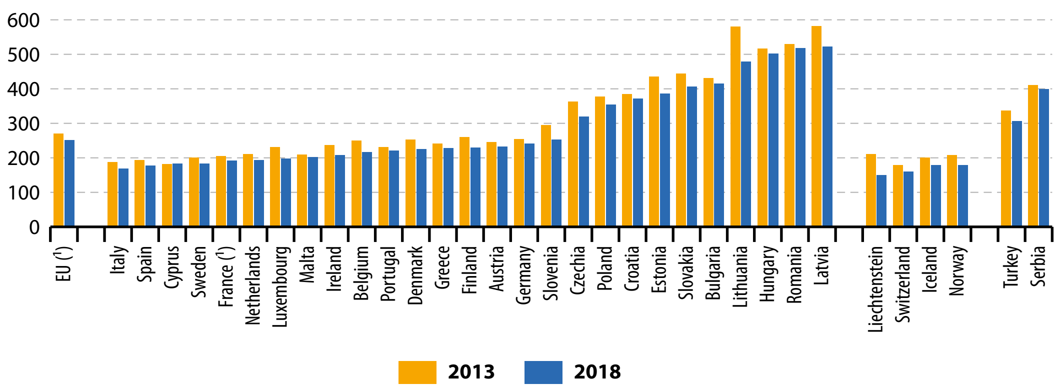
Figure 3.9: Standardised avoidable mortality, EU, 2011–2017
(number per 100 000 persons aged less than 75 years)



Compound annual growth rate (CAGR) for the total: – 1.8 % per year in the period 2012–2017.

Source: Eurostat (online data code: sdg_03_42)

Figure 3.10: Standardised avoidable mortality, by country, 2013 and 2018
(number per 100 000 persons aged less than 75 years)



Note: 2018 data are provisional.
(¹) 2017 data (instead of 2018).

Source: Eurostat (online data code: sdg_03_42)

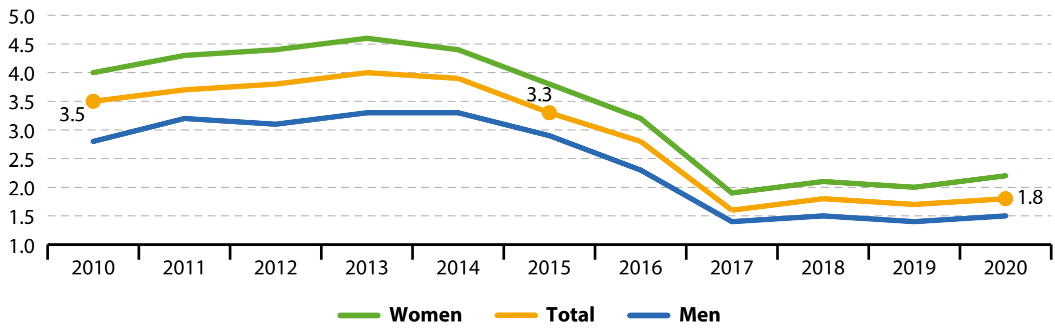
LONG TERM
2010–2020

SHORT TERM
2015–2020

Self-reported unmet need for medical care

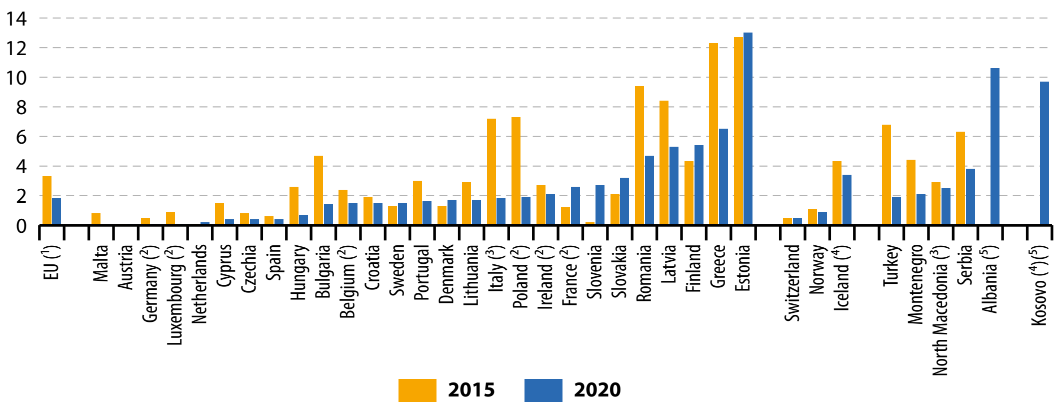
In the context of SDG monitoring, this indicator measures the share of the population aged 16 and over reporting unmet needs for medical care due to one of the following reasons: 'financial reasons', 'waiting list' and 'too far to travel'. Self-reported unmet needs concern a person's own assessment of whether they needed medical examination or treatment (dental care excluded), but did not have it or did not seek it. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC). Since social norms and expectations may affect responses to questions about unmet care needs, caution is required when comparing differences in the reporting of unmet medical examination across countries. In addition, the different organisation of health care services is another factor to consider when analysing the data. Finally, there are also some variations in the survey question across countries and across time ([58]).

Figure 3.11: Self-reported unmet need for medical care, by sex, EU, 2010–2020
(% of population aged 16 and over)



Note: Estimated data.
Compound annual growth rate (CAGR) for the total: – 6.4 % per year in the period 2010–2020; – 11.4 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_03_60)

Figure 3.12: Self-reported unmet need for medical care, by country, 2015 and 2020
(% of population aged 16 and over)



([1]) Estimated data.
([2]) Break(s) in time series between the two years shown.
([3]) 2019 data (instead of 2020).
([4]) 2018 data (instead of 2020).
([5]) No data for 2015.

Source: Eurostat (online data code: sdg_03_60)

Notes

([1]) World Health Organization (1946), *Constitution of the World Health Organization*.
([2]) European Commission (2022), *In profile: cohesion policy improving health services in the regions*.
([3]) European Commission (2021), *Europe's Beating Cancer Plan*, COM(2021) 44 final, Brussels.
([4]) European Commission, Clean Air Programme.
([5]) European Commission (2021), *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' — Pathway to a Healthy Planet for All*, COM(2021) 400 final, Brussels.
([6]) European Commission (2021), *The European Pillar of Social Rights Action Plan*, COM(2021) 102 final, Brussels.
([7]) European Commission, State of Health in the EU.
([8]) OECD/EU (2020), *Health at a Glance. Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris; European Centre for Disease Prevention and Control (2020), *Guidance on the provision of support for medically and socially vulnerable populations in EU/EEA countries and the United Kingdom during the COVID-19 pandemic*.
([9]) Eurostat (2020), *Statistics explained: Mortality and life expectancy statistics*.
([10]) Source: Eurostat (online data code: sdg_03_10).
([11]) Source: Eurostat (online data code: hlth_silc_18).
([12]) Source: Eurostat (online data code: HLTH_DH010).
([13]) OECD/EU (2020), *Health at a Glance. Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris, p. 12.
([14]) European Commission (2022), Excess mortality statistics.
([15]) 2020 data for the EU are provisional estimates based on the available Member States' data for that year (online data code: demo_mlexpec).
([16]) World Health Organization (2017), *Social determinants of health, Evidence on social determinants of health*.
([17]) World Health Organization (2021), *Obesity: New analysis from WHO/Europe identifies surprising trends in rates of overweight and obesity across the Region*.
([18]) The indicator measures the share of obese people based on their body mass index (BMI). BMI is defined as the weight in kilograms divided by the square of the height in metres. People aged 18 years or over are considered obese with a BMI equal to or greater than 30. Other categories are: underweight (BMI less than 18.5), normal weight (BMI between 18.5 and less than 25), and pre-obese (BMI between 25 and less than 30). The category overweight (BMI equal or greater than 25) combines the two categories pre-obese and obese.
([19]) Source: Eurostat (online data code: HLTH_EHIS_BM1E).
([20]) The WHO European Region also includes some non-European countries such as Israel, Uzbekistan, Turkmenistan or Tajikistan; see https://www.euro.who.int/en/countries for the full list of countries.
([21]) World Health Organization, Tobacco.
([22]) World Health Organization Regional Office for Europe, Tobacco. Data and Statistics.
([23]) OECD/EU (2014), *Health at a Glance: Europe 2014*, OECD Publishing, Paris, p. 16–17.
([24]) European Commission (2021), *Attitudes of Europeans towards tobacco and electronic cigarettes*, Special Eurobarometer 506.
([25]) World Health Organization (2011), *Burden of disease from environmental noise — Quantification of healthy life years lost in Europe*, World Health Organization Regional Office for Europe, Copenhagen, p. 1.
([26]) European Environment Agency (2018), Environmental noise.
([27]) European Environment Agency (2018), Managing exposure to noise in Europe.
([28]) European Environment Agency (2020), *Healthy environment, healthy lives: how the environment influences health and well-being in Europe*.
([29]) European Environment Agency (2018), *Managing exposure to noise in Europe*.
([30]) World Health Organization (2018), *Environmental Noise Guidelines for the European Region*, WHO Regional Office for Europe, Copenhagen.
([31]) Also see: European Environment Agency (2018), Environmental noise.
([32]) European Environment Agency (2019), Population exposure to environmental noise. Data refer to EU with UK.
([33]) European Environment Agency (2021), *Air quality in Europe — 2021 report*, EEA Report 15/2021, Copenhagen.
([34]) European Environment Agency (2018), *Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe*, EEA Report No 22/2018, Copenhagen.
([35]) Ibid.
([36]) European Environment Agency (2021), *Air quality in Europe — 2021 report*, EEA Report 15/2021, Copenhagen.
([37]) Ibid.
([38]) European Commission (2021), *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' — Pathway to a Healthy Planet for All*, COM(2021) 400 final, Brussels.
([39]) European Environment Agency (2021), *Air quality in Europe — 2021 report*, EEA Report 15/2021, Copenhagen.
([40]) World Health Organization (2021), *WHO Global air quality guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*.
([41]) European Commission (2016), *Next steps for a sustainable European future: European action for sustainability*, COM(2016) 739 final, Strasbourg.
([42]) Mårdh,O., Quinten, C., Amato-Gauci, A. & Duffell, E. (2020), *Mortality from liver diseases attributable to hepatitis B and C in the EU/EEA — descriptive analysis and estimation of 2015 baseline*, Infectious Diseases, 52:9, 625–637.
([43]) Source: Eurostat (online data code: hlth_cd_aro).
([44]) *Treaty on the Functioning of the European Union, Article 153*.

([45]) European Commission (2010), *Commission outlines measures to halve road deaths by 2020*. Between 2000 and 2010, the total number of road deaths fell by 44 %. The target to halve the 2000 number was reached in 2012. The Commission adopted a follow-up target to halve road deaths in Europe between 2010 and 2020.
([46]) Source: European Commission (2022), *Road Safety in the EU: fatalities in 2021 remain below pre-pandemic level*.
([47]) Source: Eurostat (online data code: hsw_mi08).
([48]) OECD/EU (2018), *Health at a Glance: Europe 2018 — State of Health in the EU Cycle*, OECD Publishing, Paris, p. 3.
([49]) Ibid., p. 169.
([50]) European Council (2014), *Council conclusions on the economic crisis and healthcare*, 2014/C 217/02.
([51]) Source: Eurostat (online data code: HLTH_DH030).
([52]) Source: Eurostat (online data code: HLTH_SHA11_HF).
([53]) Expert Panel on effective ways of investing in health (EXPH) (2016), *Access to health services in the European Union, final opinion approved at the 14th plenary meeting of 3 May 2016 after public consultation*, p. 18.
([54]) OECD/EU (2020), *Health at a Glance. Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris. Data refer to different years for the Member States, ranging from 2011 to 2018.
([55]) European Commission (2017), *Attitudes of Europeans towards tobacco and electronic cigarettes*, Special Eurobarometer 458, Annex.
([56]) European Commission (2021), Eurobarometers on tobacco.
([57]) Standardised death rates take into account the fact that countries with larger shares of older inhabitants also have higher death rates. See also: Eurostat (2013), *Revision of the European Standard Population, Report for Eurostat's Task Force*, Publications Office of the European Union, Luxembourg.
([58]) OECD/EU (2018), *Health at a Glance: Europe 2018 — State of Health in the EU Cycle*, OECD Publishing, Paris, p. 170.

4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

SDG 4 seeks to ensure access to equitable and quality education through all stages of life, as well as to increase the number of young people and adults who have the relevant skills for employment, decent jobs and entrepreneurship. The goal also envisages the elimination of gender and income disparities in access to education.

eurostat supports the SDGs

Education and training are key drivers for growth and jobs because they help to improve employability, productivity, innovation and competitiveness. In the broader sense, education is also a pre-condition for achieving many other Sustainable Development Goals. Receiving a quality education enables people to break the cycle of poverty, which in turn helps to reduce inequalities and achieve gender equality. Education also empowers people to live healthier lives and helps them to adopt a more sustainable lifestyle. Furthermore, education is crucial for fostering tolerance and contributes to more peaceful societies. Education and training have been key objectives of European policy for many years. Besides various EU policies, the Council Resolution on a strategic framework for European cooperation in education and training takes into consideration the whole spectrum of education and training systems from a lifelong learning perspective, covering all levels, from basic education to tertiary and adult education.

Particular focus is thereby put on the acquisition of basic and digital skills. Within this framework, several targets are defined that guide the analysis in this chapter.

Table 4.1: Indicators measuring progress towards SDG 4, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Basic education			
Low achieving 15-year-olds in reading, mathematics or science	↓ (1)	↓ (2)	page 92
Participation in early childhood education	:	↗	page 93
Early leavers from education and training	↑	↑	page 94
Tertiary education			
Tertiary educational attainment	↑	↑	page 95
Adult learning			
Adult participation in learning	↑	↑	page 97
Digital skills			
Share of adults with at least basic digital skills	:	↘	page 98

(1) Trend refers to worst performance among the three subjects (science). Past 12-year period.
(2) Past 3-year period.

Table 4.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 4 'Quality education'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

The European Education Area (EEA) is an umbrella initiative in the area of education that helps European Union Member States work together to build more resilient and inclusive education and training systems (1).

Basic education and tertiary education

Four out of the seven EEA strategic framework (2) targets to achieve by 2030 are used to monitor progress in basic and tertiary education in the EU: at least 96 % of children between the age of 3 and the starting age for compulsory primary education should participate in early childhood education and care; less than 9 % of pupils should leave education and training early; less than 15 % of 15-year-olds should be low-achievers in reading, mathematics and science; and at least 45 % of 25–34-year-olds should have a tertiary education qualification.

Basic and tertiary education are supported by the European Social Fund (3) and its successor, the European Social Fund Plus. Additionally, the reinforced Youth Guarantee (4) aims to ensure that all young people under the age of 30 receive a good quality offer of employment, continued education, apprenticeship and traineeship within a period of four months of becoming unemployed or leaving education.

Adult learning and digital skills

The new European Skills Agenda is a five-year plan that aims to help individuals and businesses develop more and better skills and to put them to use by strengthening sustainable competitiveness. A Council Resolution on a new European agenda for adult learning 2021–2030 from November 2021 highlights the need to significantly increase adult participation in formal, non-formal and informal learning.

The EEA requires that by 2025 at least 47 % of adults aged 25 to 64 should have participated in learning during the last 12 months, while the European Pillar of Social Rights Action Plan proposed a headline target that at least 60 % of all adults should participate in training every year by 2030.

The EEA also sets the target that by 2030 less than 15 % of eighth-graders should be low-achievers in computer and information literacy. The Digital Education Action Plan (2021–2027) (5) is a renewed EU policy initiative to support the sustainable and effective adaptation of the education and training systems of Member States to the digital age. The plan is key to realising the EEA vision and contributes to achieving the goals of the European Pillar of Social Rights Action Plan and the '2030 Digital Compass: the European way for the Digital Decade', which both have a goal for at least 80 % of people aged 16–74 to have basic digital skills.

Furthermore, the Digital Europe Programme (DIGITAL) (6) is the first EU financial instrument designed to bring digital technology to businesses and citizens. It focuses on building the strategic digital capacities of the EU and on facilitating the wide deployment of digital technologies.

Quality education in the EU: overview and key trends

Monitoring SDG 4 in an EU context focuses on basic education, tertiary education, adult learning and digital skills. As Table 4.1 indicates, the EU has made significant progress in increasing participation in early childhood, basic and tertiary education as well as in adult learning. However, over the past few years, progress towards the target for adults with at least basic digital skills has stalled, and the percentage of underachievers in the PISA test has further deteriorated.

Basic education

Basic education covers the earliest stages in a child's educational pathway, ranging from early childhood education to primary and secondary education. An inclusive and quality education for all, which eliminates school segregation, is an essential element of sustainable development. SDG 4 thus aims to ensure that by 2030 all girls and boys have access to quality early childhood development, care and pre-primary education so they are ready for primary education. In addition, SDG 4 intends to ensure that all boys and girls complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. Furthermore, SDG 4 focuses on ensuring all youths have the literacy, numeracy and relevant skills needed for employment, decent jobs and entrepreneurship.

Participation in early childhood education is rising too slowly in the EU to meet the 2030 target

Early childhood education and care is usually the first step in a child's educational pathway. According to the EU Quality Framework for Early Childhood Education and Care ([7]), access to quality early childhood education and care for all children contributes to their development, well-being and educational success. It also helps to reduce social inequalities and narrows the competence gap between children from different socio-economic backgrounds, as well as the gap between children with and without disabilities. Equitable access is also essential for ensuring that parents, especially women, have the flexibility to (re)integrate into the labour market ([8]). Within the strategic framework for European cooperation in education and training, participation in early childhood education is defined as the share of the population — aged between three years and the starting age of compulsory primary education — who take part in early education. Participation in early childhood education has risen slowly in the EU since 2014, reaching 93.0 % in 2020. Stronger progress will be necessary in the coming years to meet the target of 96 % by 2030.

93.0 %
of young children in the EU participated in early childhood education and care in 2020

Educational attainment levels in the EU are improving

Early school leaving is linked to unemployment, social exclusion, poverty and poor health. Thus, it is in the interest of societies as a whole, as well as individuals themselves, to make sure that everyone completes education and training ([9]). Consequently, the strategic framework for European cooperation in education and training has set a target to reduce the share of early leavers from education and training (ELET) to below 9 % by 2030.

Since 2002, the ELET rate has fallen continuously in the EU, albeit more slowly in recent years. In 2021 the share had reached 9.7 %, putting the EU well on track to meeting the 2030 target. Monitoring of the 9 % target is complemented by a supplementary indicator on the completion of at least upper secondary education, which is generally considered the minimum requirement for gaining satisfactory employment in today's economy and is important for full participation in society (10). The indicator, which measures the share of people aged 20 to 24 with at least an upper secondary qualification, shows that 84.6 % had completed this level of education in 2021 (11).

9.7 %
of people aged 18 to 24 had left education and training early in the EU in 2021

An analysis by degree of urbanisation reveals that young people living in towns and suburbs (10.7 %) and rural areas (10.0 %) were more likely to leave school early than children living in cities (8.7 %) in 2021 (12). For further analyses of ELET trends by sex and citizenship, see the chapters on SDG 5 'Gender equality' on page 101 and on SDG 10 'Reduced inequalities' on page 181.

Educational outcomes in reading, maths and science have continued to deteriorate

Besides educational attainment in general, achieving a certain level of proficiency in basic skills is a key objective of all educational systems. Basic skills, such as reading a simple text or performing simple calculations, provide the foundations for learning, gaining specialised skills and personal development. Low achievers in the OECD's Programme for International Student Assessment (PISA) are those pupils who fail to reach the minimum proficiency level necessary to participate successfully in society. These pupils face having fewer opportunities in future, both on a personal and professional level (13).

22.5 %
of 15-year-old pupils in the EU showed insufficient reading skills in 2018

In 2018, more than one in every five 15-year-old pupils showed insufficient abilities in one or more of these basic skills. Test results in that year showed 22.3 % of pupils were low achievers in science, followed by 22.5 % for reading and 22.9 % for mathematics (14). Compared with 2015, the results were a step backward, indicating the EU is lagging seriously behind in all three domains when it comes to reaching the 2030 EU-level target of reducing the share of low-achieving 15-year-olds in basic skills to less than 15 %.

Tertiary education

Continuing education after the basic level is important because people with higher qualifications are more likely to be employed and less likely to face poverty in a knowledge-based economy. Therefore, investing efficiently in education and training systems that deliver high-quality and up-to-date services lays the foundation for a country's prosperity. Moreover, employment rates are generally higher for highly educated people. Conversely, low levels of tertiary educational attainment can hinder competitiveness, innovation and productivity and undermine growth potential.

The share of people with tertiary education has increased significantly since 2002

The strategic framework for European cooperation in education and training aims to raise the share of the population aged 25 to 34 that has completed a higher education qualification (levels 5–8 in the 2011 International standard classification of education, ISCED) to at least 45 % by 2030. As a result of an 18.1 percentage point increase since 2002, the EU reached a tertiary education attainment rate of 41.2 % in 2021 and is well on track to meeting its 2030 target. The degree of urbanisation seems to have a considerable impact on tertiary attainment levels. While in 2021 more than half (51.4 %) of the population aged 25 to 34 living in cities had attained tertiary education, the rate was

41.2 %
of the EU population aged 25 to 34 had attained a tertiary education in 2021

significantly lower for towns and suburbs (35.3 %) and rural areas (29.6 %) ([15]).

The share of 25- to 34-year-olds with tertiary education has been growing steadily since 2002 in all Member States. This partly reflects their investment in higher education to meet the demand for a more skilled labour force. Moreover, some countries shifted to shorter degree programmes following the implementation of the Bologna process ([16]) reforms. For further analyses of the trends in tertiary education by sex, see the chapter on SDG 5 'Gender equality' on page 101 and on SDG 9 'Industry, Innovation and Infrastructure' on page 163.

Adult learning

Keeping skills up to date to support the ongoing quest for a high-quality labour force is one of the goals of adult learning. Adult education covers the longest period in a person's learning lifetime. It is crucial for maintaining good health, remaining active in the community and being fully included in all aspects of society. Moreover, it helps to improve and develop skills, adapt to technological developments, advance a person's career or aid their return to the labour market (upskilling and reskilling).

Adult participation learning is growing slowly

The adult participation in learning indicator monitors the share of people aged 25 to 64 who stated they received formal or non-formal education and training in the four weeks preceding the survey. While this share has grown since 2002 when it stood at 5.3 %, it remained at a rather low level, reaching 10.8 % in 2021. The drop to 9.1 % in 2020 might be related to the COVID-19 pandemic and the related contingency measures, which resulted in an increase in teleworking and thus is likely to have reduced opportunities for adults taking part in education and training. Similarly, for adults not in employment, the extended lockdown periods in 2020 led to a temporary reduction in education and training programmes.

10.8 %
of 25- to 64-year-old adults participated in learning in the EU in 2021

Women are more likely to participate in adult learning than men. In 2021, the share of 25- to 64-year-old women was 1.5 percentage points higher than that for men (11.6 % compared with 10.1 %). The rate for women was not only higher than for men, it had also been improving faster, gaining 6.1 percentage points since 2002, compared with 5.1 percentage points for men. The participation rate in adult learning also differs in terms of degree of urbanisation. In 2021, adults living in cities were more likely to participate in learning (13.6 %) than those living in towns and suburbs (9.8 %) or rural areas (7.8 %) ([17]).

While the above-mentioned indicator is based on the question of whether adults participated in learning during the four weeks preceding the survey, the target defined in the strategic framework refers to the share of adults participating in learning during the past 12 months. Baseline data for the target definition have so far only been collected in 2016 ([18]). At that time, the share stood at 37.4 %, which is 9.6 percentage points below the EU target of 47 % for 2025. Participation rates were particularly low for low-educated adults (ISCED 2011 levels 0–2), at 17.9 %. The European Skills Agenda consequently also set a target for raising the share of adults aged 25 to 64 with low qualification and who participated in learning during the last 12 months to 30 % by 2025. In contrast to this group, more than half (58.1 %) of adults with tertiary education (ISCED 2011 levels 5–8) participated in learning in 2016.

Digital skills

Digitalisation is having a massive impact on the labour market and the type of skills needed in the economy and society. Thus, digital skills are of critical value for working, learning and social interaction. The COVID-19 pandemic has accentuated the digital skills gap that already existed and new inequalities are emerging as many people still do not have the required level of digital skills or are in workplaces or schools that are lagging behind in digitalisation ([19]).

The share of people with at least basic digital skills is stagnating

The European Pillar of Social Rights Action Plan has set a target for the EU to raise the share of people aged 16 to 74 who have at least basic digital skills to 80 % in 2030. This target is evaluated using the composite indicator for digital skills, based on selected activities performed by individuals on the internet in four specific areas: information, communication, problem solving and software skills for content manipulation. It is assumed that individuals who can perform certain activities have the desired digital skills, therefore the indicator can be considered as a proxy for the digital competences and skills of individuals.

Between 2016 and 2021, the share of people aged 16 to 74 with at least basic digital skills stagnated at 54 %, making no progress towards the 80 % target for 2030. In contrast to most other educational indicators presented in this chapter, fewer women (52 % in 2021) had at least basic digital skills than men (56 %). Age and formal education also affect a person's level of digital skills.

54 %
of 16- to 74-year-old people in the EU had at least basic digital skills in 2021

While 71 % of 16- to 24-year-olds had basic or above-basic overall digital skills in 2021, this was only the case for 62 % of 25- to 54-year-olds. In particular older people struggle with the use of digital media, with only 35 % of people aged 55 to 74 having at least basic digital skills in 2021. Additionally, 79 % of people with high formal education had at least basic digital skills in 2021, while this was only the case for 32 % of people with no or low formal education ([20]).

Digital competences constitute an essential skill for participating in a technology-driven world. In the strategic framework for European cooperation in education and training, the EU sets a target that the share of low-achieving eighth-graders in computer and information literacy should be less than 15 % by 2030. This target is based on the International Computer and Information Literacy Study (ICILS) ([21]), which investigates the extent to which grade-eight pupils (aged 13 to 14) are able to use information and communication technology (ICT) productively in school, at home, in society and in their future workplaces. One of the key findings of the 2018 study shows that young people do not develop sophisticated digital skills just by growing up using digital devices: in 8 out of 13 Member States participating in ICILS, more than one-third of pupils achieved scores below level 2 on the ICILS CIL scale. This level can be defined as the threshold for underachievement in digital competence ([22]).

Presentation of the main indicators

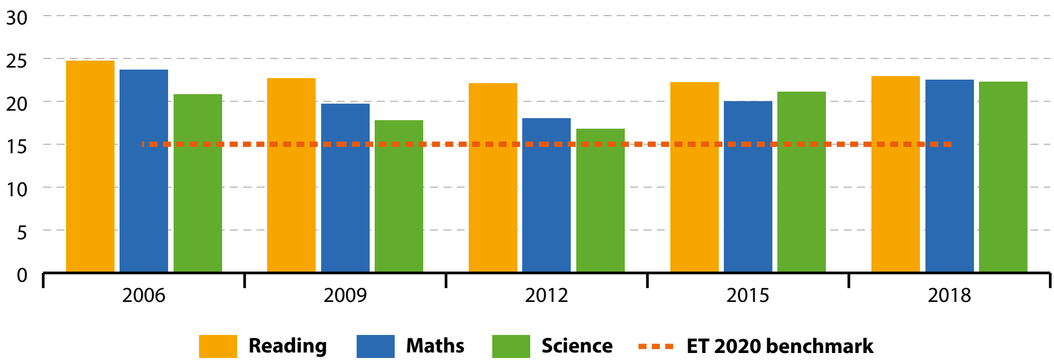
LONG TERM
2006–2018

SHORT TERM
2015–2018

Low achieving 15-year-olds in reading, mathematics or science

This indicator measures the share of 15-year-old students failing to reach level 2 ('basic skills level') on the Programme for International Student Assessment (PISA) scale for the three core school subjects of reading, mathematics and science. The data stem from the PISA study, a triennial international survey that aims to evaluate education systems by testing the skills and knowledge of 15-year-old students.

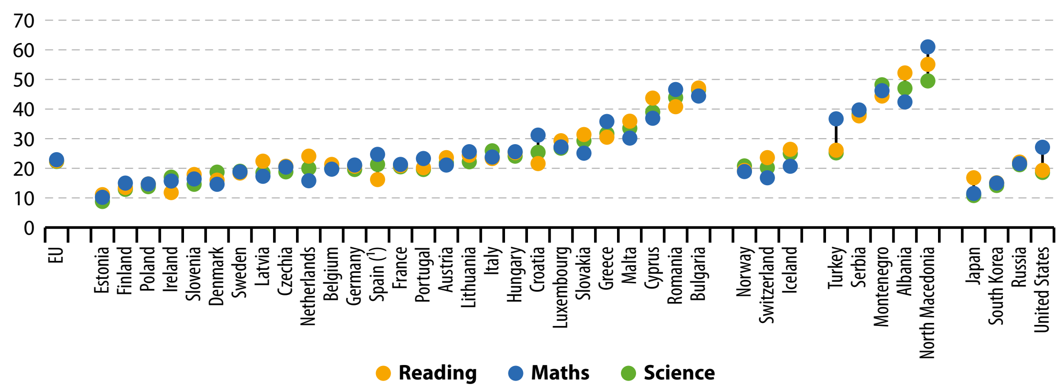
Figure 4.1: Low achieving 15-year-olds in reading, mathematics or science, EU, 2006–2018
(% of 15-year-old students)



Compound annual growth rate (CAGR):
Reading: –0.4 % per year (observed) and –1.9 % per year (required to meet target) in the period 2006–2018; 4.0 % per year (observed) and – 1.9 % per year (required to meet target) in the period 2015–2018.
Mathematics: –0.6 % per year (observed) and –2.1 % per year (required to meet target) in the period 2006–2018; 1.0 % per year (observed) and –2.6 % per year (required to meet target) in the period 2015–2018.
Science: 0.6 % per year (observed) and –1.4 % per year (required to meet target) in the period 2006–2018; 1.9 % per year (observed) and –2.2 % per year (required to meet target) in the period 2015–2018.

Source: OECD (Eurostat online data code: sdg_04_40)

Figure 4.2: Low achieving 15-year-olds in reading, mathematics or science, by country, 2018
(% of 15-year-old students)



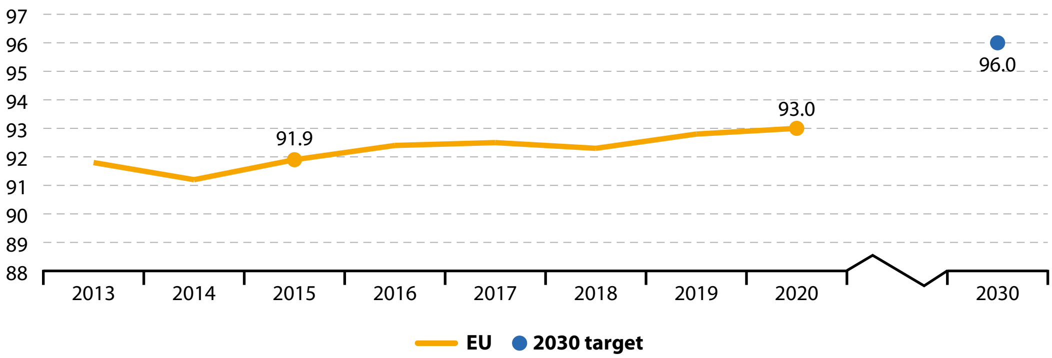
(¹) 2015 data for reading.

Source: OECD (Eurostat online data code: sdg_04_40)

Participation in early childhood education

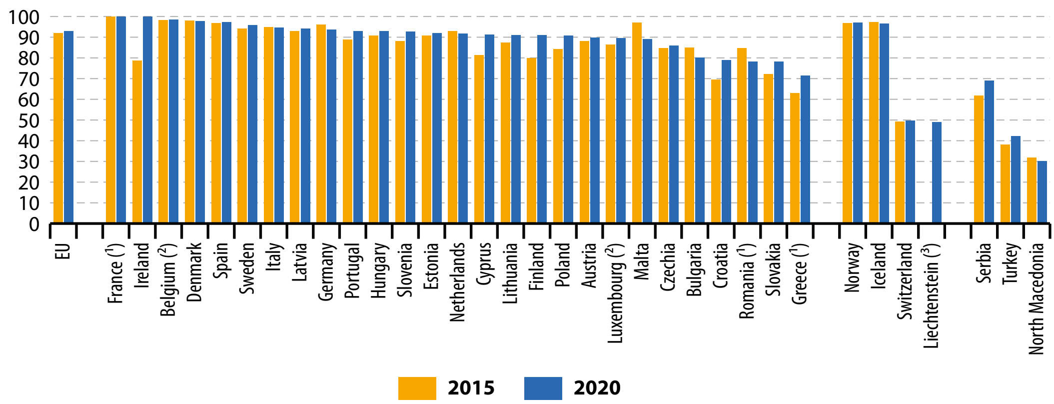
This indicator measures the share of children between the age of three and the starting age of compulsory primary education who participated in early childhood education. Data presented here stem from the joint UIS (UNESCO Institute of Statistics)/OECD/Eurostat (UOE) questionnaires on education statistics, which constitute the core database on education.

Figure 4.3: Participation in early childhood education, EU, 2013–2020
(% of children aged 3 and over)



Compound annual growth rate (CAGR): 0.2 % per year (observed) and 0.3 % per year (required to meet target) in the period 2015–2020.
Source: Eurostat (online data code: sdg_04_31)

Figure 4.4: Participation in early childhood education, by country, 2015 and 2020
(% of children aged 3 and over)



(¹) 2020 data are estimated or provisional.
(²) Break(s) in time series between the two years shown.
(³) No data for 2015.

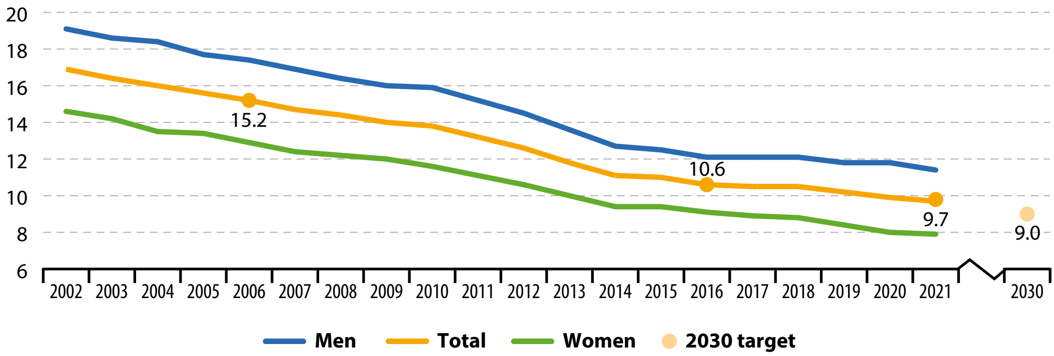
Source: Eurostat (online data code: sdg_04_31)

LONG TERM 2006–2021 (* ↑ ** ↑)
SHORT TERM 2016–2021 (* ↑ ** ↓)
* Total ** Gender gap

Early leavers from education and training

The indicator measures the share of the population aged 18 to 24 with at most lower secondary education who were not involved in any education or training during the four weeks preceding the survey. The data stem from the EU Labour Force Survey (EU-LFS).

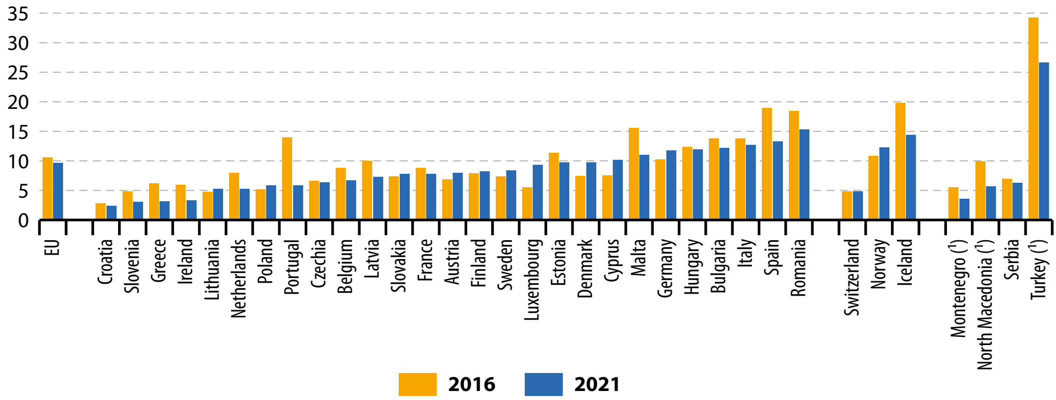
Figure 4.5: Early leavers from education and training, by sex, EU, 2002–2021
(% of population aged 18 to 24)



Note: Breaks in time series in 2003, 2006, 2014 and 2021.
Compound annual growth rate (CAGR) for the total share: – 3.0 % per year (observed) and – 2.2 % per year (required to meet target) in the period 2006–2021; – 1.8 % per year (observed) and – 1.2 % per year (required to meet target) in the period 2016–2021. CAGR for the gender gap: – 1.7 % per year in the period 2006–2021; 3.1 % per year in the period 2016–2021.

Source: Eurostat (online data code: sdg_04_10)

Figure 4.6: Early leavers from education and training, by country, 2016 and 2021
(% of population aged 18 to 24)



Note: Break in time series in 2021 for all countries.
(1) 2020 data (instead of 2021).

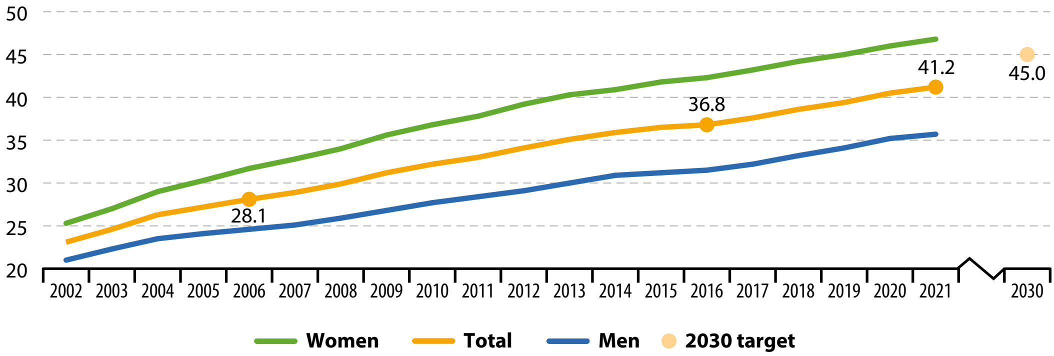
Source: Eurostat (online data code: sdg_04_10)

Tertiary educational attainment

LONG TERM 2006–2021
SHORT TERM 2016–2021
* Total ** Gender gap

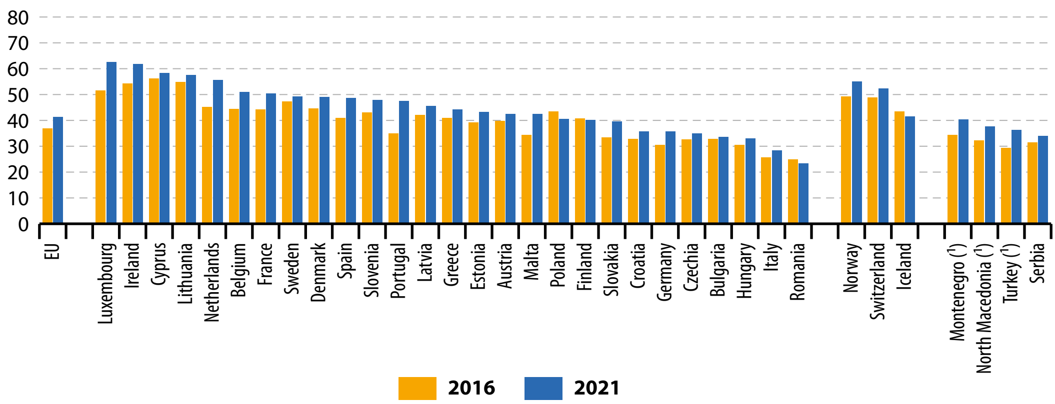
This indicator measures the share of the population aged 25 to 34 who have successfully completed tertiary studies (for example, at university or a higher technical institution). Tertiary educational attainment refers to ISCED (International Standard Classification of Education) 2011 levels 5–8 for data from 2014 onwards and to ISCED 1997 levels 5–6 for data up to 2013. The indicator is based on the EU Labour Force Survey (EU-LFS).

Figure 4.7: Tertiary educational attainment, by sex, EU, 2002–2021
(% of population aged 25 to 34)



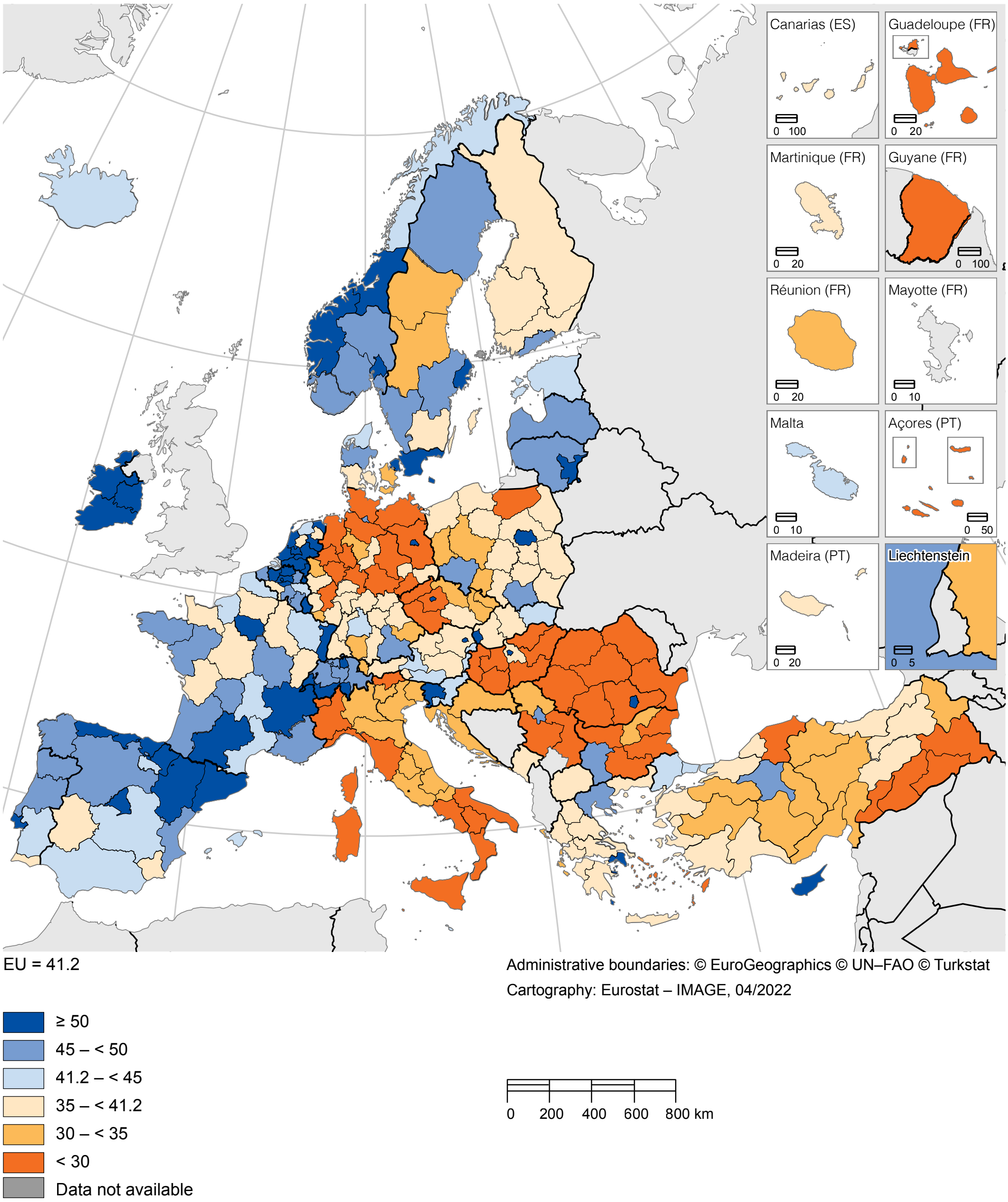
Note: Breaks in time series in 2014 and 2021.
Compound annual growth rate (CAGR) for the total share: 2.6 % per year (observed) and 2.0 % per year (required to meet target) in the period 2006–2021; 2.3 % per year (observed) and 1.4 % per year (required to meet target) in the period 2016–2021. CAGR for the gender gap: 3.0 % per year in the period 2006–2021; 0.5 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_04_20)

Figure 4.8: Tertiary educational attainment, by country, 2016 and 2021
(% of population aged 25 to 34)



Note: Break in time series in 2021 for all countries.
(¹) 2020 data (instead of 2021).
Source: Eurostat (online data code: sdg_04_20)

Map 4.1: Tertiary educational attainment, by NUTS 2 region, 2021
(% of population aged 25 to 34)



Note: 2019 data for Trier (DE); 2020 data for Corse (FR), Kontinentalna Hrvatska (HR) as well as for all regions in Norway (except Innlandet), Montenegro, North Macedonia and Turkey.

Source: Eurostat (online data code: edat_lfse_04)

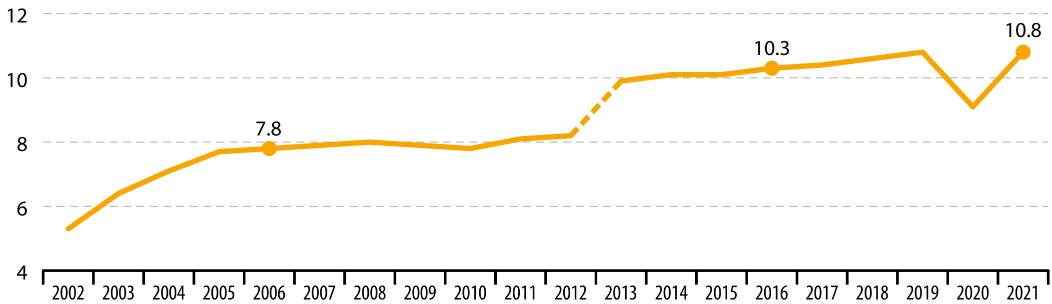
Adult participation in learning

LONG TERM
2006–2021

SHORT TERM
2016–2021

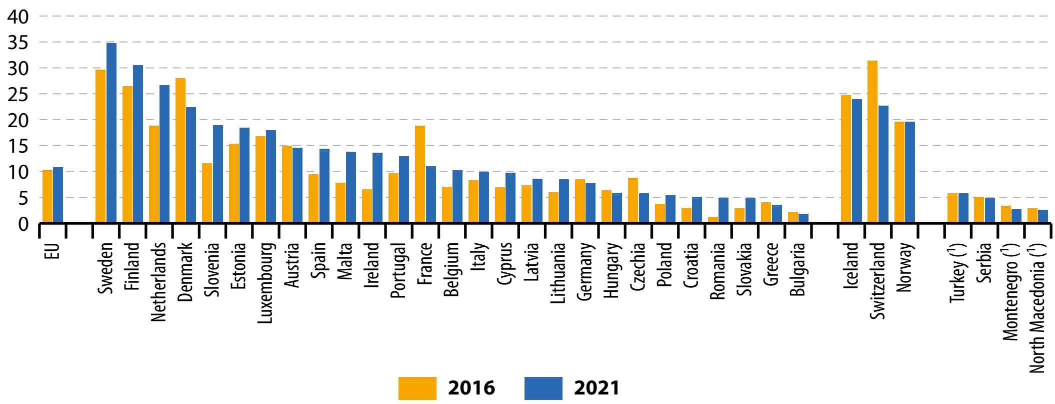
Adult participation in learning refers to people aged 25 to 64 who stated they received formal or non-formal education and training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding those who did not answer the question 'participation in education and training'. Adult learning covers formal and non-formal learning activities — both general and vocational — undertaken by those aged 25–64 ([23]). Data stem from the EU Labour Force Survey (EU-LFS).

Figure 4.9: Adult participation in learning, EU, 2002–2021
(% of population aged 25 to 64)



Note: Breaks in time series in 2003, 2006 2013 and 2021.
Compound annual growth rate (CAGR): 2.2 % per year in the period 2006–2021; 1.0 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_04_60)

Figure 4.10: Adult participation in learning, by country, 2016 and 2021
(% of population aged 25 to 64)



Note: Break in time series in 2021 for all countries.
(¹) 2020 data (instead of 2021).
Source: Eurostat (online data code: sdg_04_60)

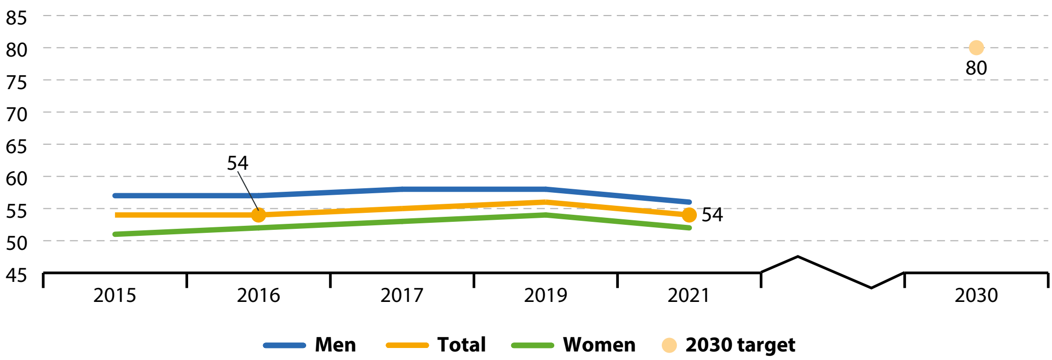
LONG TERM
Time series too short

SHORT TERM
2016–2021

Share of adults having at least basic digital skills

This indicator measures the share of people aged 16 to 74 who have at least basic digital skills. It is a composite indicator based on selected activities performed by individuals aged 16 to 74 on the internet in specific areas: until 2019, these included information, communication, problem solving and software, and from 2021 onwards safety was also added. The level that this indicator assesses — basic and above basic digital skills — has been consistently measured in data since 2015. The indicator is based on the EU survey on the ICT usage in households and by individuals.

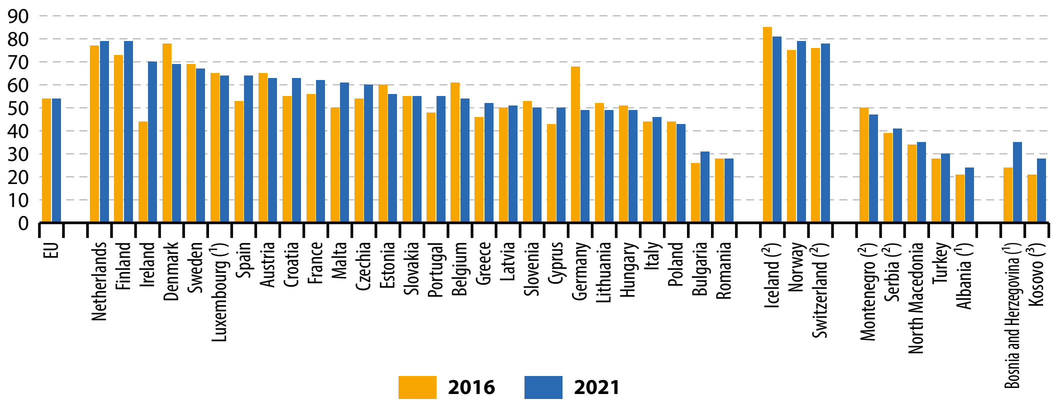
Figure 4.11: Share of adults having at least basic digital skills, by sex, EU, 2015–2021
(% of individuals aged 16 to 74)



Note: No data for 2018 and 2020; break in time series in 2021.
Compound annual growth rate (CAGR) for the total share: 0.0% per year (observed) and 2.8% per year (required to meet target) in the period 2016–2021.

Source: Eurostat (online data code: sdg_04_70)

Figure 4.12: Share of adults having at least basic digital skills, by country, 2016 and 2021
(% of individuals aged 16 to 74)



Note: Break in time series in 2021 for all countries.
([1]) 2019 data (instead of 2016).
([2]) 2017 data (instead of 2016).
([3]) 2017 and 2019 data.

Source: Eurostat (online data code: sdg_04_70)

Notes

(1) European Commission (2020), *Communication from the Commission to the European Parliament, the Council, the European economic and social Committee and the Committee of the regions on achieving the European Education Area by 2025*, COM(2020) 625 final, Brussels.
(2) Council of the European Union (2021), *Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030)*, (2021/C 66/01).
(3) European Commission, *European Social Fund, Better Education*.
(4) European Commission, *The reinforced Youth Guarantee*.
(5) European Commission, *Digital Education Action Plan (2021–2027)*.
(6) European Commission (2021), *The Digital Europe programme*.
(7) European Commission (2019), *Council recommendation of 22 May 2019 on High Quality Early Childhood Education and Care Systems* (2019/C 189/02).
(8) European Commission/EACEA/Eurydice (2019), *Key Data on Early Childhood Education and Care in Europe*, p. 43.
(9) European Commission (2018), *Education and Training Monitor 2018*, p. 26.
(10) European Commission (2020), *Education and Training Monitor 2020,* p. 40.
(11) Source: Eurostat (online data code: yth_educ_030).
(12) Source: Eurostat (online data code: edat_lfse_30).
(13) European Commission (2019), *PISA 2018 and the EU. Striving for social fairness through education*, p. 7.
(14) Within the EU weighted averages for 2018, Spain's results were excluded for reading.
(15) Source: Eurostat (online data code: edat_lfs_9913).
(16) The Bologna process put in motion a series of reforms to make European higher education more compatible, comparable, competitive and attractive for students. Its main objectives were: the introduction of a three-cycle degree system (bachelor, master and doctorate); quality assurance; and recognition of qualifications and periods of study (source: Eurostat, Education and training statistics introduced).
(17) Source: Eurostat (online data code: trng_lfs_14).
(18) Source: Eurostat, *adult education survey (AES)*.
(19) European Commission (2020), *European Skills Agenda for sustainable competitiveness, social fairness and resilience*, p. 3 and 18.
(20) Source: Eurostat (online data code: ISOC_SK_DSKL_I21).
(21) European Commission (2019), *The 2018 International Computer and Information Literacy Study (ICILS)*, Publications Office of the European Union, Luxembourg.
(22) For more information see: European Commission (2021), *Education and Training Monitor 2021* p. 74–80.
(23) The general definition of adult learning covers formal, non-formal and informal training but the indicator adult participation in learning only covers formal and non-formal education and training. For more information, see: Eurostat, *Participation in education and training*.

5 Achieve gender equality and empower all women and girls

SDG 5 aims to achieve gender equality by ending all forms of discrimination, violence and any harmful practices against women and girls in the public and private spheres. It also calls for the full participation of women and equal opportunities for leadership at all levels of political and economic decision-making.

The balanced participation of women and men in education and training, the labour market and in leadership positions is crucial for gender equality in the EU. Equal access to quality education, especially tertiary education, is expected to improve chances in life for both men and women. However, women continue to be over-represented in lower paid sectors and occupations, and experience constraints in their professional choices linked to care responsibilities and gender stereotypes. The persistent employment gap is mirrored in the significant gender pay gap. Closing gender gaps in employment and pay is an urgent economic and social objective, for the individual and for society as a whole. In addition, promoting equality between women and men in decision-making has been a key objective of European policy for many years. Another important objective is the elimination of gender-based violence and protecting and supporting victims.

Table 5.1: Indicators measuring progress towards SDG 5, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Gender-based violence			
Physical and sexual violence to women	:	:	page 108
Education			
Gender gap for early leavers from education and training (*)	↑	↓ (1)	SDG 4, page 94
Gender gap for tertiary educational attainment (*)	↓ (1)	↘ (1)	SDG 4, page 95
Employment			
Gender pay gap in unadjusted form	↑ (2)	↑	page 109
Gender employment gap	↑ (3)	↗	page 110
Gender gap for inactive population due to caring responsibilities	↑	↑	page 111
Leadership positions			
Seats held by women in national parliaments	↑	↑	page 112
Positions held by women in senior management	↑	↑	page 113

(*) Multi-purpose indicator.
(1) Gender gap is widening to the disadvantage of men.
(2) Past 10-year period.
(3) Past 12-year period.

Table 5.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 5 'Gender equality'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

The EU Gender Equality Strategy 2020–2025 (1) presents policy objectives and actions to make significant progress towards a gender-equal Europe by 2025. The goal is for women and men, as well as girls and boys, to be free to pursue their chosen path in life, have equal opportunities to thrive and can equally participate in and lead European society.

Gender-based violence

The benchmark for international standards in gender-based violence is the Istanbul Convention (2), which the EU signed in 2017, and the EU Strategy on victims' rights (2020–2025) which guarantees that all victims of crime can fully rely on their rights, no matter where in the EU the crime took place (3). Ending gender-based violence is one of the key objectives of the EU Gender Equality Strategy 2020–2025 (4). It is also a subject of the European Parliament resolution on the situation of women with disabilities (5).

Education

The Strategic framework for European cooperation in education and training (2021–2030) (6) prioritises improving quality, equity, inclusion and success for all in education and sets a monitoring framework via policy targets to be achieved by 2030.

Employment

Gender mainstreaming is a horizontal principle of the European Social Fund Plus (ESF+) (7), under which the Member States have the obligation to programme targeted actions aimed at promoting a gender-balanced labour market participation, equal working conditions, and a better work-life balance.

A proposal on pay transparency is aimed at ensuring women and men in the EU get equal pay for equal work.

The European Pillar of Social Rights Action Plan proposes a new EU headline target of raising the overall employment rate to at least 78 % by 2030, which includes an ambition to halve the gender employment gap compared with 2019 levels.

The Work-life Balance Directive (8) aims at helping women and men reconcile work and caring responsibilities and promote gender equality.

Leadership positions

Achieving gender balance in decision-making and in politics is a priority area for the European Commission and another key objective of the EU Strategy of Gender Equality 2020–2025.

Gender equality in the EU: overview and key trends

Monitoring SDG 5 in an EU context focuses on the topics of gender-based violence, education, employment and leadership positions. Gender equality in the EU has improved in terms of leadership positions, and the disparities between men and women in the labour market-related aspects monitored in this report have narrowed. However, men continue to fall behind in their educational attainment levels.

Gender-based violence

Gender-based violence is a brutal form of discrimination and a violation of fundamental human rights. It is both a cause and a consequence of inequalities between women and men. Physical and sexual violence against women affects their health and well-being. Moreover, it can hamper women's access to employment and harm their financial independence and the economy overall.

One in three women in Europe has experienced physical and/or sexual violence since the age of 15

In 2012, 8 % of women in the EU had experienced physical and/or sexual violence by a partner or non-partner in the 12 months prior to the interview. Younger women were more likely to report having been subject to violence; 12 % of women aged 18 to 29 had experienced physical or sexual violence in the 12 months prior to the interview, whereas 5 % of women aged 50 to 59 had been affected. Over a longer time period, every third woman (33 %) in the EU reported having experienced physical or sexual violence since the age of 15 ([9]). Women with disabilities are even more likely to be a victim of physical and/or sexual violence, at a rate that is two to five times higher than the rate for women without disabilities ([10]).

8 %
of women in the EU in 2012 experienced physical or sexual violence during the past 12 months

Data from official crime statistics on intentional homicide and sexual offences show that women are much more likely to be a victim of such crimes than men. In 2019, 55 out of 100 000 women were victims of sexual assault, and 28 out of 100 000 women were victims of rape. The rates were significantly lower for men, with 10 per 100 000 men for sexual assault and 3 out of 100 000 men for rape ([11]). Moreover, women are about twice as likely as men to be a victim of intentional homicide by family and relatives or their intimate partner. In 2019, 0.4 out of 100 000 women were victims of such homicide, compared with only 0.2 per 100 000 men ([12]).

The prevalence of violence varies greatly across the EU. However, caution is needed when comparing countries' official crime statistics. Their comparability can be affected, for example, by different legal and criminal justice systems or criminal law and legal definitions such as those concerning offenders, victims or prosecutable age. Also aspects such as the organisation and efficiency of the police, prosecution and courts or recording and reporting systems contribute to cross-country differences ([13]). The limitations of comparability also include the stigma associated with disclosing cases of violence against women in certain settings and to certain people, including interviewers. In addition, Member States that rank highest in terms of gender equality also tend to report a greater prevalence of violence against women. This may indicate a greater awareness and willingness of women in these countries to report violence to the police or to an interviewer ([14]).

Education

Equal access to quality education and training is an important foundation for gender equality and an essential element of sustainable development.

Equipping people with the right skills allows them to find quality jobs and improve their chances in life. Early leavers from education and training may face considerable difficulties in the labour market. For example, they may find it difficult to obtain a secure foothold because employers may be more reluctant to take them on with their limited education. Nowadays, completing compulsory education is often not considered sufficient to guarantee quality employment. Thus, attaining, for example, tertiary education is becoming more important for both men and women. Tertiary education also plays an essential role in society by fostering innovation, increasing economic development and growth, and improving the general well-being of citizens. In education and training, it is important to eliminate gender stereotypes and promote gender balance in traditionally 'male' or 'female' fields.

The rate of early leavers from education and training among men in the EU was

3.5

percentage points higher than among women in 2021

Young women outperform men in terms of education

Women overall tend to perform better than men when it comes to early leaving from education and training in the EU. In 2021, 11.4 % of men and 7.9 % of women aged 18 to 24 had left education and training earlier, meaning with at most lower secondary education while not being in further education and training. Although this gap narrowed between 2002 and 2016, it widened again over the following five years and remained substantial, at 3.5 percentage points in 2021.

The tertiary education attainment rate of women in the EU was

11.1

percentage points higher than for men in 2021

A major expansion in higher education systems has taken place in the EU since the early 2000's, when the Bologna process put in motion a series of reforms to make European higher education more compatible, comparable, competitive and attractive for students ([15]). As a result, the share of the population aged 25 to 34 who completed tertiary education increased steadily between 2002 and 2021. The increase was particularly strong for women, whose tertiary educational attainment rate rose from 25.3 % in 2002 to 46.8 % in 2021. For men, the increase was slower, from 21.0 % to 35.7 %. This caused the gender gap to surge from 4.3 percentage points to 11.1 percentage points between 2002 and 2021.

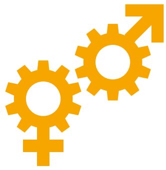
Employment

Ensuring high employment rates for both men and women is one of the EU's key targets. Reducing the wide gender employment gap, which measures the difference between the employment rates of men and women aged 20 to 64, is important for equality and a sustainable economy. Women tend to be more highly educated than men in most EU countries. Despite this, women are still paid less, as evidenced by the persistent gender pay gap. Women in the EU are over-represented in low-paid sectors and under-represented in well-paid sectors. Because of the gender pay gap, and interrupted and shorter working lives, women earn less over their lifetime than men. The correlation between women's lower employment rate and caring responsibilities aggravates their risk of poverty and social exclusion, especially in old age.

Women are still less likely to be employed than men

Employment rates ([16]) for women are an indication of a country's social customs, attitudes towards women in the labour force and family structures in general ([17]). Parenthood and caring responsibilities, limited access to quality childcare and monetary disincentives to participate in the labour market have a negative impact on the gender employment gap ([18]).

In the EU, the employment rate for women grew from 60.6 % in 2009 to 67.7 % in 2021. For men, the rate started from a higher value and increased more slowly, from 74.0 % in 2009 to 78.5 % in 2021 (see the chapter on SDG 8 'Decent work and economic growth' on page 147 for more detailed analyses on employment rates). As a result, the gender employment gap narrowed by 2.6 percentage points between 2009 and 2021. Most of this decrease took place in the period leading up to 2014, with the gap remaining at just over 11 percentage points until 2020 and then falling to 10.8 percentage points in 2021. Although the drop to below 11 percentage points in 2021 represents a new record low, it also means the proportion of working-age men in employment still considerably exceeds that of women.



The gender employment gap (in favour of men) was

10.8

percentage points in the EU in 2021

An analysis by degree of urbanisation shows a variation in the gender employment gap between cities, towns and suburbs and rural areas. In 2021, the gap was smallest in cities, at 8.5 percentage points, while it amounted to 12.3 percentage points in rural areas and 12.6 percentage points in towns and suburbs ([19]).

There is also a clear difference between employed women and men aged 20 to 64 when looking at the rate of part-time working. In 2021, 28.3 % of women in this age group worked part-time, while this was the case for only 7.6 % of men. This difference resulted in a gender gap of 20.7 percentage points for part-time employment. The gender gap for employed persons with temporary contracts was much less pronounced, at 2.3 percentage points in 2021 (12.4 % of women and 10.1 % of men) ([20]).

The COVID-19 pandemic further highlighted ongoing challenges related to women's participation in the labour market. According to the Joint Employment Report 2022, there is no evidence of a stronger negative impact on employment rates of women compared with men, but women experienced a steeper fall in working hours than men during confinement periods. Reasons behind these developments can be found in differences in the representation of women and men in sectors and occupations affected by the crisis, but also in gender differences in the use of telework and the fact that women took on the larger share of caring responsibilities. In addition, single women with children experienced larger employment losses during the pandemic than those without children. This underlines the importance of child-care and long-term care services to increase the labour market participation of women ([21]).

The gender pay gap has decreased in recent years but remains considerable

Women do not only have lower employment rates than men, they also tend to earn less. Between 2015 and 2020, the gender pay gap narrowed by 2.5 percentage points in the EU. However, in 2020, women's gross hourly earnings in the EU were still on average 13.0 % below those of men. There are various reasons for the existence and size of the gender pay gap. The inequalities that women face in gaining access to work, career progression and rewards, along with the consequences of career breaks or part-time work due to caring responsibilities, labour market segregation, the parenthood penalty and stereotypes about the roles of men and women are inevitably linked to the persistent gender pay gap.

Men earned

13.0 %

more than women in the EU in 2020

Caring responsibilities are by far the main reason for women to be outside the labour force

The gender gap is particularly pronounced when looking at non-participation in the labour force due to caring responsibilities, caused by the lack of available, accessible and quality formal care services, especially for children ([22]), as well as long-term care services. Caring responsibilities was the main reason why women (aged 20 to 64) were not part of the labour force in 2021, with 30.2 % of women outside the labour force reporting this as the main reason. In contrast, only 8.5 % of men outside the labour force reported caring responsibilities as the main reason.

The gender gap (in favour of men) for inactivity due to caring responsibilities in the EU in 2021 was

21.7

percentage points

The share of men who were outside the labour force due to caring responsibilities has increased by 1.3 percentage points since 2016, when it stood at 7.2 %. In contrast, 31.1 % of women were inactive due to this reason in 2016, with the share falling by 1.1 percentage points by 2021. As a result, the gender gap has narrowed by 2.4 percentage points since 2016, reaching 21.7 percentage points in 2021.

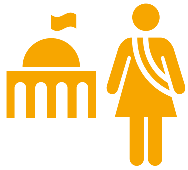
Leadership positions

Traditional gender roles, a lack of support to allow women and men to balance care responsibilities with work, and political and corporate cultures are some of the reasons why women are underrepresented in decision-making processes. Promoting equality between women and men in this area is one of the priorities the EU has set for achieving gender equality.

The share of seats held by women in national parliaments has increased steadily since 2003

Women held 33.1 % of seats in national parliaments in the EU in 2021. This share has increased since 2003, when women accounted for about one-fifth of members in national parliaments. However, differences between Member States vary greatly, from 47.6 % seats held by women in Sweden to 13.0 % in Hungary. There was no single EU country in 2021 where women held the most seats.

Contributing to this under-representation is the fact that women seldom become leaders of major political parties, which are instrumental in forming future political leaders. Another factor is that gender norms and expectations reduce the pool of female candidates for selection as electoral representatives. The share of female members of government (senior and junior ministers) in the EU was still lower than for men at 33.4 % in 2021, although this was an increase from 22.6 % in 2003. Also showing an increase was the number of female heads of government in EU countries. In 2021, there were on average five female heads of government compared with none in 2003. Over the whole period from 2003 to 2021, the highest share of female heads of government was 18.5 %, meaning there were never more than five women in this executive position at the same time (23).



33.1 %

of seats in national parliaments in the EU were held by women in 2021

In 2021, almost a third of board members of the largest listed companies were women

Women held 30.6 % of board positions in the largest listed companies in 2021. This level of representation was achieved after a steady 22.4 percentage point increase since 2003. However, the numbers mean the clear majority of board members of the largest listed companies are still men. The data nevertheless provide evidence of the positive impact of legislative action on the issue of female representation in boards (24).

30.6 %

of board positions in the largest listed companies in the EU were held by women in 2021

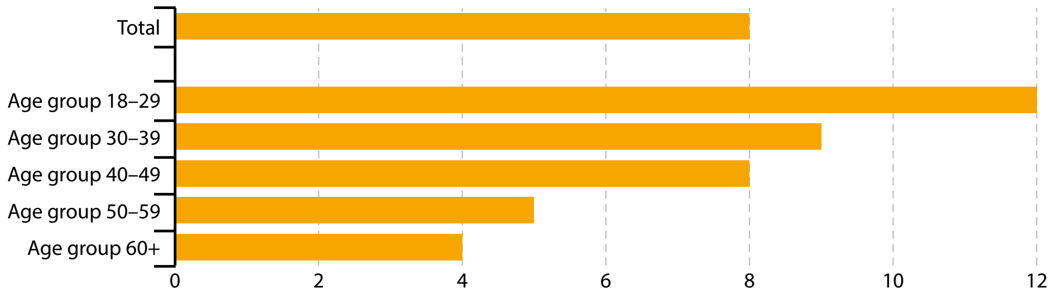
Presentation of the main indicators

X Assessment of progress not possible due to lack of EU-level time series

Physical and sexual violence to women

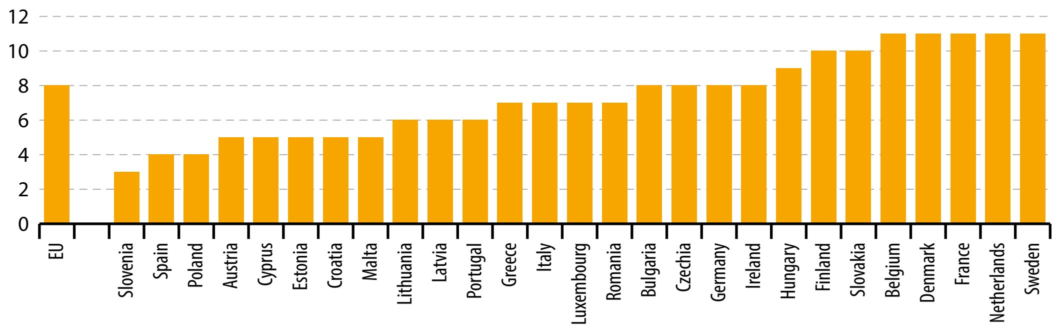
This indicator is based on the results of a survey by the European Union Agency for Fundamental Rights (FRA). Women were asked whether they had experienced physical and/or sexual violence within the 12 months prior to the interview.

Figure 5.1: **Physical and sexual violence to women experienced within 12 months prior to the interview, EU, 2012**
(% of women)



Source: European Union Agency for Fundamental Rights (FRA) (Eurostat online data code: sdg_05_10)

Figure 5.2: **Physical and sexual violence to women experienced within 12 months prior to the interview, by country, 2012**
(% of women)



Source: European Union Agency for Fundamental Rights (FRA) (Eurostat online data code: sdg_05_10)

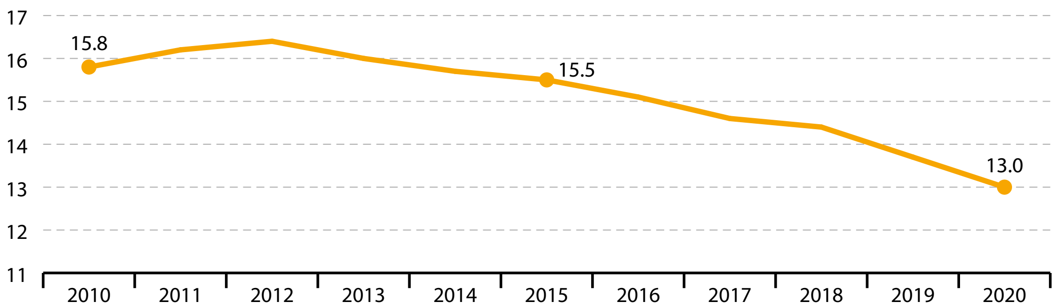
Gender pay gap in unadjusted form

LONG TERM 2010-2020

SHORT TERM 2015–2020

The gender pay gap in unadjusted form represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. The indicator has been defined as unadjusted because it gives an overall picture of gender inequalities in terms of pay and measures a concept which is broader than the concept of equal pay for equal work. The gender pay gap is based on the methodology of the structure of earnings survey (SES), which is carried out every four years.

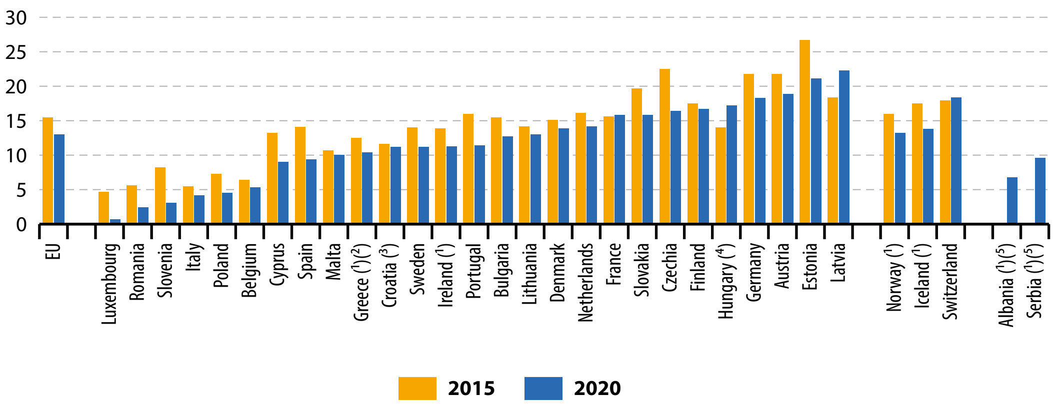
Figure 5.3: Gender pay gap in unadjusted form, EU, 2010–2020
(% of average gross hourly earnings of men)



Compound annual growth rate (CAGR): – 1.9 % per year in the period 2010–2020; – 3.5 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_05_20)

Figure 5.4: Gender pay gap in unadjusted form, by country, 2015 and 2020
(% of average gross hourly earnings of men)



Note: 2020 data are provisional or estimated for most countries.
(¹) 2018 data (instead of 2020).
(²) 2014 data (instead of 2015).
(³) 2016 data (instead of 2015).
(⁴) Break(s) in time series between the two years shown.
(⁵) No data for 2015.

Source: Eurostat (online data code: sdg_05_20)

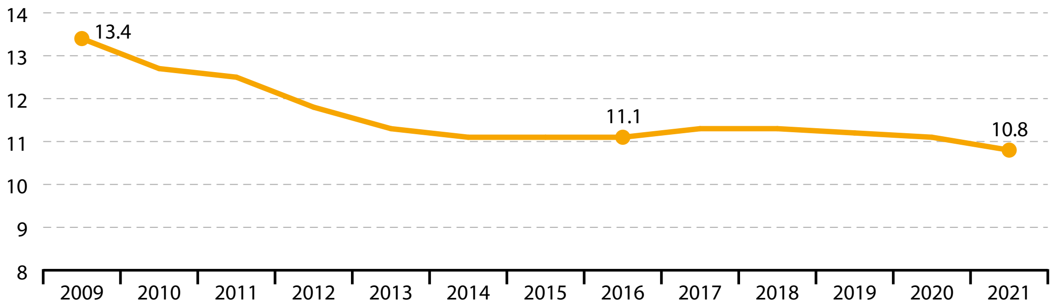
LONG TERM 2009–2021

SHORT TERM 2016–2021

Gender employment gap

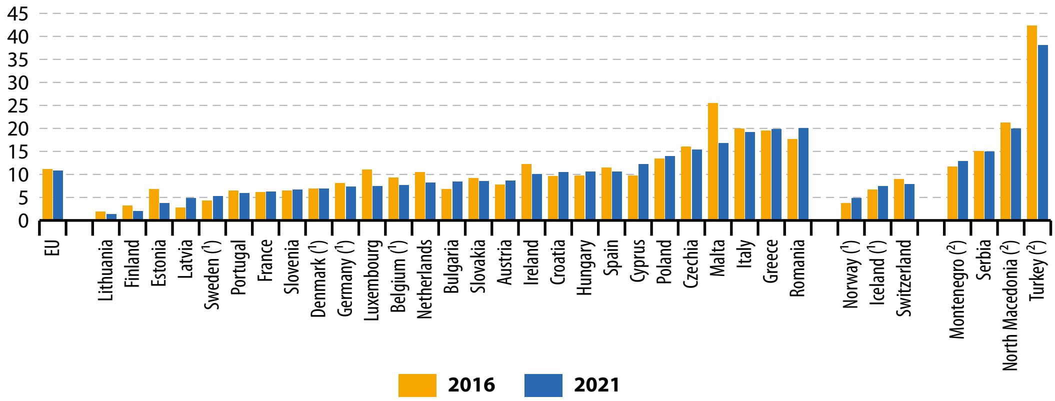
The gender employment gap is defined as the difference between the employment rates of men and women aged 20 to 64. The employment rate is calculated by dividing the number of people aged 20 to 64 in employment by the total population of the same age group. The indicator is based on the EU Labour Force Survey (EU-LFS).

Figure 5.5: Gender employment gap, EU, 2009–2021
(percentage points)



Compound annual growth rate (CAGR): – 1.8 % per year in the period 2009–2021; – 0.5 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_05_30)

Figure 5.6: Gender employment gap, by country, 2016 and 2021
(percentage points)



([1]) Break(s) in time series between the two years shown.
([2]) 2020 data (instead of 2021).

Source: Eurostat (online data code: sdg_05_30)

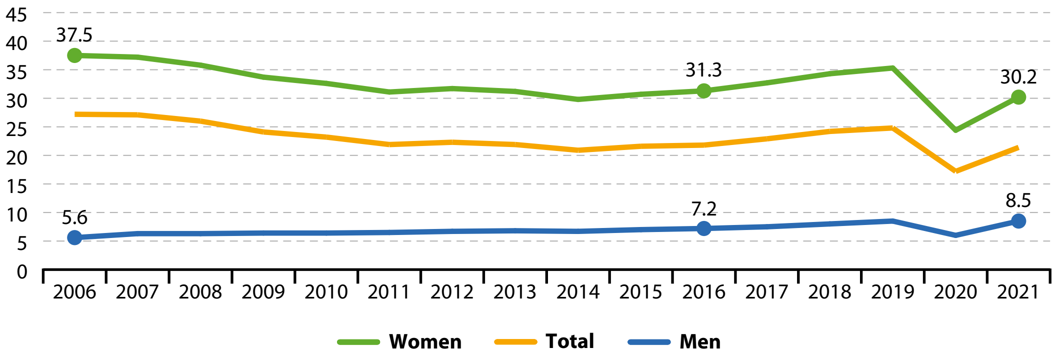
Gender gap for inactive population due to caring responsibilities

LONG TERM 2006–2021

SHORT TERM 2016–2021

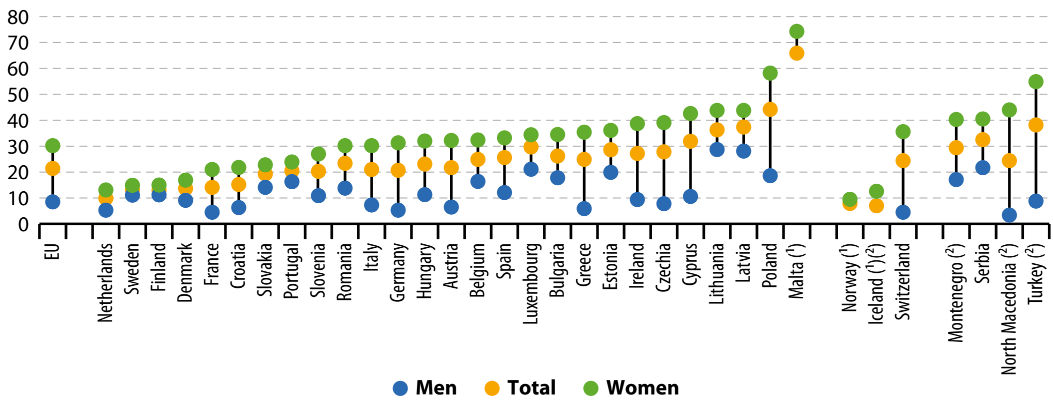
The economically inactive population comprises individuals who are not working, not actively seeking work or not available to work even if they have found a job. Therefore, they are neither employed nor unemployed and considered to be outside the labour force. This definition used in the EU Labour Force Survey (EU-LFS) is based on the guidelines of the International Labour Organization. The reasons for economic inactivity covered by this indicator include 'care of adults with disabilities or children' and 'other family or personal reasons'.

Figure 5.7: Inactive population due to caring responsibilities, by sex, EU, 2006–2021
(% of population aged 20 to 64 outside the labour force)



Note: The drop in 2020 can be explained by the exceptionally high non-response rate of 18.3 % in that year, compared with 1.0 % in 2019 and 0.5 % in 2021.
Compound annual growth rate (CAGR) of the gender gap: – 2.5 % per year in the period 2006–2021; – 2.1 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_05_40)

Figure 5.8: Inactive population due to caring responsibilities, by sex, by country, 2021
(% of population aged 20 to 64 outside the labour force)



Note: Data (especially for men) have low reliability for many countries.
(¹) No data for men.
(²) 2020 data.
Source: Eurostat (online data code: sdg_05_40)

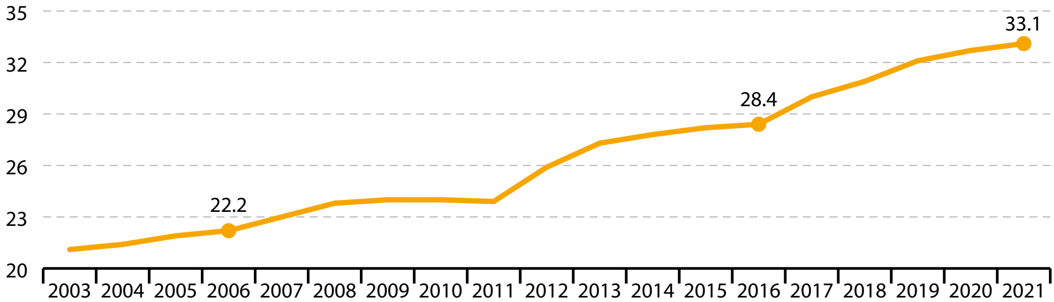
LONG TERM
2006–2021

SHORT TERM
2016–2021

Seats held by women in national parliaments

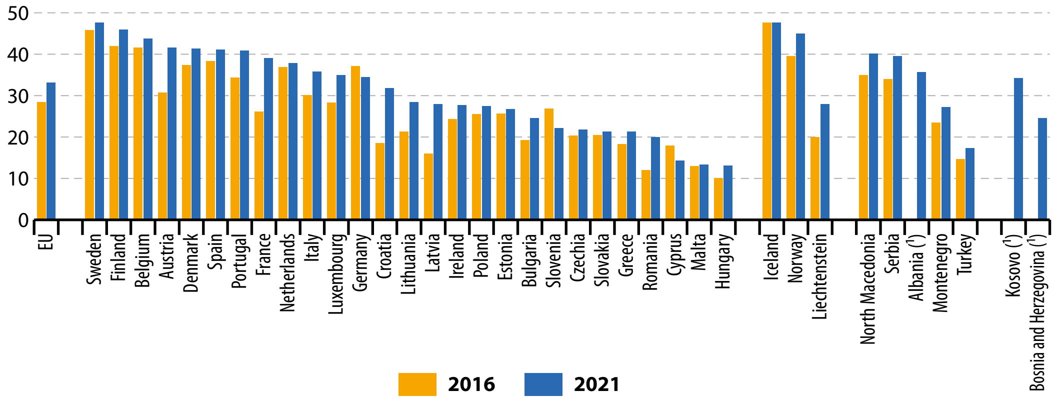
This indicator refers to the proportion of women in national parliaments in both chambers (lower house and upper house, where relevant). The data stem from the Gender Statistics Database of the European Institute for Gender Equality.

Figure 5.9: Seats held by women in national parliaments, EU, 2003–2021
(% of seats)



Compound annual growth rate (CAGR): 2.6 % per year in the period 2006–2021; 3.9 % per year in the period 2016–2021.
Source: European Institute for Gender Equality (EIGE) (Eurostat online data code: sdg_05_50)

Figure 5.10: Seats held by women in national parliaments, by country, 2016 and 2021
(% of seats)



(1) No data for 2016.
Source: European Institute for Gender Equality (EIGE) (Eurostat online data code: sdg_05_50)

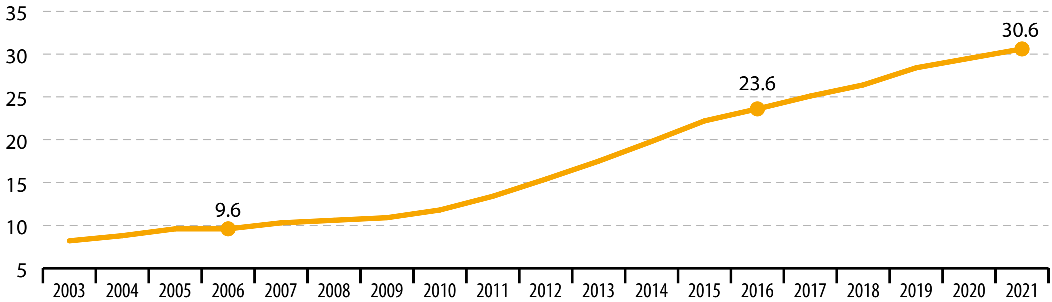
Positions held by women in senior management

This indicator measures the share of female board members in the largest publicly listed companies. The data presented in this section stem from the Gender Statistics Database of the European Institute for Gender Equality.

LONG TERM
2006–2021

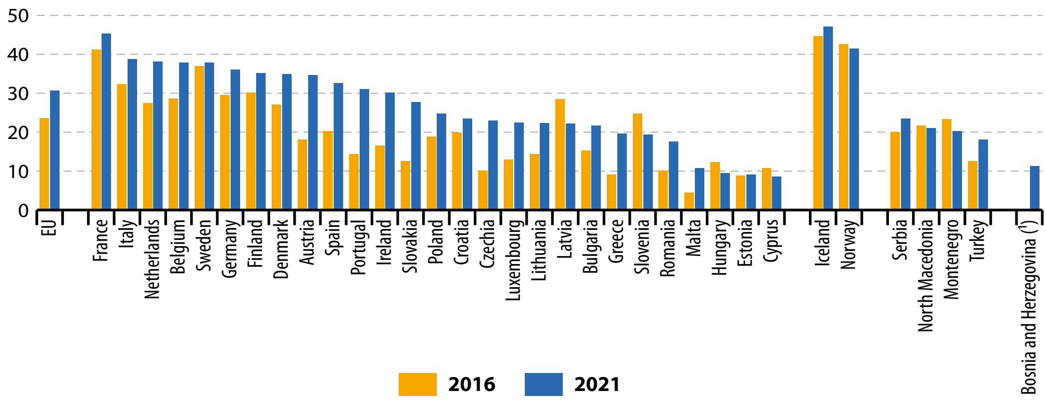
SHORT TERM
2016–2021

Figure 5.11: Positions held by women in senior management, EU, 2003–2021
(% of board members)



Compound annual growth rate (CAGR): 8.0 % per year in the period 2006–2021; 5.3 % per year in the period 2016–2021.
Source: European Institute for Gender Equality (EIGE) (Eurostat online data code: sdg_05_60)

Figure 5.12: Positions held by women in senior management, by country, 2016 and 2021
(% of board members)



(1) No data for 2016.
Source: European Institute for Gender Equality (EIGE) (Eurostat online data code: sdg_05_60)

Notes

(1) European Commission (2020), *A Union of Equality. Gender Equality Strategy 2020–2025*, COM(2020) 152 final, Brussels.
(2) Council of Europe (2017), *Council of Europe Convention on preventing and combating violence against women and domestic violence (CETS No. 210)*, Istanbul, 11.V.2011.
(3) European Commission (2020), *EU Strategy on victims' rights (2020–2025)*, COM(2020) 258 final, Brussels.
(4) European Commission (2020), *A Union of Equality. Gender Equality Strategy 2020–2025*, COM(2020) 152 final, Brussels.
(5) European Parliament (2018), *European Parliament resolution of 29 November 2018 on the situation of women with disabilities (2018/2685(RSP))*
(6) Council of the European Union (2021), *Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) (2021/C 66/01)*.
(7) European Commission, *European Social Fund Plus (ESF+)*.
(8) European Parliament, European Council, (2019), *Directive on work-life balance for parents and carers and repealing Council Directive 2010/18/EU*, Brussels.
(9) European Union Agency for Fundamental Rights (2014), *Violence against women: an EU-wide survey, Main results*, Publications Office of the European Union, Luxembourg, p. 17.
(10) European Parliament (2018), *European Parliament resolution of 29 November 2018 on the situation of women with disabilities (2018/2685(RSP))*.
(11) Source: Eurostat (online data code: CRIM_HOM_SOFF).
(12) Source: Eurostat (online data code: CRIM_HOM_VREL).
(13) For more information see Eurostat metadata on Crime and criminal justice (crim).
(14) European Union Agency for Fundamental Rights (2014), *Violence against women: an EU-wide survey, Main results*, Publications Office of the European Union, Luxembourg, pp. 25–26, 32.
(15) The Bologna process put in motion a series of reforms to make European higher education more compatible, comparable, competitive and attractive for students. Its main objectives were: the introduction of a three-cycle degree system (bachelor, master and doctorate); quality assurance; and recognition of qualifications and periods of study (source: Eurostat, Education and training statistics introduced).
(16) Due to the entry into force of Regulation 2019/1700 on 1 January 2021, there is a break in the LFS data series between 2020 and 2021 for most countries. Correction input (which can be correction factors or corrected LFS indicators) has been sent by countries to Eurostat, which has been used to break-correct some of the LFS time series, while some others have not been corrected. Accordingly, data on total and female/male employment rates use break-corrected data based directly on the correction input received from countries. Data on employment by degree of urbanisation use raw data received before 2021, i.e. non break-corrected data. Data on part-time employment use break-corrected data based, for most countries, on derivations done by Eurostat using the correction input received from countries (derived indicators).
(17) International Labour Organisation (2015), *Key Indicators of the Labour market: Full report, Ninth Edition*, International Labour Office, Geneva, p. 17.
(18) European Commission (2019), *Proposal for a Joint Employment Report from the Commission and the Council accompanying the Communication from the Commission on the Annual Sustainable Growth Survey 2020*, COM(2019) 653 final, Brussels.
(19) Source: Eurostat (online data code : TEPSR_LM230).
(20) Source: Eurostat (online data code: LFSI_PT_A).
(21) European Commission, Directorate-General for Employment, Social Affairs and Inclusion (2021), *Proposal for a Joint Employment Report 2022*, Brussels.
(22) European Commission (2017), *Draft Joint Employment Report from the Commission and the Council accompanying the Communication from the Commission on the Annual Growth Survey 2018*, COM(2017) 674 final, Brussels, p. 57.
(23) European Institute for Gender Equality, *Gender Statistics Database (National governments: presidents and prime ministers)*.
(24) European Commission (2021), *2021 report on gender equality in the EU*, p. 37.

6 Ensure availability and sustainable management of water and sanitation for all

SDG 6 calls for ensuring universal access to safe and affordable drinking water, sanitation and hygiene, and ending open defecation. It also aims to improve water quality and water-use efficiency and to encourage sustainable abstractions and supply of freshwater.

6 CLEAN WATER AND SANITATION

eurostat supports the SDGs

Access to water is a basic human need. Provision of drinking water and sanitation services is a matter of public and environmental health in the EU. Clean water in sufficient quantity is also of paramount importance for agriculture, industry and the environment and plays a crucial role in providing climate-related ecosystem services. The most important pressures on Europe's water resources are pollution, for example from agriculture as well as untreated or insufficiently treated municipal and industrial waste water discharges, and hydrological or physical alterations of water bodies. Also, over-abstraction can be a severe issue in southern Europe, in particular during the summer months and in densely populated areas. Consequently, protecting the quality of Europe's water resources and ensuring their sustainable and efficient use are key elements of EU water policy.

Table 6.1: Indicators measuring progress towards SDG 6, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Sanitation			
People living in households without basic sanitary facilities (such as bath, shower, indoor flushing toilet)	↑ (1)	↑	page 122
Population connected to at least secondary waste water treatment	↗	↗	page 123
Water quality			
Biochemical oxygen demand in rivers	↑ (2)	↗ (2)	page 124
Nitrate in groundwater	↘ (3)	↘ (3)	page 125
Phosphate in rivers	↑ (2)	↓ (2)	page 126
Inland water bathing sites with excellent water quality (*)	:	↘	SDG 14, page 258
Water use efficiency			
Water exploitation index (WEI+)	:	:	page 127

(*) Multi-purpose indicator.
(1) Past 10-year period.
(2) Data refer to an EU aggregate based on 18 Member States.
(3) Data refer to an EU aggregate based on 19 Member States.

Table 6.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 6 'Clean water and sanitation'. This section provides an overview of some of the most recent and relevant initiatives (also see the Commission's website on water). For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Sanitation

Protection of water resources, water ecosystems, and drinking and bathing water is a cornerstone of EU water policy, as proposed in the 8th Environment Action Programme ([1]).

The Urban Waste-Water Treatment Directive ([2]) regulates the collection, treatment and discharge of domestic and industrial urban waste waters.

Water quality

The Water Framework Directive ([3]) is the main European legislation aiming to prevent water pollution. The EU Biodiversity Strategy for 2030 ([4]) supports the implementation of the Water Framework Directive's objective by requiring Member States to restore freshwater ecosystems. The Biodiversity Strategy also aims to reduce pollution from fertilisers by 50 % and their use by 20 %.

The Nitrates Directive ([5]) includes measures to prevent nitrates from agriculture polluting ground and surface waters by improving the nitrogen balance.

The Farm to Fork Strategy ([6]) addresses these challenges by setting objectives to reduce nutrient loss from fertilisers (especially nitrogen and phosphorus) by at least 50 % by 2030.

The Towards Zero Pollution for Air, Water and Soil action plan ([7]) released in May 2021 sets out key actions to speed up water pollution reduction.

The Bathing Water Directive ([8]) requires Members States to monitor and assess bathing water for at least two parameters of (faecal) bacteria.

Water use efficiency

The EU strategy on adaptation to climate change ([9]) aims to reduce water use and encourage water efficiency and savings, while at the same time guaranteeing a stable and secure supply of drinking water.

The Water Framework Directive aims to ensure water is used and managed in a sustainable way. To reduce water stress and promote water resource efficiency, a new Regulation on minimum requirements for water reuse for agricultural irrigation ([10]) entered into force in June 2020. The new rules will apply from June 2023.

Clean water and sanitation in the EU: overview and key trends

Monitoring SDG 6 in an EU context focuses on sanitation, water quality and water use efficiency. While the EU has made further progress on access to sanitation, trends for water quality have been mixed over the past few years, with concentrations of some surface and groundwater pollutants rising. Progress on water use efficiency cannot be assessed due to the seasonal variability of the balance between water abstraction and renewable fresh water resources.

Sanitation

Provision of drinking water and the adequate treatment of sewage are matters of public and environmental health. As a vital resource, water is considered a public good in the EU. Water utilities are subject to strict regulation regarding the quality and efficiency of services. The indicators chosen to monitor sanitation are the share of the population having neither a bath, nor a shower, nor indoor flushing toilet in their household, and the share of the population connected to at least secondary waste water treatment.

