Sustainable development in the European Union

Monitoring report on progress towards the SDGs in an EU context

2021 edition

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Foreword of Commissioner Gentiloni

During the last year, while combatting the COVID-19 pandemic, the European Commission has focused on concrete actions to bring tangible progress in the areas of the Sustainable Development Goals (SDGs). Several deeply transformative initiatives have been presented, such as the European Green Deal, the Climate Law and the European Pillar of Social Rights Action Plan. Additionally, the EU adopted unprecedented instruments such as the European instrument for temporary Support to mitigate Unemployment Risks in an Emergency (SURE) or NextGenerationEU to build back better over the medium term.

The European Green Deal has become a decisive part of the answer to the current crisis as well as a growth strategy for making the EU's economy sustainable. It is our roadmap for turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all. The fact that in the middle of the pandemic the EU has agreed on the much more ambitious greenhouse gas emission target of 55 % reduction by 2030 shows the EU's determination to use climate action as an opportunity for economic recovery. At the same time, the change towards a more sustainable, fairer and more inclusive future will also entail short-term costs and challenges. Therefore, the Commission has also presented the European Pillar of Social Rights Action Plan to ensure fair and well-functioning labour markets and social protection systems.

Rebuilding a sustainable and resilient Europe also requires substantial financial resources. The Recovery and Resilience Facility offers an unprecedented opportunity to create European flagship areas for investments and reforms with tangible benefits for the economy and citizens across the EU. The six pillars of the Recovery and Resilience Facility are closely aligned with the priorities of 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 European Commission remains committed to the 2030 Agenda and has an ambitious political programme to deliver on sustainability in the EU and beyond. The SDGs will continue to provide the umbrella for all EU policies and for investing EU funds. Sustainable development is mainstreamed into the policymaking and economic coordination processes, like the European Semester. Actions at all levels, from local, regional and national to European, are necessary to achieve a better and more sustainable future. To achieve the SDGs, everybody has to contribute to make sustainable development a reality.

This monitoring report on SDGs is our latest contribution to the debate on the future of Europe and world in 2030 and beyond, as well as on the actions we must take to get there. Knowing where we stand, identifying the most pressing sustainability challenges and critically examining our performance is essential, if we are 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 fifth edition of Eurostat's monitoring report on Sustainable Development Goals (SDGs), which provides a quantitative assessment of the progress of the European Union (EU) towards reaching the SDGs. The 2021 edition is based on a set of 102 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.

The 2021 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. The 2021 edition also includes a chapter on the status and progress of EU Member States towards achieving the SDGs and a quantitative analysis of the links between the SDGs. Also, for the first time, the spillover effects of the EU's actions on the ability of other countries to achieve the SDGs are analysed. Two further innovations are the evaluation against new targets of the Green Deal and the analysis of decoupling of economic growth from environmental degradation.

The indicators show the progress the EU has achieved in implementing the 17 SDGs and also point to areas where further effort is needed.

The past year was marked by the COVID-19 pandemic, which continues to have a significant impact on every aspect of life, from public health, economic and social stability to the environment. As a result, progress towards the SDGs may have been compromised and monitoring the indicators has become more important than ever. In response to this, Eurostat launched a new European Statistical Recovery Dashboard containing short-term data for the economy, businesses and the labour market. Based on a selection of the indicators of this dashboard, this year's report also analyses — in a dedicated chapter — how the pandemic has influenced the EU on its way towards achieving the SDGs.

I believe that the 2021 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

Acknowledgements

Data coverage and direct links to Eurostat's database:

The data presented in this publication were extracted in early May 2021.

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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Disclaimer

Synopsis

Sustainable development objectives have been at the heart of European policy-making for a long time, firmly anchored in the European Treaties ([1]) and mainstreamed in key projects, sectoral 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 has fully committed itself to delivering on the 2030 Agenda and its implementation, as outlined in 'The European Green Deal' ([2]) and the staff working document (SWD) 'Delivering on the UN's Sustainable Development Goals — A comprehensive approach' ([3]).

The COVID-19 pandemic has affected all aspects of life, both in the EU and globally. The impacts of the pandemic itself and of the contingency measures taken by countries in response to it are increasingly becoming visible, for example through Eurostat's European Statistical Recovery Dashboard. The COVID-19 crisis has not only underlined the interconnectedness of the social, economic and environmental spheres, but has also highlighted the importance of achieving the SDGs. Progress towards the SDGs in the EU had already been uneven before COVID-19, 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 ([4]).

This publication, entitled 'Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context (2021 edition)', is the fifth in a series of annual monitoring exercises launched by Eurostat in 2017. It is based on the EU SDG indicator set that was developed to monitor progress towards the SDGs in an EU context. The SDG monitoring report aims to present an objective assessment of whether the EU — according to the selected indicators — has progressed towards the SDGs over the past five- and 15-year periods. This synopsis chapter provides a statistical overview of progress towards the SDGs in the EU over the most recent five-year period ('short-term') based on the EU SDG indicators.

The report's thematic chapters — one for each SDG — present a more detailed analysis of progress for the individual indicators, complementing the short-term assessment with a long-term perspective that reflects the 15-year scope of the 2030 Agenda. Additionally, a new chapter on cross-cutting issues addresses topics that affect several or all SDGs and that cannot be analysed from the perspective of a single goal. These topics are: (1) the COVID-19 pandemic and how it impacted the EU's progress towards the SDGs, (2) an analysis of the interlinkages (synergies and trade-offs) that exist between the SDGs at EU

level, and (3) an assessment of the positive and negative impacts ('spillovers') of consumption in the EU on other parts of the world in relation to achieving the 2030 Agenda.

How is progress assessed?

Indicator trends are assessed on the basis of their average annual growth rate during the past five years. For the 15 indicators with quantitative EU targets ([5]), progress towards those targets is assessed. These targets mainly exist in the areas of climate change, energy consumption and education. All other indicators are assessed according to the direction and speed of change. Arrow symbols are used to visualise the results of these assessments. The meaning of these symbols is explained in the introduction and at the beginning of each thematic chapter; the overall approach to assessing indicator trends is explained in more detail in the introduction (see page 26).

For each SDG, this synopsis summarises progress in the selected indicators towards the respective goal. This summary is based on an average score for each SDG, which is obtained by calculating the mean of the individual indicator assessments, including the multipurpose indicators. The method for summarising progress at the goal level based on the selected indicators is explained in the introduction (see page 29).

The findings presented in this publication are based on developments over a five-year timespan. Studies and reports that consider current status (in addition to or instead of trends), different indicators or different timespans may come to different conclusions. It also needs to be noted that the overall assessment of EU progress towards the SDGs presented in this report is not fully comparable with the assessment presented in previous editions of Eurostat's SDG monitoring report. This is due to changes in the selection of indicators (including the use of multi-purpose indicators) for a number of goals and the consideration of new EU policy targets that were adopted in 2020 or early 2021, for example for the European Education Area.

How has the EU progressed towards the SDGs?

The figure on the next page shows a statistical summary of EU progress towards the SDGs over the most recent five-year period for which data are available, based on the average scores of the indicators selected to monitor these goals in an EU context. Over this five-year period, the EU made progress towards most goals. Progress in some goals was faster than in others, and movement away from the sustainable development objectives occurred in specific areas of a number of goals as well as for two goals overall. It is important to note that many indicators refer to the period up to 2019 only, which means that the findings presented here sometimes refer to the situation before the COVID-19 pandemic. A more detailed description of individual indicator trends can be found in the 17 thematic chapters of this report.

As the figure on the next page shows, the EU made strong progress over the past five years towards fostering peace and personal security, access to justice and trust in institutions (SDG 16). Good progress was also visible in reducing poverty and social exclusion (SDG 1) and in improving the EU's health situation (SDG 3). However, due to the time lag of the respective indicators, the assessment of the two goals on poverty (SDG 1) and health (SDG 3) still refers to the period up to 2019 and therefore does not reflect the impacts of the COVID-19 pandemic.

The assessment of the remaining goals is to some extent already affected by the pandemic, with COVID-19 markedly slowing the reported average progress. In the area of the economy and the labour market (SDG 8), the COVID-19 crisis has interrupted the continuous improvement observed since 2013. Similar impacts can be observed in the areas of education (SDG 4), gender equality (SDG 5), other inequalities (SDG 10) as well as global partnerships and means of implementation (SDG 17), where 2020 data show a clear deterioration for individual indicators.

Overview of EU progress towards the SDGs over the past 5 years, 2021
(Data mainly refer to 2014–2019 or 2015–2020)

16 Peace, justice and strong institutions

3 Good health and well-being

1 No poverty

11 Sustainable cities and communities

5 Gender equality

8 Decent work and economic growth

► **significant progress**

12 Responsible consumption and production

13 Climate action

4 Quality education

9 Industry, innovation and infrastructure

2 Zero hunger

10 Reduced inequalities

Goals for which trends cannot be calculated (*)

▼

6 Clean water and sanitation

15 Life on land

17 Partnerships for the goals

14 Life below water

7 Affordable and clean energy

◄ **moderate movement away**   ► **moderate progress**

(*) Due to lack of time series for more than 25 % of the indicators

Moderate progress is visible for sustainable cities (SDG 11), consumption and production (SDG 12), sustainable agriculture (SDG 2) and R&D and innovation (SDG 9). For these goals 2020 data are not yet available, therefore their assessment reflects the period before the onset of the pandemic.

The overall assessment of SDG 13 'Climate action' remains more or less neutral. While positive trends are visible for climate mitigation and support to climate action, the assessment of the past five years is negatively affected by the intensifying climate impacts Europe is facing. It is worth noting that the assessment of progress towards the greenhouse gas emissions reduction target is based on past progress and not on projections of future emissions based on planned legislation and policy measures.

For two goals — SDG 7 'Affordable and clean energy' and SDG 15 'Life on land' — the aggregation of the individual indicator trends shows a slight movement away of the EU from the respective SD objectives over the past five years. In the case of SDG 7, this overall slightly negative assessment is due to increases in the EU's energy consumption in the period from 2014 to 2019 and thus does not yet reflect the — at least temporary — reductions expected for 2020. The assessment of SDG 15 shows that ecosystems and biodiversity remain under pressure from human activities.

For two further goals — SDG 6 'Clean water and sanitation' and SDG 14 'Life below water' — overall EU trends cannot be calculated due to a lack of sufficient data for the past five years.

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 intact. Citizen's confidence in EU institutions — the European Commission, the European Parliament and the European Central Bank — has grown considerably since 2014.

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. Due to the time lag of the statistics on income and living conditions (SILC), the data do not yet reflect the potential impacts of the COVID-19 pandemic and the corresponding contingency measures on the EU's poverty situation. In the area of multidimensional poverty, trends in the five-year period up to 2019 show that fewer people were affected by income poverty, suffered from severe material deprivation or lived in households with very low work intensity. This resulted in a marked improvement concerning the overall risk of poverty or social exclusion across the EU. In addition, fewer people faced problems related to their homes, such as overcrowding, poor dwelling conditions, a lack of sanitary facilities, or the inability to keep the home adequately warm.

Similar to SDG 1, the assessment of **SDG 3 'Good health and well-being'** does not yet reflect the impacts of the COVID-19 pandemic due to the time lag of the respective indicators. The moderately strong progress shown for this goal consequently refers to the period up to 2019, which has seen considerable improvements in almost all health-related areas monitored here. This includes improvements in both external health determinants such as noise and air

pollution and in lifestyle-related risk factors such as smoking. These improvements are also reflected in the reduction of avoidable mortality, referring to both preventable and treatable causes of death. In addition, deaths due to HIV, tuberculosis and hepatitis have fallen continuously. Moreover, fewer people died in accidents at work or on roads, although the reduction in road traffic deaths is too slow to meet the respective 2020 target. Together with the improvements in access to healthcare reported up to 2019, these trends have helped to further increase the number of healthy life years in the EU. However, the changes in mortality conditions caused by the COVID-19 pandemic are likely to result in a considerable deterioration of future SDG 3 assessments, as is, for example, already visible in the significant reduction in life expectancy across the EU in 2020.
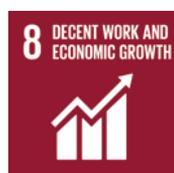
SDG 8 'Decent work and economic growth' is characterised by steady improvements in the EU's economic and labour market situation up to 2019. The year 2020 has, however, been marked by a turnaround in almost all aspects of the economy and labour markets monitored here. The substantial drop in GDP per capita in 2020 compared with the previous year has gone hand in hand with a fall in investment and employment and a considerable increase in the share of young people not in education, employment or training (NEET). Due to the nature of the indicator, the EU's long-term unemployment rate has not yet seen a clear COVID-19-related impact. Despite these recent deteriorations, the 2020 picture for SDG 8 still constitutes an improvement compared with five years earlier, which might be due to policy actions such as the introduction of short-time working schemes that helped to cushion the pandemic's negative impact on the EU's labour market. Other indicators, especially in-work poverty, have a longer time lag and thus only reflect the favourable developments in the EU before the onset of the pandemic.

The indicators used for monitoring **SDG 11 'Sustainable cities and communities'** partly overlap with those of SDG 1 (poverty) and SDG 3 (health) and do not yet reflect the impacts of the COVID-19 pandemic. Up to 2019, trends concerning the quality of life in cities and communities — referring to issues such as overcrowding, poor dwelling conditions, exposure to noise and air pollution, and the occurrence of crime, violence and vandalism in the neighbourhood — have been clearly favourable. Developments were less clear-cut for other aspects of SDG 11. Already before the pandemic public passenger transport modes (buses and trains) were continuously losing shares to cars, a development that is likely to be exacerbated by the COVID-19 crisis. Progress towards the 2020 target of halving road traffic deaths has moreover slowed in recent years, making its achievement unlikely. 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.

Trends concerning **SDG 12 'Responsible consumption and production'** do not yet reflect the impacts of the COVID-19 pandemic and have shown a mixed picture in the period up to 2019. For both energy and material use, only relative decoupling from economic growth has been visible over the past five years of available data. This means that the recent increases in the EU's resource and energy productivity have mainly been a result of strong GDP growth and do not necessarily reflect more sustainable consumption patterns of natural resources. This trend is evidenced by the growth in total waste generation (excluding mineral wastes), even though the trend in the circular material use rate points to an increased recycling and recovery of waste in the EU. Furthermore, increases in CO_2 emissions from new passenger

cars between 2016 and 2019 have put the EU car fleet off track to meeting its target for 2020. On the positive side, the consumption of toxic chemicals has slightly fallen since 2014, and the gross value added in the environmental goods and services sector (EGSS) has risen considerably.

As there are no major issues concerning hunger in the EU, monitoring **SDG 2 'Zero hunger'** in an EU context mainly focuses on the sustainability of agricultural production and its environmental impacts. Past five-year trends concerning the viability and sustainability of agricultural production have been favourable. The labour productivity of the EU's agricultural sector has improved and public investments in agricultural R&D have increased. In addition, risks related to pesticide use have fallen, and the area under organic farming has grown steadily, although stronger progress will be required to meet the target of farming 25 % of the EU's total farmland organically by 2030. The adverse impacts of agricultural production, however, are still clearly visible in the EU. Ammonia emissions from agriculture have increased since 2013, accompanied by rising nitrate concentrations in EU groundwater bodies. Moreover, the dramatic decline of common farmland birds observable since the 1990s continues, although the pace of this decline appears to slow down. On a more positive note, the EU land area at risk of severe soil erosion by water has decreased slightly since 2010. EU trends regarding the topic of malnutrition cannot be assessed due to the lack of a robust time series.

SDG 9 'Industry, innovation and infrastructure' is characterised by divergent developments in the monitored areas. As regards R&D and innovation, the EU's R&D intensity continues to grow too slowly to reach the long-standing objective of raising R&D expenditure to 3 % of GDP. Other trends in R&D and innovation have, however, been clearly favourable, with steady increases in R&D personnel and in tertiary educational attainment. Also, patent

applications to the European Patent Office have risen considerably over the past five years, despite a slight decline in 2020. Moreover, the air emissions intensity of industry — monitored here by particulate matter emissions from manufacturing in relation to the sector's gross value added — has improved since 2013. In contrast, developments are clearly unfavourable in the area of sustainable transport. Both passenger and freight transport have shifted further away from environmentally friendly modes such as buses, trains or inland waterways, and the increase in CO_2 emissions from new passenger vehicles between 2016 and 2019 has pushed the EU car fleet off track to meeting its 2020 target. A new indicator on digitalisation shows 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 9 above, **SDG 5 'Gender equality'** also shows quite divergent developments in the monitored areas. In the area of employment, women's hourly earnings are slowly catching up with those of men, and the gender employment gap has shrunk since 2015, albeit this is largely due to a drop in 2020 when the COVID-19 pandemic hit the EU's labour market. Women continue to increasingly occupy leadership positions, as shown by the 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. The gender gap is reversed in the area of education, with more young women than men attaining secondary and tertiary education. For both early school leaving and tertiary education, these gaps have widened since 2015, indicating that young men are continuing to fall further behind women in terms of educational attainment levels. The improvement in the overall SDG 5 assessment compared with previous reports is in part due to changes in the selection of indicators.

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 towards its 2030 targets for early childhood education, early leavers from education and training and tertiary educational attainment. Adult learning had also been increasing until 2019 but saw a considerable drawback in 2020, most likely due to changes to the EU labour market brought by COVID-19. Trends have, however, 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 even 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 has grown only marginally since 2015, making the achievement of the target of raising this share to 70 % by 2025 unlikely.

Developments in the area of **SDG 10 'Reduced inequalities'** reveal a diversified picture. While income inequalities within countries and economic inequalities between countries had been shrinking up to 2019, data on labour market trends for 2020 highlight the challenges EU countries face concerning migrant integration, which have intensified due to the COVID-19 pandemic. Data from the statistics on income and living conditions (SILC) are available up to 2019 and show slightly favourable trends for income inequalities between the rich and the poor as well as for the gap in the risk of poverty between rural and urban areas in EU countries. Trends up to 2019 also show a continued convergence of Member States regarding GDP per capita and household income. However, the labour market integration of migrants from outside the EU saw a clear drawback in 2020, with considerable increases in the gap between non-EU citizens and EU home-country nationals for early school leavers, young people neither in employment nor in education and training (NEET) and the employment rate. This is a result of non-EU citizens being much more affected by the COVID-19 impacts than home-country nationals.

EU developments regarding **SDG 17 'Partnerships for the goals'** have also been mixed. While imports from developing countries continued to grow, the financial support the EU provides 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 slowly but 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. Concerning financial governance within the EU, the EU's overall debt-to-GDP ratio rose sharply to more than 90 % 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, and a shift of taxation from labour towards environmental taxes has not taken place in the EU. On a more positive note, the new indicator on digitalisation shows a strong increase in the share of households enjoying high-speed internet connections, contributing to achieving the EU's 2030 connectivity objectives.

The overall assessment of progress towards **SDG 13 'Climate action'** remains more or less neutral. While according to provisional estimates for 2019 the EU has already reduced its net greenhouse gas emissions by about 25 % since 1990 ([6]), further progress will be required to meet the new 55 % reduction ambition for 2030. This assessment is based on past progress and 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. Implementing the planned measures outlined in the NECPs of the Member States is currently estimated to result in an overall

EU emission reduction of 41 % by 2030 (without taking into consideration emission removals) and would be an important step towards reaching the new climate target ([7]). Moreover, while the EU's greenhouse gas emissions intensity of energy consumption has continued to improve, further progress will be required to meet the current target of raising the share of renewable energies to 32 % by 2030. Meanwhile, the impacts of global climate change keep intensifying. European surface temperature in the decade 2010 to 2019 was already 1.7 °C above pre-industrial times, an increase of 0.2 °C on the preceding decade. Influenced by global warming, monetary losses from weather- and climate-related disasters continue to rise. Moreover, due to the absorption of CO_2 into the world's oceans, the mean ocean acidity continues to increase, and in 2019 reached an unprecedented high over pre-industrial levels. In reaction to these trends, the EU is stepping up its support for climate action in many ways, as evidenced for example by the increase in the EU's contribution to climate finance for developing countries and the growing number of signatories to the Covenant of Mayors for Climate and Energy.

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 the area protected under the Natura 2000 network have slightly increased, 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 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 status of ecosystems and biodiversity in the EU is insufficient, and that the negative impacts of EU consumption patterns on global biodiversity are considerable ([8]).

Similar to SDG 15, the overall goal-level assessment of **SDG 7 'Affordable and clean energy'** is slightly negative. This is largely due to unfavourable developments between 2014 and 2019 in the areas of energy consumption and energy supply. Both primary and final energy consumption as well as per-capita energy consumption in households reached a low in 2014 but have increased since then. As a result, the EU is currently not on track to meeting its target to improve energy efficiency by 32.5 % by 2030. The trends in energy consumption have gone hand in hand with an increasing dependence on energy imports from outside the EU, which reached a new record high in 2019. The share of renewable energies — which are considered a domestic source — in electricity, heating, cooling and transport has been rising steadily, although further progress seems necessary to reach the target of raising this share to 32 % by 2030. Clearly positive trends are visible for energy productivity and the greenhouse gas emissions intensity of energy consumption, indicating that energy is used more and more efficiently in the EU. In addition, the proportion of people who are unable to keep their home adequately warm had been falling up to 2019. The COVID-19 pandemic is likely to have a strong impact on SDG 7 once 2020 data are available, as energy consumption is expected to have fallen considerably in that year.

For the following two SDGs, average scores at goal level cannot be calculated due to insufficient data over the past five years.

For **SDG 6 'Clean water and sanitation'**, EU aggregate data are not available for several indicators. This makes it impossible to calculate an average score at goal level. However, available data paint a somewhat mixed picture for the EU for this goal. On the positive side, the share of people without appropriate sanitation facilities in their households has been

steadily decreasing in the EU, with most Member States already having universal access to sanitation. Europeans are also enjoying improved bathing water quality in inland waters. However, divergent trends are visible for pollutant concentrations in rivers and groundwater bodies. 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 mg/l), serious problems at the regional or local level still exist.

Available data for **SDG 14 'Life below water'** are still somewhat limited in scope, which makes it impossible to calculate an average score at the goal level. While the area of marine territory protected under the Natura 2000 network continues to grow, 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. Similarly, model-based indicators on sustainable fisheries provide an (improving) picture only for the North-East Atlantic, while data for other EU waters such as the Mediterranean or the Black Sea (where the situation may be less favourable) are not yet robust enough to be used for monitoring. The increase in the share of coastal bathing sites with excellent water quality has slowed in recent years, but overall the trend is still moderately positive. Unfavourable trends are, however, visible for ocean acidification, as already mentioned for SDG 13 above. Due to the absorption of CO_2 into the world's oceans, the mean ocean acidity continues to increase, and in 2019 reached a new unprecedented high over pre-industrial levels.

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 focused 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 ([9]). 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 33) makes use of these short-term data, showing the monthly and quarterly impacts of the pandemic throughout 2020.

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 electricity use and CO_2 emissions from fossil fuel combustion 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. As the long-term effects of the COVID-19 pandemic on the EU economy, labour market, education and poverty, as well as on environmental issues, remain to be seen, future SDG monitoring reports might present a different picture about the consequences of the pandemic.

Notes

(¹) Articles 3 (5) and 21 (2) of the Treaty on European Union (TEU).

(²) European Commission (2019), *The European Green Deal*, COM(2019) 640.

(³) European Commission (2020), *Delivering on the UN's Sustainable Development Goals — A comprehensive approach*, SWD(2020) 400 final, Brussels.

(⁴) 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.

(⁵) See Table II.1 in Annex II.

(⁶) Net emissions according to the provisional agreement on the European Climate Law. Data include international aviation, indirect CO_2, and natural sinks from land use, land use change and forestry (LULUCF) whereby the annual contribution of emission removals from LULUCF is limited to 225 Mt of CO_2 equivalents. 2019 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-2.

(⁷) European Commission (2021), *Progress made in cutting emissions*.

(⁸) 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*.

(⁹) 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.

Introduction

1 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, sectoral 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 of economic governance. 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 fifth 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 (see Section 3.1, page 25), 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 policies at both EU and Member State levels. As part of this process, it will promote the ongoing assessment and monitoring of progress in implementing the SDGs, and it will help to highlight their cross-cutting nature and the links between them.

This 2021 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 'policy background' and 'monitoring sustainable development in the EU' sections below). It also contains a new chapter on cross-cutting issues, such as COVID-19, interlinkages between the SDGs and spillover effects ([5]). The

detailed monitoring results are presented in 17 chapters, one for each of the 17 SDGs. This is followed by a 'country profiles' chapter on status and progress of EU Member States towards the SDGs. The Annexes contain notes on methods and sources (see page 387).

2 Policy background

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 most widely used nowadays. Following this report, 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 were among the most important milestones in the international pursuit of sustainable development, which paved the way for the 2030 Agenda ([9]).

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 new 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 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

Figure 0.1: Important milestones on the road to the Agenda 2030
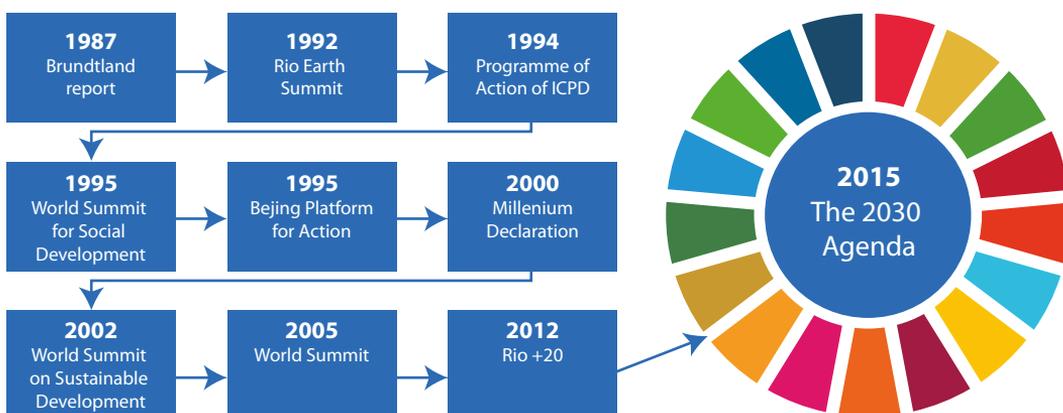
Figure 0.2: The UN Sustainable Development Goals

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, undertaken by both developed and developing countries, and provide a platform for partnerships, including through the participation of major groups and other relevant stakeholders [12]. In view of this, many countries are updating their national sustainable development strategies based on the 2030 Agenda [13].

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 [14].

In July 2017, the UNGA adopted a global SDG indicator list, including 232 indicators [15]. However, only slightly more than half of these are classified as tier 1 indicators by the UN, meaning data are available and published by more than 50 % of countries globally. For a further 42 % 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 exist not only in developing countries, but also in developed nations. 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, as foreseen in the governance of the global SDGs indicators, the Statistical Commission conducted a comprehensive review of the indicator framework in early 2020. This resulted in the approval of 36 major changes to the global SDG indicator list in the form of replacements, revisions, additions

and deletions by the 51st session of the Statistical Commission in March 2020. 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 ([16]).

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 for 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 ([17]).

The global indicator framework 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 ([18]), for Africa ([19]) and for Latin America and the Caribbean ([20]). 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 ([21]). The UNECE also published a Roadmap on Statistics for Sustainable Development Goals in July 2017 ([22]). The roadmap includes six sections, focusing on (a) establishing national mechanisms for collaboration; (b) assessing the readiness of countries to provide data on global SDG indicators; (c) developing

regional, national and sub-national indicators; (d) reporting mechanisms for data on SDG indicators; (e) capacity development for SDG statistics; and (f) communicating statistics for SDGs. It includes recommendations for national statistical offices and concrete actions to support the Conference of European Statisticians member countries in implementing a measurement system for the SDGs ([23]). A second edition of the roadmap is currently under preparation. The EU SDG indicator set as described in section 3.1 is in line with the UNECE roadmap.

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 welcomed the adoption of the 2030 Agenda and committed to implementing the SDGs and fully integrating the goals into the European policy framework ([24]).

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 ([25]). 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 Goals.

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' ([26]) announced the integration of the SDGs into the European policy framework. In addition, a reflection paper 'Towards a Sustainable

Figure 0.3: The European Green Deal
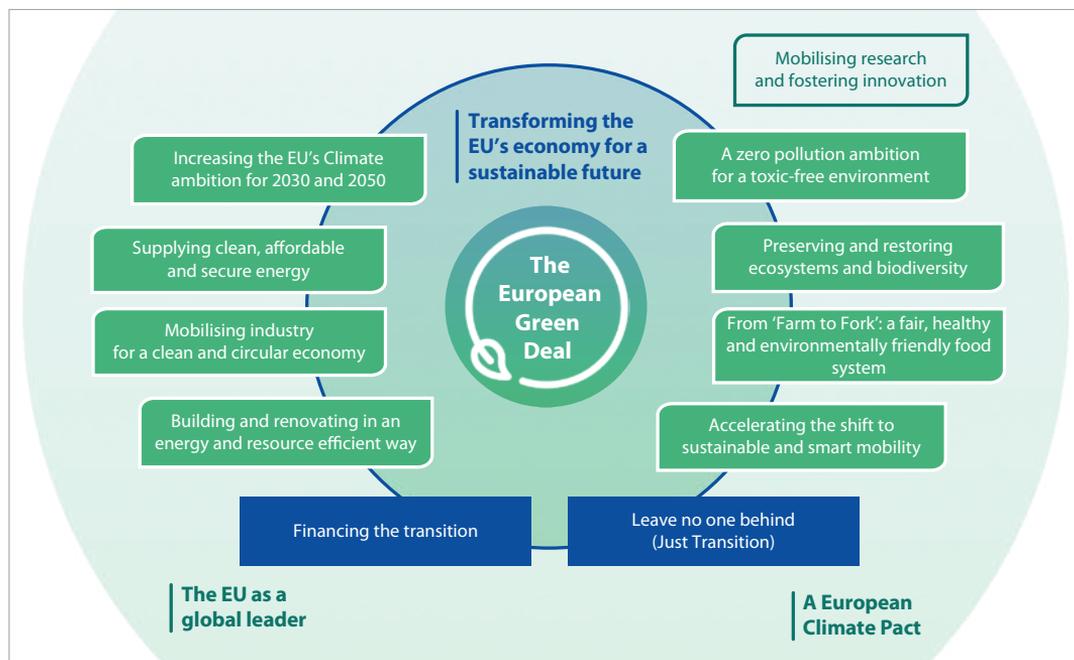
Europe by 2030' from 2019 (^{27}) highlighted the complex challenges the EU is facing and identified the competitive advantages that implementing the SDGs would offer the EU. Concerning the EU's external actions, the European Consensus on Development (^{28}) was adopted in 2017 in response to the 2030 Agenda and defined the EU's shared vision and action framework for development cooperation. Additionally, since 2017 the EU has been monitoring the implementation of the SDGs in its annual SDG monitoring report.

Since late 2019, the new Commission has presented many transformative policies aimed at delivering on sustainability and numerous other areas in the EU and beyond. The EU's approach for implementing the 2030 Agenda is briefly summarised below and described in detail in a staff working document (SWD) 'Delivering on the UN's Sustainable Development Goals — A comprehensive approach' (^{29}).

The European Green Deal (^{30}), adopted in December 2019, is the EU's new growth strategy and aims to transform the Union into a fair and prosperous society. 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. At the same time, this transition aims to be just and inclusive. It is also seen as 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 (^{31}) 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 in the heart of the European Green Deal was adopted — the Farm to Fork Strategy (^{32}). 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 (³³), 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 (³⁴) from September 2020 envisions reductions in greenhouse gas emissions to at least 55 % below their 1990 level by 2030, which is consistent with EU's goal to become climate-neutral by 2050. 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 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 social protection 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.

In line with the Political Guidelines (³⁸), the SDGs have also been integrated into the European Semester. In 2021, the European Semester has been temporarily aligned with the Recovery and Resilience Facility. The publication of the Annual Sustainable Growth Strategy (ASGS) 2021 in September 2020 launched the 2021 European Semester cycle. Similar to the previous year, the 2021 strategy focuses on the European Green Deal and competitive sustainability, while adding the aspect of the COVID-19 recovery. The national Recovery and Resilience Plans submitted by the Member States cover the four dimensions outlined in the 2021 ASGS: (1) environmental sustainability, (2) productivity, (3) fairness and (4) macroeconomic stability. The Commission's assessment of the Recovery and Resilience Plans will replace the European Semester country reports in 2021.

The COVID-19 crisis demonstrated once again the importance of building a sustainable, resilient and fair Europe, and the SDGs can be regarded as a means to achieving this. As a response to the crisis, in September 2020 the Commission published its first annual Strategic Foresight Report (³⁹), with the intention of integrating strategic foresight into EU policy-making. The report identifies first lessons from the COVID-19 crisis, introduces resilience as a new compass for EU policy-making and discusses the role of strategic foresight in strengthening the resilience of the EU and its Member States.

3 Monitoring sustainable development in the EU

3.1 The EU SDG indicator set

The European Commission is committed to monitoring progress towards the SDGs in an 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-seven 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 taking 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 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 review 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, such as the integration of earth observation data and information from Copernicus, the European Earth Observation and Monitoring Programme, whenever they contribute to the increased availability, quality, timeliness and disaggregation of data [40].

3.2 Data coverage and sources

Data in this report are mainly presented for the aggregated EU level. After the withdrawal of the United Kingdom (UK) from the EU, these data generally refer to the situation of the current 27 Member States. In a few exceptional cases, data for other EU aggregates such as the EU-28 including the UK are shown when data for the current EU composition are not (yet) available. This applies for example to data taken from reports published before 'Brexit' or retrieved from external sources.

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. As a result, long-term trends cannot be assessed for a number of indicators.

The data presented in this report were extracted in early May 2021. 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 EEA, the European Institute for Gender Equality (EIGE), the OECD and the World Bank.

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 ([41]). The website also includes a section called 'Statistics Explained' ([42]), 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.

3.2.1 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 do not undermine the reliability of the data.

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.

3.3 Assessment of indicator trends

3.3.1 How are trends assessed?

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 ([43]).

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 (see Annex II on page 397). 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 in section 3.3.3 (indicators with quantitative targets) and 3.3.4 (indicators without quantitative targets).

The assessment is generally based on the 'compound annual growth rate' (CAGR) formula, which assesses the pace and direction of the evolution of an indicator. This 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. For a detailed description of the calculation method, see Annex III (page 399).

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 and are not always fully aligned with the assessments in other reports from the European Commission or the EEA. This is most notably the case when other assessments take into account the level of an indicator instead of or in addition to the trend, or when the assessments also take into account planned measures or projections instead of past trends only.

3.3.2 How are the assessment results presented?

The assessment of indicator trends is visualised in the form of arrows (see Table 0.1). 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 of the long-term unemployment rate, or of greenhouse gas emissions, would be represented with an upward arrow, as reductions in these areas mean progress towards the sustainable development objectives.

Depending on whether or not there is a quantitative EU policy target, two cases are distinguished, as shown in Table 0.1. 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 below.

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 2004 to 2019 or 2005 to 2020). 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 2014 to 2019 or 2015 to 2020). 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.

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.

3.3.3 Indicators with quantitative targets

Whenever possible, the assessment of indicator trends takes into account concrete targets set in relevant EU policies and strategies. In the presence of a quantified political target (for example, the European Education Area targets), the actual rate of change of the indicator (based on the CAGR as described in Annex III on page 399) is compared with the theoretical rate of change that would be required to meet the target in the target year. If the actual rate is 95 % or more of the required rate,

Table 0.1: 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 (for example, time series too short)	

the indicator shows a significant progress towards the EU target. If that ratio is at least 60 %, but less than 95 %, the trend shows moderate progress towards the EU target, and if the ratio is at least 0 %, but less than 60 %, progress towards the EU target is insufficient. Negative ratios mean the trend is moving away from the EU target.

Figure 0.4 shows the thresholds for assessing an indicator trend against a quantitative target that would require the indicator values to increase (as, for example, in the case of the European Education Area target of raising the EU tertiary educational attainment rate to 45 %). For targets that require indicators to decrease (for example, the target of reducing the EU's net greenhouse gas emissions by 55 %), analogous decreasing target paths are used instead.

3.3.4 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 observed rate of change of the

indicator, calculated based on the CAGR as described in Annex III, is then compared with the following thresholds: a change of 1 % per year or more is considered 'significant'. If this change is in the desired direction, it means there has been 'significant progress towards SD objectives'. If the change is in the wrong direction, it means there has been 'significant movement away from SD objectives'. A change in the desired direction which is less than 1 % (including 0 %) per year is considered 'moderate progress towards SD objectives', and a change in the wrong direction which is less than 1 % per year is considered 'moderate movement away from SD objectives'. See Table 0.1 for reference.

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 ([44]). 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

Figure 0.4: Thresholds for assessing indicators against a quantitative target (example of a target that requires the indicator to increase)
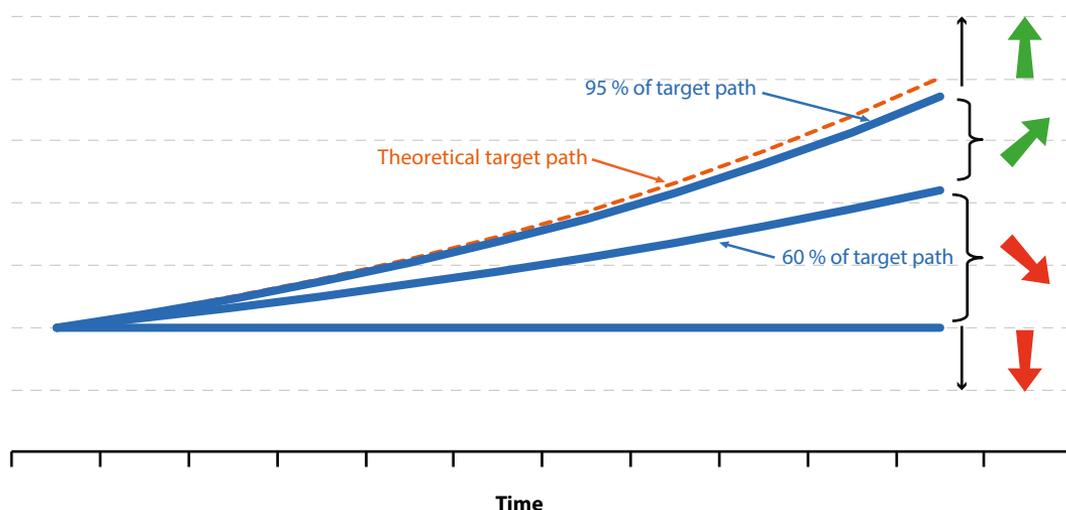
Figure 0.5: Thresholds for assessing indicators without quantitative targets (example of an indicator where the desired direction is an increase)
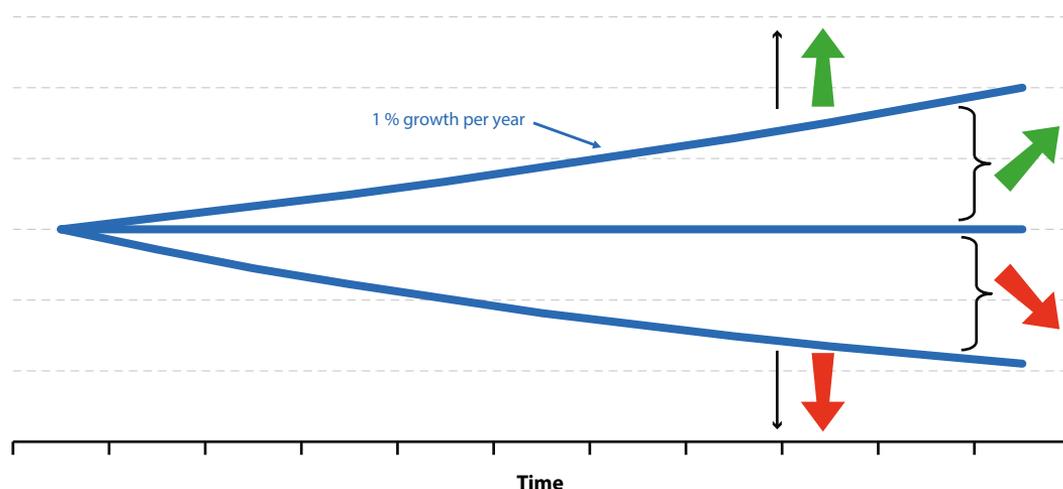
environmental, economic and social changes, thus affecting many SDGs simultaneously.

Figure 0.5 shows the thresholds for assessing an indicator for which the desired direction would be an increase (for example, life expectancy at birth). For indicators where the desired direction is a decrease (such as the long-term unemployment rate), the categories are reversed.

3.3.5 Summary of progress at goal level

In the synopsis chapter of this report, average scores of the indicators are used to rank the SDGs according to their level of progress towards the SDGs. To calculate these averages, a score is first calculated for each indicator, reflecting its short-term (past five years) assessment (see Annex III on page 399 for details on the scoring method). For each goal, a simple average of the scores of the individual indicators (including the multi-purpose indicators) is then calculated. 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. This is currently the case for two goals (SDG 6 and SDG 14).

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 2015: 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) 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, paragraph 84.

(¹³) 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.

(¹⁴) 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.

(¹⁵) 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.

(¹⁶) United Nations Economic and Social Council (2020), *Report of the Secretary-General on progress towards the Sustainable Development Goals*; United Nations (2020), *The Sustainable Development Goals Report 2020*.

(¹⁷) See: United Nations (2015), *Outcome document of the Third International Conference on Financing for Development: Addis Ababa Action Agenda*, A/CONF.227//L.1.

(¹⁸) United Nations, Asian Development Bank, and United Nations Development Programme (2017), *Asia-Pacific Sustainable Development Goals Outlook*, United Nations, Bangkok.

(¹⁹) 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.

(²⁰) Nicolai, S., Bhatkal, T., Hoy, C., and Aedy, T. (2016), *Projecting progress: the SDGs in Latin America and the Caribbean*, Overseas Development Institute, London.

(²¹) UNECE (2020), *UNECE launches Dashboard to track regional progress on SDGs*.

(²²) 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*.

(²³) 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*.

(²⁴) European Commission (2016), *Next steps for a sustainable European future: European action for sustainability*, COM(2016) 739 final, Brussels.

(²⁵) Ursula von der Leyen (2019), *A Union that strives for more — My agenda for Europe. Political Guidelines for the next European Commission 2019–2024*.

(²⁶) European Commission (2016), *Next steps for a sustainable European future: European action for sustainability*, COM(2016) 739 final, Brussels.

(²⁷) European Commission (2019), *Reflection Paper 'Towards a Sustainable Europe by 2030'*, COM(2019)22, Brussels.

(²⁸) European Commission (2017), *The New European Consensus on Development 'Our World, Our Dignity, Our Future'*, 2017/C 210/01.

(²⁹) European Commission (2020), *Delivering on the UN's Sustainable Development Goals — A comprehensive approach*, SWD(2020) 400 final, Brussels.

(³⁰) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.

(³¹) European Commission (2020), *A new Circular Economy Action Plan: For a cleaner and more competitive Europe*, COM(2020) 98 final, Brussels.

(³²) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM(2020) 381 final, Brussels.

(³³) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final, Brussels.

(³⁴) 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.

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

(³⁹) European Commission (2020), *2020 Strategic Foresight Report*, COM(2020) 493 final.

(⁴⁰) 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.

(⁴¹) 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. The complete set of indicators is presented in Annex II of this publication.

(⁴²) Eurostat, Statistics explained.

(⁴³) 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.

(⁴⁴) 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.

COVID-19, interlinkages and spillover effects: a focus on cross-cutting issues

The 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs) represents a holistic agenda that is intended to be both universal and indivisible in nature. The 'universality' principle means the SDGs should be achieved by 2030 by both the so-called developed and developing countries alike, whereas the 'indivisibility' principle refers to the notion that all 17 goals — be they of economic, environmental or social nature — are equally important and can only be achieved in conjunction. Monitoring progress towards the SDGs in an EU context therefore should not only look at individual goals or indicators in isolation but also needs to consider the 2030 Agenda's holistic nature. This means taking into account the interconnectedness within the Agenda itself — how the different goals and targets influence each other — as well as the interconnectedness of the EU with other parts of the world.

This new chapter of the EU SDG monitoring report intends to address these cross-cutting topics that affect several or all SDGs and that cannot be analysed from the perspective of a single goal (as is the case with the 17 thematic chapters of this report). This obviously also applies to a pandemic that affects all the 17 goals as well as all of the countries across the world. The topics that are in the focus of this chapter consequently are: (1) the COVID-19 pandemic and how it impacted the EU's progress towards the SDGs, (2) an analysis of the interlinkages (synergies and trade-offs) that exist between the SDGs at EU level, and (3) an assessment of the positive and negative impacts the EU has on other parts of the world in relation to achieving the 2030 Agenda.

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

The ongoing COVID-19 pandemic has 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 full-scale effects of the pandemic remain to be seen, short-term data collected by Eurostat and published in the European Statistical Recovery Dashboard can provide some indications of how COVID-19 and the related contingency measures are affecting the EU in its attempts to achieve the SDGs. The analysis below is using breakdowns of the EU SDG indicators to assess the impact on specific population groups as well as proxy indicators such as electricity consumption for illustrating the environmental effects of the lockdowns put in place in response to the pandemic.

There were almost 600 000 additional deaths in the EU in 2020

With more than 30 million COVID-19 cases in the EU and more than half a million deaths linked to the virus ([1]), public health concerns (SDG 3) remain one of the most important effects of the pandemic. Excess mortality ([2]) in the EU witnessed two peaks in 2020, following two waves of new COVID-19 cases (see Figure C.1). In April 2020, there were 25.1 % more deaths compared with the 2016 to 2019 average, while in November 2020 additional deaths peaked at 40.6 %. In total, from March to December 2020, 580 000 more deaths occurred in the EU compared with the same period from 2016 to 2019 ([3]).

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. Older people are disproportionally affected, due to their higher death risk of COVID-19, outbreaks in elderly care facilities and possible difficulties in access to health care. Data show that while there were no additional deaths in 2020 compared with 2019 for people under the age of 20, excess mortality reached 13.0 % and 15.0 % for people aged 60 to 79 and people aged 80 or over, respectively. Excess mortality for men (14.4 %) was higher than for women (12.3 %) in 2020 compared with 2019 ([4]).

Changes in mortality conditions also had an impact on overall life expectancy in the EU, which is estimated to have decreased by 0.9 years, from 81.3 years in 2019 to 80.4 years in 2020 ([5]). The change was slightly stronger for men (– 1.0 years) than for women (– 0.8 years). Life expectancy at age 65 also decreased by about a year in 2020, but in percentage terms this decrease amounted to 4.0 %, compared with a 1.1 % decline of life expectancy at birth. In particular older men appear to have been hit disproportionally hard, with their life expectancy at age 65 decreasing by 5.5 % from 2019 to 2020.

The COVID-19 pandemic also revealed existing inequalities (SDG 10). Some individuals are more vulnerable than the rest of the population to the virus itself, as well as to the consequences of the lockdown measures, which have exacerbated their already challenging life situations. These people include, among others, older people, people with underlying health conditions, migrants, people living in poor housing conditions, homeless people, people living in abusive household settings and people with disabilities. Each of these groups faces specific challenges. Ethnic minorities work disproportionally in jobs that expose them to risk of a COVID-19 infection (for example, delivery drivers). The ability of old and disabled people to seek or receive medical help, to exercise or to run errands is compromised due to the measures implemented to prevent the spread the infection. People living in abusive households are even more exposed to domestic violence during social isolation periods ([6]).

Figure C.1: Excess mortality, EU, 2020–2021
(% of additional deaths compared with average monthly deaths in 2016–2019)
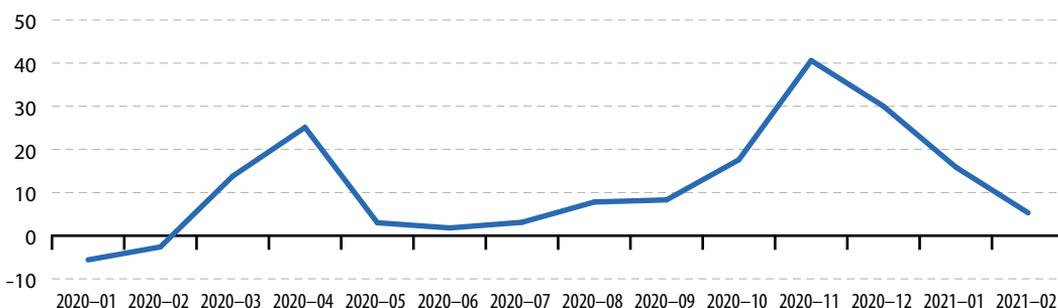
Note: Data are provisional estimates.
Source: Eurostat (online data code: demo_mexrt)

Figure C.2: GDP, industrial production and imports, EU, 2019-2021
(% change on previous period)
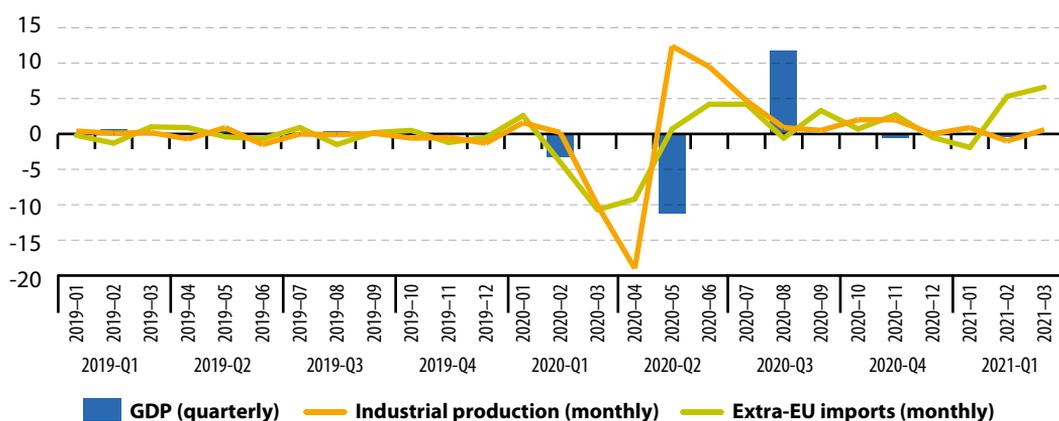
Note: Seasonally and calendar-adjusted data; data for industrial production for March 2021 are estimated.
Source: Eurostat (online data codes: namq_10_gdp, sts_inpr_m and ext_st_eu27_2020sitc)

COVID-19 can also cause persistent ill-health. The so-called long COVID (when symptoms persist for more than a month) has a serious impact on people's ability to go back to work or have a social life. It affects their mental health and may have significant economic consequences for them, their families and for society ([7]). It has also been reported that the COVID-19 pandemic increased the risk of developing mental health conditions, especially among young people. Additionally, health care and other frontline workers are facing an especially high risk of stress, anxiety, depression, insomnia and post-traumatic stress disorder ([8]).

The EU economy contracted by 6.2 % in 2020 compared with 2019

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. In the second quarter of 2020, the EU's GDP dropped by 11.2 %, which resulted in an annual drop of real GDP per capita by 6.2 % in 2020 compared with 2019. Industrial production ([9]) (SDG 9 and SDG 12) experienced the biggest drop in April 2020, by 19.0 %, leading

to an annual decrease of 8.0 % in 2020 compared with 2019 ([10]). EU imports from other countries (SDG 17) have also declined, by 10.7 % in March 2020 compared with the previous month. Imports from African countries dropped especially strongly, by 32.6 % from March to April. As a result of these fluctuations, extra-EU imports fell by 11.7 % in 2020 compared with 2019 ([11]).

Despite the economic recession, official development assistance of the EU institutions amounted to EUR 18.3 billion in 2020, a 25.4 % increase compared with the previous year. Out of these, EUR 7.9 billion were spent on COVID-19 related activities ([12]).

The COVID-19 crisis created an extraordinary need for governments to respond to the pandemic and protect jobs and livelihoods, for example by introducing short-time working schemes. Throughout 2020, government measures aimed at mitigating the economic and social impacts of the COVID-19 pandemic led to an increase in general government gross debt, which climbed to 90.8 % of the EU's GDP in the fourth quarter of the year (see Figure C.3). This was 13.2 percentage points higher than in the fourth quarter of 2019.

Figure C.3: General government gross debt, EU, 2019–2020
(% of GDP)
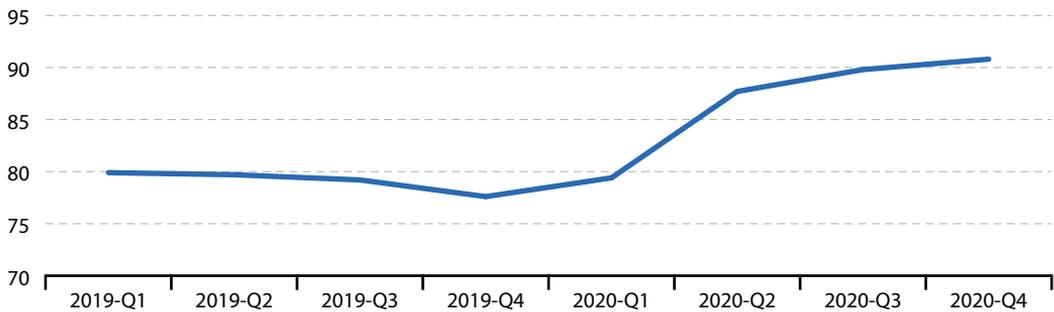
Source: Eurostat (online data code: gov_10q_ggdebt)

Figure C.4: Employment and unemployment growth, EU, 2019–2020
(% change on previous period)

— **Employment growth (age group 20–64)** — **Unemployment growth (age group 15–74)**
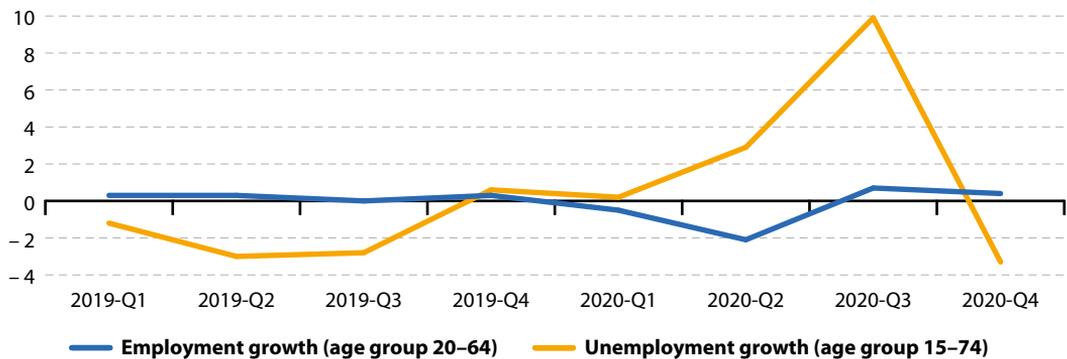
Note: Seasonally adjusted data.
Source: Eurostat (online data codes: lfsi_emp_q and une_rt_q)

Figure C.5: Growth of young people (aged 15–29) neither in employment nor in education and training (NEET), EU, 2019–2020
(% change on previous period)
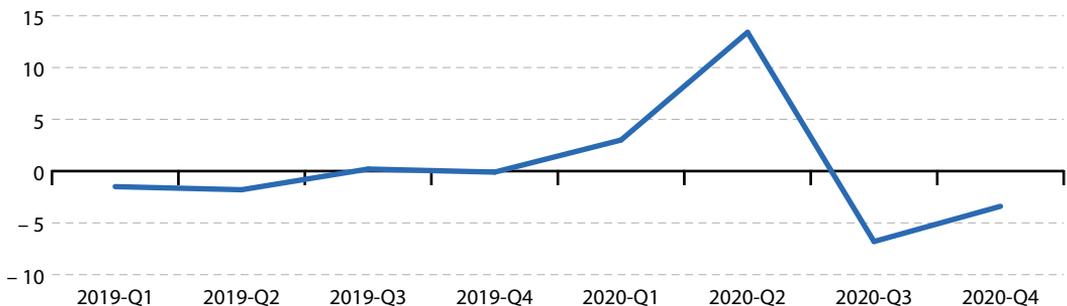
Note: Seasonally adjusted data.
Source: Eurostat (online data code: lfsi_neet_q)

The COVID-19 pandemic negatively affected the EU's labour market, with young people being hit hardest

The measures introduced by EU Member States such as short-time work schemes helped cushion the pandemic's negative impact on the EU's labour market (SDG 8). Available data show strong fluctuations in the labour market in the second quarter of 2020, with many people moving from employment and unemployment to economic inactivity and thus dropping out of the labour market ([13]). In the second quarter of 2020, the number of employed people aged 20 to 64 fell by 2.1 % compared with the first quarter, while the number of economically inactive people rose by 5.5 % for the same age group. As people started re-entering the labour market in the third quarter of 2020, the number of unemployed people aged 15 to 74 increased by 9.9 % (see Figure C.4). Despite these fluctuations, the total (annual) employment rate fell by only 0.7 percentage points, from 73.1 % in 2019 to 72.4 % in 2020. Conversely, the annual unemployment rate only increased from 6.7 % in 2019 to 7.1 % in 2020.

The labour market situation of young people was particularly affected by the COVID-19 pandemic. The number of employed people aged 15 to 24 dropped by 8.8 % in the second quarter of 2020, while the number of unemployed people of the same age increased by 11.5 % by the third quarter

of 2020. Moreover, the number of young people aged 15 to 29 neither in employment nor in education and training (NEET) also increased by 13.4 % in the second quarter of 2020 compared with the previous quarter. This resulted in an annual NEET rate of 13.7 % in 2020, 1.1 percentage points higher than in 2019.

Non-EU citizens were also disproportionally affected by the pandemic. Between 2019 and 2020, the number of unemployed non-EU citizens aged 15 to 74 increased by 15.1 %, while for EU home country nationals the share grew by just 2.7 % ([14]). Low-educated people (ISCED levels 0–2) were another group affected by the crisis, with their employment falling by 4.4 % in the second quarter of 2020 ([15]). The decrease was slightly slower for people with a medium-level education (ISCED levels 3–4), with 3.0 %, while the number of employed people with a tertiary education (ISCED levels 5–8) continued to increase in the second quarter and fell by only 2.0 % in the third quarter.

When segregated by gender (SDG 5), data show no significant differences between men and women when it comes to the fall in employment or the increase in unemployment in the EU in 2020, even though women are overrepresented in some of the hardest hit sectors (such as hospitality, retail and care) and took on a larger share of caretaking responsibilities. The gender employment gap has slightly narrowed since the start of the pandemic, reaching 11.2 percentage

Figure C.6: Electricity consumption, EU, 2019–2021
(% change compared with same period of previous year)
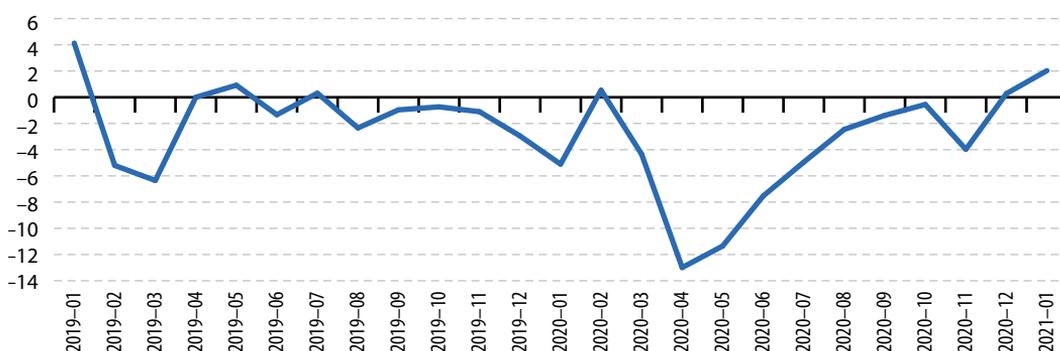
Source: Eurostat (online data code: nrg_cb_eim)

points in the fourth quarter of 2020, compared with 11.7 percentage points at the end of 2019.

The EU's electricity consumption fell by more than 4 % in 2020

The effects of the lockdown measures on the environmental dimension are more difficult to estimate because environmental indicators are usually reported with a time lag of one to several years. However, it is already clear that the COVID-19 crisis is having a direct impact on energy use and greenhouse gas (GHG) emissions at both global and EU levels (SDG 13) [16]. The transport sector, a key source of GHG emissions, was particularly affected by the crisis (SDG 9). This is illustrated by the number of commercial air flights, which dropped by 91.2 % in April 2020 compared

with April 2019. In December 2020, air traffic still remained 66.9 % lower than in the same month of the previous year.

The lockdown measures and related restrictions on social life also led to a drop in energy consumption in 2020 (SDG 7), with a clear drop in fossil fuel consumption in all EU Member States. This is illustrated by the trends in electricity consumption, which decreased by 13.0 % in April 2020 compared with April 2019. Overall, electricity consumption is estimated to have fallen by 4.4 % in 2020 compared with 2019 [17]. The decrease in energy consumption is also reflected in carbon dioxide (CO_2) emissions from fossil fuel combustion (SDG 13), which, according to Eurostat estimates, have seen a significant decrease of 10 % in 2020 compared with the previous year [18].

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 the achievement of the 2030 Agenda and the SDGs even more challenging, both for the EU and globally [19]. Increased mortality and 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, for example resource and energy use, might be 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.

Despite these negative trends, the EU's response to the crisis showed that the economic and social impacts of the coronavirus pandemic can be mitigated. By the end of May 2021, almost half of the adult EU population had been vaccinated with at least one dose and the delivery of vaccines keeps speeding up [20]. The economy is also already recovering and, according to the European Commission's latest Economic Forecast, is expected to grow by 4.2 % in 2021 [21]. Most of the employment indicators showed improvements in the third and fourth quarters of 2020 as well.

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 different picture about the consequences of the pandemic.

Further reading on COVID-19

European Environment Agency (2020), *Air Quality in Europe 2020 Report*, EEA Report No 9/2020, Publications Office of the European Union, Luxembourg.

European Environment Agency (2020), *COVID-19 and the environment: explore what we know*.

European Environment Agency (2021), *Briefing: COVID-19 and Europe's environment: impacts of a global pandemic*.

European Commission (2021), *EU research and innovation in action against the coronavirus*.

Eurostat (2021), *Excess mortality starting to fall back in 2021, after a large death toll*.

Further data sources COVID-19

EuroMOMO, Graphs and Maps.

European Centre for Disease Prevention and Control, COVID-19 Vaccine Tracker.

European Environment Agency, Air quality and COVID-19.

The interlinked nature of the SDGs

The 2030 Agenda for Sustainable Development represents a complex holistic challenge. Understanding the scope of interlinkages among SDGs is key to unlocking their full potential as well as ensuring that progress in one area is not made at the expense of another one. Hence, investigating trade-offs and synergies emerging from relationships between the goals is crucial for achieving long-lasting sustainable development outcomes. This report uses a quantitative approach, based on Spearman's rank correlation analysis, to identify interlinkages between the SDGs.

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 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 and targets, when achieving one target, such as a 20 % share of renewable energy in the EU, can also help achieving 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. A study by the European Commission's Joint Research Centre (JRC) [22] found five main approaches to identify interlinkages between the SDGs: linguistic, literature review, expert judgement, quantitative analysis, and modelling complex system interactions. The International Council for Science published 'A Guide to SDG interactions', which, based on expert judgment, explored the nature of interlinkages between the SDGs and found more synergies than trade-offs between the goals [23]. The Interlinkages Working Group of the IAEG-SDGs also conducted a study that identified positive interlinkages between the goals and

targets in order to help countries focus on those targets with the greatest potential for positive externalities [24]. The Italian National Institute of Statistics (Istat) based its analysis of interlinkages on the aforementioned work of the IAEG-SDGs and compared the identified interlinkages with the statistical information contained in the Istat-SDGs information system [25]. The National Institute of Statistics and Economic Studies in France applied principal component analysis (PCA) to the EU SDG indicators to identify correlations between the SDGs [26]. A study by E. Barbier and J. Burgess identified trade-offs among the SDGs using an economic model [27]. Some academic studies also used integrated assessment models to identify interactions, synergies and trade-offs between the SDGs [28].

In general, all these studies agree there are many more synergies between the SDGs 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 country, region or world level). This 2021 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.

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 such as Eurostat. Such methods were also used by the JRC [29] and in several academic articles [30][31][32][33]. In line with these studies, Spearman's rank correlation was chosen over Pearson's correlation due to its suitability for monotonic non-linear relationships and little sensitivity to outliers [34].

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 (for example employment rate) and a negative sign to indicators with values that would need to decrease (for example 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 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 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 to be driven by an independent third variable, namely 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 ([35]). 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 of 5 050 possible combinations of indicators with country-level data, the actual number of indicator pairs included in the analysis varied from 4 613 for Belgium to 3 588 for Malta.

Results of the analysis of interlinkages between the SDGs

In line with other studies using correlation analysis ([36])([37])([38])([39]), the results for the EU show there are more positive (25 %) than negative (14 %) interlinkages. However, almost two-thirds of indicator pairs (62 %) 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.

Figure C.7 shows the positive correlations between the SDGs at EU level, with the thickness of the line corresponding to the share of positive correlations between the two SDGs in question. The shares of positive interlinkages between any two goals (among all possible interlinkages between these two goals) varied from 12 % to 54 %. The figure, however, does not show connections between goals that have less than 30 % of positive interlinkages. This means that even though some goals, such as SDG 15, do have positive correlations with other goals, this is not reflected in the figure.

Not surprisingly, the network of Figure C.7 reveals that the way we live, produce and consume is strongly 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 ([40]) and energy efficiency ([41]) and thus directly impact on a number of energy-related aspects (SDG 7) ([42]). 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) ([43]), while urban areas (SDG 11) affect the EU's climate (SDG 13) since they

Figure C.7: Visualisation of SDG interlinkages based on shares of positive correlations between the goals

act as a focal point of environmental change due to land take (soil sealing), transport, housing and mobility issues, food supply and waste generation.

Some goals, such as life on land (SDG 15), zero hunger (SDG 2) 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 15, this is in part due to the lack of Member States' data for some indicators and only a few data points for other indicators that are not collected annually, which increases the likelihood that the correlation results are not significant. However, there is a wide agreement that these goals are cross-cutting topics that are crucial for meeting the 2030 Agenda as a whole [44][45][46]. Biodiversity and ecosystem services (SDG 15) provide a basis for

human life on earth and human well-being, while sustainable agriculture practices (SDG 2) help to maintain biodiversity and end hunger. Reducing inequalities (SDG 10) in society helps to maintain peace and security (SDG 16) and to increase access to common goods and services, which in turn has a positive influence on economic growth (SDG 8), education (SDG 4) and health (SDG 3).

When looking at synergetic relationships that occur in the majority of EU Member States (that is, in more than three-quarters of EU countries), the connection between social and economic indicators becomes clear. In most Member States, poverty indicators are strongly correlated with each other, as well as with labour market indicators. This is not surprising given that the income generated from employment helps

Figure C.8: Visualisation of SDG interlinkages based on shares of negative correlations between the goals

workers to obtain goods and services to meet their basic needs. Labour market indicators are associated with each other and with real GDP per capita, indicating that economic growth usually goes hand in hand with improvements in the employment situation. In most Member States the number of young people not in employment, education or training (NEET) shows a synergetic relationship with GDP per capita, meaning that countries with higher GDP show lower NEET rates, a finding that has also been confirmed by previous research ([47]).

Some indicators referring to the environmental pillar of sustainability also show strong synergetic relationships with each other in the majority of the EU Member States. Organic farming, for example, is associated with higher energy

productivity. This is also confirmed by a review of 50 studies that found that organic farming systems are more energy efficient than their conventional counterparts ([48]). Energy productivity is also showing a synergetic relationship with the share of renewable energies as well as with CO_2 emissions from cars. Greenhouse gas emissions are correlated with primary energy consumption, meaning that improvements in one area are associated with improvements in another — a connection that can also be found in previous research ([49]).

Negative interlinkages between the SDGs, i.e. when a positive development in one SDG goes hand in hand with negative development in another SDG, present less variation compared with positive interlinkages, with the shares of

negative correlations varying from 7 % to 22 %. Figure C.8 shows SDG pairs with more than 18 % negative correlations. Decreasing poverty in the EU (SDG 1) seems to be associated with negative (unsustainable) trends in consumption and production (SDG 12), climate change (SDG 13), energy (SDG 7) and gender equality (SDG 5). This means that progress on social goals such as SDG 1 and SDG 10 can lead to increased material consumption (SDG 12) and energy consumption (SDG 7), carbon footprint and other environmental impacts (SDG 13) [50][51][52]. Material consumption is, in turn, one of the most significant drivers of environmental pressures [53][54]. Therefore, ensuring the well-being of citizens while protecting and enhancing the EU's natural capital is a key policy challenge.

Goals for gender equality (SDG 5), reduced inequalities (SDG 10) and partnerships for the goals (SDG 17) seem to have the biggest shares of negative correlations with other goals at the EU level. This might be related to the fact that many EU Member States have shown negative trends towards these SDGs over the past years, especially in terms of growing gender gaps for many indicators. It is important to keep in mind that the assessment of progress towards SDG 5 in an EU context focuses on equal chances for both for men and women. In particular, in the area of education, men are falling behind women in many Member States, which leads to a negative assessment of those indicators.

In contrast to positive interlinkages, very few SDG indicator pairs show a negative correlation in more than half of the EU Member States, indicating that no major trade-offs can be identified as universal at the EU level. Domestic material consumption, for example, shows a negative correlation with employment rate and NEET rate in 14 EU Member States, meaning that improvements in the labour market situation in these countries have coincided with increased resource consumption.

Although the correlation analysis of the SDG interlinkages on 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. Policy measures can contribute to delivering on different SDGs at the same time. In addition, the calculation results demonstrate that interlinkages are context dependent and can differ greatly between countries. Nevertheless, the analysis of interlinkages indicates that for a transition towards a more sustainable and resilient society, citizens and all stakeholders in the different policy areas, sectors and levels of decision-making have important roles to play and are sharing the same responsibility.

Developing experimental indicators for estimating spillover effects caused by consumption — a model-based approach

Strategies to achieve the SDGs need to be implemented at multiple scales — from local to global. Ideally, achieving the SDGs should mutually foster positive impacts in all regions while negative impacts on other regions should be avoided. The impacts that policies and strategies in one region have on other regions are called spillover effects (or simply 'spillovers'). At the level of countries, the term transboundary effects is also often used. Transboundary effects are said to occur when one country's actions generate benefits or impose costs on another country.

The demand for assessing spillover effects is immense while quantifying them accurately is challenging. Many organisations emphasise the importance of international spillovers for achieving the SDGs globally (see box, p46). The OECD conducted an expert-based assessment which concluded that 97 out of 169 SDG targets have a transboundary component ([55]). Half of these targets related to support for developing countries in achieving the SDGs. Most of the transboundary targets were in the environment-related SDGs (SDG 6, 12, 13, 14 and 15). The Sustainable Development Solutions Network (SDSN) has incorporated an international spillover index in its SDG Index and Dashboards assessment which tracks the annual performance of all UN member states on the SDGs. Some EU Member States have begun to reflect spillovers in their SDG implementation ([56]). For example, Finland has included a section on international spillovers in its 2020 Voluntary National Review (VNR) presented at the UN.

Many organisations have carried out studies on spillover effects and have examined and tested relevant data and methods to measure them but so far a common understanding on methods and mature global data seem to be lacking.

Positive and negative spillover effects related to trade and global supply chains

SDG 17 'Partnerships for the goals' calls for a global partnership for sustainable development and highlights the importance of trade and policy coherence for sustainable development. Trade and investment liberalisation can promote the transfer of environmentally sound technologies and trade may also provide incentives to companies to apply higher environmental standards in their business models and supply chains. SDG Target 8.a 'Increase Aid for Trade support' therefore aims to strengthen the trade relationships with developing countries. EU trade agreements consequently feature dedicated chapters on trade and sustainable development, with binding commitments on labour standards, environmental protection and responsible business conduct. At government level, developed countries support developing countries with direct investments and official development assistance which help strengthen, for instance, health and education systems and infrastructure.

At the same time, it is harder for countries to achieve the SDGs if negative spillovers from other countries counteract their efforts. As an example, unsustainable supply chains to produce imported goods can cause environmental degradation — such as deforestation and biodiversity loss — in the countries that supply raw materials.

It is therefore essential that the achievement of national or EU-wide sustainability targets (for instance on climate neutrality or biofuel strategies) do not undermine other countries' action on sustainable development. Better estimates of greenhouse gas emissions, air pollutants, water scarcity, biodiversity threats, jobs and income as well as other impacts generated through

International spillovers and policy relevance in the EU context

The EU recognises the importance of international spillover effects in implementing the SDGs and addresses them in the ongoing policy discussions.

The **2020 staff working document on delivering the SDGs** identifies policy coherence for sustainable development as a key pillar of the EU's strategy to implement the SDGs. This requires taking into account the impact of EU's policies 'nationally, within the EU, in other countries and at global level' ([57]).

Commission President von der Leyen underlined the EU's strong, fair and open trade agenda of Europe when setting out the six priorities of her Commission. This would include ensuring the highest standards of climate, environmental and labour protections and not least zero tolerance for child labour ([58]).

The European Commission will adopt a carbon border adjustment mechanism (CBAM) in July 2021 to address the risk of carbon leakage, which could lead to an increase of emissions globally. The EU Parliament supports the CBAM and in March 2021 adopted a resolution on a WTO-compatible EU CBAM to advance both EU and EU's trade partners' climate objectives in line with the Paris Agreement.

The **trade policy review** and the proposal for the **sustainable corporate governance directive** including rules on human rights and environmental due diligence, which are currently under development, both aim to address the impacts of the EU's consumption and trade on the rest of the world embedded in international supply chains.

EU trade agreements provide an important platform on which to engage with third countries on matters related to the sustainable development goals. For example, in the case of Mercosur, a dialogue is ongoing on enhancing cooperation on its sustainable development dimensions, addressing the implementation of the Paris Agreement and deforestation in particular.

The EU's bilateral trade agreements facilitate trade in green technologies, goods, services and investments. They support the diffusion of clean and more efficient production methods and technologies and create market access opportunities for green goods and services. They also help secure access to third-country markets for the EU's renewable energy industry, and ensure undistorted trade and investment in the raw materials and energy goods that are required to secure the necessary supplies to support the transition to climate neutral economies.

The **2020 staff working document on promoting decent work worldwide** assigns the EU the role of a responsible leader in promoting decent work globally through sustainable value chains.

production and consumption of globally traded goods and services will allow developing more effective policies. At the same time, the EU needs more reliable data and information to underpin the development agendas it is working on together with developing countries.

The purpose of this chapter is to provide an initial attempt to estimate positive and negative environmental, economic and social spillover effects due to the consumption of imported goods and services. It is important to note that there are other types of spillover effects that are relevant in the context of the SDGs but are not covered in this chapter. These include spillover effects related to international financing (for example official development assistance or profit shifting), those linked to physical flows of air and water carrying pollution across borders, and those related to peacekeeping and security. Further work on assessing spillover effects in a broader sense will be necessary over the coming years.

Data and methods for measuring consumption-related spillover effects

Measuring the spillover effects embedded in imports and exports requires a change of approach from 'production-based' to 'consumption-based'. '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 'embedded' 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.

Measuring spillover effects remains challenging as it requires both extensive geographic coverage and granular data on global supply chains. Statistical measures of cross-border flows are typically limited to direct flows, such as imports and exports of goods and services. Measuring spillover effects requires data on both countries'

consumption and production flows and on the socio-economic and environmental impacts of specific products and sectors throughout the entire supply chain. Many of these (often indirect) impacts cannot be directly observed and therefore quantifying them requires making assumptions and model-based estimates.

So far, modelling tends to be outside the normal range of activities of most national statistical offices and, consequently, methods to track environmental and social impacts embedded in imports and exports mainly come from research projects and civil society organisations rather than official statistics. However, there is a growing set of model-based estimates that rely on official statistics. Eurostat as a supra-national statistical office has for several years invested heavily in tracking transboundary environmental impacts by modelling footprint indicators based on official statistics.

In addition, the European Commission has several ongoing projects and activities related to consumption-based accounting. In 2019, the European Commission's Joint Research Centre (JRC) released a detailed study ([59]) on the development of two sets of life-cycle assessment-based indicators to assess the environmental impacts of EU consumption covering 130 representative products ([60]). The full international and global accounts for research in input–output analysis (FIGARO) involving Eurostat and the JRC aims to provide tools for analysing the socio-economic and environmental effects of globalisation in the EU ([61]).

Consumption-based indicators are currently less developed and generally less reliable than other indicators based on official statistics. Therefore, the indicators presented here are not yet part of the EU SDG set and the trends are not assessed according to the standard Eurostat assessment methodology used in the rest of this report. Eurostat will continue to strengthen its work on measuring consumption-based spillovers for future editions of this report.

The data used in this chapter belong to two principal categories of data sources:

- Eurostat footprints based on the System of Economic-Environmental Accounts (SEEA) standard.

- Multi-regional input–output (MRIO) tables for a range of environmental, social and economic indicators from the research and policy-oriented Global Industrial Ecology Virtual Laboratory platform (Global MRIO Lab).

The technical details on the methods and on the MRIO tables used in this chapter are available in Annex IV.

Indicators on consumption-based spillovers

This chapter presents a selection of indicators on environmental, social and economic spillover effects of consumption in EU Member States, including effects caused globally for the production of goods and services. The indicators were selected primarily on the bases of data availability and therefore they do not yet cover the full range of SDGs concerned by spillover effects.

Environmental spillover effects

Three environmental footprint indicators can be presented: material footprint, carbon footprint and air pollution footprint. These are primarily related to SDG 13 (Climate action), SDG 8 (Decent work and economic growth) and SDG 12 (Responsible consumption and production).

Material footprint

Eurostat's material footprint indicators quantify the worldwide demand for material extraction (biomass, metal ores, non-metallic minerals and fossil energy materials/carriers) triggered by consumption and investment by households, governments and businesses in the EU. In the official UN SDGs monitoring framework, this is covered under SDG 8 (Decent work and economic growth) and SDG 12 (Responsible consumption and production with the Indicator 12.2.1: Material footprint, material footprint per capita, and material footprint per GDP).

In addition to statistics on physical imports and exports, Eurostat produces estimates of material footprints of imported and exported products by calculating the actual weight of materials extracted to produce the traded goods instead of the weight when the goods cross country borders — so-called raw material equivalents (RME) of imports and exports. In other words, the weight of processed goods traded internationally is converted into the corresponding raw material extractions they would have required. This is typically two to three times more than the actual weight. This enables users to compare the material footprints of imports and exports and the material footprint of extractions made in the EU, and Eurostat can produce indicators on this basis.

The material footprint of domestic extractions plus imports in RME minus exports in RME is also called raw material consumption, which measures the total volume of raw materials required to produce the goods used by the economy. According to Eurostat estimates, raw material consumption was 14.5 tonnes per capita in the EU in 2018.

Figure C.9 shows in more detail which product groups are the main drivers of material extraction. The product categories with highest material footprint in the EU are construction (4.2 tonnes per capita), food, beverages and tobacco products (1.8 tonnes per capita), agricultural products (0.8 tonnes per capita), electricity generation (0.6 tonnes per capita) and coke and refined petroleum products (0.5 tonnes per capita).

Imports from outside the EU expressed in raw material equivalents are estimated at 7.8 tonnes per capita (RME) in 2018, while exports are estimated at 5.3 tonnes per capita (RME). This means that in 2018 the EU was a net importer of materials.

Figure C.10 shows the total raw material footprint of the 7.8 tonnes per capita of imports in RME, broken down by high-level groupings of material categories. The shares of the categories metal ores and fossil energy materials and carriers are the largest. This suggests that imported materials are not only used for consumption products, such as food or clothes, but also for housing and energy. It is worth noting that not all materials create the

Figure C.9: Products with the highest raw material consumption by type of product, EU, 2018
(tonnes per capita)
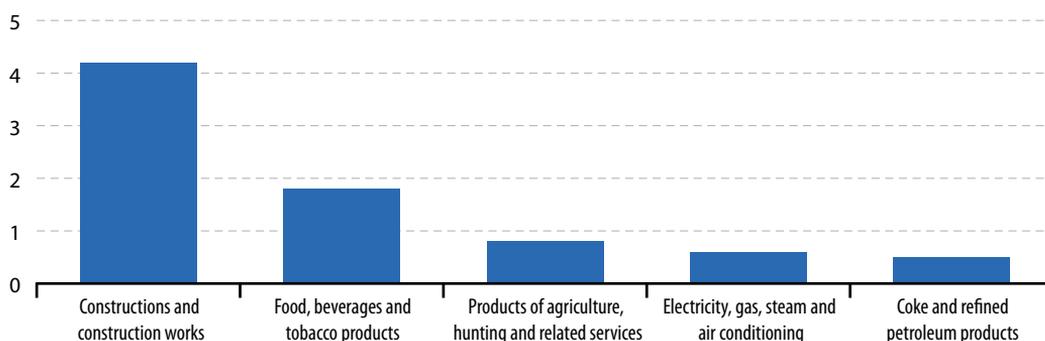
Source: Eurostat (online data code: env_ac_rmefd)

Figure C.10: Material footprint of imports of products into the EU, in RME, by material category, 2018
(%)

- Biomass
- Metal ores (gross ores)
- Non-metallic minerals
- Coal and other solid energy materials/carriers
- Crude oil, condensate and natural gas liquids (NGL)
- Natural gas
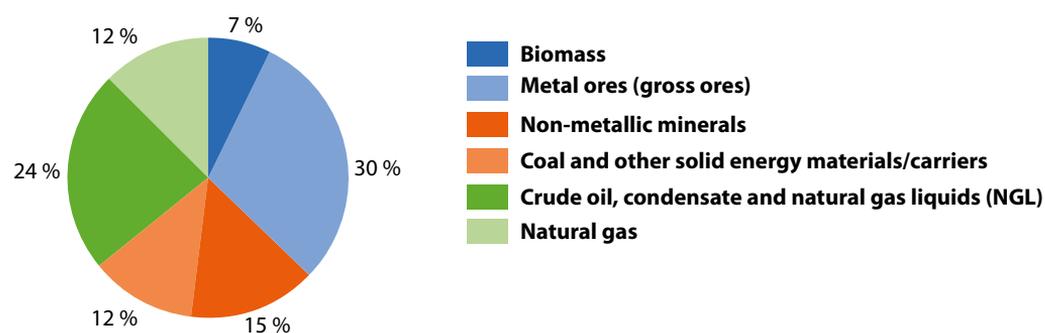
Source: Eurostat (online data code env_ac_rme)

same environmental pressure — such as land use — or generate pollution or social impacts at their places of origin. For example, mining and agriculture have different impacts on land use. A deeper analysis per product using more detailed information on production technologies and place of origin is therefore needed to understand the full picture.

Of the raw products (in physical terms), including metal ores and non-metallic minerals, that are imported into the EU, 23.9 % come from Latin American countries, 19.7 % from Asia and 9.4 % from Africa ([62]).

Carbon footprint and CO₂ emissions

Eurostat and MRIO tables represent two different methodologies for estimating the EU's carbon footprint.

Building on Eurostat's air emission accounts, Eurostat uses the 'domestic technology assumption' and hence estimates the volume of emissions 'avoided' on the EU territory through imports. In other words, Eurostat estimates the volume of emissions that would have been emitted by European industry if the imported goods had been produced in the EU. This volume

Figure C.11: **Trends in consumption-based CO_2 emissions of imports and exports for the EU based on MRIO estimates, 2000–2018**
(tonnes per capita)
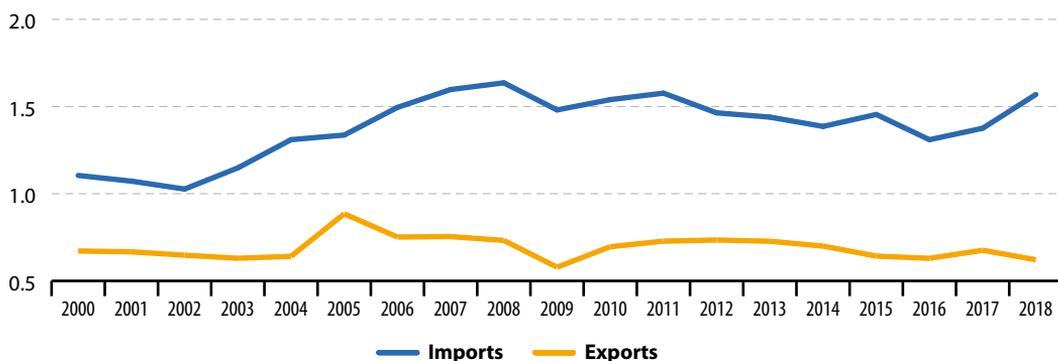
Source: Eurostat calculations based on data from the Global MRIO Lab.

per capita can at the same time be considered an approximation of the emissions occurring in the rest of the world. However, the 'real' emissions occurring abroad could be higher or lower, depending on the technologies and energy used in the countries that export to the EU.

Based on economic information and air emissions accounts (AEA), Eurostat estimates the CO_2 emissions embedded into EU exports and imports in 2019 at 1.28 and 1.02 tonnes of CO_2 per capita, respectively [63]. This means that the EU emitted 0.26 tonnes of CO_2 per person more to produce exports than it avoided in the EU by importing goods and services. This can be explained by the relatively higher volume of raw materials imported into the EU (see above) and the relatively higher volume of processed products exported from the EU, which require energy for processing and manufacture. Services, which constitute a large share of the EU economy and its exports, also have substantial amounts of CO_2 emissions embedded.

In contrast to Eurostat's methodology, the MRIO data from the Global MRIO Lab seek to estimate the 'real' emissions in the rest of the world for goods delivered to the EU. This is very challenging due to limited information about local production technologies. MRIO estimates show that in 2018, around 1.6 tonnes of CO_2 per capita were emitted

abroad for the production of goods and services for the EU. Figure C.11 shows that according to the MRIO estimates for 2000 to 2018, the EU has been a net-importer of CO_2 emissions. This means that the EU's emissions embedded in the import of goods and services were higher than the emissions embedded in its exports.

Both the Eurostat method and the MRIO-based estimates include transport-related CO_2 emissions. According to MRIO Lab data, most CO_2 emissions embedded in the EU's imports are generated by imports from countries in the Asia-Pacific region (see Table C.2).

Air pollution footprint

The air pollution footprint covers gases such as sulphur dioxide (SO_2) and nitrogen oxide (NO_x) that are mostly emitted during fossil fuel combustion, for example in power plants, and have documented adverse health effects, such as respiratory illnesses. Goods and services have embedded air pollution whenever these gases are emitted during the production process, throughout the supply chain. According to the 'real' emissions estimates based on MRIO Lab data, NO_x emissions embedded in EU imports and exports in 2018 were 4.84 kg and 1.95 kg per capita, respectively. The SO_2 pollution levels per capita

are comparable, estimated at 4.7 kg per capita for imports and 1.5 kg per capita for exports.

This means that the consumption of imported products in the EU is estimated to contribute more to air pollution in exporting countries worldwide than the production of exported products generates in the EU ([64]). This might be partially explained by differences in environmental standards but information on local production technologies is limited. The global SDG target 17.7 to 'promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries' aims to reduce these differences.

For both gases, the highest share of total emissions caused by consumption in the EU (52 % for NO_x and 61 % for SO_2) were generated in the Asia-Pacific region.

Social spillover effects: employment

The social indicator 'employment' primarily links with SDG 8 (Decent work and economic growth). It estimates the number of people employed directly or indirectly in the production of goods and services for EU Member States along the full supply chain. The indicator is based on MRIO data and includes both male and female employment but does not include child labour ([65]). Employment is considered to be a positive spillover effect as EU consumption generates jobs in global supply chains.

In 2018, around 25 million people worked in the EU in the production of goods and services that were destined for exports. By contrast, around 69 million people worked outside the EU in the supply chains of products (such as food, textiles, other manufactured items) consumed in the EU. This means that imports into the EU generated around 44 million more jobs in exporting countries than demand from those countries for EU goods and services generated in the EU. In other words, the EU is a net exporter of jobs. As shown in Table C.2, most of these jobs are located in the Asia-Pacific region (47 %) and in Africa (27 %). Eastern Europe and Central Asia, Latin America, the Middle East, North America and the rest of

Europe together accounted for the remaining 26 % of the spillover effects on employment.

Economic spillover effects: income

The economic indicator tracking income primarily links with SDG 8 (Decent work and economic growth), SDG 12 (Responsible consumption and production) and SDG 17 (Partnerships for the goals). It estimates wages and salaries paid to people directly or indirectly employed in the supply chains of goods for EU consumption and is based on MRIO data.

The income generated abroad in 2018 through the production of goods and services for the EU is estimated at around EUR 500 billion, while the income generated in the EU associated with exports to the rest of the world is estimated at around EUR 636 billion (see Table C.1).

Income exports per employee are around EUR 25 600, and income imports are around EUR 7 300 per employee. This means that in 2018 exports to the rest of the world generated an income of about EUR 18 300 per employee more than the income generated in countries that produce goods and services for the EU. In other words, the EU is a net exporter for this indicator and wages and salaries paid to workers in the EU for the production of exports are higher than the income received by workers overseas for the production of EU imports. Differences in purchasing power may explain to some extent this pay gap.

A breakdown of the EU's total imports by global regions reveals that the income-related spillover effects primarily take place in the Asia-Pacific region, the rest of Europe and in North America.

Conclusions

Trade with the EU is a crucial source of income and economic activity in many EU partner countries, including some of the poorest countries in the world. This is recognised notably under SDG 17 (Partnerships for the goals). The indicator on income used in this report suggests that in 2018 the EU's imports provided employment to 69 million people and generated EUR 500 billion of income in the rest of the world.

However, environmental impacts embedded in EU trade are significant. Using the Eurostat model, the EU's imports are estimated to have generated more than one tonne of CO_2 per capita in 2018 in countries outside the EU. This is around 15 % of the carbon footprint of the EU, which is 6.7 tonnes per capita. According to Eurostat estimates, the net impact (emissions embedded in imports less emissions embedded in exports) is, however, small.

The 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 outlines the Commission's commitment to the transformation of global value chains, by promoting new environmental and social standards for sustainable growth. Currently there are also discussions in the EU on a mandatory due diligence legislation for multi-national companies.

This chapter has been a first step in quantifying spillovers. Better and more granular data are needed to track the spillover effects embedded in consumption. Methods that integrate multi-regional assessments and connect material extractions and production technologies with socio-economic and environmental impacts have the potential to provide meaningful insights, but require data that is currently not yet available. As a result, the indicators so far are less reliable than official statistics. More indicators have to be developed to cover the targets and goals of the SDGs that are related to transboundary effects, such as the spillover effects of tourism, social impacts and further environmental impacts such as water use and land use.

Overview of the experimental spillover indicators

The following two tables provide an overview of the indicators that were developed for this chapter.

Table C.1: Spillover effects of EU consumption for the indicators in this chapter in 2018

Indicator	Data source	Imports/Exports	Measurement unit	EU
Raw material footprint	Eurostat	Imports	t per capita in raw material equivalents	7.8
		Exports	t per capita in raw material equivalents	5.3
CO_2 emissions	MRIO Lab	Imports	t per capita	1.6
	Eurostat		t per capita	1.0
	MRIO Lab	Exports	t per capita	0.6
	Eurostat		t per capita	1.3
Air pollutant: NO_x	MRIO Lab	Imports	kg per capita	4.8
	Eurostat		kg per capita	3.6
	MRIO Lab	Exports	kg per capita	1.9
	Eurostat		kg per capita	6.8
Air pollutant: SO_2	MRIO Lab	Imports	kg per capita	4.7
	Eurostat		kg per capita	1.5
	MRIO Lab	Exports	kg per capita	1.6
	Eurostat		kg per capita	2.8
Employment	MRIO Lab	Imports	Absolute (million people)	69
		Exports	Absolute (million people)	25
Income	MRIO Lab	Imports	Absolute (EUR billion)	503
			Per employee (EUR)	7 295
			Per capita (EUR)	1 123
	MRIO Lab	Exports	Absolute (EUR billion)	636
			Per employee (EUR)	25 637
			Per capita (EUR)	1 427

Note: Imports cover imports from the rest of the world into the EU, exports cover products produced in the EU and exported to the rest of the world.

Source: Global MRIO Lab, Eurostat (online data codes: env_ac_io10, env_ac_rme and env_ac_rmefd)

Table C.2: Share of spillover impacts of EU consumption per region for five selected indicators, 2018

(%)

Region	CO_2 emissions	NO_x	SO_2	Employment	Income
Africa	7	6	6	26	2
Asia-Pacific	56	53	61	47	34
Eastern Europe and Central Asia	11	10	10	5	3
Rest of Europe	12	12	14	11	33
Latin America	2	6	3	5	3
Middle East	2	3	2	1	1
North America	10	11	6	4	24

Note: The impacts are estimated by regions that exported goods and services to the EU (i.e. imports into EU). The Asia-Pacific region includes China. Sums over 100 are the result of rounding.

Source: Global MRIO Lab.

Notes

(¹) By 5 May 2021, https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea.

(²) Excess mortality is the rate of additional deaths in a month compared with the average number of deaths in the same month over a baseline period. It refers to deaths from all causes.

(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) EU data for 2020 are provisional estimates based on the available Member States' data for that year; source: Eurostat (online data code: demo_mlexpec).

(⁶) 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*, Stockholm.

(⁷) European Observatory on Health Systems and Policies (2021), *In the wake of the pandemic: Preparing for Long COVID*, Policy Brief 39.

(⁸) OECD/European Union (2020), *Health at a Glance: Europe 2020: State of Health in the EU Cycle*, OECD Publishing, Paris.

(⁹) Industrial production covers the following sectors: mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply.

(¹⁰) Source: Eurostat (online data code: sts_inpr_a).

(¹¹) Source: Eurostat (online data code: ext_lt_maineu).

(¹²) OECD (2021), *COVID-19 spending helped to lift foreign aid to an all-time high in 2020, Detailed Note*, OECD, Paris, p. 8 and p. 10. USD were converted to EUR based on the average annual exchange rate (ert_bil_eur_a).

(¹³) Source: Eurostat, *Labour Force Survey (LFS) — detailed quarterly survey results*.

(¹⁴) Source: Eurostat (online data code: lfsa_ugan).

(¹⁵) Source: Eurostat (online data code: lfsq_egised).

(¹⁶) EEA (2020), *COVID-19 and Europe's environment: impacts of a global pandemic*, Briefing No 13/2020.

(¹⁷) Source: own calculations based on Eurostat (online data code: nrg_cb_eim).

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(⁶⁴) It should be noted that the Eurostat estimates using the domestic technology assumption differ from the MRIO estimates (see Table C.1) and in fact invert the net balance. As a result, the EU becomes a net-exporter of air pollution. This shows that results of spillovers estimates need to be interpreted with care.

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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.

eurostat supports the SDGs

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 prevent long-term loss of economic productivity from whole groups of society and encourage inclusive and sustainable growth. Poverty and social exclusion can take on various forms, including, but not limited to, income poverty (including in-work poverty), material deprivation and very low work intensity. The European Pillar of Social Rights is key to addressing poverty and social exclusion in the European Union. It expresses principles

and rights essential for fair and well-functioning labour markets and welfare systems in 21st century Europe (²). While many of the Pillar's 20 principles are relevant for poverty, its third chapter is dedicated to social inclusion and social protection, support to children, introduction of minimum income benefits and access to essential services.

Table 1.1: Indicators measuring progress towards SDG 1

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 65
People at risk of income poverty after social transfers	: (¹)	↗	page 67
Severely materially deprived people	: (¹)	⬆	page 68
People living in households with very low work intensity	: (¹)	⬆	page 69
In work at-risk-of-poverty rate	: (¹)	⬆	page 70
Basic needs			
People living in households with poor housing conditions (such as leaking roof, damp walls or foundation, etc.)	: (¹)	⬆	page 71
Self-reported unmet need for medical care (*)	: (¹)	⬆	SDG 3, page 107
People living in households without basic sanitary facilities (such as bath, shower, indoor flushing toilet) (*)	: (¹)	⬆	SDG 6, page 151
Population unable to keep home adequately warm (*)	: (¹)	⬆	SDG 7, page 176
Overcrowding rate (*)	: (¹)	⬆	SDG 11, page 243

(*) Multi-purpose indicator.
(¹) Data for the EU from the EU Statistics on Income and Living Conditions (EU-SILC) are only available from 2010 onwards. The available time series (2010 to 2019) is consequently too short for an assessment of the long-term trend.

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.1 in the annex.

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, and moderate progress in reducing the share of people at risk of income poverty after social transfers, as shown in Table 1.1.

Multidimensional poverty

SDG 1 not only calls for the eradication of extreme poverty but also for poverty in all its dimensions to be halved by 2030. This universal approach to reducing poverty is directly relevant to the EU, which already employs a multidimensional measure of poverty in its European Pillar of Social Rights.

The at-risk-of-poverty-or-social-exclusion (AROPE) indicator is based on three sub-dimensions: income poverty, very low work intensity and severe material deprivation. Through this multidimensional approach, the indicator shows which share of the population is at risk of exclusion and marginalisation from economic and social activities.

20.9 %
of the EU population were at risk of poverty or social exclusion in 2019

The overall at-risk-of-poverty-or-social-exclusion rate has been decreasing in the EU since 2012

In 2019, 20.9 % of the EU population were at risk of poverty or social exclusion, a decrease of 3.6 percentage points since 2014. It is worth noting that the EU's at-risk-of-poverty-or-social-exclusion rate increased between 2009 and 2012 because of the delayed social effects of the economic crisis ([3]), but has been falling ever since.

All dimensions of poverty have been reduced in the EU

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 for some people overlap, meaning they can 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 median income in their country. In other words, the at-risk-of-poverty rate depends on the income level enjoyed by most people in a country or region. This means that even during times of increasing median income, the relative poverty rate could remain stable, or even increase, depending on changes in income distribution across the overall population. Rates of severe material deprivation (indicating a lack of resources to cover certain material 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.

