

Smarter, greener, more inclusive?

INDICATORS TO SUPPORT THE
EUROPE 2020 STRATEGY

2018 edition



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Smarter, greener, more inclusive?

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EUROPE 2020 STRATEGY

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Foreword of Vice-President Katainen and Commissioner Thyssen

The Europe 2020 strategy is the EU's agenda for growth and jobs for the current decade. It emphasises smart, sustainable and inclusive growth as a way to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity and underpin a sustainable social market economy.



The Europe 2020 targets are monitored in the framework of the European Semester. Through this framework, the Commission supports the EU Member States in coordinating their economic policies and addressing the economic challenges facing the EU.

This publication by Eurostat provides up-to-date data in the areas covered by the Europe 2020 strategy. These data are an important tool for our policymaking and help monitor progress towards the strategy's objectives.

After a difficult start to the decade, under the shadow of the financial and economic crisis, Europe's economy is now growing at its fastest rate in a decade. Employment is at a record high, and if it continues to grow at the current pace, the employment target of the Europe 2020 strategy is within reach. We have already met our greenhouse gas emissions objective and are very close to reaching our education targets. We are on track with the Europe 2020 renewable energy and energy efficiency targets, but further efforts are still needed. However, we still need to make considerable progress on attracting more investment in research and innovation and in fighting poverty and social exclusion.

To ensure we meet the objectives of the Europe 2020 strategy, the Commission will continue to boost investment, pursue structural reforms in Member States and ensure responsible fiscal policies. Implementation of the Investment Plan for Europe is a key element of this strategy. Focusing in particular on social challenges, on 17 November last year the EU endorsed the European Pillar of Social Rights. The Pillar is designed as a compass for a renewed process of upward convergence towards better working and living conditions in the European Union.

We need to build on the favourable economic situation we are now enjoying to achieve smart, sustainable, inclusive and long-lasting growth in Europe.

Jyrki Katainen

Vice-President — European Commission
Jobs, Growth, Investment
and Competitiveness

Marianne Thyssen

Commissioner — European Commission
Employment, Social Affairs, Skills and
Labour Mobility, Responsible for Eurostat



Foreword of Eurostat's Director-General

Eurostat — the statistical office of the European Union — provides crucial information for EU institutions, national governments, businesses and members of the civil society about important economic, social and environmental developments in the EU. In particular, Eurostat produces annual flagship publications, which present statistical analyses on key EU policy initiatives.



The flagship publication '*Smarter, greener, more inclusive? — Indicators to support the Europe 2020 strategy*' presents the progress of the EU and its Member States towards the targets of the Europe 2020 strategy. The 2018 edition continues the tradition of the previous releases. Mostly based on data produced by the European Statistical System (ESS), it analyses EU development in the five thematic areas of the Europe 2020 strategy: employment, R&D and innovation, climate change and energy, education, poverty and social exclusion.

The description of long-term trends provided by the strategy's headline indicators is complemented with additional contextual indicators, which help understanding the driving forces behind the main trends. Country profiles for each Member State give a detailed picture of the situation at national level in relation to the national Europe 2020 targets.

Impartial and objective statistical information is essential for evidence-based decision-making. Eurostat is fully committed to supporting the implementation and monitoring of the Europe 2020 strategy by producing high quality statistics and making them available to users.

Mariana Kotzeva

Director-General of Eurostat



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Data coverage and direct links to Eurostat's database

The data presented in this publication were extracted during mid-June 2018.

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:

<http://ec.europa.eu/eurostat/data/database>

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Executive summary



Overview of trends in the Europe 2020 headline indicators

Nine headline indicators and additional sub-indicators support the monitoring of the Europe 2020 strategy's eight targets. The development of these indicators since 2008, the baseline year for monitoring the Europe 2020 strategy, shows a rather mixed picture. Substantial progress has been made in the areas of climate change and energy, as well as in education. On the other side, the targets on R&D investment, employment and poverty alleviation are still at a distance, although more recent developments for the employment target are promising.

The Europe 2020 strategy

Europe 2020 is the EU's agenda for jobs and growth for the current decade. It emphasises smart, sustainable and inclusive growth as a way to strengthen the EU economy and prepare its structure for the challenges of the next decade. As its main objectives, the strategy strives to deliver high levels of employment, productivity and social cohesion in the Member States, while reducing the impact on the natural environment.

To reach these objectives, the EU has adopted eight ambitious targets in the areas of employment, research and development (R&D), climate change and energy, education, and poverty reduction, to be reached by 2020. These have been translated into national targets to reflect the situation and possibilities of each Member State to contribute to the common goals. A set of nine headline indicators and additional sub-indicators provides an overview of how fast the EU is progressing towards its overall targets and how far it still is from reaching them.

Since 2008, substantial progress has been made in the area of climate change and energy through the reduction in greenhouse gas emissions and the increase in the use of renewable energy sources. Positive developments are also visible in the area of education, where the EU is within reaching distance of both headline targets. While the most recent developments in R&D investment

and poverty alleviation are less promising, the EU's employment target can still be reached if the growth recorded over the past few years continues.

The analysis in this 2018 edition of 'Smarter, greener, more inclusive?' aims to shed light on the trends in the headline indicators over the past eight years, from 2008 up to 2016 or 2017 (depending on data availability).

Employment rate



72.2% of the EU population aged 20 to 64 were employed in 2017, up from 71.1% in 2016. This is the highest share that has been observed since 2002. As a result,

the distance to the Europe 2020 employment target of 75% narrowed to 2.8 percentage points. Compared with other non-EU G20 economies in the world, the EU's employment rate was higher than in most of these countries in 2017, with only Japan and Australia showing higher rates.

Although the labour market prospects of younger people have been improving in the EU, in 2017 the employment rate for young people aged 20 to 29 was considerably lower than for those aged 30 to 54. Older people (aged 55 to 64) are another vulnerable group on the labour market: although their employment rate has grown continuously over the past decade, it has remained low compared to younger age groups. Despite women becoming increasingly well qualified and even out-performing men in terms of educational attainment, their employment rate has remained lower than those for men. However, the gender employment gap has narrowed for all age groups since 2002 and in 2017 was at 11.5 percentage points.

Other factors influencing integration into the labour market are educational attainment levels and country of origin. Just slightly more than half (54.9%) of those with at most primary or lower

**Table 0.1:** Europe 2020 headline indicators, EU-28, 2008 and 2013–2017

Topic	Headline indicator	2008	2013	2014	2015	2016	2017	Target
Employment	Employment rate age group 20–64, total (% of population)	70.3	68.4	69.2	70.1	71.1	72.2	75.0
	• Employment rate age group 20–64, females (% of population)	62.8	62.6	63.5	64.3	65.3	66.5	:
	• Employment rate age group 20–64, males (% of the population)	77.9	74.3	75.0	75.9	76.9	78.0	:
R&D	Gross domestic expenditure on R&D ⁽¹⁾ (% of GDP)	1.84	2.02	2.03	2.04	2.03	:	3.00
Climate change and energy	Greenhouse gas emissions ⁽²⁾ (Index 1990 = 100)	90.6	80.4	77.4	78.0	77.6	:	80.0
	Share of renewable energy in gross final energy consumption (%)	11.1	15.2	16.1	16.7	17.0	:	20.0
	Primary energy consumption (Million tonnes of oil equivalent)	1 693	1 571	1 509	1 532	1 543	:	1 483
	Final energy consumption (Million tonnes of oil equivalent)	1 180	1 108	1 063	1 086	1 108	:	1 086
Education	Early leavers from education and training, total ⁽³⁾ (% of population aged 18–24)	14.7	11.9	11.2	11.0	10.7	10.6	< 10,0
	• Early leavers from education and training, females ⁽³⁾ (% of population aged 18–24)	12.7	10.2	9.6	9.5	9.2	8.9	:
	• Early leavers from education and training, males ⁽³⁾ (% of population aged 18–24)	16.7	13.6	12.8	12.4	12.2	12.1	:
	Tertiary educational attainment, total ⁽³⁾ (% of population aged 30–34)	31.2	37.1	37.9	38.7	39.1	39.9	≥ 40,0
	• Tertiary educational attainment, females ⁽³⁾ (% of population aged 30–34)	34.3	41.4	42.3	43.4	43.9	44.9	:
	• Tertiary educational attainment, males ⁽³⁾ (% of population aged 30–34)	28.0	32.8	33.6	34.0	34.4	34.9	:
Poverty and social exclusion	People at risk of poverty or social exclusion, EU-27 ⁽⁴⁾ (Million people)	116.1	121.6	120.8	117.8	116.9	:	96.2 ⁽⁵⁾
	People at risk of poverty or social exclusion, EU-28 ⁽⁴⁾ (Million people)	:	122.8	122.0	119.0	118.0	:	:
	People at risk of poverty or social exclusion, EU-28 ⁽⁴⁾⁽⁶⁾ (% of population)	23.7	24.6	24.4	23.8	23.5	:	:
	• People living in households with very low work intensity, EU-28 ⁽⁶⁾ (% of population aged 0–59)	9.2	11.0	11.3	10.7	10.5	:	:
	• People at risk of poverty after social transfers, EU-28 ⁽⁶⁾ (% of population)	16.6	16.7	17.2	17.3	17.3	:	:
	• Severely materially deprived people, EU-28 ⁽⁶⁾⁽⁷⁾ (% of population)	8.5	9.6	8.9	8.1	7.5	6.7	:

(1) 2016 data are provisional.

(2) Total emissions, including international aviation and indirect CO₂, but excluding emissions from land use, land use change, and forestry (LULUCF).

(3) Break in time series in 2014 (switch from ISCED 97 to ISCED 2011).

(4) The indicator 'People at risk of poverty or social exclusion' corresponds to the sum of persons who are: at risk of poverty after social transfers, severely materially deprived or living in households with very low work intensity. Persons are only counted once even if they are present in several sub-indicators.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

(5) The overall EU target is to lift at least 20 million people out of the risk of poverty and exclusion by 2020. Due to data availability issues, the target is evaluated only for the EU-27.

(6) EU-27 data for 2008.

(7) 2017 data are estimates.

secondary education in the EU were employed in 2017, compared to 84.0% for those with tertiary education. The employment rate of non-EU nationals (aged 20 to 64) was 14.8 percentage points lower than the overall rate in 2017.

Gross domestic expenditure on research and development (R&D)



R&D expenditure in the EU stood at 2.03 % of GDP in 2016, compared with 2.04 % in 2015. Gross domestic expenditure on R&D as a percentage of GDP has increased slightly

between 2008 and 2012, as a result of depressed GDP growth and a wider EU effort to boost public expenditure on R&D, and has stagnated around 2 % of GDP since then. This means that by 2016, the EU was still 0.97 percentage points below its target for 2020, which calls for combined public and private R&D expenditure to be increased to 3 % of GDP.

Business enterprise remains the largest R&D performing sector in the EU, accounting for 64.9 % of total R&D expenditure. The business sector has also recorded the largest increase since 2002. The 'higher education' and 'government' sectors contribute less to total R&D expenditure, at 23.0 % and 11.2 %, respectively. Although the R&D shares of these two sectors have been growing at a slower pace, they have been more resilient to economic fluctuations.

Greenhouse gas emissions, share of renewable energy in gross final energy consumption, and energy efficiency



By 2016, emissions of greenhouse gases (GHG) across the EU had fallen by 22.4 % compared with 1990 levels. Thus, the EU is expected to exceed its Europe 2020 target of reducing GHG

emissions by 20 % by 2020. All sectors, except fuel combustion in transport and international aviation, contributed to the reductions between 1990 and 2016. Although energy industries were responsible for the largest reductions in absolute terms over this time period, it was still the sector

responsible for the largest share of total emissions in 2016.

The EU's GHG emissions per capita are below the levels observed in many other major economies such as Australia, Canada and the United States. Despite large variation among per capita GHG emissions globally, a trend towards greater convergence can be observed between 1990 and 2015: per-capita emissions decreased in the EU, the United States and Russia but increased in emerging economies such as China.

The share of renewable energy in gross final energy production, the Europe 2020 strategy's second climate change and energy target, increased from 16.7 % in 2015 to 17.0 % in 2016. Therefore, the EU remains 3.0 percentage points below the Europe 2020 renewable energy target of 20 %. Solid, liquid and gaseous biofuels still provide the biggest share of total renewable energy in the EU, and are the largest renewable energy source used in transport and for heating and cooling. Hydropower remains the dominant renewable energy technology in the electricity sector. However, the shares of wind and solar energy have increased substantially thanks to effective support schemes and large cost reductions. Compared to other economies in the world, in particular most emerging and industrialised countries, the EU's renewable energy share is relatively high.

The EU has also made progress towards its energy efficiency objective, although the trend has slightly reversed in recent years. The 2020 target for final energy consumption was reached temporarily in 2015. Due to the subsequent increase in consumption in 2016, an additional 2.0 % decrease is now required by 2020. With respect to primary energy consumption, the EU must achieve a further reduction of 3.9 % until 2020 in order to reach the Europe 2020 target of increasing its energy efficiency by 20 % compared with projections. In 2016, the EU consumed 10.0 % less primary energy than in 2005, but 2.3 % more than in 2014. Energy efficiency policies have helped achieve substantial reductions in primary energy consumption, but some of the reductions can also be attributed to lower economic output in the aftermath of the economic crisis and relatively warm years, such as 2013 and 2014.



Globally, only one major economy has reduced primary energy consumption more than the EU: Japan consumed 18.4% less primary energy in 2016 than in 2005.

Early leavers from education and training and tertiary educational attainment



The share of early leavers from education and training, defined as the share of 18 to 24 year olds with at most lower secondary education and not in further education and training, has

fallen continuously since 2002, both for men and women. In 2017, the indicator stood at 10.6%, compared with 14.7% in 2008. Thus, Europe is steadily approaching its headline target for 2020 of less than 10% of early leavers.

Young men are more likely to leave education and training early compared to women, even though the gap has been narrowing since 2004. Figures for women are already below the overall EU target, standing at 8.9% in 2017. Residents not born in the reporting country are more likely to leave formal education early compared to natives.

Early leavers from education and training face particularly severe problems in the labour market. In 2017, 55.7% of 18 to 24 year old early leavers from education and training were either unemployed or inactive. This share has increased by 10.1 percentage points compared to 2008.