Most EU citizens have access to basic sanitation and are connected to secondary waste water treatment

1.5 % of the EU population lacked sanitary facilities at home in 2020

Overall, connection rates and the quality of water services in the EU were already high more than 10 years ago, and have continued to improve. The share of the population that have neither a bath, shower, nor indoor flushing toilet in their household fell from 2.2 % in 2015 to 1.5 % in 2020. Data also show that the share of the EU population connected to secondary waste water treatment has increased continuously since 2000, reaching 80.9 % in 2019.

Conventional primary waste water treatment mainly removes suspended solids and only reduces organic water pollution by 20–30 %. Secondary treatment processes, which are typically applied after primary treatment, remove about 70 % of organic pollution. Growth in the share of people connected to secondary treatment indicates that the Urban Waste Water Treatment Directive, which was first implemented in the 1990s, has helped to reduce pollution and improve water quality in Europe's rivers.

Different levels of access to water services and sanitation persist between Member States

Almost every household in the EU had basic sanitary facilities in 2020, and most countries reported that less than 1 % of their population were still living in households without a bath, shower or a flushing toilet. However, in some countries, this share remains comparatively high. In particular, Romania reported figures far above all other Member States, with 21.2 % of the population not having access to basic sanitary facilities in 2020. Relatively high shares were also reported by Lithuania, Bulgaria and Latvia with values between 6.4 % and 7.0 % in the same year. These figures highlight the strong link between access to basic sanitary facilities and poverty, which can be seen across the EU. In 2020, 5.2 % of poor people in the EU lacked access to a bath, shower or toilet in their households, compared with only 0.7 % of those living above the poverty threshold.

Connection to secondary waste water treatment is another important facility for enhancing access to sanitation. Connection rates to secondary treatment have increased slowly but continuously across the EU, with 80.9 % of the EU population connected in 2019. This is about 10 percentage points higher than in 2004, when the connection rate was 70.4 %. Between 2014 and 2019, connection rates increased in almost all reporting Member States. The lowest-scoring countries were in south-east Europe. It is important to note that connection rates are not expected to reach 100 % in most cases because in some areas connection costs can be disproportionately high, in particular for rural areas with a low population density. The Urban Waste Water Treatment Directive only obliges bigger agglomerations to introduce secondary treatment, while requiring smaller agglomerations to apply an appropriate treatment (when waste water is collected) or other alternative solutions to reach the same level of protection for water bodies.

80.9 %
of the EU population were connected to at least secondary waste water treatment in 2019

Water quality

Diffuse pollution by agriculture, accidental spillage of harmful substances and discharge of untreated or insufficiently treated domestic and industrial waste water, as well as atmospheric deposition of pollutants such as mercury, can pose a threat to human and environmental health. These pressures, along with changes to the structure and flow of water bodies, pose a barrier to sustainable development. Water quality monitoring distinguishes between different kinds of chemical pollution such as organic pollution by nutrients, pesticides and pathogens. In this report, water quality is monitored through four indicators looking at nutrients in freshwater and at bathing water quality ([11]).

Improved waste water treatment has reduced organic pollution in European rivers

Heavy organic pollution, caused by municipal waste water and effluents from industry or livestock, can lead to the deoxygenation of water, killing fish and invertebrates. Thanks to improved waste water collection and treatment as well as mature treatment, organic pollution in European rivers has been declining, though the trend has slowed in recent years. A proxy for organic water pollution is the amount of oxygen needed for microbes to digest organic pollution under standard conditions, expressed as biochemical oxygen demand (BOD). BOD values in European rivers range from less than 1 milligram per litre (mg/L) (very clean) to more than 15 mg/L (heavily polluted).

Data available for 18 Member States (see page 124) show an overall decline of BOD in EU rivers, from 2.9 mg/L in 2004 to 2.5 mg/L in 2019. The trend, however, has not been continuous. While BOD levels had been falling until 2011, they had climbed back to 2.8 mg/L by 2015 but have been falling again since then. Overall, BOD levels in EU rivers have fallen by 13.8 % over the past 15 years, and by 2.7 % over the past five years. The overall decrease in BOD values is mainly linked to a general improvement in waste water collection and treatment throughout Europe.

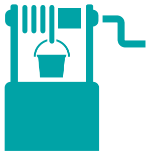
Between 2014 and 2019, the biochemical oxygen demand in EU rivers fell by
2.7 %

Eutrophication is still a major issue for Europe's aquatic environment

An assessment of European waters published by the European Environment Agency (EEA) in 2018 concludes that although nutrient pollution has fallen since the 1990s, it is still the main reason why 28 % of EU surface water bodies ([12]) have not achieved good water quality. In some regions, pollution of rivers with nitrate/ammonia (N) and phosphorous (P) is still causing severe eutrophication in coastal waters. Eutrophication can lead to algal blooms and oxygen depletion of surface waters, which in turn can harm fish, invertebrates and whole ecosystems.

The main sources of nutrient inputs are the use of fertilisers and animal waste in agriculture, as well as poorly treated waste water from industry ([13]). Nitrates (NO_3), among other chemicals, can infiltrate and contaminate groundwater bodies. They are the most common cause of poor chemical status of groundwater in the EU (18 % of groundwater bodies by area across 24 Member States are in poor status because of nitrates) [14]. This is particularly problematic because groundwater is an important source of drinking water in Europe.

Data on nitrate concentrations in EU groundwater are available for 19 Member States (see page 125). They show a long-term stagnation of NO_3 concentrations at around 21 milligrams per litre (mg/L), with a slight upward trend in recent years, increasing by 2.7 % between 2014 and 2019. Additionally, between 2016 and 2019, 14.1 % of groundwater stations showed NO_3 concentrations above the threshold considered unfit for drinking, which is set at 50 mg/L by the Nitrates Directive [15]. The long-term stagnation of nitrate concentrations in EU groundwater is a result of opposing trends for individual groundwater bodies across Member States [16].



Between 2014 and 2019, the concentration of nitrates in EU groundwater increased by

2.7 %

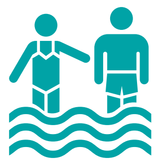
Data on phosphate (PO_4) concentrations in EU rivers are available for 18 Member States (see page 126). They show a marked improvement between 2007 and 2013, after which, however, the trend levelled off and even started increasing again. Thus, while the phosphate concentration of 0.06 mg/L recorded in 2019 is considerably below the values reported in the early 2000s, it is 13.2 % higher than in 2014. The overall positive long-term trend is to some extent the result of measures implemented under the Urban Waste Water Treatment Directive over the past 30 years, especially the introduction of phosphate-free detergents. The recent turnaround may be related to the slower decrease in phosphorus emissions from the agricultural sector [17] as well as increasing phosphorus fertiliser consumption in some Member States [18].

Between 2014 and 2019, the concentration of phosphates in EU rivers increased by

13.2 %

The share of inland bathing waters with excellent water quality has fallen in recent years

Contamination of water by faecal bacteria continues to pose a risk to human health. This is especially the case when it is found at bathing water sites, where it can cause illness among swimmers. Overall, the share of inland water bathing sites with excellent water quality in the EU increased between 2011 and 2017 but has been declining since then. The recent downward trend has been caused by a stagnation in the absolute number of bathing sites with excellent water quality, while the total number of bathing sites included in the assessment rose. According to the latest European Environment Agency (EEA) data, 77.7 % of inland water bathing sites showed excellent bathing water quality in 2020, compared with 81.1 % five years earlier. The major sources of bathing water pollution are sewage and water draining from farmland. Such pollution increases during heavy rains and floods which wash sewage overflow and polluted drainage water into rivers and seas.



77.7 %

of inland water bathing sites in the EU showed excellent bathing water quality in 2020

Water use efficiency

SDG 6 also calls for a focus on water use efficiency in order to use freshwater resources sustainably and reduce water stress. The regionalised water exploitation index (WEI+) aims to illustrate the pressure on renewable freshwater resources due to water demand, which is largely affected by population trends and socio-economic developments; and climate conditions, which control the availability of renewable freshwater resources.

Water stress is low in most EU countries, but shows strong seasonal variability

Water stress occurs when water demand exceeds the available water resources at a specific place and time. Water scarcity is generally considered to occur when the ratio of water abstraction to long-term average available water resources exceeds 20 %, while ratios above 40 % indicate severe water scarcity, meaning the use of freshwater resources is unsustainable (19). A look at annual national mean WEI+ values shows water stress appears to be a local phenomenon in Europe. At the EU level, the annual WEI+ is rather stable, increasing only slightly from 8.0 % in 2002 to 8.4 % in 2017.

24
out of 27 Member States reported sustainable water exploitation in 2017

In 2017, Spain and Greece showed water stress with mean annual WEI+ values above 20 %, while Cyprus showed severe water stress with a mean annual WEI+ value of 70 %. However, annual national values can mask regional and seasonal water stress, which is in fact common in many European regions. This is particularly the case in a number of large metropolitan areas across the continent and in southern Europe, where more than half of the population regularly experiences water stress. In southern Europe, water stress is typically greatest over the summer months, when water demand from agriculture and tourism is at its highest and precipitation is low. In contrast, metropolitan areas with high energy production tend to face water stress during autumn and winter.

Although water stress has become a constant companion in the EU, it is still a local and seasonal phenomenon (20). An assessment of river basin districts between 1990 and 2015 by the EEA concluded that, over the 15-year period from 2000 to 2015, water scarcity affected on average 14 % of the total EU territory, with the highest values observed in 2000 (21 %) and 2015 (20 %). In 2015 — a year with relatively high actual water evaporation from land surface and transpiration from vegetation and low precipitation levels — the share of the European population exposed to water scarcity was around 30 %. Most of these people were living in densely populated cities, on small Mediterranean islands and in agricultural areas of southern Europe (21).

Presentation of the main indicators

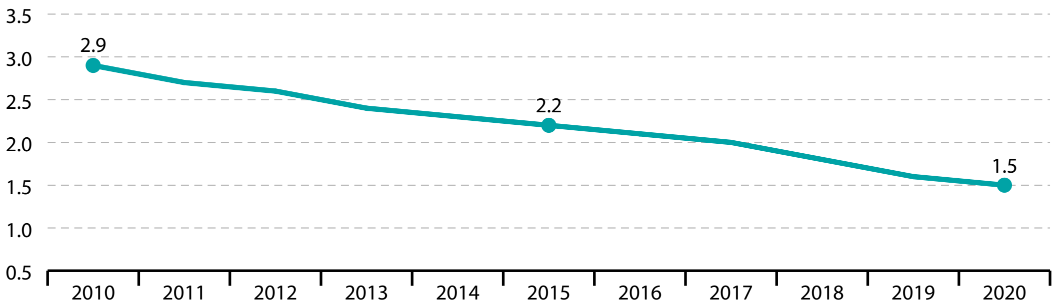
LONG TERM
2010–2020

SHORT TERM
2015–2020

People living in households without basic sanitary facilities (such as bath, shower, indoor flushing toilet)

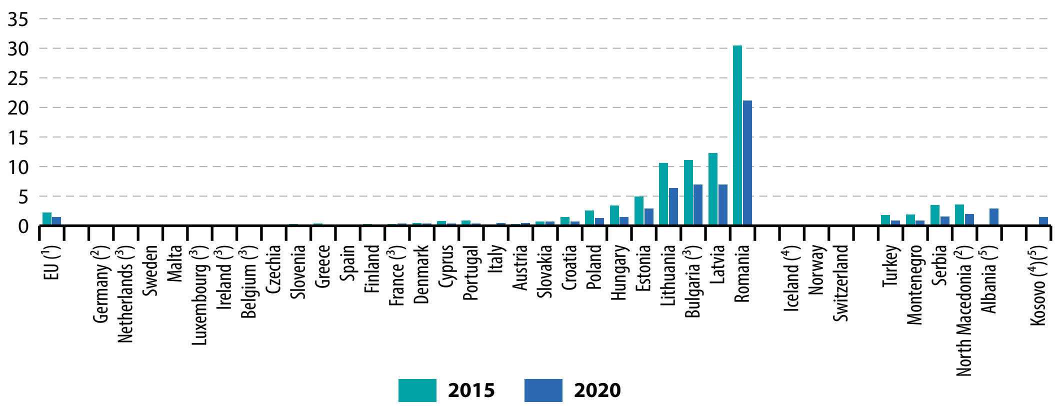
This indicator reflects the share of total population having neither a bath, nor a shower, nor an indoor flushing toilet in their household. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC).

Figure 6.1: **Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, EU, 2010–2020**
(% of population)



Note: Estimated data.
Compound annual growth rate (CAGR): – 6.4 % per year in the period 2010–2020; – 7.4 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_06_10)

Figure 6.2: **Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, by country, 2015 and 2020**
(% of population)



([1]) Estimated data.
([2]) 2019 data (instead of 2020).
([3]) Break(s) in time series between the two years shown.
([4]) 2018 data (instead of 2020).
([5]) No data for 2015.

Source: Eurostat (online data code: sdg_06_10)

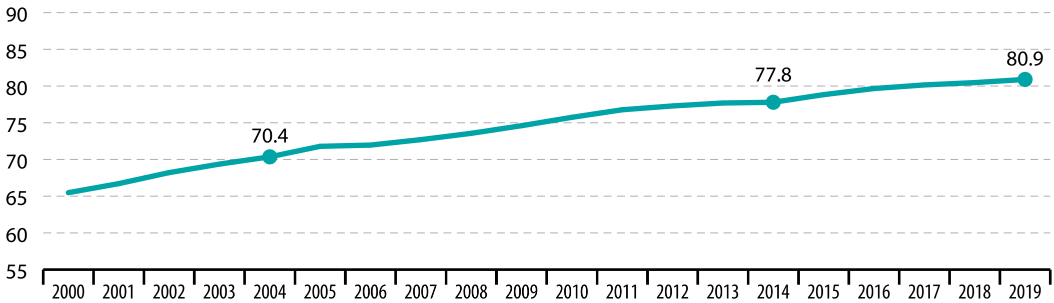
Population connected to at least secondary waste water treatment

LONG TERM 2004–2019

SHORT TERM 2014–2019

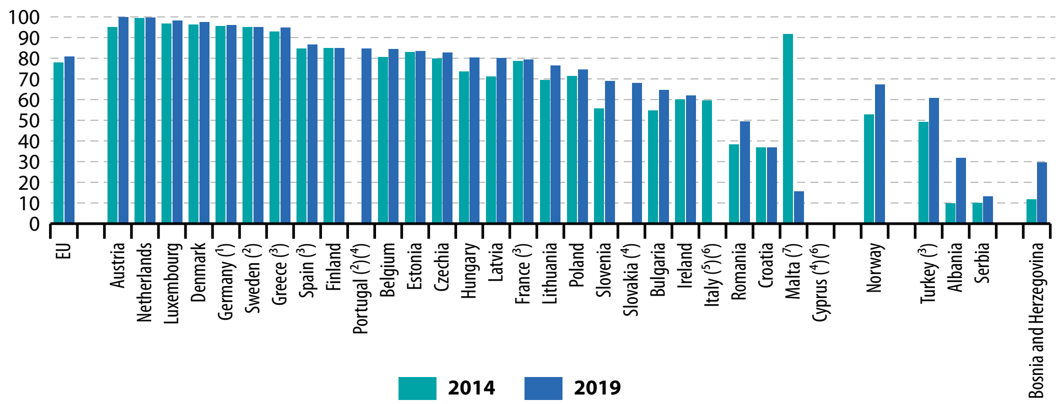
This indicator measures the percentage of the population connected to waste water treatment systems with at least secondary treatment. Thereby, waste water from urban or other sources is treated by a process generally involving biological treatment with a secondary settlement or other process that removes organic material and reduces its biochemical oxygen demand (BOD) by at least 70 % and chemical oxygen demand (COD) by at least 75 %. Data presented in this section stem from the Water Statistics of the European Statistical System (ESS).

Figure 6.3: Population connected to at least secondary waste water treatment, EU, 2000–2019
(% of population)



Note: Eurostat estimates.
Compound annual growth rate (CAGR): 0.9 % per year in the period 2004–2019; 0.8 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_06_20)

Figure 6.4: Population connected to at least secondary waste water treatment, by country, 2014 and 2019
(% of population)



(1) 2016 data (instead of 2019).
(2) 2017 data (instead of 2019).
(3) 2018 data (instead of 2019).
(4) No data for 2014.
(5) 2015 data (instead of 2014).
(6) No data for 2019.
(7) Jumps in the time series are caused by performance problems of Malta's waste water treatment plants, resulting in them not being classified as secondary treatment in all years.

Source: Eurostat (online data code: sdg_06_20)

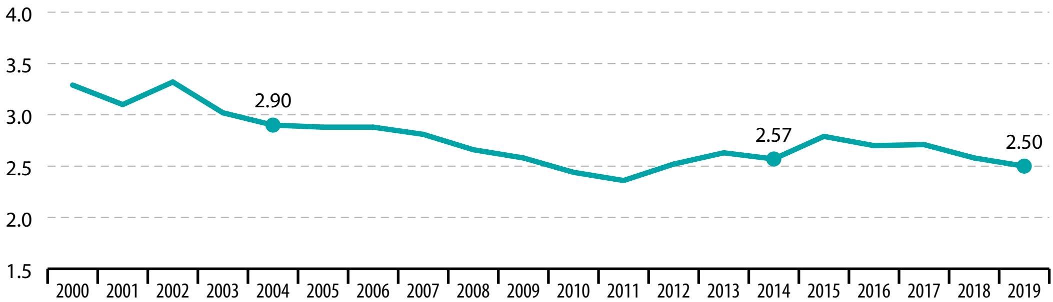
LONG TERM
2004–2019

SHORT TERM
2014–2019

Biochemical oxygen demand in rivers

This indicator measures the mean annual five-day biochemical oxygen demand (BOD5) in rivers, weighted by the number of measuring stations. BOD5 is a measure of the amount of oxygen that aerobic microorganisms need to decompose organic substances in a water sample over a five-day period in the dark at 20 °C. High BOD5 values are usually a sign of organic pollution, which affects water quality and aquatic environment. Organic pollution caused by discharges from waste water treatment plants, industrial effluents and agricultural run-off increase BOD. The cleanest rivers have a five-day BOD of less than 1 milligram per litre (mg/L). Moderately polluted rivers show values ranging from 2 to 8 mg/L. Data presented in this section stem from the EEA Waterbase database on the status and quality of Europe's rivers.

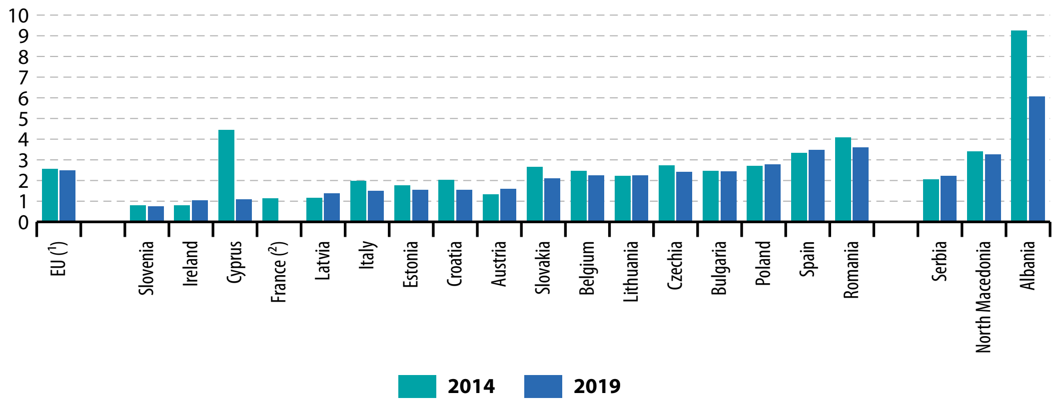
Figure 6.5: **Biochemical oxygen demand in rivers, EU, 2000–2019**
(mg O_2 per litre)



Note: 'EU' refers to an aggregate based on 18 Member States.
Compound annual growth rate (CAGR): – 1.0 % per year in the period 2004–2019; – 0.6 % per year in the period 2014–2019.

Source: EEA (Eurostat online data code: sdg_06_30)

Figure 6.6: **Biochemical oxygen demand in rivers, by country, 2014 and 2019**
(mg O_2 per litre)



(1) 'EU' refers to an aggregate based on 18 Member States. Denmark, France and Luxembourg are not included in the calculation due to interrupted time series. Data for Finland and Sweden are not shown in the graph due to the low number of measuring stations compared with the country size, but are included in the aggregated EU data.
(2) No data for 2019.

Source: EEA (Eurostat online data code: sdg_06_30)

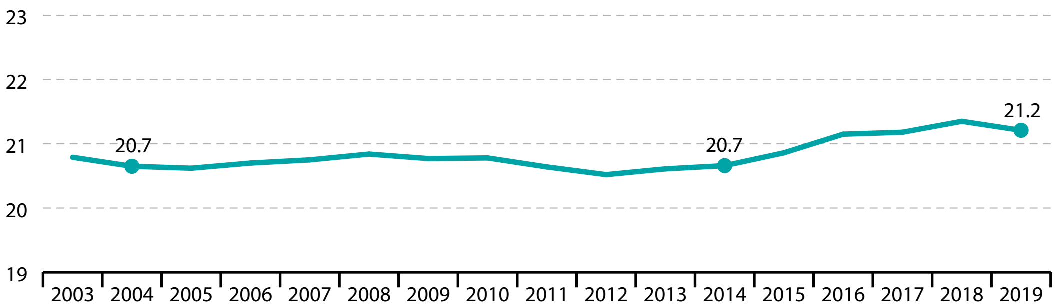
Nitrate in groundwater

LONG TERM 2004–2019

SHORT TERM 2014–2019

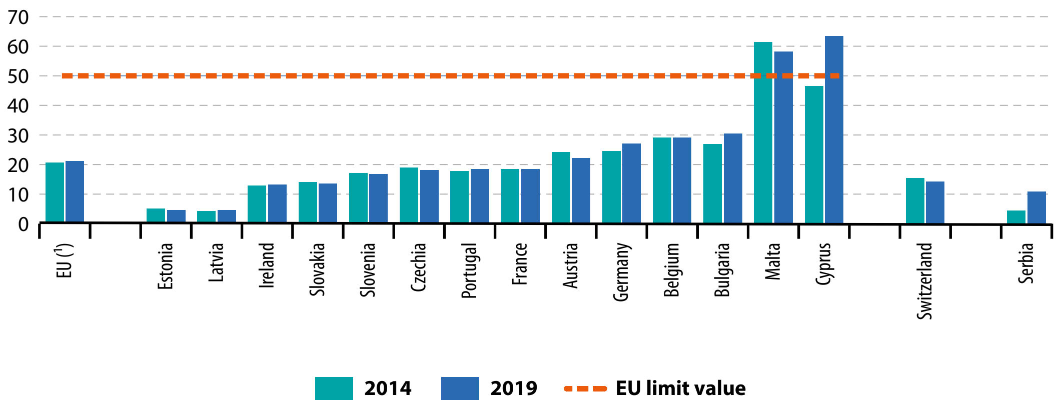
This indicator refers to concentrations of nitrate (NO_3) in groundwater measured as milligrams per litre (mg NO_3/L). Data are taken from well samples and aggregated to annual average concentrations for groundwater bodies in Europe. Only complete series after inter/extrapolation are included. The indicator is relatively robust in presenting the overall trend in water quality, however, the distribution of measuring stations over groundwater bodies might mask exceedances of nitrate levels in certain polluted areas. The data stem from the EEA Waterbase database on the status and quality of Europe's rivers.

Figure 6.7: **Nitrate in groundwater, EU, 2003–2019**
(mg NO_3 per litre)



Note: 'EU' refers to an aggregate based on 19 Member States. The data are presented as a smoothed average over a four-year period. Compound annual growth rate (CAGR): 0.2 % per year in the period 2004–2019; 0.5 % per year in the period 2014–2019.
Source: EEA (Eurostat online data code: sdg_06_40)

Figure 6.8: **Nitrate in groundwater, by country, 2014 and 2019**
(mg NO_3 per litre)



([1]) 'EU' refers to an aggregate based on 19 Member States. Denmark, Spain, Italy, Lithuania and Finland are not shown in the graph due to the low number of measuring stations compared with the country size but are included in the aggregated EU data. The data are presented as a smoothed average over a four-year period.
Source: EEA (Eurostat online data code: sdg_06_40)

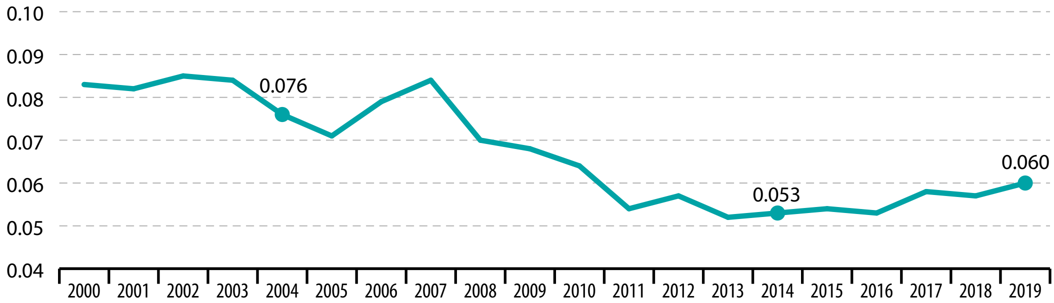
LONG TERM
2004–2019

SHORT TERM
2014–2019

Phosphate in rivers

This indicator measures the concentration of phosphate (PO_4) per litre in the dissolved phase from water samples from river stations and aggregated to annual average values. At high concentrations phosphate can cause water quality problems, such as eutrophication, by triggering the growth of aquatic plants including algae. The data stem from the EEA Waterbase database on the status and quality of Europe's rivers.

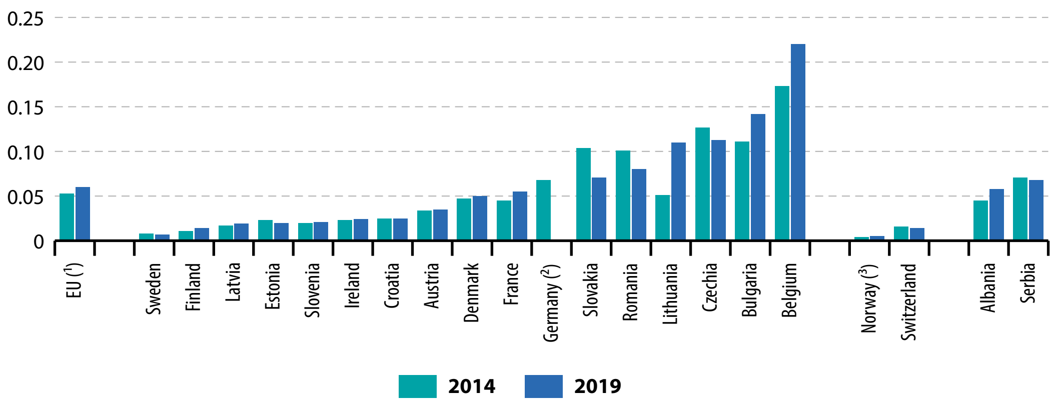
Figure 6.9: Phosphate in rivers, EU, 2000–2019
(mg PO_4 per litre)



Note: 'EU' refers to an aggregate based on 18 Member States.
Compound annual growth rate (CAGR): – 1.6 % per year in the period 2004–2019; 2.5 % per year in the period 2014–2019.

Source: EEA (Eurostat online data code: sdg_06_50)

Figure 6.10: Phosphate in rivers, by country, 2014 and 2019
(mg PO_4 per litre)



(1) 'EU' refers to an aggregate based on 18 Member States. Germany, Cyprus and Luxembourg are not included in the calculation due to interrupted time series. Spain and Italy are not shown in the graph due to the low number of measuring stations compared with the country size but are included in the aggregated EU data.
(2) No data for 2019.
(3) 2017 data (instead of 2019).

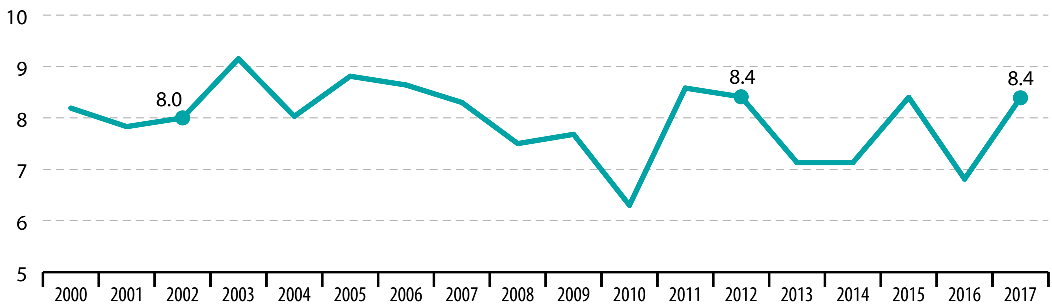
Source: EEA (Eurostat online data code: sdg_06_50)

Water exploitation index (WEI+)

Assessment of progress not possible due to seasonal variability of the water balance

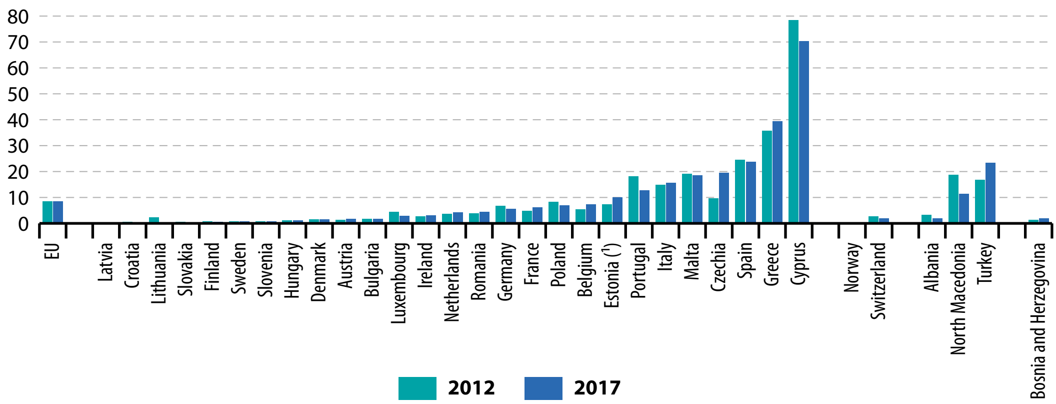
The regionalised water exploitation index (WEI+) measures total fresh water use as a percentage of the long-term annual average available water (LTAA) from renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much is returned after use to the environment via basins. The difference between water abstraction and return is regarded as water consumption, and in combination with LTAA, illustrates the pressure on renewable freshwater resources due to water abstraction. In the absence of Europe-wide agreed formal targets, values above 20 % are generally considered to be a sign of water scarcity, while values equal or greater than 40 % indicate situations of severe water scarcity [22], meaning the use of freshwater resources is unsustainable. Annual calculations of the WEI+ at national level do not reflect uneven spatial and seasonal distribution of resources and may therefore mask water stress which occurs on a seasonal or regional basis. The indicator is a result of data modelling by the EEA based on data from the WISE SoE-Water quantity database (WISE 3) and other open sources (JRC, Eurostat, OECD, FAO) and including gap filling methods.

Figure 6.11: Water exploitation index (WEI+), EU, 2000–2017
(% of renewable water resources)



Source: EEA (Eurostat online data code: sdg_06_60)

Figure 6.12: Water exploitation index (WEI+), by country, 2012 and 2017
(% of renewable water resources)



(¹) 2015 data (instead of 2017).

Source: EEA (Eurostat online data code: sdg_06_60)

Notes

(1) European Commission (2021), *Environment action programme to 2030*.
(2) Council of European Communities (1991), *Council Directive 91/271/EEC concerning urban waste water treatment*.
(3) European Parliament and Council of the European Union (2000), *Directive 2000/60/EC establishing a framework for the Community action in the field of water policy*.
(4) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.
(5) Council of the European Communities (1991), *Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources*.
(6) European Commission (2020), *Farm to Fork Strategy — For a fair, healthy and environmentally-friendly food system*.
(7) European Commission (2021a), *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' — Pathway to a Healthy Planet for All*, COM(2021) 400 final.
(8) European Parliament and Council of the European Union (2006), *Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC*.
(9) European Commission (2021b), *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions — Forging a climate-resilient Europe — The new EU strategy on adaptation to climate change, COM(2021) 82 final*.
(10) European Union (2020), *Regulation (EU) 2020/741 of the European Parliament and of the Council of 25 May 2020 on minimum requirements for water reuse*.
(11) Chemical water quality is not evaluated in this report because of a lack of a comprehensive series of suitable data.
(12) European Environment Agency (2018), *European waters — Assessment of status and pressures 2018,* EEA Report No 7/2018, p. 63.
(13) European Environment Agency (2017), *Emissions of pollutants to Europe's waters — sources, pathways and trends*, ETC/ICM report, p. 17.
(14) European Environment Agency (2018), *European waters — Assessment of status and pressures 2018,* EEA Report No 7/2018, p. 52.
(15) European Commission (2021), *Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2016–2019*, p. 4.
(16) European Environment Agency (2020), *Nutrients in freshwater in Europe*.
(17) Ibid.
(18) Eurostat (2018), *Statistics Explained, Agri-environmental indicator — mineral fertiliser consumption*.
(19) European Environment Agency (2020), *Use of freshwater resources in Europe*.
(20) European Environment Agency (2021), *Water resources across Europe — confronting water stress: an updated assessment*, EEA Report No 12/2021.
(21) European Environment Agency (2018), *Use of freshwater resources (CSI 018)*, Indicator assessment; and European Environment Agency (2018), *Environmental indicator report 2018*, EEA Report No 19/2018.
(22) European Environment Agency (2020), *Use of freshwater resources in Europe*.

7 Ensure access to affordable, reliable, sustainable and modern energy for all

SDG 7 calls for ensuring universal access to modern energy services, improving energy efficiency and increasing the share of renewable energy. To accelerate the transition to an affordable, reliable and sustainable energy system that fulfils these demands, countries need to facilitate access to clean energy research and technology and to promote investment in resource- and energy-efficient solutions and related infrastructure.

Everyday life and the workings of the economy depend on reliable and affordable energy services, such as electricity supply, heating and cooling, and transport services. Energy enables the smooth functioning of all economic sectors, from micro-enterprises to large business, from agriculture to mining, manufacturing, construction and services. The EU still relies heavily on fossil fuels for its energy and faces a number of challenges to securing affordable, reliable and sustainable energy supplies. Reducing total energy consumption and using renewable energies, while ensuring security of supply, competitiveness and access to affordable energy for all its citizens, are some of the ways the EU can contribute to achieving SDG 7. As reflected in the 'Delivering on the European Green Deal' package, increased energy efficiency and a shift towards renewable energy production are crucial for the EU, especially in light of the climate crisis.

Table 7.1: Indicators measuring progress towards SDG 7, EU

Indicator		Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Energy consumption				
Energy consumption	Primary energy consumption	↑ (1)	↑ (1)	page 138
	Final energy consumption	↑ (1)	↑ (1)	
Final energy consumption in households per capita		↗	↘	page 140
Energy productivity		↑	↑	page 141
Energy supply				
Share of renewable energy in gross final energy consumption		↑ (1)	↑ (1)	page 142
Energy import dependency		↗	↘	page 143
Access to affordable energy				
Population unable to keep home adequately warm		↑ (2)	↑	page 144

(*) Multi-purpose indicator.
(1) Assessment against the EU energy targets for 2030 that were in place at the time of writing.
(2) Past 10-year period

Table 7.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU's Energy Union [1] addresses the different aspects of SDG 7 'Affordable and clean energy'. This section provides an overview of some of the most recent and relevant initiatives (also see the Commission's website on energy). For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

The European Green Deal [2] with its 'Delivering on the European Green Deal' package envisages the decarbonisation of Europe's energy systems in order to reach climate neutrality by 2050. To reach the new EU climate target for 2030 [3], the Commission proposed an interconnected set of measures in the areas of energy, transport, taxation and climate policies, also called 'Fit for 55'.

Energy consumption

The amended Energy Efficiency Directive [4] aims to improve energy efficiency by at least 32.5 % by 2030 compared with the 2007 reference year. The Commission proposed a revision in July 2021 [5], which implements energy efficiency as a priority across all sectors. It also increases the ambition of the 2030 target and makes it binding for the EU as a whole. The new ambition translates into a target of increasing primary energy efficiency by 39 % and of final energy efficiency by 36 % compared with the 2007 reference year [6].

Energy supply

The Renewable Energy Directive [7] aims at a share of renewable energy sources in final energy consumption of at least 32 %. The Commission proposed a revision of the Directive in July 2021 [8], including increasing the target to 40 %. It also proposed strengthened measures for transport, heating and cooling, and a more circular energy system.

REPowerEU is a new strategic plan on reducing the EU's dependence on energy imports, particularly from Russia, due to insecurity and high prices following Russia's invasion of Ukraine. In addition, the Commission presented a Communication on security of supply and affordable energy prices with focus a on immediate measures to prepare for next winter.

Access to affordable energy

The European Pillar of Social Rights [9] lists energy among the essential services that everyone should have access to. With its EU Energy Poverty Observatory [10], the EU seeks to help Member States in their efforts to decrease energy poverty and ensure access to affordable energy.

The European Commission issued recommendations on energy poverty [11] as part of the renovation wave [12], proposing actions for Member States to alleviate energy poverty as well as the proposal for a Council Recommendation on ensuring a fair transition towards climate neutrality to complement the package on delivering the Green Deal presented in July 2021. The Commission has already adopted a Communication on tackling rising energy prices, which highlights key elements to mitigate energy poverty and address the immediate impact of recent price increases.

Affordable and clean energy in the EU: Overview and key trends

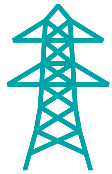
Monitoring SDG 7 in an EU context involves looking at developments in energy consumption, energy supply and access to affordable energy. As shown in Table 7.1, good progress has been made in almost all areas over the past few years. The largest progress was observed in energy consumption. The measures taken in response to the COVID-19 pandemic and the related restrictions on public life and lower economic activity remarkably reduced consumption in 2020. Thus, the EU was able to reach its 2020 target and, based on the progress achieved so far, including the pandemic's effects in 2020, appears to be on track towards its 2030 target. The reduction in energy consumption also helped with progress on energy supply. The EU met its 2020 renewable energy target and similarly appears to be on track to meeting its 2030 target. Moreover, energy import dependency saw a small improvement in 2020, although overall it has moved away from the SDG objective over the past five years. In contrast, access to affordable energy has been improving over the past few years, even though 2020 saw an increase in the number of people unable to keep their home adequately warm. It is important to note that the most recent data presented in this chapter refer to 2020 and therefore do not yet reflect the recent developments related to the rise in energy prices and the effects of Russia's invasion of Ukraine.

Energy consumption

Increasing energy efficiency is one of the main pillars for reaching an affordable, reliable, sustainable and modern energy system as envisaged in SDG 7. Efficient energy systems reduce consumption and costs, decrease energy dependencies and diminish the environmental and climate impacts linked to energy supply and use. The EU consequently aims to improve energy efficiency along the whole energy supply chain.

Measures against the COVID-19 pandemic have helped to put the EU on track towards its 2030 energy efficiency target

The EU aims to increase its energy efficiency by at least 20 % by 2020 and 32.5 % by 2030. Because these targets were set in relation to business-as-usual projections of energy consumption, they have been translated into absolute levels of energy consumption for monitoring purposes. This means that by 2020, the unofficial milestone for the EU without the UK was that energy consumption should not exceed 1 312 million tonnes of oil equivalent (Mtoe) of primary energy and 959 Mtoe of final energy ([13]). By 2030, the EU should not consume more than 1 128 Mtoe of primary and 846 Mtoe of final energy ([14]). The proposed new 2030 target would mean that the EU should consume no more than 1 023 Mtoe of primary and 787 Mtoe of final energy ([15]).



1 236.5
Mtoe of primary energy were consumed in the EU in 2020

The EU's primary energy consumption has seen a general downward trend since 2005, reaching 1 236.5 Mtoe in 2020. Over the whole period, primary energy consumption fell by 261.0 Mtoe or 17.4 %. In comparison, final energy consumption fell by 133.9 Mtoe or 12.9 %, reaching 906.8 Mtoe in 2020. Long-term progress on both fronts was due to various factors, including a structural transition towards less energy-intensive industries in many Member States and improvements in end-use efficiency in the residential sector. However, increases in energy consumption

906.8
Mtoe of final energy were consumed in the EU in 2020

between 2014 and 2017 partly reflect a return to average heating demand after an exceptionally warm 2014 and stronger year-on-year economic growth, which could not be offset by energy savings ([16]). Small reductions in primary energy consumption and stabilisation of final energy consumption in 2018 and 2019 may be traced back to a general increase in energy efficiency. However, this improvement was partly offset by higher consumption in the service sector, rising industrial production and growth in the number of households ([17]).

The remarkable drop in energy consumption of more than 8 % from 2019 to 2020 was mainly a result of measures taken to tackle the COVID-19 pandemic and the related restrictions on public life and lower economic activity. In addition, long-term trends such as the further increase in energy efficiency and of renewable energies in the energy mix ([18]), as well as comparatively mild weather in 2020, may have further helped to reduce energy consumption ([19]). As a result, the EU met its 2020 energy efficiency target. If the short-term trend observed between 2015 and 2020 continues, the EU would also meet its 2030 reduction targets for primary and final energy consumption. However, it can be expected that the economic recovery in 2021 has led to an increase in energy consumption (see the section on COVID-19 impacts on page 29), although it might remain below 2019 levels as the pandemic continues to shape energy and economic activities ([20]). Therefore, additional energy efficiency improvements seem necessary to ensure the EU meets its 2030 target.

EU citizens' energy consumption at home remained stable

Households account for about a quarter of final energy consumption. At home, people use energy in particular for heating, cooling, cooking, lighting, sanitary purposes and appliances. The level of household energy consumption mainly depends on outdoor temperatures, energy performance of buildings, use and efficiency of electrical appliances, and behaviour and economic status of inhabitants (for example, their desired or affordable level of thermal comfort, frequency of clothes washing, use of TV-sets, games and lighting preferences).

Household energy consumption appears to have stagnated over the past five years. In 2020, the average household energy consumption was 555 kilograms of oil equivalent (kgoe) per EU inhabitant, which is just about 0.5 % more than in 2015.

555
kgoe of final energy were consumed by each EU inhabitant at home in 2020

When viewed over the longer term, efficiency improvements, in particular in space heating, seem to have balanced the effect of population growth and increases in the number and size of dwellings. Since 2005, energy consumption per EU inhabitant has fallen by 9.3 %, with a slight downward trend in total household energy consumption offsetting a 2.8 % or 12.0 million ([21]) increase in the population over the same period.

The EU has increased its energy productivity

Recent trends in Europe point to a decoupling of economic growth from energy consumption, which is measured here using gross domestic product (GDP) and gross available energy (GAE) respectively. Between 2005 and 2020, GAE fell by 16.5 % with half of the reduction taking place in 2020. Over the same period, GDP grew by 13.1 % ([22]). As a result, energy productivity — which measures GDP per unit of energy input — has continuously increased from EUR 6.3 per kgoe in 2005 to EUR 8.6 per kgoe in 2020.

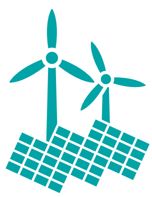
In 2020, the EU's energy productivity was
EUR 8.6
per kgoe

Energy supply

To achieve the SDG 7 aim of ensuring an affordable, clean and secure energy system, the EU is seeking to increase the share of renewable energy in gross final energy consumption to at least 32 % by 2030 ([23]). Most renewable energy sources are considered to be practically inexhaustible or renew within a human lifetime. In contrast, fossil energy sources regenerate over millions of years and are the main source of man-made greenhouse gas (GHG) emissions, thus contributing significantly to the climate crisis. In addition, fossil fuels such as natural gas and crude oil are mainly imported from outside the EU, exposing consumers to significant costs and to the risk of supply shortages, for example due to geopolitical conflicts. The risks increase as dependency on a single country grows. Therefore, the EU seeks to increase domestic energy production in particular from renewable energy sources, reduce its energy consumption, and build and update infrastructure which will allow clean energy to be distributed across the EU.

The share of renewables has kept rising, putting the EU on track to meeting its 2030 target

Use of renewable energy has grown continuously in the EU, with its share doubling since 2005 when renewables covered only 10.2 % of gross final energy consumption. By 2020, this figure had reached 22.1 %. Reductions in investment costs, more efficient technologies, supply chain improvements and support schemes for renewable energy sources have driven this increase ([24]).



22.1 %
of the energy consumed in the EU in 2020 came from renewable sources

Due to this steady growth, the EU met its 2020 target of increasing the share of renewable energy to 20 %. The EU appears furthermore on track to meeting the 32 % target (and the proposed 40 %) in 2030. However, the measures taken against the COVID-19 pandemic reduced final energy consumption in 2020, increasing the share of renewables in gross final energy consumption by 11.1 % from 2019 to 2020 (from 19.9 % in 2019 to 22.1 % in 2020). This rapid increase is exceptional and might partly be reversed with final energy consumption partially returning to pre-pandemic times.

The share of renewable energy grew in all of the three areas monitored here, namely electricity, heating and cooling, and transport. In 2020, the share of renewables was highest in electricity generation at 37.5 %, followed by heating and cooling at 23.1 %, and transport at 10.2 %. Since 2005, the share of renewable energy in transport has increased more than five-fold, up from only 1.8 %. If the trend continues at this pace, the EU will meet its 2030 target for renewables to supply at least 14 % of the energy consumed in road and rail transport ([25]). The second largest increase was realised in electricity generation where renewables doubled their share. Both the share of renewables in electricity and in transport energy consumption saw a significant increase in 2020 compared with 2019 due to the reduction of energy consumption in both sectors. The progress in the share of renewables in heating and cooling was in line with former years while energy consumption in buildings remained relatively stable.

In 2020, the share of renewable energy in gross final energy consumption varied widely across Member States, due to differences in the availability of renewable sources and financial and regulatory support. Sweden had a substantial lead with a share of 60.1 % followed by Finland and Latvia with shares of 43.8 % and 42.1 %, respectively. These particularly high shares were reached through the use of hydropower and solid biofuels, which are considered to be more ecologically friendly than conventional energy sources but can still negatively impact other SDGs such as those on health, water and marine and terrestrial ecosystems ([26]). Still, wind and solar energy have also increasingly contributed to the growth of renewable energy in final energy consumption in most EU countries.

Imports of fossil fuels still cover more than half of the EU's energy demand

Despite continuous growth in renewable energy sources over the past decade, fuel imports from non-EU countries remained an important source for meeting the EU energy needs, contributing 57.5 % of gross available energy (GAE) — as measured by net imports (imports minus exports) — in 2020. This is almost the same share as in 2005, when imports covered 57.8 %. This stagnation can be explained by two opposing developments. On the one hand, the EU reduced its energy consumption and increased the use of domestic renewables. On the other hand, however, the EU saw a reduction in the primary production of fossil fuel because of exhausted or uneconomical domestic sources, particularly natural gas ([27]). Therefore, in 2020, net imports were highest for oil and petroleum products (97.0 % imported), followed by natural gas (83.6 % imported) and solid fuels (predominantly coal) (35.9 % imported). Net imports of renewable energy including biofuels accounted for 8.5 % of gross available renewable energy in 2020 and just 1.7 % of total net imports ([28]).

Net imports amounted to 57.5 % of the gross available energy in the EU in 2020

Russia continued to be the main supplier of energy to the EU in 2020, accounting for 43.6 % of gas, 28.9 % of petroleum product and 53.7 % of solid fuel imports from outside the EU. The next largest suppliers of gas and petroleum products were European countries that are not part of the EU (mainly Norway and the UK), delivering 25.4 % of gas and 16.5 % of petroleum imports. The second largest source for solid fuels was North America at 18.8 % ([29]). All percentages reported here refer to shares of total imports from outside the EU only, so do not account for energy traded between Member States.

In 2020, all Member States were net importers of energy, with 16 importing more than half of their total energy consumption from other countries (EU countries and non-EU countries). Countries with the highest shares of imports in 2020 were the island countries Malta (97.6 %) and Cyprus (93.1 %) as well as Luxembourg (92.5 %), all of which covered virtually all of their energy needs with imports.

Access to affordable energy

SDG 7 emphasises the need for affordable energy for reasons of social equality and justice. The European Pillar of Social Rights also places energy among the essential services everyone should have access to. The inability to keep the home adequately warm is a survey-based indicator used to monitor access to affordable energy throughout the EU. A lack of access to affordable energy is strongly associated with low levels of income in combination with high expenditure on energy and poor building efficiency standards ([30]).

Access to affordable energy was improving until the onset of the pandemic

The EU has made some progress on improving access to affordable energy over the past few years. Between 2012 and 2019, the share of people unable to afford to keep their homes adequately warm fell steadily, reaching 6.9 % in 2019. However, in 2020 the share rose again to 8.2 %. This increase was likely to have been caused by the COVID-19 pandemic and a change in the German EU-SILC survey's methodology (see also the chapter on SDG 1 'No Poverty' on page 37). This change resulted in the share of people unable to afford to keep their homes adequately warm in Germany growing from 2.5 % in 2019 to 9.0 % in 2020. Only nine other Member States saw an increase from 2019 to 2020, but mostly of less than one percentage point.

8.2 % of the EU population were unable to keep their home adequately warm in 2020

In 2020, 20.0 % of people with an income below the poverty threshold reported an inability to keep their home adequately warm, which is 1.8 percentage points higher than in 2019. This means that around a fifth of the poorer EU population suffered from energy poverty. In contrast, only 5.8 % of people with an income above the poverty threshold could not afford to keep their homes adequately warm — an increase of 1.2 percentage points when compared with 2019.

In 2020, 20 Member States indicated that less than 10 % of their population reported an inability to keep their homes adequately warm. Northern and most western European countries, with particularly cold winters, had the lowest shares of people without affordable access to heating.

In contrast, the lack of adequate warmth appeared to be a problem particularly in southern and south-eastern Europe. This distribution can be traced mainly to poor building energy efficiency, including the lack of suitable heating systems and insulation, leading to higher heating costs. In addition, the generally lower income levels in these regions affect housing standards and the ability to pay for fuel. The existence and design of financial interventions by the respective governments might also play an important role in alleviating energy poverty and helping to keep homes adequately warm ([31]).

Presentation of the main indicators

There are a variety of energy indicators to measure energy consumption at different stages of the supply chain and to measure progress towards the EU energy targets. The following box lists and explains the indicators and the differences between them.

Definitions of energy terms/concepts:

Gross available energy (GAE): represents the total energy demand of a country. It is defined as: primary production + recovered/recycled products + imports – exports + stock changes.

Gross inland energy consumption (or gross inland consumption; GIC): represents energy demand including international aviation but excluding maritime bunkers. It is defined as: gross available energy – international maritime bunkers.

Total energy supply: represents the total energy delivered and/or consumed in a country excluding deliveries to international aviation and international marine bunkers. It is defined as: gross inland energy consumption – international aviation.

Primary energy consumption (PEC): represents a country's total energy demand including consumption of the energy sector itself, losses during transformation and distribution, and the final consumption by end users. This means it excludes, for example, natural gas used in non-energy products, such as chemicals. It is defined as: gross inland energy consumption – non-energy use of energy carriers.

Primary energy consumption (2020–2030): measures the progress towards the EU's 2020 and 2030 energy efficiency targets. It deviates from primary energy consumption only in that it excludes ambient heat. It is defined as: primary energy consumption – gross inland consumption of ambient heat (heat pumps).

Gross final energy consumption (or gross energy consumption): is the basis for measuring the share of renewable energies according to Directive 2009/28/EC on the promotion of renewable energies. It represents the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, the consumption of electricity and heat by the energy branch for electricity, heat and transport fuel production, and losses of electricity and heat in distribution and transmission.

Final energy consumption (FEC) (or final consumption – energy use): measures a country's energy use by end users, such as households, industry and transport. It excludes the energy used by the energy sector itself and losses incurred during energy transformation and distribution and any non-energy use of energy carriers. It is defined as: primary energy consumption – consumption by the energy sector – transformation/distribution losses – statistical differences.

Final energy consumption (2020–2030): measures the progress towards the EU's 2020 and 2030 energy efficiency targets. It deviates from final energy consumption by excluding ambient heat and including international aviation and energy consumption of blast furnaces. It is defined as: final energy consumption – final energy consumption of ambient heat (heat pumps) + international aviation + transformation input blast furnaces (all products) – transformation output blast furnaces (all products) + energy sector blast furnaces (all fossil fuels).

LONG TERM 2005–2020 * **

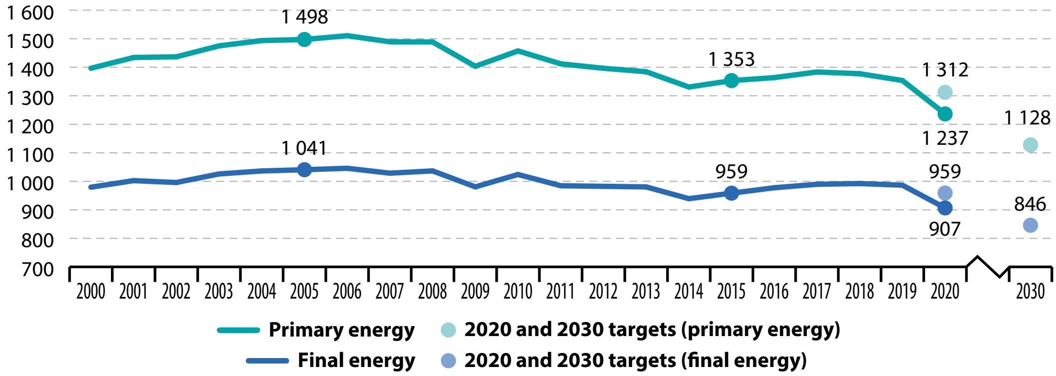
SHORT TERM 2015–2020 * **

* Primary ** Final

Energy consumption

This indicator measures a country's total energy needs excluding all non-energy use of energy carriers (such as natural gas used for producing chemicals rather than for combustion). Primary energy consumption represents a country's total energy demand before of any energy transformation, excluding energy carriers used for non-energy purposes. In comparison, final energy consumption covers the energy consumed by end users, such as industry, transport, households, services and agriculture.

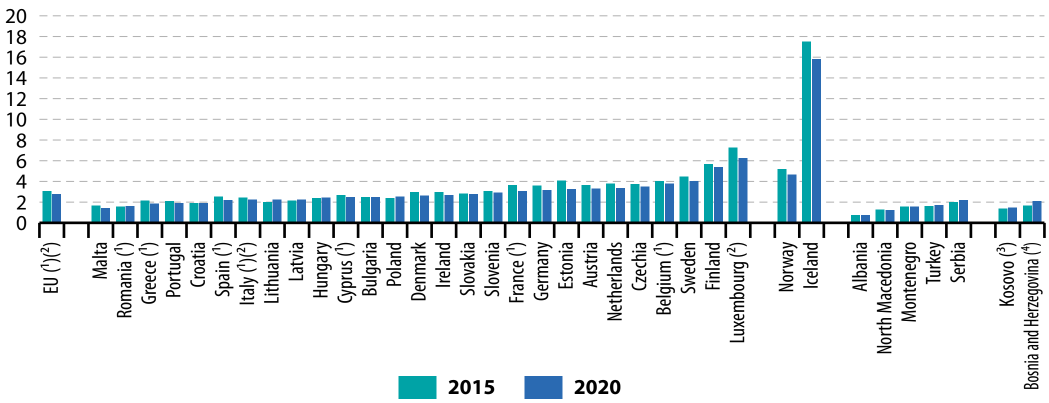
Figure 7.1: Primary and final energy consumption, EU, 2000–2020
(million tonnes of oil equivalent (Mtoe))



Compound annual growth rate (CAGR) assessed against the EU energy targets for 2030 that were in place at the time of writing: primary energy consumption: – 1.3 % per year (observed) and – 1.1 % per year (required to meet the 2030 target) in the period 2005–2020; – 1.8 % per year (observed) and – 1.2 % per year (required to meet the 2030 target) in the period 2015–2020; final energy consumption: – 0.9 % per year (observed) and – 0.8 % per year (required to meet the 2030 target) in the period 2005–2020; – 1.1 % per year (observed) and – 0.8 % per year (required to meet the 2030 target) in the period 2015–2020.

Source: Eurostat (online data codes: sdg_07_10 and sdg_07_11)

Figure 7.2: Primary energy consumption, by country, 2015 and 2020
(tonnes of oil equivalent per capita)

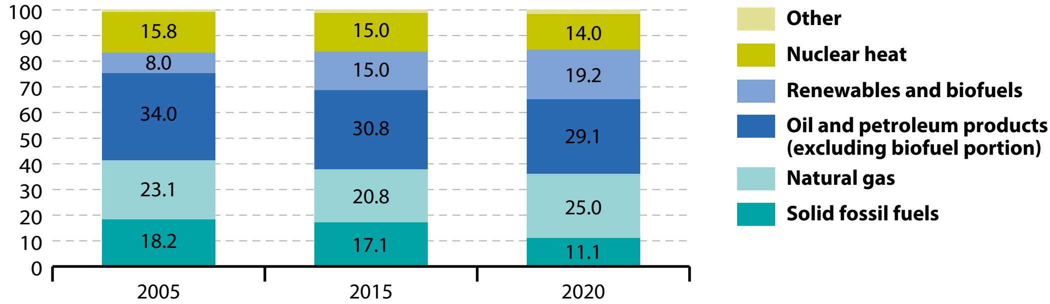


([1]) 2020 population data are estimated and/or provisional.
([2]) Break(s) in population data time series between the two years shown.
([3]) 2019 data (instead of 2020).
([4]) 2018 data (instead of 2020).

Source: Eurostat (online data code: sdg_07_10)

Figure 7.3: Primary energy consumption, by fuel type, EU, 2005, 2015 and 2020

(%)

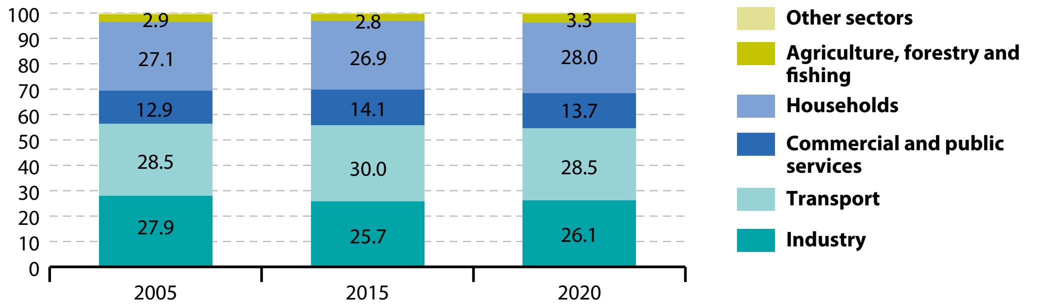


Note: Definition of primary energy consumption according to energy balances.

Source: Eurostat (online data code: nrg_bal_c)

Figure 7.4: Final energy consumption, by sector, EU, 2005, 2015 and 2020

(%)



Note: Definition of final energy consumption according to energy balances.

Source: Eurostat (online data code: nrg_bal_c)

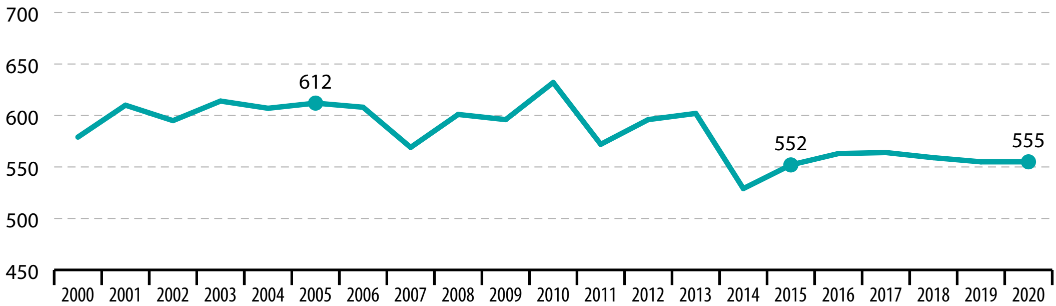
LONG TERM 2005–2020

SHORT TERM 2015–2020

Final energy consumption in households per capita

This indicator measures how much energy each citizen consumes at home, excluding transport. Data are not temperature-adjusted, so variations from year to year are due in part to the weather.

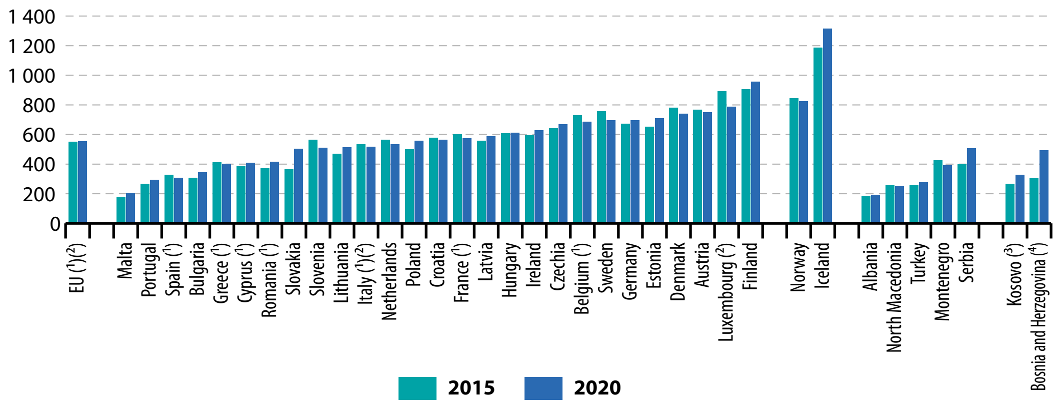
Figure 7.5: Final energy consumption in households per capita, EU, 2000–2020
(kgoe)



Note: Multiple breaks in population data time series; 2018–2020 population data are provisional estimates.
Compound annual growth rate (CAGR): – 0.6 % per year in the period 2005–2020; 0.1 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_07_20)

Figure 7.6: Final energy consumption in households per capita, by country, 2015 and 2020
(kgoe)



(1) 2020 population data are estimated and/or provisional.
(2) Break(s) in population data time series between the two years shown.
(3) 2019 data (instead of 2020).
(4) 2018 data (instead of 2020).

Source: Eurostat (online data ode: sdg_07_20)

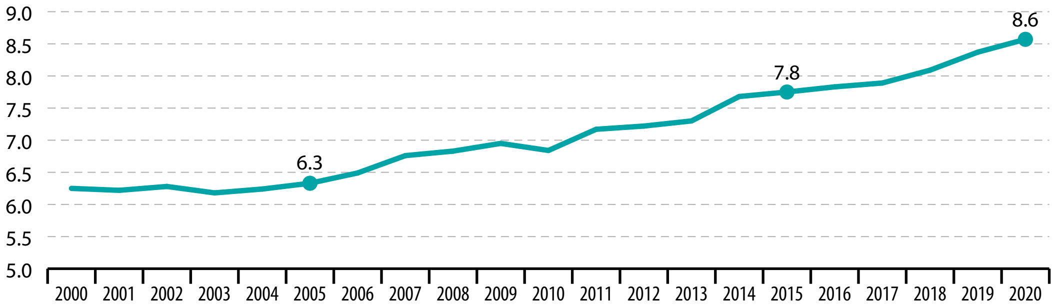
Energy productivity

LONG TERM 2005–2020

SHORT TERM 2015–2020

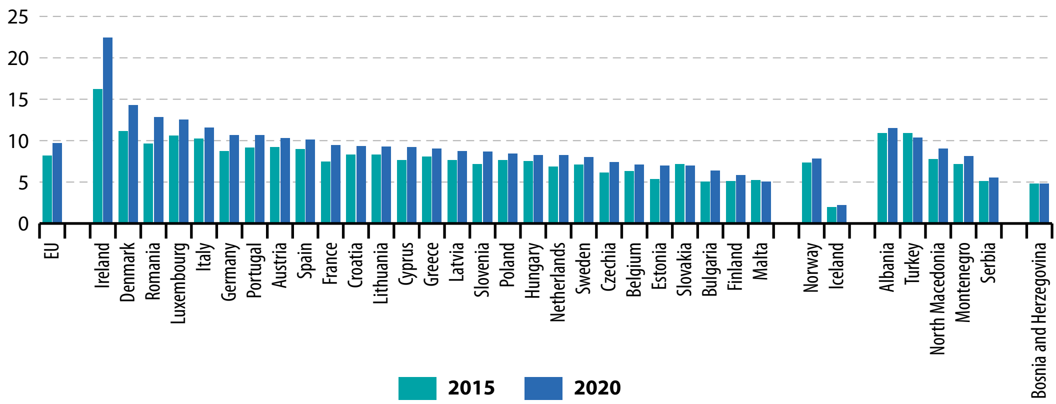
This indicator measures the amount of economic output produced per unit of gross available energy (GAE). Gross available energy represents the quantity of energy products needed to satisfy all demand of entities in the geographical area under consideration. Economic output is either given as euros in chain-linked volumes to the reference year 2010 at 2010 exchange rates or in the unit PPS (purchasing power standards).

Figure 7.7: Energy productivity, EU, 2000–2020
(EUR per kgoe)



Compound annual growth rate (CAGR): 2.0 % per year in the period 2005–2020; 2.0 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_07_30)

Figure 7.8: Energy productivity, by country, 2015 and 2020
(PPS per kgoe)



Source: Eurostat (online data code: sdg_07_30)

LONG TERM
2005–2020

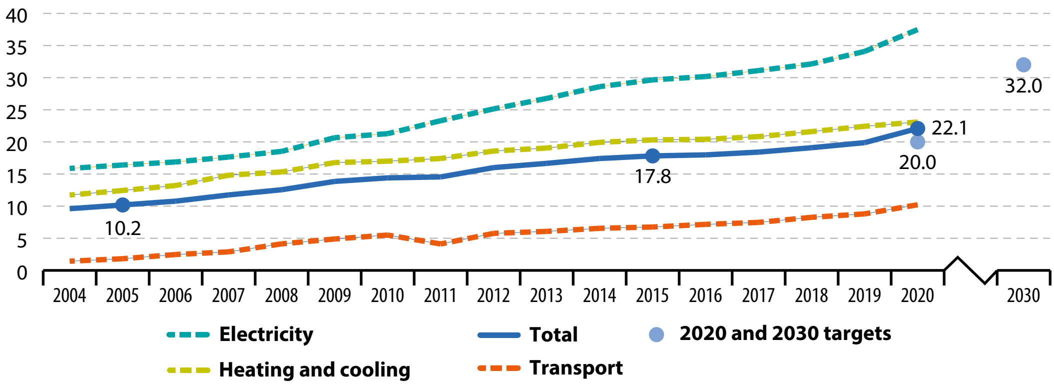
SHORT TERM
2015–2020

Share of renewable energy in gross final energy consumption

This indicator is defined as the share of renewable energy consumption in gross final energy consumption, according to the Renewable Energy Directive (32). The gross final energy consumption is the energy used by end consumers plus grid losses and power plants' own consumption.

Figure 7.9: Share of renewable energy in gross final energy consumption, by sector, EU, 2004–2020

(%)

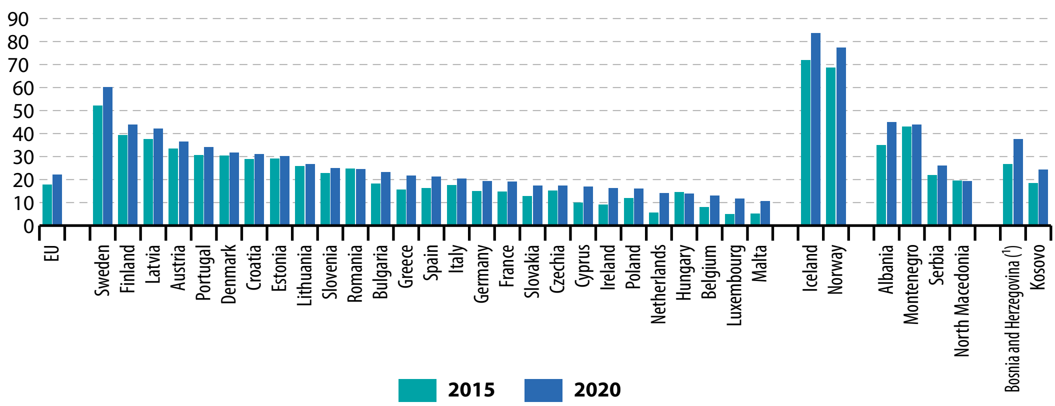


Compound annual growth rate (CAGR) for the total assessed against the EU renewable energy target for 2030 that was in place at the time of writing: 5.3 % per year (observed) and 4.7 % per year (required to meet the 2030 target) in the period 2005–2020; 4.4 % per year (observed) and 4.0 % per year (required to meet the 2030 target) in the period 2015–2020.

Source: Eurostat (online data code: sdg_07_40)

Figure 7.10: Share of renewable energy in gross final energy consumption, by country, 2015 and 2020

(%)



(1) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_07_40)

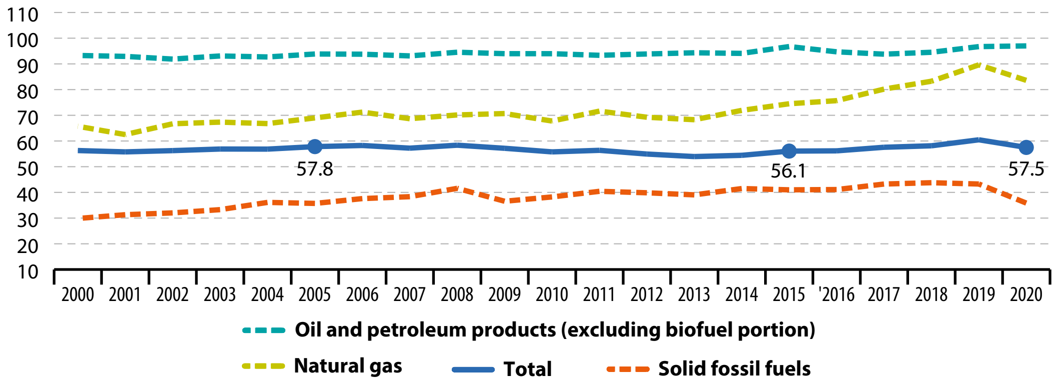
Energy import dependency

LONG TERM 2005–2020

SHORT TERM 2015–2020

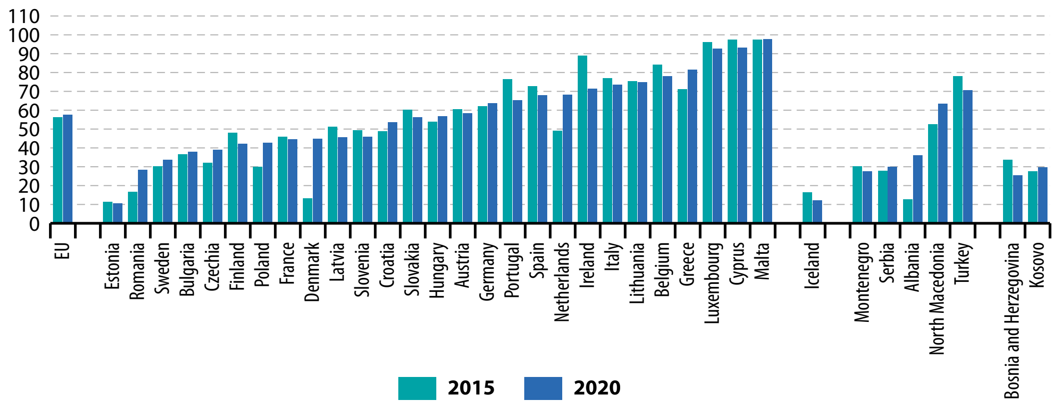
Energy import dependency shows the share of a country's total energy needs that are met by imports from other countries. It is calculated as net imports divided by the gross available energy (GAE). Energy import dependency = (imports – exports) / gross available energy.

Figure 7.11: **Energy import dependency, by product, EU, 2000–2020**
(% of imports in gross available energy)



Note: 'Total' is not the average of the other three fuel categories shown. It also includes other energy sources, such as renewable energy or nuclear energy, which are treated as domestic sources.
Compound annual growth rate (CAGR) for the total: – 0.04 % per year in the period 2005–2020; 0.5 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_07_50)

Figure 7.12: **Energy import dependency, by country, 2015 and 2020**
(% of imports in gross available energy)



Note: Norway not shown on the graph with an import dependency of – 623 % in 2020.
Source: Eurostat (online data code: sdg_07_50)

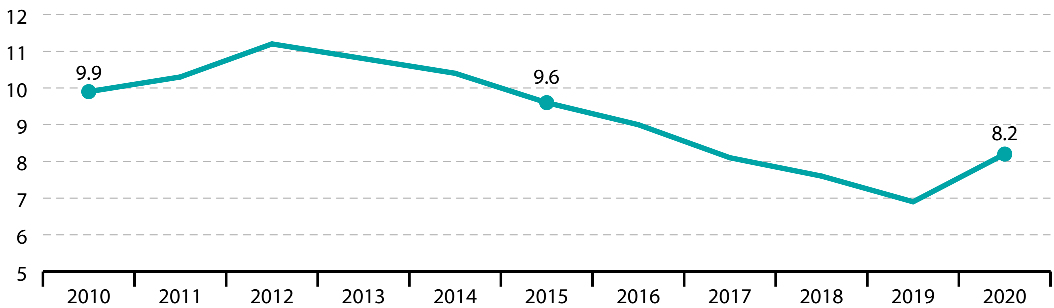
LONG TERM 2010-2020

SHORT TERM 2015–2020

Population unable to keep home adequately warm

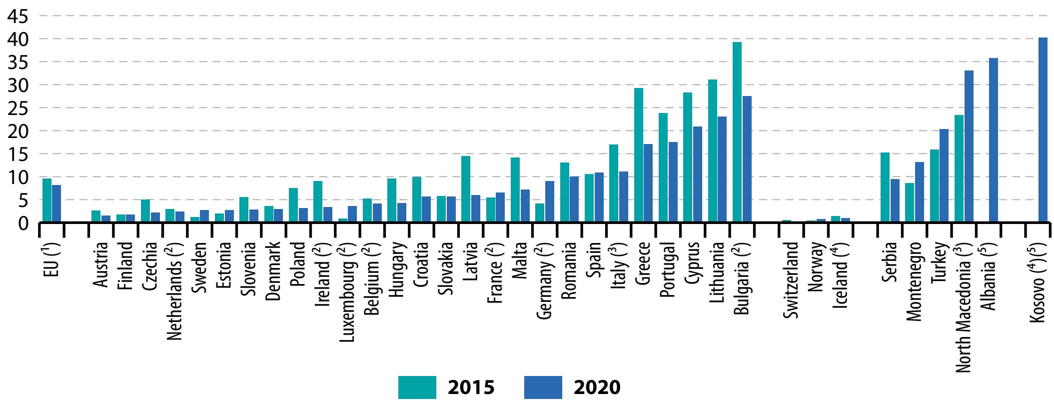
This indicator monitors access to affordable energy throughout the EU. It measures the share of people unable to afford to keep their home adequately warm. The data are collected as part of the EU Statistics on Income and Living Conditions (EU-SILC) to monitor the development of poverty and social inclusion in the EU. Data collection is based on a survey, which means that indicator values are self-reported.

Figure 7.13: Population unable to keep home adequately warm, EU, 2010–2020
(% of population)



Note: Estimated data.
Compound annual growth rate (CAGR): – 1.9 % per year in the period 2010–2020; – 3.1 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_07_60)

Figure 7.14: Population unable to keep home adequately warm, by country, 2015 and 2020
(% of population)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2019 data (instead of 2020).
(4) 2018 data (instead of 2020).
(5) No data for 2015.
Source: Eurostat (online data code: sdg_07_60)

Notes

(1) European Commission (2022), *Energy union.*
(2) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.
(3) European Commission (2021), *European Climate Law, Brussels.*
(4) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/2002 amending Directive 2012/27/EU on energy efficiency.*
(5) European Commission (2021), *Proposal for a Directive of the European Parliament and of the Council on energy efficiency (recast)*, COM/2021/558 final, Brussels.
(6) The Commission proposed an additional reduction of energy consumption of 9% by 2030 compared with the new 2020 reference scenario projections. This corresponds to an energy efficiency target for primary energy consumption of 39% and 36% for final energy consumption compared with the 2007 reference scenario projections for 2030.
(7) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources*.
(8) European Commission (2021), *Proposal for a Directive of the European Parliament and of the Council amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652*, COM/2021/557 final, Brussels.
(9) European Commission (2017), *The European Pillar of Social Rights in 20 principles.*
(10) European Commission (2018), *EU Energy Poverty Observatory.*
(11) European Commission (2020), *Commission Recommendation on Energy Poverty, COM(2020) 1563, Brussels.*
(12) European Commission (2020), *Renovation Wave, Brussels.*
(13) Eurostat (2021), *Energy saving statistics: Energy efficiency targets for 2020 and 2030 — Statistics Explained*.
(14) European Parliament and Council of the European Union (2019), *Decision amending directive 2012/27/EU on energy efficiency for the withdrawal of the United Kingdom from the EU*.
(15) European Commission (2021), *Proposal for a Directive of the European Parliament and of the Council on energy efficiency (recast)*, COM/2021/558 final, Brussels.
(16) European Commission (2019), *Energy efficiency progress report, COM(2019) 224 final, Brussels.*
(17) Eurostat (online data codes: nrg_bal_c); European Commission (2020), *2020 assessment of the progress made by Member States towards the implementation of the Energy Efficiency Directive 2012/27/EU and towards the deployment of nearly zero-energy buildings and cost-optimal minimum energy performance requirements in the EU in accordance with the Energy Performance of Buildings Directive 2010/31/EU, COM(2020) 954 final.*
(18) The substitution of fossil energy by renewable energies leads to a reduction of PEC via a statistical definition. The physical energy content method basically means fossil and biogenic fuel input quantities are multiplied by their calorific value. Wind, hydropower or photovoltaics produce energy with an efficiency of 100%, geothermal energy with 10% and nuclear energy with 33%. This means that PEC decreases disproportionately with increasing substitution of fossil and nuclear fuels by renewable energies.
(19) See, for example, for Germany (key energy consuming country in the EU): AGEB e.V. (2020), *Energieverbrauch in Deutschland im Jahr 2020*. For the EU with preliminary data see European Commission (2020), *2020 assessment of the progress made by Member States towards the implementation of the Energy Efficiency Directive 2012/27/EU and towards the deployment of nearly zero-energy buildings and cost-optimal minimum energy performance requirements in the EU in accordance with the Energy Performance of Buildings Directive 2010/31/EU, COM(2020) 954 final.*
(20) See, for example, the trend in monthly energy data (Eurostat online data code: nrg_quantm) or analysis from Germany (key energy consuming country in the EU): AGEB e.V. (2022), Energieverbrauch zieht wieder an.
(21) Source: Eurostat (online data code: demo_gind).
(22) Source: Eurostat (online data codes: nrg_bal_c and nama_10_gdp).
(23) European Parliament and the Council of the European Union (2018), *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources*.
(24) European Commission (2019), *Renewable energy progress report, COM(2019) 225 final, Brussels*, p. 4.
(25) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources*.
(26) See, for example, Sayed, E. T. et al. (2021), *A critical review on environmental impacts of renewable energy systems and mitigation strategies: Wind, hydro, biomass and geothermal. Science of the total environment*, Volume 766 or Best, A., et al. (2021), *Assessment of resource nexus-related challenges and opportunities in the context of the European Green Deal*, Background report for the EEA Briefing 'Applying a "resource nexus" lens to policy: opportunities for increasing coherence'.
(27) Source: Eurostat (online data code: nrg_bal_c).
(28) Ibid.
(29) Source: Eurostat (online data codes: nrg_ti_sff, nrg_ti_oil and nrg_ti_gas). Import shares for natural gas were calculated in cubic meters; solid fuel and oil import shares were calculated in tonnes.
(30) European Commission (2020), *Commission Recommendation on Energy Poverty, COM(2020) 1563, Brussels.*
(31) Bouzarovski, S. and Tirado-Herrero, S. (2017), *The energy divide: Integrating energy transitions, regional inequalities and poverty trends in the European Union, European Urban and Regional Studies; 24: pp. 69–86.*
(32) European Parliament and Council of the European Union (2009), *Directive 2009/28/EC on the promotion of the use of energy from renewable sources.*

8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

SDG 8 recognises the importance of sustained economic growth and high levels of economic productivity for the creation of well-paid quality jobs, as well as resource efficiency in consumption and production. It calls for opportunities for full employment and decent work for all alongside the eradication of forced labour, human trafficking and child labour, and the promotion of labour rights and safe and secure working environments.

Sustainable economic growth and decent employment are vital for the development and prosperity of European countries and the well-being and personal fulfilment of individuals. For economic growth to be truly sustainable, it must be accompanied by eco-efficiency improvements, climate action and resilient measures, alongside active labour market and social inclusion policies, in order to ensure that the transition to a climate-neutral economy is just and inclusive. Key to achieving this will be the generation of decent employment opportunities for all and improving working conditions for those already in employment as well as supporting citizens in their labour market transitions.

Table 8.1: Indicators measuring progress towards SDG 8, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more?
Economic growth			
Real GDP	↗	↑	page 154
Investment share of GDP	↘	↑	page 155
Employment			
Young people neither in employment nor in education and training (NEET)	↘	↘	page 156
Employment rate	↑ (1)	↑	page 157
Long-term unemployment rate	↗ (1)	↑	page 159
Inactive population due to caring responsibilities (*)	↑ (2)	↑ (2)	SDG 5, page 111
Decent work			
Fatal accidents at work	:	↑	page 160
In work at-risk-of-poverty rate (*)	↓ (3)	↗	SDG 1, page 50

(*) Multi-purpose indicator.
(1) Past 12-year period.
(2) Trend refers to evolution of gender gap.
(3) Past 10-year period

Table 8.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 8 'Decent work and economic growth'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Economic growth

Sustainable Europe Investment Plan (SEIP) is an investment pillar of the European Green Deal. The plan will mobilise at least EUR 1 trillion in sustainable investments over the next decade.

NextGenerationEU is a EUR 750 billion temporary recovery instrument to help repair the immediate economic and social damage brought about by the COVID-19 pandemic. The Recovery and Resilience Facility makes EUR 672.5 billion in loans and grants available to support reforms and investments undertaken by EU countries.

Employment

The European Pillar of Social Rights Action Plan sets the targets of at least 78 % of the population aged 20 to 64 to be employed and less than 9 % of young people aged 15 to 29 to be neither in employment, nor in education or training by 2030.

The Council Recommendation on the integration of the long-term unemployed into the labour market aims to help long-term unemployed people re-enter the labour market.

The Recommendation on Effective Active Support to Employment following the COVID-19 crisis supports the transition between emergency measures taken to preserve jobs during the pandemic and new measures needed for a job-rich recovery.

The European Social Fund ([1]) and the Youth Employment Initiative support quality employment, further education, quality traineeships and apprenticeships. The European Social Fund Plus fosters youth employment through funds allocation.

Decent work

The Communication on Decent Work Worldwide reaffirmed the EU's commitment to champion decent work both at home and around the world.

The Directive on transparent and predictable working conditions in the EU complements existing obligations to inform each worker of his or her working conditions and sets new minimum EU standards on working conditions for all workers.

A proposal for a Directive on adequate minimum wages in the European Union aims to ensure that EU workers earn minimum wages that allow a decent living.

A proposal for a Directive on improving working conditions in platform work aims to ensure that people working through digital labour platforms can enjoy the labour rights and social benefits they are entitled to.

The EU strategic framework on health and safety at work 2021–2027 sets out key priorities for improving workers' health and safety over the next years.

Decent work and economic growth in the EU: overview and key trends

Monitoring SDG 8 in an EU context involves looking into trends in the areas of sustainable economic growth, employment and decent work. As Table 8.1 shows, the EU has made some progress in terms of economic growth over the past few years. Despite the COVID-19 pandemic, the overall employment situation and working conditions have also improved since 2015.

Economic growth

To ensure the well-being of future generations, the EU has adopted a new growth strategy, the European Green Deal, aimed at transforming the Union into a modern, resource-efficient and competitive economy. The indicators selected to monitor this objective show that over the past few years Europeans have generally enjoyed continuous economic growth. However, the positive trend was halted in 2020 by the COVID-19 pandemic.

After a COVID-19-related drop in 2020, the EU economy grew by 5.4 % in 2021

Citizens' living standards depend on the performance of the EU economy, which can be measured using several indicators. One of these is growth in gross domestic product (GDP). Although GDP is not a measure of welfare, it gives an indication of an economy's potential to satisfy people's needs and its capacity to create jobs. It can also be used to monitor economic development.

The average real GDP per capita in the EU in 2021 was

EUR 27 810

Real GDP per capita (GDP adjusted for inflation) in the EU saw strong and continuous growth of 2.0 % per year on average between 2014 and 2019, with both private consumption and investment being the key drivers of economic expansion [2]. In 2020, the economy was hit by the COVID-19 pandemic, resulting in a 6.0 % contraction of real GDP compared with 2019. Nevertheless, the economy rebounded from the recession in the following year. In 2021, the real GDP per capita reached EUR 27 810, a 5.4 % increase compared with the previous year and only slightly below 2019 levels. This growth was mostly driven by households spending [3].

Investment is another indicator of economic growth as it enhances an economy's productive capacity. In 2020, the total investment share of GDP in the EU declined by 0.2 percentage points compared with the previous year as a result of the pandemic, reaching 22.3 %. This drop interrupted a period of steady growth in investment observed since 2014 and can be attributed to a decrease in business investment in 2020. Businesses were the biggest investor in 2020, with an investment share in GDP of 13.7 %, followed by households with 5.4 % and governments with 3.3 %. The investment share of households has been growing slowly since 2016 but still remains below the levels seen before the 2008 financial crisis. Government investment has followed a counter-cyclical pattern, increasing during both the financial crisis of 2008 and the COVID-19 crisis in 2020.

22.3 %

of GDP was invested in the EU in 2020

Employment

Decent employment for all — including women, people with disabilities, young people, older people and migrants — is a cornerstone of socio-economic development. Apart from generating the resources needed for decent living standards and achieving life goals, work provides opportunities for meaningful engagement in society, which promotes a sense of self-worth, purpose and social inclusion. Higher employment rates are a key condition for making societies more inclusive by reducing poverty and inequality in and between regions and social groups. The

European Pillar of Social Rights Action Plan sets a target of at least 78 % of the population aged 20 to 64 to be in employment by 2030.

Following the economic recovery, the employment rate in the EU reached its peak in 2021

Prior to the COVID-19 pandemic, the EU employment rate (4) exhibited an upward trend, reaching 72.7 % in 2019. The growth over the past decade can be partly attributed to increased participation in the labour force by older workers and women (5). In 2020, the severity of the pandemic's socio-economic impacts was cushioned by support measures introduced by the EU and its Member States (6). As a result, the employment rate fell by only one percentage point to 71.7 % in the first year of the pandemic. Following the economic recovery, labour market conditions in the EU improved and the employment rate went up to 73.1 % in 2021 — the highest level observed so far. If this positive trend continues, the EU will be well placed to reach its employment target of 78 % by 2030.

73.1 %
of 20- to 64-year-olds were employed in the EU in 2021

An analysis by degree of urbanisation reveals that employment rates in cities, towns and suburbs and rural areas were all affected by the COVID-19 crisis. The pandemic and the following economic recovery, however, did not affect the employment gap between cities and rural areas, which stood at 0.4 percentage points in 2020 and 2021, the same level as in 2019. Since 2012, the employment rate in rural areas has been slightly higher than in cities and reached 73.6 % in 2021, compared with 73.2 % in cities and 72.6 % in towns and suburbs (7).

Unemployment and long-term unemployment have decreased since 2014

The EU's unemployment situation had also been improving before the onset of the COVID-19 pandemic. Between 2014 and 2019, the EU's unemployment rate (age group 15–74) decreased by 4.2 percentage points, affecting 6.8 % of the population in the labour force in 2019 (8). In the first year of the pandemic, however, the unemployment rate increased to 7.2 %, before falling back to 7.0 %, following the economic recovery in 2021. Over the past few years, city dwellers have been more affected by unemployment than those living in rural areas. In 2021, the unemployment rate in cities was 7.8 % compared with 5.9 % for rural areas (9).

Long-term unemployment usually follows the trends in unemployment, but with a delay, meaning that the effects of the COVID-19 pandemic are only visible in 2021 data. Being unemployed for a year or more can have long-lasting negative implications for individuals and society by reducing employability prospects, contributing to human capital depreciation, endangering social cohesion and increasing the risk of poverty and social exclusion. Beyond material living standards, it can also lead to a deterioration of individual skills and health, thus hindering future employability, productivity and earnings.

2.8 %
of the population in the labour force were long-term unemployed in 2021

As a result of the COVID-19 pandemic, the long-term unemployment in the EU increased by 0.3 percentage points, reaching 2.8 % of the labour force in 2021. This was still 2.7 percentage points less than at the peak of the long-term unemployment rate in 2013 and 2014, indicating an overall positive trend. The proportion of long-term unemployment in total unemployment has also decreased over the past few years (10).

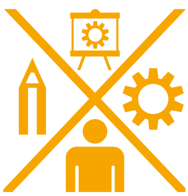
The labour market situation of young people was strongly affected by the COVID-19 crisis

The economic growth observed over the past few years has also helped to improve the labour market situation of younger people, with the employment rate of 20- to 24-year-olds growing steadily between 2014 and 2019. Nevertheless, their employment prospects remain precarious and they were hit harder by the COVID-19 crisis than older age groups. This is because young people are more likely to be employed on a temporary contract or to work in sectors affected by the restrictions placed on economic activities to tackle the pandemic, such as the service sector (11). In 2021, only 50.6 % of people aged 20 to 24 were employed (12), compared with 73.1 % of people aged 20 to 64.

The overall low employment rate of people aged 20 to 24 can also be explained by the fact that many people at this age are still in education, and thus, are not a part of the labour force. However, in 2021 the employment rate of young people was still 2.2 percentage points lower than at its peak in 2008. Moreover, despite the strong decrease in youth unemployment since 2013, 15.2 % of 20- to 24-year-olds were unemployed in 2021, which is still significantly higher than for older age groups (13).

Young people not engaged in employment nor in education and training (NEET) are among the most vulnerable groups in the labour market. Over the long term they may fail to gain new skills and suffer from erosion of competences, which in turn might lead to a higher risk of labour market and social exclusion. To improve the labour market situation of young people, the EU set a complementary target of decreasing the NEET rate to 9 % by 2030.

Between 2004 and 2019, the NEET rate for 15- to 29-year-olds in the EU closely followed the economic cycle, improving from 15.6 % to 12.6 % over the period. As a result of the COVID-19 pandemic, however, the NEET rate increased to 13.8 % in 2020, before falling back to 13.1 % in 2021, which was still above the pre-pandemic level. This pushed the EU off-track to achieving its 2030 target of 9 %. The NEET rate in rural areas and towns and suburbs has been higher than in cities over the past few years and reached 13.9 % in towns and suburbs and 13.7 % in rural areas in 2021, compared with a rate of 12.2 % in cities (14) .



13.1 %
of young people aged 15 to 29 were not employed nor in education and training in the EU in 2021

Women's participation in the labour market is growing, but gender differences persist

Over the past 12 years, the employment rate of women in the EU has been increasing. After a dip caused by the COVID-19 pandemic, the employment rate of women reached a new high of 67.7 % in 2021. The gender employment gap, however, continues to persist, despite narrowing by 2.6 percentage points since 2009. In 2021, it amounted to 10.8 percentage points, despite women increasingly becoming well qualified and even outperforming men in terms of educational attainment (see the chapter on SDG 5 'Gender equality' on page 101). Women are also overrepresented in part-time work.

The impact of parenthood and caring responsibilities remains one of the main drivers of lower employment rates for women. Inflexible work-life-balance options and underdeveloped care services — both for childcare and long-term care of a family member — are major impediments to women remaining in or returning to work. In 2021, 30.2 % of women aged 20 to 64 outside the labour force were in this situation because they were caring for children or incapacitated adults, compared with only 8.5 % of men. This gender gap had widened between 2014 and 2019, reaching 26.8 percentage points in 2019, but in 2021 the trend reversed and the gap narrowed to 21.7 percentage points. Overall, the share of people aged 20 to 64 from both sexes who were outside the labour force due to caring responsibilities rose continuously between 2013 and 2019, reaching 24.8 % of the population outside of the labour force in 2019, before falling back to 21.4 % in 2021.

30.2 %
of women outside of the labour force were in this situation because of caring responsibilities in the EU in 2021

In 2021, caring responsibilities were also the main reason why women were opting for part-time employment (15). As a result, women were overrepresented in part-time employment, with

28.3 % of employed women working part-time in 2021, compared with 7.6 % of employed men [16].

Employment opportunities are lower for people with disabilities

People with disabilities are those who have a basic activity difficulty (such as seeing, hearing, walking, communicating) and/or a work limitation caused by a longstanding health condition and/or a basic activity difficulty [17]. Disabilities impact on people's lives in many areas, including participation in the labour market. In 2020, the employment rate of people with disabilities at the EU level was 24.5 percentage points lower compared with people without disabilities. For women with disabilities, this gap was 21.6 percentage points, while for men with disabilities it was 27.0 percentage points. The degree of disability is also an important factor affecting the employment rate. At the EU level, the employment rate for people with a severe disability was 44.1 percentage points lower than for people without disability, while for people with a moderate disability the gap was 17.4 percentage points in 2020 [18].

Decent work

For a society's sustainable economic development and well-being it is crucial that economic growth generates not just any kind of job but 'decent' jobs. This means that work should deliver fair income, workplace security and social protection for families, better prospects for personal development and social integration and equality of opportunity [19].

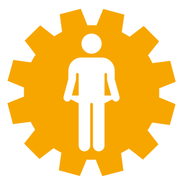
Work in the EU is becoming safer and more economically secure

A prerequisite for decent work is a safe and healthy working environment, without non-fatal and fatal accidents. Over the past few decades, the EU and its Member States have put considerable effort into ensuring minimum standards in occupational health and safety at work. In 2019, the rate of fatal accidents at work amounted to 1.7 fatalities per 100 000 employed persons, with the mining and quarrying sector being particularly prone to the risk of fatal accidents [20]. While there has been a significant decrease since 2010, a noticeable gender difference persists: in 2019, the incidence rate for women was only 0.2 per 100 000 persons, compared with 3.1 for men. This might be due to the fact that activities with the highest incidence rates are mostly male-dominated [21].

1.7
per 100 000 people employed in the EU had a fatal accident at work in 2019

Besides safety at work, fair income and social protection are other important components of decent work. Poverty is often associated with the absence of a paid occupation but low wages can also push some workers below the poverty line. People working part-time or on temporary contracts [22], low-skilled workers and non-EU born workers are especially affected by in-work poverty. In the EU, the share of the so-called 'working poor' (aged 18 and over) decreased between 2016 and 2019, to 9.0 %. In 2020, however, the in-work at-risk-of-poverty rate grew again, to 9.4 % of employed people. Part of this increase can be attributed to methodological changes in the EU-SILC surveys in a couple of Member States.

Factors influencing in-work poverty rates include, among other things, type of contract, working time and hourly wages. While a fixed-term, part-time contract or platform work may provide greater flexibility for both employers and workers, it is not always a personal choice for an employee and can thus significantly influence their well-being. In 2021, 4.9 % of European employees aged 20 to 64 were involuntarily working on temporary contracts, corresponding to 37.5 % of all temporary employees. This share has decreased over the past few years [23]. Similar to involuntary temporary employment, the share of involuntary part-time employment in total employment in the EU also decreased, from 5.6 % in 2016 to 4.1 % in 2021 [24].