16.5 %
of the EU population were at risk of income poverty in 2019

Income poverty was the most prevalent form of poverty in the EU in 2019, affecting 16.5 % of the population. This means that after social transfers these people had an equivalised disposable income of less than 60 % of the national median. With a considerable gap, the second most frequent form of poverty was very low work intensity, which

5.5 %
of the EU population were affected by severe material deprivation in 2019

refs to people living in households where the adults worked no more than 20 % of their total work potential during the past year. This form of poverty affected 8.3 % of the EU population aged below 60 in 2019 ([4]). In the same year, 5.5 % of the population were affected by severe material deprivation. This third form of poverty means they were unable to afford four or more items out of a list of nine considered by most people to be desirable or even necessary for an adequate life (see page 68 for the full list).

Of all of the people at risk of poverty or social exclusion in the EU in 2019, 28.1 % were affected by more than one dimension of poverty. And 5.9 % were affected by all three forms ([5]).

The European Commission, the European Council and the European Parliament jointly proclaimed the European Pillar of Social Rights in November 2017 ([6]). The Pillar promotes upward convergence towards better living and working conditions in Europe. Of the 20 principles that the Pillar sets out, those in the third chapter are dedicated to social protection and inclusion. In March 2021, the Commission put forward an ambitious European Pillar of Social Rights Action Plan with a proposed target of reducing the number of people at risk of poverty or social exclusion by 15 million by 2030, including at least five million children ([7]).

As Figures 1.5, 1.7 and 1.9 show, the three sub-indicators of poverty and social exclusion have all shown a downward trend in recent years. For severely materially deprived people the trend began in 2012 and for people living in households with very low work intensity it started in 2014. However, income poverty has only been falling since 2016.

The implementation of the European Pillar of Social Rights ([8]) is monitored by the Social Scoreboard in the context of the European Semester. The country-specific recommendations address fiscal and structural reforms (including social policies) to reduce both poverty and inequality ([9]).

To reduce poverty, governments provide a wide range of policies, such as income support though various benefits (for example, unemployment benefits, sickness and invalidity benefits, and minimum income benefits), tax policies and provision of 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 2019 from 24.4 % ([10]) to 16.5 %, which corresponds to a 32.4 % reduction ([11]).

8.3 %
of the EU population aged less than 60 were living in households with very low work intensity in 2019

Considerable differences in poverty rates exist within the EU

The aggregated EU figure for the risk-of-poverty-or-social-exclusion rate masks considerable differences between Member States, whose national rates ranged from 12.5 % in Czechia to 32.8 % in Bulgaria in 2019. In addition, there can be striking differences in countries' sub-indicators, showing 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 highest share of income poverty after social transfers and one of the highest shares

of severely materially deprived people in 2019, while at the same time its share of very low work intensity was within the bottom third of countries. Denmark and Finland are other examples with striking differences with regard to the three sub-indicators. Both countries were among the best performers for severe material deprivation and income poverty after social transfers but had relatively high shares of very low work intensity, which were 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

Analysis of the risk of poverty or social exclusion by age group reveals that young people aged 20 to 24 are the most affected by this situation. In 2019, 27.7 % of young people in this age group were at risk, which is 6.8 percentage points higher than the total EU rate of 20.9 %. Children aged 0 to 17 were also more affected than the overall EU population, with 22.2 % at risk. In line with the total EU trend, the poverty or social exclusion rates for both groups have decreased since 2014 ([12]).

9.0%
of employed people in the EU were at risk of income poverty in 2019

It is obvious that children's risk of poverty or social exclusion is largely determined by the situation of their parents. In particular, the educational attainment of parents is a major factor: in 2019, 59.6 % 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 6 being the most affected (61.8 %). Children (aged 0 to 17) with more highly educated parents fared significantly better, with 25.5 % of children whose parents had a mid-level education and 8.9 % of children with highly educated parents at risk ([13]). Similarly, single-parent households with one or more dependent children had a much higher at-risk rate (40.0 % in 2019) than other household types ([14]).

All EU countries have committed to implementing the reinforced Youth Guarantee ([15]) in a Council Recommendation of October 2020 ([16]). The reinforced Youth Guarantee strengthens prevention and activation of young people from vulnerable groups and will help reduce poverty or social exclusion among young people.

The Commission has also adopted a proposal for a Council recommendation establishing a European Child Guarantee ([17]). The proposal will help ensure that in Europe every child in need has equal access to quality early childhood education and care, education, healthcare, housing and nutrition.

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

Identifying situations that can make people more vulnerable to being at 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 2019. 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. Nearly half (45.3 %) of non-EU citizens living in the EU in 2019 were at risk of poverty and social exclusion,

far more than EU home-country nationals (19.6 %) [18]. The situation was quite similar when looking at country of birth, with 38.0 % of adults born in non-EU countries being at risk, compared with only 19.3 % of those born in the reporting EU countries [19]. Moreover, about one-third of people with severe disabilities (34.7 %) or low education levels (32.8 %) were at risk of poverty or social exclusion. Further vulnerable groups included people living in rural areas (22.4 %) and women (21.8 %). Not surprisingly, the group most at risk of poverty or social exclusion was unemployed people, of which almost two-thirds (65.3 %) were at risk [20].

> With its **Strategy for the Rights of Persons with Disabilities 2021–2030** [21], **which was adopted on 3 March 2021, the Commission is taking on a leading role in the fight to improve the inclusion of people with disabilities in society. The strategy 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 new strategy builds on its predecessor, the European Disability Strategy 2010–2020, and contributes to the implementation of the European Pillar of Social Rights.**

Having a job is not a guarantee against poverty

Poverty can also affect employed people. The share of people unable to escape the risk of poverty despite being employed, the so-called working poor, increased almost continuously from 2010 to 2016 before falling again. In 2019,

the in-work poverty rate was 9.0 %, a decline of 0.6 percentage points since 2014. However, rates varied considerably across the EU in 2019, with the lowest recorded in Finland (2.9 %) and the highest in Romania (15.7 %) and Spain (12.7 %).

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 [22].

> **In January 2021, the European Parliament and EU Member States in the Council reached the political agreement on the Commission's proposal for a Regulation on the European Social Fund Plus** (ESF+) [23]. **The ESF+ will be a key financial instrument for implementing the European Pillar of Social Rights. It is the successor to the European Social Fund (ESF), which has supported investments in the social future of European citizens for six decades. The ESF+ has a total budget of EUR 88 billion (in 2018 prices). The ESF+ will invest in young people, who have been particularly hard hit by the socio-economic crisis following the coronavirus outbreak, support the most vulnerable suffering from job losses and income reductions, provide food and basic material assistance to the most deprived, invest in children who have suffered the effects of the crisis, and directly support social innovation.**

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, keep their home adequately warm or receive medical treatment when needed.

Poor people often live in inadequate housing conditions

An adequate living situation, defined by the United Nations as a safe and secure home and community in which to live in peace and dignity [24], is necessary for active inclusion in society. For example, in many cases an address is a precondition for getting a job or even identification documents. In addition, the costs of housing determine what is left of a household's budget for other expenses, such as education and culture, or even food. People suffering from poverty are far more often restricted to sub-optimal housing than the overall population.

12.7 %
of the EU population lived in poor dwelling conditions in 2019

Inadequate housing — marked by a leaking roof, damp walls, floors or foundation, or rot in window frames or floors — affected 12.7 % of the EU population in 2019. This was a 2.9 percentage point improvement compared with 2014. Among people living in income poverty, 19.8 % were affected by a leaking roof, damp walls, floors or foundation, or rot in window frames or floors in 2019, which was a 5.0 percentage point improvement compared with 2014 [25].

Living conditions have also improved in terms of basic sanitary facilities. In 2019, 1.6 %

1.6 %
of the EU population lacked sanitary facilities at home in 2019

of the overall EU population lived in a house or apartment without a bath, shower or indoor flushing toilet, which was a 0.7 percentage point improvement since 2014. However, 5.7 % of people living below the income poverty threshold were still exposed to these housing deficiencies in 2019 [26].

The **Fund for European Aid to the Most Deprived (FEAD)** [27] **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. FEAD will be integrated into the new European Social Fund Plus (ESF+; see box on page 62). All Member States will devote at least 3% of their ESF+ resources to providing food and basic material assistance to the most deprived citizens [28].**

Another important aspect when considering adequate housing is the ability to keep one's home warm [29]. Energy poverty will be a particularly important issue in the transition to a carbon-neutral society, during which energy prices are expected to increase [30]. In 2019, 6.9 % of the overall EU population were unable to keep their home adequately warm, which was an improvement

6.9 %
of the EU population were unable to keep their home adequately warm in 2019

of 3.5 percentage points compared with 2014. Among people affected by income poverty in 2019, the rate was 18.2 %, which was a 5.7 percentage point improvement compared with 2014.

Furthermore, many EU citizens also share a dwelling with more people than there is space for and face overcrowding ([31]) within their household. Such living conditions can significantly affect quality of life by restricting opportunities for movement, rest, sleep, privacy and hygiene. In 2019, 17.1 % of the EU population lived in an overcrowded household, which is 1.0 percentage points less than in 2014. At 29.1 %, the incidence of overcrowding was considerably higher for people with an income below the poverty threshold ([32]).

17.1 %
of the EU population lived in an overcrowded household in 2019

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

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 cost, distance and waiting time. In 2019, 1.7 % of the EU population aged 16 and above reported unmet needs for medical care, which was an improvement of 2.2 percentage points compared with 2014. Cost was the main reason given for impeded access to health care services, indicated by 0.9 % of the EU population. People with lower incomes face a much higher share of unmet needs for medical care. While only 0.1 % of the richest 20 % of the population reported unmet care needs due to financial constraints, 2.2 % of people in the poorest quintile reported that this was the case ([33]).

1.7 %
**of the EU population reported unmet needs for medical care in 2019**

Presentation of the main indicators

People at risk of poverty or social exclusion

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' shows the share of people affected by at least one of the following three forms of poverty or social exclusion: income poverty, severe material deprivation and very low work intensity (see pages 67–69 for a detailed description of these sub-indicators). Data on the three sub-indicators are derived from the EU Statistics on Income and Living Conditions (EU-SILC).

X LONG TERM
Time series
too short

↑ SHORT TERM
2014–2019

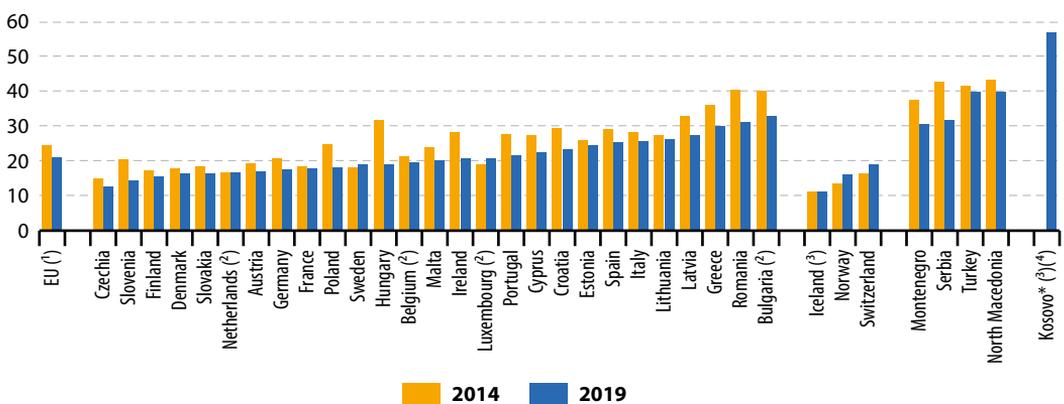**Figure 1.1:** People at risk of poverty or social exclusion, EU, 2010–2019
(% of population)
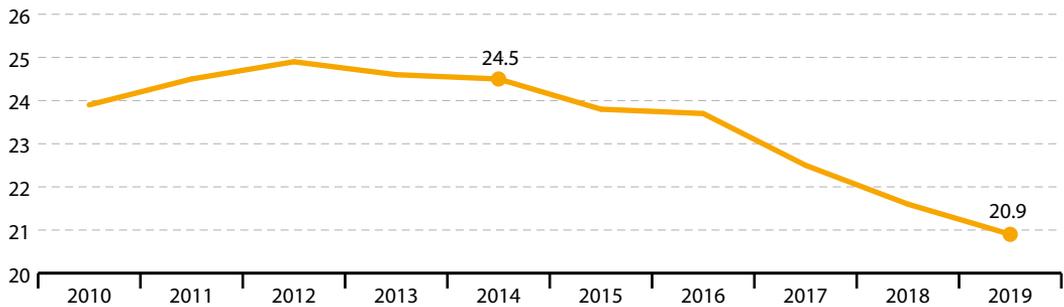
Note: Estimated data.
Compound annual growth rate (CAGR): – 3.1 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_10)

Figure 1.2: People at risk of poverty or social exclusion, by country, 2014 and 2019
(% of population)

■ 2014   ■ 2019

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_01_10)

(*) 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.
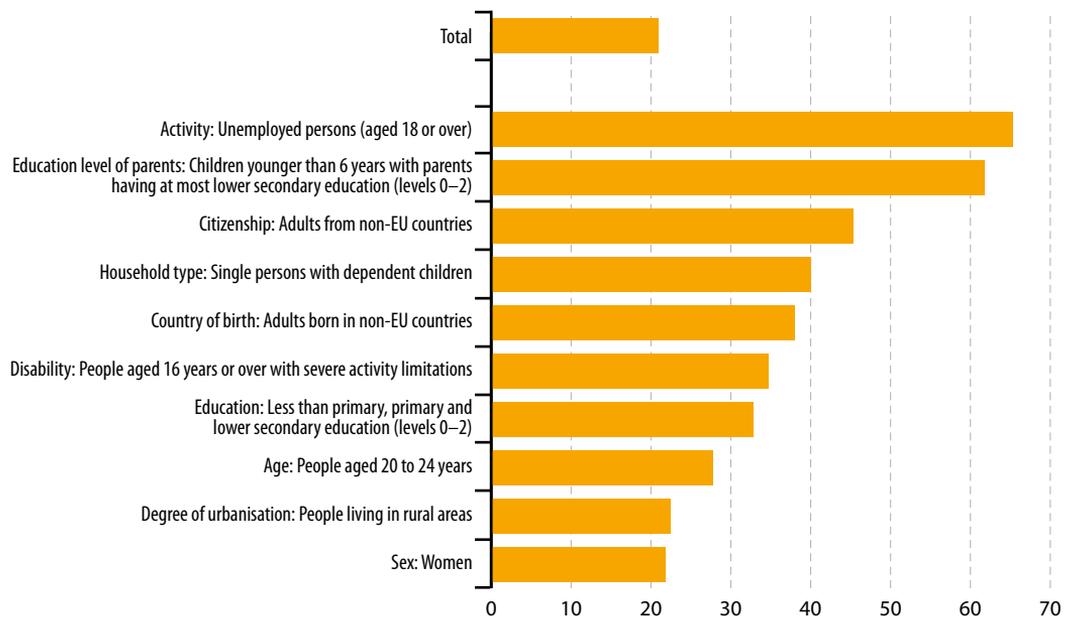
Figure 1.3: Aggregation of sub-indicators of 'People at risk of poverty or social exclusion', EU, 2019
(% of population)

Total number for each sub-indicator

Combination of sub-indicators (with intersectons)

Severely materially deprived people

5.5

People at risk of poverty after social transfers

16.5

People living in households with very low work intensity

6.1

2.2

1.8

10.9

1.2

0.3

2.6

2.0
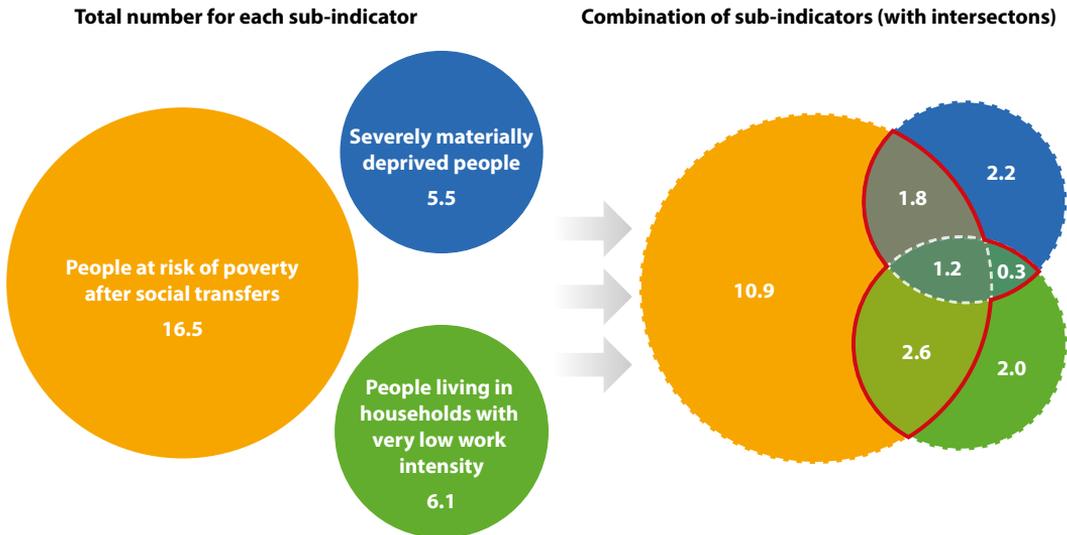
Note: Estimated data. The data for 'very low work intensity' shown here refer to the total population as denominator and therefore differ from the data shown in Figures 1.9 and 1.10 where — according to the official definition of the indicator — the population aged less than 60 is used as denominator instead.

Source: Eurostat (online data code: ilc_pees01)

Figure 1.4: People most at risk of poverty or social exclusion, by sub-group, EU, 2019
(% of population)

Category	Value
Total	~21
Activity: Unemployed persons (aged 18 or over)	~65
Education level of parents: Children younger than 6 years with parents having at most lower secondary education (levels 0–2)	~62
Citizenship: Adults from non-EU countries	~45
Household type: Single persons with dependent children	~40
Country of birth: Adults born in non-EU countries	~38
Disability: People aged 16 years or over with severe activity limitations	~35
Education: Less than primary, primary and lower secondary education (levels 0–2)	~33
Age: People aged 20 to 24 years	~28
Degree of urbanisation: People living in rural areas	~22
Sex: Women	~22

Note: Estimated data.

Source: Eurostat (online data codes: ilc_peps01, ilc_peps02, ilc_peps03, ilc_peps04, ilc_peps05, ilc_peps06, ilc_peps13, ilc_peps60 and hlth_dpe010)
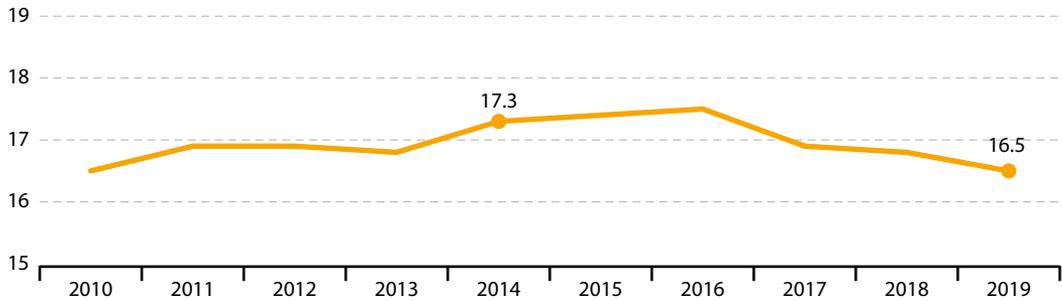
People at risk of income poverty after social transfers

This indicator measures the share of people with an equivalised disposable income below the risk-of-poverty threshold. This is set at 60 % of the national median equivalised ([34]) disposable income after social transfers. The data stem from the EU Statistics on Income and Living Conditions (EU-SILC).

X **LONG TERM** Time series too short

↗ **SHORT TERM** 2014–2019

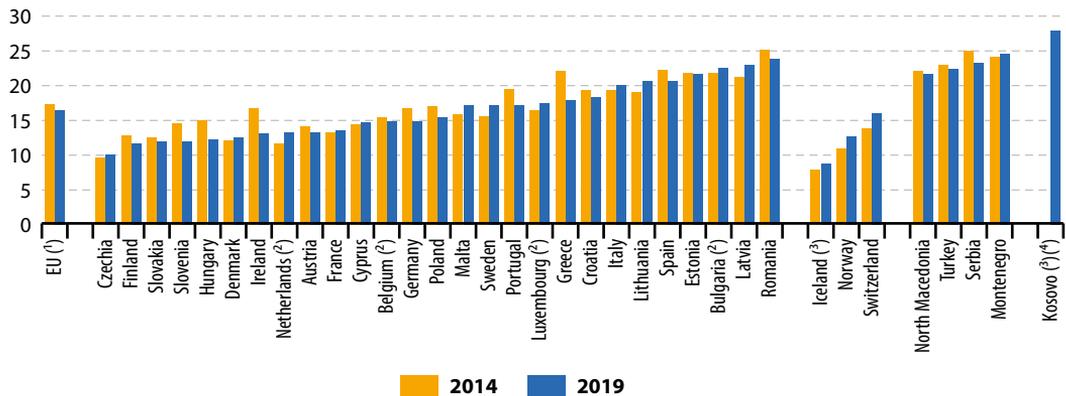**Figure 1.5:** People at risk of income poverty after social transfers, EU, 2010–2019 (% of population)

Note: Estimated data.
Compound annual growth rate (CAGR): – 0.9 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_20)

Figure 1.6: People at risk of income poverty after social transfers, by country, 2014 and 2019 (% of population)

2014   2019

(^{1}) Estimated data.
(^{2}) Break(s) in time series between the two years shown.
(^{3}) 2018 data (instead of 2019).
(^{4}) No data for 2014.
Source: Eurostat (online data code: sdg_01_20)
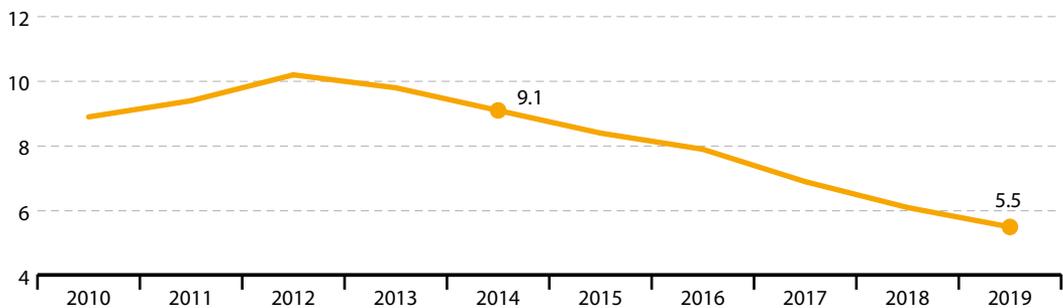
Severely materially deprived people

This indicator covers issues relating to economic strain, durables, housing and the environment of dwellings. Severely materially deprived people have living conditions that are greatly constrained by a lack of resources, which means they cannot afford at least four of the following items: to pay their rent or utility bills, to keep their home warm, to pay unexpected expenses, to eat meat, fish or a vegetarian equivalent every second day, a week holiday away from home, a car, a washing machine, a colour TV or a telephone. Data for this indicator stem from the EU Statistics on Income and Living Conditions (EU-SILC).

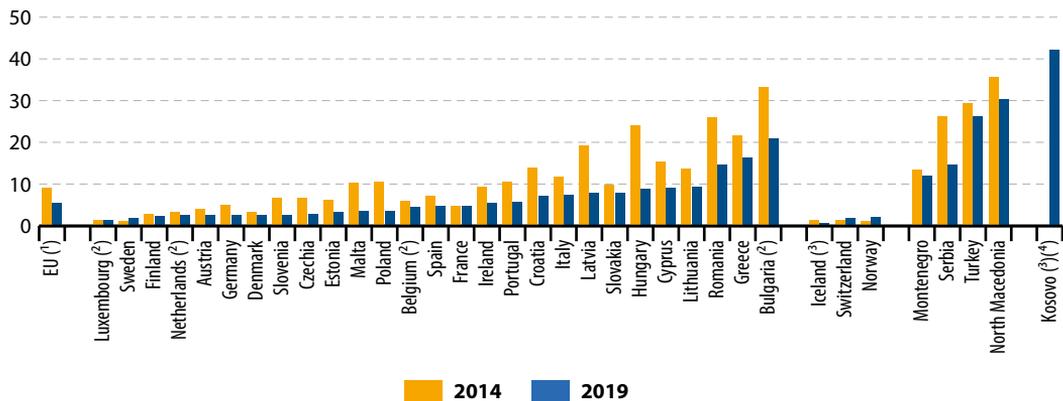**Figure 1.7:** **Severely materially deprived people, EU, 2010–2019**
(% of population)

Note: Estimated data.
Compound annual growth rate (CAGR): – 9.6 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_30)

Figure 1.8: **Severely materially deprived people, by country, 2014 and 2019**
(% of population)

■ **2014** ■ **2019**

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
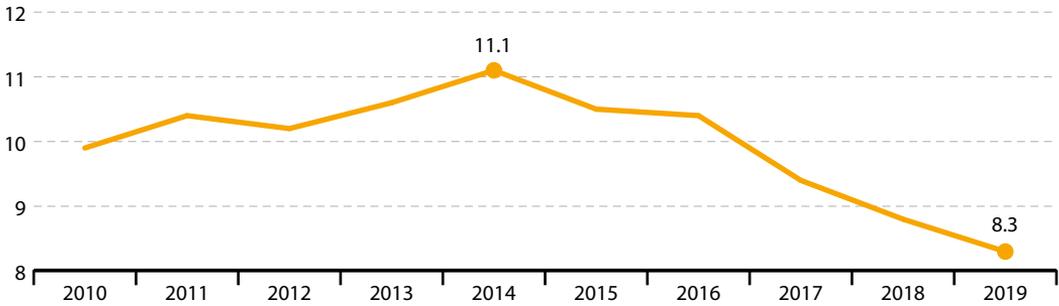(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_01_30)

People living in households with very low work intensity

This indicator describes the share of people aged less than 60 living in households where the working age adults aged 18 to 59 worked no more than 20 % of their total work potential during the past year. The EU Statistics on Income and Living Conditions (EU-SILC) is the data source for this indicator.

X LONG TERM
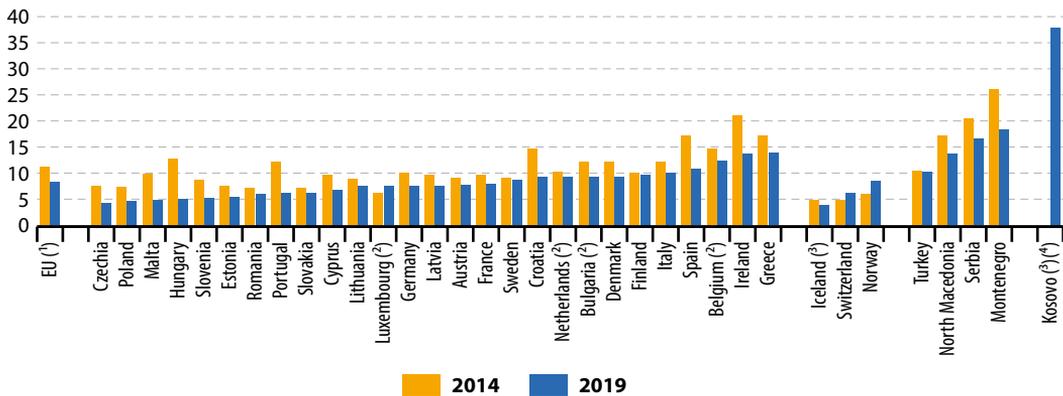Time series
too short

↑ SHORT TERM
2014–2019

Figure 1.9: People living in households with very low work intensity, EU, 2010–2019
(% of population aged less than 60)

Note: Estimated data.
Compound annual growth rate (CAGR): – 5.6 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_40)

Figure 1.10: People living in households with very low work intensity, by country, 2014 and 2019
(% of population aged less than 60)

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.

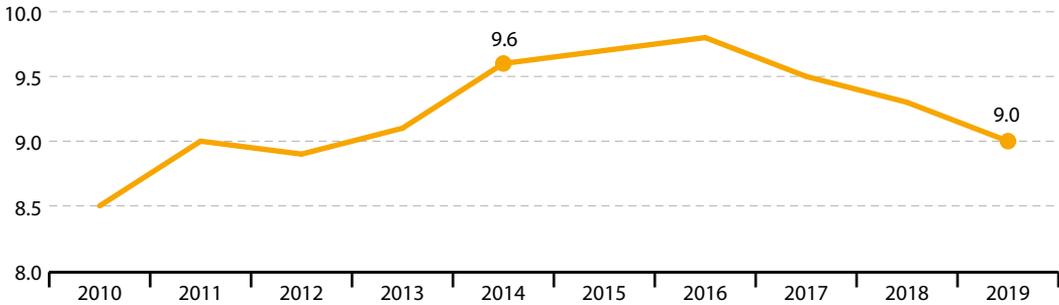*Source:* Eurostat (online data code: sdg_01_40)

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 67). 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, 2010–2019
(% of population aged 18 or over)

Note: Estimated data.
Compound annual growth rate (CAGR): – 1.3 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_41)

Figure 1.12: In work at-risk-of-poverty rate, by country, 2014 and 2019
(% of population aged 18 or over)
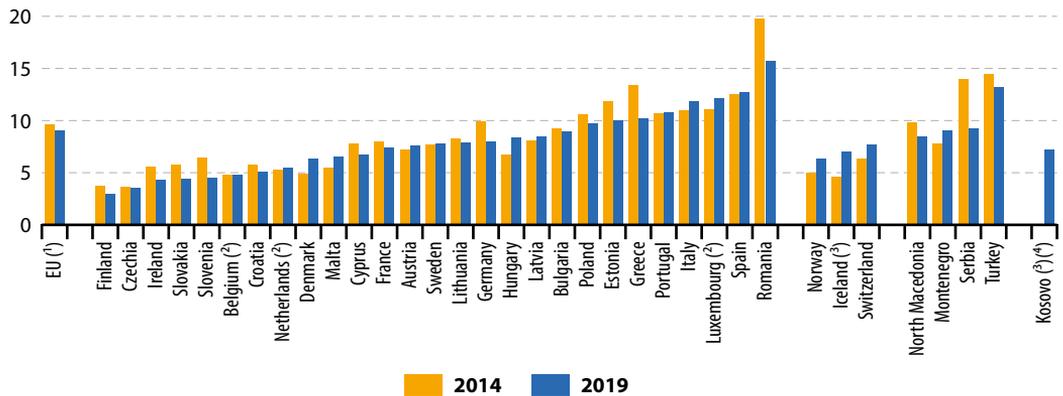
2014   2019

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_01_41)

People living in households with poor housing conditions (such as leaking roof, damp walls or foundation, etc.)

X LONG TERM Time series too short

SHORT TERM 2014–2019

The indicator reflects the share of the population with at least one of the following deficits in their home: a leaking roof, damp walls, floors or foundation, or rot in window frames or floor. This indicator is derived from the EU Statistics on Income and Living Conditions (EU-SILC).

Figure 1.13: Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames or floor, EU, 2010–2019
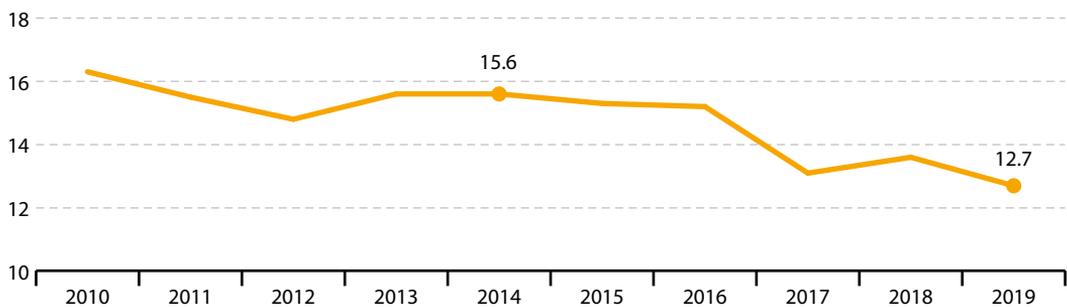(% of population)

Note: Estimated data.
Compound annual growth rate (CAGR): – 4.0 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_60)

Figure 1.14: Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames or floor, by country, 2014 and 2019
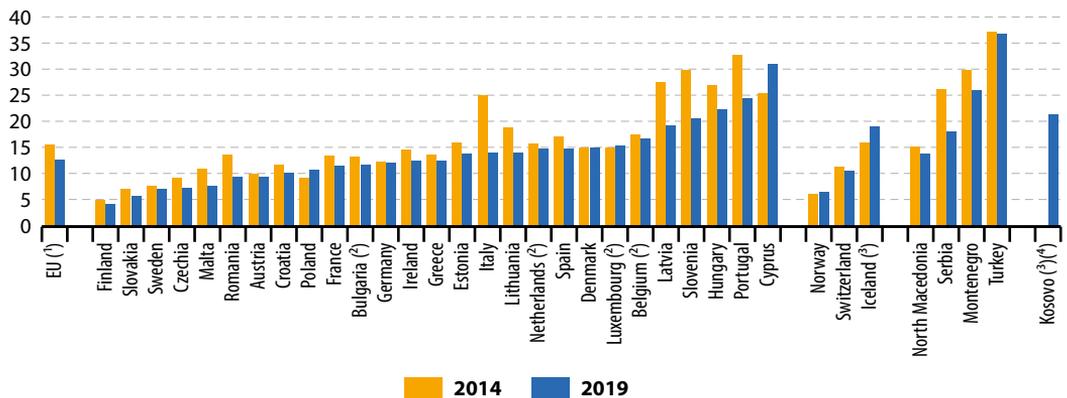(% of population)

2014 **2019**

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_01_60)

Further reading on poverty

European Commission (2020), *Employment and Social Developments in Europe, Annual Review 2020*, Publications Office of the European Union, Luxembourg.

European Commission (2021), *Joint Employment Report 2021*, Directorate-General for Employment, Social Affairs and Inclusion, Brussels.

European Commission (2017), *European Semester Thematic Factsheet, Social Inclusion*.

European Parliament (2019), *Factsheet, The fight against poverty, social exclusion and discrimination*.

European Union (2020), *Social Protection Committee Annual Report 2020*, Publications Office of the European Union, Luxembourg.

European Union (2017), *Monitoring social inclusion in Europe, 2017 edition*, Publications Office of the European Union, Luxembourg.

United Nations (2020), *The Sustainable Development Goals Report 2020*, United Nations Publications, New York.

Further data sources on poverty

OECD, Income Distribution Database (IDD): Gini, poverty, income, methods and concepts.

OECD, Affordable Housing Database.

The World Bank, Poverty and Equity Data Portal.

UNDP, Human Development Data (1990–2019).

Notes

(¹) For more information, see Eurostat (2013), *Statistics Explained, Intergenerational transmission of disadvantage statistics*.
(²) The European Parliament, the Council and the Commission (2017), *European Pillar of Social Rights*, booklet.
(³) European Commission (2019), *Employment and Social Developments in Europe 2019*, Luxembourg.
(⁴) The data for 'very low work intensity' mentioned here refer to the population aged less than 60 as denominator (in accordance with the official definition of the indicator) and therefore differ from the data shown in Figure 1.3 where the total population is used as the denominator.
(⁵) The year of reference differs for the three sub-indicators. 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.
(⁶) European Commission (2017), *Establishing a European Pillar of Social Rights*, COM(2017) 250 final, Brussels.
(⁷) European Commission (2021), *The European Pillar of Social Rights Action Plan*, Publication Office of the European Union, Luxembourg.
(⁸) European Commission (2017), *Establishing a European Pillar of Social Rights*, COM(2017) 250 final, Brussels.
(⁹) Council of the European Union (2020), *European Semester, integrated country-specific recommendations — Approval and report to the European Council*, 8593/1/20 REV 1, Brussels.
(¹⁰) Source: Eurostat (online data code: ilc_li10).
(¹¹) Source: Eurostat (online data code: TESPM050).
(¹²) Source: Eurostat (online data code: ilc_peps01).
(¹³) Source: Eurostat (online data code: ilc_peps60).
(¹⁴) Source: Eurostat (online data code: ilc_peps03).
(¹⁵) For more information see: European Commission, The reinforced Youth Guarantee.
(¹⁶) Official Journal of the European Union (2020), *Council Recommendation of 30 October 2020 on A Bridge to Jobs — Reinforcing the Youth Guarantee and replacing the Council Recommendation of 22 April 2013 on establishing a Youth Guarantee (2020/C 372/01).*
(¹⁷) For more information see: European Commission, Child guarantee for vulnerable children.
(¹⁸) Source: Eurostat (online data code: ilc_peps05)
(¹⁹) Source: Eurostat (online data code: ilc_peps06)
(²⁰) Further information on vulnerable groups particularly at risk of poverty or social exclusion can be found in: Eurostat (2018), *Living condition in Europe*, 2018 edition, Luxembourg.
(²¹) European Commission (2021), *Union of Equality, Strategy for the Rights of Persons with Disabilities 2021–2030*, COM(2021) 101 final, Brussels.
(²²) 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.
(²³) For more information see: European Commission, A new, stronger European Social Fund Plus.
(²⁴) For more information on the definition of adequate housing, see the United Nations (2014), *The Right to Adequate Housing: Fact Sheet No. 21/Rev.1*.
(²⁵) Source: Eurostat (online data code: ilc_mdho01).
(²⁶) Source: Eurostat (online data code: ilc_mdho05).
(²⁷) For further information see: European Commission, Fund for European Aid to the Most Deprived (FEAD).
(²⁸) European Commission (2021), *Commission welcomes political agreement on the ESF+*, ESF News of 29/01/2021.
(²⁹) See also European Commission (2020), *Commission Recommendation of 14.10.2020 on energy poverty*, SWD(2020) 960 final, Brussels. The European Commission proposes the inability to keep one's home adequately warm as one of the main indicators to measure energy poverty.
(³⁰) European Commission (2020), *Employment and Social Developments in Europe, Annual Review 2020*, Publications Office of the European Union, Luxembourg, p. 108.
(³¹) 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).
(³²) Source: Eurostat (online data code: ilc_lvho05a).
(³³) Source: Eurostat (online data code: hlth_silc_08).
(³⁴) 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.

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 environmental friendly practices such as reduced pesticide use and an increase in the agricultural area under organic farming — 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.

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 83
Sustainable agricultural production			
Agricultural factor income per annual work unit	⬆	⬆	page 84
Government support to agricultural R&D	⬈ (¹)	⬆	page 85
◎ Area under organic farming	:	⬈	page 86
Harmonised risk indicator for pesticides (HRI1)	:	⬆	page 87
Environmental impacts of agricultural production			
Ammonia emissions from agriculture	⬈	⬊	page 88
Nitrate in groundwater (*)	⬊ (²)	⬊ (²)	SDG 6, page 154
Estimated severe soil erosion by water (*)	⬈ (³)	⬈ (⁴)	SDG 15, page 327
Common farmland bird index (*)	⬊ (⁵)	⬊ (⁵)	SDG 15, page 329

(*) Multi-purpose indicator.
(¹) Past 12-year period.
(²) Data refer to an EU aggregate based on 16 Member States.
(³) Past 16-year period.

(⁴) Past 6-year period.
(⁵) 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.1 in the annex.

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 indicates, the EU has shown progress in making agricultural production more sustainable 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 seventh 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.

14.9 %
of the EU's adult population were obese in 2017

Obesity is a significant health issue in the EU, affecting almost 15 % of the adult population in 2017. Obesity is also a contributing factor to non-communicable diseases, such as cancer, cardiovascular diseases and diabetes. It also disproportionately affects people with lower levels of education and generally tends to increase with age until late in life.

When considered together with pre-obesity, the situation looks even more severe, with more than half of the adult EU population being overweight in 2017. Patterns in the pre-obesity rate follow patterns in the obesity rate, though pre-obesity affected more than twice as many Europeans as obesity (36.9 % of the adult population) in 2017.

Between 2014 and 2017, the share of obese and pre-obese people hardly changed. At the Member State level, 11 of the 22 EU countries for which data for 2014 and 2017 are available show a rise in obesity rates.

The EU Action Plan on Childhood Obesity 2014–2020 (¹) aimed to help halt the rise in childhood obesity by 2020. Actions under the plan included measures to promote healthy diets, increase access to healthy foods, address changing family eating patterns, and restrict marketing and advertising that contributes to the formation of unhealthy dietary preferences at a young age. Europe's Beating Cancer Plan (²) also highlights the importance of addressing obesity and diabetes from an early age. The Commission will evaluate the 2014–2020 Action Plan on Childhood Obesity and propose a follow-up.

As announced in the Farm to Fork Strategy (³), the Commission will also propose a revision of the EU school fruit, vegetables and milk scheme in 2023 to make healthy products more available to children and improve their understanding of the benefits of healthy food. It will also propose harmonised, mandatory front-of-pack nutrition labelling to empower consumers to make informed, healthy, and sustainable food choices.

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 create 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 indicators are: agricultural income and labour productivity; investment in agricultural research and innovation; organic farming; and pesticide risk.

The **EU's Common Agricultural Policy (CAP)**, first launched in 1962, provides income support, market measures and rural development measures to safeguard farmers and increase agricultural productivity while protecting rural landscapes and the environment. In June 2018, the European Commission presented legislative proposals for the future CAP, covering the period 2021 to 2027. Collectively, the nine future CAP objectives address the economic, social and environmental dimensions of sustainability.

The **EU Farm to Fork Strategy for sustainable food** ([4]) is a key component of the **European Green Deal** ([5]). The strategy aims, among other things, to significantly reduce the use and risk of chemical pesticides, reduce nutrient losses and reduce the use of fertilisers and antibiotics. In addition, the Farm to Fork strategy will help to achieve a circular economy by reducing the environmental impact of food processing and retail sectors. The strategy also promotes affordable healthy food for all and stimulate sustainable food consumption in the EU. The Farm to Fork strategy sets the following 2030 targets: achieving 25 % of the EU's total farmland under organic farming; a 50 % reduction in the use and risk of chemical pesticides and the use of more hazardous pesticides; a 50 % reduction in nutrient losses, which will result in a reduction of at least 20 % in fertiliser use, while ensuring no deterioration in soil fertility; and a 50 % reduction in the sale of antimicrobials for farmed animals and in aquaculture.

In the context of the European Green Deal, the Commission also adopted its **Biodiversity Strategy for 2030** ([6]), a comprehensive, long-term plan to protect nature and reverse the degradation of ecosystems. The strategy aims to put Europe's biodiversity on a path to recovery by 2030, and contains specific actions and commitments, including the establishment of a larger EU-wide network of protected areas and the launch of an EU nature restoration plan. In relation to farming, the strategy 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. The strategy also reiterates the EU's 2030 target for organic farming.

The **Europe's Beating Cancer Plan** ([7]) mentions that the Commission is undertaking a review of the promotion policy for agricultural products, with a view to enhancing its contribution to sustainable production and consumption, and in line with the shift to a more plant-based diet, with more fruit and vegetables and less red and processed meat and other foods linked to cancer risks.

The **Action Plan for the Development of Organic Production** ([8]), adopted by the Commission on 25 March 2021, supports the achievement of the target of having at least 25 % of the EU's agricultural land under organic farming by 2030 and achieving a significant increase in organic aquaculture that is included in both the Farm to Fork and Biodiversity Strategies.

Labour productivity in EU agriculture has increased, but investment in the future of farming lags behind

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)'.

Following a dip during the economic crisis in the late 2000s, agricultural factor income per AWU has been rising in Europe. By 2020 it was 27.2 % 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.

27.2 %
growth in EU agricultural factor income per annual work unit between 2010 and 2020

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 (⁹).

2.9
billion EUR in government support was spent on agricultural R&D in 2019

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 14.2 % between 2014 and 2019 to reach EUR 2.9 billion in 2019.

Several EU initiatives contribute to innovation for sustainable agriculture. In 2012, the agricultural European Innovation Partnership 'Agricultural productivity and sustainability' (EIP-AGRI) (¹⁰) was launched to boost innovation in the farming and forestry sectors. In autumn 2016, the Commission launched the FOOD 2030 initiative (¹¹). This initiative seeks to develop a coherent research and innovation agenda for sustainable food and nutrition systems. It highlights the need for new business models and investment to provide enough sustainable and safe high-quality food, encourage citizen involvement, and increase capacity and skills.

Organic farming is on the rise across the EU while pesticide risks are decreasing

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.

8.5 %
of the EU's utilised agricultural area was farmed organically in 2019

In the EU, the share of organic farming in total agricultural area grew by 2.4 percentage points between 2014 and 2019, to 8.5 %. 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 in 2019,

followed by Estonia and Sweden with levels slightly above 20 %. In all other Member States, organic farming was practised on less than 16 % of the agricultural land.

Risks related to pesticide use have been decreasing in the EU. The harmonised risk indicator for pesticides captures the trend in both the amount of active substances sold in plant protection products (as a proxy for pesticide use) and the differing risk levels of these active substances. The pesticide reduction target for 2030 currently cannot be monitored with this indicator. Data for 2018 show a 17.0 % reduction in the overall risk to human health and the environment from pesticides in the EU compared with the 2011–2013 average. An analysis by substance groupings shows that the use of, and hence the risk from, non-approved active substances decreased while the use of low-risk active substances increased. Compared with the 2011–2013 average, by 2018 the overall pesticide risk had decreased in 20 Member States but had risen in the other seven.

17.0 %
reduction in pesticide-related risks in the EU in 2018 compared with the 2011–2013 average

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. 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. 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.

NH_3

3.2
million tonnes of ammonia were emitted from agriculture in the EU in 2018

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 reversed, showing a slight increase over the past five years. After reaching a low of 3.20 million tonnes in 2012, emissions of ammonia rose to 3.24 million tonnes in 2018. It must be noted that the national and EU totals might mask considerable variations in fertiliser application and livestock densities at regional and local levels.

An average of

22.0
milligrams of nitrates were in each litre of groundwater in the EU in 2018

The amount of nitrates in EU groundwater remained fairly stable at around 21 milligrams per litre (mg/L) between 2000

and 2013 but has recently started increasing, reaching 22.0 mg/L in 2018. 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).

> The **National Emission reduction Commitments Directive (NEC Directive) ([12]) sets national emission reduction commitments for Member States and the EU for five important air pollutants, including ammonia. Annex III of the NEC Directive specifies measures that Member States must undertake to control ammonia emissions.**
>
> The **Nitrates Directive ([13]) was introduced in 1991 to protect water quality across Europe by preventing agricultural nitrates from polluting ground and surface waters and by promoting good farming practices. It has helped to improve the nitrogen balance, but major efforts are still needed to restore optimal water quality across the EU.**

The agricultural sector is also responsible for considerable quantities of greenhouse gas (GHG) emissions ([14]), accounting for about 10 % of total GHG emissions in the EU in 2018. While total emissions have been falling across the EU (see the chapter on SDG 13 'Climate action' on page 273), GHG emissions from the agricultural sector have broken away from this trend and started slowly

rising again in 2013. By 2018 they had reached almost 400 million tonnes of CO_2 equivalent, although this figure is still far below the 1990 level of 497 million tonnes ([15]).

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 (km^2) 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 ([16]) estimated to be at risk of severe soil erosion by water fell from 6.1 % to 5.3 % between 2000 and 2016.

The **Soil Thematic Strategy** (^{17}) is the main EU policy directed at soil protection. The updated EU Soil Thematic Strategy (planned in 2021) will help to fulfil the EU's commitment to reaching land degradation neutrality by 2030. The **Zero Pollution Action Plan for Air, Water and Soil** (^{18}) released in May 2021 also looks at these issues. The EU and most EU Member States do not have specific legislation targeting soils, but instead aspects of soil protection are determined by other sectoral policies such as agriculture, forestry, water, waste and land use planning.

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, which provides, for example Corine Land Cover and High Resolution Layers on imperviousness, grasslands, forests, water and wetness. The Commission has worked to integrate soil concerns into other sectoral policies, and rehabilitation projects have been funded, for example, through the Cohesion Policy (^{19}).

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

Between 2004 and 2019, common farmland birds in the EU declined by

11.1 %

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 (^{20}).

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 is used to measure the relative abundance and diversity of 39 farmland bird species compared with the 2000 base year. Between 2004 and 2019, the index showed there was a considerable decline of 11.1 % in the abundance of common farmland birds in the EU. 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.

Presentation of the main indicators

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).

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

Figure 2.1: Obesity rate, by body mass index (BMI), sex, age group and educational attainment, EU, 2017
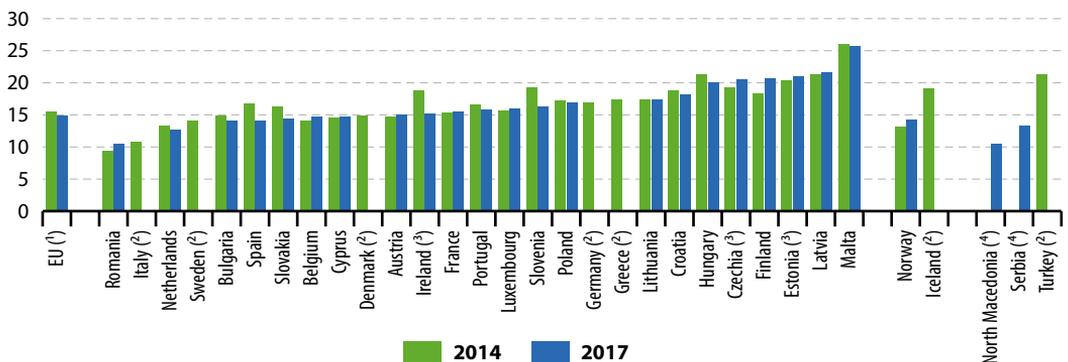(% of population aged 18 or over)
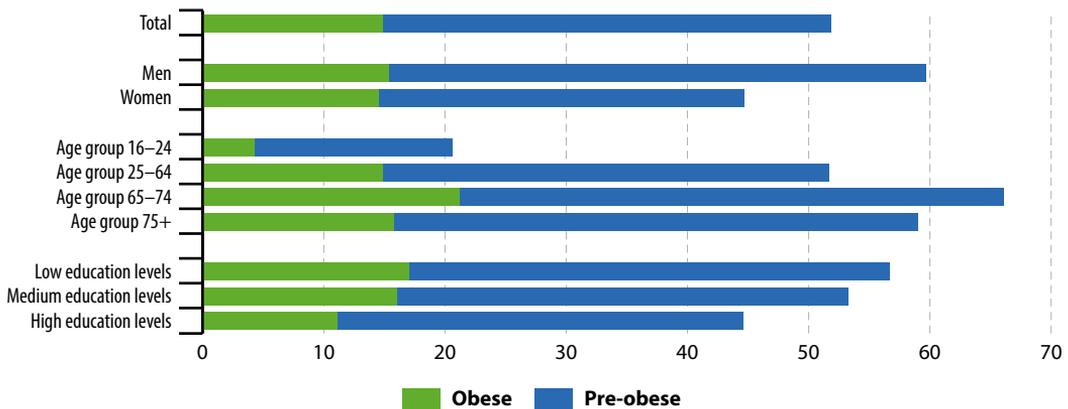
Note: Estimated data.
Source: Eurostat (online data codes: sdg_02_10 and ilc_hch10)

Figure 2.2: Obesity rate, by country, 2014 and 2017
(% of population aged 18 or over)

(¹) 2017 data are estimated.
(²) No data for 2017.
(³) 2017 data have low reliability.
(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_02_10)

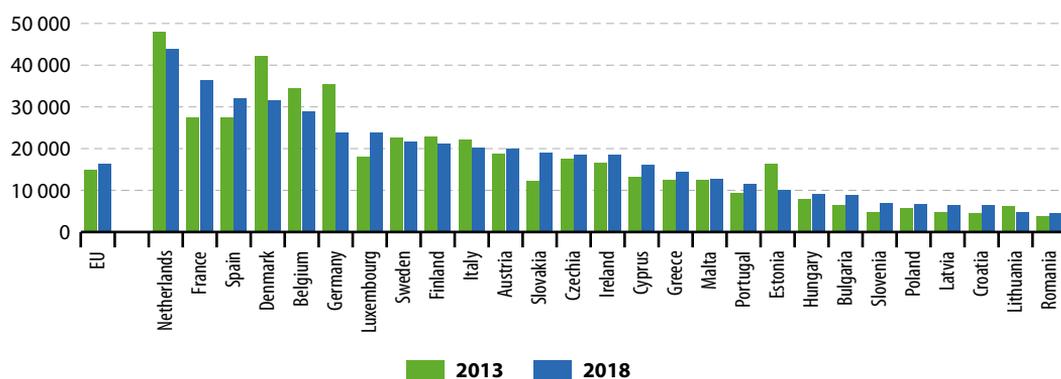# Agricultural factor income per annual work unit

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, 2005–2020
(index 2010=100)

Note: 2020 data are estimated.
Compound annual growth rate (CAGR): 3.1 % per year in the period 2005–2020; 2.9 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_02_20)

Figure 2.4: Agricultural factor income per annual work unit (AWU), by country, 2013 and 2018
(EUR, chain linked volumes (2010))

■ 2013   ■ 2018

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)

Government support to agricultural R&D

This indicator refers to Government budget appropriations or outlays for research and development (GBAORD). GBAORD 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. GBAORD data are built up using the guidelines laid out in the proposed 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, 2007–2019**
(million EUR)

Note: Data for 2007 and for 2009–2011 are estimated.
Compound annual growth rate (CAGR): 0.5 % per year in the period 2007–2019; 2.7 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_02_30)

Figure 2.6: **Government support to agricultural research and development, by country, 2014 and 2019**
(EUR per capita)
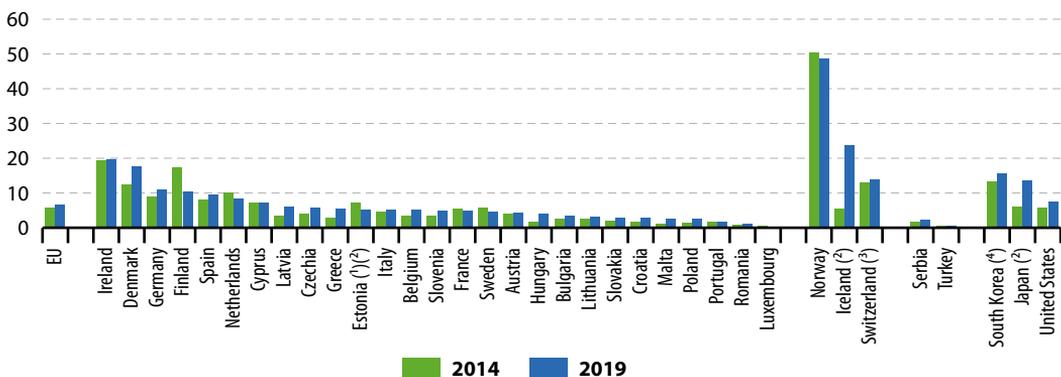
(¹) 2014 data are estimated.
(²) Break(s) in time series between the two years shown.
(³) 2017 data (instead of 2019).
(⁴) 2018 data (instead of 2019).

Source: Eurostat (online data code: sdg_02_30)

| X	**LONG TERM** Time series too short
↗	**SHORT TERM** 2014–2019

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 protection and animal welfare considerations. It avoids or largely reduces the use of synthetic chemical inputs such as fertilisers, pesticides, additives and medical products.

Figure 2.7: Area under organic farming, EU, 2012–2019
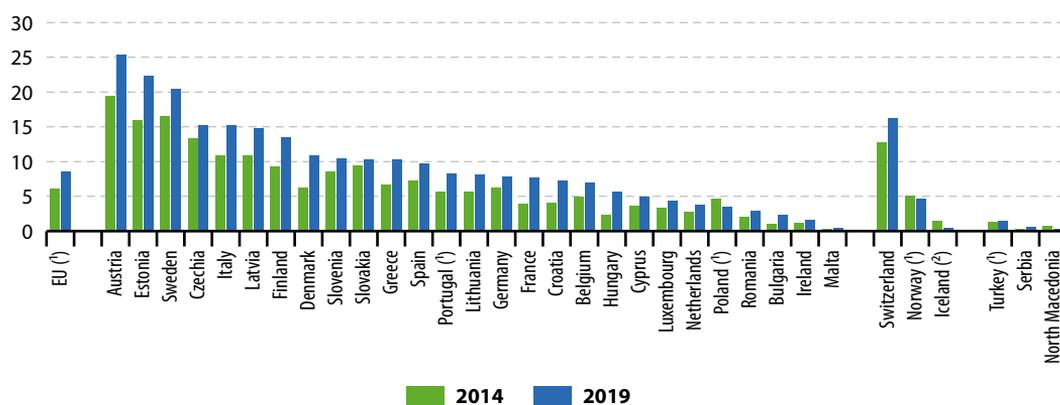(% of utilised agricultural area)
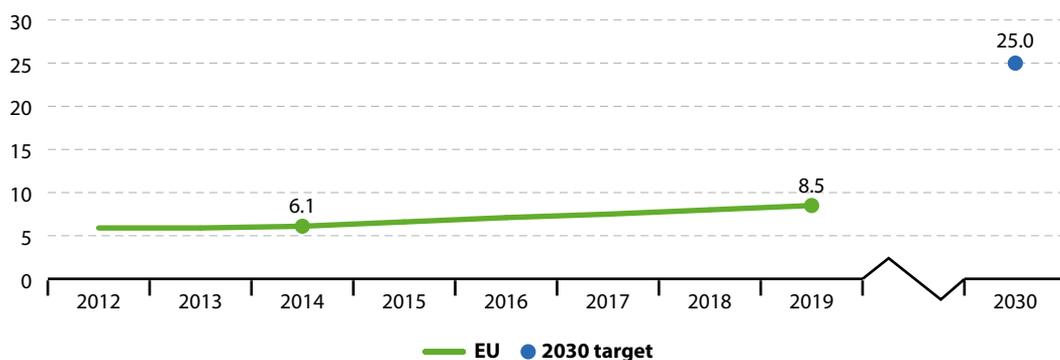
Note: 2017–2019 data are estimated or provisional.
Compound annual growth rate (CAGR): 6.9 % per year (observed) and 9.2 % per year (required to meet target) in the period 2014–2019.
Source: Eurostat (online data code: sdg_02_40)

Figure 2.8: Area under organic farming, by country, 2014 and 2019
(% of utilised agricultural area)

(¹) 2019 data are estimated.
(²) 2015 data (instead of 2014).
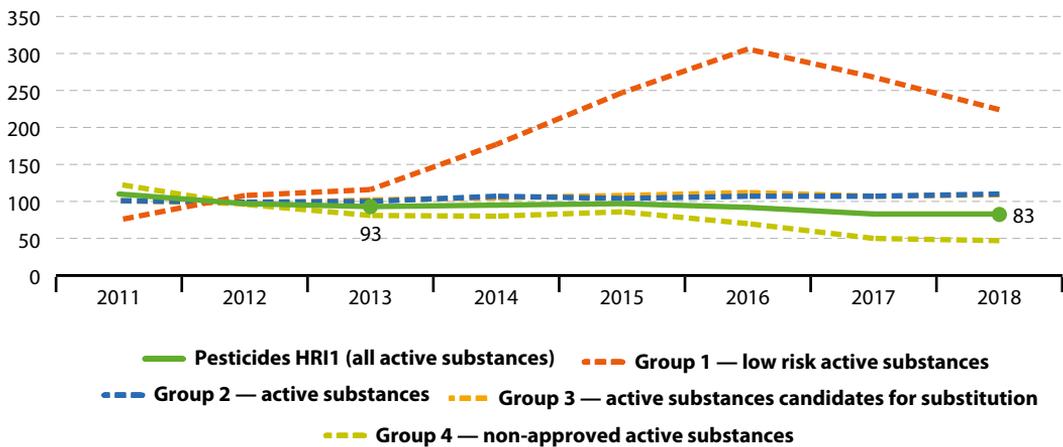*Source:* Eurostat (online data code: sdg_02_40)

Harmonised risk indicator for pesticides (HRI1)

The harmonised risk indicator (HRI1) estimates the trends in risk from pesticide use in the EU and its Member States. Unsustainable use of pesticides entails risks and impacts on human health and the environment. The indicator is based on statistics on the quantity of active substances in plant protection products placed on the market under Regulation (EC) No 1107/2009. Those data are multiplied by risk-weighting factors for different groups of active substances as categorised in Commission Directive (EU) 2019/782. The weighting factors reflect pesticide policy, which supports the sustainable use of pesticides and promotes alternative approaches to protecting crops. The indicator is presented as an index relative to the average results for the period 2011 to 2013.

X **LONG TERM**
Time series too short

↑ **SHORT TERM**
2013–2018

Figure 2.9: **Harmonised risk indicator for pesticides (HRI1), EU, 2011–2018** (index 2011–2013 = 100)

Compound annual growth rate (CAGR) for HRI1: – 2.2 % per year in the period 2013–2018.

Source: DG Health and Food Safety (Eurostat online data code: sdg_02_51)

Figure 2.10: **Harmonised risk indicator for pesticides (HRI1), by country, 2013 and 2018** (index 2011–2013 = 100)
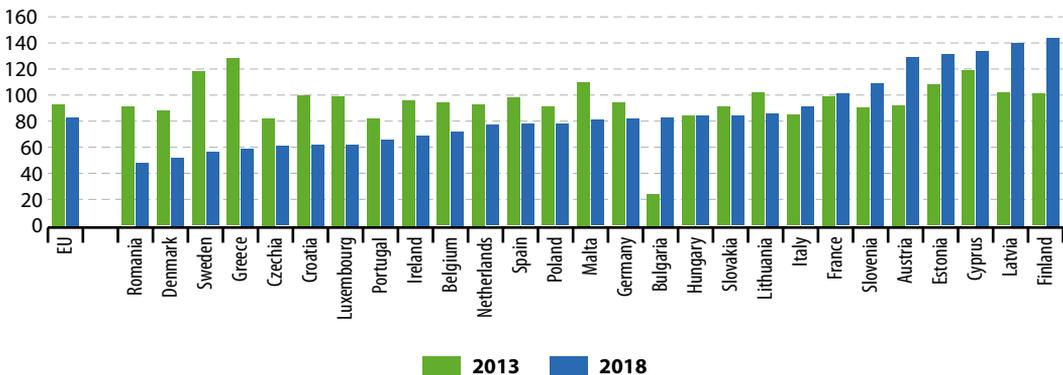
*Source:* DG Health and Food Safety (Eurostat online data code: sdg_02_51)

LONG TERM
2003–2018

SHORT TERM
2013–2018

## Ammonia emissions from agriculture

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, 1990–2018
(million tonnes)
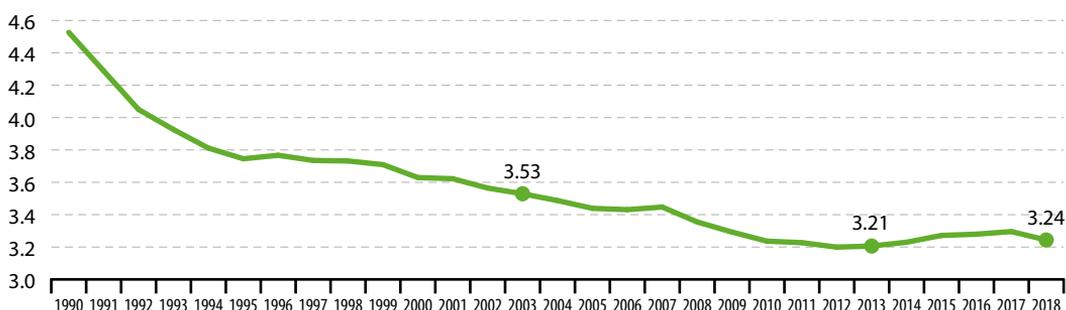
Compound annual growth rate (CAGR): – 0.6 % per year in the period 2003–2018; 0.2 % per year in the period 2013–2018.
Source: EEA (Eurostat online data code: sdg_02_60)

Figure 2.12: Ammonia emissions from agriculture, by country, 2013 and 2018
(kg per ha of utilised agricultural area)

2013   2018
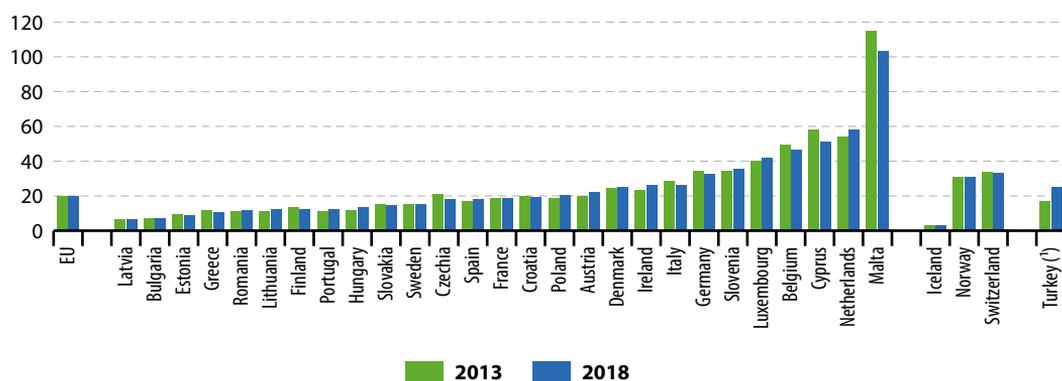
(¹) 2014 data (instead of 2013).

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

Further reading on zero hunger

European Commission (2017), *Overview report — Sustainable use of pesticides*.

European Commission (2019), *Initiatives on Nutrition and Physical Activity*.

European Commission (2020), *Farm to Fork Strategy — for a fair, healthy and environmentally-friendly food system*.

EEA (2017), *Food in a green light — A systems approach to sustainable food*, European Environment Agency, Copenhagen.

EEA (2019), *State of the Environment 2020,* European Environment Agency, Copenhagen.

FAO, IFAD, UNICEF, WFP and WHO (2018), *The State of Food Security and Nutrition in the World 2018: Building climate resilience for food security and nutrition*, FAO Publishing, Rome.

FAO and IWMI (2018), *More people, more food, worse water? A global review of water pollution from agriculture*, FAO Publishing, Rome.

OECD (2017), *Obesity Update 2017*, Organisation for Economic Co-operation and Development.

Rodríguez-Eugenio N., McLaughlin M. and Pennock D. (2018), *Soil Pollution: a hidden reality*, FAO Publishing, Rome.

Further data sources on zero hunger

EEA, Food consumption — animal based protein.

European Commission, Trends in Harmonised Risk Indicators for the European Union.

Eurostat, Economic accounts for agriculture — agricultural income (indicators A, B, C).

Eurostat, Organic farming statistics.

FiBL, FiBL Statistics — Europe — Key indicators.

Notes

(¹) European Commission (2014), *EU Action Plan on Childhood Obesity 2014–2020*.

(²) European Commission (2021), *Europe's Beating Cancer Plan*, COM(2021) 44 final.

(³) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM(2020) 381 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 (2019), *The European Green Deal*, COM(2019) 640 final.

(⁶) European Commission (2021), *EU's Biodiversity Strategy for 2030*, May 2020.

(⁷) European Commission (2021), *Europe's Beating Cancer Plan*, COM(2021) 44 final.

(⁸) European Commission (2021), *Action Plan for the Development of Organic Production*, COM(2021) 141 final.

(⁹) 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.

(¹⁰) European Commission, *European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI)*.

(¹¹) European Commission, Bioeconomy: FOOD2030.

(¹²) 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*.

(¹³) 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*.

(¹⁴) The main GHG emissions from agricultural practices are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O).

(¹⁵) Eurostat (online data code: env_air_gge).

(¹⁶) 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).

(¹⁷) European Commission (2006), *Thematic Strategy for Soil Protection*, COM(2006) 0231 final.

(¹⁸) 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.

(¹⁹) European Commission (2012), *Environment: Commission calls for a stronger response to soil degradation*, European Commission Press Release.

(²⁰) 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.

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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 for instance smoking, excessive alcohol consumption and unhealthy diets, and by external socio-economic and environmental factors, such as living conditions, air quality and noise. These additional factors are to be covered by preventive measures. Research is also essential to ensuring good health as well as preventing and tackling diseases. Thus, the ability to achieve the targets of the SDG 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 102
People with good or very good self-perceived health	:	↗	page 103
Health determinants			
Smoking prevalence	↑ (³)	↑ (⁴)	page 104
Obesity rate (*)	:	:	SDG 2, page 83
Population living in households suffering from noise (*)	:	↑	SDG 11, page 244
Exposure to air pollution by particulate matter (*)	↑	↑	SDG 11, page 245
Causes of death			
Standardised death rate due to tuberculosis, HIV and hepatitis	↑ (³)	↑	page 105
Standardised avoidable mortality	:	↑	page 106
People killed in accidents at work (*)	:	↑	SDG 8, page 194
◎ Road traffic deaths (*)	↗	↘	SDG 11, page 246
Access to health care			
Self-reported unmet need for medical care	:	↑	page 107

(*) Multi-purpose indicator.
(¹) Past 11-year period.   (³) Past 14-year period.
(²) Past 4-year period.   (⁴) 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.1 in the annex.

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 ([2]) 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 European Commission's own assessment of policy levers and priorities.

The COVID-19 pandemic has severely affected the EU and its Member States throughout 2020 and beyond. 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 ([3])([4]). However, since most data on health indicators in this report are only available up to 2019, COVID-19's impact on health cannot yet be fully analysed in this monitoring report. Some of its short-term consequences are discussed in a dedicated chapter on COVID-19 at the beginning of this report (see page 33). Data for 2020 on excess mortality and how this impacted life expectancy in the EU are presented later in the chapter under 'Causes of death' (see page 97).

Healthy lives

The worldwide surge in life expectancy ([5]) 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 will result in a further stagnation or possible decline in life expectancy in 2020 in those countries that have been most impacted ([6]). 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 views 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 2019 could on average expect to live 81.3 years. However, the number of years this child could expect to live in a healthy condition — that is, without disability and functional limitations — was roughly 17 years lower, at 64.6 years. 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 that a child born in the EU can expect to live an ever-increasing part of its life in a healthy condition.

A child born in 2019 could on average expect to live

64.6
years in a healthy condition

Self-perceived health has also improved. Between 2014 and 2019, the share of people perceiving themselves to be in good or very good health increased by 1.3 percentage points. In 2019, on average 68.6 % of people in the EU judged their health as being either good or very good. However, this share varied strongly between Member States, from 84.0 % to 46.2 %. 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.

Member States retain the main responsibility for their health care policies and for organising their health care systems. Although each Member State is different, their health systems all share the ultimate aim of contributing to the good health and well-being of their population. The Commission's main role is to support Member States in this aim.

The EU cohesion policy (⁷) aims to reduce disparities between EU regions, including in terms of endowment of health services. The EU4Health programme will make EUR 5.1 billion available to strengthen the resilience of health systems and promote innovation in the health sector. EU4Health will make a significant contribution to the post-COVID-19 recovery by making the EU population healthier, support the fight against cross-border health threats and boost the EU's preparedness and capacity to respond effectively to future health crises, as part of a future European Health Union (⁸). Through its actions, the European Health Union will also ensure that medical supplies are available, affordable and innovative. In addition, the actions under the EU climate and environmental policy (⁹), the European Green Deal (¹⁰), the Farm to Fork Strategy (¹¹) and Europe's Beating Cancer Plan (¹²) contribute to improving health and well-being.

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 that 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 %.

68.6 %
of the EU population perceived themselves to be in good or very good health in 2019

In general, 68.6 % of the EU population perceived themselves to be in good or very good health in 2019. Although women are generally expected to live longer than men (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 2019, 66.3 % of women and 71.1 % of men considered their health to be good or very good (a gender gap of 4.8 percentage points).

Health determinants

Many factors affect the health of individuals and populations. These include socio-economic aspects, the state of the environment, city design, access to and use of health services, and a person's individual characteristics and behaviour (¹³). 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 the productivity and growth of our economy. The
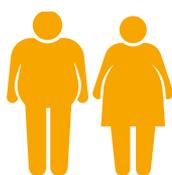
health determinants discussed in the following sections are obesity rate, smoking prevalence, noise and air pollution. Roughly speaking, the first two determinants focus on a person's individual characteristics and behaviours and the second two look at external factors. However, multi-dimensional aspects such as consumption patterns or mobility influence all the determinants considered.

More than half of the adult EU population was overweight in 2017

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 further 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.

14.9%
of the adult population in the EU were obese in 2017

In 2017, 14.9% of people over the age of 18 in the EU were obese [14] and another 36.9% were pre-obese. This means more than half of the population above the age of 18 in the EU were overweight. While the share of obese people fell by 0.5 percentage points between 2014 and 2017, the share of people who were pre-obese increased by 1.2 percentage points. The total share of overweight people therefore grew slightly over this period, from 51.1% in 2014 to 51.8% in 2017.

The obesity rate generally increases with age, peaking at 65 to 74 years in 2017 and decreasing again for people aged 75 and older. Obesity and pre-obesity rates appear to be decreasing with higher educational levels. In 2017, there was still a considerable difference between Member States, with values ranging from 10.4% to 25.7% for obese people over the age of 18. According to the World Health Organization (WHO), Europe had the second highest proportion of overweight or obese people in 2014, behind the Americas [15].

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 [16] has the highest prevalence of tobacco smoking adults and one of

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

the highest proportions of deaths attributable to tobacco use [17]. 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 [18].

Smoking prevalence among the EU population aged 15 or over fell between 2006 and 2020, from 31% to 25%. Nevertheless, this still means that a quarter of adults were smoking in 2020. More men than women smoked in 2020, with a share of 28% for male respondents compared with 22% for female respondents. Throughout the years, the decrease in smoking prevalence is less evident for women than for men, which can partially explain the narrowing gender gap in life expectancy [19]. Demographically, the age group between 25 and 54 smoked the most (>30%), followed by younger respondents (15 to 24, 20%) and older age groups (>55, 18%). In addition, there appears to be a social gradient related to smoking, with the share of smokers who say they have trouble paying bills most of the time being higher than the share of smokers who say they (almost) never have trouble paying bills [20].

About 40 % of cancer cases in the EU are preventable. Prevention is also the most cost-efficient long-term cancer control strategy. The European Commission adopted **Europe's Beating Cancer Plan** ([21]) **on 3 February 2021 to address cancer in a holistic way through four pillars: (1) prevention; (2) early detection; (3) diagnosis and treatment; and (4) quality of life of cancer patients and survivors. Through its focus on health determinants, the Plan is also expected to positively impact on other major non-communicable diseases sharing common risk factors. In particular, it will contribute to reducing obesity through actions on healthy diets and physical activity and to reducing smoking prevalence by setting out a target of less than 5 % of the population using tobacco by 2040. Furthermore, it aims to improve air quality in the EU by aligning the EU's air quality standards more closely with WHO guidelines. The plan will also improve health promotion by updating and promoting the European Code against Cancer** ([22]) **and establish a Cancer Inequalities Registry to identify trends, challenges and specific areas of action to guide investment and interventions.**

The Tobacco Products Directive ([23]) **lays down rules governing the manufacture, presentation and sale of tobacco and related products. The Directive requires large mandatory combined health warnings on cigarette packages, bans all promotional and misleading elements on tobacco products, and prohibits cigarettes with characterising flavours, such as fruit or candy. From a public-health perspective, the Directive aims to protect citizens from the hazardous effects of smoking and other forms of tobacco consumption by helping them to quit or not start smoking in the first place.**

External factors affecting health, such as air pollution and noise exposure, have been improving

According to European Environment Agency (EEA) estimates, air pollution is the number-one environmental cause of death in Europe, responsible for about 400 000 premature deaths per year ([24]). 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 ([25]). For example, groups of lower socio-economic status tend to be disproportionately affected by noise pollution because they often live closest to the source. Another disproportionally affected group are children. 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 ([26]).

Exposure to air pollution by fine particulate matter ($PM_{2.5}$) — one of the most harmful components of air pollution for human health ([27]), causing around 417 000 premature deaths in Europe in 2018 ([28]) — had been increasing in the EU until 2011. Since then, the trend has reversed, falling by almost 20 % over the past five years, from 15.7 micrograms per cubic metre ($\mu g/m^3$) in 2014 to 12.6 $\mu g/m^3$ in 2019. Considerable differences within the EU remain, with values ranging between 4.8 $\mu g/m^3$ and 19.6 $\mu g/m^3$ in 2019. The annual mean for $PM_{2.5}$ is below the EU target of 25 $\mu g/m^3$, but it continues to be above the WHO's recommended annual mean of 10 $\mu g/m^3$.

In 2019, the concentration of fine particulate matter in atmosphere in the EU reached

12.6
$\mu g/m^3$

In 2013, the European Commission adopted the **Clean Air Policy Package** [29] **(air quality standards; national emission reduction targets; and emission standards for key sources of pollution) with a view to reducing the number of premature deaths linked to air pollution by more than half in 2030 compared with 2005. When the Directive on emissions of atmospheric pollutants** [30]**, which came into force on 31 December 2016, is fully implemented, it is estimated that 13 % of EU citizens will be exposed to $PM_{2.5}$ concentrations above the World Health Organization's guideline value in 2030 compared with the 88 % who were affected in 2005** [31]**. The European Green Deal is also expected to contribute to protecting the health and well-being of EU citizens from environmental-related risks and impacts** [32]**, including through its Zero Pollution Action Plan** [33] **which was released in May 2021.**

Noise exposure also reduces life satisfaction and perception of well-being. The WHO [34] identified noise as the second most significant environmental cause of ill health in western Europe after air pollution [35]. 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 [36]. In Europe, environmental noise is estimated to cause 12 000 premature deaths per year [37]. Road traffic is the dominant source of environmental noise, but railways, airports and industry remain also important sources of localised noise pollution [38].

The EU has made progress towards reducing noise pollution over the past nine years, with the

17.3 %
of the EU population were affected by noise from neighbours or from the street in 2019

share of population feeling affected by noise from neighbours or from the street falling from 20.6 % in 2010 to 17.3 % in 2019. Since 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 [39].

Based on noise indicator levels set by the EU Environmental Noise Directive (2002/49/EC) 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 [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 75 and SDG 12 'Responsible consumption and production' on page 235 as well as the further reading section on page 108).

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 8.9 %, from 176.0 per 100 000 persons in 2011 to 160.4 per 100 000 in 2016. In a similar way, treatable mortality fell by 9.9 %, from 103.4 per 100 000 persons to 93.1 in 100 000 over the same period. While the developments were positive in all Member States, the gap of 350.3 persons per 100 000 in 2017 between the highest and the lowest value shows there remains a great deal of heterogeneity within the EU, with a visible divide between eastern and western Member States.

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 2.8 per 100 000 people by 2016. Trends were also positive for the three diseases individually: between 2002 and 2016 deaths per 100 000 people fell from 2.2 to 0.8 for tuberculosis, from 1.3 to 0.6 for HIV/AIDS and from 1.7 to 1.4 for hepatitis. It should be noted, however, that in the case of hepatitis, the current calculation of the indicator is likely to under-report deaths due to hepatitis B and C ([42]).

While the number of deaths due to the three communicable diseases

253.5
per 100 000 people died prematurely in the EU due to avoidable causes of death in 2016

2.8
per 100 000 people died because of HIV, tuberculosis and hepatitis in the EU in 2016

monitored here have decreased, deaths due to other infectious and parasitic diseases have tended to stall as a result of fluctuations, for example, in the severity of seasonal flu ([43]). In 2011, 12.6 out of 100 000 people died because of certain infectious and parasitic diseases. This number went up in the following years, peaking at 15.2 in 2015, but fell back to 13.5 in 2016 ([44]).

High excess mortality in 2020 has reduced life expectancy in the EU

The COVID-19 pandemic also considerably influenced death rates in EU Member States throughout 2020. The population above the age of 60 years, as well as people from socially disadvantaged groups, were especially affected ([45]). Overall, between March and December 2020, almost 600 000 excess deaths occurred in the EU compared with the same period in the years 2016 to 2019 ([46]). As a consequence, the COVID-19 pandemic has also led to a reduction in life expectancy in 2020 in the majority of Member States, however, with considerable geographical differences. The largest reductions in life expectancy compared with 2019 were observed in Spain (– 1.6 years) as well as in Romania and Bulgaria (– 1.4 years), while the pandemic's influence on life expectancy is 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 ([47]). Men appear to have been affected slightly harder (– 1.0 years) than women (– 0.8 years). While the fall from 2019 to 2020 means a 1.1 % reduction in life expectancy at birth, the expected remaining life years at age 65 were reduced by 4.0 %. Older men were especially impacted, with a 5.5 % fall in their remaining life expectancy at age 65. Insights on the pandemic's impact on other variables, such as economic factors, are discussed in a dedicated chapter on COVID-19 at the beginning of the report (see page 33).

The Commission supports Member States and civil-society organisations in combatting communicable diseases (and other diseases) through existing policies and instruments, such as the EU4Health programme, the EU's response to COVID-19 for 2021 to 2024, and Horizon Europe, which is the EU's research and innovation framework programme running from 2021 to 2027. The Decision on serious cross-border threats to health ([48]) lays down rules on the data and information that national competent authorities should communicate and provides for continued coordination of the network by the European Centre for Disease Prevention and Control (ECDC). An overview of the current situation,

policy instruments and good practices on combatting HIV/AIDS, viral hepatitis and tuberculosis in the EU and neighbouring countries is compiled in a 2018 Commission Staff Working Document ([49]).

Regarding non-communicable diseases (NCDs), the Commission supports countries in reaching the international targets and has set up a Steering Group on Health Promotion, Disease Prevention and Management of Non-Communicable Diseases ([50]). It identifies public health priorities and collects, evaluates and facilitates the roll out of identified best practices among Member States through a Best Practice Portal.

Fewer people are killed in work or road traffic accidents, but progress has stalled in recent years

Accidents were one of the most common causes of death within the EU in 2016, leading to almost 148 000 deaths or 3.3 % of all deaths ([51]). 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 ([52]).

5.1
per 100 000 were killed in road accidents in the EU in 2019

Halving the number of deaths from road-traffic accidents is not only a global target, but also a goal of EU policies ([53]). 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 2019, 22 757 people were killed in road traffic crashes (equalling 5.1 per 100 000 people), which is 48.8 % fewer than in 2004 and 5.7 % down on 2014. Nevertheless, the stagnation in road casualties since 2013 means the EU is no longer on track to reaching its target to halve the number of people killed in road traffic crashes by 2020 compared with 2010. By 2019, it had achieved a reduction of just 23.1 % compared with 2010. However, the EU rate of 5.1 fatalities per 100 000 people compares favourably with the global average of more than 18. In addition, preliminary results for 2020 indicate an unprecedented fall in the number of people killed in road traffic crashes by 17% compared with 2019, possibly due to lower traffic volume as a result of the COVID-19 pandemic ([54]).

1.8
per 100 000 people employed had fatal accidents at work in the EU in 2018

Fatal accidents, leading to the death of the victim within one year, also occur at work. The EU made progress between 2013 and 2018, reducing the number of fatal accidents at work per 100 000 employed persons from 1.9 to 1.8. Although the total incidence rate for fatal accidents at

work decreased in 2018, 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 1 703.8 per 100 000 employed persons in 2017 ([55]).

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 ([56]). Limited access for some population groups may result in poorer health outcomes for that group and greater health inequalities ([57]). Reducing health inequalities is not only important for equality reasons, but also because it contributes to higher economic and social cohesion ([58]).

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

In 2019, 1.7 % of the EU population reported an unmet need for medical care because of financial reasons, long waiting lists or the distance they needed to travel was too far. Overall, this share was lower than five years earlier, when it was 3.9 %. 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 2019. While there were already considerable differences between Member States' reported unmet needs for medical care in 2014, the gap has widened by another 3.1 percentage points,

1.7 %
of the EU population reported unmet need for medical care in 2019

reaching 15.5 percentage points in 2019 (up from 12.4 percentage points in 2014). Thus, while Malta reported zero unmet need for medical care in 2019 for the reasons monitored, 15.5 % of the population in Estonia did so. This indicates that access to health care remains a challenge in certain parts of the EU.

Financial constraints are the most common reason why people report unmet needs for medical examination. For 0.9 % of the total EU population in 2019, 'too expensive' was the most prominent reason for reporting unmet medical examination. A further 0.7 % reported unmet medical examination because of 'waiting lists' and another 0.1 % because it was 'too far to travel'. 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 decreased slightly since 2014 (from 15.9 % to 15.5 % in 2018), a considerable gap of 35.4 percentage points between countries remained in 2018. 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 ([59]). Moreover, across Member States, between 1.0 % and 19.2 % of households experienced catastrophic spending on health, meaning the out-of-pocket expenditure on health care exceeds 40 % of a household's disposable income ([60]). 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.

Access to health care is one of the 20 principles of the European Pillar of Social Rights. This commitment was renewed in the European Pillar of Social Rights Action Plan ([61]), adopted by the Commission on 4 March 2021. The action plan proposes to develop better tools to identify problems with accessibility to quality health care. The report of the Commission's Health System Performance Assessment Expert Group published on 14 April 2021 explores complementary accessibility metrics, which take into account patient perspective and vulnerabilities linked to socio-economic or clinical status ([62]).

Access to health care is also enshrined in other principles of the European Pillar of Social Rights, for example Principle 11 on Childcare and support to children. In this context, and following the request of the European Parliament in 2015 to introduce a European Child Guarantee, the European Commission adopted a proposal for Council Recommendation on 24 March 2021 that aims to ensure that all children in Europe who are at risk of poverty, social exclusion or are otherwise disadvantaged, have access to essential services that are of good quality ([63]). This initiative aims to facilitate access to health care and adequate nutrition as one of the key intervention areas for children in need.

Accessibility is also one of the three interconnected priorities in the European Semester, along with effectiveness and resilience of health systems. It has been a key element of health-system analysis since the Commission's policy was defined in the 2014 Commission Communication 'On effective, accessible and resilient health systems' ([64]). This Communication sets the triple objective of effectiveness, accessibility and resilience, and has the goal of transforming health systems across Europe to make them fit for the future.

The Directive 2011/24/EU on the application of patient rights in cross-border health care gives EU citizens the right to access health care in the EU and to be reimbursed for it.

The Commission is carrying out preparatory work to make a proposal, at the end of 2021, on a European Health Data Space. This initiative will promote access to health data for better health care, research and policy-making, and to foster the development, deployment and application of digital services for the provision of health care.

Finally, the Commission is co-funding a three-year joint action on health inequalities (JAHEE) with Member States, launched in 2018. One work package is dedicated to access to health care for those left behind.

Adopted on 25 November 2020, the Pharmaceutical Strategy for Europe ([65]) aims to create a future-proofed regulatory framework and to support industry in promoting research and technologies that actually reach patients in order to fulfil their therapeutic needs while addressing market failures.

Presentation of the main indicators

LONG TERM
2008–2019

SHORT TERM
2016–2019

Healthy life years at birth

This indicator measures the number of years at birth that 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).

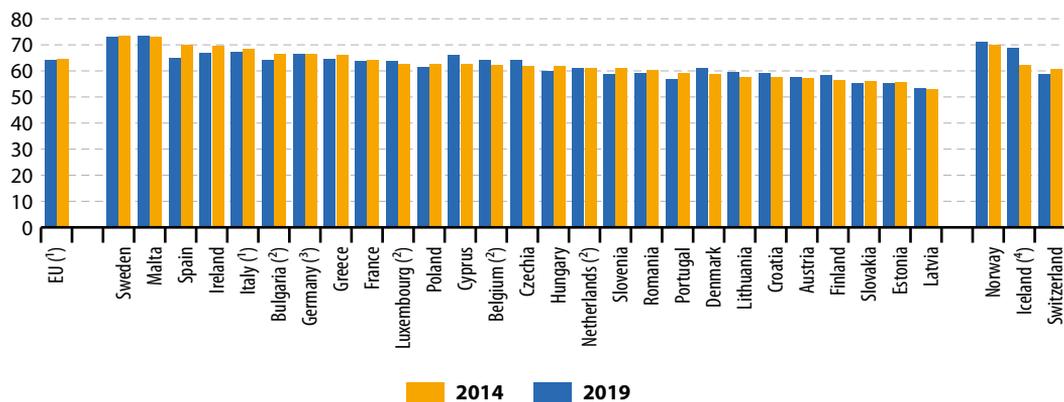**Figure 3.1:** Healthy life years at birth, by sex, EU, 2008–2019
(years)
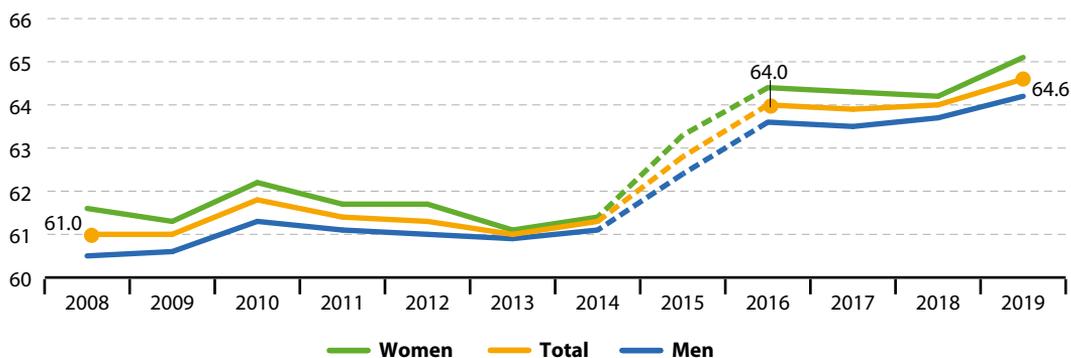
Note: Breaks in time series in 2015 and 2016.
Compound annual growth rate (CAGR) for the total: 0.5 % per year in the period 2008–2019; 0.3 % per year in the period 2016–2019.
Source: Eurostat (online data code: sdg_03_11)

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).
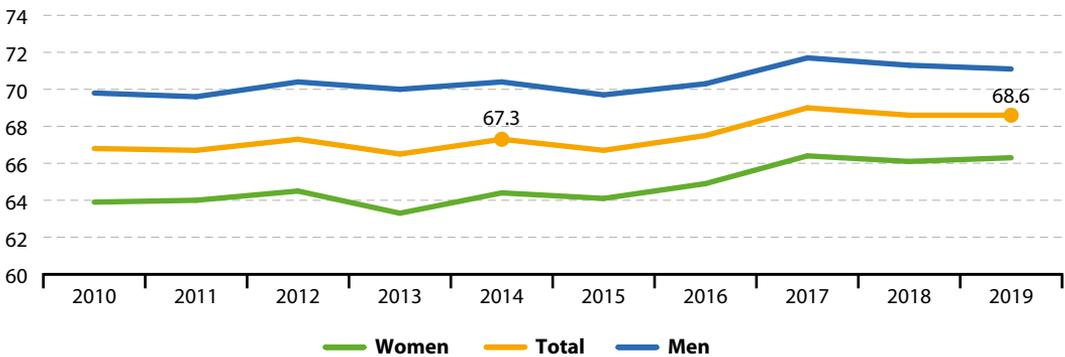*Source:* Eurostat (online data code: sdg_03_11)

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.

X LONG TERM Time series too short

↗ SHORT TERM 2014–2019

Figure 3.3: Share of people with good or very good perceived health, by sex, EU, 2010–2019 (% of population aged 16 or over)

Note: Estimated data.
Compound annual growth rate (CAGR) for the total: 0.4 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_03_20)

Figure 3.4: Share of people with good or very good perceived health, by country, 2014 and 2019 (% of population aged 16 over)
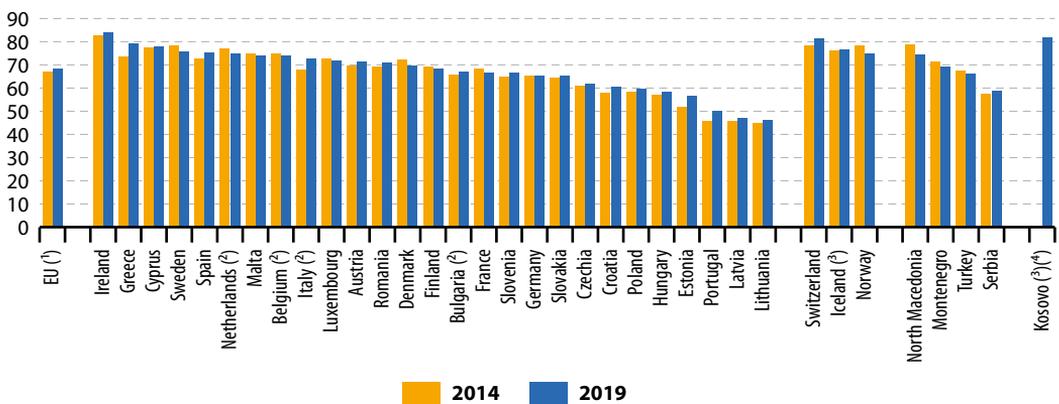
(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.

*Source:* Eurostat (online data code: sdg_03_20)

LONG TERM
2006–2020

SHORT TERM
2014–2020

Smoking prevalence

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 [66]. 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 [67] 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)
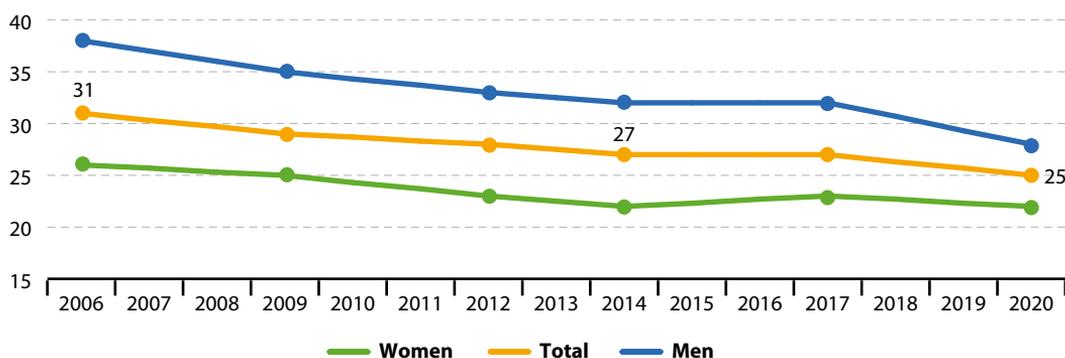
Note: Estimated data. Data were collected in 2006, 2009, 2012, 2014, 2017 and 2020 only; values for 2007, 2008, 2010, 2011, 2013, 2015, 2016, 2018 and 2019 are interpolated; 2012 data excluding Croatia.
Compound annual growth rate (CAGR) for the total: – 1.5 % per year in the period 2006–2020; – 1.3 % 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)
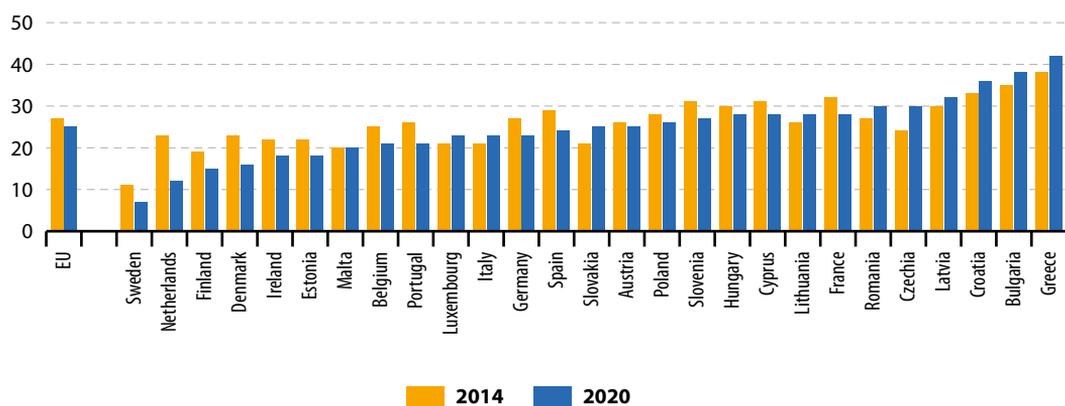
Source: European Commission services (Eurostat online data code: sdg_03_30)

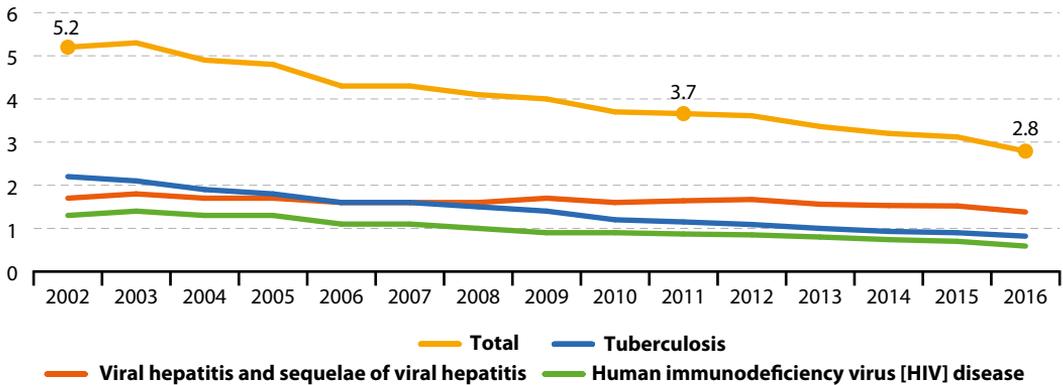# Standardised death rate due to tuberculosis, HIV and hepatitis

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 ([68]).