The share of 30 to 34 year olds who have completed tertiary education has also improved, reaching 39.9% in 2017. This means that the Europe 2020 target of 40% has almost been achieved three years in advance. However, the EU's tertiary attainment rate still lags behind the rates of some other major world economies such as Korea, Japan, Canada and the United States.

Disaggregated by gender, the data reveal that growth in the share of tertiary graduates has been considerably faster for women, who already

met the Europe 2020 target in 2012 and by 2017 reached 44.9%. Progress has been slower for men: by 2017, only 34.9% of 30 to 34 year old men have attained tertiary education.

People at risk of poverty or social exclusion



The Europe 2020 strategy aims to reduce the number of people at risk of poverty or social exclusion by 20 million by 2020, compared

with the 2008 level ⁽¹⁾. In 2016, 118.0 million people were at risk of poverty or social exclusion in the EU-28, which was around 0.1 million more than in 2010, but one million less than in 2015. The development of risk of poverty or social exclusion in the EU over the past decade has been marked by two turning points: in 2009, when the number of people at risk started to rise because of the delayed social effects of the economic crisis, and in 2012, when this upward trend reversed. The share of people at risk of poverty or social exclusion has recently decreased and is approaching the levels observed before the economic crisis in 2008. Still, almost every fourth person (23.5% of the population) in the EU remained at risk in 2016, 20.7 million more than foreseen by the Europe 2020 target. Significant additional efforts are thus necessary to reinforce the recent positive trend and close this gap.

The most widespread form of poverty or social exclusion in the EU is monetary poverty. In 2016, about 86.9 million people, representing 17.3% of the total EU population, were at risk of poverty after social transfers. The second most common dimension of poverty or social exclusion was very low work intensity, affecting 39.1 million people or 10.5% of the EU population. The third form of poverty or social exclusion — severe material deprivation — affected 37.8 million people in 2016. This equalled 7.5% of the total population aged 0 to 59 in the EU. People may be simultaneously

⁽¹⁾ Due to the structure of the survey on which most of the key social data is based (European Union Statistics on Income and Living Conditions), a large part of the main social indicators available in 2010, when the Europe 2020 Strategy was adopted, referred to 2008 data for the EU-27 as the most recent data available. This is why monitoring of progress towards Europe 2020 headline targets takes EU-27 data from 2008 as a baseline year (see European Commission, *Social Europe — Current challenges and the way forward. Annual Report of the Social Protection Committee (2012)*, Luxembourg, Publications Office of the European Union, 2013, p. 12).



affected by two or more forms of poverty, but are nevertheless only counted once for the headline indicator.

The three dimensions of poverty and social exclusion captured by the headline indicator have developed unevenly since 2010. Monetary poverty has been moderately but steadily increasing; the overall amount of people living in households with very low work intensity has not changed drastically since 2010; at the same time, the amount of materially deprived people first increased from 2009 to 2012, but has since decreased. Thus, developments in the headline

indicator were mainly driven by changes in the number of severely materially deprived people.

The most vulnerable groups appear to be the same across all three dimensions of poverty, namely young people, unemployed and inactive persons, single parents, households consisting of only one person, people with low educational attainment, foreign citizens born outside the EU, and those residing in rural areas. Of all the groups examined, the rate of risk of poverty is the highest among the unemployed and single parents with one or more dependent children.

Introduction



Providing statistical support to Europe 2020

The 2018 edition of Eurostat's annual 'flagship publication' entitled 'Smarter, greener, more inclusive? — Indicators to support the Europe 2020 strategy' ⁽¹⁾ provides statistical support for the Europe 2020 strategy, the EU's agenda for jobs and growth for the current decade, and monitors progress towards its headline targets. The publication presents the most recent official statistics disseminated by Eurostat, with the aim of providing statistical analyses related to important European Commission policy frameworks and relevant economic, social and environmental phenomena. Impartial and objective statistical information is essential for evidence-based political decision-making and defines Eurostat's role in the context of the Europe 2020 strategy ⁽²⁾. It involves developing and choosing relevant indicators to support the strategy, producing statistical data and assuring the indicators' quality.

The analysis in the five thematic chapters is based on the Europe 2020 headline indicators, developed to monitor the strategy's targets. Other indicators focusing on specific subgroups of society or on related issues that show underlying trends are also used to deepen the analysis and present a broader picture. The data used mainly come from official European Social Surveys such as the EU

Labour Force Survey (EU LFS) or the EU Statistics on Income and Living Conditions (EU SILC), as well as from administrative sources. Data on EU-28 aggregates and individual Member States are presented and, where available, comparisons are made with the members of the European Free Trade Association (EFTA) and EU candidate countries, as well as non-European countries such as the United States and Japan. For some of the headline indicators, maps presenting the performance of Europe's regions and their progress towards the national Europe 2020 targets are included, even though the targets only apply on a national level.

The thematic chapters analyse past trends, generally since 2002 or 2008, up to the most recent year for which data are available (2016 or 2017). They aim to document and analyse the trends shown by the headline indicators and the distance to the Europe 2020 targets. Supplementary indicators are also used to provide the broader context. The most recent data on the headline indicators and information on the Europe 2020 strategy are available on a dedicated section of Eurostat's website: Europe 2020 headline indicators ⁽³⁾.

⁽¹⁾ Eurostat, *Smarter, greener, more inclusive? — Indicators to support the Europe 2020 strategy*, Publications Office of the European Union, Luxembourg.

⁽²⁾ European Commission, *Europe 2020 — A strategy for smart, sustainable and inclusive growth*, COM(2010) 2020 final, Brussels, 2010.

⁽³⁾ See: <http://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy/headline-indicators-scoreboard>

The Europe 2020 strategy

The Europe 2020 strategy was adopted by the European Council on 17 June 2010 ^(*) as the successor to the Lisbon strategy. It emphasises smart, sustainable and inclusive growth as a way to strengthen the EU economy and prepare its structure for the challenges of the next decade.

Three key priorities and eight targets

The Europe 2020 strategy puts forward three mutually reinforcing priorities to make Europe a smarter, more sustainable and more inclusive place to live:

- Smart growth, through the development of an economy based on knowledge, research and innovation.

- Sustainable growth, through the promotion of resource-efficient, green and competitive markets.
- Inclusive growth, through policies aimed at fostering job creation and poverty reduction.

Under these three key priorities, the EU adopted eight targets (see Table 0.1).

The eight targets belong to five thematic areas: employment, education, poverty and social exclusion, climate change and energy, and R&D and innovation (see Figure 0.1).

These five areas are strongly interlinked. For example, higher educational levels are associated with improved employability and increasing the

Figure 0.1: Europe 2020 strategy thematic areas

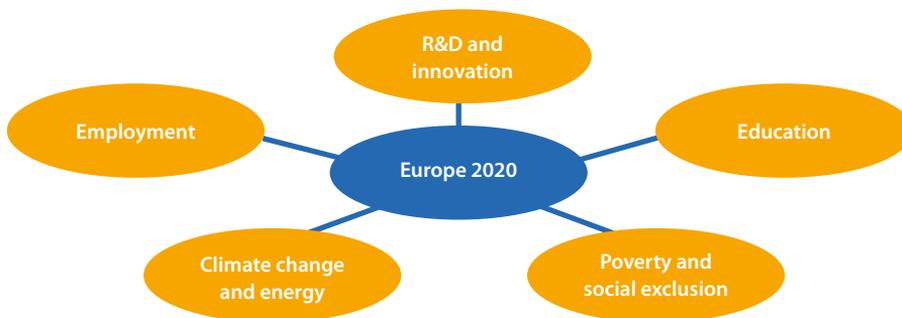


Table 0.1: The Europe 2020 strategy's key priorities and headline targets

	Targets
Smart growth	<ul style="list-style-type: none"> • Increasing combined public and private investment in R&D to 3 % of GDP • Reducing school drop-out rates to less than 10 % • Increasing the share of the population aged 30–34 having completed tertiary education to at least 40 %
Sustainable growth	<ul style="list-style-type: none"> • Reducing greenhouse gas emissions by at least 20 % compared to 1990 levels • Increasing the share of renewable energy in final energy consumption to 20 % • Moving towards a 20% increase in energy efficiency
Inclusive growth	<ul style="list-style-type: none"> • Increasing the employment rate of the population aged 20–64 to at least 75 % • Lifting at least 20 million people out of the risk of poverty and social exclusion

^(*) European Council, Conclusions, 17 June 2010, EUCO 13/10, Brussels, 2010.

employment rate helps to reduce poverty. A greater capacity for R&D and innovation across all sectors of the economy, combined with increased resource efficiency, would improve competitiveness and foster job creation. Investing in cleaner, low-carbon technologies would help the environment, contribute to the fight against climate change and create new business and employment opportunities ⁽⁵⁾.

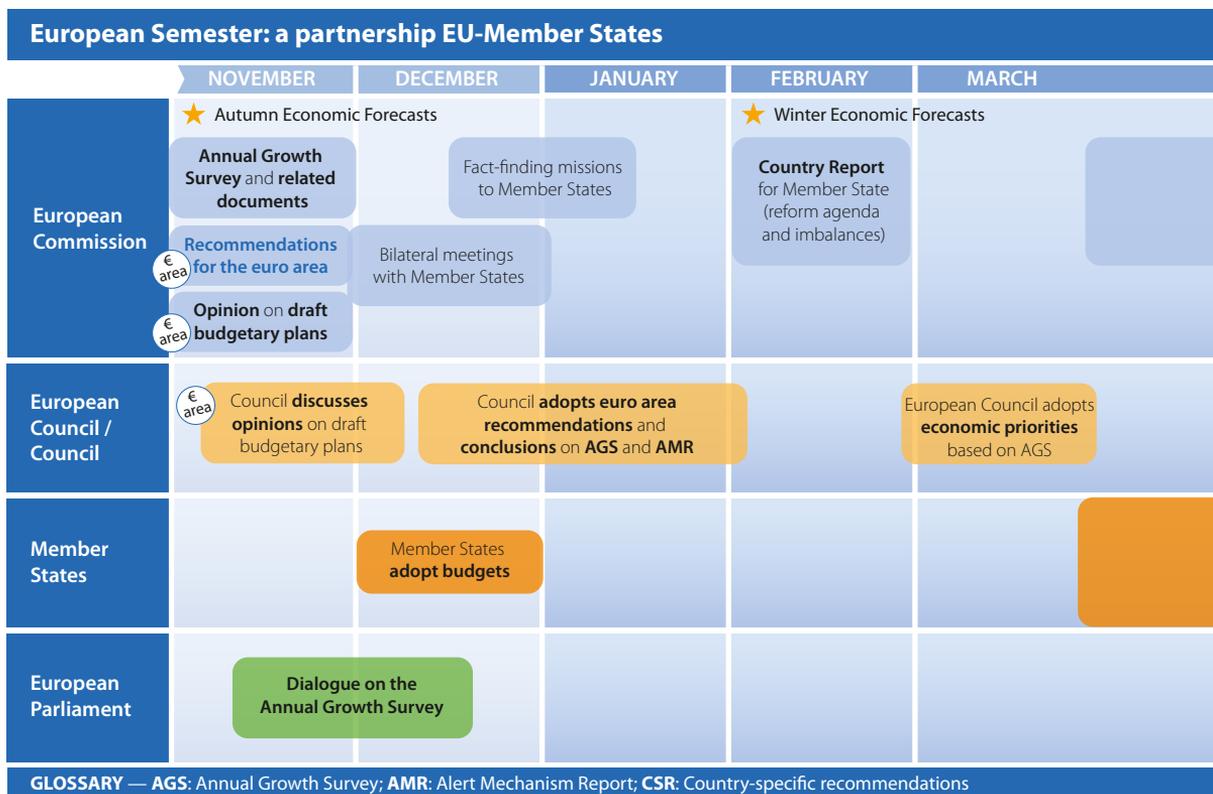
The EU targets have been translated into national targets. These reflect each Member State's situation and the level of ambition they are able to reach as part of the EU-wide effort to implement the Europe 2020 strategy. However, in some cases the national targets are not sufficiently ambitious

to cumulatively reach the EU-level targets. For instance, fulfilling all national targets in the area of employment would bring the overall EU-28 employment rate up to 74%, which would still be one percentage point below the Europe 2020 target of 75% ⁽⁶⁾.

Taking stock of Europe 2020 — how to pursue smart, sustainable and inclusive growth?

In March 2014, the Commission published a Communication 'Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth' ⁽⁷⁾. The mid-term evaluation revealed that progress towards the Europe 2020 targets had

Figure 0.2: The European Semester



Source: European Commission

⁽⁵⁾ European Commission, *Europe 2020 — A strategy for smart, sustainable and inclusive growth*, COM(2010) 2020 final, Brussels, 2010 (p. 11).

⁽⁶⁾ European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels (p. 12–16).

⁽⁷⁾ European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels.

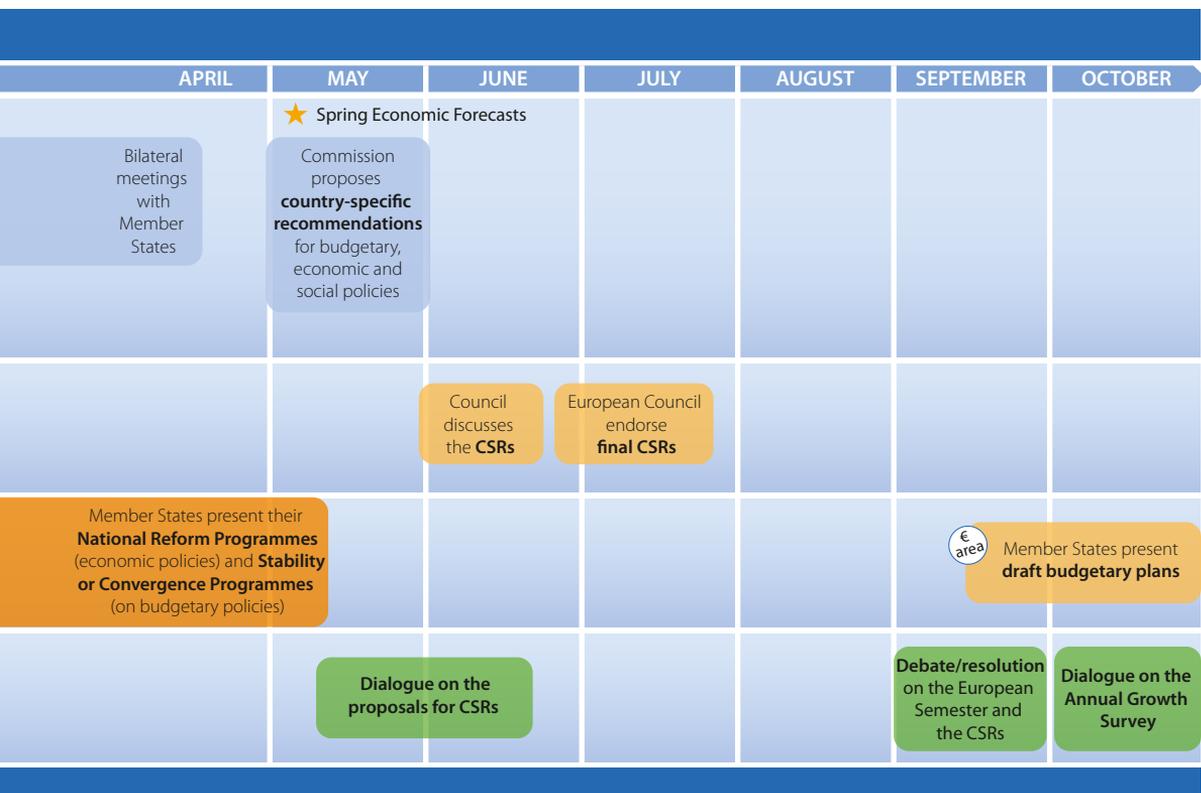


been mixed: while the EU was on course to meet its targets on education, climate and energy, it was still far from fulfilling the employment, research and development, and poverty reduction targets ⁽⁸⁾.