9.4 %
of people employed in the EU were at risk of income poverty in 2020

Presentation of the main indicators

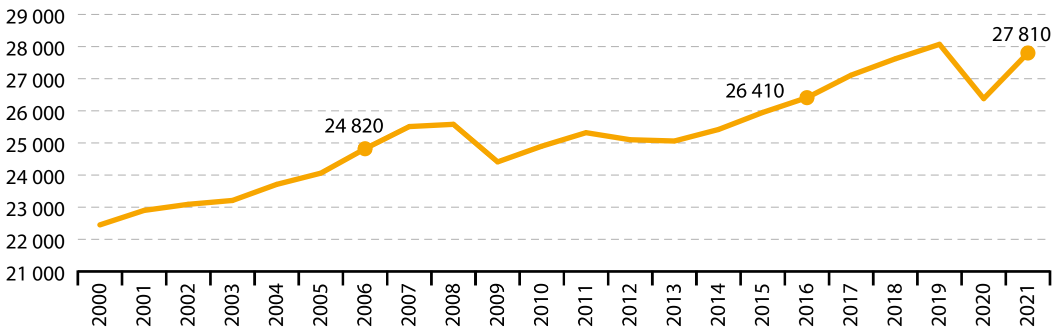
LONG TERM
2006–2021

SHORT TERM
2016–2021

Real GDP

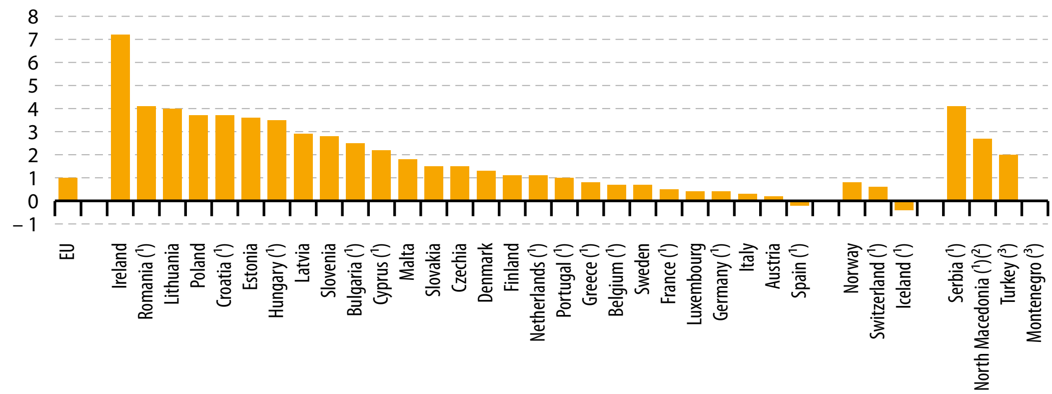
Gross domestic product (GDP) is a measure of economic activity and is often used as a proxy for changes in a country's material living standards. It refers to the value of total final output of goods and services produced by an economy within a certain time period. Real GDP per capita is calculated as the ratio of real GDP (GDP adjusted for inflation) to the average population of the same year and is based on rounded figures.

Figure 8.1: Real GDP per capita, EU, 2000–2021
(EUR per capita, chain-linked volumes, 2010)



Compound annual growth rate (CAGR): 0.8 % per year in the period 2006–2021; 1.0 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_08_10)

Figure 8.2: Change in real GDP per capita, by country, 2016–2021
(average annual growth rate in %)



(¹) Provisional or estimated data.
(²) Change 2013–2018.
(³) Change 2015–2020.
Source: Eurostat (online data code: sdg_08_10)

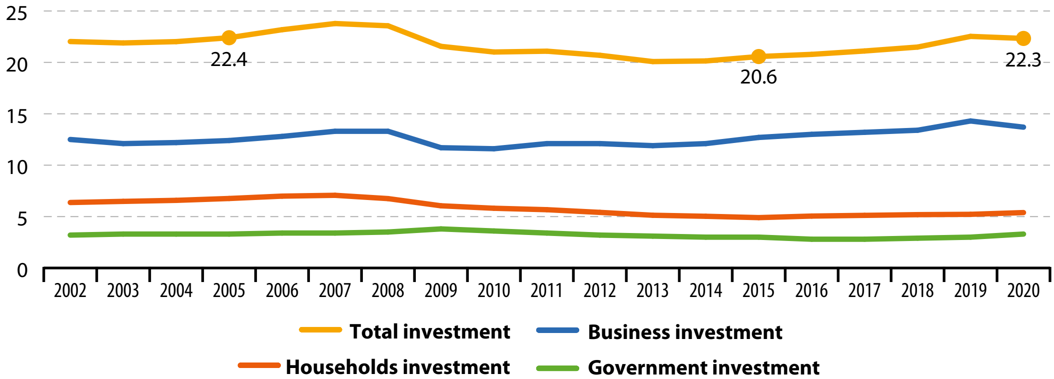
Investment share of GDP

The investment share of GDP measures gross fixed capital formation (GFCF) for the total economy, government and business, as well as household sectors as a percentage of GDP.

LONG TERM
2005–2020

SHORT TERM
2015–2020

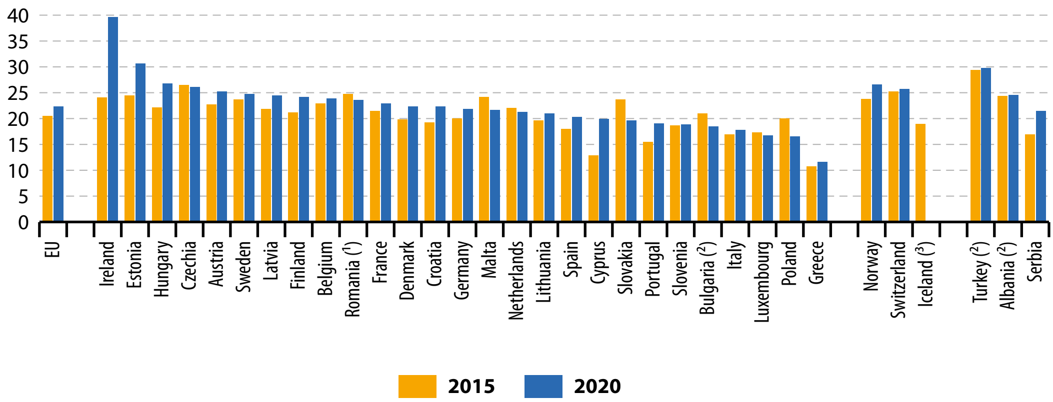
Figure 8.3: Investment share of GDP, by institutional sector, EU, 2002–2020
(% of GDP)



Compound annual growth rate (CAGR) for total investment: – 0.02 % per year in the period 2005–2020; 1.7 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_08_11)

Figure 8.4: Investment share of GDP, by country, 2015 and 2020
(% of GDP)



(¹) 2019 data (instead of 2020).
(²) 2017 data (instead of 2020).
(³) No data for 2020.

Source: Eurostat (online data code: sdg_08_11)

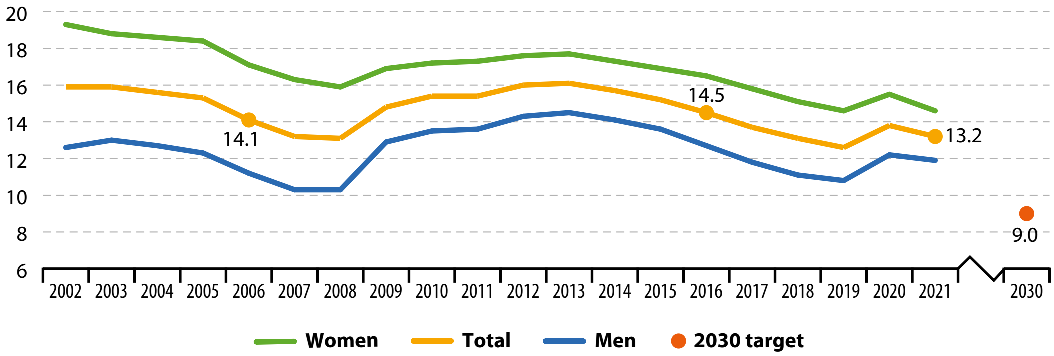
LONG TERM
2006–2021

SHORT TERM
2016–2021

Young people neither in employment nor in education and training (NEET)

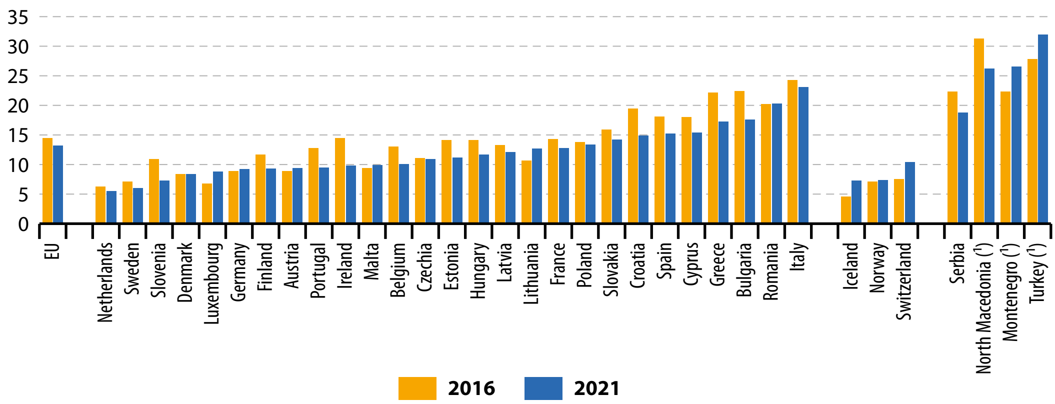
A considerable proportion of young people aged 15 to 29 in the EU are not a part of the labour force. For some this is due to the pursuit of education and training. Others, however, have withdrawn from the labour market or are not entering it after leaving the education system. Those who struggle with the transition from education to work are captured by the statistics on young people who are neither in employment (i.e. outside of the labour force or unemployed), education nor training (NEET rate). Data presented in this section stem from the EU Labour Force Survey (EU-LFS).

Figure 8.5: Young people neither in employment nor in education and training (NEET), by sex, EU, 2002–2021
(% of population aged 15 to 29)



Note: Breaks in time series in 2003, 2006 and 2021
Compound annual growth rate (CAGR) for the total: – 0.4 % per year (observed) and – 1.9 % per year (required to meet target) in the period 2006–2021; – 1.9 % % per year (observed) and – 3.3 % per year (required to meet target) in the period 2016–2021.
Source: Eurostat (online data code: sdg_08_20)

Figure 8.6: Young people neither in employment nor in education and training (NEET), by country, 2016 and 2021
(% of population aged 15 to 29)

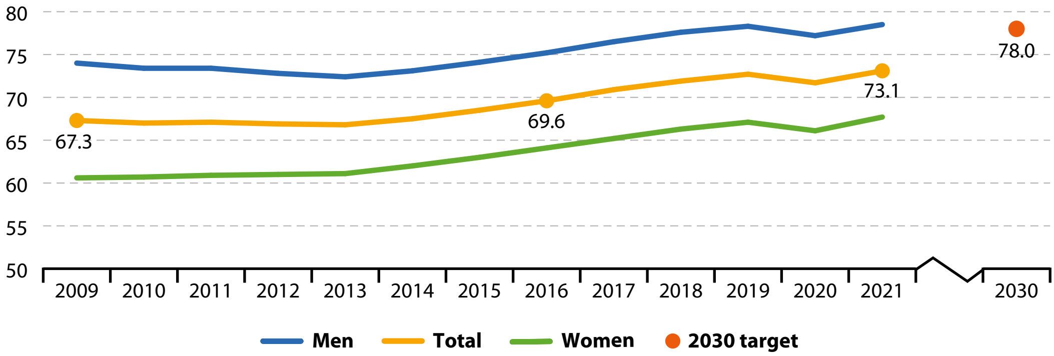


Note: Break in time series in 2021 for all countries.
(1) 2020 data (instead of 2021).
Source: Eurostat (online data code: sdg_08_20)

Employment rate

The employment rate is defined as the percentage of employed persons in relation to the comparable total population. The data analysed here focus on the population aged 20 to 64. Employed persons are defined as all persons who, during a reference week, worked at least one hour for pay or profit or were temporarily absent from such work. Data presented in this section stem from the EU Labour Force Survey (EU-LFS).

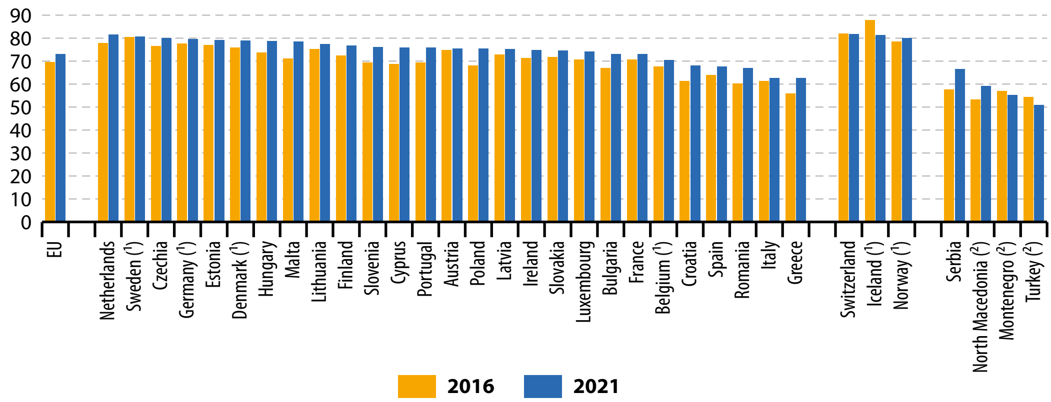
Figure 8.7: **Employment rate, by sex, EU, 2009–2021**
(% of population aged 20 to 64)



Compound annual growth rate (CAGR) for the total: 0.7 % per year (observed) and 0.7 % per year (required to meet target) in the period 2009–2021; 1.0 % per year (observed) and 0.8 % per year (required to meet target) in the period 2016–2021.

Source: Eurostat (online data code: sdg_08_30)

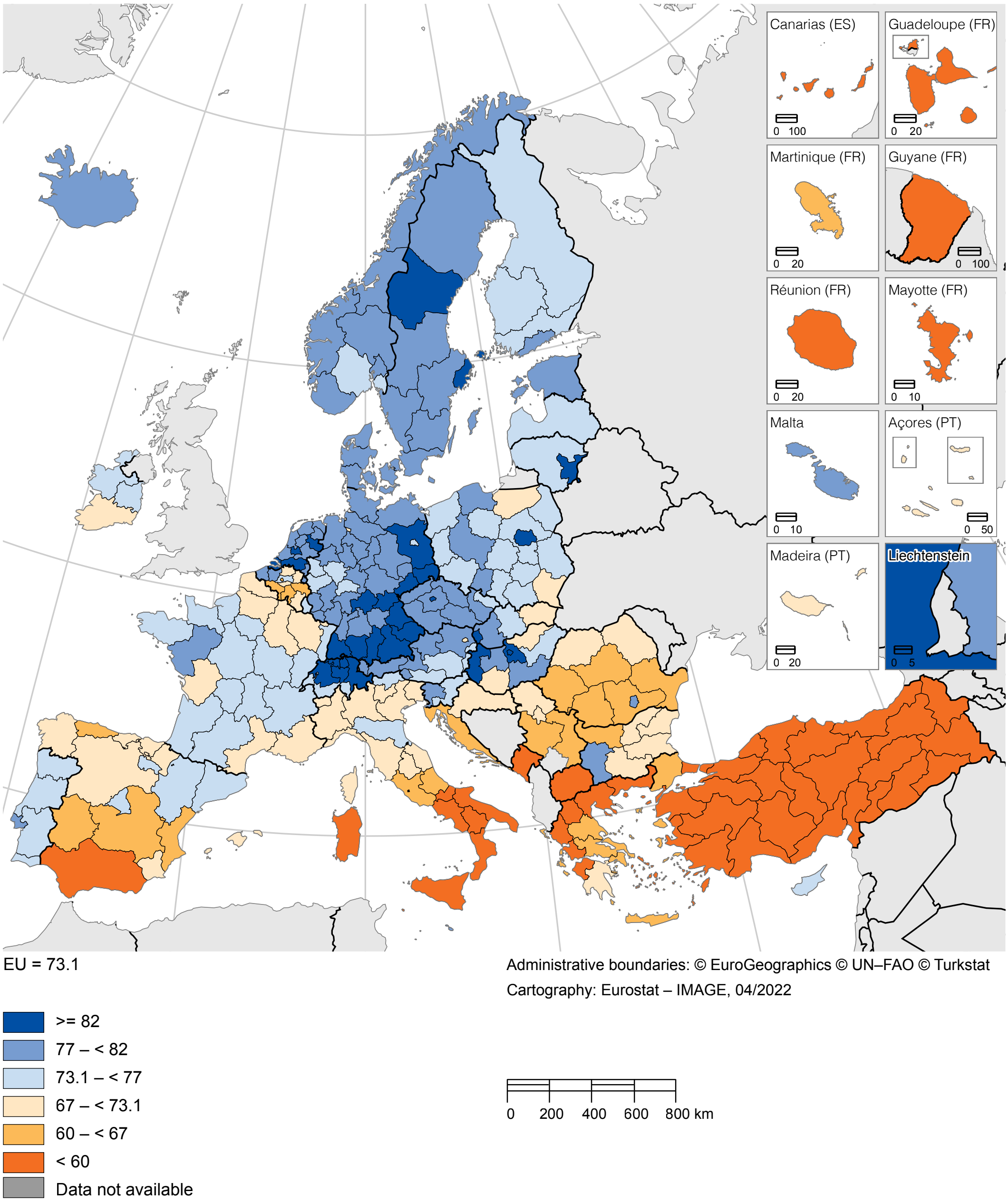
Figure 8.8: **Employment rate, by country, 2016 and 2021**
(% of population aged 20 to 64)



(1) Break(s) in time series between the two years shown.
(2) 2020 data (instead of 2021).

Source: Eurostat (online data code: sdg_08_30)

Map 8.1: Employment rate, by NUTS 2 regions, 2021
(% of population aged 20 to 64)



Note: 2020 data for Mayotte (FR), Kontinentalna Hrvatska (HR) as well as for all regions in Norway (except Innlandet), Montenegro, North Macedonia Turkey.

Source: Eurostat (online data code: lfst_r_lfe2emprt)

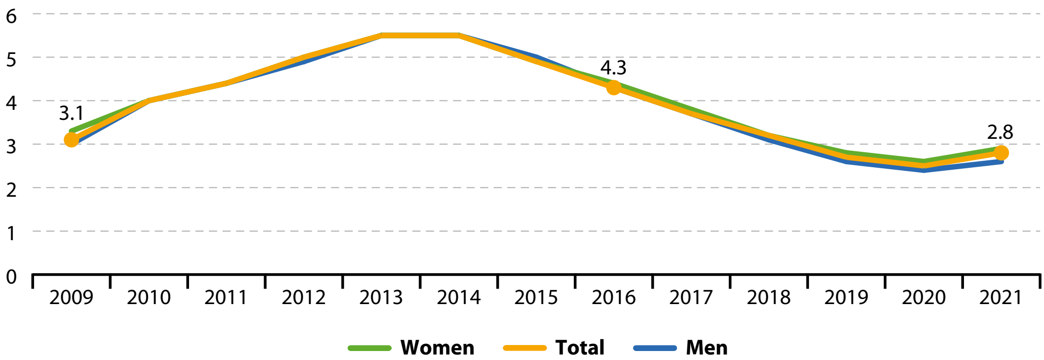
Long-term unemployment rate

LONG TERM
2009–2021

SHORT TERM
2016–2021

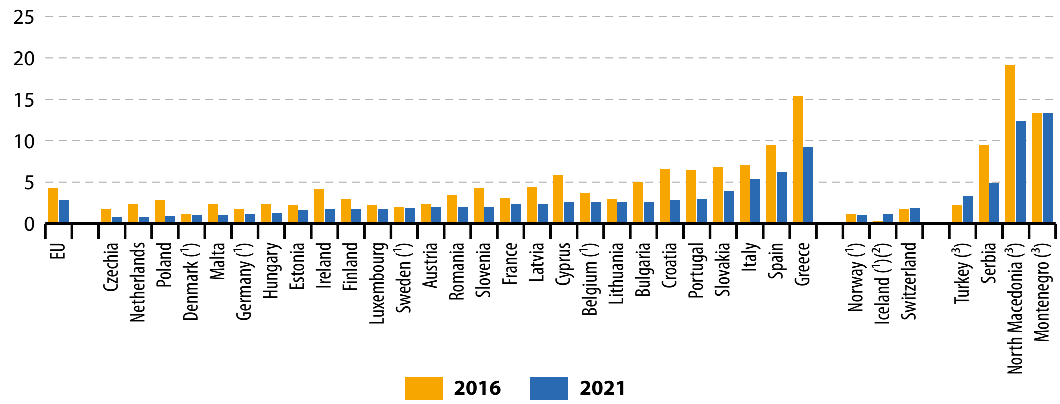
Long-term unemployment is measured for the population in the labour force (which includes both employed and unemployed people) aged 15 to 74 who have been unemployed for 12 months or more. Long-term unemployment increases the risk of inactivity and falling into poverty and has negative implications for society as a whole. People in the EU who are long-term unemployed have about half the chance of finding employment as those who are short-term unemployed ([25]). Data presented in this section stem from the EU Labour Force Survey (EU-LFS).

Figure 8.9: **Long-term unemployment rate, by sex, EU, 2009–2021**
(% of population in the labour force)



Compound annual growth rate (CAGR) for the total: – 0.8 % per year in the period 2009–2021; – 8.2 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_08_40)

Figure 8.10: **Long-term unemployment rate, by country, 2016 and 2021**
(% of population in the labour force)



(1) Break(s) in time series between the two years shown.
(2) 2017 data (instead of 2016).
(3) 2020 data (instead of 2021).

Source: Eurostat (online data code: sdg_08_40)

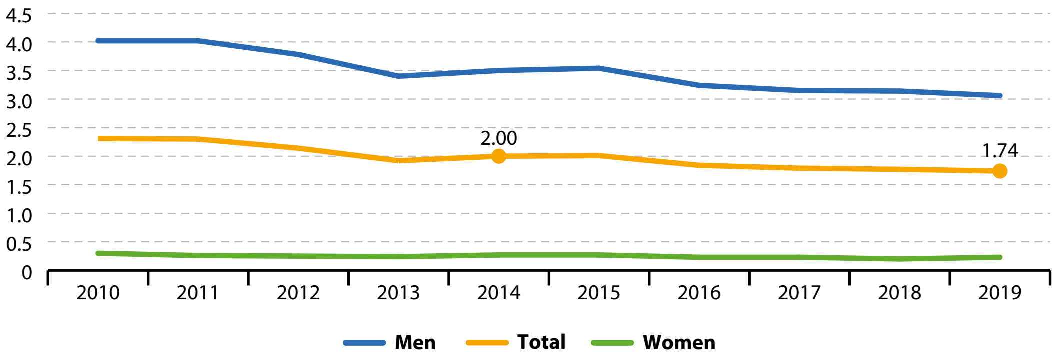
X LONG TERM
Time series too short

SHORT TERM
2014–2019

Fatal accidents at work

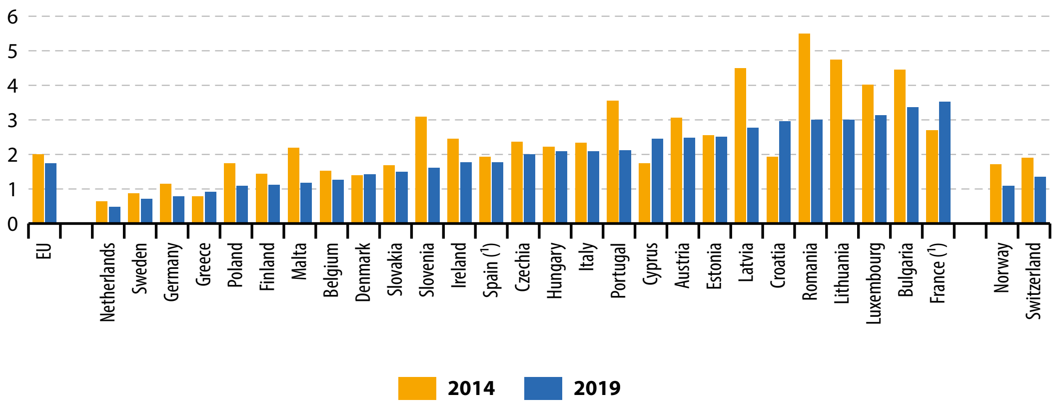
Fatal accidents at work are those occurring during the course of employment and leading to the death of the victim within one year; commuting accidents occurring between the home and the workplace are excluded. The incidence rate refers to the number of accidents per 100 000 persons in employment. Data presented in this section are collected in the framework of the administrative data collection 'European Statistics on Accidents at Work (ESAW)' ([26]). As an exception, fatal road traffic accidents at work are not included in the data from the Netherlands.

Figure 8.11: Fatal accidents at work, EU, 2010–2019
(number per 100 000 workers)



Compound annual growth rate (CAGR) for the total: – 2.7 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_08_60)

Figure 8.12: Fatal accidents at work, by country, 2014 and 2019
(number per 100 000 workers)



(¹) Break(s) in time series between the two years shown
Source: Eurostat (online data code: sdg_08_60)

Notes

(1) European Parliament and Council of the European Union (2013), *Regulation (EU) No 1304/2013 on the European Social Fund and repealing Council Regulation (EC) No 1081/2006.*
(2) European Commission (2020), *Employment and Social Developments in Europe 2020,* Publications Office of the European Union, Luxembourg, p. 22.
(3) European Commission (2021), *European Economic Forecast, Winter 2022,* Publications Office of the European Union, Luxembourg, p. 8.
(4) Due to the entry into force of Regulation 2019/1700 on 1 January 2021, there is a break in the LFS data series between 2020 and 2021 for most countries. Correction input (which can be correction factors or corrected LFS indicators) has been sent by countries to Eurostat, which has been used to break-correct some of the LFS time series, while some others have not been corrected. Accordingly, data on total and female/male employment rate, as well as (long-term) unemployment use break-corrected data for the years 2009 to 2020, based directly on the correction input received from countries. Data on employment by degree of urbanisation and employment by NUTS use raw data received before 2021, i.e. non break-corrected data. Data on part-time employment use break-corrected data based, for most countries, on derivations done by Eurostat using the correction input received from countries (derived indicators).
(5) European Commission (2017), *Employment and Social Developments in Europe 2017,* Publications Office of the European Union, Luxembourg, p. 10.
(6) European Commission (2021), *Proposal for a Joint Employment Report from the Commission and the Council*, COM(2021) 743 final, Brussels.
(7) Source: Eurostat (online data code: lfst_r_ergau).
(8) Source: Eurostat (online data code: une_rt_a).
(9) Source: Eurostat (online data code: lfst_r_urgau).
(10) European Commission (2020), *Employment and Social Developments in Europe 2020,* Publications Office of the European Union, Luxembourg, p. 29.
(11) Fana, M., Tolan, S., Torrejón, S., Urzi Brancati, C., Fernández-Macías, E (2020), *The COVID confinement measures and EU labour markets*, Publications Office of the European Union, Luxembourg.
(12) Source: Eurostat (online data code: lfsa_ergan).
(13) Source: Eurostat (online data code: lfsa_urgaed).
(14) Source: Eurostat (online data code: edat_lfse_29).
(15) Source: Eurostat (online data code: lfsa_epgar).
(16) Source: Eurostat (online data code: lfsa_epgaed).
(17) Eurostat, *Prevalence of disability* (source LFS).
(18) Source: Eurostat (online data code: hlth_dlm200).
(19) International Labour Organisation (2022), *Decent work*.
(20) Source: Eurostat (online data code: hsw_n2_ 02).
(21) Eurostat (2022), *Statistics Explained: Accidents at work — statistics by economic activity*.
(22) European Commission (2020), *Joint Employment Report 2020*, Directorate-General for Employment, Social Affairs and Inclusion, Brussels, p. 11.
(23) Source: Eurostat (online data code: lfsa_etgar).
(24) Source: Eurostat (online data codes: lfsa_epgar, lfsa_epgaed).
(25) European Commission (2016), *Employment and Social Developments in Europe 2015*, Publications Office of the European Union, Luxembourg, p. 13.
(26) Eurostat (2013), *European Statistics on Accidents at Work (ESAW) — Summary methodology*, Publications Office of the European Union, Luxembourg.

9 Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

SDG 9 calls for building resilient and sustainable infrastructure and promotes inclusive and sustainable industrialisation. It also recognises the importance of research and innovation for finding lasting solutions to social, economic and environmental challenges.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

eurostat supports the SDGs

To combat the wide range of political, economic and sustainability challenges faced by the EU, SDG 9 calls on countries to build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. Inclusive and sustainable industrial development is an important source of income and allows for rapid and sustained increases in living standards for all people. Research and development (R&D) and innovation drive competitiveness, economic growth, job creation, labour productivity and resource efficiency. They are also of key importance for tackling the COVID-19 pandemic and its economic and social consequences, as well as supporting the recovery in the EU. In general, R&D and innovation are crucial for delivering the European Green Deal and the Digital Single Market. By undergoing a 'green transformation', industry plays a leading role in achieving a clean, competitive and circular economy. Therefore, investments in sustainable infrastructure are key elements for achieving the SDGs. This involves increasing the deployment of low- and zero-emission vehicles, renewable and low-carbon fuels and infrastructure, and the roll-out of high-speed internet connectivity in order to remain competitive in an increasingly digitalised world.

Table 9.1: Indicators measuring progress towards SDG 9, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
R&D and innovation			
◎ Gross domestic expenditure on R&D	↗	↗	page 171
R&D personnel	↑	↑	page 173
Patent applications to the European Patent Office	↑	↑	page 174
◎ Tertiary educational attainment (*)	↑	↑	SDG 4, page 95
Sustainable industry			
Air emissions intensity of industry	↑ (¹)	↑	page 176
Gross value added in environmental goods and services sector (*)	↑	↑	SDG 12, page 228
Sustainable infrastructure			
Share of buses and trains in inland passenger transport	↘	↘	page 177
Share of rail and inland waterways in inland freight transport	↘ (²)	↓	page 178
◎ Share of households with high-speed internet connection (*)	:	↑	SDG 17, page 315

(*) Multi-purpose indicator.
(¹) Past 11-year period.
(²) Past 14-year period.

Table 9.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
◎	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 9 'Industry, innovation and infrastructure'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

R&D and innovation

A new vision for the European Research Area (ERA) aims to build a common scientific and technology area for the EU, by prioritising investments and reforms, improving access to excellence, translating research and innovation results into the economy and deepening the ERA. The EU has a long-standing objective of increasing its R&D intensity to 3 % of GDP, which was reaffirmed in a Council Recommendation on a Pact for Research and Innovation in Europe from November 2021.

The EU research and innovation programme Horizon Europe (1) aims to support researchers and innovators to drive the systemic changes needed to ensure a green, healthy and resilient Europe.

The European Education Area (EEA) is an initiative that enables all young people to benefit from the best education and training and to find employment across Europe (2). The European Education Area strategic framework (3) promotes collaboration between EU Member States and key stakeholders and sets the target that at least 45 % of 25–34-year-olds in the EU should have completed tertiary education by 2030.

Sustainable industry

The EU's 2021 Updated New Industrial Strategy aims to support industry to shift towards climate neutrality and to build a more circular economy (4). It also promotes job creation in the green economy, and encourages investments in skills and in people to deliver on the twin — green and digital — transition.

Sustainable infrastructure

The Sustainable and Smart Mobility Strategy (5) sets various milestones for smart and sustainable transport modes to reach the climate targets of the European Green Deal.

The Trans-European Transport Network (TEN-T) policy is directed towards implementing and developing an effective, EU-wide and multimodal network of roads, railway lines, inland waterways, ports, airports and rail-road terminals with the Connecting Europe Facility supporting the transition to sustainable mobility. With its Action Plan to boost long-distance and cross-border passenger rail services (6) and the proposed revision of the TEN-T Regulation, the EU aims to contribute to more attractive cross-border options with rail transport.

The 2030 Digital Compass (7) presents a vision and avenues for Europe's digital transformation and sets the target that all European households should be covered by a gigabit network by 2030.

Industry, innovation and infrastructure in the EU: overview and key trends

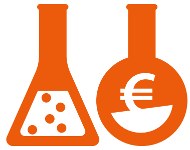
Monitoring SDG 9 in an EU context focuses on research and development (R&D) and innovation, sustainable industry and sustainable infrastructure. As Table 9.1 shows, R&D and innovation in the EU has progressed in terms of R&D intensity and personnel, patent applications and tertiary educational attainment in recent years. The analysis on sustainable industry comprises the air emissions intensity of the manufacturing sector and the gross value added of environmental goods and services, both of which show a clearly favourable trend. Indicators on sustainable infrastructure show unfavourable trends for sustainable transport and mobility patterns, especially in the short term, while the roll-out of high-speed internet access has progressed considerably.

R&D and innovation

R&D expenditure is a key enabling factor for smart, sustainable and inclusive growth. Introducing new ideas to the market promotes job creation, labour productivity and efficient use of resources. Highly skilled human resources are imperative for keeping the EU's research and innovation capacity and competitiveness up to date. Innovative products and services, often as a result of R&D activities, contribute to smart growth and sustainable industrialisation. R&D and innovation are also essential for finding solutions to societal and environmental challenges such as climate change and clean energy, security, and active and healthy ageing.

EU expenditure on R&D has shown only modest growth

The EU economy is facing increasing global competition and can only remain competitive with other countries and regions in the world by strengthening its scientific and technological base. Therefore, one of the key aims of EU policies over recent decades has been to encourage greater investment in R&D. This is monitored here by looking at gross domestic expenditure on R&D in relation to GDP, referred to as R&D intensity. R&D intensity thus reflects both growth in spending on R&D and growth in GDP.



2.3 %
of GDP was spent on R&D in the EU in 2020

Despite the EU's long-standing 3 % target, the EU's R&D intensity has grown only modestly over the past 20 years. After prolonged stagnation between 2000 and 2007, the EU's R&D intensity has increased slowly, stabilising at just above 2.0 % since 2011 and reaching 2.3 % in 2020. In absolute terms, this corresponded to an R&D expenditure of about EUR 311 billion in 2020, compared with EUR 228 billion in 2011 [8]. With a gap of 0.7 percentage points, the EU nevertheless remains at some distance from its ambition of raising R&D intensity to 3 % by 2030.

Private expenditure accounts for two-thirds of total R&D expenditure

An analysis of gross domestic expenditure on R&D by sector of performance shows that the two biggest spenders in 2020 remained the business enterprise sector (65.8 % of total R&D expenditure) and the higher education sector (21.9 %). The share of the government sector was 11.7 %, while the private non-profit sector accounted for less than 1 % of total R&D expenditure [9].

The business enterprise sector accounts for the lion's share of total R&D expenditure and has increased its R&D intensity by 0.4 percentage points over the past 15 years, from 1.13 % of GDP in 2005 to 1.53 % in 2020. Simultaneously the higher education sector increased its R&D intensity from 0.39 % in 2005 to 0.51 % of GDP in 2020. In contrast, the R&D intensities of the government and private non-profit sectors have more or less stagnated at lower levels.

The number of patent applications to the European Patent Office has grown

Patent applications provide a valuable measure of the creative and innovative capacity of countries, regions and companies and of the economic exploitation of research results. In 2021, 67 713 patent applications from within the EU were submitted to the European Patent Office. This figure was reached after an almost continuous period of growth since 2006, when 55 197 applications were submitted. The only year to record a strong year-on-year drop in applications was 2009 as a result of the economic crisis ([10]).

67 713
patent applications from within the EU were submitted to the European Patent Office in 2021

The availability of human capital for a knowledge-based society is growing, but gender disparities remain

The growing knowledge orientation of the EU's economy and society, together with developments in the labour market and demographic trends, make human capital increasingly important. Achieving the SDGs will require ambitious investments in Research and Development (R&D) and significant innovation, including further investment in skills development and in lifelong learning ([11]).

R&D personnel consists of researchers engaged directly in R&D as well as those persons providing direct services for the R&D activities (such as R&D managers, administrators, technicians and clerical staff) ([12]). The share of R&D personnel in the labour force has increased steadily since 2005, from 0.94 % to 1.44 % in 2020 (full-time equivalent). This trend was mainly driven by the business enterprise sector, which employed more than half of the R&D workforce in 2020.

1.44 %
of the economically active population in the EU worked in R&D in 2020

An analysis by sex, however, reveals that women remain considerably underrepresented among researchers based on head count in the EU, accounting for only 32.9 % in 2019. There has been no considerable progress since 2003, when the share stood at 29.0 %. This underrepresentation is particularly strong in the business enterprise sector, where women only made up 21.3 % of researchers in 2019. In contrast, women accounted for more than 40 % of researchers in the other three sectors (government, higher education and non-profit sector), with the private non-profit sector being the closest to achieving parity at 48.4 % in 2019. Compared with the other sectors, the higher education sector recorded the largest increase in female researchers: between 2003 and 2019, it increased by 8.4 percentage points to 43.0 % ([13]).

Data on tertiary educational attainment show a general long-term increase in the EU population's skill levels. Between 2006 and 2021, the share of 25- to 34-year olds with a university degree or similar increased from 28.1 % to 41.2 %. The EU is therefore on track to reach its target of raising this share to at least 45 % by 2030, as set out in the Council Resolution on the European Education Area ([14]). However, differences between the sexes remain considerable, and when compared with the situation for R&D personnel, the gender imbalance is reversed. While 46.8 % of women aged 25 to 34 years had accomplished tertiary education in 2021, only 35.7 % of men in this age group had done so. This gender gap has been widening almost continuously since 2006. For further details on tertiary education and the gender gap, see the chapters on SDG 4 'Quality education' on page 85 and SDG 5 'Gender equality' on page 101.

41.2 %
of the EU population aged 25 to 34 had accomplished tertiary education in 2021

Sustainable industry

Mobilising industry for a clean and circular economy is one of the key priorities of the European Green Deal, which seeks to support and accelerate the EU's industry transition to a sustainable model of inclusive growth ([15]). This requires a massive reduction in harmful air emissions from industrial production alongside increased use of greener products and services.

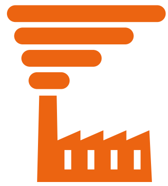
The air emissions intensity of EU industry has improved in recent years

Industry is vital for Europe's prosperity and future development. The EU industrial sector accounts for more than 20 % of the EU economy and employs about 35 million people ([16]). However, industry is also a source of many environmental pressures such as material consumption and the emission of greenhouse gases and other air pollutants. This analysis focuses on air pollutants emitted by industry, using particulate matter emissions from manufacturing as a proxy. For an analysis of the emissions of greenhouse gases from industry, see the chapter on SDG 13 'Climate action' on page 233.

Poor air quality causes premature deaths, impacts quality of life and damages ecosystems ([17]). Particulate matter, especially fine particulate matter ($PM_{2.5}$), is one of the most harmful components of air pollution for human health ([18]). According to the European Environment Agency, air pollution by $PM_{2.5}$ caused around 307 000 premature deaths in the EU in 2019, leading to 762 years of life lost per 100 000 inhabitants ([19]) (see chapters on SDG 3 'Good health and well-being' on page 67 and on SDG 11 'Sustainable cities' on page 201). In 2019, the EU's manufacturing sector was responsible for more than a fifth (22.0 %) of total $PM_{2.5}$ emissions. In comparison, in the same year, more than a third (36.6 %) of total $PM_{2.5}$ emissions could be attributed to transportation and storage, and slightly more than one fifth (21.1 %) to agriculture, forestry and fishing ([20]).

Data on emissions intensity monitor a sector's air emissions relative to its economic output in terms of gross value added (GVA). Between 2008 and 2019, the air emissions intensity of fine particulate matter ($PM_{2.5}$) of the EU's manufacturing sector dropped by 36.4 %, from 0.11 grams per euro to 0.07 grams per euro. This improvement is a result of the sector's $PM_{2.5}$ emissions falling by 25.5 % between 2008 and 2019, while its GVA grew almost continuously, by 13.5 %, during the same period.

In the past five years, however, $PM_{2.5}$ emissions from manufacturing have increased slightly by 0.4 %, alongside a 14.5 % increase in the sector's GVA between 2014 and 2019 ([21]). As a consequence, the improvement in the sector's emissions intensity did not only slow down to 12.5 % over this five-year period, but also mainly reflected strong economic performance rather than environmentally friendly developments. This underlines the need for further transformation of EU industry as envisaged by the Commission in its New Industrial Strategy ([22]).



12.5 %
improvement in the manufacturing sector's emissions intensity of fine particulate matter between 2014 and 2019

In general, the improvement of $PM_{2.5}$ emissions was comparable to the broader group of fine and coarse particulate matter (PM_{10}), with the respective emissions intensity decreasing by 37.5 % (2008–2019) and 16.7 % (2014–2019).

Gross value added of environmental goods and services has grown strongly

The EU's 2021 Updated New Industrial Strategy strives for a greener industry in Europe. Products and services that, for instance, prevent or limit environmental pollution, repair and correct resource depletion or protect biodiversity may contribute to a so-called green economy. These kinds of environmental goods and services (EGSS) are gaining in importance. In 2019, they accounted for a gross value added of EUR 293.2 billion. This is a 66.4 % increase compared with 2004, when the EU's GVA of environmental goods and services amounted to EUR 176.2 billion. In relation to the whole economy, the environmental goods and services sector grew from 1.7 % of GDP in 2004 to 2.3 % in 2019. This indicates the sector grew, in gross value added terms, disproportionally faster than other economic sectors.

293.2 billion EUR of gross value added were generated by the EU's environmental goods and services sector in 2019

Employment (in full-time equivalent) in the sector has also increased since 2004, by 35.8 %. In 2019, the sector employed more than 4.5 million people in the EU [23]. The development is related to multiple factors, which, among other things, include growth in private investments in environmental goods and services, encouraged by increasing government interventions in this area [24].

Sustainable infrastructure

The European Green Deal aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy. To achieve this vision, the EU needs to address the twin challenges of the green and the digital transformations. In this context, the Green Deal calls for an acceleration in the shift to sustainable and smart mobility as well as for investments in digitalisation to support the ecological transition. Multimodal freight transport as well as automated and connected multimodal mobility will consequently need to play an increasing role, together with smart traffic management systems enabled by digitalisation.

Cars remain the dominant mode for inland passenger transport

Well-functioning and efficient transport and mobility systems are key elements for a competitive economy. Growth in transport activities puts increasing pressure on natural resources and on societies. Emissions of greenhouse gases, air pollutants and noise from transport affect the climate, the environment and human health. As the transport sector is responsible for nearly one-quarter of greenhouse gas (GHG) emissions in the EU (see the chapter on SDG 13 'Climate action' on page 233), sustainable transport is an essential ingredient in sustainable development strategies. Rethinking future mobility includes optimising the use of all means of transport, promoting car sharing and the integration between different modes of collective transport such as trains and buses [25].

17.2 % of passenger-km in the EU were covered by buses and trains in 2019

The modal share of inland passenger transport has not changed substantially since 2000, with passenger cars still accounting for 82.8 % of inland passenger transport in the EU in 2019 [26]. As a result, the share of buses and trains has stagnated around 17 % and accounted for 17.2 % in 2019. This is a 0.9 percentage point decrease from its 2013 peak of 18.1 %.

The EU's freight transport system still relies on road transport

Similar to passenger transport, the modal split of freight transport has not changed substantially since 2005. Despite the EU's policy objective to shift freight from road to rail and inland waterways, road continues to have by far the largest share of EU freight transport among the three inland transport modes analysed in this report (road, rail and inland waterways). The share of rail and inland waterways in total freight transport in the EU accounted for 23.7 % in 2019, which is a 2.4 percentage point decrease since 2014.

23.7 % of total inland freight tonne-km in the EU was carried out via rail and inland waterways in 2019

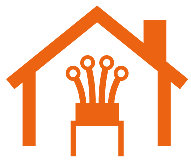
Considerable differences do exist at country level though. In 2019, three countries (Latvia, Lithuania and Romania) had higher freight transport shares for rail and inland waterways than for road. Particularly high shares of rail transport were reported from the Baltic countries Latvia (73.6 %), Lithuania (67.4 %) and Estonia (42.0 %). And in the Netherlands, freight transport via inland waterways still plays an important role (modal split of 42.7 % in 2019).

A look at the absolute transport performance of goods reveals that in the EU road freight transport (in tonne-kilometres) is strongly linked to economic growth. Between 2014 and 2019, the EU's GDP grew by 11.5 %, while the goods transport by road increased even more strongly, by 14.9 % ([27]). Over the same period, freight transport by rail increased only by about 4 % in the EU ([28]). In contrast, the inland waterways transport decreased by 7.3 % ([29]). However, the performance of this transport mode is strongly linked to environmental and hydraulic conditions, such as water levels and the impact of droughts ([30]).

Considerable progress has been made in rolling out fixed very high capacity network connections across the EU

Digital connections are crucial for today's economies and societies. Instant communication between individuals, bank transfers, office work, public dissemination of information, or data analysis are only some of the activities that depend on the internet. Especially in rural and remote areas, fast internet connection can significantly improve access to various services such as health care and education. Regions without fast internet connections have serious social and economic disadvantages in a digitalised world. The 2030 Digital Compass thus proposed the target that by 2030 all European households should be covered by a gigabit network, with all populated areas covered by 5G ([31]).

Data collected by the European Commission services for the key dimensions of the European information society ([32]) show that the uptake of fixed very high capacity network (VHCN) connectivity — referring to fibre connections or other networks offering similar bandwidth ([33]) — has improved considerably in the EU over the past few years. While only 25.2 % of EU households had access to such connectivity in 2016, this share has risen considerably, reaching 70.2 % of households in 2021. If VHCN roll-out continues at this pace, the EU will reach 100 % coverage well ahead of 2030. VHCN connectivity has also improved in rural areas ([34]). Between 2016 and 2021, the share of rural households with fixed VCHN connection increased from 7.7 % to 37.1 % across the EU. Despite this positive development, VCHN connectivity in rural areas remains at some distance from the 2030 target. In addition, basic digital skills for all citizens (see the chapter on SDG 4 'Quality education' on page 85) are a general prerequisite for ensuring they benefit from digital developments ([35]).



70.2 %
of EU households had high-speed internet coverage in 2021

Presentation of the main indicators

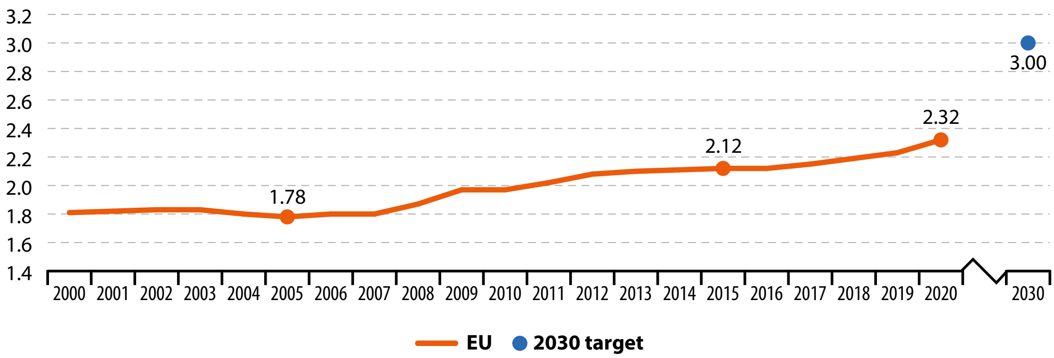
Gross domestic expenditure on R&D

LONG TERM 2005–2020

SHORT TERM 2015–2020

This indicator measures gross domestic expenditure on R&D (GERD) as a percentage of gross domestic product (GDP) — also called R&D intensity. The *Frascati Manual* defines research and experimental development (R&D) as creative and systematic work undertaken in order to increase the stock of knowledge — including knowledge of humankind, culture and society — and to devise new applications of available knowledge [36].

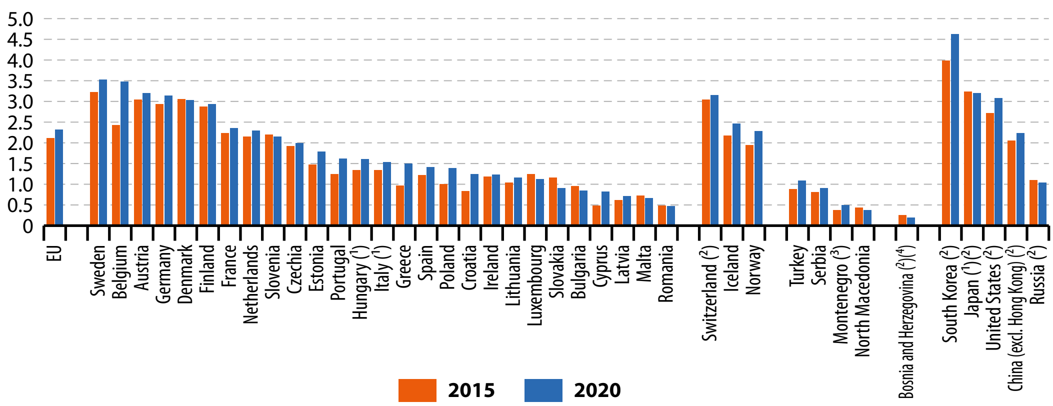
Figure 9.1: Gross domestic expenditure on R&D, EU, 2000–2020
(% of GDP)



Note: Data for 2000 to 2019 are estimated; 2020 data are provisional.
Compound annual growth rate (CAGR): 1.8 % per year (observed) and 2.1 % per year (required to meet target) in the period 2005–2020; 1.8 % per year (observed) and 2.3 % per year (required to meet target) in the period 2015–2020.

Source: Eurostat (online data code: sdg_09_10)

Figure 9.2: Gross domestic expenditure on R&D, by country, 2015 and 2020
(% of GDP)

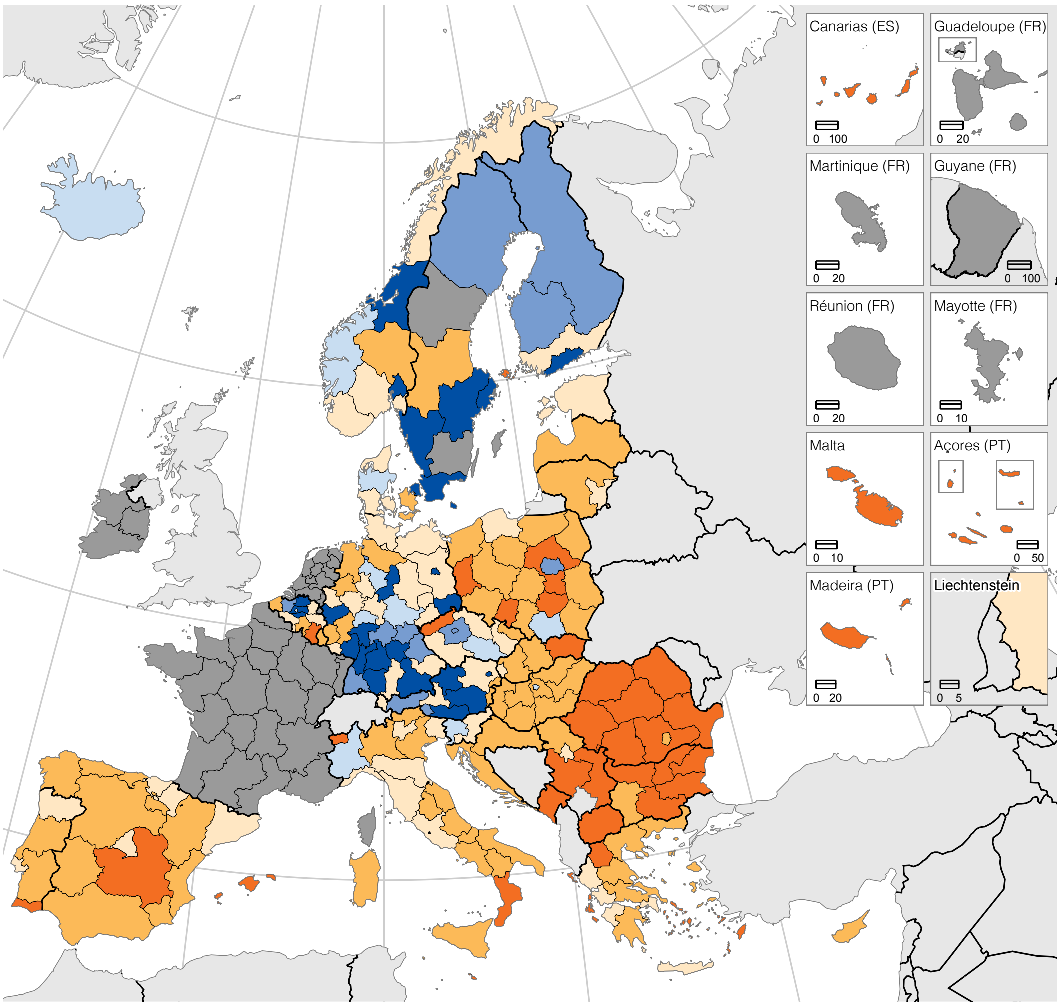


Note: Estimated or provisional data for many countries.

(1) Break(s) in time series between the two years shown.
(2) 2019 data (instead of 2020).
(3) 2018 data (instead of 2020).
(4) 2014 data (instead of 2015).

Source: Eurostat (online data codes: sdg_09_10 and rd_e_gerdtot)

Map 9.1: **Gross domestic expenditure on R&D, by NUTS 2 region, 2019**
(% of GDP)



EU = 2.23

Administrative boundaries: © EuroGeographics © UN–FAO © Turkstat
Cartography: Eurostat – IMAGE, 04/2022

- >= 3
- 2.5 – < 3
- 2.23 – < 2.5
- 1.4 – < 2.23
- 0.6 – < 1.4
- < 0.6
- Data not available

0 200 400 600 800 km

Note: 2017 data for all regions in Belgium; 2018 data for all regions in Norway and Montenegro.
Source: Eurostat (online data code: RD_E_GERDREG)

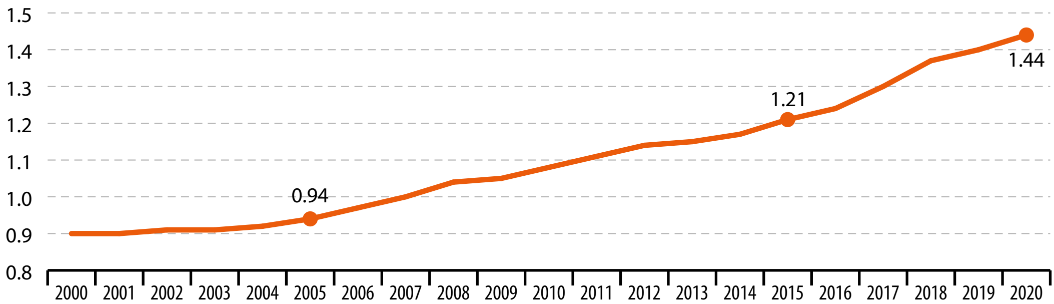
R&D personnel

LONG TERM 2005–2020

SHORT TERM 2015–2020

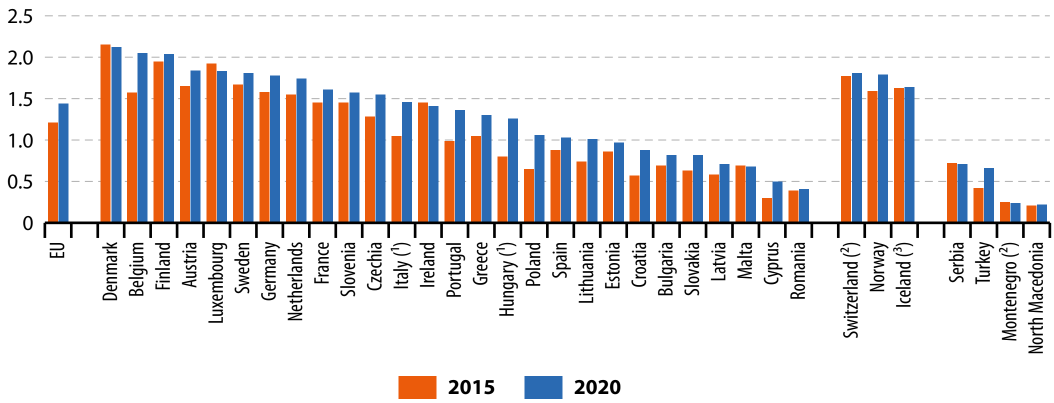
This indicator measures the share of R&D personnel in the following institutional sectors: business enterprise, government, higher education and private non-profit. Data are presented in full-time equivalents as a share of the labour force. R&D personnel consists of persons engaged directly in R&D, which refers to the creative and systematic work undertaken in order to increase the stock of knowledge, including knowledge of humankind, culture and society, and to devise new applications of available knowledge. In addition, R&D personnel also includes those providing direct services for the R&D activities, such as R&D managers, administrators, technicians and clerical staff.

Figure 9.3: R&D personnel, EU, 2000–2020
(% of population in the labour force)



Note: Data for 2000–2019 are estimated; 2020 data are provisional.
Compound annual growth rate (CAGR): 2.9 % per year in the period 2005–2020; 3.7 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_09_30)

Figure 9.4: R&D personnel, by country, 2015 and 2020
(% of population in the labour force)



Note: Estimated or provisional data for many countries.
(¹) Break(s) in time series between the two years shown.
(²) 2019 data (instead of 2020).
(³) 2018 data (instead of 2020).
Source: Eurostat (online data code: sdg_09_30)

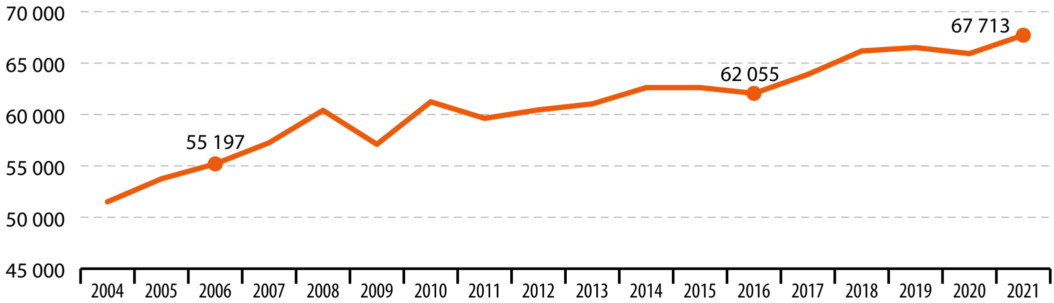
LONG TERM
2006–2021

SHORT TERM
2016–2021

Patent applications to the European Patent Office

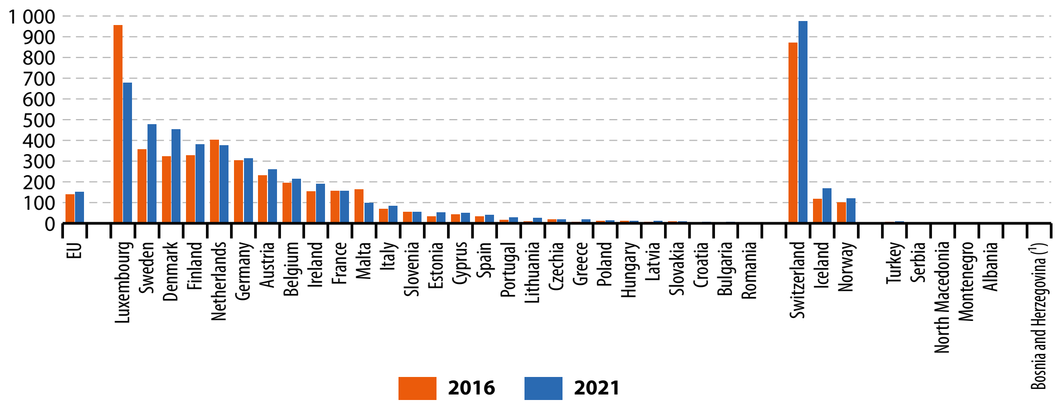
This indicator measures requests for the protection of an invention filed with the European Patent Office (EPO) regardless of whether they are granted or not. Applications are allocated according to the country of residence of the first applicant listed on the application form (first-named applicant principle) as well as according to the country of residence of the inventor.

Figure 9.5: Patent applications to the European Patent Office (EPO), by country of applicant, EU, 2004–2021
(number)



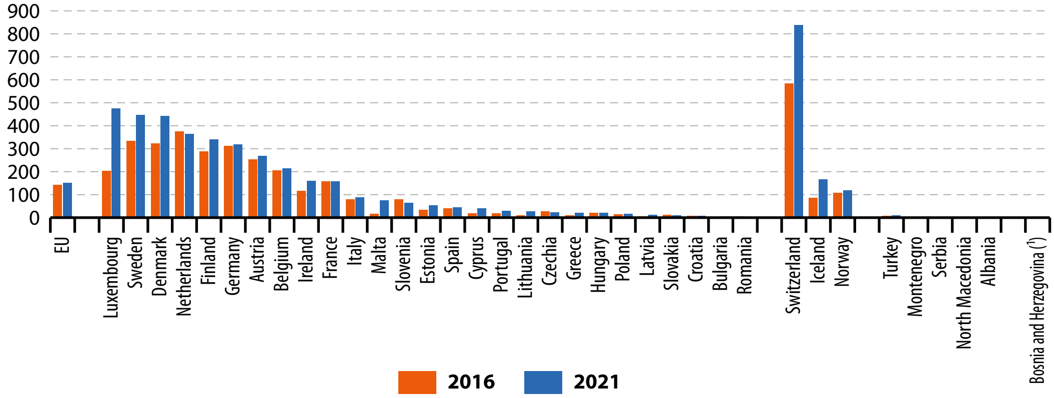
Note: 2021 data are provisional.
Compound annual growth rate (CAGR): 1.4 % per year in the period 2006–2021; 1.8 % per year in the period 2016–2021.
Source: EPO (Eurostat online data code: sdg_09_40)

Figure 9.6: Patent applications to the European Patent Office (EPO), by country of applicant, 2016 and 2021
(per million inhabitants)



Note: 2021 data are provisional.
(1) No data for 2021.
Source: EPO, Eurostat (online data code: sdg_09_40)

Figure 9.7: **Patent applications to the European Patent Office (EPO), by country of inventor, 2016 and 2021**
(per million inhabitants)



Note: 2021 data are provisional.
([1]) No data for 2021.

Source: EPO, Eurostat (online data code: sdg_09_40)

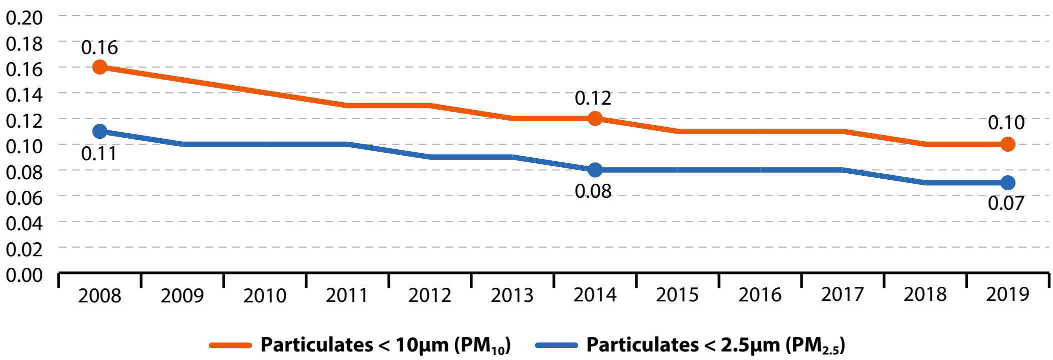
LONG TERM 2008–2019

SHORT TERM 2014–2019

Air emissions intensity of industry

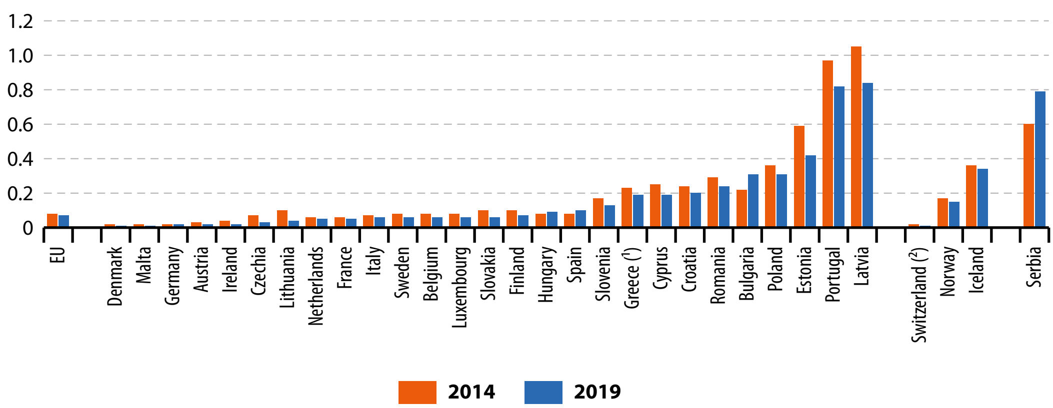
This indicator measures the emissions intensity of particulate matter (PM_{10} and $PM_{2.5}$) from the manufacturing sector (NACE Rev. 2 sector 'C'). Air emissions are defined as flows of gaseous and particulate materials emitted into the atmosphere. Fine and coarse particulates (PM_{10}) are less than 10 micrometres in diameter and can be carried deep into the lungs, where they can cause inflammation and exacerbate the condition of people suffering from heart and lung diseases. Fine particulates ($PM_{2.5}$) are less than 2.5 micrometres in diameter and are therefore a subset of the PM_{10} particles. Their negative health impacts are more serious than PM_{10} because they can be drawn further into the lungs and may be more toxic. Emission intensity is calculated by dividing the sector's PM emissions by its gross value added (GVA), which is defined as output (at basic prices) minus intermediate consumption (at purchaser prices).

Figure 9.8: **Air emissions intensity of industry for particulate matter, EU, 2008–2019**
(grams per euro, chain-linked volumes, 2010)



Note: 2008 data are Eurostat estimates.
Compound annual growth rate (CAGR) for $PM_{2.5}$: – 4.0 % per year in the period 2008–2019; – 2.6 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_09_70)

Figure 9.9: **Air emissions intensity of industry for particulate matter ($PM_{2.5}$), by country, 2014 and 2019**
(grams per euro, chain-linked volumes, 2010)

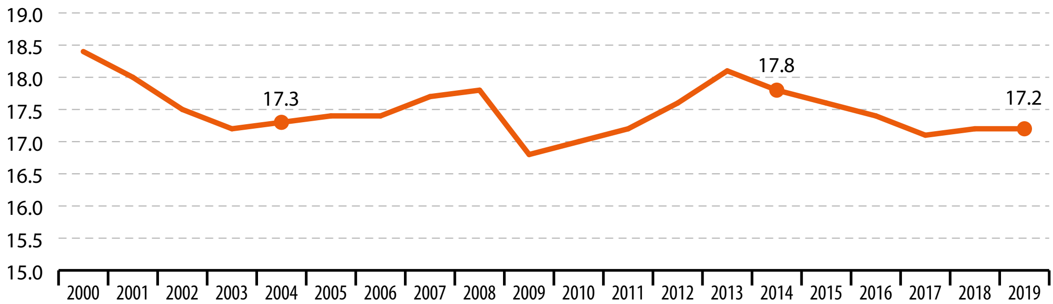


([1]) Estimated data.
([2]) 2018 data (instead of 2019).
Source: Eurostat (online data code: sdg_09_70)

Share of buses and trains in inland passenger transport

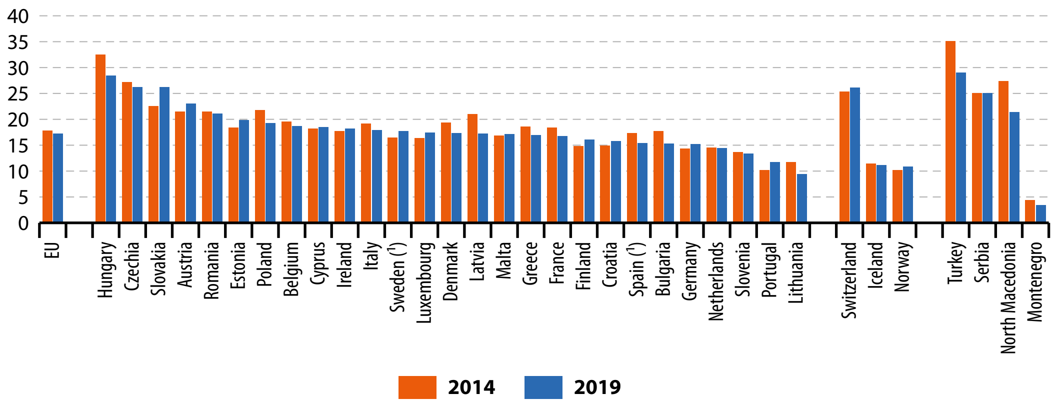
This indicator measures the share of buses, including coaches and trolley-buses, and trains in inland passenger transport, expressed in passenger-kilometres (pkm). Passenger transport here includes transport by passenger cars, buses and coaches, and trains, but excludes inland waterways, air and sea transport. All data are based on movements within national territories, regardless of the vehicle's nationality vehicle. Road data stem from a voluntary collection and are not fully harmonised at the EU level. Tram and metro systems are not included because the data collection methodology for these means of transport is not sufficiently harmonised between Member States.

Figure 9.10: Share of buses and trains in inland passenger transport, EU, 2000–2019
(% of passenger-km)



Note: Estimated data.
Compound annual growth rate (CAGR): – 0.04 % per year in the period 2004–2019; – 0.7 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_09_50)

Figure 9.11: Share of buses and trains in inland passenger transport, by country, 2014 and 2019
(% of passenger-km)



Note: Estimated data for EU and many countries.
([1]) Break(s) in time series between the two years shown.
Source: Eurostat (online data code: sdg_09_50)

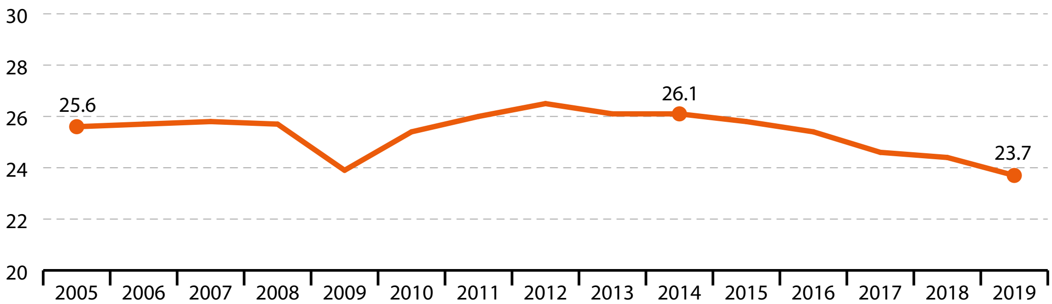
LONG TERM 2005–2019

SHORT TERM 2014–2019

Share of rail and inland waterways in inland freight transport

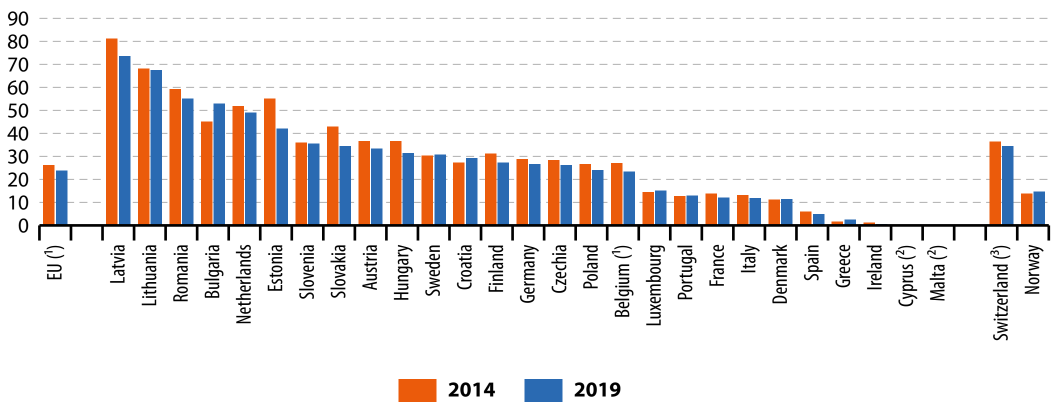
This indicator measures the share of rail and inland waterways in inland freight transport, expressed in tonne-kilometres (tkm). Inland freight transport includes road, rail and inland waterways. All data are based on movements on national territory; rail and inland waterways transport are collected based on movements on national territory, regardless of the nationality of the train or vessel. Road transport activity is collected according to the country of registration of the vehicle, regardless of the territory where the activity is performed. The activity is redistributed to the territory where the activity is actually performed by modelling the likely journey itinerary on the European road network. Neither sea nor air freight transport are included.

Figure 9.12: **Share of rail and inland waterways in inland freight transport, EU, 2005–2019**
(% of freight tonne-km)



Note: Data for 2005–2008 and 2012–2019 are estimated.
Compound annual growth rate (CAGR): – 0.5 % per year in the period 2005–2019; – 1.9 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_09_60)

Figure 9.13: **Share of rail and inland waterways in inland freight transport, by country, 2014 and 2019**
(% of freight tonne-km)



([1]) Estimated data.
([2]) Not applicable (no rail or inland waterways).
([3]) 2019 data are estimated.

Source: Eurostat (online data code: sdg_09_60)

Notes

(1) European Commission (2021), *Horizon Europe*.
(2) European Commission (2020), *Communication from the Commission to the European Parliament, the Council, the European economic and social Committee and the Committee of the regions on achieving the European Education Area by 2025*, COM(2020) 625 final, Brussels.
(3) Council of the European Union (2021), *Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030)*, (2021/C 66/01).
(4) European Commission (2021), *Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery*, COM(2021) 350 final.
(5) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM (2020) 789 final.
(6) European Commission (2021), *Action plan to boost long distance and cross-border passenger rail*, COM (2021) 810 final.
(7) European Commission (2021), *2030 Digital Compass: the European way for the Digital Decade*, COM(2021) 118 final.
(8) Eurostat (online data code: rd_e_gerdtot).
(9) Ibid.
(10) European Patent Office (2009), *Annual Report 2009*, p. 13.
(11) International Labour Organization (2021), *World Employment and Social Outlook — Trends 2021*, p. 114.
(12) Eurostat (2022), *Research and development (R&D) — Reference Metadata*.
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(15) European Commission (2019), *The European Green Deal*, COM(2019) 640 final.
(16) European Commission (2020*), A New Industrial Strategy for Europe*, p. 2.
(17) European Commission (2022), *Clean air*.
(18) World Health Organization (2021), *Ambient (outdoor) air pollution*, (Factsheet, 21 September 2021).
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(20) Eurostat (online data code: env_ac_ainah_r2).
(21) Eurostat (online data codes: env_ac_ainah_r2 and nama_10_a10).
(22) European Commission (2020*), A New Industrial Strategy for Europe*, p. 3.
(23) Source: Eurostat (online data code: env_ac_egss1).
(24) European Emvironmental Agency (2019): *Environmental Goods and Services Sector: employment and value added*.
(25) Tram and metro systems are not included because the data collection methodology for these means of transport is not sufficiently harmonised between Member States.
(26) Eurostat (online data code: tran_hv_psmod).
(27) Eurostat (online data codes: nama_10_gdp and ttr00005).
(28) Estimated data based on Eurostat (online data code: rail_go_total).
(29) Eurostat (online data code: iww_go_atygo).
(30) European Inland Waterway Transport Platform (2021), *Forecasting the impacts of climate change on inland waterways*; CCNR (2021): *Annual Report 2021 — Water levels and freight rates*.
(31) European Commission 2021: *2030 Digital Compass: the European way for the Digital Decade*, p. 6.
(32) See European Commission, *Key Indicators*.
(33) Data until 2018 refer to FTTP (fiber to the premises) only, while data from 2019 onwards refer to both FTTP and DOCSIS 3.1 (Data Over Cable Service Interface Specification). DOCSIS allows adding high-bandwidth data transfer to existing cable television systems.
(34) In the context of the EU's digital agenda scoreboard indicators, rural areas are defined as those with fewer than 100 people per km^2.
(35) European Commission 2021: *2030 Digital Compass: the European way for the Digital Decade*, p. 6.
(36) OECD (2015*), Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*, OECD Publishing, Paris, § 1.32.

10 Reduce inequality within and among countries

10 REDUCED INEQUALITIES

eurostat supports the SDGs

SDG 10 addresses inequalities within and among countries. It calls for nations to reduce inequalities in income as well as those based on age, sex, disability, race, ethnicity, origin, religion or economic or other status within a country. The goal also addresses inequalities among countries, including those related to representation, and calls for the facilitation of orderly and safe migration and mobility of people.

It is widely agreed that economic prosperity alone will not achieve social progress. Research suggests that high levels of inequality risk leaving much human potential unrealised, damage social cohesion, lead to disproportionate exposure to adverse climate change impacts, hinder economic activity and undermine democratic participation. Although economists believe that some income inequality is necessary for the effective functioning of a market economy, as it allows for incentives that support investment and growth, an ever-widening gap between the rich and the poor is a matter of concern. Inequalities between countries have significant impacts on political decision-making processes, as poorer countries are often at a disadvantage in international policy-making structures. Moreover, less-developed countries lack capacities for sustainable development, while disproportionately facing the consequences of climate change, which has primarily been caused by rich countries. This imbalance between countries hampers the achievement of the SDGs on a global level. Therefore, ensuring cohesion between EU Member States and reducing inequalities, such as in economic performances, income and living standards, is one of the central objectives of the European Union.

Table 10.1: Indicators measuring progress towards SDG 10, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Inequalities within countries			
Income quintile share ratio	↘ (1)(2)	↘ (2)	page 189
Income share of the bottom 40 % of the population	↘ (1)(2)	↗ (2)	page 190
Relative median at-risk-of-poverty gap	↓ (1)(2)	↘ (2)	page 191
Urban–rural gap for risk of poverty or social exclusion (*)	:	↑ (2)(3)	page 196
Inequalities between countries			
Disparities in GDP per capita	↗ (4)	↘ (4)	page 192
Disparities in household income per capita	↑ (4)	↑ (4)	page 194
Migration and social inclusion			
Asylum applications	:	:	page 195
Citizenship gap for risk of income poverty after social transfers (*)	↘ (1)(2)(5)	↗ (2)(5)	page 197
Citizenship gap for early leavers from education and training (*)	↑ (5)	↘ (5)	page 197
Citizenship gap for young people neither in employment nor in education and training (NEET) (*)	↗ (5)	↑ (5)	page 198
Citizenship gap for employment rate (*)	↓ (5)	↗ (5)	page 198

(*) Multi-purpose indicator.
(1) Past 10-year period.
(2) Assessment arrow shown in grey because trend assessment is influenced by methodological changes in the EU-SILC surveys from 2020 of several countries, in particular Germany and France.
(3) Trend refers to evolution of gap between cities and rural areas.
(4) Calculation of trend based on coefficient of variation.
(5) Trend refers to evolution of gap between citizens of reporting EU countries and non-EU citizens.

Table 10.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 10 'Reduced inequalities'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Inequalities within countries

The European Pillar of Social Rights ([1]) sets out 20 key principles to support fair and well-functioning labour markets and welfare systems and to tackle inequalities. It serves as a new 'social rulebook' that ensures solidarity between generations and creates opportunities for all.

The Just Transition Mechanism ([2]) supports those who will be most affected by the transition to the climate-neutral society. The Commission's proposal for a Council Recommendation on ensuring a fair transition towards climate neutrality ([3]) provides policy guidance for addressing the relevant employment and social aspects linked to the transition.

The Commission's proposal for a Directive on adequate minimum wages ([4]) ensures that workers in the Union earn adequate minimum wages, thereby guaranteeing adequate working and living conditions.

The revised European Social Fund Plus (ESF+), with a budget of EUR 88 billion (in 2018 prices) as part of the Multiannual Financial Framework 2021–2027, will help to reduce inequalities.

By reducing disparities in the levels of development between European regions, the purpose of the European Regional Development Fund (ERDF) is to strengthen economic and social cohesion in the EU.

Inequalities between countries

The 2021–2027 EU Cohesion Policy focuses on five main objectives that drive investments in order to ensure all EU regions participate in the green and digital transitions in a fair and territorially balanced way.

Migration and social inclusion

The European Commission's New Pact on Migration and Asylum ([5]) aims to create faster migration processes and stronger governance of migration and border policies.

The Fund for European Aid to the Most Deprived (FEAD) may support asylum seekers by providing them with immediate relief and social assistance.

The European Commission's Action Plan on Integration and Inclusion (2021 to 2027) ([6]) sets out actions that support migrants' inclusion in education and employment, as well as access to health services and affordable housing.

The EU Skills Profile Tool for Third Country Nationals assists refugees, migrants and citizens of non-EU countries in profiling their skills and work qualifications to reception, employment and education services.

Reduced inequalities in the EU: overview and key trends

Leaving no one behind is a crucial part of achieving both the SDGs and the objectives of the European Green Deal. Monitoring SDG 10 in an EU context thus focuses on inequalities within countries, inequalities between countries, and migration and social inclusion. The assessment of income inequalities within EU countries is hampered by methodological changes in several national EU-SILC surveys in 2020, most importantly in Germany and France. The arrows shown in Table 10.1 for the respective indicators therefore represent an improvement in monitoring (due to better representativity of the sample population) rather than an actual deterioration of the situation on the ground, especially since income data collected in 2020 refer to the year 2019 and thus do not yet reflect the impacts of the COVID-19 pandemic (7). The trends in economic disparities between EU countries show a continued long-term converge of Member States in terms of GDP and income, even though the short-term trends are less clear. The picture is also mixed when it comes to migration and social inclusion. Despite moderate progress in certain areas, the EU still faces challenges in eliminating differences in social and labour market inclusion between home country nationals and non-EU citizens.

Inequalities within countries

High levels of inequality harm society in many ways. They can hamper social cohesion, result in lost opportunities for many, hinder economic activity, reduce social trust in institutions (8), lead to disproportionate exposure to adverse climate change impacts (9), and undermine democratic participation (10). Technological innovation and financial globalisation in particular have driven inequality within countries by favouring people with specific skills or accumulated wealth (11). Similarly, the transition to a climate-neutral society will have to be managed well to prevent rising inequality (12).

The income gap between the rich and the poor in the EU remains large

Analysing income distribution is one of the ways to measure inequality within EU countries. The income quintile share ratio compares the income share (in total households' income) received by the 20 % of the population who have the highest equivalised disposable income with the income share of the 20 % with the lowest equivalised disposable income. The higher this ratio, the bigger the income inequality. In the EU, this ratio had been decreasing in recent years, falling from 5.22 in 2014 to 4.99 in 2019. In 2020, however, due to methodological changes in several Member States, especially Germany and France, the ratio rose to 5.24. This means that in 2020 the income share of the richest 20 % of the EU population was more than five times as much as that of the poorest 20 %. It is important to note that income data collected in 2020 refer to the year 2019 and therefore do not yet take into account the impacts of the COVID-19 pandemic.

In 2020, the income share of the richest 20 % of the population in the EU was
5.24
higher than that of the poorest 20 %

Reflecting the trend in the income quintile share ratio, the income share of the bottom 40 % of the population in the total equivalised disposable income had been increasing between 2014 and 2019 before falling back to 20.9 % in 2020, which is the same share as in 2014 and 2015. Similar to the income quintile share ratio above, the data do not yet reflect the impacts of the COVID-19 crisis.

20.9 %
was the share of total income earned by the bottom 40 % of the EU population in 2020

Inequality affects children's long-term opportunities

Inequality is of particular concern regarding the long-term outcomes and opportunities for children, as it puts children at a disadvantage from the start of their lives in areas with long-lasting consequences, such as physical and mental health and education, thus undermining their development and human potential. To evaluate these disadvantages, indicators on several dimensions of children's inequality of opportunity, such as income ([13]) and education ([14]), have been developed. The COVID-19 pandemic has had negative effects on children's physical and mental health and exacerbated societal inequality ([15]). Moreover, there are wide variations between the EU Member States regarding the childcare gap, which refers to a period in which families with young children are unable to benefit from childcare leave or a guaranteed place in early childhood care ([16]). While some Member States experience no childcare gap (for example, Denmark and Slovenia), others offer a relatively short period of childcare leave and guarantee a place in early childhood care only relatively late (for example, the Netherlands and Ireland).

The poverty gap has widened, while the urban–rural gap for risk of poverty has narrowed in recent years

Inequality and poverty are closely interrelated. The poverty gap, defined as the distance between the median income of people at risk of poverty and the poverty threshold (set at 60 % of the national median equivalised disposable income after social transfers), has increased. In 2020, this gap amounted to 26.5 % in the EU, which means the median income of those below the poverty threshold was 26.5 % lower than the poverty threshold. This represents a 1.1 percentage point widening of the gap since 2015, indicating a deterioration in the 'depth' of income poverty in the EU. As mentioned earlier, it is important to note that the increase from 2019 to 2020 has been affected by methodological changes in several Member States, especially Germany and France.

26.5 %
median distance from the poverty threshold for those at risk of poverty in 2020

Furthermore, the distribution of resources within a country has a direct impact on the extent and depth of poverty. In 2020, 21.9 % of the EU population were at risk of poverty or social exclusion. However, this rate differs between cities and rural areas. In 2020, the urban–rural gap in the at-risk-of-poverty-or-social-exclusion rate amounted to 0.9 percentage points, with 22.3 % of people living in cities being in this situation, compared with 23.2 % of people in rural areas. The lowest share of people at risk of poverty or social exclusion was observed in towns and suburbs, with 20.4 % of people at risk in 2020.

The gap in the risk of poverty or social exclusion rate between cities and rural areas at EU level has thus closed slightly compared with 2015, when it was 3.1 percentage points. This development is the result of a stronger improvement in rural areas, where the share of people at risk of poverty or social exclusion has fallen by 3.2 percentage points since 2015. In contrast, the rate in cities has decreased by only 1.0 percentage points over the same time span.

The share of people at risk of poverty or social exclusion in rural areas was
0.9
percentage points higher than in cities in 2020

Rural areas tend to be at a higher risk of poverty due to out-migration and limited access to services, infrastructure, labour markets and educational opportunities ([17]). However, the overall EU figure masks the full scope of the broad variations in gaps among Member States. Rural poverty remains extremely high in some European countries, such as Bulgaria and Romania, where 48.8 % and 50.5 % of the rural population were at risk of poverty or social exclusion in 2020. This amounted to an urban-rural gap of 24.8 and 30.6 percentage points in these two countries, respectively. However, this does not account for all EU Member States, as other countries such as Austria, France and Belgium are reporting much higher poverty rates in cities than in rural areas.

Inequalities between countries

We live in an interconnected world, where problems and challenges, such as poverty, climate change or migration, are rarely confined to one country or region. Therefore, combating inequalities between countries is important, not only from a social justice perspective, but also as a prerequisite for solving many interdependent problems. In particular, sharing prosperity and reducing trade barriers allow nations to cooperate on meeting global challenges, which by definition cannot be addressed by the EU alone (see chapter on SDG 17 'Partnerships for the goals' on page 301). Cohesion between Member States is one of the EU's objectives, as mentioned in the Treaty on European Union (article 3.3) ([18]).

North–south and west–east divides in economic disparities between EU countries remain

Not only have economic performance, incomes and living standards improved across the EU as a whole over time, they have also been converging between countries. A way to measure such conversion is by looking at the coefficient of variation, expressed as the ratio of the standard deviation to the mean (in %). A lower coefficient of variation indicates less disparities between Member States. The two indicators used to measure this convergence show that inequalities between EU countries have decreased over the past 15 years, even though the short-term trends are mixed.

44.8 %
variation in GDP per capita between Member States in 2021

The coefficient of variation in gross domestic product (GDP) per capita — expressed in purchasing power standards (PPS) — shows that economic disparities between Member States have narrowed slightly since 2000, reaching 44.8 % in 2021. This improvement was mainly a result of rising GDP in countries that joined the EU in 2004 and later ([19]). Most of this convergence took place in the period leading up to the 2008 economic crisis and between 2015 and 2019. During the COVID-19 crisis of 2020 and 2021, disparities between counties increased by 4.4 percentage points compared with pre-pandemic levels. At Member State level, purchasing power adjusted GDP per capita ranged from 55 % of the EU average in Bulgaria to 277 % in Luxembourg in 2021.

While GDP per capita is used to measure a country's economic performance, adjusted gross household disposable income provides an indication of the average material well-being of people. Gross household disposable income reflects households' purchasing power and ability to invest in goods and services or save for the future, by taking into account taxes, social contributions and in-kind social benefits. The coefficient of variation in gross household disposable income between Member States has decreased over time, reaching 25.4 % in 2020. This figure is 3.8 percentage points less than in 2015 and an 11.3 percentage point improvement since 2005.

25.4 %
variation in household disposable income across the EU in 2020

However, a clear north–south and west–east divide is evident when looking at the geographical distribution of GDP per capita and household income in the EU in 2020. EU citizens living in northern and western European countries with above-average GDP per capita levels had the highest gross disposable income per capita. At the other end of the scale were eastern and southern EU countries, which displayed gross household disposable incomes and GDP per capita levels below the EU average.

Migration and social inclusion

The Syrian conflict, unstable situations in Afghanistan and some African countries, crises in several Latin American countries such as Venezuela, Colombia, Honduras or Nicaragua, and the war in Iraq have contributed to an unprecedented surge of migration into the EU over the past few years. Recently, Russia's invasion of Ukraine has led to a new wave of refugees to the EU ([20]). The successful integration of migrants is decisive for the future well-being, prosperity and cohesion of European societies. To ensure the social inclusion of immigrants and their children, it is essential to strengthen the conditions that will enable their participation in society, including their active participation in education and training and their integration into the labour market ([21]). Successful integration of migrants into the EU labour force has the potential to slow down the ongoing trend of population ageing ([22]). However, migration alone will almost certainly not reverse the population ageing experienced in many parts of the EU ([23]).

The number of asylum applications in the EU has fallen considerably in recent years

The urge to seek international protection is one of the main reasons why people cross borders. In 2021, the EU received 535 975 first-time asylum applications ([24]) (equalling 1 196 applications per million EU inhabitants), which is about half the number at the height of the refugee crisis in 2015, but a 28 % increase since 2020. During 2021, slightly more than 200 000 people were granted protection status at the first instance in the EU ([25]), which equals 452 positive first-instance decisions per million EU inhabitants.

1 196
first time asylum applications per million inhabitants were submitted in the EU in 2021

The considerable decrease in the number of first-time asylum seekers applying for international protection between 2019 and 2020 (by one-third) is attributable to the COVID-19 pandemic and related emergency measures, such as movement restrictions ([26]). A similar drop in numbers was observed between 2016 and 2017, which marked a pronounced decrease of 46.8 % compared with 2016. This even more rapid fall than the one attributed to the COVID-19 pandemic can be connected to the overall reduction in the number of arrivals to the EU due to stricter border controls ([27]). This has partly been influenced by the closure of the Western Balkans route ([28]) and the EU–Turkey Statement in 2016 ([29]), which made the irregular flow of people towards central and northern Europe more difficult and forced migrants to use different routes across the Mediterranean ([30]). Most recently, asylum applications have increased again in 2021, although not yet reaching pre-pandemic levels.

The income poverty rate for non-EU citizens was
23.8
percentage points higher than for home-country nationals in the EU in 2020

Despite some improvements in recent years, the social inclusion of non-EU citizens remains a challenge

The social integration of migrants is monitored here by comparing the situation of non-EU citizens with citizens of EU Member States that reside in their home country — referred to as 'home-country nationals' in this publication — in the areas of poverty, education and the labour market. In all these areas, people from outside the EU fare less well than EU nationals. However, short-term trends have been mostly favourable, with the gap between home-country nationals and non-EU citizens closing or at least stagnating in almost all areas monitored here.

Trends in the citizenship gap for people at risk of income poverty after social transfers show that between 2015 and 2020, poverty rates remained quite stable for both non-EU citizens and EU home-country nationals. Still, the gap remains large, with 39.0 % of non-EU citizens being at risk of income poverty (after social transfers) in 2020, compared with only 15.2 % of home-country nationals.

Between 2016 and 2021, employment rates for both EU home-country nationals and non-EU citizens aged 20 to 64 increased by 3.2 percentage points. Since employment rates for non-EU citizens did not rise at a faster pace than those of EU citizens, the gap between the two groups has stagnated since 2016, at 14.9 percentage points. While 74.0 % of EU home-country nationals were employed in 2021, the rate for non-EU citizens only stood at 59.1 %. Thus, despite the recent improvements for both groups, the gap remains considerable.

The employment rate for non-EU citizens was

14.9

percentage points lower than for home-country nationals in 2021

The gaps between home-country nationals and non-EU citizens in the area of education and training have evolved differently in recent years. The shares of young people not in employment nor in education and training (NEET) decreased for both groups between 2016 and 2021. The NEET rate for 15- to 29-year old migrants fell by 3.6 percentage points, reaching 24.9 % in 2021. For home-country nationals of the same age, the NEET rate decreased by 1.2 percentage points in the same period, amounting to 12.4 % in 2021. Thus, a closing of the gap by 2.4 percentage points has been visible since 2016. Despite these improvements, the citizenship gap between the two groups still amounted to 12.5 percentage points in 2021.

The NEET rate for non-EU citizens was

12.5

percentage points higher than for EU home-country nationals in 2021

The most striking difference between non-EU citizens and EU home-country nationals is visible for 18- to 24-year old early leavers from education and training. The early leaving rate of home-country nationals has fallen continuously since 2016, reaching 8.4 % in 2021. While the early leaving rate for non-EU citizens experienced a less linear trend, it has still decreased by 1.0 percentage points in recent years, reaching 26.0 % in 2021. Despite these improvements for both groups, the citizenship gap in that year amounted to 17.6 percentage points, which is about the same level as five years earlier. Because early school leaving and unemployment both have an impact on people's future job opportunities and their lives in general, further efforts are needed to fully integrate young migrants into European societies.

The share of early school leavers among non-EU citizens was

17.6

percentage points higher than for EU home-country nationals in 2021

Presentation of main indicators

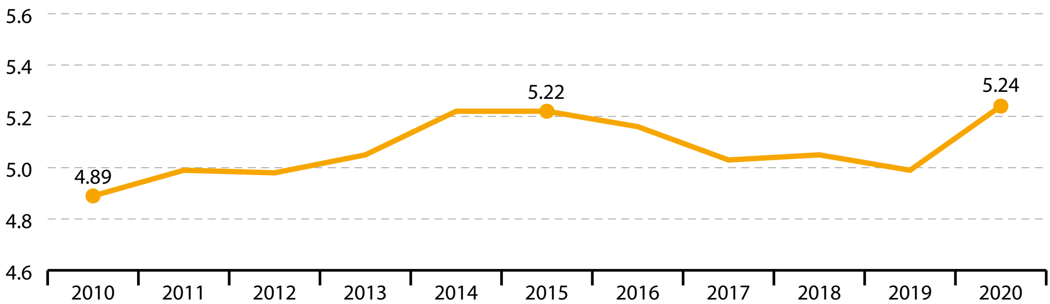
Income quintile share ratio

LONG TERM
2010–2020

SHORT TERM
2015–2020

The distribution of income can be measured by using, among others (31), the ratio of total equivalised disposable income received by the 20 % of the population with the highest income (top quintile) to that received by the 20 % of the population with the lowest income (lowest quintile). Equivalised disposable income is the total income of a household (after taxes and other deductions) that is available for spending or saving, divided by the number of household members converted into equivalised adults. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC).