Figure 3.7: Standardised death rate due to tuberculosis, HIV and hepatitis, by type of disease, EU, 2002–2016
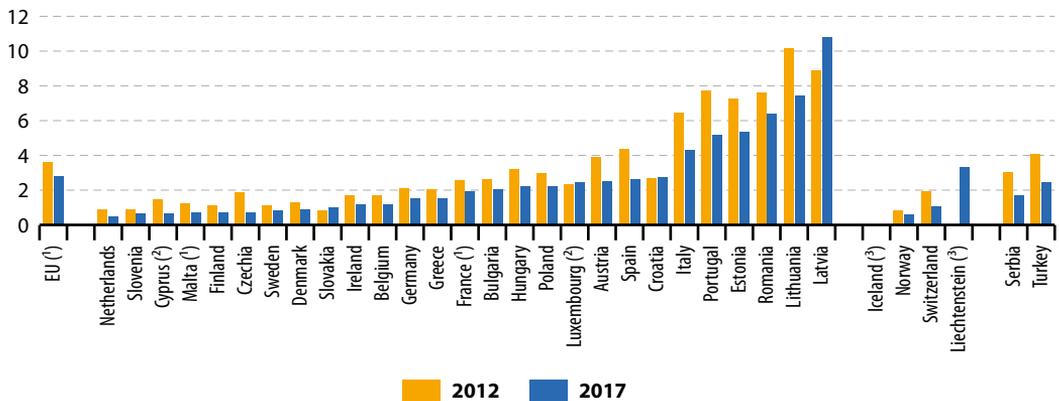
(number per 100 000 persons)

Note: Data for 2002–2010 are estimated.
Compound annual growth rate (CAGR) for the total: – 4.3 % per year in the period 2002–2016; – 5.3 % per year in the period 2011–2016.

Source: Eurostat (online data code: sdg_03_41)

Figure 3.8: Standardised death rate due to tuberculosis, HIV and hepatitis, by country, 2012 and 2017

(number per 100 000 persons)

Note: 2017 data are provisional.
([1]) 2016 data (instead of 2017).
([2]) 2014 data (instead of 2012).
([3]) No data for 2012.

Source: Eurostat (online data code: sdg_03_41)

X	**LONG TERM** Time series too short
↑	**SHORT TERM** 2011–2016

Standardised avoidable mortality

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.
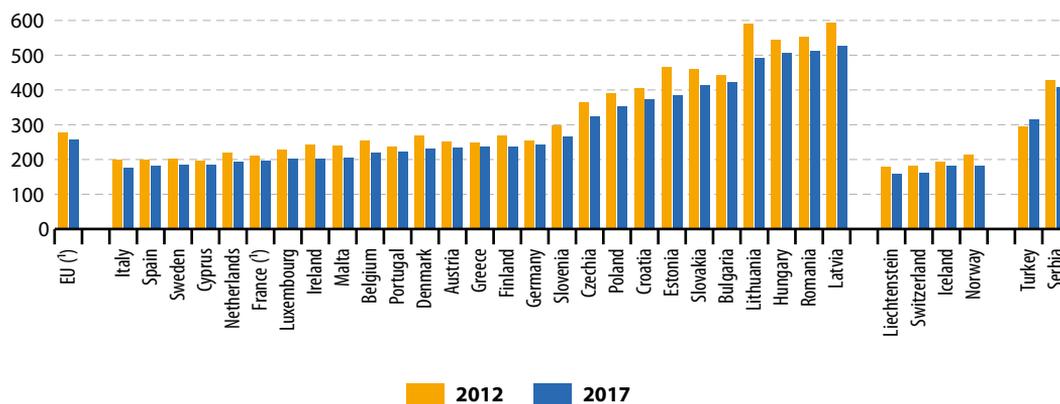
Figure 3.9: Standardised avoidable mortality, EU, 2011–2016
(number per 100 000 persons aged less than 75 years)
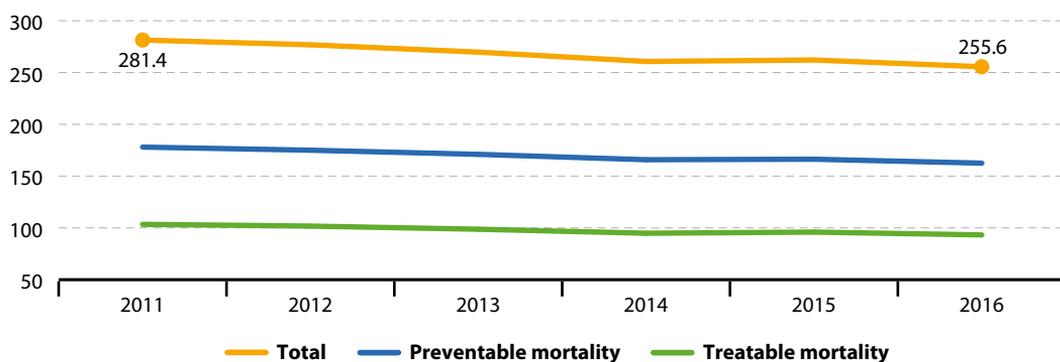
Compound annual growth rate (CAGR) for the total: – 1.9 % per year in the period 2011–2016.
Source: Eurostat (online data code: sdg_03_42)

Figure 3.10: Standardised avoidable mortality, by country, 2012 and 2017
(number per 100 000 persons aged less than 75 years)

Note: 2017 data are provisional.   (¹) 2016 data (instead of 2017).
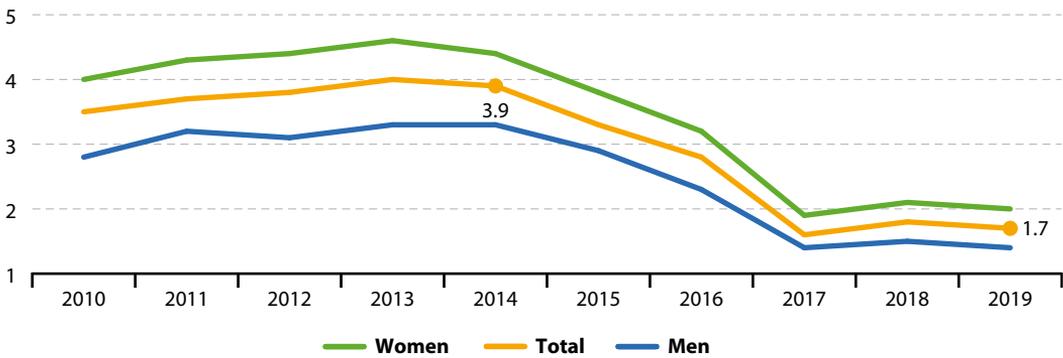*Source:* Eurostat (online data code: sdg_03_42)

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 who report 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 he or she 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 (⁶⁹).

X LONG TERM
Time series
too short

↑ SHORT TERM
2014–2019

Figure 3.11: Self-reported unmet need for medical care, by sex, EU, 2010–2019
(% of population aged 16 and over)

Note: Estimated data.
Compound annual growth rate (CAGR) for the total: – 15.3 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_03_60)

Figure 3.12: Self-reported unmet need for medical care, by country, 2014 and 2019
(% of population aged 16 and over)
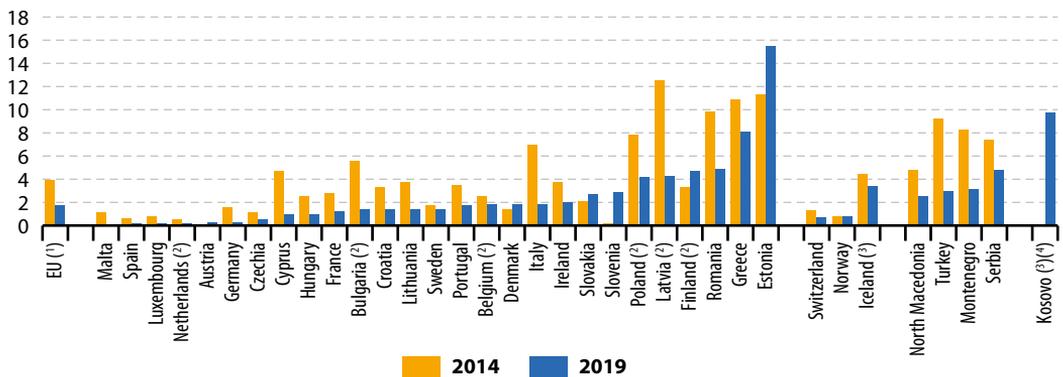
(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.

Source: Eurostat (online data code: sdg_03_60)

Further reading on good health and well-being

European Center 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*.

European Commission (2019), *State of Health in the EU: Companion Report 2019*, Publications Office of the European Union, Luxembourg.

European Commission (2019), *State of Health in the EU: Country Health Profiles*, Publications Office of the European Union, Luxembourg.

EEA (2019), *Healthy environment, healthy lives: how the environment influences health and well-being in Europe*, European Environment Agency, Copenhagen.

OECD & European Commission (2020), *Health at a Glance: Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris.

WHO (2018), *Environmental Noise Guidelines for the European Region*, WHO Regional Office for Europe, Copenhagen.

Further data sources on good health and well-being

ECDC, COVID-19.

ECDC, Surveillance and disease data.

EEA, Air quality and COVID-19.

EEA, Environmental noise and Population exposure to environmental noise.

World Bank (2020), Atlas of Sustainable Development Goals 2020: From World Development Indicators.

WHO (2020), World Health Statistics 2020: Monitoring health for the SDGs.

Notes

(¹) World Health Organization (1946), *Constitution of the World Health Organization.*

(²) European Commission, *State of Health in the EU.*

(³) OECD/EU (2020), *Health at a Glance. Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris.

(⁴) European Center 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.*

(⁵) Eurostat (2020), *Statistics explained: Mortality and life expectancy statistics.*

(⁶) OECD/EU (2020), *Health at a Glance. Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris.

(⁷) European Commission, EU Regional Policy.

(⁸) European Commission (2020), *Building a European Health Union: Reinforcing the EU's resilience for cross-border health threats*, COM(2020) 724 final, Brussels.

(⁹) European Commission, Energy, Climate change, Environment.

(¹⁰) European Commission, A European Green Deal.

(¹¹) European Commission (2020), *Farm to Fork Strategy.*

(¹²) European Commission (2021), *Europe's Beating Cancer Plan.*

(¹³) WHO (2017), *Social determinants of health, Evidence on social determinants of health.*

(¹⁴) 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.

(¹⁵) Eurostat (2014), *Overweight and obesity — BMI statistics*.

(¹⁶) 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.

(¹⁷) World Health Organization, Tobacco.

(¹⁸) World Health Organization Regional Office for Europe, Tobacco. Data and Statistics.

(¹⁹) OECD/EU (2014), *Health at a Glance: Europe 2014*, OECD Publishing, Paris, p. 16–17.

(²⁰) European Commission (2021), *Attitudes of Europeans towards tobacco and electronic cigarettes*, Special Eurobarometer 506.

(²¹) European Commission (2021), *Europe's Beating Cancer Plan*, COM(2021) 44 final, Brussels.

(²²) International Agency for Research on Cancer/European Commission, *European Code against Cancer.*

(²³) European Parliament and Council of the European Union (2014), *Directive 2014/40/EU on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco and related products and repealing Directive 2001/37/EC.*

(²⁴) European Environment Agency (2020), *Air quality in Europe — 2020 report, EEA Report No 9/2020, Copenhagen, EEA, p. 7.* Estimates of the health impacts attributable to exposure to air pollution indicate that $PM_{2.5}$ concentrations in 2018 were responsible for about 417 000 premature deaths originating from long-term exposure in Europe (including 41 countries), of which around 379 000 were in the 28 EU Member States (before Brexit).

(²⁵) 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.

(²⁶) *Ibid*.

(²⁷) World Health Organization (2016), *World Health Statistics 2016: Monitoring Health for the SDGs*, p. 37.

(²⁸) European Environment Agency, *Marked improvements in Europe's air quality over past decade, fewer deaths linked to pollution.*

(²⁹) European Commission, Clean Air Programme.

(³⁰) 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.*

(³¹) International Institute for Applied Systems Analysis (2018), *Progress towards the achievement of the EU's air quality and emissions objectives*, December 10, 2018, Laxenburg, Austria.

(³²) European Commission, A European Green Deal.

(³³) 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.

(³⁴) 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.

(³⁵) European Environment Agency (2018), *Environmental noise.*

(³⁶) European Environment Agency (2018), *Managing exposure to noise in Europe.*

(³⁷) European Environment Agency (2020), *Healthy environment, healthy lives: how the environment influences health and well-being in Europe.*

(³⁸) European Environment Agency (2018), *Managing exposure to noise in Europe.*

(³⁹) Also see: European Environment Agency (2018), *Environmental noise.*

(⁴⁰) European Environment Agency (2019), *Population exposure to environmental noise.* Data refer to EU with UK.

(⁴¹) European Commission (2016), *Next steps for a sustainable European future: European action for sustainability, COM(2016) 739 final, Strasbourg.*

(⁴²) Mardh/ECDC (2019), *Mortality from liver diseases associated with hepatitis B and C in the EU/EEA – descriptive analysis and estimation of 2015 baseline*, International Viral Hepatitis Elimination Meeting, Amsterdam.

(⁴³) The death rate can be expected to further rise in 2020 due to the coronavirus pandemic.

(⁴⁴) Source: Eurostat (online data codes: hlth_cd_asdr and hlth_cd_asdr2).

(⁴⁵) OECD/EU (2020), *Health at a Glance. Europe 2020 — State of Health in the EU Cycle*, OECD Publishing, Paris, p. 12.

(⁴⁶) European Commission (2021), *580 000 excess deaths between March and December 2020.*

(⁴⁷) 2020 data for the EU are provisional estimates based on the available Member States' data for that year (online data code: demo_mlexpec).

(⁴⁸) European Parliament and Council of the European Union (2013), *Decision No 1082/2013/EU on serious cross-border threats to health and repealing Decision No 2119/98/EC.*

(⁴⁹) European Commission (2018), *Commission Staff Working Document on Combatting HIV/AIDS, viral hepatitis and tuberculosis in the European Union and neighbouring countries — State of play, policy instruments and good practices, SWD(2018) 387 final, Brussels.*

(⁵⁰) European Commission (2021), *Non-communicable diseases.*

(⁵¹) Source: Eurostat (online data code: hlth_cd_aro).

(⁵²) *Treaty on the Functioning of the European Union, Article 153.*

(⁵³) 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.

(⁵⁴) European Union (2021), *Road safety: 4 000 fewer people lost their lives on EU roads in 2020 as death rate falls to all time low.*

(⁵⁵) Source: Eurostat (online data code: hsw_mi08).

(⁵⁶) OECD/EU (2018), *Health at a Glance: Europe 2018 — State of Health in the EU Cycle,* OECD Publishing, Paris, p. 3.

(⁵⁷) *Id.*, p. 169.

(⁵⁸) European Council (2014), *Council conclusions on the economic crisis and health care*, 2014/C 217/02.

(⁵⁹) 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.

(⁶⁰) 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.

(⁶¹) European Commission (2021), *The European Pillar of Social Rights Action Plan*, COM(2021) 102 final, Brussels.

(⁶²) European Commission (2021), *Improving access to health care through more powerful measurement tools. An overview of current approaches and opportunities for improvement.*

(⁶³) European Commission (2021), *Commission proposes action to uphold child rights and support children in need.*

(⁶⁴) European Commission (2014), *Communication from the Commission on effective, accessible and resilient health systems*, COM(2014) 215 final, Brussels.

(⁶⁵) European Commission (2020), *A pharmaceutical strategy for Europe.*

(⁶⁶) European Commission (2017), *Attitudes of Europeans towards tobacco and electronic cigarettes,* Special Eurobarometer 458, Annex.

(⁶⁷) European Commission (2021), *Eurobarometers on tobacco.*

(⁶⁸) 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.

(⁶⁹) OECD/EU (2018), *Health at a Glance: Europe 2018 — State of Health in the EU Cycle,* OECD Publishing, Paris, p. 170.

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.

4 QUALITY 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. Special focus is thereby put

on the acquisition of basic and digital skills. Within this framework, several targets are defined which 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			
⊚ Underachievement in reading, maths and science	↓ (¹)	↓ (²)	page 119
⊚ Participation in early childhood education	:	↑	page 120
⊚ Early leavers from education and training	↑	↑	page 121
Tertiary education			
⊚ Tertiary educational attainment	↑	↑	page 122
Adult learning			
Adult participation in learning	↑	↓	page 123
Digital skills			
⊚ Share of adults with at least basic digital skills	:	↘ (³)	page 124

(¹) Trend refers to worst performance among the three subjects (science). Past 12-year period.
(²) Past 3-year period.
(³) Past 4-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.1 in the annex..
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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. However, over the past few years, progress towards the targets for participation in adult learning and for adults with at least basic digital skills has stalled, and the percentage of underachievers in the PISA test has deteriorated further.

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 that leads 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.

The European Commission is developing initiatives to help establish a European Education Area (EEA) that enables all young people to benefit from the best education and training and to find employment across Europe ([1]**). The EEA is rooted in decades of education cooperation at EU level such as Education and training 2020 (ET 2020). This former strategic framework for European cooperation in education and training set common EU targets to be reached by 2020.**

Building on ET 2020, the Council of the European Union on 26 February 2021 adopted a Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) ([2]**). This new framework addresses five strategic priorities: (1) improving quality, equity, inclusion and** success for all in education and training; (2) making lifelong learning and mobility a reality for all; (3) enhancing competences and motivation in the education profession; (4) reinforcing European higher education; and (5) supporting green and digital transitions in and through education and training. It also defines seven EU-level targets for the EEA to be reached by 2025 or 2030, five of which are monitored here and guide the analysis in this chapter.**

The European Pillar of Social Rights ([3]**) is about delivering new and more effective rights for citizens in the field of education, particularly via its principle 1 on 'Education, training and life-long learning' and principle 11 on 'Childcare and support to children'. On 4 March 2021, the Commission put forward an ambitious European Pillar of Social Rights Action Plan (**[4]**).**

The recently adopted **Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) (⁵) sets four targets for basic education to be reached by 2030: for low-achieving 15-years-old in basic skills, for low-achieving eight-graders in digital skills, for participation in early childhood education and care, and for early leavers from education and training.**

The EU is on track to meeting its 2030 target for participation in early childhood education

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 (⁶), 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. Equitable access is also essential for ensuring that parents, especially women, have the flexibility to (re)integrate into the labour market (⁷). 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 (⁸) and the starting age of compulsory primary education

93.3 %
of young children in the EU participated in early childhood education and care in 2019

— who take part in early education. Between 2013 and 2018 the share fluctuated around 92 %, but rose to 93.3 % in 2019. If this dynamic can be sustained, the EU will be able to meet its target of 96 % by 2030.

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. With a share of 10.1 % in 2020, the EU is well on track

In 2020, the share of people aged 18 to 24 in the EU who had left education and training early was

10.1 %

to meeting the 2030 target. Monitoring of the 9 % target is complemented by a supplementary indicator on the completion of at least secondary education, which is generally considered to be 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 84.0 % had completed this level of education in 2020 (¹¹). For further analyses of ELET trends by sex and citizenship, see the chapters on SDG 5 'Gender equality' on page 127 and on SDG 10 'Reduced inequalities' on page 215.

Across the EU, the **European Social Fund** (¹²) **is financing initiatives to improve education and training and ensure young people complete their education and get the skills that make them more competitive in the labour market. Reducing early school leaving is a major priority here, along with improving vocational training and tertiary education opportunities. Its successor, the European Social Fund Plus** — **part of the EU's budget from 2021–2027** — **also supports measures to aid youth employment and the activation of young people, as does the EU's Recovery and Resilience Facility.**

In 2018, more than one in every five 15-year-old pupils showed insufficient abilities in each 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 maths (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 %.

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. Underachievers 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).

Abc

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

The **European Skills Agenda** from 2020 **is a five-year plan to help individuals and businesses develop more and better skills and to put them to use by strengthening sustainable competitiveness, ensuring social fairness, putting in practice the first principle of the European Pillar of Social Rights and building resilience to react to crises, based on the lessons learnt during the COVID-19 pandemic. The new European Skills Agenda proposed 12 new actions that build upon the Commission's 2016 Skills Agenda** (¹⁵).

In a **Council Recommendation of October 2020** (¹⁶) **all EU countries committed to implementing the reinforced Youth Guarantee** (¹⁷) **. The reinforced Youth Guarantee 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.**

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 two indicators selected for this sub-theme show that the EU has already met its target for tertiary education and is close to meeting its target for placing recent graduates in the labour market.

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 tertiary or the equivalent education (levels 5–8 in the 2011 International standard classification of education, ISCED) to at least 45 % by 2030. As a result of a 17.1 percentage point increase since 2002, the EU reached a tertiary education attainment rate of 40.2 % in 2020 and is well on track to meeting its 2030 target.

40.2 %
of the EU population aged 25 to 34 had accomplished tertiary education in 2020

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 (¹⁸) reforms. For further analyses of the trends in tertiary education by gender see the chapter on SDG 5 'Gender equality' on page 127 and on SDG 9 'Industry, Innovation and Infrastructure' on page 197.

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 learning is a key subject of the European Pillar of Social Rights Action Plan, which proposed a headline target that at least 60 % of all adults should participate in training every year.

Moreover, the renewed Council Recommendation on Key Competences for Lifelong Learning, adopted in May 2018, explicitly recommends that Member States should mainstream the ambitions of the SDGs into education, training and learning, in particular those within SDG 4.7. These include fostering the acquisition of knowledge about limiting the multifaceted nature of climate change and using natural resources in a sustainable way.

The Resolution of the Council of the European Union on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) (¹⁹) sets a target of 47% for participation of adults in learning.

The increase in adult participation in learning stalled in 2020

Adult participation in learning 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 has remained at a rather low level, peaking at 10.8 % in 2019 and falling back to 9.2 % in 2020. This drop might be related to the COVID-19 pandemic and the related contingency measures, which resulted in an increase in home-working and thus is likely to have reduced opportunities for taking part in education and training.

9.2 %
of 25- to 64-year-old adults participated in learning in the EU in 2020

Women are more likely to participate in adult learning than men. In 2020, the share of 25- to 64-year-old women was 1.6 percentage points higher than that for men (10.0 % compared with 8.4 %). The rate for women was not only clearly higher than it was for men, it had also been improving faster, gaining 4.5 percentage points since 2002, compared with 3.4 percentage points for men.

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 last 12 months. Baseline data for this definition have so far only been collected in 2016. At that time, the share stood at 37.4%, which was 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 had 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 lagging behind in digitalisation [20].

The share of people with at least basic digital skills is growing slowly

The European Skills Agenda 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 70 % in 2025. This composite indicator is based on selected activities performed by individuals on the internet in four specific areas: information, communication, problem solving and content creation. 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.

Since 2015, the share of people aged 16 to 74 with at least basic digital skills has increased slowly, from 54 % to 56 % in 2019. At this pace, the EU is unlikely to meet the 70 % target in 2025. In contrast with most other educational indicators presented in this chapter, fewer women (54 %) have at least basic digital skills than men (58 %). Furthermore, there exists a clear relationship between age and digital skills. While 80 % of 16- to 24-year-olds had basic or above-basic overall digital skills in 2019, this was only the case for 64 % of 25- to 54-year-olds. Older people in particular struggle with the use of digital media, with only 33 % of people aged 55 to 74 having at least basic digital skills.

56 %
of 16- to 74-year-old people in the EU had at least basic digital skills in 2019

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].

The Digital Europe Programme (DIGITAL) is the first EU financial instrument designed to bring digital technology to businesses and citizens. It focuses on building the EU's strategic digital capacities and on facilitating the wide deployment of digital technologies. The programme will boost investments in supercomputing, artificial intelligence, cybersecurity, advanced digital skills and ensuring a wide use of digital technologies across the economy and society ([23]).

Presentation of the main indicators

Underachievement in reading, maths and 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, which is a triennial international survey that aims to evaluate education systems by testing the skills and knowledge of 15-year-old students.

Figure 4.1: Underachievement in reading, maths and science, EU, 2006–2018 (% of 15-year-old students)
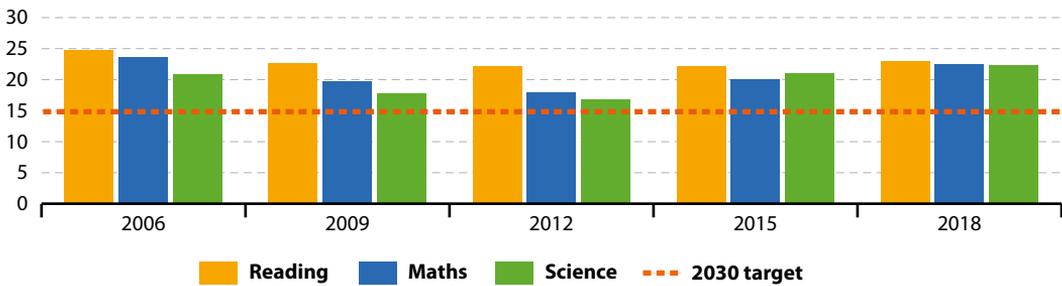
Source: OECD (Eurostat online data code: sdg_04_40)

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. Maths: – 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.

Figure 4.2: Underachievement in reading, maths and science, by country, 2018 (% of 15-year-old students)
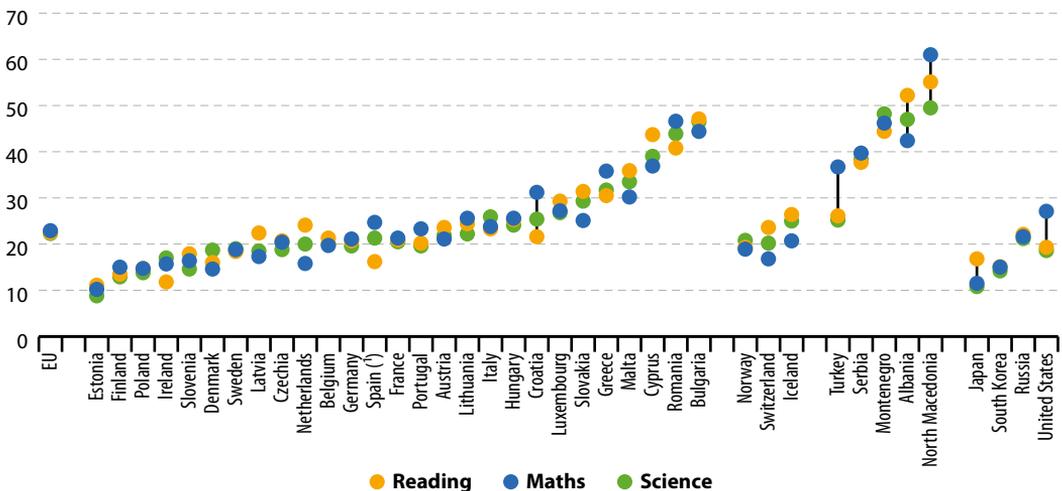
(¹) 2015 data for reading.

Source: OECD (Eurostat online data code: sdg_04_40)

X **LONG TERM**
Time series
too short

⬆ **SHORT TERM**
2014–2019

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, 2013–2019
(% of the age group between 3 years and the starting age of compulsory education at primary level)
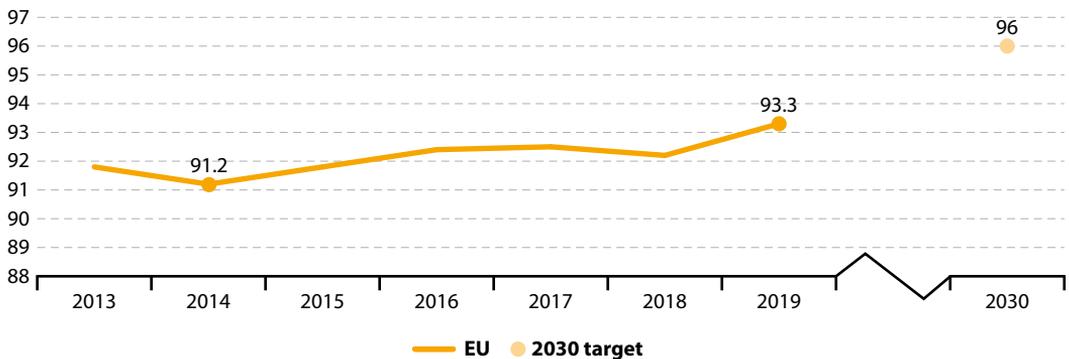
Compound annual growth rate (CAGR): 0.5 % per year (observed) and 0.3 % per year (required to meet target) in the period 2014–2019.
Source: Eurostat (online data code: sdg_04_30)

Figure 4.4: Participation in early childhood education, by country, 2014 and 2019
(% of the age group between 3 years and the starting age of compulsory education at primary level)
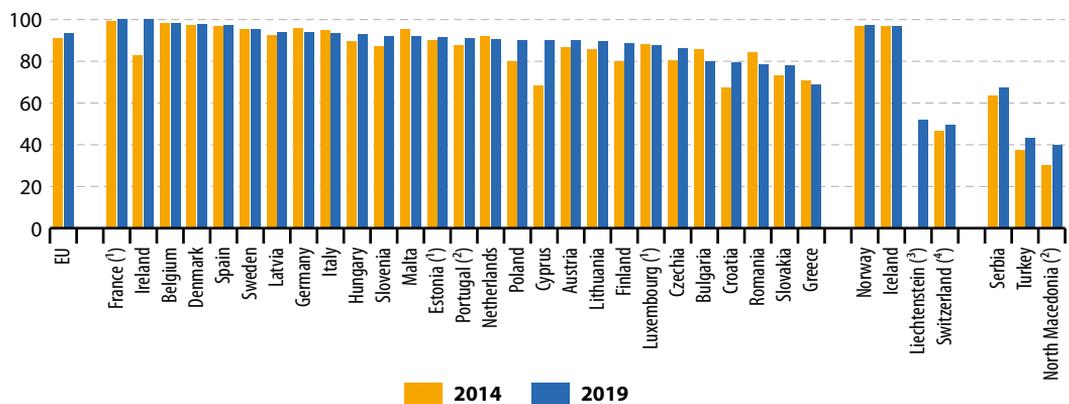
(¹) Break(s) in time series between the two years shown.   (³) No data for 2014.
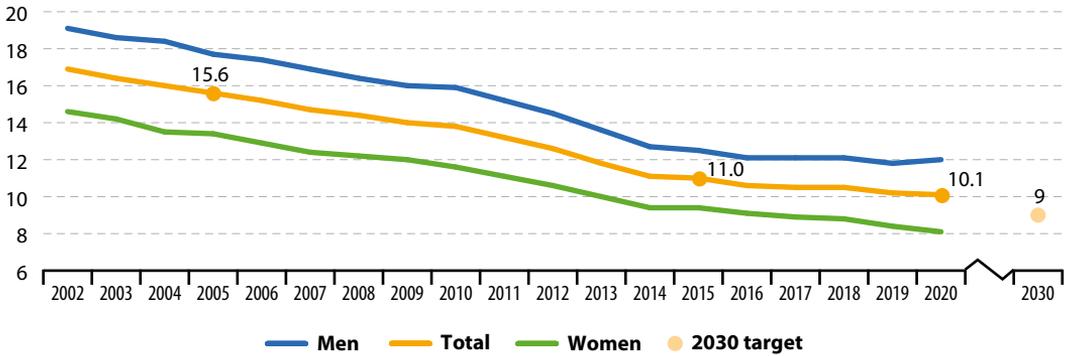(²) 2018 data (instead of 2019).   (⁴) 2013 data (instead of 2014).

Source: Eurostat (online data code: sdg_04_30)

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, 2002–2020
(% of the population aged 18 to 24)

Note: Break in time series in 2003, 2006 and 2014.
Compound annual growth rate (CAGR) for the total share: – 2.9 % per year (observed) and – 2.2 % per year (required to meet target) in the period 2005–2020; – 1.7 % per year (observed) and – 1.3 % per year (required to meet target) in the period 2015–2020. CAGR for the gender gap: – 0.6 % per year in the period 2005–2020; 4.7 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_04_10)

Figure 4.6: Early leavers from education and training, by country, 2015 and 2020
(% of the population aged 18 to 24)
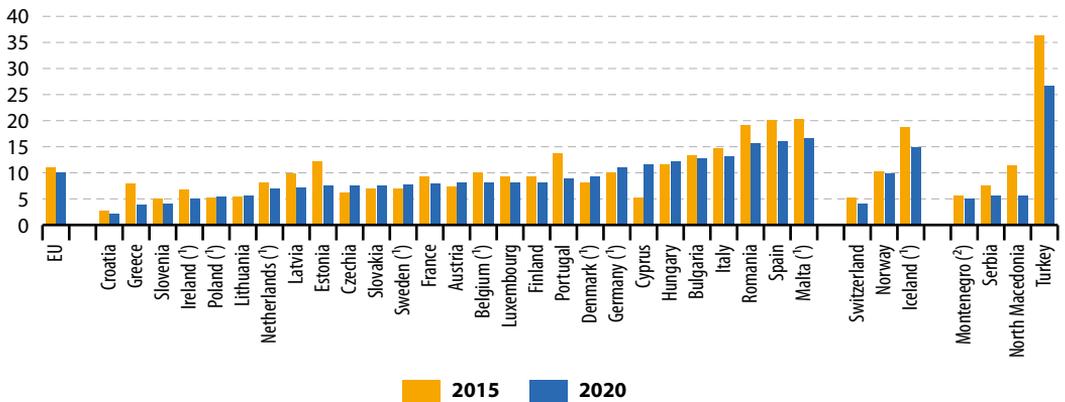
(¹) Break(s) in time series between the two years shown.
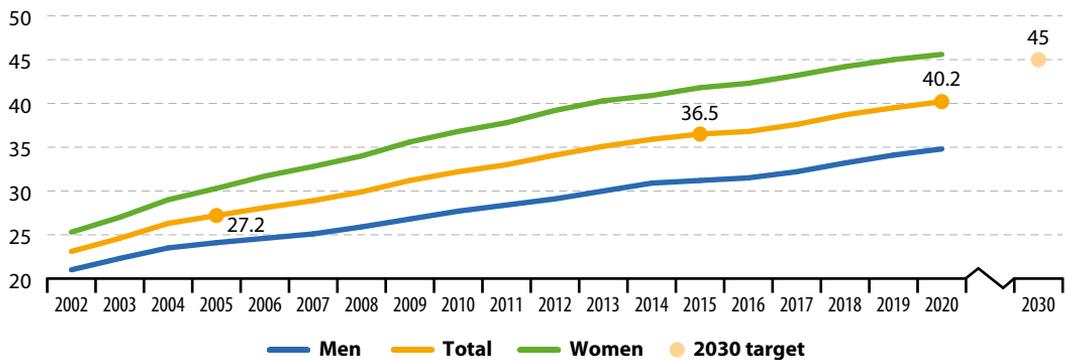(2) 2019 data (instead of 2020)
Source: Eurostat (online data code: sdg_04_10)

Tertiary educational attainment

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, 2002–2020
(% of the population aged 25 to 34)

Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).
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 2005–2020; 1.9 % per year (observed) and 1.4 % per year (required to meet target) in the period 2015–2020. CAGR for the gender gap: 3.8 % per year in the period 2005–2020; 0.4 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_04_20)

Figure 4.8: Tertiary educational attainment, by country, 2015 and 2020
(% of the population aged 25 to 34)
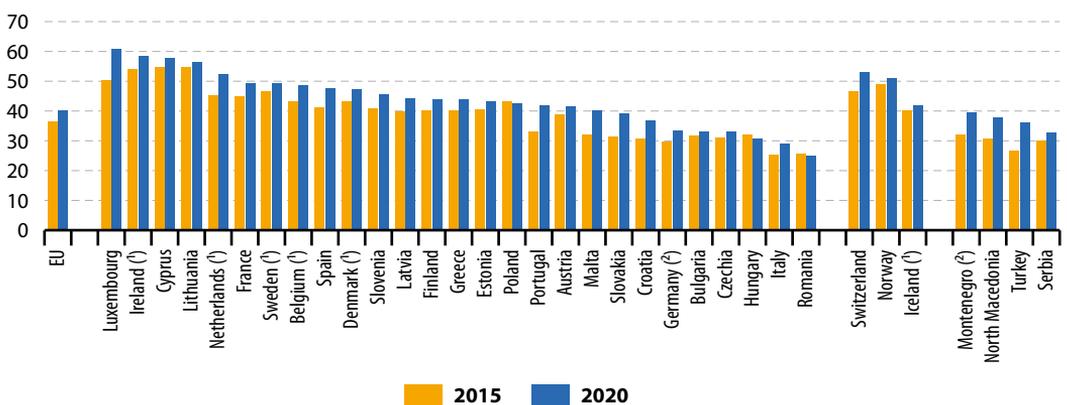
(¹) Break(s) in time series between the two years shown.
(²) 2019 data (instead of 2020)

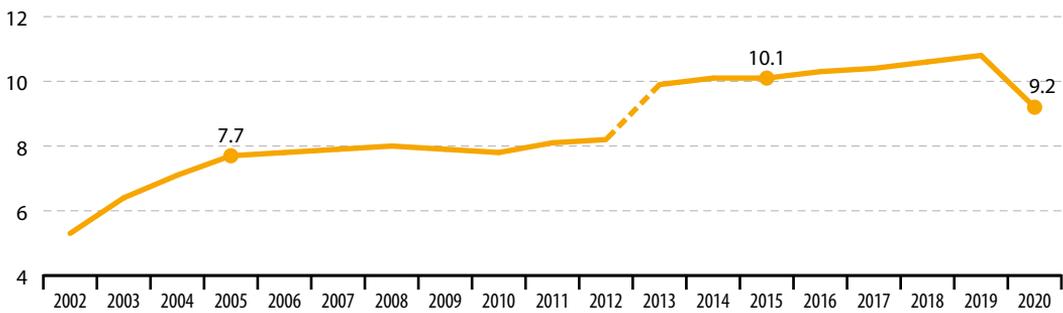*Source:* Eurostat (online data code: sdg_04_20)

Adult participation in learning

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 adults after leaving initial education and training ([24]). Data stem from the EU Labour Force Survey (EU-LFS).

LONG TERM
2005–2020

SHORT TERM
2015–2020

Figure 4.9: Adult participation in learning, EU, 2002–2020
(% of population aged 25 to 64)

Note: Breaks in time series in 2003, 2006 and 2013.
Compound annual growth rate (CAGR): 1.2 % per year in the period 2005–2020; − 1.8 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_04_60)

Figure 4.10: Adult participation in learning, by country, 2015 and 2020
(% of population aged 25 to 64)
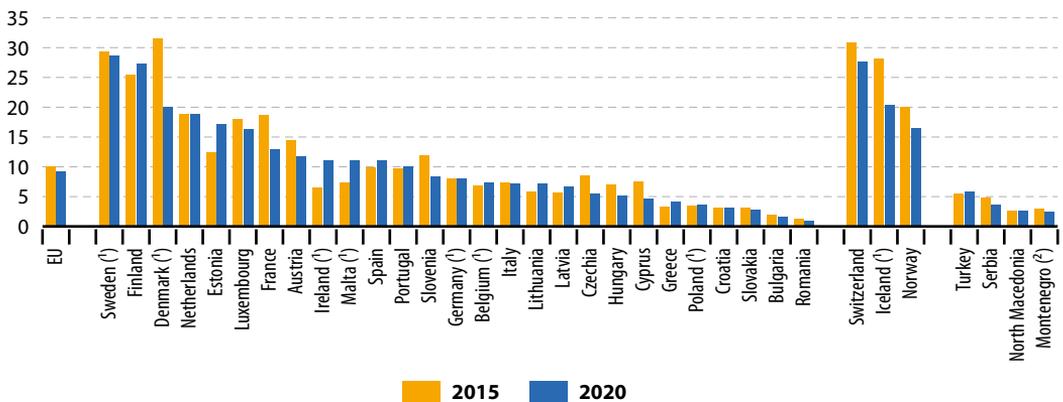
2015   2020

([1]) Break(s) in time series between the two years shown.
([2]) 2019 data (instead of 2020).

Source: Eurostat (online data code: sdg_04_60)

X **LONG TERM** Time series too short

SHORT TERM 2015–2019

Share of adults having at least basic digital skills

This indicator measures the share of people aged 16 to 74 having at least basic digital skills. This is the second highest level of the overall digital indicator, which is a composite indicator based on selected activities performed by individuals aged 16 to 74 on the internet in the four specific areas (information, communication, problem solving and content creation). 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, 2015–2019 (% of individuals aged 16 to 74)

Men — **Total** — **Women** — **2025 target**
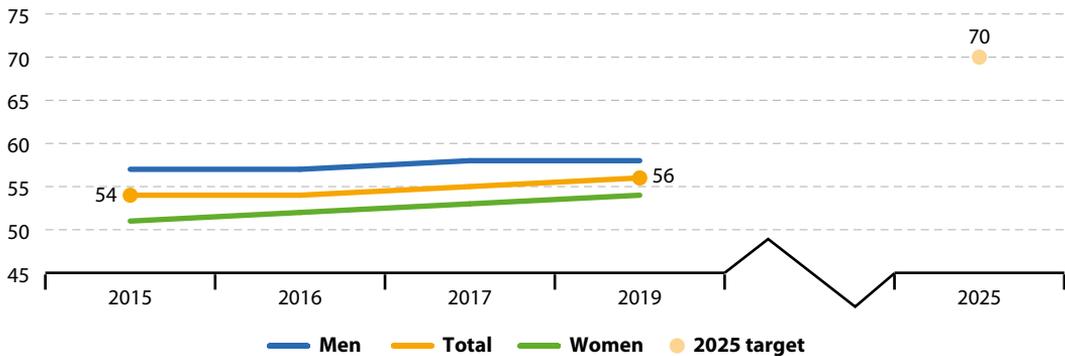
Note: No data for 2018.
Compound annual growth rate (CAGR) for the total share: 0.9 % per year (observed) and 2.6 % per year (required to meet target) in the period 2015–2019.
Source: Eurostat (online data code: sdg_04_70)

Figure 4.12: Share of adults having at least basic digital skills, by country, 2015 and 2019 (% of individuals aged 16 to 74)

2015 **2019**
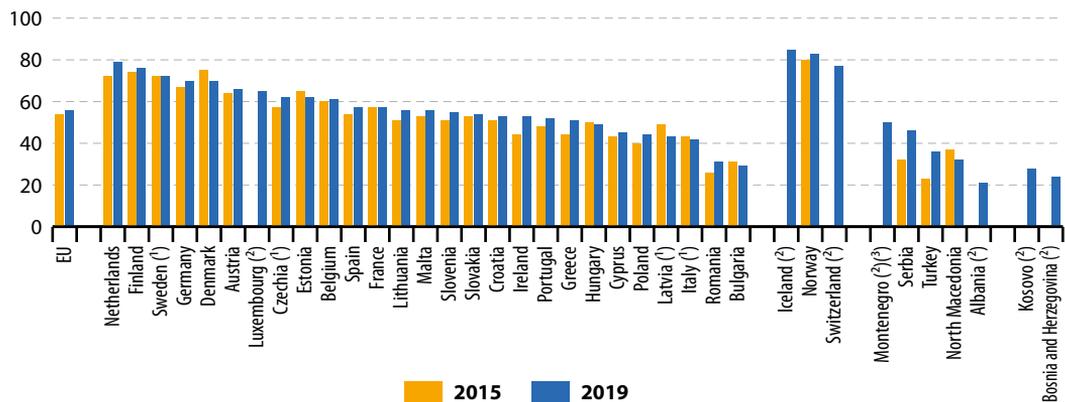
(¹) Break(s) in time series between the two years shown.
(²) No data for 2015.
(³) 2017 data (instead of 2019).
Source: Eurostat (online data code: sdg_04_70)

Further reading on education

European Commission/EACEA/Eurydice (2019), *Key Data on Early Childhood Education and Care in Europe*, 2019 Edition, Eurydice Report, Publications Office of the European Union, Luxembourg.

European Commission (2020), *Education and Training Monitor 2020*, Publications Office of the European Union, Luxembourg.

European Commission (2019), *PISA 2018 and the EU. Striving for social fairness through education*, Publications Office of the European Union, Luxembourg.

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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 Parliament/European Council/European Commission (2017), *European Pillar of Social Rights*.

(⁴) European Commission (2021), *The European Pillar of Social Rights Action Plan*, Publications Office of the European Union, Luxembourg.

(⁵) 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).

(⁶) European Commission (2019), *Council recommendation of 22 May 2019 on High Quality Early Childhood Education and Care Systems* (2019/C 189/02).

(⁷) European Commission/EACEA/Eurydice (2019), *Key Data on Early Childhood Education and Care in Europe*, p. 43.

(⁸) Please note that the definition of the indicator on participation in early childhood education used in this report (referring to children from three years on) differs from the one used in previous reports (referring to children from four years on).

(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); 2020 data are provisional.

(¹²) European Commission, *European Social Fund, Better Education*.

(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) European Commission, *European Skills Agenda*.

16)European Commission (²⁰²⁰), *Council recommendation of 30 October 2020 on A Bridge to Jobs — Reinforcing the Youth Guarantee and replacing the Council Recommendation of 22 April 2013 on establishing a Youth Guarantee* (2020/C 372/01).

(¹⁷) European Commission, *The reinforced Youth Guarantee*.

(¹⁸)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).

(¹⁹) 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).

(²⁰)European Commission (2020), *European Skills Agenda for sustainable competitiveness, social fairness and resilience*, p. 3 and 18.

(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 (2020), *Education and Training Monitor 2020*, p. 16–35.

(²³)European Commission (2021), *The Digital Europe programme*.

(²⁴)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.

eurostat
supports the SDGs

The balanced participation of women and men in formal 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 the chances in life for both men and women. 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 134
Education			
Gender gap for early leavers from education and training (*)	↗	↓ (¹)	SDG 4, page 121
Gender gap for tertiary educational attainment (*)	↓ (²)	↘ (²)	SDG 4, page 122
Employment			
Gender pay gap in unadjusted form	:	↑	page 135
Gender employment gap	↑	↗	page 136
Gender gap for inactive population due to caring responsibilities	↘ (³)	↓	page 137
Leadership positions			
Seats held by women in national parliaments	↑	↑	page 138
Positions held by women in senior management	↑	↑	page 139

(*) Multi-purpose indicator.
(¹) Women aged 18–24 have a lower rate for early leaving from education and training than men, and the unfavourable assessment is due to their rate decreasing faster over the past five years than the rate for men.

(²) Women aged 25–34 have a higher tertiary education attainment rate than men, and the unfavourable assessment is due to their rate increasing faster over time than the rate for men.
(³) Past 13-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.1 in the annex.

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, while disparities between men and women have increased in the labour market to the disadvantage of women and in the area of education to the disadvantage of men (see Table 5.1).

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 ([5]); 12 % of women aged 18 to 29 had experienced physical or sexual violence in the 12 months prior to the interview, whereas only 5 % of women aged 50 to 59 had been affected. Looking at a longer period of life, every third woman (33 %) in the EU reported having experienced physical or sexual violence since the age of 15 ([6]).

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

The EU Gender Equality Strategy 2020– 2025 ([1]) **presents policy objectives and actions for making significant progress towards a gender-equal Europe by 2025. It aims to ensure that women and men, as well as girls and boys, are free to pursue their chosen path in life, have equal opportunities to thrive and can equally participate in and lead European society. The EU Gender Action Plan (GAP) III 2021–2025 reflects the objectives of the EU Gender Equality Strategy and provides a framework for the EU to boost its level of engagement, focusing on five pillars.**

Gender equality is also a key principle of the European Pillar of Social Rights ([2]), **which covers areas of employment, social protection, education and access to goods and services. This includes terms and conditions of employment and career**

progression, equal pay, work-life balance and equal opportunities to acquire pension rights. On 4 March 2021, the Commission put forward an ambitious European Pillar of Social Rights Action Plan ([3]), **which includes a target that 78 % of the EU population aged 20 to 64 should be employed by 2030. In order to achieve this goal, Europe must strive to at least halve the gender employment gap compared with 2019.**

The European Commission supports Member States in improving gender equality by monitoring the situation and disseminating information, data and analysis of trends through its annual reports on equality between women and men in the EU and through the EU Gender Equality Index ([4]). **In addition, the Mutual Learning Programme in Gender Equality aims to encourage the exchange of good practices.**

One of the key objectives of the **EU Gender Equality Strategy 2020–2025** (**⁷**) **is ending gender-based violence. The benchmark for international standards in this field is the Istanbul Convention, which the EU signed in 2017.**

The EU also protects women and children from gender-based violence through awareness-raising as well as legislation and practical measures on victims' rights. In 2020, the Commission published its first ever EU Strategy on victims' rights (2020–2025) to ensure all victims of crime can fully rely on their rights, no matter where in the EU the crime took place (⁸).

The prevalence of violence varies greatly across the EU. However, caution is needed when comparing rates, because in some countries there is a stigma associated with disclosing cases of violence against women in certain settings and to certain people, including interviewers (⁹). 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 (¹⁰).

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. Thus, having a tertiary education degree 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.

Improving quality, equity, inclusion and success for all in education and training is one of the five strategic priorities of the recently adopted Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) (¹¹). Moreover the European Commission is developing initiatives to help establish a European Education Area (EEA) enabling all young people to benefit from the best education and training, and to find employment across Europe. Inclusion and gender equality are one of the six dimensions of the EEA. It includes pathways to school success, gender-sensitive teaching, a European approach to micro-credentials and 50 centres of excellence for vocational education and training (VET) (¹²).

Young women outperform men in terms of education

Women overall tend to perform better than men when it comes to participation in education in the EU. In 2020, 12.0 % of men and 8.1 % of women aged 18 to 24 had left education and training with at most lower secondary education. Although this gap narrowed between 2002 and 2016, it widened again over the following four years and remained substantial, at 3.9 percentage points in 2020.

The gender gap (to the disadvantage of men) for early leavers from education and training in the EU was

3.9

percentage points in 2020

A major expansion in higher education systems has taken place in the EU since the introduction of the Bologna process ([13]). The share of the population aged 25 to 34 who completed tertiary education increased steadily between 2002 and 2020. The increase was particularly strong for women, whose tertiary educational attainment rate rose from 25.3 % in 2002 to 45.6 % in 2020. For men, the increase was slower, from 21.0 % to 34.8 %. This caused the gender gap to surge from 4.3 percentage points to 10.8 percentage points between 2002 and 2020.

The tertiary education attainment rate of women in the EU was

10.8

percentage points higher than for men in 2020

Employment

Ensuring high employment rates for both men and women is one of the EU's key targets. Reducing the gender employment gap — 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 the higher educational attainment of women, they are still paid less, as evidenced by the persistent gender pay gap. Women in the EU are over-represented in low pay 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 women's risk of poverty and social exclusion, especially in old age.

Women are still less likely to be employed than men

Employment rates for women are an indication of a country's social customs, attitudes towards women in the labour force and family structures in general ([14]). 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 ([15]).

In the EU, the employment rate for women grew from 58.1 % in 2004 to 66.8 % in 2020. For men, the rate started from a higher value and increased more slowly, from 74.5 % in 2004 to 78.1 % in 2020 (see the chapter on SDG 8 'Decent work and economic growth' on page 181 for more detailed analyses on employment rates). As a result, the gender employment gap narrowed by 5.1 percentage points between 2004 and 2020. The strongest reduction occurred during the economic crisis between 2008 and 2009, partly because jobs were lost in traditionally male-dominated fields, such as construction and the automotive industry ([16]). The gap continued to shrink until 2014 and then stagnated at slightly below 12 percentage points until 2019. In 2020, when the COVID-19 pandemic hit the labour market, the gap fell to 11.3 percentage points. Although this 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

11.3

percentage points in the EU in 2020

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

Between 2014 and 2019, the gender pay gap narrowed by 1.6 percentage points in the EU. However, in 2019, women's gross hourly earnings were still on average 14.1 % 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

Men earned

14.1 %

more than women in the EU in 2019

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.

Caring responsibilities are by far the main reason for inactivity among women

The gender gap is particularly pronounced regarding inactivity due to caring responsibilities, caused by the lack of available, accessible and quality formal care services, especially for children ([17]), as well as long-term care services. Inactivity due to caring responsibilities was the main reason why women (aged 20 to 64) were not part of the labour force in 2020, with 27.3 % of

Closing gender gaps in the labour market by achieving equal participation across different economic sectors, addressing the gender pay and pension gap, and closing the gender care gap are among the key objectives of the EU Strategy on Gender Equality 2020–2025. On 4 March 2021, the Commission presented a proposal on pay transparency to ensure women and men in the EU get equal pay for equal work. This proposal sets out pay transparency measures, such as pay information for job seekers, a right to know the pay levels for

workers doing the same work, as well as gender pay gap reporting obligations for big companies.

The European Pillar of Social Rights Action Plan will also play a key role in increasing women's participation in the labour market, especially following the impact of the COVID-19 pandemic. The Action Plan proposes a new EU headline target of raising the overall employment rate to 78 % by 2030, which includes reducing the gender employment gap by 50 % compared with 2019 levels.

The European Pillar of Social Rights stipulates that parents and people with caring responsibilities have the right to suitable leaves of absence, flexible working arrangements and access to care services. In addition, women and men shall have equal access to special leaves of absence to fulfil their caring responsibilities and be encouraged to use them in a balanced way. The European Pillar of Social Rights Action Plan also emphasises the importance of the right to affordable and good quality long-term care services, in particular home-care and community-based care.

The Work-life Balance Directive ([18]), which entered into force on 2 August 2019, has been one of the Pillar's flagship pieces of legislation. Its implementation will help women and men reconcile work and caring responsibilities and promote gender equality. Work-life balance policies, such as flexible working arrangements or family-related leave, play an important role in reducing obstacles to the participation of people with caring responsibilities in the labour market. If used in a balanced way by women and men, these policies can also help to reduce employment gender gaps.

inactive women reporting this as main reason. In contrast, only 3.9 % of inactive men reported being inactive due to caring responsibilities.

The share of inactive people due to caring responsibilities increased steadily between 2014 and 2019, by 1.1 percentage points for men and by 4.2 percentage points for women. As a result, the gender gap has increased by 3.0 percentage points since 2014, reaching 27.8 percentage points in 2019.

The gender gap (in favour of men) for inactivity due to caring responsibilities in the EU in 2019 was

27.8
percentage points

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 under-represented 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 32.7 % of seats in national parliaments in the EU in 2020. 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 49.6 % seats held by women in Sweden to 12.6 % in Hungary. There was no single EU country in 2020 where women held the most seats.

32.7 %
of seats in national parliaments in the EU were held by women in 2020

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 32.7 % in 2020, 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 2020, there were on average four female heads of government compared with none in 2003. Over the whole period from 2003 to 2020, the highest share of female heads of government was 14.3 %, meaning there were never more than four women in this executive position at the same time [19].

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. To reach the aim of at least 40 % representation of the under-represented sex among non-executive members on company boards, the European Commission will push for the adaption of the 2012 proposal for a Directive on improving the gender balance on corporate boards [20].

In 2020, almost 30 % of board members of the largest listed companies were women

Women held 29.5 % of board positions in the largest listed companies in 2020. This level of representation was achieved after a steady 21.3 percentage point increase since 2003. However, the numbers mean that 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 on boards [21].

29.5 %
of board positions in the largest listed companies in the EU were held by women in 2020

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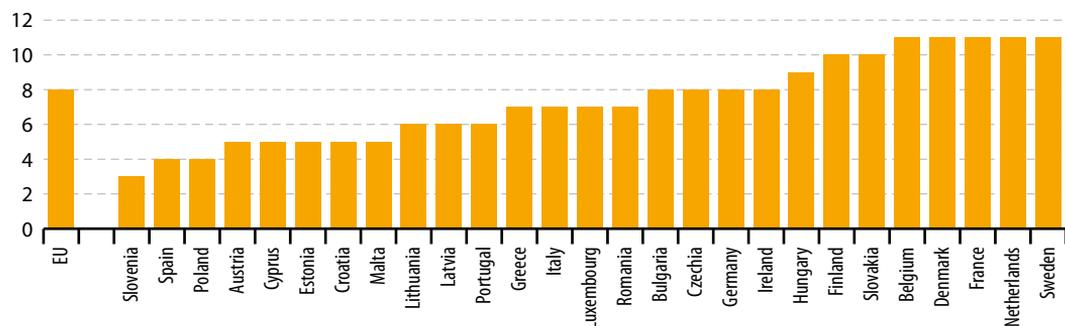(% of women)
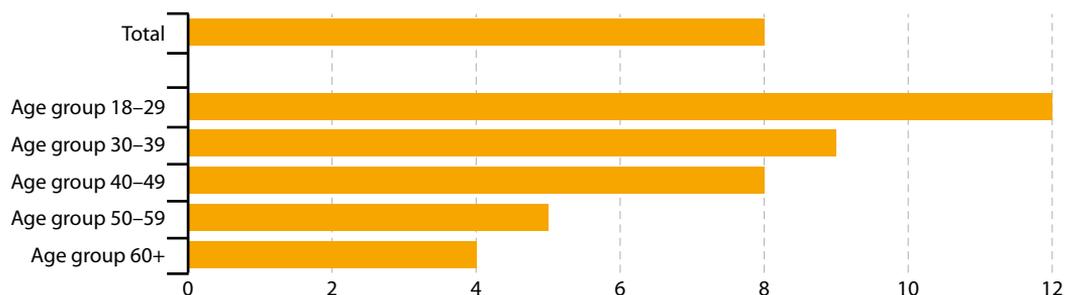
Source: European Union Agency for Fundamental Rights (FRA) (Eurostat online data code: sdg_05_10)

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)
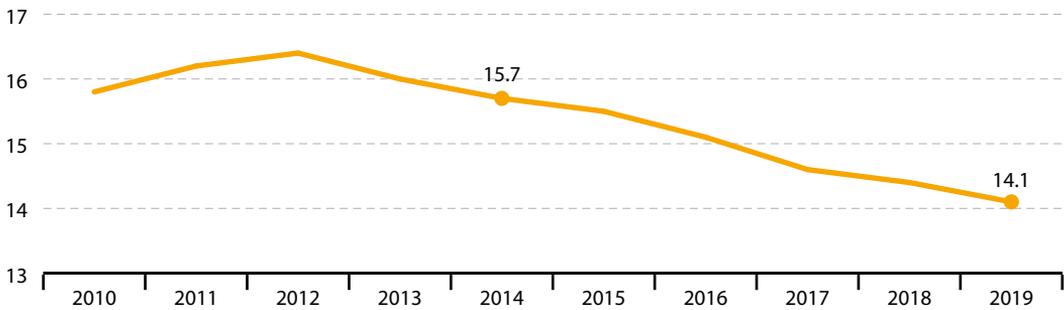
Gender pay gap in unadjusted form

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 that 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, 2010–2019
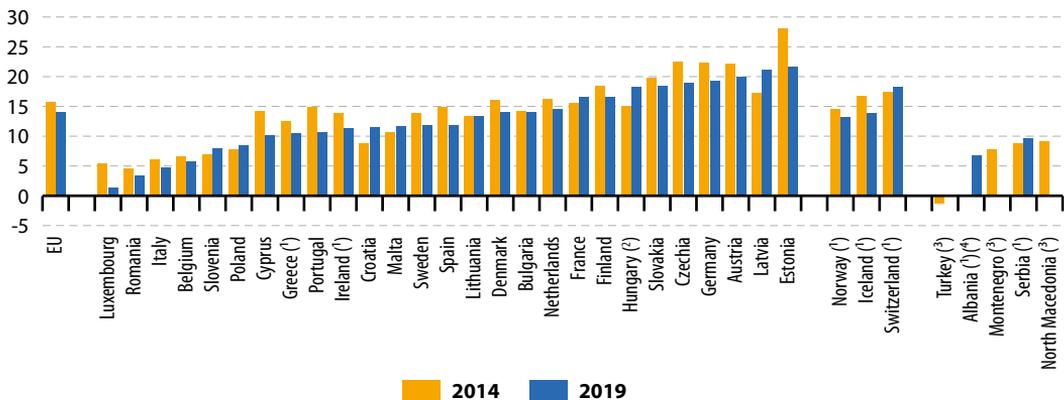(% of average gross hourly earnings of men)

Compound annual growth rate (CAGR): − 2.1 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_05_20)

Figure 5.4: Gender pay gap in unadjusted form, by country, 2014 and 2019
(% of average gross hourly earnings of men)

Note: 2019 data are provisional or estimated for most countries.
(¹) 2018 data (instead of 2019).
(²) Break(s) in time series between the two years shown.
(³) No data for 2018.
(⁴) No data for 2014.
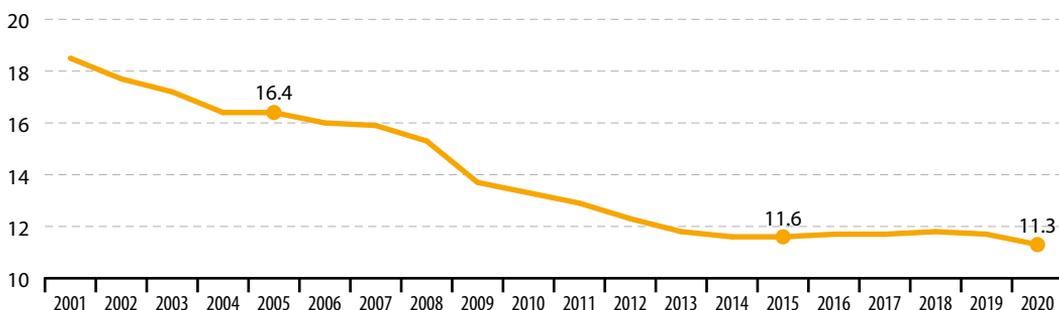*Source:* Eurostat (online data code: sdg_05_20)

LONG TERM
2005–2020

SHORT TERM
2015–2020

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, 2001–2020**
(percentage points)

Compound annual growth rate (CAGR): – 2.5 % per year in the period 2005–2020; – 0.5 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_05_30)

Figure 5.6: **Gender employment gap, by country, 2015 and 2020**
(percentage points)
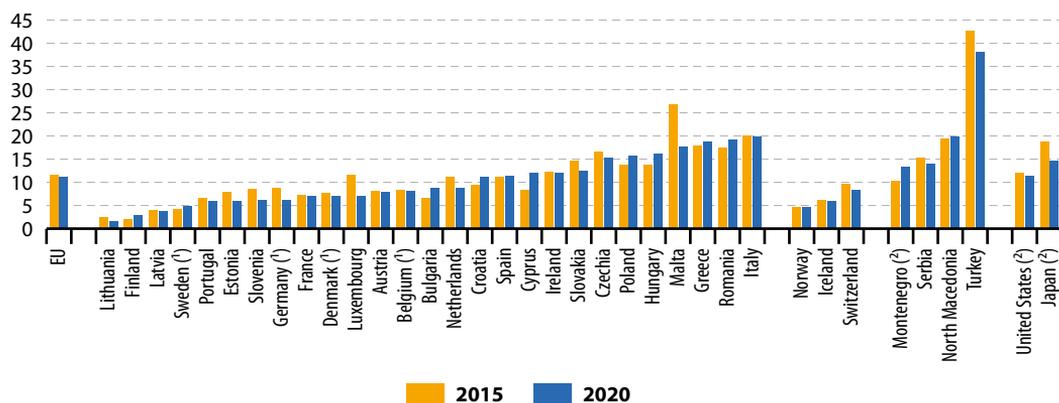
2015   2020

(¹) Break(s) in time series between the two years shown.
(²) 2019 data (instead of 2020).
Source: Eurostat (online data code: sdg_05_30)

Gender gap for inactive population due to caring responsibilities

LONG TERM 2006–2019

SHORT TERM 2014–2019

The economically inactive population comprises individuals that are not working, not actively seeking work and 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.

Figure 5.7: Inactive population due to caring responsibilities, by sex, EU, 2006–2019 (% of inactive population aged 20 to 64)

Compound annual growth rate (CAGR) of the gender gap: 0.4 % per year in the period 2006–2019; 2.4 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_05_40)

Figure 5.8: Inactive population due to caring responsibilities, by sex, by country, 2019 (% of inactive population aged 20 to 64)
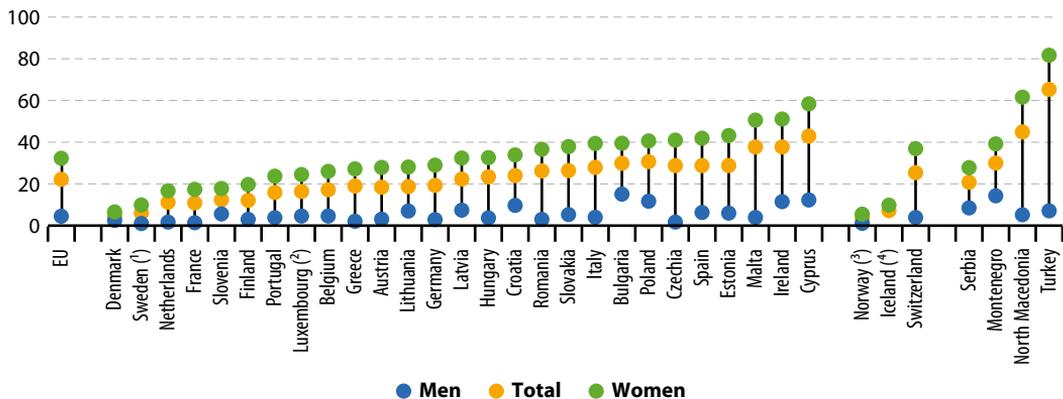
(¹) 2018 data for men (with low reliability).
(²) Data for men have low reliability.
(³) 2015 data for men (with low reliability).
(⁴) No data for men.

Source: Eurostat (online data code: sdg_05_40)

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.
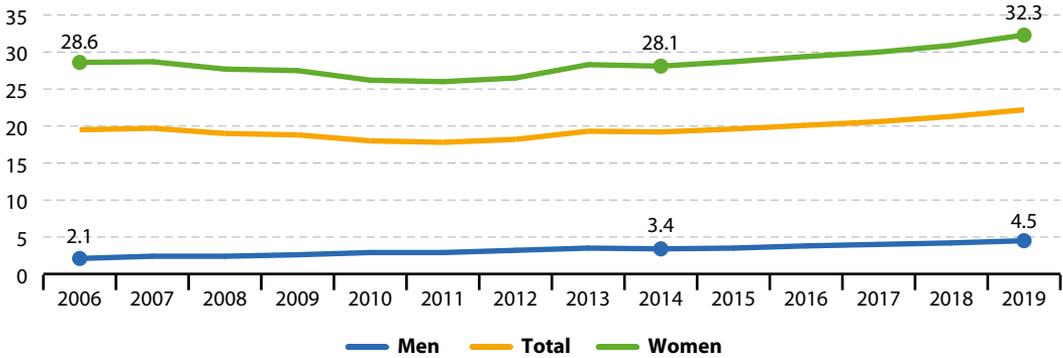
Figure 5.9: Seats held by women in national parliaments, EU, 2003–2020
(% of seats)

Compound annual growth rate (CAGR): 2.7 % per year in the period 2005–2020; 3.0 % per year in the period 2015–2020.
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, 2015 and 2020
(% of seats)

■ 2015 ■ 2020

(¹) No data for 2015.
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
2005–2020

SHORT TERM
2015–2020

Figure 5.11: Positions held by women in senior management, EU, 2003–2020
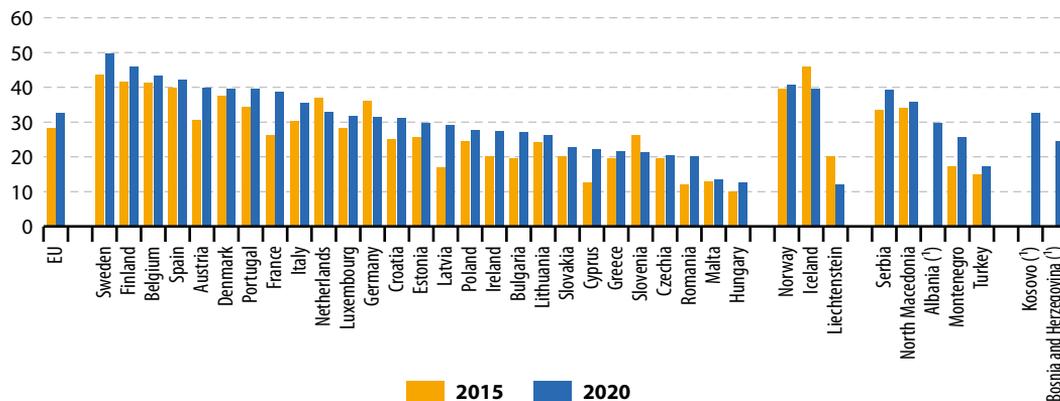(% of board members)

Compound annual growth rate (CAGR): 7.8 % per year in the period 2005–2020; 5.9 % per year in the period 2015–2020.
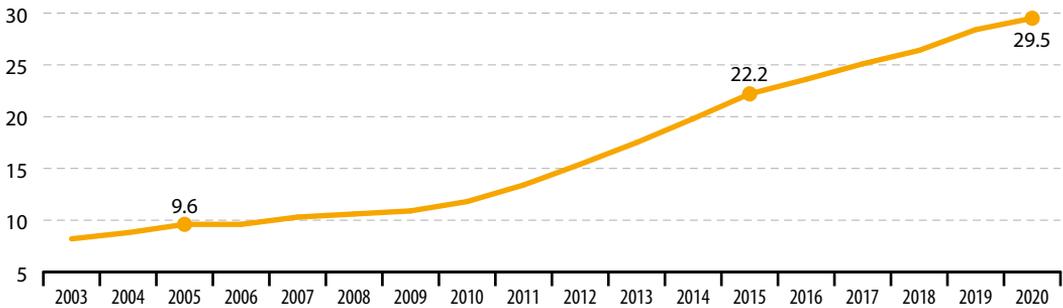*Source:* European Institute for Gender Equality (EIGE) (Eurostat online data code: sdg_05_60)

Figure 5.12: Positions held by women in senior management, by country, 2015 and 2020
(% of board members)
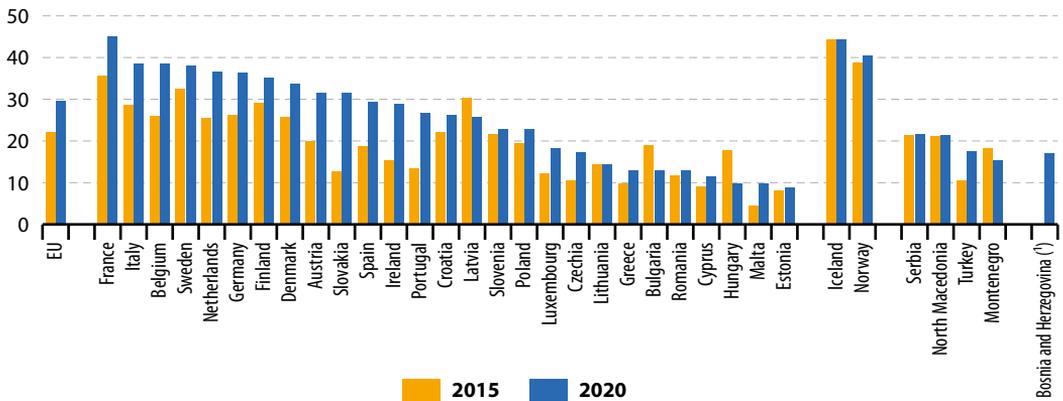
2015   2020

(¹) No data for 2015.
Source: European Institute for Gender Equality (EIGE) (Eurostat online data code: sdg_05_60)

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(²) European Parliament, European Council, European Commission (2017), *European Pillar of Social Rights*.

(³) European Commission (2021), *The European Pillar of Social Rights Action Plan*, Publications Office of the European Union, Luxembourg.

(⁴) European Institute for Gender Equality (EIGE), Gender Equality Index.

(⁵) European Union Agency for Fundamental Rights (2014), *Violence against women: an EU-wide survey, Main results*, Publications Office of the European Union, Luxembourg, p. 25.

(⁶) Id, p. 17.

(⁷) European Commission (2020), *A Union of Equality. Gender Equality Strategy 2020–2015*, COM(2020) 152 final, Brussels.

(⁸) European Commission (2020), *EU Strategy on victims' rights (2020–2025)*, COM(2020) 258 final, 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, pp. 25–26, 32.

(¹⁰) Ibid.

(¹¹) 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).

(¹²) 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.

(¹³) 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).

(¹⁴) International Labour Organisation (2015), *Key Indicators of the Labour market: Full report, Ninth Edition*, International Labour Office, Geneva, p. 17.

(¹⁵) 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.

(¹⁶) European Commission (2009), *Economic Crisis in Europe: Causes, Consequences and Responses*, Directorate-General for Economic and Financial Affairs, p. 36.

(¹⁷) 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.

(¹⁸) European Parliament, European Council, (2019), *Directive on work-life balance for parents and carers and repealing Council Directive 2010/18/EU*, Brussels.

(¹⁹) European Institute for Gender Equality, *Gender Statistics Database (National governments: presidents and prime ministers)*.

(²⁰) European Commission (2012), *Proposal for a Directive of the European Parliament and of the Council on improving the gender balance among non-executive directors of companies listed on stock exchanges and related measures*, COM(2012) 614 final, Brussels.

(²¹) European Commission (2017), *2018 Report on equality between women and men in the EU*, Publication Office of the European Union, Luxembourg, p. 31.

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.

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 municipal and industrial discharges and waste water, 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.

No trend calculation possible

6 Clean water and sanitation

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)	:	⬆	page 151
Population connected to at least secondary waste water treatment	:	:	page 152
Water quality			
Biochemical oxygen demand in rivers	⬆ (¹)	⬆ (¹)	page 153
Nitrate in groundwater	↘ (¹)	↘ (¹)	page 154
Phosphate in rivers	⬆ (²)	⬇ (²)	page 156
Inland water bathing sites with excellent water quality (*)	:	↗	SDG 14, page 305
Water use efficiency			
Water exploitation index (WEI+)	:	:	page 157

(*) Multi-purpose indicator.
(¹) Data refer to an EU aggregate based on 16 Member States.
(²) Data refer to an EU aggregate based on 18 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.1 in the annex.

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 in the area of water quality have been mixed over the past few years, with divergent trends in pollutant concentrations in surface and groundwater. Progress on water use efficiency cannot be assessed because of the seasonal variability in 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.

The majority of EU citizens have access to basic sanitation and are connected to secondary waste water treatment

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 decreased from 2.3 % in 2014 to 1.6 % in 2019. Data also show that between 2013 and 2018, the share of the population connected to secondary waste water treatment increased in most Member States.

1.6 %
of the EU population lacked sanitary facilities at home in 2019

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). This programme will also lay the ground for establishing a new dedicated monitoring framework.

The EU health and food safety policy also contributes to high water and sanitation standards in terms of preventing the spread of communicable diseases. The Urban Waste-Water Treatment Directive (²) regulates the collection, treatment and discharge of domestic as well as industrial urban waste waters. The most recent report on the Directive's implementation revealed encouraging compliance trends, showing that 95 % of EU waste water is being collected and 88 % is being biologically treated (³).

Furthermore, the EU — through its external relations, development cooperation policy (through the European consensus and the Agenda for Change), the European Neighbourhood Policy and the EU Enlargement Policy — is supporting third countries' efforts to achieve this sustainable development goal through bilateral assistance programmes or regional initiatives.

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 2019, 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 22.4 % of the population not having access to basic sanitary facilities in 2019. Relatively high shares were also reported by Bulgaria, Latvia and Lithuania, with values between 7.5 % and 8.7 % 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 2019, 5.7 % of poor people in the EU lacked access to a bath, shower or toilet in their households, compared with only 0.8 % of those living above the poverty threshold.

Connection to secondary waste water treatment is another important facility for enhancing access to sanitation. Since 2013, connection rates to secondary treatment have increased in more than two-thirds of the reporting Member States. Many of the 15 countries that, according to the most recent data, reported having secondary treatment connection rates of 80 % or more were 'old' (EU-15) Member States which had a head start on implementing the Urban Waste Water Treatment Directive. 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 in rural areas

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Member States reported that more than 80 % of their population were connected to at least secondary wastewater treatment

with a low population density. For this reason the Urban Waste Water Treatment Directive only obliges bigger agglomerations to introduce secondary treatment, while encouraging smaller agglomerations (below 2 000 person equivalents) to find alternative solutions to reach the same level of protection for waterbodies.

EU water policy provides a framework for comprehensively addressing water protection and for achieving good status for inland surface waters, transitional waters, coastal waters and groundwater. The EU health and food safety policy also contributes to high standards for water and sanitation in terms of preventing the spread of communicable diseases. The **EU Enlargement Policy** promotes the extension of EU norms to candidate countries, covering not only water quality and waste water treatment, but also water management and flood prevention.

Water quality

Diffuse pollution by agriculture, accidental spillage of harmful substances and discharge of 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 ([4]). All these indicators show favourable trends for the EU over the past few years.

The **Water Framework Directive** (⁵) **is
the main European legislation aiming
to prevent water pollution. It integrates
several previously existing Directives, such
as the Freshwater Fish Directive (which sets
standards for phosphorus concentration). In
addition, it is complemented by 'daughter'
Directives: the Groundwater Directive
(which sets a threshold for nitrates) and
the Quality Standards Directive (which sets
standards for certain priority pollutants
of significant risk). According to the Water
Framework Directive, Member States were
obliged to achieve good status in all bodies
of surface water and groundwater by 2015
or, with grounds for exemption, by 2027
at the latest. An evaluation of the Water
Framework Directive was published in a
Fitness Check report in December 2019.**

The **EU Biodiversity Strategy for 2030** (⁶)
**supports the implementation of the
Water Framework Directive's objective
by requiring Member States to restore
freshwater ecosystems. For this to happen,
physical barriers that obstruct migrating
fish and prevent the regular flow of water**

**and sediments must be removed or
rearranged, with the objective of reinstating
at least 25 000 kilometres of free-flowing
rivers by 2030. In the same vein, the
Commission will assist Member States to
review all permits for water abstraction and
impoundment as a measure to implement
ecological flows and to contribute towards
the achievement of the Water Framework
Directive's requirements.**

The proposed **8th Environment Action
Programme** (⁷) **sets the environmental
policy agenda for the years from 2021 to
2030 and explicitly mentions water-related
issues in two of its six priority objectives.
These two objectives are: (1) pursuing a
zero-pollution ambition for a toxic free-
environment, including for air, water and
soil and protecting the health and well-
being of citizens from environment-related
risks and impacts; and (2) protecting,
preserving and restoring biodiversity and
enhancing natural capital, notably air,
water, soil, and forest, freshwater, wetland
and marine ecosystems.**

Improved waste water treatment has led to less organic pollution in European rivers

Heavy organic pollution,
caused by municipal waste
water, effluents from industry
or livestock, can lead to the
deoxygenation of water, killing
fish and invertebrates. Thanks
to improved waste water
treatment, organic pollution
in European rivers has been
decreasing, though the trend
has slowed in recent years.
A proxy for organic water
pollution is the amount of

**Between 2013
and 2018, the
biochemical
oxygen demand
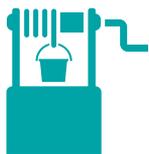in EU rivers
fell by
6.9 %**

oxygen needed for the microbial digestion of
organic pollution under standard conditions,
expressed as biochemical oxygen demand (BOD).
BOD values of rivers in Europe range from less
than 1 milligram per litre (mg/L) (very clean) to
more than 15 mg/L (heavily polluted).

Data available for 16 Member States (see
page 153) show a more or less continuous
decline of BOD in EU rivers, from more than
3 mg/L in 2000 and 2001 to 2.0 mg/L in 2018. The
trend, however, appears to have come to a halt
since 2014, with BOD values stagnating slightly
above 2 mg/L from 2014 to 2018. While the overall
decrease in BOD values is mainly linked to a
general improvement in waste water treatment
throughout Europe.

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

The most recent assessment of European waters published by the European Environment Agency (EEA) concludes that although nutrient pollution has fallen since the 1990s, it is still the main reason why 28 % of EU surface water bodies ([8]) 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.

Between 2013 and 2018, the concentration of nitrates in EU groundwater increased by

4.7 %

The main sources of nutrient inputs are the application of fertilisers and animal waste in agriculture, as well as poorly treated waste water from industry ([9]). 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) ([10]). 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 16 Member States (see page 154). They show a long-term stagnation of NO_3 concentrations at around 21 milligrams per litre (mg/L), followed by a slight but more or less continuous increase since 2012. In 2018, nitrate concentrations in EU groundwater thus reached a new high of 22.0 mg/L, a level 7.1 % higher than in 2012. Additionally, between 2012 and 2015, 13.3 % 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 ([11]). The the long-term stagnation of nitrate concentrations in EU groundwater is a result of opposing trends for individual groundwater bodies across Member States ([12]).

The **Nitrates Directive** ([13]) **includes measures to prevent nitrates from agriculture polluting ground and surface waters by decreasing the nitrogen balance on farmland (also see the chapter on SDG 2 'Zero hunger' on page 75). However, continued effort is needed to restore optimal water quality across the EU. All Member States have set up nitrate action programmes in the designated nitrates vulnerable zones to prevent nitrates from agricultural sources polluting ground and surface waters.**

The **Farm to Fork Strategy** ([14]) **— a core component of the European Green Deal** ([15]) **— addresses these challenges by setting objectives to reduce nutrient loss from fertilisers (especially nitrogen and phosphorus) by at least 50 % by 2030. The aim is to reduce the overall use of fertilisers by at least 20 % by 2030 without compromising soil fertility.**

The **Zero Pollution Action Plan for Air, Water and Soil** ([16]) **released in May 2021 sets out key actions to speed up pollution reduction.**

Data on phosphate (PO_4) concentrations in EU rivers are available for 18 Member States (see page 156). They show a marked improvement between 2000 and 2011, after which, however, the trend levelled off and even started increasing again. Thus, while the phosphate concentration of 0.059 mg/L recorded in 2018 is considerably below the values reported in the early 2000s, it is 7.3 % higher than the low of 0.055 mg/L reported in 2013. 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 and 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 between 2008 and 2018 in some Member States ([18]).

Between 2013 and 2018, the concentration of phosphates in EU rivers increased by

7.3 %

The quality of most inland bathing waters is 'excellent'

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 grew steadily between 2011 and 2017. Since then, however, the share of excellent bathing sites has declined slightly. According to the EEA's assessment of European bathing water quality ([19]), 79.1 % of inland water bathing sites showed excellent bathing water quality in 2019.

79.1 %
of inland water bathing sites in the EU showed excellent bathing water quality in 2019

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.

The Bathing Water Directive ([20]) requires Member States to monitor and assess bathing water for at least two parameters of (faecal) bacteria. In addition, they must inform the public about bathing water quality and beach management, through so-called bathing water profiles. These profiles contain, for instance, information on the kind of pollution and sources that affect bathing water quality and are a risk to bathers' health. The Directive requires Member States to have reached at least 'sufficient' status at all sites by 2015.

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 a strong seasonal variability

Water stress occurs when water demand exceeds available water resources at a specific place and time. Situations where the ratio between water abstraction and long-term average available water resources exceeds 20 % are generally considered as an indication of water scarcity, while values above 40 % indicate severe water scarcity,

meaning the use of freshwater resources is unsustainable ([21]). 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.

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

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

tend to face water stress during autumn and winter.

At the European level, 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 ([22]).

The Water Framework Directive aims to ensure that water is used and managed in a sustainable manner. To reduce water stress and promote water resource efficiency, a new Regulation on minimum requirements for water reuse for agricultural irrigation ([23]) entered into force in June 2020. The new rules will start applying in June 2023.

Presentation of the main indicators

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).

X LONG TERM
Time series
too short

↑ SHORT TERM
2014–2019

Figure 6.1: Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, EU, 2010–2019
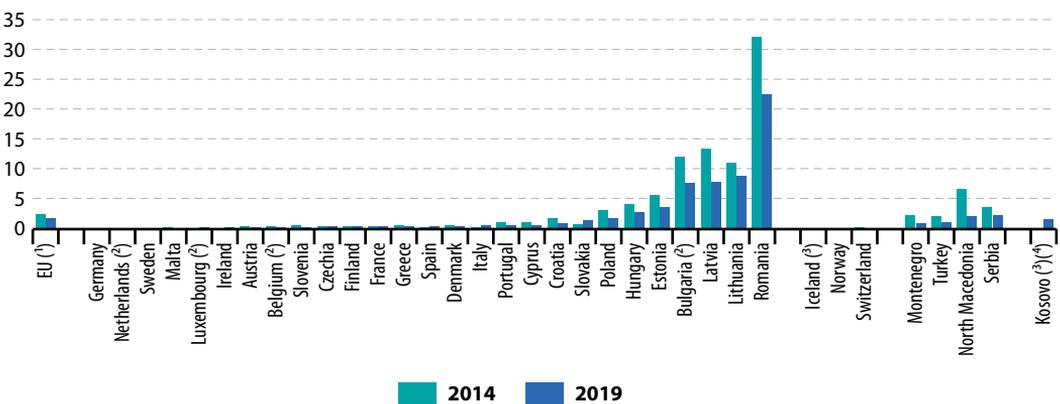(% of population)
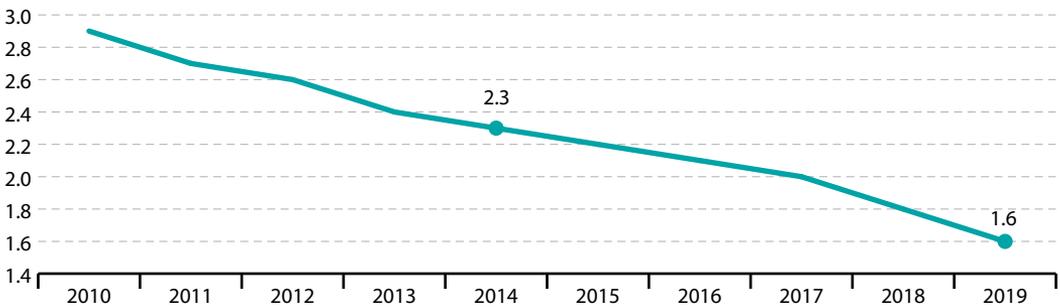
Note: Estimated data.
Compound annual growth rate (CAGR): – 7.0 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_06_10)

Figure 6.2: Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, by country, 2014 and 2019
(% of population)

2014   2019

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.
*Source:* Eurostat (online data code: sdg_06_10)

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

Population connected to at least secondary waste water treatment

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, by country, 2013 and 2018**
(% of population)
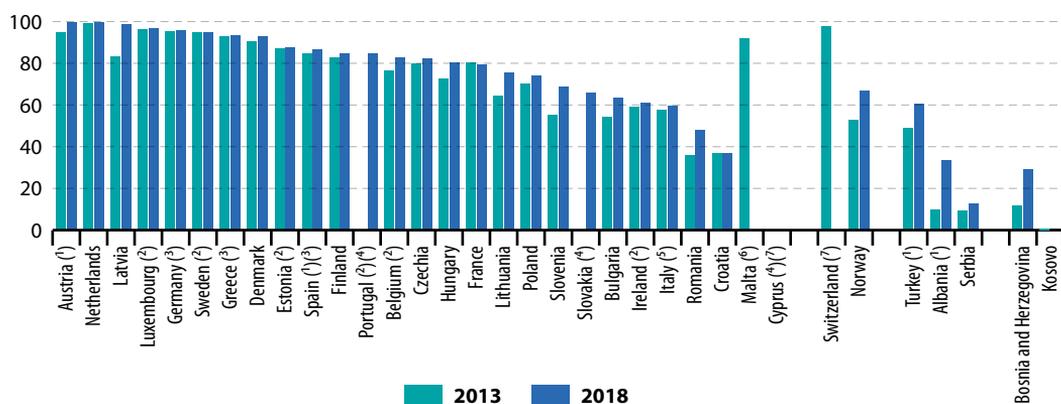
(¹) 2014 data (instead of 2013).
(²) 2017 data (instead of 2018).
(³) 2016 data (instead of 2018).
(⁴) No data for 2013.
(⁵) 2012 and 2015 data.

(⁶) Jumps in the time series are caused by performance problems with Malta's waste water treatment plants resulting in them not being classified as secondary treatment in all years.
(⁷) No data for 2018.

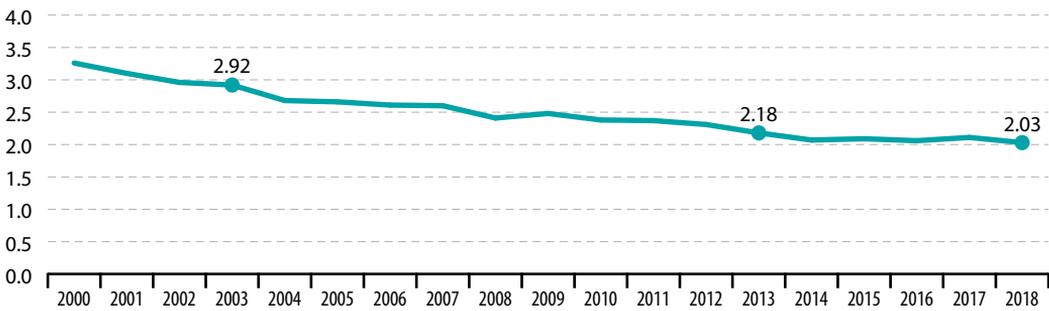*Source:* Eurostat (online data code: sdg_06_20)

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 concentrations of this parameter. 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.

LONG TERM
2003–2018

SHORT TERM
2013–2018

Figure 6.4: Biochemical oxygen demand in rivers, EU, 2000–2018
(mg O_2 per litre)

Note: 'EU' refers to an aggregate based on 16 Member States.
Compound annual growth rate (CAGR): − 2.4 % per year in the period 2003–2018; − 1.4 % per year in the period 2013–2018.
Source: EEA (Eurostat online data code: sdg_06_30)

Figure 6.5: Biochemical oxygen demand in rivers, by country, 2013 and 2018
(mg O_2 per litre)

2013   2018
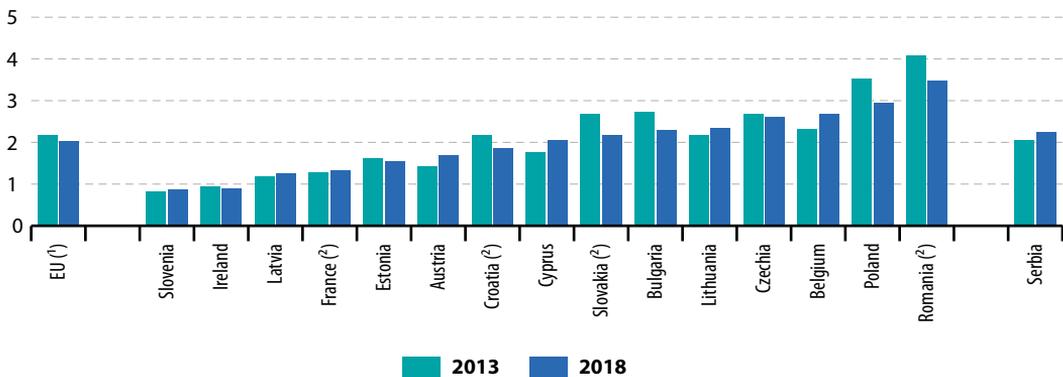
(¹) 'EU' refers to an aggregate based on 16 Member States (Finland is not shown in the graph due to the low number of measuring stations compared to the country size but is included in the aggregated EU data).
(²) 2018 data are estimated.
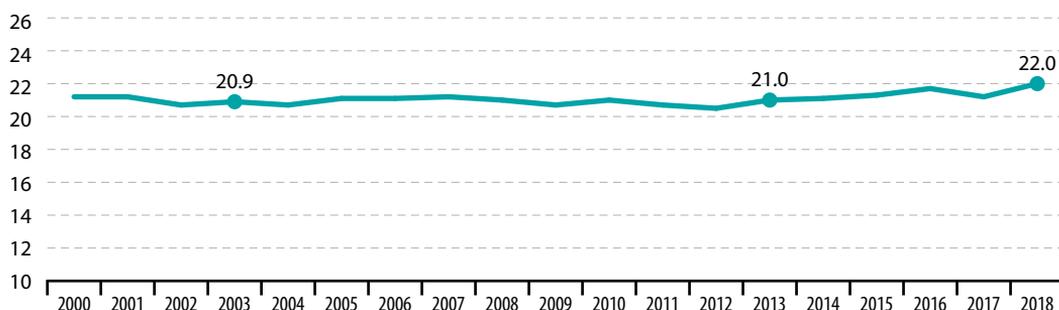*Source:* EEA (Eurostat online data code: sdg_06_30)

Nitrate in groundwater

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 6.6: Nitrate in groundwater, EU, 2000–2018
(mg NO_3 per litre)

Note: 'EU' refers to an aggregate based on 16 Member States.
Compound annual growth rate (CAGR): 0.3 % per year in the period 2003–2018; 0.9 % per year in the period 2013–2018.
Source: EEA (Eurostat online data code: sdg_06_40)

Figure 6.7: Nitrate in groundwater, by country, 2013 and 2018
(mg NO_3 per litre)

2013   2018
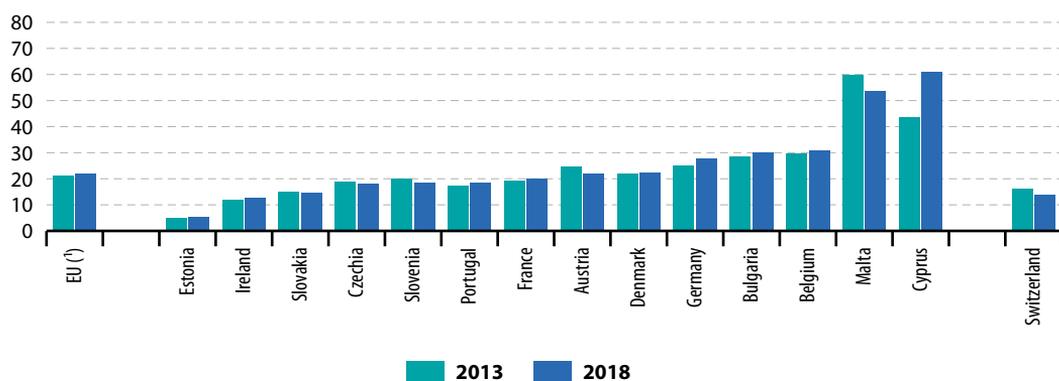
([1]) 'EU' refers to an aggregate based on 16 Member States (Finland and Spain are not shown in the graph due to the low number of measuring stations compared with the country size but are included in the aggregated EU data).
Source: EEA (Eurostat online data code: sdg_06_40)

Figure 6.8: Share of groundwater measuring stations with nitrate concentrations above 50 mg/L, EU, 2012–2015 average
(%)

- Stations above 50 mg NO$_3$ per litre
- Stations below 50 mg NO$_3$ per litre
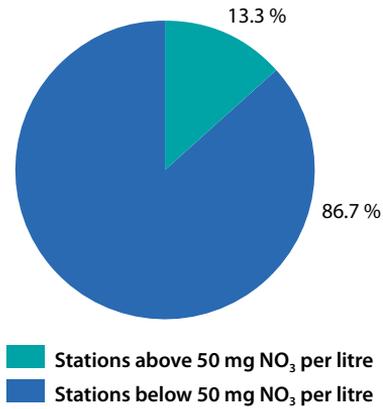
Source: European Commission services

LONG TERM
2003–2018

SHORT TERM
2013–2018

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, 2000–2018
(mg PO_4 per litre)

Note: 'EU' refers to an aggregate based on 18 Member States.
Compound annual growth rate (CAGR): – 2.2 % per year in the period 2003–2018; 1.4 % per year in the period 2013–2018.

Source: EEA (Eurostat online data code: sdg_06_50)

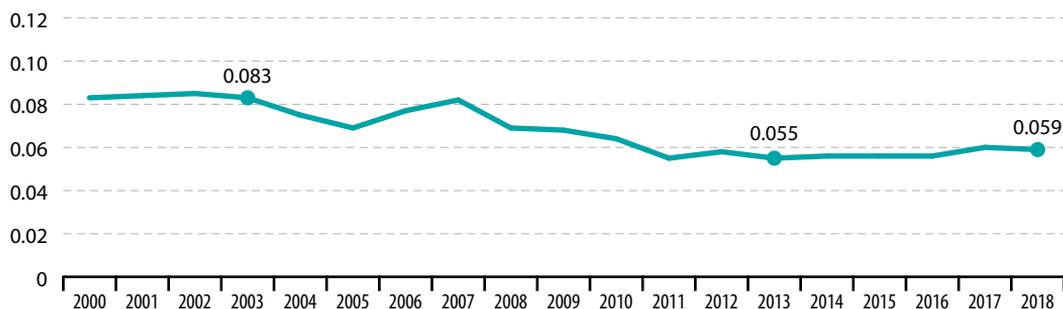**Figure 6.10:** Phosphate in rivers, by country, 2013 and 2018
(mg PO_4 per litre)

2013 ■ 2018
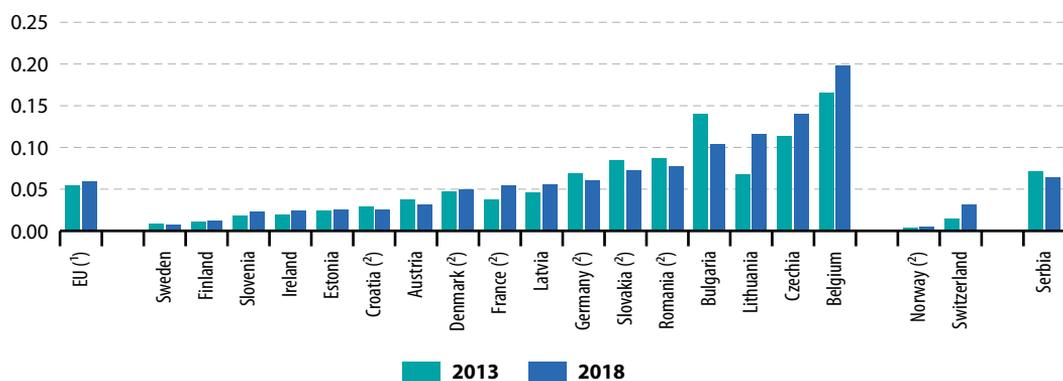
(¹) 'EU' refers to an aggregate based on 18 Member States (Spain is not shown in the graph due to the low number of measuring stations compared with the country size but is included in the aggregated EU data).
(²) 2018 data are estimated.