Taking account of Member States' different situations in the economic cycle, the 2018 Annual Growth Survey ⁽⁹⁾ invites Member States to continue building on the 'virtuous triangle' of economic policy: boosting investment, pursuing structural reforms and ensuring responsible fiscal policies. Focus is placed on reforms to boost investment, including in human capital, and to improve the functioning of product, service and labour markets, which will increase innovation, competitiveness, productivity and long-term growth.

The European Semester: annual cycle of policy coordination

The success of the Europe 2020 strategy crucially depends on Member States coordinating their efforts. To ensure this, the European Commission has set up an annual cycle of coordination of economic policies known as the European Semester. Its main purpose is to foster structural reforms, to create more jobs and growth in line with the Europe 2020 strategy, to boost investment, to ensure sound public finances (avoiding excessive government debt) and compliance with the Stability and Growth Pact (SGP) ⁽¹⁰⁾, and to prevent excessive macroeconomic imbalances in the EU.



⁽⁸⁾ European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels (p. 21).

⁽⁹⁾ European Commission, *2018 European Semester: Annual Growth Survey*, COM(2017) 690 final, Brussels.

⁽¹⁰⁾ For more information on the Stability and Growth Pact see: <https://ec.europa.eu/info/node/4287/>

Figure 0.2 presents the stages of the European Semester policy cycle. These include:

- Adoption of the **Annual Growth Survey (AGS)** ⁽¹¹⁾ by the European Commission, which sets out overall economic and social priorities for the EU and its Member States.
- Publication of the Commission's **Alert Mechanism Report (AMR)** ⁽¹²⁾, the **draft Joint Employment Report** ⁽¹³⁾ and **recommendations for the euro area** ⁽¹⁴⁾, accompanied by a Staff Working Document.
- Publication of a **country report** by the Commission services for each Member State, analysing its economic and social situation and progress on implementing the country-specific recommendations and towards the Europe 2020 strategy. For the Member States selected in the Alert Mechanism Report, it also includes the **'in-depth review'** of possible imbalances.
- Submission of the **National Reform Programmes (NRPs)** ⁽¹⁵⁾ and **Stability and Convergence Programmes (SCPs)** by each Member State, presenting concrete reforms and measures towards implementing the country-specific recommendations and the Europe 2020 strategy.

- Adoption of the proposals for country-specific recommendations for each Member State (except those under a stability support programme) by the Commission, followed by formal Council endorsement of the country-specific recommendations. The recommendations focus on the issues which require the most urgent attention in the next 12 to 18 months due to their macro- and socio-economic significance. The recommendations are also consistent with the Europe 2020 strategy.

The 'Reflection paper on the deepening of the Economic and Monetary Union' ⁽¹⁶⁾, adopted on 31 May 2017, includes avenues that the European Commission will consider to further reinforce the European Semester. These include:

- Foster further cooperation and dialogue with Member States, involving also national parliaments, social partners, National Productivity Boards and other stakeholders.
- Increase further the focus on the aggregate euro-area dimension, with a stronger role for the euro-area recommendations.
- Make a closer link between the yearly process of the European Semester and a multi-annual approach to reforms of national governments.

⁽¹¹⁾ For more information on the Annual Growth Survey see: https://ec.europa.eu/info/publications/2018-european-semester-annual-growth-survey_en

⁽¹²⁾ For more information on the Alert Mechanism report see: https://ec.europa.eu/info/publications/2018-european-semester-alert-mechanism-report_en

⁽¹³⁾ For more information on the Draft Joint Employment Report see: https://ec.europa.eu/info/publications/2018-european-semester-draft-joint-employment-report_en

⁽¹⁴⁾ For more information on the Recommendation for the Euro Area see: https://ec.europa.eu/info/publications/2018-european-semester-recommendation-euro-area_en

⁽¹⁵⁾ For more information on the National Reform Programmes see: https://ec.europa.eu/info/strategy/european-semester/european-semester-timeline/national-plans_en

⁽¹⁶⁾ European Commission, *Reflection paper on deepening the economic and monetary union*, COM(2017) 291, Brussels, 2017.



Europe 2020 in a broader policy perspective

Ten priorities for the EU

Before being elected president of the European Commission in July 2014, Jean-Claude Juncker presented his political agenda, highlighting ten priority areas, in a document entitled 'A New Start for Europe: My Agenda for Jobs, Growth Fairness and Democratic Change' ⁽¹⁷⁾ (see Box 0.1).

The 2018 Commission work programme 'An agenda for a more united, stronger and more democratic Europe' ⁽¹⁸⁾ sets out concrete actions and proposals for completing the work on President Juncker's ten political priorities before the end of its mandate, as well as a series of forward-looking initiatives for the future of Europe. To boost jobs, growth and investment, the Commission will pursue work to deliver on the

Circular Economy Action Plan and to complete the Digital Single Market, the Energy Union, the Capital Markets Union, the Economic and Monetary Union, and the Banking Union. An initiative on fair taxation in the digital economy, a social fairness package and a proposal to improve the EU food supply chain will all contribute to a deeper and fairer internal market with a strengthened industrial base. There will also be targeted new measures to complete the Security Union and deliver on the EU Agenda on Migration and the Global Strategy, and to strengthen the Union Civil Protection Mechanism. The Commission will pursue its balanced and progressive trade policy to harness globalisation by finalising agreements with Japan, Singapore and Vietnam, and will

Box 0.1: The ten European Commission priorities

1. A new boost for jobs, growth and investment ^(a)
2. A connected digital single market ^(b)
3. A resilient Energy Union with a forward-looking climate change policy ^(c)
4. A deeper and fairer internal market with a strengthened industrial base ^(d)
5. A deeper and fairer Economic and Monetary Union (EMU) ^(e)
6. A balanced and progressive trade policy to harness globalisation ^(f)
7. An area of Justice and Fundamental Rights based on mutual trust ^(g)
8. Towards a new policy on migration ^(h)
9. Europe as a stronger global actor ⁽ⁱ⁾
10. A Union of democratic change ^(j)

^(a) For more information on the investment plan see: http://ec.europa.eu/priorities/jobs-growth-and-investment_en

^(b) For more information on the digital single market see: https://ec.europa.eu/priorities/digital-single-market_en

^(c) For more information on the energy union see: http://ec.europa.eu/priorities/energy-union-and-climate_en

^(d) For more information on the internal market see: http://ec.europa.eu/priorities/internal-market_en

^(e) For more information on the economic and monetary union see: https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union_en

^(f) For more information on the trade policy see: https://ec.europa.eu/commission/priorities/balanced-and-progressive-trade-policy-harness-globalisation_en

^(g) For more information on justice and fundamental rights see: http://ec.europa.eu/priorities/justice-and-fundamental-rights_en

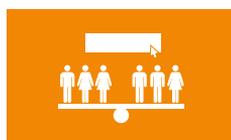
^(h) For more information on migration policy see: http://ec.europa.eu/priorities/migration_en

⁽ⁱ⁾ For more information on the EU as a stronger global actor see: https://ec.europa.eu/priorities/stronger-global-actor_en

^(j) For more information on making the EU more democratic see: https://ec.europa.eu/priorities/democratic-change_en

⁽¹⁷⁾ Jean-Claude Juncker, *A New Start for Europe: My Agenda for Jobs, Growth Fairness and Democratic Change*, Strassbourg, 15 July 2015.

⁽¹⁸⁾ European Commission, *Commission Work Programme 2018: An agenda for a more united, stronger and more democratic Europe*, COM(2017) 650 final, Strasbourg, 2017.

Figure 0.3: Categories of the European Pillar of Social Rights

**Equal opportunities
and access to the
labour market**



Fair working conditions



**Social protection and
inclusion**

pursue negotiations with Mexico and the South American free-trade bloc Mercosur.

Reinforcing economic governance

In June 2015, the President of the European Commission, in cooperation with the President of the Euro Summit, the President of the Eurogroup, the President of the European Central Bank and the President of the European Parliament, presented a report titled 'Completing Europe's Economic and Monetary Union' ⁽¹⁹⁾, also known as the Five Presidents' Report ⁽²⁰⁾. It proposed a roadmap for strengthening the Economic and Monetary Union (EMU) by taking actions on four fronts: economic, financial, fiscal and political.

As a follow-up to the Five President's report, the European Commission issued a Communication 'On steps towards completing the Economic and Monetary Union' ⁽²¹⁾. It laid out a plan for strengthening the European Semester by better integrating European and national dimensions, placing a stronger focus on employment and social performance, promoting convergence by benchmarking and pursuing best practices, and by supporting structural reforms through the provision of EU funds and technical assistance.

In December 2017, the European Commission published a Communication on 'Further steps towards completing Europe's economic and monetary union: A roadmap' ⁽²²⁾. The Roadmap is accompanied by four other main initiatives: a proposal to establish a European Monetary Fund (EMF), anchored within the EU's legal framework ⁽²³⁾; a proposal to integrate the substance of the Treaty on Stability, Coordination and Governance into the Union legal framework ⁽²⁴⁾; a Communication on new budgetary instruments for a stable euro area within the Union framework ⁽²⁵⁾; and a Communication ⁽²⁶⁾ spelling out the possible functions of a European Minister of Economy and Finance.

Strengthening the EU's social dimension

While the design and implementation of social policy remains principally a responsibility of national governments, the EU plays an important role in supporting and complementing their efforts.

On 17 November 2017, at the Social Summit for Fair Jobs and Growth in Gothenburg, the Council and the European Commission jointly signed the European Pillar of Social Rights ⁽²⁷⁾ (see Figure 0.3). The Pillar establishes a set of 20 principles and

⁽¹⁹⁾ European Commission, *The Five Presidents' Report: Completing Europe's Economic and Monetary Union*, 22 June 2015.

⁽²⁰⁾ The report was prepared by the president of the European Commission, in cooperation with the presidents of the Euro Summit, the Eurogroup, the European Central Bank and the European Parliament.

⁽²¹⁾ European Commission, *Communication from the Commission to the European Parliament, the Council and the European Central Bank on steps towards Completing Economic and Monetary Union*, COM(2015) 600 final, Brussels, 2015.

⁽²²⁾ European Commission, *Further steps towards completing Europe's economic and monetary union: A roadmap*, COM(2017) 821 final, Brussels, 2017.

⁽²³⁾ European Commission, *Proposal for a Council Regulation on the establishment of the European Monetary Fund*, COM(2017) 827 final, Brussels, 2017.

⁽²⁴⁾ European Commission, *Proposal for a Council Directive laying down provisions for strengthening fiscal responsibility and the medium-term budgetary orientation in the Member States*, COM(2017) 824 final, Brussels, 2017.

⁽²⁵⁾ European Commission, *New budgetary instruments for a stable euro area within the union framework*, COM(2017) 822 final, Brussels.

⁽²⁶⁾ European Commission, *A European Minister of Economy and Finance*, COM(2017) 823 final, Brussels, 2017.

⁽²⁷⁾ European Commission, *European Pillar of Social Rights*, 2017: Gothenburg, Sweden.



Figure 0.4: Scenarios of the potential state of the EU in 2025



rights, which are to serve as a reference framework for employment and social policy at the national and European levels. These are structured around three categories: equal opportunities and access to the labour market, fair working conditions, social protection and inclusion.

The **2018 Annual Growth Survey** ⁽²⁸⁾ puts the Pillar at the forefront by prioritising reforms that aim to help the labour force acquire skills, promote equal opportunities in the labour market and fair working conditions, increase labour productivity to support wage growth, and promote adequate and sustainable social protection systems.

In addition to proposing the European Pillar of Social Rights, the Commission has put forward a number of legislative and non-legislative initiatives related to work-life balance, working conditions, access to social protection and working time.

White Paper on the future of Europe and follow-up Reflection Papers

At the Rome Summit on 1 March 2017 the Commission presented a White Paper ⁽²⁹⁾ setting out a broader vision for the EU's future. The paper outlines the main demographic, economic and political challenges the EU will face in the future and presents five scenarios of the potential state of the Union in 2025 (see Figure 0.4):

- **Scenario 1: Carrying On** — The EU-27 focuses on delivering its positive reform agenda.
- **Scenario 2: Nothing but the Single Market** — The EU-27 is gradually re-centred on the single market.

- **Scenario 3: Those Who Want More, Do More** — The EU-27 allows willing Member States to do more together in specific areas.
- **Scenario 4: Doing Less, More Efficiently** — The EU-27 focuses on delivering more and faster in selected policy areas, while doing less elsewhere.
- **Scenario 5: Doing Much More Together** — Member States decide to do much more together across all policy areas.

The White Paper has been supplemented by five reflection papers on specific issues important for the future of the EU: the social dimension of Europe, harnessing globalisation, the deepening of the economic and monetary union, the future of European defence and the future of EU finances. A sixth reflection paper 'Towards a sustainable Europe by 2030' was announced in the Commission Work Programme for 2018.

The 2030 Agenda for sustainable development

In a global context, the Europe 2020 strategy plays an important role in addressing the internationally adopted 2030 Agenda for Sustainable Development and thus putting the European Union on the right track to achieving a sustainable future.