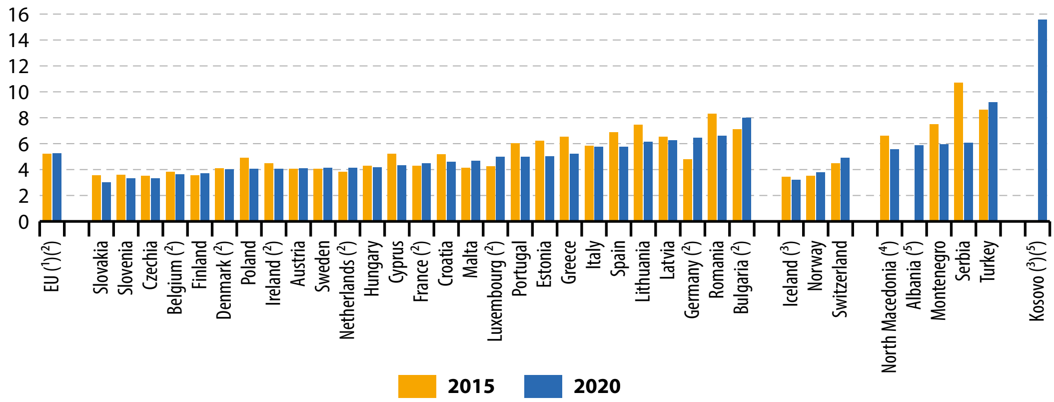
Figure 10.1: Income distribution, EU, 2010–2020
(income quintile share ratio)



Note: 2014–2020 data estimated; break in time series in 2020.
Compound annual growth rate (CAGR): 0.7 % per year in the period 2010–2020; 0.1 % per year in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by methodological changes in the 2020 EU-SILC surveys of several countries, in particular Germany and France.

Source: Eurostat (online data code: sdg_10_41)

Figure 10.2: Income distribution, by country, 2015 and 2020
(income quintile share ratio)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) 2019 data (instead of 2020).
(5) No data for 2015.

Source: Eurostat (online data code: sdg_10_41)

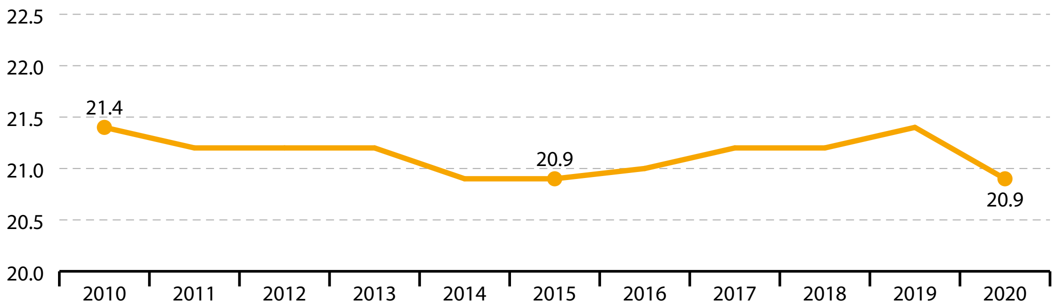
LONG TERM
2010–2020

SHORT TERM
2015–2020

Income share of the bottom 40 % of the population

This indicator measures the income share received by the bottom 40 % of the population (in terms of income). The income concept used is the total disposable household income, which is a households' total income (after taxes and other deductions) that is available for spending or saving. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC).

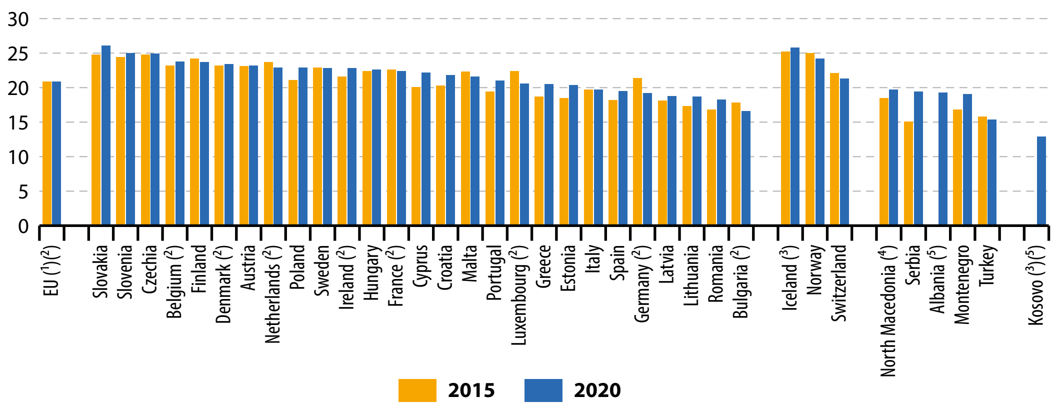
Figure 10.3: Income share of the bottom 40 % of the population, EU, 2010–2020
(% of income)



Note: 2014–2020 data are estimated; break in time series in 2020.
Compound annual growth rate (CAGR): – 0.2 % per year in the period 2010–2020; 0.0 % per year in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by methodological changes in the 2020 EU-SILC surveys of several countries, in particular Germany and France.

Source: Eurostat (online data code: sdg_10_50)

Figure 10.4: Income share of the bottom 40 % of the population, by country, 2015 and 2020
(% of income)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) 2019 data (instead of 2020).
(5) No data for 2015.

Source: Eurostat (online data code: sdg_10_50)

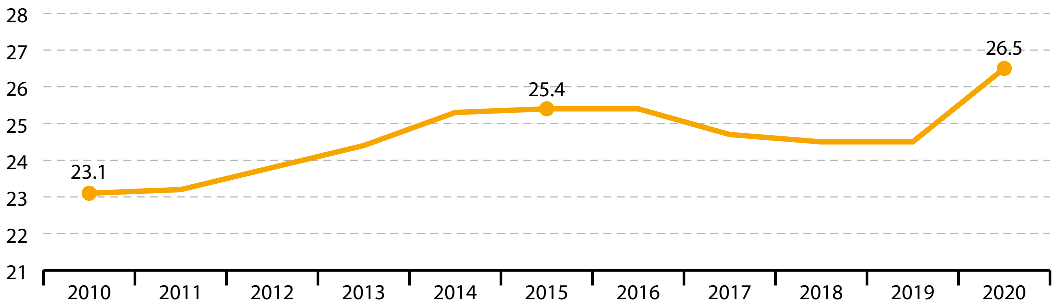
Relative median at-risk-of-poverty gap

LONG TERM
2010–2020

SHORT TERM
2015–2020

The relative median at-risk-of-poverty gap helps to quantify how poor the poor are by showing the distance between the median income of people living below the poverty threshold and the threshold itself, expressed in relation to the poverty threshold. The poverty threshold is set at 60 % of the national median equivalised disposable income of all people in a country and not for the EU as a whole. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC).

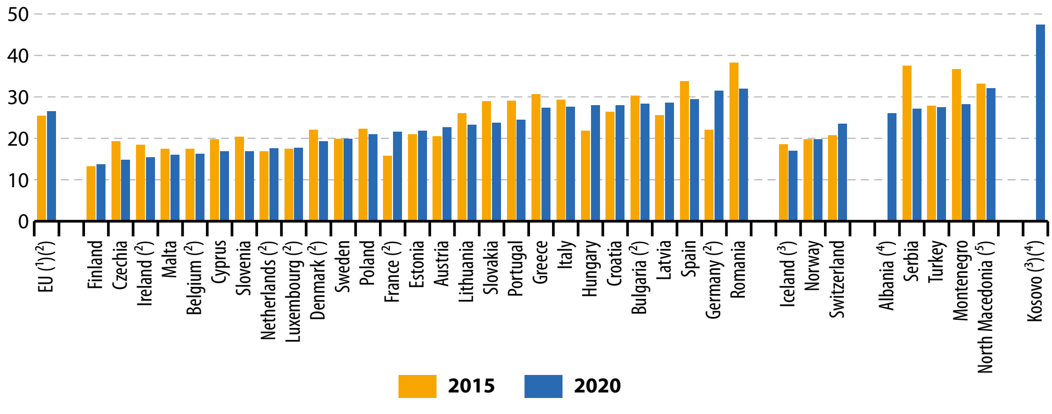
Figure 10.5: Relative median at-risk-of-poverty gap, EU, 2010–2020
(% distance to poverty threshold)



Note: 2014–2020 data estimated; break in time series in 2020.
Compound annual growth rate (CAGR): 1.4 % per year in the period 2010–2020; 0.9 % per year in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by methodological changes in the 2020 EU-SILC surveys of several countries, in particular Germany and France.

Source: Eurostat (online data code: sdg_10_30)

Figure 10.6: Relative median at-risk-of-poverty gap, by country, 2015 and 2020
(% distance to poverty threshold)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2018 data (instead of 2020).
(4) No data for 2015.
(5) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_10_30)

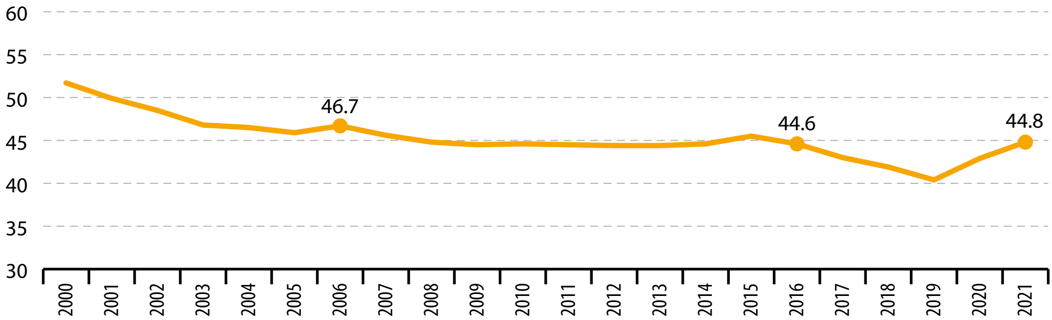
LONG TERM
2006–2021

SHORT TERM
2016–2021

Disparities in GDP per capita

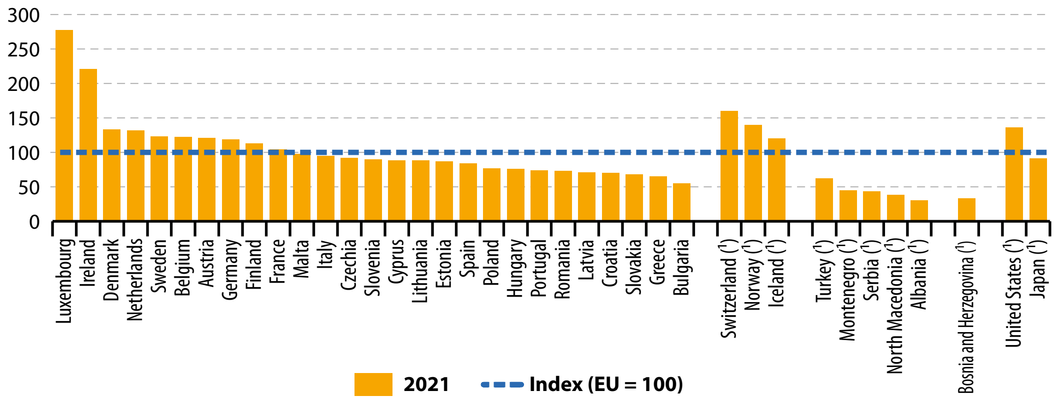
GDP per capita is calculated as the ratio of GDP to the average population in a specific year. Basic figures are expressed in purchasing power standards (PPS) ([32]), which represent a common currency that eliminates differences in price levels between countries to allow meaningful volume comparisons of GDP. The disparities indicator for the EU is calculated as the coefficient of variation of the national figures.

Figure 10.7: Disparities in purchasing power adjusted GDP per capita, EU, 2000–2021
(coefficient of variation, in %)



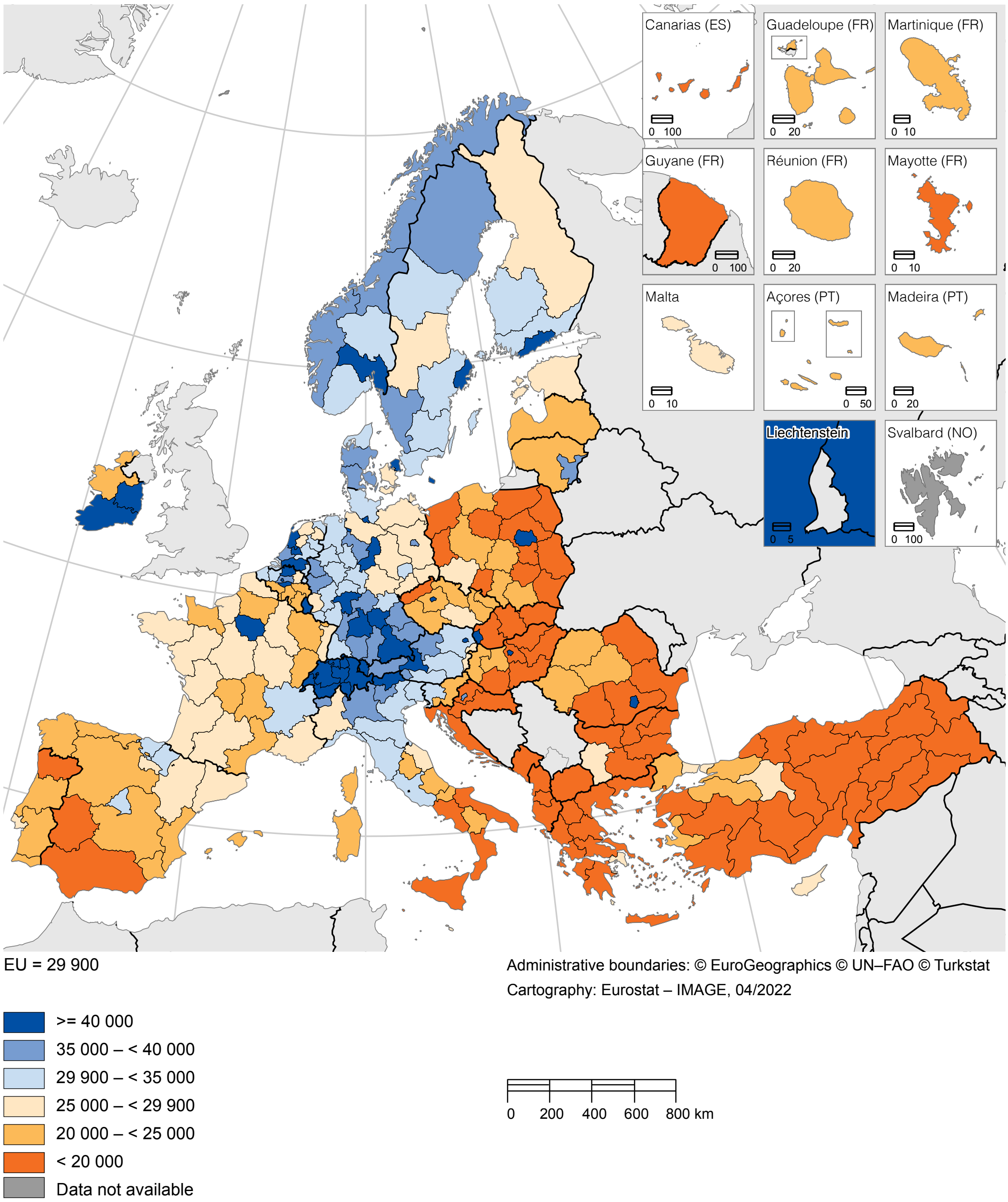
Compound annual growth rate (CAGR): – 0.3 % per year in the period 2006–2021; 0.1 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_10_10)

Figure 10.8: Purchasing power adjusted GDP per capita, by country, 2021
(index EU = 100)



(¹) 2020 data.
Source: Eurostat (online data code: sdg_10_10)

Map 10.1: **Purchasing power adjusted GDP per capita, by NUTS 2 region, 2020**
(PPS per inhabitant)



Note: 2018 data for all regions in Switzerland; 2019 data for all regions in Norway, Albania, Montenegro and North Macedonia.
Source: Eurostat (online data code: NAMA_10R_2GDP)

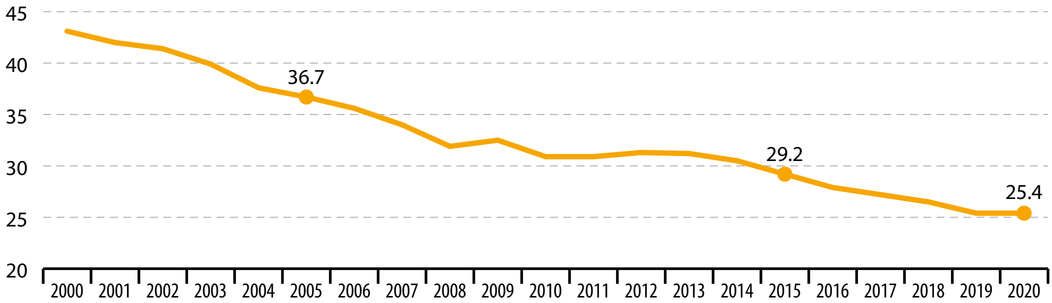
LONG TERM 2005–2020

SHORT TERM 2015–2020

Disparities in household income per capita

The adjusted gross disposable income of households reflects the purchasing power of households and their ability to invest in goods and services or save for the future, by accounting for taxes and social contributions and monetary in-kind social benefits. The disparities indicator for the EU is calculated as the coefficient of variation of the national figures in PPS per capita.

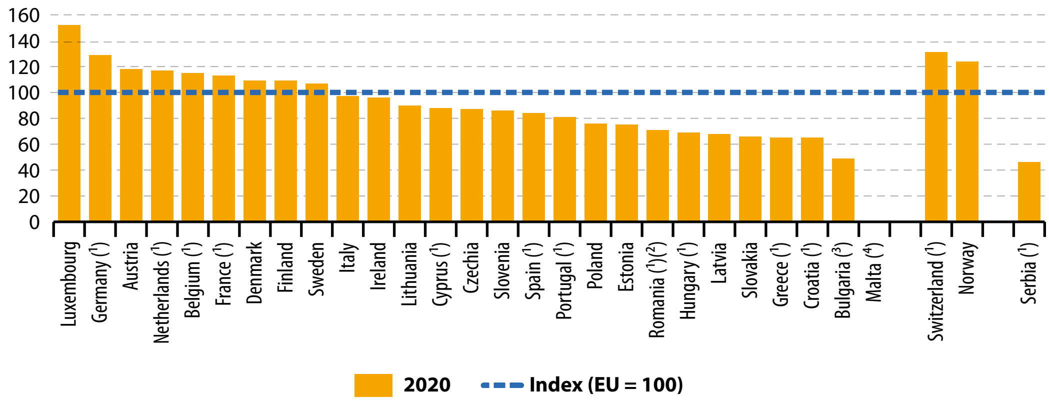
Figure 10.9: Disparities in adjusted gross disposable income of households per capita, EU, 2000–2020
(coefficient of variation, in %)



Note: EU coefficient of variation excluding Malta (whole time series); 2018–2020 data are provisional estimates.
Compound annual growth rate (CAGR): – 2.4 % per year in the period 2005–2020; – 2.7 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_10_20)

Figure 10.10: Adjusted gross disposable income of households per capita, by country, 2020
(index EU = 100)



(1) Provisional data.
(2) 2019 data.
(3) 2017 data.
(4) No data.

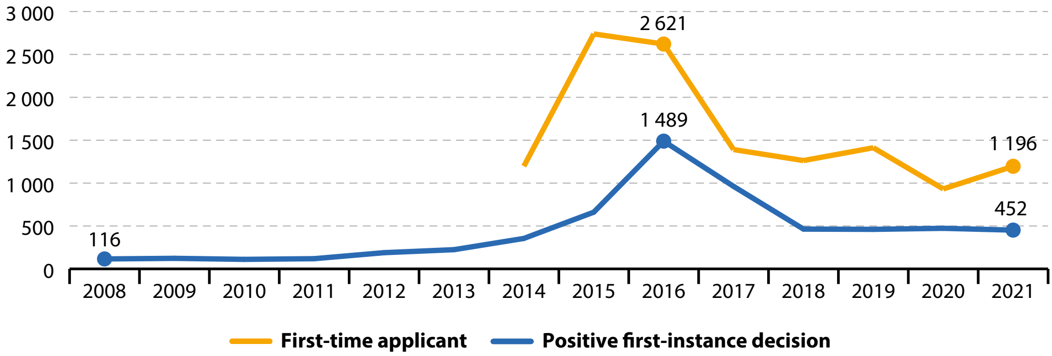
Source: Eurostat (online data code: sdg_10_20)

Asylum applications

X Assessment of progress not applicable due to lack of policy targets

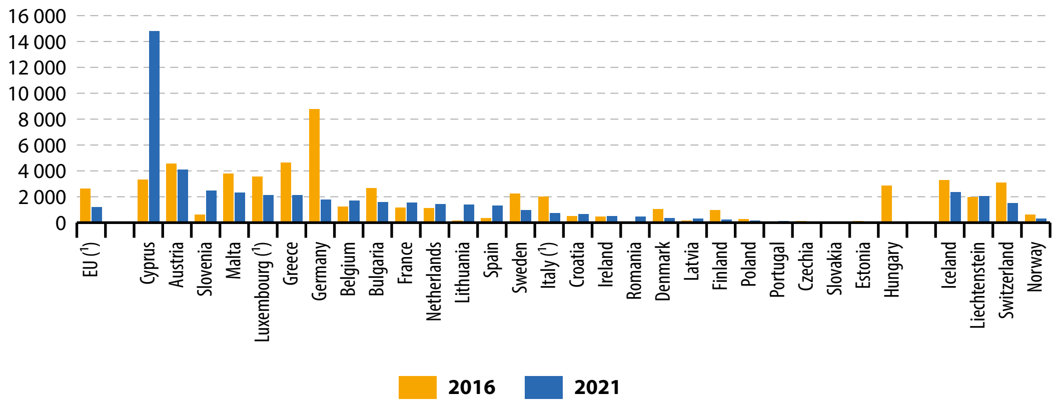
This indicator shows the number of first-time asylum applicants per million inhabitants and the number of positive first instance decisions per million inhabitants. A first-time applicant for international protection is a person who lodged an application for asylum for the first time in a given Member State. First-instance decisions are decisions granted by the respective authority acting as a first instance of the administrative or judicial asylum procedure in the receiving country. The source data are supplied to Eurostat by the national ministries of interior and related official agencies.

Figure 10.11: Asylum applications and decision, EU, 2008–2021
(number per million inhabitants)



Note: Multiple breaks in population data time series; 2018-2021 population data and 2021 data are provisional estimates.
Source: Eurostat (online data code: sdg_10_60)

Figure 10.12: First time asylum applications, by country, 2016 and 2021
(number per million inhabitants)



Note: 2021 data are provisional estimates.
([1]) Break(s) in population data time series between the two years shown.
Source: Eurostat (online data code: sdg_10_60)

Presentation of additional multi-purpose indicators

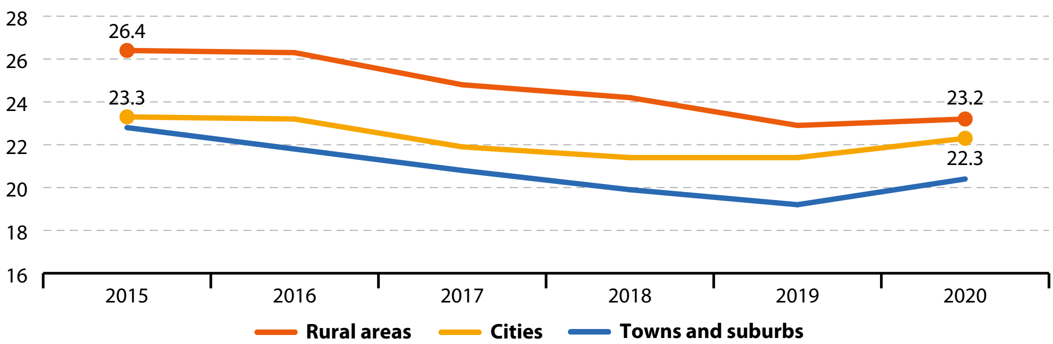
LONG TERM
Time series too short

SHORT TERM
2015–2020

Urban–rural gap for risk of poverty or social exclusion

Statistics on the degree of urbanisation classify local administrative units as 'cities', 'towns and suburbs' or 'rural areas' depending on population density and the total number of inhabitants. This classification is used to determine the difference in the shares of people at risk of poverty or social exclusion (see page 45 for a description of the main indicator) between cities and rural areas. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC).

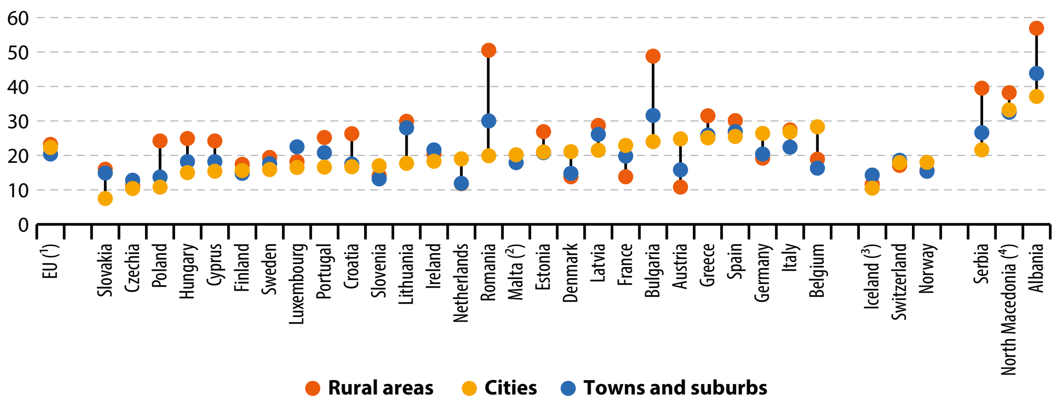
Figure 10.13: People at risk of poverty or social exclusion, by degree of urbanisation, EU, 2015–2020
(% of population)



Note: Estimated data; break in time series in 2020.
Compound annual growth rate (CAGR) of the gap between cities and rural areas: – 21.9 % per year in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by methodological changes in the 2020 EU-SILC surveys of several countries, in particular Germany and France.

Source: Eurostat (online data code: sdg_01_10a)

Figure 10.14: People at risk of poverty or social exclusion, by degree of urbanisation, by country, 2020
(% of population)



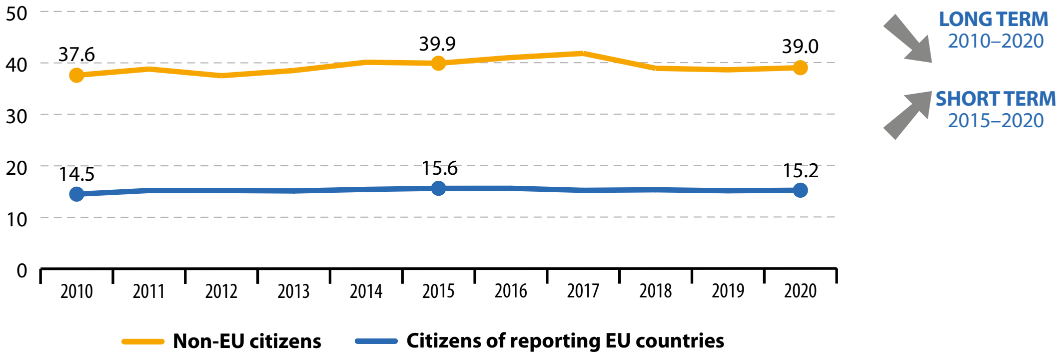
(1) Estimated data.
(2) No data for rural areas.
(3) 2018 data (instead of 2020).
(4) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_01_10a)

Citizenship gaps between non-EU citizens and citizens of reporting EU countries

This section provides data for different indicators by citizenship. Data are shown for non-EU citizens, referring to citizens of non-EU Member States, and for citizens of the reporting countries, referring to citizens of EU Member States that reside in their home country. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC) and from the EU Labour Force Survey (EU-LFS).

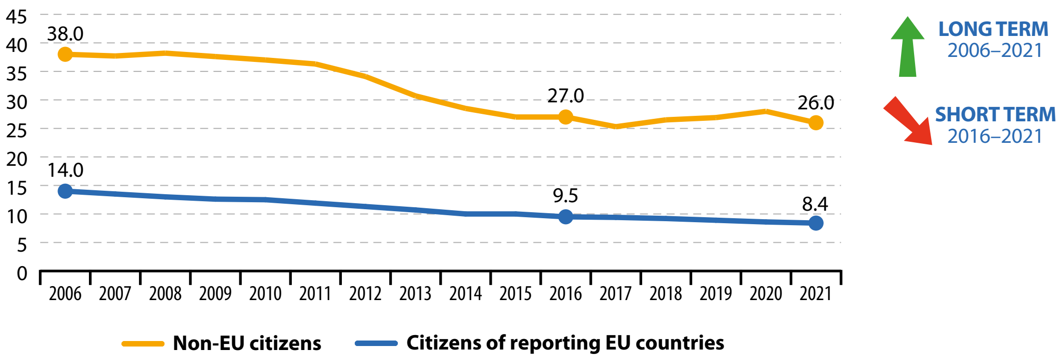
Figure 10.15: **People at risk of income poverty after social transfers, by citizenship, EU, 2010–2020**
(% of population aged 18 years or more)



Note: Estimated data; 2010–2011 data for non-EU citizens have low reliability; break in time series in 2020.
Compound annual growth rate (CAGR) of the citizenship gap: 0.3 % per year in the period 2010–2020; – 0.4 % per year in the period 2015–2020. Assessment arrow shown in grey because trend is influenced by methodological changes in the 2020 EU-SILC surveys of several countries, in particular Germany and France.

Source: Eurostat (online data code: sdg_01_20a)

Figure 10.16: **Early leavers from education and training, by citizenship, EU, 2006–2021**
(% of population aged 18–24)



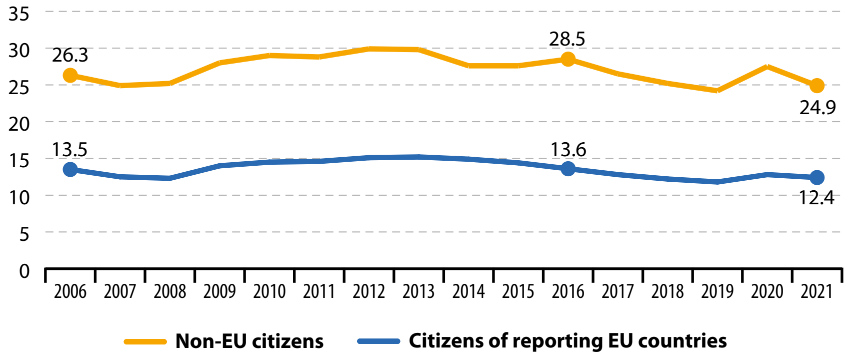
Note: Breaks in time series in 2014 and 2021.
Compound annual growth rate (CAGR) of the citizenship gap: – 2.0 % per year in the period 2006–2021; 0.1 % per year in the period 2016–2021.

Source: Eurostat (online data code: sdg_04_10a)

Figure 10.17: Young people neither in employment nor in education and training (NEET), by citizenship, EU, 2006–2021
(% of population aged 15–29)

LONG TERM
2006–2021

SHORT TERM
2016–2021



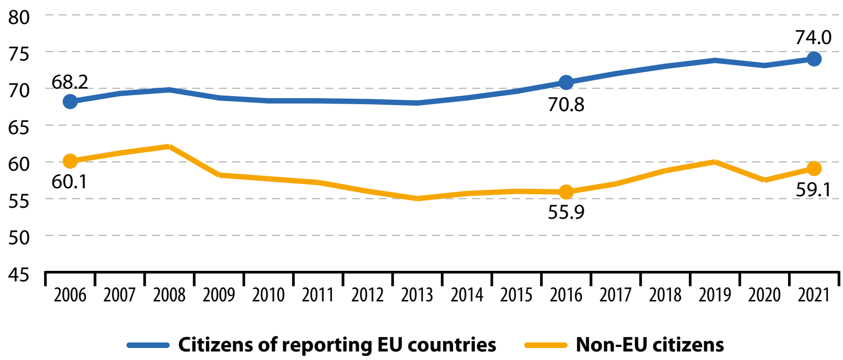
Note: Break in time series in 2021.
Compound annual growth rate (CAGR) of the citizenship gap: – 0.2 % per year in the period 2006–2021; – 3.5 % per year in the period 2016–2021.

Source: Eurostat (online data code: sdg_08_20a)

Figure 10.18: Employment rate, by citizenship, EU, 2006–2021
(% of population aged 20–64)

LONG TERM
2006–2021

SHORT TERM
2016–2021



Note: Break in time series in 2021.
Compound annual growth rate (CAGR) of the citizenship gap: 4.1 % per year in the period 2006–2021; 0.0 % per year in the period 2016–2021.

Source: Eurostat (online data code: sdg_08_30a)

Notes

(1) European Commission (2017), *Establishing a European Pillar of Social Rights*, COM (2017) 250 final, Brussels.
(2) European Commission (2020), *The Just Transition Mechanism: Making Sure No One Is Left Behind. The European Green Deal*.
(3) European Commission (2021), *Proposal for a Council Recommendation on ensuring a fair transition towards climate neutrality*, COM(2021) 801 final, Brussels.
(4) European Commission (2020), *Proposal for a Directive of the European Parliament and of the Council on adequate minimum wages in the European Union*, COM(2020) 862 final, Brussels.
(5) European Commission (2020), *A New Pact on Migration and Asylum*, COM(2020) 609 final, Strasbourg.
(6) European Commission (2020), *Action plan on Integration and Inclusion 2021–2027*, COM(2020) 758 final, Brussels.
(7) The methodological change in Germany's EU-SILC data collection resulted in a better representation of young, poor and people with a migration background, leading to higher rates for many poverty-related indicators. A more detailed explanation of the methodological change is available (in German) on the website of the German Statistical Office (DESTATIS).
(8) OECD (2017), *Understanding the socio-economic divide in Europe. Background report*.
(9) European Environment Agency (2018), *Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe*, EEA Report No. 22/2018.
(10) Schröder, J. M. and Neumayr, M. (2021), *How socio-economic inequality affects individuals' civic engagement: a systematic literature review of empirical findings and theoretical explanations*, Socio-Economic Review.
(11) Darvas, Z. and Wolff, B. (2016), *An Anatomy of Inclusive Growth in Europe*, pp. 14–15.
(12) European Commission (2019), *Going climate-neutral by 2050: A strategic long-term vision for a prosperous, modern, competitive and climate-neutral EU economy*, p. 18.
(13) European Commission, *EU social indicators dataset: Inequality of opportunity — income dimension*.
(14) European Commission, *EU social indicators dataset: Inequality of opportunity — education dimension*.
(15) Eurochild (2020), *Growing up in lockdown. Europe's children in the age of COVID-19*.
(16) European Platform for Investing in Children (EPIC) (2020), *The Childcare Gap in EU Member States*, Publications Office of the European Union, Luxembourg.
(17) Volonteurope (2016), *Rural isolation of citizens in Europe*.
(18) *Consolidated version of the Treaty on European Union and the Treaty on the Functioning of the European Union. 2012/C 326/01.*
(19) European Commission (2018), *Employment and Social Developments in Europe, Annual Review*, p. 45.
(20) *Speech by President von der Leyen at the European Parliament Plenary on the Russian aggression against Ukraine*
(21) OECD and European Union (2015), *Indicators of Immigrant Integration 2015: SettlIng In*, OECD Publishing, Paris.
(22) Lutz W. (Ed.), Amran G., Bélanger A., Conte A., Gailey N., Ghio D., Grapsa E., Jensen K., Loichinger E., Marois G., Muttarak R., Potančoková M., Sabourin P., Stonawski M. (2019), *Demographic Scenarios for the EU — Migration, Population and Education*, Publications Office of the European Union, Luxembourg.
(23) Eurostat (2022), *Statistics Explained: Migration and migrant population statistics*.
(24) Source: Eurostat (online data code: MIGR_ASYAPPCTZA).
(25) Source: Eurostat (online data code: MIGR_ASYDCFSTA).
(26) European Asylum Support Office (2021), *Asylum Trends 2020 preliminary overview*.
(27) European Commission (2018), *Migration: Number of asylum applications in the EU down by 43 % in 2017*.
(28) The Balkan route has been the main entry point for migrants who entered the EU through Greece and tried to make their way to western Europe via the former Yugoslav Republic of Macedonia, Serbia into Hungary and Croatia. The route became a popular passageway into the EU in 2012 when Schengen visa restrictions were relaxed for five Balkan countries: Albania, Bosnia and Herzegovina, Montenegro, Serbia and North Macedonia.
(29) European Council and Council of the European Union (2016), *EU–Turkey statement, 18 March 2016*.
(30) UNHCR (2017), Bureau for Europe, *Desperate Journeys: Refugees and migrants entering and crossing Europe via the Mediterranean and Western Balkans routes*, pp. 1–2.
(31) The income quintile share ratio looks at the two ends of the income distribution. Other indicators, such as the Gini index, measures total inequality along the whole income distribution.
(32) The purchasing power standard (PPS) is an artificial currency unit. Theoretically, one PPS can buy the same amount of goods and services in each country. However, price differences across borders mean different amounts of national currency units are needed for the same goods and services depending on the country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective purchasing power parities. PPS is the technical term used by Eurostat for the common currency in which national accounts aggregates are expressed when adjusted for price level differences using PPPs. Thus, PPPs can be interpreted as the exchange rate of the PPS against the euro.

11 Make cities and human settlements inclusive, safe, resilient and sustainable

SDG 11 aims to renew and plan cities and other human settlements in a way that offers opportunities for all, with access to basic services, energy, housing, transportation and green public spaces, while reducing resource use and environmental impact.

eurostat supports the SDGs

Around 325 million people or almost three-quarters of the EU population, live in urban areas — cities, towns and suburbs — with almost 40 % residing in cities alone ([1]). With the share of Europe's urban population projected to rise to just over 80 % by 2050 ([2]), sustainable cities, towns and suburbs are therefore essential for citizens' well-being and quality of life. Urban areas also serve as hubs for economic and social development and innovation, and attract many people thanks to the wide range of opportunities for education, employment, entertainment and culture on offer. This large concentration of people and wealth, however, often comes with a range of complex challenges such as ensuring sustainable mobility and affordable and decent housing conditions. Another is reducing cities' negative environmental impacts, such as poor air quality, noise, spread of settlement areas and generation of large amounts of waste in urban areas. Cities are consequently not just a source of economic, environmental and social challenges but also a potential solution to these issues. As such, they can be considered a key driver for achieving a sustainable future.

Table 11.1: Indicators measuring progress towards SDG 11, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Quality of life in cities and communities			
Severe housing deprivation rate	↑ (1)	↑	page 209
Population living in households suffering from noise	↑ (1)	↑	page 210
Years of life lost due to $PM_{2.5}$ exposure	↗ (2)	↗	page 211
Population reporting crime, violence or vandalism in their area (*)	↑ (1)	↑	SDG 16, page 294
Sustainable mobility			
Road traffic deaths	↗	↘	page 212
Share of buses and trains in inland passenger transport (*)	↘	↘	SDG 9, page 177
Environmental impacts			
Settlement area per capita	:	↓ (3)	page 214
Recycling rate of municipal waste	↑	↗	page 215
Population connected to at least secondary waste water treatment (*)	↗	↗	SDG 6, page 123

(*) Multi-purpose indicator.
(1) Past 10-year period.
(2) Past 14-year period.
(3) Past 3-year period.

Table 11.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 11 'Sustainable cities and communities'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Quality of life in cities and communities and environmental impacts

Under the EU Cohesion Policy, a minimum of 8 % of the European Regional Development Fund of each national envelope will be dedicated to supporting sustainable urban development. It will be accompanied by the European Urban Initiative supporting innovation, capacity and knowledge-building in urban areas.

The Environmental Noise Directive is the main EU instrument for identifying and combating noise pollution.

The EU addresses air pollution directly through specific air quality and emissions source legislation ([3]), such as the Clean Air Package, as well as indirectly through implementing certain climate policies that also have the effect of reducing pollution.

The affordable housing initiative is part of the Commission's renovation wave strategy, which aims to green buildings, create jobs and improve lives. It seeks to ensure that social and affordable housing facilities also benefit from the renovation wave.

The Action Plan 'Towards Zero Pollution for Air, Water and Soil' includes the target of reducing the health impacts due to air pollution by 55 % by 2030, compared with 2005.

The EU Soil Strategy for 2030 sets out a framework and concrete measures to protect and restore soils, and ensure they are used sustainably. The strategy contains a goal of no net land take by 2050.

The Circular Economy Package supports the transition to a stronger and more circular economy. In 2018, the legally binding targets for recycling and reuse of municipal waste entered into force ([4]). EU countries will now be required to recycle at least 55 % of their municipal waste by 2025, 60 % by 2030 and 65 % by 2035.

Sustainable mobility

The EU has established guidelines for sustainable urban mobility planning and provides funding for related projects. The Sustainable and Smart Mobility Strategy, adopted in 2020, supports the green and digital transformation of the EU transport system.

The Communication on the Urban Mobility Framework (2021) reinforces the enabling EU framework for Member States, regions and cities to develop safe, accessible, inclusive, smart, resilient and zero-emission urban mobility.

The Communication 'Towards a European road safety area: policy orientations on road safety 2011–2020' sets a target of halving the overall number of road deaths in the EU by 2020 compared with 2010. The Strategic Action Plan on Road Safety and the EU road safety policy framework 2021–2030 set a 50 % reduction target for deaths and for serious injuries by 2030 compared with 2019 and ambitious road safety plans to reach zero road deaths by 2050 ('Vision Zero') ([5]).

Sustainable cities and communities in the EU: overview and key trends

Monitoring SDG 11 in an EU context means looking at developments in the quality of life in cities and communities, sustainable mobility and adverse environmental impacts. As Table 11.1 shows, the EU has achieved significant progress on increasing the quality of life in cities and communities over the past few years, as well as in managing waste sustainably. However, negative trends can be observed in safe and sustainable transport systems, and urban land-take has increased.

Quality of life in cities and communities

While European cities and communities provide opportunities for employment, economic and cultural activity, many inhabitants still face considerable social challenges and inequalities. Problems affecting the quality of housing and the wider residential area, such as noise disturbance, crime and vandalism, are some of the most visible challenges that cities and communities can face and that impact a population's quality of life.

Quality of housing in the EU has improved over the past ten years

4.2 % of the EU population experienced severe housing deprivation in 2020

Safe and adequate homes are a foundation for living an independent, healthy and fulfilling life. Poor housing conditions, on the other hand, are associated with lower life chances, health inequalities, increased risks of poverty and environmental hazards. During the COVID-19 pandemic, a lack of facilities and overcrowding has been especially dangerous.

The severe housing deprivation rate refers to the share of the population who live in an overcrowded household while also experiencing housing deprivation measures such as a leaking roof, damp walls, floors or foundation, or rot in window frames or floor, lacking sanitary facilities or a dwelling considered too dark. Between 2010 and 2020, the share of EU residents who lived in such conditions fell by 1.9 percentage points, which indicates an improvement in the perceived quality of the EU's housing stock.

Europeans perceive their residential areas as quieter and safer

17.2 % of the EU population experienced noise disturbance in 2020

Noise disturbance can cause annoyance, stress, sleep deprivation, poor mental health and well-being, as well as harm to the cardiovascular and metabolic system ([6]). Likewise, crime and vandalism can also reduce quality of life and housing satisfaction in a residential area, leading to even more stress and anxiety. In 2020, 17.2 % of the EU population (about 77 million people) said their household suffered from noise disturbance, compared with 20.6 % in 2010 ([7]). Crime, violence and vandalism were perceived in their area by 10.9 % of the EU population in 2020, compared with 13.1 % in 2010.

Despite improvements in perceived exposure to noise, 70 million people in EU urban areas were estimated to be exposed to road traffic noise at levels of 55 decibel (dB) or higher on an annual average for day, evening and night in 2017. Another 9 million people were estimated to be subjected to excessive noise from railways, 2.4 million from airports and 0.5 million from industry ([8]). The number of people exposed has also increased since 2007 for all sources of environmental noise. At 55 decibels (dB) noise levels can start to have critical effects, ranging from severe annoyance and sleep disturbance to hearing impairment ([9]). The more recent WHO guidelines for Europe are even more stringent, recommending that the noise level from road traffic should be below 53 dB during the day and below 45 dB during the night ([10]).

Exposure to fine particular matter in the EU leads to many lost years of life and premature death

762 years of life per 100 000 people lost due to PM2.5 exposure in 2019

High concentrations of people and economic activities significantly increase exposure to air pollution, which poses major environmental and health risks and influences quality of life in cities. Pollutants such as fine particulate matter ($PM_{2.5}$) suspended in the air reduce people's life expectancy and perception of well-being and can lead to or aggravate many chronic and acute respiratory and cardiovascular diseases ([11]). Every year, exposure to air pollution is estimated to cause seven million premature deaths and result in the loss of millions more years of healthy life worldwide ([12]).

In 2019, the annual mean concentration of $PM_{2.5}$ in urban areas in the EU stood at 12.6 micrograms per cubic metre (µg/m³) ([13]). Although this was below the limit set by the EU (25 µg/m³ annual mean) ([14]), substantial air-pollution hotspots remain. According to recent European Environment Agency (EEA) estimates, 4 % of the EU urban population were exposed to levels above the EU's $PM_{2.5}$ limit value in 2019 ([15]). If the more stringent WHO air-quality guideline is considered (5 µg/m³ annual mean), almost all EU city dwellers (97 %) were estimated to be exposed to $PM_{2.5}$ concentration levels deemed harmful to human health ([16]).

In the EU, this long-term exposure to fine particulate matter was responsible for around 307 000 premature deaths in 2019, according to EEA estimates ([17]). This resulted in approximately 3.4 million years of life lost in the EU due to $PM_{2.5}$ exposure, corresponding to 762 years per 100 000 inhabitants. Since 2005, the number of premature deaths, and as a result the years lost, have decreased, but this decrease has slowed since 2014. Additional efforts to reduce concentrations of particulate matter in air will be needed for the EU to meet its 2030 target of reducing the health impacts of air pollution by more than 55 % compared with 2005.

Despite a decline in road traffic during the COVID-19 pandemic, $PM_{2.5}$ concentrations have not fallen consistently across all European cities. This is because the main sources of this pollutant, including the combustion of fuel for the heating of residential, commercial and institutional buildings and industrial activities, are varied ([18]) and pollution levels also depend on weather conditions and season. Nevertheless, there is evidence that the lockdown measures introduced by European countries to fight the pandemic in 2020 led to reductions in emissions of air pollutants, resulting in better air quality ([19]). This improvement, however, was temporary, with air pollution from road transport increasing since September 2021 ([20]).

City dwellers experience more noise pollution and crime

16.4 % of people living in EU cities reported occurrence of crime and vandalism in their area in 2020

Statistics on the degree of urbanisation provide an analytical and descriptive lens through which to view urban and rural communities. Based on the share of the local population living in urban clusters and urban centres, Eurostat differentiates between three types of area: 'cities', 'towns and suburbs' and 'rural areas' ([21]).

The severe housing deprivation rate in the EU in 2020 was higher in rural areas (4.8 %) than in cities (4.6 %) and in towns and suburbs (3.2 %) ([22]). The perceived level of noise pollution varies greatly depending on the degree of urbanisation. In 2020, people living in EU cities were more likely to report noise from neighbours or from the street (23.6 %) compared with those living in towns and suburbs (15.4 %) or in rural areas (10.4 %) ([23]). Similarly, the perceived occurrence of crime and vandalism in cities (16.4 %) was almost three times higher than in rural areas (5.9 %) and above the level observed in towns and suburbs (8.5 %) in 2020 ([24]).

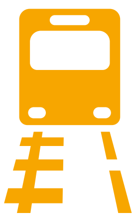
Sustainable mobility

A functioning transport system is necessary for people to reach their places of work, education, services and social activities, all of which affect quality of life. In addition to availability, the type, quality and safety of transport systems are also crucial when designing sustainable and inclusive cities and communities.

Cars are the main means of transport in the EU

The EU aims to improve citizens' quality of life and to strengthen the economy by promoting sustainable urban mobility and the increased use of clean and energy-efficient vehicles. Public transport networks help to relieve traffic jams, reduce harmful pollution and offer more affordable and sustainable ways to commute to work, access services and travel for leisure.

Since 2000, the share of buses and trains in inland passenger transport has stagnated well below 20 %, accounting for only 17.2 % in 2019. Both long- and short-term trends show that these public transport modes are losing shares (– 0.1 percentage points since 2004 and – 0.6 percentage points since 2014) in favour of passenger cars. This means most passenger journeys in the EU (in passenger-kilometres) are still undertaken by car.



17.2 %
of inland journeys were taken by buses and trains in 2019

While there are no official data available on the effects of the COVID-19 pandemic on urban mobility, there is evidence that lockdown measures have significantly influenced mobility of people and traffic volumes in general. The International Transport Forum, for example, estimates that overall urban transport activity in 2020 was 19 % of the previously estimated annual demand, while cycling and walking had surged ([25]). The International Association of Public Transport pointed to a sharp increase in the share of cars in the overall modal split during the pandemic ([26]). The number of rail passengers had at least halved in most Member States in the second quarter of 2020 compared with the second quarter of 2019. The largest decrease was reported in Ireland, where rail passenger numbers fell by 90 % ([27]). However, it remains to be seen how far the pandemic influences the overall modal split of passenger transport, especially the use of private cars compared with public transport modes.

Road traffic deaths dropped in 2020 due to a lockdown-related reduction in traffic volumes

Road traffic injuries are a public health issue and have huge economic costs. Around 120 000 people are estimated to be seriously injured in road accidents in the EU each year ([28]). In 2020, about 52 people lost their lives on EU roads every day. This corresponds to about 18 800 people for the entire year — a loss equivalent to the size of a medium town. Nevertheless, the EU has made considerable progress in this respect, reducing road casualties by 36.5 % between 2010 and 2020. However the target of halving the total death toll on EU roads over the past decade was missed. Between 2019 and 2020, there was a sharp drop of 17.4 % in the number of road fatalities after a relatively long period of stagnation. This drop can be explained by

18 788
were killed in road accidents in the EU in 2020

reduced traffic volumes as a result of the COVID-19 pandemic.

The highest share of road-traffic fatalities was recorded on non-motorway roads outside urban areas (52 %), followed by roads inside urban areas (40 %) in 2020 [29]. While the overall number of fatalities fell by 23.1 % between 2010 and 2019, the number of cyclists killed in urban areas actually increased by 3.1 % [30]. Indeed, EU-wide, around 70 % of fatalities in urban areas involve vulnerable road users such as pedestrians, motorcyclist and cyclists. This is therefore a key area when it comes to introducing new policy measures to tackle road safety.

Lower traffic volumes, as a result of the COVID-19 pandemic, continued to have a clear impact on the number of road fatalities. Preliminary data indicate that in 2021 the number of road deaths in the EU rose by 5 % compared with 2020 but was still 13 % lower than in 2019 [31].

Environmental impacts

While cities, towns and suburbs are a focal point for social and economic activity, if not managed sustainably, they risk causing considerable environmental damage. At the same time, large and densely populated cities provide opportunities for effective environmental action, indicating that urbanisation is not necessarily a threat but can act as a transformative force for more sustainable societies [32]. EU progress in reducing the environmental impacts of cities and communities is monitored by three indicators looking into the management of municipal waste, waste water treatment and artificial land cover.

Despite continuous improvements in the recycling of municipal waste, the EU might miss its targets

The 'waste hierarchy' is the overarching logic that guides EU waste policy. It prioritises waste prevention, followed by preparing for reuse, recycling, other recovery and finally disposal, including landfilling, as the last resort. Waste management activities promote recycling, which reduces the amount of waste going to landfills and leads to higher resource efficiency. Although municipal waste accounts for less than 10 % of the weight of total waste generated in the EU [33], it is highly visible and closely linked to consumption patterns. Sustainable management of this waste stream reduces the adverse environmental impact of cities and communities, which is why the EU has set a target to recycle at least 60 % of its municipal waste by 2030 [34].

In 2020, EU residents generated 225 732 thousand tonnes of municipal waste, which corresponds to 505 kilograms (kg) of waste per capita per year [35]. Since 2015, the annual waste generated per capita has increased by 25 kg. Although the EU has not reduced its municipal waste generation, it has clearly shifted to more recycling. Since 2000, the recycling rate of municipal waste has increased continuously from 27.3 % to 47.8 % in 2020. However, the trend has slowed since 2016, with the share of recycled municipal waste increasing by only 1.3 percentage points between 2016 and 2020. Further efforts are therefore needed to put the EU back on track towards meeting its recycling targets.

47.8 %
of total municipal waste generated in the EU was recycled in 2020

Connection rates to waste water treatment have been increasing

Urban areas also place significant pressure on the water environment through waste water from households and industry that contains organic matter, nutrients and hazardous substances. The share of the EU population connected to at least secondary waste water treatment plants, which use aerobic or anaerobic micro-organisms to decompose most of the organic material and retain some of the

80.9 %
of the EU population were connected to at least secondary waste water treatment in 2019

nutrients, has been steadily growing since 2000 and reached 80.9 % in 2019. In seven Member States, more than 90 % of the population were connected to such services. However, it may not be suitable to connect 100 % of the population to a sewerage collection system, either because it would produce no environmental benefit or would be too costly (see chapter on SDG 6 'Clean water and sanitation' on p. 115).

The settlement area per capita has increased

Offering numerous cultural, educational and job opportunities, an urban lifestyle has become increasingly attractive to Europeans. However, this growth in the urban population has also come with increased land take. Land take is described as the process of transforming agricultural, forest and other semi-natural and natural areas into artificial areas. It often means an increase of settlement area over time, usually at the expense of rural areas. As a result of land take, urban areas may severely hamper ecosystem functioning and the related delivery of ecosystem services [36].

703.4
square metres of land were covered by settlement area per capita in 2018

Settlement area indicator captures the amount of settlement area that is due to land-take. In the EU, settlement area per capita has increased over the past few years. In 2018, for each EU inhabitant, 703.4 square metres (m^2) of land was covered by settlement area (comprising both sealed and non-sealed surfaces — for example, buildings, industrial and commercial area, infrastructure but also parks and sportsgrounds), which is 3.3 % more than in 2015.

Presentation of the main indicators

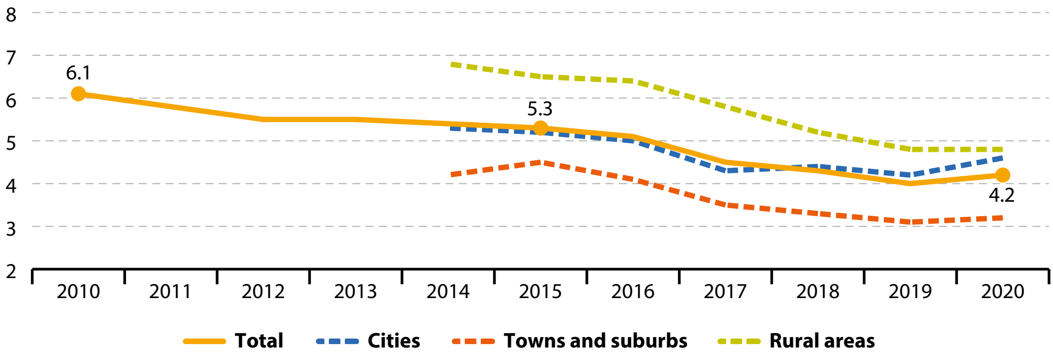
Severe housing deprivation rate

LONG TERM 2010–2020

SHORT TERM 2015–2020

The severe housing deprivation rate is defined as the percentage of the population living in a dwelling which is considered as overcrowded, while also exhibiting at least one of the following housing deprivation measures: i) a leaking roof, ii) no bath/shower and no indoor toilet, and iii) considered too dark. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC).

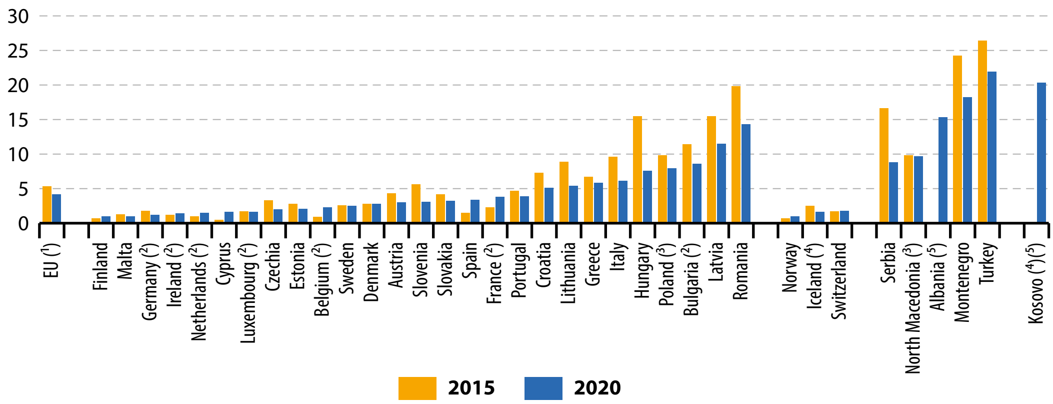
Figure 11.1: Severe housing deprivation rate, by degree of urbanisation, EU, 2010–2020
(% of population)



Note: Estimated data.
Compound annual growth rate (CAGR): – 3.7 % per year in the period 2010–2020; – 4.5 % per year in the period 2015–2020.

Source: Eurostat (online data codes: sdg_11_11 and ilc_mdho06d)

Figure 11.2: Severe housing deprivation rate, by country, 2015 and 2020
(% of population)



(1) Estimated data.
(2) Break(s) in time series between the two years shown.
(3) 2019 data (instead of 2020).
(4) 2018 data (instead of 2020).
(5) No data for 2015.

Source: Eurostat (online data code: sdg_11_11)

LONG TERM 2010–2020

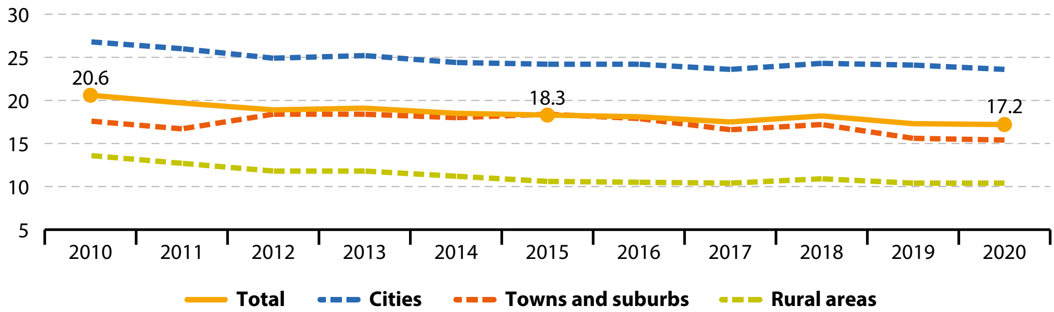
SHORT TERM 2015–2020

Population living in households suffering from noise

This indicator measures the share of the population who declare they are affected either by noise from neighbours or from the street. Because the assessment of noise pollution is subjective, it should be noted that the indicator accounts for both the level of noise pollution as well as people's standards of what level they consider to be acceptable. Therefore, an increase in the value of the indicator may not necessarily indicate a similar increase in noise pollution levels but also a decrease in the levels that European citizens are willing to tolerate and vice versa. In fact, there is empirical evidence that perceived environmental quality by individuals is not always consistent with the actual environmental quality assessed using 'objective' indicators, particularly for noise. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC).

Figure 11.3: Population living in households considering that they suffer from noise, by degree of urbanisation, EU, 2010–2020

(% of population)

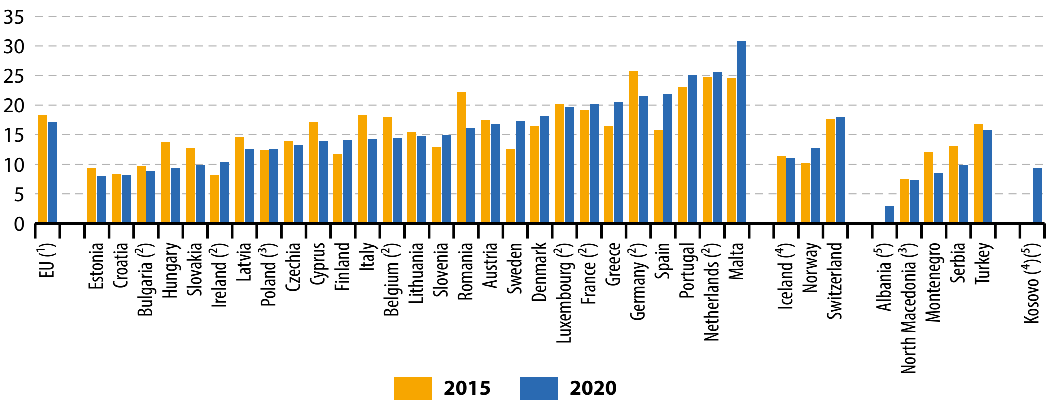


Note: Estimated data.
Compound annual growth rate (CAGR): – 1.8 % per year in the period 2010–2020; – 1.2 % per year in the period 2015–2020

Source: Eurostat (online data codes: sdg_11_20 and ilc_mddw04)

Figure 11.4: Population living in households considering that they suffer from noise, by country, 2015 and 2020

(% of population)



([1]) Estimated data.
([2]) Break(s) in time series between the two years shown.
([3]) 2019 data (instead of 2020).
([4]) 2018 data (instead of 2020).
([5]) No data for 2015.

Source: Eurostat (online data code: sdg_11_20)

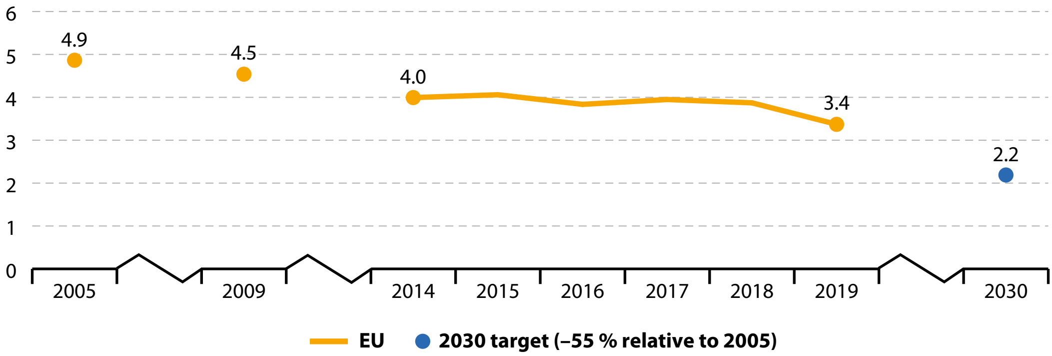
Years of life lost due to $PM_{2.5}$ exposure

LONG TERM
2005–2019

SHORT TERM
2014–2019

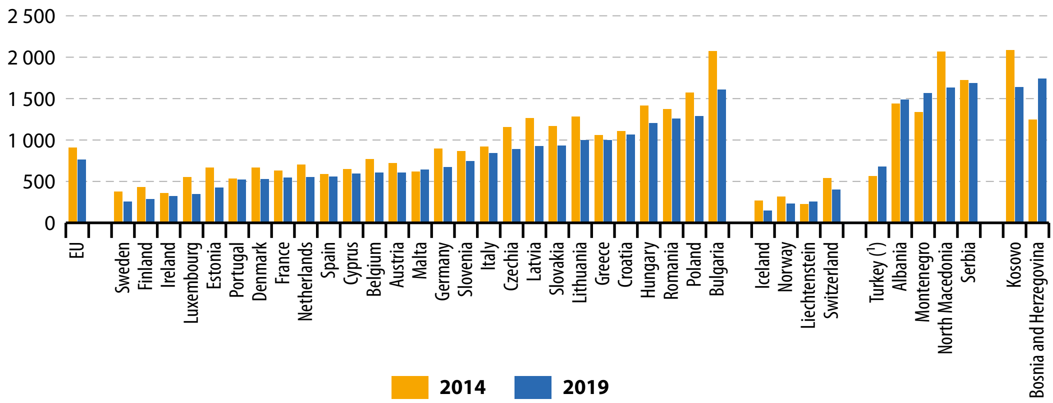
The indicator measures the years of life lost (YLL) due to exposure to particulate matter. Fine particulates ($PM_{2.5}$) are particulates whose diameter is less than 2.5 micrometres, meaning they can be carried deep into the lungs where they can cause inflammation and exacerbate the condition of people suffering heart and lung diseases. YLL is defined as the years of potential life lost as a result of premature death. It is an estimate of the average number of years that a person would have lived if they had not died prematurely. The data stem from the European Environment Agency.

Figure 11.5: Years of life lost due to $PM_{2.5}$ exposure, EU, 2005–2019
(million years lost)



Note: estimated data.
Compound annual growth rate (CAGR): – 2.6 % per year (observed) and – 3.1 % per year (required to meet target) in the period 2005–2019; – 3.3 % per year (observed) and – 3.7 % per year (required to meet target) in the period 2014–2019.
Source: EEA (Eurostat online data code: sdg_11_51)

Figure 11.6: Years of life lost due to $PM_{2.5}$ exposure, by country, 2014 and 2019
(years lost per 100 000 inhabitants)



Note: Estimated data.
(1) 2016 data (instead of 2014).
Source: EEA (Eurostat online data code: sdg_11_51)

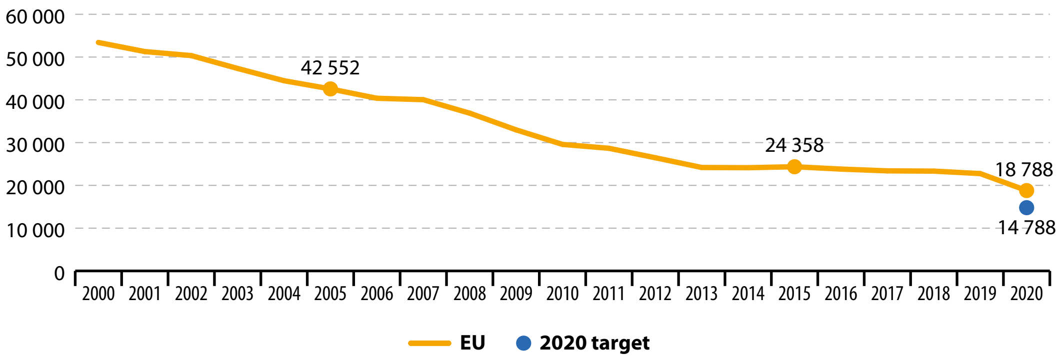
LONG TERM 2005–2020

SHORT TERM 2015–2020

Road traffic deaths

This indicator measures the number of fatalities caused by road accidents, including drivers and passengers of motorised vehicles and pedal cycles, as well as pedestrians. Persons dying on road accidents up to 30 days after the occurrence of the accident are counted as road accident fatalities. The data come from the CARE database managed by DG Mobility and Transport (DG MOVE).

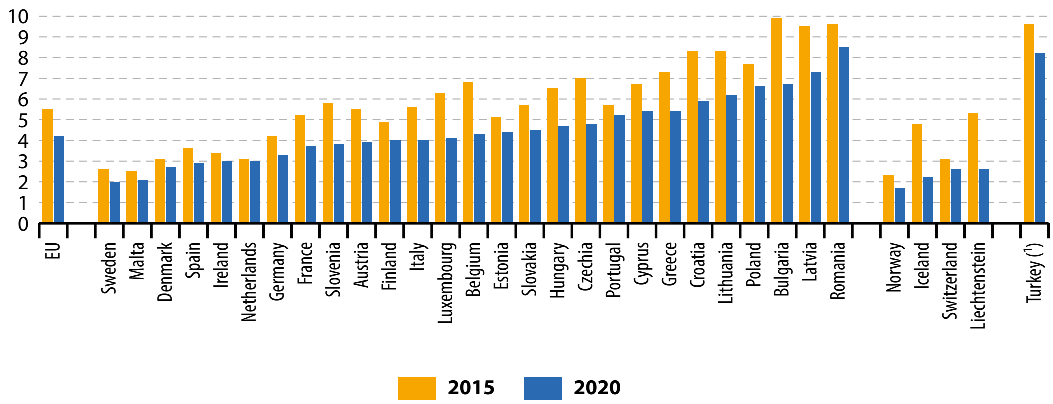
Figure 11.7: Road traffic deaths, EU, 2000–2020
(number of killed people)



Compound annual growth rate (CAGR): – 5.3 % per year (observed) and – 6.8 % per year (required to meet target) in the period 2005–2020; – 5.1 % per year (observed) and – 9.5 % per year (required to meet target) in the period 2015–2020.

Source: European Commission services, DG Mobility and Transport (Eurostat online data code: sdg_11_40)

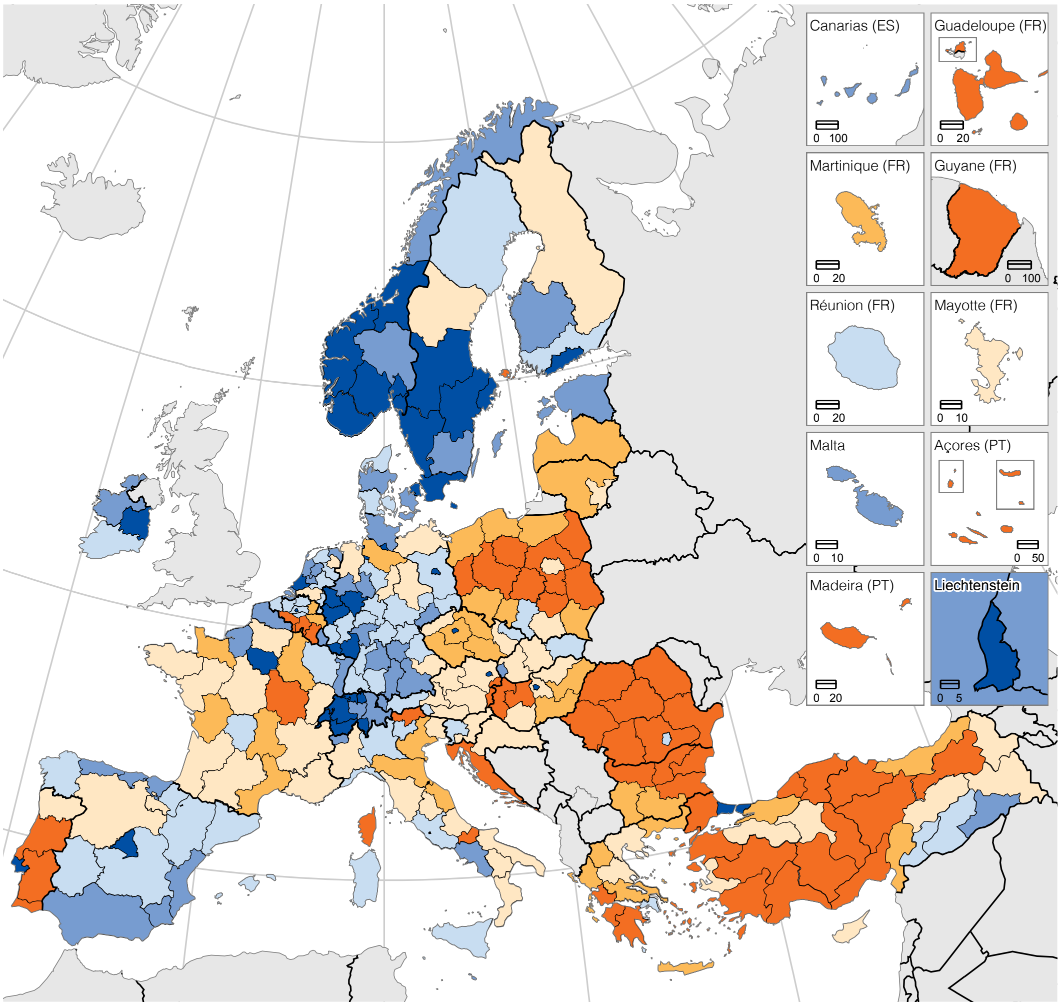
Figure 11.8 Road traffic deaths, by country, 2015 and 2020
(number per 100 000 people)



(¹) 2018 data (instead of 2020).

Source: European Commission services, DG Mobility and Transport (Eurostat online data code: sdg_11_40)

Map 11.1: **Road traffic deaths, by NUTS 2 region, 2019**
(number per 100 000 people)



EU = 5.1

Administrative boundaries: © EuroGeographics © UN–FAO © Turkstat
Cartography: Eurostat – IMAGE, 04/2022

- >= 8
- 6.5 – < 8
- 5.1 – < 6.5
- 4 – < 5.1
- 3 – < 4
- < 3
- Data not available

0 200 400 600 800 km

Source: Eurostat (online data code: TRAN_R_ACCI)

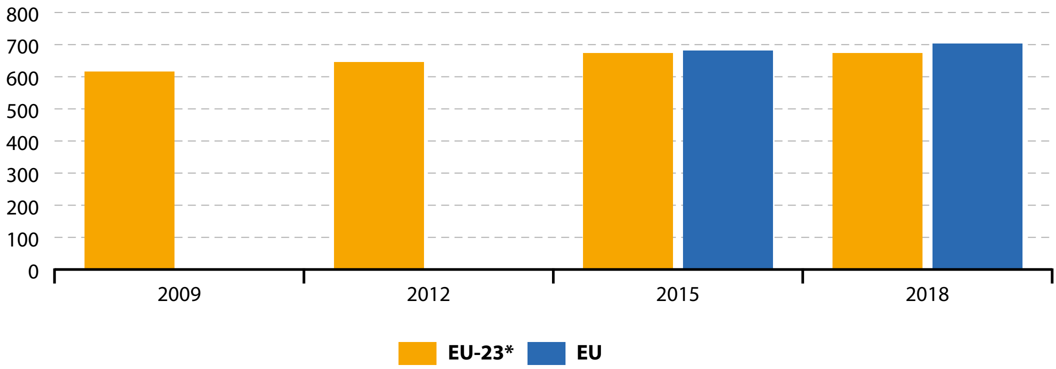
LONG TERM
Time series too short

SHORT TERM
2015–2018

Settlement area per capita

This indicator captures the amount of settlement area due to land-take, such as for buildings, industrial and commercial areas, infrastructure and sports grounds, and includes both sealed and non-sealed surfaces.

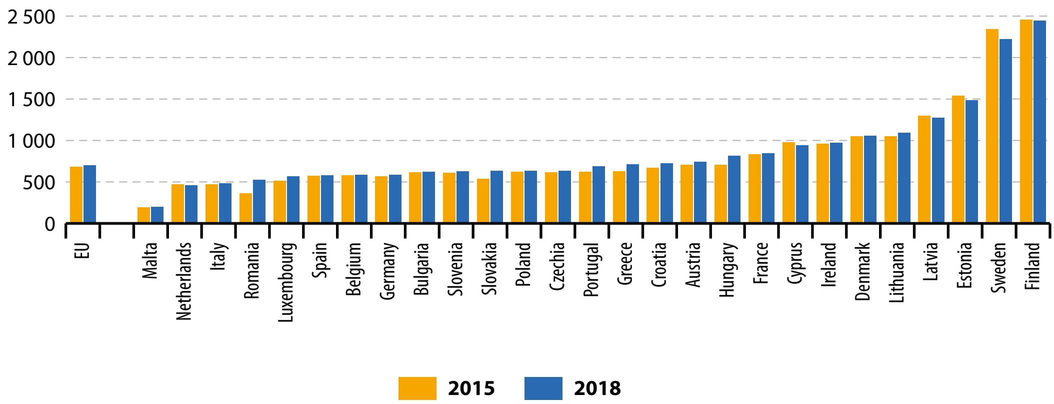
Figure 11.9: Settlement area per capita, EU, 2009–2018
(m²)



Note: EU-23* refers to an aggregate including the UK but excluding Bulgaria, Croatia, Cyprus, Malta and Romania.
Compound annual growth rate (CAGR) for the EU: 1.1 % per year in the period 2015–2018.

Source: Eurostat (online data code: sdg_11_31)

Figure 11.10: Settlement area per capita, by country, 2015 and 2018
(m²)



Source: Eurostat (online data code: sdg_11_31)

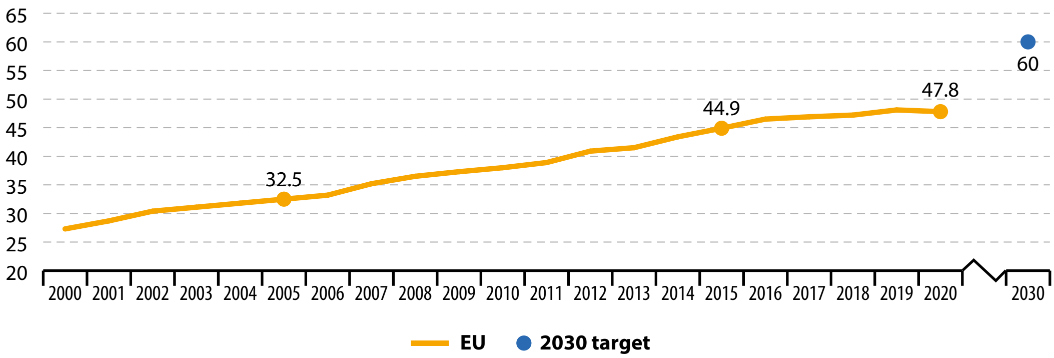
Recycling rate of municipal waste

LONG TERM 2005–2020

SHORT TERM 2015–2020

This indicator measures the tonnage recycled from municipal waste divided by the total municipal waste arising. Recycling includes material recycling, composting and anaerobic digestion. Municipal waste consists mostly of waste generated by households, but may also include similar wastes generated by small businesses and public institutions and collected by the municipality. This latter part of municipal waste may vary from municipality to municipality and from country to country, depending on the local waste management system. For areas not covered by a municipal waste collection scheme the amount of waste generated is estimated. Each year, Member States report the amount recycled and the total municipal waste generated to Eurostat. Data collection, validation and dissemination are performed by the Environmental Data Centre on waste hosted at Eurostat.

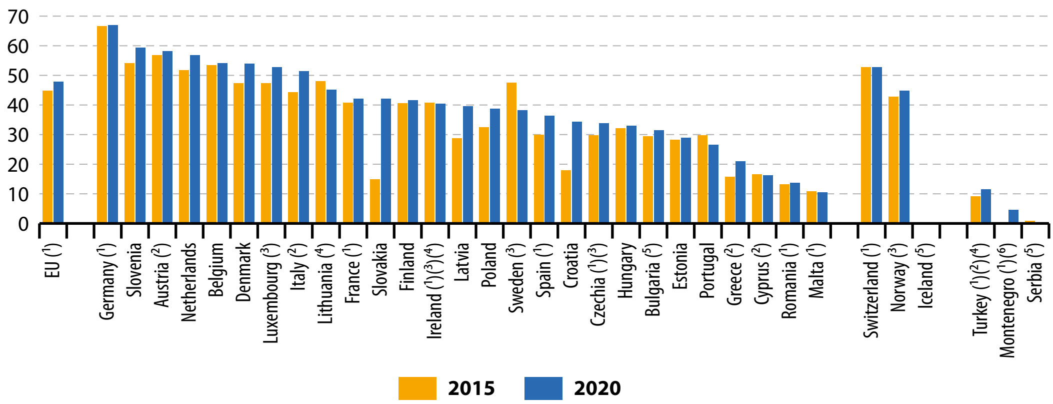
Figure 11.11: Recycling rate of municipal waste, EU, 2000–2020
(% of total municipal waste generated)



Note: 2019 and 2020 data are Eurostat estimates.
Compound annual growth rate (CAGR): 2.6 % per year (observed) and 2.5 % per year (required to meet target) in the period 2005–2020; 1.3 % per year (observed) and 2.0 % per year (required to meet target) in the period 2015–2020.

Source: Eurostat (online data code: sdg_11_60)

Figure 11.12: Recycling rate of municipal waste, by country, 2015 and 2020
(% of total municipal waste generated)



(1) Estimated and/or provisional data.
(2) 2019 data (instead of 2020).
(3) Break(s) in time series between the two years shown.
(4) 2016 data (instead of 2015).
(5) 2018 data (instead of 2020).
(6) No data for 2015.

Source: Eurostat (online data code: sdg_11_60)

Notes

(1) 2020 data. Source: Eurostat (online data codes: ilc_lvho01 and demo_gind).
(2) Eurostat (2016), *Urban Europe: Statistics on cities, towns and suburbs*, Publications Office of the European Union, Luxembourg, p. 9.
(3) See: European Commission (2019), *Environment: Clean Air*.
(4) European Parliament and the Council of the European Union (2018), *Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste*.
(5) European Commission (2018), *Europe on the Move: Commission completes its agenda for safe, clean and connected mobility*, Press release database, Brussels.
(6) European Environment Agency (2019), *Population exposure to environmental noise.*
(7) Source: Eurostat (online data codes: sdg_11_20 and demo_gind).
(8) European Environment Agency (2021), *Exposure of Europe's population to environmental noise.*
(9) Berglund, B., Lindvall, T., Schwela, D.H. (1999), *Guidelines for Community Noise*, World Health Organization (WHO), Geneva.
(10) WHO Regional Office for Europe (2018), *Environmental Noise Guidelines for the European Region*.
(11) World Health Organization (2016), *World Health Statistics 2016: Monitoring Health for the SDGs*, p. 37.
(12) World Health Organization (2021), *WHO global air quality guidelines: particulate matter ($PM_2$5 and PM_{10}), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*.
(13) Source: Eurostat (online data code: t2020_rn210).
(14) For $PM_{2.5}$, the Ambient Air Quality Directive 2008/50/EC introduced a target value to be attained by 2010, which became a limit value starting in 2015. For more information on EU air quality standards see: http://ec.europa.eu/environment/air/quality/standards.htm.
(15) European Environment Agency (2021), *Europe's air quality status 2021 — update*.
(16) Ibid.
(17) European Environment Agency (2021), *Air Quality in Europe 2021*, EEA Report No 15/2021.
(18) European Environment Agency (2021), *Air quality and COVID-19*.
(19) European Environment Agency (2020), *Air Quality in Europe 2020 Report*, EEA Report No 9/2020, Publications Office of the European Union, Luxembourg, p. 6.
(20) Eurostat (2022), *European Statistical Recovery Dashboard*, Air quality.
(21) Degree of urbanisation classifies local administrative units as 'cities', 'towns and suburbs' or 'rural areas'. In 'cities' at least 50 % of the population lives in an urban centre. If less than 50 % lives in an urban centre but more than 50 % of the population lives in an urban cluster it is classified as 'towns and suburbs', and if more than 50 % of the population lives outside an urban cluster it is classified as a 'rural area'. An urban centre is a cluster of contiguous grid cells of 1 km^2 with a density of at least 1 500 inhabitants per km^2 and a minimum population of 50 000 people. An urban cluster is a cluster of contiguous grid cells of 1 km^2 with a density of at least 300 inhabitants per km^2 and a minimum population of 5 000 people.
(22) Source: Eurostat (online data code: ilc_mdho06D).
(23) Source: Eurostat (online data code: ilc_mddw04).
(24) Source: Eurostat (online data code: ilc_mddw06).
(25) ITF (2021), *ITF Transport Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/16826a30-en.
(26) UITP (2020), *The Future of Mobility post-COVID*.
(27) Eurostat (2020), *Impact of COVID-19 on rail passenger transport in Q2 2020*.
(28) European Commission (2020), *Road safety: Europe's roads are getting safer but progress remains too slow*.
(29) European Commission (2022), *Road safety in the EU: fatalities in 2021 remain well below pre-pandemic level*.
(30) European Commission (2021), *European Road Safety Observatory: Annual statistical report on road safety in the EU 2020*, p. 13.
(31) European Commission (2022), *Road safety in the EU: fatalities in 2021 remain well below pre-pandemic level*.
(32) UN-Habitat (2016), *Urbanization and Development: Emerging Futures, World Cities report 2016*, pp. 85–100.
(33) Eurostat (2021), *Statistics explained: Municipal waste statistics*.
(34) European Commission (2018), *Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste (Text with EEA relevance)*.
(35) Source: Eurostat (online data code: env_wasmun).
(36) EEA (2016), *Land recycling in Europe: Approaches to measuring extent and impacts*, EEA Report No 31/2016, European Environment Agency.

12 Ensure sustainable consumption and production patterns

SDG 12 calls for a comprehensive set of actions from businesses, policy-makers, researchers and consumers to adapt to sustainable practices. It envisions sustainable production and consumption based on advanced technological capacity, resource efficiency and reduced global waste.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

eurostat supports the SDGs

Consumption and production patterns have wide environmental and social impacts. Sustainable production and consumption means using resources efficiently, respecting resource constraints and reducing pressures on natural capital to increase overall well-being, keep the environment clean and healthy, and safeguard the needs of future generations. The rise in living standards and quality of life in Europe since the end of World War II has been made possible through increases in income, production and consumption, which have tended to go hand in hand with more resource extraction and growing pressures on natural capital (air, water, land and biodiversity) and the climate. Since we live on a planet with finite and interconnected resources, the rate at which these are used has implications for today's prosperity and lasting effects on future generations. Thus, it is important for the EU to decouple economic growth and the improvement of living standards from resource use and its possible negative environmental impacts. This involves increasing the circularity of materials in the economy, thereby reducing both the need for resource extraction and the amount of waste ending up in landfills or incineration. It also means safe management of chemicals and a shift away from carbon-intensive energy carriers towards renewable energy sources. Such an approach would not only reduce environmental pressures, but also provide major economic and social benefits.

Table 12.1: Indicators measuring progress towards SDG 12, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Decoupling environmental impacts from economic growth			
Consumption of hazardous chemicals	↗	↘	page 224
Material footprint	↗	↓	page 225
Average CO_2 emissions from new passenger cars	↗ (¹)	↘	page 226
Energy productivity (*)	↑	↑	SDG 7, page 141
Green economy			
Gross value added in the environmental goods and services sector	↑	↑	page 228
Waste generation and management			
Circular material use rate	↑	↑	page 229
Generation of waste excluding major mineral wastes	↘ (²)	↓ (³)	page 230

(*) Multi-purpose indicator.
(¹) Past 13-year period.
(²) Past 14-year period.
(³) Past 4-year period.

Table 12.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 12 'Responsible consumption and production'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

The 8th Environment Action Programme (EAP) (1) adopted in March 2022 aims to accelerate the transition to a climate-neutral, resource-efficient and regenerative economy, recognising that human well-being depends on healthy ecosystems. Among its priority objectives are achieving climate neutrality by 2050 and restoring biodiversity.

The Circular Economy Action Plan (2) adopted in 2020 aims to double the EU's circular material use rate in the coming decade to support the achievement of climate neutrality by 2050, to decouple economic growth from resource use and waste generation and to keep resource consumption within ecological boundaries. In March 2022, the European Commission proposed a package on Circular Economy measures to make sustainable products the norm in the EU and boost circular business models.

The Global Alliance on Circular Economy and Resource Efficiency (GACERE), launched in 2021, aims to bring together governments and relevant organisations to advance the circular economy transition.

The Commission's New Consumer Agenda (3) aims to empower consumers to actively engage with the green and digital transitions, while effectively enforcing consumer rights and protection during and after the COVID-19 pandemic.

The revised Waste Framework Directive sets a goal to reduce food waste by 30 % by 2025 and 50 % by 2030. It also establishes a 55 % recycling rate target for municipal waste that will be increased to 65 % by 2035, and emphasises waste prevention.

The 2020 EU industrial strategy and its 2021 update (4) aim to help Europe's industry lead the twin transitions towards climate neutrality and digital leadership, while strengthening the resilience of the EU's economy.

The REACH framework (5) aims to improve the protection of human health and the environment through better identification and management of hazardous chemicals. The framework will be updated in 2022, supported by the Chemicals Strategy for Sustainability (6), which aims to reduce the harm to humans and the environment from exposure to chemicals.

The 2021 Zero Pollution Action Plan (7) calls for air, water and soil pollution to be reduced to levels no longer considered harmful to health and ecosystems, respecting planetary boundaries and creating a toxic-free environment.

EU legislation sets mandatory CO_2 emission targets for cars and vans and CO_2 emission standards for heavy-duty vehicles (8) (applying from 2025). The Commission's 'Fit for 55' proposal for revised CO_2 emission standards for new passenger cars and vans (9) aims to contribute to the 2030 climate objectives and climate neutrality.

The Smart and Sustainable Mobility Strategy (10) adopted in 2020 aims to enable the green transition of the EU's transport system. As a contribution to the 2030 and 2050 climate targets and the zero pollution ambition, the goal is to make at least 30 million zero-emission vehicles operational in Europe by 2030.

Responsible consumption and production in the EU: overview and key trends

Monitoring SDG 12 in an EU context focuses on developments in the areas of decoupling environmental impacts from economic growth, the green economy, and waste generation and management. As Table 12.1 shows, when it comes to decoupling environmental impacts from economic growth, the short-term trends have largely been unfavourable. Consumption of toxic chemicals and of raw materials has increased, and further progress will be necessary to meet the EU target for carbon dioxide (CO_2) emissions from new cars despite significant reductions from 2019 to 2020. The picture is also mixed in the area of waste generation, where non-mineral waste generation is increasing despite improvements in the circular use of materials. On a positive note, the value added from the environmental goods and services sector has been growing.

Decoupling environmental impacts from economic growth

Economic growth improves people's well-being but has long been associated with growing resource and energy consumption. Continuous growth in the consumption of finite resources both harms the environment and significantly contributes to climate change. To tackle this challenge, the EU has launched a new growth strategy — the European Green Deal [11] — which aims to transform the EU into a fair and prosperous climate-neutral society, with a modern, resource-efficient and competitive economy where economic growth is decoupled from resource use. It focuses on improving resource- and energy-use efficiency by restructuring economies so they produce more from the same resource and energy inputs.

6.52 billion tonnes of globally extracted raw material were consumed in the EU in 2019

The EU's material footprint has worsened in recent years, while energy productivity has improved

The material footprint, also referred to as raw material consumption (RMC), shows the amount of materials used along the supply chains of goods and services that are finally consumed in a country. RMC is based on modelling estimates of traded products — imports and exports — in raw material equivalents. Thus, as opposed to domestic material consumption (DMC), the indicator includes the extracted materials (both domestically and abroad) needed to produce goods and services consumed by final users inside a country's borders.

In 2019, final users in the EU consumed 6.52 billion tonnes of raw material, which was a 5.2 % increase from 2014. Over the period 2014 to 2019, imports measured in raw material equivalents are estimated to have been about two times higher than when measured in the weight of traded goods only. The main difference between RMC and DMC manifests in material input, which refers to imports plus domestic extraction. When measured in terms of RMC, the EU's 2019 material input was about 24 % higher than for DMC and had grown at a slightly faster rate between 2014 and 2019 [12]. However, the stark difference between the two consumption indicators is somewhat reduced when exports are also considered. As with imports, exports measured in raw materials are higher than when only the weight of traded goods is considered. Therefore, despite the disparities in material input, the EU's RMC in 2019 was only about 3 % higher than its DMC. Nevertheless, the significant increase in the EU's material consumption up to 2019 suggests that further efforts might be required to meet the objectives of the European Green Deal, which calls for a reduction in environmental pressures alongside economic growth (also see the section on spillover effects on page 339).

DMC is used to calculate resource productivity ([13]), which monitors how much output — in terms of gross domestic product (GDP) — an economy produces per unit of used materials. Between 2015 and 2020, the EU economy (in terms of GDP) grew by 2.5 %, while DMC fell by 0.7 %. This resulted in a 3.3 % increase in the EU's resource productivity, from EUR 2.01 per kg of DMC in 2015 to EUR 2.08 per kg in 2020 ([14]).

Similar to resource productivity, energy productivity ([15]) measures economic output (in terms of GDP) per unit of energy used. Observed trends for energy productivity are stronger than for resource productivity, due to larger decreases in energy consumption than in material use. From 2015 to 2020, the EU increased its energy productivity by 10.6 %, from EUR 7.8 per kg of oil equivalent (kgoe) to EUR 8.6 per kgoe. The economic growth reported above was accompanied by reductions in the EU's gross available energy (GAE) by 7.3 % from 2015 and 2020 ([16]).

In 2020, the EU's energy productivity amounted to

8.6

EUR per kgoe

Consumption of hazardous chemicals has stagnated in recent years

Most everyday products used by businesses and consumers are produced with the help of chemicals. This makes them a significant contributor to the EU economy, with chemical sales worth EUR 543 billion in 2019 ([17]). The consumption of chemicals provides benefits to society, but can also entail risks to the environment and human health. The risk depends on both the hazard presented by the chemicals and the exposure to them. Tracking the consumption volumes of industrial (manufactured) chemicals that are hazardous to human and environmental health is, therefore, used as a proxy for human exposure ([18]).

217.9

million tonnes of toxic chemicals were consumed in the EU in 2020

In 2020, 217.9 million tonnes of hazardous chemicals were consumed in the EU. Since 2005, the total consumption of hazardous chemicals has fallen by 12.9 %. However, the short-term trend reveals a moderately negative development, as consumption increased slightly by 0.2 % between 2015 and 2020.

Average CO_2 emissions from new car fleets have fallen significantly in 2020, but further progress is necessary to meet the EU target

In 2019, passenger cars were responsible for 14.9 % of total domestic EU emissions of carbon dioxide (CO_2), the main greenhouse gas ([19]). To reduce those emissions, the EU has set targets for the fleet-wide average emissions of new passenger cars. From 2020 onwards, a target of 95 grams of CO_2 per kilometre (g/km) applies ([20]). For each manufacturer's new car fleet, a binding specific emission target is set according to the average mass of its new vehicles, in such a way that the overall target for the EU's average fleet emissions should be met. For 2020, Regulation (EU) 2019/631 included a phase-in of the targets by considering only the 95 % lowest emitting cars of each manufacturer. Due to this phase-in and other flexible compliance mechanisms, most major manufacturers were able to meet their 2020 target ([21]).

108.2

grams of CO_2 per km were emitted on average by new passenger cars in the EU in 2020

Based on provisional data published by the European Environment Agency (EEA), average CO_2 emissions per km from new passenger cars registered in the EU reached 108.2 g/km in 2020, which is a 9.2 % fall since 2015. This reduction is due to a steep 11.4 % drop from 2019 to 2020, reversing a somewhat increasing trend in average CO_2 emissions experienced in the three preceding years. While this constitutes the largest emissions reduction yet, further progress will be necessary to meet the current EU target as well as the stricter targets that will apply from 2025 and 2030 onwards ([22]).

Replacing conventional cars with zero emission vehicles will be a crucial step towards achieving the EU's greenhouse gas emissions reduction targets, as set out in the European Climate Law ([23]) and the EU's 2030 Climate Target Plan ([24]), and towards climate neutrality by 2050. According to data from the European Alternative Fuels Observatory, the share of zero-emission vehicles, including both battery electric vehicles and hydrogen vehicles, in newly registered passenger cars in the EU rose from 0.4 % in 2015 to 5.3 % in 2020. However, the share differs considerably between different European countries. Within the EU, the Netherlands reported the highest share with 20.2 % in 2020, followed by Sweden with 9.3 % and Denmark with 7.0 %. In contrast, zero-emission vehicles accounted for less than 1 % of newly registered passenger cars in Cyprus, Poland and Greece ([25]). A comparison of Figures 12.6 and 12.7 (see page 227) reveals that countries with a high share of zero emission vehicles in newly registered passenger cars, such as the Netherlands, Denmark and France, are also among the best performers for car fleets' CO_2 emissions.

Green economy

Another way to help decouple environmental impacts from economic growth is to increase the share of the green economy. The environmental goods and services sector (EGSS) is the part of the economy engaged in producing goods and services that are used in environmental protection activities and resource management. Such goods and services can include, for example, products to prevent, measure, control, limit, minimise or correct environmental damage and resource depletion. Increasing the market share of green technologies in the EU can also have important socio-economic benefits in terms of value added and employment ([26]).