Source: EEA (Eurostat online data code: sdg_06_50)

Water exploitation index (WEI+)

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 to or greater than 40 % indicate situations of severe water scarcity ([24]), 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.

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

Figure 6.11: Water exploitation index (WEI+), EU, 2000-2017
(% of renewable water resources)
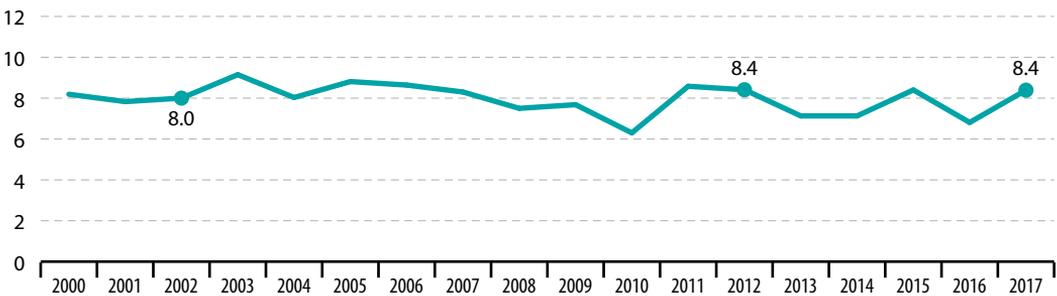
Source: EEA (Eurostat online data code: sdg_06_60)

Figure 6.12: Water exploitation index (WEI+), by country, 2012 and 2017
(% of renewable water resources)
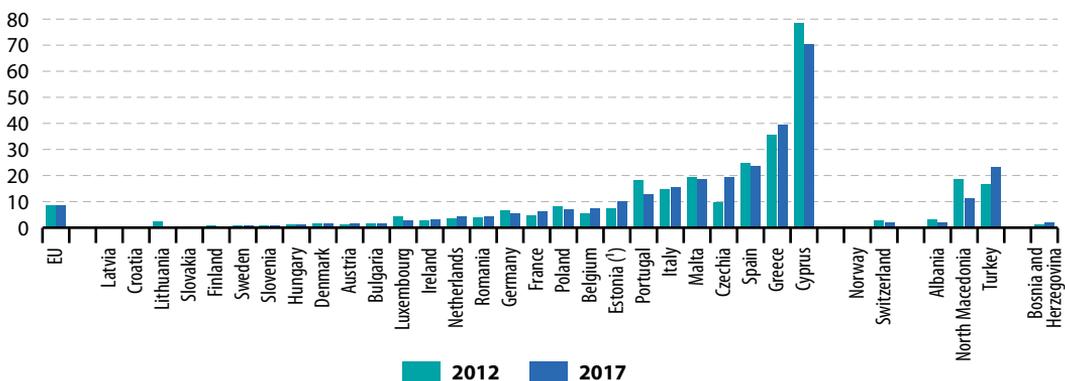
(¹) 2015 data (instead of 2017).
Source: EEA (Eurostat online data code: sdg_06_60)

Further reading on clean water and sanitation

EEA (2017), *Emissions of pollutants to Europe's waters — sources, pathways and trends*, ETC/ICM Report 3/2017, European Environment Agency, Copenhagen.

EEA (2018), *European waters — Assessment of status and pressures 2018*, ETC/ICM Report No 7/2018, European Environment Agency, Copenhagen.

EEA (2019), *The European environment — State and outlook 2020*, Chapter 4: Freshwater, European Environment Agency, Copenhagen.

European Commission (2019), *Commission Staff Working Document, Fitness Check of the Water Framework Directive, Groundwater Directive, Environmental Quality Standards Directive and Floods Directive*, SWD(2019) 439, Brussels.

European Commission (2019), *Commission Staff Working Document — Executive summary of the fitness check of the WFD, GWD and EQSD*, SWD(2019) 440, Brussels.

European Commission (2019), *Report from the Commission to the European Parliament and the Council on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)*, COM(2019) 95, Brussels.

European Commission (2019), *Integrated Assessment of the 2nd River Basin Management Plans. EU-wide storyline report*, Brussels.

UN Water (2018), *SDG 6 Synthesis Report 2018 on Water and Sanitation*.

Further data sources on clean water and sanitation

EEA, Urban waste water treatment.

EEA, Nutrients in freshwater in Europe.

EEA, Water intensity of crop production in Europe.

EEA, Use of freshwater resources in Europe.

Eurostat, Water statistics.

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 Commission (2020), *Tenth Report on the implementation status and programmes for implementation concerning urban waste water treatment*, COM(2020)   492 final.

(⁴) Chemical water quality is not evaluated in this report because of a lack of a comprehensive series of suitable data.

(⁵) 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*.

(⁶) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.

(⁷) European Commission (2021), *Environment action programme to 2030*.

(⁸) European Environment Agency (2018), *European waters — Assessment of status and pressures 2018*, EEA Report No 7/2018, p. 63.

(⁹) European Environment Agency (2017), *Emissions of pollutants to Europe's waters — sources, pathways and trends*, ETC/ICM report, p. 17.

(¹⁰) European Environment Agency (2018), *European waters — Assessment of status and pressures 2018*, EEA Report No 7/2018, p. 52.

(¹¹) European Commission (2018), *The Nitrates Directive: Reports from the Commission to the Council and the European Parliament on implementation of the Nitrates Directive (Article 11 reports), p. 5; data for EU based on European Commission (2020), Recommendations to the Member States as regards their strategic plan for the Common Agricultural Policy*, COM(2020) 846 final.

(¹²) European Environment Agency (2020), *Nutrients in freshwater in Europe*.

(¹³) 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*.

(¹⁴) European Commission (2020), *Farm to Fork Strategy — For a fair, healthy and environmentally-friendly food system*.

(¹⁵) European Commission (2019), *The European Green Deal*, COM(2019)   640 final.

(¹⁶) 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.

(¹⁷) European Environment Agency (2020), *Nutrients in freshwater in Europe*; and Eurostat (2018) *Agri-environmental indicator — risk of pollution by phosphorus*.

(¹⁸) Eurostat (2018), *Statistics Explained, Agri-environmental indicator - mineral fertiliser consumption*.

(¹⁹) *European Environment Agency (2020), European Bathing Water Quality in 2019, EEA Report No. 1/2020.*

(²⁰) 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*.

(²¹) European Environment Agency (2020), *Use of freshwater resources in Europe*.

(²²) 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.

(²³) 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*.

(²⁴) 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 low-carbon energy infrastructure.

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supports the SDGs

Everyday life depends on reliable and affordable energy services, such as electricity supply and heating and cooling, as well as transport services. Energy enables the smooth functioning of all economic sectors, from business and industry to agriculture. 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 Europe 2030 climate and energy framework, 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 170
	Final energy consumption	↘ (¹)	↓ (¹)	
Final energy consumption in households per capita		↗	↘	page 172
Energy productivity		↑	↑	page 173
Greenhouse gas emissions intensity of energy consumption (*)		↑	↑	SDG 13, page 285
Energy supply				
⊚ Share of renewable energy in gross final energy consumption		↑ (¹)	↗ (¹)	page 174
Energy import dependency		↘	↓	page 175
Access to affordable energy				
Population unable to keep home adequately warm		:	↑	page 176

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

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.1 in the annex.

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, progress in these areas over the past few years has been mixed. While the EU improved its energy productivity and the greenhouse gas emission intensity of energy consumption, data up to the year 2019 show that energy consumption itself has risen since 2014. However, due to a remarkable drop in energy consumption estimated for 2020, following measures taken in response to the COVID-19 pandemic, the EU might still meet its 2020 target. Achieving the 2030 target, however, is likely to remain difficult. In energy supply, the use of renewable energies further increased with moderate progress towards the 2030 target, while a dependence on energy imports from outside the EU keeps rising. On a positive note, the share of people who are able to keep their homes adequately warm has risen continuously.

Energy consumption

Increasing the EU economy's 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. As a consequence, the EU aims to improve energy efficiency along the whole energy supply chain.

The EU is not on track to meeting 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 is that energy consumption should not exceed 1 312 million tonnes of oil equivalent (Mtoe) of primary energy and 959 Mtoe of final energy (¹). By 2030, the EU should not consume more than 1 128 Mtoe of primary and 846 Mtoe of final energy (²).

1 351.9
Mtoe of primary energy were consumed in the EU in 2019

Primary energy consumption in the EU began the period from 2004 to 2019 on an upward trend that peaked in 2006, before falling to 1 351.9 Mtoe in 2019. Over the whole period, primary energy consumption fell by 141.8 Mtoe or 9.5 %. In comparison, final energy consumption fell by only 52.8 Mtoe or 5.1%, reaching 983.6 Mtoe in 2019. 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.

983.6
Mtoe of final energy were consumed in the EU in 2019

The EU aims to improve energy efficiency by 20 % by 2020, as set in the **Europe 2020 strategy** (³), and by at least 32.5 % by 2030, according to the **revised Energy Efficiency Directive** (⁴). The **European Green Deal** (⁵) includes energy efficiency as a key measure for reducing cross-sectoral GHG emissions. In addition, the Commission plans to propose a revision of the Energy Efficiency Directive and the 2030 energy efficiency target in June 2021 (⁶) following the increased climate ambition for the same year (⁷).

EU cohesion policy (2021–2027) focuses on investments in a Smarter Europe through innovation, digitalisation and economic transformation as well as in a greener, carbon-free Europe through climate action including energy efficiency. These two objectives should receive 65 % to 85 % of available funding (⁸).

Furthermore, the **'Next Generation EU' recovery plan** is the Union's economic response to the COVID-19 crisis. It includes the Recovery and Resilience Facility (RRF) worth EUR 672.5 billion, of which at least 37 % must be spent on climate action, in particular on improving the energy efficiency of buildings (⁹).

In addition, the **EU's Digital Single Market Strategy** (¹⁰) aims to help to improve energy efficiency at the household level, for example, through support for smart metering and smart cities.

However, increases in primary and final energy consumption 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 (¹¹). Following this increase, 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 (¹²).

If the short-term trend observed between 2014 and 2019 continues, the EU could miss both of its 2020 and 2030 reduction targets for primary and final energy consumption. However, preliminary data for 2020 indicate the EU might still meet its 2020 target due to a remarkable drop in energy consumption in that year. This is mainly a result of the measures taken to tackle the COVID-19 pandemic and the related restrictions on public life. In addition, long-term trends such as the further increase in energy efficiency and of renewable energies in the energy mix (¹³), as well as comparatively mild weather in 2020, may further help to reduce energy consumption (¹⁴).

EU citizens did not reduce their energy consumption at home between 2014 and 2019

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, the energy performance of buildings, the use and efficiency of electrical appliances, and the behaviour and the 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).

550
kgoe of final energy were consumed by each EU inhabitant at home in 2019

In 2019, the average household energy consumption was 550 kilograms of oil equivalent (kgoe) per EU inhabitant, which is 3.8 % more than in 2014. The slight increase over the past five years is a result of an exceptionally low household

energy consumption in 2014 when a very warm European winter reduced heating demand. However, household energy consumption appears to have stagnated in other years covered by the period.

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 2004, energy consumption per EU inhabitant has fallen by 9.7 %, with a slight downward trend in total household energy consumption offsetting a 3.2 % or 14.1 million [15] increase in the population over the same period.

The EU has reduced its energy intensity and related greenhouse gas emissions

Historically, economies have developed in line with an increase in consumption as greater resource and energy use spurs on economic growth. However, to tackle the climate crisis, energy consumption needs to fall [16]. Green growth strategies such as the European Green Deal therefore call for a 'decoupling' of economic growth from energy consumption. This would allow the economy to continue to grow while reducing its energy consumption (see page 402 for a detailed explanation of the decoupling concept).

Absolute decoupling of gross available energy from GDP occurred in the EU between 2004 and 2019

Recent trends in Europe point to such a decoupling of economic growth from energy consumption, measured here using gross domestic product (GDP) and gross available energy (GAE) respectively. Between 2004 and 2014, GAE in the EU fell by 10.6 % before more or less stabilising up to 2019. Over the same 15-year period, GDP grew by 22.2 % with a dip in 2009 during the economic crisis [17]. As a result,

energy productivity — which measures GDP per unit of energy input — has increased continuously since 2004, reaching EUR 8.4 per kgoe in 2019, with all Member States contributing to this positive trend.

The way to weaken the exacerbating effects of energy consumption on climate change is to reduce its greenhouse gas (GHG) intensity — the ratio between energy-related GHG emissions and gross inland energy consumption. Between 2004 and 2019 [18], GHG emissions from fossil fuel combustion for energy generation fell by 22.6 % while energy consumption fell by only 8.8 %, leading to a 15.1 % fall in GHG intensity. The greater reduction in GHG emissions compared with the reduction in energy consumption was mainly the result of a rising share of renewable energies in the energy mix and falling consumption of primarily oil products and coal. The increased use of gas in some countries has also contributed to this trend as it tends to be less GHG intensive than other fossil fuels [19]. However, the two variables remain strongly linked.

In 2019, the EU's energy productivity was

EUR 8.4
per kgoe

Energy supply

To achieve SDG 7's aim of ensuring an affordable and clean energy system, the EU is seeking to increase the share of renewable energy in gross final energy consumption to 20 % by 2020 [20] and to at least 32 % by 2030 [21]. Most renewable energy sources are considered to be practically inexhaustible or able to renew within a human lifetime. In contrast, fossil energy sources take millions of years to regenerate and are the main source of man-made GHG emissions, thus contributing significantly to climate change. The EU highlights the importance of renewable energy sources to the goal of decarbonising the EU energy system (see also the chapter on SDG 13 'Climate Action' on page 273).

The EU must also reduce its dependency on energy imports, which mostly comprise natural gas, crude oil and coal imports. Importing energy exposes the EU economy 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 become more energy independent through increased domestic energy production (in particular from renewable energy sources), increased energy efficiency and moderation of demand, as well as through the implementation of infrastructure which will allow clean energy to be distributed across the EU.

15.1 %
decrease in the GHG intensity of EU gross inland energy consumption between 2004 and 2019

reached 19.7 %. Reductions in investment costs, more efficient technologies, supply chain improvements and competitive support schemes for renewable energy sources have driven this increase ([22]). Due to this steady growth, the EU is on track to meeting its 2020 target to increase the share of renewable energy to 20 % by 2020. But current progress is not fast enough to meet the 32 % target in 2030.

19.7 %
of the energy consumed in the EU in 2019 came from renewable sources

The share of renewable energy grew in all of the three areas monitored here, namely electricity, heating and cooling, and transport. In 2019, the share of renewables was highest in electricity generation at 34.1 %, followed by heating and cooling at 22.1 %, and transport at 8.9 %. Since 2004, the share of renewable energy in transport has increased almost six-fold, up from only 1.6 %. 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 ([23]). The second largest increase was realised in electricity generation where renewables doubled their share, closely followed by heating and cooling.

The share of renewables has kept rising, but progress has slowed

Use of renewable energy has grown continuously in the EU, with its share doubling since 2004 when renewables covered only 9.6 % of gross final energy consumption. By 2019, this figure had

The **Europe 2020 strategy** ([24]) **set a target to increase the share of renewable energy sources in final energy consumption to 20 % by 2020. By 2030, the share should further increase to at least 32 %, according to the revised Renewable Energy Directive** ([25]). **The Commission plans to propose a revision of the Renewable Energy Directive and of the 2030 renewable energy target in June 2021** ([26]) **following the increased climate ambition for the same year** ([27]).

The **European Green Deal** ([28]) **envisages the decarbonisation of Europe's energy systems in order to reach climate neutrality by 2050. For this purpose, the EU will turn towards**

a **fully integrated, interconnected and digitalised renewable energy system, while at the same time ensuring security of supply at affordable prices.**

The **Sustainable and Smart Mobility Strategy** ([29]), **adopted in December 2020, and the forthcoming RefuelEU aviation and FuelEU maritime initiatives aim to boost the deployment of renewable and low-carbon fuels in the transport sector.**

Moreover, **EU cohesion policy funds** (2021– 2027) ([30]) **including the 'Next Generation EU' recovery plan provide funding for investments in renewable energies.**

In 2019, 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 56.4 % followed by Finland and Latvia with shares of 43.1 % and 41.0 %, respectively. These particularly high shares were reached through the use of hydropower and solid biofuels. 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 of renewable energy sources over the past decade, fuel imports from non-EU countries remained almost stable and the EU's energy dependence has not improved over the past two decades. While 56.9 % of the gross available energy within the EU was imported in 2004, this share had risen to 60.7 % by 2019. This increase in the EU's energy dependence was mainly due to growth in the shares of imported natural gas and solid fuels, which rose by 22.9 and 7.9 percentage points, respectively. The rise in imports can be explained by a reduction in primary production within in the EU because of exhausted or uneconomical domestic sources ([31]).

60.7 %
of the energy consumed in the EU in 2019 was imported

In 2019, imports were highest for oil and petroleum products (96.8 % imported), followed by natural gas (89.7 % imported) and solid fuels (predominantly coal) (44.0 % imported). Imports of renewable energy including biofuels accounted for 8.3 % of gross available renewable energy in 2019 and just 1.4 % of total imports ([32]).

> The **Energy Security Strategy** ([33]) **outlines the need to enhance domestic energy production, including the need to increase local renewable energy production and energy efficiency and to provide missing infrastructure.**

Russia continued to be the main supplier of energy to the EU in 2019, accounting for 41.1 % of gas imports, 29.0 % of petroleum product imports and 46.7 % of solid fuel imports from outside the EU. The next largest suppliers of gas were European countries that are not part of the EU (mainly Norway), which delivered 19.4 % of gas imports. For oil and petroleum products, Africa and the Middle East were the next largest suppliers after Russia, both at around 17 %. The second largest source for solid fuels was North America at 20.0 % ([34]). 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 2019, all Member States were net importers of energy, with 17 importing more than half their total energy consumption from other countries (EU countries and non-EU countries). Countries with the highest shares of imports in 2019 were the island countries Malta (97.2 %) and Cyprus (92.8 %), as well as Luxembourg (95.1 %), which covered virtually all of their energy needs with imports.

Between 2014 and 2019, the greatest progress in reducing overall energy dependence was observed in Estonia. This was realised through an increase in domestic renewable energy production (mainly bioenergy) and a reduction of energy consumption which led to a reduced need for fossil fuel imports ([35]).

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 [36]. Poverty alleviation can therefore improve the ability to keep a home warm (or cool) by enabling people to pay for their energy costs and to invest and shift their behaviour to reduce their overall energy needs (see also the chapter on SDG 1 'No Poverty' on page 57).

Access to affordable energy has improved since 2012

The EU has made some progress on improving access to affordable energy over the past few years. Since 2012, the share of people unable to keep their homes adequately warm has steadily decreased, reaching 6.9 % in 2019 — 3.5 percentage points lower than in 2014. This overall figure, however, masks that almost a fifth of the poorer EU population suffered from energy poverty. In 2019, 18.2 % of people with an income below the poverty threshold reported an inability to keep their home adequately warm, in contrast to only 4.6 % of people that are above the poverty threshold.

6.9 %
of the EU population were unable to keep their home adequately warm in 2019

In 2019, 21 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 access to heating. In contrast,

The **European Pillar of Social Rights** [37] lists energy among the essential services that everyone should have access to. Principle 20 states that 'Everyone has the right to access essential services of good quality, including water, sanitation, energy, transport, financial services and digital communications. Support for access to such services shall be available for those in need'.

In 2018, the European Commission launched the **EU Energy Poverty Observatory** [38], an initiative to aid Member States in their efforts to decrease energy poverty and ensure access to affordable energy. An online data platform seeks to improve monitoring, measuring and the sharing of best practices on combatting energy poverty between countries.

In addition, the European Commission issued **recommendations on energy poverty** [39] as part of the **renovation wave** [40], proposing actions for Member States to alleviate energy poverty and provides guidance for monitoring. In support of this, the **Just Transition Fund** provides money for improving the energy efficiency of buildings as well as for fighting energy poverty and providing access to clean, affordable energy [41].

lack of access to affordable heating seemed to be a problem particularly in southern and south-eastern Europe. This distribution can be traced back mainly to poor building energy efficiency, including the lack of suitable heating systems and insulation, leading to low indoor temperatures during winter. Other reasons include the general income level which affects housing standards and ability to pay for fuels and the existence and design of financial interventions by the respective governments [42].

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 total energy demand as transformational output (for example, in form of electricity or heat produced). It is defined as: primary energy consumption – transformation losses – statistical differences.

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
2004–2019
* **

SHORT TERM
2014–2019
* **

* 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 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, 2000–2019
(Million tonnes of oil equivalent (Mtoe))
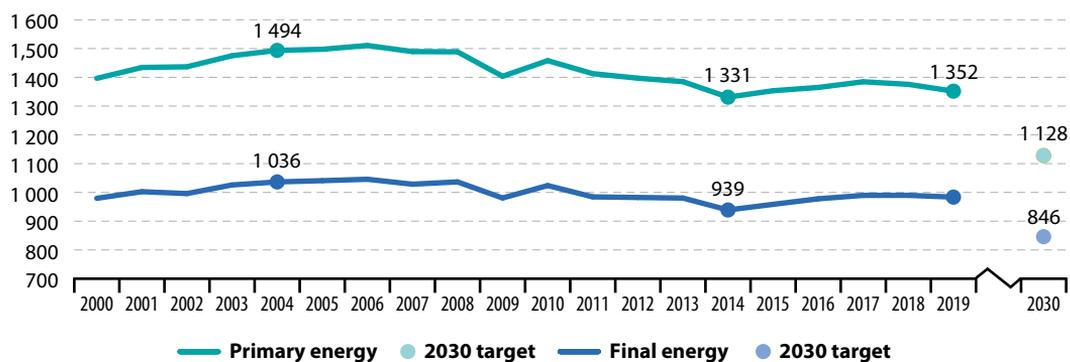
Compound annual growth rate (CAGR): primary energy consumption: – 0.7 % per year (observed) and – 1.1 % per year (required to meet target) in the period 2004–2019; 0.3 % per year (observed) and – 1.0 % per year (required to meet target) in the period 2014–2019; final energy consumption: – 0.3 % per year (observed) and – 0.8 % per year (required to meet target) in the period 2004–2019; 0.9 % per year (observed) and – 0.6 % per year (required to meet target) in the period 2014–2019.

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

Figure 7.2: Primary energy consumption, by country, 2014 and 2019
(tonnes of oil equivalent per capita)
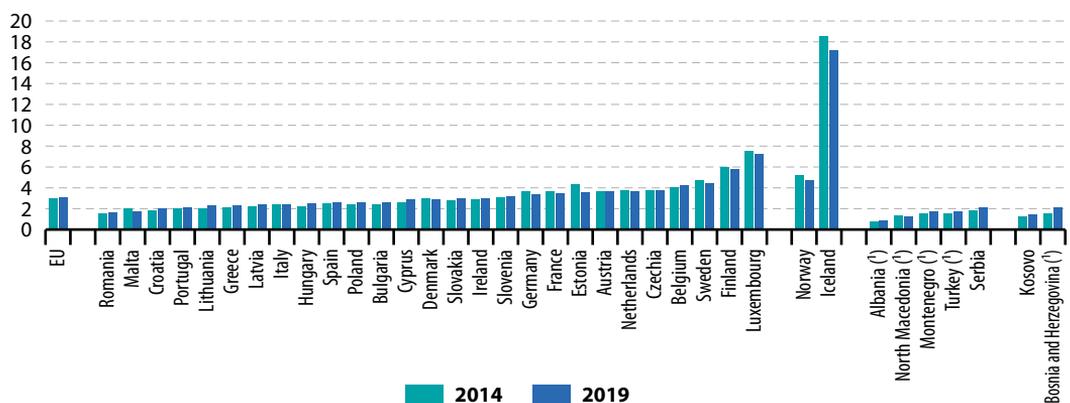
(¹) 2018 data (instead of 2019).
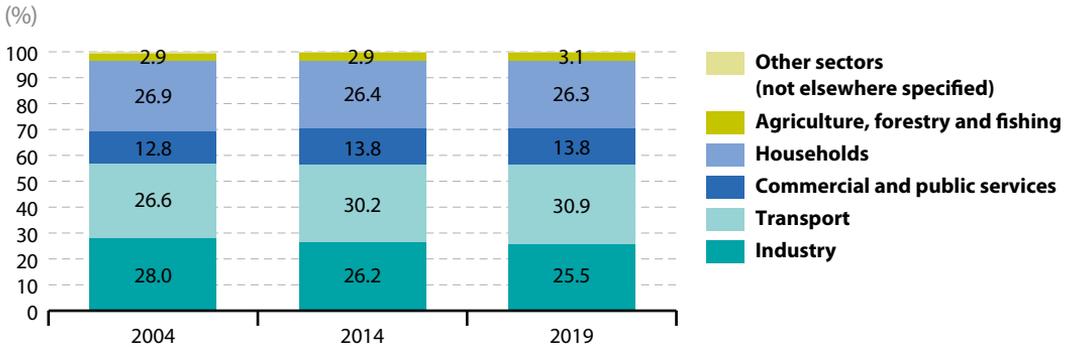
Source: Eurostat (online data code: sdg_07_10)

Figure 7.3: Primary energy consumption, by fuel type, EU, 2004, 2014 and 2019

(%)

Legend:
- **Other**
- **Nuclear heat**
- **Renewables and biofuels**
- **Oil and petroleum products (excluding biofuel portion)**
- **Natural gas**
- **Solid fossil fuels**

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, 2004, 2014 and 2019

(%)

Legend:
- **Other sectors (not elsewhere specified)**
- **Agriculture, forestry and fishing**
- **Households**
- **Commercial and public services**
- **Transport**
- **Industry**

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

Source: Eurostat (online data code: nrg_bal_c)

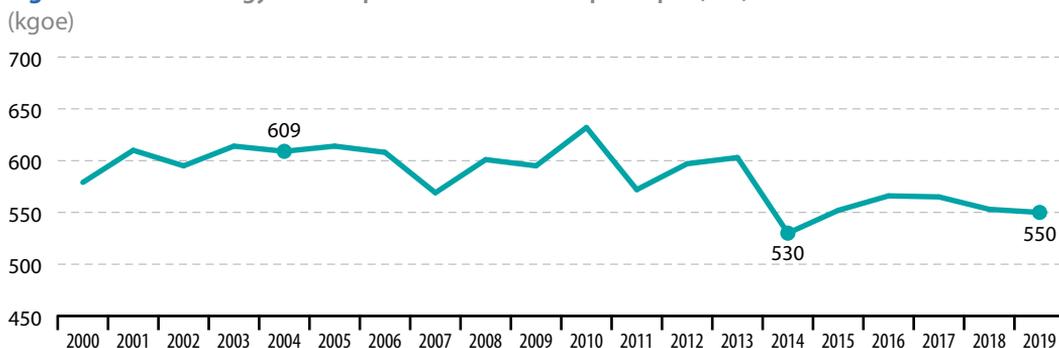## Final energy consumption in households per capita

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 weather.

Figure 7.5: Final energy consumption in households per capita, EU, 2000–2019
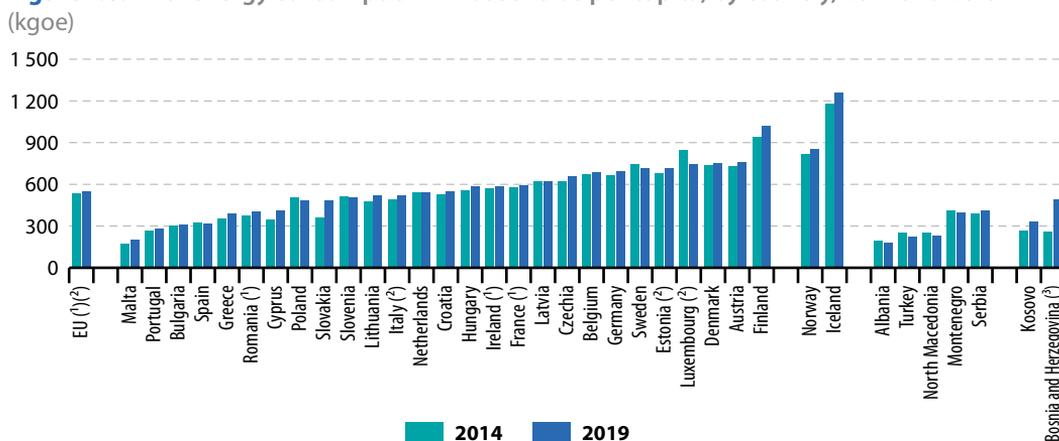(kgoe)

Note: Multiple breaks in time series; 2018 and 2019 data are provisional estimates.
Compound annual growth rate (CAGR): – 0.7 % per year in the period 2004–2019; 0.7 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_07_20)

Figure 7.6: Final energy consumption in households per capita, by country, 2014 and 2019
(kgoe)

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

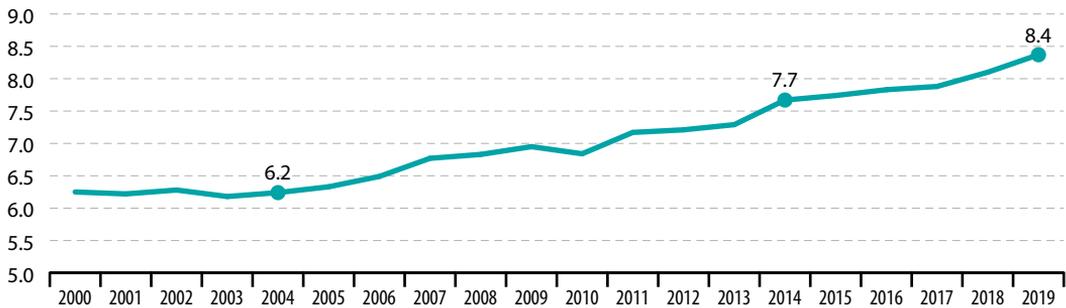*Source:* Eurostat (online data ode: sdg_07_20)

LONG TERM
2004–2019

SHORT TERM
2014–2019

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 (⁴³). 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, 2004–2019

(%)
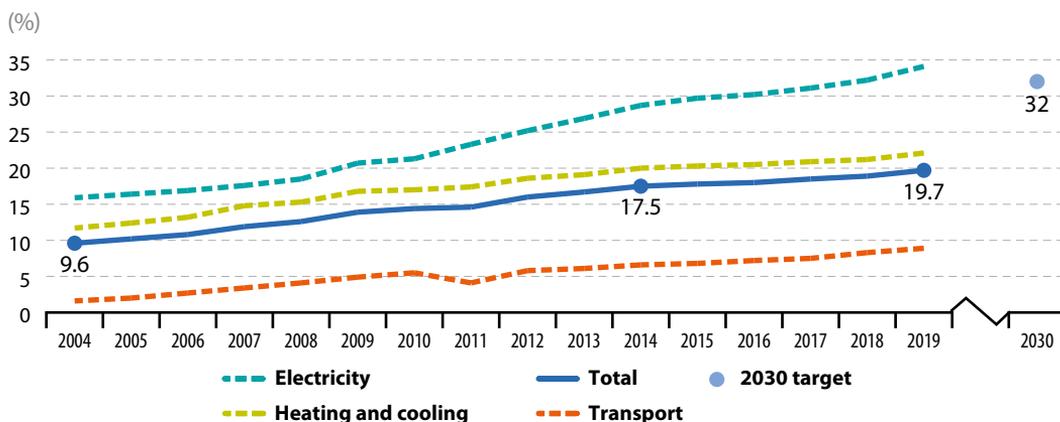
Compound annual growth rate (CAGR) for the total: 4.9 % per year (observed) and 4.7 % per year (required to meet target) in the period 2004–2019; 2.5 % per year (observed) and 3.9 % per year (required to meet target) in the period 2014–2019.

Source: Eurostat (online data code: sdg_07_40)

Figure 7.10: Share of renewable energy in gross final energy consumption, by country, 2014 and 2019

(%)
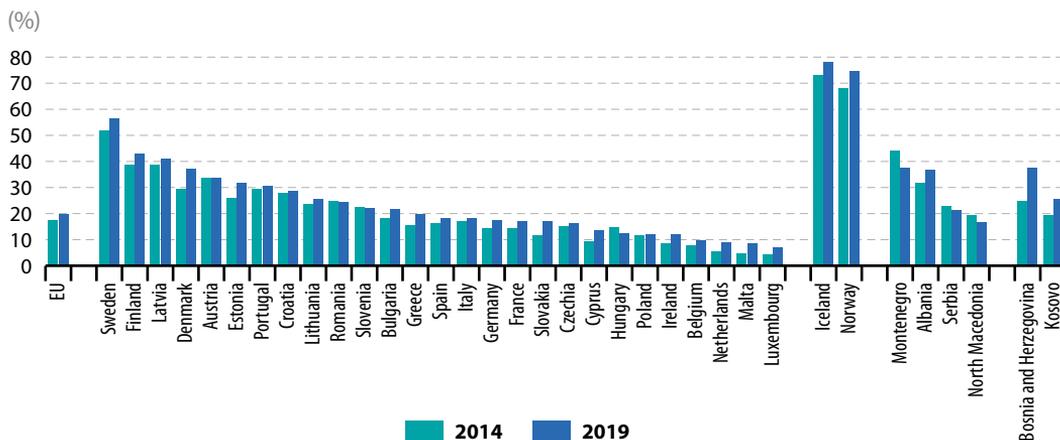
Source: Eurostat (online data code: sdg_07_40)

Energy import dependency

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.

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 7.11: Energy import dependency, by product, EU, 2000–2019
(% of imports in gross available energy)

- - - Oil and petroleum products (excluding biofuel portion)
- - - Natural gas ——— Total - - - Solid fossil fuels
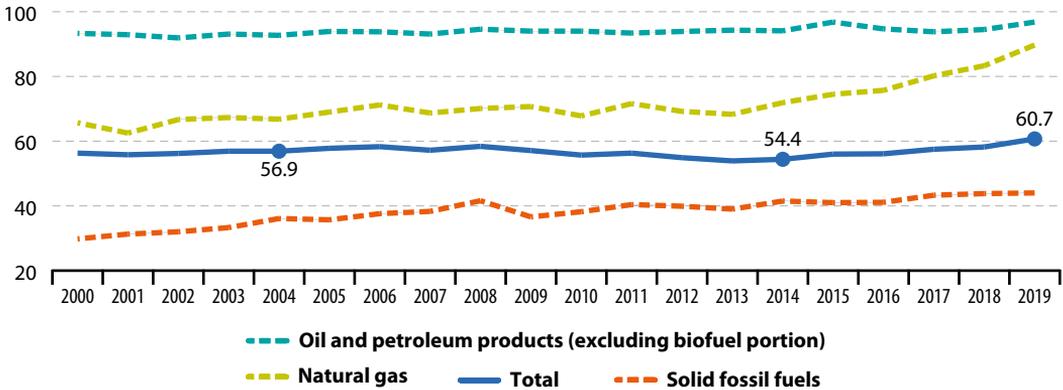
Note: 'Total' is not the average of the other three fuel categories shown. It also includes other energy sources, such as renewable energy or nuclear energy, which are treated as domestic sources.
Compound annual growth rate (CAGR) for the total: 0.4 % per year in the period 2004–2019; 2.2 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_07_50)

Figure 7.12: Energy import dependency, by country, 2014 and 2019
(% of imports in gross available energy)
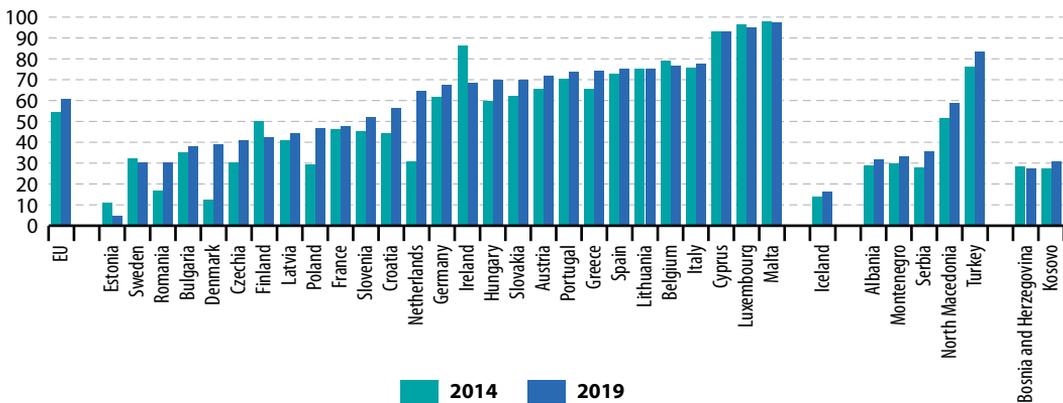
■ 2014 ■ 2019

Source: Eurostat (online data code: sdg_07_50)

Population unable to keep home adequately warm

This indicator monitors access to affordable energy throughout the EU. 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, 2010–2019
(% of population)
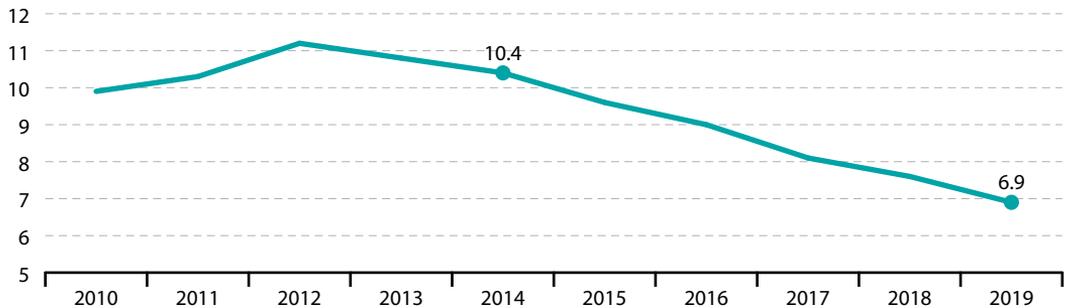
Note: Estimated data.
Compound annual growth rate (CAGR): – 7.9 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_07_60)

Figure 7.14: Population unable to keep home adequately warm, by country, 2014 and 2019
(% of population)
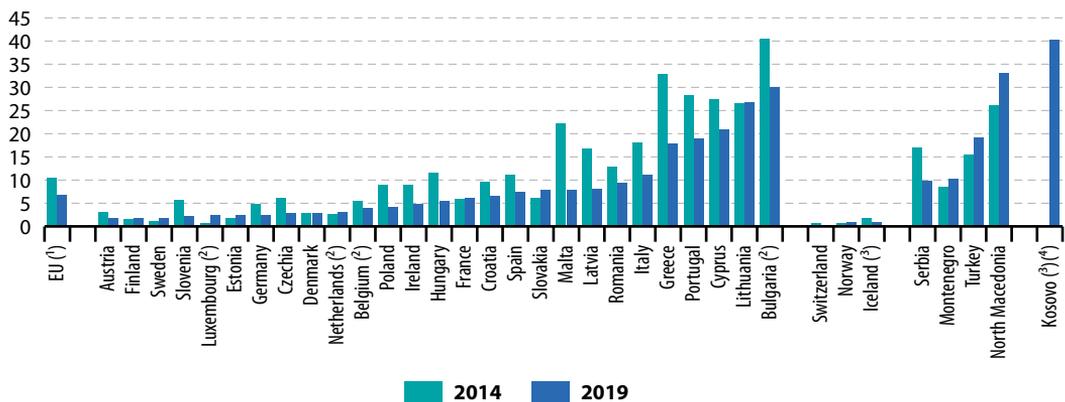
2014   **2019**

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.

(³) 2018 data (instead of 2019).
(⁴) No data for 2014.

Source: Eurostat (online data code: sdg_07_60)

Further reading on affordable and clean energy

European Commission, *Energy*.

European Commission, *Clean energy for all Europeans package*.

EEA (2020), *Trends and projections in Europe 2020 — Tracking progress towards Europe's climate and energy targets*, Report No. 13/2020, European Environment Agency, Copenhagen.

European Commission (2019), *2020 report on the State of the Energy Union*, COM(2020) 950 final, Brussels.

European Commission (2020), *Renewable energy progress report*, COM(2020) 952 final, Brussels.

European Commission (2020), *Energy efficiency progress report*, COM(2020) 954 final, Brussels.

European Commission, EU Energy Poverty Observatory, *What is energy poverty?*

European Social Policy Network (2020), *Access to essential services for people on low incomes in Europe. An analysis of policies in 35 countries*, European Commission, Brussels.

Further data sources on affordable and clean energy

European Union (2020), EU energy in figures — Statistical pocketbook 2019.

European Commission, EU Energy Poverty Observatory.

Eurostat, Energy statistics introduced — Statistics Explained.

Eurostat, Renewable Energy Statistics — Statistics Explained.

Eurostat, Energy production and imports — Statistics Explained.

Odyssee-Mure, Key indicators on energy efficiency.

Notes

(^{1}) Eurostat (2021), *Energy saving statistics: Energy efficiency targets for 2020 and 2030 — Statistics Explained*.
(^{2}) 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*.
(^{3}) European Commission (2010), *Europe 2020 — A strategy for smart, sustainable and inclusive growth*, COM(2010) 2020 final, 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 (2019), *The European Green Deal*. COM(2019) 640 final, Brussels.
(^{6}) European Commission (2019), *The European Green Deal — Annex*, COM(2019) 640 final, Brussels.
(^{7}) European Commission (2021), *European Climate Law*, Brussels.
(^{8}) European Commission (2020), *New Cohesion Policy*, Brussels.
(^{9}) European Commission (2020), *NextGenerationEU: Commission presents next steps for EUR 672.5 billion Recovery and Resilience Facility in 2021 Annual Sustainable Growth Strategy*, September 2020, Brussels.
(^{10}) European Commission (2015), *A digital single market strategy for Europe*, COM(2015) 192 final, Brussels.
(^{11}) European Commission (2019), *Energy efficiency progress report.* COM(2019) 224 final, Brussels.
(^{12}) 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.
(^{13}) 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 that 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.
(^{14}) 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.
(^{15}) Source: Eurostat (online data code: demo_gind).
(^{16}) European Commission (2019), *Clean energy — Factsheet 11. December 2019*, Brussels.
(^{17}) Source: Eurostat (online data codes: nrg_bal_c and nama_10_gdp).
(^{18}) 2019 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-2.
(^{19}) Source: Eurostat (online data codes: nrg_bal_c); IPCC (2021), *Emission factor database (EFDB)*.
(^{20}) European Parliament and the Council of the European Union (2009), *Directive 2009/28/EC on the promotion of the use of energy from renewable sources*.
(^{21}) 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*.
(^{22}) European Commission (2019), *Renewable energy progress report*, COM(2019) 225 final, Brussels, p. 4.
(^{23}) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources*.
(^{24}) European Commission (2010), *Europe 2020 — A strategy for smart, sustainable and inclusive growth*, COM(2010) 2020 final, Brussels.
(^{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}) European Commission (2019), *The European Green Deal — Annex*, COM(2019) 640 final, Brussels.
(^{27}) European Commission (2021), *European Climate Law*, Brussels.
(^{28}) European Commission (2019), *The European Green Deal*,COM(2019) 640 final, Brussels.
(^{29}) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM(2020) 789 final.
(^{30}) European Commission (2015), *European structural and investment funds 2014–2020: Official texts and commentaries*, Brussels.
(^{31}) Source: Eurostat (online data code: nrg_bal_c). Primary production.
(^{32}) Source: Eurostat (online data code: nrg_bal_c).
(^{33}) European Commission (2014), *European energy security strategy*, COM(2014) 330 final, Brussels.
(^{34}) 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.
(^{35}) Source: Eurostat (online data code: nrg_bal_c). Primary production, Imports, GEA.
(^{36}) COM (2020). *Commission Recommendation on Energy Poverty,* COM(2020) 1563, Brussels.
(^{37}) European Commission (2017), *The European Pillar of Social Rights in 20 principles.*
(^{38}) European Commission (2018), *EU Energy Poverty Observatory.*
(^{39}) European Commission (2020), *Commission Recommendation on Energy Poverty*, COM(2020) 1563, Brussels.

(⁴⁰)European Commission (2020), *Renovation Wave*, Brussels.

(⁴¹) EU Commission (2020), *The Just Transition Mechanism: making sure no one is left behind*.

(⁴²) 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.

(⁴³) 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.
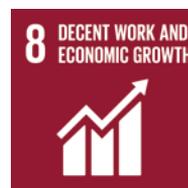
eurostat
supports the SDGs

Inclusive green economic growth and decent employment are of key importance for the development and prosperity of European countries and for the well-being and personal fulfilment of individuals. For economic growth to be truly sustainable, it needs to 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. Sustainable economic growth thus also means generating employment opportunities for all and improving working conditions for those already in employment and 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?
Sustainable economic growth			
Real GDP	↗	↗	page 189
Investment share of GDP	↘	↑	page 190
Resource productivity (*)	↑	↑	SDG 12, page 262
Employment			
Young people neither in employment nor in education and training (NEET)	↗	↑	page 191
Employment rate	↗	↗	page 192
Long-term unemployment rate	↑	↑	page 193
Inactive population due to caring responsibilities (*)	↘ (¹)(²)	↓ (¹)	SDG 5, page 137
Decent work			
People killed in accidents at work	:	↑	page 194
In work at-risk-of-poverty rate (*)	:	↑	SDG 1, page 70

(*) Multi-purpose indicator.
(¹) Trend refers to evolution of gender gap.
(²) Past 13-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.1 in the annex.

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

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

Sustainable economic growth

While economic growth is an important driver of prosperity and society's well-being, it can also harm the environment that it depends on. Therefore, 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 been enjoying economic growth, which has also become more sustainable. However, the positive trend has been halted by the ongoing COVID-19 pandemic.

After several years of continuous growth, the EU economy contracted by 6.2 % in 2020

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.

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 ([1]). However, in 2020 the economy was hit by the global COVID-19 pandemic, which resulted in a 6.2 % contraction of real GDP compared with 2019. This was the strongest drop observed since at least the mid-1990s, overtaking the previous 'record' drop of 4.6 % in 2009, following the financial crisis of 2007 to 2008. As a result of the 2020 recession, real GDP per capita in the EU stood at EUR 26 230, which was 9.0 % higher than in 2005 and only slightly above 2015 levels. Nevertheless, the EU economy shows signs of recovery and total real GDP is forecast to grow by 4.2 % in 2021 ([2]).

26 230
EUR was the average real GDP per capita in the EU in 2020

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 0.3 percentage points compared with the previous year as a result of the pandemic, reaching 22.1 %. This drop interrupted a period of a steady growth in investment observed since 2014 and can be attributed to a decrease in business investment in 2020.

22.1 %
of GDP was invested in the EU in 2020

As part of the **European Green Deal** (³), the European Commission set out the **Sustainable Europe Investment Plan (SEIP)** as an investment pillar to mobilise at least EUR 1 trillion in sustainable investments. The **InvestEU Programme** is part of and complementary to the SEIP and dedicates at least 30 % of its funds to combating climate change.

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** is a centrepiece of NextGenerationEU, with EUR 672.5 billion in loans and grants available to support reforms and investments undertaken by EU countries. The aim is to mitigate

the economic and social impact of the pandemic and make European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transitions.

The EU **Capital Markets Union** aims to tackle investment shortages head-on by increasing and diversifying business funding and investment financing.

On 4 March 2021, the Commission put forward an ambitious **European Pillar of Social Rights Action Plan** (⁴). The Action Plan proposes concrete actions to accelerate the implementation of the principles of the European Pillar of Social Rights for a fair, inclusive and resilient socio-economic recovery.

Economic growth in the EU has become more sustainable

Using natural resources more efficiently reduces pressure on the environment from production and consumption and increases an economy's competitiveness. Resource productivity, measured as GDP divided by domestic material consumption (DMC), monitors the relationship between what an economy produces and the physical materials it uses (⁵). Hence, it depicts an aggregate measure of an economy's material efficiency.

The EU has increased its resource productivity by 36.4 % since 2004, reaching EUR 2.1 per kilogram in 2019. This favourable development can be attributed to GDP growth accompanied by a 10.4 % decrease in DMC, which reflects such

2.1
EUR of GDP were produced in the EU for each kilogram of DMC used in 2019

factors as the EU's long-term shift towards a service economy, globalisation and increasing reliance on imports (⁶).

A closer look at the underlying developments from 2004 to 2019 shows some initial years of coupling of DMC and GDP until the onset of the economic crisis in 2008, followed by a period of relative decoupling between the two indicators in the aftermath of the crisis and up to 2019. The increase in resource productivity should therefore be interpreted with caution and should not be contributed entirely to the success of environmental policy. It is likely that the observed trend was influenced by a number of other factors, such as a drop in DMC due to the economic crisis (⁷). Indeed, the past five years have seen a 3.9 % growth in the EU's material consumption alongside the strong economic

Relative decoupling of DMC from GDP occurred in the EU between 2014 and 2019

expansion mentioned previously. Consequently, the short-term trend has only seen a relative decoupling of DMC from GDP.

Employment

Decent employment for all — including women, people with disabilities, youth, the elderly 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 employment rate in the EU decreased in 2020 as a result of the COVID-19 pandemic

Prior to the COVID-19 pandemic, the EU employment rate had exhibited an upward trend, reaching a record high of 73.1 % in 2019. The growth over the past decade can be partly attributed to increased participation in the labour force by older workers and women [8]. However, as a consequence of the coronavirus pandemic and its severe socio-economic impacts, the employment rate fell back to 72.4 % in 2020, which is the same level as in 2018.

72.4 %
of 20- to 64-year-olds were employed in the EU in 2020

The EU supports growth, job creation and competitiveness through funding instruments such as the **European Fund for Strategic Investments**, the **European Social Fund** and its successor, the **European Social Fund Plus**, the **European Structural and Investment Funds**, the **Programme for Employment and Social Innovation** (EaSI), the **Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises** (COSME), the **Emergency Support Instrument**, the **Common Agriculture Policy**, the **Connecting Europe Facility** and the **Creative Europe Programme**.

The **European Pillar of Social Rights**, jointly proclaimed by the European Commission, the European Parliament and the European Council in 2017, sets out 20 key principles and rights essential for fair and well-functioning labour markets and social protection systems. The **European Pillar of Social Rights Action Plan** [9], adopted in 2021, turns the Principles into concrete actions to benefit citizens. It also proposes an ambitious employment target of 78 % of the population aged 20 to 64 for the EU to reach by 2030. In support of this, the Action Plan proposes to halve the gender employment gap by 2030 compared with 2019 and to decrease the rate of young people neither in employment nor in education or training (NEET) aged 15 to 29 to 9 % by 2030.

Unemployment and long-term unemployment have decreased since 2014

The EU's unemployment situation also saw continuous improvement prior to the onset of the COVID-19 pandemic. Between 2014 and 2019, the EU's unemployment rate decreased by 4.1 percentage points, reaching 6.7 % in 2019 ([10]). The trend, however, came to a halt due to the coronavirus outbreak, and the unemployment rate bounced back to 7.1 % in 2020.

Long-term unemployment usually follows the trends in unemployment but with a delay, meaning that the effects of the COVID-19 pandemic will only become visible in data from 2021. 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. In 2020, 2.5 % of the EU's active population had been unemployed for a year or more, which is 3.0 percentage points less than at the peak of the long-term unemployment rate in 2014. The proportion of long-term unemployment in total unemployment has also decreased over the past few years ([11]).

2.5 %
of the active population had been long-term unemployed in 2018

The Council Recommendation on the integration of the long-term unemployed into the labour market, proposed by the European Commission in 2015 and adopted by the Council in 2016, puts forward assistance to help long-term unemployed people re-enter the labour market.

In March 2021, the Commission presented its Recommendation on Effective Active Support to Employment following the COVID-19 crisis. The recommendation outlines a strategic approach to a gradual transition between emergency measures taken to preserve jobs during the pandemic and new measures needed for a job-rich recovery.

The labour market situation of young people has been 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 have a fixed-term contract or to work in sectors affected by the restrictions placed on economic activities, such as the service sector, to tackle the pandemic ([12]). In 2020, the employment rate of people aged 20 to 24 stood at 48.7 % ([13]) compared with the total employment rate of 72.4 %.

The overall low employment rate of people aged 20 to 24 can also be explained by the fact that many young people at this age are still in education, and thus, economically inactive.

However, in 2020 their employment rate was still 4.1 percentage points lower than at its peak in 2008. Moreover, despite the strong decrease in youth unemployment since 2014, 15.7 % of 20- to 24-year-olds were unemployed in 2020, which is still significantly higher than for older age groups (¹⁴).

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. 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, the NEET rate increased again to 13.7 % in 2020.

13.7 %
of young people aged 15 to 29 were not employed nor in education and training in the EU in 2020

The European Social Fund (¹⁵) and the Youth Employment Initiative support measures that focus on quality employment and quality apprenticeships. The EU has also adopted a political commitment to reinforce the Youth Guarantee in the form of a Council Recommendation of October 2020 that aims to help young people with their school-to-work transition. As part of the EU's budget for 2021 to 2027, the European Social Fund Plus (ESF+) (¹⁶) further prioritises young people. Member States with NEET rates exceeding the EU average in 2019 are required to dedicate at least 10 % of their ESF+ allocations to targeted action and structural reforms fostering youth employment.

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

Over the past 15 years, the employment rate of women in the EU has been increasing and reached a new high of 67.3 % in 2019 before decreasing to 66.8 % in 2020 due to the COVID-19 outbreak. Moreover, the gender employment gap continues to persist and has stagnated in the short term since 2015, despite narrowing by 5.1 percentage points since 2005. In 2020 it amounted to 11.3 percentage points, despite women increasingly becoming well qualified and even outperforming men in terms of educational attainment (see the chapter on SDG 4 'Quality education' on page 111).

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 2019, 32.3 % of inactive women aged 20 to 64 were in this situation because they were caring for children or incapacitated adults, compared with only 4.5 % of men. Since 2014, this gender gap has widened by 3.1 percentage points.

32.3 %
of economically inactive women in the EU were in this situation because of caring responsibilities in 2019

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, and allow flexibility of working arrangements and hours.

Over the past few years, work in the EU has become 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. In 2018, the rate of fatal accidents at work amounted to 1.8 fatalities per 100 000 employed persons, with the mining and quarrying sector being particularly prone to the risk of fatal accidents [17]. While there has been a significant decrease since 2010, a noticeable gender difference persists: in 2018, 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 [18].

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 are especially affected by

1.8
per 100 000 people employed in the EU had a fatal accident at work in 2018

9.0 %
of people employed in the EU were at risk of income poverty in 2019

A new Directive on transparent and predictable working conditions in the European Union was agreed between the Commission, the Council and the European Parliament in 2019. It complements and modernises existing obligations to inform each worker of his or her working conditions. In addition, the proposal creates new minimum EU standards on working conditions for all workers, including those on atypical contracts.

In October 2020, the Commission proposed a Directive on adequate minimum wages in the European Union to ensure that the workers in the EU are protected by adequate minimum wages allowing for a decent living wherever they work.

in-work poverty [19]. The share of the so-called 'working poor' (aged 18 and over) increased almost continuously from 2010 to 2016 in the EU. However, the share has decreased since then, affecting 9.0 % of employed people in 2019.

Factors influencing in-work poverty rates include, among other things, type of contract, working time and hourly wages. While a fixed-term or part-time contract 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 2020, 6.8 % of European employees aged 20 to 64 were involuntarily working on temporary contracts, corresponding to 54.4 % of all temporary employees. This share has decreased slightly over the past few years [20]. Similar to involuntary temporary employment, the share of involuntary part-time employment in total employment in the EU also decreased, from 5.9 % in 2015 to 4.4 % in 2020 [21].

Presentation of the main indicators

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.

LONG TERM
2005–2020

SHORT TERM
2015–2020

Figure 8.1: **Real GDP per capita, EU, 2000–2020**
(EUR per capita, chain-linked volumes, 2010)

Compound annual growth rate (CAGR): 0.6 % per year in the period 2005–2020; 0.2 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_08_10)

Figure 8.2: **Change in real GDP per capita, by country, 2015–2020**
(average annual growth rate in %)
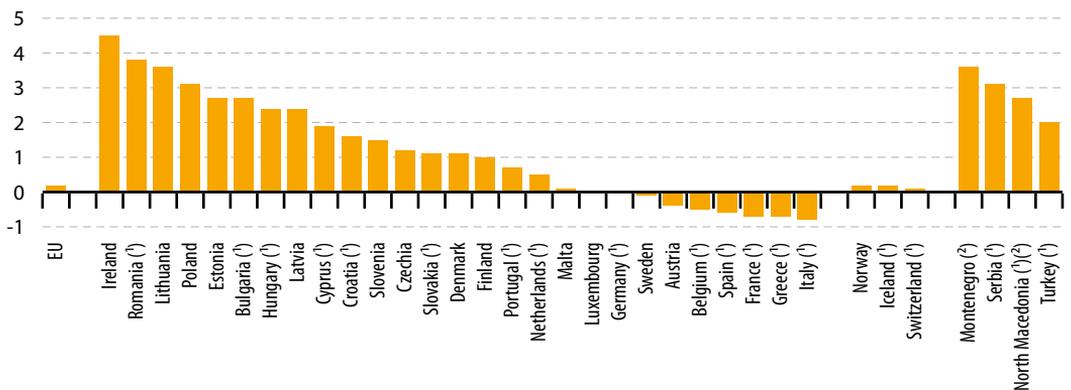
(¹) Provisional or estimated data.
(²) Change 2013–2018.
Source: Eurostat (online data code: sdg_08_10)

LONG TERM
2005–2020

SHORT TERM
2015–2020

Investment share of GDP

Investment share of GDP measures the investment for the total economy, government and business, as well as household sectors. The indicator is calculated as the share of GDP used for gross investment. It is defined as gross fixed capital formation (GFCF) expressed as a percentage of GDP for the government, business and households sectors.

Figure 8.3: Investment share of GDP, by institutional sector, EU, 2002–2020
(% of GDP)
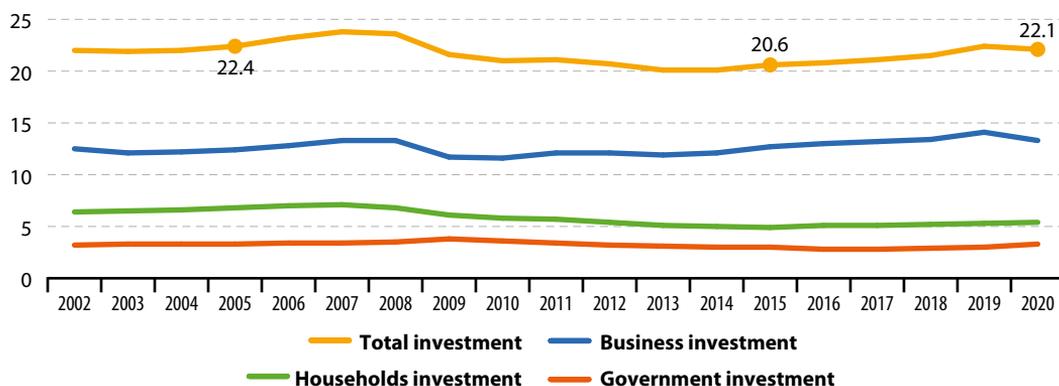
Compound annual growth rate (CAGR) for total investment: – 0.1 % per year in the period 2005–2020; 1.4 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_08_11)

Figure 8.4: Investment share of GDP, by country, 2014 and 2019
(% of GDP)
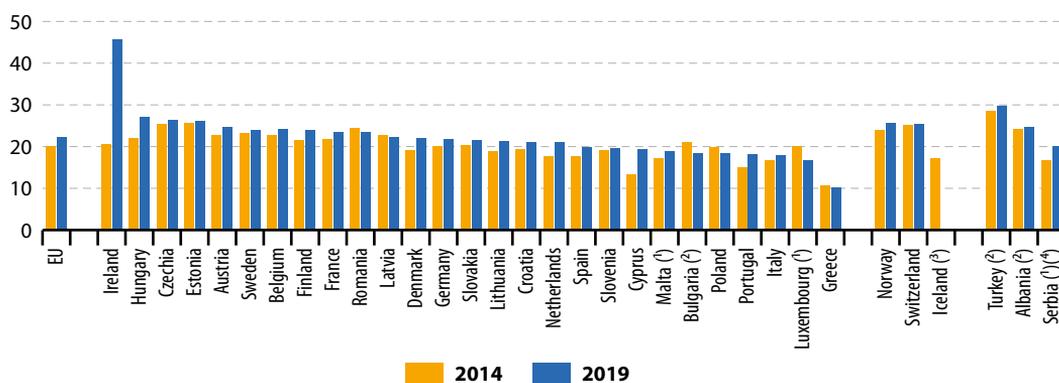
(¹) 2018 data (instead of 2019).   (³) No data for 2019.
(²) 2017 data (instead of 2019).   (⁴) 2015 data (instead of 2014).

Source: Eurostat (online data code: sdg_08_11)

Young people neither in employment nor in education and training (NEET)

LONG TERM
2005–2020

SHORT TERM
2015–2020

A considerable proportion of young people aged 15 to 29 in the EU are economically inactive. 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. economically inactive 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, 2002–2020
(% of population aged 15 to 29)
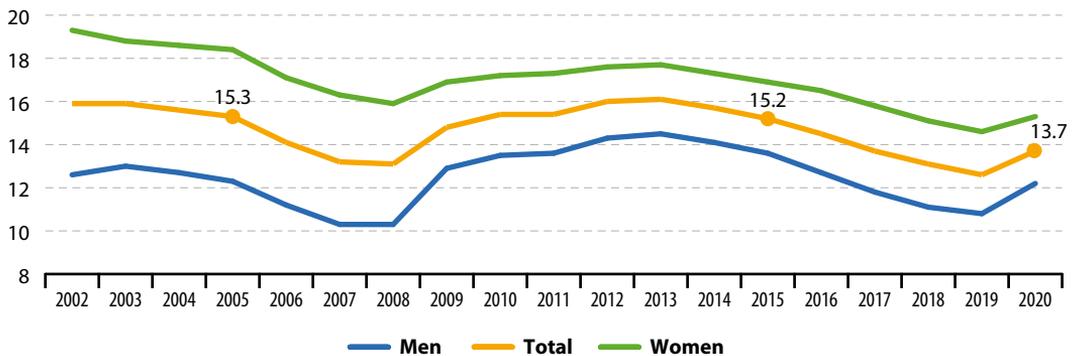

Note: Breaks in time series in 2003 and 2006.
Compound annual growth rate (CAGR) for the total: – 0.7 % per year in the period 2005–2020; – 2.1 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_08_20)

Figure 8.6: Young people neither in employment nor in education and training (NEET), by country, 2015 and 2020
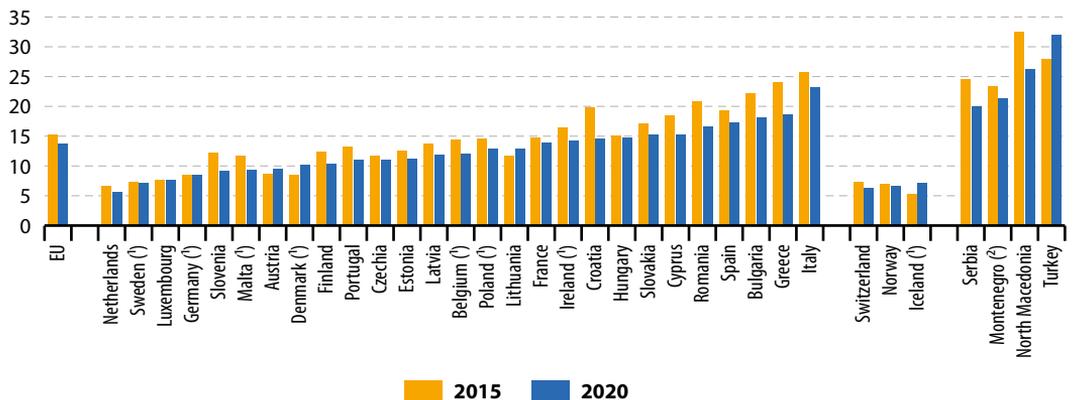(% of population aged 15 to 29)

(¹) Break(s) in time series between the two years shown.   (²) 2019 data (instead of 2020).
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, 2000–2020**
(% of population aged 20 to 64)

Compound annual growth rate (CAGR) for the total: 0.5 % per year in the period 2005–2020; 0.9 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_08_30)

Figure 8.8: **Employment rate, by country, 2015 and 2020**
(% of population aged 20 to 64)

(¹) Break(s) in time series between the two years shown.
(²) 2019 data (instead of 2020).
Source: Eurostat (online data code: sdg_08_30)

Long-term unemployment rate

Long-term unemployment is measured for economically active people (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 falling into poverty and has negative implications for society as a whole. Long-term unemployed people in the EU have about half the chance of finding employment as those who are short-term unemployed ([22]). Data presented in this section stem from the EU Labour Force Survey (EU-LFS).

Figure 8.9: Long-term unemployment rate, by sex, EU, 2005–2020
(% of active population)

Compound annual growth rate (CAGR) for the total: − 3.5 % per year in the period 2005–2020; − 12.9 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_08_40)

Figure 8.10: Long-term unemployment rate, by country, 2015 and 2020
(% of active population)
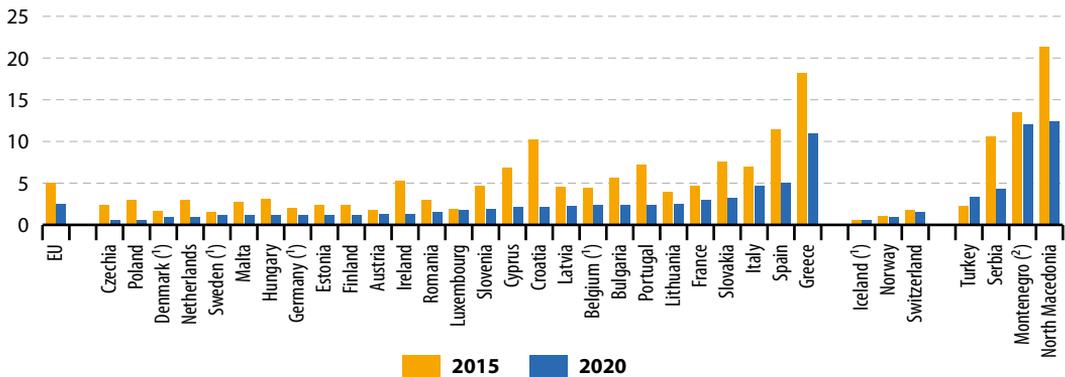
([1]) Break(s) in time series between the two years shown.
([2]) 2019 data (instead of 2020).
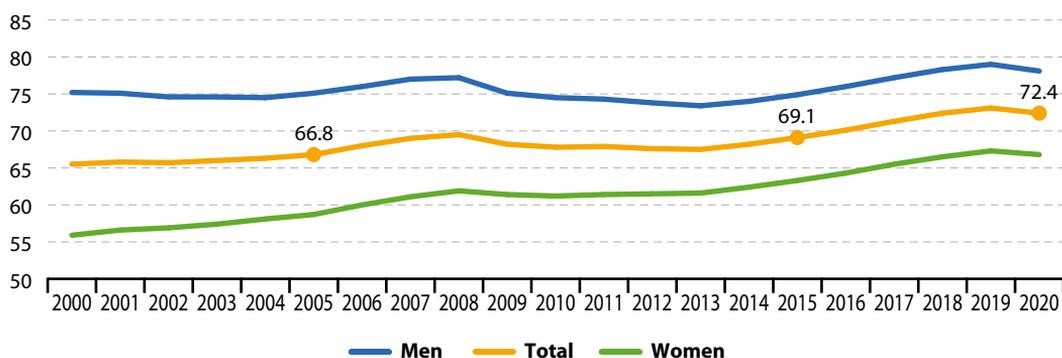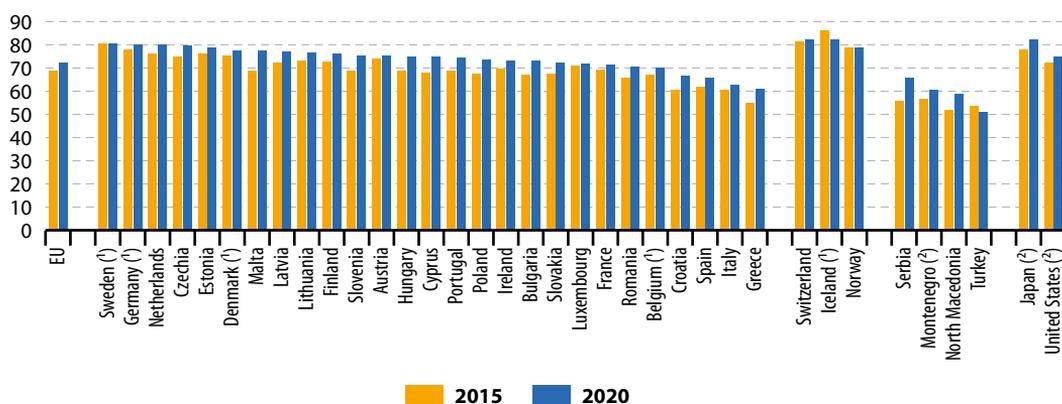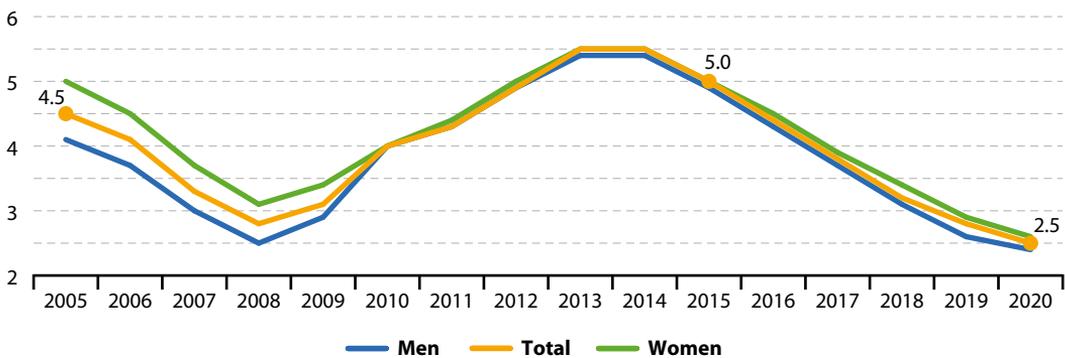*Source:* Eurostat (online data code: sdg_08_40)

X **LONG TERM** Time series too short

↑ **SHORT TERM** 2013–2018

People killed in 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)' ([23]). As an exception, fatal accidents data for the Netherlands are derived from survey data, these data are not available from administrative sources.

Figure 8.11: People killed in accidents at work, EU, 2010–2018
(number per 100 000 employed persons)
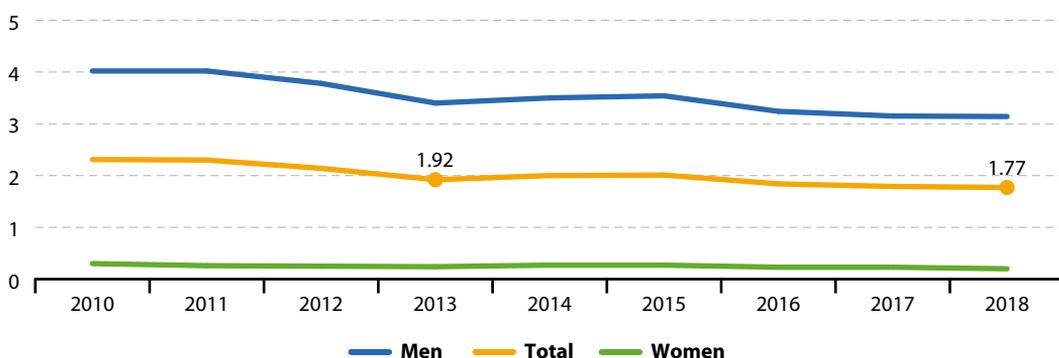
Compound annual growth rate (CAGR) for the total: – 1.6 % per year in the period 2013–2018.
Source: Eurostat (online data code: sdg_08_60)

Figure 8.12: People killed in accidents at work, by country, 2013 and 2018
(number per 100 000 employed persons)
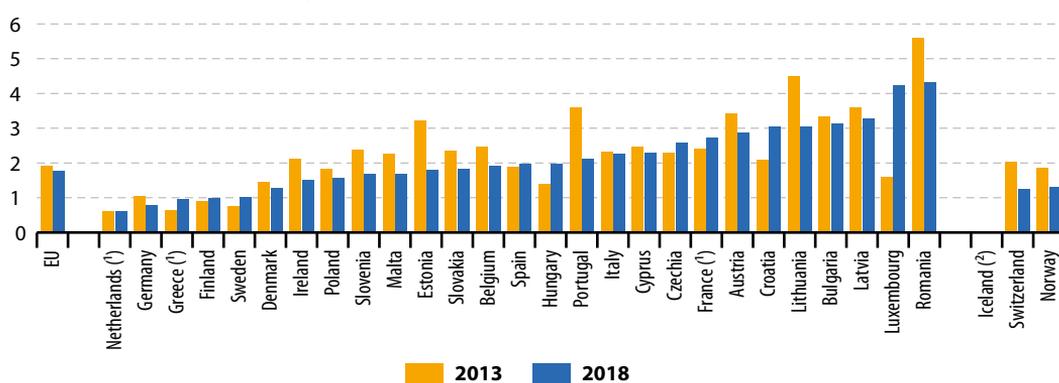
(¹) Break in time series between the two years shown.
(²) Zero cases in 2013; no data for 2018.
Source: Eurostat (online data code: sdg_08_60)

Further reading on decent work and economic growth

European Commission (2020), *Employment and Social Developments in Europe 2020*, Publications Office of the European Union, Luxembourg.

European Commission (2020), *European Economic Forecast, Autumn 2020*, Publications Office of the European Union, Luxembourg.

European Commission (2017), *European Semester Thematic Factsheet: Women in the Labour Market.*

International Labour Organisation webpage on '*Decent work and the 2030 agenda for sustainable development'*.

International Labour Organisation (2020), *World Employment and Social Outlook: Trends 2020*, Geneva.

OECD (2020), *OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis*, OECD Publishing, Paris.

OECD (2020), *OECD Economic Outlook, Volume 2020 Issue 2*, OECD Publishing, Paris.

European Environment Agency (2021), *Growth without economic growth*.

Further data sources on decent work and economic growth

Eurostat, European Statistical Recovery Dashboard.

Eurostat, Statistics on the economy related to COVID-19.

Eurostat, Job vacancy and unemployment rates — Beveridge curve.

Eurostat, Employment in current job by duration.

Notes

(¹) European Commission (2020), *Employment and Social Developments in Europe 2020*, Publications Office of the European Union, Luxembourg, p. 22.

(²) European Commission (2021), *European Economic Forecast, Spring 2021*, Publications Office of the European Union, Luxembourg, p. 2.

(³) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.

(⁴) European Commission (2021), *The European Pillar of Social Rights Action Plan*, COM(2021) 102 final, Brussels.

(⁵) Resource productivity is defined as GDP per unit of domestic material consumption (DMC), measured in EUR per kilogram. Some of these materials are 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.

(⁶) European Environment Agency (2016), *More from less — material resource efficiency in Europe. 2015 overview of policies, instruments, and targets in 32 countries*, EEA report No. 10/2016, EEA Copenhagen, p. 38.

(⁷) European Commission (2014), Study on modelling of the economic and environmental impacts of raw material consumption, Publications Office of the European Union, Luxembourg, p. 5.

(⁸) European Commission (2017), *Employment and Social Developments in Europe 2017,* Publications Office of the European Union, Luxembourg, p. 10.

(¹⁰) European Commission (2021), *The European Pillar of Social Rights Action Plan*, COM(2021) 102 final, Brussels.

(⁹) Source: Eurostat (online data code: une_rt_a).

(¹¹) European Commission (2020), *Employment and Social Developments in Europe 2020,* Publications Office of the European Union, Luxembourg, p. 29.

(¹²) 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.

(¹³) Source: Eurostat (online data code: lfsa_ergan).

(¹⁴) Source: Eurostat (online data code: lfsa_urgaed).

(¹⁵) 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.*

(¹⁶) European Commission (2018), *Proposal for a regulation of the European Parliament and of the Council on the European Social Fund Plus (ESF+),* COM/2018/382 final.

(¹⁷) Source: Eurostat (online data code: hsw_n2_ 02).

(¹⁸) Eurostat (2020), Statistics Explained: Accidents at work — statistics by economic activity.

(¹⁹) European Commission (2020), *Joint Employment Report 2020*, Directorate-General for Employment, Social Affairs and Inclusion, Brussels, p. 11.

(²⁰) Source: Eurostat (online data code: lfsa_etgar).

(²¹) Source: Eurostat (online data codes: lfsa_epgar, lfsa_epgaed).

(²²) *European Commission (2016), Employment and Social Developments in Europe 2015*, Publications Office of the European Union, Luxembourg, p. 13.

(²³) 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.

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 crucial for delivering the European Green Deal and the Digital Single Market. Through a 'green transformation', industry also has a role in achieving a clean and circular economy. Similarly, investments in sustainable infrastructure are key elements for achieving the SDGs. This involves increasing the deployment of low-emissions and zero-emission vehicles, renewable and low-carbon fuels and infrastructure, as well as the roll-out of high-speed internet connectivity in order to remain competitive in an increasingly digitalised world.

Additionally, R&D and innovation are of key importance for tackling the COVID-19 pandemic and its economic and social consequences, as well as supporting the recovery in the EU.

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 207
R&D personnel	↑	↑	page 208
Patent applications to the European Patent Office	↑	↑	page 209
⊙ Tertiary educational attainment (*)	↑	↑	SDG 4, page 122
Sustainable industry			
Air emissions intensity of industry	↑ (¹)	↑	page 210
Sustainable infrastructure			
Share of buses and trains in total passenger transport	↘	↓	page 211
Share of rail and inland waterways in total freight transport	↘ (²)	↓	page 212
⊙ Average CO$_2$ emissions from new passenger cars (*)	↘ (³)	↘	SDG 12, page 264
⊙ Share of households with high-speed internet connection (*)	:	↑	SDG 17, page 364

(*) Multi-purpose indicator. (²) Past 14-year period.
(¹) Past 10-year period. (³) Past 12-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.1 in the annex.

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 personnel, patent applications and tertiary educational attainment over the past few years, alongside stagnation in the EU's R&D intensity. The analysis on sustainable industry is so far limited to the air emissions intensity of the manufacturing sector, which shows 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. The EU has a long-standing objective of increasing its R&D intensity to 3 %, which was reaffirmed in the Council conclusions (¹) on the new European Research Area (ERA) (²).

Despite the long-standing 3 % target, the EU's R&D intensity has shown only modest growth 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 2.2 % in 2019. In absolute terms, this corresponded to an R&D expenditure of about EUR 308 billion in 2019 (³). With a gap of 0.8 percentage points, the EU nevertheless remains far from its ambition of raising R&D intensity to 3 % by 2030.

2.2 %
of GDP was spent on R&D in the EU in 2019

In September 2020, the European Commission published **a new vision for the European Research Area (ERA)**. Launched in 2000, the ERA aims to build a common scientific and technology area for the EU. The new vision consists of four objectives (prioritising investments and reforms, improving access to excellence, translating R&I results into the economy and deepening the ERA), including a set of actions to be implemented in collaboration with the Member States and further stakeholders ([4]).

One of these actions is the development of **common industrial technology roadmaps**. These will provide a common vision for R&I action in the EU and boost private R&I investment in the development of green breakthrough technologies. The European Commission will develop the roadmaps jointly with Member States, industry representatives and other relevant stakeholders. The first two R&I roadmaps will focus on low carbon energy-intensive industries and on circular industries in view of the radical transformation needed to reach the 2030 and 2050 targets ([5]).

In January 2021, the EU research and innovation programme **Horizon Europe** was launched ([6]). As a follow-up programme to Horizon 2020 it aims to support researchers and innovators to drive the systemic changes needed to ensure a green, healthy and resilient Europe. Horizon Europe will have a budget of about EUR 95.5 billion for the period 2021 to 2027 ([7]).

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 2019 remained the business enterprise sector (66.3 % of total R&D expenditure) and the higher education sector (21.6 %). The share of the government sector was about 11.5 %, while the private non-profit sector accounted for less than 1.0 % of the total R&D expenditure ([8]).

The business enterprise sector accounts for the lion's share of total R&D expenditure and has increased its R&D intensity by 0.32 percentage points over the past 15 years, from 1.14 % of GDP in 2004 to 1.46 % in 2019. In contrast, the R&D intensities of the three other sectors — higher education, government and private non-profit — 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 inventiveness of countries, regions and companies and of the economic exploitation of research results. In 2020, 65 854 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 2004, when 51 508 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 ([9]).

65 854

patent applications from within the EU were submitted to the European Patent Office in 2020

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 R&D and significant innovation. This needs to be supported by a highly skilled labour force, including new scientific and technical occupations in key manufacturing and other sectors such as energy, high-tech services and construction ([10]).

The share of R&D personnel in the economically active population — including researchers and other staff employed directly in R&D — has increased steadily since 2004, from 0.92 % to 1.41 % in 2019 (full-time equivalent). This trend was mainly driven by the business enterprise sector, which employed more than half of the R&D workforce in 2019.

1.41 %
of the economically active population in the EU worked in R&D in 2019

An analysis by sex, however, reveals that women remain considerably underrepresented among researchers based on head count in the EU, accounting for only 32.8 % in 2017. 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 21.1 % of researchers in 2017. 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 48.3 % in 2017. Compared with the other sectors, the higher education sector recorded the largest increase in female researchers between 2003 and 2017, by 7.7 percentage points ([11]).

Data on tertiary educational attainment show a general long-term increase in the EU population's skill levels. Between 2005 and 2020, the share of 25- to 34-year olds with a university degree or similar increased from 27.2 % to 40.2 %. The EU is therefore on track to reaching its target of raising this share to at least 45 % by 2030, as set out in the Council Resolution on the European Education Area ([12]). However, considerable differences between the sexes remain, and when compared with the situation for R&D personnel, the gender imbalance is reversed. While 45.6 % of women aged 25 to 34 years had accomplished tertiary education in 2020, only 34.8 % of men in this age group had done so. This gender gap has widened almost continuously since 2005. For further details on tertiary education and the gender gap, see the chapters on SDG 4 'Quality education' on page 111 and SDG 5 'Gender equality' on page 127.

40.2 %
of the EU population aged 25 to 34 had accomplished tertiary education in 2020

Sustainable industry

The EU's industrial sector accounts for more than 20 % of the EU economy and employs around 35 million people ([13]). At the same time, it is also a source of many environmental pressures such as material consumption and the emission of greenhouse gases and other air pollutants. Mobilising industry for a clean and circular economy is consequently 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 ([14]). The analysis here 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 273.

With its New Industrial Strategy for Europe from March 2020, the European Commission presented its ambitions to support industry to shift towards climate neutrality and to build a more circular economy (¹⁵). The strategy was updated in May 2021 to ensure that its industrial ambition takes full account of the new circumstances following the COVID-19 crisis and helps to drive the transformation to a more sustainable, digital, resilient and globally competitive economy. The updated strategy (¹⁶) reaffirms the priorities set out in March 2020 while responding to the lessons learned from the crisis to boost the recovery and enhance the EU's open strategic autonomy.

The air emissions intensity of industry has improved in recent years

Poor air quality causes premature deaths, impacts quality of life and damages ecosystems (¹⁷). According to a recent report by the European Environment Agency, air pollution led to about 400 000 premature deaths in the EU in 2016 (¹⁸). Particulate matter, especially fine particulate matter ($PM_{2.5}$), is one of the most harmful components of air pollution for human health (¹⁹) (see the chapters on SDG 3 'Good health and well-being' on page 91 and SDG 11 'Sustainable cities' on page 235). In 2018, the EU's manufacturing sector was responsible for almost a quarter (24.4 %) of total $PM_{2.5}$ emissions. In comparison, in the same year, about a third (32.2 %) of total $PM_{2.5}$ emissions could be attributed to transportation and storage, and slightly more than one fifth (21.6 %) to agriculture, forestry and fishing (²⁰).

27.3 %
improvement occurred in the manufacturing sector's emissions intensity of fine particulate matter between 2008 and 2018

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 2018, the air emissions intensity of fine particulate matter ($PM_{2.5}$) in the EU's manufacturing sector dropped by 27.3 %, from 0.11 gram per euro to 0.08 gram per euro. The improvement was slightly stronger when looking at the broader group of fine and coarse particulates (PM_{10}), with the respective emissions intensity decreasing by 31.3 % over the same time span.

An analysis of the underlying trends shows there was an absolute decoupling of the manufacturing sector's particulate matter emissions from its GVA between 2008 and 2018. During this period, the sector's $PM_{2.5}$ emissions fell by 24.6 % (²¹), while its GVA grew almost continuously, by 12.7 % (²²). Most of this decoupling, however, took place in the aftermath of the economic crisis, between 2008 and 2013. In the past five years the sector has only seen a relative decoupling, with $PM_{2.5}$ emissions rising by 1.4 % alongside growth in GVA of 17.5 % between 2013 and 2018.

Relative decoupling of particulate matter emissions from GVA occurred in the EU manufacturing sector between 2013 and 2018

The Horizon Europe research programme plans to comprise 49 (candidate) European partnerships, addressing various thematic clusters. Most of these strive to accelerate the transition to climate neutrality and a circular economy. Various partnerships aim to team up with the private sector to decarbonise sectors such as energy or mobility. Others focus on Member States to provide solutions for protecting and sustainably managing resources (for example, the European Partnership for Clean Steel or Processes4Planet) (²³).

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 of 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 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 273), 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 [24].

The modal share of passenger transport has not changed substantially since 2000, with passenger cars still accounting for almost 83 % of total inland

17.1 %
of total inland passenger-km in the EU were covered by buses and trains in 2018

passenger transport in the EU in 2018 [25]. As a result, the share of buses and trains has stagnated around 17 % and accounted for 17.1 % in 2018. This is a 1.0 percentage point decrease since the share peaked at 18.1 % in 2013.

CO_2 emissions from new car fleets increased between 2016 and 2019

While cars remain the dominant mode for passenger transport, new car fleets have generally become cleaner. Average carbon dioxide (CO_2) emissions from new passenger cars fell between 2007 and 2016, before starting to rise again, reaching 122.2 grams of CO_2 per kilometre (g CO_2 per km)

122.2
grams of CO_2 per km were emitted by new passenger cars on average in the EU in 2019

in 2019. This rebound has pushed the EU further away from its target of 95 g CO_2 per km that will apply from 2020 onwards.

Because efficiency improvements in new car fleets have struggled to offset rising passenger transport volumes [26], replacing conventional cars with zero-emission vehicles (ZEVs) will be crucial to achieving climate neutrality and the EU's greenhouse gas emissions reduction targets. According to data from the European Alternative Fuels Observatory [27], the share of ZEVs — 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. The most recent year-on-year change showed a particular strong boost in ZEV uptake in the EU, up from 1.9 % in 2019. While considerable differences between European countries remain, the data show that countries with a high share of ZEVs in newly registered passenger cars — such as the Netherlands, Denmark or France — are among the best performers in terms of their car fleets' CO_2 emissions (see the chapter on SDG 12 'Responsible consumption and production' on page 251).

EU legislation sets mandatory **CO$_2$ emission reduction targets for new vehicles. In addition, new, stricter CO$_2$ emission standards for cars and vans** (²⁸) **and, for the first time, CO$_2$ emission standards for heavy-duty vehicles** (²⁹) **will start applying from 2025 and 2030. These new standards will require CO$_2$ emissions from new passenger cars to fall by a further 15 % by 2025 compared with 2021, and by 37.5 % from 2030 onwards** (³⁰). **Both regulations also include a mechanism for encouraging the uptake of zero- and low-emission vehicles in a technology neutral way. The Commission intends to propose a revision of the corresponding regulations to strengthen the CO$_2$ emission standards, in line with the increased ambition of the 2030 climate target** (³¹).

**In December 2020, the European Commission presented its Sustainable and Smart Mobility Strategy** (³²). **The strategy sets various milestones for smart and sustainable transport modes to reach the climate targets outlined in the European Green Deal. It aims to make interurban and urban mobility, as well as freight transport, more sustainable. Among other things the strategy strives for at least 30 million zero-emission cars on European roads by 2030. By 2050, nearly all cars, vans, buses and new heavy-duty vehicles should be zero-emission, according to the strategy.**

The EU also strives to intensify research and innovation activities in all transport sectors, as highlighted in Cluster 5 of the Horizon Europe research programme on climate, energy and mobility. Among the main targets is the transformation of road transport to zero-emission mobility (³³).

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 policy objective of shifting freight from road to rail (see box, next page), 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. Between 2014 and 2019, this share decreased by 2.4 percentage points.
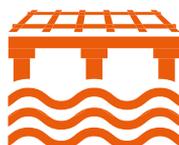
23.7 %
of total inland freight tonne-km in the EU was carried out via rail and inland waterways in 2019

Considerable differences do exist at the 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, Lithuania and Estonia. And in the Netherlands, freight transport via inland waterways still plays a very important role (modal split of 42.7 % in 2019).

A look at the absolute transport 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 11.2 %, while goods transport by road increased even more strongly, by 14.8 % (³⁴). Over the same period, goods transport by rail increased only by about 5 % in the EU (³⁵), while inland waterways transport contracted by 7.3 % (³⁶).

Since 2014, the **Trans-European Transport Network (TEN-T)** policy has been directed towards implementing and developing a Europe-wide network of roads, railway lines, inland waterways, ports, airports and rail-road terminals. The main objective of TEN-T is to close gaps, remove bottlenecks and eliminate technical barriers that exist between the transport networks of Member States and the different transport modes. In doing so, it ultimately aims to strengthen the social, economic and territorial cohesion of the Union, increase the sustainability of transport and contribute to the creation of a single European transport area.

Within the framework of the **European Green Deal**, the European Commission aims to accelerate the shift to sustainable and smart mobility. By 2021 the Commission is planning to propose measures to boost multimodal transport, for example, by increasing the capacity of railways and inland waterways. In addition, the Commission strives to encourage the implementation of measures such as supporting new sustainable mobility services and the production of sustainable alternative transport fuels [37]. The 2021–2027 **EU budget and the NextGenerationEU recovery instrument** strongly support, among other things, fair climate and digital transitions [38].

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. Regions without fast internet connections have serious social and economic disadvantages in a digitalised world. Making Europe fit for the digital age is consequently one of the six Commission priorities for 2019 to 2024, with the aim of making the digital transformation work for people and businesses while helping to achieve the target of a climate-neutral Europe by 2050.

Data collected by the European Commission services for the key dimensions of the European information society [39] show that the uptake of fixed very high capacity network (VHCN) connectivity — referring to fibre connections or other networks offering similar bandwidth — in the EU has improved considerably since 2013. While only 15.6 % of EU households enjoyed such connectivity in 2013, this share has risen considerably, reaching 59.3 % of households in 2020. 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 [40]. Between 2013 and 2020, the share of rural households with fixed VCHN connection increased from 3.6 % to 27.8 % across the EU.

59.3 %
of EU households had a fixed very high capacity network connection in 2020

In its 2016 Communication 'Connectivity for a Competitive Digital Single Market — Towards a European Gigabit Society' ([41]), the European Commission set out a vision for a European gigabit society, operationalised through three objectives for 2025. The EU aims to have gigabit connectivity for places driving socio-economic developments, 5G coverage for all urban areas and all major terrestrial transport paths, and for all European households to have access to internet connectivity offering at least 100 megabits per second (Mbps). The Farm to Fork strategy ([42]) reaffirmed this objective by calling for the faster roll-out of fast broadband internet in rural areas to achieve the objective of 100 % access by 2025.

On 9 March 2021, the Commission — in its 2030 Digital Compass ([43]) — presented a vision and avenues for Europe's digital transformation by 2030, focusing on four main areas: (1) skills, (2) secure and sustainable digital infrastructures, (3) digital transformation of businesses, and (4) digitalisation of public services. Building on the 2016 Communication, the Digital Compass defines the objective that by 2030 all European households should be covered by a gigabit network, with all populated areas covered by 5G.

Presentation of the main indicators

Gross domestic expenditure on R&D

This indicator measures gross domestic expenditure on R&D (GERD) as a percentage of the gross domestic product (GDP) — the R&D intensity. The Frascati Manual defines research and 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 [44].

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 9.1: Gross domestic expenditure on R&D, EU, 2000–2019
(% of GDP)
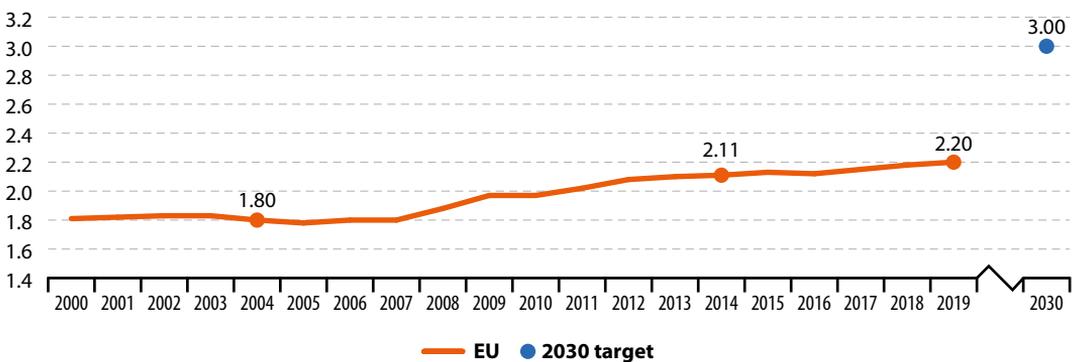
Note: Data for 2000 to 2002 are estimated; 2019 data are provisional.
Compound annual growth rate (CAGR): 1.3 % per year (observed) and 2.0 % per year (required to meet target) in the period 2004–2019; 0.8 % per year (observed) and 2.2 % per year (required to meet target) in the period 2014–2019.

Source: Eurostat (online data code: sdg_09_10)

Figure 9.2: Gross domestic expenditure on R&D, by country, 2014 and 2019
(% of GDP)
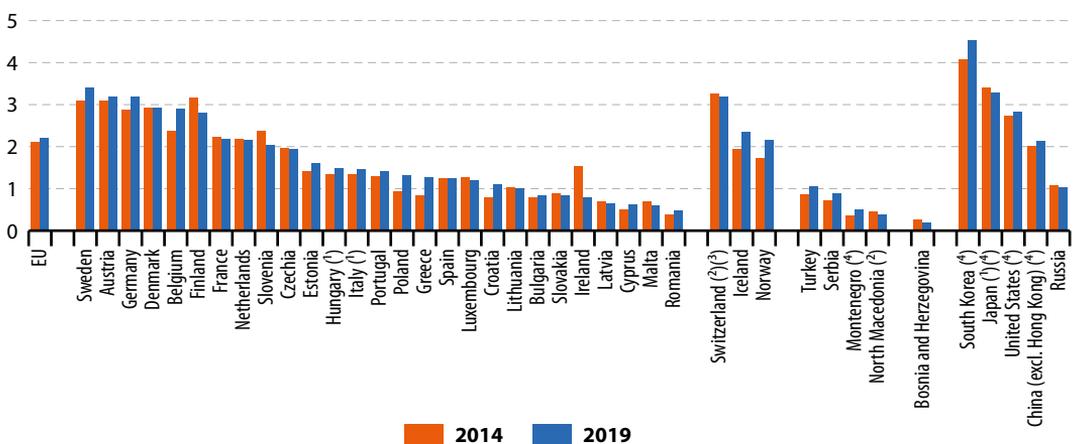
Note: Estimated or provisional data for many countries.
(¹) Break(s) in time series between the two years shown.
(²) 2015 data (instead of 2014).
(³) 2017 data (instead of 2019).
(⁴) 2018 data (instead of 2019).

Source: Eurostat (online data codes: sdg_09_10 and rd_e_gerdtot)

R&D personnel

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 economically active population (the labour force). R&D personnel consists of those persons engaged directly in R&D — that is the creative and systematic work undertaken in order to increase the stock of knowledge and to devise new applications of available knowledge.

Figure 9.3: R&D personnel, EU, 2002–2019
(% of active population)

Note: Data for 2002–2013 are estimated; 2019 data are provisional.
Compound annual growth rate (CAGR): 2.8 % per year in the period 2004–2019; 3.8 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_09_30)

Figure 9.4: R&D personnel, by country, 2014 and 2019
(% of active population)
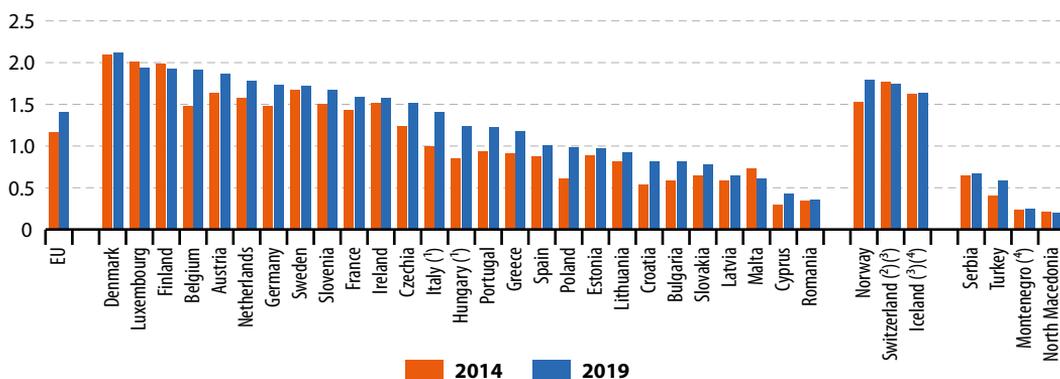
Note: Estimated or provisional data for many countries.
(¹) Break(s) in time series between the two years shown.
(²) 2017 data (instead of 2019).
(³) 2015 data (instead of 2014).
(⁴) 2018 data (instead of 2019).
Source: Eurostat (online data code: sdg_09_30)

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). The country of residence of the applicant is not necessarily the same as the county of residence of the inventor.