The 2030 Agenda was formally adopted by world leaders at the United Nations Sustainable Development Summit in September 2015. The document, titled 'Transforming our world: the 2030 agenda for sustainable development' ⁽³⁰⁾,

⁽²⁸⁾ European Commission, *Annual Growth Survey 2018*, COM(2017) 690 final, Brussels, 2017.

⁽²⁹⁾ European Commission, *White Paper on the future of Europe — Reflections and scenarios for the EU27 by 2025*, COM(2017) 2025, Brussels, 2017.

⁽³⁰⁾ United Nations, *Transforming our World: the 2030 Agenda for sustainable development*, A/RES/70/1, 25 September 2015.

Figure 0.5: The Sustainable Development Goals

consists of a declaration, a set of 17 Sustainable Development Goals (SDGs) (see Figure 0.5) and 169 related targets, a section on the means of implementation and on the follow-up and review of the 2030 Agenda.

In November 2016, the European Commission released the Communication 'Next steps for a sustainable European future: European action for sustainability'⁽³¹⁾ which was accompanied

by a first statistical publication 'Sustainable development at a glance' by Eurostat. A year later, Eurostat published the first edition of the annual EU SDG monitoring report 'Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context'⁽³²⁾, which is based on the EU SDG indicator set and includes more background information.

⁽³¹⁾ European Commission, *Next steps for a sustainable European future: European action for sustainability*, COM(2016) 739, Brussels, 2016.

⁽³²⁾ Eurostat, *Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context*, Luxembourg, Publications Office of the European Union, 2017.

1

Employment



1.1 Employment — why does it matter?

Employment and other labour market-related issues are at the heart of the social and political debate in the EU. Paid employment is crucial for ensuring sufficient living standards and it provides the necessary base for people to achieve their personal goals and aspirations. Moreover, employment contributes to economic performance, quality of life and social inclusion, making it one of the cornerstones of socioeconomic development and well-being.

The EU's labour force is shrinking as a result of demographic changes that have led to a greater share of older people than younger people in the population. Because of these changes, a smaller number of workers are now supporting a growing number of dependent people, putting the sustainability of Europe's social model, welfare systems, economic growth and public finances at risk. At the same time, global challenges are intensifying and competition from developed and emerging economies such as China and India is increasing ⁽¹⁾.

To face the challenges of an ageing population and rising global competition, the EU needs to make full use of its labour potential. The Europe 2020 strategy, through its 'inclusive growth' priority, places a strong emphasis on job creation. One of its five headline targets addresses employment, with the aim of raising the employment rate of 20 to 64 year olds to 75 % by 2020.

The EU's employment target is closely interlinked with the other strategy goals on research and development (R&D) (see the chapter on 'R&D and innovation', page 49), education (see the chapter on 'Education', page 87) and

Europe 2020 strategy target on employment

The Europe 2020 strategy sets out a target of 'increasing the employment rate of the population aged 20 to 64 to at least 75 %' by 2020 ^(*).

(*) European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, 2014.

poverty and social exclusion (see the chapter on 'Poverty and social exclusion', page 103). Higher educational levels increase employability and higher employment rates can in turn contribute to economic performance and poverty alleviation, thus addressing the strategy's inclusive growth objective. Moreover, boosting R&D capacity and innovation could improve competitiveness and thus contribute to job creation.

Overall, the EU labour market has consistently shown positive dynamics, with substantial progress towards the Europe 2020 strategy's employment rate target. At the same time, long-term changes in the demographic structure of the EU population and rapid technological change add to the need to reform labour markets. Taking into account the decline in the working-age population (aged 20 to 64) accompanied by a rising old-age dependency ratio, higher employment rates, especially for women, older workers and young people remain among the priorities of the Europe 2020 strategy.

(1) European Commission, *Europe 2020 — A strategy for smart, sustainable and inclusive growth*, COM(2010) 2020 final, Brussels, 2010, p.5, 7, 17. European Commission, *An Agenda for new skills and jobs: A European contribution towards full employment*, COM(2010) 682 final, Strasbourg, 2010, p. 2.



Employment in the EU

Europe 2020 headline indicator



Employment rate in 2017
72.2 % of age group 20 to 64
 + 1.9 pp since 2008

2020 target:
 75%

... by degree of urbanisation in 2017

72.6 % of 20 to 64 year olds living in rural areas
 + 2.8 pp since 2008

... by age in 2017

63.9 % of population aged 20 to 29
 - 1.8 pp since 2008

... by citizenship in 2017

57.4 % of non-EU citizens aged 20 to 64
 - 5.2 pp since 2008

... by education in 2017

54.9 % of 20 to 64 year olds with at most lower secondary education
 - 1.5 pp since 2008

Contextual indicators



Gender employment gap in 2017

11.5 % percentage point gap to the disadvantage of women
 - 3.6 pp since 2008



Newly employed persons in 2017

14.2 % of total employment
 - 0.5 pp since 2008



Involuntary temporary employees (1) in 2017

13.9 % of employed 15 to 24 year olds
 + 1.1 pp since 2008



Involuntary part-time employment (1) in 2017

8.0 % of employed 15 to 24 year olds
 + 1.2 pp since 2008



Unemployment rate in 2017

16.8 % of 15 to 24 year olds
 + 1.2 pp since 2008



Not in employment, education or training in 2017

14.3 % of population aged 18 to 24
 + 0.3 pp since 2008



Population age structure in 2017

59.7 % of the total population are 20 to 64 years old
 - 1.4 pp since 2008



Old-age-dependency ratio in 2016

32.6 % population aged 65+ compared with the population aged 20 to 64
 + 4.6 pp since 2008



Overqualification rate in 2017

22.7 % of employed tertiary graduates are in occupations not requiring their level of education
 + 1.9 pp since 2008



Job vacancy rate (2) in 2017

1.8 % of occupied and vacant posts
 + 0.2 pp since 2008

(1) Data have low reliability.

(2) 2008 data refer to EU-27.

Source: Eurostat (online data codes: t2020_10, lfst_r_ergau, lfsa_pganws, lfsa_ergan, teprs_wc120, lfsa_urgaed, tipslm90, demo_pjan, proj_15npms, lfsa_enuwasn, lfsa_etgar, lfsa_epgar, lfsa_epgaed, lfsa_egised and jvs_q_nace2)

What is meant by ‘activity’, ‘employment’, ‘unemployment’ and ‘labour force’?

People are classified as employed, unemployed and economically inactive according to the definitions of the International Labour Organisation (ILO) ⁽²⁾. At the EU level, the two main sources for this data are the EU Labour Force Survey (EU LFS) ⁽³⁾ and National Accounts (including GDP) ⁽⁴⁾.

The EU LFS is a large sample survey of private households, excluding the population living in institutional households (such as workers’ homes or prisons). The survey classifies respondents as **employed**, **unemployed** or **economically inactive** based on information collected through the survey questionnaire, relating mainly to their activity during a reference week. The EU LFS data refer to the resident population, meaning the results relate to the country of residence of people in employment, rather than to their country of work ⁽⁵⁾.

Labour force refers to the economically active population. This is the total number of employed and unemployed people. **Persons in employment** are those who during the reference week did any work for pay or profit, or were not working but had a job from which they were temporarily absent. The term ‘work’ is defined as any work for pay or profit during the reference week, even for as little as one hour. Pay includes cash payments or payment in kind (payment in goods or services rather than money), regardless of whether or not payment was received in the week the work was done. Anyone who receives a wage for on-the-job training that involves the production of goods or services is counted as being in employment. Self-employed and family workers are also included.

Employment rates represent the share of employed persons in the total population in the same age group; they are typically published for the age group 15 to 64 years. The earliest age that a person can leave full-time compulsory education in the EU is 15 ⁽⁶⁾ and in many Member States this is also the minimum employment age ⁽⁷⁾. However, in a majority of Member States it is rare to attain secondary education while working (even part-time). Therefore, most 15 to 19 year olds who are still in education or training are not seeking employment. Students that attain higher levels of education tend to enter the labour market later. This is in line with the strategy’s headline targets on education that promote further education (see the chapter on ‘Education’, page 87). As a result, the lower age limit of the Europe 2020 strategy’s employment target has been raised to 20 years ⁽⁸⁾. The upper age limit for the employment rate is usually set to 64 years, taking into account statutory retirement ages across Europe ⁽⁹⁾.

People are considered to be **unemployed** if they were:

1. Without work during the reference week, meaning they neither had a job nor were at work (for one hour or more) in paid employment or self-employment.
2. Available to start work, meaning they were available for paid employment or self-employment before the end of the two weeks following the reference week.
3. Actively seeking work, meaning they had taken concrete steps in the four-week period ending with the reference week to seek paid employment or self-employment or who found a job starting within three months.

The **unemployment rate** is the number of unemployed persons as a percentage of the

⁽²⁾ For more information see the ILO website: <http://www.ilo.org/global/lang-en/index.htm>

⁽³⁾ For more information on the EU LFS, see: <http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey>

⁽⁴⁾ For more information see: <http://ec.europa.eu/eurostat/web/national-accounts>

⁽⁵⁾ This difference may be significant in countries with large cross-border flows.

⁽⁶⁾ João Medeiros and Paul Minty, *Analytical support in the setting of EU employment rate targets for 2020*, Working Paper 1/2012, European Commission (Directorate-General for Employment, Social Affairs & Inclusion), Brussels, 2012 (p. 58).

⁽⁷⁾ European Commission, *Age and Employment*, Publications Office of the European Union, Luxembourg, 2011 (p. 50).

⁽⁸⁾ João Medeiros & Paul Minty, *Analytical support in the setting of EU employment rate targets for 2020*, Working Paper 1/2012, European Commission (Directorate-General for Employment, Social Affairs & Inclusion), Brussels, 2012 (p. 12).

⁽⁹⁾ European Commission, *The 2012 Ageing Report: Economic and budgetary projections for the EU27 Member States (2010–2060)*, 2012 (p. 99).

labour force. To take into account people who would like to (or have to) work after the age of 64 but are unable to find a job, the upper age limit for the unemployment rate is usually set to 74. As a result, the observed age group for unemployed persons usually is 15 to 74 years.

The **youth unemployment rate** is the unemployment rate of people aged 15 to 24. In contrast, the **youth unemployment ratio** is the percentage of unemployed young people

compared to the total population of that age group (not only the active, but also the inactive such as students).

The **economically active** population is the sum of employed and unemployed persons. In contrast, **inactive persons** are those who, during the reference week, were neither employed nor unemployed. The **activity rate** is the share of the population that is economically active.

1.2 EU employment on the rise again — signs of gradual recovery



In 2017 the overall employment rate in the EU reached 72.2 %. As a result the distance to the Europe 2020 employment target of 75 % narrowed to 2.8 percentage points. If

the employment rate keeps increasing at the pace recorded since 2013, it would be broadly within reach of the Europe 2020 target.

In 2017, nine Member States — Ireland, the Czech Republic, Lithuania, Estonia, Germany, Sweden, Latvia, Malta and Croatia — had already met their respective national employment targets.

Employment rates across the EU tend to show a north–south divide on a country level, with some of the best performing countries such as Germany, Sweden and the

United Kingdom showing high variability in regional employment rates.

In northern and western European countries employment rates tend to be higher in rural areas, whereas in most Baltic, central or eastern Member States cities exhibit higher employment rates.

In 2017, employment rates of younger and older people continued to be lower than for the total employment rate in the EU.

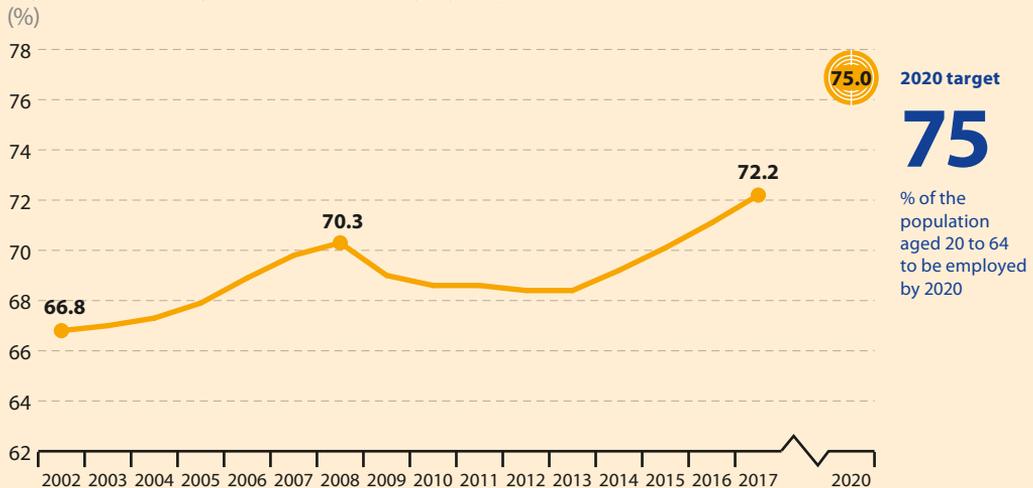
Considerably lower employment rates are observed for women than men. The gender employment gap is the widest for three age groups: 30 to 34, 35 to 39 and 60 to 64.

People with low educational attainment form one of the most disadvantaged groups in the labour market, exhibiting low employment rates.

Persons with non-EU citizenship show much lower employment rates compared to EU citizens.

Europe 2020 headline indicator

Figure 1.1: Employment rate of the age group 20 to 64, EU-28, 2002–2017



Source: Eurostat (online data code: t2020_10)

In 2017, the EU labour market continued to exhibit marked signs of improvement, spurred by the buoyancy of the economy, strong global outlook and accommodative macroeconomic policies ⁽¹⁰⁾. On the back of the strongest economic growth in a decade (2.5%), employment expanded at a solid pace and in both 2016 and 2017 showed the highest growth rates since 2008 (1.4%).

The Europe 2020 strategy monitors its employment target through the headline indicator ‘**Employment rate — age group 20 to 64**’, which shows the share of employed 20 to 64 year olds in the total EU population ⁽¹¹⁾. In 2017, 217 million people (72.2% of the EU population) were employed — almost three million (or 1.1 percentage points) more than in 2016. As shown in Figure 1.1, this is the highest share that has been observed since 2002. Nevertheless, there

is still a 2.8 percentage point gap that needs to be closed to reach the Europe 2020 employment target of 75% by 2020.