The value added of the environmental goods and services sector has shown strong growth over the past 15 years

The gross value added in the EGSS in the EU has grown by 66.4 % over the past 15 years, from EUR 176.2 billion in 2004 to EUR 293.2 billion in 2019. This can be attributed to growth in the renewable energy and energy efficiency sectors, as well as an increase in spending on green infrastructure ([27]). In relation to the whole economy, the EGSS grew, in gross value added terms, from 1.7 % of GDP in 2004 to 2.3 % in 2019. This indicates the sector grew disproportionally faster than other economic sectors. Most of this outperformance, however, took place in the period up to 2011, with the EGSS growing at about the same pace as GDP since then. Employment (in full-time equivalent) in the sector has also increased since 2004, by 35.8 %. In 2019, the sector employed around 4.5 million people throughout the EU ([28]).

293.2
billion EUR of gross value added were generated by the EU's environmental goods and services sector in 2019

Waste generation and management

Production and consumption patterns characterised by products being made, used and disposed of at an ever-faster rate are not sustainable. Reducing both the input of materials and the output of wastes by keeping resource flows within the economy is the essence of a circular economy. Preventing materials from turning into waste for as long as possible and reusing waste that cannot be avoided are central parts of this process. Because waste contains resources, recycling can put materials back into the economy and ensure they are used again to preserve the value embedded within them. Therefore, the EU aims to move towards a circular economy where materials and resources are kept in the economy for as long as possible (through repairing, recycling and reusing) and waste is minimised or even prevented.

Waste generation is on the rise in the EU, while the circular material use rate keeps improving

In 2018, 813 million tonnes of waste, excluding major mineral waste, were generated in the EU, corresponding to 1 820 kilograms (kg) of waste per inhabitant. Of this waste, 7.9 % was hazardous to health or the environment, corresponding to 143 kg per resident. Another 8.5 % was food waste generated in the production, distribution and consumption of food, amounting to 69 million tonnes in total or 154.6 kg per capita in 2018 ([29]). Over the long-term period, the amount of non-mineral waste generated per capita in the EU increased by 1.1 % between 2004 and 2018. The short-term trend has been even less favourable, with the figure increasing by 4.9 % between 2014 and 2018.

1 820 kg
of waste (excluding major mineral waste) were generated in the EU per inhabitant in 2018

Total waste generation, which includes the large fraction of mineral wastes, dredging spoils and contaminated soils that are mainly created in the mining and construction sectors, is almost three times higher than non-mineral waste generation. In 2018, total waste generation in the EU amounted to 2 338 million tonnes or 5 234 kg per inhabitant. The short-term trend in total waste generation was quite similar to non-mineral waste generation, showing an increase of 4.2 % between 2014 and 2018 ([30]).

When not managed sustainably, all of this waste has a huge impact on the environment, causing pollution and greenhouse gas emissions, as well as significant losses of materials ([31]). Recycling waste and feeding it back into the economy as secondary raw materials relies heavily on improved waste management and is crucial for reducing the EU's demand for primary raw materials ([32]). Between 2005 and 2020, the EU circular material use (CMU) rate — the share of used materials derived from collected waste — increased from 8.8 % to 12.8 % and has grown by 1.5 percentage points since 2015.

12.8 %
of the materials used in the EU came from collected waste in 2020

Data for the recycling of waste excluding major mineral wastes show that 55 % of EU waste was recycled in 2018 ([33]). The difference between this relatively high end-of-life recycling rate and the CMU rate (12.8 % in 2020) may seem surprising at first. However, the comparatively low degree of circularity in the EU can be attributed to two structural barriers. First, a large fraction of the materials extracted, in particular minerals, is used to build and maintain buildings, infrastructure and other long-life goods and is not readily available for recycling. A second barrier is the large amount of materials used to generate energy. For these materials, in particular for fossil fuels, closing the loop is hardly possible and the high share of these materials keeps the degree of circularity low ([34]).

Presentation of the main indicators

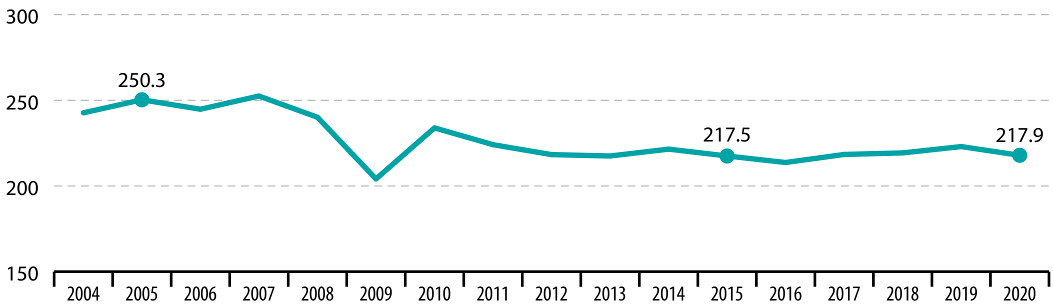
LONG TERM
2005–2020

SHORT TERM
2015–2020

Consumption of hazardous chemicals

This indicator measures the volume of aggregated consumption of toxic chemicals, expressed in million tonnes. The consumption of chemicals is calculated as the sum of the production volumes and the net import volumes of the chemicals according to the equation: consumption = production + imports – exports.

Figure 12.1: Consumption of hazardous chemicals, EU, 2004–2020
(million tonnes)



Compound annual growth rate (CAGR): – 0.9 % per year in the period 2005–2020; 0.04 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_12_10)

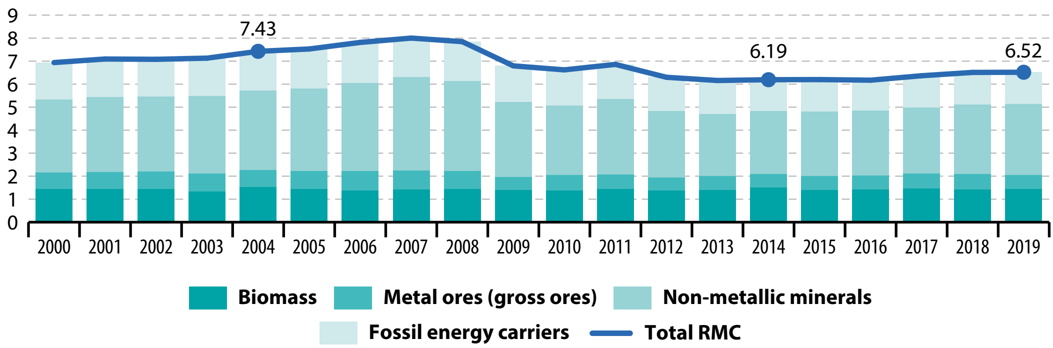
Material footprint

LONG TERM 2004–2019

SHORT TERM 2014–2019

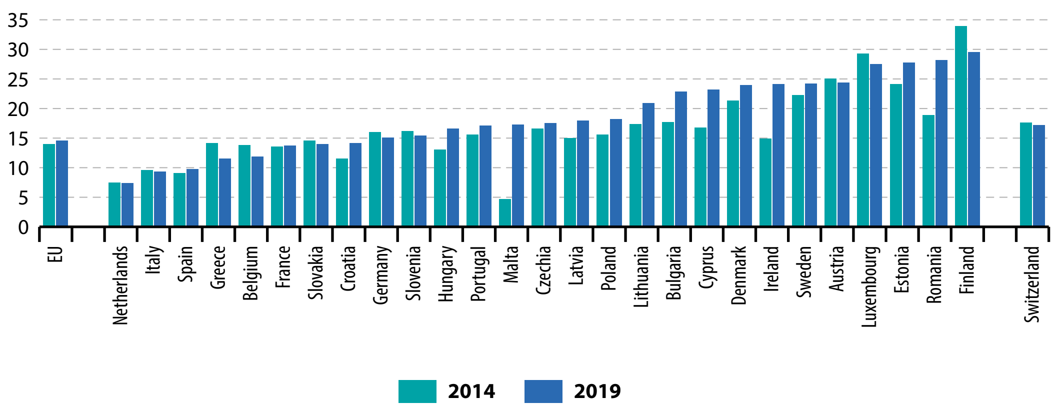
The material footprint, also referred to as raw material consumption (RMC), represents the global demand for the extraction of materials (minerals, metal ore, biomass, fossil energy materials) induced by consumption of goods and services within a geographical reference area. Data for material footprints stem from material flow accounts, which model the flows of natural resources from the environment into the economy. They include domestic extraction of materials measured in tonnes of gross material (for example, gross ore or gross harvest) as well as imports and exports measured by estimates of the raw material equivalents of the products traded (domestic and abroad extraction required to produce the traded products). RMC thus shows the amount of extraction needed to produce the goods demanded by final users in the geographical reference area, irrespective of where in the world the material extraction took place.

Figure 12.2: Raw material consumption, by material, EU, 2000–2019 (billion tonnes)



Note: Estimated data.
Compound annual growth rate (CAGR): -0.9 % per year in the period 2004–2019; 1.0 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_12_21 and env_ac_rme)

Figure 12.3: Raw material consumption, by country, 2014 and 2019 (tonnes per inhabitant)



Note: Estimated data for most countries.
Source: Eurostat (online data code: sdg_12_21)

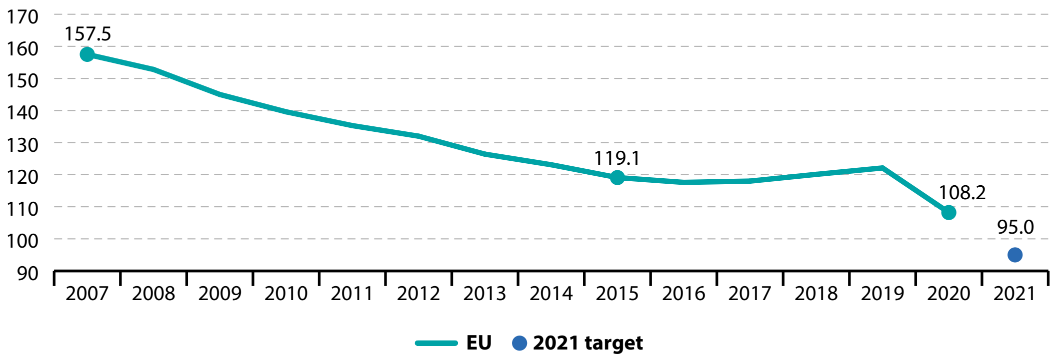
LONG TERM
2007–2020

SHORT TERM
2015–2020

Average CO_2 emissions from new passenger cars

This indicator is defined as the average carbon dioxide (CO_2) emissions per km from new passenger cars in a given year. The reported emissions are based on type-approval and can deviate from the actual CO_2 emissions of new cars. Data presented in this section are provided by the European Commission, Directorate-General for Climate Action and the European Environment Agency (EEA).

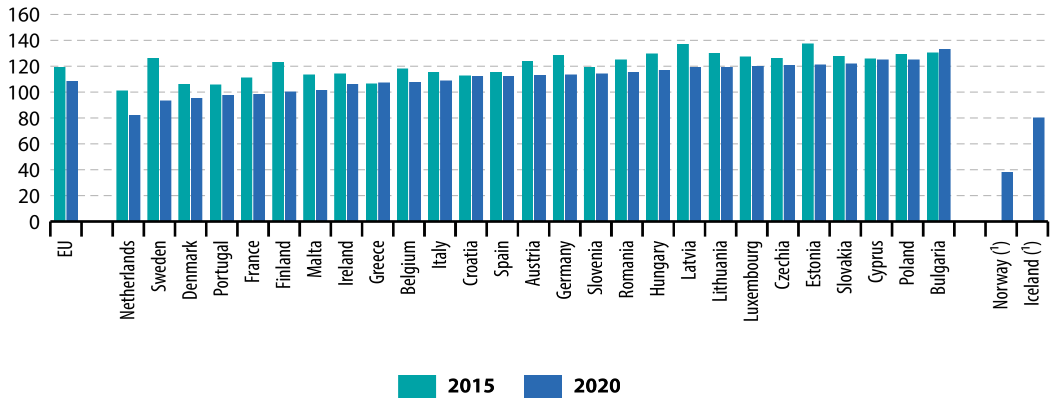
Figure 12.4: Average CO_2 emissions per km from new passenger cars, EU, 2007–2020
(g CO_2 per km)



Note: 2007–2012 data are estimated, 2020 data are provisional. The target applies to the 27 EU Member States, Iceland and Norway. Compound annual growth rate (CAGR): – 2.8 % per year (observed) and – 3.8 % per year (required to meet target) in the period 2007–2020; – 1.9 % per year (observed) and – 4.4 % per year (required to meet target) in the period 2015–2020.

Source: EEA, European Commission services, Eurostat (online data code: sdg_12_30)

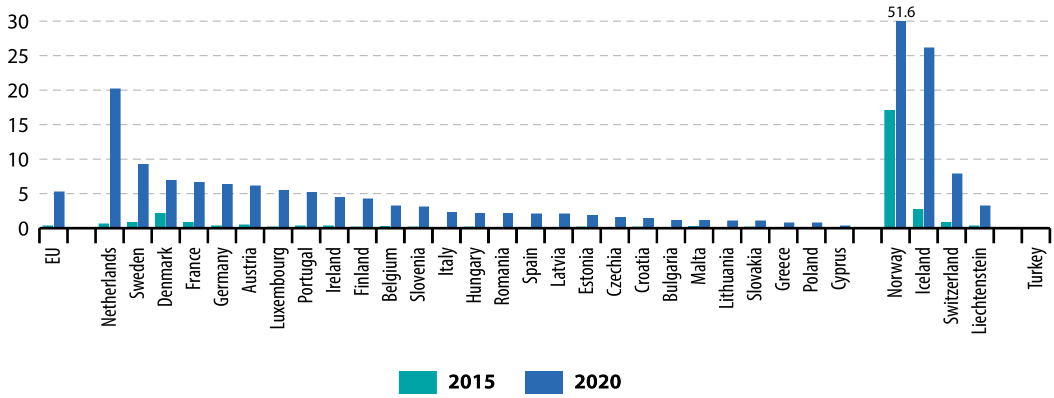
Figure 12.5: Average CO_2 emissions per km from new passenger cars, by country, 2015 and 2020
(g CO_2 per km)



Note: 2020 data are provisional.
(1) No data for 2015.

Source: EEA, European Commission services, Eurostat (online data code: sdg_12_30)

Figure 12.6: Share of zero emissions vehicles, by country, 2015 and 2020
(% of newly registered passenger cars)



Source: European Alternative Fuels Observatory, European Commission services (online data code: cli_act_noec)

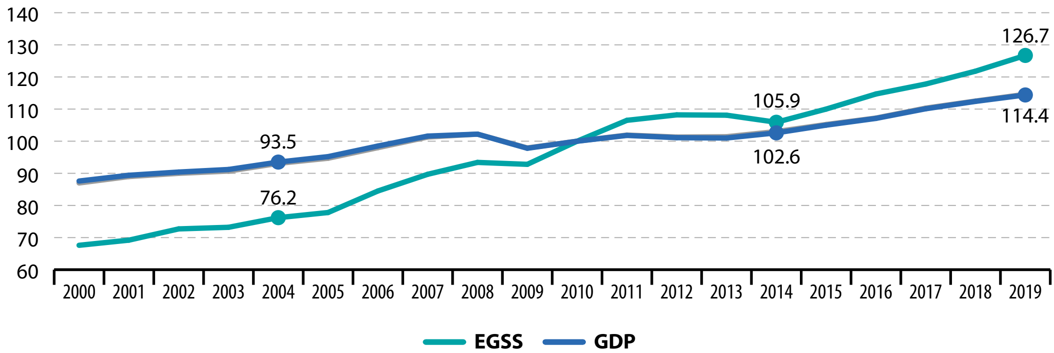
LONG TERM 2004–2019

SHORT TERM 2014–2019

Gross value added in the environmental goods and services sector

The environmental goods and services sector (EGSS) is defined as that part of a country's economy that is engaged in producing the goods and services used in environmental protection and resource management activities either domestically or abroad. Gross value added in EGSS represents the contribution of the environmental goods and services sector to GDP and is defined as the difference between the value of the sector's output and intermediate consumption.

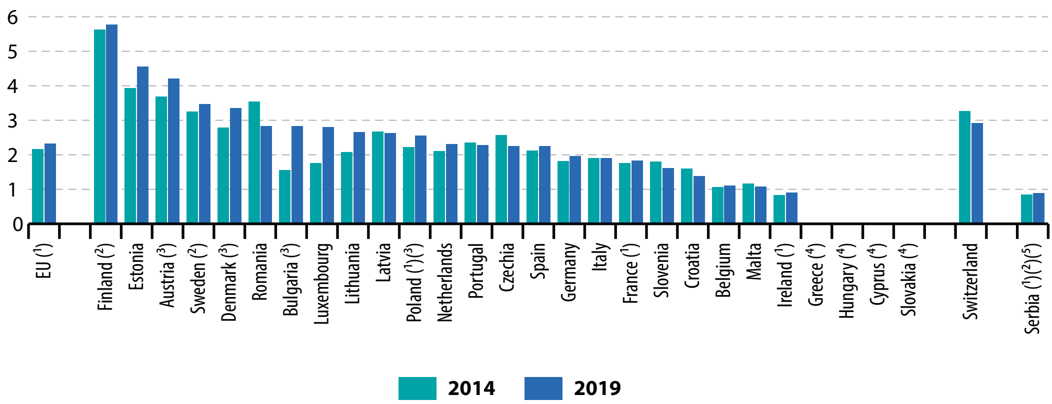
Figure 12.7: Gross value added in the environmental goods and services sector, EU, 2000–2019
(chain-linked volumes, index 2010 = 100))



Note: Eurostat estimates.
Compound annual growth rate (CAGR) of the EGSS gross value added: 3.5 % per year in the period 2004–2019; 3.7 % per year in the period 2014–2019.

Source: Eurostat (online data codes: sdg_12_61 and nama_10_gdp)

Figure 12.8: Gross value added in the environmental goods and services sector, by country, 2014 and 2019
(% of GDP)



(1) 2015 data (instead of 2013).
(2) 2015 data (instead of 2014).
(3) Break(s) in time series between the two years shown.
(4) No data.
(5) 2018 data (instead of 2019).

Source: Eurostat (online data code: sdg_12_61)

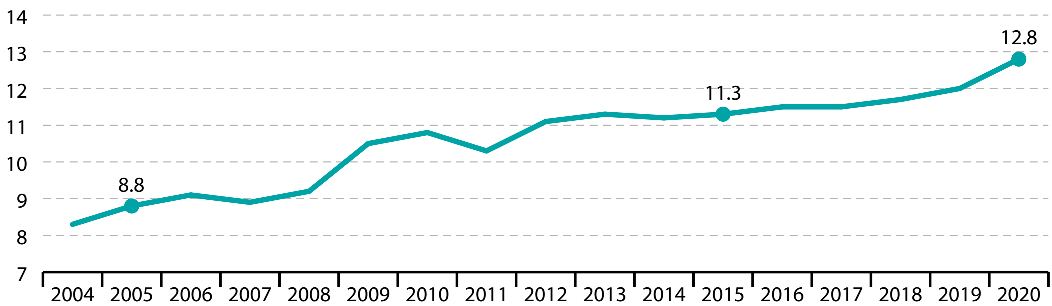
Circular material use rate

LONG TERM
2005–2020

SHORT TERM
2015–2020

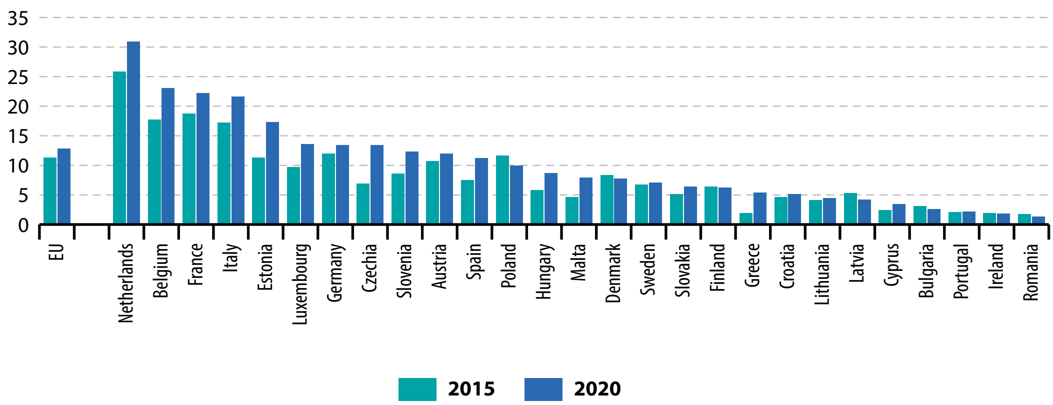
The circular material use rate (CMU) measures the share of material recovered and fed back into the economy in overall material use. The CMU is defined as the ratio of the circular use of materials to the overall material use. The overall material use is measured by summing up the aggregate domestic material consumption (DMC) and the circular use of materials. DMC is defined in economy-wide material flow accounts. The circular use of materials is approximated by the amount of waste recycled in domestic recovery plants minus imported waste destined for recovery plus exported waste destined for recovery abroad. A higher CMU rate value means more secondary materials are being substituted for primary raw materials, thus reducing the environmental impacts of extracting primary material.

Figure 12.9: Circular material use rate, EU, 2004–2020
(% of material input for domestic use)



Note: Data for odd years (2005, 2007, etc.) and for 2020 are estimated.
Compound annual growth rate (CAGR): 2.5 % per year in the period 2005–2020; 2.5 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_12_41)

Figure 12.10: Circular material use rate, by country, 2015 and 2020
(% of material input for domestic use)



Note: Data are estimated (all countries).
Source: Eurostat (online data code: sdg_12_41)

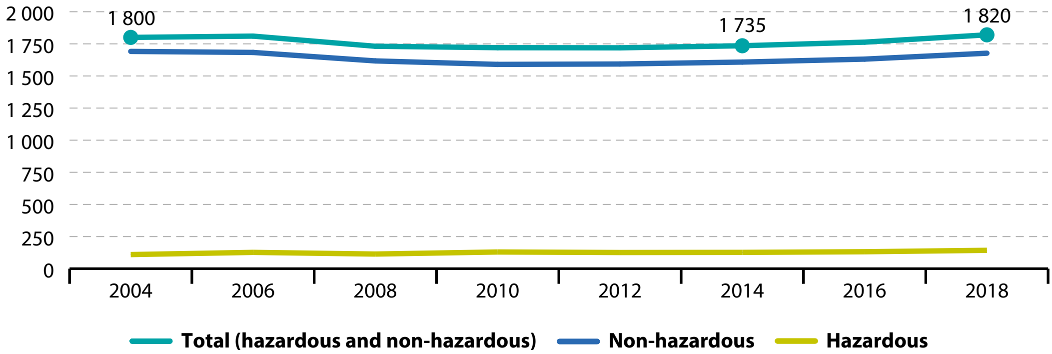
LONG TERM
2004–2018

SHORT TERM
2014–2018

Generation of waste excluding major mineral wastes

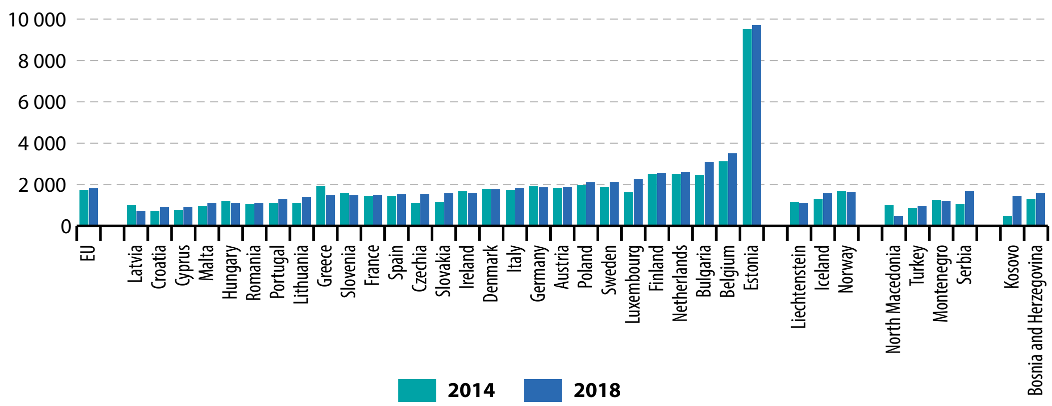
This indicator is defined as all waste generated in a country, excluding major mineral wastes, dredging spoils and contaminated soils. This exclusion enhances comparability across countries as mineral waste accounts for high quantities in some countries with important economic activities such as mining and construction.

Figure 12.11: Generation of waste excluding major mineral wastes, by hazardousness, EU, 2004–2018
(kg per capita)



Compound annual growth rate (CAGR) for the total: 0.1 % per year in the period 2004–2018; 1.2 % per year in the period 2014–2018.
Source: Eurostat (online data code: sdg_12_50)

Figure 12.12: Generation of waste excluding major mineral wastes, by country, 2014 and 2018
(kg per capita)



Source: Eurostat (online data code: sdg_12_50)

Notes

(1) European Commission (2022), *Decision (EU) 2022/591 of the European Parliament and of the Council of 6 April 2022 on a General Union Environment Action Programme to 2030*.
(2) European Commission (2020), *A new Circular Economy Action Plan: For a cleaner and more competitive Europe*, COM(2020) 98 final, Brussels.
(3) European Commission (2020), *New Consumer Agenda: Strengthening consumer resilience for sustainable recovery*, COM(2020) 696 final, Brussels.
(4) European Commission (2021), *Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery*, COM(2021) 350 final.
(5) European Parliament and Council of the European Union (2006), *Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.*
(6) European Commission (2020), *Chemicals Strategy for Sustainability: Towards a Toxic-Free Environment*, COM(2020) 667 final, Brussels.
(7) European Commission (2021), *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' — Pathway to a Healthy Planet for All*, COM(2021) 400 final, Brussels.
(8) European Commission (2018), *Proposal for a Regulation of the European Parliament and of the Council setting CO_2 emission performance standards for new heavy-duty vehicles*, COM(2018) 284 final, Brussels.
(9) European Commission (2021), *Proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) 2019/631 as regards strengthening the CO_2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition*, COM(2021) 556 final, Brussels.
(10) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM(2020), 789 final, Brussels.
(11) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.
(12) Source: Eurostat (online data codes: ENV_AC_RME and ENV_AC_MFA).
(13) Resource productivity is defined as GDP per unit of domestic material consumption (DMC), measured in EUR per kilogram. Part of these materials is directly consumed by households, which means they are not used as an input to production activities. Thus, resource productivity is not directly comparable to concepts such as labour or capital productivity.
(14) Source: Eurostat (online data codes: sdg_12_20 and nama_10_gdp).
(15) Energy productivity is defined as GDP per unit of gross inland energy consumption, measured in EUR per kg of oil equivalent. Part of the energy considered is consumed by households, which means it is not used as an input to production activities. Thus, energy productivity is not directly comparable to concepts such as labour or capital productivity. Note that the indicator's inverse is energy intensity.
(16) Source: Eurostat (online data code: nrg_bal_s).
(17) The European Chemical Industry Council (2020), *CEFIC Facts and Figures 2021*, p. 12.
(18) European Environment Agency (2019), *Consumption of hazardous chemicals*.
(19) European Commission (2021), *EU Transport in figures — Statistical pocketbook 2021*, p. 154. The total value refers to total CO_2 emissions excluding LULUCF (land use, land-use change and forestry).
(20) European Parliament and Council of the European Union (2019), *Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011, OJ L 111*.
(21) Tietge, U., Mock, P., Díaz, S., Dornoff, J. (2021), *CO_2 emissions from new passenger cars in Europe: car manufacturers' performance in 2020*, The International Council on Clean Transportation (ICCT), Washington DC.
(22) European Parliament and Council of the European Union (2019), *Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011, OJ L 111*.
(23) European Parliament and Council of the European Union (2021), *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'),* Official Journal of the European Union.
(24) European Commission (2020), *Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people*, COM(2020) 562 final, Brussels.

(25) Source: European Alternative Fuels Observatory, European Commission services (online data code: cli_act_noec)
(26) European Environment Agency (2019), *Environmental Goods and Services Sector: employment and value added.*
(27) Ibid.
(28) Source: Eurostat (online data code: env_ac_egss1).
(29) Source: Eurostat; estimates based on generation of waste by waste category, hazardousness and NACE Rev. 2 activity (online data code: env_wasgen) collected on the basis of the Waste Statistics Regulation; see: https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework.
(30) Source: Eurostat (online data code: env_wasgen).
(31) European Commission (2010), *Being wise with waste: the EU's approach to waste management*, Publication Office of the European Union, Luxembourg.
(32) European Commission (2021), *Green growth: Raw materials*, accessed 16 February 2021.
(33) Source: Eurostat (online data code: env_wasoper).
(34) Haas, W., Krausmann, F., Wiedenhofer, D., Heinz, M. (2015), *How Circular is the Global Economy?: An Assessment of Material Flows, Waste Production, and Recycling in the European Union and the World in 2005*, Journal of Industrial Ecology 19(5), 765–777.

13 Take urgent action to combat climate change and its impacts

SDG 13 seeks to implement the United Nations Framework Convention on Climate Change commitment to achieving a climate-neutral world by mid-century to limit global warming to well below 2°C — with an aim of 1.5°C — compared with pre-industrial times. It also aims to strengthen countries' resilience and adaptive capacity to climate-related natural hazards and the resulting disasters, with a special focus on supporting least-developed countries.

Climate change has many widespread and irreversible effects, such as increased average global air and ocean temperatures, changes in precipitation patterns, a rising global average sea level and increasing ocean acidity. Its impacts threaten the viability of social, environmental and economic systems and may make some regions less habitable due to food and water scarcity. In response to these challenges, the European Green Deal outlines the transformation of the EU into a climate neutral, fair and prosperous society, with a modern, resource-efficient and competitive economy. The agreement in April 2021 on the European Climate Law enshrines the EU's commitment to reaching climate neutrality by 2050 in EU law. Reducing energy consumption in transport, buildings and industries, increasing the share of renewable energy as well as shifting to sustainable agriculture and strengthening carbon sinks all contribute to achieving this commitment. Moreover, the EU works to enhance the adaptive capacity, strengthen resilience and reduce the vulnerability to climate change of its Member States and the EU as a whole with its Climate Adaptation Strategy. Because the climate crisis is a global, cross-border challenge that affects areas and regions differently, tackling it requires international coordination and cooperation. The EU has taken a leading role in international climate negotiations, pursuing the Paris Agreement goals and supporting climate initiatives around the world.

Table 13.1: Indicators measuring progress towards SDG 13, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Climate mitigation			
Net greenhouse gas emissions	↗ (1)	↗ (1)	page 241
Net greenhouse gas emissions from land use, land use change and forestry	↓	↓	page 243
Share of renewable energy in gross final energy consumption (*)	↑	↑	SDG 7, page 142
Average CO_2 emissions from new passenger cars (*)	↗ (2)	↘	SDG 12, page 226
Climate impacts and adaptation			
Climate-related economic losses	↓ (3)	↓	page 244
Population covered by the Covenant of Mayors for Climate and Energy signatories	↑ (3)	↑	page 245
Financing climate action			
Contribution to the international USD 100bn commitment on climate-related expenditure	:	↑ (4)	page 246

(*) Multi-purpose indicator.
(1) Assessed against the 55 % net emission reduction target for 2030. Note that this assessment is based on past progress and not on projections of future emissions based on planned legislation and policy measures.
(2) Past 13-year period.
(3) Past 11-year period.
(4) Assessment arrow shown in grey because of a methodological change in the data collection in 2020.

Table 13.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU signed the Paris Agreement ([1]) in 2015 and aims to achieve a climate-neutral economy by 2050 ([2]). The European Green Deal outlines EU action on the different aspects of SDG 13 'Climate action'. This section provides an overview of some of the most recent and relevant initiatives (also see the Commission's website on climate action). For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Climate mitigation

The European Climate Law ([3]) sets out a framework for climate action and increases the EU's ambition for 2030, with a new goal to reduce net greenhouse gas (GHG) emissions by at least 55 % by that year and to achieve climate-neutrality by 2050. The European Commission has also proposed a package of new and revised EU climate and energy legislation — the so called Fit for 55 package — to increase its ambition on climate mitigation. The package comprises an interconnected set of measures in the area of energy, transport, taxation and climate policies, and includes strengthened and expanded carbon pricing, targets, standards and support measures. In addition, the Commission proposes to increase the target for natural carbon sinks from 225 million tonnes (Mt) of CO_2 equivalents to 310 Mt ([4]).

The Commission also initiated the Climate Pact to support action by people across Europe. It focuses on connecting interested individuals, communities and organisations to share knowledge and develop, implement and scale up solutions.

Climate impacts and adaptation

The EU Adaptation Strategy ([5]) urges smarter, faster and more systematic adaptation so that by 2050 the EU is a climate-resilient society, fully adapted to the unavoidable impacts of climate change.

The EU Action Plan for the Sendai Framework for Disaster Risk Reduction ([6]) includes climate change adaptation actions carried out at both the EU and international level, linking these to disaster risk-reduction strategies and their coherent implementation. In addition, the EU Civil Protection Mechanism ([7]) steps in to aid Member States that are in a state of emergency due to disaster if national capacities are lacking.

Financing climate action

The EU supports climate action inside and outside Europe. In the EU, financial support comes from the EU budget, and climate-related funds including the Innovation and the Modernisation Funds ([8]). To support developing countries, the EU and its Member States contribute to the joint goal of developed countries under the Paris Agreement to provide USD 100 billion per year ([9]).

The EU aims to shift private and public investments towards sustainable activities that align with the objectives of the European Green Deal. In this context, the Commission proposed a classification system (EU taxonomy) for sustainable economic activities ([10]) and a related delegated act. Further work is summarised in the Commission's action plan on financing sustainable growth, which includes implementing further sustainability standards, mainstreaming sustainability into risk management and improving transparency in reporting.

Climate action in the EU: overview and key trends

Monitoring SDG 13 in an EU context focuses on climate mitigation, climate impacts and initiatives that support climate action. Trends in climate mitigation have been mixed, with progress on net greenhouse gas emissions and the share of renewable energies putting the EU on-track towards its 2030 targets. Greenhouse gas emissions have been falling in recent decades, with a record drop in 2020 due to the COVID-19 pandemic significantly reducing fossil fuel consumption. However, net carbon removals from land use, land use change and forestry have declined, and CO_2 emissions from new passenger cars will need to fall further to meet the EU target. In addition, the EU continues to face intensifying climate impacts as surface temperatures rise. Economic losses due to climate-related events have increased in recent years, although these remain highly variable from year to year. More local and regional governments have signed up to the Covenant of Mayors for Climate and Energy initiative for implementing mitigation and adaptation actions. Financial support is significantly progressing, both inside and outside the EU with climate-related expenditure for developed countries being topped up.

Climate mitigation

Climate mitigation aims to reduce emissions of climate-harming greenhouse gases (GHG) that originate from human activity through measures such as promoting low-carbon technologies or encouraging sustainable forest management and land use that enhance carbon removals. By 2050, the EU is committed to reaching a climate-neutral economy with no net greenhouse gas emissions. This means reducing GHG emissions as much as possible while offsetting the hardest-to-abate emissions by removing carbon dioxide (CO_2), for example by using natural carbon removals and carbon-removal technologies ([11]). On its way to achieving climate neutrality, the EU has committed itself to reducing net GHG emissions by at least 55 % by 2030 compared with 1990 levels.

Measures to tackle the COVID-19 pandemic helped put the EU on track to reaching its 2030 climate target

The EU reduced its net GHG emissions by

13.8 %

between 2015 and 2020

Estimates for GHG emissions, excluding net removals from land use and forestry, in 2020 indicate the EU has achieved a 31.4 % reduction since 1990, and therefore substantially overachieved its target for a 20 % reduction by 2020 ([12]). The net emissions, which include net removals from land use and forestry, had fallen by 33.6 % over the same period, putting the EU on track to reaching its net GHG emission reduction target of 55 % in 2030. Net removals from land use and forestry compensated for 7.3 % or 248.0 Mt of CO_2-equivalent emissions in 2020. However, estimates for 2021 ([13]) show that GHG emissions have rebounded to near pre-COVID levels as a result of increased energy consumption (see the section on COVID-19 impacts on page 29). Therefore, additional mitigation action seems necessary to ensure the EU will meet its 2030 target.

A large proportion of the emission reductions have occurred over the past 15 years, with net emissions falling by 27.7 % between 2005 and 2020. Electricity and heat-generation activities achieved the largest absolute reductions, by consuming less fossil fuel ([14]) and increasing their use of renewable energy. Renewable energy sources contributed to 22.1 % of gross final energy consumption in 2020 (see the chapter on SDG 7 'Affordable and clean energy' on page 129).

The short-term trend has been less clear-cut. GHG emissions increased slightly between 2014 and 2017, but fell between 2017 and 2020. A remarkable drop of 10.4 % happened in 2020 compared with 2019, attributed mainly to the measures taken in response to the COVID-19 pandemic and the related reduction in energy consumption. Overall, EU net emissions have fallen over the past five years (2015 to 2020) by 13.8 %. These data only cover GHG emissions produced inside the EU territory and do not take into account those that occurred outside the EU as a result of EU consumption (see the section on spillovers effects on page 339).

Per capita emissions have fallen in line with the overall reduction in net GHG emissions

Across the EU, net GHG emissions per capita ranged from 1.2 to 16.8 tonnes of CO_2 equivalents in 2020. Luxembourg by far exceeded the per capita emissions of other Member States, which can be partly attributed to a considerably higher number of commuters and transit traffic flowing into and through the country ([15]). Compared with 2015, net GHG emissions per capita have fallen in all but four Member States. The strongest increase was reported by Lithuania, with net emissions per capita growing by 27.9 %, mainly due to a reduced carbon removal of forest land. Hungary, Czechia and Croatia also saw an increase in their net emissions. Sweden, Estonia and Finland reported the strongest reductions, of more than 30 %, as they reduced their emissions and increased net removals from land use and forestry ([16]).

The contribution of carbon removals to progress towards the climate target has declined over the past 15 years

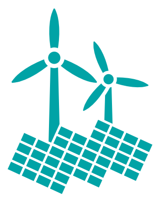
Net GHG removals come from land use and forestry, which is also referred to as the 'land use, land use change and forestry (LULUCF)' sector according to the IPCC classification. Within this sector, forests remove CO_2 from the air (as trees capture CO_2 through photosynthesis), which usually overcompensates for emissions from land use (for example, from the use of fertilisers) and land use change (such as when grassland is converted to cropland).

Net carbon removal from land use and forestry in the EU in 2020 amounted to

248.0 Mt CO_2-eq

In the EU, GHG net removals from land use and forestry decreased between 1990 and 2020 by 17.4 %. While in the first half of the period, carbon removals from forest land increased, the trend was reversed and net emission removals from all land types fell by 20.2 % between 2005 and 2020. The largest decrease happened over the last five years of this period, when net removals fell by 16.8 %. However, due to the large drop in total GHG emissions, net removals still compensated for 7.3 % of emissions in 2020, which is a much higher share compared with previous years. In absolute numbers, the net emission removals amounted to 248.0 Mt CO_2-equivalents in 2020. This is well below the net carbon removal target for land use and forestry proposed by the European Commission of at least 310 Mt CO_2-equivalents by 2030 ([17]).

Emissions associated with energy consumption have fallen thanks to energy consumption reductions and the growth of renewables



22.1 % of energy consumed in the EU in 2020 came from renewable sources

A sectoral breakdown of the years 1990 and 2020 shows that all sectors of the economy reduced their GHG emissions over this period, except transport ([18]). Fuel combustion in energy industries showed the strongest reduction, due to a general drop in energy consumption and an increasing share of renewable energy sources. In 2020, renewable energy contributed to 22.1 % of the EU's gross final energy consumption, with the electricity sector relying on it for 37.5 % of consumption. As a result of these developments, fuel combustion by energy users (excluding transport) replaced energy industries as the largest emission source in 2020. This is because fossil fuel consumption in buildings increased slightly by 2 % between 2015 and 2020 ([19]), even though the share of renewables in heating and cooling increased by 13.7 % between 2015 and 2020.

Average CO_2 emissions from new car fleets have fallen significantly in 2020, but further progress is necessary to meet the EU target

In 2019, passenger cars were responsible for 14.9 % of total domestic EU emissions of CO_2 ([20]). To reduce those emissions, the EU has set targets for the fleet-wide average emissions of new passenger cars. From 2020 onwards, a target of 95 grams of CO_2 per kilometre (g/km) applies ([21]). For each manufacturer's new car fleet, a binding specific emission target is set according to the average mass of its new vehicles, in such a way that the overall target for the EU's average fleet emissions will be met. For 2020, Regulation (EU) 2019/631 included a phase-in of the targets by considering only the 95 % lowest emitting cars of each manufacturer. Due to this phase-in and other flexible compliance mechanisms, most major manufacturers were able to meet their 2020 target ([22]).

108.2
grams of CO_2 per km were emitted by new passenger cars in the EU in 2020

Based on provisional data published by the European Environment Agency (EEA), the average CO_2 emissions per km from new passenger cars registered in the EU reached 108.2 g/km in 2020, which is a 9.2 % fall since 2015. This reduction is due to a steep 11.4 % drop from 2019 to 2020, while average CO_2 emissions had somewhat increased in the three preceding years. While this constitutes the largest emissions reduction yet, further progress will be necessary to meet the current EU target as well as the stricter targets that will apply from 2025 and 2030 onwards ([23]).

Climate impacts and adaptation

Higher concentrations of CO_2 emissions and other GHGs lead to global warming and increased ocean acidity. As a consequence of global anthropogenic GHG emissions, the decade 2011 to 2020 has been the warmest on record, with a global mean near-surface temperature increase of 0.95–1.20°C when compared with the pre-industrial level. This means that roughly half of the warming towards the global 2 °C limit stipulated in the Paris Agreement has already occurred. The average annual temperature over the European continent has increased even more, by 1.9–2.02°C in this decade ([24]).

Climate impacts are a consequence of rising temperatures and the related intensity and quantity of extreme events which affect environmental, social and economic systems. The EU's SDG monitoring focuses on the economic costs that arise from weather- and climate-related extremes. In order to minimise the impacts, countries are taking action to adapt to climate change, by introducing measures such as flood protection, adapted agricultural practices and forest management, and sustainable urban drainage systems. Climate adaptation is also fully integrated into the Covenant of Mayors, an initiative with thousands of cities in Europe and worldwide, which mobilises local governments and regions to make voluntary but ambitious climate mitigation and adaptation commitments.

Economic losses from weather- and climate-related extremes have been considerable over the past decades

Studies have shown that various weather- and climate-related extremes in Europe and beyond have become more severe and frequent as a result of global climate change ([25]) and that the resulting impact on human systems and ecosystems lead to measurable losses to economies and people's livelihoods ([26]). Reported economic losses generally reflect monetised direct damages to certain assets and as such are only partial estimates of damage. They do not consider losses related to mortality and health, cultural heritage or ecosystems services, which would considerably raise the estimate ([27]).

Over the period 1980 to 2020, weather- and climate-related losses accounted for a total of EUR 487.0 billion at 2020 values, with only 22.4 % of these losses insured ([28]). However, recorded losses vary substantially over time — more than 60 % of the total losses have been caused by just 3 % of unique extreme events ([29]). This variability makes the analysis of historical trends difficult. However, a closer look at a 30-year moving average shows an almost steady increase in climate-related economic losses, from EUR 10.8 billion in 2009 to EUR 12.9 billion in 2020 ([30]), which corresponds to a 18.8 % increase. The most expensive climate extremes during the period from 1980 to 2020 included the 2002 flood in central Europe (more than EUR 21 billion), the 2003 drought and heatwave (almost EUR 15 billion), the 1999 storm Lothar and the 2000 flood in France and Italy (both EUR 13 billion), all at 2017 values ([31]).

Over the period 1980 to 2020, weather- and climate-related economic losses in EU countries accumulated to

EUR

487.0 billion

A growing number of local governments are committed to act on climate protection and adaptation

Communities play a vital role in implementing climate mitigation and adaptation actions on the ground. In this context, the EU supports the Covenant of Mayors for Climate and Energy, which was established in 2008 and is one of the EU's flagship climate initiatives. The Covenant of Mayors mobilises local governments and regions to make voluntary but ambitious climate commitments that help achieve emission reductions in and outside the EU and increase resilience to climate impacts. While initially focusing on mitigation measures only, from 2015 onwards the Covenant of Mayors for Climate and Energy has explicitly concentrated on mitigation and adaptation measures ([32]).

In 2021, Covenant of Mayors signatories covered

44.0 %

of the EU population

In 2021, Covenant of Mayors (CoM) signatories covered 196.7 million people in the EU, representing 44.0 % of the EU population. Since 2010, the population covered by CoM signatories has grown steadily. In 13 EU Member States, CoM signatories represented more than half of the population in 2021. The highest share was reported by Belgium, with 95.3 % of the population, followed by Spain with 75.8 % and Italy with 75.0 %.

Financing climate action

As part of the transition towards climate neutrality, the EU is endeavouring to redirect public and private investments to areas where they will support this objective. For this reason, the EU has proposed the EU taxonomy as a classification system for sustainable economic activities and a European green bond standard intended as a voluntary 'gold' standard for the green bond market. At EU level, climate change mitigation and adaptation has been integrated into all major spending programmes ([33]) and the EU has also committed to support international climate action.

The EU's contribution to climate finance for developing countries has been increasing since 2014

In addition to investing in climate action within its borders, the EU and its Member States have also committed to raising money to combat climate change in developing countries. They take part in a commitment made by the world's developed countries to jointly mobilise USD 100 billion per year by 2020 through to 2025, from a wide variety of sources, instruments and channels ([34]).

Total EU public finance contributions (including all 27 Member States as well as the EU institutions) increased from about EUR 12.9 billion in 2014 to EUR 23.4 billion in 2020 — a 80.8 % increase in six years. The largest contributor in the period was Germany, with contributions increasing from EUR 5.1 billion to EUR 7.7 billion, followed by France which increased its contribution from EUR 2.9 billion to EUR 6.7 billion (see Table 13.3). The European Investment Bank (EIB) and the European Commission were the third and fourth largest donors in 2020, respectively. Together, the EU, its Member States and the EIB are the biggest contributor of public climate finance to developing countries worldwide (35). It is important to note that due to a methodological change, 2020 data are not directly comparable with earlier years as 2020 data are based on commitments only.

In 2020, the EU contribution to the international USD 100 billion commitment amounted to
EUR 23.4
billion

Presentation of the main indicators

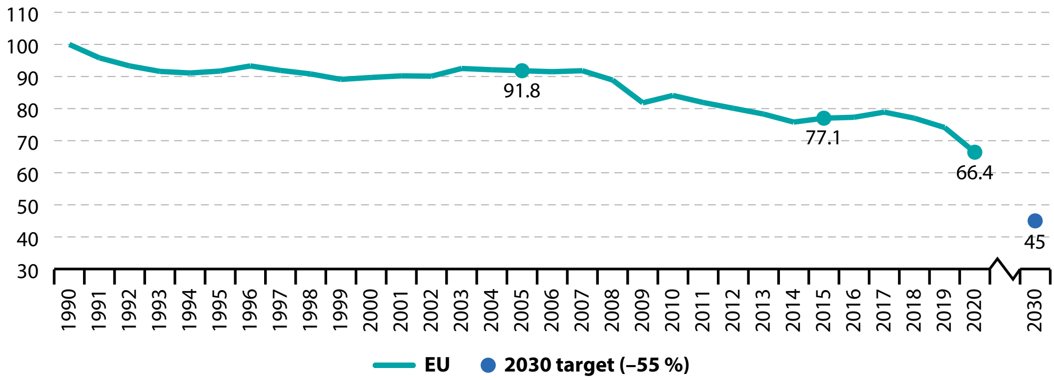
Net greenhouse gas emissions

LONG TERM 2005–2020

SHORT TERM 2015–2020

This indicator measures man-made greenhouse gas (GHG) emissions as well as carbon removals, both on EU territory ([36]). They are integrated into a single indicator — the net GHG emissions — expressed in units of CO_2 equivalents using the global warming potential (GWP) of each gas. At present, carbon removals are accounted for only in the land use, land use change and forestry (LULUCF) sector. The net GHG emissions shown here include international aviation, indirect CO_2 and natural carbon removals from LULUCF. Emissions and removals data, known as GHG inventories, are submitted annually by Member States to the EU and the United Nations Framework Convention on Climate Change (UNFCCC). The European Environment Agency (EEA) compiles the EU aggregate data and publishes data for the EU and all Member States. Eurostat republishes the EEA data.

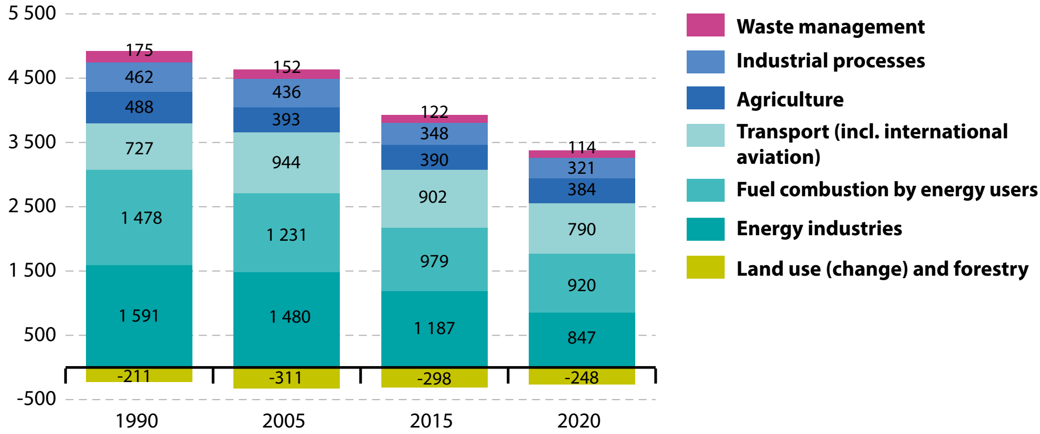
Figure 13.1: **Net greenhouse gas emissions, EU, 1990–2020**
(index 1990 = 100)



Note: Data for 2020 are provisional estimates based on the EEA approximated GHG inventory for the year 2020.
Compound annual growth rate (CAGR): – 2.1 % per year (observed) and – 2.8 % per year (required to meet target) in the period 2005–2020; – 2.9 % per year (observed) and – 3.5 % per year (required to meet target) in the period 2015–2020.

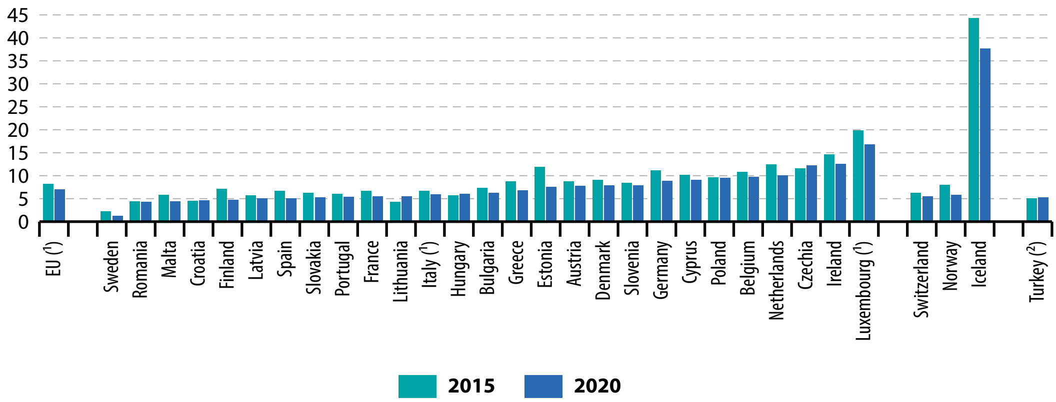
Source: EEA, Eurostat (online data code: sdg_13_10)

Figure 13.2: Greenhouse gas emissions and removals, by sector, EU, 1990, 2005, 2015 and 2020
(million tonnes of CO_2 equivalent)



Note: Data for 2020 are provisional estimates based on the EEA approximated GHG inventory for the year 2020.
Source: EEA, Eurostat (online data code: env_air_gge)

Figure 13.3: Net greenhouse gas emissions per capita, by country, 2015 and 2020
(tonnes per capita)



Note: Data for 2020 are provisional estimates based on the EEA approximated GHG inventory for the year 2020.
([1]) Break(s) in time series between the two years shown.
([2]) 2019 data (instead of 2020).

Source: EEA, Eurostat (online data code: sdg_13_10)

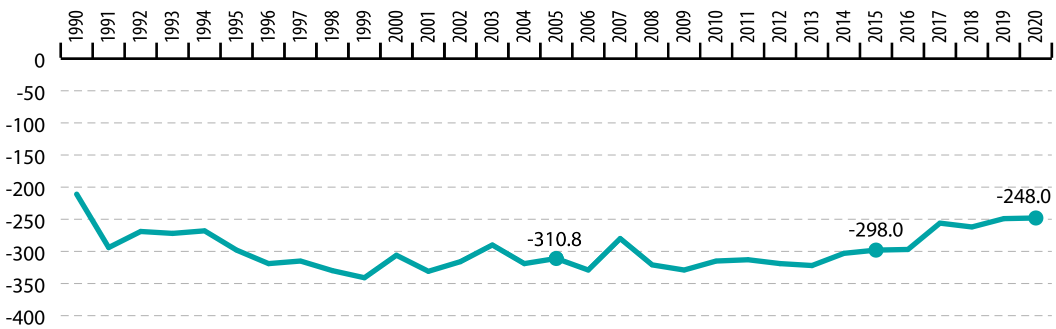
Net greenhouse gas emissions from land use and forestry

LONG TERM
2005–2020

SHORT TERM
2015–2020

This indicator measures net carbon removals from the land use, land use change and forestry (LULUCF) sector, considering both emissions and removals from the sector. The indicator is expressed as CO_2 equivalents using the global warming potential (GWP) of each gas. Emissions and removals data, known as GHG inventories, are submitted annually by Member States to the EU and the United Nations Framework Convention on Climate Change (UNFCCC). The European Environment Agency (EEA) compiles the EU aggregate data and publishes data for the EU and all Member States. Eurostat republishes the EEA data.

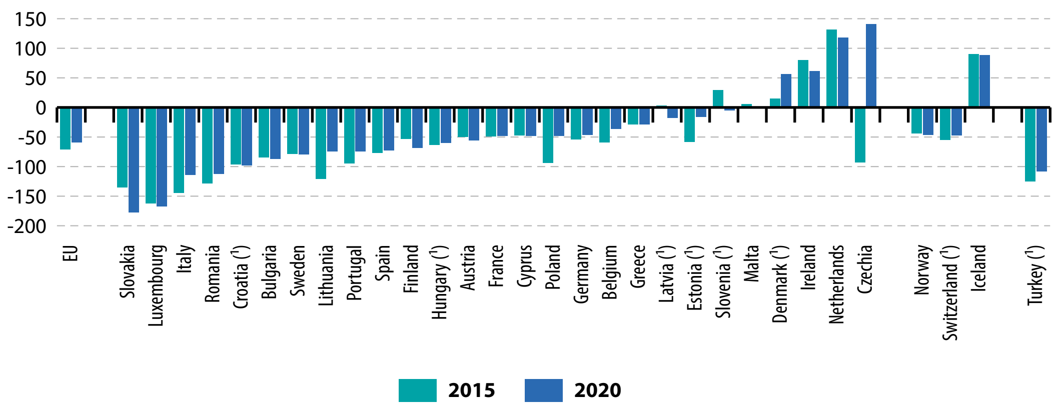
Figure 13.4: Net greenhouse gas emissions from land use and forestry, EU, 1990–2020
(million tonnes of CO_2 equivalent)



Note: Data for 2020 are provisional estimates based on the EEA approximated GHG inventory for the year 2020.
Compound annual growth rate (CAGR): – 1.5 % per year in the period 2005–2020; – 3.6 % per year in the period 2015–2020.

Source: EEA, Eurostat (online data code: sdg_13_21)

Figure 13.5: Net greenhouse gas emissions from land use and forestry, by country, 2015 and 2020
(tonnes of CO_2 equivalent per km^2)



Note: Data for 2020 are provisional estimates based on the EEA approximated GHG inventory for the year 2020.
([1]) 2019 data (instead of 2020).

Source: EEA, Eurostat (online data code: sdg_13_21)

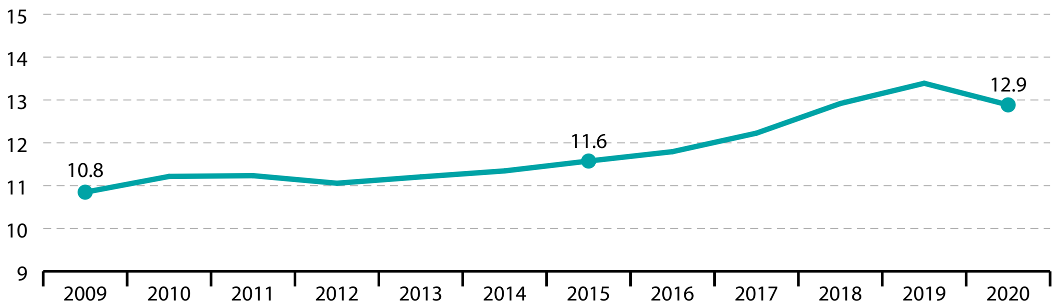
LONG TERM
2009–2020

SHORT TERM
2015–2020

Climate-related economic losses

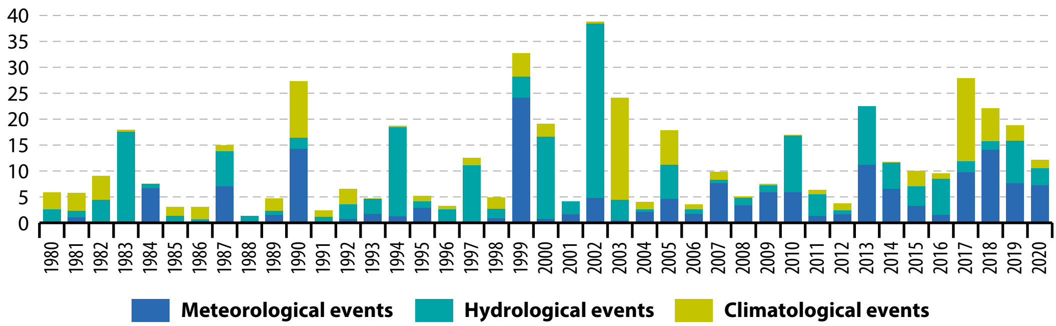
This indicator includes the overall monetary losses from weather- and climate-related events. The European Environment Agency (EEA) compiles the EU aggregate data from CATDAT of RiskLayer. Eurostat republishes the EEA data. Due to the variability of the annual figures, the data are also presented as a 30-year moving average to facilitate the analysis of historical trends.

Figure 13.6: Climate-related economic losses (30 year moving average), EU, 2009–2020
(EUR billion, constant prices)



Note: Data are shown as 30-year moving average (annual data points refer to the 30-year period up to that year).
Compound annual growth rate (CAGR): 1.6 % per year in the period 2009–2020; 2.2 % per year in the period 2015–2020.
Source: EEA, Eurostat (online data code: sdg_13_40)

Figure 13.7: Climate-related economic losses by type of event, EU, 1980–2020
(EUR billion, constant prices)



Source: EEA, Eurostat (online data code: sdg_13_40 and cli_iad_loss)

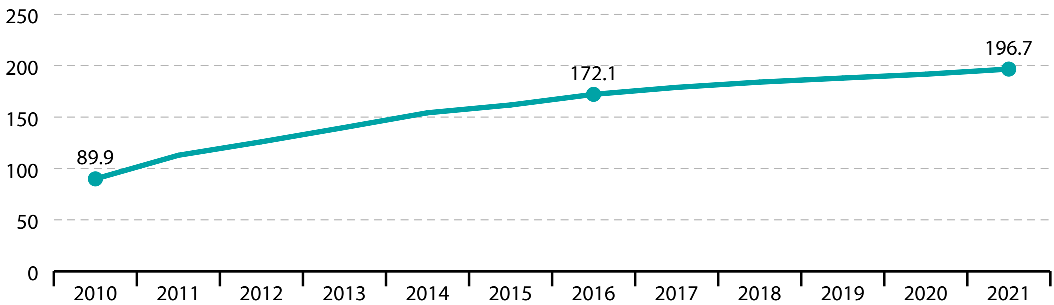
Population covered by the Covenant of Mayors for Climate and Energy signatories

LONG TERM
2010–2021

SHORT TERM
2016–2021

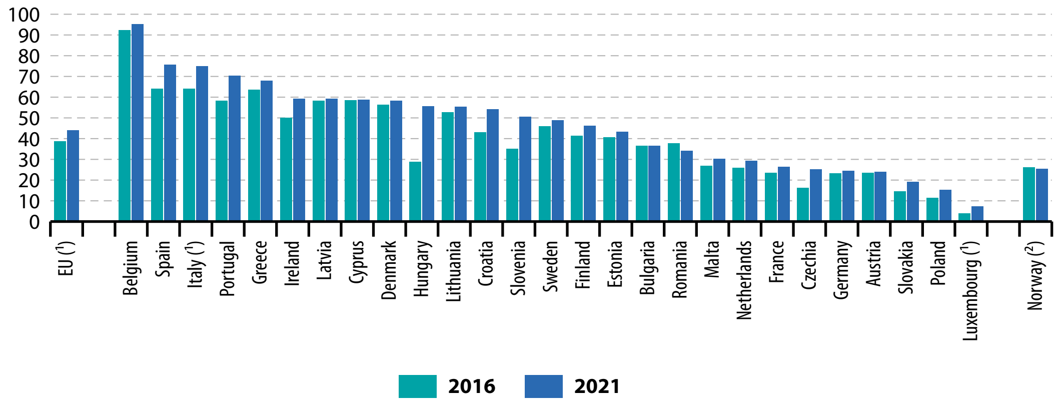
The Covenant of Mayors for Climate and Energy in Europe, now part of the Global Covenant of Mayors for Climate and Energy, represents a growing climate initiative at multiple levels of governance with actors all across the globe pledging to deliver comprehensive climate change mitigation and adaptation and energy action plans and establish a regular monitoring process. Here the number of citizens living within regions that act as signatories to the Covenant of Mayors in Europe is monitored as an indication of the initiative's reach.

Figure 13.8: Population covered by the Covenant of Mayors for Climate and Energy signatories, EU, 2010–2021
(million people)



Compound annual growth rate (CAGR): 7.4 % per year in the period 2010–2021; 2.7 % per year in the period 2016–2021.
Source: Covenant of Mayors for Climate and Energy (Eurostat online data code: sdg_13_60)

Figure 13.9: Population covered by the Covenant of Mayors for Climate and Energy signatories, by country, 2016 and 2021
(% of population)



Note: 2021 data are provisional for all countries.
(¹) Break(s) in population data time series between the two years shown.
(²) 2015 and 2018 data.
Source: Covenant of Mayors for Climate and Energy, Eurostat (online data code: sdg_13_60)

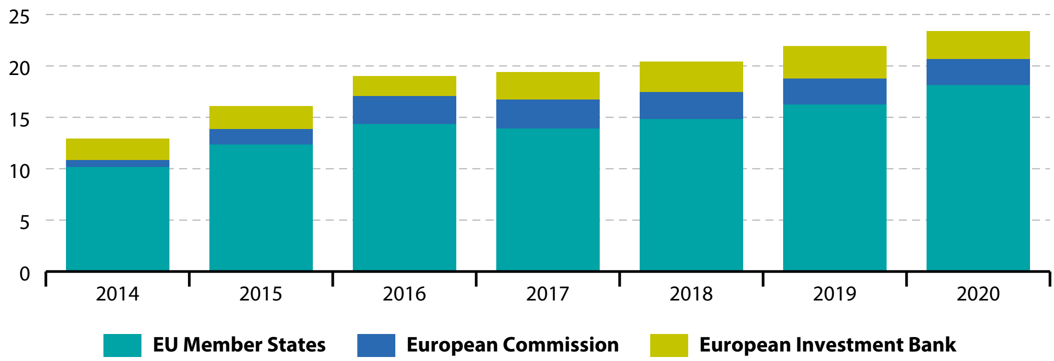
X **LONG TERM** Time series too short

SHORT TERM 2015–2020

Contribution to the international USD 100bn commitment on climate-related expenditure

The intention of the international commitment on climate finance under the UNFCCC is to enable and support enhanced action by developing countries to advance low-emission and climate-resilient development. The data presented in this section are reported to the European Commission under the Monitoring Mechanism Regulation (Regulation (EU) 525/2013) for the period up to 2019 and under the Governance Regulation (Regulation (EU) 2018/1999) for subsequent years.

Figure 13.10: **Contribution to the international USD 100bn commitment on climate-related expenditure, EU, 2014–2020**
(EUR billion, current prices)



Note: Break in time series in 2020.
Compound annual growth rate (CAGR): 7.8 % per year in the period 2015–2020.
Source: European Commission services and EIONET (Eurostat online data code: sdg_13_50)

Table 13.3: Contribution to the international USD 100bn commitment on climate-related expenditure, by country, 2015 and 2020
(EUR million, current prices)

Country	2015	2020
European Union — 27 countries	**12 333.7**	**18 103.9**
European Commission	**1 535.4**	**2 577.6**
European Investment Bank (EIB)	**2 214.7**	**2 711.5**
Belgium	46.8	119.3
Bulgaria	0.1	0.1
Czechia	8.2	12.2
Denmark	143.8	272.7
Germany	7 406.2	7 698.3
Estonia	1.2	2.0
Ireland	36.0	89.2
Greece	0.2	1.1
Spain	466.7	529.8
France	2 792.8	6 715.5
Croatia	:	0.1
Italy	327.3	582.8
Cyprus	:	0.0
Latvia	0.0	0.0
Lithuania	0.4	2.7
Luxembourg	45.7	31.5
Hungary	41.3	11.8
Malta	0.2	0.1
Netherlands	425.8	1 109.7
Austria	117.6	258.0
Poland	5.7	22.5
Portugal	6.2	2.3
Romania	:	4.8
Slovenia	2.4	1.7
Slovakia	2.2	2.8
Finland	115.4	125.5
Sweden	341.4	507.5

Note: Break in time series in 2020.
Source: European Commission services and EIONET (Eurostat online data code: sdg_13_50)

Notes

(1) United Nations (2015), *Paris Agreement*.
(2) *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')*.
(3) Ibid.
(4) European Commission (2021), *'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality*, COM/2021/550 final, Brussels.
(5) European Commission (2020), *Forging a climate-resilient Europe — the new EU Strategy on Adaptation to Climate Change*, COM(2021) 82 final, Brussels.
(6) European Commission (2016), *Action plan on the Sendai Framework for Disaster Risk Reduction 2015–2030 — A disaster risk-informed approach for all EU policies*, SWD(2016) 205 final/2, Brussels.
(7) European Commission (2017), *Strengthening EU disaster management: rescEU solidarity with responsibility*, COM(2017) 773 final, Brussels.
(8) European Commission (2022), *Funding for climate action*.
(9) European Commission (2022), *International climate finance*.
(10) European Parliament and the Council (2020): Regulation (EU) 2020/852 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088.
(11) European Commission (2018), *A Clean Planet for all — A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy*, COM(2018) 773 final and European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.
(12) 2020 data for GHG emissions presented in this report have been calculated based on the approximated estimates for greenhouse gas emissions published by the European Environment Agency: EEA (2021), *Approximated estimates for Greenhouse Gas emissions*.
(13) Eurostat (2022), Quarterly greenhouse gas emissions in the EU.
(14) Eurostat (online data code: nrg_bal_c).
(15) Eurostat (2010), *Using official statistics to calculate greenhouse gas emissions — A Statistical Guide*, Publications Office of the European Union, Luxembourg; also see Eurostat (2020), *Commuting between regions*.
(16) 2020 data for GHG emissions presented in this report have been calculated based on the approximated estimates for greenhouse gas emissions published by the European Environment Agency: EEA (2021), *Approximated estimates for Greenhouse Gas emissions*.
(17) The accounting methodology might increase or decrease this target as well as the considered emissions and removals from land types due to a difference in reporting and accounting methodology. Source: European Commission (2021), *Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2018/841 as regards the scope, simplifying the compliance rules, setting out the targets of the Member States for 2030 and committing to the collective achievement of climate neutrality by 2035 in the land use, forestry and agriculture sector, and (EU) 2018/1999 as regards improvement in monitoring, reporting, tracking of progress and review*, COM(2021) 554.
(18) Eurostat (online data code: env_air_gge) and European Environment Agency (2021), Approximated estimates for greenhouse gas emissions.
(19) Eurostat (online data code: nrg_bal_c).
(20) European Commission (2021), *EU Transport in figures — Statistical pocketbook 2021*, p. 154. The total value refers to total CO_2 emissions excluding LULUCF (land use, land-use change and forestry).
(21) European Parliament and Council of the European Union (2019), *Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011, OJ L 111*.
(22) Tietge, U., Mock, P., Díaz, S., Dornoff, J. (2021), *CO_2 emissions from new passenger cars in Europe: car manufacturers' performance in 2020*, The International Council on Clean Transportation (ICCT), Washington DC.
(23) European Parliament and Council of the European Union (2019), *Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011, OJ L 111*.
(24) European Environment Agency (2021), *Global and European temperatures*.
(25) IPCC (2018), Global Warming of 1.5°C, Special Report of the Intergovernmental Panel on Climate Change, Cambridge and New York: Cambridge University Press.
(26) IPCC (2021), Impacts, Adaptation and Vulnerabilities, Contribution of Working Group II to the Six Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge and New York: Cambridge University Press.
(27) IPBES (2019), *Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, Bonn; and European Environment Agency (2016), *Climate change impacts and vulnerability in Europe: An indicator-based report*, Report No. 1/2017, Copenhagen.
(28) European Environment Agency (2022), *Economic losses from climate-related extremes in Europe (temporal coverage 1980–2020)*.
(29) Ibid.
(30) A 30-year moving average shows the average over the past 30 years for a given year. For example, for 2017, the data point shows the average from 1988 to 2017.

([31]) European Environment Agency (2019), *Economic losses from climate-related extremes in Europe (temporal coverage 1980–2017)*.
([32]) European Commission, *European climate adaptation platform — Covenant of Mayors for Climate and Energy*.
([33]) European Commission, *Budget — Multiannual Financial Framework programmes*.
([34]) European Commission (2018), *A modern budget for a Union that protects, empowers and defends: The Multiannual Financial Framework for 2021–2027*, COM(2018) 321 final, Brussels.
([35]) European Commission (2022), *International climate finance*.
([36]) The 'Kyoto basket' of GHGs includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and the so-called F-gases, i.e., hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride (NF_3) and sulphur hexafluoride (SF_6).

14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development

SDG 14 aims to protect and ensure the sustainable use of oceans. This includes the reduction of marine pollution and the impacts of ocean acidification, the ending of overfishing and the conservation of marine and coastal areas and ecosystems. SDG 14 has strong interdependencies with a broad range of other SDGs, as oceans sustain coastal economies and livelihoods, contribute to food production and function as a carbon sink.

14 LIFE BELOW WATER

eurostat supports the SDGs

EU Member States share four marine regions: the Baltic Sea, the Mediterranean Sea, the Black Sea and the North-East Atlantic Ocean. While specific threats may vary between sea basins, it is clear that habitat alteration, biodiversity loss, over-exploitation of marine resources and pollution from both land- and sea-based sources are among the most important general pressures affecting the environmental status of EU marine waters. The marine and coastal environment are also increasingly affected by climate change. At the same time, the livelihood and well-being of Europeans depend heavily on the health and productivity of marine ecosystems. To combat biodiversity loss and ensure healthy and resilient ecosystems, the EU has implemented measures to protect, conserve and restore marine areas. Through its policies, the EU also promotes the sustainable use of marine resources and addresses pollution of the oceans. Increasing ocean acidification and warming as a result of carbon dioxide (CO_2) and other greenhouse gas emissions from human activities is addressed indirectly through climate and energy policies.

Table 14.1: Indicators measuring progress towards SDG 14, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Ocean health			
Coastal bathing sites with excellent water quality	:	↗	page 258
Marine waters affected by eutrophication	:	:	page 259
Global mean surface seawater acidity	↘	↘	page 260
Marine conservation			
Marine protected areas	:	↑ (¹)	page 261
Sustainable fisheries			
Estimated trends in fish stock biomass	↑	↑	page 262
Estimated trends in fishing pressure	↑	↗	page 263

(¹) Past 3-year period.

Table 14.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 14 'Life below water'. This section provides an overview of some of the most recent and relevant initiatives (also see the Commission's website on the marine environment). For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Ocean health and marine conservation

The Marine Strategy Framework Directive (MSFD) (1) aims to ensure EU marine waters achieve good environmental status by being ecologically diverse, clean, healthy and productive. Together with the Maritime Spatial Planning Directive (2), it requires the designation of marine protected areas (3).

The Habitats Directive (4) contributes to biodiversity conservation in the EU, and lists nine marine habitat types and 16 species for which marine site designation is required. The Birds Directive (5) aims to conserve all naturally occurring wild birds, and lists a further 60 bird species whose conservation requires marine site protection.

The EU Bathing Water Directive (6) lays down provisions for monitoring and classifying bathing water quality at designated bathing sites.

To tackle marine pollution, the EU uses a wide set of legal instruments, including the regulations on waste management and prevention (7), port reception facilities (8) for ship-generated waste and cargo residues and the Directive on Single Use Plastics (9).

The EU Biodiversity Strategy for 2030 (10) aims to enhance the protection of marine ecosystems with the objective of achieving good environmental status.

The Zero Pollution Action Plan for Air, Water and Soil sets out key actions to improve water quality by reducing emissions of waste, plastic litter at sea and microplastics.

The EU's new approach for a sustainable blue economy fosters activities that preserve marine ecosystems, reduce pollution, and increase resilience to climate change.

The EU's International Ocean Governance Forum provides a platform for ocean stakeholders and actors to discuss challenges and solutions for ocean sustainability. In the joint International Ocean Governance Agenda (11), the Commission committed to a global plan of action to address the impacts of climate change on oceans.

The International Convention for the Prevention of Pollution from Ships (MARPOL) aims to protect oceans and seas against pollution caused by maritime transport.

The EU strategy on adaptation to climate change (12) aims to stop ocean acidification and encourage nature-based solutions for sustaining Europe's seas.

Sustainable fisheries

The Common Fisheries Policy (CFP) (13) aims to ensure the long-term sustainability of the sector by ensuring the highest sustainable yield, conserving marine resources and supporting the profitability of the industry.

Life below water in the EU: overview and key trends

Monitoring SDG 14 in an EU context looks into trends in the areas of ocean health, marine conservation and sustainable fisheries. Improved data availability in this report now allows an assessment of trends in most SDG 14 indicators for Europe's seas. These show that marine conservation efforts have increased and fishing activities in EU waters appear to have become more sustainable. Trends in ocean health, however, remain mixed.

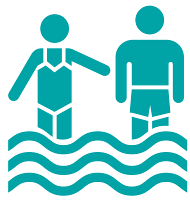
Ocean health

Accomplishing the goal of clean, healthy and productive oceans requires an integrated approach that addresses different pressures and their cumulative impacts holistically. In the context of the EU's SDG monitoring, the indicators focus on bathing water quality, eutrophication and ocean acidification. The EU is committed to improving water quality in marine waters and coastal areas in the sea basins around the EU through a range of land-based and marine policies and by active engagement in Regional Sea Conventions ([14]). As a result, some positive trends have been emerging for bathing water quality and the reduction of point-source pollution through improved waste water treatment. Oceans, however, have continued to acidify as a result of global climate change.

European coasts offer an increasing number of bathing sites with excellent water quality

Coastal water quality is affected by land-based pollution from sewage, agriculture run-off, and surface run-off from coastal cities, which can carry litter. The resulting pollution exerts significant pressure on aquatic ecosystems and underwater life.

However, in the EU, the trends have been quite favourable in this regard over the past few years, and as a result the water quality of the EU's coastal bathing sites has improved almost continuously in recent years. The most important factors affecting the quality of these waters are microbiological contamination and marine litter. Between 2011 and 2020, the share of European coastal bathing sites with 'excellent' water quality grew more or less steadily, reaching 88.4 % in 2020. It should be noted though that the bathing water indicator provides only a limited view of pollution in European seas because it is focused on the shore and excludes transitional waters or waters further away from the coast in the exclusive economic zones (EEZs) of Europe ([15]). In addition, because the classification of bathing water quality takes into account datasets reported for the past four bathing seasons, this indicator does not tend to fluctuate greatly from year to year.

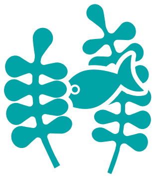


88.4 %
of EU coastal water bathing sites had excellent water quality in 2020

Pollution continues to threaten the marine environment

Despite improvements in bathing water quality, Europe's marine ecosystem continues to be at threat from organic and chemical pollutants from human activities, as well as marine litter and noise pollution. Excessive nutrient loads from agriculture and municipal waste water — in particular compounds of phosphorus and nitrogen — cause eutrophication, which can lead to problematic algal blooms and oxygen depletion with severe consequences for the marine ecosystem health and biodiversity ([16]).

The Copernicus Marine Service monitors all EU sea basins for oxygen depletion and measures anomalies in chlorophyll-a levels as an indicator of eutrophication. The chlorophyll data show strong annual fluctuations in the area of EU marine waters affected by eutrophication. For most of the years in the time series from 2000 to 2020, less than 20 000 square kilometres (km^2) of EU marine waters were affected, corresponding to less than 0.4 % of the EU EEZ. However, in some years — for example 2007, 2008 and 2018 — more than twice that area was affected, highlighting the strong annual variability of eutrophication. In 2020, 10 907 km^2 of EU marine waters were affected by eutrophication, corresponding to 0.20 % of the EU's EEZ. This is just over a third of the area affected in 2015, when 29 031 km^2 of marine waters or 0.54 % of the EU's EEZ were classified as eutrophic.



0.20 %
of marine waters in the EU's exclusive economic zones were classified as eutrophic in 2020

Another threat to the marine environment is chemical pollution from hazardous substances and marine litter, in particular plastic litter and micro-plastics. Chemical pollution can come from a number of land-based and marine sources, including agriculture (through the application of pesticides and veterinary medicines), industry, households and the transport sector. Of particular concern are the persistent organic pollutants (POPs), which degrade slowly and can bio-accumulate in the food chain.

Estimates of plastic litter entering Europe's oceans are highly tentative, due to a lack of data. However, the European Commission estimates that 150 000 to 500 000 tonnes of plastic enter the EU's oceans every year ([17]). Plastic pollution has many harmful effects on the marine environment, for example by strangling and trapping marine species or being ingested by them. Marine plastic can come from both land- and sea-based sources. Single-use plastics pose a particular problem because they account for about 50 % of all marine litter on European beaches ([18]). Based on a Commission initiative, in 2019 the European Parliament and the Council adopted the new European Directive on Single Use Plastics ([19]) targeting these plastics and fishing gear alongside other plastic products. Human-induced eutrophication, contaminant concentrations, marine litter and noise pollution are pollution types that must be minimised for marine and coastal waters to achieve good environmental status under the Marine Strategy Framework Directive (MSFD).

Seawater acidification poses a risk to the marine environment and global climate regulation

Seawater acidification occurs when increased levels of carbon dioxide (CO_2) from the atmosphere are absorbed by the sea. Acidification reduces calcification and affects biochemical processes such as photosynthesis, with knock-on effects for entire ecosystems ([20]). Because cold water absorbs more CO_2, polar regions are disproportionately hard hit by acidification ([21]). Research has shown that organisms relying on calcification (for example, mussels, corals and plankton) and photosynthesis (plankton and algae) are particularly vulnerable to increased acidity ([22]).

In 2020, the mean pH level of global ocean surface water reached a new low of
8.05

Before industrialisation, pH levels varied between 8.3 and 8.2. Since 1985, these levels have been declining at a steady rate, with the global mean surface seawater pH reaching an unprecedented low of 8.05 in 2020. EU leadership to mitigate climate change (see SDG 13) is thus of vital importance for reaching the SDG target 14.3 to minimise seawater acidification.

Marine conservation

The lives of European citizens depend in many ways on the services that marine ecosystems provide, including climate regulation, fish and seafood provision, coastal protection, cultural value, recreation and tourism. Against this backdrop, the European Commission and Member States have taken multiple steps to combat the loss of aquatic and coastal habitats and biodiversity, which poses a serious threat to human livelihoods, food security and climate stability (23). A crucial step has been the designation of a network of marine protected areas (MPAs) (24), in which human activities are subject to stricter regulation. The degree of protection and hence the effectiveness of MPAs depends on the management plan regulating each protected area. Management measures range from a total ban on fishing, mining or wind power generation, to a more moderate protection regime where economic activity is restricted, for example, allowing only certain types of fishing methods. One of the commitments taken by the international community at the 2022 One Ocean summit has been to designate new MPAs to achieve the goal of 30 % of marine space under protection by 2030 (25). The EU supports this goal and has included it in the EU Biodiversity Strategy for 2030.

While the extent of marine protected areas has been growing in the EU, the conservation status of marine habitats and species remains unfavourable

Between 2012 and 2019, the extent of marine protected areas grew considerably, from 216 742 km^2 to 552 008 km^2. Even though this means MPAs represented only 10.7 % of overall EU marine area in 2019, the EU is well on track towards meeting its 30 % target by 2030. Since 2016, MPA coverage has grown significantly in 12 out of the 22 EU Member states with a sea border. The largest relative improvements in MPA size were reported from France, Greece, Cyprus and Spain.

10.7 %
of the EU's marine area were protected in 2019

Although a positive development, growth in the extent of protected areas alone does not provide a good indication of how well species and habitats are being protected. In fact, the EU currently has no overview or assessment of how effective the management plans associated with designated MPAs in EU regional seas are. In a recent special report on the marine environment, the European Court of Auditors concluded that EU MPAs provide limited protection in practice (26).

To gain a better picture on MPAs, information on their connectivity, status and the implementation of conservation measures is needed. The Biodiversity Strategy for 2030 requires the Commission, in cooperation with Member States and the European Environment Agency (EEA), to advance criteria and guidelines for the identification and designation of new protected areas, as well as for coherent management planning (27). As foreseen by the Biodiversity Strategy for 2030, the Commission is also preparing an Action Plan to conserve fisheries resources and protect marine ecosystems to be adopted in 2022.

A recent analysis by the EEA revealed that a high proportion of marine species and habitats across Europe's seas are still in 'unfavourable conservation status' and that the marine ecosystem condition is generally not 'good' (28). A scarcity of marine data, however, limits the conclusions that can be drawn in this respect.

Sustainable fisheries

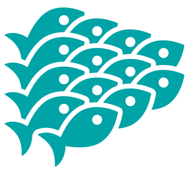
Besides pollution, the unsustainable use of living resources is the main threat to marine habitats and species in the EU (29). An ecosystem-based approach to managing Europe's fishing fleets is thus also necessary for biodiversity conservation.

Governance of fisheries in EU waters mainly focuses on fair access and sustainable supply. The European Common Fisheries Policy (CFP) aims to ensure that EU fisheries are managed sustainably by setting catch limits at the maximum sustainable yield. It limits the total amount of fish catches and controls who is allowed to fish how, when and where to prevent damage to vulnerable marine ecosystems and preserve fish stocks. Thus, the CFP's ambition and implementation will directly affect whether SDG 14 is achieved, in particular the aim of ending overfishing, the destructive and/or illegal, unreported and unregulated fishing practices, and the subsidies that encourage these activities.

Improved sustainability of fisheries in EU marine waters

European fisheries affect fish stock productivity and stock size through catches. However, because stock size also varies naturally, the management of fisheries is a complex exercise. Controlling fishing mortality is one way of managing fisheries. Fishing mortality (F) reflects the proportion of fish of a given age that is caught by fisheries during one year. For fisheries to be sustainable, fishing mortality should not exceed the maximum sustainable yield value (F_{MSY}), which will provide the largest catch that can be taken from a fish stock over an indefinite period without harming it (30).

The model-based median value of all F/F_{MSY} assessments can be used to estimate fishing pressures on fish stocks. Values above 1.0 mean the current fishing mortality (F) exceeds the estimated maximum sustainable yield (F_{MSY}). The results for EU marine waters mirror the downward trend in overexploited overall stocks and show a 35 % reduction in fishing pressure, from 1.73 in 2004 to 1.12 in 2019. However, this overall figure masks that while fish stocks in the North-East Atlantic on average are fished sustainably (F/F_{MSY} median of 0.87 in 2020), Mediterranean and Black Sea fish stocks are still heavily overfished (F/F_{MSY} median of 1.94 in 2019). If the EU is to meet its own targets for sustainable fisheries, efforts need to be increased substantially in these sea basins.



Between 2004 and 2019, fishing pressure in EU marine waters decreased by

35 %

There has been an improvement in the number of stocks fished below F_{MSY} in the North-East Atlantic, where about three-quarters of the EU's catch originates. In 2003, only 29 % of stocks in this region were fished below F_{MSY}, whereas in 2020, this figure had risen to 75 % (31). In turn, however, this means that a quarter of stocks in the North-East Atlantic were still being overfished.

The EU's approach to sustainable fisheries is not limited to respecting MSY. The Marine Strategy Framework Directive (MSFD) (32) requires commercially exploited fish and shellfish populations to have a healthy distribution of age and size. Furthermore, because unsustainable fisheries are a major threat to marine ecosystems through the bycatch of non-target species (such as birds and cetaceans) and seabed degradation (33), additional measures to regulate fisheries are required under the Birds and Habitats Directives and the MSFD. The CFP empowers Members States and the Commission to adopt such measures to fulfil obligations under these directives.

The status of stocks and their reproductive capacity can be measured and described by fish stock biomass as well as by spawning stock biomass (SSB). Biomass estimates are, however, associated with high levels of uncertainty due to the high annual variability of stock biomass. Fish stocks can also take time to respond to changes in management measures, and results can be masked by other factors, such as environmental conditions and predation (34). For this reason, analyses of stock biomass trends should always focus on longer term patterns. There has been an estimated 30 % increase in biomass in EU marine waters between 2004 and 2019. The increase has been stronger in the North-East Atlantic, gaining almost 37 %, while stock biomass only grew by some 18 % in the Mediterranean and Black Sea.

Between 2004 and 2019, fish stock biomass in EU marine waters increased by

30 %

Presentation of the main indicators

X **LONG TERM** Time series too short

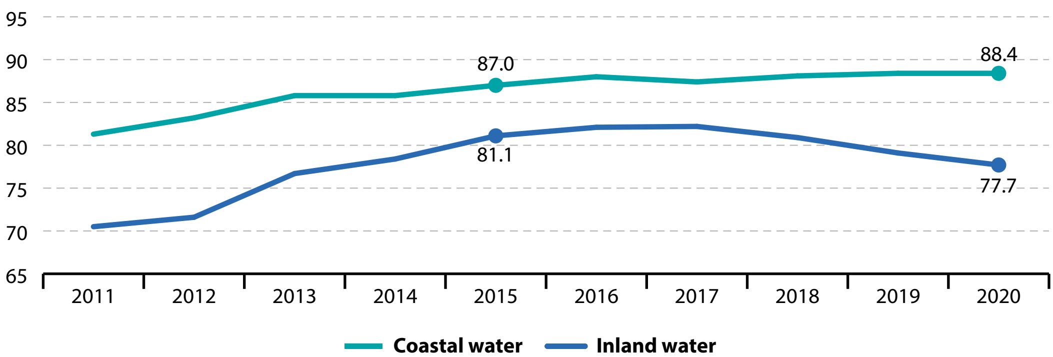
SHORT TERM 2015–2020 * **

* Coastal water sites
** Inland water sites

Bathing sites with excellent water quality

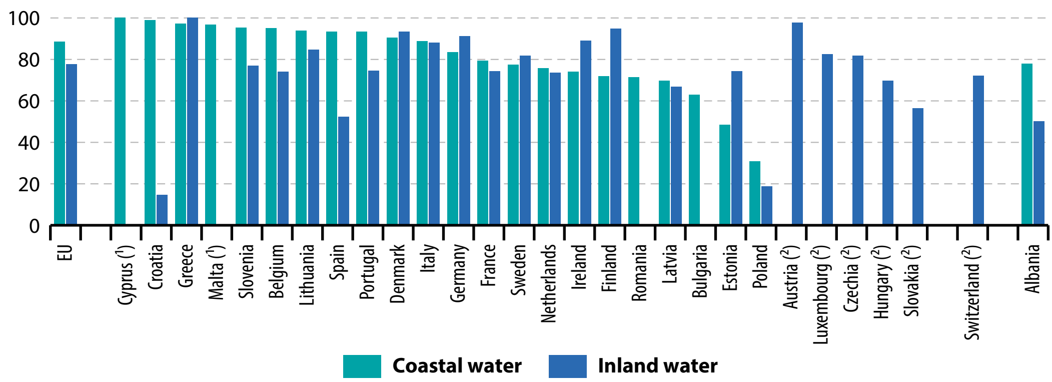
This indicator shows the share of inland and coastal bathing sites with excellent water quality in the EU and is calculated based on the moving average of 16 sampling events in four years to be sure that most weather events are covered. Bathing water quality is assessed according to standards for microbiological parameters (intestinal enterococci and *Escherichia coli*). The Bathing Water Directive (BWD) requires Member States to identify and assess the quality of all inland and marine bathing waters and to classify these waters as 'poor', 'sufficient', 'good' or 'excellent' depending on the levels of faecal bacteria detected. The data presented in this section stem from the European Environment Agency (EEA) and are based on Member States reporting under the BWD. They are described in the annual Briefing on European bathing water quality.

Figure 14.1: Bathing sites with excellent water quality, by locality, EU, 2011–2020
(% of bathing sites with excellent water quality)



Note: EU aggregate refers to 22 Member States for coastal water (no data for landlocked countries) and 25 Member States for inland water (no data for Cyprus and Malta); see Figure 14.2.
Compound annual growth rate (CAGR): 0.3 % per year (coastal water) and – 0.9 % per year (inland water) in the period 2015–2020.
Source: EEA (Eurostat online data code: sdg_14_40)

Figure 14.2: Bathing sites with excellent water quality, by locality, by country, 2020
(% of bathing sites with excellent water quality)



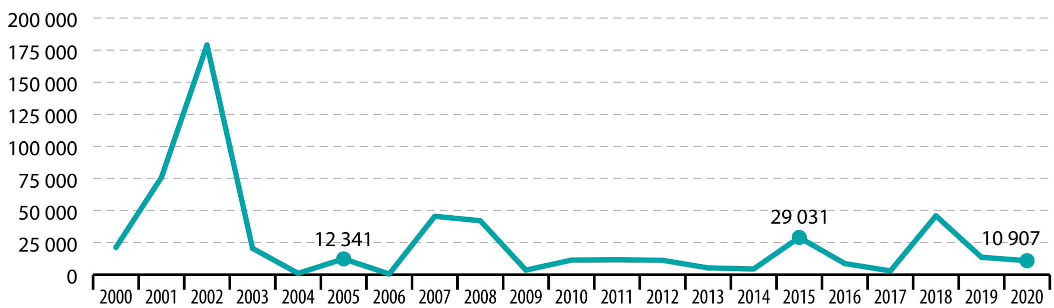
(1) No measurements of inland water bathing sites.
(2) No coastal water bathing sites (landlocked country).
Source: EEA (Eurostat online data code: sdg_14_40)

Marine waters affected by eutrophication

X Assessment of progress not possible due to the annual variability of eutrophication

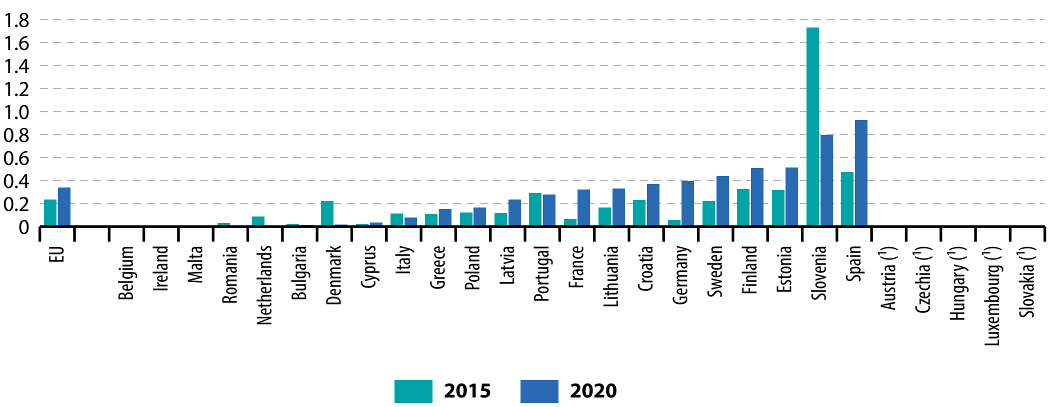
This indicator shows the extent of eutrophic marine waters in the Exclusive Economic Zone (EEZ). An area is classified as eutrophic if for more than 25 % of the observation days of a given year the chlorophyll concentrations as a proxy are above the 90th percentile of the 1998–2017 reference base line. Eutrophication is the process by which an excess of nutrients — mainly phosphorus and nitrogen — leads to increased growth of plant material, particularly algal blooms, in an aquatic body resulting in a decrease in water quality. This can, in turn, cause death by hypoxia of aquatic organisms. Anthropogenic activities, such as farming, agriculture, aquaculture, industry and sewage, are the main source of nutrient input in problem areas. The Marine Strategy Framework Directive (MSFD) requires Member States to report on eutrophication for their regional seas every six years. The Copernicus Marine Service calculates the indicator from satellite imagery.

Figure 14.3: Marine waters affected by eutrophication, EU, 2000–2020
(km²)



Source: Mercator Ocean International, Copernicus Marine Service (Eurostat online data code: sdg_14_60)

Figure 14.4: Marine waters affected by eutrophication, by country, 2015 and 2020
(% of exclusive economic zone (EEZ))



Note: Data are presented as four-year moving average.
(¹) Not applicable (landlocked country).

Source: Mercator Ocean International, Copernicus Marine Service (Eurostat online data code: sdg_14_60)

LONG TERM 2005–2020

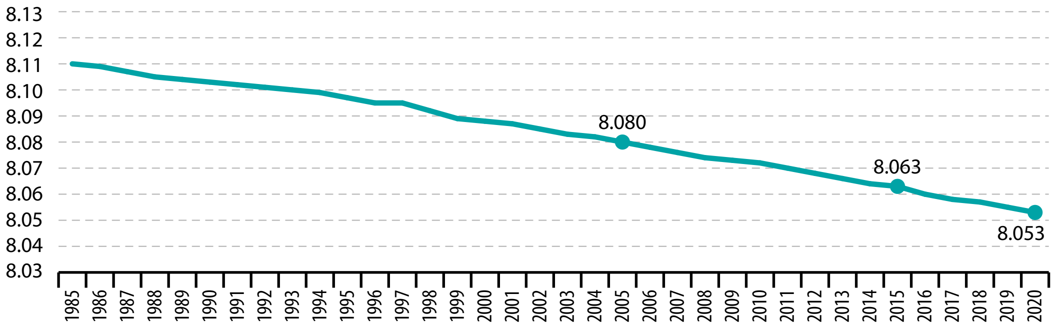
SHORT TERM 2015–2020

Global mean surface seawater acidity

This indicator shows the global yearly mean surface seawater acidity expressed as pH value. The decline in pH observed on a global scale corresponds to an increase in the acidity of seawater and vice versa. This trend is caused by an increase in atmospheric CO_2, which increases the uptake of CO_2 by oceans. This is directly correlated with seawater pH. The Copernicus Marine Service has reconstructed the global yearly mean surface seawater pH from 1985 onwards.

Figure 14.5: **Global mean surface seawater acidity, 1985–2020**

(pH value)



Note: As the pH scale is logarithmic, the actual increase in acidity is higher than the annual growth rate (CAGR) below suggests. The change in pH value of around – 0.01 between 2015 and 2020 means an increase in acidity of around 2 %.
Compound annual growth rate (CAGR): – 0.02 % per year in the period 2005–2020; – 0.02 % per year in the period 2015–2020.