LONG TERM
2005–2020

SHORT TERM
2015–2020

Figure 9.5: Patent applications to the European Patent Office (EPO), EU, 2004–2020
(number)

Note: 2020 data are provisional.
Compound annual growth rate (CAGR): 1.4 % per year in the period 2005–2020; 1.0 % per year in the period 2015–2020.
Source: EPO (Eurostat online data code: sdg_09_40)

Figure 9.6: Patent applications to the European Patent Office, by country, 2015 and 2020
(per million inhabitants)

■ **2015**   ■ **2020**
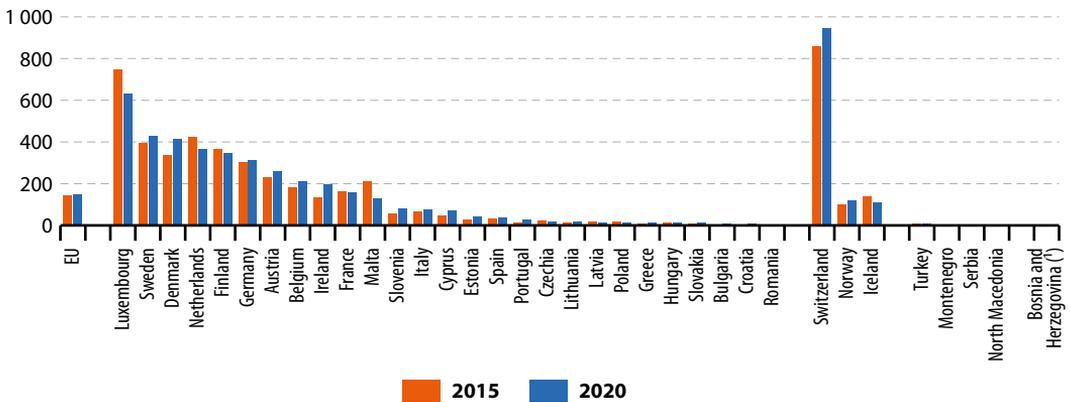
Note: 2020 data are provisional.
(¹) 2018 data (instead of 2020).
Source: EPO, Eurostat (online data code: sdg_09_40)

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 m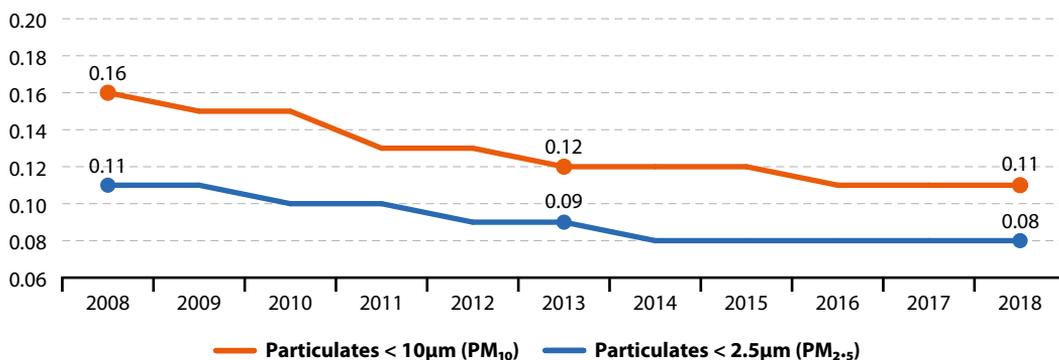ore toxic. Emission intensity is calculated by dividing the sector's PM emissions by its gross value added (GVA), which is defined as output (at basic prices) minus intermediate consumption (at purchaser prices).

Figure 9.7: Air emissions intensity of industry for particulate matter, EU, 2008–2018
(grams per euro, chain-linked volumes, 2010)

Note: Eurostat estimates.
Compound annual growth rate (CAGR) for $PM_{2.5}$: – 3.1 % per year in the period 2008–2018; – 2.3 % per year in the period 2013–2018.
Source: Eurostat (online data codes: sdg_09_70 and and env_ac_aeint_r2)

Figure 9.8: Air emissions intensity of industry for particulate matter ($PM_{2.5}$), by country, 2013 and 2018
(grams per euro, chain-linked volumes, 2010)

(¹) Estimated data.   (²) 2017 data (instead of 2018).
Source: Eurostat (online data code: sdg_09_70)

Share of buses and trains in total passenger transport

This indicator measures the share of buses, including coaches and trolley-buses, and trains in total passenger transport, expressed in passenger-kilometres (pkm). Total passenger transport here includes transport by passenger cars, buses and coaches, and trains, but excludes inland waterways, air and sea transport. All data should be based on movements within national territories, regardless of the nationality of the 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 9.9: Share of buses and trains in total passenger transport, EU, 2000–2018
(% of total inland passenger-km)

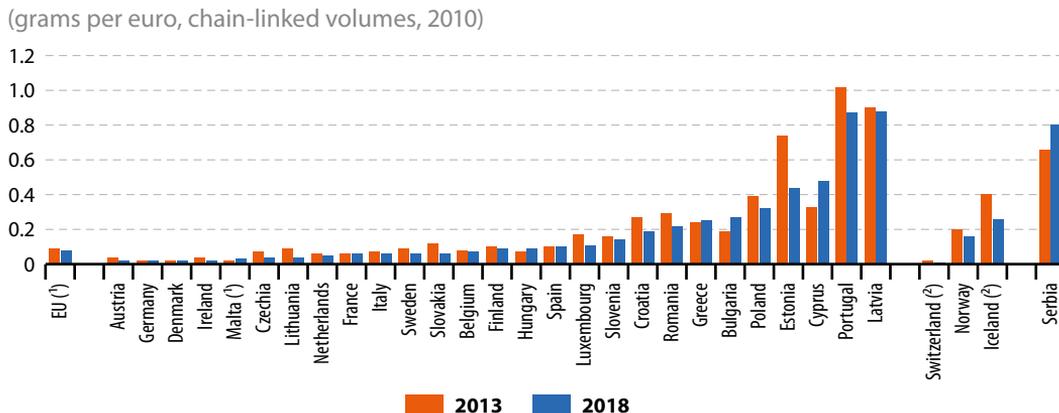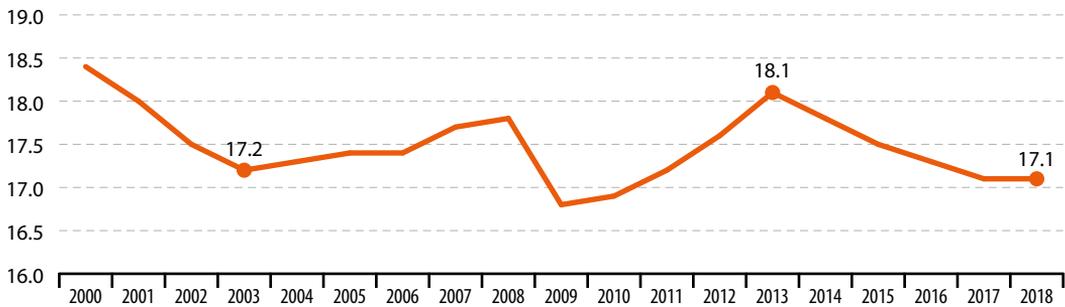

Note: Estimated data.
Compound annual growth rate (CAGR): – 0.04 % per year in the period 2003–2018; – 1.1 % per year in the period 2013–2018.
Source: Eurostat (online data code: sdg_09_50)

Figure 9.10: Share of buses and trains in total passenger transport, by country, 2013 and 2018
(% of total inland passenger-km)
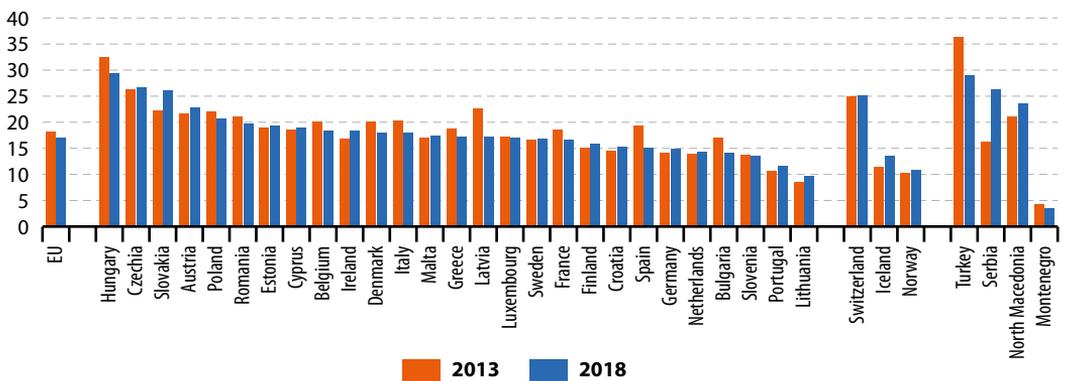
Note: Estimated data for EU and many countries.
Source: Eurostat (online data code: sdg_09_50)

Share of rail and inland waterways in total freight transport

This indicator measures the share of rail and inland waterways in total inland freight transport, expressed in tonne-kilometres (tkm). Inland freight transport modes include 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 is redistributed to the national territory on the basis of reported data on the activity of the vehicles registered in each country and modelling the likely journey itinerary by projecting it on the European road network. Neither sea nor air freight transport are currently represented in the indicator.

Figure 9.11: Share of rail and inland waterways in total freight transport, EU, 2005–2019
(% of total inland freight tonne-km)
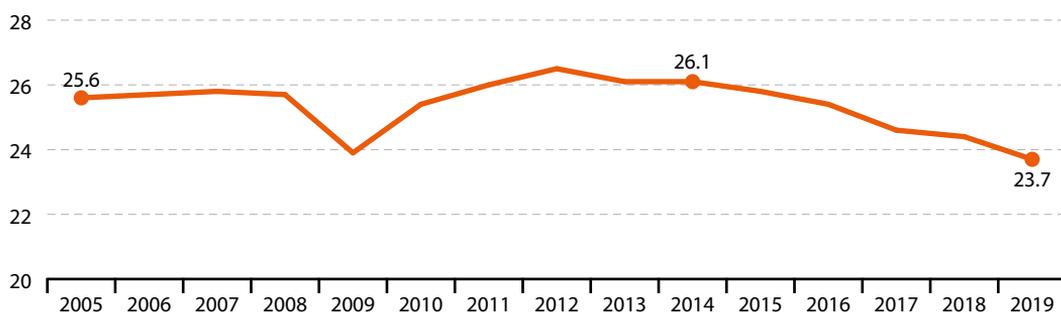
Note: Data for 2005–2008 and 2012–2019 are estimated.
Compound annual growth rate (CAGR): – 0.6 % per year in the period 2005–2019; – 1.9 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_09_60)

Figure 9.12: Share of rail and inland waterways in total freight transport, by country, 2014 and 2019
(% of total inland freight tonne-km)

2014 **2019**
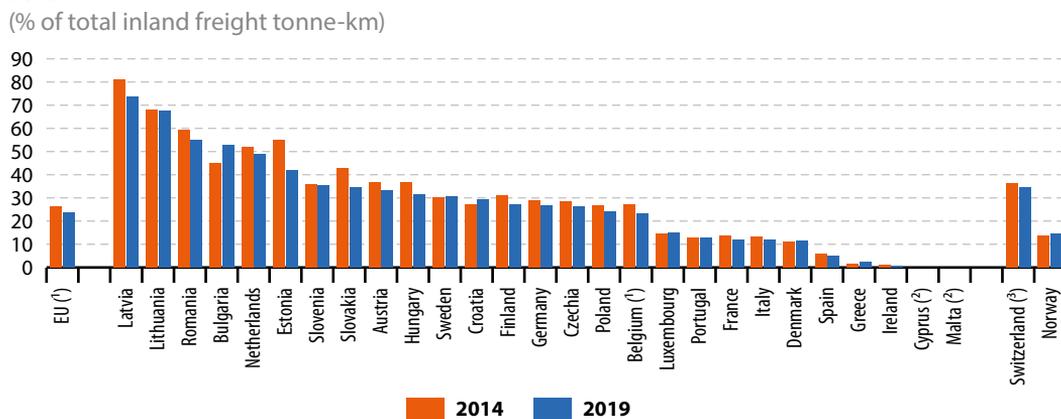
(¹) Estimated data.
(²) Not applicable (no rail or inland waterways).
(³) 2019 data are estimated.

Source: Eurostat (online data code: sdg_09_60)

Further reading on industry, innovation and infrastructure

European Commission (2020), *Science, Research and Innovation Performance of the EU (SRIP) report*, Publications Office of the European Union, Luxembourg.

European Court of Auditors (2016), *Rail freight transport in the EU: still not on the right track*, Publications Office of the European Union, Luxembourg.

European Commission (2011), *White Paper — Roadmap to a Single European Transport Area — Towards a competitive and resource efficient transport system*, Brussels.

OECD (2021), *OECD Science, Technology and Innovation Outlook 2021: Times of Crisis and Opportunity*, OECD Publishing, Paris.

United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport (2016), Mobilizing Sustainable Transport for Development, United Nations, New York.

Further data sources on industry, innovation and infrastructure

European Commission (2020), European Innovation Scoreboard Edition 2020.

European Commission (2020), The 2020 EU industrial R&D investment scoreboard.

OECD (2017), OECD Science, Technology and Industry Scoreboard 2017.

OECD (2019), Measuring the Digital Transformation. A Roadmap for the Future.

UNIDO (2019), Statistical Indicators of Inclusive and Sustainable Industrialization, United Nations Industrial Development Organization, Vienna.

Notes

(¹) Council of the European Union (2020), *Council conclusions on the New European Research Area*.

(²) European Commission (2020), *A new ERA for Research and Innovation*, COM(2020), 628 final.

(³) Eurostat (online data code: rd_e_gerdtot).

(⁴) European Commission (2020), *A new ERA for Research and Innovation*, COM(2020), 628 final.

(⁵) European Commission (2021), *ERA common industrial technology roadmaps*.

(⁶) European Commission (2021), *Horizon Europe*.

(⁷) European Commission (2020), *Commission welcomes political agreement on Horizon Europe, the next EU research and innovation programme — Press release (10 December 2020)*.

(⁸) Eurostat (online data code: rd_e_gerdtot).

(⁹) European Patent Office (2009), *Annual Report 2009*, p. 13.

(¹⁰) International Labour Organization (2018), *World Employment and Social Outlook 2018: Greening with jobs*, p. 42.

(¹¹) Eurostat (online data code: rd_p_femres).

(¹²) 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).

(¹³) European Commission (2020), *A New Industrial Strategy for Europe*, COM(2020) 102 final.

(¹⁴) European Commission (2019), *The European Green Deal*, COM(2019) 640 final.

(¹⁵) European Commission (2020), *A New Industrial Strategy for Europe*, COM(2020) 102 final.

(¹⁶) European Commission (2021), *Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery*, COM(2021) 350 final.

(¹⁷) European Commission (2021), *Clean air*.

(¹⁸) European Environment Agency (2019), *Cutting air pollution in Europe would prevent early deaths, improve productivity and curb climate change*.

(¹⁹) World Health Organization (2016), *World Health Statistics 2016: Monitoring Health for the SDGs*, p. 37.

(²⁰) Eurostat (online data code: env_ac_ainah_r2).

(²¹) Eurostat (online data code: env_ac_ainah_r2).

(²²) Eurostat (online data code: nama_10_a10).

(²³) European Commission (2021), *Horizon Europe — Investing to shape our future*, presentation.

(²⁴) Tram and metro systems are not included because the data-collection methodology for these means of transport is not sufficiently harmonised between Member States.

(²⁵) Eurostat (online data code: tran_hv_psmod).

(²⁶) Eurostat (online data code: ROAD_TF_VEHMOV).

(²⁷) See https://www.eafo.eu.

(²⁸) 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 CO₂ 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*.

(²⁹) European Commission (2018), *Proposal for a Regulation of the European Parliament and of the Council setting CO₂ emission performance standards for new heavy-duty vehicles*, COM(2018) 284 final, Brussels.

(³⁰) 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 CO₂ 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*.

(³¹) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.

(³²) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM (2020) 789 final.

(³³) European Commission (2021), *Horizon Europe: Strategic plan 2021–2024*, Publications Office of the European Union, Luxembourg.

(³⁴) Eurostat (online data codes: nama_10_gdp and ttr00005).

(³⁵) Estimated data based on Eurostat (online data code: rail_go_total).

(³⁶) Eurostat (online data code: iww_go_atygo).

(³⁷) European Commission (2019), *The European Green Deal*, p. 10.

(³⁸) European Commission (2021), *The 2021–2027 EU budget — What's new?*

(⁴²) See European Commission, Key Indicators.

(⁴³) In the context of the EU's digital agenda scoreboard indicators, rural areas are defined as those with fewer than 100 people per km².

(³⁹) European Commission (2016), *Connectivity for a Competitive Digital Single Market — Towards a European Gigabit Society*, COM(2016) 587 final.

(⁴⁰) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM(2020) 381 final.

(⁴¹) European Commission (2021), *2030 Digital Compass: the European way for the Digital Decade*, COM(2021) 118 final.

(⁴⁴) 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

SDG 10 addresses inequalities within and among countries. It calls for nations to reduce inequalities in income and 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.

eurostat supports the SDGs

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, to name just a few examples. 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 can be reduced by encouraging development assistance and foreign direct investment to the regions with the greatest need. Because rising income inequality within countries can hamper economic growth and social cohesion, the EU seeks to address this by supporting Member States in their efforts to reform their tax and benefit systems, provide universal access to quality education, health and other key services, as well as promote

the uptake of income support, active labour market inclusion and integrated social services for those in need. Moreover, the EU promotes the social inclusion of migrants.

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	:	↗	page 224
Income share of the bottom 40% of the population	:	↗	page 225
Relative median at-risk-of-poverty gap	:	↗	page 226
Urban–rural gap for risk of poverty or social exclusion (*)	:	↑ (¹)	page 230
Inequalities between countries			
Disparities in GDP per capita	↗ (²)	↗ (²)	page 227
Disparities in household income per capita	↑ (²)	↑ (²)	page 228
Migration and social inclusion			
Asylum applications	:	:	page 229
Citizenship gap for risk of income poverty after social transfers (*)	:	↑ (³)	page 231
Citizenship gap for early leavers from education and training (*)	↑ (³)(⁴)	↓ (³)	page 231
Citizenship gap for young people neither in employment nor in education and training (NEET) (*)	↘ (³)(⁴)	↓ (³)	page 232
Citizenship gap for employment rate (*)	↓ (³)(⁴)	↓ (³)	page 232

(*) Multi-purpose indicator.
(¹) Trend refers to evolution of gap between cities and rural areas.
(²) Calculation of trend based on coefficient of variation.

(³) Trend refers to evolution of gap between citizens of reporting EU countries and non-EU citizens.
(⁴) Past 14-year period.

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.1 in the annex.

Reduced inequalities in the EU: overview and key trends

Leaving no one behind is a crucial part of both achieving 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. Table 10.1 shows that economic disparities, both between and within Member States, have diminished over the past few years. However, when it comes to migration and social inclusion, the picture is more mixed. 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 and reduce social trust in institutions ([1]). Technological innovation and financial globalisation in particular have driven inequality within countries by favouring people with specific skills or accumulated wealth ([2]). Similarly, the transition to a climate-neutral society will have to be managed well to prevent rising inequality ([3]).

Despite positive developments in the past five years, the income gap between the rich and the poor in the EU remains large

Analysing income distribution is one of the ways of measuring 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 has decreased in recent years, falling from 5.22 in 2014 to 4.99 in 2019. This means that the income share of the richest 20 % of the population was almost five times as much as that of the poorest 20 % in 2019.

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 has increased slightly since 2014, reaching 21.4 % in 2019. However, according to the 2020 Annual Review of Employment and Social Developments in Europe ([4]), the COVID-19 crisis is likely to cause a deterioration in the socio-economic situation of low-income households and other marginalised groups, such as migrants and minorities. Income loss, consumption-related issues (such as rising prices and health expenses) and service disruption may affect low-income households disproportionally and could have a number of long-term consequences, such as for a person's capacity to save, their health and the education of children, thus exacerbating inequalities in the long run ([5]).

In 2019, the income of the richest 20 % of the households in the EU was

5.0
times higher than that of the poorest 20 %

21.4 %
Share of total income earned by the bottom 40 % of the EU population in 2019

The European Pillar of Social Rights (⁶) sets out 20 key principles to support fair and well-functioning labour markets and welfare systems. These principles address topics related to inequality by tackling both inequality of outcomes and inequality of opportunities: from wage-setting to social-protection systems, gender equality, enabling social services, childcare and support to children, old-age income, healthcare and access to housing.

The European Pillar of Social Rights Action Plan turns the Principles of European Pillar of Social Rights into concrete actions to benefit citizens. It proposes headline targets regarding employment rate, adult participation in learning and risk of poverty and social exclusion for the EU to reach by 2030.

The European Semester is a key delivery tool of the Pillar and coordinates the economic and fiscal policies of EU Member States. As part of its Green Deal, the European Commission has announced that the European Semester will be refocused to integrate the SDGs and to put sustainability and the well-being of citizens at the centre of economic policy.

The Commission also launched the Just Transition Mechanism (⁷) to support those who will be the most affected by the transition to the climate-neutral society by helping to provide opportunities for reskilling, training and job assistance, but also through investment in energy efficiency.

Inequality is of particular concern regarding the long-term outcomes and opportunities for children, as it puts children at a disadvantage from the starting point in areas with long-lasting consequences, such as physical and mental health and education, thus undermining children's development and human potential. Several

organisations have analysed the impacts and conditions of inequality on children in the EU. In their 2020 Growing up in lockdown report, the Eurochild network reviews the effects of the COVID-19 outbreak on children in 25 European countries. The findings suggest the pandemic has had negative effects on children's mental health and has exacerbated societal inequality. The European Platform for Investing in Children (EPIC) published a policy memo exploring 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. The memo highlights wide variations between the EU Member States and suggests policy options for dealing with the childcare gap.

The poverty gap and the urban–rural gap in risk of poverty have narrowed in recent years

Inequality and poverty are closely interrelated. The distribution of resources within a country has a direct impact on the extent and depth of poverty. In 2019, 20.9 % of the EU population were at risk of poverty or social exclusion. However, this rate differs between cities and rural areas. In 2019, the urban–rural gap in the at-risk-of-poverty-or-social-exclusion rate amounted to 1.1 percentage points, with 21.3 % of people living in cities being in this situation, compared with 22.4 % of people in rural areas. The lowest share of people at risk of poverty or social exclusion was observed in towns and suburbs, with 19.2 % of people at risk in 2019.

The share of people at risk of poverty or social exclusion in rural areas was

1.1

percentage points higher than in cities in 2019

The gap in the risk of poverty or social exclusion rate between cities and rural areas at the EU level has thus almost closed compared with 2010, when it was 7.8 percentage points. This development is the result of a significant improvement in rural areas, where the share of people at risk of poverty or social exclusion has

fallen by 7.6 percentage points since 2010. In contrast, the rate in cities has decreased by only 0.9 percentage points over the same time span.

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 (⁸). 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 48.5 % and 44.3 % of the rural population were at risk of poverty or social exclusion in 2019. This amounted to an urban-rural gap of 24.9 and 29.8 percentage points in these two countries, respectively. However, this does not account for all EU Member States, as other countries such as Austria, the Netherlands and France are reporting much higher poverty rates in cities than in rural areas.

Furthermore, the poverty gap, defined as the distance between the median income of people at risk of poverty and the poverty threshold has decreased. In 2019, this gap amounted to 24.5 % in the EU, which means the median income of those below the poverty threshold was 24.5 % lower than the poverty threshold. This represents a 0.8 percentage point closing of the gap since 2014, indicating a slight improvement in the 'depth' of income poverty in the EU. The long-term trend, however, shows a 1.4 percentage point widening of the gap since 2010.

24.5 %
median distance from the poverty threshold for those at risk of poverty in 2019

The **European Social Fund** (ESF) is the EU's main instrument for investing in people since the adoption of the Treaty of Rome. It helps tackle inequalities, both in terms of outcomes and opportunities, by financing actions in the areas of employment, social inclusion, education, training and administrative capacity reforms. 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 further help to reduce inequalities.

The **long-term vision for rural areas** is an upcoming EU initiative to create a discourse on the future of rural areas. Intended for Commission adoption in June 2021, the vision will propose actions to address the challenges specific to rural areas, such as demographic change, low income levels, connectivity and limited access to services, in order to help rural areas to realise their potential. It will also explore inclusive solutions to climate change impacts, the digital transformation and the COVID-19 crisis.

In order to support European rural development policy, the **European Agricultural Fund for Rural Development (EAFRD)** finances rural development programmes across the EU Member States and regions. For the peropd 2021 to 2027, the EAFRD budget amounts to EUR 95.5 billion, including an injection of EUR 8.1 billion from the **NextGenerationEU** recovery instrument to help address the challenges posed by the COVID-19 pandemic.

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. Particular attention is paid to regions that are naturally disadvantaged due to natural or demographic factors, such as remoteness, low population densities and island, cross-border and mountain regions.

Inequalities between countries

We live in an interconnected world, where problems and challenges — be they 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. Cohesion between Member States is one of the EU's objectives, as mentioned in the Treaty on European Union (article 3.3) (⁹).

Despite an overall reduction in economic disparities, north–south and west-east divides between EU countries remain

Not only have economic performances, 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.

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 2003, reaching 41.3 %

41.3 %
variation in GDP per capita between Member States in 2019
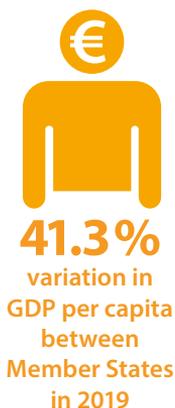
in 2019. According to the 2018 Annual Review of Employment and Social Developments in Europe (¹⁰), this improvement was mainly a result of rising GDP in countries that joined the EU in 2004 and later. Most of this convergence took place in the period leading up to the 2008 economic crisis. At Member State level, purchasing power adjusted GDP per capita in 2019 ranged from 53 % of the EU average in Bulgaria to 260 % in Luxembourg.

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 the ability to invest in goods and services or to 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 24.9 % in 2019. This figure is 5.3 percentage points less than in 2014 and a 12.9 percentage point improvement since 2004.

24.9 %
variation in household disposable income across the EU in 2019

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 2019. 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.

The new **2021–2027 EU Cohesion Policy** focuses on five main objectives that drive investments in order to ensure that all EU regions participate in the green and digital transitions in a fair and territorially balanced way: (a) fostering innovation and digitisation, (b) supporting the green energy transition and fighting climate change, (c) creating strategic transport and digital networks, (d) delivering on the **European Pillar of Social Rights**, and (e) supporting local development strategies and sustainable urban development. The allocation of regional funding includes — next to GDP per capita — additional criteria such as youth unemployment, climate change and migrant integration).

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. 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 their integration into the labour market [11].

The number of asylum applications in the EU has fallen considerably since 2015

The urge to seek international protection is one of the main reasons that forces people to cross borders. In 2020, the EU received 416 950 first-time asylum applications [12] (equalling 932 applications per million EU inhabitants), which is about a third of the number at the height of the refugee crisis in 2015, but still more than a three-fold increase compared with 2008. During 2020, 211 825 people were granted protection status in the first instance in the EU [13].

416 950
first-time asylum applications were submitted in the EU in 2020

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 [14]. A similar drop in numbers was observed between 2016 and 2017, which marked a pronounced decrease of 46.9 % 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 [15]. This has partly been influenced by the closure of the Western Balkans route [16] and the EU–Turkey Statement in 2016 [17], which made the irregular flow of people towards central and northern Europe more difficult and forced migrants to use different routes across the Mediterranean [18].

The European Commission's **New Pact on Migration and Asylum** (¹⁹) **aims to create faster migration processes and stronger governance of migration and border policies. In particular, it emphasises the shared responsibility of Member States as well as fair and efficient asylum rules.**

The **Fund for European Aid to the Most Deprived** **(FEAD) may support asylum seekers by providing them with immediate relief and social assistance. However, Member States define the target groups individually and the scope of support by FEAD depends on the scope of the national programme.**

The **European Solidarity Corps enables young people across the EU to volunteer their help for the reception and integration of migrants or refugees.**

The social inclusion of non-EU citizens remains a challenge, as shown by the impacts of the COVID-19 pandemic

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 face much harsher conditions than EU nationals. Furthermore, short-term trends have been mostly unfavourable, with the gap between home-country nationals and non-EU citizens widening in almost all areas monitored here.

The income poverty rate for non-EU citizens was

23.5

percentage points higher than for home-country nationals in the EU in 2019

Data for the citizenship gap for people at risk of income poverty after social transfers are not yet available for 2020 and thus do not yet reflect the impacts of the COVID-19 pandemic. The available data show that poverty rates remained quite stable for both groups between 2014 and 2019. Still, the gap remains large, with 38.6 % of non-EU citizens being at risk of income poverty (after social transfers) in 2019, compared with only 15.1 % of home-country nationals.

The disadvantaged situation of migrants from outside the EU is particularly visible with regard to the COVID-19 crisis. In 2020, trends for non-EU citizens plummeted across several indicators, whereas indicator trends for EU citizens — while also worsening — were considerably less affected. For example, employment rates for non-EU citizens aged 20 to 64 dropped by 2.6 percentage points between 2019 and 2020, while EU home-country nationals only suffered a 0.5 percentage point decrease. This contributed to a further widening of the gap between the two groups, from 13.6 percentage points in 2015 to 15.9 percentage points in 2020. This means that while 73.3 % of EU home-country nationals were employed in 2020, the rate for non-EU citizens only stood at 57.4 %, which is only slightly above the employment rate reported for this group five years earlier (56.0 % in 2015).

The employment rate for non-EU citizens was

15.9

percentage points lower than for home-country nationals in the EU in 2020

The COVID-19 pandemic had similar effects for indicators in the area of education, where a widening of the gap between home-country nationals and non-EU citizens has been visible in recent years. Both the shares of young people not in employment nor in education and training (NEET) and of early school leavers worsened considerably for non-EU citizens in 2020, whereas EU home-country nationals were much less affected. From 2019 to 2020, the NEET rate for 15- to 29-year old migrants increased by 2.6 percentage points, reaching 26.8 % in 2020. For home-country nationals of the same age, the NEET rate only increased by 1.0 percentage points, reaching 12.8 % in 2020. The citizenship gap between these two groups consequently amounted to 14.0 percentage points in 2020, compared with 13.1 percentage points five years earlier.

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 2006, without any visible impact of the COVID-19 pandemic, reaching 8.8 % in 2020. In contrast, the early leaving rate for non-EU citizens had already been growing since 2017, with a further 1.5 percentage point increase from 2019 to 2020, reaching 28.4 % in 2020. The citizenship gap in that year consequently amounted to 19.6 percentage points, which is well above the gap of 17.0 percentage points reported in 2015. 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 NEET rate for non-EU citizens was

14.0 **percentage points higher than for EU home-country nationals in 2020**

The share of early school leavers among non-EU citizens was

19.6 **percentage points higher than for EU home-country nationals in 2020**

The European Commission's Action Plan on Integration and Inclusion (2021 to 2027) ([20]) sets out actions that support migrants' inclusion in education and employment. It also coordinates, through the European Integration Network, the various actors working on integration at national, regional and local level.

Presentation of main indicators

Income quintile share ratio

The distribution of income can be measured by using, among others ([21]), 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, 2010–2019
(income quintile share ratio)
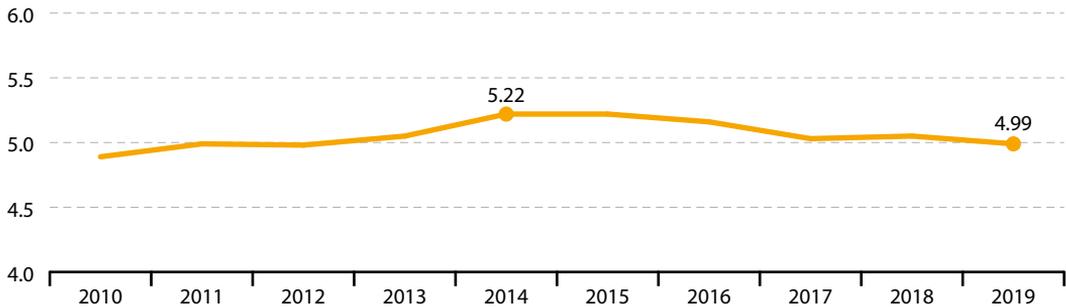
Note: 2016–2019 data estimated.
Compound annual growth rate (CAGR): – 0.9 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_10_41)

Figure 10.2: Income distribution, by country, 2014 and 2019
(income quintile share ratio)
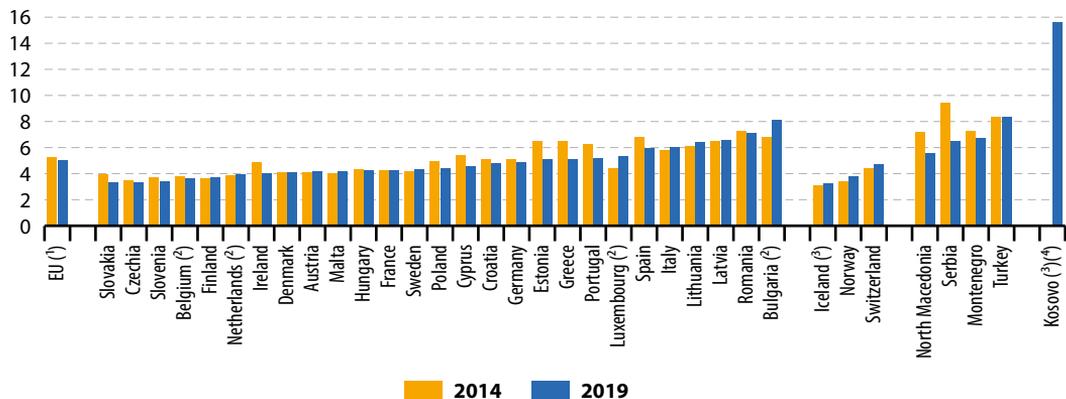
2014   2019

([1]) 2019 data are estimated.
([2]) Break(s) in time series between the two years shown.
([3]) 2018 data (instead of 2019).
([4]) No data for 2014.
Source: Eurostat (online data code: sdg_10_41)

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) available for spending or saving. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC).

X LONG TERM Time series too short

SHORT TERM 2014–2019

Figure 10.3: Income share of the bottom 40 % of the population, EU, 2010–2019
(% of income)
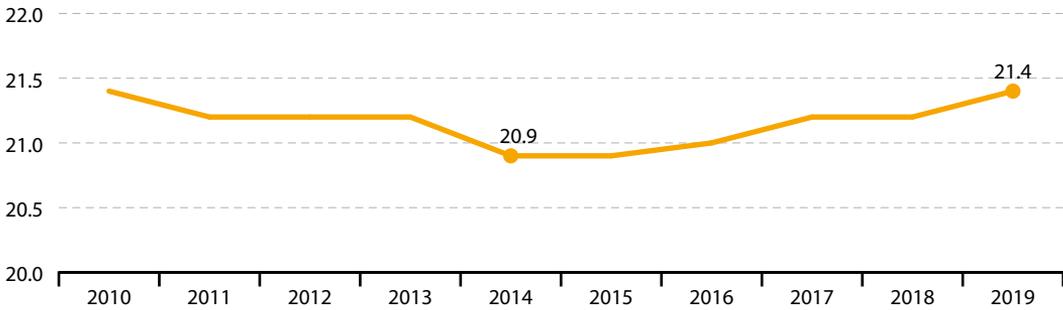
Note: 2016–2019 data are estimated.
Compound annual growth rate (CAGR): 0.5 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_10_50)

Figure 10.4: Income share of the bottom 40 % of the population, by country, 2014 and 2019
(% of income)
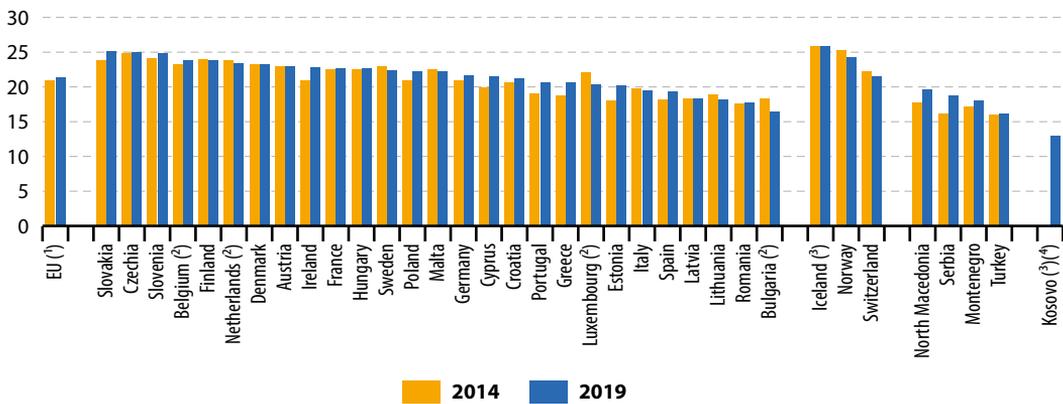
2014 **2019**

(¹) 2019 data are estimated.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.

Source: Eurostat (online data code: sdg_10_50)

Relative median at-risk-of-poverty gap

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, 2010–2019
(% distance to poverty threshold)
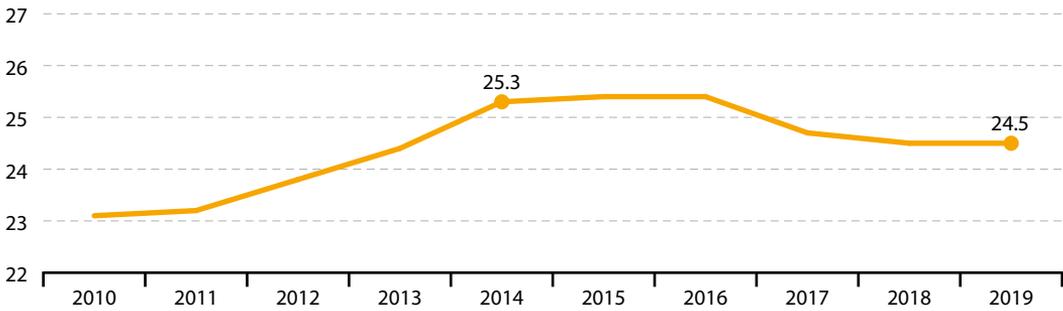
Note: 2016–2019 data estimated.
Compound annual growth rate (CAGR): – 0.6 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_10_30)

Figure 10.6: Relative median at-risk-of-poverty gap, by country, 2014 and 2019
(% distance to poverty threshold)
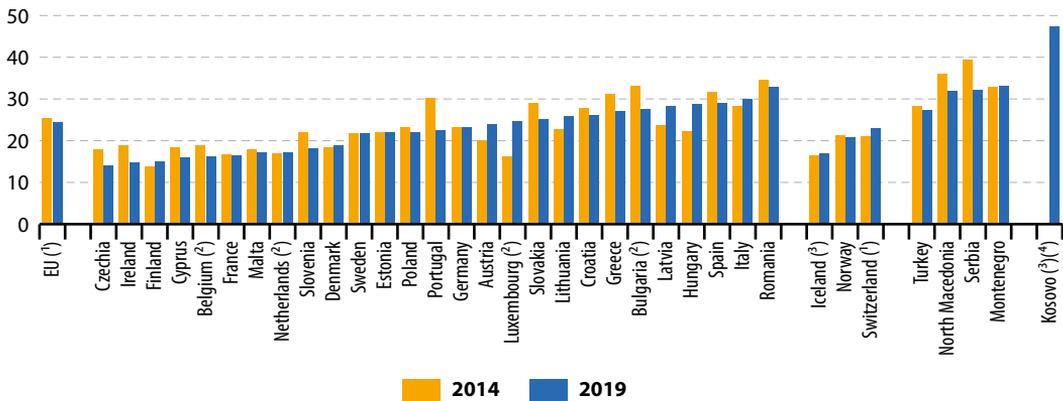
■ **2014** ■ **2019**

(¹) 2019 data are estimated.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_10_30)

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) ([22]), 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, 2000–2019
(coefficient of variation, in %)
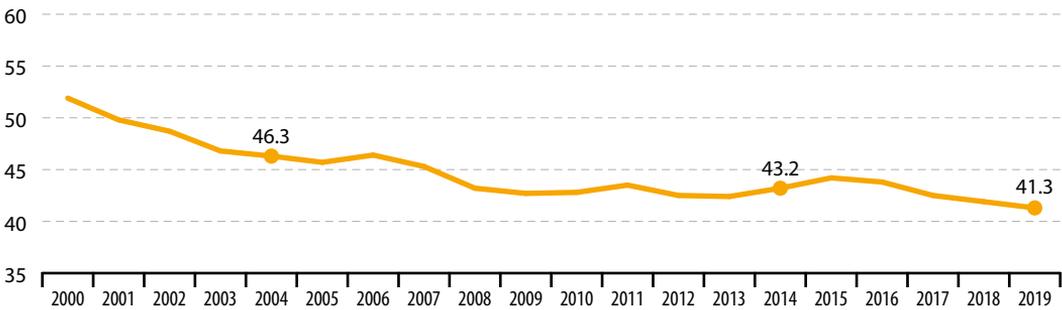
Compound annual growth rate (CAGR): – 0.8 % per year in the period 2004–2019; – 0.9 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_10_10)

Figure 10.8: Purchasing power adjusted GDP per capita, by country, 2019
(index EU = 100)
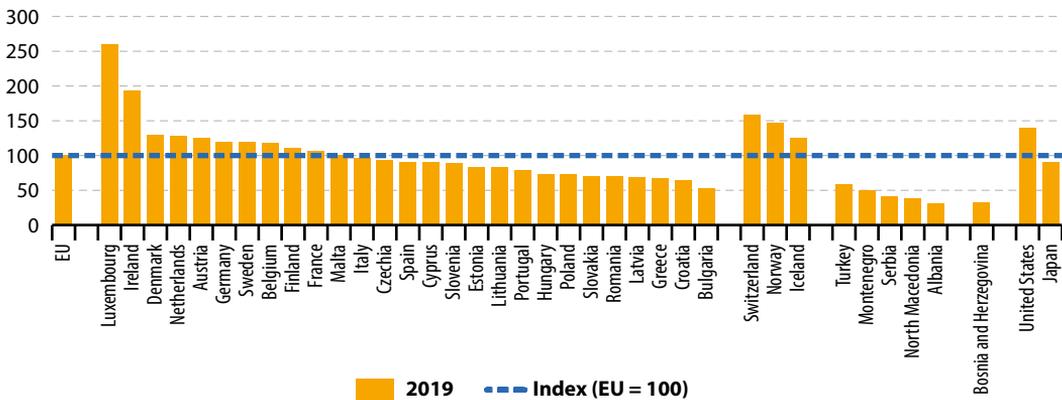
Source: Eurostat (online data code: sdg_10_10)

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, 2000–2019
(coefficient of variation, in %)
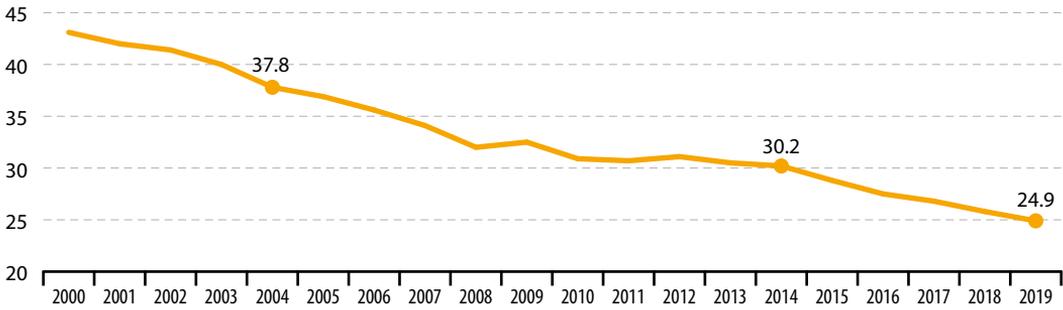
Note: EU coefficient of variation excluding Malta (whole time series); 2018 and 2019 data are provisional estimates.
Compound annual growth rate (CAGR): – 2.7 % per year in the period 2004–2019; – 3.8 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_10_20)

Figure 10.10: Adjusted gross disposable income of households per capita, by country, 2019
(index EU = 100)

2019   Index (EU = 100)
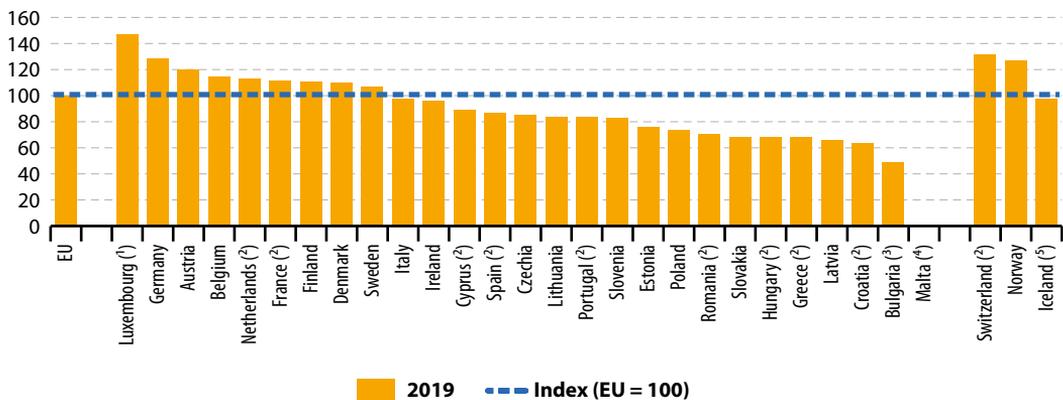
(¹) 2018 data.   (⁴) No data.
(²) Provisional or estimated data.   (⁵) 2014 data.
(³) 2017 data.
Source: Eurostat (online data code: sdg_10_20)

Asylum applications

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/judicial asylum procedure in the receiving country. The source data are supplied to Eurostat by the national ministries of interior and related official agencies.

X Assessment of progress not applicable due to lack of policy targets

Figure 10.11: Asylum applications, by state of procedure, EU, 2008–2020 (number per million inhabitants)
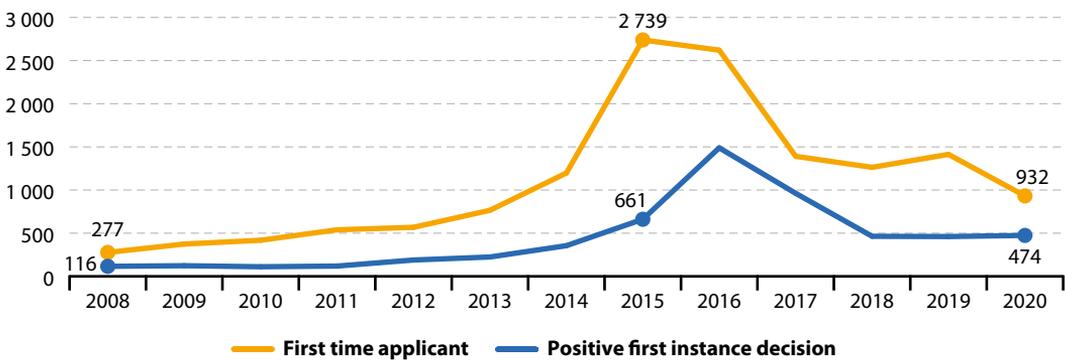
Note: Multiple breaks in time series; 2018–2020 data are provisional estimates.
Source: Eurostat (online data code: sdg_10_60)

Figure 10.12: First time asylum applications, by country, 2015 and 2020 (number per million inhabitants)
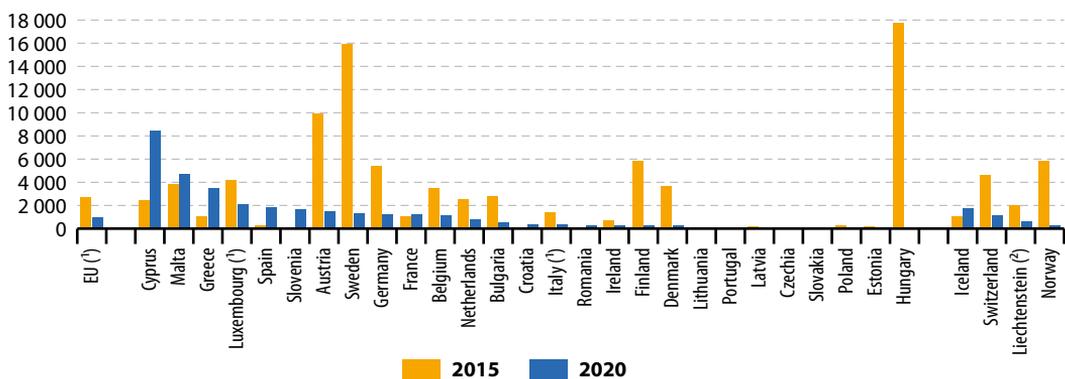
Note: 2020 data are provisional estimates.
(¹) Break(s) in time series between the two years shown.
(²) 2016 data (instead of 2015).
Source: Eurostat (online data code: sdg_10_60)

Presentation of additional multi-purpose indicators

X LONG TERM
Time series
too short

↑ SHORT TERM
2014–2019

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 65 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, 2010–2019
(% of population)
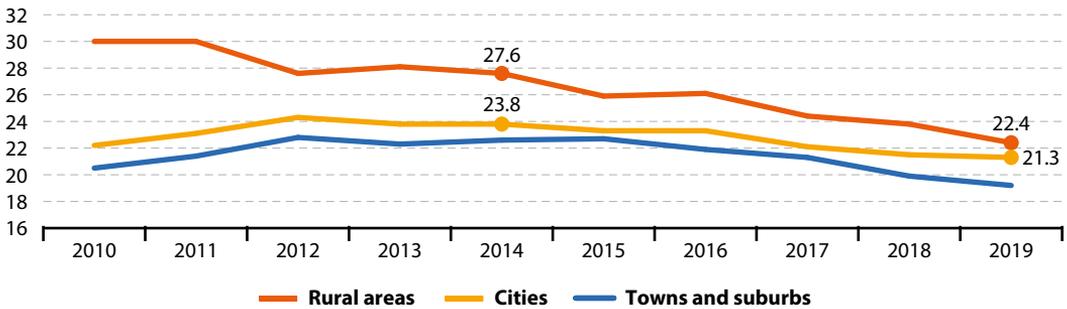
Note: Estimated data.
Compound annual growth rate (CAGR) of the gap between cities and rural areas: – 22.0 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_01_10a)

Figure 10.14: People at risk of poverty or social exclusion, by degree of urbanisation, by country, 2019
(% of population)
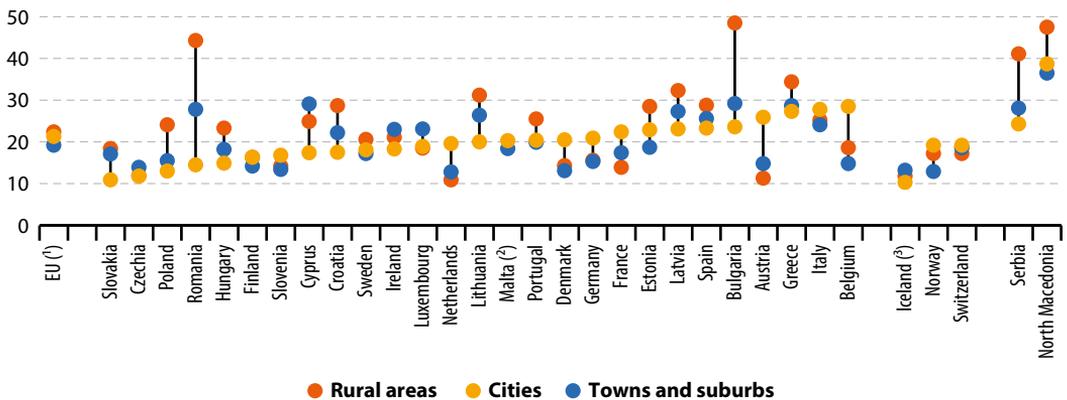
(¹) Estimated or provisional data.   (³) 2018 data (instead of 2019).
(²) No data for rural areas.
Source: Eurostat (online data code: sdg_01_10a)

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, 2010–2019**

(% of population aged 18 years or more)
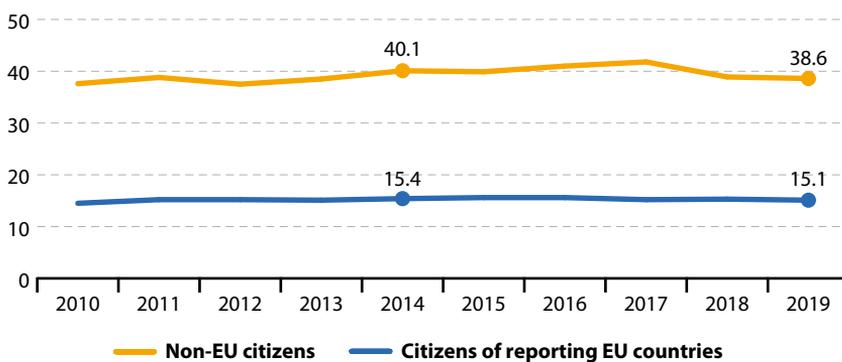
Note: Estimated data; 2010–2011 data for non-EU citizens have low reliability.
Compound annual growth rate (CAGR) of the citizenship gap: – 1.0 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_01_20a)

Figure 10.16: **Early leavers from education and training, by citizenship, EU, 2006–2020**

(% of population aged 18–24)
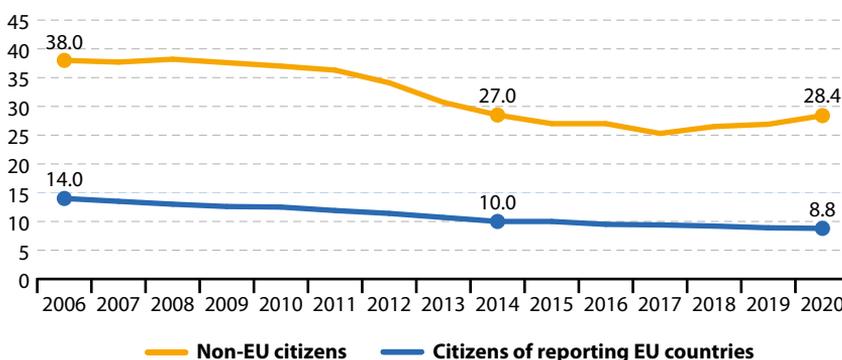
Note: Break in time series in 2014.
Compound annual growth rate (CAGR) of the citizenship gap: – 1.4 % per year in the period 2006–2020; 2.9 % per year in the period 2015–2020.

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, 2006–2020

(% of population aged 15–29)

LONG TERM
2006–2020

SHORT TERM
2015–2020

Non-EU citizens   Citizens of reporting EU countries
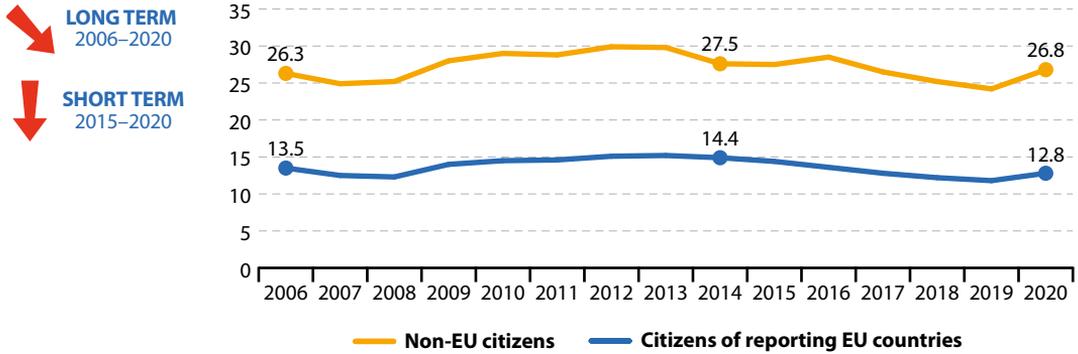
Compound annual growth rate (CAGR) of the citizenship gap: 0.9 % per year in the period 2006–2020; 1.3 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_08_20a)

Figure 10.18: Employment rate, by citizenship, EU, 2006–2020

(% of population aged 20–64)

LONG TERM
2006–2020

SHORT TERM
2015–2020

Non-EU citizens   Citizens of reporting EU countries
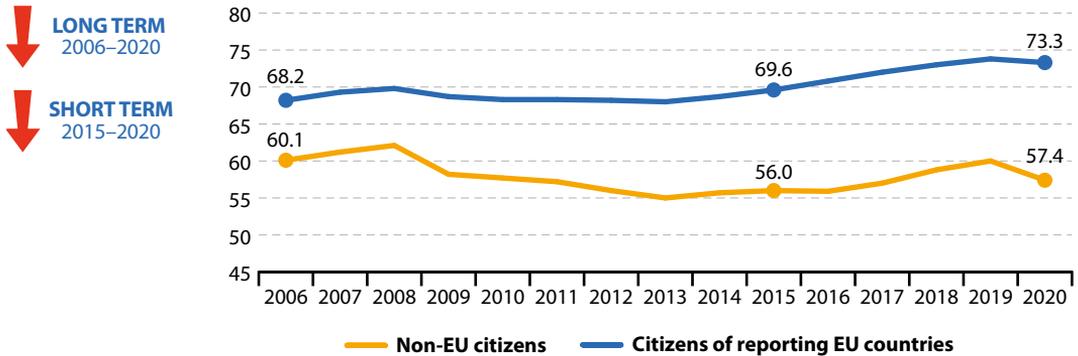
Compound annual growth rate (CAGR) of the citizenship gap: 5.3 % per year in the period 2006–2020; 3.2 % per year in the period 2015–2020.

Source: Eurostat (online data code: sdg_08_30a)

Further reading on inequalities

Eurofound (2020), *Upward convergence in material well-being: Is a COVID-19 setback inevitable?*, Publications Office of the European Union, Luxembourg.

Eurofound (2019), *A more equal Europe? Convergence and the European Pillar of Social Rights*, Publications Office of the European Union, Luxembourg.

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OECD (2020), *International Migration Outlook 2020*.

OECD (2019), *Under Pressure: The Squeezed Middle Class*.

OECD (2018), *A Broken Social Elevator? How to Promote Social Mobility*.

UNHCR (2020), *Mid-year trends 2020*, Geneva.

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(¹⁰) European Commission (2018), *Employment and Social Developments in Europe, Annual Review 2018*, p. 45.

(¹¹) OECD and European Union (2015), *Indicators of Immigrant Integration 2015: Settling In*, OECD Publishing, Paris.

(¹²) Source: Eurostat (online data code: MIGR_ASYAPPCTZA).

(¹³) Source: Eurostat (online data code: MIGR_ASYDCFSTA).

(¹⁴) European Asylum Support Office (2021), *Asylum Trends 2020 preliminary overview*.

(¹⁵) European Commission (2018), *Migration: Number of asylum applications in the EU down by 43% in 2017*.

(¹⁶) 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.

(¹⁷) European Council and Council of the European Union (2016), *EU–Turkey statement*, 18 March 2016.

(¹⁸) UNHCR (2017), Bureau for Europe, *Desperate Journeys: Refugees and migrants entering and crossing Europe via the Mediterranean and Western Balkans routes*, pp.1–2.

(¹⁹) European Commission (2020), *A New Pact on Migration and Asylum*, COM(2020) 609 final, Brussels.

(²⁰) European Commission (2020), *Action plan on Integration and Inclusion 2021–2027*, COM(2020) 758 final, Brussels.

(²¹) 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.

(²²) 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 320 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 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 housing and decent housing conditions. Another is reducing cities' negative environmental impacts, such as poor air quality, noise, the spread of settlement areas and the large amounts of waste generated 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			
Overcrowding rate	:	⬆	page 243
Population living in households suffering from noise	:	⬆	page 244
Exposure to air pollution by particulate matter	⬆	⬆	page 245
People living in households with poor housing conditions (such as leaking roof, damp walls or foundation, etc.) (*)	:	⬆	SDG 1, page 71
Population reporting crime, violence or vandalism in their area (*)	:	⬆	SDG 16, page 342
Sustainable mobility			
🎯 Road traffic deaths	↗	↘	page 246
Share of buses and trains in total passenger transport (*)	↘	⬇	SDG 9, page 211
Environmental impacts			
Settlement area per capita	:	⬇ (¹)	page 247
🎯 Recycling rate of municipal waste	⬆	↗	page 248
Population connected to at least secondary waste water treatment (*)	:	:	SDG 6, page 152

(*) Multi-purpose indicator.
(¹) 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.1 in the annex.

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 in increasing the quality of life in cities and communities over the past few years, as well as in sustainably managing waste. 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.

The **European Handbook for SDG Voluntary Local Reviews, elaborated by the European Commission, gives policymakers, researchers and practitioners a framework for setting up Voluntary Local Reviews (VLRs). VLRs are an effective instrument to monitor progress towards achieving the SDGs through a local monitoring system designed for European cities. Several European cities and local governments have already started using these tools to implement the SDGs at local level, involving local stakeholders and enhancing multilevel cooperation.**

Quality of housing in the EU has improved over the past eight years

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. In times of the COVID-19 pandemic, a lack of facilities and overcrowding are especially dangerous.

12.7 %
of the EU population lived in poor dwelling conditions in 2019

In 2019, 12.7 % of EU residents experienced at least one of the following basic deficits in their housing condition: leaking roof, damp walls, floors or foundation, or rot in window frames or floor. Since 2010, this share has fallen by 3.6 percentage points, which indicates an improvement in the perceived quality of the EU's housing stock. The overcrowding rate has also fallen since 2010, by 2.0 percentage points. However, in 2019, 17.1 % of the EU population were still living in overcrowded homes.

17.1 %
of the EU population lived in overcrowded homes in 2019

Between 2014 and 2020 more than EUR 115 billion of Cohesion policy funds, predominantly from the European Regional Development Fund, were invested in cities to create better opportunities for sustainable urban mobility, energy efficiency, urban renewal, research and innovation capacity, and economic and social regeneration of deprived communities. Of these funds, a total of EUR 17 billion was spent in cities through integrated urban development strategies managed directly by local authorities. In addition, at least 8 % of total European Regional Development Fund resources have been earmarked at national level for sustainable urban development and the creation of the 'European Urban Initiative' between 2021 and 2027 ([3]).

Europeans perceive their residential areas as quieter and safer

Noise disturbance can cause annoyance, stress, sleep deprivation, poor mental health and well-being as well as harm to the cardiovascular and metabolic system ([4]). Likewise, crime and vandalism can also reduce quality of life and housing satisfaction in residential areas, leading to even more stress and anxiety. In 2019, 17.3 % of the EU population (about 77 million people) said their household suffered from noise disturbance, compared with 20.6 % in 2010 ([5]). Crime, violence and vandalism were perceived in their area by 11.0 % of the EU population in 2019, compared with 13.1 % in 2010.

Despite improvements in perceived exposure to noise, 78.2 million people in EU urban areas were estimated to be exposed to road traffic noise at levels of 55 decibel (dB) or higher on

17.3 %
of the EU population experienced noise disturbance in 2019

an annual average for day, evening and night, based on modelling calculations from 2019. 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 ([6]). 55 dB is the noise level where critical health effects may start arising, ranging from severe annoyance and sleep disturbance to hearing impairment ([7]). The more recent WHO guidelines for Europe are even more stringent, recommending that noise from road traffic should be below 53 dB during the day and below 45 dB during the night ([8]).

The Environmental Noise Directive is the main EU instrument for identifying and combating noise pollution. It focuses on three areas: (a) determining exposure to environmental noise; (b) ensuring information on environmental noise and its effects is made available to the public; and (c) preventing and reducing environmental noise where necessary, particularly where exposure levels can induce harmful effects on human health, and preserving environmental noise quality where it is good.

Despite recent improvement, the urban population's exposure to fine particular matter remains high

High concentrations of people and economic activities significantly increase exposure to air pollution, which poses a major environmental and health risk and influences quality of life in cities. Pollutants such as fine particulate matter 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 ([9]). In 2018, long-term exposure to particulate matter

The average concentration of fine particulate matter in 2019 was
12.6 μg/m³

was responsible for 379 000 premature deaths in the EU, according to EEA estimates [10].

The population-weighted annual mean concentration of fine particulate matter ($PM_{2.5}$) in urban areas dropped from 15.7 μg/m^3 in 2014 to 12.6 μg/m^3 in 2019. Although this is well below the limit set by the EU for 2015 onwards (25 μg/m^3 annual mean) [11], substantial air-pollution hotspots remain. According to recent European Environment Agency (EEA) estimates, 4 % of the EU urban population [12] were exposed to levels above the EU $PM_{2.5}$ limit value in 2018 [13]. If the more stringent WHO air-quality guideline is considered (10 μg/m^3 annual mean), about 74 % of people living in EU cities were estimated to be exposed to $PM_{2.5}$ concentration levels deemed harmful to human health [14].

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 [15]. Nevertheless, there is evidence that the lockdown measures introduced by European countries to fight the pandemic in 2020 also led to reductions in emissions of air pollutants, resulting in better air quality [16]. This improvement, however, is likely to be temporary.

> **The EU addresses air pollution directly through specific air quality and emissions source legislation [17], such as the Clean Air Package,** as well as indirectly through the implementation of certain climate policies that also have the effect of reducing pollution.

City dwellers face more overcrowding, noise pollution and crime

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' [18]. Overcrowding in the EU was greater in cities (19.2 %) than in rural areas (16.3 %) in 2019 [19]. One possible explanation for this is that dwellings in rural areas and towns and suburbs tend to be larger [20]. Meanwhile, the EU population living in towns and suburbs experienced the lowest overcrowding rate (15.5 %).

17.0 %
of people living in EU cities reported occurrence of crime and vandalism in their area in 2019

The perceived level of noise pollution also varies a lot depending on the degree of urbanisation. In 2019, people living in EU cities were more likely to report noise from neighbours or from the street (24.1 %) compared with those living in towns and suburbs (15.6 %) or in rural areas (10.4 %) [21]. Similarly, the perceived occurrence of crime and vandalism in cities (17.0 %) was three times higher than in rural areas (5.6 %) and above the level observed in towns and suburbs (9.1 %) [22].

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 total inland passenger transport has stagnated well below 20 %, accounting for only 17.1 % in 2018. Both long- and short-term trends show that these public transport modes are losing shares (– 0.1 percentage points since 2003 and – 1.0 percentage point since 2013) in favour of passenger cars. This means most passenger journeys in the EU are still undertaken by car.

17.1 %
of total inland passenger-km were covered by buses and trains in 2018

While there are no data available on the effects of the COVID-19 pandemic on urban mobility, there is evidence that the lockdown measures have significantly influenced mobility of people and traffic volumes in general (²³). The number of rail passengers 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, with the number of rail passengers falling by 90 % (²⁴). However, it remains to be seen how far the pandemic has influenced the overall modal split of passenger transport, especially the use of private cars compared with public transport modes.

The EU has established guidelines for sustainable urban mobility planning and provides funding for related projects, including through the use of the European Regional Development Fund.

In December 2020, the European Commission launched its Sustainable and Smart Mobility Strategy (²⁵) which lays the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. One of its flagship actions refers to making interurban and urban mobility more sustainable and healthy.

The reduction in road traffic deaths has slowed in recent years, pushing the EU off track to meeting its 2020 target

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 (²⁶). In 2019, about 62 people lost their lives on EU roads every day. This corresponds to 22 757 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 48.8 % between 2004 and 2019. However, since 2013 the number of road fatalities has stagnated, meaning that by 2019 the indicator had only fallen by 23.1 % in relation to the target's reference year (2010). The EU is therefore likely to miss likely miss its 2020 target of halving the total death toll on EU roads compared with 2010.

22 757
people were killed in road accidents in the EU in 2019

The highest share of road-traffic fatalities was recorded on non-motorway roads outside urban areas (53 %), followed by roads inside urban areas (38 %) in 2018 (²⁷). While the overall number of fatalities fell by 21 % between 2010 and 2018, the number of cyclists killed in urban areas actually increased by 1 %. 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, had a clear impact on the number of road fatalities. Preliminary data indicate that in 2020 the number of road deaths in the EU fell by 17 % compared with 2019 and by an estimated 36 % compared with 2010 (²⁸).

In 2010, the Commission adopted the Communication '**Towards a European road safety area: policy orientations on road safety 2011–2020**', setting a target of halving the overall number of road deaths in the EU by 2020 compared with 2010, and outlining 16 actions. At the 3rd Global Ministerial Conference on Road Safety in Stockholm in February 2020, Sweden presented the **Stockholm Declaration**, paving the way for further global political commitment. It led to the **UN General Assembly Resolution on road safety**,

which proclaimed the period 2021–2030 as the Second Decade of Action for Road Safety and introduced a new reduction target for 2030. In this regard, the EU has already taken the lead and set itself a 50 % reduction target for deaths and for serious injuries by 2030. This was set out in the Commission's **Strategic Action Plan on Road Safety** and the **EU road safety policy framework 2021–2030**, which also set out ambitious road safety plans to reach zero road deaths by 2050 ('Vision Zero') ([29]).

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 ([30]). 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 re-use, 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

47.7 %
of total municipal waste generated in the EU was recycled in 2019

municipal waste accounts for less than 10 % of the weight of total waste generated in the EU ([31]), 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 ([32]).

The **Circular Economy Package** supports the transition to a stronger and more circular economy in which resources are used in a more sustainable way. The **European Green Capital** and the **European Green Leaf** initiatives showcase the EU's commitment to resolving urban environmental challenges. In May 2018 the European Council established legally binding **targets for recycling and reuse of municipal waste.** EU countries will now be required to recycle at least 55 % of their municipal waste by 2025, 60 % by 2030 and 65 % by 2035.

In 2019, each EU inhabitant generated on average 1.38 kilograms of municipal waste per day, which was just 0.03 kg below the 2000 figure ([33]). Although the EU has not substantially 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 47.7 % in 2019. However, the trend has slowed since 2016, with the share of recycled municipal waste rising by only 1.2 percentage points between 2016 and 2019. Further efforts are therefore needed to put the EU back on track towards meeting its recycling targets.

Connection rates to waste water treatment are 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. Between 2016 and 2018, 15 Member States reported that 80 % or more of their population were 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 nutrients. In eight Member States, more than 90 % of the population were connected to such services. The shares increased in most Member States between 2003 and 2018. However, it may not be suitable to connect 100 % of the

15

Member States reported that 80 % or more of their population were connected to at least secondary waste water treatment

population to a sewerage collection system, either because it would produce no environmental benefit or would be too costly.

Settlement area per capita has increased

Offering numerous cultural, educational and job opportunities, an urban lifestyle is increasingly attractive to Europeans, leading to a growing urban population. However, certain demographic and lifestyle trends hinder the efficient use of land in urban areas (^{34}), leading to settlement areas expanding more quickly than populations have grown. Since the mid-1950s, the total surface area of EU cities has increased by 78 % compared with a 33 % growth in the size of the population. The loss of land and ecosystem services that this land could otherwise offer remains one of the major environmental challenges that Europe faces (^{35}).

703.4
square metres of land were covered by settlement area per capita in 2018

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 were covered by settlement area (comprising both sealed and non-sealed surfaces — for example, buildings, industrial and commercial area, infrastructure but also parks and sports grounds), which is 3.3 % more than in 2015.

Presentation of the main indicators

Overcrowding rate

This indicator measures the share of people living in overcrowded conditions in the EU. A person is considered to be living in an overcrowded household if the house 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). The data stem from the EU Statistics on Income and Living Conditions (EU-SILC).

X **LONG TERM** Time series too short

SHORT TERM 2014–2019

Figure 11.1: Overcrowding rate, EU, 2010–2019
(% of population)
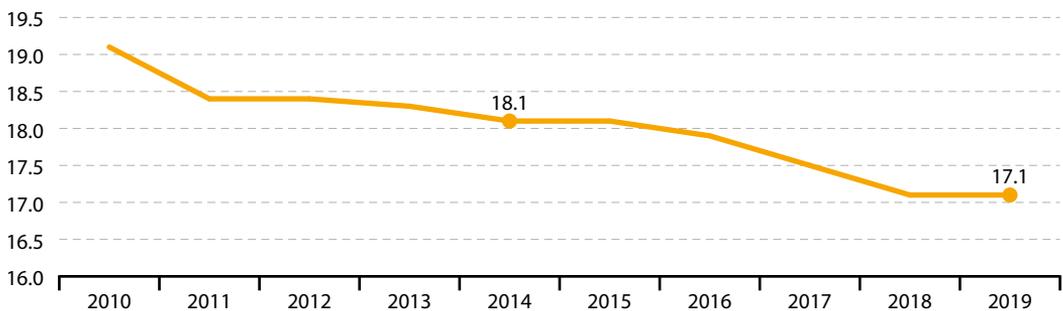
Note: Estimated data.
Compound annual growth rate (CAGR): – 1.1 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_11_10)

Figure 11.2: Overcrowding rate, by country, 2014 and 2019
(% of population)

2014   2019

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_11_10)

Population living in households suffering from noise

This indicator measures the proportion 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 levels 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 of 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, EU, 2010–2019
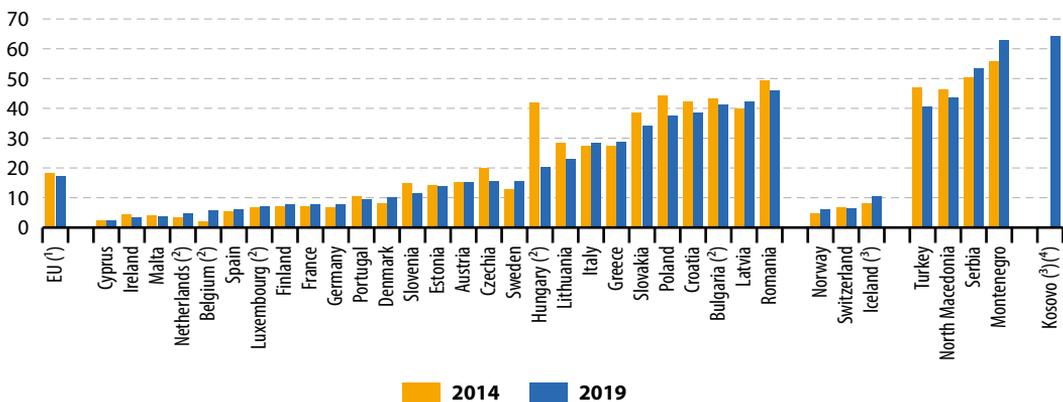(% of population)
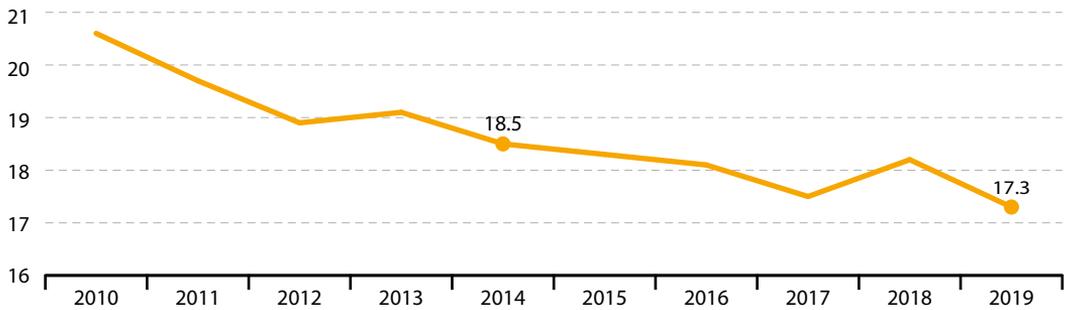
Note: Estimated data.
Compound annual growth rate (CAGR): – 1.3 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_11_20)

Figure 11.4: Population living in households considering that they suffer from noise, by country, 2014 and 2019
(% of population)
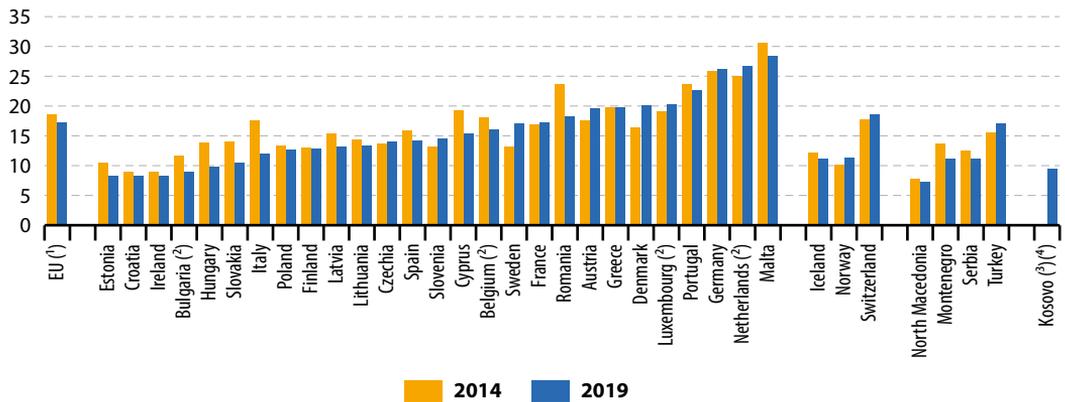
■ **2014** ■ **2019**

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
(⁴) No data for 2014.

Source: Eurostat (online data code: sdg_11_20)

Exposure to air pollution by particulate matter

This indicator measures the population weighted annual mean concentration of particulate matter at urban background stations in agglomerations. Fine and coarse particulates (PM_{10}), i.e. particulates whose diameters are less than 10 micrometres, can be carried deep into the lungs where they can cause inflammation and exacerbate the condition of people suffering heart and lung diseases. Fine particulates ($PM_{2.5}$) are those whose diameters are less than 2.5 micrometres. They are therefore a subset of the PM_{10} particles. Their deleterious health impacts are more serious than PM_{10} as they can be drawn further into the lungs and may be more toxic. Based on the annual submission of Member States' measured concentrations, the data are processed by the European Environment Agency (EEA) with the help of the European Topic Centre on Air Pollution, Transport, Noise and Industrial Pollution (ETC/ATNI) (and its predecessor ETC/ACM).

Figure 11.5: Exposure to air pollution by particulate matter, EU, 2000–2019 (µg/m³)
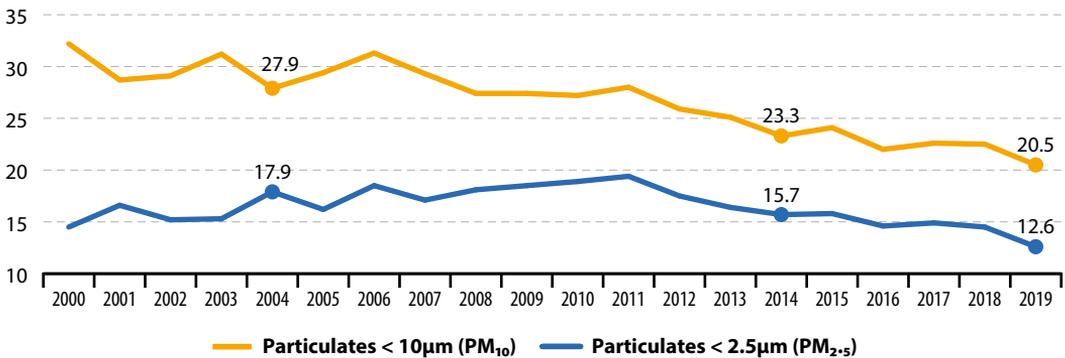
Compound annual growth rate (CAGR) for $PM_{2.5}$: – 2.3 % per year in the period 2004–2019; – 4.3 % per year in the period 2014–2019.
Source: EEA, Eurostat (online data code: sdg_11_50)

Figure 11.6: Exposure to air pollution by particulate matter ($PM_{2.5}$), by country, 2014 and 2019 (µg/m³)
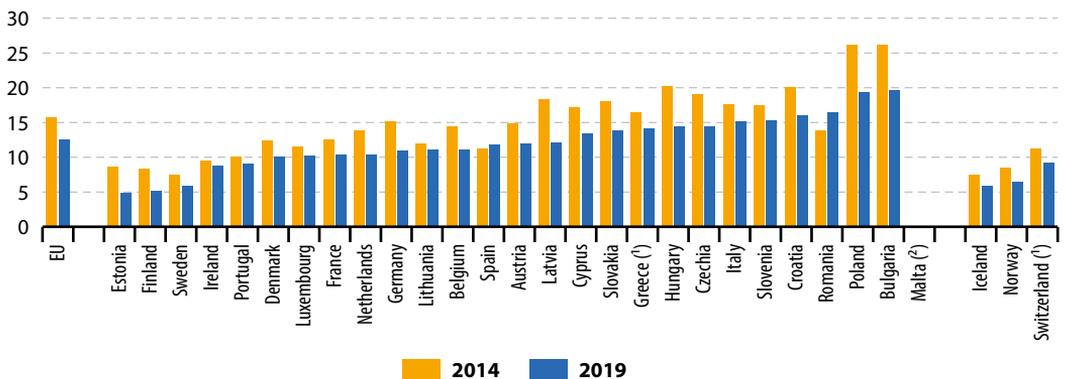
(¹) 2015 data (instead of 2014).   (²) No data.
Source: EEA, Eurostat (online data code: sdg_11_50)

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. After this period, the reason for dying might be declared differently. For Member States not using this definition, corrective factors were applied. The average population of the reference year (calculated as the arithmetic mean of the population on 1 January of two consecutive years) is used as denominator (per 100 000 persons). The data come from the CARE database managed by DG Mobility and Transport (DG MOVE).

Figure 11.7: Road traffic deaths, EU, 2000–2019
(number of killed people)
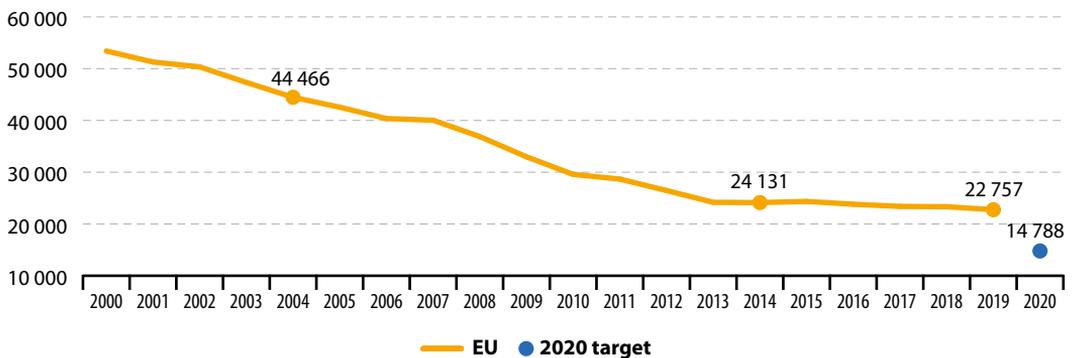
Compound annual growth rate (CAGR): – 4.4 % per year (observed) and – 6.6 % per year (required to meet target) in the period 2004–2019; – 1.2 % per year (observed) and – 7.8 % per year (required to meet target) in the period 2014–2019.

Source: European Commission services, DG Mobility and Transport (Eurostat online data code: sdg_11_40)

Figure 11.8: Road traffic deaths, by country, 2014 and 2019
(number per 100 000 people)
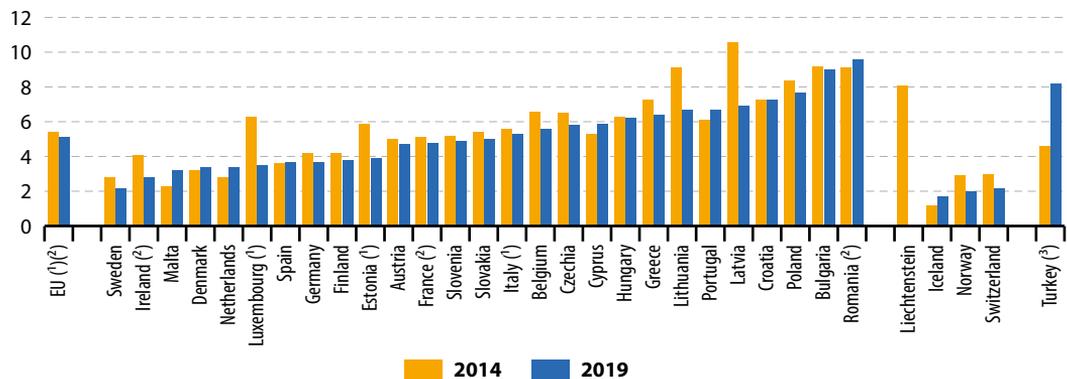
(¹) Break(s) in time series between the two years shown.   (³) 2018 data (instead of 2019).
(²) 2019 data are provisional and/or estimated.

Source: European Commission services, DG Mobility and Transport (Eurostat online data code: sdg_11_40)

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.

X LONG TERM
Time series
too short

SHORT TERM
2015–2018

Figure 11.9: Settlement area per capita, EU, 2009–2018
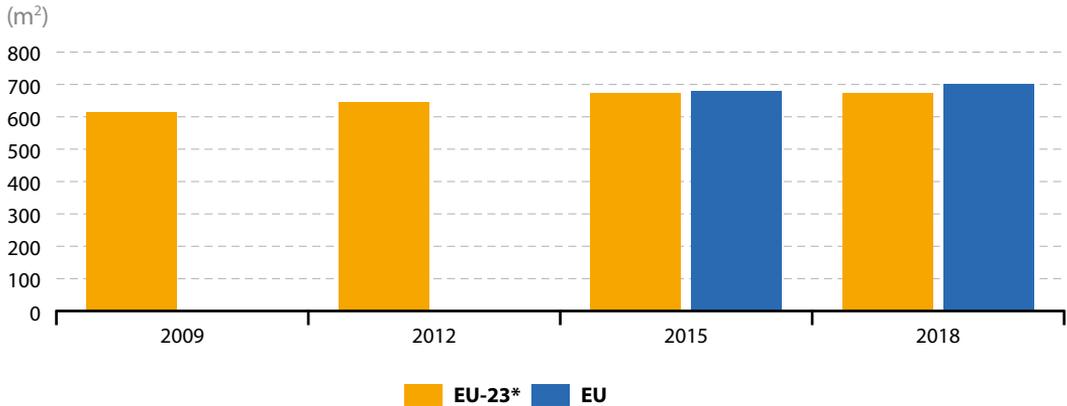
(m²)

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)
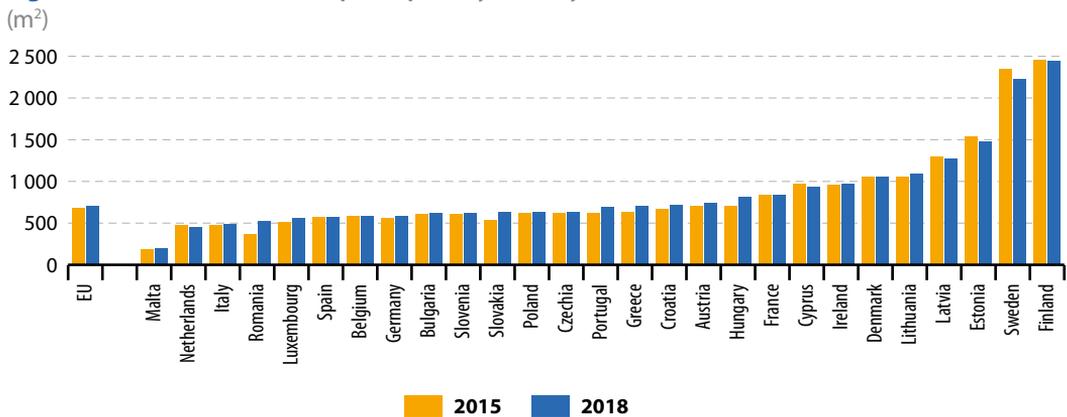
Source: Eurostat (online data code: sdg_11_31)

Recycling rate of municipal waste

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 the 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 by Eurostat.

Figure 11.11: Recycling rate of municipal waste, EU, 2000–2019
(% of total municipal waste generated)
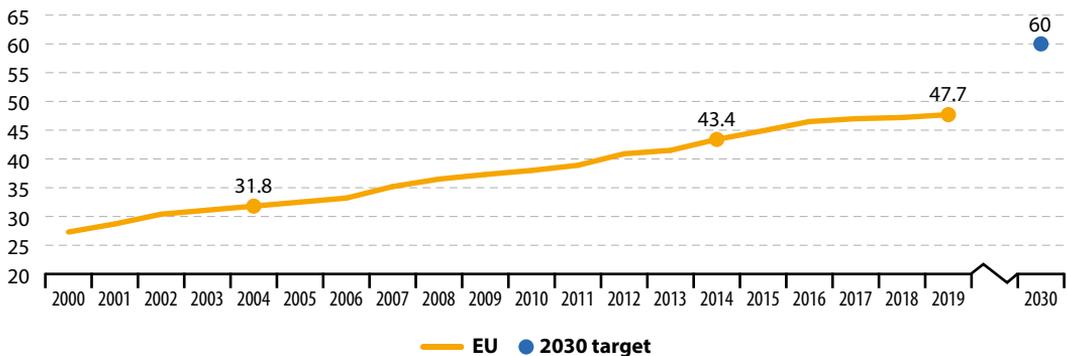
Note: 2019 data are Eurostat estimates.
Compound annual growth rate (CAGR): 2.7 % per year (observed) and 2.5 % per year (required to meet target) in the period 2004–2019; 1.9 % per year (observed) and 2.0 % per year (required to meet target) in the period 2014–2019.

Source: Eurostat (online data code: sdg_11_60)

Figure 11.12: Recycling rate of municipal waste, by country, 2014 and 2019
(% of total municipal waste generated)
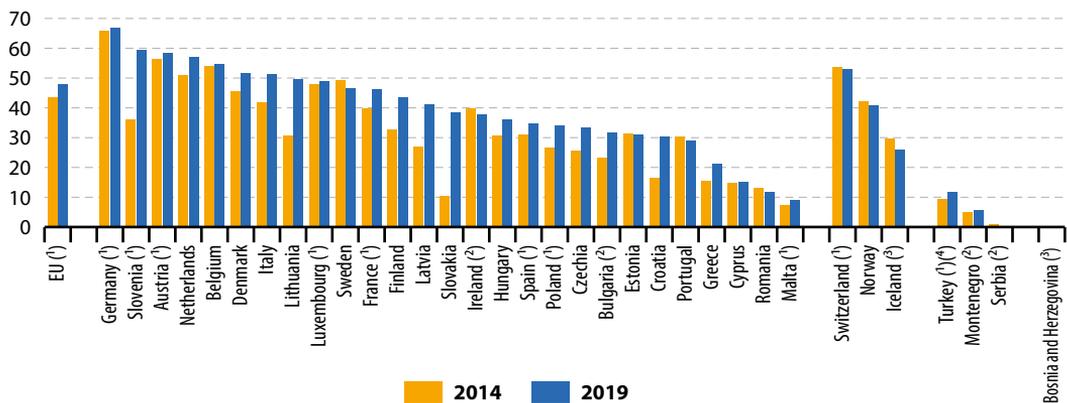
(¹) Estimated and/or provisional data.
(²) 2018 data (instead of 2019).
(³) 2017 data (instead of 2019).
(⁴) 2016 data (instead of 2014).

Source: Eurostat (online data code: sdg_11_60)

Further reading on sustainable cities and communities

European Environment Agency (2020), *Air Quality in Europe 2020 Report*, EEA Report No 9/2020, Publications Office of the European Union, Luxembourg.

Eurostat (2020), *Eurostat regional yearbook 2020*, Publications Office of the European Union, Luxembourg.

Joint Research Centre (2018), *Atlas of the Human Planet 2018, a world of cities*, Publications Office of the European Union, Luxembourg.

The Housing Europe (2021), *The State of Housing in Europe 2021,* Housing Europe, the European Federation for Public, Cooperative and Social Housing, Brussels.

United Nations, Department of Economic and Social Affairs, Population Division (2018), *The World's Cities in 2018 — Data Booklet* (ST/ESA/SER.A/417).

UN-Habitat (2020), *World Cities Report 2020: The Value of Sustainable Urbanization*.

WHO (2018), *Global Status Report on Road Safety 2018.*

WHO Regional Office for Europe (2018), *Environmental Noise Guidelines for the European Region*.

Further data sources on sustainable cities and communities

EEA, Land take.

EEA, Air quality and COVID-19.

EEA, Population exposure to environmental noise.

EEA, Waste recycling.

European Commission, Mobility and Transport. Statistics — accidents data.

European Commission, Urban Data Platform.

Notes

(¹) 2019 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) European Parliament (2020), *News: Agreement reached on the 2021–2027 EU regional and cohesion funding*.
(⁴) European Environment Agency (2019), *Population exposure to environmental noise*.
(⁵) Source: Eurostat (online data code: sdg_11_20 and demo_gind).
(⁶) European Environment Agency (2019), *Population exposure to environmental noise*. Data refer to EU-28.
(⁷) Berglund, B., Lindvall, T., Schwela, D.H. (1999), *Guidelines for Community Noise*, World Health Organization (WHO), Geneva.
(⁸) WHO Regional Office for Europe (2018), *Environmental Noise Guidelines for the European Region*.
(⁹) World Health Organization (2016), *World Health Statistics 2016: Monitoring Health for the SDGs*, p. 37.
(¹⁰) European Environment Agency (2020), *Air Quality in Europe 2020 Report*, EEA Report No 9/2020, Publications Office of the European Union, Luxembourg, p. 7. The EEA estimates reported here refer to the EU-28.
(¹¹) 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
(¹²) The EEA estimates reported here refer to the EU-28.
(¹³) European Environment Agency (2020), *Air Quality in Europe 2020 Report*, EEA Report No 9/2020, Publications Office of the European Union, Luxembourg, p. 8.
(¹⁴) *Ibid*.
(¹⁵) European Environment Agency (2020), *Air quality and COVID-19*.
(¹⁶) European Environment Agency (2020), *Air Quality in Europe 2020 Report*, EEA Report No 9/2020, Publications Office of the European Union, Luxembourg, p. 6.
(¹⁷) See: European Commission (2019), *Environment: Clean Air*.
(¹⁸) 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.
(¹⁹) Source: Eurostat (online data code: tessi174).
(²⁰) See: Average size of dwelling by household type and degree of urbanisation. Source: Eurostat (online data code: ilc_hcmh02).
(²¹) Source: Eurostat (online data code: ilc_mddw04).
(²²) Source: Eurostat (online data code: ilc_mddw06).
(²³) Google (2020), *Google COVID-19 Community Mobility Reports*.
(²⁴) Eurostat (2020), *Impact of COVID-19 on rail passenger transport in Q2 2020*.
(²⁵) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM(2020) 789 final, Brussels.
(²⁶) European Commission (2020), *Road safety: Europe's roads are getting safer but progress remains too slow*.
(²⁷) European Commission (2020), *2019 road safety statistics: what is behind the figures?*
(²⁸) European Commission (2021), *Road safety: 4 000 fewer people lost their lives on EU roads in 2020 as death rate falls to all time low*.
(²⁹) European Commission (2018), *Europe on the Move: Commission completes its agenda for safe, clean and connected mobility*, Press release database, Brussels.
(³⁰) UN-Habitat (2016), *Urbanization and Development: Emerging Futures*, World Cities report 2016, pp. 85–100.
(³¹) Eurostat (2021), Statistics explained: *Municipal waste statistics*.
(³²) 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)*.
(³³) Source: Eurostat (online data code: env_wasmun).
(³⁴) Examples of such trends are lower household occupancy and preference for detached houses. See also European Environment Agency (2016), *Urban sprawl in Europe — joint EEA-FOEN report*, Publications Office of the European Union, Luxembourg.
(³⁵) European Commission (2016), *Science for Environment Policy. Future Brief: No net land take by 2050?* p. 4.

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.

eurostat
supports the SDGs

Consumption and production patterns have wide environmental and social impacts. Sustainable production and consumption use resources efficiently, respect resource constraints and reduce 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. It is thus important for the EU to decouple economic growth and the improvement of living standards from resource use and the 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 sustainably produced 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 toxic chemicals	↗	↗	page 261
Resource productivity and domestic material consumption (DMC)	↑	↑	page 262
◎ Average CO_2 emissions from new passenger cars	↘ (¹)	↘	page 264
Energy productivity (*)	↑	↑	SDG 7, page 173
Green economy			
Gross value added in the environmental goods and services sector	↑	↑	page 266
Waste generation and management			
Circular material use rate	↑	↑	page 267
Generation of waste excluding major mineral wastes	↘ (²)	↘ (³)	page 268

(*) Multi-purpose indicator.
(¹) Past 12-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.1 in the annex.

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, the EU has made some progress in decoupling environmental impacts from economic growth, increasing the value added from green products and services and improving its use of circular materials. However, waste generation has been increasing and average CO_2 emissions from new cars are not falling fast enough to meet the target.

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 — that 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 ([1]). It focuses on improving resource- and energy-use efficiency by restructuring economies so they produce more from the same resource and energy inputs.

The EU's progress in this area is monitored by four indicators. Two look at the ratio of resource use (materials and energy) to gross domestic product (GDP) while the other two look at the harmful environmental impacts of the consumption of toxic chemicals and CO_2 emissions related to transport.

2.09
EUR of GDP were produced in the EU for each kilogram of DMC in 2019

Some decoupling of resource and energy consumption from economic output has occurred in the EU, but not consistently

Resource productivity ([2]) and energy productivity ([3]) directly monitor how much output (in terms of GDP) an economy produces per unit of used materials or energy. When a rise in economic output causes an equal increase of, for instance, resource consumption, these two variables are said to be coupled. Decoupling of the two variables can be relative, when an increase in economic output occurs alongside a lesser increase in the environmental pressure variable, or absolute, when the environmental pressure decreases. Decoupling economic growth from environmental impacts is a central aim of green growth strategies such as the European Green Deal (see Annex III on page 402 for a detailed explanation of the decoupling concept).