In 2017, 5.8% of the population aged 20 to 64 were unemployed while the remaining 22.0% were inactive ⁽¹²⁾.

1.2.1 North–south divide in employment rates across the EU

In 2017, employment rates among Member States ranged from 57.8% in Greece to 81.8% in Sweden (see Figure 1.2). Northern and central European countries recorded the highest rates; nine countries even exceeded the 75% EU employment target. With employment rates below 70%, Mediterranean countries, along with Romania and Belgium, represented the lower end

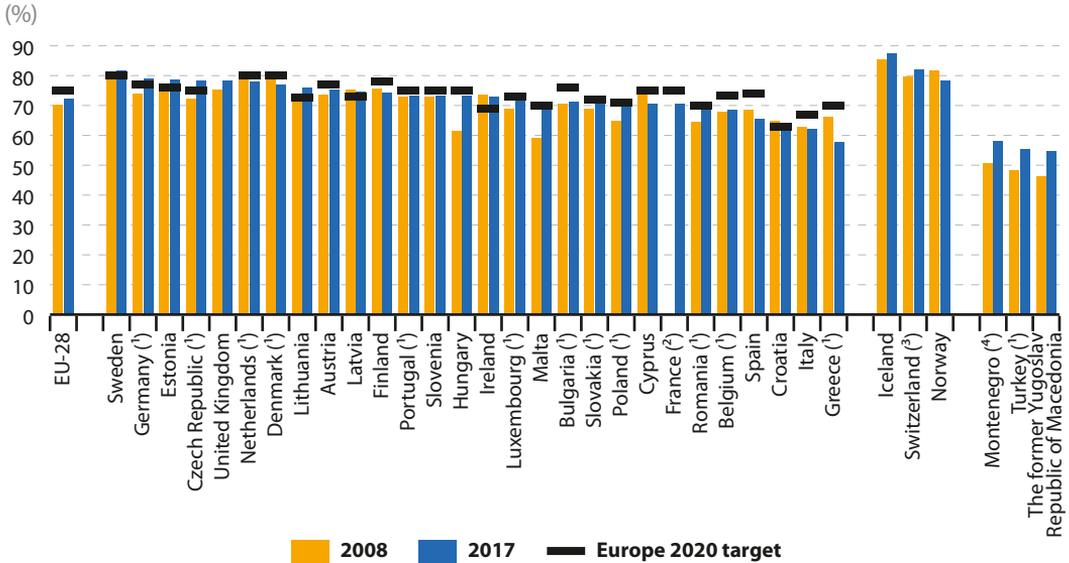
⁽¹⁰⁾ European Commission, *Labour Market and Wage Developments in Europe — Annual review 2017*, 2017.

⁽¹¹⁾ The age brackets for this headline indicator are narrower than for Eurostat descriptive statistics based on the Labour Force Survey, where employment covers people aged 15 years and older and unemployment includes people aged 15–74. In this report, people below the age of 20 are excluded because many of them are still in education or training and are not actively seeking employment (only 20.4% of this age group were part of the labour force in 2017, Eurostat online data code *lfsa_pganws*). The upper age limit is set to 64 years to take account of statutory retirement ages across Europe. You can see more information about the reason for choosing the age group 20–64 in the section ‘What is meant by ‘activity’, ‘employment’, ‘unemployment’ and ‘labour force?’’, page 26.

⁽¹²⁾ Eurostat (online data code: *lfsa_pganws*).



Figure 1.2: Employment rate age group 20 to 64, by country, 2008 and 2017

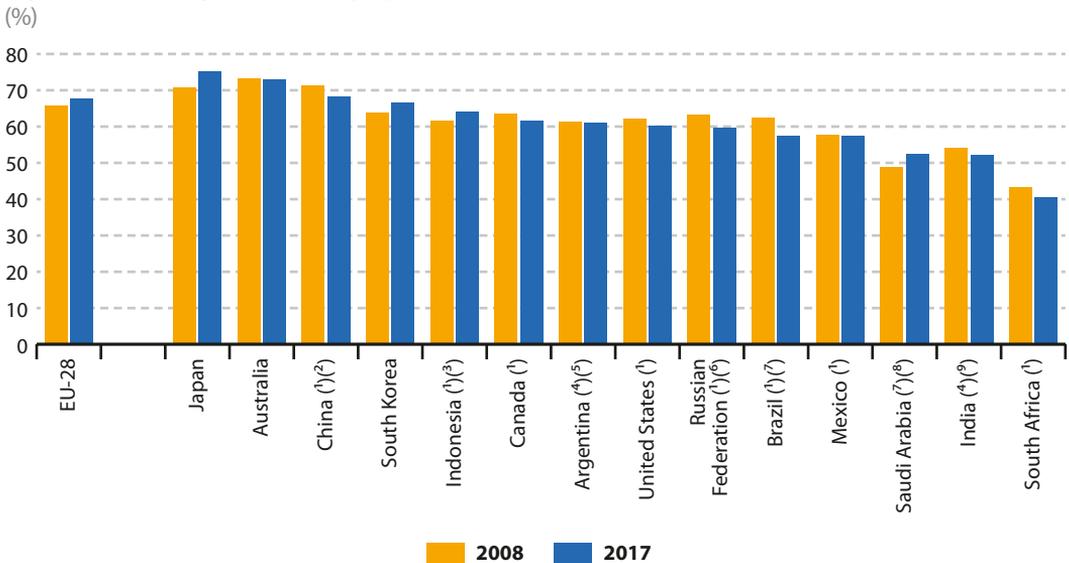


(¹) Break(s) in time series between 2008 and 2017.
 (²) No data for 2008.

(³) 2010 data (instead of 2008).
 (⁴) 2011 data (instead of 2008).

Source: Eurostat (online data code: t2020_10)

Figure 1.3: Employment rate, age group 15 to 64, 2008 and 2017



(¹) Age group 15+.

(²) 2016 data instead of 2017.

(³) Break in time series in 2013.

(⁴) 2010 data instead of 2008.

(⁵) 2014 data instead of 2017.

(⁶) Break in time series in 2010.

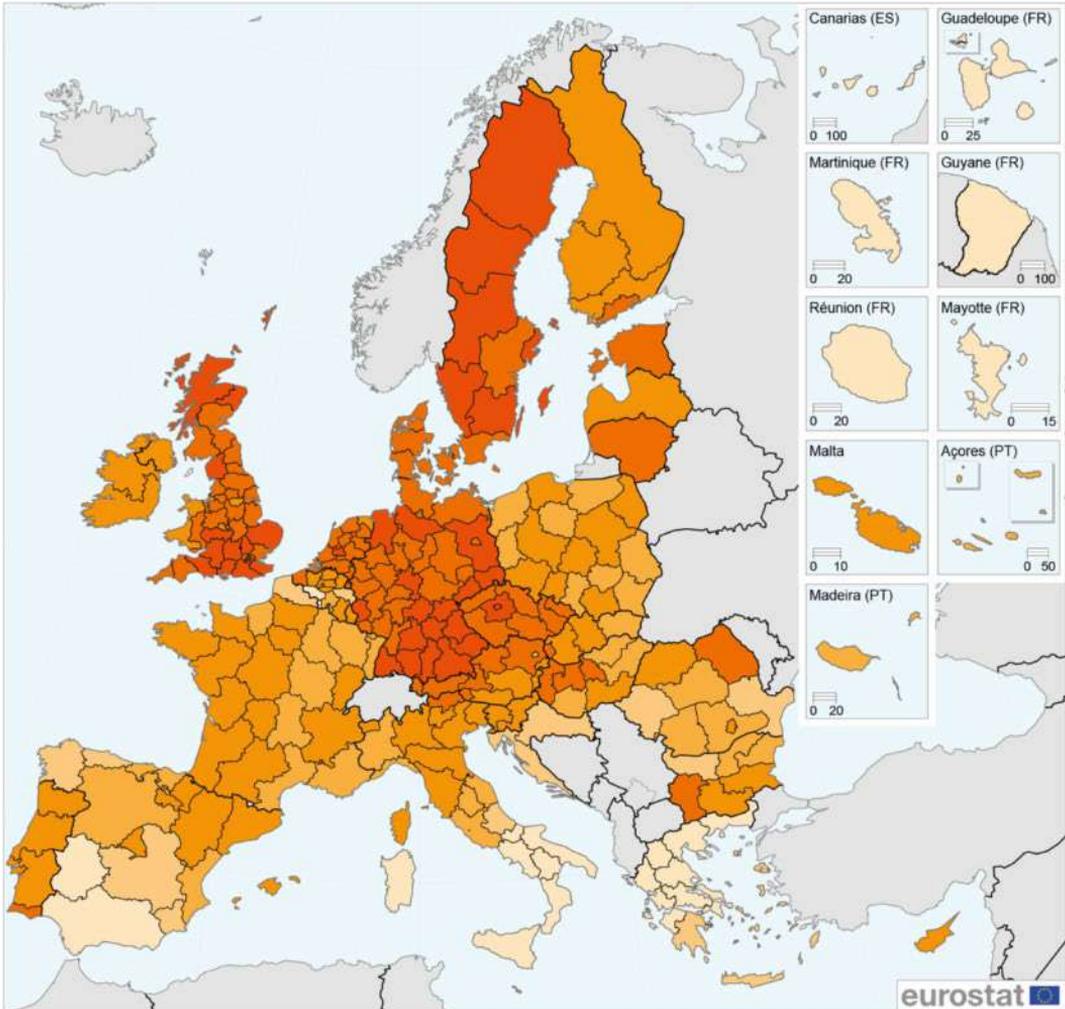
(⁷) 2015 data instead of 2017.

(⁸) 2009 instead of 2008.

(⁹) 2012 data instead of 2017.

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

Map 1.1: Employment rate age group 20 to 64, by NUTS 2 regions, 2017
 (% of population aged 20 to 64)

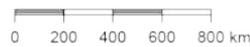


EU-28 = 72.2 %

Administrative Boundaries: © EuroGeographics © UN-FAO © Turkstat
 Cartography: Eurostat — IMAGE, 04-07-18

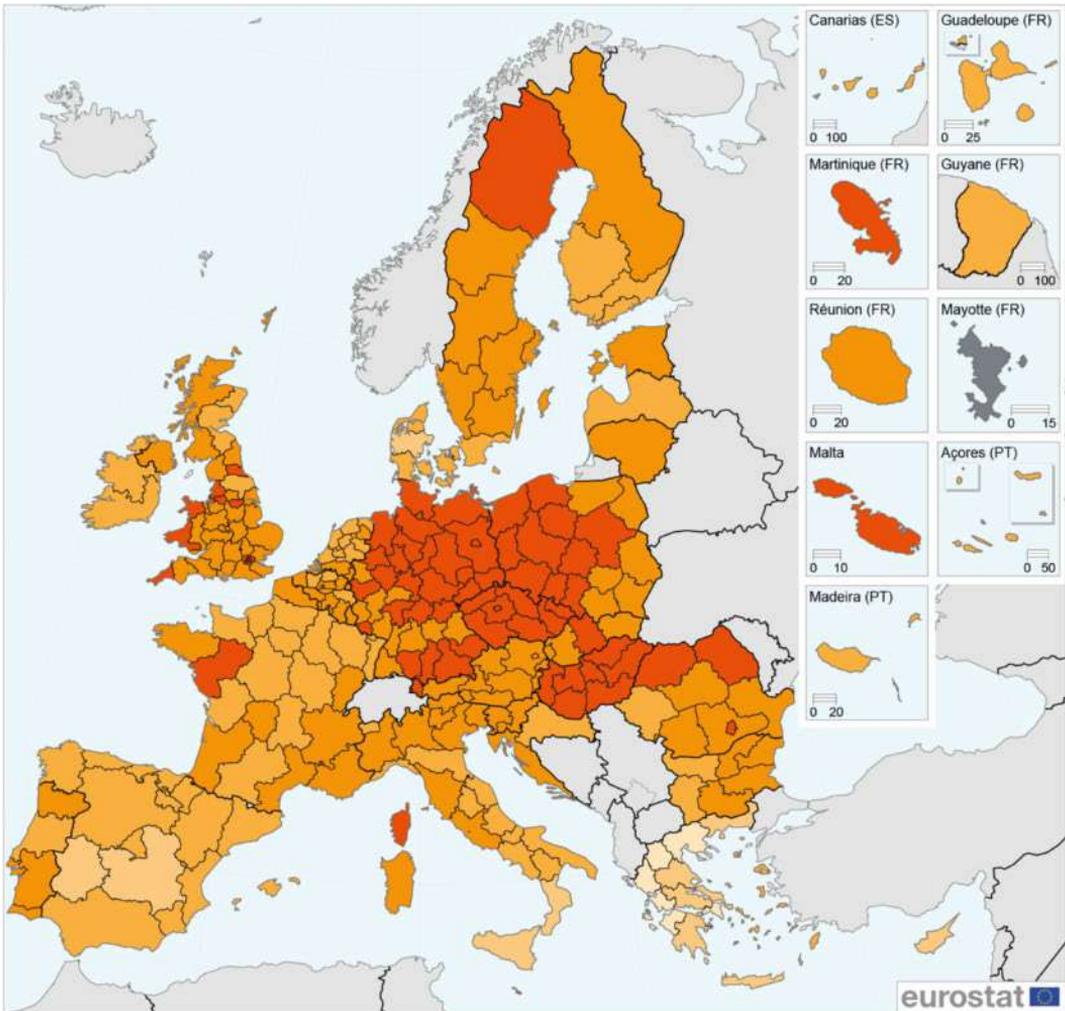
Legend:

- <= 60
- 60 – 65
- 65 – 70
- 70 – 75
- 75 – 80
- > 80
- Data not available



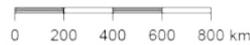
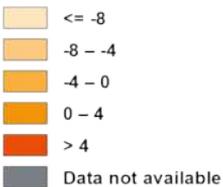
Source: Eurostat (online data code: [lfst_r_lfe2emprt](#))

Map 1.2: Change in employment rate age group 20 to 64, by NUTS 2 regions, 2008–2017 (percentage points difference between 2017 and 2008, persons aged 20 to 64)



EU-28 = 1.9

Administrative Boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — IMAGE, 06-07-18



Note: Breaks in time series between 2008 and 2017 for several regions (too numerous to list), change 2010–2017 for London (UK) and Slovenia.