Source: EEA, Copernicus Marine Service (Eurostat online data code: sdg_14_50)

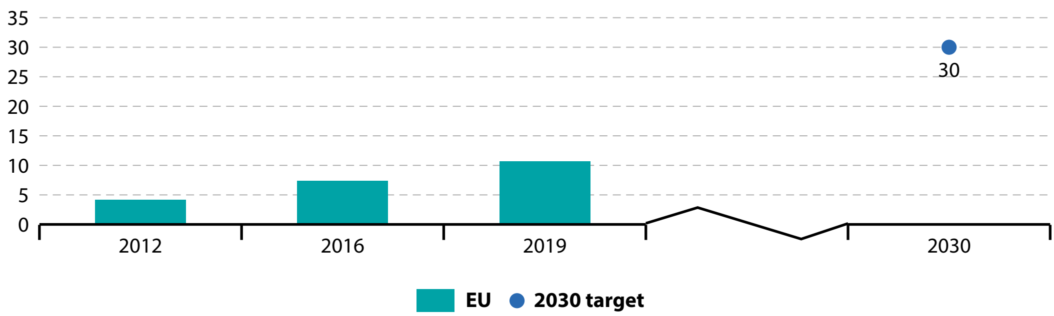
Marine protected areas

LONG TERM
Time series too short

SHORT TERM
2016–2019

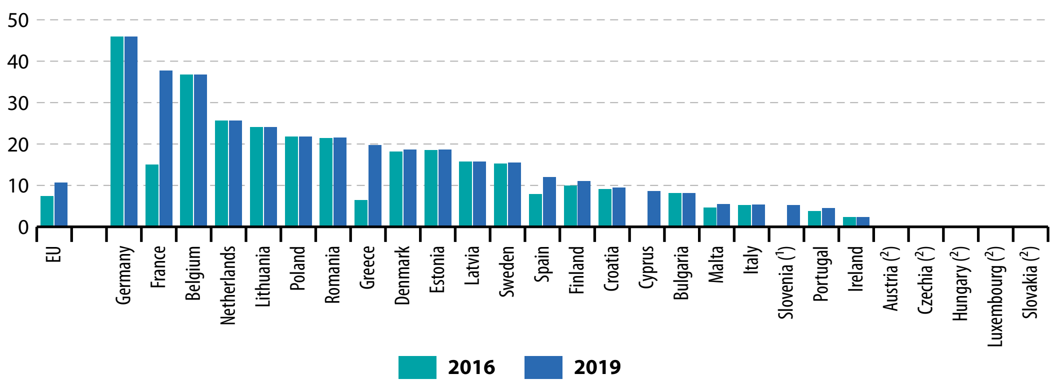
This indicator measures the surface of marine protected areas (MPAs) in EU marine waters. The indicator comprises nationally designated protected areas and Natura 2000 sites. A nationally designated area is an area protected by national legislation. The Natura 2000 network comprises both marine and terrestrial protected areas designated under the EU Habitats and Birds Directives with the goal to maintain or restore a favourable conservation status for habitat types and species of EU interest. The EU biodiversity strategy aims to protect at least 30 % of land and sea in Europe, including both nationally designated sites and Natura 2000 sites. MPAs can serve various objectives including species and habitats protection, biodiversity conservation and restoration, but also resource use within defined ecological boundaries. For all MPAs, specific management objectives are set, often consisting of different zones with permitted and non-permitted uses. Data provided by the Member States to the Commission are consolidated by the European Environment Agency and the European Topic Centre on Biological Diversity (EEA ETC/BD) and collected by European Commission Directorate-General for the Environment.

Figure 14.6: Marine protected areas, EU, 2012–2019
(% of marine area)



Compound annual growth rate (CAGR): 13.1 % per year (observed) and 10.5 % per year (required to meet target) in the period 2016–2019.
Source: EEA (Eurostat online data code: sdg_14_10)

Figure 14.7: Marine protected areas, by country, 2016 and 2019
(% of marine area)



(¹) No data for 2016.
(²) Not applicable (landlocked country).
Source: EEA (Eurostat online data code: sdg_14_10)

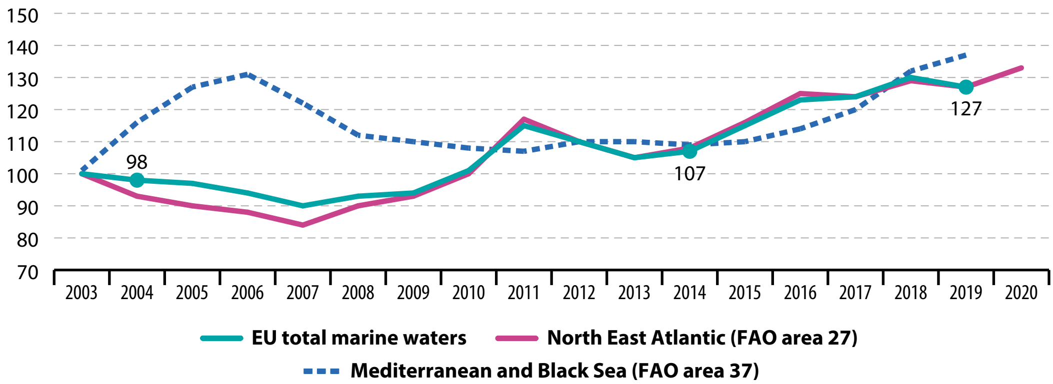
LONG TERM
2004–2019

SHORT TERM
2014–2019

Estimated trends in fish stock biomass

Fish stock biomass is a function of biological characteristics such as abundance and weight and can indicate the status of a fish stock when measured against reference values. This is a model-based indicator that is computed using results from single-species quantitative stock assessments. It shows the median value of fish stock biomass relative to 2003 (35). Time series for stock biomass estimates are provided by the International Council for the Exploration of the Sea (ICES).

Figure 14.8: **Estimated trends in fish stock biomass, 2003–2020**
(index 2003 = 100)



Note: Data for Mediterranean and Black Sea (FAO area 37) have lower reliability and are only available until 2019.
Compound annual growth rate (CAGR) for EU total marine waters: 1.7 % per year in the period 2004–2019; 3.5 % per year in the period 2014–2019.

Source: Joint Research Centre (JRC) — Scientific, Technical and Economic Committee for Fisheries (STECF) (Eurostat online data code: sdg_14_21)

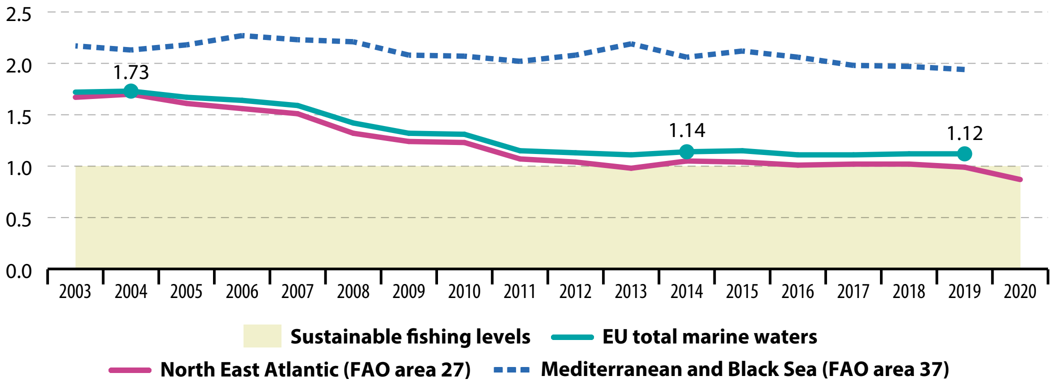
Estimated trends in fishing pressure

To ensure fish stocks are exploited sustainably, the CFP aims to rebuild stocks above levels at which they can produce the maximum sustainable yield (MSY). MSY is determined by the long-term average stock size that allows fishing at this level. The indicator shows the model-based median value of current fishing mortality (F) relative to the estimated maximum sustainable yield (F_{MSY}), expressed with the term F/F_{MSY}. Values below 1 indicate sustainable fishing levels ($F \leq F_{MSY}$). The modelled trend for the total EU waters is dominated by the more stable situation in the North-East Atlantic, while the heavier fishing pressure in the Mediterranean and the Black Sea has lower weight in the model. Time series data on fishing mortality are provided by the International Council for the Exploration of the Sea (ICES).

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 14.9: **Estimated trends in fishing pressure, 2003–2019**
(model-based median value of fishing pressure (F/F_{MSY}))



Note: Data for Mediterranean and Black Sea (FAO area 37) have lower reliability and are only available until 2019.
Compound annual growth rate (CAGR) for EU total marine waters: – 2.9 % per year in the period 2004–2019; – 0.4 % per year in the period 2014–2019.

Source: Joint Research Centre (JRC) — Scientific, Technical and Economic Committee for Fisheries (STECF) (Eurostat online data code: sdg_14_30)

Notes

(1) European Parliament and Council of the European Union (2008), *Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)*.
(2) European Parliament and Council of the European Union (2014), *Directive 2014/89/EU establishing a framework for maritime spatial planning*.
(3) European Parliament and Council of the European Union (2008), *Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)*.
(4) Council of the European Communities (1992), *Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*.
(5) European Parliament and Council of the European Union (2009), *Directive 2009/147/EC on the conservation of wild birds*.
(6) European Parliament and Council of the European Union (2006), *Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC*.
(7) European Parliament and Council of the European Union (2008), *Directive 2008/98/EC on waste and repealing certain Directives*.
(8) European Parliament and Council of the European Union (2000), *Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues — Commission declaration*.
(9) *Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment*.
(10) European Commission (2020), *EU Biodiversity strategy for 2030*, COM(2020) 380 final, Brussels.
(11) European Commission (2016), *International ocean governance: an agenda for the future of our oceans*, JOIN (2016) 49 final, Brussels.
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15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

SDG 15 seeks to protect, restore and promote the conservation and sustainable use of terrestrial, inland-water and mountain ecosystems. This includes efforts to sustainably manage forests and halt deforestation, combat desertification, restore degraded land and soil, halt biodiversity loss and protect threatened species.

15 LIFE ON LAND

eurostat supports the SDGs

Along with SDG 14, SDG 15 is one of the key goals at international level that incorporates environmental considerations for UN member countries. In the EU this goal ensures that the health and functioning of ecosystems and the delivery of ecosystem services remain a priority, especially in the face of global trends such as population growth, accelerating urbanisation and the increasing need for natural resources. Ecosystem services provided by terrestrial ecosystems offer many benefits to society, including recreation, natural resources, food, clean air and water, as well as protection from natural disasters and mitigation of climate change. However, human activities that damage ecosystems and increase land degradation threaten the provision of these services and diminish biodiversity. Thus, the EU endeavours to ensure ecosystems are healthy and sustainably used and managed.

Table 15.1: Indicators measuring progress towards SDG 15, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Ecosystem status			
Share of forest area	:	↗ (1)	page 275
Biochemical oxygen demand in rivers (*)	↑ (2)	↗ (2)	SDG 6, page 124
Phosphate in rivers (*)	↑ (3)	↓ (3)	SDG 6, page 126
Land degradation			
Soil sealing index	:	:	page 276
Estimated severe soil erosion by water	↗ (4)	↗ (5)	page 277
Biodiversity			
◎ Terrestrial protected areas	:	↑	page 279
Common bird index	↘ (6)	↘ (6)	page 280
Grassland butterfly index	↓ (7)	↓ (7)	page 281

(*) Multi-purpose indicator.
(1) Past 3-year period.
(2) Data refer to an EU aggregate based on 18 Member States.
(3) Data refer to an EU aggregate based on 19 Member States.
(4) Past 16-year period.
(5) Past 6-year period.
(6) Data refer to an EU aggregate that changes over time depending on when countries joined the Pan-European Common Birds Monitoring Scheme.
(7) Data refer to an EU aggregate based on 17 Member States.

Table 15.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
◎	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 15 'Life on land'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

The EU Biodiversity Strategy for 2030 aims to put Europe's biodiversity on a path to recovery by 2030, by establishing a larger EU-wide network of protected areas on land and at sea, launching a nature restoration plan, and introducing measures to enable the necessary transformative change and to tackle the global biodiversity challenge.

The EU Birds Directive (1) and the Habitats Directive (2) aim to maintain or restore a favourable conservation status of protected habitats and species, and safeguard their sustainable use and management. The Birds Directive protects all wild bird species and their habitats. The Habitats Directive introduces similar measures but extends its coverage to more than 1 300 other rare, threatened or endemic species of wild animals and plants. In addition, the Habitats Directives covers 233 natural habitat types.

The Water Framework Directive (3) imposes restrictions on activities that could pollute and damage Europe's freshwater resources. This legislation is complemented by the EU Drinking Water Directive (4) and Nitrates Directive (5), which also restrict levels of chemicals and minerals in Europe's freshwater resources.

The new EU Forest Strategy for 2030 (6) sets a vision and concrete actions to improve the quantity and quality of EU forests and strengthen their protection, restoration and resilience. It includes a roadmap outlining how the Commission plans to achieve the 3 billion additional trees commitment in full respect of ecological principles as set in the EU Biodiversity Strategy for 2030. A high proportion of forests are also covered in the Habitats Directive.

The EU Soil Strategy for 2030 (7) sets out a framework and concrete measures to protect and restore soils and ensure they are used sustainably. The LIFE Programme (8) is the key EU's funding instrument for environmental and nature conservation projects. It plays an important role in restoring and safeguarding the condition of terrestrial and freshwater ecosystems.

The Zero Pollution Action Plan for Air, Water and Soil (9) maximises synergies with relevant EU policies, such as limiting soil sealing and urban sprawl.

Europe's Common Agricultural Policy (CAP) sets requirements to protect utilised agricultural areas against erosion and establishes a framework of standards that aim, among other things, to prevent soil erosion. Additional funding is available for farmers through the European Agricultural Fund for Rural Development to implement farming practices aimed at addressing biodiversity loss.

The EU Initiative on Pollinators (10) puts forward an integrated approach to address the decline in pollinators, including by a more effective use of existing tools and policies.

Life on land in the EU: overview and key trends

Assessments of the EU's situation concerning SDG 15 'life on land', such as the State of Nature in the EU, the EU Ecosystem Assessment 2020, the Report on ecosystems and their services in the EU and the European Environment — State and Outlook 2020, show continued and strong declines in biodiversity and species abundance, and continued land degradation ([11]). However, because of data availability issues, in this report the monitoring of SDG 15 in the EU context is more limited and focuses on selected indicators for ecosystem status, land degradation and biodiversity (see Table 15.1). These indicators show a mixed picture in all three areas over both the long and the short terms. However, the trends for common birds and butterflies confirm the negative assessments of the EU's biodiversity outlined in recent European Environment Agency (EEA) reports.

Ecosystem status

Humans greatly benefit from many ecosystem services, such as clean air, purified water and food provision. In addition, terrestrial ecosystems provide natural resources used in industrial processes and cultural services such as outdoor recreation. Other services that ecosystems offer include protection from natural disasters such as flooding and mitigation of the negative effects of climate change. Human activities that degrade ecosystems, including pollution and the overuse of resources, threaten animals and plants, and as a result the provision of ecosystem services and their benefits to human well-being ([12]).

In 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) released a Global Assessment Report on Biodiversity and Ecosystem Services ([13]). The report's key findings indicate that negative trends in biodiversity and ecosystem services are expected to hinder progress towards the Agenda 2030 and its SDG targets. As such, current global conservation and sustainability goals will not be met unless transformative change is implemented. In 2021, the European Commission issued the report Accounting for ecosystems and their services in the European Union (INCA) which delivered an integrated system of ecosystem accounts for the EU. The report's key findings suggest that between 2000 and 2018, changes in the extent of most ecosystem types have been small in relative terms. However, urban ecosystems have seen a significant increase in their extent, indicating a continued expansion of urbanised areas at the expense of semi-natural ecosystems and farmland. The report also suggests that sites in the Natura 2000 network tend to have a higher degree of ecosystem stability than the area outside the network ([14]).

Some types of terrestrial ecosystems (for example, wetlands, heathlands and scrub) and the pressures placed on them (such as invasive species, habitat fragmentation, and noise and light pollution) are not monitored here due to data shortcomings. It is therefore important to recognise the limitations in presenting a full and complete picture of Europe's terrestrial ecosystems, the status of which cannot be fully assessed with the long-term datasets that are currently available.

Organic and phosphate pollution levels in EU rivers have been decreasing since 2000

In 2019, the biochemical oxygen demand in European rivers amounted to

2.50 mg/L

The ecological status of European water bodies gives an important indication of how Europe's natural environment is faring in the face of pressures from human use. Two indicators monitor progress in this area: biochemical oxygen demand in rivers and phosphate in rivers. These indicators paint a rather favourable picture of the EU's progress on making rivers cleaner over the past 19 years.

Biochemical oxygen demand in rivers is an indicator of organic water pollution and the effectiveness of water treatment ([15]). When a high level of oxygen (O_2) is required for the microbiological decomposition of organic compounds in water, there is less O_2 available for other river species. As such, biochemical oxygen demand provides an indication of the state of a river system's overall health. In 2019, the biochemical oxygen demand in EU rivers was 2.50 milligrams (mg) of O_2 per litre (L) of water, representing a 24.0 % reduction from 3.29 mg/L in 2000. Between 2014 and 2019, 10 out of 16 reporting Member States saw reductions in biochemical oxygen demand in their rivers.

Phosphate (PO_4) in rivers can originate from agricultural production, urban waste water and industrial discharges [16]. Heavy loads of phosphate in rivers can harm the environment by causing biodiversity loss and water eutrophication. European phosphate concentrations have fallen by 27.7 % since 2000, reaching 0.060 mg/L in 2019. Overall, this reduction can be linked to the introduction of measures by national and European legislation, such as the Urban Waste Water Treatment Directive [17] and the switch to phosphate-free detergents [18].

0.060 mg/L of phosphates were present in European rivers in 2019

Declines in phosphate concentrations in EU rivers, however, levelled off in 2011 and have even increased slightly in recent years. This tendency may be related to slower reductions in phosphorus emissions from the agricultural sector [19] and a rise in phosphorus fertiliser consumption between 2008 and 2018 in some Member States [20]. Of all the reporting Member States, rivers in Finland and Sweden on average had the lowest concentrations of phosphate between 2016 and 2018. This is likely to be a result of their low population densities and high levels of waste water collection and treatment. In contrast, relatively high concentrations were found in some Member States with high population densities and/or intensive agriculture. The high and increasing short-term values observed, particularly in Belgium, Bulgaria and Lithuania, may lead to freshwater eutrophication [21].

The share of forest area in the EU is growing

Europe's forests provide multiple benefits, such as enhancing soil fertility and conserving soil moisture, storing carbon and providing habitats for animals and plants. They also provide employment in rural areas and help mitigate climate change and regulate the microclimate [22]. In 2018, forests and other wooded land covered 43.5 % of the EU's total land area. As a proportion of total land area, the EU's share of forests and other wooded land increased slightly by 0.9 percentage points between 2015 and 2018.

In 2018, the share of forests in total EU land area reached 43.5 %

Currently, forests are affected by pressures from habitat degradation and loss, invasive alien species, pollutants and excessive nutrient loads, as well as climate change [23], resulting in persistent droughts and heatwaves. This means that EU efforts to retain and sustainably manage its forested areas are increasingly important. According to the latest assessment of the State of Nature in the EU, only around 14 % of forest habitats at the EU level are in good conservation status, while the rest are in poor and bad conservation status. Nevertheless, the report shows that forest habitats have experienced the most improvement compared with other habitats [24].

Land degradation

Land degradation is linked to the long-term functionality and biological productivity of land or land-based ecosystems. It is a complex phenomenon bringing together several elements, including soil degradation and the capacity of land to support water resources, biodiversity and primary productivity [25]. Soil degradation by itself covers many aspects such as soil sealing and contamination, erosion by wind and water, loss of soil biodiversity, compaction, decline in organic matter, desertification, acidification and salination [26]. Not all of these threats to soil quality can be covered in this indicator set, so the analysis has been limited to imperviousness change and soil erosion by water.

Land take is continuing to increase in the EU

Land take is described as the process of transforming agricultural, forest and other semi-natural and natural areas into artificial areas. It often means an increase in settlement area over time, usually at the expense of rural areas. Land take is monitored using the Copernicus CORINE land cover datasets (27), which have been published every six years between 2000 and 2018. Net land take includes the 'reverse land take process', which occurs when artificial areas are returned to non-artificial land categories through recultivation and renaturalisation. According to EEA data, net land take in the EU has amounted to 11 845 square kilometres (km²) since 2000, equalling an average annual net land take of 658 km². Even though the rate of net land take has fallen by more than 40 % over the three observation periods, indicating a positive trend, it was still higher than the rate of land recultivation and renaturalisation. This shows there is still a long way to go to meet the 'no net land take' policy target for 2050 (28).

Soil sealing is the most intense form of land take and is essentially an irreversible process. It destructs or covers soils with layers of partly or completely impermeable artificial material (such as asphalt and concrete) (29). Increases in the area of sealed land can be used to estimate land-use change for human use or intensification (30). The area of sealed soil in the EU has increased in all Member States since 2006. Between 2006 and 2015, the total area covered with impervious materials grew by 2 983 km² or 4.5 %. Between 2015 and 2018, it increased by 3.7 %. A substantial but unknown share of the increase is due to improvements in methodology and spatial resolution of the underlying remote-sensing data. According to the newest methodology, 1.8 % of the EU was covered with impervious materials in 2018.

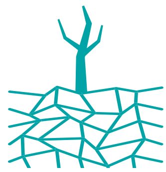
In 2018, the area of sealed soil surface in the EU was

1.8 %

In all three observation periods, agricultural areas were the most likely to be converted to artificial surfaces, reducing the amount of land available for food and feed production (31). This results in increased fragmentation and loss of natural habitats. Furthermore, artificial areas create plots of land that are isolated from functional ecosystems and can lead to increased flood risk and more frequent rapid surface runoff (32). Moreover, sealed lands cannot store carbon and thereby contribute to greenhouse gas emissions and climate change.

Fewer areas in the EU are now at risk of severe soil erosion by water

Soil is a resource that provides multiple benefits to society, including the provision of raw materials, food production, storage, filtration and the transformation of many substances, including water, carbon and nitrogen (33). Maintaining soil health ensures the continued provision of these benefits. Soil erosion by water is one of the major threats to EU soils and contributes to land degradation. By removing fertile topsoil, it reduces soil productivity and threatens crop production, the quality of drinking water, habitats and biodiversity, and carbon stocks (34).



Between 2010 and 2016, the estimated land area at risk of severe soil erosion by water in the EU fell by

0.9 %

Overall, severe soil erosion by water is estimated to affect more than 5 % of the non-artificial erodible land area in the EU and is responsible for 52 % of total soil loss in Europe. There are hotspots in some European regions, in particular in the Mediterranean areas and in the Alpine regions of Slovenia and western Austria, mainly due to a combination of steep topography and high rainfall erosivity (35). In addition, modelling results up to 2070 show that water erosion could rise by up to two-thirds compared with today (36).

However, efforts to address and mitigate soil erosion by water have helped to reduce the estimated EU land area at risk of severe soil erosion (soil loss of more than 10t/ha/yr) by water, from 198 607 km^2 in 2010 to 196 853 km^2 in 2016, equalling an average annual decrease of 0.1 %. This represents a considerable slowdown compared with the period 2000 to 2010, when the estimated area at risk fell by an average of 1.3 % per year.

Between 2010 and 2016, the reduction in the area at risk of soil erosion was larger in arable lands compared with all lands ([37]). Here, improvements due to the implementation of agro-environmental standards required under the Common Agricultural Policy (CAP) may have helped to reduce the mean rate of soil loss by water erosion. This includes the application of soil conservation practices such as reduced tillage, preservation of a minimum soil cover, reduction in the area of bare soils, contour farming along slopes, maintenance of terraces and stone walls, and extended use of grass margins ([38]).

Biodiversity

Terrestrial ecosystems have been protected under the Birds Directive since 1979 and the EU Habitats Directive since 1992. Both Directives form the main pillar for the protection of Europe's biodiversity and ecosystems. Under these Directives, Member States are required to designate and manage Special Protection Areas (SPAs; Birds Directive) and Sites of Community Importance/Special Areas of Conservation (SCIs/SACs; Habitats Directive). These sites, which are collectively known as the Natura 2000 network, shall enable protected habitats and species to reach favourable conservation status in the EU. The Natura 2000 network is complemented by nationally designated terrestrial protected areas that are established under each Member State's national framework. The EU Biodiversity Strategy for 2030 ([39]) includes a target for at least 30 % of EU land to be protected.

Despite an increase in protected areas, many terrestrial habitats and species in the EU have not reached 'favourable conservation status'

In 2021, the EU and its Member States protected 1 115 435 km^2 of terrestrial habitats, covering 26.4 % of the EU's land area. This is an increase of almost 40 % compared with 2013, when only 18.9 % of land area was protected. Even though the designation of additional protected areas has slowed in recent years, the EU seems on track to meeting its 30 % target by 2030 if the pace observed between 2016 and 2021 can be maintained. The Member States with the largest protected areas relative to the country size in 2021 included Luxembourg (51.5 %), Bulgaria (41.0 %), Slovenia (40.5 %) and Poland (39.6 %). In contrast, the shares of protected areas were smallest in Finland (13.2 %), Ireland (13.9 %) and Sweden (14.1 %).

26.4 %
of the EU land area was protected in 2021

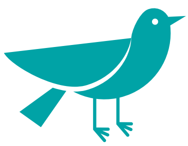
The latest assessment of the State of Nature in the EU reveals that many species and habitats of European interest are still in unfavourable conservation status ([40]). The conservation status of habitats did not improve over the reporting period (2013–2018), but for species other than birds a slight improvement can be stated. Across the EU, about a quarter (27 %) of species assessments and 15 % of the habitat assessments show a good conservation status, compared with 23 % and 16 % respectively in 2015. The majority of the assessments considered, however, have a poor or bad conservation status at EU level (63 % for species and 81 % for habitats). Moreover, a look at the trends reveals that only 6 % of species assessments and 9 % of habitat assessments showed improving trends in the reporting period, while 35 % and 36 % indicated a deteriorating trend at EU level, respectively.

The State of Nature report also shows that fish and molluscs continue to have a particularly high proportion of species (around 30 % each) with a bad conservation status, while reptiles and vascular plant species have the highest proportion of good conservation status (36 % and 40 % respectively). Dune habitats and bogs, mires and fens habitats have the highest share of assessments showing a bad conservation status (around 50 % each). Grasslands, which contain some species-rich habitats that are particularly suitable for pollinator species, also have one of the highest proportions of bad conservation status assessments (49 %) ([41]).

Common bird species and grassland butterfly species are in long-term decline in the EU

Changes in land use and overuse of ecosystems can harm biodiversity. Because biodiversity supports all ecosystem functions and contributes to their capacity to provide ecosystem services ([42]), it needs to be monitored so it can be preserved and restored. Birds are sensitive to both human-induced and natural environmental change, making them good indicators of wider ecosystem health. Their widespread and diverse habitats also make them ideal for monitoring the results of conservation efforts ([43]).

The EU common bird index tracks the population abundance and diversity of a selection of common bird species in the EU, typified by common forest and farmland bird species. The index shows a 13.3 % decline in common bird species and a dramatic 36.9 % fall in farmland bird species between 1990 and 2020. Forest bird species have only declined slightly, with their index falling by 3.3 % over the whole period. The decline in common farmland birds has largely been attributed to agricultural intensification, which has reduced natural nesting habitats such as hedges, wetlands, meadows and fallow fields. Agro-chemicals, such as pesticides, and changes in ploughing times for cereals have also affected common farmland birds, disrupting breeding and decreasing available food sources ([44]). Shorter-term trends show a continued decline for common birds and farmland birds. For all common birds there has been a 5.6 % reduction since 2005 and a 1.2 % reduction since 2015, while farmland birds continued to show an even stronger decline, by 17.4 % since 2005 and 5.5 % since 2015.



Between 2005 and 2020, common bird species in the EU declined by

5.6 %

Butterflies, which are among the most common plant pollinators, are well suited to acting as signals of environmental and habitat health. They occur in a wide range of habitat types and are sensitive to environmental change. The report Assessing Butterflies in Europe (ABLE) — Butterfly Indicators 1990–2018 ([45]) presents butterfly indicators for widespread species and woodland butterflies, as well as butterflies in urban environments and in Natura 2000 areas, and uses them as indicators of climate change. Trends and indicators can be calculated for 167 (35 %) of the 483 butterfly species occurring in Europe.

The grassland butterfly index is based on data from 17 Member States, measuring the population trends of 17 butterfly species within the national Butterfly Monitoring Schemes. According to estimates from these monitoring efforts, butterfly populations declined by 25.3 % between 1991 and 2018, signifying a dramatic loss of grassland biodiversity. Much of this decrease has occurred over the past 15 years, with the index falling by 19.8 % between 2003 and 2018. While the decline has slowed in the past few years, the grassland butterfly index still showed a fall of 5.9 % between 2013 and 2018. Causes for this decline can be attributed to changes in rural land use, in particular stemming from agricultural intensification, pesticides use and land abandonment in mountains and wet regions, mainly in eastern and southern Europe. The loss of semi-natural grasslands has been particularly detrimental ([46]). Butterflies show a moderate decline in non-urban areas but they have been stable within urban areas across Europe, suggesting that parks and other green parts of the urban environment are becoming increasingly suitable and are being managed in a butterfly-friendly way. However, the situation of butterflies in urban areas requires further research, as different studies offer contrasting findings ([47]).

Between 2003 and 2018, grassland butterfly populations in Europe shrank by

19.8 %

Presentation of the main indicators

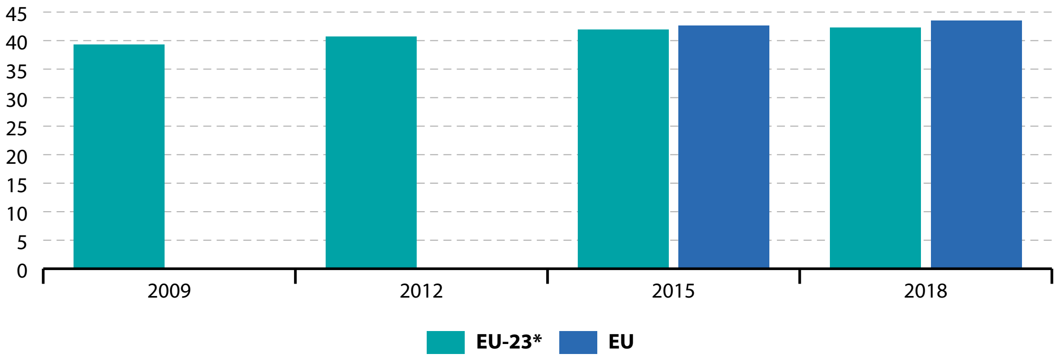
X **LONG TERM**
Time series too short

SHORT TERM
2015–2018

Share of forest area

This indicator measures the proportion of forest ecosystems in comparison to the total land area. Data used for this indicator is derived from the Land Use and Cover Area frame Survey (LUCAS) ([48]). The LUCAS land use and land cover classification has been adapted to FAO forest definitions, distinguishing between the categories 'forests' and 'other wooded land'.

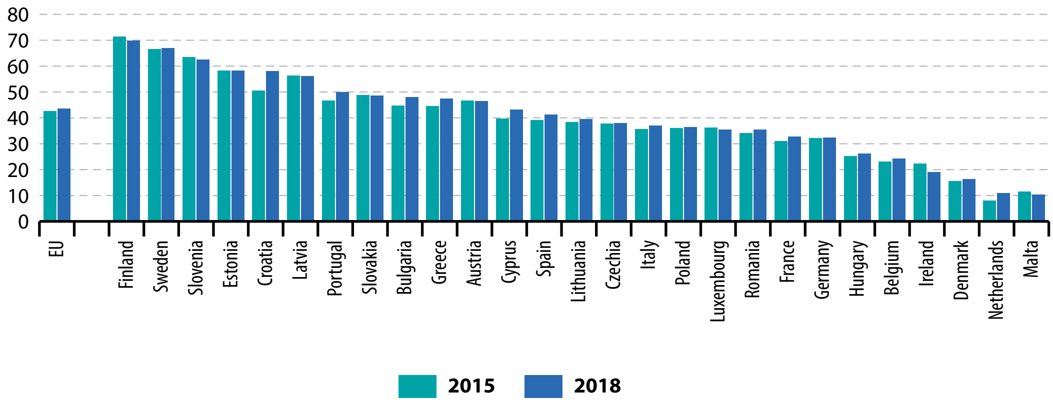
Figure 15.1: Share of forest area, EU, 2009–2018
(% of total land area)



Note: EU-23* refers to an aggregate including the UK but excluding Bulgaria, Croatia, Cyprus, Malta and Romania.
Compound annual growth rate (CAGR): 0.7 % per year in the period 2015–2018.

Source: Eurostat (online data code: sdg_15_10)

Figure 15.2: Share of forest area, by country, 2015 and 2018
(% of total land area)



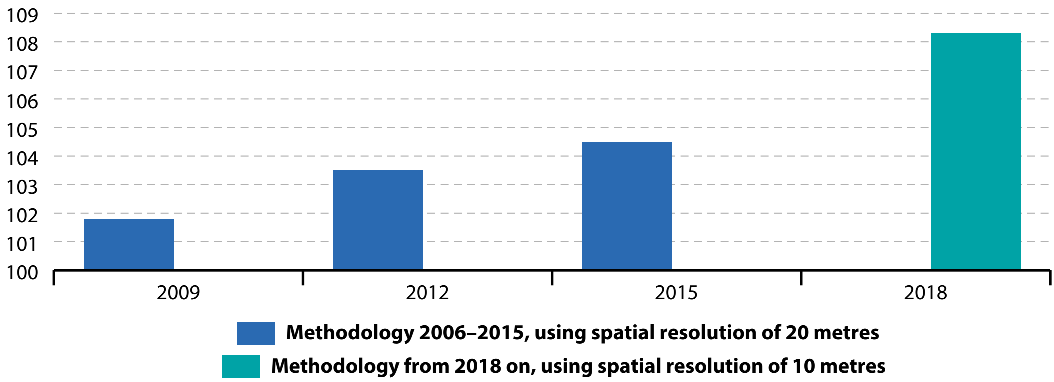
Source: Eurostat (online data code: sdg_15_10)

X Assessment of progress not possible due to break in time series in 2018

Soil sealing index

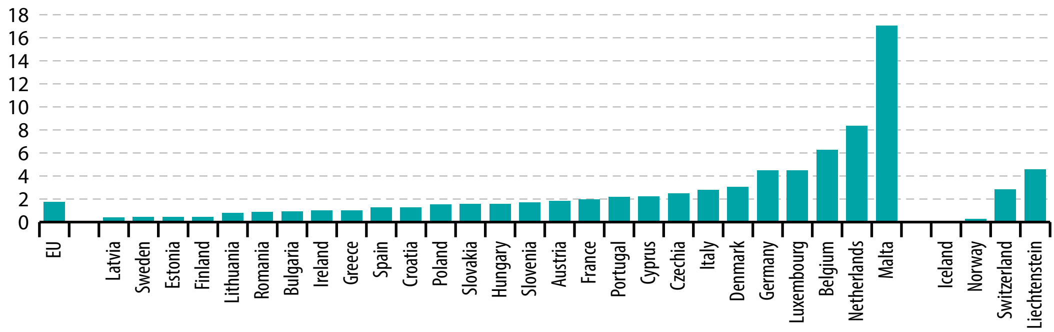
This indicator estimates the increase in sealed soil surfaces with impervious materials due to development and construction (such as buildings, constructions and laying of completely or partially impermeable artificial material, such as asphalt, metal, glass, plastic or concrete). This provides an indication of the rate of soil sealing, which occurs when there is a change in land use towards artificial and urban land use [49]. The indicator builds on data from the Imperviousness High Resolution Layer (a product of the Copernicus Land Monitoring Service).

Figure 15.3: Soil sealing index, EU, 2006–2018
(index 2006 = 100)



Note: Break in time series in 2018.
Source: EEA (Eurostat online data code: sdg_15_41)

Figure 15.4: Soil sealing, by country, 2018
(% of total surface)



Source: EEA (Eurostat online data code: sdg_15_41)

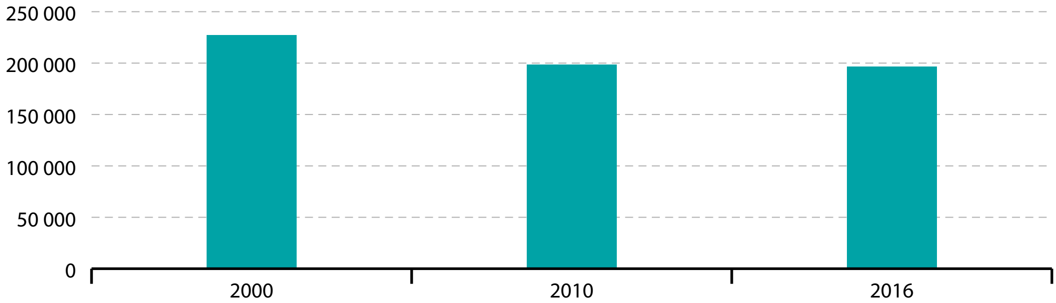
Estimated severe soil erosion by water

LONG TERM
2000–2016

SHORT TERM
2010–2016

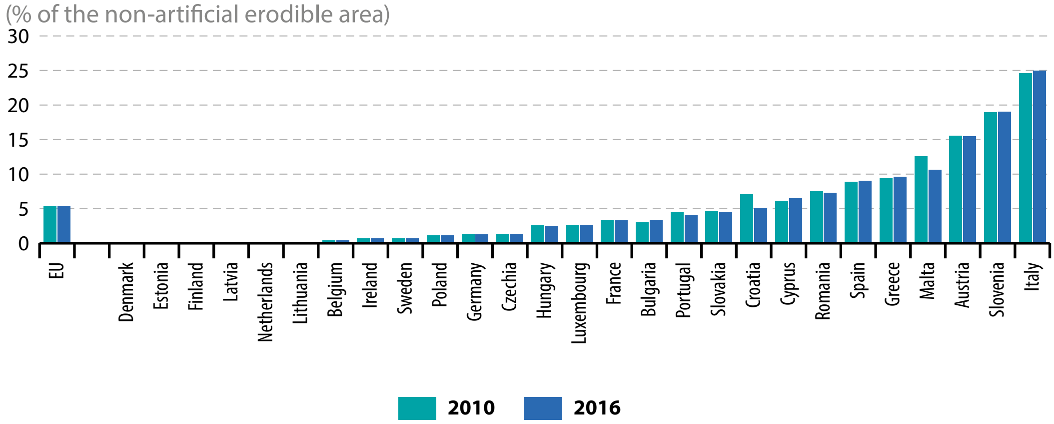
This indicator estimates the area potentially affected by severe erosion by water such as rain splash, sheet-wash and rills (soil loss > 10 tonnes/hectare/year). This area is expressed in square kilometres (km^2) and as a percentage of the total non-artificial, erodible area in the country. These numbers are estimated from soil-erosion susceptibility models and should not be taken as measured values ([50]). Data presented in this section stem from the JRC's soil erosion database.

Figure 15.5: Estimated severe soil erosion by water, EU, 2000, 2010 and 2016
(km^2)



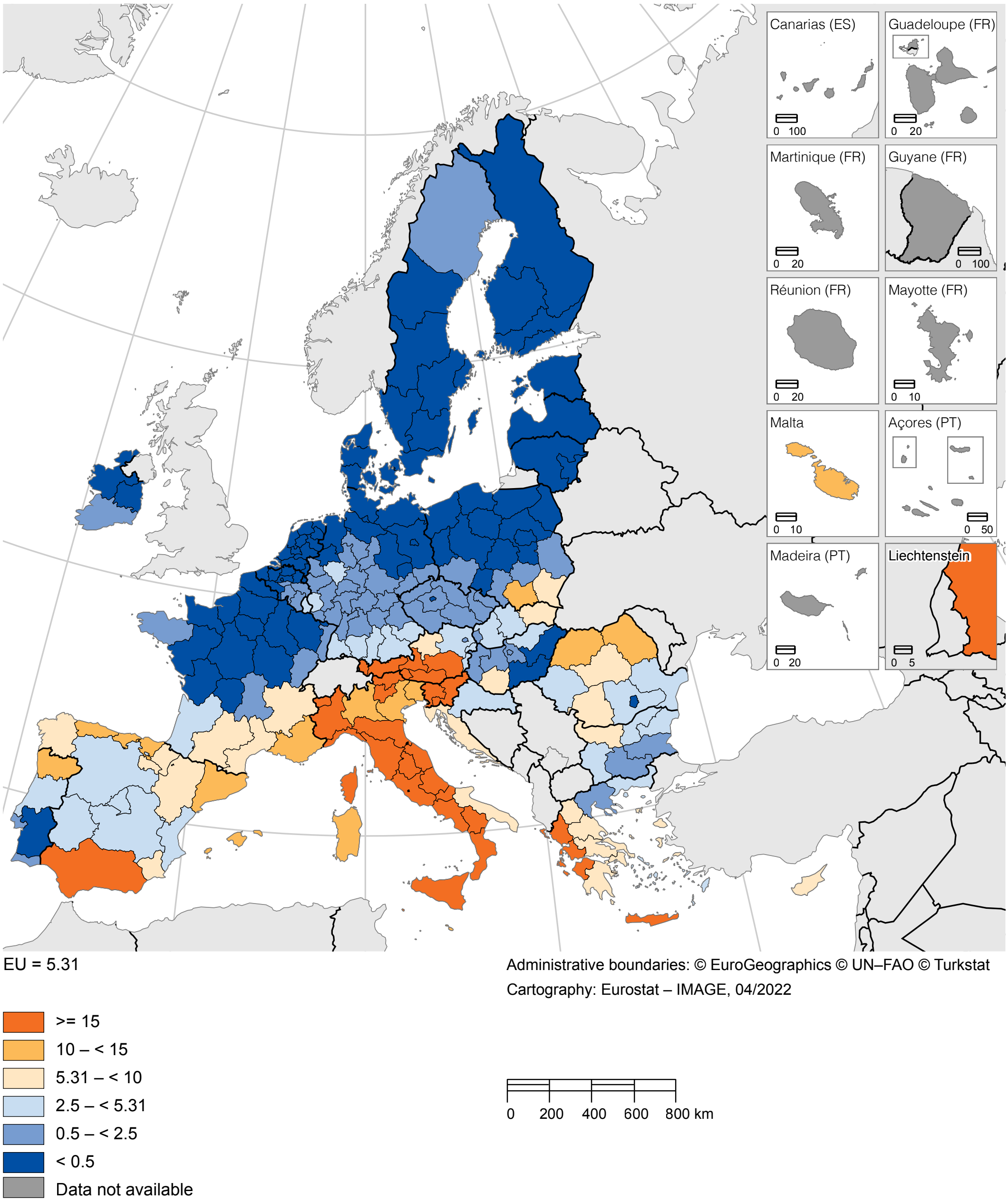
Compound annual growth rate (CAGR): – 0.9 % per year in the period 2000–2016; – 0.1 % per year in the period 2010–2016.
Source: Joint Research Centre (Eurostat online data code: sdg_15_50)

Figure 15.6: Estimated severe soil erosion by water, by country, 2010 and 2016
(% of the non-artificial erodible area)



Source: Joint Research Centre (Eurostat online data code: sdg_15_50)

Map 15.1: Estimated severe soil erosion by water, by NUTS 2 region, 2016
(% of the non-artificial erodible area)



Source: Eurostat (online data code: AEI_PR_SOILER)

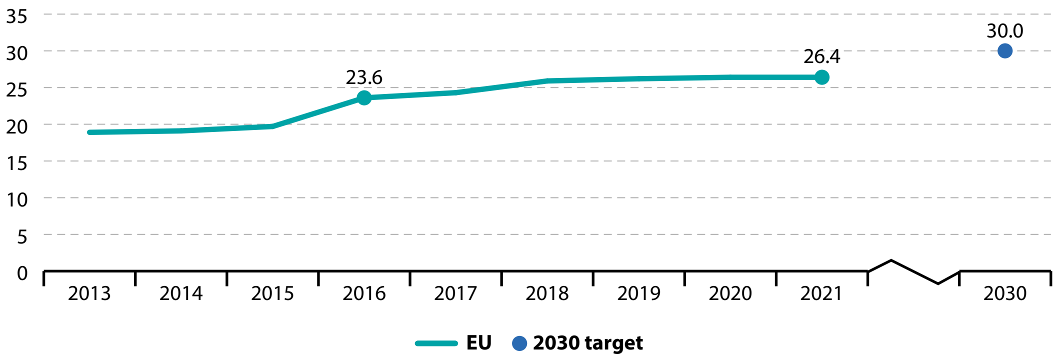
Terrestrial protected areas

LONG TERM
Time series too short

SHORT TERM
2016–2021

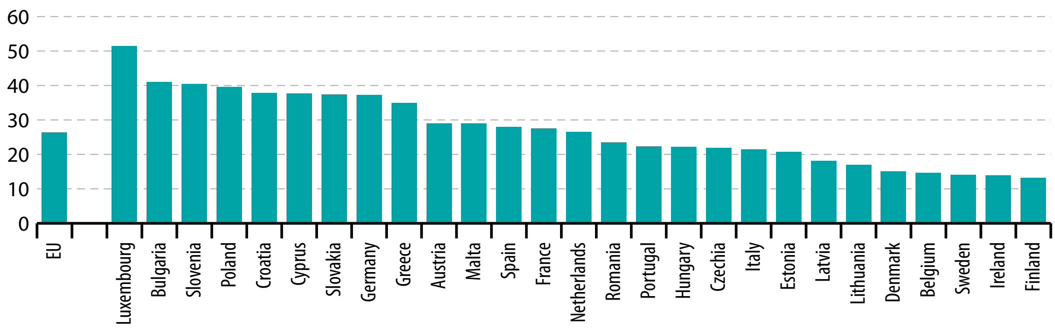
This indicator measures the surface of terrestrial protected areas. The indicator comprises nationally designated protected areas and Natura 2000 sites. A nationally designated area is an area protected by national legislation. The Natura 2000 network comprises both marine and terrestrial protected areas designated under the EU Habitats and Birds Directives with the goal to maintain or restore a favourable conservation status for habitat types and species of EU interest. The EU biodiversity strategy aims to protect at least 30 % of land and sea in Europe, including both nationally designated sites and Natura 2000 sites. Data provided by the Member States to the Commission are consolidated at least yearly by the European Environment Agency and the European Topic Centre on Biological Diversity (EEA ETC/BD) and collected by European Commission Directorate-General for the Environment.

Figure 15.7: Terrestrial protected areas, EU, 2013–2021
(% of land area)



Compound annual growth rate (CAGR): 2.3 % per year (observed) and 1.7 % per year (required to meet target) in the period 2016–2021.
Source: EEA (Eurostat online data code: sdg_15_20)

Figure 15.8: Terrestrial protected areas, by country, 2021
(% of land area)



Source: EEA (Eurostat online data code: sdg_15_20)

LONG TERM
* ** 2005–2020

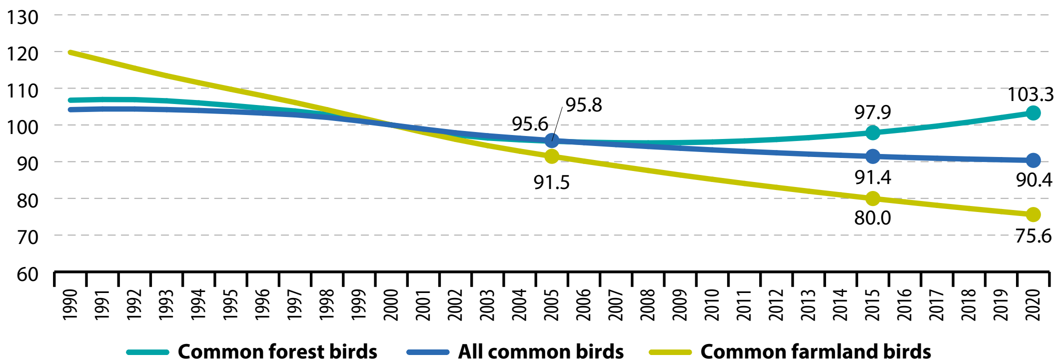
SHORT TERM
* ** 2015–2020

* All common birds
** Common farmland birds

Common bird index

This indicator is an index and integrates the abundance and the diversity of a selection of common bird species associated with specific habitats. Rare species are excluded. Three groups of bird species are represented: common farmland species (39 species), common forest species (34 species) and all common bird species (167 species; including farmland and forest species). The indices are presented for EU-aggregates only and with smoothed values. The index draws from data produced by the European Bird Census Council and its Pan-European Common Bird Monitoring Scheme programme. Data coverage has increased from nine to 22 EU Member States over the period 1990 to 2010, with 25 countries covered as of the reference year 2011 ([51]).

Figure 15.9: Common bird index, by type of species, EU, 1990–2020
(index 2000 = 100)



Note: The EU aggregate changes depending on when countries joined the Pan-European Common Birds Monitoring Scheme; 2018 and 2019 data are estimated.
Compound annual growth rate (CAGR): – 0.4 % per year (all common birds) and – 1.3 % per year (common farmland birds) in the period 2005–2020; – 0.2 % per year (all common birds) and – 1.1 % per year (common farmland birds) in the period 2015–2020.
Source: European Bird Census Council (EBCC)/BirdLife/Statistics Netherlands (Eurostat online data code: sdg_15_60)

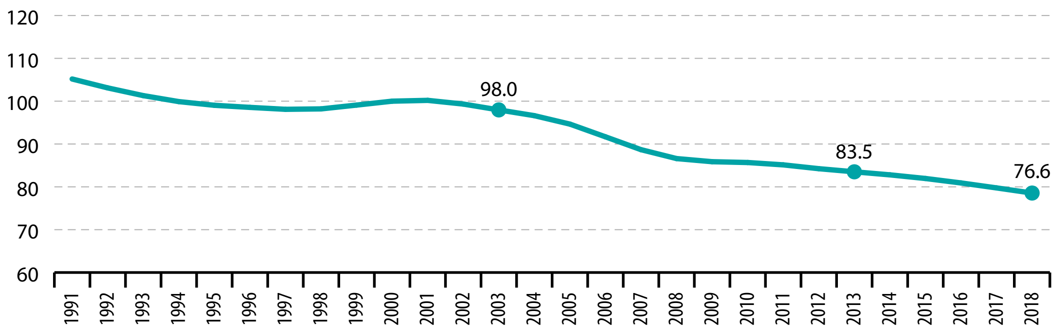
Grassland butterfly index

LONG TERM
2003–2018

SHORT TERM
2013–2018

This indicator measures the population trends of 17 butterfly species at EU-level. The index is presented as an EU-aggregate only and with smoothed values. The indicator is based on data from 17 EU Member States (Austria, Belgium, Czechia, Estonia, Finland, France, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands, Romania, Slovenia, Spain and Sweden), but with a limited number of long time-series available ([52]). The data are integrated and provided by the European Environment Agency, the European Butterfly Monitoring Scheme partnership and the Assessing Butterflies in Europe (ABLE) project.

Figure 15.10: **Grassland butterfly index, EU, 1991–2018**
(index 2000 = 100)



Compound annual growth rate (CAGR): – 1.5 % per year in the period 2003–2018; – 1.2 % per year in the period 2013–2018.

Source: EEA, Butterfly Conservation Europe, European Butterfly Monitoring Scheme partnership, Assessing Butterflies in Europe (ABLE) project (Eurostat online data code: sdg_15_61)

Notes

(1) European Parliament and Council of the European Union (2009), *Directive 2009/147/EC on the conservation of wild birds*.
(2) Council of the European Communities (1992), *Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*.
(3) European Parliament and Council of the European Union (2000), *Directive 2000/60/EC establishing a framework for Community action in the field of water policy*.
(4) Council of the European Union (1998), *Directive 98/83/EC on the quality of water intended for human consumption*.
(5) Council of the European Communities (1991), *Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources*.
(6) European Commission (2021), *New EU Forest Strategy for 2030*, COM(2021) 572 final, Brussels.
(7) European Commission (2021), *EU Soil Strategy for 2030. Reaping the benefits of healthy soils for people, food, nature and climate*, COM(2021) 699 final, Brussels.
(8) European Commission (2018), *Implementing decision (EU) 2018/210 of 12 February 2018 on the adoption of the LIFE multiannual work programme for 2018–2020*.
(9) European Commission (2021), *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' — Pathway to a Healthy Planet for All*, COM(2021) 400 final, Brussels.
(10) European Commission (2018), *EU Pollinators Initiative*, COM(2018) 395 final, Brussels.
(11) See, for example, EEA (2019), *The European environment — state and outlook 2020. Knowledge for transition to a sustainable Europe*; EEA (2020), *State of nature in the EU. Results from reporting under the nature directives 2013–2018*; Maes et al. (2020), *Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment*; Díaz et al. (2019), *Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on biodiversity and Ecosystem Services*.
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(16) European Environment Agency (2020), *Nutrients in freshwater in Europe*.
(17) Council of the European Communities (1991), *Directive 91/271/EEC concerning urban waste water treatment.*
(18) European Environment Agency (2020), *Nutrients in freshwater in Europe*.
(19) Ibid.
(20) Eurostat (2018), *Statistics Explained, Agri-environmental indicator — mineral fertiliser consumption*.
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(23) European Environment Agency (2016), *European forest ecosystems — State and trends*, EEA Report No 5/2016, Copenhagen.
(24) European Environment Agency (2020), *State of nature in the EU. Results from reporting under the nature directives 2013–2018*, EEA Report No 10/2020.
(25) European Environment Agency (2016), *The direct and indirect impacts of EU policies on land*, EEA Report No 8/2016, Copenhagen. European Environment Agency (2019), *Land degradation knowledge base: policy, concepts and data*, European Topic Centre on Urban, Land and Soil Systems (ETC/ULS) Report No 1/2019, Vienna.
(26) European Commission (2012), *The implementation of the Soil Thematic Strategy and ongoing activities*, COM(2012) 46 final; FAO (2015), *Status of the World's Soil Resources*, Food and Drug Administration, Rome, Food and Agriculture Organization of the United Nations.
(27) European Environment Agency (2018), *Land take in Europe*.
(28) Data stem from the EEA's *'Land take and net land take indicator dashboard'.*
(29) Prokop G, Jobstmann H, Schonbauer A (2011), *Report on best practices for limiting soil sealing and mitigating its effects*, European Commission, Brussels. doi:10.2779/15146.
(30) European Environment Agency (2020), *Imperviousness and imperviousness change*.
(31) Data stem from the EEA's *'Land take and net land take indicator dashboard'.*
(32) European Environment Agency (2017), *Landscapes in transition: An account of 25 years of land cover change in Europe, EEA Report No 10/2017.*
(33) European Commission Directorate General for the Environment, *Soil and Land*.
(34) European Soil Data Centre (ESDAC), *Erosion by water*.
(35) Panagos et al. (2015), *The new assessment of soil loss by water erosion in Europe*, Environmental Science & Policy 54, 438–447.
(36) Borrelli et al. (2020), *Land use and climate change impacts on global soil erosion by water (2015–2070)*, PNAS September 8, 2020 117 (36) 21994–22001.

(37) Panagos et al. (2020), *A soil erosion indicator for supporting agricultural, environmental and climate policies in the European Union*, Remote Sensing 12 (9), p. 1365.
(38) Panagos et al. (2020), *A soil erosion indicator for supporting agricultural, environmental and climate policies in the European Union*, Remote Sensing 12 (9), p. 1365; and Panagos et al. (2016), *Soil conservation in Europe: wish or reality?* Land Degrad. Dev., 27, pp. 1547–1551.
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(41) Ibid.
(42) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.
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(44) Greshko (2018), *Around the World, Farmland Birds Are in Steep Decline*, National Geographic.
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(46) European Environment Agency (2013), *The European Grassland Butterfly Indicator: 1990–2011*, Technical Report No 11/2013, Copenhagen, EEA.
(47) Van Swaay et al. (2020), *Assessing Butterflies in Europe — Butterfly Indicators 1990–2018*, Technical report, Butterfly Conservation Europe & ABLE/eBMS (www.butterfly-monitoring.net).
(48) Eurostat (2019), *Statistics Explained, LUCAS — Land use and land cover survey.*
(49) European Environment Agency (2020), *Imperviousness and imperviousness change*.
(50) Eurostat (2020), Statistics Explained, *Agri-environmental indicator — soil erosion*.
(51) Eurostat (2020), *Metadata Biodiversity* (env_biodiv).
(52) Van Swaay et al.(2020), *Assessing Butterflies in Europe — Butterfly Indicators 1990–2018*, Technical report, Butterfly Conservation Europe & ABLE/eBMS (www.butterfly-monitoring.net).

16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

SDG 16 calls for peaceful and inclusive societies based on respect for human rights, protection of the most vulnerable, the rule of law and good governance at all levels. It also envisions transparent, effective and accountable institutions.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

eurostat supports the SDGs

In 2012, the European Union was awarded the Nobel Peace Prize for advancing the causes of peace, reconciliation, democracy and human rights in Europe. Under the guidance of the Treaty of Rome ([1]), signed in 1957, the EU can look back on 60 years of peace, democracy and solidarity within its territory. Effective justice systems play a crucial role in upholding the rule of law and the EU's fundamental values. At EU level, a number of instruments and mechanisms are used by the Commission to promote and uphold the EU's fundamental values, in particular the rule of law. Nevertheless, crime still remains a threat to European citizens, businesses, state institutions and to society as a whole. In particular, one of the biggest challenges for European societies is corruption, which compromises trust in democratic institutions and weakens the accountability of political leadership. The European Commission has been given a political mandate to monitor the fight against corruption and to develop a comprehensive EU anti-corruption policy.

Table 16.1: Indicators measuring progress towards SDG 16, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more?
Peace and personal security			
Standardised death rate due to homicide	↑	↑	page 292
Population reporting crime, violence or vandalism in their area	↑ (1)	↑	page 294
Access to justice			
General government total expenditure on law courts	↑	↑	page 295
Perceived independence of the justice system: very of fairly good	:	↑	page 296
Trust in institutions			
Corruption Perceptions Index	:	:	page 297
Population with confidence in EU institutions	↘	↑	page 298

(1) Past 10-year period.

Table 16.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 16 'Peace, justice and strong institutions'. This section provides an overview of some of the most recent and relevant initiatives. For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Peace and personal security

In 2020, the European Commission set out a new EU Security Union Strategy (2) for the period from 2020 to 2025. It maps out the main actions, tools and measures to ensure European security, both in the physical and digital worlds, and across all parts of society. The strategy identified three priorities: fighting organised crime and human trafficking, countering terrorism and radicalisation, and fighting cybercrime.

Access to justice

Improving the effectiveness of justice systems in Member States has been identified as a key component for structural reforms in the European Semester. With the help of the EU justice scoreboard, the EU monitors the efficiency, quality and independence of Member States' justice systems.

Trust in institutions

With the adoption of the Stockholm Programme, the Commission has been given a political mandate to measure efforts in the fight against corruption and to develop a comprehensive EU anti-corruption policy.

In EU legislation, the fight against corruption is covered by the 1997 Convention on fighting corruption involving officials of the EU or officials of Member State and the 2003 Framework Decision on combating corruption in the private sector.

Peace, justice and strong institutions in the EU: overview and key trends

Monitoring SDG 16 in an EU context focuses on peace and personal security, access to justice and trust in institutions. Over the past five years, all the indicators for which data are available show strong progress towards SDG 16.

Peace and personal security

Safety is a crucial aspect of a person's life. Insecurity is a common source of fear and worry, and negatively affects quality of life. Physical insecurity includes all the external factors that could potentially put an individual's physical integrity in danger. Crime is one of the most obvious causes of insecurity. Analyses of physical insecurity usually combine two aspects: the subjective perception of insecurity and the objective lack of safety. Available time series on both objective and subjective measures of personal safety show a favourable trend in the EU over the past decade.

The EU has become a safer place to live

0.7 deaths per 100 000 people in the EU in 2017 were caused by homicides

Homicide is one of the most serious crimes. In the EU, deaths due to homicide have fallen steadily since 2002, reaching a rate of 0.7 deaths per 100 000 people in 2017. This corresponds to a reduction of 51.4 % over a 15-year period. The decrease in homicides in the EU has gone hand in hand with improvements in people's perception of crime, violence or vandalism. Since 2010, the share of people reporting the occurrence of such problems in their area has generally fallen in the EU. In 2020, 10.9 % of the population felt affected by these issues, which is 2.2 percentage points less than in 2010.

The perception of being affected by crime, violence or vandalism differs across socio-demographic sub-groups of the EU population and across degrees of urbanisation. While 13.3 % of the population living in households with an equivalised disposable income below the poverty threshold — set at 60 % of the national median equivalised income — felt affected by such problems in 2020, this was only the case for 10.4 % of the population living in households above the poverty threshold. Similarly, in 2020 the perceived occurrence of crime, violence or vandalism in cities (16.4 %) was almost three times higher than in rural areas (5.9 %) and almost twice as high as in towns and suburbs (8.5 %) [3].

10.9 % of the EU population reported crime, violence or vandalism in their area in 2020

The fear of victimisation paradox: when objective and subjective measures of physical insecurity do not match

National figures show that the perceived exposure to crime, violence or vandalism in 2020 was eight times higher in the most affected country (19.1 % of the population in Bulgaria) than in the least affected country (2.4 % in Croatia). However, country differences in this subjective indicator need to be treated with caution. Previous research suggests that crime rates from police registers and the subjective exposure to crime may differ, as population groups with low victimisation rates may be particularly afraid of crime (the so-called 'fear of victimisation paradox') [4]. This is, for instance, the case in France, which has one of the lowest death rates due to homicide across the EU, but one of the highest shares of people who say they feel affected by crime or other problems in their area (see Figures 16.2 and 16.4). In contrast, death rates due to homicide were the highest in the Baltic countries, which had rather low shares of people feeling affected by crime, violence or vandalism in their neighbourhood. It should, however, be acknowledged that this comparison may not capture the full picture, as other forms of crime than homicide also contribute to perceived insecurity.

Men are more likely to die from homicide, while women are more likely to be victims of violence in their homes and sexual assaults

Deaths due to homicide in the EU show a remarkable gender gap. While death rates due to homicide have fallen for both sexes, they remain about twice as high for men (0.9 deaths per 100 000 persons in 2017, compared with 0.5 deaths per 100 000 persons for women). However, while men have a higher overall risk of being killed, women have a significantly higher risk of being killed by their intimate partners or family members. A study by the United Nations Office on Drugs and Crime (UNODC) shows that intimate partner- or family-related homicides accounted for 58 % of women who were killed in 2017 globally, while this was only the case for 7.5 % of male homicides ([5]).

Data from Eurostat's official crime statistics on intentional homicide and sexual offences show that women are much more likely to be a victim of such crimes than men. In 2019, 55 out of 100 000 women were victims of sexual assault, and 28 out of 100 000 women were victims of rape. The rates were significantly lower for men, with 10 per 100 000 men for sexual assault and 3 out of 100 000 men for rape ([6]). Moreover, women are about twice as likely as men to be a victim of intentional homicide by family and relatives or their intimate partner. In 2019, 0.4 out of 100 000 women were victims of such homicide, compared with only 0.2 per 100 000 men ([7]).

The prevalence of violence varies greatly across the EU. However, cross-country comparisons of the crime statistics should be made with caution. Comparability is affected by different legal definitions concerning offenders and victims, different levels of police efficiency and the stigma associated with disclosing cases of violence against women ([8]) (see the chapter on SDG 5 'Gender equality' on page 101 for more information on gender-based violence).

Overall, according to the UNODC report, almost a quarter (24 %) of homicides in Europe in 2017 (compared with 18 % globally) were at the hands of an intimate partner or were family-related ([9]). This is an issue of concern, given that women are at a much higher risk of being killed by their partners or family members (globally, 64 % of victims of intimate partner/family-related homicide were women), and especially when considering the broader concept of violence against women, encompassing all forms of physical, sexual and psychological violence.

Access to justice

Well-functioning justice systems are an important structural condition on which EU Member States base their sustainable growth and social stability policies. Whatever the model of the national justice system or the legal tradition in which it is anchored, quality, independence and efficiency are among the essential parameters of an 'effective justice system'. As there is no single agreed way of measuring the quality of justice systems, the budget actually spent on courts is used here as a proxy for this topic. Moreover, judges need to be able to make decisions without interference or pressure from governments, politicians or economic actors, to ensure that individuals and businesses can fully enjoy their rights. The perceived independence of the justice system is used to monitor this aspect. Data for the EU show a generally favourable trend over the past few years in both areas.

Growth in the EU expenditure on law courts has slowed due to the pandemic

In the EU, general government expenditure on law courts has risen by 44.7 % since 2005, reaching EUR 45.2 billion in 2020. In per capita terms, this corresponds to a 40.4 % increase from EUR 71.8 per inhabitant in 2005 to EUR 100.8 per inhabitant in 2020. However, when viewed as a share of total government expenditure, spending on law courts remained stable at 0.7 % between 2005 and 2019. In 2020, the share decreased to 0.6% of total expenditure, largely due to increases in other government expenditure to mitigate the economic and social impact of the COVID-19 pandemic. In relation to GDP, expenditure on law courts has also been stable since 2005, at 0.3 % of GDP ([10]). The dynamics in government expenditure on law courts therefore do not reflect a stronger focus on the financing of law courts but merely mirror an increase in total government spending.

45
billion euro were spent by governments on law courts across the EU in 2020

More than half of the EU population consider the justice system to be sufficiently independent

In 2021, 54 % of EU inhabitants rated the independence of the courts and judges in their country as 'very good' or 'fairly good', four percentage points higher than in 2016. At the same time, the perception of 'very bad' or 'fairly bad' fell by three percentage points, from 38 % to 35 %. Interference or pressure from government and politicians was the most likely reason for a bad rating of perceived independence of courts and judges ([11]).

54 %
of the EU population rated the independence of courts and judges as very or fairly good in 2021

Age, employment status, education and experience with the justice system seem to have a notable effect on the perception of the independence of the justice system. In 2021, 61 % of 15- to 24-year-old respondents in the EU gave a good rating, compared with 50 % of respondents aged 55 or over. Employees (59 %) were more likely to give a good rating than self-employed people (52 %), manual workers (49 %) or people who were not employed (51 %). The longer people remained in education, the more likely they were to rate the independence of courts and judges as good: 58 % of those who completed education aged 20 or above gave a good rating, compared with 38 % of those who completed education aged 15 or younger. Notably, respondents who had been involved in a dispute that had gone to court were more evenly split between those who rated their system as good (46 %) and bad (49 %) than those who had not been to court (54 % good, 34 % bad) ([12]).

Trust in institutions

Effective justice systems are a prerequisite for the fight against corruption. Corruption inflicts financial damage by lowering investment levels, hampering the fair operation of the internal market and reducing public finances. It also causes social harm as organised crime groups use corruption to commit other serious crimes, such as trafficking in drugs and humans. Corruption can also undermine trust in democratic institutions and weaken the accountability of political leadership.

EU Member States are among the least corrupt countries in the world

As there is no meaningful way to assess absolute levels of corruption in countries or territories on the basis of hard empirical evidence, capturing perceptions of corruption of those in a position to offer assessments of public-sector corruption is currently the most reliable method of comparing relative corruption levels across countries. According to Transparency International's Corruption Perceptions Index (CPI), EU countries continued to rank among the least-corrupt globally in 2021 and made up one-half of the global top 20 least-corrupt countries. Within the EU, northern European countries achieved the best scores, with Denmark, Finland and Sweden leading the ranking. At the other end of the scale, Bulgaria, Hungary and Romania showed the highest levels of perceived corruption across the EU, ranking at positions

10
of the top-20 least corrupt countries in the world in 2021 were in the EU

78, 73 and 66, respectively, on the global list (comprising 180 countries in total) ([13]).

Country rankings in the CPI largely correspond to analogous answers collected in late 2019 through a Eurobarometer survey ([14]), in which Finland, Denmark and Sweden were identified as having the least corruption. Responses to this survey, however, paint a more pessimistic picture of corruption levels across the EU than the CPI. In all but five countries, at least half of respondents considered corruption a widespread national problem. For the EU as a whole, this translates into an average of 72 % of respondents sharing this perception in late 2019.

There also exists a notable relationship between the CPI and the perceived independence of the justice system. Countries with a high CPI ranking, such as Denmark, Finland or Sweden, also show a high share of the population rating the independence of the justice system as 'good' (see Figures 16.8 and 16.9). Conversely, countries with less optimistic ratings of the justice system's independence also tend to have lower CPI scores, for example Bulgaria and Croatia. As both indicators are based on people's perceptions, however, a causal relationship between the effectiveness of the justice system and the occurrence of corruption cannot be inferred based on these data. Effective justice systems are nevertheless considered to be a prerequisite for fighting corruption ([15]).

Following a drop after the onset of the COVID-19 crisis, trust in EU institutions increased in 2021

Confidence in political institutions is key for effective democracies. On the one hand, citizens' confidence increases the probability that they will vote in democratic elections. On the other hand, it provides politicians and political parties with the necessary mandate to take decisions that are accepted in society.

Since 2004, the EU has seen a considerable decline in levels of trust in three of its main institutions, the European Parliament, the European Commission and the European Central Bank. While in 2004 between 50 % and 60 % of the EU population expressed confidence in each of these three institutions, trust levels had fallen to 35–40 % by 2015. Between 2016 and 2019, confidence in the EU institutions had been on the rise, until dropping again in 2020 by 2–6 percentage points, depending on the institution. The 2021 data indicate that the EU institutions have regained some of the trust, with between 47 % and 50 % of the population expressing their confidence in them.

50%
of the EU population expressed trust in the European Parliament in 2021, making it the most trusted of the main EU institutions

The economic crisis may have played a role in the strong decline in trust in EU institutions observed between 2007 and 2013, while the COVID-19 pandemic might have influenced the drop in 2020. Such crises can be seen as a test of the EU's governance mechanisms. However, citizens tend to be much less acquainted with EU institutions compared with their own national or regional governments, making confidence in the EU much more dependent on extrinsic factors, such as contextual information, than on actual governance ([16]).

Throughout the years, the European Parliament has remained the most trusted of the three institutions surveyed. In 2021, 50 % of the EU population expressed confidence in the European Parliament, followed by 47 % for the European Commission and for the European Central Bank. However, the 2020 drop in trust levels has affected the European Parliament the most among the three EU institutions, and in 2021 the confidence in European Parliament remained lower than in 2019. Among the Member States, the Parliament and the European Central Bank were trusted equally, with both being the most trusted institution in 12 countries each.

Presentation of the main indicators

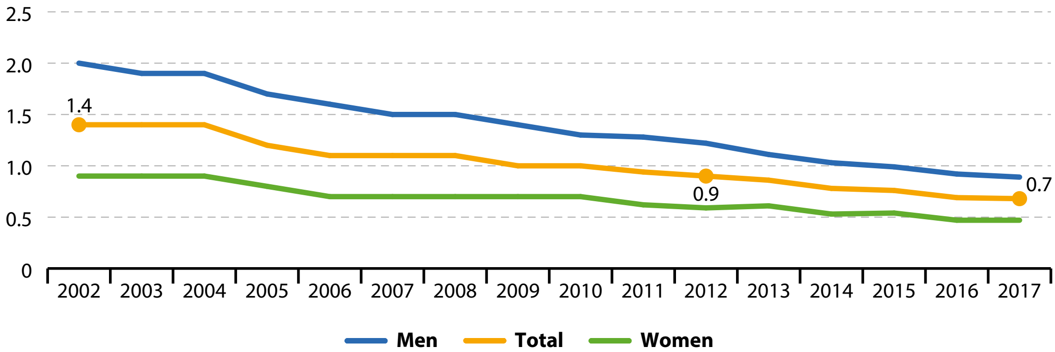
LONG TERM
2002–2017

SHORT TERM
2012–2017

Standardised death rate due to homicide

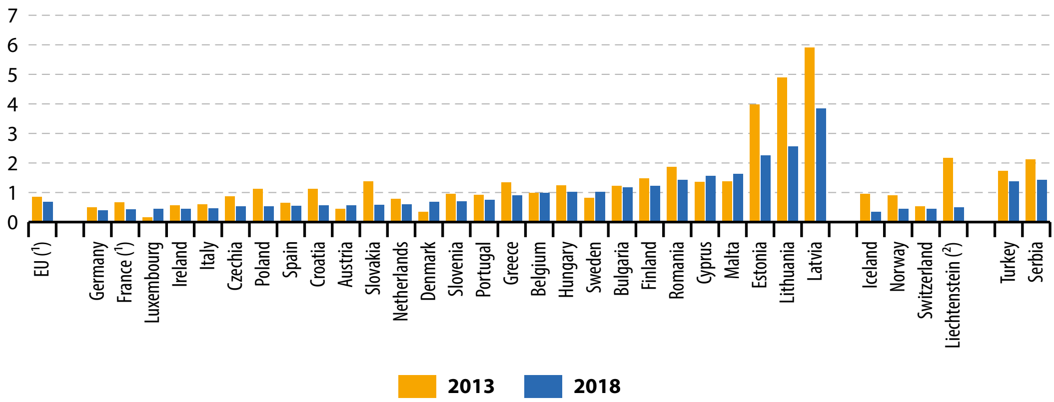
This indicator tracks deaths due to homicide and injuries inflicted by another person with the intent to injure or kill by any means, including 'late effects' from assault (International Classification of Diseases (ICD) codes X85 to Y09 and Y87.1). It does not include deaths due to legal interventions or war (ICD codes Y35 and Y36). The data are presented as standardised death rates, meaning they are adjusted to a standard age distribution in order to measure death rates independently from the population's age structure.

Figure 16.1: Standardised death rate due to homicide, by sex, EU, 2002–2017
(number per 100 000 persons)



Note: Data for 2002–2010 are estimated.
Compound annual growth rate (CAGR) for the total rate: – 5.0 % per year in the period 2002–2017; – 5.5 % per year in the period 2012–2017.
Source: Eurostat (online data code: sdg_16_10)

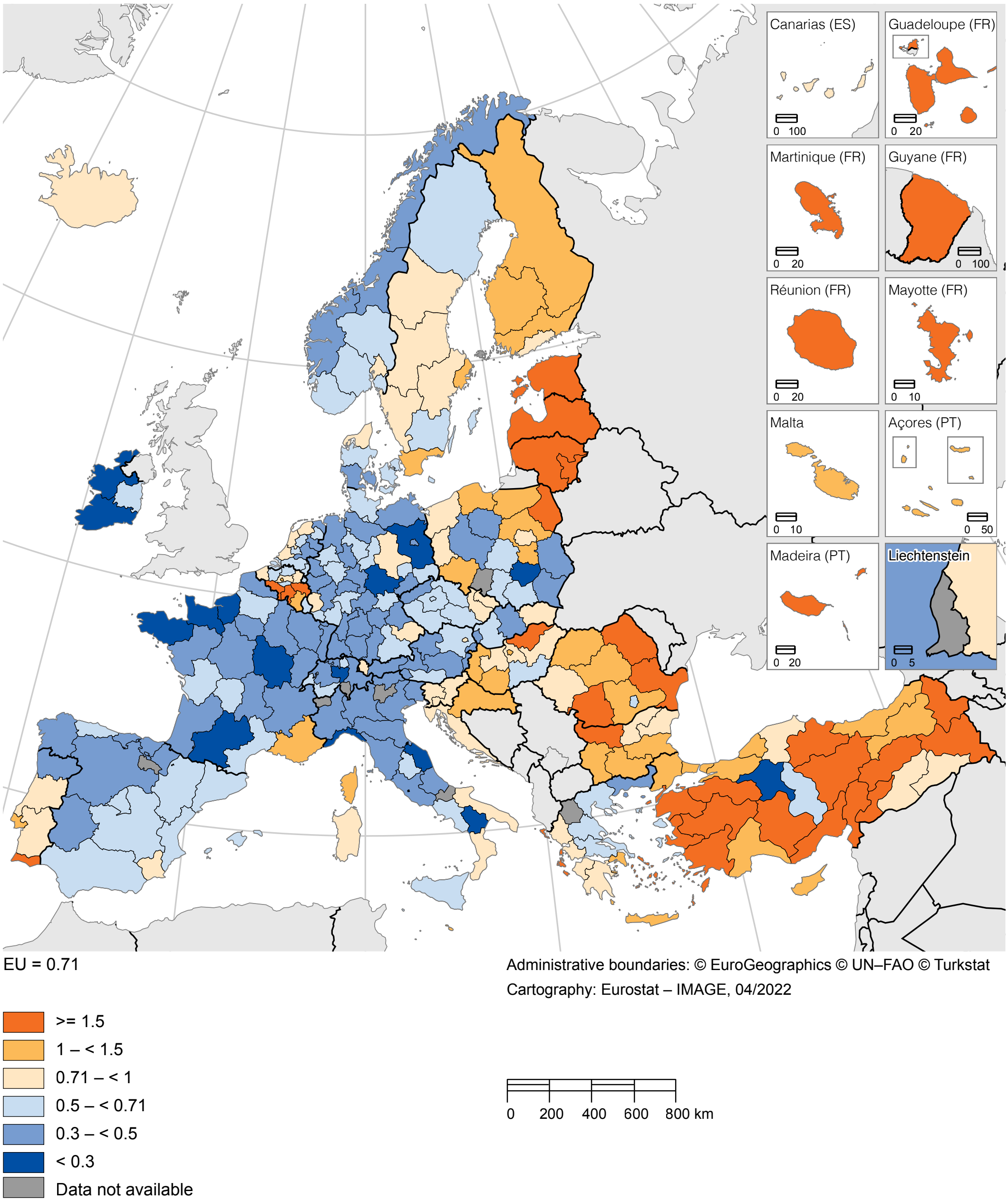
Figure 16.2: Standardised death rate due to homicide, by country, 2013 and 2018
(number per 100 000 persons)



(1) 2017 data (instead of 2018).
(2) 2014 data (instead of 2013).

Source: Eurostat (online data code: sdg_16_10)

Map 16.1: **Standardised death rate due to homicide (3-year average), by NUTS 2 region, 2017**
(number per 100 000 persons)



Note: 2014 data for Limousin (FR) and Zeeland (NL); 2015 data for Sjælland (DK), Notio Aigaio (EL) and Kärnten (AT); 2016 data for Northern and Western (IE), Alsace (FR), Região Autónoma dos Açores (PT) and Vestlandet (NO).

Source: Eurostat (online data code: HLTH_CD_YSDR2)

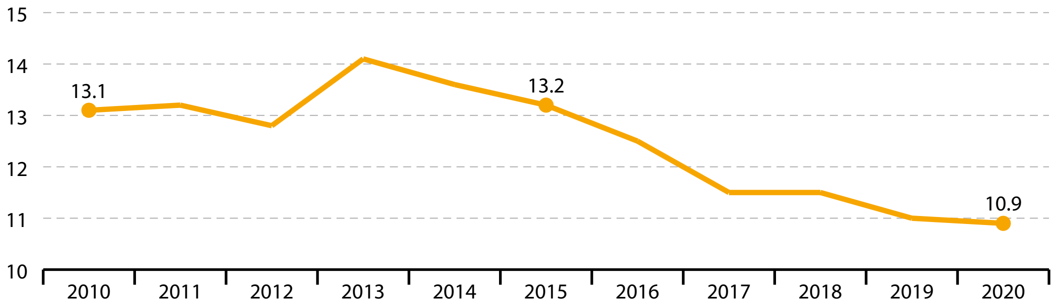
LONG TERM 2010–2020

SHORT TERM 2014–2019

Population reporting crime, violence or vandalism in their area

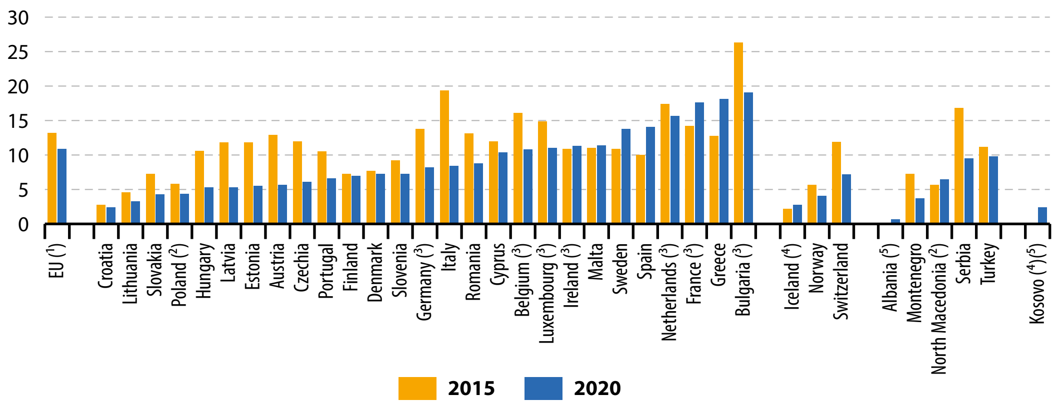
This indicator shows the share of the population who reported facing the problem of crime, violence or vandalism in their local area. This describes the situation where the respondent feels crime, violence or vandalism in the area to be a problem for the household, although this perception is not necessarily based on personal experience. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC).

Figure 16.3: Population reporting occurrence of crime, violence or vandalism in their area, EU, 2010–2020
(% of population)



Note: Estimated data.
Compound annual growth rate (CAGR): – 1.8 % per year in the period 2010–2020; – 3.8 % per year in the period 2010–2020.
Source: Eurostat (online data code: sdg_16_20)

Figure 16.4: Population reporting occurrence of crime, violence or vandalism in their area, by country, 2015 and 2020
(% of population)



(¹) Estimated data.
(²) 2019 data (instead of 2020).
(³) Break(s) in time series between the two years shown.
(⁴) 2018 data (instead of 2020).
(⁵) No data for 2015.
Source: Eurostat (online data code: sdg_16_20)

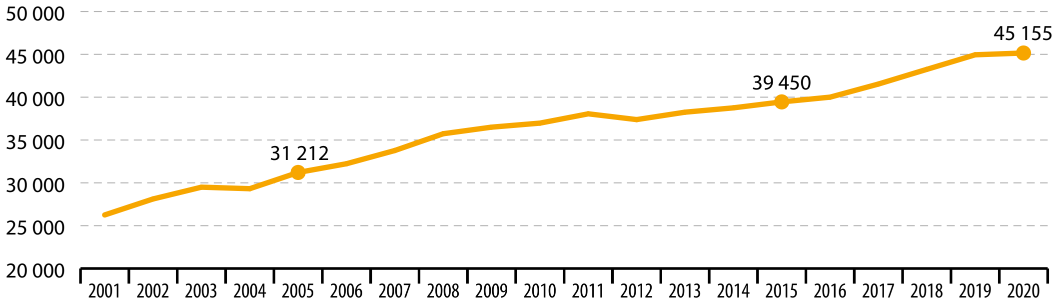
General government total expenditure on law courts

LONG TERM 2005–2020

SHORT TERM 2015–2020

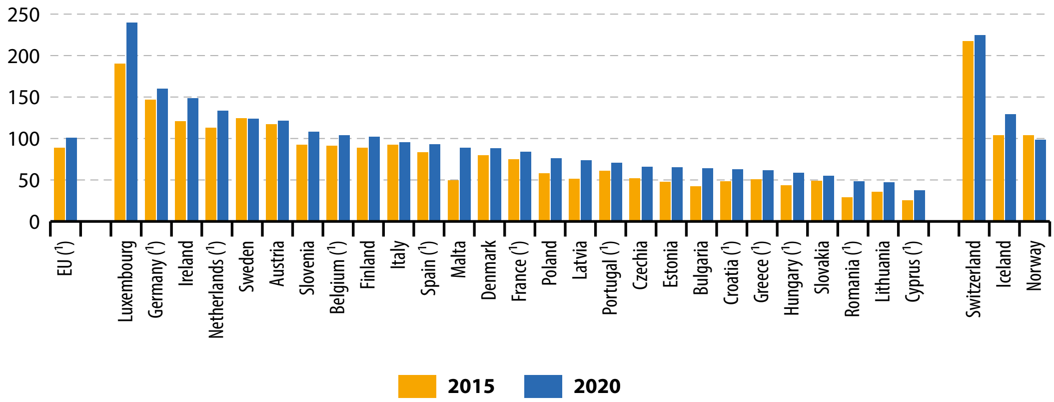
This indicator refers to the general government total expenditure on law courts. It includes expenditure on the administration, operation or support of civil and criminal law courts and the judicial system, including enforcement of fines and legal settlements imposed by the courts. The operation of parole and probation systems, legal representation and advice on behalf of government or on behalf of others provided by government in cash or in services are also taken into account. Law courts include administrative tribunals, ombudsmen and the like, but excludes prison administrations.

Figure 16.5: General government total expenditure on law courts, EU, 2001–2020
(million EUR)



Note: 2020 data are provisional.
Compound annual growth rate (CAGR): 2.5 % per year in the period 2005–2020; 2.7 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_16_30)

Figure 16.6: General government total expenditure on law courts, by country, 2015 and 2020
(EUR per inhabitant)



(¹) 2020 data are provisional and/or estimated.
Source: Eurostat (online data code: sdg_16_30)

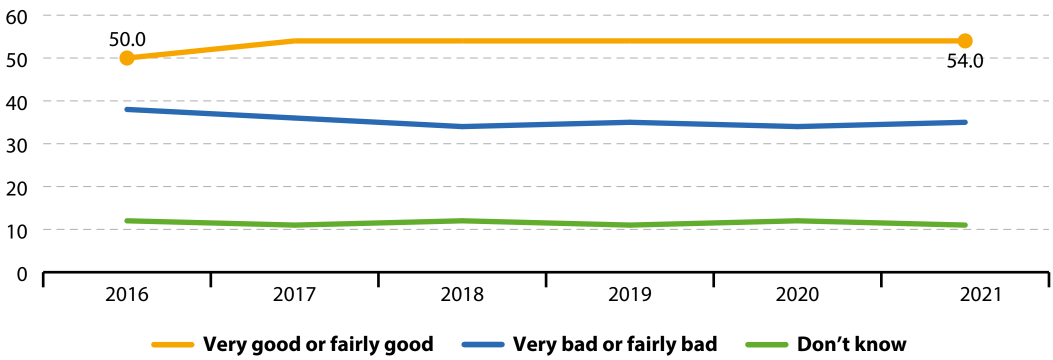
X **LONG TERM** Time series too short

SHORT TERM 2016–2021

Perceived independence of the justice system: very or fairly good

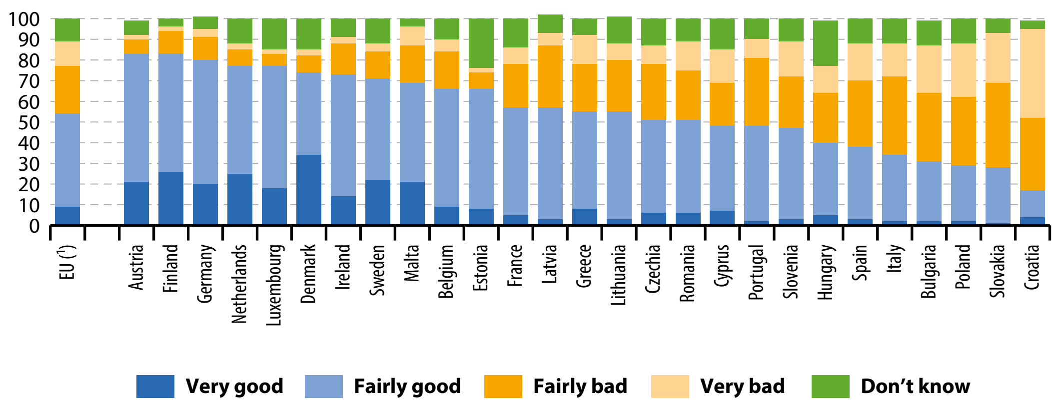
This indicator is designed to explore respondents' perceptions about the independence of the judiciary across EU Member States, looking specifically at the perceived independence of the courts and judges in a country. Data on the perceived independence of the justice system stem from annual Flash Eurobarometer surveys, which started in 2016 on behalf of the European Commission's Directorate-General for Justice and Consumers.

Figure 16.7: Perceived independence of the justice system, EU, 2016–2021
(% of population)



Note: Estimated data.
Compound annual growth rate (CAGR) (share of very good and fairly good): 1.6 % per year in the period 2016–2021.
Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_40)

Figure 16.8: Perceived independence of the justice system, by country, 2021
(% of population)



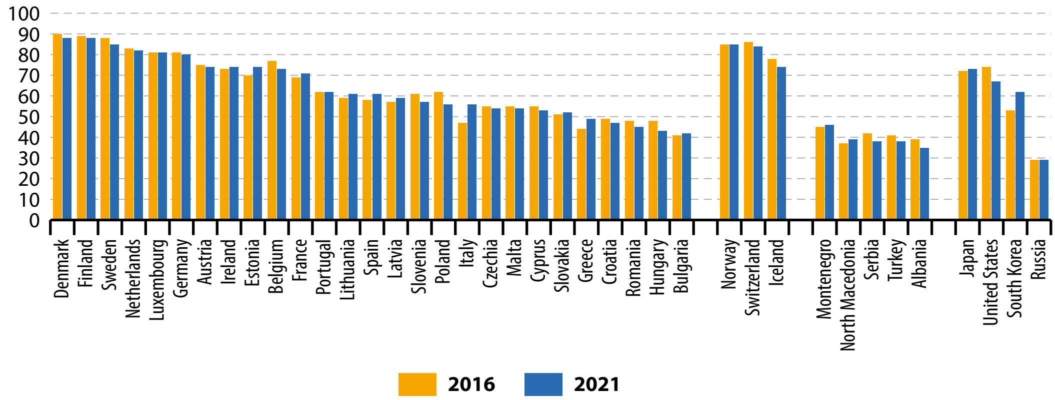
(¹) Estimated data.
Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_40)

Corruption Perceptions Index

Assessment of progress not possible due to lack of EU-level data

This indicator is a composite index based on a combination of surveys and assessments of corruption from 13 different sources and scores. It ranks countries based on how corrupt their public sector is perceived to be, with a score of 0 representing a very high level of corruption and 100 representing a very clean country. The sources of information used for the Corruption Perception Index (CPI) are based on data gathered in the 24 months preceding the publication of the index. The CPI includes only sources that provide a score for a set of countries/territories and that measure perceptions of corruption in the public sector.
For a country/territory to be included in the ranking, it must be included in a minimum of three of the CPI's data sources. The CPI is published by Transparency International.

Figure 16.9: Corruption Perceptions Index, by country, 2016 and 2021
(score scale of 0 (highly corrupt) to 100 (very clean))



Source: Transparency International (Eurostat online data code: sdg_16_50)

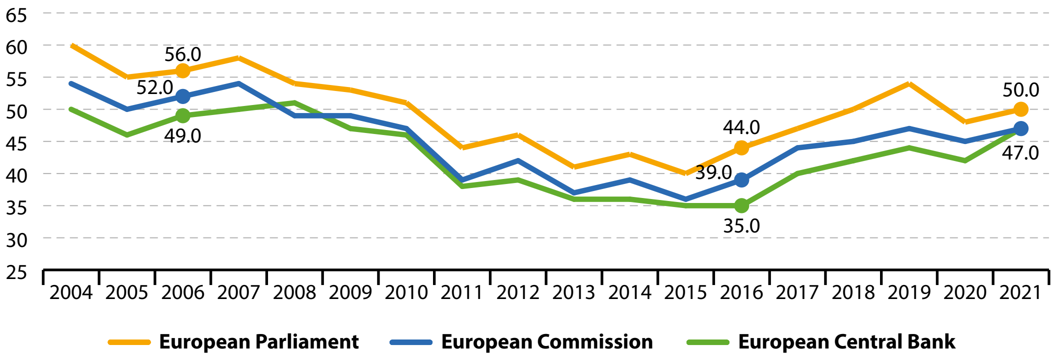
LONG TERM 2006–2021

SHORT TERM 2016–2021

Population with confidence in EU institutions

This indicator measures confidence among EU citizens in three EU institutions: the European Parliament, the European Commission and the European Central Bank. It is expressed as the share of positive opinions (people who declare that they tend to trust) about the institutions. Citizens are asked to express their confidence levels by choosing the following alternatives: 'tend to trust', 'tend not to trust' and 'don't know' or 'no answer'. The indicator is based on the Eurobarometer, a survey which has been conducted twice a year since 1973 to monitor the evolution of public opinion in Member States. The indicator only displays the results of the autumn survey.

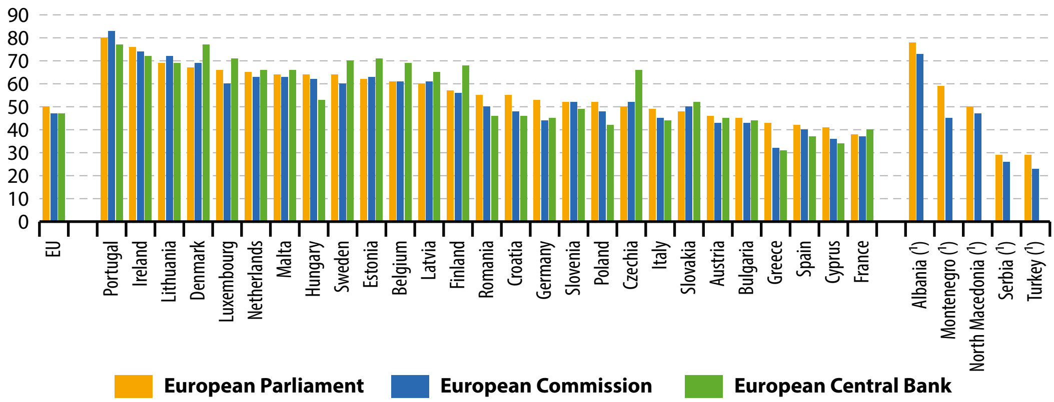
Figure 16.10: Population with confidence in EU institutions, by institution, EU, 2004–2021
(% of population)



Note: 2004–2017 data are estimated.
Compound annual growth rate (CAGR):
European Commission: – 0.7 % per year in the period 2006–2021; 3.8 % per year in the period 2016–2021.
European Central Bank: – 0.3 % per year in the period 2006–2021; 6.1 % per year in the period 2016–2021.
European Parliament: – 0.8 % per year in the period 2006–2021; 2.6 % per year in the 2016–2021.

Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_60)

Figure 16.11: Population with confidence in EU institutions, by institution and country, 2021
(% of population)



(1) 2018 data for European Parliament and Commission; no data for European Central Bank.

Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_60)

Notes

(1) Signed in Rome in 1957 as the Treaty establishing the European Economic Community, it is now known as Treaty on the Functioning of the European Union.
(2) European Commission (2020), *EU Security Union Strategy*, COM(2020) 605 final, Brussels.
(3) Source: Eurostat (online data code: ilc_mdvdw06).
(4) See for example: Rader, N. (2017), *Fear of Crime*, Oxford Research Encyclopedia of Criminology.
(5) UNODC (2019), *Global study on homicide 2019, Executive summary,* Vienna, United Nations Office on Drugs and Crime, p. 14. The percentage of men killed by family members and/or intimate partners is calculated based on data on p. 13–15.
(6) Source: Eurostat (online data code: CRIM_HOM_SOFF).
(7) Source: Eurostat (online data code: CRIM_HOM_VREL).
(8) For more information see Eurostat metadata on Crime and criminal justice (crim) and European Union Agency for Fundamental Rights (2014), *Violence against women: an EU-wide survey, Main results*, Publications Office of the European Union, Luxembourg, pp. 25–26, 32.
(9) UNODC (2018), *Global study on homicide 2018, Gender-related killing of women and girls*, United Nations Office on Drugs and Crime, Vienna, p. 18.
(10) Source: Eurostat (online data code: gov_10a_exp).
(11) European Commission (2021*), Flash Eurobarometer 489, Report on Perceived independence of the national justice systems in the EU among the general public*, p. 18.
(12) Ibid, p. 7.
(13) Transparency International (2022), *Corruption Perceptions Index 2021*.
(14) European Commission (2020), *Special Eurobarometer 502 on Corruption, p. 21*.
(15) Also see European Commission (2016), *European Semester Thematic Factsheet on Effective Justice Systems*.
(16) European Research Centre for Anti-Corruption and State-Building (ERCAS) & Hertie School of Governance (2015), *Public integrity and trust in Europe*, Berlin, p. 19.