Relative decoupling of DMC from GDP occurred in the EU between 2014 and 2019

Economic growth in the EU alongside reductions in domestic material consumption (DMC) has led to a 36.4 % increase in the EU's resource productivity since 2004, reaching EUR 2.09 per kilogram of DMC in 2019. During this period, the EU economy grew (in terms of GDP) by 22.2 % ([4]), while DMC fell by 10.4 %. A closer look at the underlying trends shows there was some coupling between DMC and GDP until the onset of the economic crisis in 2008, followed by a period of relative and absolute decoupling between the two indicators. Since 2013, however, there has mainly been relative decoupling of DMC from GDP, due to an increase in DMC, albeit at a slower rate than GDP.

These trends, however, need to be interpreted with caution because they might not be

entirely due to the success of environmental policies. It is likely that the drop in DMC from 2008 onwards was strongly influenced by the economic crisis. Since the beginning of the economic recovery in 2013, DMC has increased by 5.2 %. However, despite the recent increase, in 2019 total DMC was still 16.5 % lower than in 2007, the year before the economic crisis began. This development was mostly caused by ups and downs in construction activities, which account for the lion's share of total material use, but contribute, in relative terms, much less to the EU economy ([5]).

Moreover, DMC includes imports and exports in the actual weight of the traded goods when they cross country borders, instead of the weight of materials extracted to produce them. A high share of imports in total consumption might therefore signal an underestimation of the total resource use caused by the EU, when looking at DMC only. The material footprint, also referred to as raw material consumption (RMC), addresses the limitation of DMC by accounting for the materials required along the supply chains of goods and services finally consumed within a country. Over the period 2013 to 2018, imports measured in raw material equivalents ([6]) are estimated to have been two times higher than when measured in the weight of traded goods only. In 2018, the EU's material input (domestic extraction plus imports) in terms of RMC was not only about 25 % higher than for DMC, but it had also grown slightly stronger between 2013 and 2018. This 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 45).

Observed trends for energy productivity are similar to those of resource productivity. From 2004 to 2019, the EU increased its energy productivity by

In 2019, the EU's energy productivity amounted to

8.4
EUR per kgoe

34.1 %. Economic growth in the EU was accompanied by reductions in gross available energy (GAE), which fell by 8.9 % ([7]). Between 2004 and 2008, there was relative decoupling of GAE from GDP, which changed during the course of the 2008 economic crisis. The short-term period between 2014 and 2019 shows a mix of absolute and relative decoupling.

Relative decoupling of GAE from GDP occurred in the EU between 2014 and 2019

The proposed 8th Environment Action Programme (EAP) ([8]), which is the EU's environment action programme to 2030, builds on the environment and climate objectives of the European Green Deal while reiterating the 7th EAP's 2050 vision to ensure well-being for all within planetary boundaries. The 8th EAP puts forward six priority objectives, in accordance with the Green Deal: (a) to achieve the 2030 greenhouse gas emission reduction target and climate neutrality by 2050, (b) to reduce vulnerability to climate change, (c) to decouple economic growth from resource use and environmental degradation and accelerate the transition to a circular economy, (d) to pursue a zero-pollution ambition, (e) to protect biodiversity and enhance natural capital, and (f) to reduce the environmental pressures of consumption and production.

Europe's Bioeconomy Strategy addresses the production of renewable biological resources and their conversion into vital products and bioenergy. The 2018 update of the EU Bioeconomy Strategy aims to strengthen the connection between the economy, the society and the environment. The strategy has sustainability and circularity at its heart, contributing to achieving SDG 12.

Consumption of toxic chemicals has fallen moderately in both the long and the short terms

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 ([9]). The consumption of chemicals provides benefits to society, but can also entail risks to the environment and human health. 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 ([10]).

In 2019, 216.6 million tonnes of toxic chemicals were consumed in the EU. Since 2004, the total consumption of toxic chemicals has fallen by 10.3 %. However, this trend has stagnated over the past five years as consumption only decreased by 1.7 % between 2014 and 2019. The decrease in consumption

216.6
million tonnes of toxic chemicals were consumed in the EU in 2019

of toxic chemicals in parallel with an overall increase in GDP between 2004 and 2019 marks a decoupling of the two indicators. There was a period of relative decoupling from 2004 until 2007, with toxic chemicals consumption starting to fall even before the start of the economic crisis in 2008. After GDP began recovering in 2013, the two indicators mainly showed absolute decoupling.

Absolute decoupling of consumption of toxic chemicals from GDP occurred between 2014 and 2019

CO$_2$ emissions from new car fleets increased between 2016 and 2019

In 2018, passenger cars were responsible for 14.1 % of total EU emissions of carbon dioxide (CO$_2$), the main greenhouse gas ([14]). To reduce those emissions, the EU has set targets for the fleet-wide average emissions of new passenger cars: until 2019, this target was 130 grams of CO$_2$ per kilometre (g/km), while from 2020 onwards a stricter target of 95 g/km applies ([15]). For each manufacturer's new car fleet, a specific emission target is set according to the average mass of its new vehicles, in such a way that the overall targets for the EU's average fleet emissions are met.

The **REACH** framework ([11]) **aims to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances while enhancing the competitiveness of the EU chemicals industry.**

The **Zero Pollution Action Plan** ([12]) **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 within which the planet can cope, thereby creating a toxic-free environment. In addition, the Chemicals Strategy for Sustainability towards a Toxic-Free**

Environment in 2020 ([13]) **aims to protect citizens and the environment by promoting high standards for chemicals, banning the most harmful chemicals in consumer products and fostering innovation for safe and sustainable chemicals.**

The **European Chemicals Agency (ECHA) substitution strategy, which was adopted in 2018, aims to encourage the replacement of harmful chemicals by boosting the availability and adoption of safer alternatives and technologies. It highlights networking, capacity building and improving access to data, funding and technical support as key areas for action.**

Average CO_2 emissions per km from new passenger cars in the EU reached 122.2 g/km in 2019, which is only a 0.7 % fall since 2014. This limited reduction is due to the increase in average CO_2 emissions since 2016 when they had reached a low of 117.6 g/km. The 3.9 % increase in car fleets' emissions between 2016 and 2019 means that further progress will be needed to reach the 2020 target as well as the stricter targets that will apply from 2025 and 2030 onwards ([16]).

122.2
grams of CO_2 per km were emitted by new passenger cars in the EU in 2019

Replacing conventional cars with zero emission vehicles will be a crucial step in achieving climate neutrality and the EU's greenhouse gas emissions reduction targets, as proposed in the EU's 2030 Climate Target Plan ([17]). 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 of zero emission vehicles in newly registered passenger cars, with a share of 20 % in 2020, followed by

Sweden with 9 % and Denmark with 7 %. In contrast, zero emission vehicles accounted for less than 1 % of newly registered passenger cars in Cyprus in Greece. Norway reported a much higher share of zero emission vehicles than the EU, with zero emissions vehicles making up more than half of the newly registered passenger cars in that country in 2020. Comparing Figures 12.6 and 12.7 (see page 264) reveals that countries with a high share of zero emission vehicles in newly registered passenger cars — such as the Netherlands, Denmark or France — are also among the best performers for car fleets' CO_2 emissions.

Diverging national incentive systems may provide an explanation for the stark contrast in the uptake of zero emission vehicles across Europe. This includes financial incentives such as purchase incentives, reduced parking fees, benefits for vehicle and fuel taxes, and reduced infrastructure and road charging as well as non-financial incentives such as providing the necessary recharging or refuelling infrastructure, establishing low-emission zones in cities and CO_2 standards ([18]). For instance, Greece has established few financial benefits regarding zero emission vehicles (such as registration and ownership tax benefits) ([19]), whereas Norway offers both extensive financial and non-financial incentives for zero emission vehicles (such as several tax exemptions as well as free parking or the possibility of using bus lanes) ([20]).

EU legislation sets mandatory CO_2 emission reduction targets for new vehicles. In addition, new, stricter CO^2 emission standards for cars and vans [21] and, for the first time, CO_2 emission standards for heavy-duty vehicles [22] will start applying from 2025 and 2030. CO_2 emissions from new passenger cars will consequently require a further 15 % reduction by 2025 compared with 2021, and a 37.5 % reduction from 2030 onwards [23]. Both regulations also include a mechanism to encourage the uptake of zero and low emission vehicles in a technology-neutral way. The Commission intends to propose a revision of the corresponding regulations to strengthen CO_2 emission standards, in line with the increased ambition of the 2030 climate target.

Under real-world driving conditions, new passenger cars in the EU in 2017 emitted on average around 40 % more than in the laboratory [24]. In recognition of the shortcomings of the NEDC test procedure that had been used until then, in September 2017 the EU introduced the Worldwide Harmonised Light Vehicles Test Procedure (WLTP), which yields more realistic CO_2 emission values [25]. As of 2021, the CO_2 emission performance of light-duty vehicle manufacturers will be assessed against their specific targets on the basis of the WLTP emission values. Also from 2021, data on the real-world fuel and energy consumption of cars and vans will be collected [26]. This will allow the gap between type-approval and actual CO_2 emissions to be monitored, and will provide a better understanding of how vehicles perform under real-world driving conditions.

As part of the European Green Deal, the Smart and Sustainable Mobility Strategy [27] from 2020 aims to enable the green transition of the EU's transport system. One of its 10 flagships areas is to boost the uptake of zero emission vehicles, renewable and low-carbon fuels and related infrastructure. 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.

Green economy

Increasing the share of the green economy can also help to decouple environmental impacts from economic growth. 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 have important socio-economic benefits in terms of value added and employment [28]. The 2020 EU industrial strategy [29] aims to make industry greener and more digital.

The value added of the environmental goods and services sector has shown strong growth over the past 15 years

Over the past 15 years, the gross value added in the EGSS in the EU has grown by 66.3 %, from EUR 169.2 billion in 2003 to EUR 281.4 billion in 2018. This can be attributed to growth in the renewable energy and energy efficiency sectors, as well as an increase in spending on green infrastructure [30]. In relation to the whole economy, the EGSS grew, in gross value added terms, from 1.7 % of GDP in 2003 to 2.3 % in 2018. This indicates the sector grew disproportionally

281.4
billion EUR of gross value added were generated by the EU's environmental goods and services sector in 2018

faster than other economic sectors. Most of this outperformance, however, took place in the period up to 2011, and since then EGSS has grown at about the same pace as GDP. Employment (in full-time equivalent) in the sector has also increased since 2003, by 32.3 %. In 2018, the sector employed nearly 4.4 million people throughout the EU ([31]).

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 closing economic and ecological loops of resource flows is the essence of a circular economy. Waste should be seen as a resource and more recycling would put materials back into the economy and ensure they are kept in circulation 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 and waste is minimised.

Waste generation is on the rise in the EU, while the circular material use rate keeps improving

In 2018, 812 million tonnes of waste, excluding major mineral waste, were generated in the EU, corresponding to 1 818 kilograms (kg) of waste per inhabitant ([33]). Of this waste, 7.9 % was hazardous to health or the environment, corresponding to 143 kg per resident ([34]). 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 ([35]). Over the long-term period, the amount of non-mineral waste generated per capita in the EU increased by 1.0 % between 2004 and 2018. The short-term trend has been even less favourable, with the figure increasing by 4.8 % between 2014 and 2018.

1 818 kg
of waste (excluding major mineral waste) were generated in the EU per inhabitant in 2018

In March 2020, the European Commission adopted a new **Circular Economy Action Plan** ([32]) as one of the main blocks of the **European Green Deal**. The new Action Plan announced initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible. The Action Plan thus aims to double the EU's circular material use rate in the coming decade to help support the achievement of climate neutrality by 2050 and to decouple economic growth from resource use and waste generation, thereby enabling the transition to a sustainable economic system.

As a part of the new Circular Economy Action Plan, the staff working document '**Leading the way to a global circular**

economy: state of play and outlook' provides a comprehensive account of the ongoing and forthcoming actions related to the international dimension of the circular economy. These are placed in the context of key trends in resource use and the challenges and opportunities for various actors across the globe.

The **Global Alliance on Circular Economy and Resource Efficiency (GACERE),** initiated by the European Commission and the United Nations Environment Programme (UNEP), was launched in February 2021. As part of the EU's Circular Economy Action Plan, its aim is to bring together governments and relevant organisations to advance the circular economy transition, advocating resource efficiency and sustainable consumption and production in multilateral political fora.

This distinct rise in waste generation along with an increase in GDP shows the two indicators were coupled in the period from 2004 to 2018. The 2008 economic and financial crisis and its repercussions pose the only exception to this development as both indicators decreased in that time span, marking a short period of negative coupling. Waste generation, however, had started rising again already by 2010, whereas GDP did not recover until 2014. Between 2014 and 2018, waste generation and GDP were once again coupled, with both indicators increasing continuously.

When not managed sustainably, all of this waste could have a huge impact on the environment, causing pollution and greenhouse gas emissions, as well as significant losses of materials [36]. 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

Coupling of waste generation and GDP occurred in the EU between 2014 and 2019

materials [37]. Between 2004 and 2019, the EU circular material use (CMU) rate — indicating the share of used materials derived from collected waste — increased from 8.3 % to 11.9 % and has grown by 0.8 percentage points since 2014.

Data for the recycling of waste excluding major mineral wastes show that 56 % of EU waste was recycled in 2016 [38]. The difference between this relatively high end-of-life recycling rate and the CMU rate (11.9 % in 2019) may seem surprising at first sight. However, the comparatively low degree of circularity in the EU can be attributed to two structural barriers. First, a large fraction of these materials 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 material 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 [39].

11.9 %
of the materials used in the EU came from collected waste in 2019

Contributing to the Green Deal's zero pollution ambition, the Commission adopted a proposal for a new batteries Regulation in December 2020. Mandatory requirements for all batteries on the EU market are intended to minimise both the environmental and social impacts of batteries by using responsibly sourced materials that will be repurposed or recycled at the end of their life.

New rules on the export, import and intra-EU shipment of plastic waste, established in December 2020, ban the export of plastic waste from the EU to non-OECD countries, with the exception of clean plastic waste sent for recycling. Plastic waste exports to OECD countries as well as imports to the EU will also be subject to stricter controls.

A multi-stakeholder platform (EU Platform on Food Losses and Food Waste) was established in 2016 to support all parties in taking concrete action, share best practice and learning, and thereby accelerate the EU's progress towards reducing food waste. The Commission has also adopted EU guidelines to facilitate food donation (2017), as well as the valorisation of food no longer intended for human consumption as animal feed (2018).

The revised Waste Framework Directive, adopted in 2018, requires Member States to reduce food waste at each stage of the food supply chain, with the goal of reducing food waste by 30% by 2025 and 50% by 2030. To this end, Member States will monitor and report annually on food waste levels. On 3 May 2019, the Commission adopted a Decision laying down a common methodology to measure food waste. Official figures will be reported by the Member States from 2022 onwards. Currently, data on food waste estimates in the EU are available on Eurostat's circular economy website as part of the circular economy monitoring framework.

Presentation of the main indicators

Consumption of toxic 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.

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 12.1: **Consumption of toxic chemicals, EU, 2004–2019**
(million tonnes)

Compound annual growth rate (CAGR): – 0.7 % per year in the period 2004–2019; – 0.3 % per year in the period 2014–2019.

Source: Eurostat (online data code: sdg_12_10)

Resource productivity and domestic material consumption (DMC)

Resource productivity is defined as gross domestic product (GDP) divided by domestic material consumption (DMC). DMC measures the total amount of material directly used by an economy. It is calculated as the annual quantity of raw materials extracted from the domestic territory of the focal economy, plus all physical imports, minus all physical exports.

Figure 12.2: Resource productivity, EU, 2000–2019
(EUR per kg, chain-linked volumes (2015))
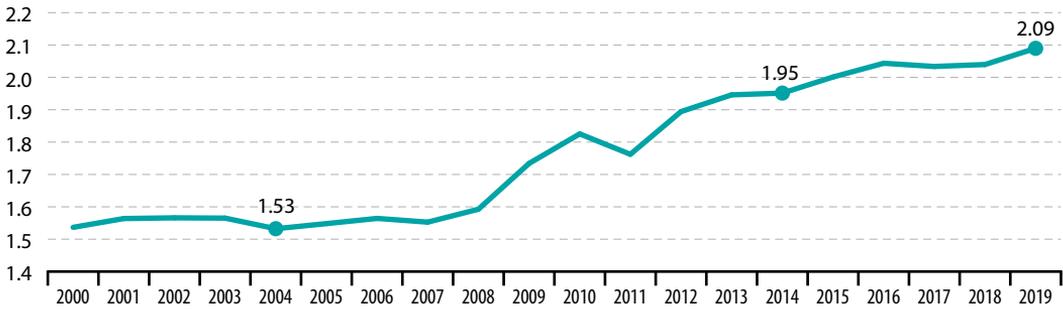
Note: 2009–2019 data are estimated; 2019 data are provisional.
Compound annual growth rate (CAGR): 2.1 % per year in the period 2004–2019; 1.4 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_12_20)

Figure 12.3: Resource productivity, by country, 2014 and 2019
(Purchasing Power Standard per kg)

2014   2019
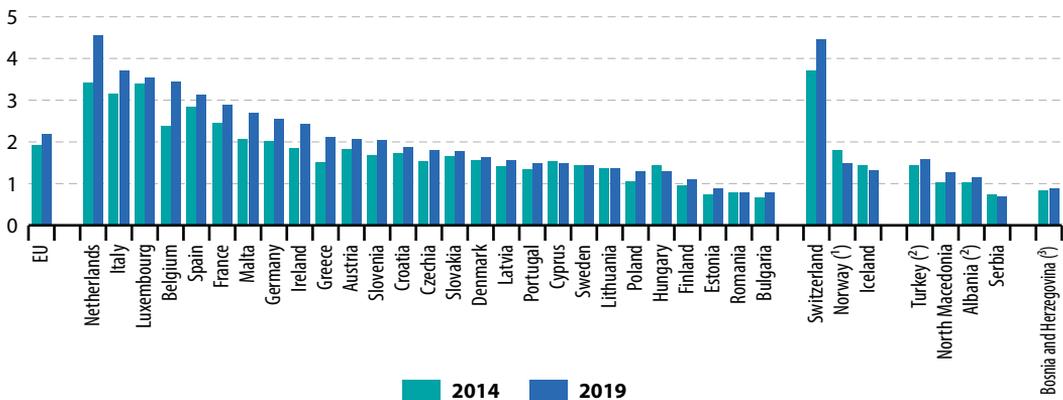
Note: Provisional and/or estimated data for most countries.
(1) Break in time series between the two years shown.
(2) 2018 data (instead of 2019).
(3) 2015 and 2017 data.

Source: Eurostat (online data code: sdg_12_20)

Figure 12.4: Domestic material consumption, EU, 2000–2019
(billion tonnes)

Note: 2009–2019 data are estimated; 2019 data are provisional.

Source: Eurostat (online data code: sdg_12_20)

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 12.5: Average CO_2 emissions per km from new passenger cars, EU, 2007–2019 (g CO_2 per km)
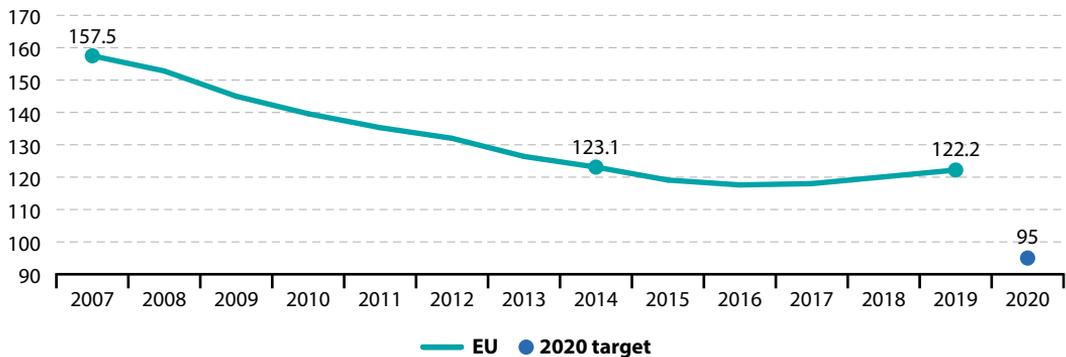
Note: 2007–2012 data are estimated, 2019 data are provisional.
Compound annual growth rate (CAGR): – 2.1 % per year (observed) and – 3.8 % per year (required to meet target) in the period 2007–2019; – 0.1 % per year (observed) and – 4.2 % per year (required to meet target) in the period 2014–2019.
Source: EEA, European Commission services, Eurostat (online data code: sdg_12_30)

Figure 12.6: Average CO_2 emissions per km from new passenger cars, by country, 2014 and 2019 (g CO_2 per km)
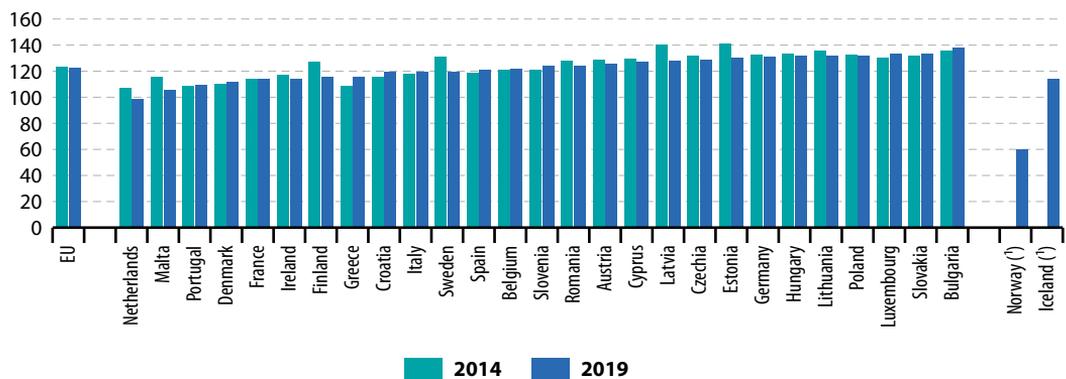
Note: 2019 data are provisional.
([1]) No data for 2014.
Source: EEA, European Commission services, Eurostat (online data code: sdg_12_30)

Figure 12.7: Share of zero emissions vehicles, by country, 2015 and 2020
(% of newly registered vehicles)
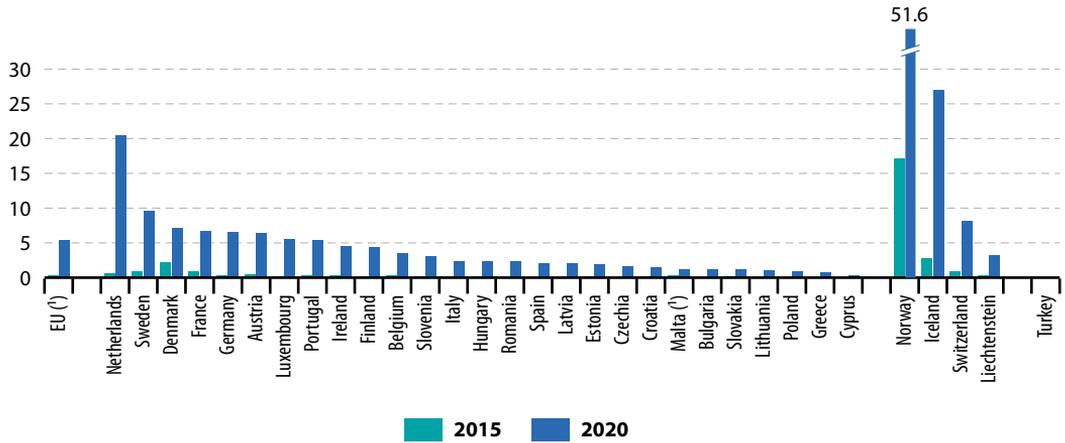
Source: European Alternative Fuels Observatory

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 goods and services that are 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 12.8: **Gross value added in the environmental goods and services sector, EU, 2000–2018**
(chain-linked volumes, index 2003 = 100))
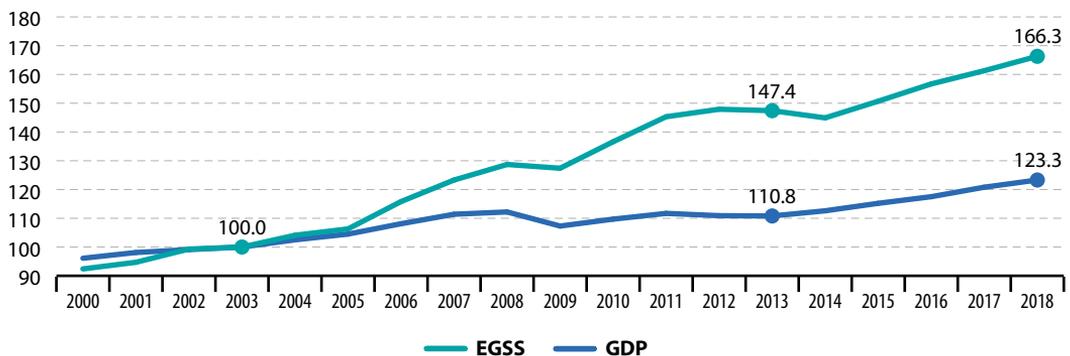
Compound annual growth rate (CAGR) of the EGSS gross value added: 3.5 % per year in the period 2003–2018; 2.4 % per year in the period 2013–2018.

Source: Eurostat (online data codes: sdg_12_61 and nama_10_gdp)

Figure 12.9: **Gross value added in the environmental goods and services sector, by country, 2013 and 2018**
(% of GDP)
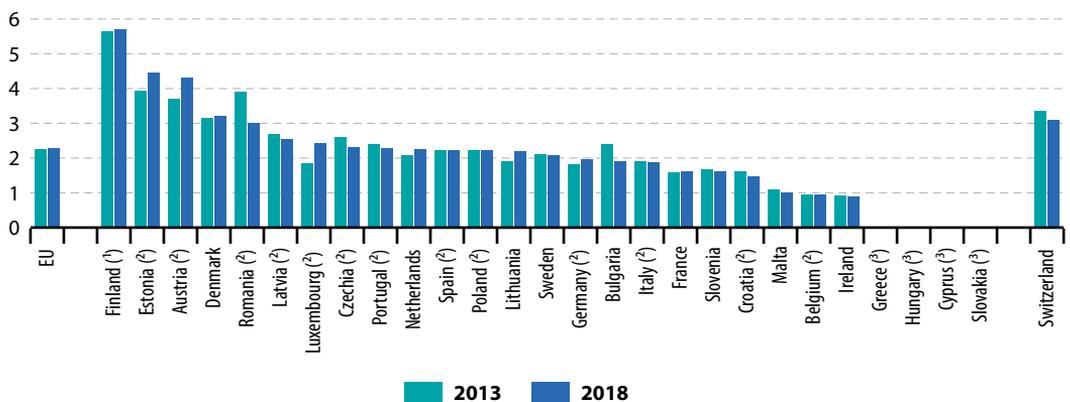
(¹) 2015 data (instead of 2013).   (3) No data.
(²) 2014 data (instead of 2013).

Source: Eurostat (online data code: sdg_12_61)

Circular material use rate

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.

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 12.10: Circular material use rate, EU, 2004–2019
(% of material input for domestic use)

Note: Data for odd years (2005, 2007, etc.) are estimated.
Compound annual growth rate (CAGR): 2.4 % per year in the period 2004–2019; 1.4 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_12_41)

Figure 12.11: Circular material use rate, by country, 2014 and 2019
(% of material input for domestic use)
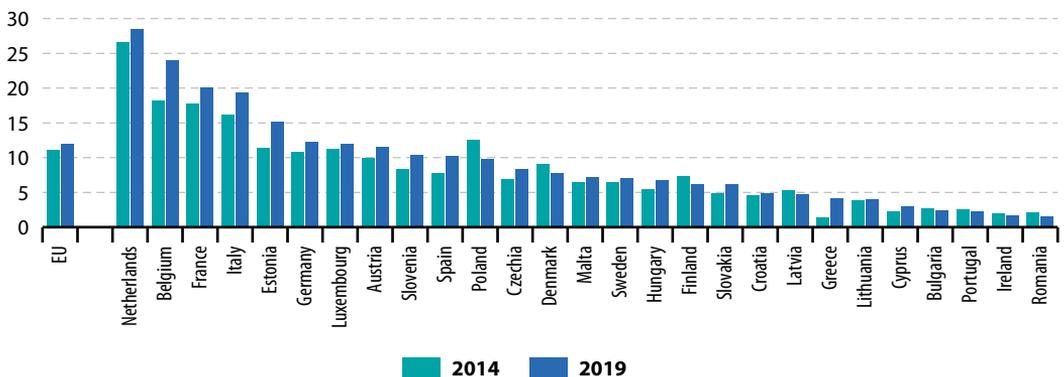
Note: 2019 data are estimated (all countries).
Source: Eurostat (online data code: sdg_12_41)

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 12.12: Generation of waste excluding major mineral wastes, by hazardousness, EU, 2004–2018
(kg per capita)
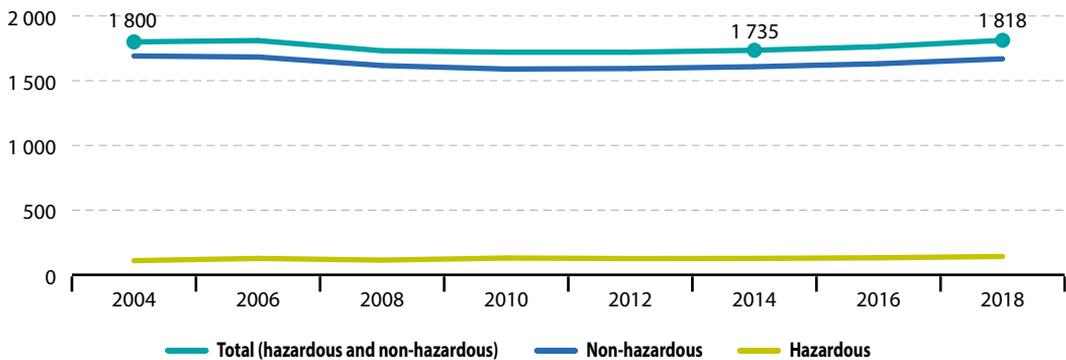
Compound annual growth rate (CAGR) for the total: 0.1 % per year in the period 2004–2018; 1.2 % per year in the period 2014–2018.
Source: Eurostat (online data code: sdg_12_50)

Figure 12.13: Generation of waste excluding major mineral wastes, by country, 2014 and 2018
(kg per capita)
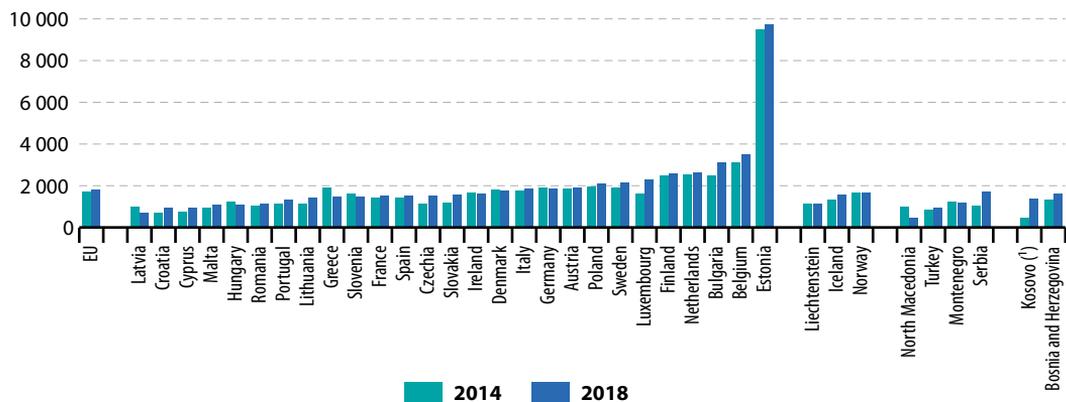
(¹) 2016 data (instead of 2018).
Source: Eurostat (online data code: sdg_12_50)

Further reading on responsible consumption and production

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EEA (2019), *Preventing Plastic Waste in Europe, European Environment Agency*, Copenhagen.

PACE (2020), *The Circularity Gap Report 2020: When circularity goes from bad to worse: The power of countries to change the game*, Platform for Accelerating the Circular Economy, Amsterdam.

Sala, S., Crenna, E., Secchi, M., Sanyé-Mengual, E. (2020), *Environmental sustainability of European production and consumption assessed against planetary boundaries*, Journal of Environmental Management, 269, 110686.

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UNEP (2019), *Global Chemicals Outlook II. From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development.*

UNEP (2019), *Global Resources Outlook: Natural Resources for the Future We Want*, A Report of the International Resource Panel, United Nations Environment Programme, Nairobi, Kenya.

Further data sources on responsible consumption and production

European Automobile Manufacturers Association, Interactive map: Affordability of electric cars, correlation between market uptake and GDP in the EU.

European Commission, Raw Materials Information System (RMIS).

Eurostat, Monitoring Framework for the Circular Economy.

UNEP, Natural Resources: Resource Efficiency Indicators.

UNEP/IRP, Global Material Flows Database.

Notes

(¹) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.
(²) 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.
(³) 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.
(⁴) Source: Eurostat (online data code: nama_10_gdp).
(⁵) European Environment Agency (2016), *More from less — material resource efficiency in Europe. 2015 overview of policies, instruments and targets in 32 countries*, EEA report No 10/2016, p. 38.
(⁶) Source: Eurostat (online data code: ENV_AC_RME)
(⁷) Source: Eurostat (online data code: nrg_bal_s).
(⁸) European Commission (2020), *Proposal for a Decision of the European Parliament and of the Council on a General Union Environment Action Programme to 2030*, COM(2020) 652 final, Brussels.
(⁹) The European Chemical Industry Council (2021), *CEFIC Facts and Figures 2021*, p. 6.
(¹⁰) European Environment Agency (2019), *Consumption of hazardous chemicals*.
(¹¹) 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.*
(¹²) 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.
(¹³) European Commission (2020), *Chemicals Strategy for Sustainability: Towards a Toxic-Free Environment*, COM(2020) 667 final, Brussels.
(¹⁴) European Commission (2020), *EU Transport in figures — Statistical pocketbook 2020*, p. 159.
(¹⁵) 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*.
(¹⁶) Ibid.
(¹⁷) 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.
(¹⁸) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, SWD(2020) 331 final, Brussels; and European Commission (2020), *State of the art on alternative fuels transport systems in the European Union. 2020 Update*, Publications Office of the European Union, Luxembourg.
(¹⁹) European Alternative Fuels Observatory (2021), *Country detail incentives, Greece*, accessed 16th February 2021.
(²⁰) European Alternative Fuels Observatory (2021), *Country detail incentives, Norway*, accessed 16th February 2021.
(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) 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.
(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*.
(²⁴) Tietge, U., Diaz, S., Mock, P., Bandivadekar, A., Dornoff, J., Ligterink, N. (2019), *From laboratory to road: A 2018 update*, International Council on Clean Transportation.
(²⁵) European Commission (2017), *European Commission recommendation 2017/948 of 31 May 2017 on the use of fuel consumption and CO_2 emission values type-approved and measured in accordance with the World Harmonised Light Vehicles Test Procedure when making information available for consumers pursuant to Directive 1999/94/EC of the European Parliament and of the Council*.
(²⁶) European Commission (2021), *Commission Implementing Regulation (EU) 2021/392 of 4 March 2021 on the monitoring and reporting of data relating to CO_2 emissions from passenger cars and light commercial vehicles pursuant to Regulation (EU) 2019/631 of the European Parliament and of the Council and repealing Commission Implementing Regulations (EU) No 1014/2010, (EU) No 293/2012, (EU) 2017/1152 and (EU) 2017/1153, OJ L 77, 5.3.2021*, p. 8–25.
(²⁷) European Commission (2020), *Sustainable and Smart Mobility Strategy — putting European transport on track for the future*, COM(2020), 789 final, Brussels.

(²⁸) European Environment Agency (2019), *Environmental Goods and Services Sector: employment and value added.*

(²⁹) European Commission (2020), *A New Industrial Strategy for Europe*, COM(2020) 102 final, Brussels.

(³⁰) European Environment Agency (2019), *Environmental Goods and Services Sector: employment and value added.*

(³¹) Source: Eurostat (online data code: env_ac_egss1).

(³²) European Commission (2020), *A new Circular Economy Action Plan: For a cleaner and more competitive Europe*, COM(2020) 98 final, Brussels.

(³³) Source: Eurostat (online data code: env_wasgen).

(³⁴) Ibid.

(³⁵) 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*.

(³⁶) European Commission (2010), *Being wise with waste: the EU's approach to waste management*, Publication Office of the European Union, Luxembourg.

(³⁷) European Commission (2021), *Green growth: Raw materials*, accessed 16th February 2021.

(³⁸) Source: Eurostat (online data code: env_wasoper).

(³⁹) 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

Goal 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.

eurostat
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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 has been introduced with the aim of transforming the EU into a 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. It sets a new target of reducing net greenhouse gas (GHG) emissions by at least 55 % by 2030 compared to 1990 levels. Reducing GHG emissions and energy consumption, increasing the share of renewable energy and enhancing carbon sinks in the EU all contribute to achieving the EU's commitment to climate neutrality. Moreover, the EU works to increase the climate resilience of its Member States and the EU as a whole with the

adoption of a new and more ambitious EU Climate Adaptation Strategy. Because climate change 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			
Greenhouse gas emissions	↘ (¹)	↘ (¹)	page 283
Greenhouse gas emissions intensity of energy consumption	⬆	⬆	page 285
Share of renewable energy in gross final energy consumption (*)	⬆	↗	SDG 7, page 174
Average CO_2 emissions from new passenger cars (*)	↘ (²)	↘	SDG 12, page 264
Climate impacts			
Mean near-surface temperature deviation	⬇ (³)	:	page 286
Climate-related economic losses	⬇ (⁴)	⬇	page 287
Global mean ocean surface acidity (*)	↘	↘	SDG 14, page 307
Support to climate action			
Contribution to the international USD 100bn commitment on climate-related expenditure	:	⬆	page 288
Population covered by the Covenant of Mayors for Climate and Energy signatories	⬆ (⁴)	⬆	page 290

(*) 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 12-year period.
(³) Change over the two most recent decades (2010–2019 compared with 2000–2009); assessment is the same for global and European temperature.
(⁴) Past 10-year period.

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.1 in the annex.

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. On the basis of the indicators used, the EU is not on track to meeting two of the three climate and energy targets monitored here, including the increased 2030 greenhouse gas emissions reduction target. In addition, the EU continues to face unfavourable trends in climate impacts, such as rising surface temperatures and ocean acidification. Moreover, economic losses due to climate-related events have increased in recent years, although these remain subject to high year-to-year variability due to the natural variability of the underlying hazards. However, support to climate action is increasing in the EU, both in terms of climate-related expenditure and the number of local and regional governments signing up to the Covenant of Mayors for Climate and Energy.

To achieve the increased GHG emissions reduction target, the European Commission is at present reviewing the existing EU climate and energy legislation and will propose their revision in July 2021 (see box, page 276). As a result, the indicators used to monitor SDG 13 will also be reviewed to reflect the new EU climate targets.

Climate mitigation

Climate mitigation aims to reduce emissions of climate-harming greenhouse gases (GHG) originating from human activity through measures such as promoting low-carbon technologies or encouraging sustainable forest management and land use that enhance GHG sinks. By 2050, the EU is committed to reaching a climate-neutral economy with no net emissions. This means reducing GHG emissions by as much as possible while offsetting the hardest-to-abate emissions by removing carbon dioxide, for example by using natural carbon sinks and carbon-removal technologies ([1]).

Annual change in GHG emissions is the main indicator used to track the success of climate mitigation measures. In the EU, the highest share of emissions comes from the production and consumption of energy. As a result, curbing climate change in an EU context will require reduced energy consumption and a shift to low-carbon technologies for energy generation. However, all sectors must reach near-zero GHG emissions to make the long-term climate target achievable.

More action is needed to meet the EU 2030 climate target

On its way to achieving climate neutrality by 2050, the EU has committed itself to reducing net GHG emissions by at least 55 % by 2030 compared to 1990 levels. The 2030 target includes carbon net removals from land use, land use change and forestry (LULUCF sector).

The EU reduced its GHG emissions by

19.8 %
between 2004 and 2019

Approximated estimates for 2019 GHG emissions excluding net removals from the LULUCF sector indicate that EU emissions had already fallen by 23.7 % between 1990 and 2019 and thus overachieved the 20 % emission reduction target

for 2020 (^{2}). The net emissions, which include the LULUCF sector, had fallen by 25.1 % over the same period. It is important to note that LULUCF was not part of the climate policy framework before 2021.

A large proportion of the emission reductions have occurred over the past 15 years, with net emissions falling by 19.8 % between 2004 and 2019. Electricity and heat generation activities achieved the largest absolute reductions, by consuming less fossil fuel (^{3}) and increasing the use of renewable energies, which delivered a share of 19.7 % of total energy consumption in 2019 (see the chapter on SDG 7 'Affordable and clean energy' on page 161). The short-term trend has been less favourable, with GHG emissions rising slightly between 2014 and 2017. Nevertheless, thanks to reductions between 2017 and 2019, EU net emissions have shown a decrease over the past five years (2014 to 2019), albeit by only 2.5 %.

19.7 %
of energy consumed in the EU in 2019 came from renewable sources

Despite the emission reductions since 1990, the EU does not yet appear to be on track to meeting the 55 % net emission reduction target for 2030. This assessment is based on past progress and does not take into account the European Commission's impact assessment of the 2030 climate target, which states that the current energy and climate legislation, if fully implemented, is expected to reduce greenhouse gas emissions by more than 40 % in 2030 compared with 1990 (^{5}). Also, implementing the planned measures in Member States' National Energy and Climate Plans (NECPs) is currently estimated to result in an overall EU emissions reduction of 41 % by 2030 (without taking into consideration GHG net removals in the LULUCF sector) and would be an important step towards reaching the new climate target (^{6}).

A sectoral breakdown of the years 1990 and 2019 shows that all sectors of the economy reduced their GHG emissions over that period, except transport (^{7}). GHG net removals came only from land use, land use change and forestry (LULUCF) and amounted to 7.0 % of the other sectors' emissions in 2019, which is somewhat higher than in 1990 (5.2 %). In absolute terms, the LULUCF net

The EU reached an agreement on the European Climate Law (^{4}) in April 2021. The law sets out a framework for climate action to enhance certainty for society and increases the EU's ambition for 2030, with a new goal to reduce net GHG emissions by 55 % by that year. To ensure there is sufficient mitigation effort, the law limits the contribution that carbon removals can make towards compliance with the net emission reduction target. According to the agreement on the European Climate Law, the contribution of removals to the net target is set at the minimum level of 225 million tonnes (Mt) of CO_2 equivalents but could be higher if the reductions in net emissions exceed 55 %. Nevertheless, for compliance with the European Climate Law, a deduction of only 225 Mt of CO_2 is allowed.

The law furthermore establishes a European Scientific Advisory Board on Climate Change to provide scientific advice and reporting on EU measures, climate targets and indicative greenhouse gas budgets and their coherence with the European Climate Law and the EU's international commitments under the Paris Agreement.

The Climate Pact aims to give a voice to citizens and to support people across Europe to act. As part of the European Green Deal, the pact aims to become a lively space to share information, debate and act on the climate crisis, and offer support for a European climate movement to grow and consolidate.

removals were at almost the same level in 2019 as in 1990.

Of all the GHG emission sources, fuel combustion in the energy industries has shown the strongest absolute fall in emissions since 1990, although it was still the largest source in 2019. The second largest source was transport followed by fuel combustion in manufacturing industries and construction. The latter has shown the second-largest absolute reduction and the largest relative decrease of 41.0 %. Fuel combustion in households and from the service sector contributed 14.3 % to overall emissions in 2019 followed by agriculture with 10.4 %. Both sectors have also reduced their emissions since 1990, by 14.3 % and 21.5 % respectively.

In contrast, emissions from fuel combustion in transport (not including international aviation and shipping) were 23.7 % higher in 2019 than in 1990, making it the second largest emitter in the EU with a share of 22.2 % of total EU emissions in 2019. These emissions came almost entirely from road transport, with cars emitting more than half of overall transport emissions. Over the past five years, emissions from transport and energy consumption increased by about 7 % ([8]) as increases in energy efficiency and improvements in GHG intensity of vehicles failed to offset growth

in passenger and freight transport ([9]). Emissions from international aviation more than doubled between 1990 and 2019. In total, domestic transport and international aviation accounted for more than a quarter (25.7 %) of the EU's GHG emissions in 2019.

CO$_2$ emissions from new car fleets increased between 2016 and 2019

The average CO$_2$ emissions per kilometre of new passenger cars, as measured on the emission test cycle, fell between 2007 and 2016, reaching a low of 117.6 grams per kilometre (g/km). Average emissions, however, increased by 3.9 % in subsequent years, reaching 122.2 g/km in 2019. Average CO$_2$ emissions of new cars registered in 2019 were thus only 0.7 % or 0.9 g/km lower than of those registered in 2014.

122.2

grams of CO$_2$ per km were emitted by new passenger cars in the EU in 2019

Therefore, further progress in vehicle efficiency and the uptake of zero emission vehicles will be needed to meet the 95 g/km target that applies from 2020 (also see chapter on SDG 12 'Responsible consumption and production' on page 251).

EU legislation sets mandatory CO$_2$ emission reduction targets for new vehicles. In addition, new stricter CO$_2$ emission standards for cars and vans ([10]) and, for the first time, CO$_2$ emission standards for heavy-duty vehicles ([11]) will start applying from 2025 and 2030. These new standards will require CO$_2$ emissions from new passenger cars to fall by a further 15 % by 2025 compared with 2021, and by 37.5 % from 2030 onwards ([12]). Both regulations include a mechanism to encourage the uptake of zero and low emission vehicles in a technology-neutral way. As part of the European Green Deal, the Commission intends to propose a revision of the corresponding regulations to strengthen

the CO$_2$ emission standards, in line with the increased ambition of the 2030 climate target and the climate-neutrality objective ([13]).

The Commission's Sustainable and Smart Mobility Strategy ([14]) lays out the pathway for a 90 % reduction in transport emissions by 2050 and specifies milestones for the years 2030 and 2035. The strategy proposes actions that help realise the vision of a smart, resilient and sustainable mobility system. These include the uptake of zero emission vehicles and airplanes, the expansion of high-speed rail traffic, automated mobility and the greening of freight transport.

Absolute decoupling of economic growth from greenhouse gas emissions in the EU

Historically, GHG emissions increased with economic growth. However, between 2004 and 2019, the EU realised an absolute decoupling of its gross domestic product (GDP) from GHG emissions: while its GDP increased by 22.2 % ([15]), GHG emissions fell by 19.7 %. A closer look at the underlying trends of the past 15 years shows that between 2003 and 2007 GDP grew by 11.4 % while GHG emissions remained on the same level. In 2008 and 2009, the economic crisis led to a simultaneous fall in GDP and GHG emissions, followed by an increase in both GDP and GHG emissions, mainly due to changes in emissions from manufacturing activities. Since 2009, GDP has increased by 16.7 % whereas emissions have fallen by 10.6 %.

Absolute decoupling of GDP from greenhouse gas emissions occurred in the EU between 2004 and 2019

The absolute decoupling observed takes into consideration domestic GHG emissions, meaning it excludes emissions attributable to imported goods — so-called 'embodied emissions' (see also chapter on spillover effects on page 45). Estimates from environmental input–output modelling reveal that the GHG emissions embodied in products consumed in the EU (excluding exported goods and services) ([16]) are somewhat higher when compared with domestic emissions. Between 2014 and 2019, the difference between consumption- and production-based emissions fell from 6.8 % to 4.1 % as embodied emissions fell by 5.8 % while domestic GHG emissions fell by only 3.4 %.

In spite of total emission reductions, per capita emissions have increased in just over half of EU countries

Across the EU, net GHG emissions per capita ranged from 1.1 tonnes to 20.0 tonnes of CO_2 equivalents in 2019. 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 ([17]). Compared with 2014, net GHG emissions per capita have fallen in 13 Member States and increased in the remaining 14. The strongest increase was reported by Lithuania, with net emissions per capita growing by 54.9 %, mainly due to a reduced sink function of LULUCF. Estonia, Sweden and Malta reported the strongest reductions, of more than 30 % as they reduced their emissions and increased emission removals from LULUCF.

GHG emissions per unit of energy consumed have fallen over the past two decades

The ratio between energy-related emissions and gross inland consumption of energy equals the GHG intensity of energy consumption. Between 2004 and 2019 ([18]), GHG intensity of energy consumption fell almost continuously, by 15.1 %. Most progress was reported in Malta (– 42.9 %) followed by Finland (– 34.6 %) and Denmark (– 34.5 %) ([19]). These developments can be explained by a gradual shift away from GHG-intensive energy sources. Between 2004 and 2019, gross inland consumption of coal (and other solid fuels) and oil (including oil shale and oil sands) fell from 55.6 % of total energy consumption to 46.4 %. The consumption of natural gas remained almost stable. Renewable energy, in contrast, more than doubled its share in gross inland consumption, from 7.1 % to 15.8 % ([20]).

Between 2004 and 2019, GHG intensity of energy consumption in the EU fell by

15.1 %

Climate impacts

Climate impacts refer to climate change-induced changes to environmental, social and economic systems. Three indicators are used to monitor climate impacts in the EU: average global and European temperature, ocean acidity, and the economic costs that arise as a result of weather- and climate-related disasters. These indicators indirectly provide an indication of trends in terms of climate change vulnerability.

The international community, including the EU, has committed to restricting the increase in mean global temperature to well below 2 °C above pre-industrial levels and seeks to further limit the increase to 1.5 °C. These objectives were enshrined in the Paris Agreement ([21]) signed at the United Nations Framework Convention on Climate Change (UNFCCC) 21st Conference of the Parties (COP) in 2015.

Near-surface temperatures and ocean acidity have increased continuously over the past decades

Near-surface air temperature gives one of the clearest signals of global and regional climate change because it has been measured at the same locations for decades. Historical recordings of the combined global land and marine temperatures show a clear upward trend. In the decade from 2010 to 2019, the average global near-surface temperature was the hottest on record, with an increase of 0.94–1.03 °C compared with pre-industrial levels. The data — especially global mean temperatures in the past five years — indicate that roughly

Europe's mean surface temperature for the decade 2010-2019 increased by

1.7–1.9

degrees Celsius compared with pre-industrial levels

half of the warming towards the 2 °C threshold has already occurred ([22]). Warming effects are stronger over land than water, and as a result, warming in the northern hemisphere is more pronounced than in the southern hemisphere ([23]). For this reason, the average annual temperature over the European continent has increased by more than the global average. This means that the decade from 2010 to 2019 was also the hottest on record for Europe, with an average temperature increase of 1.7–1.9 °C above pre-industrial times.

Ocean acidity is another important indicator of the environmental impacts of climate change because water becomes more acidic as it absorbs CO_2. Despite considerable annual variability, ocean pH levels have been declining consistently (also see the chapter on SDG 14 'Life below water' on page 295). In 2019, average ocean acidity was 8.06 pH, which is an unprecedented low compared with the pre-industrial level of 8.2 (lower pH values mean higher acidity) ([24]).

In 2019, the mean pH level of ocean water reached a new low of

8.06

Economic losses from weather- and climate-related extremes have been considerable over the past decades

Statistical attribution 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]). 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, cultural heritage or ecosystems

Over the period 1980 to 2019, weather- and climate-related economic losses in EU countries accumulated to

EUR 419.1
billion

services, which would considerably raise the estimate (²⁶). According to the Intergovernmental Panel on Climate Change, the long-term rise in economic losses from weather and climate-related disasters has been mainly caused by the increasing exposure of people and economic assets to these events (²⁷).

Over the period 1980 to 2019, weather- and climate-related losses accounted for a total of EUR 419.1 billion at 2019 values. However, recorded losses vary substantially over time — more than 60 % of the total losses have been caused by just 3 % of disaster events (²⁸). 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 10.0 billion in 2009 to EUR 11.9 billion in 2019 (²⁹), which corresponds to a 19.3 % increase. The most expensive climate extremes during the period from 1980 to 2019 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 (³⁰).

In April 2020, all EU Member States had a national adaptation strategy or plan in place (³¹). At the EU level, the new EU Adaptation Strategy (³²) urges smarter, faster and more systematic adaptation to fulfil the vision that in 2050, the EU will be a climate-resilient society, fully adapted to the unavoidable impacts of climate change.

The EU has also been at the forefront of international efforts in particular with regards to the adoption of the Paris Agreement (³³) on climate change and the Sendai Framework for Disaster Risk Reduction (³⁴). The EU is highly committed to delivering on the commitments made in Paris (³⁵) and supporting work and action to implement the Sendai Framework, finding synergies wherever possible. The EU Action Plan for the Sendai Framework for Disaster Risk Reduction 2015–2030 (³⁶) 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.

Multiple programmes have been established at the EU level to manage and respond to the risk of natural hazards and related disasters. For one, the European Union Civil Protection Mechanism (³⁷) steps in to aid Member States in a state of emergency due to disaster when national capacities are lacking.

The European Climate Change and Adaptation Platform (Climate-ADAPT) (³⁸) provides data, information and knowledge to support Europe in adapting to climate change. It is an online platform, managed jointly by the European Commission and the European Environment Agency. Since February 2021, Climate-ADAPT hosts the European Climate and Health Observatory (³⁹). The initiative aims to support Europe in preparing for and adapting to the health impacts of climate change by providing access to relevant information and tools, and fostering cooperation between relevant international, European, national and non-governmental actors.

Support to climate action

Climate actions occur at multiple levels of governance in the EU and take various forms, such as policies, economic and strategic planning and financing schemes, among others. At the EU level, climate change mitigation and adaptation has been integrated into all major spending programmes ([40]) and climate mitigation and adaptation is also fully integrated in the Covenant of Mayors, with thousands of cities in Europe and worldwide being part of the initiative, which mobilises local governments and regions to make voluntary but ambitious climate commitments.

The EU Multiannual Financial Framework (MFF) sets the priorities for the next five years for the EU budget. The MFF for 2021 to 2027 is worth EUR 1.07 trillion, 30 % of which should go to climate action ([41]). Furthermore, the 'Next Generation EU' recovery plan, worth EUR 750 billion, is the Union's economic response to the COVID-19 crisis. It includes the Recovery and Resilience Facility (RRF) worth EUR 672.5 billion, of which at least 37 % must go to climate action. To receive support from the RRF, Member States prepare national recovery and resilience plans on how they intend to spend their national allocations. The plans should meet the 37 % climate expenditure target and comply with the principle of 'do no significant harm' to environmental objectives. For example, investments in fossil fuels and infrastructure, new roads or waste incineration are not allowed ([42]).

The new EU cohesion policy (2021 to 2027) includes a 'greener, carbon-free Europe' as one of its five main objections, receiving 65 % to 85 % of available funding together with an objective for a 'smarter Europe' ([43]).

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 are also committed to raising money to combat climate change in developing countries. They take part in the developed countries' goal to jointly mobilise USD 100 billion per year by 2020 through to 2025, from a wide variety of sources, instruments and channels ([44]).

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 21.9 billion in 2019 — a 69.4 % increase in five years. The largest contributor in the period was Germany, with contributions increasing from EUR 5.1 billion to EUR 6.8 billion, followed by France which increased its contribution from EUR 2.9 billion to EUR 6.0 billion (see Table 13.6). The European Investment Bank (EIB) and the European Commission were the third- and fourth-largest donors in 2019, respectively.

In 2019, the EU contribution to the international USD 100 billion commitment amounted to

EUR 21.9 billion

In 2013, the EU launched the Global Climate Change Alliance (GCCA) ([45]), followed in 2015 by the GCCA+, a seven-year thematic flagship programme to help the world's poorest and most climate-vulnerable countries shift to a climate-resilient, low-carbon future. The alliance is a platform for dialogue and exchange of experience between the EU and developing countries and provides technical and financial support for implementing climate action.

A growing number of local governments are committed to act on climate protection and adaptation

The EU also 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-reduction targets in and outside the EU, and increase the climate resilience of European economies and societies. 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 ([46]).

In 2020, Covenant of Mayors (CoM) signatories covered 190.4 million people in the EU, representing 42.6 % of the EU population. Since 2010, the population covered by CoM signatories has grown steadily. In 10 EU Member States, CoM signatories represented more than half of the population in 2020. The highest share was reported by Belgium, with 94.4 % of the population, followed by Italy with 72.9 % and Spain with a share of 70.4 %.

Presentation of the main indicators

Greenhouse gas emissions

This indicator measures man-made greenhouse gas (GHG) emissions as well as GHG removals (^{47}). 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, GHG removals are realised only in the land use, land use change and forestry (LULUCF) sector. 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.

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 13.1: Net greenhouse gas emissions, EU, 1990–2019
(index 1990 = 100)
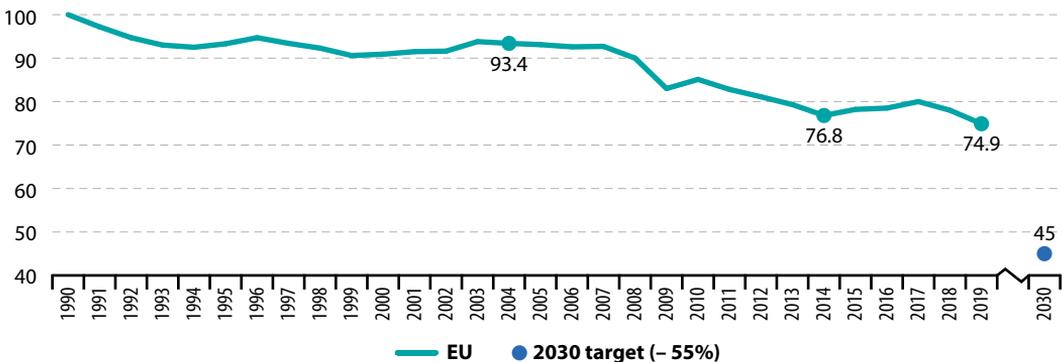
93.4

76.8

74.9

45

EU ● 2030 target (– 55%)

Note: Net emissions including international aviation, indirect CO_2, and natural sinks from land use, land use change and forestry (LULUCF). 2019 data are provisional estimates based on the EEA approximated GHG inventory for the year 2019.
Compound annual growth rate (CAGR): – 1.5 % per year (observed) and – 2.8 % per year (required to meet target) in the period 2004–2019; – 0.7 % per year (observed) and – 3.4 % per year (required to meet target) in the period 2014–2019.
Source: EEA, Eurostat (online data code: sdg_13_10)

Figure 13.2: Greenhouse gas emissions and removals, by sector, EU, 1990, 2004, 2014 and 2019
(million tonnes of CO$_2$ equivalent)
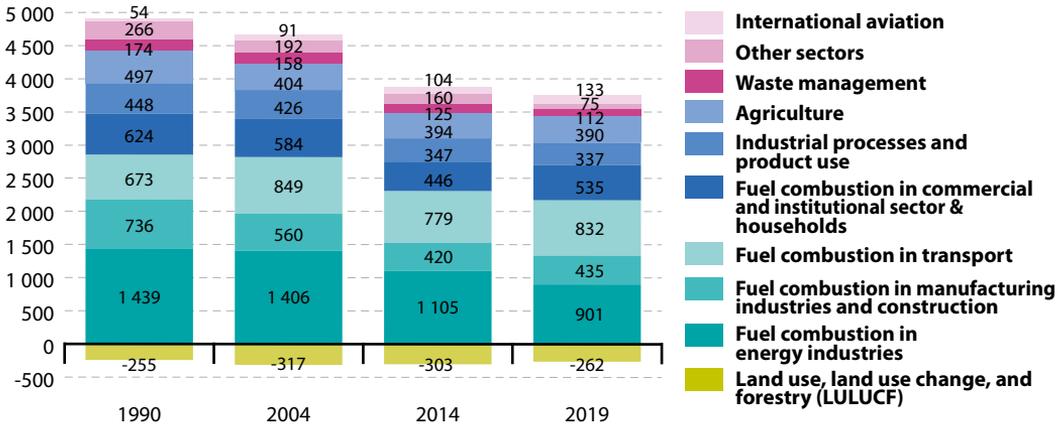
Legend:
- International aviation
- Other sectors
- Waste management
- Agriculture
- Industrial processes and product use
- Fuel combustion in commercial and institutional sector & households
- Fuel combustion in transport
- Fuel combustion in manufacturing industries and construction
- Fuel combustion in energy industries
- Land use, land use change, and forestry (LULUCF)

Note: 2019 data are provisional estimates based on the EEA approximated GHG inventory for the year 2019.

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

Figure 13.3: Net greenhouse gas emissions per capita, by country, 2014 and 2019
(tonnes per capita)

■ 2014   ■ 2019
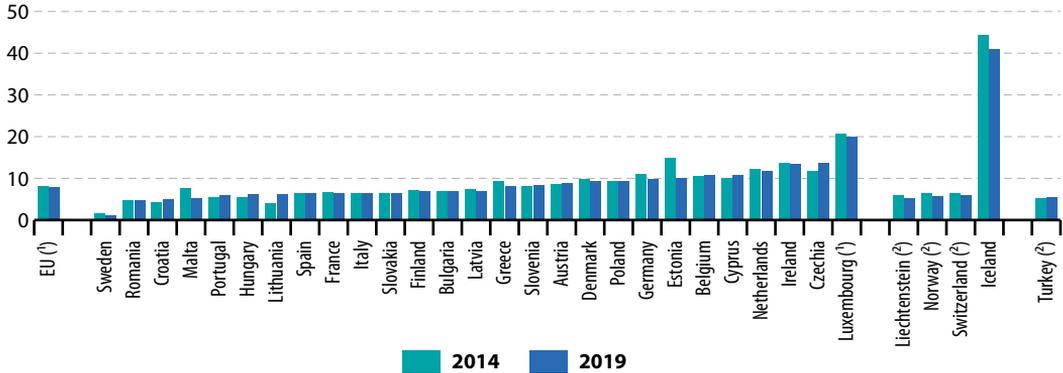
Note: Net emissions, including international aviation, indirect CO$_2$, and land use, land use change and forestry (LULUCF). 2019 data are provisional estimates based on the EEA approximated GHG inventory for the year 2019.
([1]) Break(s) in time series between the two years shown.
([2]) 2018 data (instead of 2019).

Source: EEA, Eurostat (online data code: sdg_13_10)

Greenhouse gas emissions intensity of energy consumption

LONG TERM
2004–2019

SHORT TERM
2014–2019

The GHG intensity of energy consumption is the ratio between energy-related GHG emissions and gross inland consumption of energy. It expresses how many tonnes of CO_2 equivalent of energy-related GHGs are emitted in a certain economy per unit of energy consumed. The data on energy emissions are sourced from the GHG emissions reported to the UNFCCC. Gross inland consumption is reported by each Member State to Eurostat and is the sum of final energy consumption, distribution losses, transformation losses and statistical differences.

Figure 13.4: **Greenhouse gas emissions intensity of energy consumption, EU, 2000–2019**
(index 2000 = 100)
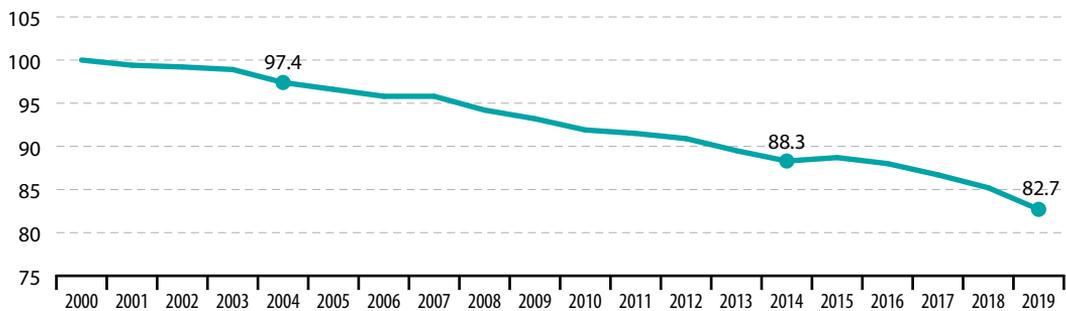
Note: 2019 data are provisional estimates based on the EEA approximated GHG inventory for the year 2019.
Compound annual growth rate (CAGR): – 1.1 % per year in the period 2004–2019; – 1.3 % per year in the period 2014–2019.

Source: EEA, Eurostat (online data code: sdg_13_20)

Figure 13.5: **Greenhouse gas emissions intensity of energy consumption, by country, 2019**
(index 2000 = 100)
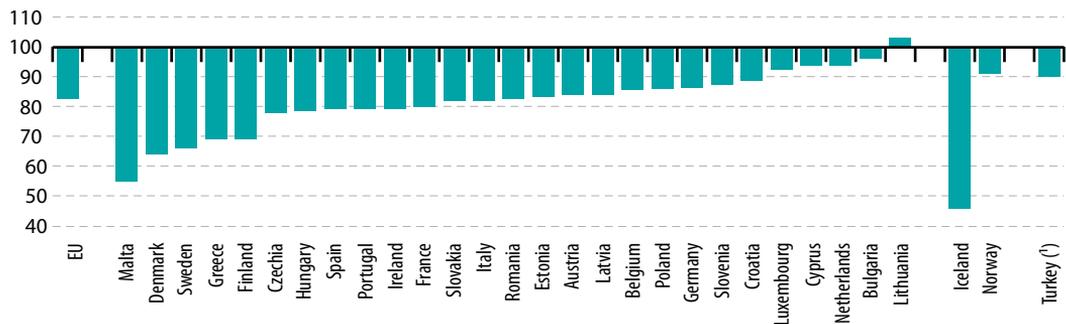
Note: 2019 data are provisional estimates based on the EEA approximated GHG inventory for the year 2019.
(¹) 2018 data.

Source: EEA, Eurostat (online data code: sdg_13_20)

Mean near-surface temperature deviation

This indicator tracks deviations in the average near-surface temperature worldwide and for Europe compared with the 1850 to 1899 average. These measurements have been taken for decades by stations forming a dense network across the globe. The data are monitored using standardised measurements, and quality control and homogeneity procedures are used to ensure data are compatible and comparable. The average annual temperature shown here is expressed in relation to the 'pre-industrial' baseline period of 1850 to 1899, when widespread temperature measurement was first established ([48]). In addition to annual data, decadal averages are shown, as they form the basis for the indicator assessment. Data presented in this section stem from the EEA, based on the Met Office Hadley Centre and Climatic Research Unit (HadCRUT4).

Figure 13.6: Global and European annual and decadal mean temperature deviations, 1850–2019 (temperature deviation in °C, compared with the 1850–1899 average)

European (annual)   **Global (annual)**

European (decadal)   **Global (decadal)**
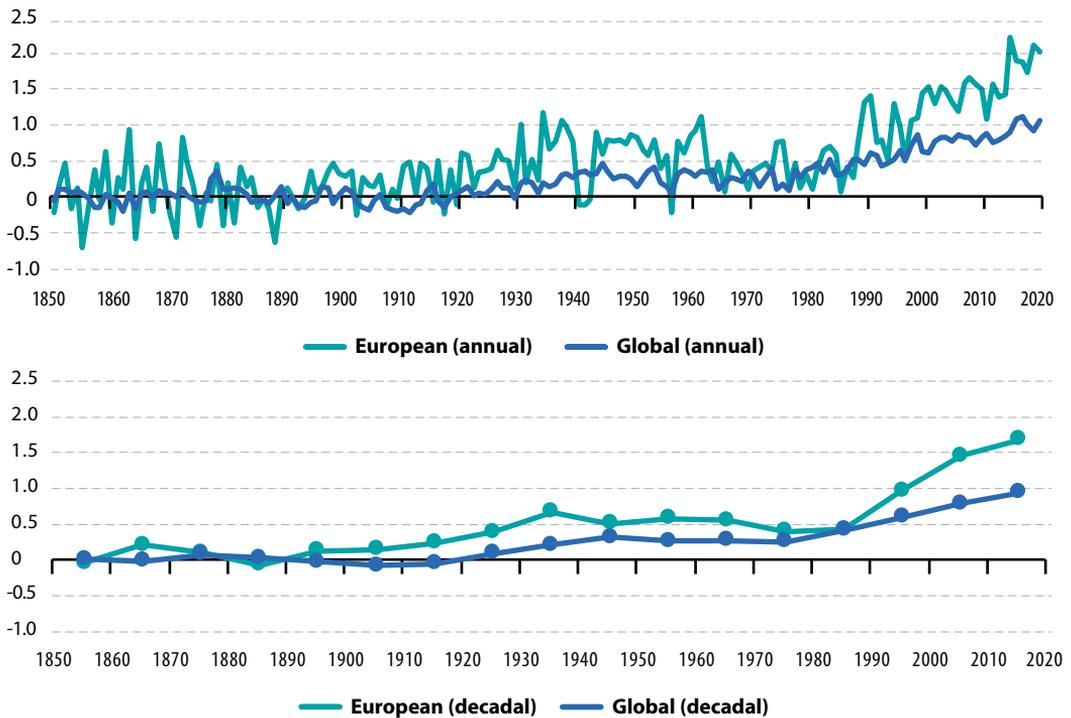
Source: EEA, Eurostat (online data code: sdg_13_30)

Climate-related economic losses

This indicator includes the overall monetary losses from weather- and climate-related events. It is based on data from the NatCatSERVICE managed by the Munich Reinsurance Company (⁴⁹). The NatCatSERVICE is a global database of natural catastrophe data around the world, collected since 1974. 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.

LONG TERM
2009–2019

SHORT TERM
2014–2019

Figure 13.7: Climate-related economic losses (30 year moving average), EU, 2009–2019
(EUR billion, current prices)
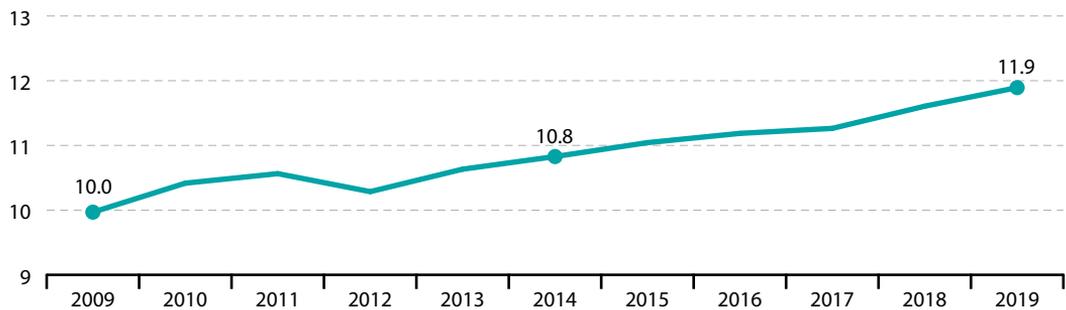
Note: Data are shown as 30-year moving averages (annual data points refer to the 30-year period up to that year).
Compound annual growth rate (CAGR): 1.8 % per year in the period 2009–2019; 1.9 % per year in the period 2014–2019.

Source: EEA, Eurostat (online data code: sdg_13_40)

Figure 13.8: Climate-related economic losses by type of event, EU, 1980–2019
(EUR billion, current prices)
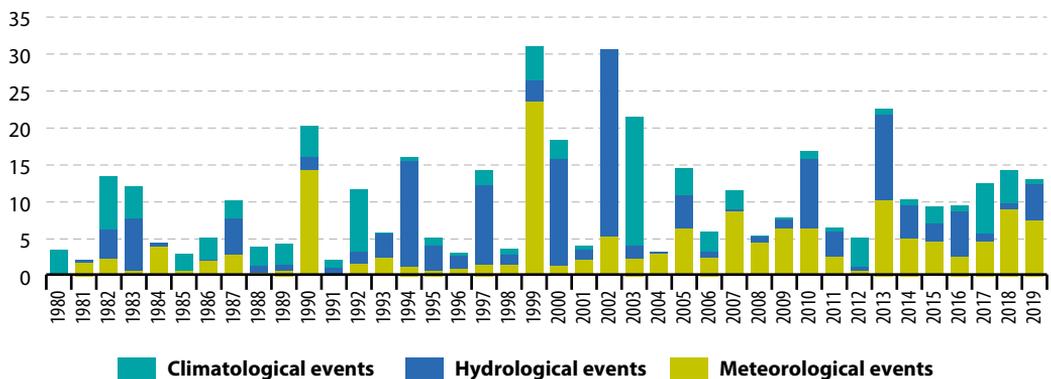
Source: EEA, Eurostat (online data code: sdg_13_40)

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 under the Monitoring Mechanism Regulation (MMR) to the European Commission.

Figure 13.9: Contribution to the international USD 100bn commitment on climate-related expenditure, EU, 2014–2019
(EUR billion, current prices)
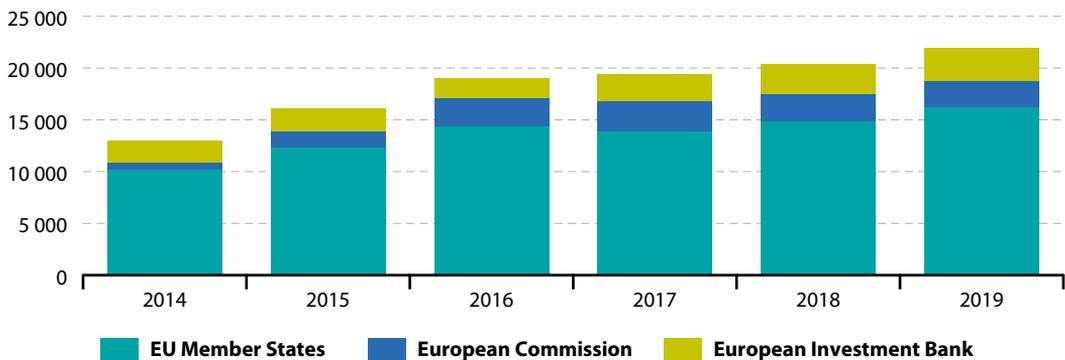
Compound annual growth rate (CAGR): 11.1 % per year in the period 2014–2019.

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, 2014 and 2019
(EUR million, current prices)

Country	2014	2019
EU Member States	10 163.9	16 205.8
European Commission	677.0	2 534.8
European Investment Bank	2 098.5	3 184.3
Belgium	142.7	99.7
Bulgaria	0.1	:
Czechia	7.7	7.5
Denmark	222.0	246.9
Germany	5 130.6	6 811.8
Estonia	0.5	0.5
Ireland	41.4	70.2
Greece	0.0	0.7
Spain	498.8	740.1
France	2 921.4	5 958.8
Croatia	0.0	0.0
Italy	143.2	417.6
Cyprus	0.0	:
Latvia	0.4	0.0
Lithuania	0.3	2.0
Luxembourg	36.3	51.4
Hungary	2.7	3.4
Malta	0.1	0.1
Netherlands	340.0	580.8
Austria	141.3	332.8
Poland	4.2	12.9
Portugal	9.5	0.9
Romania	0.0	0.2
Slovenia	2.4	5.8
Slovakia	1.2	5.9
Finland	132.3	146.8
Sweden	384.8	708.9

Source: European Commission services and EIONET (Eurostat online data code: sdg_13_50)

LONG TERM
2010–2020

SHORT TERM
2015–2020

Population covered by the Covenant of Mayors for Climate and Energy signatories

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 13.10: Population covered by the Covenant of Mayors for Climate and Energy signatories, EU, 2010–2020
(million people)
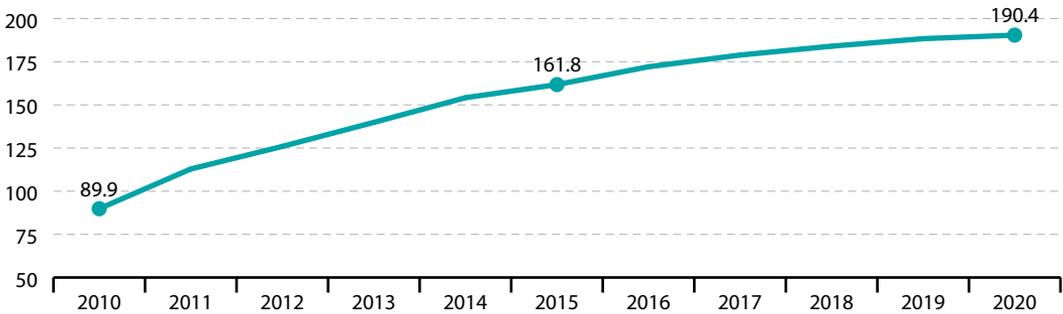
Compound annual growth rate (CAGR): 7.8 % per year in the period 2010–2020; 3.3 % per year in the period 2015–2020.
Source: Covenant of Mayors for Climate and Energy (Eurostat online data code: sdg_13_60)

Figure 13.11: Population covered by the Covenant of Mayors for Climate and Energy signatories, by country, 2015 and 2020
(% of population)
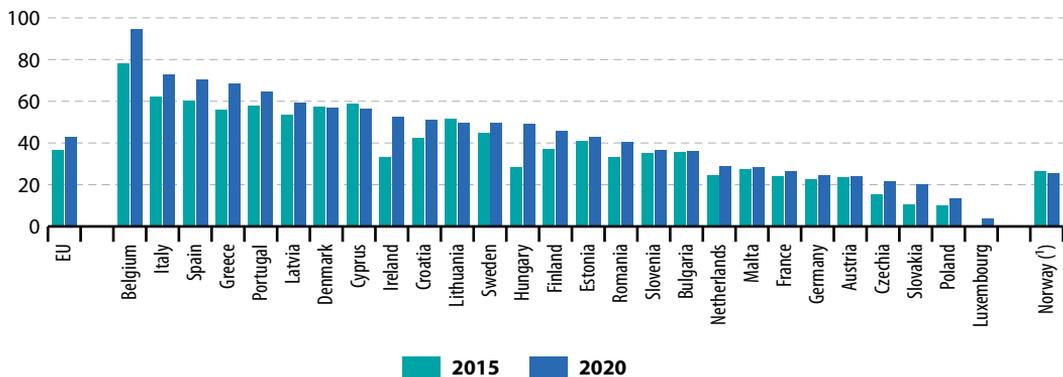
Note: 2020 data are provisional.
([1]) 2018 data (instead of 2020).
Source: Covenant of Mayors for Climate and Energy (Eurostat online data code: sdg_13_60)

Further reading on climate action

European Commission, *Climate Action*.

European Commission, *Citizen support for climate action*.

European Commission, *International Climate Finance*.

European Commission (2020), *Kick-starting the journey towards a climate-neutral Europe by 2050 — EU Climate Action Progress Report*.

EEA (2020), *Trends and projections in Europe 2019 — Tracking progress towards Europe's climate and energy targets*, Report No. 13/2020, European Environment Agency, Copenhagen.

EEA (2018), *National climate change vulnerability and risk assessments in Europe, 2018*, European Environment Agency, Copenhagen.

EEA (2020), *Urban adaptation in Europe: how cities and towns respond to climate change*, EEA Report No 12/2020.

IPCC (2018), *Special Report: Global Warming of 1.5 °C — Summary for Policymakers*, Intergovernmental Panel on Climate Change.

The Convent of Mayors, *About*.

Further data sources on climate action

EEA, Greenhouse gas data viewer.

EEA, EEA greenhouse gas projections — data viewer.

EEA, EEA database on climate change mitigation policies and measures in Europe.

EEA, Global and European temperatures.

Eurostat, Climate change.

Eurostat, Statistics Explained: Climate change — Driving forces.

Notes

(¹) 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.

(²) 2019 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-2.

(³) Eurostat (online data code: nrg_bal_c*)*.

(⁶) Council of the European Union (2021), *Proposal for a Regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law)*.

(⁴) Commission Staff Working Document (2020), *Impact Assessment: Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people*, SWD(2020) 176 final.

(⁵) European Commission (2020), *Kick-starting the journey towards a climate-neutral Europe by 2050 — EU Climate Action Progress Report*.

(⁷) Eurostat (online data code: *env_air_gge*) and European Environment Agency (2020), *Approximated estimates for greenhouse gas emissions*.

(⁸) Eurostat (online data code: nrg_bal_c): Final energy consumption.

(⁹) Eurostat (online data codes: ROAD_GO_TA_TOTT and ROAD_TF_VEHMOV).

(¹⁰) 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 CO₂ 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*.

(¹¹) European Commission (2018), *Proposal for a Regulation of the European Parliament and of the Council setting CO₂ emission performance standards for new heavy-duty vehicles*, COM(2018) 284 final, Brussels.

(¹²) 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 CO₂ 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*.

(¹³) European Commission (2019), *The European Green Deal*, Annex, COM(2019) 640 final, Brussels.

(¹⁴) European Commission (2020), *Sustainable and Smart Mobility Strategy – putting European transport on track for the future*, COM/2020/789 final, Brussels.

(¹⁵) Eurostat (online data code: nama_10_gdp).

(¹⁶) Eurostat (online data code: ENV_AC_IO10).

(¹⁷) 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*.

(¹⁸) 2019 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-2*.

(¹⁹) Malta established an electricity connection to Sicily and was thus able to close an old fuel power plant in 2016. The indicator does not include GHG emissions from imports as they are attributed to the place of production.

(²⁰) Eurostat (online data code: nrg_bal_c).

(²¹) United Nations *(2015), Paris Agreement.*

(²²) European Environment Agency (2020), *Global and European temperatures*.

(²³) Friedman, A. R., Hwang, Y. T., Chiang, J. C., Frierson, D. M. (2013), *Interhemispheric temperature asymmetry over the twentieth century and in future projections*, Journal of Climate 26(15), 5419-5433.

(²⁴) European Environment Agency (2020), *Ocean acidification.*

(²⁵) IPCC (2012), *Managing the risks of extreme events and disasters to advance climate change adaptation*, Special Report of the Intergovernmental Panel on Climate Change, Cambridge and New York: Cambridge University Press.

(²⁶) 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.

(²⁷) IPCC (2013), *Climate Change 2013: The Physical Science Basis*, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge and New York: Cambridge University Press.

(²⁸) European Environment Agency (2020), *Economic losses from climate-related extremes in Europe (temporal coverage 1980–2019)*.

(²⁹) 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.

(³⁰) European Environment Agency (2019), *Economic losses from climate-related extremes in Europe (temporal coverage 1980–2017)*.

(³¹) European Environment Agency (2020), *Monitoring and evaluation of national adaptation policies throughout the policy cycle*.

(³²) European Commission (2020), *Forging a climate-resilient Europe — the new EU Strategy on Adaptation to Climate Change*, COM(2021) 82 final, Brussels.

(³³) United Nations (2015), *Paris Agreement*.

(³⁴) United Nations Office for Disaster Risk Reduction (2015), *Sendai Framework for Disaster Risk Reduction 2015–2030*.

(³⁵) European Commission (2017), *Report from the Commission to the European Parliament and the Council. Two years after Paris — progress towards meeting the EU's climate commitments*, COM(2017) 646 final, Brussels.

(³⁶) 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.

(³⁷) European Commission (2017), *Strengthening EU disaster management: rescEU solidarity with responsibility*, COM(2017) 773 final, Brussels.

(³⁸) European Commission, *European climate adaptation platform*.

(³⁹) European Commission and European Environment Agency, *European Climate and Health Observatory*.

(⁴⁰) European Commission, *Budget — Multiannual Financial Framework programmes*.

(⁴¹) European Commission, *The 2021–2027 EU budget — What's new?*

(⁴²) EU Commission (2020), *Questions and answers: Commission presents next steps for EUR 672.5 billion Recovery and Resilience Facility in 2021 Annual Sustainable Growth Strategy*, September 2020.

(⁴³) European Commission (2020), *New Cohesion Policy*, Brussels.

(⁴⁴) 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.

(⁴⁵) European Commission, *Global Climate Change Alliance (GCCA)*.

(⁴⁶) European Commission, *European climate adaptation platform — Covenant of Mayors for Climate and Energy*.

(⁴⁷) 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).

(⁴⁸) European Environment Agency (2020), *Global and European temperatures*.

(⁴⁹) Munich RE, *NatCatSERVICE*.

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 main 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 is also increasingly affected by climate change. At the same time, the livelihood and well-being of Europeans depend heavily on the productivity and health of marine ecosystems. To combat the biodiversity loss and ensure sustainable ecosystems, the EU has implemented measures to protect, conserve and restore marine areas. Through its policies, the EU also promotes the conservation and sustainable use of marine resources and addresses pollution to protect the health and productivity of the oceans. The

No trend calculation possible

14 Life below water
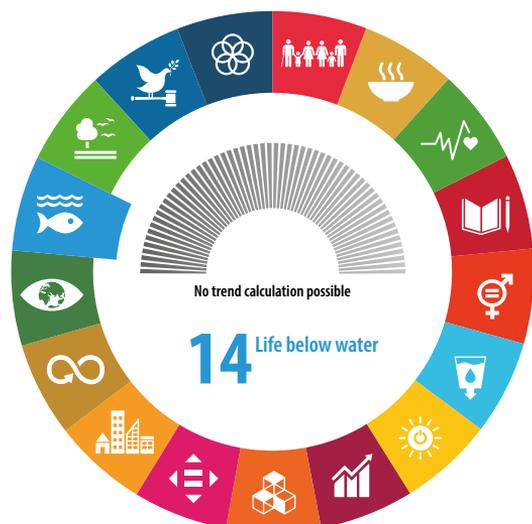
increasing ocean acidification as a result of carbon dioxide (CO_2) emissions is addressed indirectly through climate and energy policies.

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 305
Marine waters affected by eutrophication	:	:	page 306
Global mean ocean surface acidity	↘	↘	page 307
Marine conservation			
Surface of marine sites designated under Natura 2000	:	↗	page 308
Sustainable fisheries			
Estimated trends in fish stock biomass	:	:	page 309
Assessed fish stocks exceeding fishing mortality at maximum sustainable yield (F_{MSY})	:	:	page 310

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.1 in the annex.

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. Coverage of available marine observations and data remain limited for some indicators, meaning it is not yet possible to assess sea basin health across the entire EU. However, additional data are becoming increasingly available from new data sources such as the Copernicus Marine Service, although these data were not yet fully available at the time of writing.

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 SDG monitoring in the EU, the aspects under scrutiny cover 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 (¹). 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 bathing 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.

In the EU, the trends have been quite favourable in this regard during the past few years, with the water quality of the EU's coastal bathing sites having improved almost continuously since 2013. The most important factors affecting the quality of these waters are microbiological contamination

With its **Marine Strategy Framework Directive (MSFD)** (²)**, the EU has put in place a comprehensive set of instruments to promote a holistic approach to managing Europe's oceans and seas. The MSFD aims to ensure EU marine waters achieve good environmental status by being ecologically diverse, clean, healthy and productive. In its recent Article 20 Report on the first cycle of implementation** (³)**, the European Commission has stressed the need for greater efforts to address the main environmental pressures. The MFSD also provides the basis for strengthening regional ocean governance through collaboration with Regional Sea Conventions around the EU.**

In 2016, in recognition that achieving ocean sustainability is a shared responsibility that requires collective and coordinated action built on strong partnerships, multilateral dialogue and international cooperation, the European Commission and the European External Action Service adopted the **International Ocean Governance (IOG) Agenda** (⁴)**. Following the progress reported in 2019** (⁵)**, the EU's International Ocean Governance Forum was launched in 2020. This forum provides a platform for ocean stakeholders and actors to discuss challenges and solutions for ocean sustainability and to support the development of the IOG Agenda.**

and marine litter. Between 2013 and 2019, the share of European coastal bathing sites with 'excellent' water quality grew more or less steadily, reaching 88.4 % in 2019. 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 ([6]). 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.
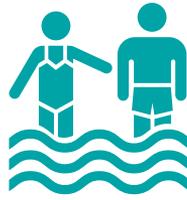
88.4 %
of EU coastal water bathing sites had excellent water quality in 2019

The EU Bathing Water Directive ([7]) is one of the success stories of EU water policy. The Directive lays down provisions for monitoring and classifying bathing water quality at designated bathing sites, managing those sites and providing information on bathing water quality to the public.

Bathing water quality is also dependent on the successful implementation of the Marine Strategy Framework Directive ([8]), the Water Framework Directive ([9]) and the Urban Waste Water Treatment Directive ([10]).

Pollution continues to threaten the marine environment by causing eutrophication

Despite improvements in bathing water quality, organic and chemical pollutants from human activities, as well as marine litter and noise pollution, continue to pose a serious threat to Europe's marine ecosystems. 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 ([11]).

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 1998 to 2019, less than 20 000 square kilometres (km²) of EU marine waters (corresponding to less than 0.4 % of the EEZ of the EU) were affected. 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 2019, 13 567 km² of EU marine waters were affected by eutrophication, corresponding

0.25 %
of marine waters in the EU's exclusive economic zones were classified as eutrophic in 2019

to 0.25 % of the EU's EEZ. This is three times the area affected in 2014, when 4 457 km² of marine waters or 0.08 % of the EU's EEZ were classified as eutrophic.

The European Environment Agency (EEA) monitors the winter mean levels of dissolved inorganic nitrogen, oxidised nitrogen and phosphate concentrations in Europe's regional seas [12]. However, a lack of data for the Black and Mediterranean Seas make it difficult to assess EU-wide trends. The Black Sea and the Baltic Sea are known to be particularly prone to eutrophication due to low levels of water exchange with connecting seas and high run-off from agricultural activities and the densely populated catchments surrounding the regional sea [13]. In the Atlantic region, a lack of data makes it impossible to analyse overall trends in dissolved nitrogen concentrations, and no significant changes in phosphorus concentrations were observed, despite some positive developments in nutrient reductions in the Greater North Sea.

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 [22]. 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 [23]. Based on a Commission initiative, in 2019 the European Parliament and the Council adopted the new European Directive on Single Use Plastics [24] targeting these plastics and fishing gear alongside other plastic products. Human-induced eutrophication, contaminant concentrations, marine litter and noise pollution are some of the 11 elements that must be minimised for marine and coastal waters to achieve good environmental status under the Marine Strategy Framework Directive (MSFD).

To support the reduction of nutrient loads to European waters, the Nitrates Directive [14], the Water Framework Directive [15] and the Urban Waste Water Treatment Directive [16] aim to reduce related pollution. To tackle marine pollution, the EU uses a wide set of instruments, including the regulation on waste management and prevention [17], port reception facilities [18] for ship-generated waste and cargo residues and the Directive on Single Use Plastics [19].

REACH [20], the EU framework for improving the protection of human health and the environment from the risks posed by chemicals, includes contaminants in seafood and marine litter. The Zero Pollution Action Plan [21] 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 within which the planet can cope, thereby creating a toxic-free environment.

In January 2018, the European Commission published the European Strategy for Plastics in a Circular Economy (²⁵), which outlines several elements: the obligation of Member States to monitor and reduce marine litter within the MSFD's scope, the obligation to adopt measures to reduce the consumption of single-use items, such as plastic bags (²⁶), a 55 % target for recycling plastic packaging waste by 2030, and the promotion of research and innovation in product design and biodegradable plastics.

Within the scope of the MSFD, EU Member States in September 2020 also agreed on a threshold value for marine litter on coastlines, with the objective that there should be no more than 20 litter items per 100 metres of coastline (²⁷). The beach litter threshold value will also contribute to achieving the objectives of the Single Use Plastic Directive.

Within the EU's industrial policy, the Circular Plastics Alliance has been set up with the aim of boosting the EU market for recycled plastics to 10 million tonnes by 2025. The alliance covers the full plastics value chains and includes 277 organisations representing industry, academia and public authorities. New stakeholders can join the alliance by signing its declaration.

Ocean acidification poses a risk to the marine environment and global climate regulation

Ocean acidification occurs when increased levels of carbon dioxide (CO_2) from the atmosphere are absorbed by the ocean. Acidification reduces calcification and affects biochemical processes such as photosynthesis, with knock-on effects

for entire ecosystems (²⁸). Because cold water absorbs more CO_2, Polar Regions are disproportionately hard hit by acidification (²⁹). 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 (³⁰). Before industrialisation, pH levels varied between 8.3 and 8.2.

In 2019, the mean pH level of ocean water reached a new low of

8.06

Since 1985, these levels have been declining at a steady rate, with the global ocean surface water pH reaching an unprecedented low of 8.06 in 2019. EU leadership to mitigate climate change (see SDG 13) is thus of vital importance for reaching SDG target 14.3 to minimise ocean acidification.

In the joint International Ocean Governance (IOG) Agenda (³¹), the European Commission expressed its commitment for a global plan of action to address the impacts of climate change on oceans. On 24 February 2021, the Commission furthermore adopted its new EU strategy on adaptation to climate change (³²). The new strategy sets out how the EU can adapt to the unavoidable impacts of climate change and become climate resilient by 2050. In relation to ocean acidification, the strategy calls for science-based, robust ecosystem restoration and management that helps minimise risks, improves resilience, and ensures the continued delivery of vital ecosystem services and features such as food provision, air and water purification, flood protection, biodiversity, and climate mitigation.

Marine conservation

The lives of European citizens depend in many ways on the services that marine ecosystems provide, including fish and seafood, coastal protection, degradation of pollutants and climate regulation, cultural value, recreation and tourism. The European Commission and Member States have taken multiple steps to combat the loss of aquatic habitats and biodiversity, which poses a serious threat to human livelihoods, food security and climate stability (³³). A crucial step has been the designation of a network of marine protected areas (MPAs) (³⁴), 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, by allowing only certain types of fishing methods.

The extent of marine protected areas has been growing in the EU

In 2016, marine protected areas in the EU were to a large extent formed by the Natura 2000 network under the EU Habitats and Birds Directives (54 %), complemented by nationally designated MPAs established under each Member State's national framework (46 %) (³⁵). Data from 2019 show this network has grown, with a clear increase of designated MPAs in the EU. Between 2014 and 2019, their spatial extent grew considerably, from 244 054 km² to 441 001 km².

In 2019, the spatial extent of marine protected areas under Natura 2000 in the EU reached

441 001 km²

The EU **Biodiversity Strategy for 2030** (³⁶) aims to enhance the protection of marine ecosystems with the objective of achieving good environmental status. The strategy builds on the **Natura 2000 network** (³⁷), by setting a goal for protected areas to extend to at least 30 % of the EU sea surface by 2030 (the same applies for EU lands), focusing on the inclusion of areas where existing or potential biodiversity is high. The goal of '30 by 30' is promoted in the context of the post-2020 global biodiversity framework under the Convention on Biological Diversity (³⁸). The designation for the new protected areas is the responsibility of Member States; the Commission and the European Environment Agency will support this assignment, providing criteria and guidance in order to identify the most suitable sites and to put in place ad hoc management plans, with clearly defined objectives and measures for nature conservation monitoring.

In proportion to the Member States' EEZs, the surface of marine sites established under Natura 2000 increased from 4 % in 2014 to 8 % in 2019. The new Biodiversity Strategy will lead to a significant extension of the marine protected areas.

Compared with terrestrial protected areas, there were significant delays in the establishment of marine protected areas in the Natura 2000 network until 2013. Since then, a sharp expansion has taken place, as MPAs have climbed up the political agenda and research efforts have accelerated, including through EU financial support.

The **Birds** (39) and **Habitats Directives** (40) make a substantial contribution to the implementation of the EU **Biodiversity Strategy for 2030** in the marine environment by promoting the protection, conservation and restoration of a network of key marine habitats and species in European marine waters. The **Marine Strategy Framework Directive** also fosters the designation of marine protected areas by requiring Member States to include spatial protection measures in their Programmes of Measures (41). The protection of the marine environment also constitutes a key objective under the **Maritime Spatial Planning Directive** (42). **The Commission also** continues to work on the implementation of fisheries measures contributing to the preservation of biodiversity by using the available tools under the Common Fisheries Policy. On top of this, the EU is fully committed to concluding an ambitious international, legally binding instrument on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction under the United Nations Convention on the Law of the Sea under the IOG Agenda (43).

Additionally, the **LIFE Programme** (44) plays an important role in restoring and safeguarding the condition of seas and oceans. It funds nature conservation projects in the areas of biodiversity, habitats and species, and contributes to the implementation of the EU's Directives on Birds and Habitats, the EU Biodiversity Strategy to 2030 and the development of the **Natura 2000 Network**.

The conservation status of marine habitats and species remains unfavourable

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 (45).

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 EEA, to advance criteria and guidelines for the identification and designation of new protected areas, as well as for coherent management planning (46). 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 by the end of 2021.

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 condition of the marine ecosystem is generally not 'good' (47). 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 ([48]). This means the prudent management of the European fishing fleet's activities is 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 maximum sustainable yield. It limits the total amount of fish catches and controls who is allowed to fish how, when and where, with a view to preventing damage to vulnerable marine ecosystems and preserving fish stocks. Thus, the CFP's ambition and implementation will directly affect whether SDG 14 is achieved, in particular the aim of ending overfishing, destructive and/or illegal, unreported and unregulated fishing practices, and the subsidies that encourage these activities.

The sustainability of fisheries in the North-East Atlantic and adjacent seas has improved

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 (MSY) — the largest catch that can be taken from a fish stock over an indefinite period without harming it ([49]).

There has been an improvement in the number of stocks fished below maximum sustainable yield (F_{MSY}) in the North-East Atlantic, where about three-quarters of the EU's catch originates. In

43.1 %
of assessed stocks in the North-East Atlantic were overfished in 2019

2003, only 25 % of stocks in this region were fished below F_{MSY}, whereas in 2019, this figure had risen to almost 57 % ([50]). In turn, however, this means that about 43 % of stocks in the North-East Atlantic were still overfished.

The model-based median value of all F/F_{MSY} assessments can be used as an additional tool to indicate 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 the North-East Atlantic mirror the downward trend in overexploited stocks and show a reduction in pressure from 1.70 to 1.04 between 2003 and 2019. This means that overall stocks are on average fished nearly sustainably in this region.