Source: Eurostat (online data code: [lfst_r_lfe2emprt](#))

of the distribution. Employment rates in the EFTA countries Iceland, Switzerland and Norway were higher than in the majority of Member States.

Between 2008 and 2017, the employment rate rose in most EU countries, with the strongest growth recorded in Malta (12.2 percentage points) and Hungary (11.8 percentage points). In 10 Member States (Greece, Cyprus, Spain, Denmark, Finland, Croatia, Netherlands, Latvia, Italy and Ireland) the employment rates were still below 2008 levels, however, all these countries ⁽¹³⁾ were back on a 'growth path' by 2017.

To reflect different national circumstances, the general EU target has been translated into national targets. These range from 62.9% for Croatia to 80.0% for Denmark, the Netherlands and Sweden. In 2017, nine Member States had already met their national employment targets. Of the remaining Member States, nine were less than 2 percentage points below their national targets, led by Poland which was just 0.1 percentage points from its target. Greece and Spain were the most distant, at 12.2 and 8.5 percentage points below their national targets, respectively.

Compared with non-EU G20 economies, the EU employment rate — here referring to the age group 15 to 64 — was higher than in most of these countries in 2017 (see Figure 1.3). Only Japan and Australia showed much higher rates of above 70%. In contrast, Saudi Arabia, India and South Africa reported particularly low employment rates of 52.5%, 52.0% and 40.4%, respectively.

1.2.2 Highest employment rates recorded in regions in north-western and central Europe

The differences in employment rates across Member States, shown in Figure 1.2, are also reflected in the cross-country regional distribution of employment rates (at NUTS 2 level). Map 1.1 shows that the highest employment rates in Europe were mainly recorded in north-western and central regions, particularly in Germany,

Sweden, the United Kingdom, the Netherlands, Austria and the Czech Republic. In 2017, the Finnish region 'Åland' had the highest employment rate in the EU, at 88.2%, followed by 'Berkshire, Buckinghamshire and Oxfordshire' (United Kingdom), at 85.2%, and 'Stockholm' (Sweden), at 84.2%. At the other end of the scale, the lowest rates were observed around the Mediterranean, in particular in southern Italy, Spain and Greece, as well as in the French overseas regions and the outlying Spanish autonomous cities (Ceuta and Melilla). In 2017, the Italian regions Sicilia, Calabria, Campania and Puglia, and the French region Mayotte had the lowest employment rates in the EU, with less than 50%.

Map 1.2 shows the change in regional employment rates since 2008. Among the 275 NUTS 2 regions for which data are available, one-third (91 regions) experienced a fall in their employment rates over the observed period. Among the hardest hit were several regions in Greece, with reductions of 8 percentage points or more. In contrast, employment rates increased in 182 regions from 2008 to 2017. Growth rates of 5 percentage points or more were observed in 56 of these regions, 19 of which were in Germany, nine in Poland and the UK, and seven in the Czech Republic and Hungary. Increases of more than 10 percentage points were recorded for regions in Hungary (Észak-Alföld, Észak-Magyarország, Dél-Alföld, Dél-Dunántúl, Közép-Dunántúl), Malta, France (Corse), Germany (Berlin) and Romania (Nord-Est).

1.2.3 Most western and northern Member States report highest employment rates in rural areas

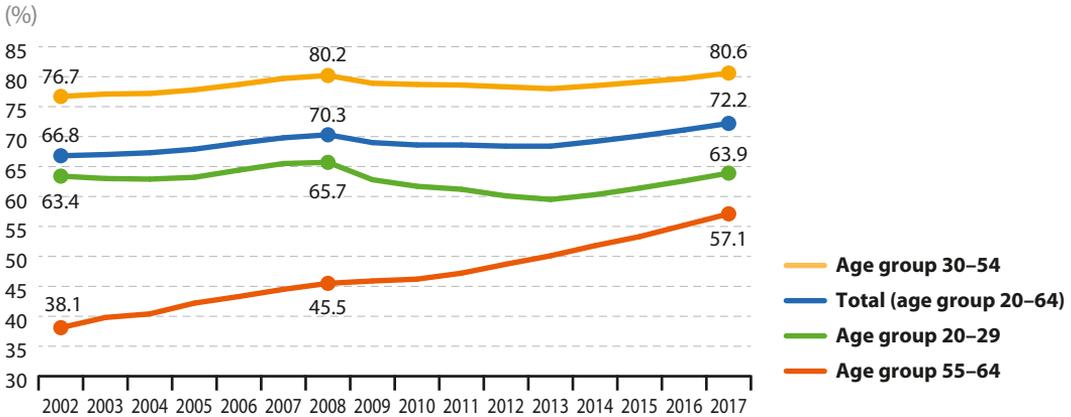
Employment rates vary not only between regions, but also by degree of urbanisation. While the impact of population density was not obvious at the EU level in 2017, with cities, towns and suburbs recording an employment rate of 72.0% and rural areas 72.6% ⁽¹⁴⁾, patterns were discernible at the country level. In most western and northern

⁽¹³⁾ Except for Denmark, where a break in time series in 2016 could have influenced a lower employment rate in 2017 compared to 2016.

⁽¹⁴⁾ Source: Eurostat (online data code: [lfst_r_ergau](#)).



Figure 1.4: Employment rate, by age group, EU-28, 2002–2017



Source: Eurostat (online data codes: *lfsa_pganws* and *t2020_10*)

European countries (such as Belgium, Austria and Germany), employment rates tended to be higher in rural areas. In contrast, most Baltic and central or eastern Member States (such as Bulgaria, Croatia and Slovakia) exhibit higher employment rates in cities. Southern European countries do not share a common pattern in terms of employment rates by degree of urbanisation.

1.2.4 Younger and older people tend to have lower employment rates

In 2017, the employment rate of people aged 30 to 54 was notably higher than for the overall working-age population aged 20 to 64 (see Figure 1.4). In contrast, considerably lower employment rates were observed for young people aged 20 to 29. This may not only reflect the overall lower activity rates of younger people but may also be due to the generally less secure position of young people in the labour market, which makes youth employment more sensitive to the macro-economic fluctuations than adult employment.

The lowest employment rate among the working-age population was reported for the group aged 55 to 64 years. However, the employment rate in this group has risen more or less continuously

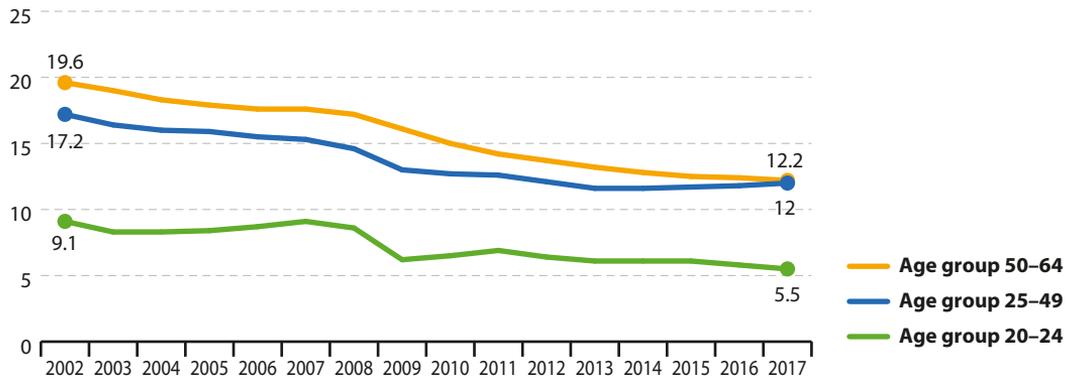
since 2002, reaching 57.1 % in 2017. Growth has been more pronounced for older women (22.0 percentage points) than for older men (15.6 percentage points) since 2002. Overall, the increase in the employment rate of older workers is one of the main drivers of the total rise in employment across the EU. These increases can be linked to structural factors such as cohorts with better educational attainment, especially women, moving up the age pyramid as well as recent pension reforms, such as increases in the pensionable age, the age for early retirement and the length of pension contribution⁽¹⁵⁾. This has led to longer working lives for both women and men. The duration of working life is measured as the number of years a person aged 15 is expected to be active in the labour market. In recent years this has risen in the EU by 2.7 years, from 32.9 years in 2002 to 35.6 years in 2016. The rise was higher for women (3.6 years) than for men (1.9 years). However, in 2016 men could still expect to stay in work much longer (38.1 years) than women (33.1 years)⁽¹⁶⁾.

Interestingly, for half of the Member States, and most notably for Spain, Italy, Belgium, Bulgaria, Netherlands and Portugal, the rise in the employment rate for older people (aged 55 to 64)

⁽¹⁵⁾ European Commission, *Employment and Social Developments in Europe, Annual Review, 2017*, p. 34.

⁽¹⁶⁾ Source: Eurostat (online data code: *lfsi_dwl_a*).

Figure 1.5: Gender employment gap, by age group, EU-28, 2002–2017
(Difference between employment rates of men and women, in percentage points)



Note: Break in time series in 2005.

Source: Eurostat (online data code: lfsa_ergan)

between 2006 and 2017 coincided with a fall in the employment rate for younger people (aged 20 to 24) ⁽¹⁷⁾.

1.2.5 Women still have lower employment rates but the gender employment gap is shrinking

Despite women becoming increasingly well qualified and even out-performing men in terms of educational attainment (see also the ‘Poverty and social exclusion’ chapter, page 103), the activity and employment rates of women remain lower than those for men. However, as shown in Figure 1.5, the **gender employment gap** — the difference in employment rates between men and women — has been decreasing for all age groups. Overall, for the age group 20 to 64, the gap fell from 17.3 percentage points in 2002 to 11.5 percentage points in 2017. A number of structural factors influencing the participation of women in the labour market may account for why they have been catching up with men. These include changes in social values and attitudes, policies enabling women to reconcile paid work with household responsibilities such as child care provision, flexible working hours, reduction

in financial disincentives for women, improved mechanisms to encourage fathers’ parental engagement, and pension reforms ⁽¹⁸⁾. European employment policies promoting new forms of flexibility and security are addressing the specific situation of women to help raise their employment rates in line with the headline target.

In 2017, the gender employment gap for 25 to 49 year olds was at 12.0 percentage points, which is 5.2 percentage points less than in 2002. The bigger gap for this age group in comparison to the age group 20 to 24 is not surprising, given this is the age when women are more likely than men to be economically inactive due to caring responsibilities for children. In 2017, family and caring responsibilities were the main reasons for inactivity among 51.8% of women in this age group, in comparison to 8.2% of men ⁽¹⁹⁾. In addition to caring responsibilities, women can face strong financial disincentives in tax-benefit systems when re-entering the labour market or wanting to work more ⁽²⁰⁾. Time out of the labour force for these reasons might also affect employment opportunities in later years because finding a job becomes more difficult the longer a person is not employed. This might partially explain why the

⁽¹⁷⁾ Source: Eurostat (online data code: lfsa_ergan).

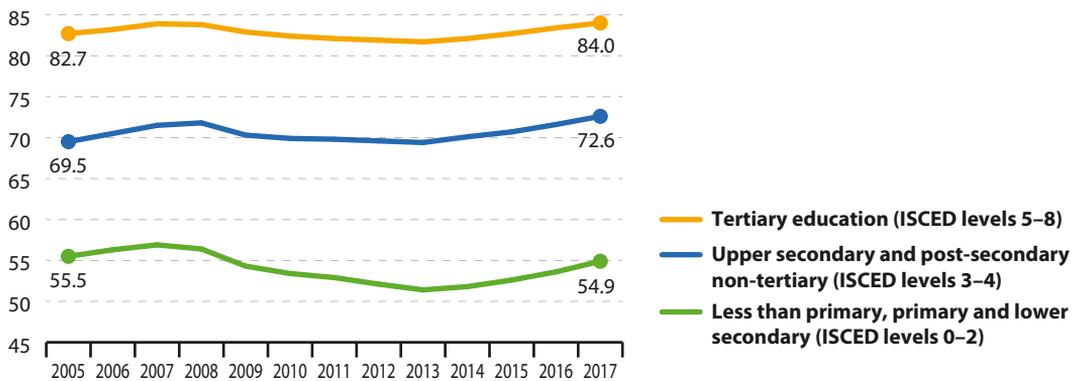
⁽¹⁸⁾ European Commission, *Employment and Social Developments in Europe 2015*, 2016, p. 22.

⁽¹⁹⁾ Source: Eurostat (online data code: lfsa_igar).

⁽²⁰⁾ European Commission, *Women in the labour market*, European Semester Thematic Factsheet 2017, 2017, p. 4.



Figure 1.6: Employment rate age group 20 to 64, by educational attainment level, 2005–2017 (%)



Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).

Source: Eurostat (online data code: [tepsr_wc120](#))

gender employment gap is smaller for 20 to 24 years old, at 5.5 percentage points in 2017. Higher gender gaps in (short-term) employment rates in older age cohorts may be explained by a cohort effect (women who had not participated in the labour force when they were younger moving up the age pyramid) or reflect the lack of care facilities for grandchildren or dependent parents.

1.2.6 Higher education levels increase employability

Educational attainment levels are among the main factors that influence employment rates. Employment rates are higher for more well-educated people (see Figure 1.6). In 2017, the employment rate among tertiary education graduates (84.0%) was much higher than the EU average total (72.2%). In contrast, just slightly more than half of those with at most primary or lower secondary education were employed. The employment rate for people with upper secondary or post-secondary non-tertiary education was in between these levels and slightly above the overall EU average employment rate.

These findings underline the importance of education for employability. Increasing

educational attainment and equipping people with skills for the knowledge society are, therefore, a major focus of European employment policies addressing Europe 2020 headline targets on employment and education (see ‘Education’ chapter, page 87).

1.2.7 Employment rates among non-EU migrants are considerably low

Economic migration is becoming increasingly important for the EU’s ability to deal with a shrinking labour force and expected skills shortages. According to current population projections ⁽²¹⁾, without net migration the working-age population aged 20 to 64 would shrink by 9% by 2030 and by 28% by 2060 compared with 2015 levels. As shown further below, the working-age population is expected to decline even with net migration into the EU, but at slower rates of –4% by 2030 and –13% by 2060 ⁽²²⁾.