17 Strengthen the means of implementation and revitalise the global partnership for sustainable development

SDG 17 calls for a global partnership for sustainable development. The goal highlights the importance of global macroeconomic stability and the need to mobilise financial resources for developing countries from international sources, as well as through strengthened domestic capacities for revenue collection. It also highlights the importance of trade for developing countries and equitable rules for governing international trade. Furthermore, SDG 17 emphasises the importance of access to science, technology and innovation, in particular internet-based information and communications technology.

17 PARTNERSHIPS FOR THE GOALS

eurostat supports the SDGs

The world today is more interconnected than ever before, in part due to digital technology. The SDGs can only be realised with a strong commitment to global partnership and cooperation. Coordinating policies to help developing countries, particularly least-developed countries, is vital to achieving sustainable growth and development. This includes supporting these countries in managing their finances, including debt, as well as promoting investment. The EU has long been committed to global partnership by supporting developing countries through official development assistance. Over the past decade there has been a shift in the balance of roles, from donor–recipient towards cooperation based on a more equal partnership. The EU has been strongly involved in processes such as the Global Partnership for Effective Development Cooperation, which promotes country ownership, inclusive development processes, transparency and results, among other principles. However, to help others, the EU also has to ensure its own financial stability and make efforts to support good financial governance in its Member States. Many of the SDGs can only be reached on the basis of strong technological development, in particular in the digital sphere.

Table 17.1: Indicators measuring progress towards SDG 17, EU

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)	Where to find out more
Global partnership			
Official development assistance	↗	↑	page 309
EU financing to developing countries	↑	↓	page 311
EU imports from developing countries	↑	↑	page 312
Financial governance within the EU			
General government gross debt	↓	↘	page 313
Share of environmental taxes in total tax revenues	↓	↓	page 314
Access to technology			
Share of households with high-speed internet connection	:	↑	page 315

Table 17.2: Explanation of symbols for indicating progress towards SD objectives and targets

Symbol	With quantitative target	Without quantitative target
	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example, time series too short)	

Note: The two methods for calculating progress used in this report are explained in more detail in the introduction and in the annex; for an overview of the considered policy targets see Table II.4 in the annex.

Policy context

The EU has a wide range of policies in place that address or touch on the different aspects of SDG 17 'Partnership for the goals'. This section provides an overview of some of the most recent and relevant initiatives (also see the Commission's website on international partnerships). For an overview of the main overarching EU initiatives on the SDGs, see the introduction chapter on page 19.

Global partnership

The European Consensus on Development (1) outlines the need to dedicate a high proportion of official development assistance to least developed countries (LDCs) and other low-income countries. Hence, 0.15–0.20 % of GNI should be allocated to LDCs in the short term, rising to 0.20 % by 2030.

The EU uses its European Fund for Sustainable Development Plus (EFSD+) to help mobilise private-sector financing and maintain 'duty free and quota free' market access to LDCs as set out in the Addis Ababa Action Agenda (AAAA) (2).

The EU's unilateral preferential trade arrangement, 'Generalised Scheme of Preferences' (3) allows developing countries to pay less or no duties on their exports to the EU. The Everything But Arms arrangement grants duty-free and quota-free access for all LDC products except arms and ammunition. The EU also provides significant amounts of 'aid for trade', with the aim of supporting trade-related infrastructure and building productive capacity.

Global Gateway is a European strategy to mobilise infrastructure investments of up to EUR 300 billion across the world.

In 2021, the EU renewed its Multilateralism Strategy to further the cooperation on global challenges such as peace and security, human rights and the rule of law, sustainable development, public health and climate change (4).

Financial governance within the EU

The Treaty on the Functioning of the European Union (TFEU) requires a Member State's annual government deficit-to-GDP ratio to not exceed 3 %, and that government debt as a ratio of GDP should be limited to 60 %. The TFEU is complemented by Regulation 1176/2011 on the prevention and correction of macroeconomic imbalances (5) as well as Regulation 1174/2011 on enforcement measures to correct excessive macroeconomic imbalances in the euro area (6).

Access to technology

In the 2020 Digital Strategy, the EU committed to developing a Global Digital Cooperation Strategy that will reflect the SDGs (7).

The 2030 Digital Compass (8) presents a vision for Europe's digital transformation and sets the target of all European households to be covered by a gigabit network by 2030.

Partnerships for the goals in the EU: overview and key trends

Monitoring SDG 17 in an EU context focuses on global partnership as well as on financial governance and access to technology within the EU. The EU's progress in the monitored areas has been strongly impacted by the COVID-19 pandemic. In the area of global partnership, the EU's official development assistance (ODA) to gross national income (GNI) ratio reached a new record high in 2020, and imports from developing countries — despite a fall in 2020 — remained higher than five years earlier. Overall financial flows to these countries have, however, decreased in recent years. The picture is clearly unfavourable when it comes to financial governance within the EU: debt-to-gross domestic product (GDP) ratios have risen strongly as a result of measures implemented to fight the COVID-19 pandemic, and a shift in the tax burden from labour to the environment has not taken place. However, trends in access to technology have been clearly favourable for the EU, with considerably more urban and rural households enjoying high-speed internet access.

Global partnership

To achieve the SDGs, partnerships are necessary between governments, the private sector, civil society and other parties. Wealthier economies such as the EU can support the implementation of the 2030 Agenda in developing countries through public and private, domestic and international resources. These resources can be both financial and non-financial ([9]). This chapter focuses on the former. Overall, the global partnership indicators show a mixed picture for the EU over the past few years.

The EU supports country-led development through a range of financial support mechanisms

In 2015, in the Addis Ababa Action Agenda, all countries recognised that international public finance plays an important role in complementing countries' domestic efforts to mobilise public resources, especially in the poorest and most vulnerable countries. Official development assistance (ODA), other official flows (OOFs), private flows, such as foreign direct investment (FDI), grants by non-governmental organisations (NGOs) and officially supported export credits ([10]) are some of the financial flows from the EU and its Member States to developing countries.

101.6
billion EUR were spent by the EU on financing to developing countries in 2020

Regarding the total volume of financial flows from the EU to developing countries, the Organisation for Economic Co-operation and Development (OECD) estimates that total public and private EU financing to developing countries amounted to EUR 101.6 billion in 2020. While this is higher than the financial flows provided by the EU in the early 2000s, it is — in part substantially — lower than the amounts provided between 2014 and 2019. While OOFs and grants by NGOs have remained rather marginal, ODA and private flows combined have accounted for 95 % or more of total estimated EU financing for development since 2014. Overall, ODA has been the most reliable and steady financial flow from the EU to developing countries, while private flows have varied strongly over the years.

Official development assistance: a long struggle to meet targets

The idea that donor countries should contribute 0.7 % of their gross national income (GNI) to ODA has been on the international agenda for half a century ([11]). The EU is committed to reaching the 0.7 % target by 2030, as affirmed in the European Consensus on Development ([12]). Member States that joined the EU after 2002 have committed to provide 0.33 % of their GNI for ODA. As a whole, the EU spent 0.50 % of its GNI on ODA in 2020, exceeding the previous peak of 0.49 % in 2016. The increase in 2020 reflects a global trend, with worldwide ODA reaching an overall high as a result of donor efforts in the context of the COVID-19 pandemic (13).

0.50 %
of the EU's gross national income was spent on ODA in 2020

The ODA provided, both in absolute amounts and as share of GNI, is also linked to the EU's economic situation. In 2020, the total amount of EU ODA was 15 % higher than in 2019 in real terms. At the same time, however, the EU's GNI fell by 4.7 % as a result of the COVID-19 pandemic, reaching a value considerably lower than in the two preceding years (14). Thus, the increase in the EU's ODA/GNI ratio is only partially due to an increase in the overall ODA amount provided by EU institutions and EU Member States.

Only four EU countries — Sweden, Luxembourg, Denmark and Germany — achieved the 0.7 % target in 2020, meaning additional efforts will be needed to meet the collective EU target by 2030.

The EU remains the world's biggest ODA donor

In 2020, the EU maintained its position as the biggest ODA donor globally, providing about EUR 66.8 billion. This figure refers to the combined ODA provided by the 27 EU Member States and EU institutions. Additionally, with 0.50 % in 2020, the EU's overall ODA/GNI ratio was significantly higher than for most other OECD donors such as Canada, Japan or the United States. At the same time, aid from emerging donors is gaining in relevance. For example, Turkey spent 1.14 % of its GNI on ODA in 2020 (15).

The EU seeks to support least developed countries in particular

To direct resources where they are most needed — least developed countries (LDCs) and countries in states of fragility and conflict — the EU has a target to collectively provide 0.15–0.20 % of GNI to LDCs in the short term, reaching 0.20 % within the timeframe of the 2030 Agenda. In 2019, the EU's official development assistance to LDCs accounted for 0.10 % of GNI, following a period of stagnation around this value since 2013. The EU has thus not progressed towards its 0.20 % target over the past few years. In 2019, only three Member States — Luxembourg, Sweden and Denmark — exceeded the targeted GNI ratio of ODA to LDC.

The EU seeks to ensure that developing countries can combine aid, investment and trade with domestic resources and policies to build capacity and become self-reliant. ODA, for example, can be used as a catalyst to mobilise other financial resources such as domestic tax revenues or resources from the private sector. Other innovative instruments have been developed, such as blending grants with loans, guarantees or equity from public and private financiers.

EU financial support, combined with domestic and private revenues, can provide a basis for achieving the 2030 Agenda's goals, allowing for investment in social services, clean energy, infrastructure, transport and information and communications technologies. In the best case, developing countries could leapfrog some of the unsustainable modes of production and consumption that industrialised countries use.

EU imports from developing countries reached a new record high in 2020

Trade's potential contribution to sustainable development has long been acknowledged. This is reflected in the EU's 2021 Trade Policy Review (16), along with the European Green Deal which stresses the contribution that trade policy can make to achieving the EU's ambition on sustainable development (17).

Exports can create domestic jobs and allow developing countries to obtain foreign currency, which they can use to import necessary goods. Better integration of developing countries into world markets may reduce the need for external public flows. Several of the SDGs refer to the importance of trade for sustainable development.

However, it needs to be noted that the EU's trade-related indicators do not provide insights on whether the products in question are produced in an environmentally and socially sustainable manner.

Between 2006 and 2021, EU imports from developing countries almost doubled from EUR 558 billion to EUR 1 082 billion. Over this period, EU imports from developing countries grew by 4.5 % per year on average. In the short term, since 2016, imports grew even more strongly, by 7.6 % a year. After an interruption of trade flows by the COVID-19 pandemic in 2020, when the value of EU imports from developing countries shrank to EUR 852 billion, the 2021 value represents a new record high.

1 082
billion EUR was the value of EU imports from developing countries in 2021

Imports from developing countries to the EU as a share of imports from all countries outside the EU increased from 41.5 % in 2006 to 51.1 % in 2021. China (excluding Hong Kong) alone accounted for 22.3 % of EU imports in 2021, which is twice the share of imports from the United States, which accounted for 11.0 %. Conversely, the almost 50 countries classified as least developed by the UN accounted for less than 2 % of all imports to the EU in 2021 overall ([18]).

'Aid for trade' is a part of ODA that is targeted at trade-related projects and programmes. It aims to build trade capacity and infrastructure in developing countries, particularly least developed countries. The EU and its Member States were the leading global providers of aid for trade in 2019, providing EUR 17.9 billion, or 38 % of global aid for trade. Just three donors — the EU institutions as well as Germany and France — provided 86 % of this overall sum. The share of aid for trade to LDCs was 15 % of overall aid for trade in 2019 ([19]).

Financial governance within the EU

To help others to advance their economies, it is vital to keep the EU's own economies on a sustainable development path. Macroeconomic stability in the EU is therefore one pillar of the Union's contribution to implementing the SDGs. In addition, the EU seeks to make its economy greener. In a global context, where consumption patterns in one region can severely impact production patterns elsewhere, it is particularly important that prices reflect the real costs of consumption and production. They should include payments for negative externalities caused by polluting activities or other activities that damage human health and the environment. Moreover, the EU has pointed out that environmental taxes may offer opportunities to reduced taxes in other areas, for example on labour.

Steady progress in reducing government debt as a share of GDP was halted by the COVID-19 pandemic

According to the Treaty on the Functioning of the European Union, government debt should not exceed 60 % of GDP in EU Member States. As a consequence of the COVID-19 crisis and related public spending, the EU's overall debt-to-GDP ratio rose sharply in 2020, reaching 90.0 %, which is a 12.5 percentage point increase compared with 2019. While in 2021 the EU's debt-to-GDP ratio fell by 1.9 percentage points, reaching 88.1 %, it remained above the previous peak of 86.8 % recorded in 2014.

In 2021, general government gross debt in the EU as a share of GDP was
88.1 %

In 2021, Member States' debt-to-GDP ratios ranged from 18.1 % in Estonia to 193.3 % in Greece. Fourteen EU countries exceeded the 60 % threshold in 2021 and seven Member States had debt-to-GDP ratios above 100 %.

'Greening' the taxation system remains a challenge

Environmental taxes help to provide the right price signals and incentives to producers, users and consumers to encourage less polluting consumption and to contribute to sustainable growth. They may also provide opportunities to reduce taxes in other areas, for example on labour, and if revenue for adequate social protection is protected, they can offer a win-win option for addressing both environmental and employment issues ([20]). In the long term, however, the focus of environmental taxes must be changed as the effective decarbonisation of the European economy will erode this tax-base. Environmental taxes could instead support the transition to a climate-neutral economy ([21]).

In 2020, environmental taxes accounted for only 5.6 % of total tax revenues in the EU, while labour taxes accounted for 51.7 % in 2019 ([22]). Since 2014, shares of labour and environmental taxes have fallen slightly, meaning a shift from labour to environmental taxes is not visible in the EU. Across Member States, the share of environmental taxes in total tax revenues ranged from 3.6 % to 9.9 % in 2020. Compared with 2015, their share has further decreased in most of the EU countries. Only Belgium and France reported a 0.1 percentage point increase each over the same period.

In 2020, the share of environmental taxes in total tax revenues in the EU was

5.6 %

The ratio of labour to environmental taxes shows how much higher a country's share of labour tax revenues is than its share of environmental taxes. In 2019, this ratio ranged from 3.6 to 13.1 across Member States. The ratio has also increased in the majority of EU countries since 2014, indicating a relative shift in taxation from environment to labour.

EU Member States spend 2 % of their GDP on average to protect the natural environment

The decline in the prioritisation of environmental taxation is partly reflected in national environmental expenditures. National expenditure on environmental protection measures the amount of resources a country uses to protect the natural environment. It includes current expenditure on environmental protection activities, investments in these activities and net transfers to other parts of the world.

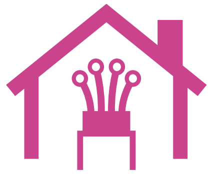
At EU level, environmental protection expenditure has stagnated at about 2.0 % of GDP over the past decade, amounting to EUR 273 billion in 2020. Across EU Member States, in 2018 expenditure ranged from 3.2 % of GDP in Belgium to 0.6 % in Ireland. However, the shares of national expenditures on environmental protection decreased or remained stable in 18 out of the 27 Member States from 2014 to 2018. Only Poland, Luxembourg, Austria, Italy and Sweden reported an increase over the same period of 0.2 percentage points on average ([23]).

Access to technology

In today's economies and societies, digital connections are crucial. Instant communication between individuals, bank transfers, office work, public dissemination of information and data analysis are only some of the activities that depend on the internet. Regions without fast internet connections have serious social and economic disadvantages in a digitalised world. As a result, making Europe fit for the digital age is one of the six Commission priorities for 2019–2024. The aim is to make the digital transformation work for people and businesses while helping to achieve the target of a climate-neutral Europe by 2050.

Considerable progress has been made in rolling out high-speed internet coverage across the EU

Data collected by the European Commission services for the key dimensions of the European information society (24) shows that in the EU the uptake of high-speed internet coverage — referring to fibre connections or other networks offering similar bandwidth — has improved considerably over the past few years. While only 25.2 % of EU households enjoyed such connectivity in 2016, this share has risen considerably, reaching 70.2 % in 2021. If high-speed internet roll-out continues at this pace, the EU will reach 100 % coverage well ahead of 2030. Connectivity has also improved in rural areas (25). Between 2016 and 2021, the share of rural households with fixed high-speed internet connection increased from 7.7 % to 37.1 % across the EU.



59.3 %

of EU households had a fixed very high capacity network connection in 2020

At Member State level, Malta had already achieved a 100 % fixed high-speed internet connectivity for all households in 2021, followed by Luxembourg, Denmark and Spain with around 95 % of households each. In contrast, fixed high-speed internet connections were the least widespread in Greece, with only 19.8 % of households enjoying such connectivity. All remaining Member States had connection rates to high-speed internet above 40 % in 2021.

Presentation of the main indicators

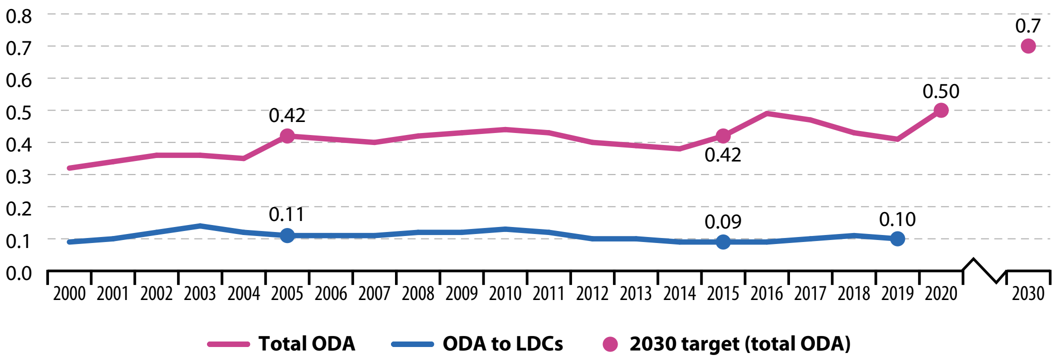
Official development assistance

LONG TERM 2005–2020

SHORT TERM 2015–2020

Official development assistance (ODA) is provided by governments and their executive agencies to support economic development and welfare in developing countries. ODA must be concessional in character, having a grant element that varies in proportion depending on the recipient. Eligible countries are included in the Organisation for Economic Development and Cooperation's (OECD) Development Assistance Committee (DAC) official list of ODA recipients. ODA disbursements and their purpose are reported by donors to the OECD. Data stem from the OECD DAC. A new methodology to calculate the ODA value of concessional loans is applied from 2018 data onwards and affects the comparability of data with previous years ([26]).

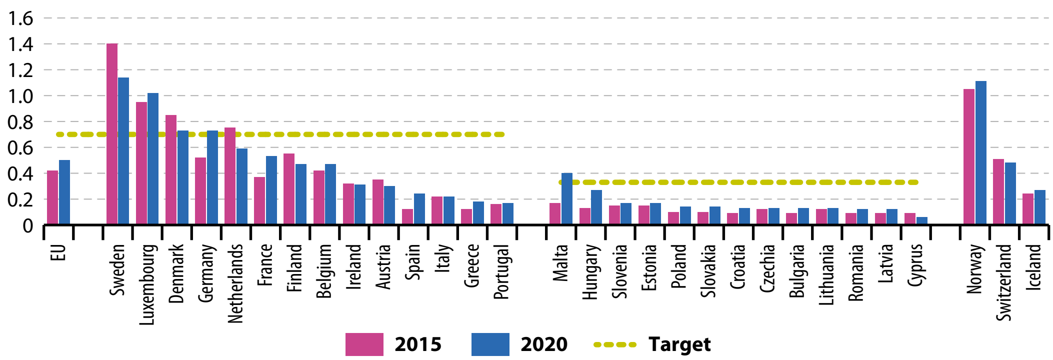
Figure 17.1: **Official development assistance as share of gross national income, EU, 2000–2020**
(% of GNI)



Note: Break in time series for total ODA in 2018. Data for total ODA include the 27 Member States' ODA and EU institutions' ODA not imputed to Member States.
Compound annual growth rate (CAGR) for total ODA: 1.2 % per year (observed) and 2.1 % per year (required to meet target) in the period 2005–2020; 3.5 % per year (observed) and 3.5 % per year (required to meet target) in the period 2015–2020.

Source: OECD (Eurostat online data code: sdg_17_10)

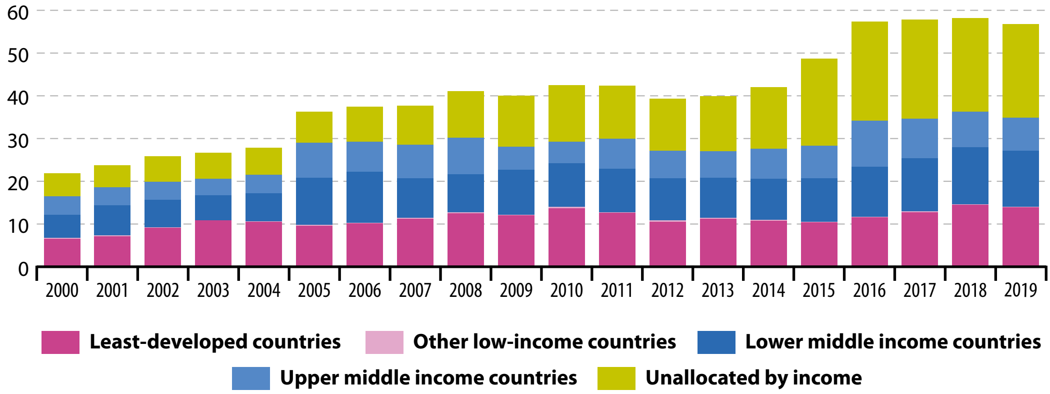
Figure 17.2: **Official development assistance as share of gross national income, by country, 2015 and 2020**
(% of GNI)



Note: Break in time series in 2018 (all countries). Data for 'EU' include the 27 Member States' ODA and EU institutions' ODA not imputed to Member States.

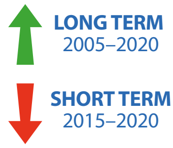
Source: OECD (Eurostat online data code: sdg_17_10)

Figure 17.3: **Official development assistance, by recipient income group, EU, 2000–2019**
(EUR billion, current prices)



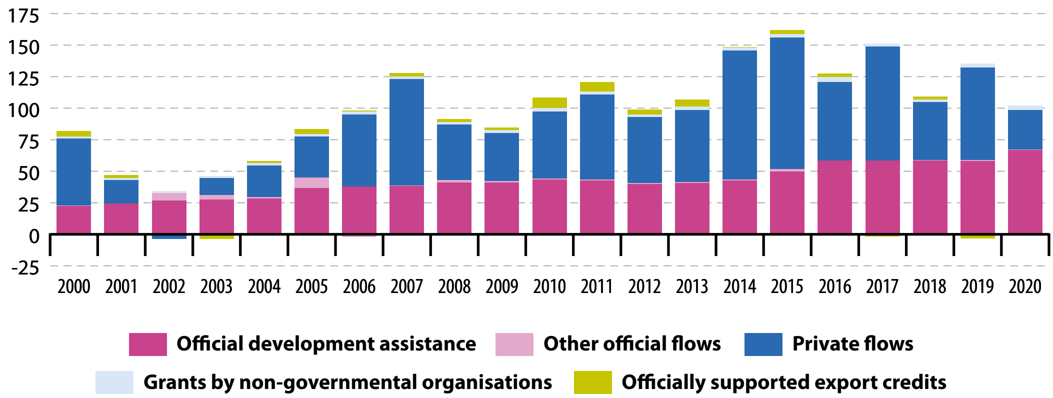
Note: Data include the 27 Member States' bilateral net ODA and imputed multilateral ODA.
Source: OECD

EU financing to developing countries



EU financing to developing countries takes a number of forms. These, as documented by the OECD, include: official development assistance (ODA) (public grants or concessional loans with the aim of supporting economic development and welfare); other official flows (OOFs) (public flows that are not focused on development or with a grant element of less than 25 %); private flows (direct investment, bonds, export credits and multilateral flows); grants by non-governmental organisations (from funds raised for development assistance and disaster relief); and officially supported export credits. Data stem from the OECD (DAC).

Figure 17.4: EU financing to developing countries, by financing source, EU, 2000–2020
(EUR billion, current prices)



Compound annual growth rate (CAGR) for total financing: 1.3 % per year in the period 2005–2020; – 8.9 % per year in the period 2015–2020.
Source: OECD (Eurostat online data code: sdg_17_20)

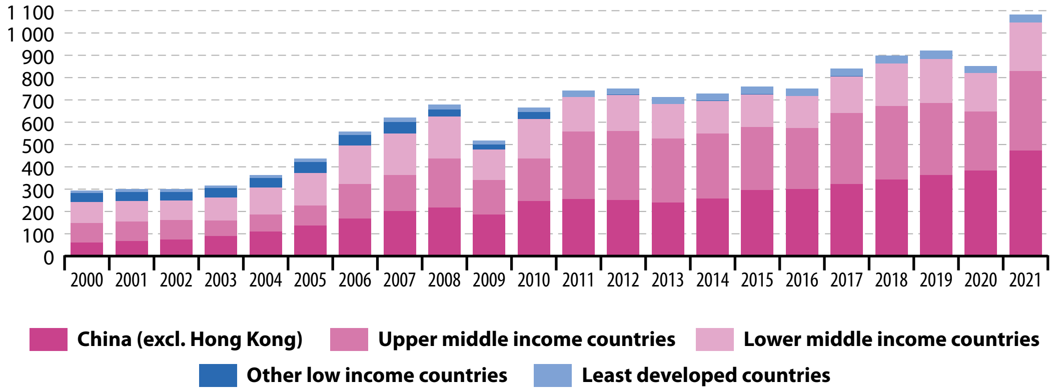
LONG TERM
2006–2021

SHORT TERM
2016–2021

EU imports from developing countries

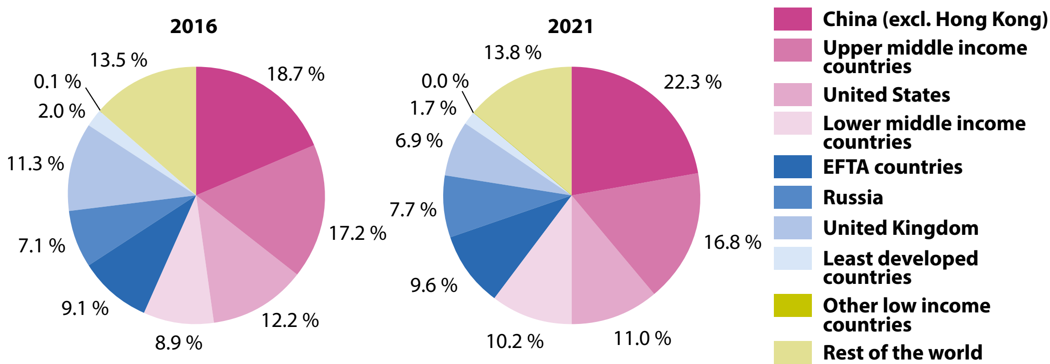
This indicator is defined as the value (at current prices) of EU imports from the countries on the DAC list of ODA beneficiaries. It indicates to what extent products from these countries access the EU market. Information for this indicator is provided by enterprises with a trade volume above a set threshold and is collected on the basis of customs declarations. This information is then adjusted by Member States to account for the impact of trade under this threshold.

Figure 17.5: EU imports from developing countries, by country income group, EU, 2000–2021
(EUR billion, current prices)



Compound annual growth rate (CAGR) for total imports: 4.5 % per year in the period 2006–2021; 7.6 % per year in the period 2016–2021.
Source: Eurostat (online data code: sdg_17_30)

Figure 17.6: Extra-EU imports, by trading partner, EU, 2016 and 2021
(%)



Source: Eurostat (online data codes: sdg_17_30 and ext_lt_maineu)

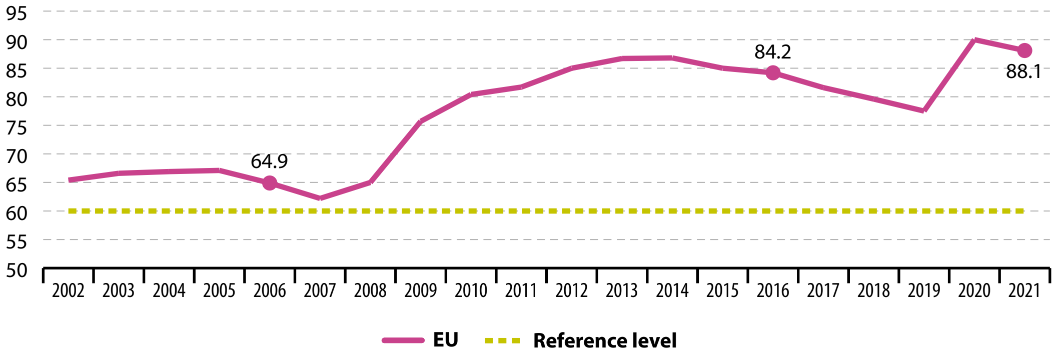
General government gross debt

The Treaty on the Functioning of the European Union defines this indicator as the ratio of government debt at the end of the year to gross domestic product at current market prices. For this calculation, government debt is defined as the total consolidated gross debt at nominal (face) value in the following categories of government liabilities, as defined in ESA 2010 ([27]): currency and deposits, debt securities and loans. Central government, state government, local government and social security funds are included.

LONG TERM
2006–2021

SHORT TERM
2016–2021

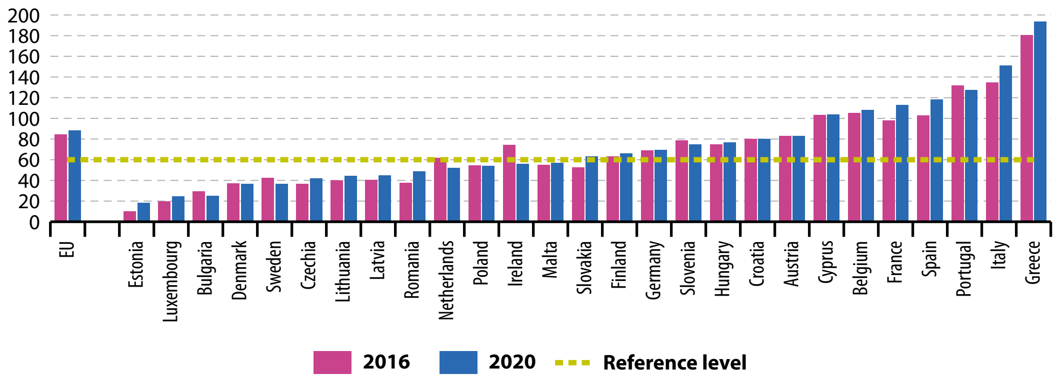
Figure 17.7: General government gross debt, EU, 2000–2021
(% of GDP)



Compound annual growth rate (CAGR): 2.1 % per year in the period 2006–2021; 0.9 % per year in the period 2016–2021.

Source: Eurostat (online data code: sdg_17_40)

Figure 17.8: General government gross debt, by country, 2016 and 2021
(% of GDP)



Source: Eurostat (online data code: sdg_17_40)

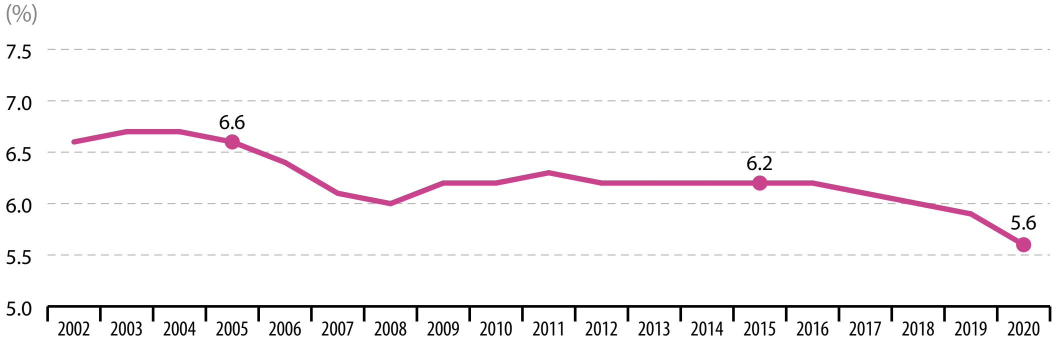
LONG TERM
2005–2020

SHORT TERM
2015–2020

Share of environmental taxes in total tax revenues

Environmental taxes are defined as taxes that are based on a physical unit (or proxy of it) of something that has a proven, specific negative impact on the environment. There are four types of environmental taxes: energy taxes, transport taxes, pollution taxes and resource taxes.

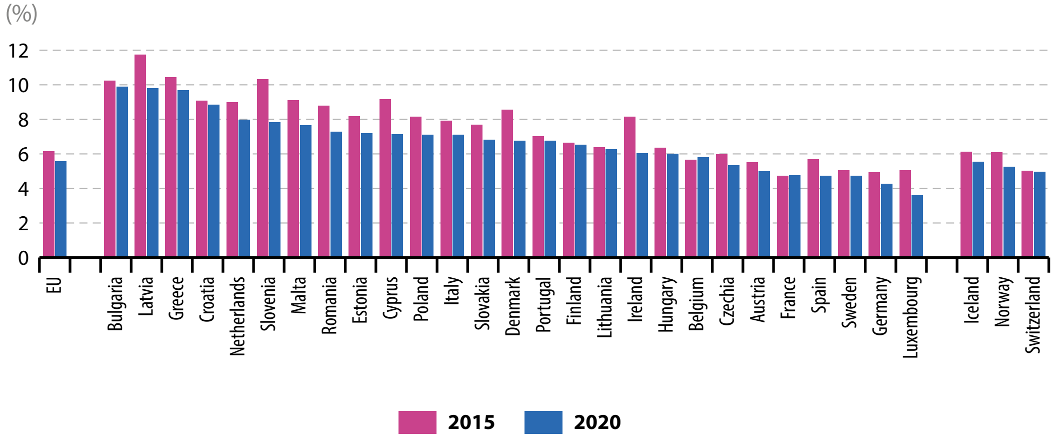
Figure 17.9: Share of environmental taxes in total tax revenues, EU, 2002–2020



Compound annual growth rate (CAGR): – 1.1 % per year in the period 2005–2020; – 2.0 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_17_50)

Figure 17.10: Share of environmental taxes in total tax revenues, by country, 2015 and 2020



Source: Eurostat (online data code: sdg_17_50)

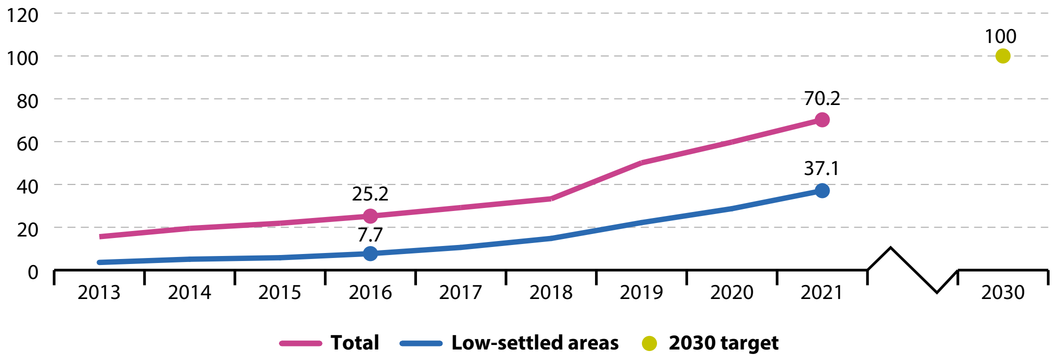
Share of households with high-speed internet connection

LONG TERM
Time series too short

SHORT TERM
2016–2021

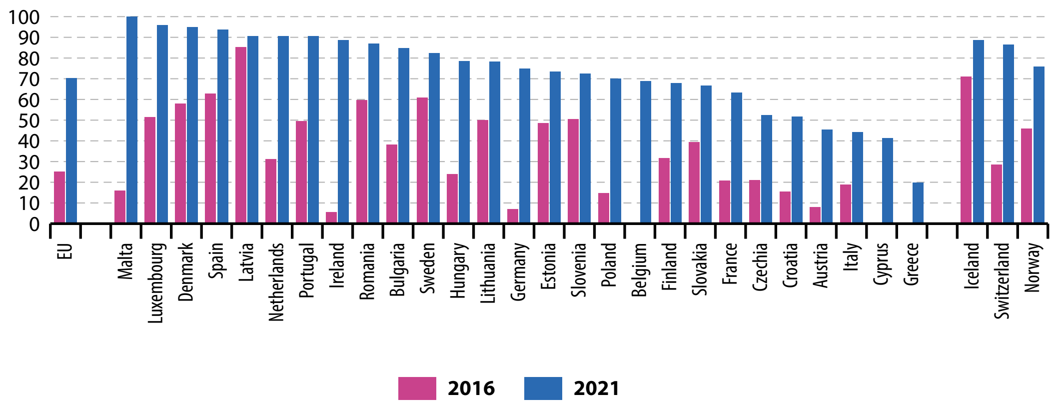
The indicator measures the share of households with fixed very high capacity network (VHCN) connection. Very high capacity network means either an electronic communications network that consists entirely of optical fibre elements at least up to the distribution point at the serving location, or an electronic communications network capable of delivering, under usual peak-time conditions, similar network performance in terms of available downlink and uplink bandwidth, resilience, error-related parameters, and latency and its variation. The data are collected for the Broadband Coverage in Europe studies published by the European Commission. Data until 2018 refer to fibre to the premises (FTTP) only, while data from 2019 onwards refer to both FTTP and Data Over Cable Service Interface Specification (DOCSIS) 3.1. DOCSIS allows adding high-bandwidth data transfer to existing cable television systems.

Figure 17.11: High-speed internet coverage, by type of area, EU, 2013–2021
(% of households)



Compound annual growth rate (CAGR): 22.7 % per year (observed) and 10.3 % per year (required to meet target) in the period 2016–2021.
Source: European Commission services, Eurostat (online data code: sdg_17_60)

Figure 17.12: High-speed internet coverage, by country, 2016 and 2021
(% of households)



Source: European Commission services, Eurostat (online data code: sdg_17_60)

Notes

(1) European Union (2017), *The new European Consensus on Development 'Our World, Our Dignity, Our Future'*, Joint statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission, 2017/C 210/01, Official Journal of the European Union, Volume 60.
(2) United Nations (2015), *Addis Ababa Action Agenda of the Third International Conference on Financing for Development, Outcome Document*, endorsed by the General Assembly in its resolution 69/313 of 27 July 2015, § 85, p. 40.
(3) *Regulation (EU) No 978/2012 applying a scheme of generalised tariff preferences and repealing Council Regulation (EC) No 732/2008.*
(4) European Commission (2021), *A renewed multilateralism fit for the 21st century: the EU's agenda*, 17 February 2021.
(5) *Regulation (EU) No 1176/2011 of the European Parliament and of the Council of 16 November 2011 on the prevention and correction of macroeconomic imbalances*.
(6) *Regulation (EU) No 1174/2011 on enforcement measures to correct excessive macroeconomic imbalances in the euro area*.
(7) European Commission (2020), *Shaping Europe's digital future*, 19 February 2020.
(8) European Commission (2021), *2030 Digital Compass: the European way for the Digital Decade*, COM(2021) 118 final.
(9) Non-financial resources include domestic policy frameworks, effective institutions and support for good governance, democracy, rule of law, human rights, transparency and accountability; see also the Addis Ababa Action Agenda (AAAA).
(10) The OECD defines export credits as loans for the purpose of trade and which are not represented by a negotiable instrument. They may be extended by the official or the private sector. If extended by the private sector, they may be supported by official guarantees; see http://www.oecd.org/dac/dac-glossary.htm#Export_Credits.
(11) In 1970 the UN General Assembly ratified a Resolution which officially introduced the goal that, 'Each economically advanced country will progressively increase its official development assistance to the developing countries and will exert its best efforts to reach a minimum net amount of 0.7 % of its gross national product at market prices by the middle of the Decade'; UN (1970), *International Development Strategy for the Second United Nations Development Decade*, UN General Assembly Resolution 2626 (XXV), 24 October 1970, paragraph 43; For background, see also OECD (2003*), Papers on Official Development Assistance (ODA)*, OECD Journal on Development, Vol. 3/4.
(12) European Union (2017), *The new European Consensus on Development 'Our World, Our Dignity, Our Future'*, Joint statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission, 2017/C 210/01, Official Journal of the European Union, Volume 60.
(13) OECD (2021), *COVID-19 spending helped to lift foreign aid to an all-time high in 2020*.
(14) Calculations based on OECD.Stat (2022), *Total flows by donor (ODA+OOF+Private) [DAC1]*.
(15) OECD.Stat (2022), *Total flows by donor (ODA+OOF+Private) [DAC1]*, 17 March 2022.
(16) European Commission (2021), *Trade Policy Review — An Open, Sustainable and Assertive Trade Policy,* COM (2021) 66 final.
(17) European Commission (2019), *The European Green Deal*, COM/2019/640 final, p. 21.
(18) Source: Eurostat (online data code: ext_lt_maineu).
(19) European Commission (2021), *EU Aid for Trade Progress Report 2021: Review of progress on the implementation of the updated EU Aid for Trade Strategy of 2017.*
(20) European Commission (2020), *An Action Plan for Fair and Simple Taxation Supporting the Recovery Strategy*, Communication from the Commission to the European Parliament and the Council, COM(2020) 312 final.
(21) European Environment Agency (2022), *The role of (environmental) taxation in supporting sustainability transitions*, Briefing.
(22) Taxes on labour are generally defined as all personal income taxes, payroll taxes and social contributions of employees and employers that are levied on labour income (both employed and non-employed). Data on labour taxes stem from the DG Taxation and Customs Union ('Data on Taxation' webpage).
(23) Source: Eurostat (online data code: ten00135).
(24) See European Commission, Key Indicators.
(25) In the context of the EU's digital agenda scoreboard indicators, rural areas are defined as those with less than 100 people per square kilometre.

(26) The new OECD-DAC methodology to calculate the ODA value of concessional loans was applied for the first time to 2018 ODA data on official loans and loans to multilateral institutions and since 2020 data also to data on debt relief. A grant equivalent measure for the use of private sector instruments has not yet been agreed (and the cash flow method is still used). In the past ('flow basis method'), the actual flows of cash between a donor and a recipient country were recorded and a loan was recorded at 'face value' as ODA but subsequent repayments by countries were then subtracted as negative ODA. The new method ('grant equivalent method') reports the grant equivalent of loans calculated on the basis of the donor effort; correspondingly, reflows are no longer counted. Since 2018 data, ODA and ODA/GNI figures to measure progress regarding the target of providing 0.7% of GNI as ODA are reported on a grant equivalent basis. For previous years, ODA and ODA/GNI figures, are reported on a flow basis. Data for bilateral ODA to least developed countries (LDCs) and other countries are also available on a grant equivalent basis, but progress regarding the target of providing 0.15–0.20% of GNI as ODA to LDCs is still measured on a flow basis, as this is calculated based on the sum of bilateral ODA to LDCs and imputed multilateral ODA to LDCs, and the latter is only available on a flow basis. Grant equivalent figures are not comparable with data calculated on a flow basis.

(27) The European System of National and Regional Accounts (ESA 2010) is the newest internationally compatible EU accounting framework for a systematic and detailed description of an economy. The ESA 2010 was published in the Official Journal on 26 June 2013. It was implemented in September 2014; from that date onwards the data transmission from Member States to Eurostat is following ESA 2010 rules. For more information on the ESA 2010 see https://ec.europa.eu/eurostat/web/esa-2010.

18 Overview of status and progress of EU Member States towards the SDGs

This chapter presents a statistical overview of the status and progress of EU Member States towards the 17 SDGs, based on the EU SDG indicator set. The status of each SDG in a Member State is an aggregation of all the indicators of a specific goal relative to the other Member States and the EU average. The progress score of the Member State is based on the average annual growth rates of all assessed indicators in the SDG over the past five years. The same approach towards aggregating individual indicator trends into a synthesised index per SDG is used in the synopsis chapter for the EU.

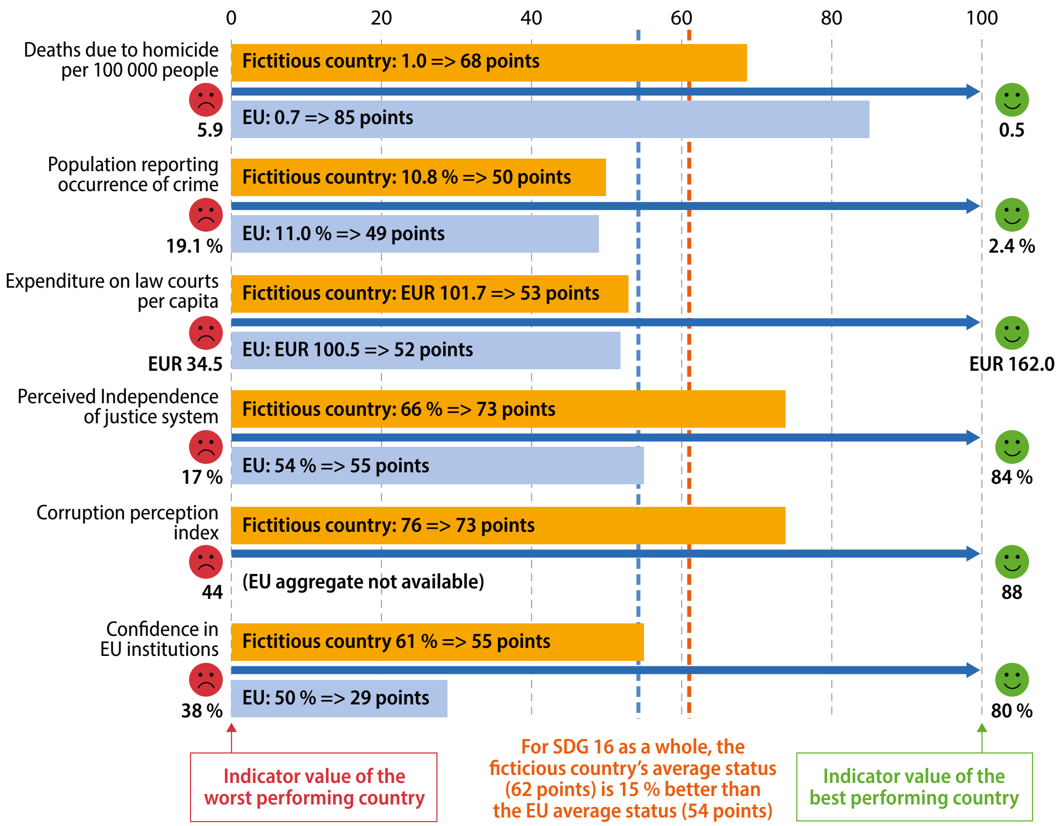
Such a synthesised presentation allows for a quick and easy overview and facilitates communication. However, applied to individual Member States, it entails the risk of simplification and might obscure details about underlying phenomena. Moreover, it has to be kept in mind that a country's status depends to a certain extent on its natural conditions and historical developments. Therefore, users are invited to read the more detailed information at indicator level in the chapters 1 to 17 on each SDG. Detailed data for the EU SDG indicators on a country level are also available on the Eurostat website ([1]).

How is the status and progress assessed?

The status of a specific SDG is an aggregate score encompassing all of that goal's indicators ([2]), based on the most recent data (mainly referring to 2020 and 2021). For each indicator, a country's status score is calculated relative to the range of values from the worst to the best performing country, whereby outliers are excluded ([3]). The status score calculation is based on a min-max-normalisation as described in Annex II. For each country, the status scores at indicator level are aggregated at SDG level using the arithmetic mean, and this goal-level score is then put in relation to the EU aggregate status score of the same goal, to show how much (in %) a country's SDG status is above or below the EU average. Figure 18.1 presents an example of the calculation of the status score for SDG 16 relative to the EU for a fictitious country.

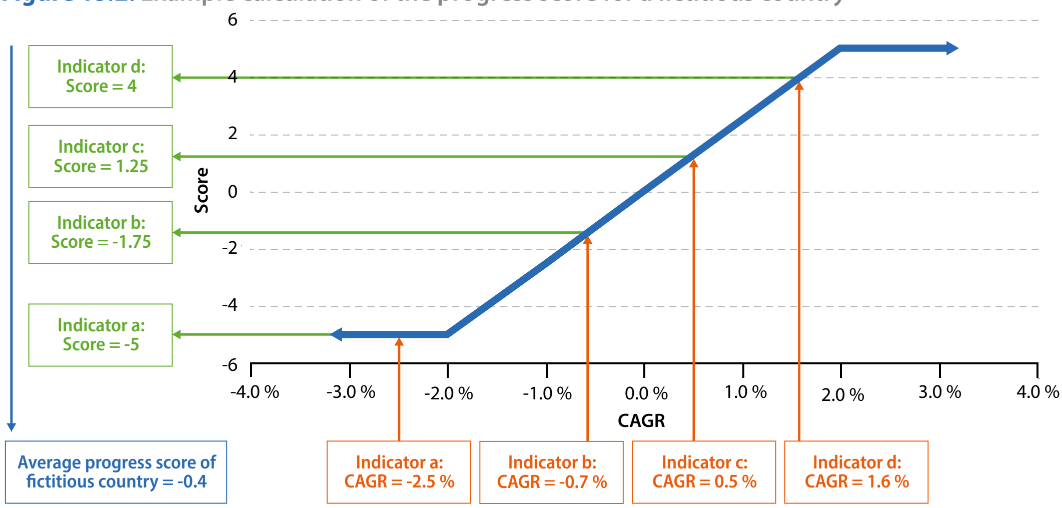
Progress is an aggregate score of the short-term (five-year) growth rates for all of the indicators assessed for each goal. The methodology uses a scoring function and is identical to the calculation of progress at EU level as presented in Annex II. Please note that the progress score calculation does not take into account any target values, as most EU policy targets are only valid for the aggregate EU level. Data mainly refer to the periods 2015–2020 or 2016–2021. Due to data availability issues, such as missing data for some years or breaks in time series, some countries' progress score calculations are based on shorter or longer periods. Additionally, some countries' progress scores have been manually adjusted, for example when a country has already achieved the maximum possible value (for example, 100 % of young children participating in early childhood education) and has maintained this level over the past five-year period. In such cases, countries are assigned the best possible score (+5) instead of the calculated score for no change (0). Depending on data availability per goal, not all 17 SDGs are shown for each country. Figure 18.2 presents an example of the calculation of the progress score for a

Figure 18.1: Example calculation of the status score for SDG 16 for a fictitious country



Note: the best and worst country values exclude outliers identified by means of the interquartile range (IQR) method, for example for expenditure on law courts.

Figure 18.2: Example calculation of the progress score for a fictitious country



fictitious country and a fictitious goal containing four indicators (for all of which an increase is the desired direction). It shows how the compound annual growth rates (CAGR) of the indicators are transformed into scores between + 5 and – 5 that are then averaged at SDG level to calculate a country's goal-level progress score.

Overall, a country's status score is a relative measure, showing its position in relation to other Member States and the EU average. A high status consequently does not mean that a country is close to reaching a specific SDG, but that it has achieved a higher status than many other Member States. On the other hand, a country's progress score is an absolute measure based on the indicator trends over the past five years, and its calculation is not influenced by the progress achieved by other Member States.

How to interpret the graphs?

The vertical axis shows the status of SDGs in the depicted country within the distribution of Member States and relative to the EU average. SDGs in the upper part of the graph have a status above the EU average, and for SDGs in the lower part the status is below the EU average. The right side of the graph displays SDGs where the country has made progress whereas the left side indicates movements away from the SDGs. This results in four 'quadrants' which can be characterised as follows:

III	I
IV	II

I. The country is progressing towards these SDGs, and on average the indicator values are above the EU average.

II. The country is progressing towards these SDGs, but on average the indicator values are below the EU average.

III. The country is moving away from these SDGs, but on average the indicator values are above the EU average.

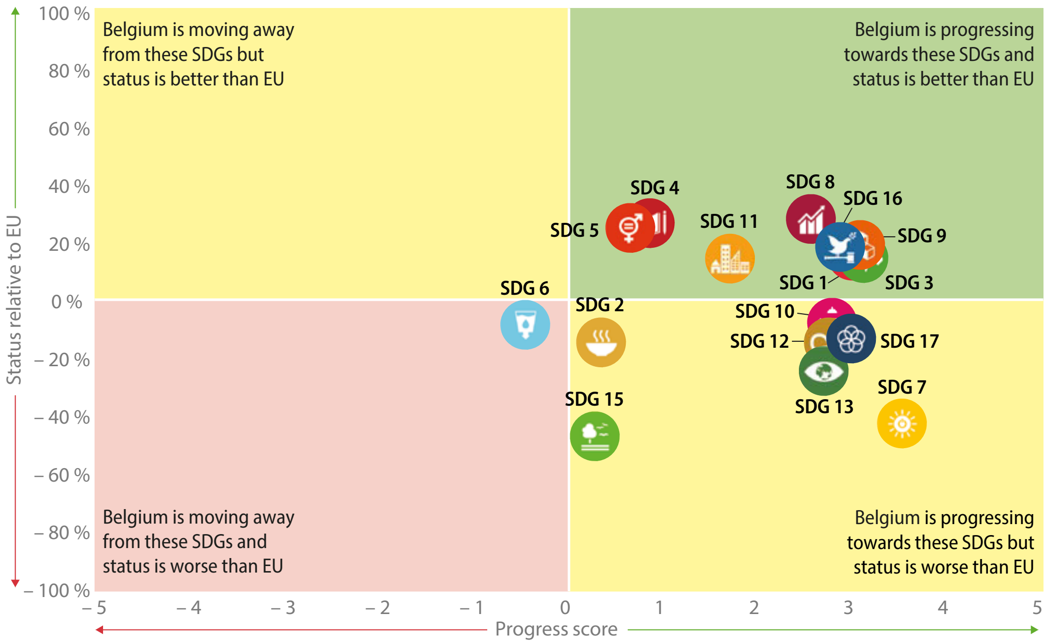
IV. The country is moving away from these SDGs, and on average the indicator values are below the EU average.

Presentation of Member States' status and progress

Table 18.1: Overview of SDGs

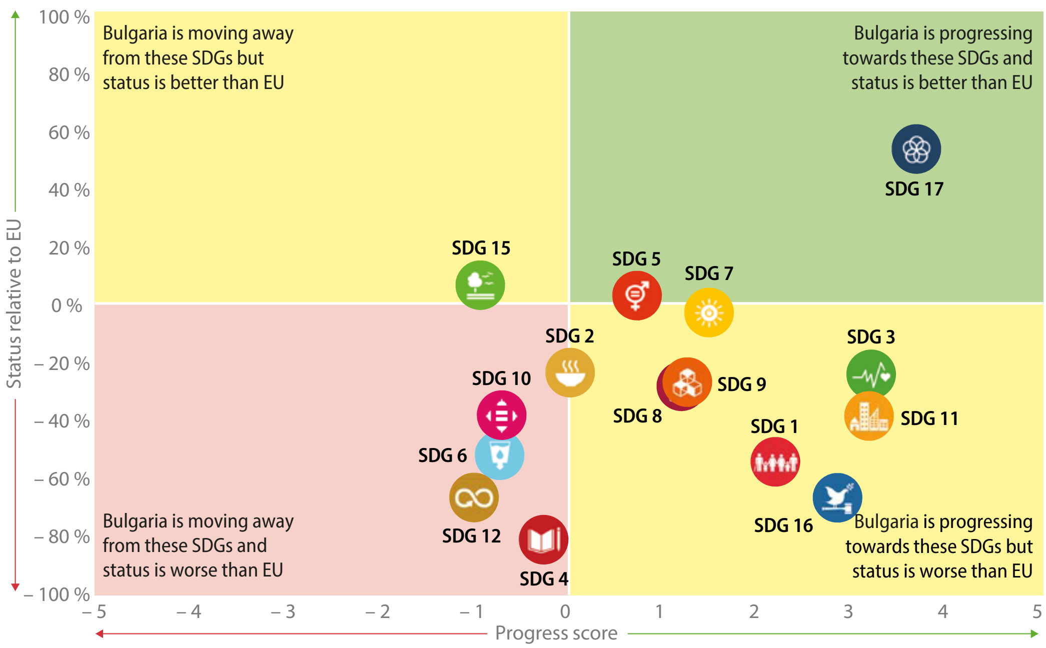
SDG icon	SDG short name
	SDG 1: No poverty
	SDG 2: Zero hunger
	SDG 3: Good health and well-being
	SDG 4: Quality education
	SDG 5: Gender equality
	SDG 6: Clean water and sanitation
	SDG 7: Affordable and clean energy
	SDG 8: Decent work and economic growth
	SDG 9: Industry, innovation and infrastructure
	SDG 10: Reduced inequalities
	SDG 11: Sustainable cities and communities
	SDG 12: Responsible consumption and production
	SDG 13: Climate action
	SDG 14: Life below water
	SDG 15: Life on land
	SDG 16: Peace, justice and strong institutions
	SDG 17: Partnerships for the goals

Figure 18.3: Belgium



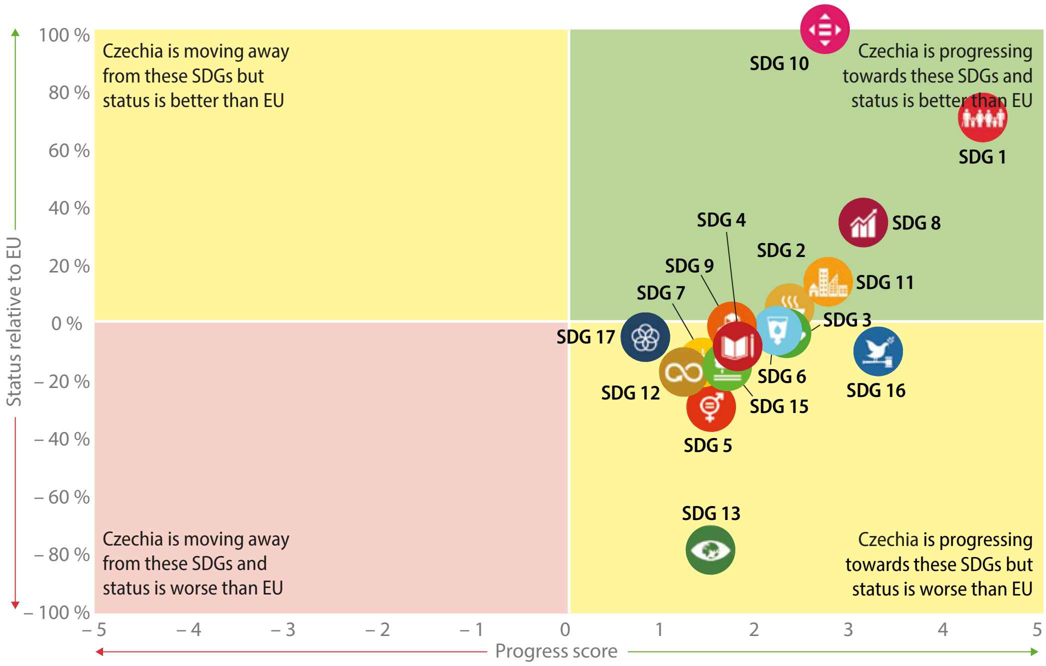
Source: Eurostat

Figure 18.4: Bulgaria



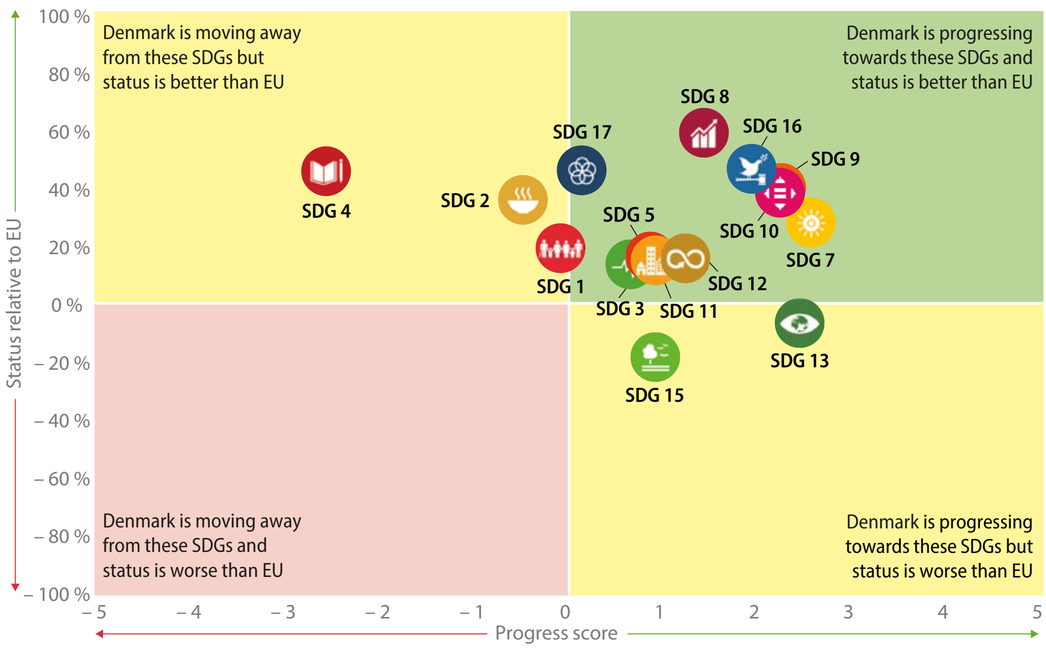
Source: Eurostat

Figure 18.5: Czechia



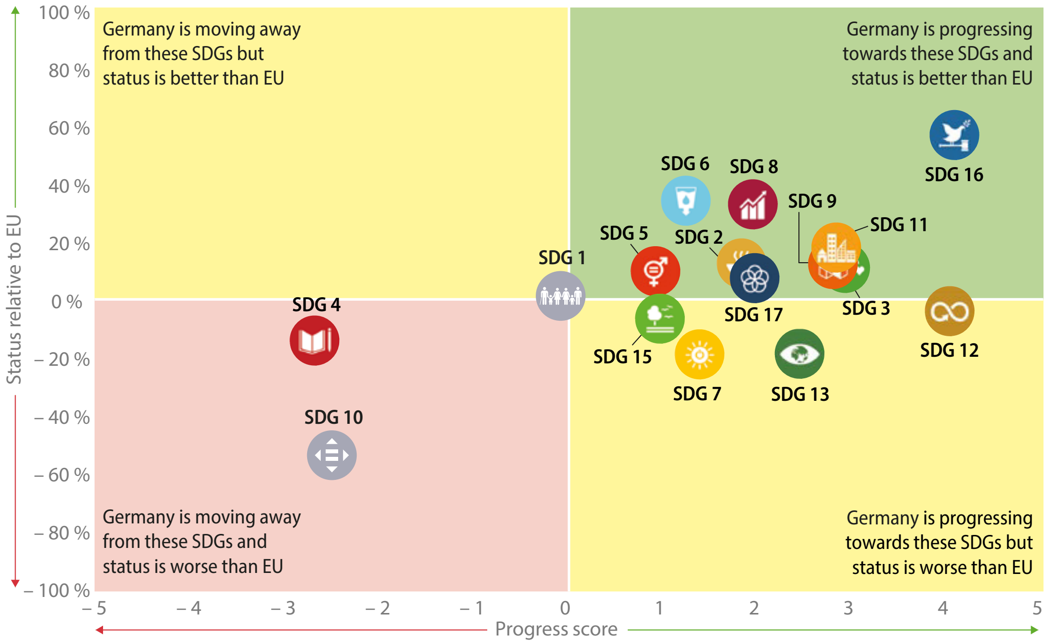
Source: Eurostat

Figure 18.6: Denmark



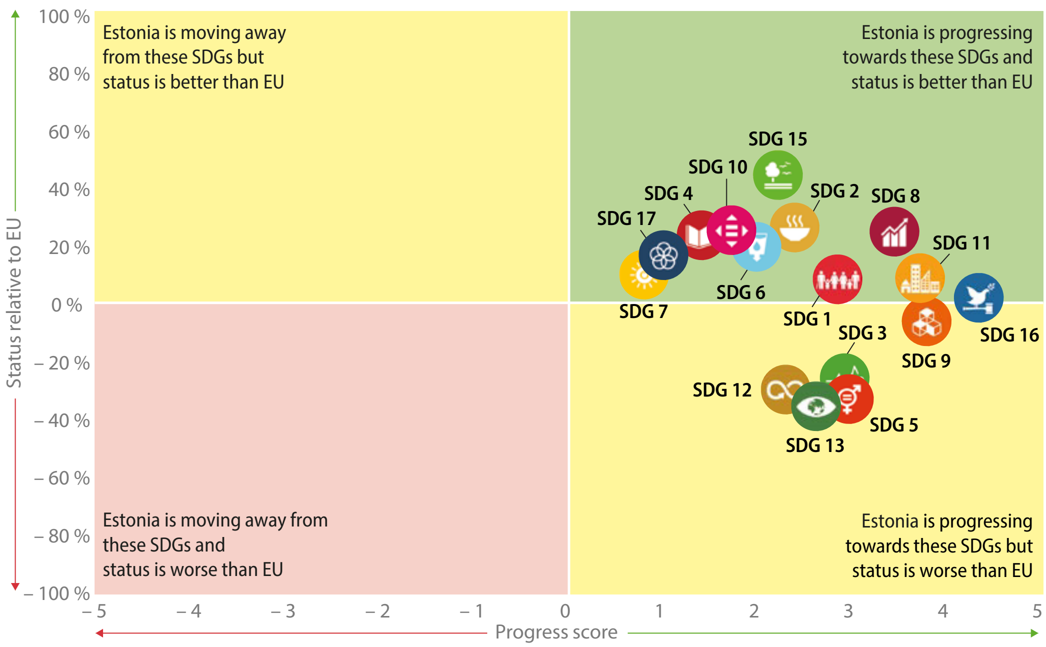
Source: Eurostat

Figure 18.7: Germany



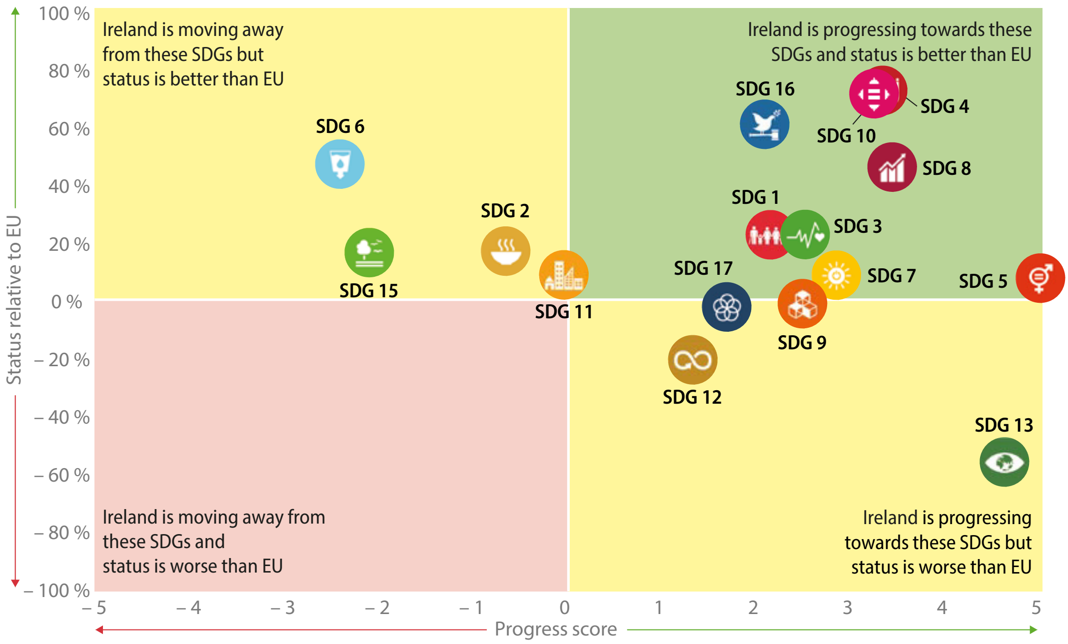
Note: The progress assessment for SDG 1 and SDG 10 is hampered by a methodological change in Germany's EU-SILC survey in 2020.
Source: Eurostat