Between 2003 and 2019, fish stock biomass in the North-East Atlantic increased by

35.0 %

The EU's approach to sustainable fisheries is not limited to respecting MSY. The Marine Strategy Framework Directive (MSFD) ([51]) 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 ([52]), additional measures to regulate fisheries are required under the Birds and Habitats Directives. The CFP empowers Members States and the Commission to adopt such measures to fulfil obligations under these directives and the MSFD.

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 ([53]). For this reason, analyses of stock biomass trends should always focus on longer term patterns. In the case of the North-East Atlantic and adjacent seas, there has been an estimated 35 % increase in biomass between 2003 and 2019.

The **Common Fisheries Policy (CFP)** (⁵⁴) **aims to ensure the long-term sustainability of the sector by safeguarding stock reproduction for high long-term yield, improving distribution of fishing opportunities, conserving marine resources and supporting the profitability of the industry.**

Fisheries in the Mediterranean and Black Sea face greater threats to sustainability but lack assessments

Beyond the North-East Atlantic, the picture is far less positive. Fishing pressure in the Mediterranean is on average two times as great as in the North-East Atlantic (⁵⁵). Overexploitation remained at very high levels between 2011 and 2017, with a slight downward trend. The assessments indicate that in 2017 stocks were exploited on average at rates of around 2.4 times what would be sustainable according to CFP objectives. In addition, of the 44 stocks assessed up to 2017 in the Mediterranean and Black Sea, only three stocks (around 7 %) were not overfished (⁵⁶). If the EU is to meet its own targets for sustainable fisheries, efforts need to be increased substantially.

With regards to reproductive capacity, spawning stock biomass (SSB) in the Mediterranean and Black Sea seem to have increased slightly between 2012 and 2017. However, any apparent trends relating to SSB in these seas should be viewed with caution, as data limitations make it difficult to gauge the true extent of overfishing (⁵⁷).

Presentation of the main indicators

Bathing sites with excellent water quality

Bathing water quality is assessed according to standards for microbiological parameters (intestinal enterococci and *Escherichia coli*). This indicator is calculated based on the result of 16 sampling events in four years to be sure that most weather events are covered. 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 State reporting under the BWD and described in the annual Briefing on the European bathing water quality.
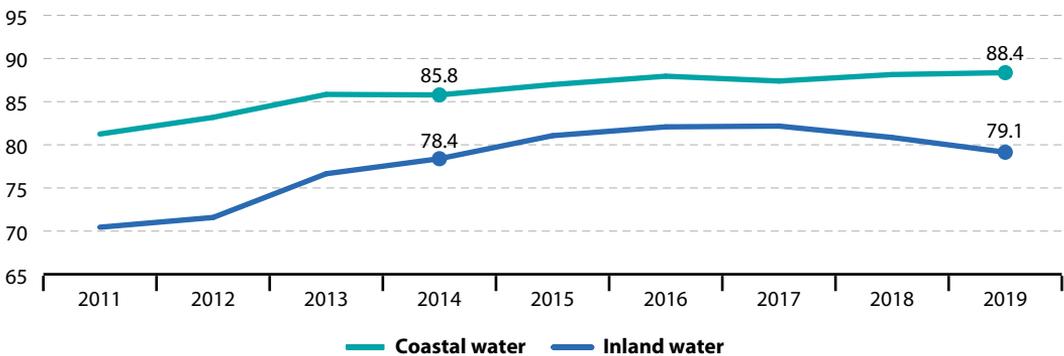
X LONG TERM Time series too short

SHORT TERM 2014–2019
*   **

* Coastal water sites
** Inland water sites

Figure 14.1: Bathing sites with excellent water quality, by locality, EU, 2011–2019
(% of bathing sites with excellent water quality)

Note: EU aggregate refers to 22 Member States for coastal water (no data for landlocked countries) and 24 Member States for inland water (no data for Cyprus, Malta and Romania); see Figure 14.2.
Compound annual growth rate (CAGR): 0.6 % per year (coastal water) and 0.2 % per year (inland water) in the period 2014–2019.
Source: EEA (Eurostat online data code: sdg_14_40)

Figure 14.2: Bathing sites with excellent water quality, by locality, by country, 2019
(% of bathing sites with excellent water quality)

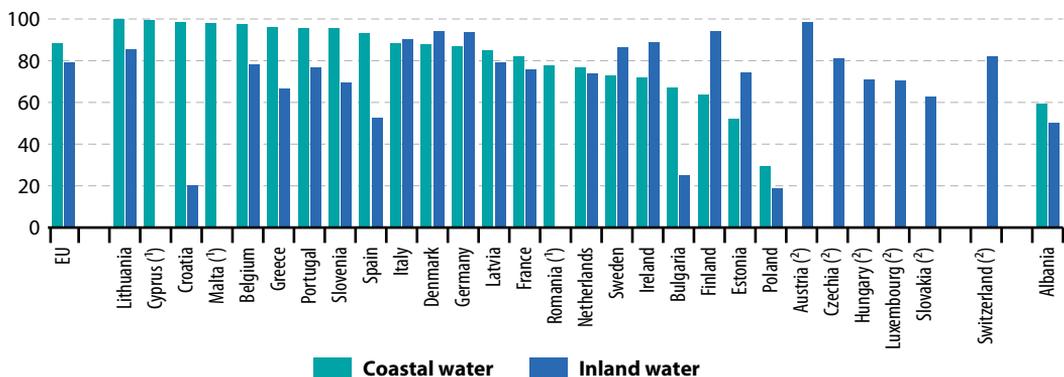(¹) No measurements of inland water bathing sites.   (²) No coastal water bathing sites (landlocked country).
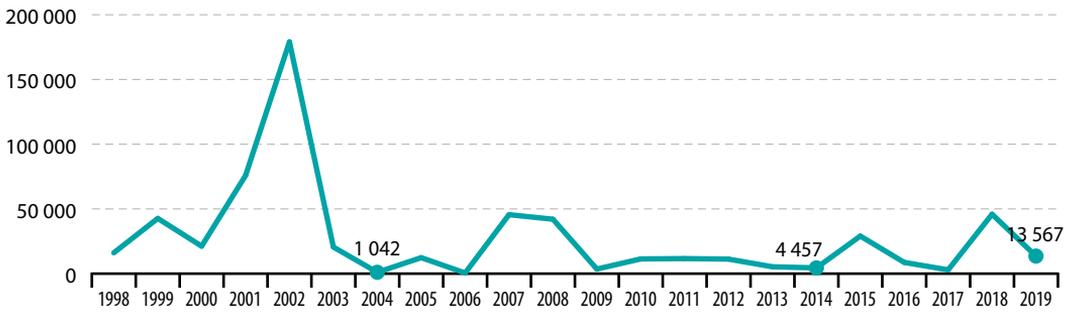*Source:* EEA (Eurostat online data code: sdg_14_40)

Marine waters affected by eutrophication

This indicator shows the share 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 6 years. The Copernicus Marine Service calculates the indicator from satellite imagery.

Figure 14.3: Marine waters affected by eutrophication, EU, 1998–2019
(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, 2014 and 2019
(% of exclusive economic zone (EEZ))
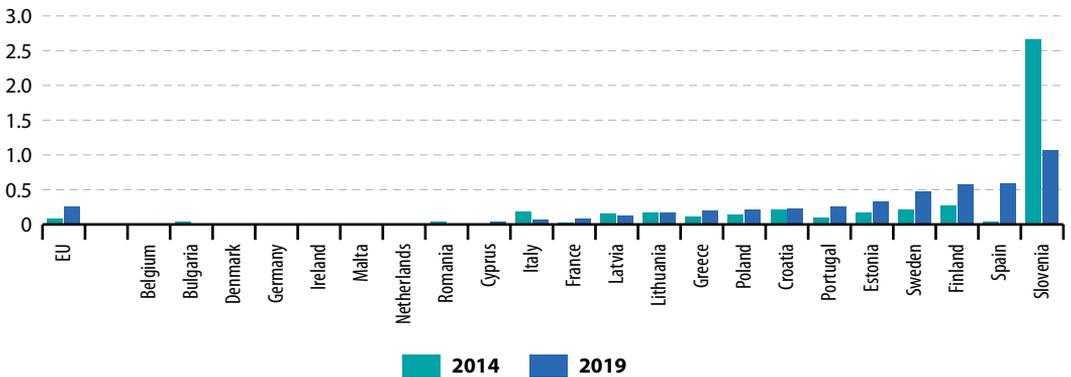
Source: Mercator Ocean International, Copernicus Marine Service (Eurostat online data code: sdg_14_60)

Global mean ocean surface 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 ocean water 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 ocean pH. The Copernicus Marine Service has reconstructed the global yearly mean surface seawater pH from 1985 onwards, based on a combination of methods which make use of in situ and remote-sensing data, as well as empirical relationships.

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 14.5: Global mean ocean surface acidity, 1985–2019
(pH value)
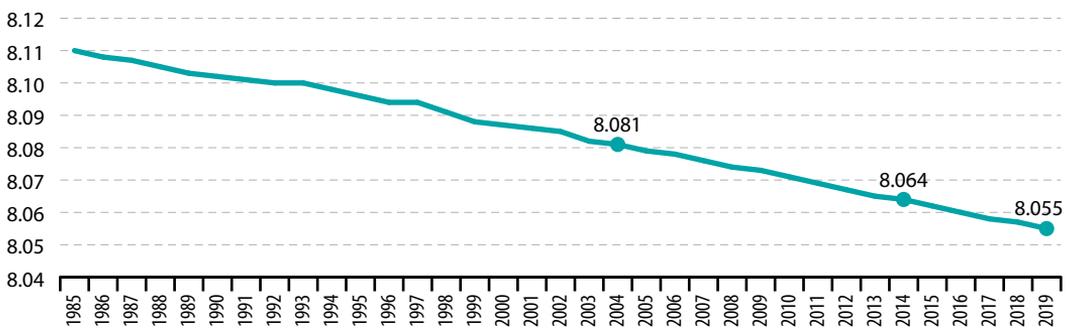
Compound annual growth rate (CAGR): – 0.02 % per year in the period 2004–2019; – 0.02 % per year in the period 2014–2019.

Source: EEA, Copernicus Marine Service (Eurostat online data code: sdg_14_50)

X **LONG TERM**
Time series
too short

↑ **SHORT TERM**
2014–2019

Surface of marine sites designated under Natura 2000

This indicator measures the surface of marine sites designated under Natura 2000. 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 area of these sites can provide an indication of the implementation of the Natura 2000 network, and the 'completeness' of its coverage within Member State marine waters. 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 14.6: Surface of marine sites designated under Natura 2000, EU, 2013–2019
(km²)
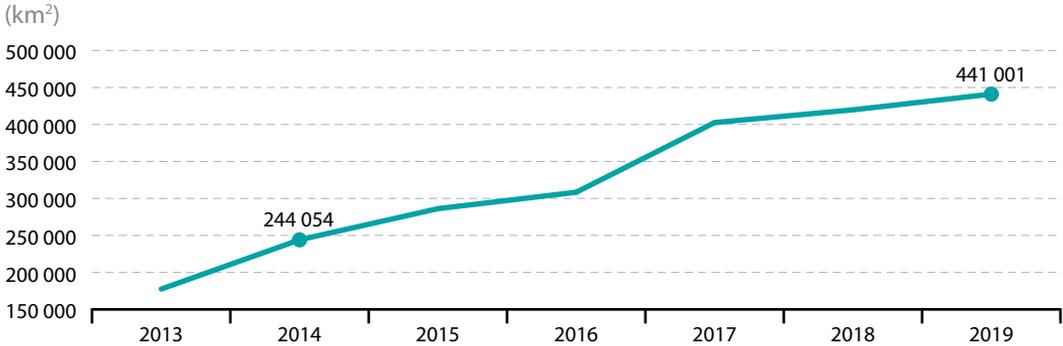
Compound annual growth rate (CAGR): 12.6 % per year in the period 2014–2019.
Source: European Commission services, EEA (Eurostat online data code: sdg_14_10)

Figure 14.7: Surface of marine sites designated under Natura 2000, by country, 2014 and 2019
(% of exclusive economic zone (EEZ))
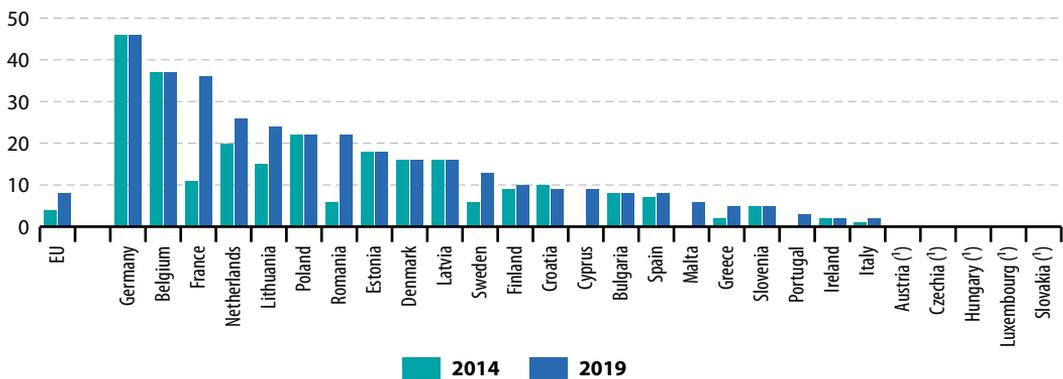
(¹) Not applicable (landlocked country).
Source: European Commission services, EEA (Eurostat online data code: sdg_14_10)

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 for the North-East Atlantic and adjacent seas (FAO area 27) ([58]). Time series for stock biomass estimates are provided by the International Council for the Exploration of the Sea (ICES). The model-based indicator for stock biomass for the Mediterranean and Black Sea is currently excluded because it is associated with high uncertainties due to the variability of biomass estimates for this area from one year to the next ([59]).

Figure 14.8: Estimated trends in fish stock biomass, North-East Atlantic and adjacent seas (FAO 27 area), 2003–2019
(index 2003 = 100)

Source: Joint Research Centre (JRC) — Scientific, Technical and Economic Committee for Fisheries (STECF) (Eurostat online data code: sdg_14_21)

X Assessment of progress not possible (scope of data too narrow for EU-wide assessment)

Assessed fish stocks exceeding fishing mortality at maximum sustainable yield (F$_{MSY}$)

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 measures the proportion of assessed fish stocks where current fishing mortality (F) exceeds the estimated maximum sustainable yield (F$_{MSY}$), expressed with the term F> F$_{MSY}$. Data are provided by the International Council for the Exploration of the Sea (ICES). The Mediterranean and Black Sea is excluded because too few fish stock assessments were carried out in the considered timeframe [60].

Figure 14.9: Assessed fish stocks exceeding fishing mortality at maximum sustainable yield (F$_{MSY}$) in the North-East Atlantic, 2003–2019
(% of stocks exceeding fishing mortality at maximum sustainable yield (F>F$_{MSY}$))

Note: 2019 data are provisional.

Source: Joint Research Centre (JRC) — Scientific, Technical and Economic Committee for Fisheries (STECF) (Eurostat online data code: sdg_14_30)
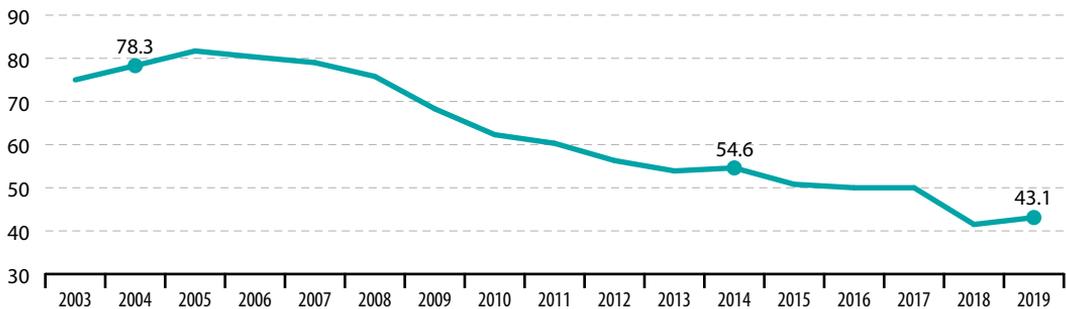
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Notes

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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.

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 325
Biochemical oxygen demand in rivers (*)	↑ (²)	↑ (²)	SDG 6, page 153
Phosphate in rivers (*)	↑ (³)	↓ (³)	SDG 6, page 156
Land degradation			
Soil sealing index	:	:	page 326
Estimated severe soil erosion by water	↗ (⁴)	↗ (⁵)	page 327
Biodiversity			
Surface of terrestrial sites designated under Natura 2000	:	↗	page 328
Common bird index	↘ (⁶)	↗ (⁶)	page 329
Grassland butterfly index	↓ (⁷)	↓ (⁷)	page 330

(*) Multi-purpose indicator.
(¹) Past 3-year period.
(²) Data refer to an EU aggregate based on 16 Member States.
(³) Data refer to an EU aggregate based on 18 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.1 in the annex.

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 and the European Environment — State and Outlook 2020, show continued and strong declines in biodiversity and species abundance and continued trends of land degradation ([1]). However, because of data availability issues, in this report the monitoring of SDG 15 in an 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 long-term trends for common birds and butterflies confirm the negative assessments of the EU's biodiversity reported 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 offered by ecosystems include protection from natural disasters such as flooding and the 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 ([2]). Hence, EU legislation such as the Birds and Habitats Directives and

policies such as the EU Biodiversity Strategy for 2030 help to ensure a healthy ecosystem status. They also aim to ensure that terrestrial ecosystems and the services they provide are sustainably used and managed.

In 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) released a Global Assessment Report on Biodiversity and Ecosystem Services ([3]). The report provides a comprehensive assessment of how economic development pathways impact nature. Its key findings indicate that species extinction rates are accelerating. 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 support of the EU Biodiversity Strategy for 2030, the European Commission issued a first EU-wide ecosystem assessment in 2020. The EU Ecosystem Assessment 2020 maps and assesses the ecosystems and their services of the EU's total land area and marine regions ([4]). This report establishes a knowledge base to support the evaluation of the 2020 biodiversity targets, and provides a data foundation for future assessments and policy developments, in particular with respect to the ecosystem restoration agenda for the next decade (2020–2030).**

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 in this report 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

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 over the past 18 years in making rivers cleaner.

Biochemical oxygen demand in rivers is an indicator of organic water pollution and the effectiveness of water treatment [5]. A high level of oxygen (O_2) required for the microbiological decomposition of organic compounds in water indicates there is less O_2 available for other river species and, as such, provides an indication of the state of a river system's overall health. In 2018, the biochemical oxygen demand in EU rivers was 2.03 milligrams (mg) of O_2 per litre (L) of water, representing a 37.7 % reduction from 3.26 mg/L in 2000. Between 2013 and 2018, 8 out of 15 reporting Member States saw reductions in biochemical oxygen demand in their rivers.

In 2018, the biochemical oxygen demand in European rivers was

2.03 mg/L

EU legislation on freshwater water quality is mainly embodied within the Water Framework Directive ([6]). This Directive imposes restrictions on activities that could pollute and damage Europe's freshwater resources. As such, it sets a goal for all surface water and groundwater sources to reach 'good ecological status' and 'good chemical status'. This legislation is complemented by the EU Drinking Water Directive ([7]) and Nitrates Directive ([8]), which also impose restrictions on levels of chemicals and minerals in Europe's freshwater resources.

Phosphate (PO_4) in rivers can originate from agricultural production, urban waste water and industrial discharges ([9]). Heavy loads of phosphate in rivers can harm the environment by causing biodiversity loss and water eutrophication. European phosphate concentrations have fallen by 28.9 % since 2000, reaching 0.06 mg/L in 2018. Overall, this reduction can be linked to the introduction of measures by national and European legislation, such as the Urban Waste Water Treatment Directive ([10]) and the switch to phosphate-free detergents ([11]).

0.06 mg/L of phosphates were present in European rivers in 2018

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 decreases in phosphorus emissions from the agricultural sector ([12]) and a rise in phosphorus fertiliser consumption between 2008 and 2018 in some Member States ([13]). Of all the Member States, Finland and Sweden had a high proportion of rivers with 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, Czechia and Lithuania, are perceived to be sufficiently high to result in freshwater eutrophication [14].

The EU's share of forest area 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 [15]. Currently, forests are affected by pressures from habitat degradation and loss, invasive alien species, pollutants and excessive nutrient loads, as well as climate change [16], resulting in

In 2018, the share of forests in total EU land area reached

43.5 %

persistent droughts and heatwaves. This means that EU efforts to retain and sustainably manage its forested areas are increasingly important.

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.

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 [22]. 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 [23]. 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.

The **European Green Deal** [17] recognises the importance of restored forest ecosystems for reducing carbon dioxide emissions, ensuring a healthy environment and combating climate change as well as promoting the circular bio-economy. Under the European Green Deal, and in line with the **EU Biodiversity Strategy for 2030** [18], the Commission has announced a new EU Forest Strategy post-2020 (planned in 2021) that covers the whole forest cycle and promotes the many services forests provide. A high proportion of forests are also covered in the **Habitats Directive** [19], showing their importance for biodiversity.

In 2019, the Commission also adopted the Communication **'Stepping up EU Action to Protect and Restore the World's Forest'** [20] with the goal to protect and improve the health of existing forests, especially primary forests, and increase sustainable and biodiverse forest coverage worldwide. At the start of 2020, within the framework of the **International Conference on Forests for Biodiversity and Climate**, the European Environment Agency in partnership with the European Commission launched the **FISE — Forest Information System for Europe** in support of the **EU Forest Strategy** [21].

Healthy soils are essential to meeting the climate and biodiversity goals under the European Green Deal. As a part of the EU Biodiversity Strategy for 2030, the Commission initiated an update of the current EU Soil Thematic Strategy (planned in 2021). A number of actions and targets set under the EU Biodiversity Strategy for 2030 and the Farm to Fork Strategy address soil degradation and preserve land resources.

The EU has released guidelines containing best practices to limit, mitigate or compensate soil sealing ([27]). These guidelines aim to support the EU's Soil Thematic Strategy ([28]) and the goal of no net land take by 2050 set in the Roadmap to a Resource-Efficient Europe ([29]).

The EU Biodiversity Strategy for 2030 indicates the need to limit soil sealing and urban sprawl under the EU Nature Restoration Plan and foresees an update of the current EU Soil Thematic Strategy (planned in 2021). The updated EU Soil Thematic Strategy will help to fulfil the EU's commitment to reaching land degradation neutrality by 2030. The Zero Pollution Action Plan for Air, Water and Soil ([30]) released in May 2021 also looks at these issues. Soil sealing and rehabilitation of contaminated brownfield land will be also addressed in the upcoming Strategy for a Sustainable Built Environment.

Land take is continuing to increase in the EU

Increases in the area of sealed land can be used to estimate land-use change for human use or intensification ([24]). The area of sealed soil in the EU has increased in all Member States since 2006. Between 2006 and 2018, the total area covered with impervious materials grew by 5 538 square kilometres (km^2) or 8.3 %.

Land take is described as the process of transforming agricultural, forest and other semi-natural and natural areas into artificial areas. It is monitored using the Copernicus CORINE land cover datasets ([25]), 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 converted to semi-natural land. According to EEA data, net land take in the EU has amounted to 11 845 square kilometres (km^2) since 2000, equalling an average annual net land take of 658 km^2. 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 ([26]).

Between 2006 and 2018, the area of sealed soil surface in the EU grew by

8.3 %

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 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 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 such benefits. Soil erosion by water is one of the

major threats to EU soils and contributes to land degradation. Removing fertile topsoil reduces soil productivity and threatens crop production, the quality of drinking water, habitats and biodiversity, and carbon stocks ([34]).

Efforts to address and mitigate soil erosion by water 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 km² in 2010 to 196 853 km² 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.

In the period between 2010 and 2016, the reduction was larger in arable lands compared with all lands ([35]). 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 have helped to reduce soil erosion ([36]). Overall, severe soil erosion by water is estimated to affect more than 5 % of the non-artificial erosive land area in the EU and is

Between 2010 and 2016, the estimated land area at risk of severe soil erosion by water in the EU fell by

0.9 %

responsible for 52 % of total soil loss in Europe ([37]). In addition, modelling results up to 2070 show that water erosion could rise by up to two-thirds compared with today ([38]).

The **Soil Thematic Strategy** ([39]) **has set a goal to reduce soil erosion, which is a recognised threat to soils in the EU. The** **Roadmap to a Resource-Efficient Europe** ([40]) **sets out a milestone to reduce soil erosion and requires Member States to implement the actions needed to achieve this. The** **EU Biodiversity Strategy for 2030** **indicates the need to reduce soil erosion and foresees an update of the current EU Soil Thematic Strategy (planned in 2021). The** **Zero Pollution Action Plan for Air, Water and Soil** **released in May 2021 also looks at these issues.**

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 contribute to preventing soil erosion. The Commission's proposals for the** **future of the CAP** **aim to foster a sustainable and competitive agricultural sector that can contribute to the** **European Green Deal, especially with regard to the** **Farm to Fork Strategy** **and the** **EU Biodiversity Strategy for 2030. A new green architecture for the CAP sets higher ambitions for environmental and climate action.**

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 (SCIs; Habitats Directive) and, if necessary, restore them to favourable conservation status. These sites, which are collectively known as the Natura 2000 network, significantly contribute to the protected area network of EU Member States. The Natura 2000 network is complemented by nationally designated terrestrial protected areas that are established under each Member State's national framework.

Many terrestrial habitats and species in the EU have still not reached 'favourable conservation status'

In 2019, the EU protected 763 986 km^2 of terrestrial habitats through designated Natura 2000 sites, covering 18 % of EU's land area. Member States with the highest percentage of Natura 2000 areas in 2019 include Slovenia (38 %), Croatia (37 %) and Bulgaria (35 %), with the lowest percentage attributed to Denmark (8 %). The designation of additional terrestrial protected areas grew slowly between 2014 and 2019. The EU Biodiversity Strategy for 2030 [41] includes a target for at least 30 % of EU land to be protected. This target, however, also includes national protected areas beyond Natura 2000 and can therefore not be monitored with the indicator on protected Natura 2000 sites.

763 986
square kilometres of the EU land area was protected under the Natura 2000 network in 2019

The latest assessment of the State of Nature in the EU reveals that many species and habitats of European interest still do not meet favourable condition standards as set out in the Habitats Directive [42]. 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 have, however, 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, have also one of the highest proportions of bad conservation status assessments (49 %) [43].

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 [44], 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 [45].

The EU common bird index tracks 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 6.3 % decline in common bird species and a dramatic 28.5 % fall in farmland bird species between 1990 and 2019. Forest bird species, on the other hand, appear to be recovering from earlier losses, with their index gaining 5.2 % 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 and changes in ploughing times for cereals have also affected common farmland birds, disrupting their breeding and decreasing available food sources ([46]). The situation is not improving for common farmland birds, despite losses slowing in recent years. Overall, the decline in common birds appears to have drawn to a halt, showing a 1.7 % reduction since 2004 but a 0.6 % gain since 2014.

Between 2004 and 2019, common bird species in the EU declined by

1.7 %

Butterflies — which are among the most common plant pollinators — are well suited to act as signals of environmental and habitat health. They occur in a wide range of habitat types and are sensitive to environmental change. The most recent report Assessing Butterflies in Europe (ABLE) — Butterfly Indicators 1990–2018 ([51]) presents new butterfly indicators for widespread species, woodland butterflies, as well as butterflies in urban environments, in Natura 2000 areas and as climate change indicators. Trends and indicators can be calculated for 167 (35 %) of the 483 butterfly species occurring in Europe and increasingly representing biogeographic zones across 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

Between 2003 and 2018, grassland butterfly populations in Europe shrank by

19.9 %

The EU **Birds Directive** ([47]) **protects all wild bird species (more than 500) and their habitats across the EU. The Habitats Directive** ([48]) **introduces similar measures but extends its coverage to more than 1 300 other rare, threatened or endemic species of wild animals and plants. It also protects more than 200 rare habitat types in their own right.**

Under the **EU Biodiversity Strategy for 2030** ([49]), **the full implementation of these two Nature Directives remains an essential goal in an effort to halt and reverse the trends of biodiversity loss. The results from reporting under the Nature Directives in the period 2013 to 2018 show the declining trend of biodiversity in Europe, despite**

significant efforts across Member States ([50]). **The EU Biodiversity Strategy for 2030 aims to reverse this trend by raising the nature protection commitment to protect at least 30 % of the land in the EU (including Natura 2000 and nationally designated areas), whereby one-third of protected areas will be strictly protected.**

Funding through the **LIFE programme has been made available to encourage nature conservation in Member States. Additional funding is available for farmers through the European Agricultural Fund for Rural Development to help them implement farming practices aimed at addressing biodiversity loss.**

Schemes. According to estimates from these monitoring efforts, butterfly populations declined by 25.4 % 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 19.9 % between 2003 and 2018. While the decline has slowed in the past few years, the grassland butterfly index still fell by 6.0 % between 2013 and 2018. Causes for this decline can be attributed to changes in rural land use, in particular stemming from agricultural intensification and land abandonment in mountains and wet regions, mainly in eastern and southern Europe. The loss of semi-natural grasslands has been particularly detrimental [52]. Butterflies show a moderate decline in non-urban areas but they are stable within urban areas in the whole of Europe, suggesting that parks and other green parts of the urban environment are becoming increasingly suitable and provide butterfly-friendly management. However, the situation of butterflies in urban areas requires further research, as the findings of different works contrast [53].

In June 2018, the European Commission adopted the first-ever EU Initiative on Pollinators [54]. The initiative sets the framework for an integrated approach to address the problem of declining pollinators in the EU and for a more effective use of existing tools and policies. The initiative aims to (a) improve knowledge of pollinator decline (both wild and domesticated pollinator species), its causes and consequences; (b) tackle these causes of pollinator decline; and (c) raise awareness, engage society at large and promote stakeholder collaboration [55].

The EU Biodiversity Strategy for 2030 aims to restore degraded ecosystems by halting and reversing the decline of pollinators and foresees in its Action Plan the review and possible revision of the EU Pollinators initiative. The target to increase biodiversity-rich high-diversity landscape features by at least 10 % of area on agricultural land will contribute to pollinator protection. The key commitment of both the Farm to Fork Strategy and the EU Biodiversity Strategy for 2030 to reduce the use and risk of pesticides by 50 % and to raise the share of agricultural land under organic farming to at least 25 % by 2030 will support halting and reversing the decline of pollinators (see also the analysis of pesticide risks and organic farming in the chapter on SDG 2 'Zero hunger' on page 75).

Presentation of the main indicators

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) ([56]). The LUCAS land use and land cover classification has been adapted to FAO forest definitions, distinguishing between the categories 'forests' and 'other wooded land'.

X **LONG TERM**
Time series
too short

SHORT TERM
2015–2018

Figure 15.1: Share of forest area, EU, 2009–2018
(% of total land area)
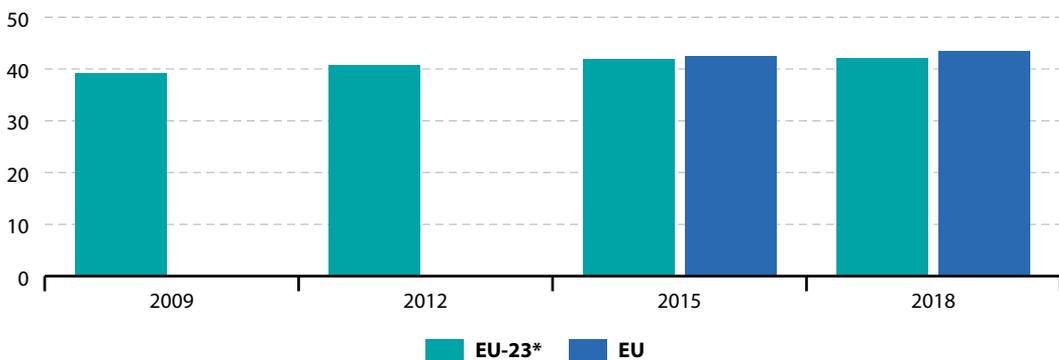
EU-23* **EU**

Note: EU-23* refers to an aggregate including the UK but excluding Bulgaria, Croatia, Cyprus, Malta and Romania; 2009 data are provisional. 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)

2015 **2018**
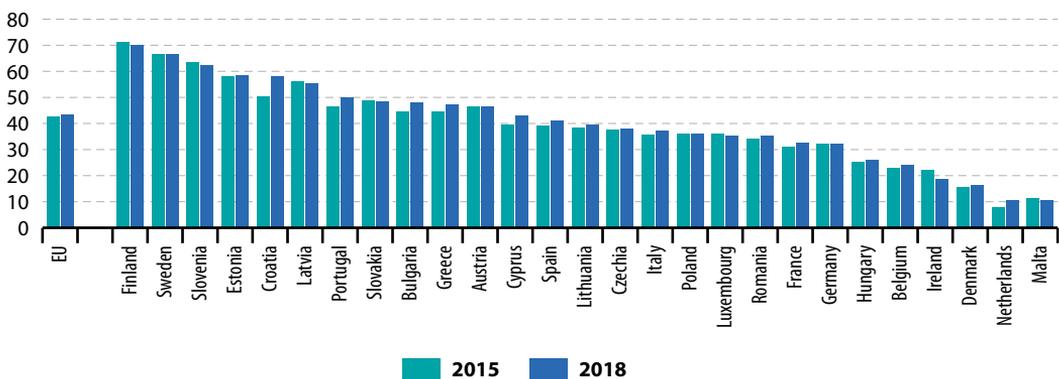
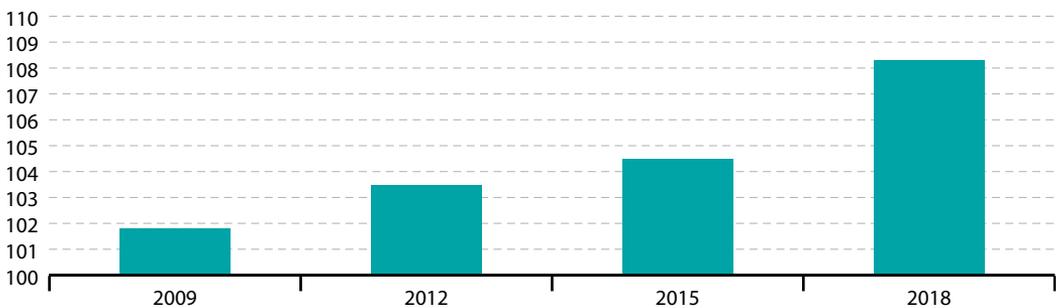*Source:* Eurostat (online data code: sdg_15_10)

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 urban 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 ([57]). 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: 2018 data are provisional; break in time series in 2018.
Source: EEA (Eurostat online data code: sdg_15_41)

Estimated severe soil erosion by water

This indicator estimates the amount of soil lost by water erosion, such as from rain splash, sheet-wash and rills. This provides an indication of the area affected by a certain rate of soil erosion (severe soil loss, E > 10 tonnes/hectare/year). This area is expressed in square kilometres (km²) and as a percentage of the total non-artificial erosive area in the country. These numbers are estimated from soil-erosion susceptibility models and should not be taken as measured values ([58]). Data presented in this section stem from the JRC's soil erosion database.

LONG TERM
2000–2016

SHORT TERM
2010–2016

Figure 15.4: Estimated severe soil erosion by water, EU, 2000, 2010 and 2016 (km²)
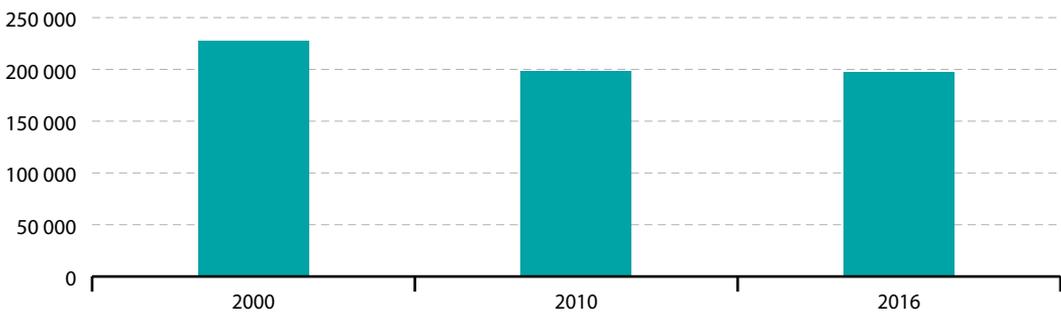
Compound annual growth rate (CAGR): – 0.9 % per year in the period 2000–2016; – 0.1 % per year in the period 2010–2016.

Source: Joint Research Centre (Eurostat online data code: sdg_15_50)

Figure 15.5: Estimated severe soil erosion by water, by country, 2010 and 2016 (% of the non-artificial erosive area)
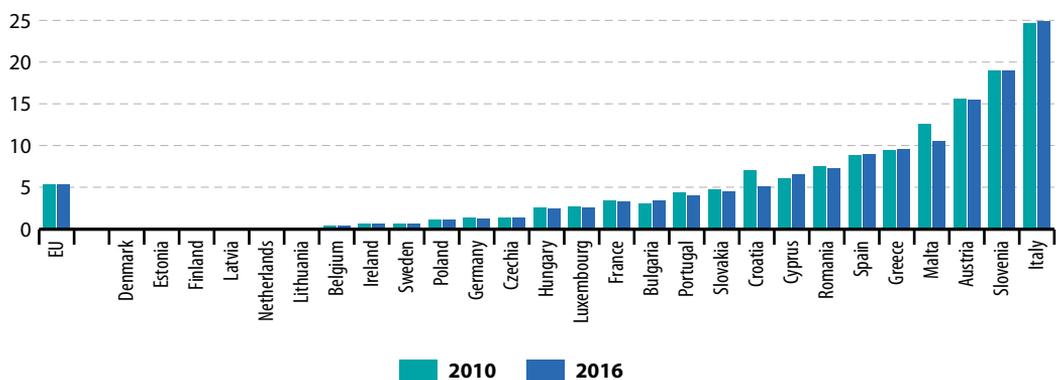
■ **2010**   ■ **2016**

Source: Joint Research Centre (Eurostat online data code: sdg_15_50)

X **LONG TERM**
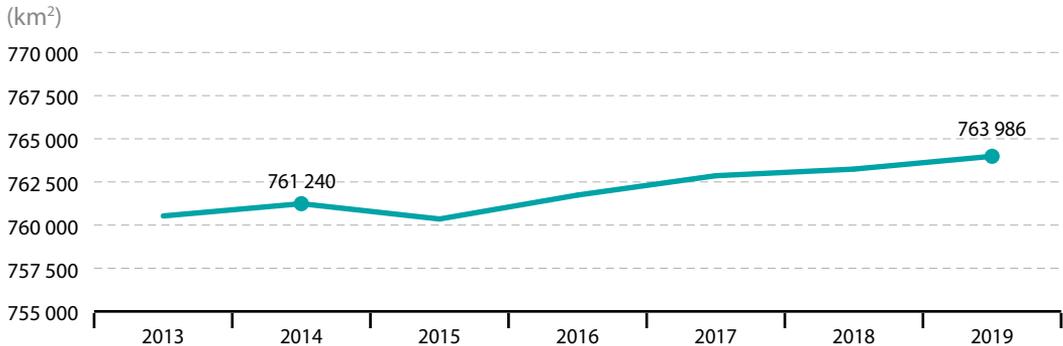Time series
too short

↗ **SHORT TERM**
2014–2019

Surface of terrestrial sites designated under Natura 2000

This indicator measures the surface of terrestrial sites designated under Natura 2000. 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 area of these sites can provide an indication of the implementation of the Natura 2000 network, and the 'completeness' of its coverage within Member State marine waters. 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 15.6: Surface of terrestrial sites designated under Natura 2000, EU, 2013–2019
(km²)

Note: 2013–2017 data are Eurostat estimates.
Compound annual growth rate (CAGR): 0.1 % per year in the period 2014–2019.
Source: European Commission services, EEA (Eurostat online data code: sdg_15_20)

Figure 15.7: Surface of terrestrial sites designated under Natura 2000, by country, 2014 and 2019
(% of country area)

■ **2014** ■ **2019**
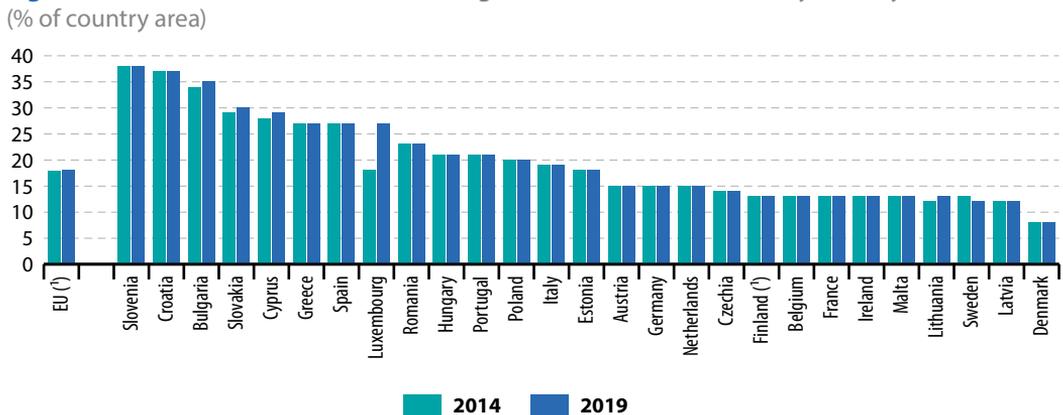
(¹) 2014 data are Eurostat estimates.
Source: European Commission services, EEA (Eurostat online data code: sdg_15_20)

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 [59].

LONG TERM
* ** 2004–2019

SHORT TERM
* ** 2014–2019

* All common birds
** Common farmland birds

Figure 15.8: Common bird index, by type of species, EU, 1990–2019
(index 2000 = 100)
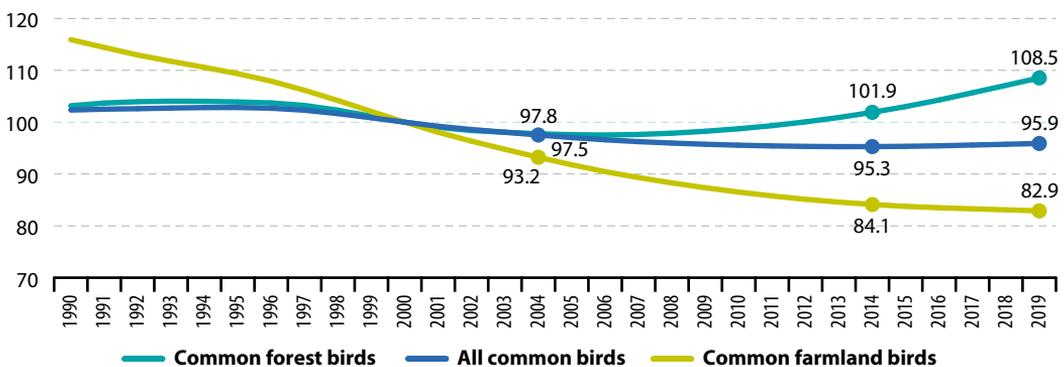
Note: The EU aggregate changes depending on when countries joined the Pan-European Common Birds Monitoring Scheme; 2018 and 2019 data are estimated.
Compound annual growth rate (CAGR): – 0.1 % per year (all common birds) and – 0.8 % per year (common farmland birds) in the period 2004–2019; 0.1 % per year (all common birds) and – 0.3 % per year (common farmland birds) in the period 2014–2019.
Source: European Bird Census Council (EBCC)/BirdLife/Statistics Netherlands (Eurostat online data code: sdg_15_60)

Grassland butterfly index

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, Sweden), but with a limited number of long time-series available ([60]). 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 15.9: Grassland butterfly index, EU, 1991–2018
(index 2000 = 100)
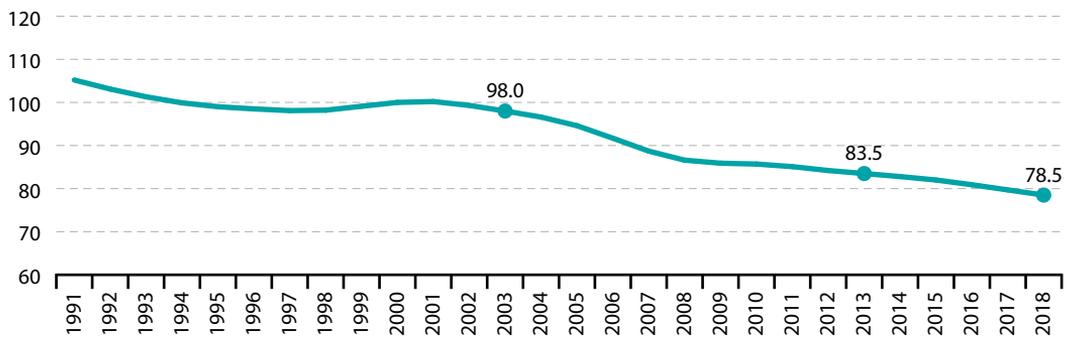
Compound annual growth rate (CAGR): – 1.5 % per year in the period 2003–2018; – 1.2 % per year in the period 2013–2018.

Source: EEA, Butterfly Conservation Europe, European Butterfly Monitoring Scheme partnership, Assessing Butterflies in Europe (ABLE) project (Eurostat online data code: sdg_15_61)

Further reading on life on land

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FAO and ITPS (2018), *Soil pollution — a hidden reality*, Food and Agriculture Organization and Intergovernmental Technical Panel on Soils, Rome, FAO.

Maes et al. (2020), *Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment*, Publications Office of the European Union, Ispra.

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PECBMS (2019), *State of common European breeding birds 2018*, CSO, Prague.

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Further data sources on life on land

EEA, Conservation status of species under the EU Habitats Directive.

EEA, Forest: growing stock, increment and fellings.

EEA, Conservation status of habitats under the EU Habitats Directive.

EEA, Land take and net land take, indicator dashboard.

EEA, Land cover and change statistics 2000-2018, dashboard.

European Commission, European Soil Data Centre (ESDAC): Soil Threats Data.

Notes

(¹) 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*.

(²) 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*.

(³) Ibid.

(⁴) Maes et al. (2020), *Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment*, EUR30161 EN, Publications Office of the European Union, Ispra, 2020, ISBN 978-92-76-17833-0, doi:10.2760/757183, JRC120383.

(⁵) European Environment Agency (2019), *Oxygen consuming substances in European rivers*.

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(⁷) Council of the European Union (1998), *Directive 98/83/EC on the quality of water intended for human consumption*.

(⁸) Council of the European Communities (1991), *Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources*.

(⁹) European Environment Agency (2020), *Nutrients in freshwater in Europe*.

(¹⁰) Council of the European Communities (1991), *Directive 91/271/EEC concerning urban waste water treatment.*

(¹¹) European Environment Agency (2020), *Nutrients in freshwater in Europe*.

(¹²) Ibid.; and Eurostat (2018) *Agri-environmental indicator — risk of pollution by phosphorus*.

(¹³) Eurostat (2018), *Statistics Explained, Agri-environmental indicator — mineral fertiliser consumption*.

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(¹⁵) World Bank (2017), *Atlas of Sustainable Development Goals 2017: World Development Indicators*, Washington, DC: World Bank, p. 90; European Commission (2013), *A New EU Forest Strategy: for forests and the forest-based sector, COM(2013) 659 final*, p. 2.

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(¹⁷) European Commission (2019), *The European Green Deal*, COM(2019) 640 final, Brussels.

(¹⁸) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.

(¹⁹) Council of the European Communities (1992), *Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*.

(²⁰) European Commission (2019), *Stepping up EU Action to Protect and Restore the World's Forests*, COM(2019) 352 final, Brussels.

(²¹) FISE — Forest Information System for Europe.

(²²) 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.

(²³) 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.

(²⁴) European Environment Agency (2020), *Imperviousness and imperviousness change*.

(²⁵) European Environment Agency (2018), *Land take in Europe*.

(²⁶) Data stem from the EEA's 'Land take and net land take indicator dashboard'.

(²⁷) European Commission (2011), *Report on best practices for limiting soil sealing and mitigating its effects*, Technical Report — 2011 — 050, Brussels.

(²⁸) European Commission (2006), *Thematic Strategy for Soil Protection*, COM(2006) 231 final, Brussels.

(²⁹) European Commission (2011), *Roadmap to a Resource Efficient Europe*, COM(2011), 571 final, Brussels.

(³⁰) 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.

(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. (2020), *A soil erosion indicator for supporting agricultural, environmental and climate policies in the European Union*, Remote Sensing 12 (9), p. 1365..

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(³⁸) 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.

(³⁹) European Commission (2006), *Thematic Strategy for Soil Protection*, COM(2006) 231 final, Brussels.

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(⁴¹) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.

(⁴²) European Environment Agency (2020), *State of nature in the EU. Results from reporting under the nature directives 2013–2018*, EEA Report No 10/2020.

(⁴³) Ibid.

(⁴⁴) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.

(⁴⁵) Eurostat (2018), *Statistics Explained, Biodiversity Statistics*.

(⁴⁶) BirdLife International (2017), *The Vanishing: Europe's farmland birds*, published online by Iván Ramírez on 12 February 2017.

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(⁴⁸) Council of the European Communities (1992), *Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*.

(⁴⁹) European Commission (2020), *EU Biodiversity Strategy for 2030 — Bringing nature back into our lives*, COM(2020) 380 final.

(⁵⁰) European Environment Agency (2020), *State of nature in the EU. Results from reporting under the nature directives 2013–2018*, EEA Report No 10/2020.

(⁵¹) Van Swaay et al. (2020), *Assessing Butterflies in Europe — Butterfly Indicators 1990–2018*, Technical report. Butterfly Conservation Europe & ABLE/eBMS (www.butterfly-monitoring.net).

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(⁵³) Van Swaay et al. (2020), *Assessing Butterflies in Europe — Butterfly Indicators 1990–2018*, Technical report. Butterfly Conservation Europe & ABLE/eBMS (www.butterfly-monitoring.net).

(⁵⁴) European Commission (2018), *EU Pollinators Initiative*, COM(2018) 395 final, Brussels.

(⁵⁵) European Commission (2019), *The EU approach to tackle pollinator decline*.

(⁵⁶) Eurostat (2019), *Statistics Explained, LUCAS — Land use and land cover survey.*

(⁵⁷) European Environment Agency (2020), *Imperviousness and imperviousness change*.

(⁵⁸) Eurostat (2020), *Statistics Explained, Agri-environmental indicator — soil erosion*.

(⁵⁹) Eurostat (2020), Metadata Biodiversity (env_biodiv).

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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.

eurostat
supports the SDGs

The European Union has been one of the most successful peace projects in the world. Under the guidance of the Treaty of Rome (¹), signed in 1957, the Union can look back on 60 years of peace, democracy and solidarity. In 2012, the EU was awarded the Nobel Peace Prize for advancing the causes of peace, reconciliation, democracy and human rights in Europe. 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	⬆ (¹)	⬆	page 341
Population reporting crime, violence or vandalism in their area	:	⬆	page 342
Access to justice			
General government total expenditure on law courts	⬆	⬆	page 343
Perceived independence of the justice system: very of fairly good	:	⬆ (²)	page 344
Trust in institutions			
Corruption Perceptions Index	:	:	page 345
Population with confidence in EU institutions	⬊	⬆	page 346

(¹) Past 14-year period.
(²) Past 4-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.1 in the annex.

Peace, justice and strong institutions in the EU: overview and key trends

Monitoring SDG 16 in an EU context focuses on the areas of 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 very 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

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 2016. This corresponds to a reduction of 50.7 % over a 14-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 2019, 11.0 % of the population felt affected by these issues, which is 2.1 percentage points less than in 2010.

0.7
deaths per 100 000 people in the EU in 2016 were caused by homicides

The perception of being affected by crime, violence or vandalism differs across socio-demographic sub-groups of the EU population. While 13.4 % of the population who were living below the poverty threshold — set at 60 % of the median equivalised income — felt affected by such problems in 2019, this was only the case for 10.6 % of the population above the poverty threshold.

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 2019 was more than seven times higher in the most affected country (20.2 % of the population in Bulgaria) than in the least affected country (2.7 % 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') [2]. 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.

11.0 %
of the EU population reported crime, violence or vandalism in their area in 2019

In 2020, the European Commission set out a new **EU Security Union Strategy** (³) 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.

Men are more likely to die from homicide, while women are more likely to be victims of violence in their homes

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 2016, 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 (⁴).

Overall, according to the UNODC report, almost a quarter (24 %) of homicides in Europe in 2017 (in comparison with 18 % globally) were at the hands of an intimate partner or were family-related (⁵). 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 (see also the chapter on SDG 5 'Gender equality' on page 127).

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.

EU expenditure on law courts has grown

In the EU, general government expenditure on law courts has risen by 53.5 % since 2004, reaching EUR 45.0 billion in 2019. In per capita terms, this corresponds to a 48.3 % increase from EUR 67.7 per inhabitant in 2004 to EUR 100.4 per inhabitant in 2019. However, putting these figures in relation to total government expenditure reveals that spending on law courts has remained stable at 0.7 % since 2003. In relation to GDP, expenditure on law courts has also been stable since 2003, at 0.3 % of GDP (⁶). 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 euros were spent by governments on law courts across the EU in 2019

More than half of the EU population consider the justice system to be sufficiently independent

In 2020, 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 four percentage points, from 38 % to 34 %. Interference or pressure from government and politicians were the most likely reasons for a bad rating of perceived independence of courts and judges (⁷).

54 %
of the EU population rated the independence of courts and judges as very or fairly good in 2020

Age, employment status and experience with the justice system seem to have a notable effect on the perception of the independence of the justice system. In 2020, 62% of 15- to 24-year-old respondents in the EU gave a good rating, compared with 53 % of respondents aged 55 or over. Employees (63 %) were more likely to give a good rating than self-employed people (55 %), manual workers (50 %) or people who were not employed (52 %). 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 (49 %) and bad (47 %) than those who had not been to court (57 % good, 32 % bad) (⁸).

> **Improving the effectiveness of justice systems in Member States has been identified as a key component for structural reforms in the European Semester, the annual cycle for the coordination of economic policies at EU level. With the help of the EU justice scoreboard, the EU monitors the efficiency, quality and independence of Member States' justice systems.**

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 2020 and made up one half of the global top 20 least-corrupt countries. Within the EU, northern European

50 %
of the 20 least corrupt countries in the world in 2020 were in the EU

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 position 69 on the global list (comprising 180 countries in total) (⁹).

Country rankings in the CPI largely correspond to analogous answers collected in late 2019 through a Eurobarometer survey (¹⁰), in which Finland, Denmark and Sweden were identified as having the least widespread 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 ([11]).

Trust in EU institutions has been increasing since 2016

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 fell to 35–40 % for all three by 2015. More recent data, however, indicate a turnaround of this trend, with trust levels increasing between 9 and 14 percentage points, depending on the institution, between 2015 and 2019.

The economic crisis may have played a role in the strong decline in trust in EU institutions observed between 2007 and 2013. A financial crisis 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 ([12]).

Throughout the years, the European Parliament has remained the most trusted of the three institutions surveyed. In 2019, 54 % of the EU population expressed confidence in the European Parliament, followed by 47 % for the European Commission and 44 % for the European Central Bank. Across Member States, the European Parliament was the most trusted of the surveyed EU institutions in all countries except for Finland, where the European Central Bank and the European Parliament were equally trusted.

54 %
of the EU population expressed trust in the European Parliament in 2019, making it the most trusted of the main EU institutions

Presentation of the main indicators

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.
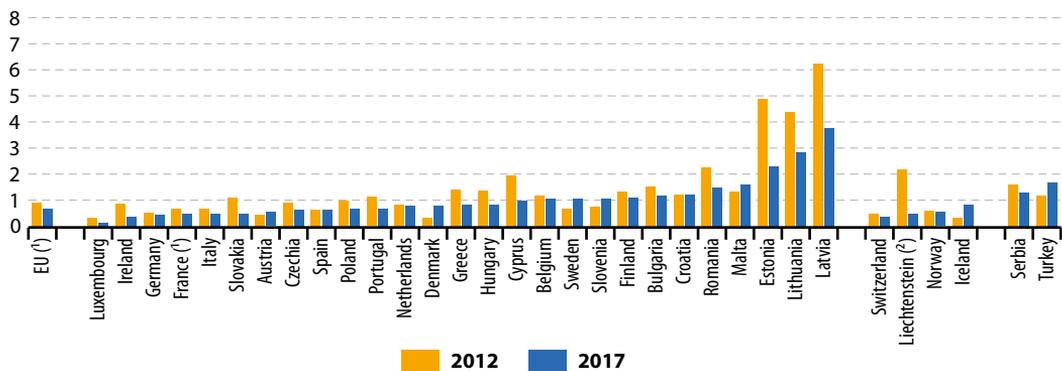
LONG TERM
2002–2016

SHORT TERM
2011–2016

Figure 16.1: Standardised death rate due to homicide, by sex, EU, 2002–2016
(number per 100 000 persons)
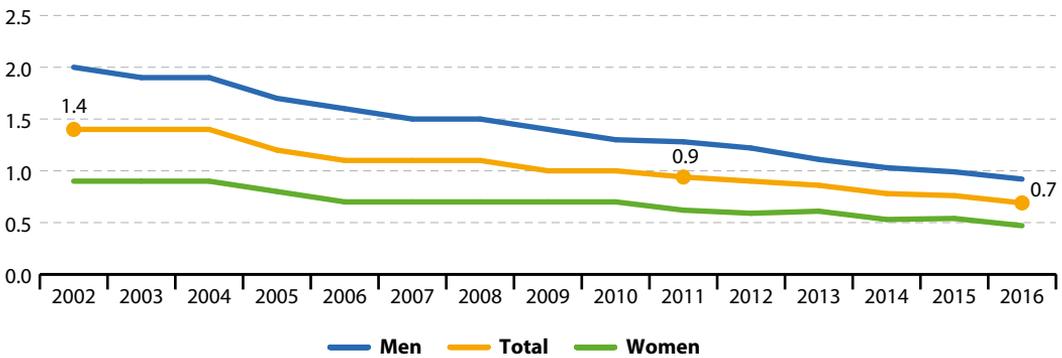
Note: Data for 2002–2010 are estimated.
Compound annual growth rate (CAGR) for the total rate: – 4.9 % per year in the period 2002–2016; – 6.0 % per year in the period 2011–2016.
Source: Eurostat (online data code: sdg_16_10)

Figure 16.2: Standardised death rate due to homicide, by country, 2012 and 2017
(number per 100 000 persons)

Note: 2017 data are provisional.
(¹) 2016 data (instead of 2017).   (²) 2014 data (instead of 2012).
Source: Eurostat (online data code: sdg_16_10)

X LONG TERM
Time series
too short

↑ SHORT TERM
2014–2019

Population reporting crime, violence or vandalism in their area

This indicator shows the share of the population who reported they face 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, 2010–2019
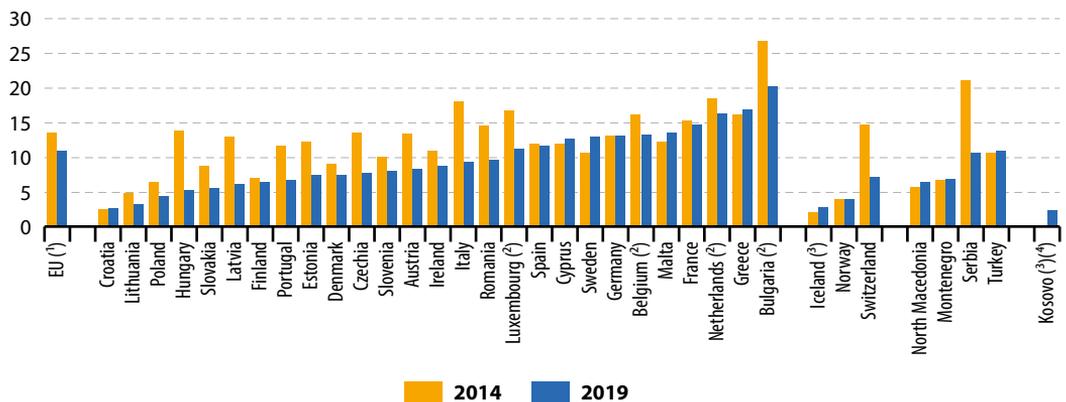(% of population)
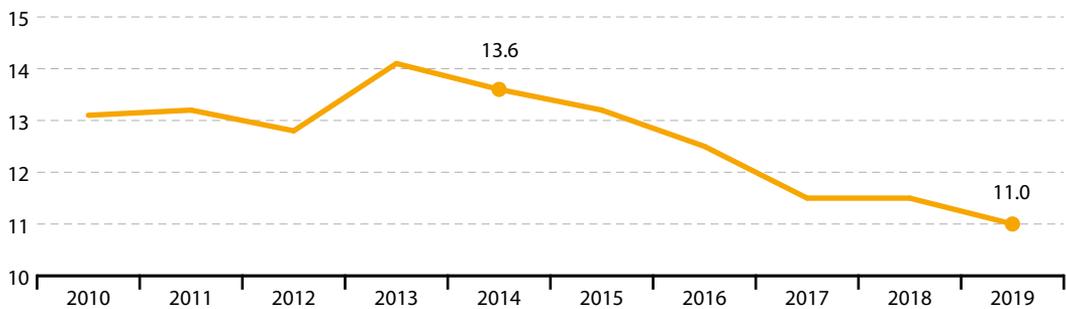
Note: Estimated data.
Compound annual growth rate (CAGR): − 4.2 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_16_20)

Figure 16.4: Population reporting occurrence of crime, violence or vandalism in their area, by country, 2014 and 2019
(% of population)

■ **2014** ■ **2019**

(¹) Estimated data.
(²) Break(s) in time series between the two years shown.
(³) 2018 data (instead of 2019).
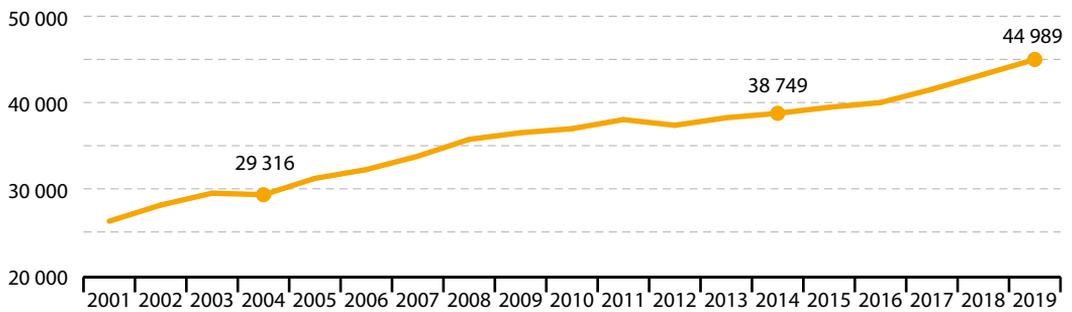(⁴) No data for 2014.
Source: Eurostat (online data code: sdg_16_20)

General government total expenditure on law courts

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.
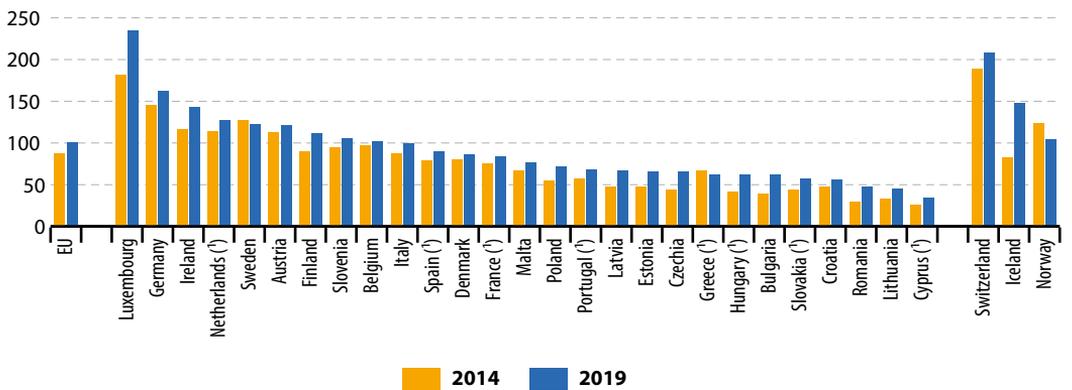
LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 16.5: General government total expenditure on law courts, EU, 2001–2019 (million EUR)

Compound annual growth rate (CAGR): 2.9 % per year in the period 2004–2019; 3.0 % per year in the period 2014–2019.
Source: Eurostat (online data code: sdg_16_30)

Figure 16.6: General government total expenditure on law courts, by country, 2014 and 2019 (EUR per inhabitant)

2014 **2019**

(¹) 2019 data are provisional and/or estimated.
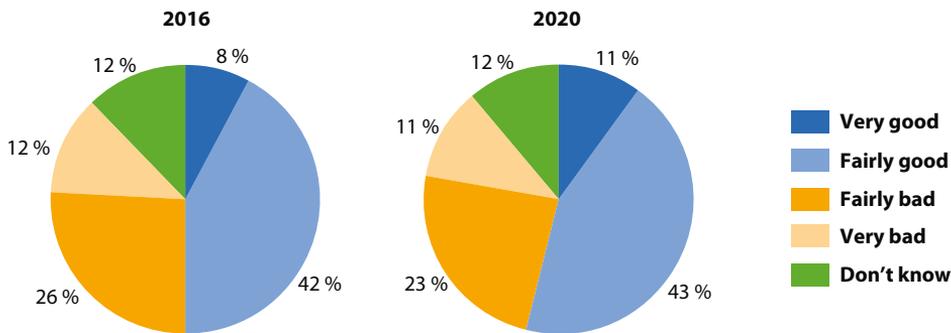*Source:* Eurostat (online data code: sdg_16_30)

X **LONG TERM**
Time series
too short

↑ **SHORT TERM**
2016–2020

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 and 2020 (% of population)

Note: Estimated data.
Compound annual growth rate (CAGR) (share of very good and fairly good): 1.9 % per year in the period 2016–2020.
Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_40)

Figure 16.8: Perceived independence of the justice system, by country, 2020 (% of population)
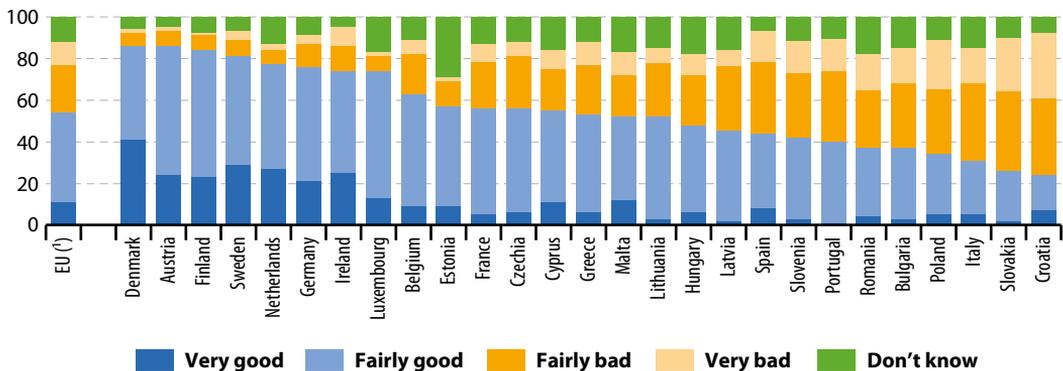

(¹) Estimated data.
Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_40)

Corruption Perceptions Index

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.

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

Figure 16.9: **Corruption Perceptions Index, by country, 2015 and 2020**
(score scale of 0 (highly corrupt) to 100 (very clean))
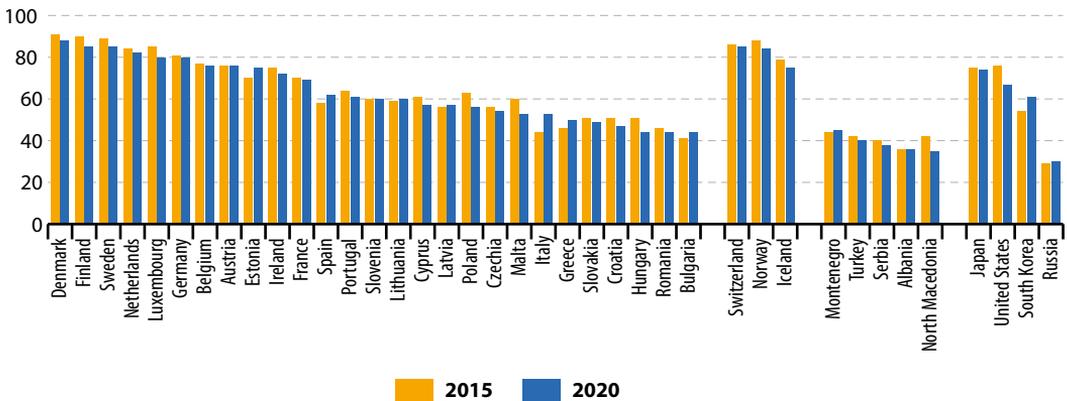
*Source:* Transparency International (Eurostat online data code: sdg_16_50)

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, 2004–2019
(% of population)
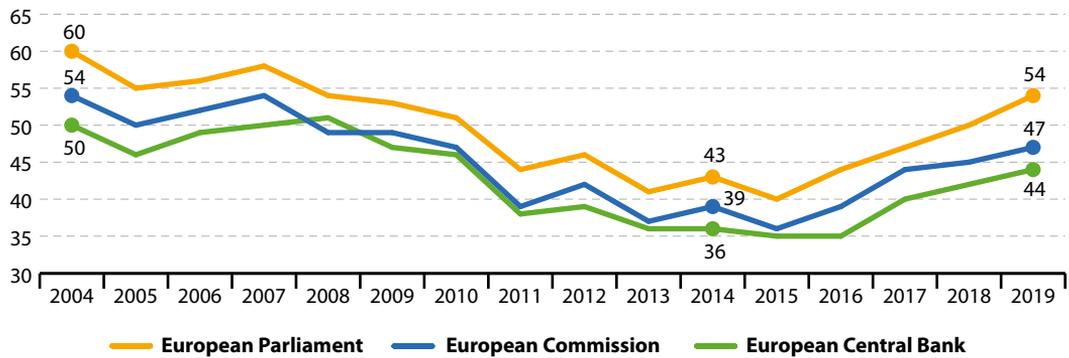
Note: 2004–2017 data are estimated.
Compound annual growth rate (CAGR):
European Commission: – 0.9 % per year in the period 2004–2019; 3.8 % per year in the period 2014–2019.
European Central Bank: – 0.8 % per year in the period 2004–2019; 4.1 % per year in the period 2014–2019.
European Parliament: – 0.7 % per year in the period 2004–2019; 4.7 % per year in the period 2014–2019.

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, 2019
(% of population)
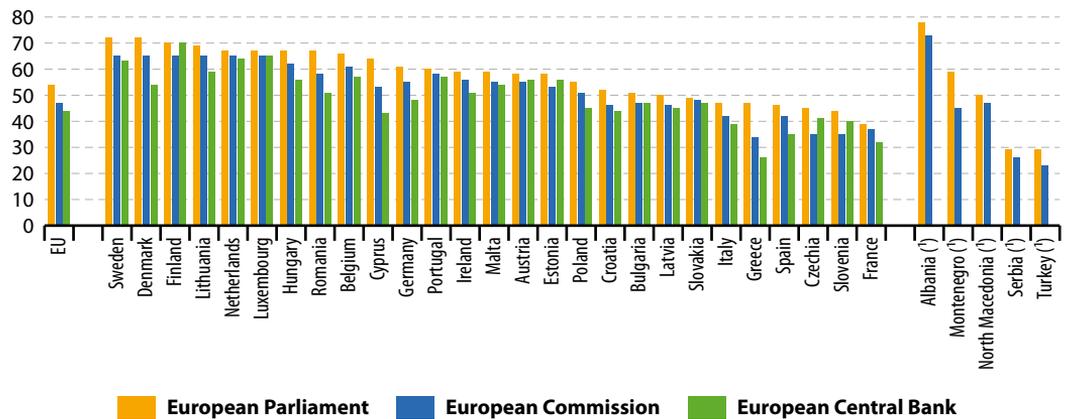
(¹) 2018 data for European Parliament and Commission; no data for European Central Bank.

Source: European Commission services, Eurobarometer (Eurostat online data code: sdg_16_60)

Further reading on peace, justice and strong institutions

European Commission (2020), *The 2020 EU Justice Scoreboard*, COM(2020) 306 final, Brussels.

European Commission (2020), *Flash Eurobarometer 483 Report on Perceived independence of the national justice systems in the EU among the general public.*

European Commission (2017), *Fight against corruption, European Semester thematic factsheet.*

European Research Centre for Anti-Corruption and State-Building (ERCAS) & Hertie School of Governance (2015), *Public integrity and trust in Europe*, Berlin.

UNODC (2019), *Global study on homicide 2019*, United Nations Office on Drugs and Crime, Vienna.

Further data sources on peace, justice and strong institutions

Eurostat, Crime and criminal justice statistics.

UNODC, Global statistics on crime, criminal justice, drug trafficking and prices, drug production, and drug use.

World Bank, Worldwide Governance Indicators.

Notes

(¹) Signed in Rome in 1957 as the Treaty establishing the European Economic Community, it is now known as the Treaty on the Functioning of the European Union.
(²) See for example: Rader, N. (2017), *Fear of Crime*, Oxford Research Encyclopedia of Criminology.
(³) European Commission (2020), *EU Security Union Strategy*, COM(2020) 605 final, Brussels.
(⁴) 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.
(⁵) UNODC (2018), *Global study on homicide 2018, Gender-related killing of women and girls,* Vienna, United Nations Office on Drugs and Crime, p. 18.
(⁶) Source: Eurostat (online data code: gov_10a_exp).
(⁷) European Commission (2020), *Flash Eurobarometer 483, Report on Perceived independence of the national justice systems in the EU among the general public*, p. 11.
(⁸) Id., p. 10. Data refer to the EU-28.
(⁹) Transparency International (2021), *Corruption Perceptions Index 2020*.
(¹⁰) European Commission (2020), *Special Eurobarometer 502 on Corruption*, p. 21.
(¹¹) Also see European Commission (2016), *European Semester Thematic Factsheet on Effective Justice Systems*.
(¹²) 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. SDG 17 furthermore emphasises the importance of access to science, technology and innovation, in particular internet-based information and communications technology.

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, 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 358
EU financing to developing countries	↑	↓	page 360
EU imports from developing countries	↑	↑	page 361
Financial governance within the EU			
General government gross debt	↓	↓	page 362
Share of environmental taxes in total tax revenues	↘	↓	page 363
Access to technology			
⊙ Share of households with high-speed internet connection	:	↑	page 364

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.1 in the annex.

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 ODA to 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-GDP ratios have risen strongly in response to fighting the COVID-19 pandemic, and a shift in the tax burden from labour to the environment has not taken place. Trends in access to technology are 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 (¹). 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 (²) are some of the financial flows from the EU and its Member States to developing countries.

131.4
billion EUR were spent by the EU on financing to developing countries in 2019

There has been a positive trend regarding the total volume of financial flows from the EU to developing countries over the past two decades. The OECD estimates that total public and private EU financing to developing countries amounted to EUR 131.4 billion in 2019. This is more than two times the amount the EU provided in 2004, but lower than the amounts given in 2014, 2015 and 2017. While OOFs and grants by NGOs have remained rather marginal, ODA and private flows combined have accounted for more than 90 % of total estimated EU financing for development since 2011. Overall, ODA has been the most reliable and steady financial flow from the EU to developing countries, while private flows have experienced a huge variation 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 (³). The EU is committed to reaching the 0.7 % target by 2030, as affirmed in the European Consensus on Development (⁴). 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 ([5]).

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. At the same time, however, the EU's GNI fell by 3 % as a result of the COVID-19 pandemic, reaching a value considerably lower than in the two preceding years. 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.

0.50 %
of the EU's gross national income was spent on ODA in 2020

Only four EU countries 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 66.6 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 overall EU 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 increasing. For example, Turkey spent 1.12 % of its GNI on ODA in 2020 ([6]).

The EU seeks to support least developed countries in particular

To target 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 official development assistance to LDCs reached EUR 13.8 billion or 0.10 % of GNI.

The **European Consensus on Development** ([7]) **of June 2017 outlines the need to dedicate a high proportion of official development assistance to least developed countries and other low-income countries. Hence, 0.15 % of GNI should be allocated to LDCs in the short term, rising to 0.20 % by 2030. The Consensus takes a comprehensive approach to implementation, combining aid with other resources, with sound policies and a strengthened approach to Policy Coherence for Development.**

Coherence between EU financial flows to developing countries

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.

The EU emphasises coherence between all financial flows to developing countries, trying to bring together aid, investment, trade, domestic resource mobilisation and effective policies. For instance, the EU has a Domestic Resource Mobilisation support programme, which aims to establish efficient, effective, transparent and fair tax systems in developing countries. The EU also uses its European Fund for Sustainable Development (EFSD) to help mobilise private-sector financing and maintains 'duty free and quota free' market access to LDCs as set out in the Addis Ababa Action Agenda (AAAA) [8].

The AAAA emphasises that public and private, international and domestic sources of financing as well as non-financial means of implementation are needed for purposes of sustainable development. This is why the EU supports the multilateral initiative of Integrated National Financing Frameworks. These are a planning and delivery tool to finance sustainable development at the national level. Country-led and country-owned, they help policymakers map the landscape for financing sustainable development. They lay out a financing strategy to leverage sustainable investments and implement policies to achieve the priorities of national sustainable development plans.

In March 2021, the OECD released the first comprehensive Total Official Support for Sustainable Development (TOSSD) dataset. It contains information from about 90 provider countries and institutions, including the EU and its Member States, on their activities in support of sustainable development. The new TOSSD dataset has the potential to capture global efforts in financing for development, for example to support COVID-19 vaccines and in fighting climate change. It also provides a more complete picture of private amounts, mobilised by official interventions [9].

Both the 2030 Agenda and the AAAA underscore the importance of science, technology and innovation as powerful drivers for sustainable development. International cooperation in these areas is indispensable for the achievement of all SDGs.

The growth in EU imports from developing countries was interrupted by the COVID-19 pandemic

The potential contribution of trade to sustainable development has long been acknowledged. This is also reflected in the EU's 2021 Trade Policy Review [10]. The European Green Deal also stresses the contribution that EU trade policy can make to achieving the EU's ambition on sustainable development [11].

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.

852

billion EUR was the value of EU imports from developing countries in 2020

The EU's unilateral preferential trade arrangement, '**Generalised Scheme of Preferences**' ([12]) allows developing countries to pay less or no duties on their exports to the EU. The **Everything But Arms arrangement** grants duty-free, 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.

Between 2005 and 2020, EU imports from developing countries increased significantly from EUR 463 billion to EUR 852 billion. Over this period, EU imports from developing countries grew by 4.6 % per year on average. In the short term since 2015, imports continued to grow, although only by 2.3 % a year. Both the long-term and short-term growth rates are influenced by a recent significant decline in EU imports from developing countries due to the COVID-19 crisis. In 2019, imports from developing countries had amounted to EUR 921 billion, and the fall to EUR 852 billion in 2020 corresponds to a decrease of 7.6 %.

Imports from developing countries to the EU as a share of imports from all countries outside the EU increased from 37.2 % in 2005 to 49.7 % in 2020. China (excluding Hong Kong) alone accounted for 22.4 % of EU imports in 2020, which is almost twice the share of imports from the United States, which accounted for 11.8 %. Conversely, the almost 50 countries classified as least developed by the UN accounted for less than 2 % of all imports to the EU in 2020 overall ([13]). In contrast to the recent

decrease in EU imports, the absolute amount of EU imports from China continued to grow from 2019 to 2020, further increasing China's role as the EU's main trading partner.

'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 2018 ([14]). They provided EUR 13.5 billion, or 30 % of global aid for trade; just three donors (the EU institutions as well as Germany and France) provided 76 % of this overall sum. The share of aid for trade to LDCs was 22 % of overall aid for trade in 2018 ([15]).

The EU updated its **Aid for Trade Strategy** ([16]) in 2017, to reflect the significant political changes both globally — in particular, the 2030 Agenda — and at the EU level, including the new **European Consensus on Development** ([17]) and **Trade for All** ([18]). The updated strategy aims to enhance the coherence of aid for trade with other EU policies and instruments, including EU trade agreements and unilateral preference schemes. The focus on LDCs constitutes a key part of the updated strategy. In its 2021 **Trade Policy Review** ([19]), the EU reiterated the importance of aid for trade for supporting developing countries in relation to sustainable development.

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. To facilitate this, the EU calls for a shift from labour to environmental taxes.

The **Treaty on the Functioning of the European Union** (TFEU) requires the ratio of a Member State's planned or actual annual government deficit to gross domestic product at market prices to not exceed 3 %, and that government debt as a ratio of GDP at market prices should be limited to 60 %. The TFEU is complemented by **Regulation 1176/2011 on the prevention and correction of macroeconomic imbalances** ([20]) **as well as Regulation 1174/2011 on enforcement action to correct excessive macroeconomic imbalances in the Euro area** ([21]). **Both aim to detect fiscal imbalances in the EU and allow, among other things, for sanctions.**

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 shall 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 90.6 %. This is a 13.3 percentage point increase compared with 2019. It is also the highest value since 2000, exceeding even the 10.7 percentage point increase in the EU's overall debt-to-GDP ratio from 2008 to 2009, which was due to the global financial crisis.

In 2020, general government gross debt in the EU as a share of GDP was

90.6 %

In 2020, Member States' debt-to-GDP ratios ranged from 18.2 % in Estonia to 205.6 % in Greece. More than half of the EU countries exceeded the 60 % threshold in 2020, and seven Member States had debt-to-GDP ratios above 100 %.

'Greening' the taxation system remains a challenge

In principle, prices of products and services should include the payments for negative externalities, such as pollution or other damage to human health and the environment. If products and services reflected the real costs of their production, sustainable products and services would become more competitive and demand for them would be likely to increase. However, reflecting these real costs in prices poses a challenge, in particular when goods and services are traded internationally and the entire supply chain needs to be considered. Therefore, EU policies such as the European Green Deal call for a shift of the tax burden from labour to pollution ([22]). Environmental taxes can serve to discourage behaviour that is potentially damaging for the environment and can provide incentives to lessen

In 2019, the share of environmental taxes in total tax revenues in the EU was

5.9 %

the burden on the environment and to preserve it by 'getting the prices right'.

In 2019, environmental taxes accounted for only 5.9 % of total tax revenues in the EU, while labour taxes accounted for 51.7 % ([23]). 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 4.4 % to 10.3 % in 2019. Compared with 2014, their share has further decreased in the majority of EU countries, most notably in Ireland, Cyprus, Latvia and Slovenia. In contrast, Estonia reported a 1.3 percentage point increase over the same period.

The ratio of labour to environmental taxes shows how much higher the shares of labour tax revenues are compared with the shares of environmental taxes in a country. In 2019, this ratio ranged from 3.6 to 13.1 across Member States. The ratio has furthermore increased in the majority of EU countries since 2014, indicating a relative shift of taxation from environment to labour.

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, or 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. Making Europe fit for the digital age is consequently one of the six Commission priorities for 2019 to 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.

SDG 17 recognises the importance of access to science, technology and innovation for sustainable development. The number of broadband internet subscriptions per 100 inhabitants is one of the indicators used by the UN to measure progress towards the related target ([24]). In its 2020 Digital Strategy, the European Commission emphasised the EU's commitment towards developing a Global Digital Cooperation Strategy, which will reflect the SDGs ([25]).

In its 2016 Communication 'Connectivity for a Competitive Digital Single Market — Towards a European Gigabit Society' ([26]), the European Commission set out a vision for a European gigabit society, operationalised through three objectives for 2025. The EU aims to have gigabit connectivity for places driving socio-economic developments, 5G coverage for all urban areas and all major terrestrial transport paths, and access for all European households to internet connectivity offering at least 100 Mbps. The Farm to Fork strategy ([27]) reaffirmed this objective by calling for an acceleration of the roll-out of fast broadband internet in rural areas to achieve the objective of 100 % access by 2025.

On 9 March 2021, the Commission — in its 2030 Digital Compass ([28]) — presented a vision and avenues for Europe's digital transformation by 2030, focusing on four main areas: (1) skills, (2) secure and sustainable digital infrastructures, (3) digital transformation of businesses, and (4) digitalisation of public services. Building on the 2016 Communication, the Digital Compass defines the objective that by 2030 all European households should be covered by a gigabit network, with all populated areas covered by 5G.

Considerable progress has been made in the roll-out of fixed very high capacity network connections across the EU

Data collected by the European Commission services for the key dimensions of the European information society ([29]) show that in the EU the uptake of fixed very high capacity network (VHCN) connectivity — referring to fibre connections or other networks offering similar bandwidth — has improved considerably since 2013. While only 15.6 % of EU households enjoyed such connectivity in 2013, this share has risen considerably, reaching 59.3 % in 2020. 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 ([30]). Between 2013

and 2020, the share of rural households with fixed VCHN connection increased from 3.6 % to 27.8 % across the EU.

At Member State level, Malta had already achieved a 100 % connectivity with fixed VHCN in 2020, followed by Luxembourg, Denmark and Spain with over 90 % of households each. In contrast, fixed VHCN connections were least widespread in Greece and Cyprus, with only 10.2 % and 26.2 % of households enjoying such connectivity, respectively.

59.3 %
of EU households had a fixed very high capacity network connection in 2020

Presentation of the main indicators

Official development assistance

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 ([31]).

Figure 17.1: Official development assistance as share of gross national income, EU, 2005–2020 (% of GNI)
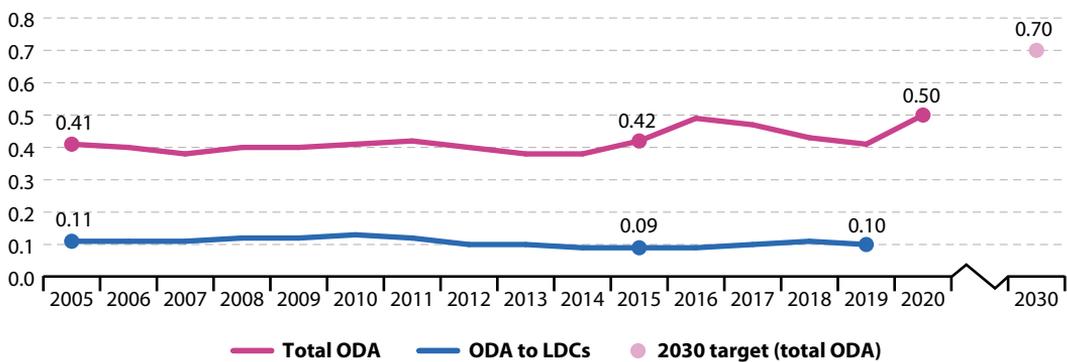

Note: Break in time series for total ODA in 2018; 2020 data are provisional. Data for total ODA include the 27 Member States and EU institutions.
Compound annual growth rate (CAGR) for total ODA: 1.3 % per year (observed) and 2.2 % per year (required to meet target) in the period 2005–2020; 3.5 % per year (observed) and 3.5 % per year (required to meet target) in the period 2015–2020.
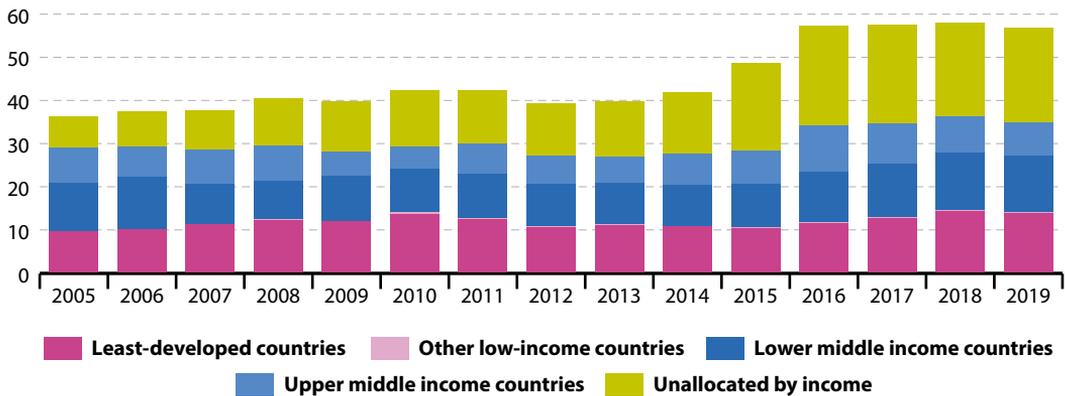
Source: OECD (Eurostat online data code: sdg_17_10)

Figure 17.2: Official development assistance as share of gross national income, by country, 2015 and 2020
(% of GNI)

Legend: 2015 | 2020 | Target
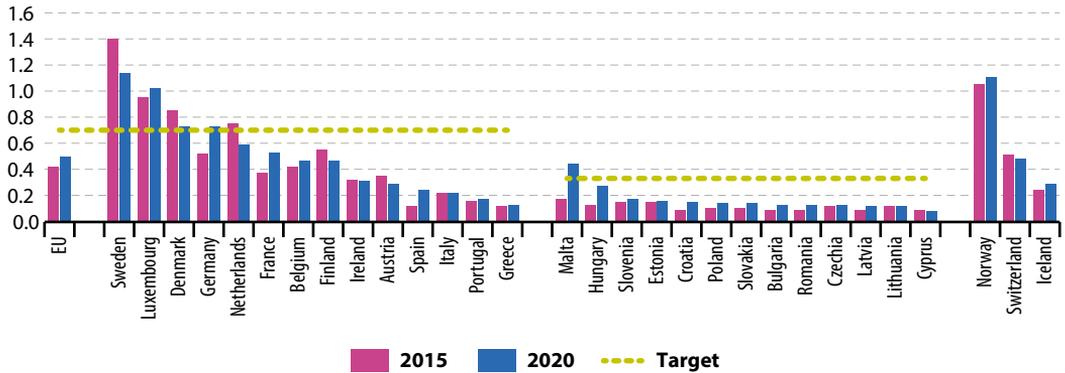
Note: Break in time series in 2018 (all countries); 2020 data are provisional. Data for 'EU' include the 27 Member States and EU institutions.
Source: OECD (Eurostat online data code: sdg_17_10)

Figure 17.3: Official development assistance, by recipient income group, EU, 2005–2019
(EUR billion, current prices)

Legend: Least-developed countries | Other low-income countries | Lower middle income countries | Upper middle income countries | Unallocated by income
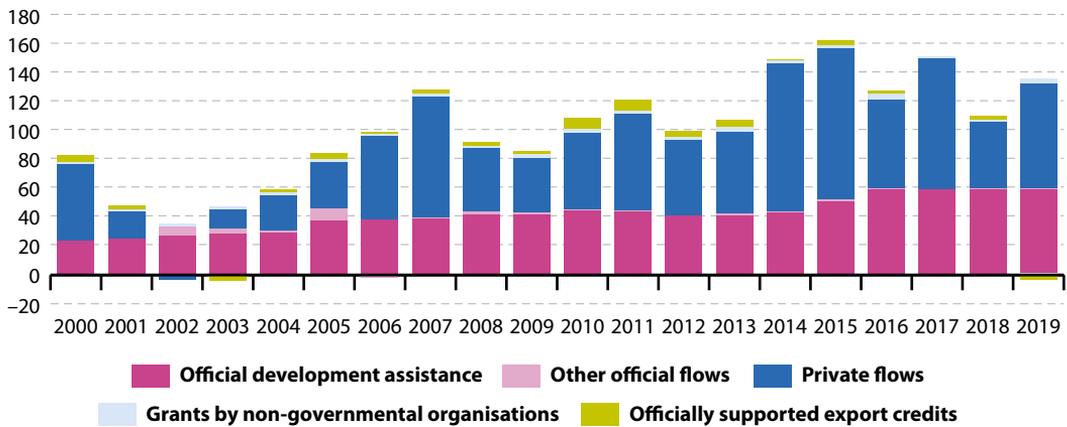
Source: OECD

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, 2000–2019
(EUR billion, current prices)

Compound annual growth rate (CAGR) for total financing: 5.6 % per year in the period 2004–2019; – 2.4 % per year in the period 2014–2019.
Source: OECD (Eurostat online data code: sdg_17_20)

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 developing 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.

LONG TERM
2005–2020

SHORT TERM
2015–2020

Figure 17.5: EU Imports from developing countries, by country income group, EU, 2000–2020 (EUR billion, current prices)
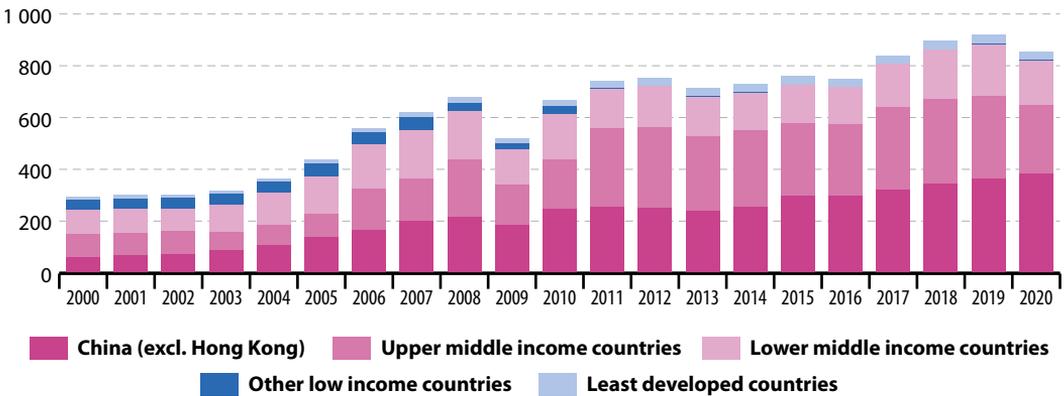
Compound annual growth rate (CAGR) for total imports: 4.6 % per year in the period 2005–2020; 2.3 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_17_30)

Figure 17.6: Extra-EU imports, by trading partner, EU, 2015 and 2020 (%)
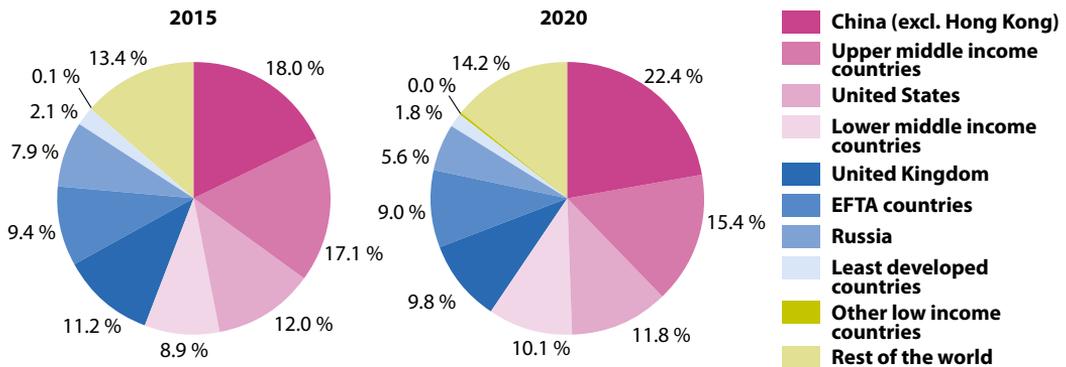
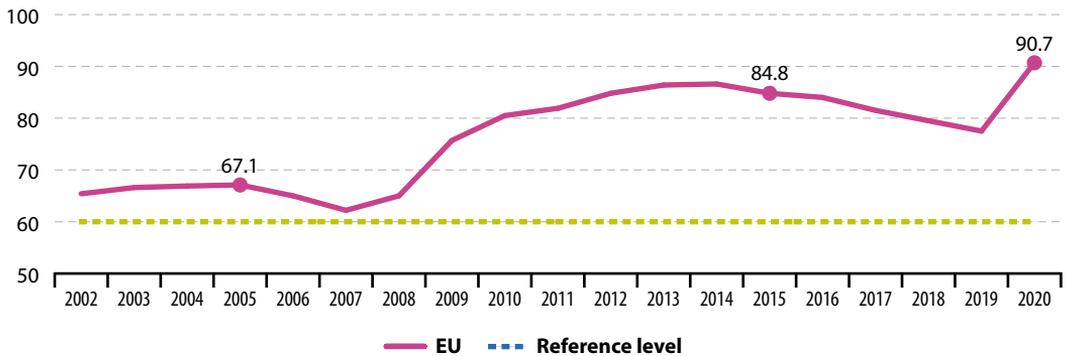*Source:* Eurostat (online data code: sdg_17_30 and ext_lt_maineu)

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 value in the following categories of government liabilities, as defined in ESA 2010 ([32]): currency and deposits, debt securities and loans. Central government, state government, local government and social security funds are included.

Figure 17.7: General government gross debt, EU, 2002–2020
(% of GDP)

Compound annual growth rate (CAGR): 2.0 % per year in the period 2005–2020; 1.4 % per year in the period 2015–2020.
Source: Eurostat (online data code: sdg_17_40)

Figure 17.8: General government gross debt, by country, 2015 and 2020
(% of GDP)
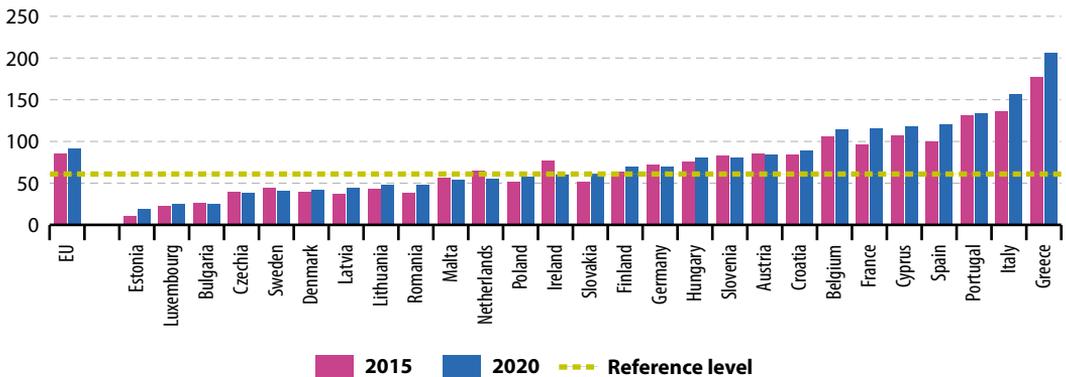
Source: Eurostat (online data code: sdg_17_40)

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, and pollution and resource taxes.