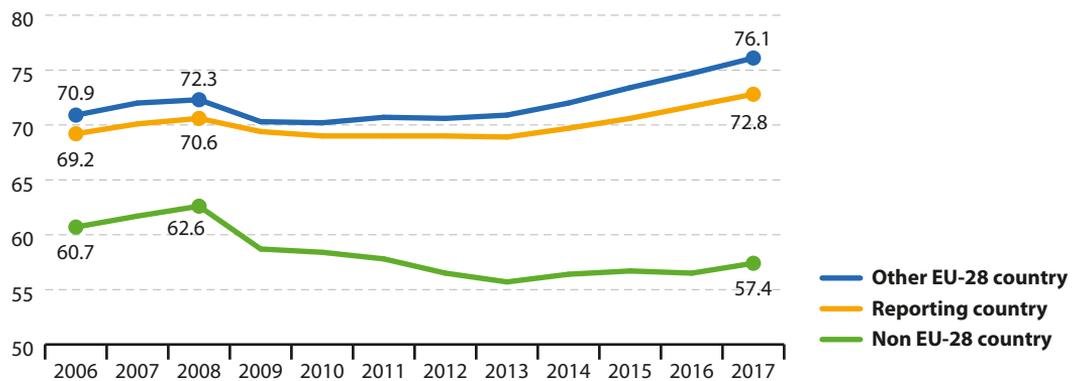
Country of origin can impact the labour market performance of individuals. Migrant workers from countries outside the EU tend to occupy low-skilled and insecure jobs with temporary contracts and poorer working conditions ⁽²³⁾. Migrants are also among the first to lose their jobs during

⁽²¹⁾ Eurostat, *Population projections data, EUROPOP2015 main scenario*.

⁽²²⁾ Source: Eurostat (online data code: [proj_15npms](#)).

⁽²³⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, p. 83.

Figure 1.7: Employment rate age group 20 to 64, by citizenship, EU-28, 2006–2017 (%)



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

economic setbacks. Much lower employment rates are consequently reported for this group than for EU citizens (see Figure 1.7). In 2017, the employment rate of non-EU nationals aged 20 to 64 was 14.8 percentage points below the total

employment rate. Additionally, their employment rate has so far not recovered from the setback caused by the economic crisis, with the 2017 rate being still considerably lower than the levels recorded in 2008.

1.3 Labour market prospects of younger people are improving in the EU



Younger people in the EU who are active in the labour market are at higher risk of being unemployed, with an unemployment rate twice as high as the total unemployment rate in

2017. However, in absolute numbers, this group is not necessarily large since many young people are still in education and not looking for a job.

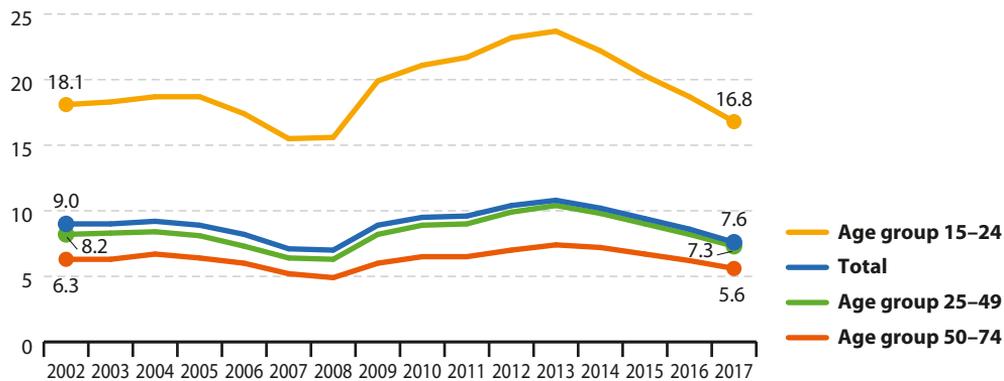
In 2017, 14.3% of 18 to 24 year olds were neither in employment nor in education (NEET), exposing themselves to the risk of labour market exclusion and dependence on social security.

1.3.1 Youth unemployment is falling, although younger people are still at a higher risk of unemployment than people of other age groups

As Figure 1.8 shows, young people generally face a higher risk of being unemployed: in 2017, the unemployment rate of 15 to 24 year olds was more than double the rate for the entire population, at 16.8%, compared with 7.6% in total. However, because many young people at this age are full-time students and are not working or looking for a job, in absolute terms the number of unemployed people was small at just 3.8 million in 2017. Over the past few years, though, this age group has experienced a marked improvement in their labour market prospects. In 2017, the youth unemployment



Figure 1.8: Unemployment rate by age group, EU-28, 2002–2017
(%)



Note: Break in time series in 2005; the total unemployment rate is given for the age group 15–74, see section ‘What is meant by ‘activity’, ‘employment’, ‘unemployment’ and ‘labour force?’; see page 26, for more information on the choice of this age group.

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

ratio was much lower (7.0 %) than the youth unemployment rate (16.8 %); it experienced a decline of 3.0 percentage points since 2013 ⁽²⁴⁾, while the youth unemployment rate declined by 6.9 percentage points over the same period ⁽²⁵⁾. In general, over the past 15 years, the youth unemployment rate has followed a similar pattern to the total unemployment rate, although young people aged 15 to 24 were more strongly affected by the economic fluctuations, as Figure 1.8 shows.

It should be kept in mind that the unemployment rate does not include people who became discouraged and stopped looking for work. Nevertheless, this group still represents a potential additional pool of workers. In 2017, 8.1 million people or 2.1 % of the total EU population were available and would have liked to work but were not seeking employment ⁽²⁶⁾. Moreover, underemployed part-time workers could also add to the labour force: in 2017, nine million people (or 2.4 % of the total population)

who were working part-time also wished to work additional hours and were available to do so ⁽²⁷⁾.

Similarly to employment, a clear link exists between unemployment and education, with more highly educated people experiencing lower unemployment rates. In 2017, only 4.5 % of economically active people with tertiary education were unemployed compared to 14.8 % of economically active people with at most lower secondary education ⁽²⁸⁾. This pattern was also visible among younger people, with the risk of unemployment particularly high for those who had only completed lower secondary education (early leavers from education and training; see chapter ‘Education’, page 87).

1.3.2 The share of young people neither in employment nor in education and training has been decreasing since 2013

The indicator monitoring young people neither in employment nor in education and training

⁽²⁴⁾ Source: Eurostat (online data code: [tespm080](#)).

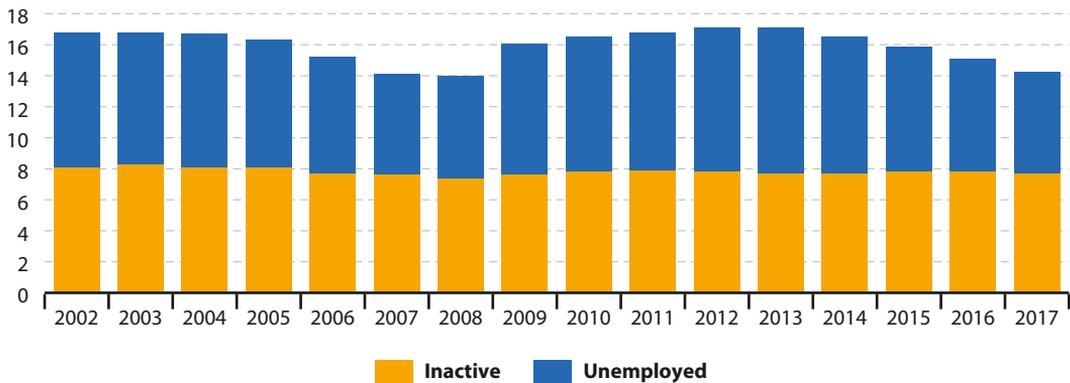
⁽²⁵⁾ The youth unemployment rate may be high even if the number of unemployed persons is limited. This may be the case when the young labour force (i.e. the rate’s denominator) is relatively small. For more information, see: http://ec.europa.eu/eurostat/statistics-explained/index.php/Youth_unemployment

⁽²⁶⁾ Source: Eurostat (online data code: [lfsi_sup_a](#)).

⁽²⁷⁾ Source: Eurostat (online data code: [lfsi_sup_a](#)).

⁽²⁸⁾ Source: Eurostat (online data code: [lfsa_urgaed](#)).

Figure 1.9: Young people neither in employment nor in education and training, EU-28, 2002–2017
(% of population aged 18 to 24)



Note: Breaks in time series in 2003 and 2006.

Source: Eurostat (online data code: [edat_lfse_20](#))

(NEET) covers people aged 18 to 24 years. Low educational attainment is one of the key determinants of young people entering the NEET category. Other important factors include having a disability or coming from a migrant background ⁽²⁹⁾.

Being in the NEET category for a considerable period of time may put young people in a very difficult situation in the labour market. Over the long term, they might fail to gain new skills and face erosion of their existing skills, which in turn might lead to a higher risk of labour market and social exclusion. Such challenges as labour market segmentation and variability in the performance of education and training systems, the availability of quality work experience, and the effectiveness

of tailored support provided to young people by public employment services, are among the main reasons why young people experience difficulties in the transition from education to work ⁽³⁰⁾.

In 2017, 14.3% of 18 to 24 year olds were neither in employment nor in education, exposing themselves to the risk of labour market exclusion and dependence on social security (see Figure 1.9). This was an improvement since 2012 when the NEET rate for this age group peaked at 17.2%, but was still slightly higher than the 2008 low of 14.0%. In 2017, the NEET rate was higher for women (14.7%) than for men (13.9%). However, while women in the NEET category tended to be economically inactive, men were mostly unemployed.

⁽²⁹⁾ Eurofound, *Young people not in employment, education or training: Characteristics, costs and policy responses in Europe*, Publications Office of the European Union, Luxembourg, 2012, p. 2.

⁽³⁰⁾ European Commission, *Youth Employment, European thematic factsheet*, 2017, p. 7.



1.4 The relative size of the EU’s working age population is shrinking due to ageing



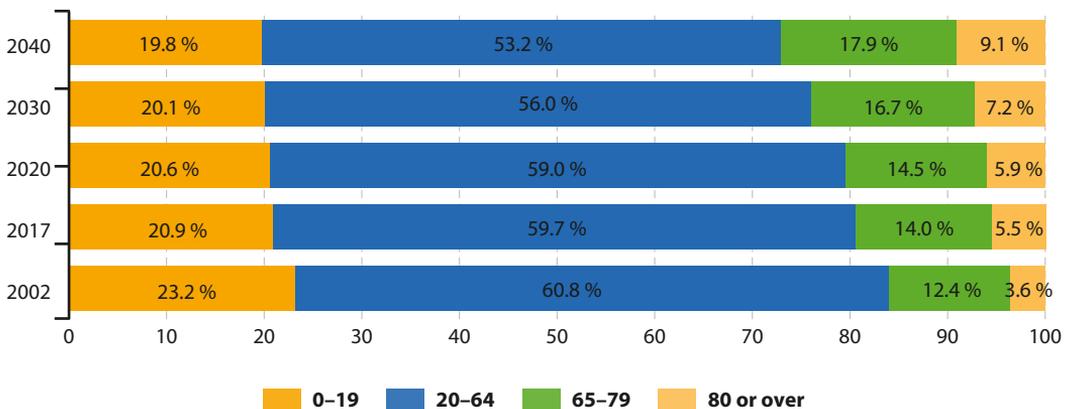
Despite steady population growth in recent decades, the EU’s sub-replacement fertility rates and rising life expectancy are contributing to a shrinking working-age

population and an increasing old-age dependency ratio. While in 2017 there were 305.3 million people of working age (20 to 64), the most recent population projections by Eurostat estimate it will decline in absolute terms by 1.1 million people by 2020.

Employment rates are the result of the interplay between the supply of and demand for workers in the labour market. Labour supply is characterised by the number of working-age people available to the labour market (largely determined by demographic structure) and the skills they offer (approximated by their education and training attainment). Despite their importance to labour supply, the demographic structure of the economically active population and its skills composition are hard to influence in the short term.

The EU is confronted with a growing but ageing population, driven by fertility rates and a continuous rise in life expectancy. This trend, which is already apparent in many Member States, will lead to a higher share of older people and a lower share of people aged 20 to 64 in the total population in the coming decades (see Figure 1.10). According to the European Commission Demography report 2015 ⁽³¹⁾, these trends mean the EU labour force is shrinking in relative terms, which may lead to future labour shortages. This is a threat to the welfare of all

Figure 1.10: Population age structure, by major age groups, EU-28, 2002, 2017, 2020, 2030, 2040 (%)



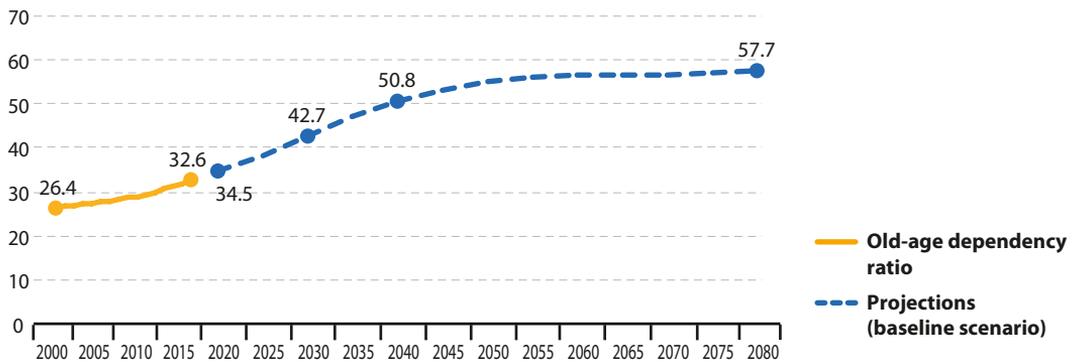
Note: 2020, 2030 and 2040 data stem from Eurostat population projections (base year 2015).

Source: Eurostat (online data codes: [demo_pjan](#) and [proj_15npms](#))

⁽³¹⁾ European Commission, *Demography report — 2015 edition*, Luxembourg, Publications Office of the European Union, 2015 (p. 43).

Figure 1.11: Old-age dependency ratio, EU-28, 2002–2080

(%)



Note: 2020–2080 data stem from Eurostat population projections (base year 2015).

Source: Eurostat (online data codes: [demo_pjan](#) and [proj_15npms](#))

generations unless the following conditions are met. First, the impact of a shrinking working-age population is cushioned by efforts to help a higher percentage of potential workers into employment and to extend the length of working lives. Second, population growth is sustained by increasing net immigration and fertility rates. Third, productivity is increased through sustained investment ⁽³²⁾.