Figure 18.8: Estonia



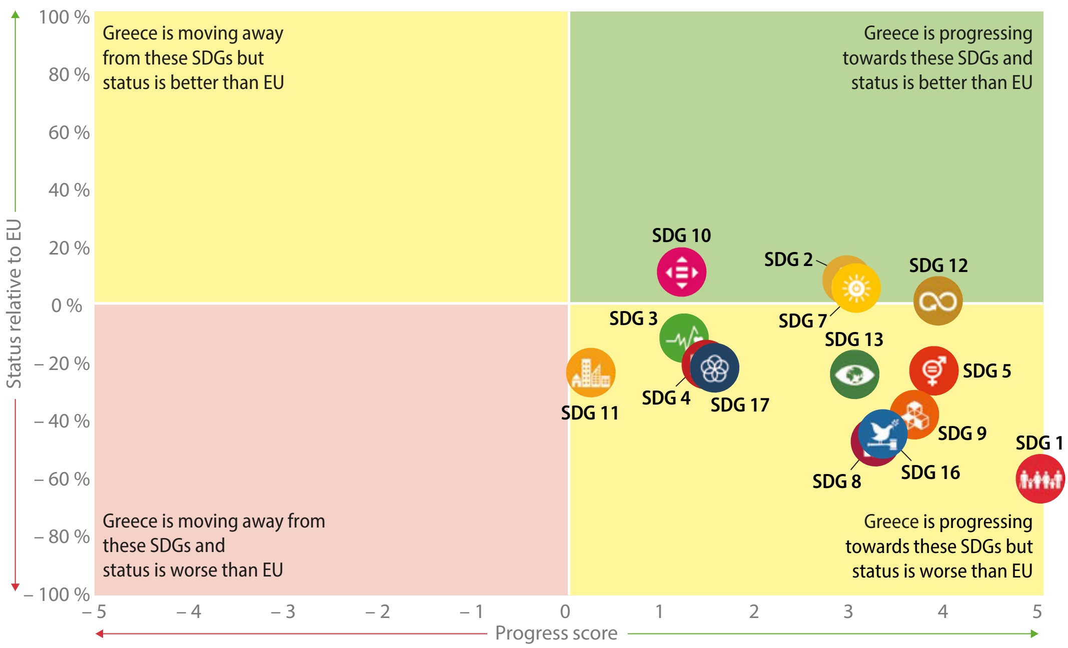
Source: Eurostat

Figure 18.9: Ireland



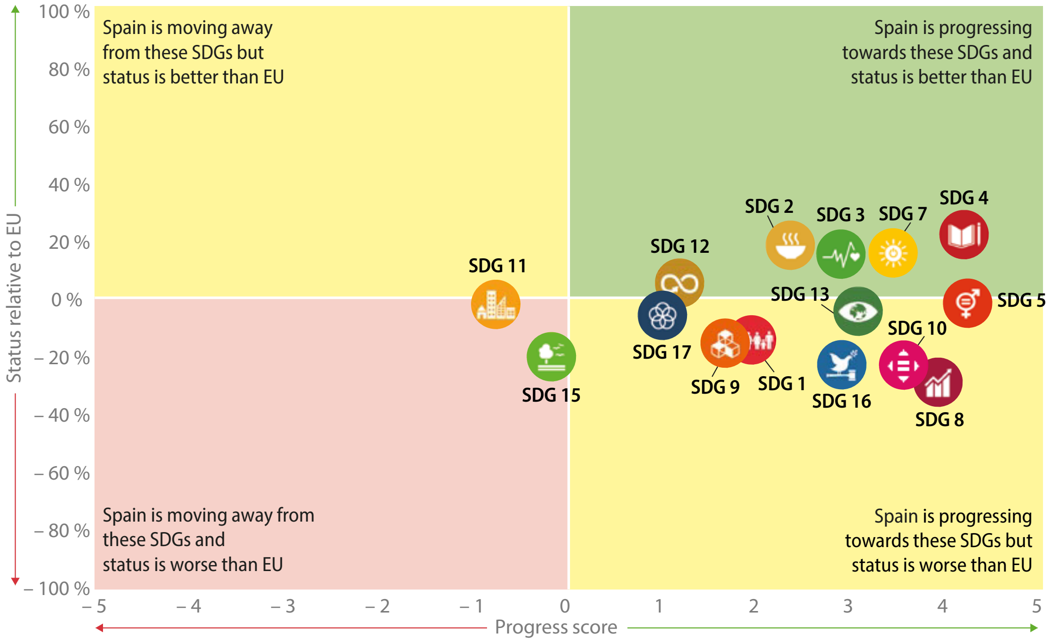
Source: Eurostat

Figure 18.10: Greece



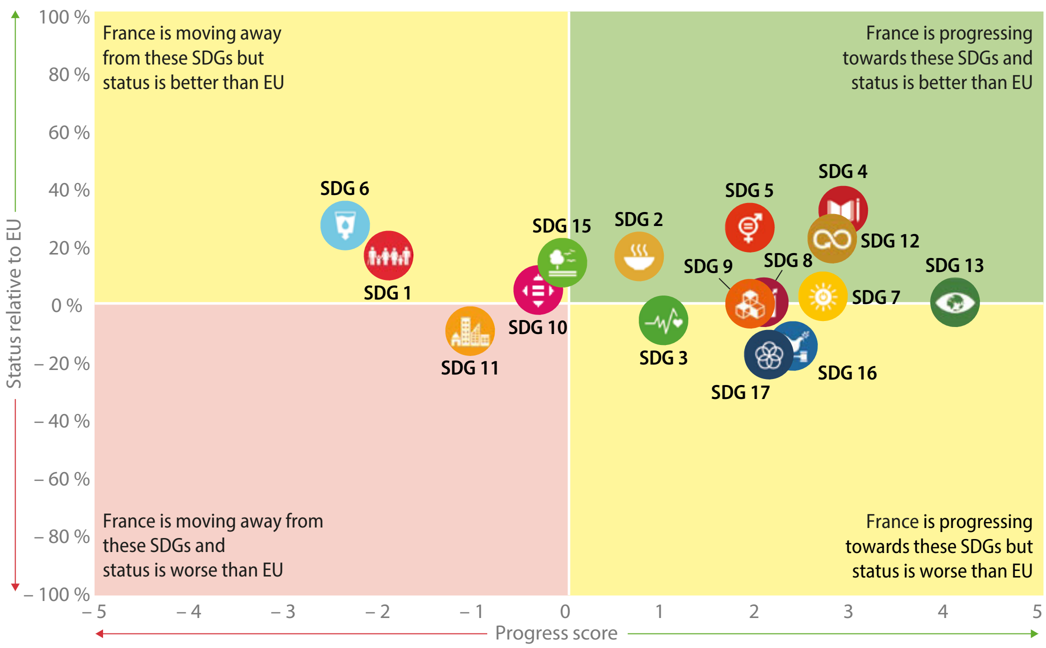
Source: Eurostat

Figure 18.11: Spain



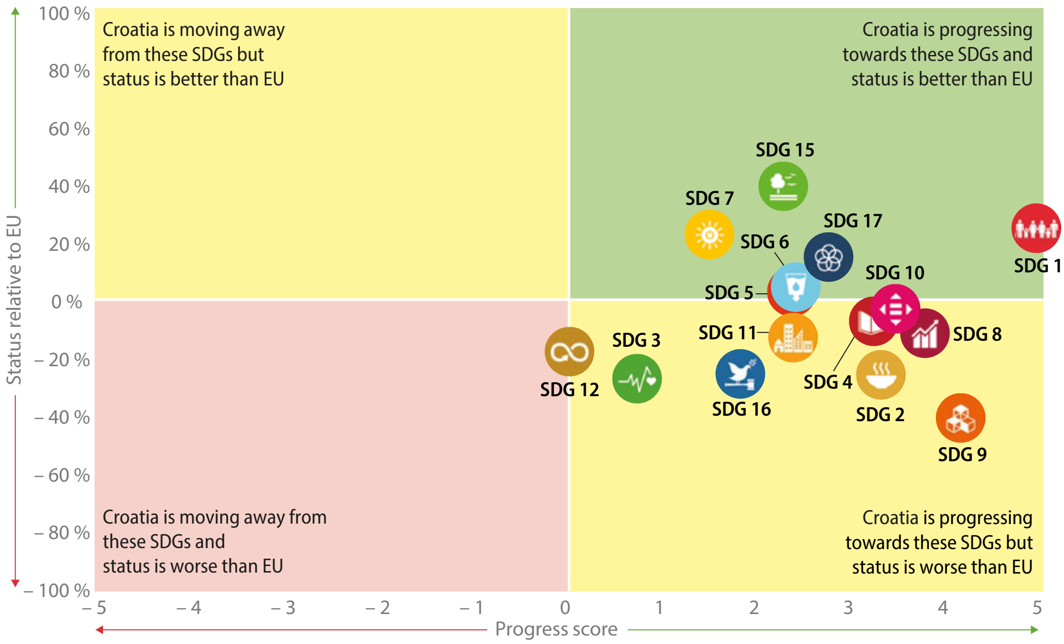
Source: Eurostat

Figure 18.12: France



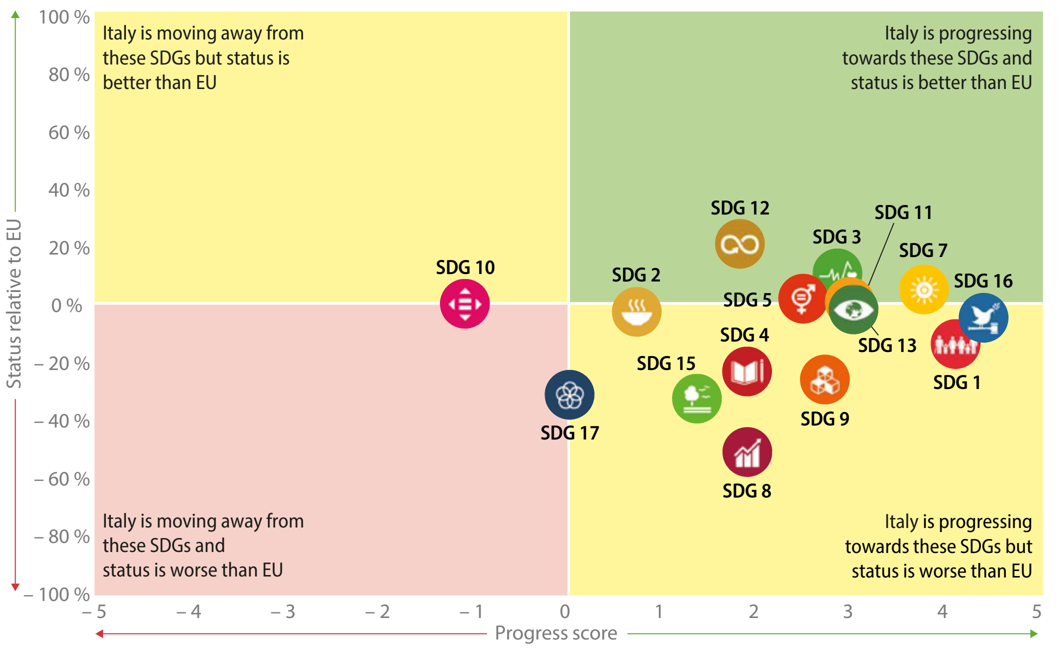
Source: Eurostat

Figure 18.13: Croatia



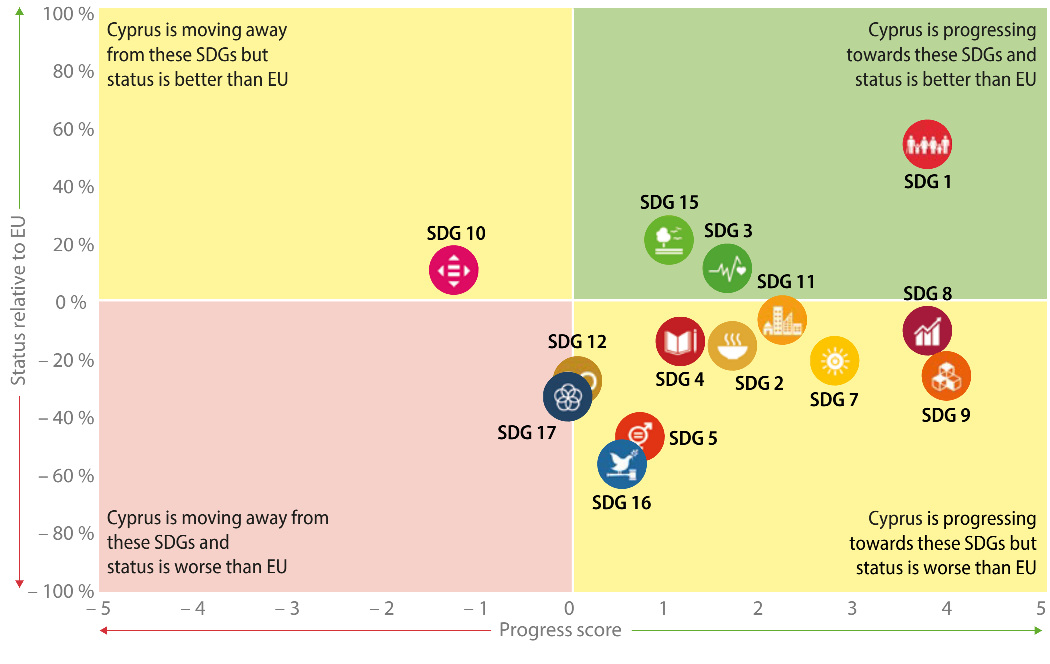
Source: Eurostat

Figure 18.14: Italy



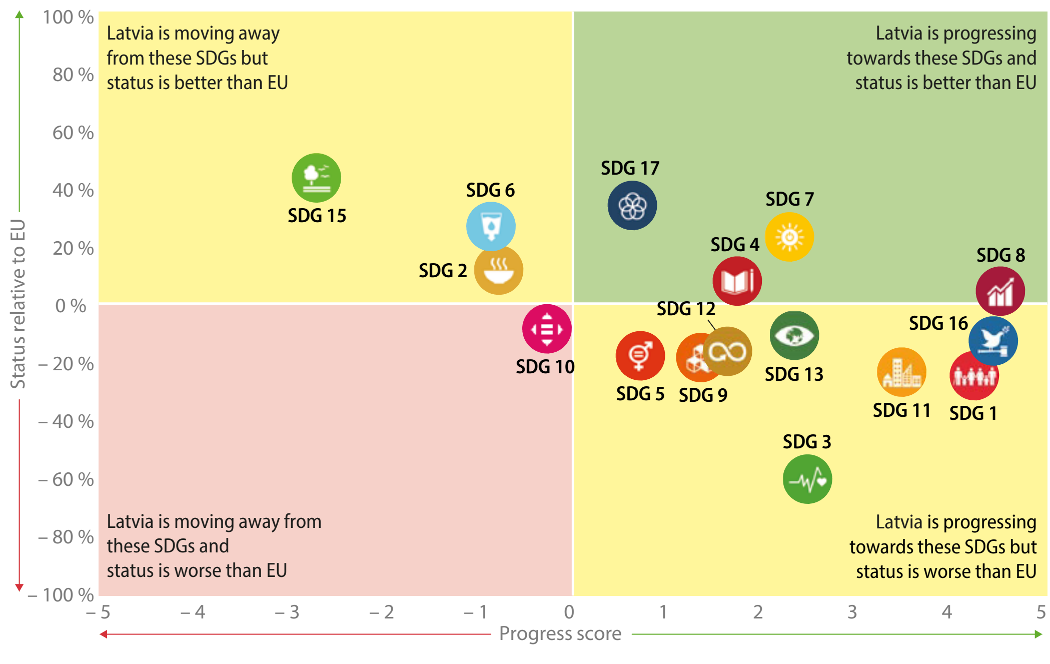
Source: Eurostat

Figure 18.15: Cyprus



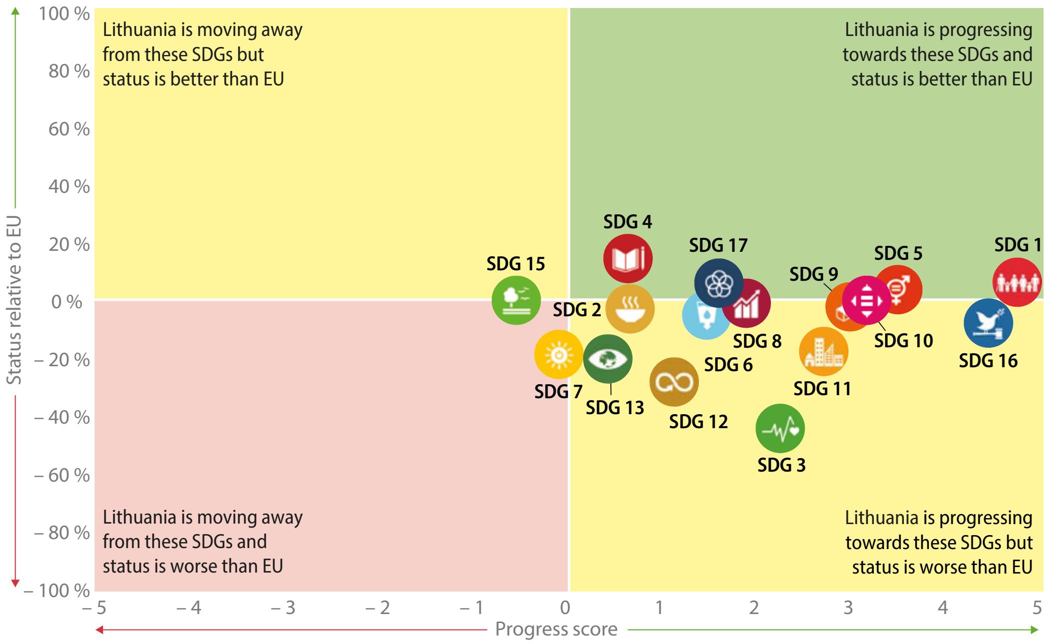
Source: Eurostat

Figure 18.16: Latvia



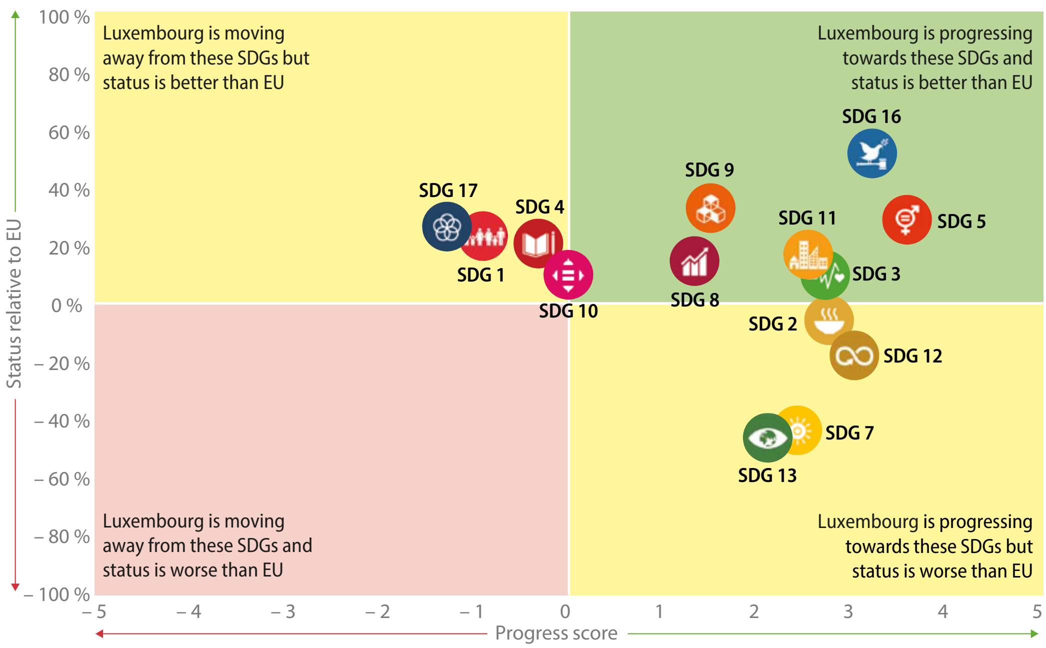
Source: Eurostat

Figure 18.17: Lithuania



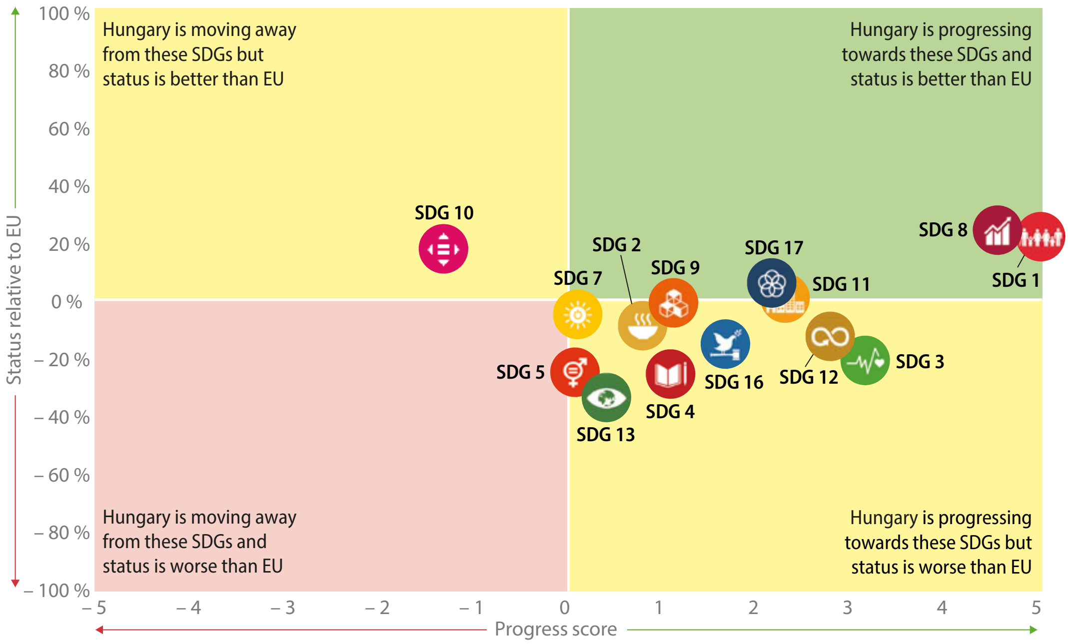
Source: Eurostat

Figure 18.18: Luxembourg



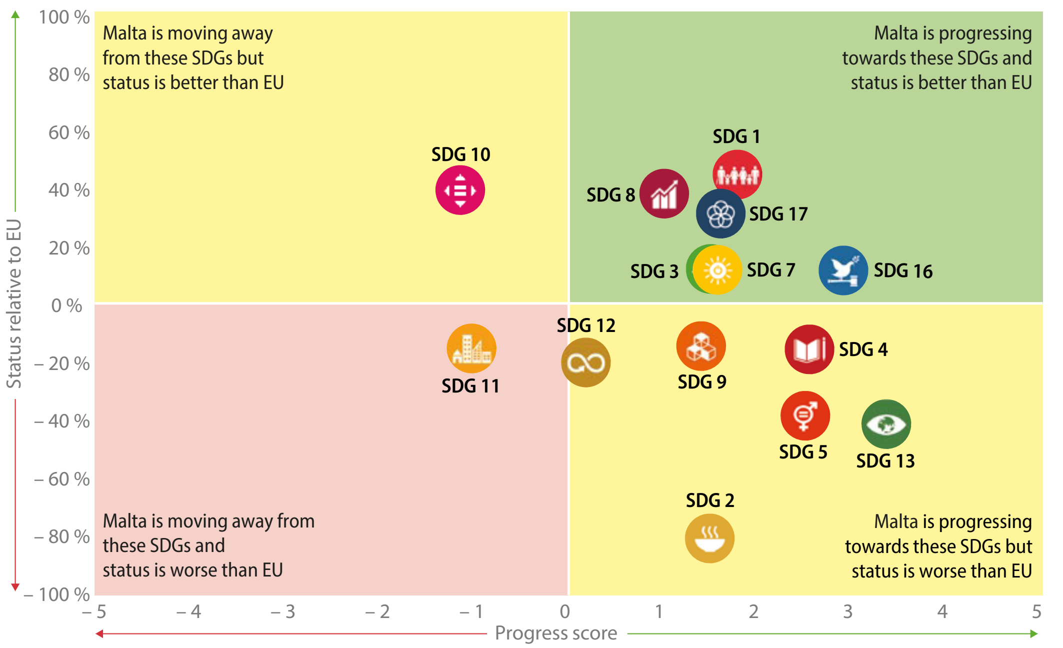
Source: Eurostat

Figure 18.19: Hungary



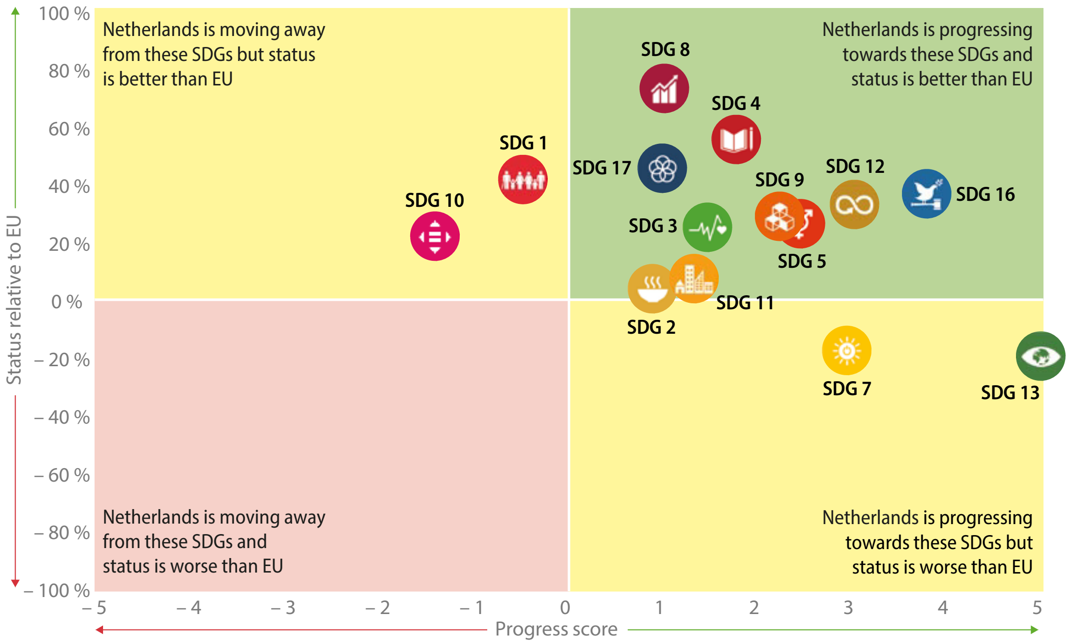
Source: Eurostat

Figure 18.20: Malta



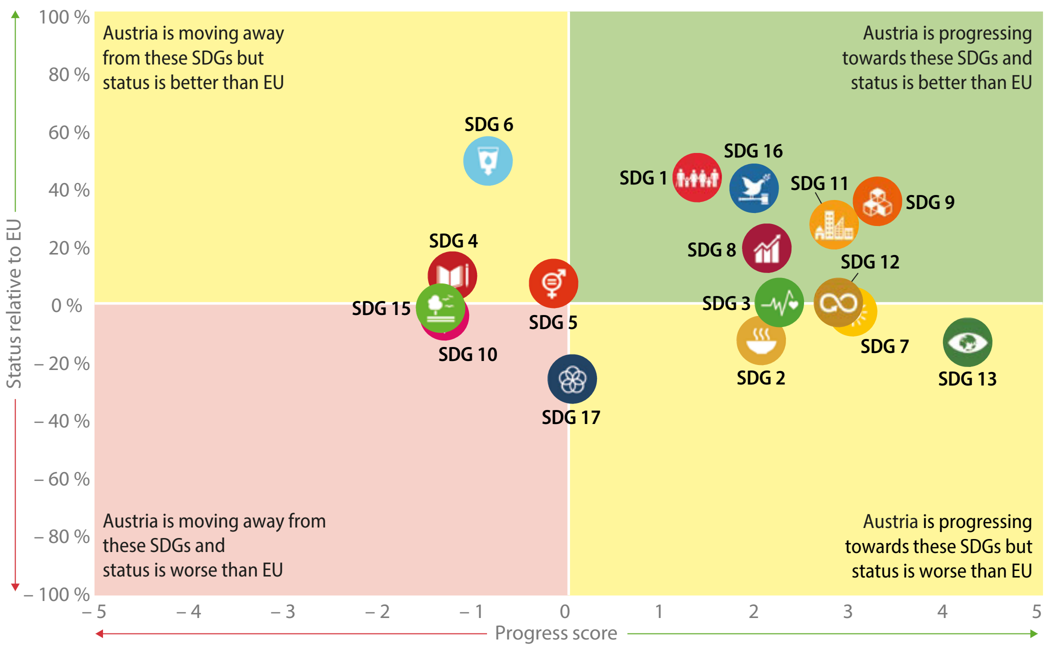
Source: Eurostat

Figure 18.21: Netherlands



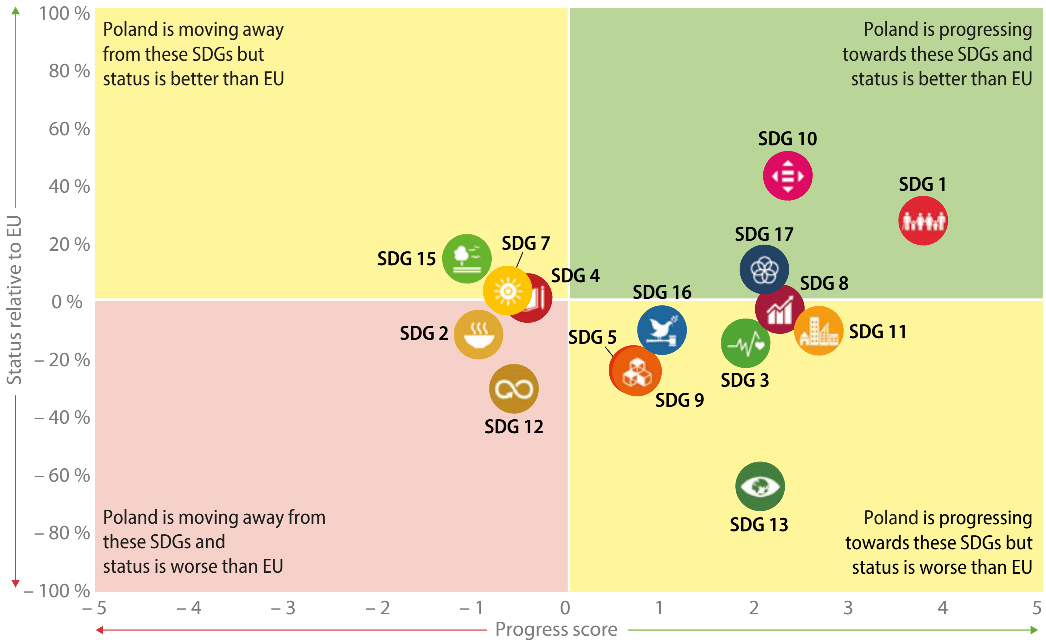
Source: Eurostat

Figure 18.22: Austria



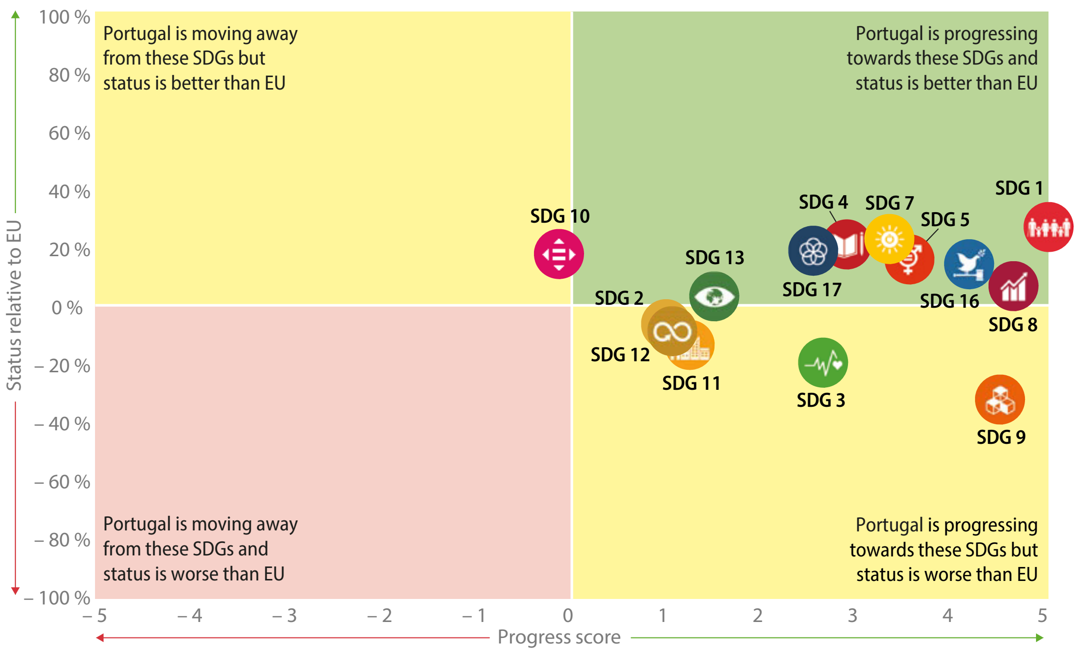
Source: Eurostat

Figure 18.23: Poland



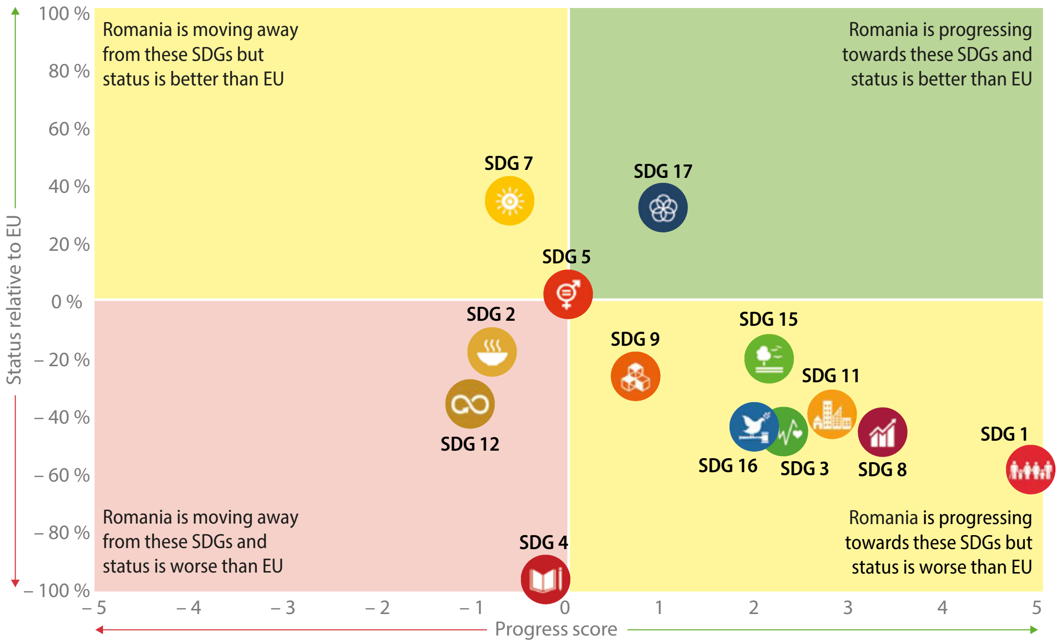
Source: Eurostat

Figure 18.24: Portugal



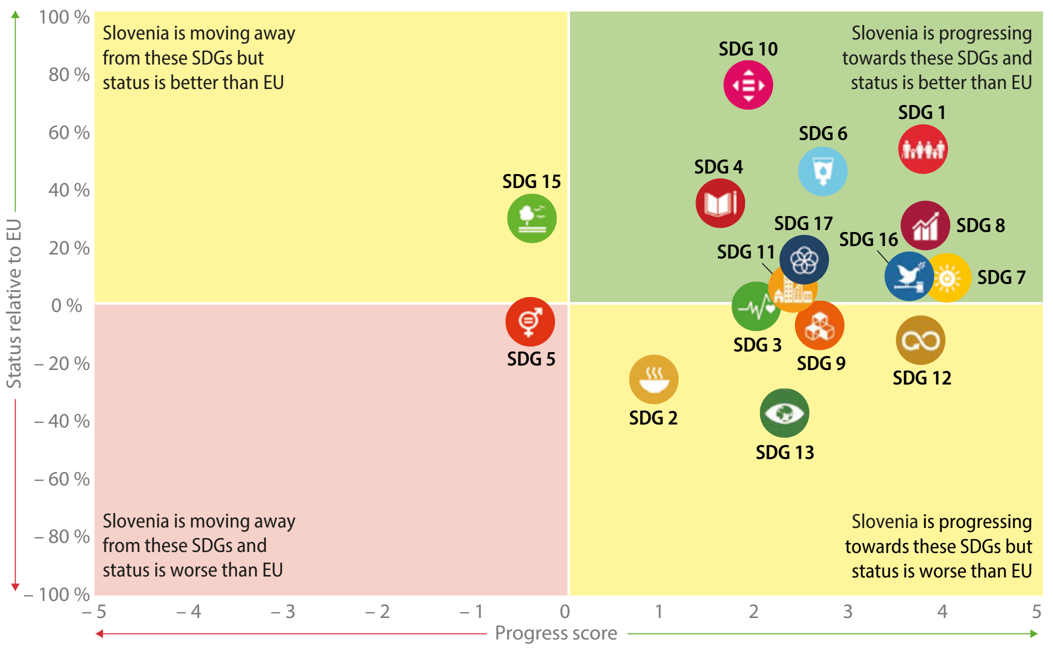
Source: Eurostat

Figure 18.25: Romania



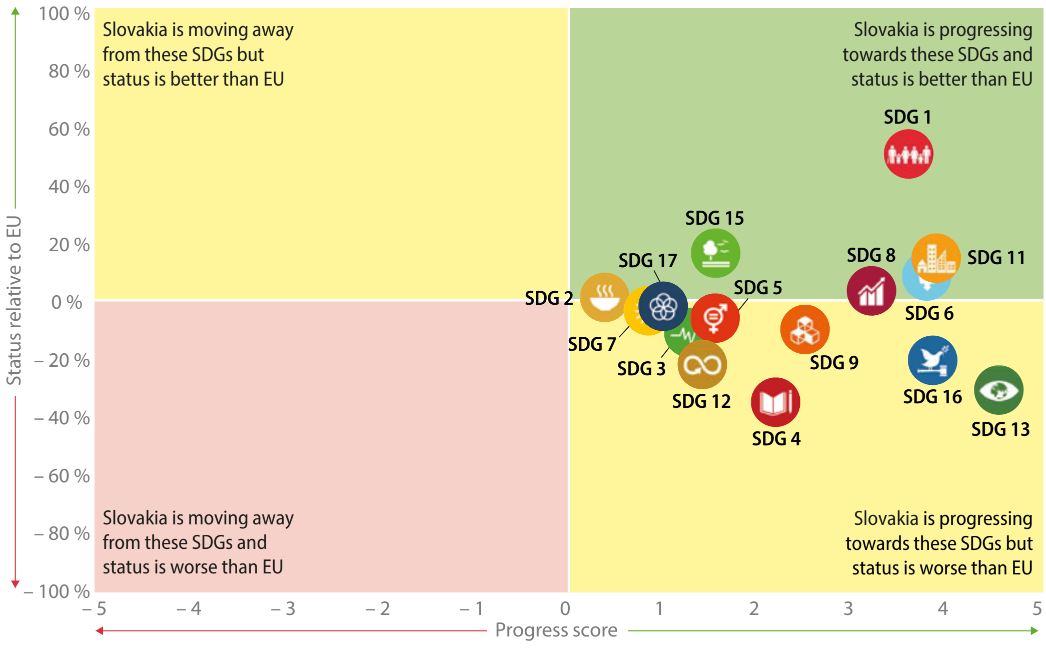
Source: Eurostat

Figure 18.26: Slovenia



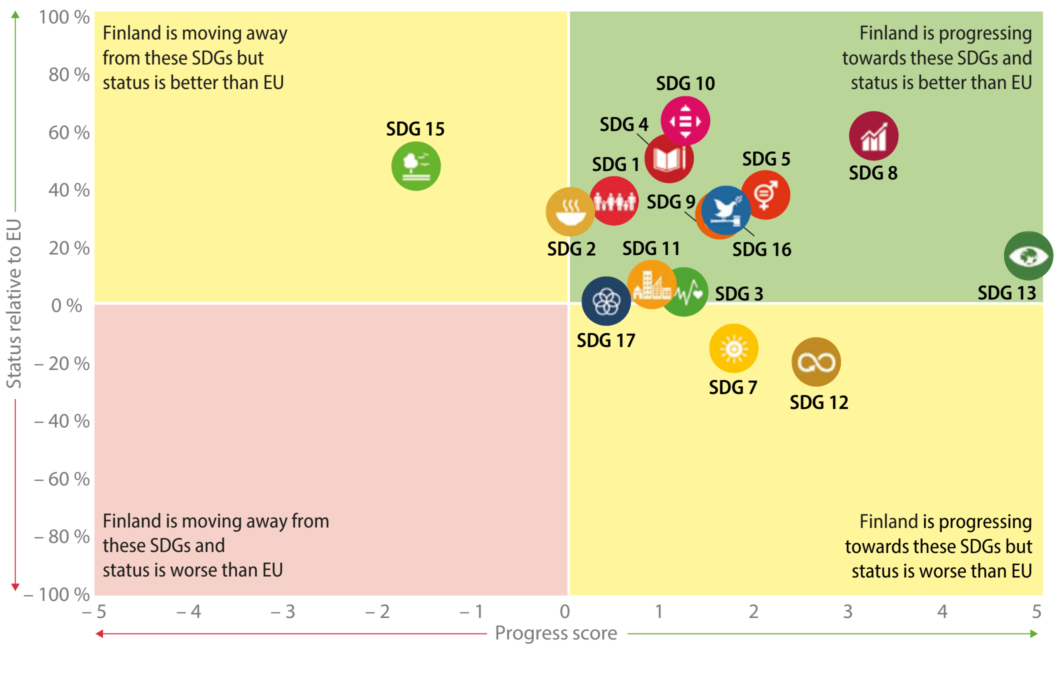
Source: Eurostat

Figure 18.27: Slovakia



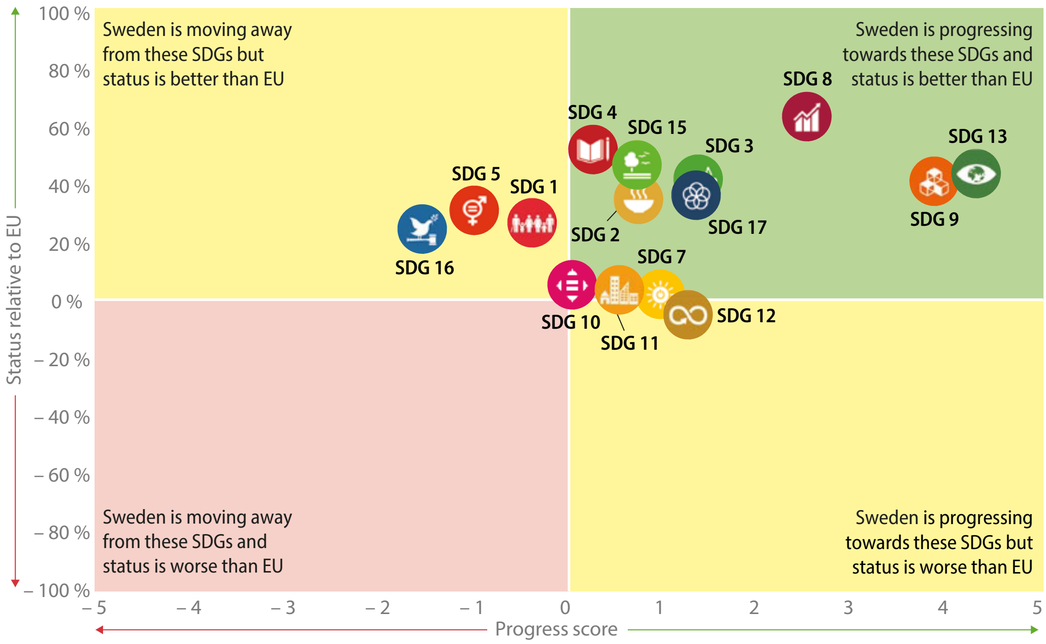
Source: Eurostat

Figure 18.28: Finland



Source: Eurostat

Figure 18.29: Sweden



Source: Eurostat

Notes

([1]) See https://ec.europa.eu/eurostat/web/sdi/indicators.
([2]) The (comparative) status is a composite index based on the relative indicator values so for each indicator in the goal, the worst country value corresponds to 0 points and the best to 100 points. During the indexing at indicator level, outliers are excluded (see next footnote) and are manually assigned an index value of 0 or 100 (depending on which end of the distribution an outlier is situated). The country status is then the average points across all indicators.
([3]) Outliers are identified by means of the interquartile range (IQR) method (see Hoaglin, D. C., Iglewicz, B., & Tukey, J. W. (1986), *Performance of Some Resistant Rules for Outlier Labeling,. Journal of the American Statistical Association*, 81(396), 991–999; and Hoaglin, D. C., & Iglewicz, B. (1987), *Fine-Tuning Some Resistant Rules for Outlier Labeling, Journal of the American Statistical Association*, 82(400), 1147–1149). This method involves calculating the first and third quartiles of the country distribution, with the IQR representing the difference between these two values. The boundaries for identifying outliers are then determined by multiplying the IQR by the factor two and by subtracting/adding these values from/to the first/third quartile, respectively. Values below/above these thresholds are considered outliers and are excluded during indexing, meaning that countries identified as outliers with this method are assigned the value of the next best/worst country for the indexing.

Indicators for estimating spillover effects caused by EU consumption

Summary

Trade with the EU is a crucial source of income and economic activity for many partner countries, including some of the poorest countries in the world. EU consumption generated EUR 1 537 billion of gross value added (GVA) in the rest of the world in 2019. The EU is also the leading donor of Official Development Assistance (ODA) in the world ([1]) and the biggest contributor to the USD 100 billion commitment ([2]).

However, the different analyses for environmental spillovers presented in this chapter also reveal that EU consumption has a significant environmental effect on other parts of the world. Carbon dioxide (CO_2) emissions embodied in EU imports are around one-third higher than those embodied in exports. While the EU's grassland footprint has only a minimal share in imported land use, the EU imports around 45 % of cropland and forestry land use to satisfy EU consumption, and imports around one-third more of this land use than it exports. Finally, the EU imports 1.1 gigatonnes of materials more than it exports, which is around 17 % of its total material consumption. This may cause additional environmental pressure elsewhere, as raw material extraction and processing are often associated with high carbon emissions, land cover changes and other negative environmental impacts. The trends over the past decade reveal a diversified picture — the EU's negative balance for CO_2 emissions and materials has slightly decreased while the land footprint spillover effect has increased during the same period.

The footprints presented in this chapter also show that the EU's share of global consumption of materials extracted (7 %), CO_2 emitted (10 %) and land used (5 %) seems to be relatively small and not significantly larger than its share of global population (around 6 %), while its share of global GVA (17 %) is substantially larger.

The important role of trade for sustainable development is recognised notably under SDG 17 (Partnerships for the goals). The Sustainable Development Goals (SDGs) call on developed regions such as the EU to reduce the global negative effects of consumption and trade by transferring cleaner and more modern production technologies and by helping to raise global social standards. The European Green Deal therefore outlines the Commission's commitment to transforming global value chains, by promoting new environmental and social standards for sustainable growth. The EU's bilateral trade agreements include commitments to effectively implement international labour standards and facilitate trade in green technologies, goods, services and investments and support the diffusion of clean and more efficient production methods and technologies to help achieve sustainable development globally.

Introduction

Strategies to achieve the SDGs need to be implemented at all levels, from local to global. In a globalised world, countries' actions towards sustainable development may positively or negatively influence other countries and their capacity to achieve the SDGs ([3]). Therefore, governments need to consider the impacts that their domestic policies may have beyond national borders, to avoid negative environmental, social and economic externalities and to foster sustainable development on a global scale ([4]). The impacts that activities in one sector, region or country have on other sectors, regions or countries are called spillover effects (or simply 'spillovers'). At the national level, the term 'transboundary effects' is also often used. Spillovers may be a result of deliberate transboundary actions, such as official development assistance (ODA), or an unintended consequence of domestically focused policies or of the consumption of natural resources embodied in trade ([5]).

International spillovers have the capacity to either foster mutual sustainable development or to hinder and counteract individual countries' actions towards achieving the SDGs nationally. Therefore, measuring and understanding international spillovers is of high importance for designing sustainable development strategies with positive impacts beyond domestic borders. Different organisations and researchers have used different methods for calculating spillovers. Prominent methods prioritise consumption-based over production-based accounts ([6]), thereby focusing on international environmental, social and economic impacts that are driven by domestic consumption.

International trade in goods and services is one of the most important triggers of international spillovers, both negative and positive. Trade generates jobs in exporting countries and is a crucial source of income and economic activity. Trade and investment liberalisation promote the transfer of environmentally sound technologies and trade also provides incentives to companies to apply higher environmental and social standards in their business models and supply chains.

However, trade also drives negative spillovers that may counteract countries' efforts to achieve the SDGs. For example, environmental spillovers occur when countries import commodities that generate high levels of greenhouse gas emissions in the country where they are made, instead of producing these (and the emissions) themselves. Thus, the importing countries avoid domestic emissions and the emissions are attributed to the producing countries. Eliminating child labour and forced labour as well as ensuring that labour rights are respected along the supply chain are further challenges.

There are other types of spillover effects that are relevant in the context of the SDGs, such as those related to international financing (for example, ODA but also profit-shifting), those linked to physical flows of air and water carrying pollution across borders as well as energy flows, and those related to peacekeeping, migration and security. However, only few of these spillover effects — ODA, energy flows and migration — are reflected in the EU SDG indicator set. There is also the notion of transgenerational spillovers, which goes back to the heart of sustainability: development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Due to data availability issues, these other types of spillover effects are not systematically covered in this chapter. Further work on assessing spillover effects in a broader sense will be necessary over the coming years.

As all countries export and import, they simultaneously cause and experience negative and positive spillovers resulting from international trade. It is therefore important to look at the net balance of spillovers between countries and regions. Globally, the positive impacts of trade should be increased while at the same time the negative impacts should be reduced and unavoidable negative spillovers should be distributed fairly between trading partners.

International spillovers and policy relevance within the EU context

The trade policy review emphasises the need for EU trade policy to be compatible with a more sustainable growth model, as put forward by the Green Deal. One of its objective is to make supply chains more sustainable by addressing the impacts of the EU's consumption and trade on the rest of the world embodied in international supply chains, in particular by promoting sustainability standards across global value chains.

The European Commission's proposal for a carbon border adjustment mechanism (CBAM) addresses the risk of carbon leakage. Carbon leakage occurs when industries transfer polluting production to other countries with less stringent climate policies, or when EU products are replaced by more carbon-intensive imports. The CBAM will require importers to buy certificates to account for embodied emissions in certain carbon-intensive products, mirroring the EU Emissions Trading System (EU ETS).

In February 2022, the Commission adopted a proposal for a Directive on corporate sustainability due diligence. The aim of this Directive is to foster sustainable and responsible corporate behaviour and to anchor human rights, international labour standards and environmental considerations in companies' operations and corporate governance. The new rules will ensure businesses address any adverse impacts of their actions, including in their value chains inside and outside Europe.

In November 2021, the Commission proposed a Regulation to minimise EU-driven deforestation and forest degradation. The new rules promote the consumption of 'deforestation-free' products in order to decrease the EU's impact on global deforestation embodied in imported agricultural products, thereby reducing greenhouse gas emissions and biodiversity loss.

Spillovers from EU consumption: overview and key trends

This chapter presents a selection of indicators on the environmental and economic spillover effects of consumption in EU Member States. The indicators were selected primarily on the basis of data availability and therefore do not yet cover the full range of SDGs concerned by spillover effects. Whether the environmental effects of EU or global consumption are within safe planetary boundaries goes beyond the considerations of this chapter.

Environmental spillovers

Three environmental indicators are available and can be used to give an insight into spillover effects: carbon dioxide (CO_2) emissions, land footprint and material footprint.

CO_2 emissions embodied in EU imports are higher than emissions embodied in EU exports

In 2018, the EU emitted around 3.2 gigatonnes (Gt) of CO_2, which was 9 % of worldwide CO_2 emissions. Consumption in the EU was responsible for 3.6 Gt of CO_2 emissions, which was 10 % of global CO_2 emissions. This was moderately higher than the share of the EU population in the global population, which was around 6 % ([7]). Using the FIGARO Multi-Regional Input-Output (MRIO) model ([8]), Eurostat estimates the volume of CO_2 emitted in the rest of the world serving EU consumption at 0.9 Gt, while around 2.7 Gt were emitted by the EU production system for EU consumption. On the other hand, 0.6 Gt CO_2 were emitted by the EU economy for the production of goods that were exported to the rest of the world. This means that in 2018, the emissions embodied in imported goods and services were higher than the emissions embodied in the EU's exports, making the EU a net importer of CO_2 emissions.

Compared with 2010, the balance has improved in favour of the EU. While CO_2 emissions in the EU embodied in exported goods are estimated to be stable (0.6 Gt), CO_2 emissions generated outside the EU for its consumption decreased by about 10 %, from 1.0 Gt in 2010 to 0.9 Gt in 2018. Thanks to a similar reduction for goods and services produced in the EU for domestic consumption, the EU's total CO_2 footprint decreased from 4.0 Gt in 2010 to 3.6 Gt in 2018.

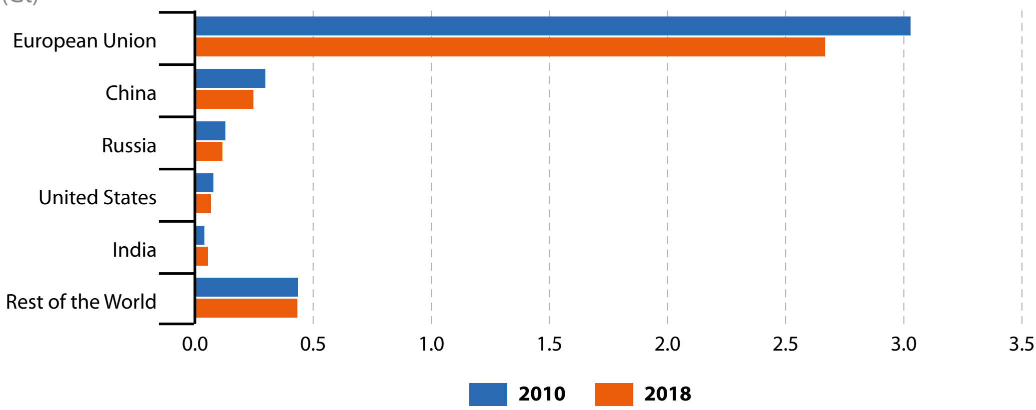
By 2030, the situation will need to change significantly if the EU is to achieve its ambitious climate policy targets ([9]). Worldwide emissions

Table 19.1: CO_2 emissions, EU versus rest of the world, 2010 and 2018
(Gt [%])

2010	Serving EU's consumption		Serving consumption in the rest of the world		Total emitted	
Emitted in EU	3.0	9 %	0.6	2 %	3.6	11 %
Emitted in the rest of the world	1.0	3 %	27.9	86 %	28.9	89 %
Total consumed	4.0	12 %	28.5	88 %	32.5	100 %
2018	**Serving EU's consumption**		**Serving consumption in the rest of the world**		**Total emitted**	
Emitted in EU	2.7	7 %	0.6	2 %	3.2	9 %
Emitted in the rest of the world	0.9	3 %	31.5	88 %	32.4	91 %
Total consumed	3.6	10 %	32.0	90 %	35.6	100 %

Source: Eurostat, JRC (estimates based on FIGARO data)

Figure 19.1: CO_2 emissions serving EU consumption by origin, 2010 and 2018
(Gt)



Source: Eurostat, JRC (FIGARO)

are expected to increase to around 55 Gt ([10]), while the EU intends to emit around 1.5 Gt by 2030, which would reduce its share of worldwide emissions from 9 % to less than 3 %. The EU's ambitious climate targets will therefore increase the focus on the consumption perspective. The question by 2030 will be: how much of the world's CO_2 emissions will be the result of the EU's consumption? Besides the volume and type of imported goods, this will very much depend on the carbon efficiency of the rest of the world's production systems, particularly in those economies producing significant CO_2 emissions to serve the EU's consumption (see Figure 19.1). To avoid simply shifting CO_2 emissions outside Europe (carbon leakage), the Commission's proposed carbon border adjustment mechanism will put a fair price on the carbon emitted during production, encouraging cleaner industry in the rest of the world. The EU's contribution to a shared USD 100 billion commitment by wealthy nations for climate finance is also expected to reduce CO_2 emissions in developing countries and thus contribute to the reduction of CO_2 imports.

Most CO_2 emissions imported for EU consumption are emitted in China, Russia and the United States

Some 0.9 Gt of global CO_2 emissions serving EU consumption originated from non-EU countries in 2018. China was the most important source of these CO_2 emissions, with 0.25 Gt. This reflects that China is the EU's main trading partner for imports: in 2018, the share of EU total imports (in value) originating from China amounted to 17.9 % ([11]). Russia accounted for 0.11 Gt CO_2 emissions ([12]), followed by the United States (US) (0.07 Gt) and India (0.05 Gt). Notably, while embodied emissions from Russia exceeded those from the US, the share in the value of US imports in total EU imports was higher (11.2 %) than from Russia (8.4 %) ([13]). This might be explained by the fact that a substantial part of imports from Russia were semi-manufactured low value products such as steel ([14]), produced with relatively high CO_2 emissions. In absolute terms, imported emissions from these countries decreased between 2010 and 2018, except for those from India.

More than 4 000 m² of farmland needed for each EU resident

The land footprint — or virtual land — refers to the estimated amount of land needed to produce one unit of a given final product consumed in a country, regardless of where in the world this land was used. Land footprints highlight the dependency of the EU on foreign land embodied in goods and services consumed within the EU. While land use itself does not show concrete and direct environmental impacts, it may serve as a proxy for pressure on ecosystems and biodiversity stemming from production and consumption systems in a given country. There are three different land footprints included in this chapter, modelled based on land use coefficients of imported agricultural products: cropland used to cultivate crops, grassland used to produce meat and dairy products, and forestry land used to produce timber. Cropland and grassland together constitute the farmland footprint ([15]).

In 2019, an estimated 111 million hectares (ha) of cropland in the EU were used for the production of agricultural goods, amounting to about 7 % of global cropland. Around two-thirds of this land served EU consumption, while the rest (around 3 % of global cropland) was farmed for exports to other parts of the world. At the same time, the EU consumed crops cultivated on an equivalent of about 130 million ha of cropland located both inside and outside the EU, which represent some 8 % of worldwide cropland. The EU imported crops that required around 60 million ha to grow, while crops exported outside the EU required around 41 million ha of cropland. This makes the EU a net importer of around 20 million ha cropland, which is about 17 % of EU cropland and approximately the size of Belgium, the Netherlands, Denmark and Austria together.

Around 48 million ha and therefore almost all (92 %) of grassland needed for EU consumption were located in the EU in 2019. Grassland is mainly used to feed livestock. However, since EU livestock are also fed with significant amounts of fodder crops produced on cropland, this number does not reflect the total land use embodied in EU consumption of livestock products. As the EU is a net importer of cropland, a certain amount of this imported cropland may also be used to sustain livestock-rearing in the EU. While the EU is also a net importer of grassland, the net balance of 1 million ha is relatively small compared with the total amount of EU grassland serving EU consumption, which was 52 million ha.

The global farmland footprint (cropland and grassland combined) of EU consumption was

Table 19.2: **Land footprints, EU versus rest of the world, 2019**
(million ha [%])

Land use type:	CROPLAND					
2019	**Serving EU consumption**		**Serving consumption in the rest of the world**		**Total land use**	
Located in EU	70	5 %	41	3 %	111	7 %
Located in the rest of the world	60	4 %	1 384	89 %	1 444	93 %
Total consumed	130	8 %	1 425	92 %	1 555	100 %
Land use type:	**GRASSLAND**					
2019	**Serving EU consumption**		**Serving consumption in the rest of the world**		**Total land use**	
Located in EU	48	2 %	3	0 %	51	2 %
Located in the rest of the world	4	0 %	3 142	98 %	3 145	98 %
Total consumed	52	2 %	3 144	98 %	3 196	100 %
Land use type:	**FORESTRY LAND**					
2019	**Serving EU consumption**		**Serving consumption in the rest of the world**		**Productive forest area**	
Located in EU	66	4 %	42	2 %	109	6 %
Located in the rest of the world	58	3 %	1 704	91 %	1 762	94 %
Total consumed	125	7 %	1 746	93 %	1 871	100 %

Source: JRC, Eurostat, FAOSTAT (Land use and Global Forest Resources Assessment) around 180 million ha in 2019, which represented around 4 % of farmland worldwide. Producing the agricultural products imported by the EU required around 64 million ha of farmland, while the rest of the world consumed products requiring 44 million ha of farmland in the EU making the EU a net importer of around 20 million ha farmland corresponding to around 12 % of EU farmland. Hence, in absolute terms each EU resident consumed agricultural products that required more than 1 400 m^2 of farmland located outside the EU, while people in the rest of the world required around 60 m^2 of EU farmland per person ([16]). However, in relative terms, the share of the total available farmland outside the EU that each EU resident required was slightly smaller than the share of EU farmland that a person in the rest of the world demanded. The 1 400 m^2 of imported farmland per EU resident came on top of the estimated 2 600 m^2 of farmland within the EU needed to satisfy EU consumption ([17]).

About 109 million ha of forest land equivalents in the EU were used for timber production in 2019, representing 6 % of worldwide productive forest area. Around 40 % of the produced timber were exported, serving consumption in the rest of the world. The forest land embodied in these exports, however, only made up some 2 % of non-EU consumption of timber-based products. The EU consumed timber-based products associated with an equivalent of about 125 million ha forest area, which was about 7 % of the world's productive forest area. Almost half of the timber-based goods consumed in the EU were produced on forest land outside the EU. Producing the timber-based products imported by the EU required around 60 million ha of forest land, while the rest of the world consumed products requiring 42 million ha of forest land located in the EU. This makes the EU a net importer of around 20 million ha of forest land corresponding to around 15 % of the productive forest area in the EU.

Imports account for nearly 40 % of the materials needed for EU consumption

The material footprint, also referred to as raw material consumption (RMC), shows the amount of materials required along the supply chains of the goods and services finally consumed in a country. Eurostat's material footprint indicators quantify the worldwide demand for material extraction triggered by consumption and investment in the EU. Eurostat estimates the material footprint by calculating the actual weight of materials extracted to produce the traded goods — the so-called raw material equivalents (RME) of imports and exports — instead of the weight of the goods crossing country borders. In other words, the weight of processed goods traded internationally is converted into the corresponding raw material extractions they required. This is typically two to three times more than the actual weight.

Since the material footprint is able to capture resources used along international supply chains for the production of final goods, it is a useful tool for assessing spillovers in material consumption. It highlights the increasing spatial separation of production and consumption and the relocation of environmental impacts associated with material extraction. All raw materials extracted and used worldwide are allocated to domestic final consumption. Thus, outsourcing of material-intensive extraction and processing does not reduce a country's overall material footprint.

In 2019, the EU's material footprint amounted to 6.5 Gt, representing 6.6 % of worldwide material extraction. In 2019, the EU was a net importer of materials, meaning that more of the materials needed for EU consumption were extracted outside the EU (2.5 Gt or around 40 % of the volume needed for EU consumption) than the EU exported to third countries for their consumption (1.4 Gt or around 55 % of imported materials serving EU consumption).

Compared with 2010, the total material extracted in the rest of the world to serve EU consumption, representing the EU's material spillover, remained stable at 2.5 Gt, despite growth in the EU's gross domestic product (GDP) of around 14 % and of around 1 % in population between 2010 and 2019 ([18]). Hence, the EU's material footprint did not seem to contribute to the nearly 30 % increase in the global material footprint between 2010 and 2019. This is further illustrated by the consumption footprint ([19]) of the EU calculated from product-

Table 19.3: **Material footprint, EU versus rest of the world, 2019**
(Gt raw material extraction in raw material equivalents [%])

2010	Serving EU consumption		Serving consumption in the rest of the world		Total extracted	
Extracted in EU	4.2	5 %	1.2	2 %	5.3	7 %
Extracted in the rest of the world	2.5	3 %	68.6	90 %	71.1	93 %
Total consumed	6.6	9 %	69.8	91 %	76.4	100 %
2019	**Serving EU consumption**		**Serving consumption in the rest of the world**		**Total extracted**	
Extracted in EU	3.9	4 %	1.4	1 %	5.3	5 %
Extracted in the rest of the world	2.5	3 %	89.7	92 %	92.2	95 %
Total consumed	6.5	7 %	91.1	93 %	97.5	100 %

Source: OECD, Imprint ([27]), Eurostat (online data code: env_ac_rme)

level life cycle assessments, which increased by 4 % between 2010 and 2018.

In terms of volume, the EU is more or less self-sufficient in the material categories of biomass and non-metallic minerals. For the category of metal ores, the EU consumed approximately 2.7 times more metal ores than the amount extracted within its borders in 2019. This means the EU relies heavily on imports of this commodity. The situation is similar regarding fossil-energy materials. In 2019, the EU consumed 2.9 times more fossil energy materials than it extracted domestically. While around 40 % of domestically extracted fossil energy carriers were exported, the EU relied on imports for around 80 % of its domestic energy demand. This negative trade balance of fossil energy materials is also illustrated by the EU's energy import dependency, which was slightly more than 60 % of the gross available energy in the EU in 2019 ([20]).

Environmental pressures vary depending on the type of product

Not all materials used for the production of consumer goods create the same environmental pressure at their places of origin; for example, mining and agriculture have different impacts on land use. A deeper analysis per sector of the economy and final product is therefore useful to better understand the full picture. The consumption footprint ([21]) calculated by the Joint Research Centre of the European Commission aims to quantify the environmental impacts of consumption by evaluating 16 Life Cycle Assessment (LCA)-based indicators with physical models of 160 representative products. The indicators are modelled from the estimated environmental pressures (emissions and resources used) along the life cycle and supply chains of these products.

The consumption footprint ([22]) of the EU has increased by 4 % between 2010 and 2018 mainly due to an increased per capita consumption intensity of food products, mobility, and specific household goods, many of which are fully or in part imported from outside the EU ([23]), and is only partially explained by a population increase ([24]).

Complementary to the consumption footprint, the domestic footprint ([25]) evaluates only domestic impacts without considering the impacts embodied in imports. The consumption footprint in absolute terms is therefore larger than the domestic footprint. By comparing the two footprints, spillovers can be observed. The domestic footprint decreased by 13 % during the 2010–2018 period, in contrast to the growing consumption footprint. Thus, the domestic reduction of environmental impacts are likely to be the result of the delocalisation of certain production processes.

Table 19.4: Gross value added, EU versus rest of the world, 2010 and 2018
(billion EUR [%])

2010	Induced by EU consumption		Induced by consumption in the rest of the world		Total generated	
Generated in EU	8 548	19 %	1 302	3 %	9 850	21 %
Generated in the rest of the world	1 131	2 %	35 253	76 %	36 384	79 %
Total induced	9 679	21 %	36 555	79 %	46 234	100 %
2019	**Induced by EU consumption**		**Induced by consumption in the rest of the world**		**Total generated**	
Generated in EU	10 445	15 %	2 031	3 %	12 476	17 %
Generated in the rest of the world	1 537	2 %	57 779	80 %	59 316	83 %
Total induced	11 982	17 %	59 810	83 %	71 792	100 %

Source: Eurostat, JRC (estimates based on FIGARO data)

Social and economic spillover effects

EU consumption can have positive spillover effects in terms of jobs and economic growth, but may also have negative effects on labour conditions in other parts of the world. To avoid the latter, it is necessary to ensure that EU trading partners effectively implement international labour standards and human rights. Currently, FIGARO data allow one related economic indicator to be monitored, gross value added (GVA).

Producing goods and services for EU imports generated 2.1 % of worldwide GVA in 2019

GVA is the difference between the output of an economy and the intermediate consumption and is one of the main elements of GDP. It is a very good approximation of the size of the economy from a production perspective. FIGARO data allow GVA to be estimated for economies inside and outside the EU and therefore can be used to show the economic value generated outside the EU for consumption inside the EU.

Total GVA induced by EU consumption in 2019 was nearly EUR 12 000 billion or 17 % of global GVA. From this amount, EUR 1 537 billion or nearly 13 % was induced in non-EU economies. GVA generated in the EU as a result of consumption outside the EU is around one-third higher (EUR 2 031 billion). This makes the EU a net exporter of GVA and mirrors the export surplus of the EU economy.

The bulk of GVA induced by EU consumption is generated in the EU, with around 87 %. Of the remaining 13 %, the EU's five biggest trade partners (the United States, China, the United Kingdom, Switzerland and Russia) have a share of around half of GVA generated by EU consumption in non-EU countries. China is the EU's biggest import partner, while the EU is the main export partner for the UK and Switzerland. Since 2010, GVA induced in the rest of the world by EU consumption has increased by around 36 %, while GVA as a result of exports to the rest of the world has increased by around 56 %. This means that the negative balance between GVA resulting from EU imports and exports is widening.

When comparing the carbon intensities of GVA inside and outside the EU, in 2018 the EU emitted around 260 g ([26]) of CO_2 per EUR of GVA, while the rest of the world emitted more than double this amount (610 g) per EUR. This illustrates the character of the EU economy as a manufacturer of relatively high-value products compared with the rest of the world. Between 2010 and 2018, the carbon intensity of the EU economy fell by around 26 %, and slightly faster than in the rest of the world (23 %).

Notes

([1]) European Commission (2020), *The European Union remains world's leading donor of Official Development Assistance with €75.2 billion in 2019*, Press release, Brussels.
([2]) European Commission, *International climate finance*.
([3]) Sustainable Development Solutions Network (SDSN) (2019), *Policy Brief: International Spillovers and the Sustainable Development Goals (SDGs). Measuring how a country's progress towards the SDGs is affected by actions in other countries.*
([4]) Joint Research Centre-European Commission (2021), *Understanding the Spillovers and Transboundary Impacts of Public Policies Implementing the 2030 Agenda for More Resilient Societies: Implementing the 2030 Agenda for More Resilient Societies*. OECD Publishing.
([5]) Ibid.
([6]) 'Production-based' means, for example, direct observation of CO_2 emissions as they are generated, while 'consumption-based' refers to, for example, CO_2 emissions that are generated throughout the supply chain and are hence 'embodied' in the products and services consumed. These CO_2 emissions are generated before the products are consumed, in different locations, and scattered across supply chains that may involve many countries. To get the full picture of the net balance of a country or region in terms of inward and outward spillover effects, a combination of both approaches is needed.
([7]) Eurostat (2020), *The EU in the world. 2020 edition*, Publications Office of the European Union, Luxembourg, p. 13.
([8]) Eurostat (2019), *European Union Inter-Country Supply, Use and Input-Output Tables — Full International and Global Accounts for Research in Input–Output Analysis (FIGARO)*.
([9]) The EU plans to reduce its production of greenhouse gas emissions by 55 % in 2030. This target is notably related to the production perspective, and not to the consumption perspective. It also includes other greenhouse gases than CO_2.
([10]) UNFCCC (2021), *Nationally determined contributions under the Paris Agreement. Synthesis report by the secretariat*, United Nations Climate Change, Glasgow Climate Change Conference.
([11]) Source: Eurostat (online data code: EXT_LT_MAINEU).
([12]) CO_2 contained in energy carriers such as crude oil or gas and imported into the EU is not included in the exporting country emission account, but will show up in the importing country's balance when combusted for power generation. The CO_2 emitted in Russia for serving EU consumption is therefore not a result of Russian gas imported into the EU.
([13]) Source: Eurostat (online data code: EXT_LT_MAINEU).
([14]) Imports of iron and steel in 2018 amounted to 11 262 109 tonnes from Russia and to 721 396 tonnes from the US.
([15]) The farmland footprint is the sum of cropland and grassland. 1 ha equals 10 000m², hence 4 000 m² equals 0.4 ha.
([16]) Calculated using https://population.un.org/wpp/
([17]) Calculated with: Eurostat (online data code: DEMO_GIND).
([18]) Source: Eurostat (online data codes: nama_10_gdp and DEMO_PJAN).
([19]) Data at EU and Member State level for the period 2010–2018 are published in the Consumption Footprint Platform, available at https://eplca.jrc.ec.europa.eu/ConsumptionFootprintPlatform.html
([20]) Source: Eurostat (online data code: sdg_07_50).
([21]) https://eplca.jrc.ec.europa.eu/sustainableConsumption.html
([22]) Data at EU and Member State level for the period 2010–2018 are published in the Consumption Footprint Platform. Available at: https://eplca.jrc.ec.europa.eu/ConsumptionFootprintPlatform.html
([23]) Sala S, Sanyé Mengual E (2022), *Consumption Footprint: assessing the environmental impacts of EU consumption*, European Commission, JRC126257.
([24]) Ibid.
([25]) Sanye Mengual, E., Tosches, D. and Sala, S., *Domestic Footprint of the EU and Member States: methodology and results (2010–2018)*, EUR 30796 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-40829-1, doi:10.2760/563812, JRC125941.
([26]) This calculation includes direct CO_2 emissions by private households e.g. for transport and heating. In 2018 the EU these CO_2 emissions were around 0.7 Gt i.e. around 20 % of the emissions serving EU consumption.
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The interlinked nature of the SDGs

Summary

Investigating synergies and trade-offs emerging from relationships between the SDGs and targets is crucial for achieving long-lasting sustainable development outcomes. This report uses a quantitative approach to identify interlinkages between the SDGs. The results for the EU show that there are more positive than negative (24.1 % vs. 13.4 %) interlinkages. However, almost two-thirds of indicator pairs (62.4 %) are not significantly correlated with each other, signalling that the EU SDG indicators monitor to a large extent distinct phenomena.

Although the correlation analysis cannot cover the whole complexity of the connections between the goals, it underlines that the SDGs are deeply interconnected and that achieving one goal is not possible in isolation from the others. Carefully designed policy measures that take advantage of the synergies, while avoiding trade-offs, are thus needed to deliver on several SDGs at the same time. In addition, the results demonstrate that interlinkages are context dependent and can differ greatly between countries. Citizens and all stakeholders in the different policy areas, sectors and levels of decision-making have important roles to play and are sharing the responsibility for a transition towards a more sustainable and resilient society.

Introduction

The 2030 Agenda for Sustainable Development represents a complex holistic challenge. Understanding the nature of interlinkages between the SDGs and their scope is key to unlocking their full potential as well as ensuring that progress in one area is not made at the expense of another. Hence, investigating trade-offs and synergies emerging from relationships between the goals is crucial for achieving long-lasting sustainable development outcomes. With its principle of 'do no harm', the European Green Deal helps to boost synergetic relationships between the policies aimed at achieving the SDGs and to avoid trade-offs.

Measuring the interlinkages between the SDGs: existing approaches

Interlinkages can be identified as positive (synergies) or negative (trade-offs). Trade-offs are negative interactions between different SDGs, indicators and targets when improvements in one dimension can constrain progress in another dimension. If achieving economic growth requires higher resource and energy consumption, it can create a trade-off between SDG 8 and SDGs 12 and 7. In contrast, synergies are positive interactions between goals, indicators and targets, meaning that achieving one target, such as a 20 % share of renewable energy in the EU, can also help to achieve another target, such as reducing greenhouse gas (GHG) emissions.

Several attempts have been made by international organisations and academics to assess interlinkages — synergies and trade-offs — between the SDGs and corresponding indicators (1)(2)(3)(4)(5)(6)(7). In general, all these studies agree that there are many more synergies between the goals than trade-offs, and that it is important to identify the positive and negative interlinkages in order to design the most efficient policy actions for delivering on the SDGs. However, the interlinkages strongly depend on the method and data used and on the geographical scope of the report (meaning whether the interlinkages are analysed on a country, region or world level). This 2022 edition of the EU SDG monitoring report attempts to identify interlinkages between the SDGs in an EU context by applying Spearman's rank-order correlation analysis to the EU SDG indicator set by correlating individual indicators with each other (forming so-called indicator pairs) as well as looking then at the level of goals (forming so-called goal pairs). The methodology behind the calculations is explained in Annex IV (see page 373).

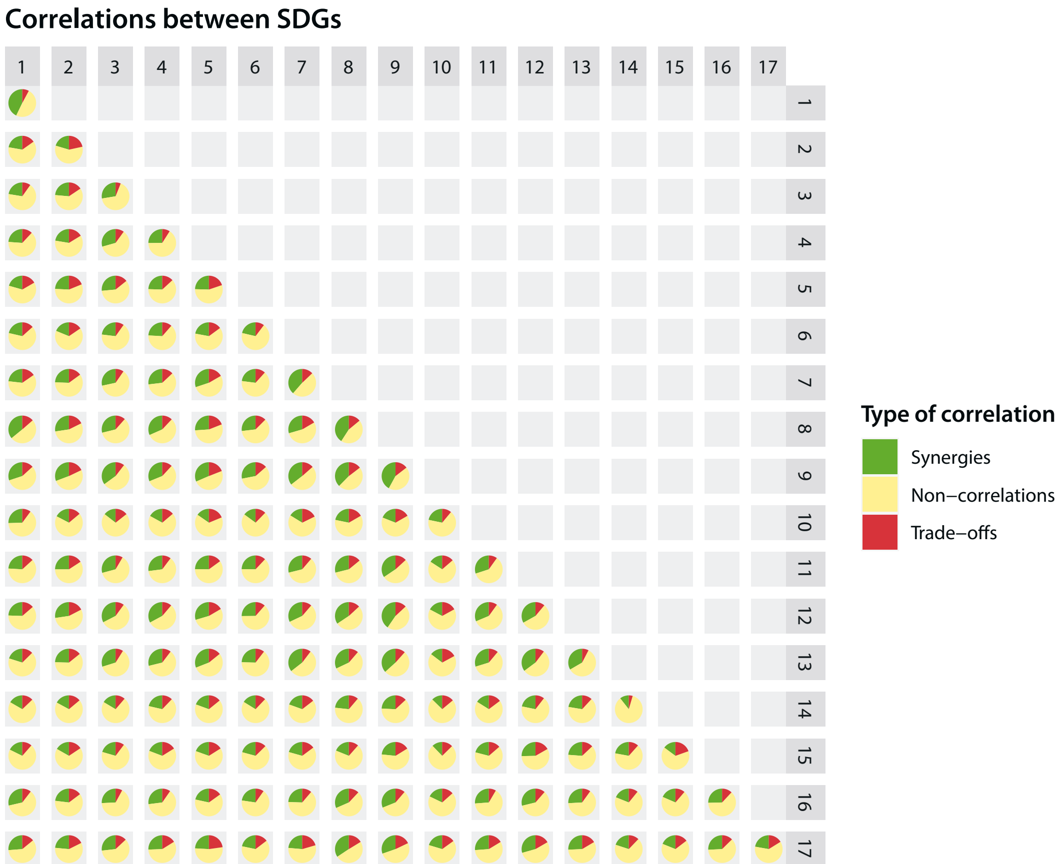
Results of the analysis of interlinkages between the SDGs

In line with other studies using correlation analysis (8)(9)(10)(11), the latest results for the EU show that there are more positive (24.1 %) than negative (13.4 %) interlinkages. However, almost two-thirds of indicator pairs (62.4 %) are not significantly correlated with each other, which signals that the indicators in the EU SDG set to a large extent monitor distinct phenomena that are not necessarily directly related to each other. The shares of synergies and trade-offs in the EU reported here are quite similar to those presented in last year's edition (24.6 % synergies and 13.7 % trade-offs). Due to the specifics of the method that takes into account all data points since 2009, adding one more data point is unlikely to radically change the results, meaning that this year's results are largely comparable to those presented in the 2021 edition of the monitoring report.

Figure 20.1 visualises shares of positive (green) and negative (red) correlations, as well as non-correlations (yellow) for each SDG pair across all EU Member states. This means that, for example, among SDG 1 and SDG 2 indicators, 22 % of all the indicator pairs with available data in all countries are positively correlated, 15 % are negatively correlated and 63 % of pairs do not show a statistical correlation. Since the majority of indicator pairs are not correlated, they are coloured yellow in the figure. For 145 out of 153 SDG pairs the share of non-correlations among their indicators is above 50 %.

Figure 20.1 also shows that for most SDG pairs in the EU Member States there are more synergies than trade-offs. Seven SDG pairs, however, still had bigger shares of trade-offs than synergies between them. Overall, the goals on industry, innovation and infrastructure (SDG 9), decent work and economic growth (SDG 8) and responsible consumption and production (SDG 12) show the highest share of synergies with other goals, while the goals on gender equality (SDG 5), zero hunger (SDG 2) and partnerships (SDG 17) have the highest share of trade-offs. The Figure 20.1 also shows correlations within each SDG. For example, 43 % of the indicators that are used to monitor SDG 1 in the EU are positively correlated, while 8 % are classified as trade-offs. Within SDG 2, however, there are more trade-offs (22 %) than synergies (20 %). A likely explanation for this result is that while the indicators in SDG 1 monitor different aspects of poverty and usually show homogenous results, the indicators in SDG 2 monitor quite diverse objectives, from obesity rate to government support to agricultural R&D and nitrate in groundwater.

Figure 20.1: Visualisation of SDG interlinkages based on shares of positive correlations, negative correlations and non-correlations between the indicator pairs.



Not surprisingly, the overall picture emerging from Figure 20.1 reveals that the way we live, produce and consume is interconnected with many other areas, both acting as a driving force for, as well as being impacted by, other developments. Consumption and production patterns (SDG 12) have a large impact on resource ([12]) and energy efficiency ([13]) and thus directly impact on a number of energy-related aspects (SDG 7) ([14]). In turn, reliable and sustainable energy systems relate to the transition towards more sustainable transport patterns and a resilient low-carbon society, thus having considerable influence on climate (SDG 13) and infrastructure (SDG 9). It is also known that climate change (SDG 13) has a synergetic relationship with human health (SDG 3) ([15]), while urban areas (SDG 11) affect the EU's climate (SDG 13) as they act as a focal point of environmental change due to land take (soil sealing), transport activity, housing and mobility issues, food supply and waste generation. The EU data also show many synergetic relationships between the goals on climate change (SDG 13) and on biodiversity (SDG 15), which is a connection well-known from the literature ([16])([17])([18])([19]).

Some goals, such as life below water (SDG 14), life on land (SDG 15) or reduced inequalities (SDG 10) show only very few connections to other SDGs, based on the correlation analysis applied to the EU SDG indicator set. For SDG 14, this is in part due to the lack of Member States' data for half of the indicators. However, there is a wide agreement that these goals are cross-

Figure 20.2: Indicator pairs with a positive relationship across the majority of Member States

cutting topics that are crucial for meeting the 2030 Agenda as a whole ([20])([21])([22]). Biodiversity and ecosystem services (SDG 15), as well as healthy oceans and rivers (SDG 14), provide a basis for human life on earth and human well-being. Reducing inequalities (SDG 10) in society helps to also reduce a risk of conflicts (SDG 16) ([23])([24]) and to increase access to common goods and services by reducing poverty (SDG 1) ([25]), which in turn has a positive influence on economic growth (SDG 8), education (SDG 4) and health (SDG 3). There is also evidence in the literature that gender equality (SDG 5) and economic inequalities (SDG 10) are strongly connected, since improvement in gender equality is positively associated with reduced economic inequalities ([26]).

An analysis on the indicator level reveals that some indicator pairs are positively correlated in almost all EU Member States (see Figure 20.2). Many such connections are within the same goal, since the indicators that are used to monitor one goal usually refer to similar or closely connected issues. For example, the income quintile share ratio and the income share of the bottom 40 % of the population, both used in SDG 10, monitor a very similar inequality problem. Real GDP per capita, employment rate and NEET rate (all belonging to SDG 8) are also closely interconnected, indicating that economic growth usually goes hand in hand with improvements in the labour market situation. Avoidable mortality (SDG 3) and tertiary educational attainment (SDG 4) show synergetic relationship in 24 out of 27 countries. The connection between education levels and avoidable mortality has also been found in research ([27]).

In contrast to positive interlinkages, very few SDG indicator pairs show a negative correlation in more than half of EU Member States, indicating that no major trade-offs can be identified as universal at EU level (see Figure 20.3). This is also connected to the fact that fewer indicators in the EU show negative than positive trends. Nevertheless, final energy consumption was negatively associated with real GDP per capita and with employment rate in 10 Member States.

Figure 20.3: Indicator pairs with negative relationships across many Member States

This means that in these countries higher incomes and an improved labour market situation are likely to have resulted in higher energy consumption. Real GDP per capita was also negatively correlated with the soil sealing index, probably reflecting higher urbanisation rates in growing economies. Increasing urbanisation improves access to sanitary facilities, but it also increases soil sealing, which leads to a negative association between the two indicators.

The negative association between the employment rate and the share of collective passenger transport in some countries is probably caused by the fact that higher employment increases households' income and ability to afford a car, thus also decreasing demand for collective transport. However, it should be taken into account that metros and trams — important modes of transport for many large cities — are not reflected in the collective passenger transport indicator.

Although the correlation analysis of SDG interlinkages at the EU level does not cover the whole complexity of the connections between the goals, it is able to demonstrate that the SDGs are deeply interconnected and that achieving one goal is not possible in isolation from the others. While most studies agree that there are many more synergies between the SDGs than trade-offs (as also shown through this correlation analysis), several studies also demonstrated that in the current development paradigm, achieving certain SDGs might negatively influence the achievement of other SDGs ([28])([29])([30]). Carefully designed policy measures are thus needed to deliver on several SDGs at the same time by finding synergies between the goals, while avoiding trade-offs with other sustainability objectives.

Notes

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Annexes

Annex I: Countries, measurement units and abbreviations

Geographical aggregates and countries

EU	The 27 Member States of the European Union since 1 February 2020 (BE, BG, CZ, DK, DE, EE, IE, EL, ES, FR, HR, IT, CY, LV, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI, SE)
EEA	The member countries of the European Environment Agency (EEA) are the EU Member States plus IS, LI, NO, CH and TR
G20	Group of 20 (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, the United States and the European Union)

Note that EU aggregates are back-calculated and therefore do not necessarily represent the composition of the EU in a given year. Data relating to the current EU aggregate are presented for periods before the UK left the EU in 2020, as if it had never been a Member State. The abbreviation 'EU' used in texts is usually referring to the current composition. Deviations from this principle are pointed out in each individual case.

European Union Member States

BE	Belgium
BG	Bulgaria
CZ	Czechia
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
HR	Croatia
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden

European Free Trade Association (EFTA)

IS	Iceland
LI	Liechtenstein
NO	Norway
CH	Switzerland

EU candidate countries

ME	Montenegro
MK	North Macedonia
AL	Albania
RS	Serbia
TR	Turkey

Potential candidates

BA	Bosnia and Herzegovina
XK	Kosovo ([1])

Other European countries

UK	United Kingdom

Units of measurement

%	per cent
°C	degree Celsius
µg	microgram
µm	micrometre
dB	decibel
EUR	euro
g	gram
ha	hectare
kg	kilogram
kgoe	kilograms of oil equivalent
km	kilometre
km^2	square kilometre

L	litre
m^2	square metre
m^3	cubic metre
Mbps	megabits per second
mg	milligram
Mt	million tonnes
Mtoe	million tonnes of oil equivalent
pH	pH value (measurement of acidity/basicity)
pkm	passenger-kilometre
pp	percentage point
PPS	purchasing power standard
tkm	tonne-kilometre
USD	US dollar

Abbreviations

5G	5th-Generation Wireless Systems
AAAA	Addis Ababa Action Agenda
AIDS	acquired immune deficiency syndrome
ABLE	Assessing Butterflies in Europe
AEA	air emissions accounts
AROPE	at risk of poverty or social exclusion
ASGS	Annual Sustainable Growth Strategy
AWU	annual work unit
BMI	body mass index
bn	billion
BOD	biochemical oxygen demand
BOD5	5-day Biochemical Oxygen Demand
BWD	Bathing Water Directive
CAGR	compound annual growth rate
CAP	Common Agricultural Policy
CARE	Community database on Accidents on the Roads in Europe
CBAM	carbon border adjustment mechanism
CFP	Common Fisheries Policy

CH4	methane
CIL	computer and information literacy
CMU	circular material use
CO_2	carbon dioxide
COD	chemical oxygen demand
CoM	Covenant of Mayors
COP	Conference of the Parties
COVID-19	Coronavirus disease 2019
CPI	Corruption Perceptions Index
DAC	Development Assistance Committee
DG	Directorate-General
DG AGRI	Directorate-General for Agriculture and Rural Development
DG MOVE	Directorate-General for Mobility and Transport
DMC	domestic material consumption
EAA	Economic Accounts for Agriculture
EAFRD	European Agricultural Fund for Rural Development
EAP	Environmental Action Programme
EBCC	European Bird Census Council
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
ECHA	European Chemicals Agency
EEA	European Environment Agency or European Education Area (depending on the context)
EEZ	Exclusive Economic Zone
EFSD	European Fund for Sustainable Development
EFTA	European Free Trade Association
EGSS	Environmental Goods and Services Sector
EHIS	European Health Interview Survey
EIB	European Investment Bank
EIONET	European Environment Information and Observation Network
EIGE	European Institute for Gender Equality
EIP-AGRI	European Innovation Partnership for Agricultural productivity and Sustainability
ELET	early leavers from education and training

EMODnet	European Marine Observation and Data Network
EPIC	European Platform for Investing in Children
EPO	European Patent Office
ERA	European Research Area
ERCAS	European Research Centre for Anti-Corruption and State-Building
ESA	European System of Accounts
ESAW	European Statistics on Accidents at Work
ESDAC	European Soil Data Centre
ESF	European Social Fund
ESF+	European Social Fund Plus
ESS	European Statistical System
ETC/ACM	European Topic Centre on Air pollution and Climate change Mitigation
ETC/ATNI	European Topic Centre on Air Pollution, Transport, Noise and Industrial Pollution
ETC/BD	European Topic Centre on Biological Diversity
ETC/ICM	The European Topic Centre on Inland, Coastal and Marine waters
EU	European Union
EU-LFS	EU Labour Force Survey
EU-SILC	EU Statistics on Income and Living Conditions
ERDF	European Regional Development Fund
F	fishing mortality
F_{MSY}	fishing mortality at maximum sustainable yield
FAO	Food and Agriculture Organisation of the United Nations
FDI	foreign direct investment
FEAD	Fund for European Aid to the most Deprived
FEC	final energy consumption
FIGARO	full international and global accounts for research in input-output analysis
FISE	Forest Information System for Europe
FRA	Fundamental Rights Agency
GAE	gross available energy
GBARD	Government budget allocations for research and development

GDP	gross domestic product
GERD	gross domestic expenditure on R&D
GFCF	gross fixed capital formation
GHG	greenhouse gas
GIC	gross inland consumption
GNI	gross national income
GVA	gross value added
GWP	global warming potential
HIV	human immunodeficiency virus
HLPF	High-level Political Forum
IAEG-SDGs	Inter-Agency and Expert Group on Sustainable Development Goal Indicators
ICD	International Classification of Diseases
ICES	International Council for the Exploration of the Sea
ICILS	International Computer and Information Literacy Study
ICPD	International Conference on Population and Development
ICT	information and communication technology
IOG	international ocean governance
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
ISCED	International Standard Classification for Education
JAHEE	Joint action on health inequalities
JRC	Joint Research Centre
LDCs	least-developed countries
LRTAP	long-range transboundary air pollution
LTAA	long-term annual average
LUCAS	Land Use/Cover Area frame Survey
LULUCF	land use, land-use change and forestry
MFF	Multiannual Financial Framework
MMR	Monitoring Mechanism Regulation
MPA	marine protected area
MRIO	multi-region input-output (table)
MSFD	Marine Strategy Framework Directive
MSY	maximum sustainable yield

N	nitrogen
N_2O	nitrous oxide
NACE	Statistical classification of economic activities in the European Community
NCD	non-communicable disease
NEC	national emission reduction commitments
NECPs	national energy and climate plans
NEDC	New European Driving Cycle
NEET	not in education, employment or training
NF_3	nitrogen triflouride
NGOs	non-governmental organisations
NH_3	ammonia
NO_3	nitrate
NOx	nitrogen oxide
O_2	oxygen
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
OOFs	other official flows
P	phosphorous
PEC	primary energy consumption
PISA	Programme for International Student Assessment
PM	particulate matter
PO_4	phosphate
POP	persistent organic pollutant
R&D	research and development
REACH	Registration, Evaluation, Authorisation and restriction of Chemicals
RMC	raw material consumption
RME	raw material equivalent
RRF	Recovery and Resilience Facility
SCI	Sites of Community Importance
SD	sustainable development
SDGs	Sustainable Development Goals
SEEA	System of Economic-Environmental Accounts

SEIP	Sustainable Europe Investment Plan
SES	Structure of Earnings Survey
SF_6	sulphur hexafluoride
SO_2	sulfur dioxide
SPA	Special Protection Areas
SSB	spawning stock biomass
STECF	Scientific, Technical and Economic Committee for Fisheries
SWD	staff working document
TEN-T	Trans-European Transport Network
TOSSD	Total Official Support for Sustainable Development
TV	television
UAA	utilised agricultural area
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNHCR	United Nations High Commissioner for Refugees
UNODC	United Nations Office on Drugs and Crime
UOE	UIS, OECD and Eurostat
VEP	vocational education and training
VHCN	very high capacity network
VLN	Voluntary Local Reviews
VNR	Voluntary National Review
WCED	World Commission on Environment and Development
WEI+	water exploitation index plus
WHO	World Health Organization
WISE	Water Information System for Europe
WLTP	Worldwide harmonized Light vehicles Test Procedure
WTO	World Trade Organisation
ZEV	zero-emission vehicle

Annex II: Methodological notes

Data coverage and sources

Data in this report are mainly presented for the aggregated EU level, referring to the current EU composition (27 Member States). In addition to the EU Member States, data for the EU candidate countries and the countries of the European Free Trade Association (EFTA) are included in the country-level comparisons throughout the report when available, complementing the EU-level analysis. When data availability allows, global comparisons of the EU with other large economies in the world (such as the United States, Japan and China) are also presented.

In order to reflect the 15-year scope of the 2030 Agenda, the analysis of trends is, as far as possible, based on data for the past 15 years. However, for a number of indicators, in particular those based on the EU Statistics on Income and Living Conditions (EU-SILC), data are only available from 2010 onwards.

The data presented in this report were mainly extracted in early April 2022. Additionally, the release of EU Labour Force Survey (LFS) data for 2021 was taken into account as far as data were available by the end of April 2022. Most of the data used to compile the indicators stem from the standard Eurostat collection of statistics through the ESS, but a number of other data sources have also been used, including other European Commission services, the European Environment Agency (EEA), the European Institute for Gender Equality (EIGE) and the OECD.

Eurostat's website contains a section dedicated to the EU SDG indicator set. Eurostat online data codes, such as sdg_01_10, allow easy access to the most recent data ([2]). The website also includes a section called 'Statistics Explained' ([3]), presenting the full range of statistical subjects covered by Eurostat in an easy-to-understand way. It works in a similar way to Wikipedia, offering an encyclopaedia of European statistics for everyone, complemented by a statistical glossary clarifying all terms used and numerous links to further information and the latest data and metadata.

Treatment of breaks in time series

Breaks in time series occur when the data collected in a specific year are not comparable with the data from previous years. This could be caused by a change in the classification used, the definition of the variable, the data coverage or other reasons. Breaks in time series could affect the continuity and consistency of data over time. However, it should be noted that such breaks may not necessarily undermine the reliability of the time series.

In the course of preparing this monitoring report, a case-by-case assessment of breaks in times series has been conducted to determine the extent to which a break would affect the assessment of an indicator. In cases where a break was considered significant enough to affect the assessment of an indicator trend or the comparability between countries, the analysis of the indicator was adjusted accordingly. Breaks in times series are indicated throughout the report in footnotes below the graphs.

Assessment of indicator trends

This publication provides an assessment of indicator trends against SDG-related EU objectives and targets. The assessment method considers whether an indicator has moved towards or away from the sustainable development objective, as well as the speed of this movement. The method focuses on developments over time and not on the 'sustainability' of the status ([4]).

Ideally, the trends observed for each indicator would be compared against theoretical trends necessary to reach either a quantitative target set within the political process or a scientifically established threshold. However, this approach is only possible for a limited number of indicators, where an explicit quantified and measurable target exists for the EU. In the remaining cases, a transparent and simple approach across the indicators is applied to avoid ad hoc value judgments. The two approaches are explained in more detail below.

Table II.1: Assessment categories and associated symbols

Symbol	With quantitative target	Without quantitative target
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (e.g. time series too short)	

The assessment of indicator trends is visualised in the form of coloured arrows (see Table II.1). The direction of the arrows shows whether the indicators are moving in a sustainable direction or not. This direction does not necessarily correspond to the direction in which an indicator is moving. For example, a reduction in the long-term unemployment rate, or in greenhouse gas emissions, would be represented with a green upward arrow, as reductions in these areas mean progress towards the sustainable development objectives. Where the trend assessment has been influenced by methodological changes, the arrow is shown in grey colour.

Depending on whether or not there is a quantitative EU policy target, two cases are distinguished, as shown in Table II.1. For indicators with a quantitative target, the arrows show if, based on past progress, the EU is on track to reaching the target. For indicators without a quantitative target, the arrows show whether the indicator has moved towards or away from the sustainable development objective, and the speed of this movement. The assessment method therefore differs slightly for these two types of indicators, as explained further on the following pages.

As far as possible, indicator trends are assessed over two periods:

- The **long-term trend**, which is based on the evolution of the indicator over the past 15-year period (usually 2005 to 2020 or 2006 to 2021). The long-term trend is also calculated for shorter time series if data are available for at least 10 consecutive years.
- The **short-term trend**, which is based on the evolution of the indicator during the past five-year period (usually 2015 to 2020 or 2016 to 2021). In a few exceptional cases, the short-term trend is calculated for shorter time periods, as long as data are available for at least three consecutive years.

Two arrows — for the assessment of the long-term and short-term trends — are therefore usually shown for each indicator, providing an indication of whether a trend has been persistent or has shown a turnaround at a certain point in time.

Method 1: Indicators without quantitative targets

In the absence of a quantified target, it is only possible to compare the indicator trend with the desired direction. An indicator is making progress towards the SD objectives if it moves in the desired direction, and is moving away from the SD objectives if it develops in the wrong direction. The assessment is generally based on the 'compound annual growth rate' (CAGR) formula, which assesses the pace and direction of an indicator trend. The CAGR formula uses the data from the first and the last years of the analysed time span and is used to calculate the average annual rate of change of the indicator (in %) between these two data points:

(1) $$CAGR = \left(\frac{y_t}{y_{t_0}}\right)^{\frac{1}{t-t_0}} - 1$$

where: t_0 = base year, t = most recent year, yt_0 = indicator value in base year, yt = indicator value in most recent year

The trend assessment is based on comparing the calculated growth rate of an indicator with a certain threshold, which is set at 1 % growth per year. The 1 % threshold is easy to communicate, and Eurostat has used it in its monitoring reports for more than 10 years. It is discerning enough to ensure there is a significant movement in the desired direction. Furthermore, it allows a nuanced picture to be presented, with a sufficient number of indicators falling into all four categories (5). The threshold should not be confused with the level of EU ambition on a given topic. It should also be noted that for some indicators, such as loss of biodiversity, any movement away from the SD objectives might be irreversible and lead to environmental, economic and social changes, thus affecting many SDGs simultaneously. Table II.2 shows the applied thresholds and the resulting symbols.

Table II.2: **Thresholds for assessing trends of indicators without quantitative targets**

Growth rate (CAGR) in relation to desired direction	Symbol
≥ 1 %	↑
< 1 % and ≥ 0 %	↗
< 0 % and ≥ - 1 %	↘
< - 1 %	↓

Method 2: Indicators with quantitative targets

The assessment of trends for indicators with targets is based on the CAGR described previously and also takes into account concrete targets set in relevant EU policies and strategies (see Table II.4). In this case, the actual (observed) growth rate is compared with the (theoretical) growth rate that would have been required up to the most recent year for which data are available in order to meet the target in the target year. This comparison is done for both the long-term (past 15 years) and short-term (past 5 years) periods and does not take into account projections of possible future developments of an indicator. The calculation of actual and required indicator trends is based on the CAGR formula and includes the following three steps:

Actual (observed) growth rate:

(2a) $$CAGR_a = \left(\frac{y_t}{y_{t_0}}\right)^{\frac{1}{t-t_0}} - 1$$

where: t_0 = base year, t = most recent year, yt_0 = indicator value in base year, yt = indicator value in most recent year

Required (theoretical) growth rate to meet the target:

(2b) $$CAGR_r = \left(\frac{x_{t_1}}{y_{t_0}}\right)^{\frac{1}{t_1-t_0}} - 1$$

where: t_0 = base year, t_1 = target year, yt_0 = indicator value in base year, xt_1 = target value in target year

Ratio of actual and required growth rate:

(2c) $$R_{a/r} = \frac{CAGR_a}{CAGR_r}$$

Table II.3 shows the thresholds applied for the Ra/r ratio and the resulting symbols.

Table II.3: Thresholds for assessing trends of indicators with quantitative targets

Ratio of actual and required growth rate	Symbol
≥ 95 %	↑
< 95 % and ≥ 60 %	↗
< 60 % and ≥ 0 %	↘
< 0 %	↓

The growth rates (CAGR) upon which the arrow symbols are based are provided in the notes below the Figures depicting the EU-level trends for all the main indicators in a chapter. For indicators with quantitative targets, the note gives the average annual growth rates observed for the two assessment periods as well as the growth rates that would be required to meet the target in the target year. For indicators without quantitative targets, only the observed growth rates are given.

Table II.4 shows the EU policy targets that have been considered for assessing indicator trends over the long- and short-term periods, to give an indication of whether the developments observed mean indicators are on track to meet their respective target in the target year.

Table II.4: EU policy targets considered for assessing indicator trends

Indicator	Target	Policy reference
People at risk of poverty or social exclusion (SDG 1)	Reduce the number of people at risk of poverty or social exclusion by 15 million by 2030, including at least 5 million children	European Pillar of Social Rights Action Plan (6)
Area under organic farming (SDG 2)	At least 25 % of the EU's agricultural land should be under organic farming by 2030	Farm to Fork strategy (7)
Use of more hazardous pesticides (SDG 2)	The use of more hazardous pesticides should be reduced by 50 % by 2030	Farm to Fork strategy
Years of life lost due to PM2.5 exposure (SDG 3, SDG 11)	Reduce the health impacts of air pollution by at least 55 % by 2030	Zero Pollution Action Plan (8)
People killed in road accidents (SDG 3, SDG 11)	Halving the overall number of road deaths in the EU by 2020 starting from 2010	Towards a European road safety area (9)
Low achievers in reading, maths and science (SDG 4)	The share of low-achieving 15-year-olds in reading, mathematics and science should be less than 15 % by 2030	European Education Area (10)
Participation in early childhood education (SDG 4)	At least 96 % of children between 3 years old and the starting age for compulsory primary education should participate in early childhood education and care by 2030	European Education Area
Early leavers from education and training (SDG 4)	The share of early leavers from education and training should be less than 9 % by 2030	European Education Area
Tertiary educational attainment (SDG 4, SDG 9)	The share of 25 to 34 year-olds with tertiary educational attainment should be at least 45 % by 2030	European Education Area
Share of adults with at least basic digital skills (SDG 4)	By 2030, at least 80 % of those aged 16 to 74 should have basic digital skills	European Pillar of Social Rights Action Plan

Indicator	Target	Policy reference
Primary and final energy consumption (SDG 7)	32.5 % increase in energy efficiency by 2030; for monitoring purposes this has been translated into absolute levels of primary and final energy consumption	Directive (EU) 2018/2002 ([11])
Share of renewable energy in gross final energy consumption (SDG 7, SDG 13)	Increase the share of renewable energy sources in gross final energy consumption to at least 32 % by 2030	Directive (EU) 2018/2001 ([12])
Young people neither in employment nor in education and training (NEET) (SDG 8)	Decrease the rate of young people neither in employment, nor in education or training (NEETs) aged 15 to 29 to 9 % by 2030	European Pillar of Social Rights Action Plan
Employment rate (SDG 8)	At least 78 % of the population aged 20 to 64 should be in employment by 2030	European Pillar of Social Rights Action Plan
Gross domestic expenditure on R&D (SDG 9)	Increasing combined public and private investment in R&D to 3 % of GDP	European Research Area ([13])
Share of households with high-speed internet connection (SDG 9, SDG 17)	By 2030, all European households should be covered by a gigabit network	2030 Digital Compass ([14])
Recycling rate of municipal waste (SDG 11)	Increase the preparing for re-use and the recycling of municipal waste to a minimum of 60 % by weight by 2030	Directive (EU) 2018/851 ([15])
Average CO2 emissions from new passenger cars (SDG 12, SDG 13)	Reduce CO_2 emissions from new passenger cars to 95 grams of CO_2 per km in 2021 (with a phase-in of the target in 2020)	Regulation (EU) 2019/631 ([16])
Greenhouse gas emissions (SDG 13)	Reduce net greenhouse gas emissions by 55 % until 2030 compared to 1990	European Climate Law ([17])
Marine protected areas (SDG 14)	Protect a minimum of 30 % of the EU's sea area by 2030	EU Biodiversity Strategy for 2030 ([18])
Terrestrial protected areas (SDG 15)	Protect a minimum of 30 % of the EU's land area by 2030	EU Biodiversity Strategy for 2030
Official development assistance (SDG 17)	Provide 0.7 % of gross national income (GNI) as ODA within the timeframe of the 2030 Agenda	The new European Consensus on Development ([19])

Method for calculating average scores at the goal level

In the synopsis and the country profiles chapters of this report, average scores of the indicators are used to rank the 17 SDGs according to their level of progress over the short-term (past 5 years) period. The calculation of average scores on the goal level is based on the calculations described on the previous pages for the indicators that have been chosen to monitor the respective SDG. For indicators without quantitative targets, the CAGR (see formula (1)) is used. For indicators with quantitative targets, the ratio of actual to required growth (see formula (2c)) is used. These values are inserted into a scoring function (which is different for indicators with and without quantitative targets) in order to calculate a score ranging from + 5 (best score) to – 5 (worst score) for each indicator. The average scores on the goal level are then calculated as the arithmetic mean of the individual scores of the indicators chosen for monitoring the respective goal (including both main and multipurpose indicators) ([20]). Consequently, these goal-level scores can also range from + 5 (best score) to – 5 (worst score).

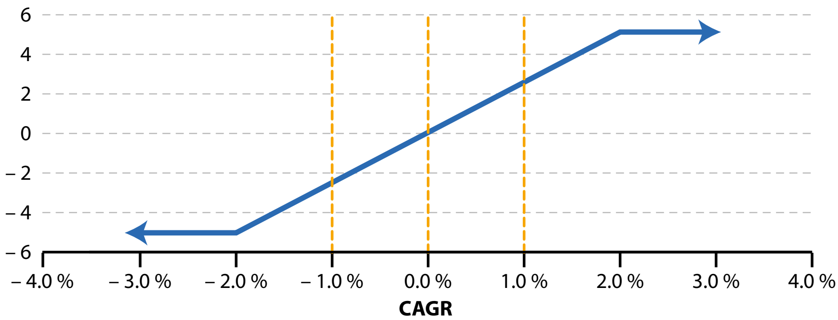
Note that the scoring functions use broader cut-off points than the thresholds shown in Tables II.2 and II.3 in order to allow for larger variability in the scores (an indicator with a CAGR of, for example, 1.1 % per year receives a different score than an indicator with a CAGR of, for example, 5.0 % per year, although they both fall into the same assessment category of Table II.2). However, the scores at the threshold points in Tables II.2 and II.3 are harmonised (the threshold values shown in both Tables result in scores of + 2.5, 0 and – 2.5, respectively) to ensure that indicators with and without quantitative targets have the same 'weight' when calculating the average score at the goal level.

Indicators for which trends cannot be assessed (for example due to insufficient time series) are not taken into account for the average score on the goal level. The share of assessed indicators (those accompanied by an 'arrow' symbol) has to be at least 75 % to compute the summary result; below this threshold, the available indicators are considered insufficient to calculate a meaningful average score at goal level.

Scoring function for indicators without quantitative targets

Figure II.1 below shows the scoring function for indicators without quantitative targets. In this case, the scoring function is a linear transformation, with cut-off points set at growth rates (CAGR) of 2.0 % and – 2.0 %. Indicators with a growth rate of exactly 0.0 % receive a score of 0. Indicators with growth rates of 2.0 % or above in the desired direction receive a score of + 5, indicators with growth rates of 2.0 % or above in the wrong direction receive a score of – 5.

Figure II.1: Scoring function for indicators without quantitative target

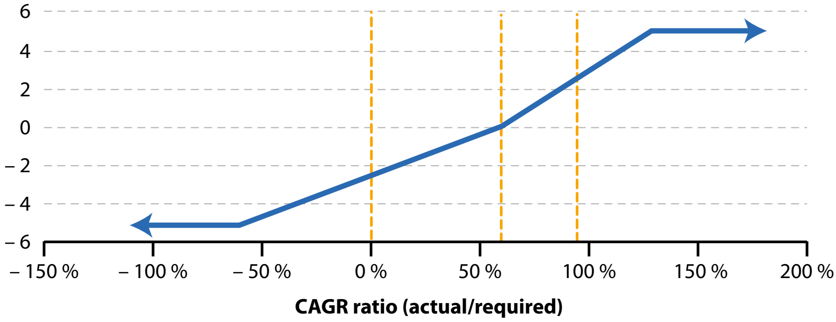


Note: The orange dotted lines represent the thresholds used for defining the assessment category of the indicator, as shown in Table II.2.

Scoring function for indicators with quantitative targets

Figure II.2 below shows the scoring function for indicators with quantitative targets. The scoring function is not linear in this case, with cut-off points set at CAGR ratios (actual to required growth) of 130 % and – 60 % (ratios below zero indicate a movement away from the target). Indicators with a CAGR ratio of 60 % receive a score of 0. Indicators with CAGR ratios of 130 % or above receive a score of + 5, indicators with CAGR ratios of – 60 % or below receive a score of – 5.

Figure II.2: Scoring function for indicators with quantitative target



Note: The orange dotted lines represent the thresholds used for defining the assessment category of the indicator, as shown in Table II.3.

Method for calculating countries' status scores

The country profiles chapter in this report applies an additional calculation of Member States' SDG status, referring to the relative position of countries towards each other based on the most recent year of data availability for each indicator. Using the formulas below, a country's status score of an indicator is calculated relative to the range of values from the worst- to the best-performing country, whereby outliers are excluded ([21]). The calculation is based on normalisation of indicator values with a min-max-method:

(3a) $$X_{ic} = \frac{x_{ic}\text{-}min_i(x_{ic})}{max_i(x_{ic})\text{-}mini(x_{ic})}$$ (3b) $$X_{ic} = \frac{max_i(x_{ic})\text{-}x_{ic}}{max_i(x_{ic})\text{-}min_i(x_{ic})}$$

X_{ic} is the normalised value of indicator x_{ic}, with i being the indicator, the c country and max_i and min_i being the maximum and minimum values of the indicator across all Member States for the most recent year of available data. Equation (3a) is used when higher indicator values are better (for example, employment rate), while equation (3b) is used when lower values are better (for example, greenhouse gas emissions per capita). Status scores for the aggregate EU level are calculated in the same way, using the EU aggregates available in the Eurostat database. The aggregation of a country's indicator scores at the SDG level is explained in the country profiles chapter.

Annex III: Data and methods for measuring consumption-related spillover effects

Measuring consumption-induced spillover effects is a complex and data-intensive exercise, requiring data on direct cross-border flows (such as imports and exports) and indirect cross-border flows (socio-economic and environmental impacts of specific products and sectors throughout the entire supply chain). Many of these indirect impacts cannot be directly observed and therefore quantifying them requires making assumptions and model-based estimates. Different international and national organisations and researchers have used different methods for calculating spillovers ([22]). The following methodologies are used for analysing spillover effects in this report:

1) **Multi-Regional Input–Output (MRIO) analysis** is a top-down approach looking at the entire supply chain, both in terms of direct (on-site) and of total (direct plus indirect) impacts ([23]). MRIO tables document the flow of money between various sectors in an economy and show the interconnections between industries located in different regions. MRIO data aim to estimate the 'real' impacts in the rest of the world linked to goods imported into a given country. The full international and global accounts for research in input–output analysis (FIGARO) ([24]) involving Eurostat and the European Commission's Joint Research Centre (JRC) aims to provide tools for analysing the socio-economic and environmental effects of globalisation for **CO_2 emissions** and **gross value added** in the EU ([25]). It constitutes a new statistical tool developed by Eurostat and the Joint Research Centre of the European Commission, using EU official data with complementary information on the main non-EU trading partners. The FIGARO inter-country input–output tables respect the same quality standards as official statistics and aspire to be the EU reference tool for policy-makers in the above-mentioned domains.

2) **Material footprints** quantify the worldwide demand for material extractions (biomass, metal ores, non-metallic minerals and fossil energy materials/carriers) triggered by consumption and investment by households, governments and businesses in the EU. Material footprints are estimated by Eurostat using data from national accounts and material flow accounts in a single-region input–output model based on the System of Economic Environmental Accounts (SEEA) standard. Material Flow Analysis (MFA) tracks material flows associated with commodities along (international) supply chains, primarily for raw or less processed commodities. It can be combined with resources embodied in trade serving as inputs for the commodity without physically flowing with the commodity ([26]).

3) The **land footprint** is the virtual amount of land, wherever it is in the world, needed to produce a final biomass-related product consumed within domestic borders. It is based on Eurostat's crop and trade statistics and applies land use coefficients to imports and exports of biomass related products.

4) **The Consumption Footprint** ([27]) is a set of 16 life cycle assessment-based indicators (also available as a single score) with the aim to quantify the environmental impacts of consumption at EU and Member State level. The assessment is based on physical models of representative products, covering a large number of emissions and resources used along the entire life cycle of those products. The model underpinning the indicators defines the inventory of environmental pressures (emissions to air, soil and water as well as the resources used) along the life cycle of circa 160 representative products, belonging to five areas of consumption (food, mobility, housing, household goods and appliances). This allows for detailed physical and environmental impact modelling ([28]). The impacts are allocated to the country where the product is consumed. Therefore, based on trade statistics, environmental impacts of the production of imported goods consumed in the EU are included in the analysis.

Annex IV: Methodology for assessing interlinkages in the EU context

Applying quantitative statistical methods for identifying correlations between the SDGs appears to be the most appropriate approach for a statistical office like Eurostat. Such methods were also used by the JRC ([29]) and in several academic articles ([30])([31])([32])([33])([34]). In line with these studies, and for the purpose of analysing SDG interlinkages in this report, Spearman's rank correlation was chosen over Pearson's correlation due to its suitability for monotonic non-linear relationships and little sensitivity to outliers ([35]).

In order to avoid false associations, prior to the correlation analysis a positive sign was assigned to indicators with values that would need to increase to achieve the SDGs (e.g. employment rate) and a negative sign to indicators with values that would need to decrease (e.g. greenhouse gas emissions). The correlation analysis was carried out across all indicator pairs with more than three common data pairs in the time series, using annual data from 2009 to 2020 or 2021 from all Member States. However, depending on the data availability for a specific indicator and country, many time series were actually shorter. Multipurpose indicators were only included once in all calculations, to avoid double-counting.

A correlation between an indicator pair is considered significant (and sufficiently strong) if its p-value is below 0.1 and if its correlation coefficient is above or below the threshold of ± 0.5. If the correlation coefficient is above 0.5, it is considered a positive interlinkage (synergy), while coefficients below -0.5 are considered a negative interlinkage (trade-off). Indicator pairs with a correlation coefficient between -0.5 and 0.5 or with a p-value above 0.1 are labelled as non-correlations.

It is important to keep in mind that correlation does not necessarily imply causality. For example, it is obvious that the positive correlation between the sales of ice-cream and the sales of sun glasses does not reflect a causal relationship between the two variables. Instead, both variables are likely driven by an independent third variable, namely weather. Similarly, a negative correlation between the two variables does not always mean that there is a causal link. Increase in ice cream sales (positive trend) and increase in deaths by drowning (negative trend) are also likely driven by good weather.

Nevertheless, even though a significant correlation between two indicators does not imply that the indicators are causally linked, correlation analysis is still helpful in quantitatively assessing whether improvements in one SDG coincide with improvements in other SDGs ([36]). Moreover, if the correlation analysis is applied to many countries and a specific synergy or trade-off is found repeatedly, it is likely that it does not appear by chance.

It must also be noted that because of data issues not all interlinkages can be captured by this method. Some indicators only show three or fewer data points and thus were excluded from the analysis, while many other, mostly environmental indicators, lack country-level data. Consequently, out a total of 5 253 possible combinations of indicators with country-level data, the actual number of indicator pairs included in the analysis varied from 4 895 for Belgium to 3 838 for Malta.

Notes

(1) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.
(2) In this report, online data codes are given as part of the source below each table and figure. When clicking on the online data code, the reader is directly led to the indicator table showing the most recent data. Alternatively, the data can be accessed by entering the data code in the search field on the Eurostat website. The indicator table also contains a link to the source dataset, which generally presents more dimensions and longer time series than the indicator table.
(3) Eurostat, Statistics explained.
(4) The following study discusses and analyses the differences in assessment methods of status (in a given year) and progress (change over time) for the EU Member States: Hametner, M., Kostetckaia, M. (2020), *Frontrunners and laggards: How fast are the EU member states progressing towards the sustainable development goals?*, Ecological Economics 177.
(5) Higher thresholds (for example, 2 %) have been tested and finally rejected, since they make the overall picture less interesting, as a vast majority of indicators would fall in the two 'moderate' categories.
(6) European Commission (2021), *The European Pillar of Social Rights Action Plan*, Publication Office of the European Union, Luxembourg.
(7) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM/2020/381 final.
(8) European Commission (2021), *Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'*, COM(2021) 400 final, Brussels.
(9) European Commission (2010), *Towards a European road safety area: policy orientations on road safety 2011–2020*, COM(2010) 389 final, Brussels.
(10) Council of the European Union (2021), *Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) (2021/C 66/01)*.
(11) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/2002 amending Directive 2012/27/EU on energy efficiency.*
(12) European Parliament and the Council of the European Union (2018), *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources*.
(13) Council of the European Union (2020), *Council conclusions on the New European Research Area*.
(14) European Commission (2021), *2030 Digital Compass: the European way for the Digital Decade*, COM(2021) 118 final.
(15) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/851 on waste*.
(16) European Parliament and Council of the European Union (2019), *Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011, OJ L 111*.
(17) *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')*.
(18) European Commission (2020), *EU Biodiversity strategy for 2030*, COM(2020) 380 final, Brussels.
(19) European Union (2017), *The new European Consensus on Development 'Our World, Our Dignity, Our Future'*, Joint statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission. 2017/C 210/01.
(20) In this 2022 edition of the monitoring report, the following exceptions apply: for SDG 15, the aggregation at the goal-level takes into account the trends in the soil sealing index (sdg_15_41) for the period 2009 to 2015.
(21) Outliers are identified by means of the interquartile range (IQR) method (see Hoaglin, D. C., Iglewicz, B., & Tukey, J. W. (1986). Performance of Some Resistant Rules for Outlier Labeling. *Journal of the American Statistical Association*, 81(396), 991–999 and Hoaglin, D. C., & Iglewicz, B. (1987). Fine-Tuning Some Resistant Rules for Outlier Labeling. *Journal of the American Statistical Association*, 82(400), 1147–1149). This method involves calculating the first and third quartiles of the country distribution, with the IQR representing the difference between these two values. The boundaries for identifying outliers are then determined by multiplying the IQR by the factor two and by subtracting/adding these values from/to the first/third quartile, respectively. Values below/above these thresholds are considered outliers and are excluded during indexing, meaning that countries identified as outliers with this method are assigned the value of the next best/worst country for the indexing.
(22) See e.g. studies conducted by the French *Ministère de la transition écologique et solidaire* and *Statistics Sweden* as well as Palm, V., Wood, R., Berglund, M., Dawkins, E., Finnveden, G., Schmidt, S. and Steinbach, N. (2019), *Environmental pressures from Swedish consumption: A hybrid multi-regional input-output approach*, Journal of Cleaner Production, 228, p. 634–44.
(23) Lenzen, M. (2000), Errors in Conventional and Input–Output-based Life Cycle Inventories, Journal of Industrial Ecology 4, 127–148.
(24) European Commission, *ESA Supply, use and Input-output tables: FIGARO.*
(25) Eurostat (2019), European Union Inter-Country Supply, Use and Input–Output Tables — Full International and Global Accounts for Research in Input–Output Analysis (FIGARO).
(26) Sustainable Development Solutions Network (SDSN), 2019, *Policy Brief: International Spillovers and the Sustainable Development Goals (SDGs). Measuring how a country's progress towards the SDGs is affected by actions in other countries*.

([27]) European Platform on Life Cycle Assessment, *Consumption Footprint: Assessing the environmental impacts of EU consumption*.
([28]) Castellani, V., Beylot, A. Sala, S. (2019), *Environmental impacts of household consumption in Europe: Comparing process-based LCA and environmentally extended input-output analysis*, Journal of Cleaner Production, 240, p.117966.
([29]) Miola A, Borchardt S, Neher F, Buscaglia D (2019), *Interlinkages and policy coherence for the Sustainable Development Goals implementation: An operational method to identify trade-offs and co-benefits in a systemic way,* Publications Office of the European Union, Luxembourg, Appendix A.
([30]) Pradhan, P., Costa, L., Rybski, D., Lucht, W., & Kropp, J. P. (2017), *A Systematic Study of Sustainable Development Goal (SDG) Interactions*, Earth's Future, 5(11), 1169–1179.
([31]) Kroll, C., Warchold, A., & Pradhan, P. (2019), *Sustainable Development Goals (SDGs): Are we successful in turning trade-offs into synergies?* Palgrave Communications, 5(1), 140.
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Sustainable development in the European Union

Monitoring report on progress towards the SDGs in an EU context

Sustainable development is firmly anchored in the European Treaties and has been at the heart of European policy for a long time. The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), adopted by the UN General Assembly in September 2015, have given a new impetus to global efforts for achieving sustainable development. The EU is fully committed to playing an active role in helping to maximise progress towards the Sustainable Development Goals. This publication is the sixth of Eurostat's regular reports monitoring progress towards the SDGs in an EU context. The analysis in this publication builds on the EU SDG indicator set, developed in cooperation with a large number of stakeholders. The indicator set comprises around 100 indicators and is structured along the 17 SDGs. For each SDG, it focuses on aspects that are relevant from an EU perspective. The monitoring report provides a statistical presentation of trends relating to the SDGs in the EU over the past five years ('short-term') and, when sufficient data are available, over the past 15 years ('long-term'). The indicator trends are described on the basis of a set of specific quantitative rules. This 2022 edition also analyses the COVID-19 pandemic's impacts during 2020, 2021 and the beginning of 2022 that are visible in Eurostat's official statistics.

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