LONG TERM
2004–2019

SHORT TERM
2014–2019

Figure 17.9: Share of environmental taxes in total tax revenues, EU, 2002–2019
(%)
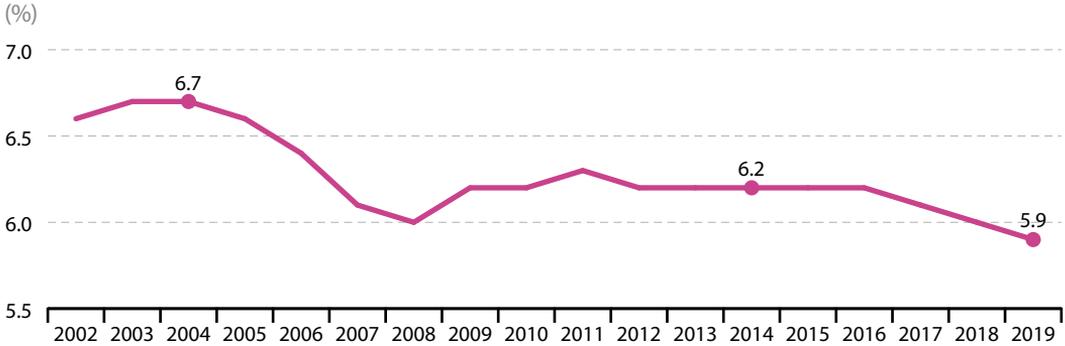
Compound annual growth rate (CAGR): − 0.8 % per year in the period 2004–2019; − 1.0 % per year in the period 2014–2019.
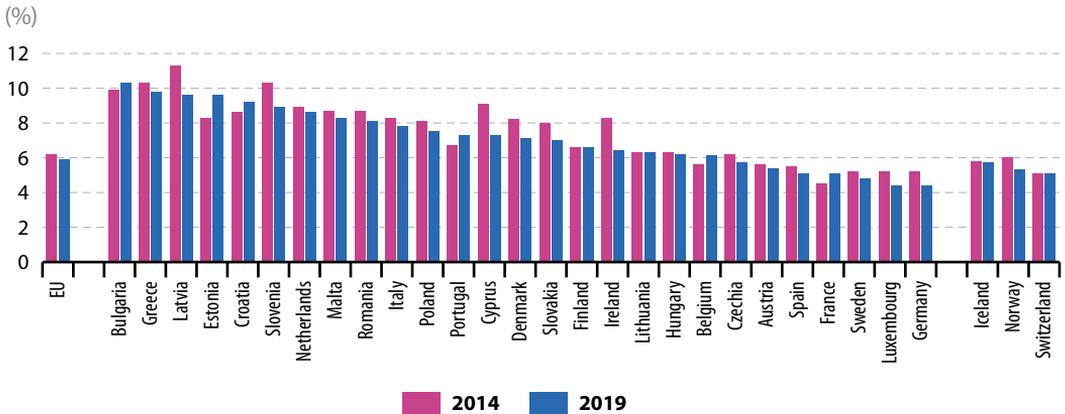*Source:* Eurostat (online data code: sdg_17_50)

Figure 17.10: Share of environmental taxes in total tax revenues, by country, 2014 and 2019
(%)

■ 2014 ■ 2019

Source: Eurostat (online data code: sdg_17_50)

Share of households with high-speed internet connection

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.

Figure 17.11: Share of households with fixed very high capacity network connection, EU, 2013–2020

(% of households)
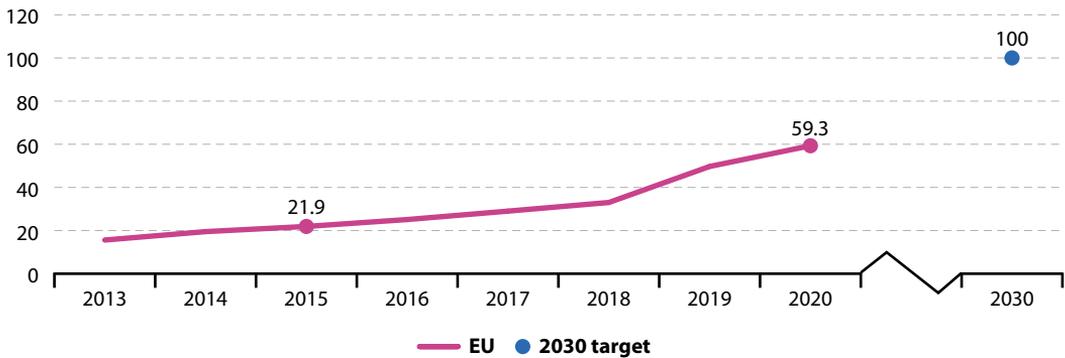
Compound annual growth rate (CAGR): 22.1 % per year (observed) and 10.7 % per year (required to meet target) in the period 2015–2020.
Source: Broadband coverage in Europe studies (Eurostat online data code: sdg_17_60)

Figure 17.12: Share of households with fixed very high capacity network connection, by country, 2015 and 2020

(% of households)
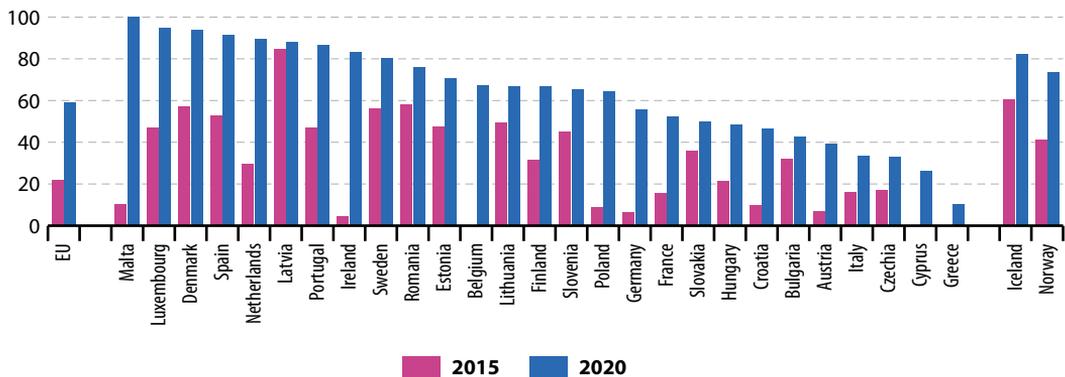
Source: Broadband coverage in Europe studies (Eurostat online data code: sdg_17_60)

Further reading on partnerships for the goals

European Commission (2021), *Trade Policy Review — An Open, Sustainable and Assertive Trade Policy*, COM (2021) 66 final.

European Commission (2021), *2020 Annual Report on the implementation of the European Union's instruments for financing external actions in 2019*, Luxembourg.

European Commission (2020), *EU Aid for Trade Progress Report 2020: Review of progress on the implementation of the updated EU Aid for Trade Strategy of 2017*, Brussels.

European Commission (2018), *Investing in Sustainable Development. The EU at the forefront in implementing the Addis Ababa Action Agenda*, SWD (2018) 148 final, Brussels.

European Union (2017), *The new European Consensus on Development 'Our World, Our Dignity, Our Future'*, 2017/C 210/01.

Global Partnership for Effective Development Co-operation (2016), *Nairobi Outcome Document: Global Partnership for Effective Development Co-Operation*.

Organisation for Economic Co-operation and Development High-Level Forum on Aid Effectiveness (2011), *Busan Partnership Agreement*, Busan.

Organisation for Economic Co-operation and Development (OECD) (2021), *Development Co-operation Report 2020: Learning from Crises, Building Resilience,* OECD Publishing, Paris.

United Nations Department of Economic and Social Affairs (2015), *Addis Ababa Action Agenda of the Third International Conference on Financing for Development (Addis Ababa Action Agenda)*, UNGA Resolution 69/313 of 27 July 2015.

United Nations, Inter-agency Task Force on Financing for Development (2020), *Financing for Sustainable Development Report 2020*, United Nations, New York.

Further data sources on partnerships for the goals

European Commission, Key indicators of the European information society.

IMF, Direction of Trade Statistics (DOTS).

OECD, Total flows by donor (ODA+OOF+Private) [DAC 1].

OECD, Broadband Portal.

Notes

(¹) 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).

(²) 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.

(³) 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.

(⁴) 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.

(⁵) OECD (2021), *COVID-19 spending helped to lift foreign aid to an all-time high in 2020*.

(⁶) Ibid.

(⁷) 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.

(⁸) 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.

(⁹) OECD, *Total official support for sustainable development (TOSSD): a new statistical measure for the SDG era*.

(¹⁰) European Commission (2021), *Trade Policy Review — An Open, Sustainable and Assertive Trade Policy*, COM (2021) 66 final.

(¹¹) European Commission (2019), *The European Green Deal*, COM/2019/640 final, p. 21.

(¹²) *Regulation (EU) No 978/2012 applying a scheme of generalised tariff preferences and repealing Council Regulation (EC) No 732/2008*.

(¹³) Source: Eurostat (online data code: ext_lt_maineu).

(¹⁴) 2019 figures were not yet available at the time of writing.

(¹⁵) European Commission (2020), *EU Aid for Trade Progress Report 2020: Review of progress on the implementation of the updated EU Aid for Trade Strategy of 2017*, p. 86.

(¹⁶) European Commission (2017), *Achieving Prosperity through Trade and Investment. Updating the 2007 Joint EU Strategy on Aid for Trade*, COM (2017) 667 final, Brussels; Council of the European Union (2017), *Achieving Inclusive and Sustainable Prosperity through Trade and Investment: Updating the joint EU Strategy on Aid for Trade*, Council Conclusions (11 December 2017).

(¹⁷) 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.

(¹⁸) European Commission (2015), *Trade for all: Towards a more responsible trade and investment policy*, Publications Office of the European Union, Luxembourg.

(¹⁹) European Commission (2021), *Trade Policy Review — An Open, Sustainable and Assertive Trade Policy*, COM (2021) 66 final.

(²⁰) *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*.

(²¹) *Regulation (EU) No 1174/2011 on enforcement measures to correct excessive macroeconomic imbalances in the euro area*.

(²²) European Commission (2019), *The European Green Deal*, COM (2019) 640 final, p. 17.

(²³) 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).

(²⁴) UN Department of Economic and Social Affairs, *SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development*, Target 17.6.

(²⁵) European Commission (2020), *Shaping Europe's digital future*, 19 February 2020.

(²⁶) European Commission (2016), *Connectivity for a Competitive Digital Single Market — Towards a European Gigabit Society*, COM(2016) 587 final.

(²⁷) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM(2020) 381 final.

(²⁸) European Commission (2021), *2030 Digital Compass: the European way for the Digital Decade*, COM(2021) 118 final.

(²⁹) See European Commission, Key Indicators.

(³⁰) In the context of the EU's digital agenda scoreboard indicators, rural areas are defined as those with less than 100 people per km².

(³¹) 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, but not to data on ODA to specific recipients, regions or groups such as Africa or LDCs. Moreover, 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. ODA and ODA/GNI figures since 2018 data (without a specified recipient group) are reported on a grant equivalent basis. ODA and ODA/GNI figures for previous years, as well as ODA and ODA/GNI figures since 2018 data with a specified recipient group such as LDCs, are reported on a flow basis. Grant equivalent figures are not comparable with data calculated on a flow basis.

(³²) 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 for 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 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).
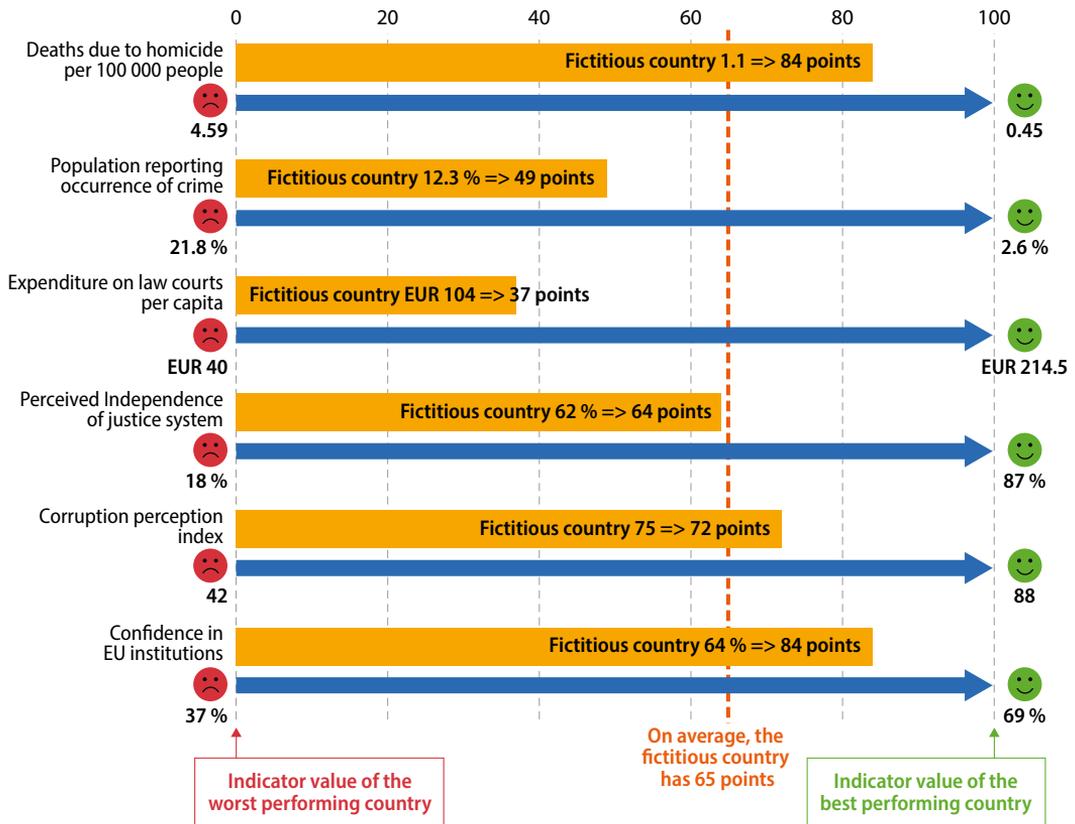
How is the status and progress assessed?

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 2019 and 2020). 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). Figure 18.1 presents an example of the calculation of the status score for SDG 16. For each country, the resulting status score at SDG level is then put in relation to the EU aggregate status score of this goal, to show how much (in %) a country's SDG status is above or below the EU average.

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 the introduction (see page 26; also see Annex III on page 399 for more details on the calculation method). Please note that the progress score calculation does not take into account any target values, since most EU policy targets are only valid for the aggregate EU level. Data mainly refer to the periods 2014–2019 or 2015–2020. Due to data availability issues, not all 17 SDGs are shown for each country.

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.

Figure 18.1: Example calculation of the status score for SDG 16 for a fictitious country

Deaths due to homicide per 100 000 people
Fictitious country 1.1 => 84 points
4.59 — 0.45

Population reporting occurrence of crime
Fictitious country 12.3 % => 49 points
21.8 % — 2.6 %

Expenditure on law courts per capita
Fictitious country EUR 104 => 37 points
EUR 40 — EUR 214.5

Perceived Independence of justice system
Fictitious country 62 % => 64 points
18 % — 87 %

Corruption perception index
Fictitious country 75 => 72 points
42 — 88

Confidence in EU institutions
Fictitious country 64 % => 84 points
37 % — 69 %

On average, the fictitious country has 65 points

Indicator value of the worst performing country

Indicator value of the best performing country

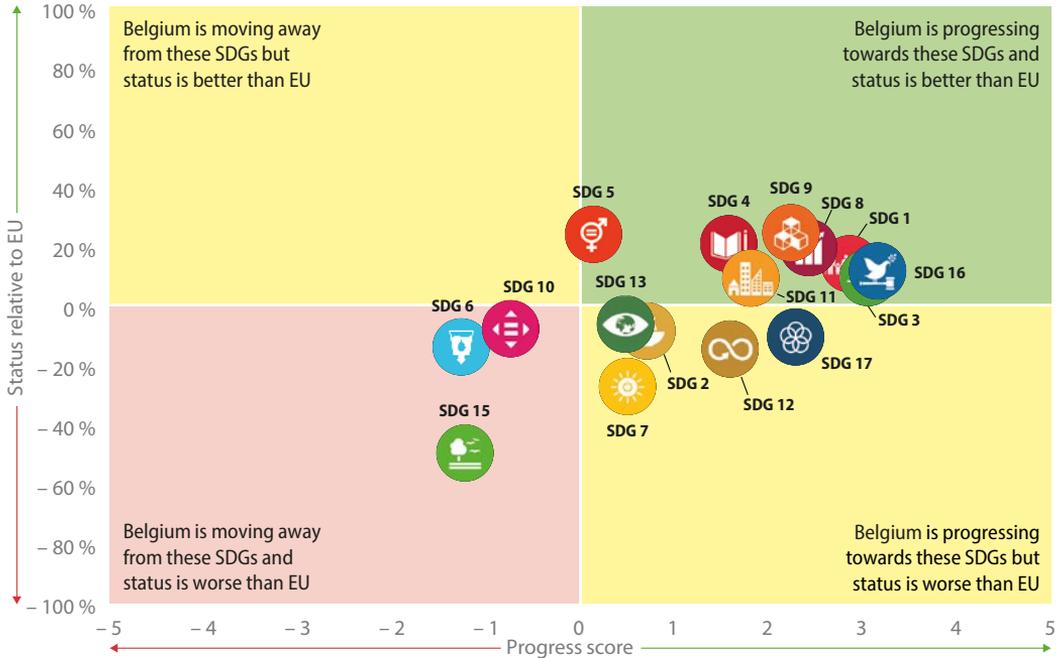## How to interpret the graphs?

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-hand side of the graph displays SDGs where the country has made progress whereas the left-hand 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.

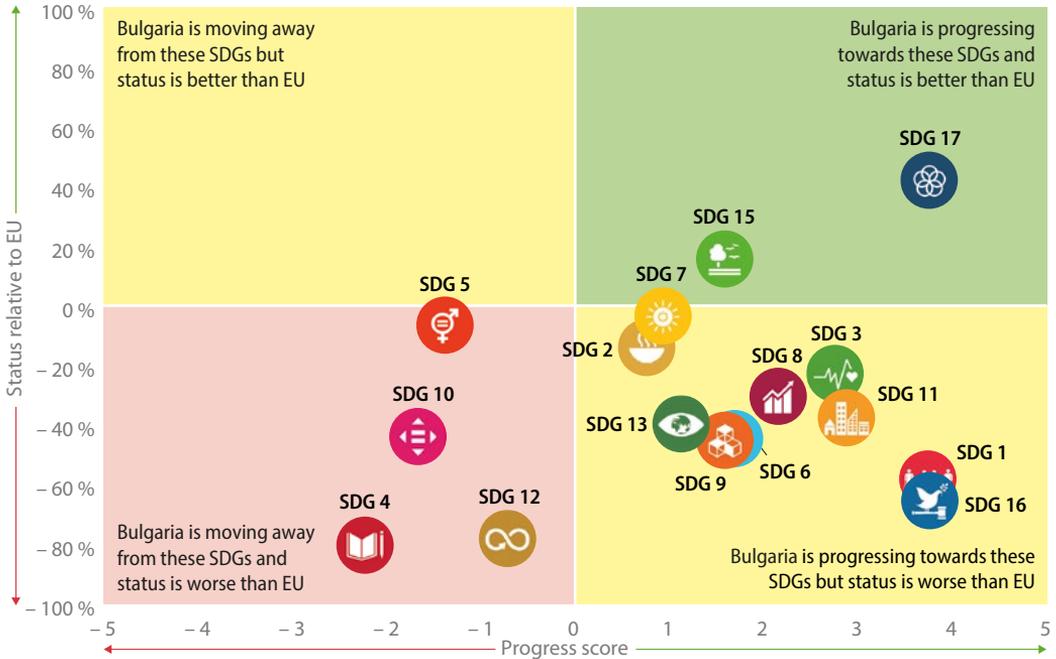IV. The country is moving away from these SDGs, and on average the indicator values are below the EU average.

Presentation of Member States' status and progress

Figure 18.2: Belgium

Source: Eurostat

Figure 18.3: Bulgaria

Bulgaria is moving away from these SDGs but status is better than EU

Bulgaria is progressing towards these SDGs and status is better than EU

Bulgaria is moving away from these SDGs and status is worse than EU

Bulgaria is progressing towards these SDGs but status is worse than EU

Source: Eurostat

Figure 18.4: Czechia

Czechia is moving away from these SDGs but status is better than EU

Czechia is progressing towards these SDGs and status is better than EU

Czechia is moving away from these SDGs and status is worse than EU

Czechia is progressing towards these SDGs but status is worse than EU
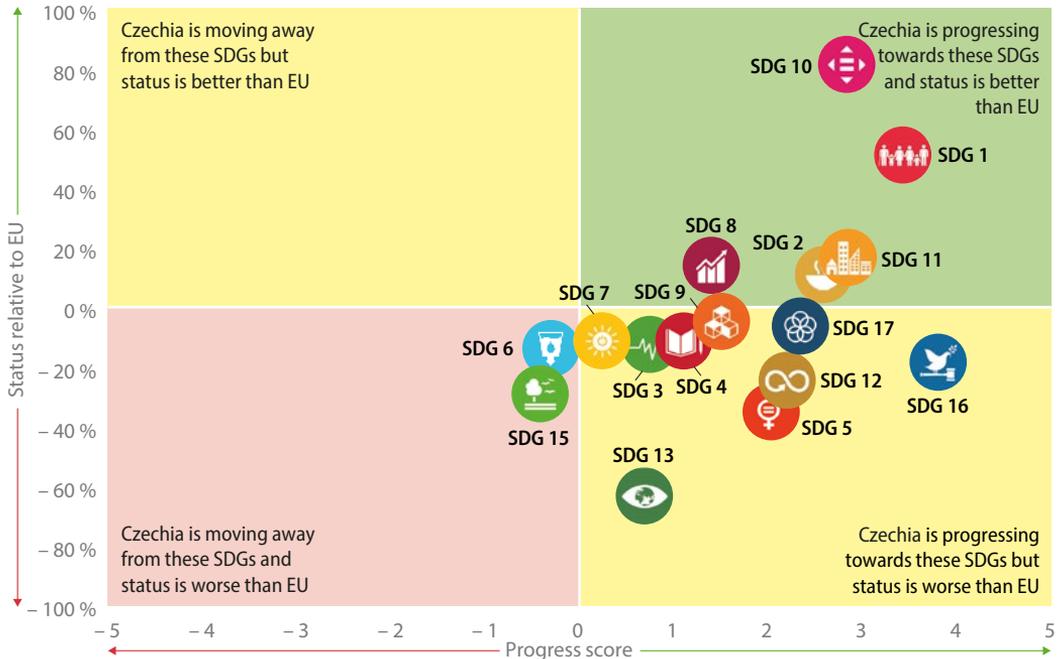
Source: Eurostat

Figure 18.5: Denmark
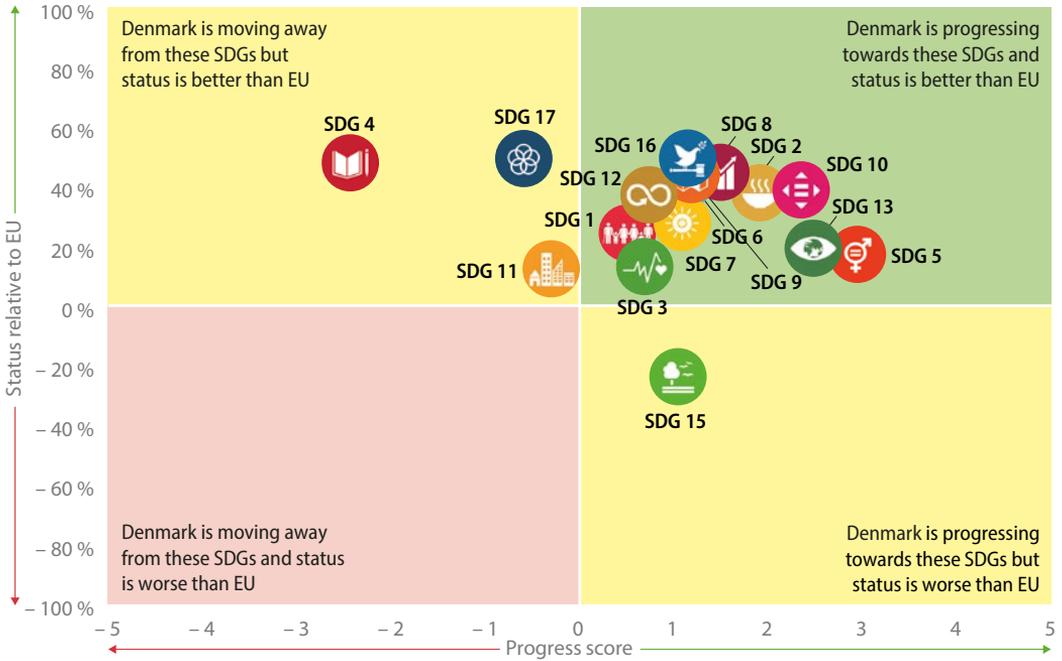
Source: Eurostat

Figure 18.6: Germany

Source: Eurostat

Figure 18.7: Estonia

Source: Eurostat

Figure 18.8: Ireland

Source: Eurostat

Figure 18.9: Greece
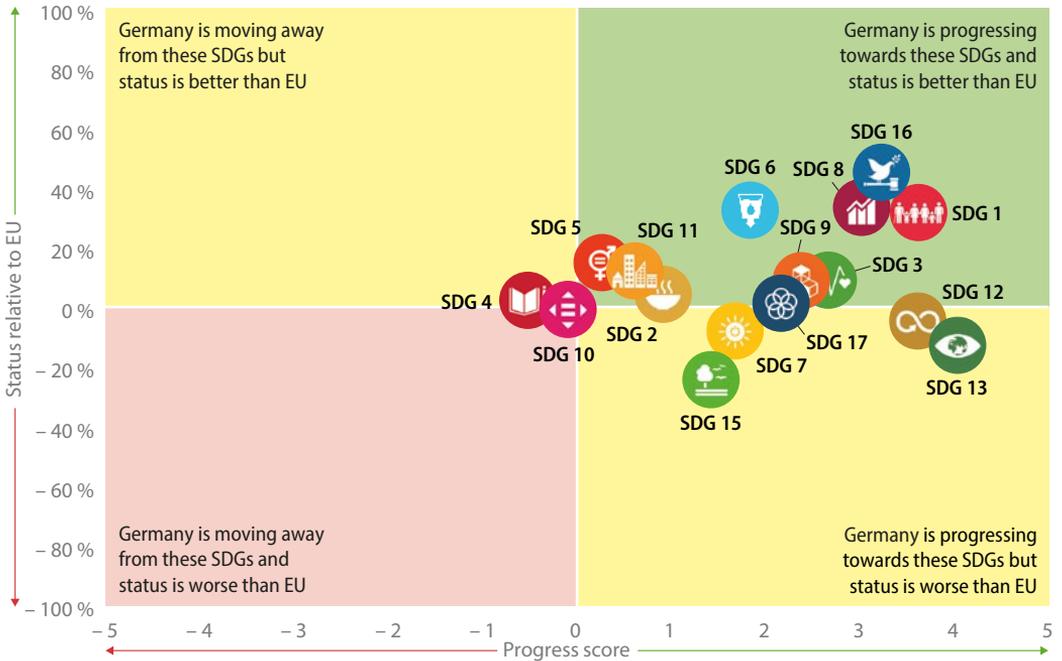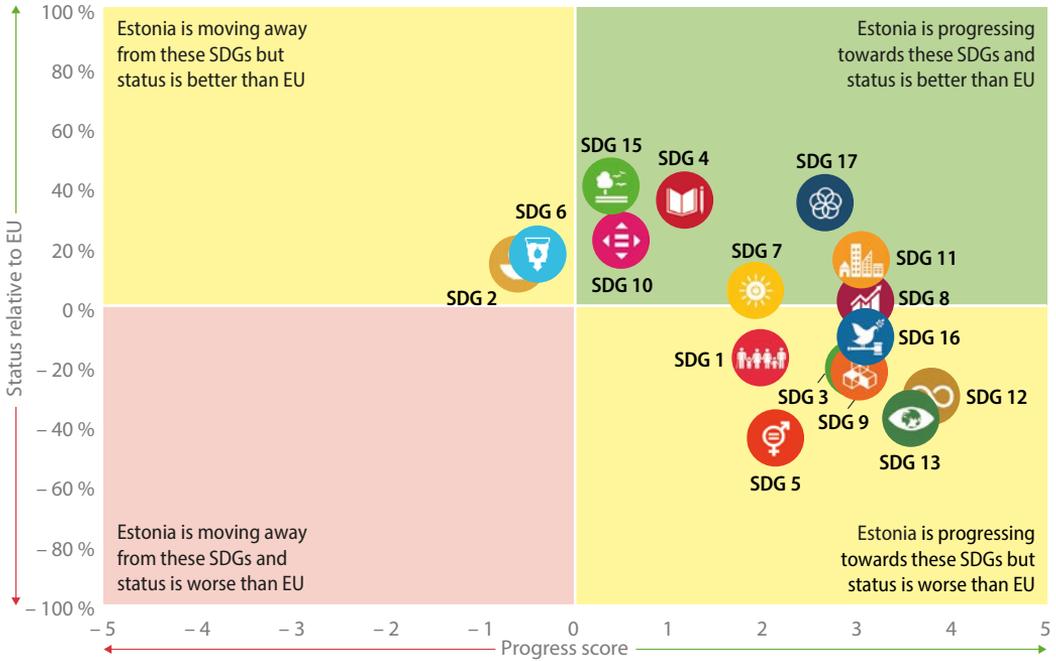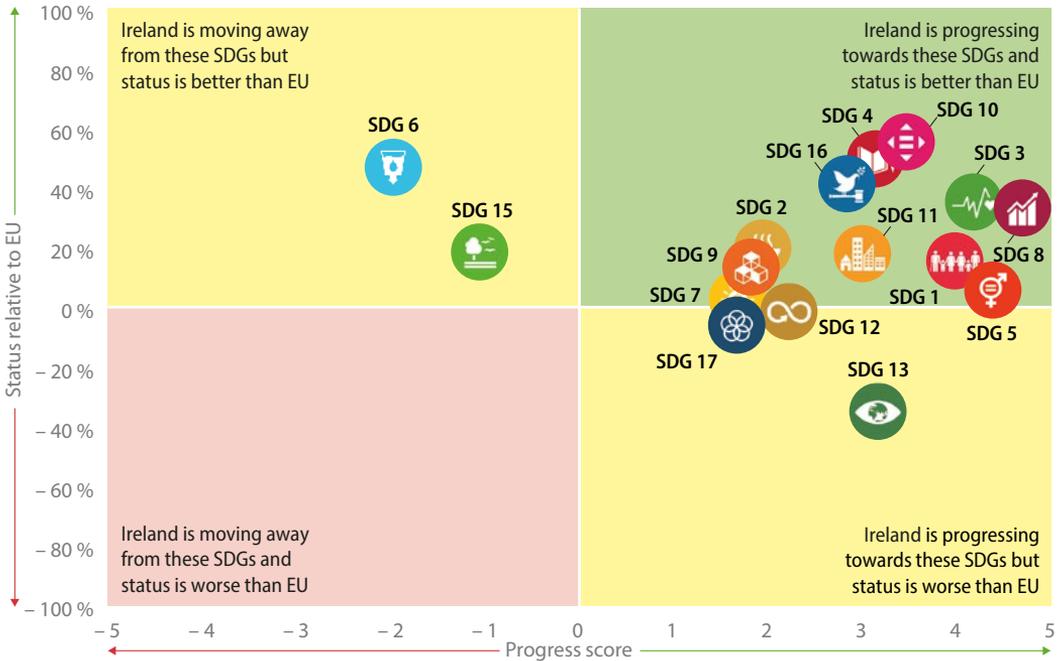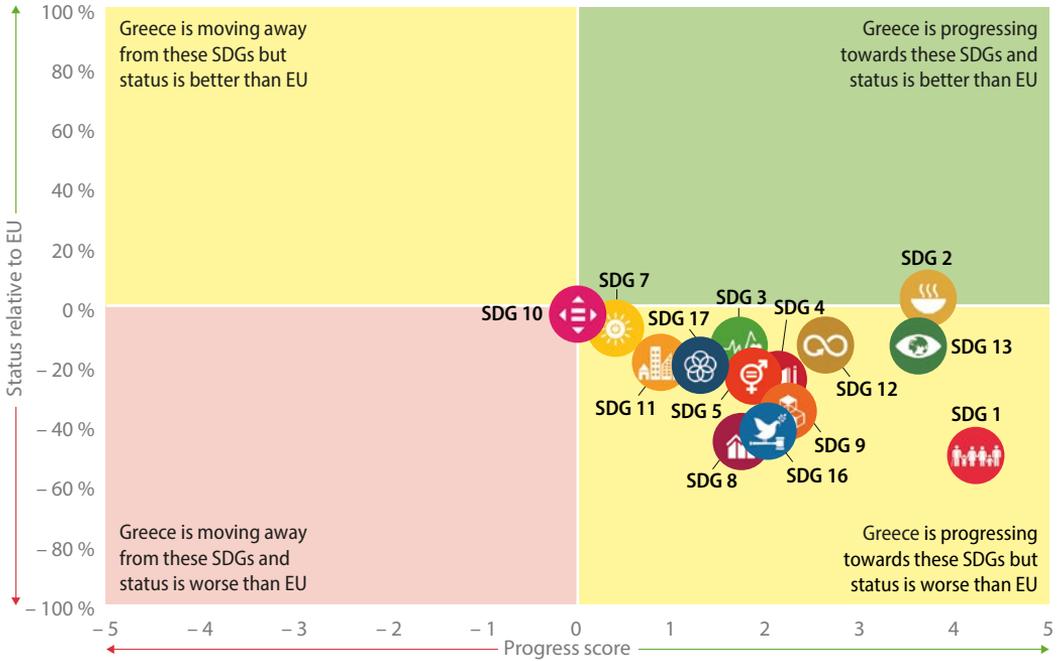

Source: Eurostat

Figure 18.10: Spain
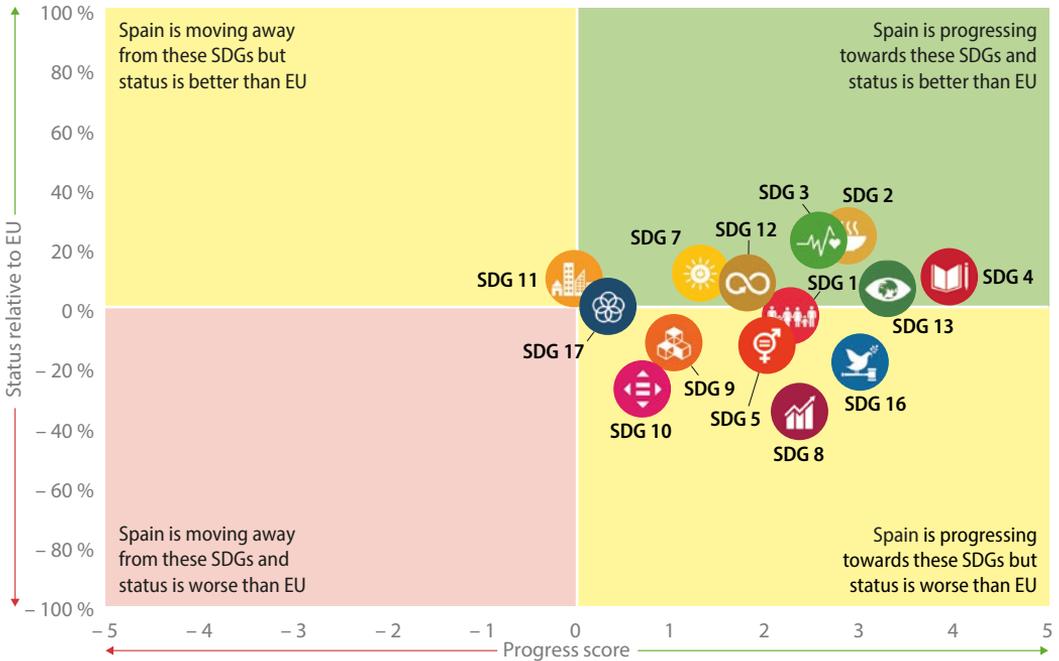
Source: Eurostat

Figure 18.11: France
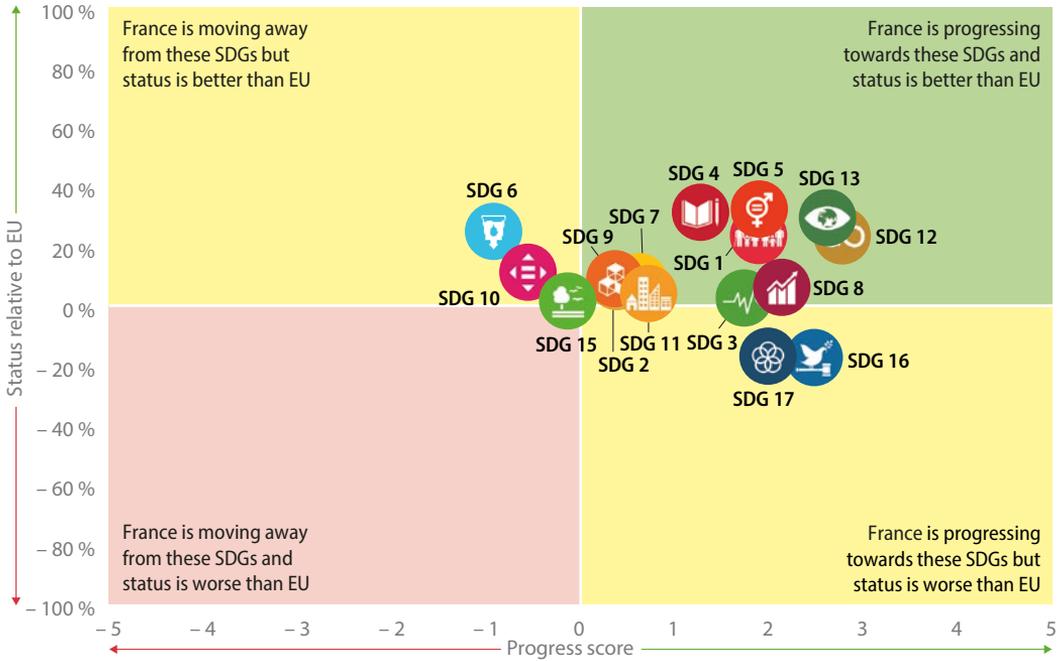
Source: Eurostat

Figure 18.12: Croatia
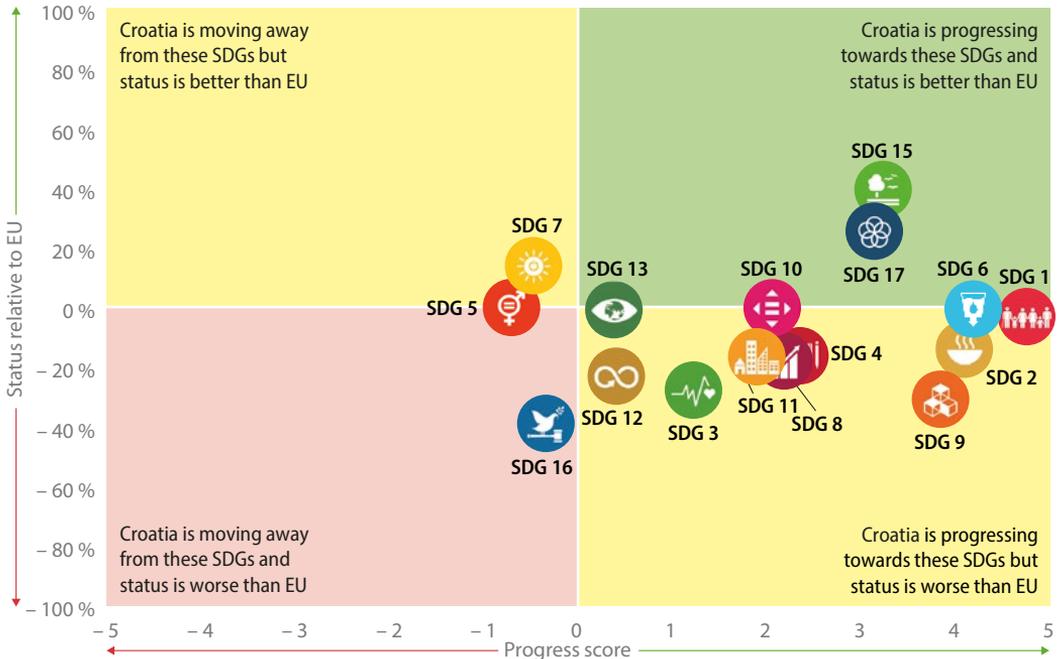
Source: Eurostat

Figure 18.13: Italy

Italy is moving away from these SDGs but status is better than EU

Italy is progressing towards these SDGs and status is better than EU

Italy is moving away from these SDGs and status is worse than EU

Italy is progressing towards these SDGs but status is worse than EU

Status relative to EU

Progress score
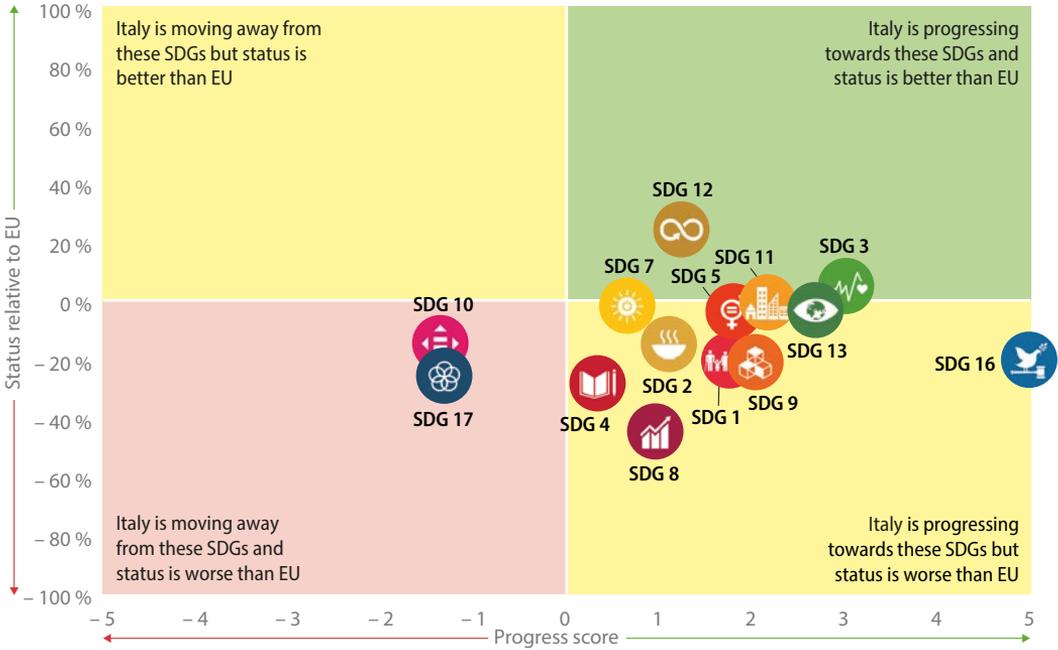
Source: Eurostat

Figure 18.14: Cyprus

Cyprus is moving away from these SDGs but status is better than EU

Cyprus is progressing towards these SDGs and status is better than EU

Cyprus is moving away from these SDGs and status is worse than EU

Cyprus is progressing towards these SDGs but status is worse than EU

Status relative to EU

Progress score
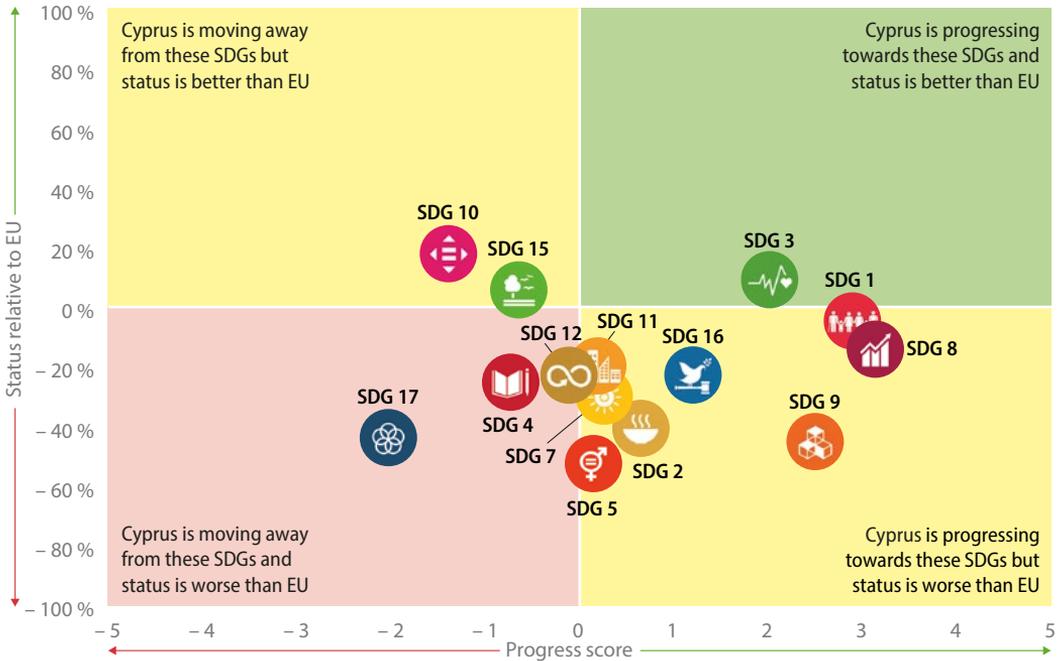
Source: Eurostat

Figure 18.15: Latvia
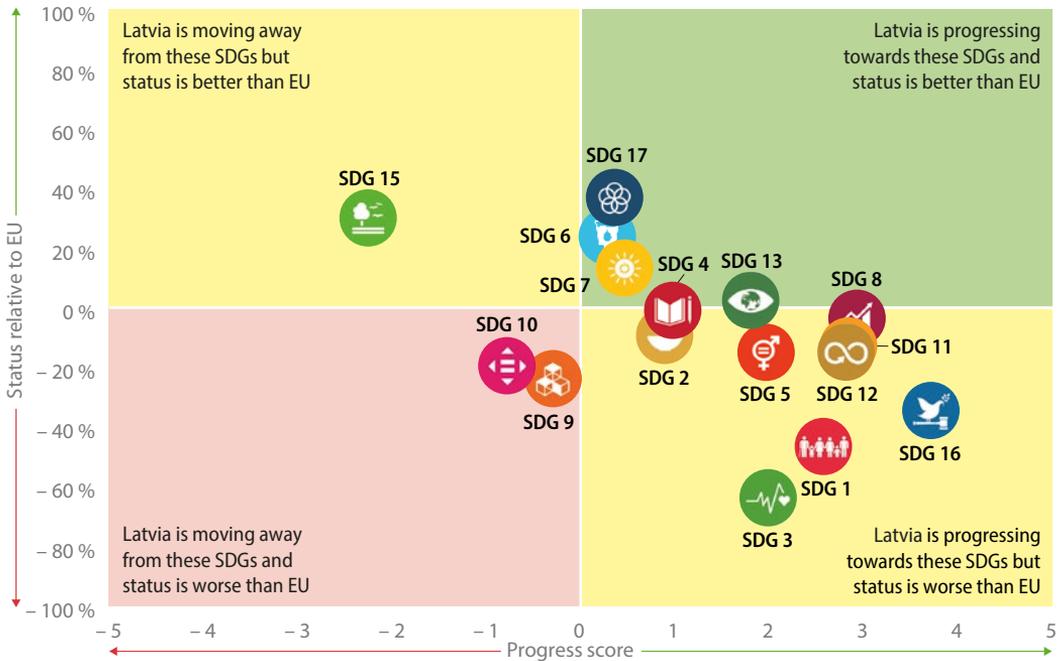
Source: Eurostat

Figure 18.16: Lithuania
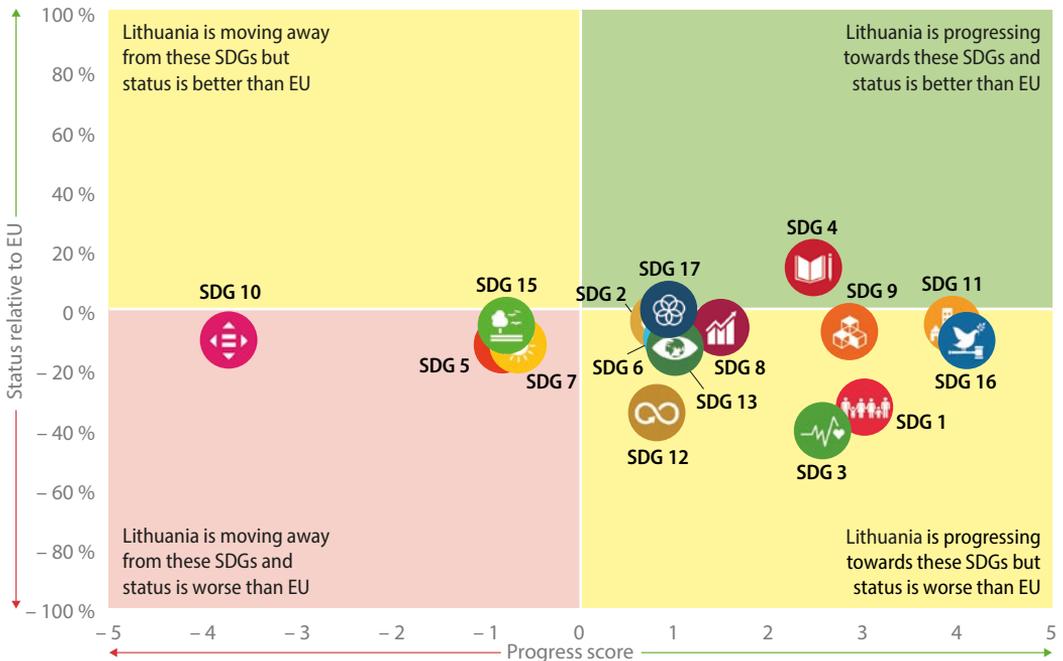
Source: Eurostat

Figure 18.17: Luxembourg
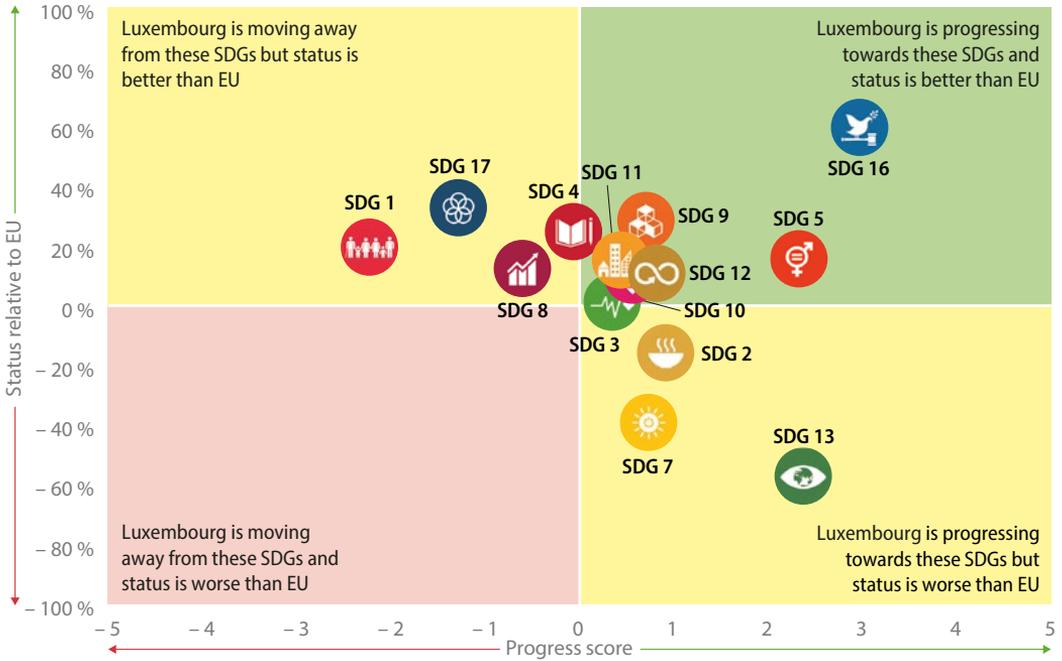
Source: Eurostat

Figure 18.18: Hungary
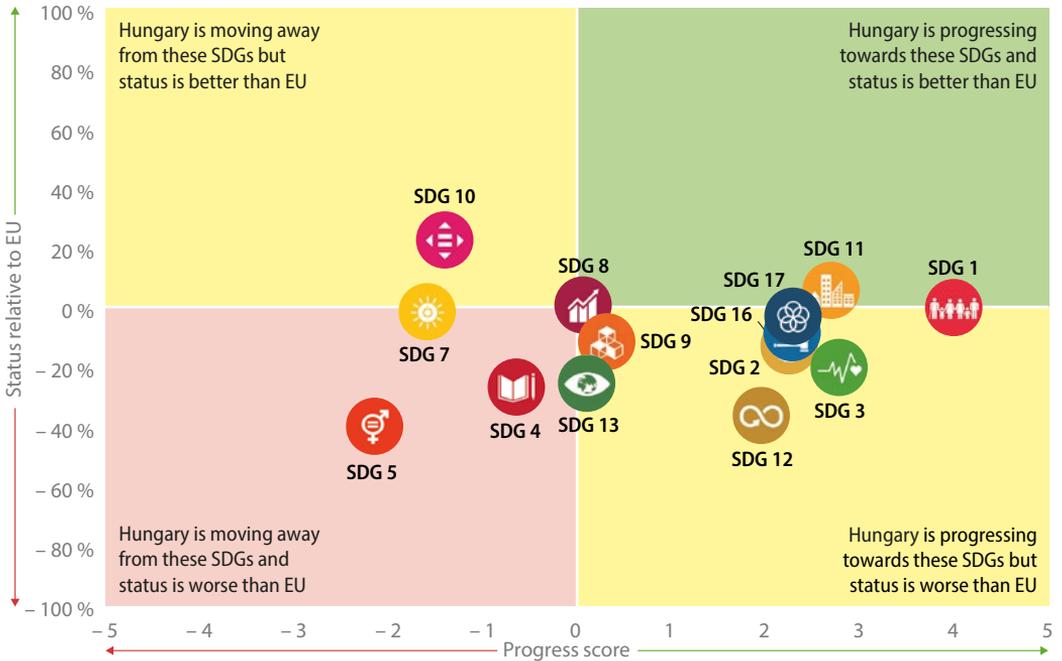
Source: Eurostat

Figure 18.19: Malta
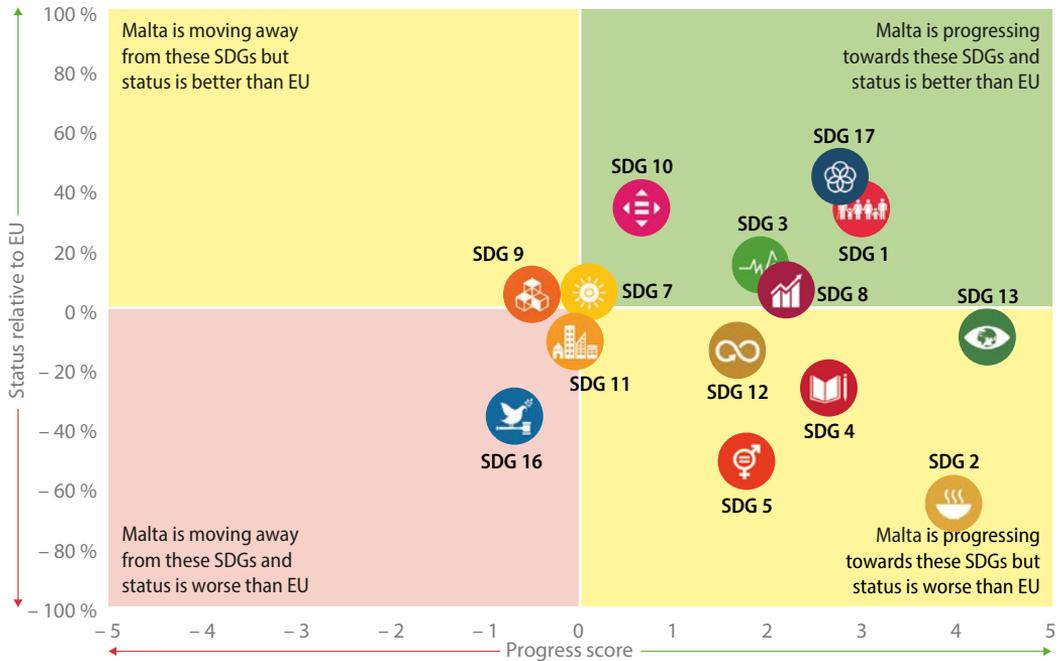
Source: Eurostat

Figure 18.20: Netherlands
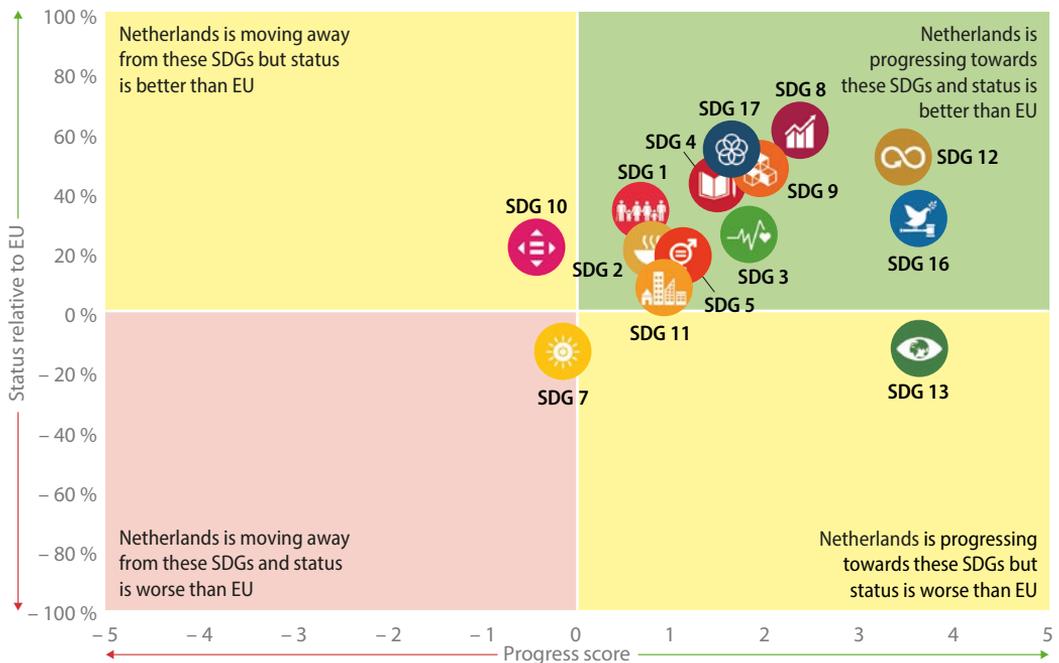
Source: Eurostat

Figure 18.21: Austria

Austria is moving away from these SDGs but status is better than EU

Austria is progressing towards these SDGs and status is better than EU

Austria is moving away from these SDGs and status is worse than EU

Austria is progressing towards these SDGs but status is worse than EU

Status relative to EU

Progress score
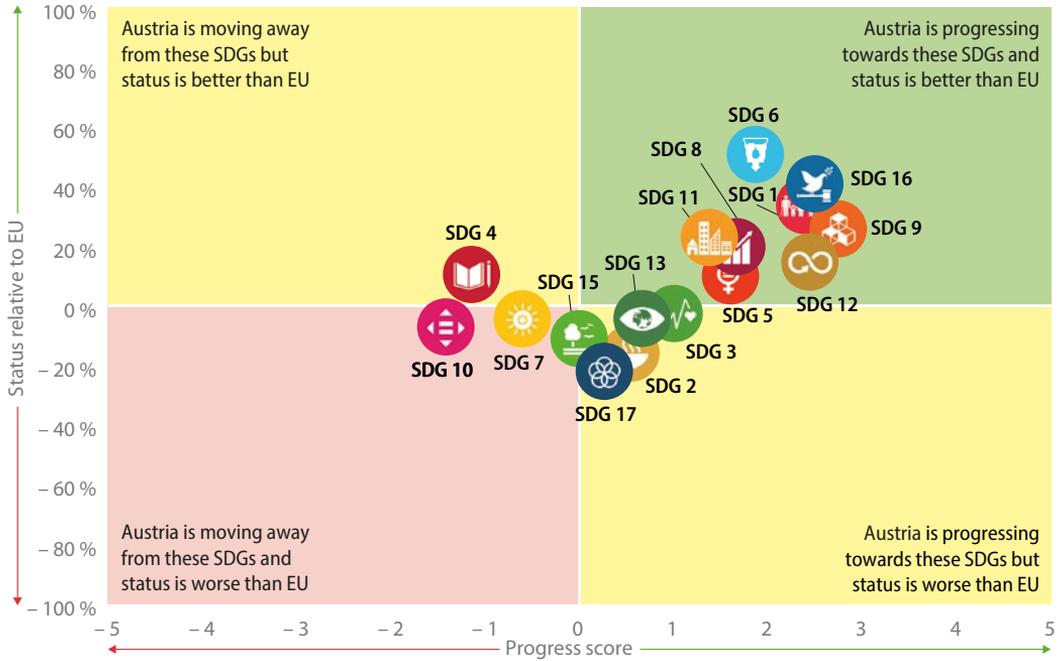
Source: Eurostat

Figure 18.22: Poland

Poland is moving away from these SDGs but status is better than EU

Poland is progressing towards these SDGs and status is better than EU

Poland is moving away from these SDGs and status is worse than EU

Poland is progressing towards these SDGs but status is worse than EU

Status relative to EU

Progress score
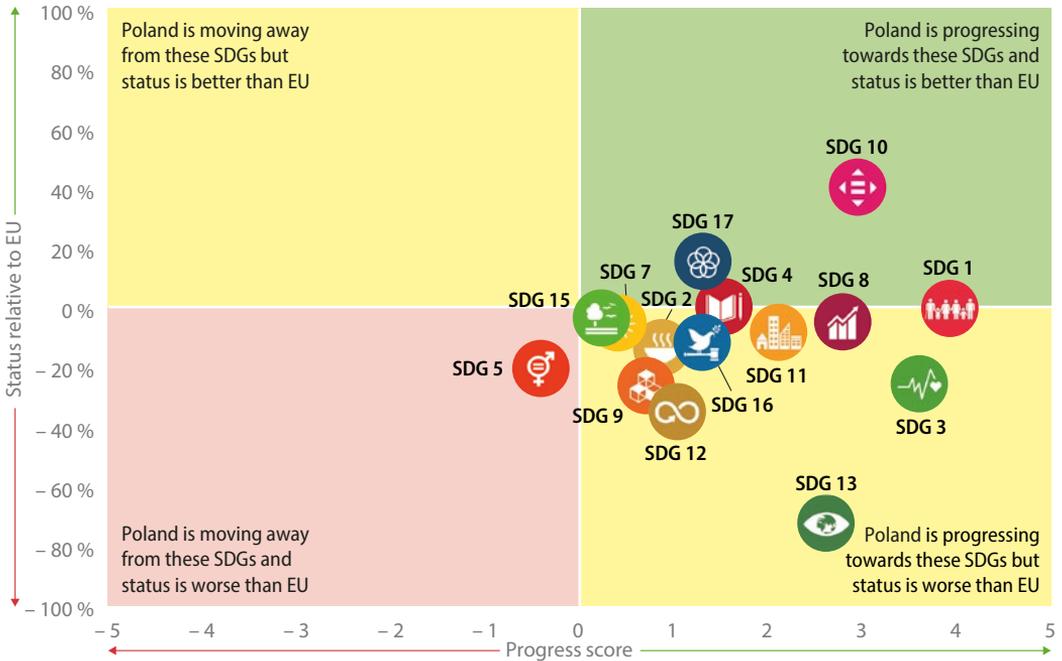
Source: Eurostat

Figure 18.23: Portugal
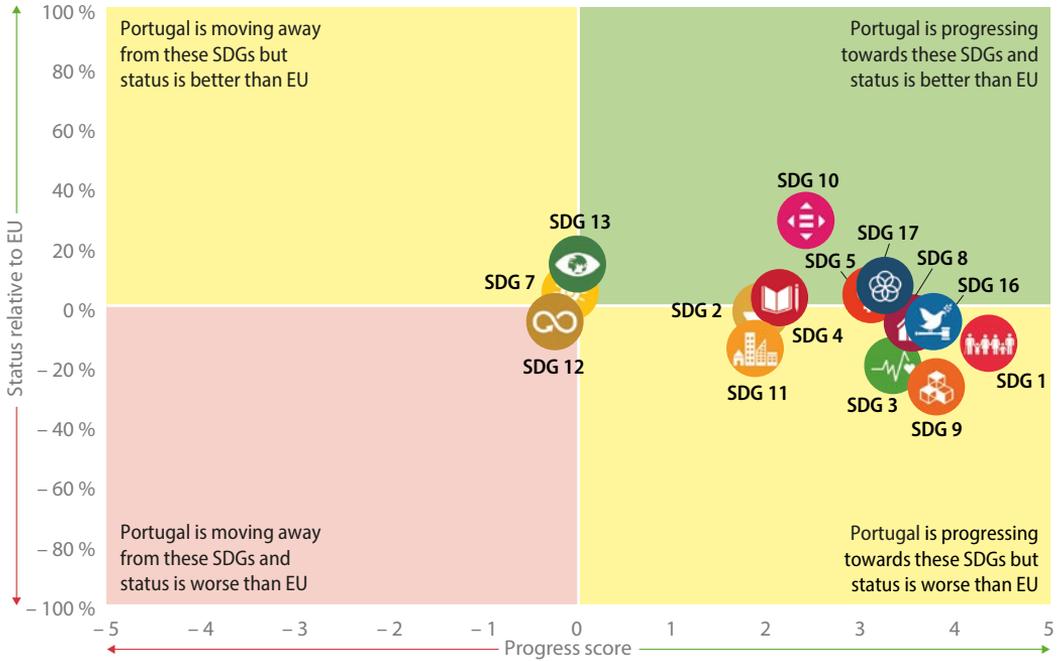
Source: Eurostat

Figure 18.24: Romania
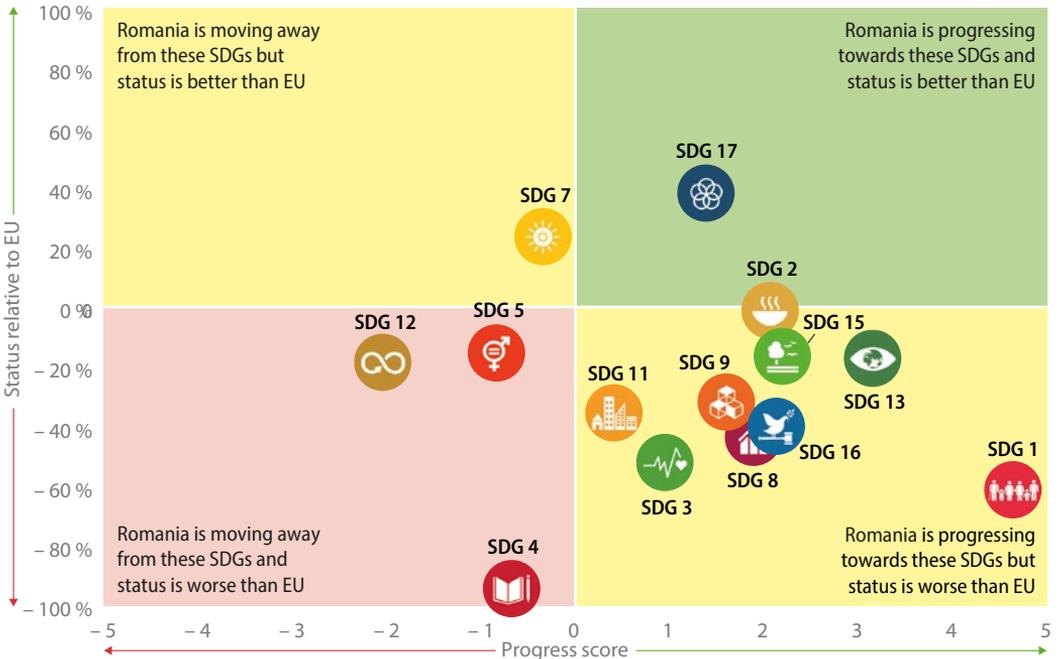
Source: Eurostat

Figure 18.25: Slovenia
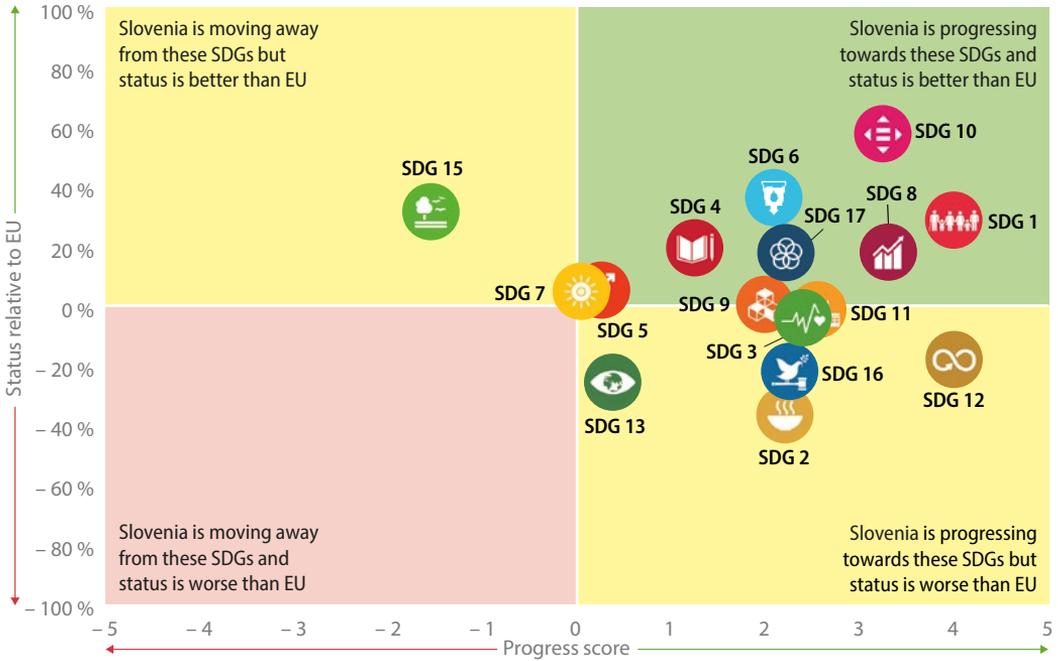
Source: Eurostat

Figure 18.26: Slovakia
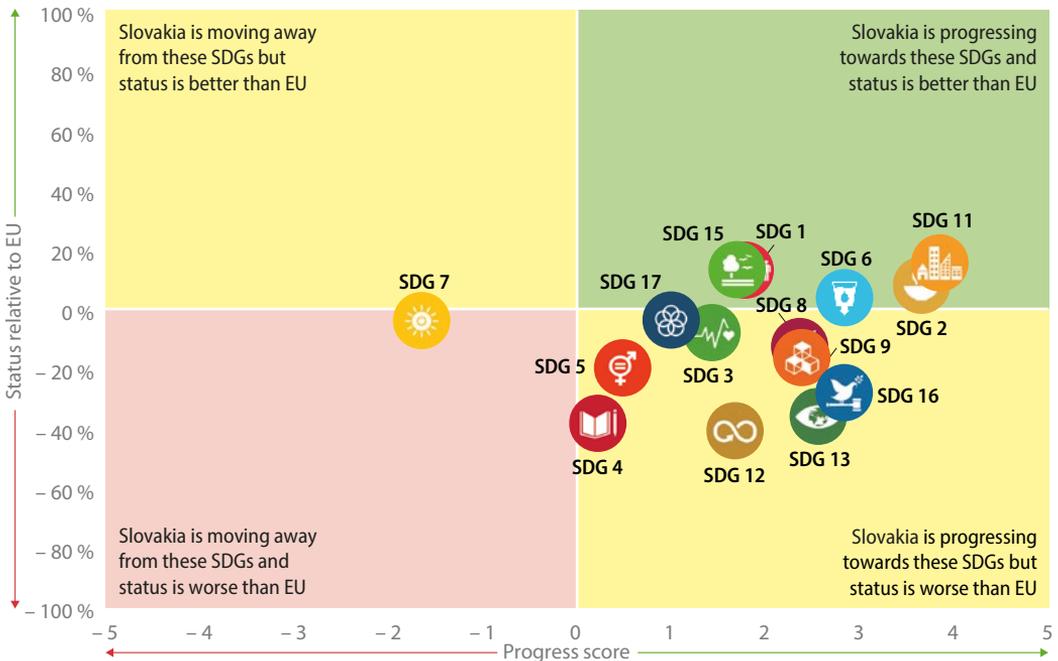
Source: Eurostat

Figure 18.27: Finland
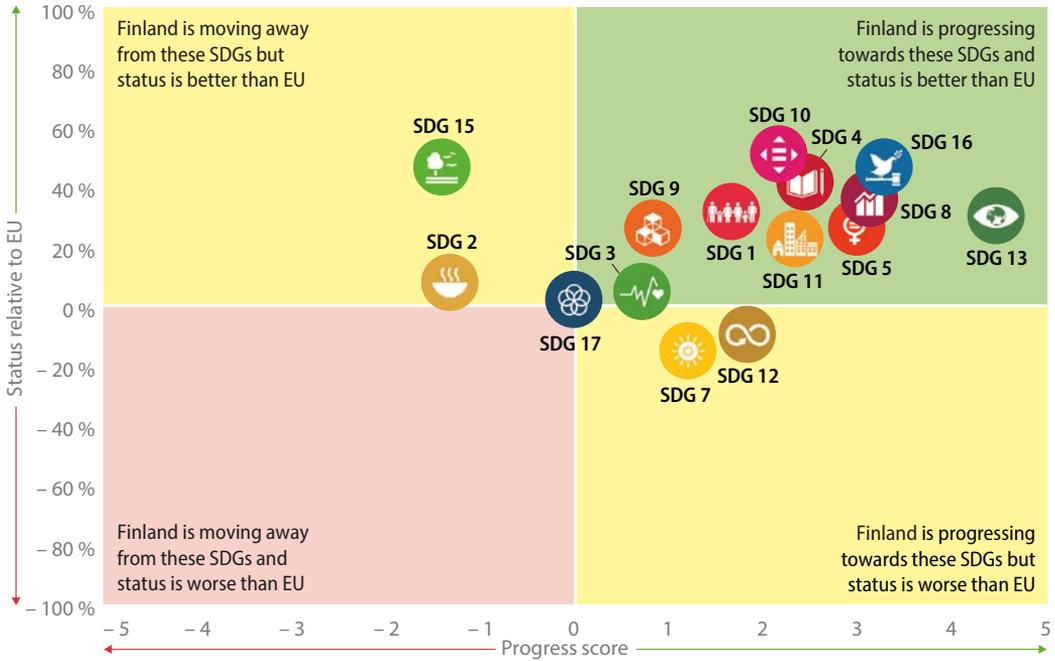
Source: Eurostat

Figure 18.28: Sweden
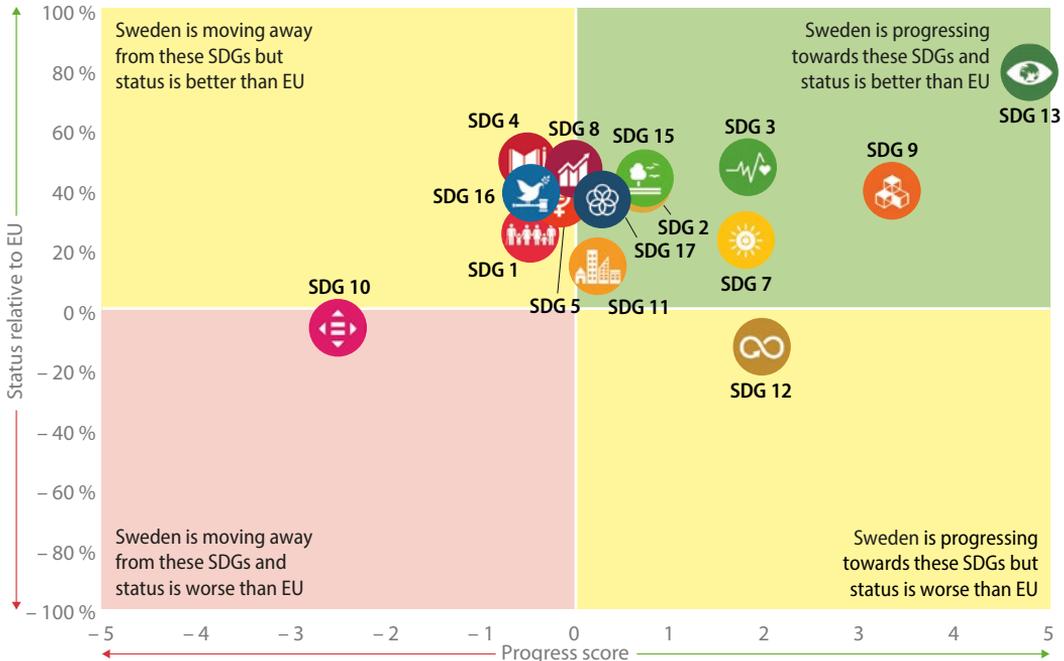
Source: Eurostat

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.

Annexes

Annex I

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

dB   decibel

EUR   euro

g   gram

ha   hectare

kg   kilogram

kgoe   kilograms of oil equivalent

km   kilometre

km^2 square kilometre

([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.

L	litre
m²	square metre
m³	cubic metre
mg	milligram
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
COSME	Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises
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
EaSI	Employment and Social Innovation 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
ET 2020	'Education and Training 2020' framework
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

GACERE	Global Alliance on Circular Economy and Resource Efficiency
GAE	gross available energy
GBAORD	Government budget appropriations or outlays for research and development
GCCA	Global Climate Change Alliance
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
HadCRUT	Hadley Centre and Climatic Research Unit
HIV	human immunodeficiency virus
HLPF	High-level Political Forum
HRI1	Harmonised Risk Indicator for pesticides
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
Istat	Italian National Institute of Statistics
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
N2O	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
NO_X	nitrogen oxide
O_2	oxygen
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
OOFs	other official flows
P	phosphorous
PCA	principal component analysis
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
R&I	research and innovation
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
SDSN	Sustainable Development Solutions Network
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
TFEU	Treaty on the Functioning of the European Union
TOSSD	Total Official Support for Sustainable Development
TV	television
UAA	utilised agricultural area
UIS	UNESCO Institute for Statistics
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

List of targets considered for assessing indicator trends

The table below shows which EU policy targets 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. For details on the assessment method for indicators with quantitative targets, see the introduction and Annex III.

Table II.1: EU policy targets considered for assessing indicator trends

Indicator	Target	Policy reference
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 ([1])
Road traffic deaths (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 ([2])
Underachievement 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 ([3])
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 25–34 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 2025, 230 million adults should have at least basic digital skills, which covers 70 % of the adult population in the EU	European Skills Agenda ([4])
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 ([5])
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 ([6])
Gross domestic expenditure on R&D (SDG 9)	Increasing combined public and private investment in R&D to 3 % of GDP	European Research Area ([7])
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 ([8])
Average CO_2 emissions from new passenger cars (SDG 9, SDG 12, SDG 13)	Reduce CO_2 emissions from new passenger cars to 95 grams of CO_2 per km in 2020	Regulation (EU) 2019/631 ([9])
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 ([10])
Greenhouse gas emissions (SDG 13)	Reduce net greenhouse gas emissions by 55 % until 2030 compared to 1990	European Climate Law ([11])
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 ([12])

See following page for footnotes

(¹) European Commission (2020), *A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system*, COM/2020/381 final.

(²) European Commission (2010), *Towards a European road safety area: policy orientations on road safety 2011–2020*, COM(2010) 389 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 (2020), *European Skills Agenda for sustainable competitiveness, social fairness and resilience*.

(⁵) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/2002 amending Directive 2012/27/EU on energy efficiency*.

(⁶) 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*.

(⁷) Council of the European Union (2020), *Council conclusions on the New European Research Area*.

(⁸) European Commission (2021), *2030 Digital Compass: the European way for the Digital Decade*, COM(2021) 118 final.

(⁹) 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*.

(¹⁰) European Parliament and Council of the European Union (2018), *Directive (EU) 2018/851 on waste*.

(¹¹) Council of the European Union (2021), *Proposal for a Regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law)*. Outcome of proceedings. Document number 8440/21.

(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.

Annex III

Method for assessing indicator trends

This section describes the formulas applied for assessing indicator trends in this report. For an overview of the assessment approach and a description of the data basis and the time periods for which the assessment is done, please see the Introduction chapter.

Method 1: Indicators without quantitative targets

The assessment of trends for indicators without quantitative targets, both for the long-term (past 15 years) and short-term (past 5 years) periods, is based on the compound annual growth rate (CAGR), using the following formula:

$$(1) \quad CAGR = \left(\frac{y_t}{y_{t_0}} \right)^{\frac{1}{t-t_0}} - 1$$

where: t_0 = base year, t = most recent year, y_{t_0} = indicator value in base year, y_t = indicator value in most recent year

The table below shows the applied thresholds and the resulting symbols.

Table III.1: 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 above and also takes into account concrete targets set in relevant EU policies and strategies. For this type of indicator, 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:

$$\text{(2a)} \quad CAGR_a = \left(\frac{y_t}{y_{t_0}} \right)^{\frac{1}{t-t_0}} - 1$$

where: t_0 = base year, t = most recent year, yt_0 = indicator value in base year, y_t = indicator value in most recent year

Required (theoretical) growth rate to meet the target:

$$\text{(2b)} \quad CAGR_r = \left(\frac{x_{t_1}}{y_{t_0}} \right)^{\frac{1}{t_1-t_0}} - 1$$

where: t_0 = base year, t_1 = target year, y_{t0} = indicator value in base year, x_{t1} = target value in target year

Ratio of actual and required growth rate:

$$\text{(2c)} \quad R_{a/r} = \frac{CAGR_a}{CAGR_r}$$

The table below shows the thresholds applied for the $R_{a/r}$ ratio and the resulting symbols.

Table III.2: 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 %	⬇

# Method for calculating average scores at the goal level

The calculation of average scores on the level of the individual SDGs is based on the calculations described above for the indicators that have been chosen to monitor the respective SDG. For indicators without quantitative targets, the CAGR (see formula (1) above) is used. For indicators with quantitative targets, the ratio of actual to required growth (see formula (2c) above) is used. These values are inserted into a scoring function (which is different for indicators with and without quantitative target) in order to calculate a score ranging from + 5 (best score) to – 5 (worst score) for each indicator. These indicator scores are currently only calculated for the short-term (past 5 years) period. 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) ([1]). 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 III.1 and III.2 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 III.1). However, the scores at the threshold points in Tables III.1 and III.2 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.

Scoring function for indicators without quantitative targets

Figure III.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.

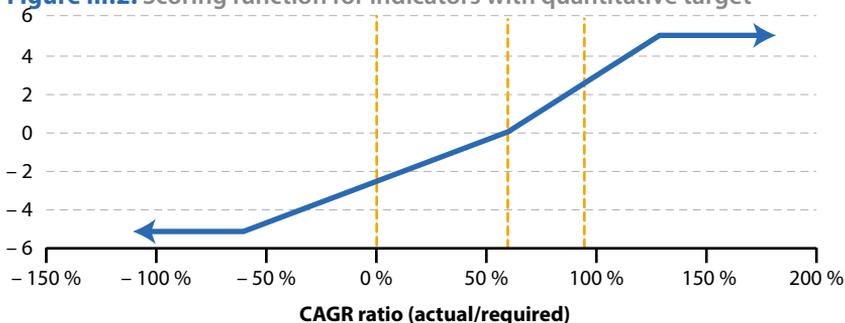**Figure III.1:** Scoring function for indicators without quantitative target
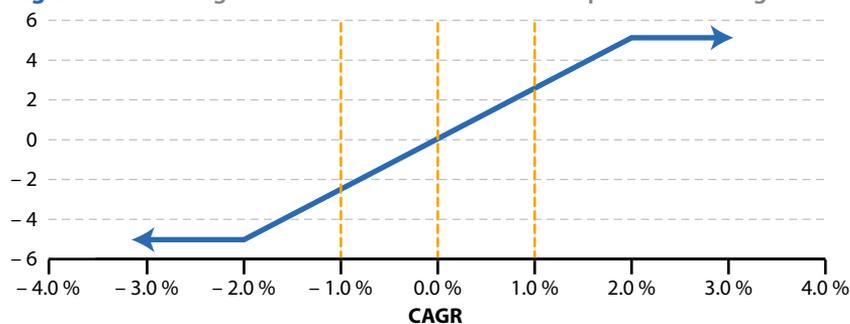
Note: The orange dotted lines represent the thresholds used for defining the assessment category of the indicator, as shown in Table III.1 above.

Scoring function for indicators with quantitative targets

Figure III.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 III.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 III.2 above.

Method for assessing decoupling

Decoupling usually refers to breaking the link between 'environmental bads' and 'economic goods' (²). Two variables are considered to be 'coupled' if one is driven by the other, making them evolve in proportion (for instance, more of A means more of B), and they 'decouple' when they cease to do so (³). The driving variable is typically economic activity, measured in terms of gross domestic product (GDP) or gross value added (GVA). The driven variable is usually an environmental one and can refer to any kind of input, output or impact of the economic activity (such as resource use, emissions, or environmental degradation).

While the decoupling literature talks about many kinds of decoupling (such as resource decoupling, impact decoupling, double decoupling, etc.), the main distinction is between absolute and relative decoupling. Absolute decoupling means that the two variables move in opposite directions (more of A means less of B). This is the case when, for instance, efficiency or productivity gains lead to a decline in material use per unit of output that overcompensates the accompanying rise in GDP. Relative decoupling means that both variables still develop into the same direction but not at the same speed (a lot more of A means a little more of B). In this case, although the amount of, for instance, resources consumed per unit of economic output declines, it does not do so fast enough to compensate for the simultaneous increase in output, leading to an overall increase in environmental pressure. In order to ensure economic growth that does not deplete nature's stocks and stays within planetary boundaries, which is fundamental for achieving the SDGs, permanent absolute decoupling of environmental impacts from economic output at a sufficient rate needs to be achieved (⁴).

A framework for calculating decoupling

The predominant understanding of decoupling (and the distinction between relative and absolute decoupling) mainly refers to situations when the economic driver is actually increasing, i.e. to economic growth. The situation is less clear in a de-growth situation, i.e. when the economic driver is decreasing [5]. The framework used in this report is a modification of a widely-used decoupling model [6], which also includes two states where economic activity declines, one with increasing environmental pressure (negative decoupling) and one with decreasing pressure (negative coupling). The latter two states can provide important insights especially for sectoral disaggregation, e.g. of production-based emissions, where despite overall GDP growth some sectors decline due to structural changes in the economy or a re-location of production processes abroad [7].

Figure III.3: Decoupling framework used in this report
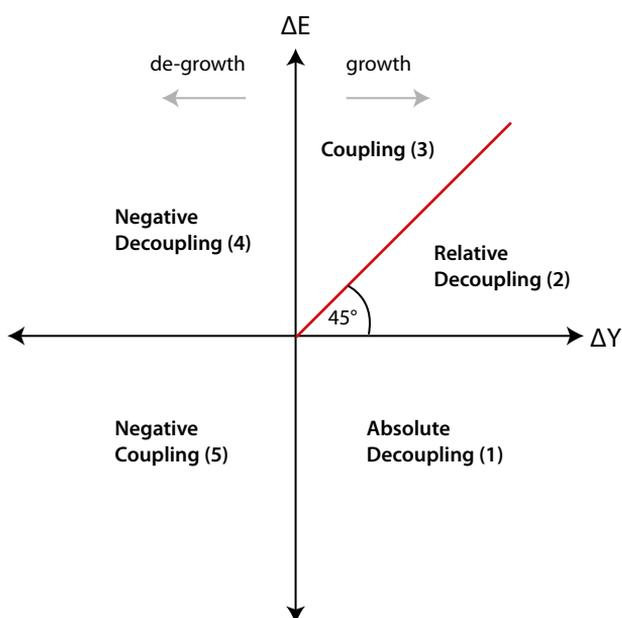
Note: The y-axis, ΔE, refers to the change in the environmental variable (E), while the x-axis, ΔY, represents the change in the economic driving force (Y).

Source: Naqvi and Zwickl (2017) [8]

The analysis of decoupling presented in this report is based on plotting the development of the environmental pressure relative to the economic driver into the framework of Figure III.3. This shows how the degree of decoupling changes over time, highlighting the importance of the temporal dimension when analysing decoupling, since economic growth and environmental pressures can decouple at one point in time, but they can also recouple later on [9].

Annex IV

Methods to estimate the spillover effects caused by consumption

Measuring the international spillover effects embedded in consumption is a data-intensive process. It requires data on both countries' consumption and production flows combined with estimates of the socio-economic and environmental impacts of specific products and sectors throughout the entire supply chains. This section provides a short overview of the methods used in this report to track the international spillover effects embedded in imports and exports.

Accounting approaches

There are two key approaches used to account for environmental, social and economic impacts: production-based accounting (PBA) and consumption-based accounting (CBA). The production-based approach involves attributing the impacts to the place of production of goods and services both for domestic use and for exports. The consumption-based approach involves attributing the impacts to the final consumer, irrespective of the place of production. In other words, PBA includes domestic production for domestic final consumption + domestic production for exports; whereas CBA includes domestic production for domestic final consumption + imports for domestic final consumption (see Figure IV.1). 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.
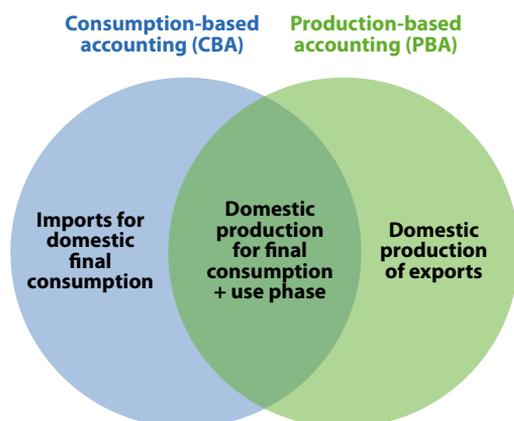
Bottom-up and top-down approaches for assessing spillover effects

Life-cycle assessments based on a processes analysis (PA), and input-output analyses (IOA) are two key methods that are widely used to make sustainability assessments of products and sectors. Process analyses is a bottom-up approach that involves compiling detailed information on a product or production process. IOA is a top-down approach that looks at the entire supply chain, and both the direct (on-site) and the total (direct plus indirect) impacts ([10]).

Both PA and IOA have weaknesses and strengths. The PA method produces a greater level of detail and specificity, but it lacks completeness because it does not take the entire supply chain into account. It draws a finite boundary around the production process and looks at all impacts falling within the boundary, but other impacts are deemed negligible.

The IOA method resolves this boundary issue because it looks at all impacts in the supply chain, starting from the producing company to all upstream suppliers. For example, the sectors providing inputs (such as electricity, fuel, food etc.) to a company are counted as the company's 'upstream' suppliers. 'Upstream' here refers to suppliers, suppliers of suppliers, suppliers of suppliers of suppliers and so on. In the context of consumption-related spillover effects, the IOA method provides a top-down approach to address the impacts of the consumption of goods and services by factoring in all upstream supply chains. This method has been used to calculate the spillover effect indicators in this report.

Figure IV.1: Consumption-based accounting versus production-based accounting ([11])

Consumption-based accounting (CBA)   Production-based accounting (PBA)

Imports for domestic final consumption

Domestic production for final consumption + use phase

Domestic production of exports

Input-output analyses methods

The IOA method has been widely used to make sustainability supply chain assessments. It is based on input-output (IO) tables that document the flow of money between various sectors in an economy. These tables can either be at a national scale (i.e. snapshot of a national economy) or a global scale encompassing information on a range of countries. IO tables can also be constructed at a regional level ([12]) such as for the EU. Tables that feature more than one region/country are called multi-regional input-output (MRIO) tables ([13]).

MRIO tables enable users to assess the supply chain impacts of a business, organisation or a sector. These tables are essential for linking centres of production (e.g. food, clothing, electronics) with the places of consumption, and for unravelling the environmental, social and economic supply chain impacts, such as greenhouse gas emissions, employment and fatal & non-fatal accidents. MRIO tables show the interconnections between industries located in different regions and therefore have been used in this report to estimate the spillover effects, in addition to

Eurostat's own estimates from environmental economic accounting. MRIO data aim to estimate the 'real' impacts in the rest of the world linked to goods imported into the EU.

By contrast, Eurostat uses the 'domestic technology assumption' and hence estimates the volume of emissions 'avoided' on the EU territory through imports ([14]). In other words, Eurostat estimates the volume of emissions that would have been emitted by European industry if the imported goods had been produced in the EU. For example, this is likely to underestimate the 'real' CO_2 emissions generated by imports if the production processes in exporting nations are more carbon-intensive than those in the EU.

Global MRIO Laboratory

All MRIO databases except for the Global MRIO Lab have a fixed regional and sectoral resolution. This means that users of these databases must keep the structure of the table when making any sustainability supply chain assessments. The Global MRIO Lab enables users to compile large-scale, high-resolution MRIO tables based on the most-detailed resolution of 221 regions and 6 357 sectors, for the purpose of conducting integrated sustainability assessments. The most significant feature of the MRIO Lab is the ability to continuously synthesise and make available information that captures the interconnections between nature, the economy and society.

The estimated MRIO indicators in this report are based on a comprehensive MRIO table featuring 164 countries and give results on imports and exports for the years 2000-2018. A particular strength of MRIO data is therefore that it allows users to get a breakdown by trading partner. The mathematical formulation of the techniques for calculating footprints are described elsewhere ([15]). The Global MRIO Lab was used as a basis for this calculation, as it enables users to track bilateral impacts.

Further reading on spillovers

Sala, S. et al. (2019), *Consumption and Consumer Footprint: methodology and results*.

OECD and EC-JRC (2021), *Understanding the Spillovers and Transboundary Impacts of Public Policies: Implementing the 2030 Agenda for More Resilient Societies*.

SDSN and IEEP (2020) *2020 Europe Sustainable Development Report*.

Hoff, H. et al. (2019), *International spillovers in SDG implementation*.

Eurostat (2019), *European Union Inter-Country Supply, Use and Input-Output Tables — Full International and Global Accounts for Research in Input-Output Analysis (FIGARO)*.

Notes

(¹) In this 2021 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.

(²) OECD (2002), *Indicators to measure decoupling of environmental pressure from economic growth*, Paris, OECD.

(³) Parrique, T., Barth, J., Briens, F., Kerschner, C., Kraus-Polk, A., Kuokkanen, A., & Spangenberg, J. H. (2019), *Decoupling debunked: Evidence and arguments against green growth as a sole strategy for sustainability*, European Environmental Bureau.

(⁴) Ibid.

(⁵) Naqvi, A. & Zwickl, K. (2017), *Fifty shades of green: Revisiting decoupling by economic sectors and air pollutants*, Ecological Economics, 133: 111–126.

(⁶) Tapio, P. (2005), *Towards a theory of decoupling: degrees of decoupling in the EU and the case of road traffic in Finland between 1970 and 2001*, Transport Policy 12(2): 137–151.

(⁷) Naqvi, A. & Zwickl, K. (2017), *Fifty shades of green: Revisiting decoupling by economic sectors and air pollutants*, Ecological Economics, 133: 111–126.

(⁸) Ibid.

(⁹) Parrique, T., Barth, J., Briens, F., Kerschner, C., Kraus-Polk, A., Kuokkanen, A., & Spangenberg, J. H. (2019), *Decoupling debunked: Evidence and arguments against green growth as a sole strategy for sustainability*, European Environmental Bureau.

(¹⁰) Lenzen, M. (2000), *Errors in Conventional and Input-Output-based Life Cycle Inventories*, Journal of Industrial Ecology 4, 127–148.

(¹¹) Lafortune et al. (2021), Published in OECD and EC-JRC: *Understanding the Spillovers and Transboundary Impacts of Public Policies: Implementing the 2030 Agenda for More Resilient Societies*.

(¹²) Lenzen, M. et al. (2014), *Compiling and using input-output frameworks through collaborative virtual laboratories*, Science of the Total Environment 485–486, 241–251.

(¹³) Wiedmann, T. & Lenzen, M. (2018), *Environmental and social footprints of international trade*, Nature Geoscience 11, 314–321.

(¹⁴) Eurostat (2021), *Greenhouse gas emission statistics — carbon footprints*.

(¹⁵) Miller, R. E. & Blair, P. D. (2010), *Input–Output Analysis: Foundations and Extensions*, Prentice-Hall.

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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 fifth 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 102 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 2021 edition also shows some of the early impacts of the COVID-19 pandemic that are visible in Eurostat's official statistics.

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