Between 2002 and 2017 the number of older people aged 65 and above increased by 26.9%. The rise was particularly steep for the group aged 80 or over (by 58.1%). At the same time, the working age population aged 20 to 64 grew only slightly, by 2.7% over the same period. In contrast, the number of 0 to 19 year olds fell by 5.7%.

The most recent population projections ⁽³³⁾ foresee a continuation of these trends, with further growth in the number of older people accompanied by a shrinkage of the share of the 20 to 64 age group: from 59.7% in 2017 to 56.0% in 2030 and 53.2% in 2040 (see Figure 1.10). This amounts to a decrease of more than 12 million people by 2030 and more than 24 million by 2040 in this age group. At the same time, the number of older people aged 65 or over will grow by 25.8 million by 2030, meaning

that in 2030 almost every fourth person in the EU will be 65 or above.

One of the important factors contributing to the EU demographic structure is the ageing of the 'baby-boomers' who were born between 1946 and 1964 and are now entering their 60s. The baby-boom generation resulted from high fertility rates in several European countries over a 20- to 30-year period to the mid-1960s. They continue to comprise a significant part of the working population, but the first of this large group are now reaching retirement age.

Increasing life expectancy and shrinking annual net migration inflows are also likely to influence the EU's demographic structure. Projections show that life expectancy of the EU population at birth is likely to increase by 7.8 years for males and 6.6 years for females by 2070 in comparison to 2016 ⁽³⁴⁾. Net migration flows are projected to halve by 2070 compared with 2016.

Recently, as a result of the demographic changes, the old-age dependency ratio increased from 26.4% in 2002 to 32.6% in 2017. This ratio shows the share of the population aged 65 and above compared with the population of 20 to 64 year

⁽³²⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, p. 13.

⁽³³⁾ Eurostat, *Population projections data, EUROPOP2015 main scenario*.

⁽³⁴⁾ European Commission, *The 2018 Ageing Report, Underlying Assumptions & Projection Methodologies*, 2017, p. 3.

olds. This means that while there were 3.8 people of working age for every dependent person over 65 in the EU in 2002, this number had fallen to 3.1 people by 2017. By 2030, the old-age dependency ratio is projected to reach 42.7%, meaning there will be only 2.3 people of working age for

every dependent person over 65. As shown in Figure 1.11, the EU's old-age dependency ratio is projected to increase until 2060 and then to stabilise at slightly above 55%, which corresponds to about 1.7 people of working age for every person over 65.

1.5 Job creation and decent work



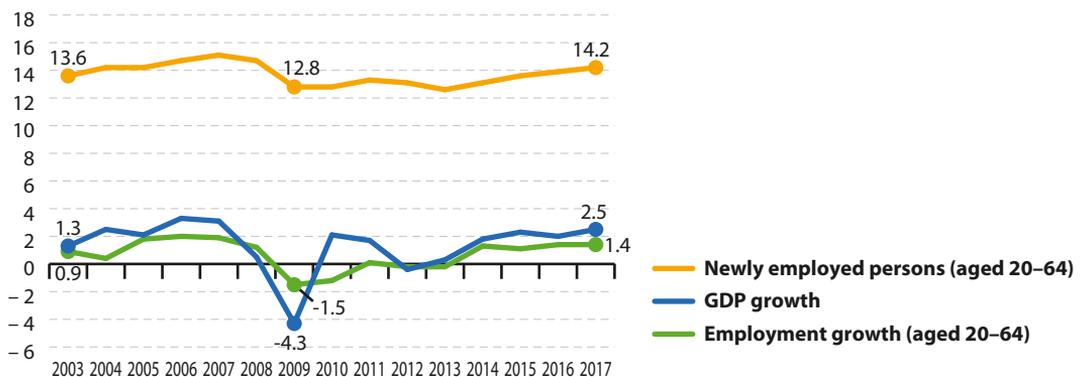
Following the recovery in GDP and employment growth, the share of newly employed people (those whose job started within the last 12 months) is at its highest level since 2009.

Between 2008 and 2017, employment grew fastest in the professional, scientific and technical activities and the administrative sector, while it declined the

most in the construction, agriculture and manufacturing sectors. Men were the most affected by this decline.

In the EU, young people are at higher risk of being in involuntary part-time and fixed-term employment than other age groups, with 13.9% of 15 to 24 year olds involuntarily employed on time-limited contracts and 8.0% involuntarily in part-time work in 2017.

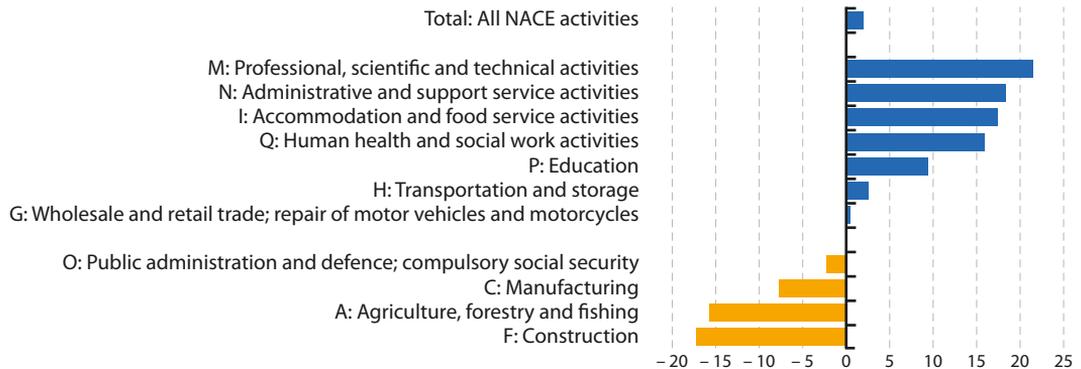
Figure 1.12: GDP growth, employment growth and newly employed persons, EU-28, 2003–2017 (%)



Note: Employment growth and newly employed persons: break in time series in 2005. Employment growth: percentage change over previous period; newly employed persons: share of persons aged 20 to 64 whose job started within the last 12 months in total employment).

Source: Eurostat (online data codes: nama_10_gdp, lfsa_pganws and lfsa_ewnasn)

Figure 1.13: Employment growth by economic sector, age group 20-64, EU-28, 2008–2017 (%)



Note: Sectors depicted in the figure are those whose share in the total employment is close to or more than 4%.

Source: Eurostat (online data code: [lfsa_egan2](#)).

Employment (and unemployment) rates are closely linked to the business cycle. Usually this is expressed in terms of growth in gross domestic product (GDP), which can be seen as a measure of an economy's dynamism and its capacity to create jobs. Figure 1.12 illustrates this relationship, showing similar patterns for **GDP growth, employment growth and the share of newly employed people in total employment** ⁽³⁵⁾.

As Figure 1.12 shows, GDP growth has brought about a job-rich recovery over the past four years, with annual employment growth rates between 1.1 % and 1.4 % for 2014 to 2017. However, GDP growth is not necessarily associated with employment growth. In 2010 and 2011, GDP also grew, while employment stagnated. The pattern of 'jobless growth' stems from the fact that GDP grew mostly because of an increase in productivity and hours worked, leaving little room for employment growth ⁽³⁶⁾.

The link between GDP growth and employment growth is also reflected in the share of newly employed people in total employment. This dropped considerably in 2009, following the contractions in GDP and employment in the same year. In 2017, following the recovery in GDP and employment growth, the share of newly

employed people was at its highest level since 2009, at 14.2 %.

1.5.1 Professional, administrative, scientific and technical sectors show the strongest signs of jobs recovery

Jobs growth is unevenly distributed across economic sectors and strongly dependent on general economic conditions as well as developments within these sectors. Overall, total employment across all EU economic sectors rose slightly between 2008 and 2017 (see Figure 1.13). Employment in the professional, scientific and technical activities sector grew the fastest over this period (by 21.5 %, which equals to 2.2 million people), followed by traditional service sectors (by 18.3 % or 1.4 million people in administrative and support service activities and by 17.4 % or 1.5 million people in accommodation and food service activities).

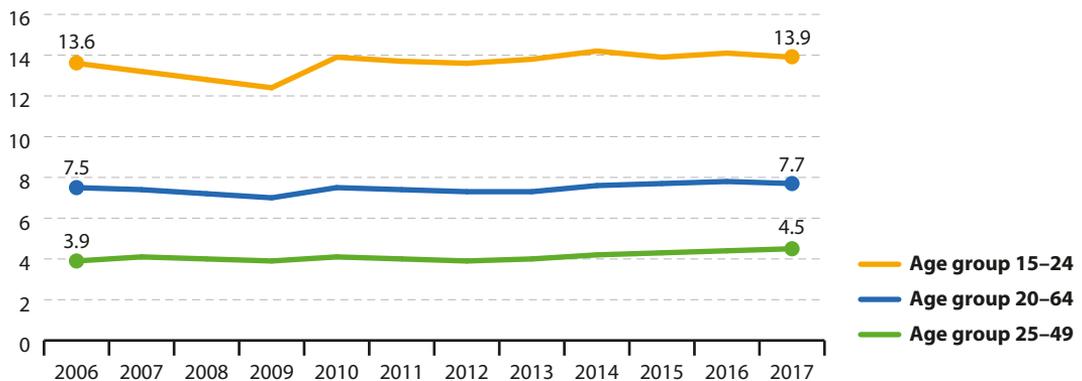
However, the construction, agriculture and manufacturing sectors, which were also heavily affected by the economic crisis, showed the strongest declines between 2008 and 2017. These three sectors accounted for 96 % of the jobs lost during the economic crisis and the subsequent

⁽³⁵⁾ People who started their job within the past 12 months.

⁽³⁶⁾ European Commission, *Employment and Social Developments in Europe 2012*, 2013.



Figure 1.14: Involuntary temporary employees by age group, EU-28, 2006–2017
(% of total employees)



Source: Eurostat (online data codes: [lfsa_etgar](#))

recovery (from 2008 to 2016) ⁽³⁷⁾. Because these sectors are male-dominated, men have been affected more strongly by their decline than woman. For instance, the number of women employed in construction fell by 10.1% (1.7 million people) between 2008 and 2017, while for men this decline was almost twice as strong, at 18.0% (2.9 million people).

1.5.2 Involuntary non-standard work contracts most widespread among young people

In 2017, 13.4% of employees aged 20 to 64 in the EU were working on a fixed-term contract. Total temporary employment has been relatively stable around 13% over the past decade, with a slight upward tendency. It was most widespread among young people, with 44.0% of 15 to 24 year olds working on a time-limited contract. Temporary employment was much lower among 25 to 49 year olds (13.3%) and for older people aged 50 to 64 (7.0%) ⁽³⁸⁾.

The significant over-representation of young people in temporary work reflects not only changes in labour market demand, but also structural features of educational systems. In many

Member States, for instance, temporary contracts for youth are associated with participation in education and training or a probationary period. In such cases, these contracts can potentially act as a stepping stone and support successful school-to-work transitions ⁽³⁹⁾.

However, for many people having a fixed-term contract rather than a permanent one is not always a personal choice. In this respect, data on involuntary temporary employment provides a better insight into the excessive use of fixed-term contracts. In 2017, 7.7% of employees aged 20 to 64 year olds were involuntarily working on temporary contracts (see Figure 1.14). Again, the share was much higher for young people aged 15 to 24, at 13.9%. With some fluctuations, the overall trend since 2006 indicates growing use of involuntary fixed-term contracts. Although fixed-term contracts could create additional opportunities and reduce youth unemployment, there is also the risk that temporary work may represent ‘dead ends’ rather than ‘stepping stones’ for young people towards permanent jobs ⁽⁴⁰⁾.

The situation is quite similar when looking at part-time versus full-time contracts. In 2017, 18.7% of all employed people aged 20 to 64 in the EU worked

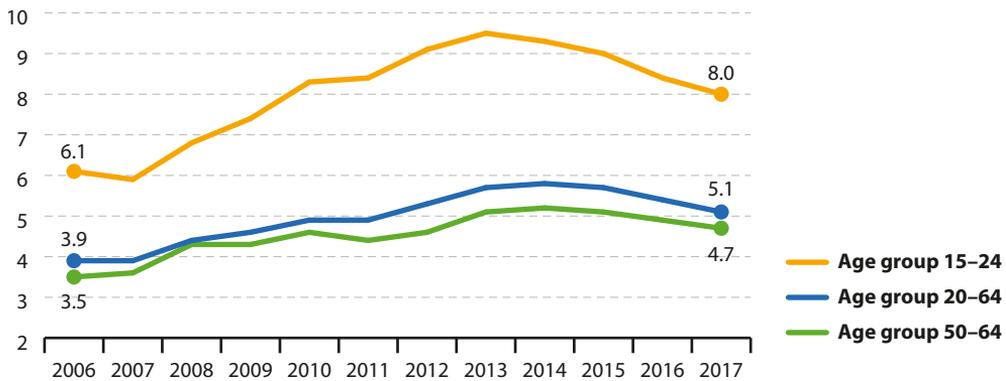
⁽³⁷⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, p. 27.

⁽³⁸⁾ Source: Eurostat (online data code: [lfsa_etgar](#)).

⁽³⁹⁾ European Commission, *Youth Employment*, European thematic factsheet, 2017, p. 8.

⁽⁴⁰⁾ European Commission and EU Council, *Joint Employment Report 2018*, 2018, p. 49.

Figure 1.15: Involuntary part-time employment by age group, EU-28, 2006–2017
(% of total employment)



Note: Data for 2008–2010 have low reliability.

Source: Eurostat (online data codes: [lfsa_epgar](#) and [lfsa_epgaed](#))

on a part-time contract⁽⁴¹⁾. More than a quarter (27.1 %) were in involuntary part-time employment, meaning they were underemployed. The share of involuntary part-time employed in total employment rose from 4.4 % in 2008 to 5.1 % in 2017. As with involuntary temporary employment, young people are affected the most (see Figure 1.15). For all age groups the share of women in involuntary part-time employment exceeded that of men. The gender gap is widening with age, from 3.2 percentage points for 15 to 24 year olds to 4.9 percentage points for the 50 to 64 age group.

While part-time work can provide flexibility and better reconciliation between work and private life, and also be a valuable option for individuals who wish to be active in the labour market but cannot for health or disability reasons work full-time, it is also associated with low pay and might

lead to poverty and social exclusion⁽⁴²⁾. In 2017, more than one in three younger workers and one in four prime-age and older workers worked part time not by choice but because they could not find full-time employment, and the share of involuntary part-time work has increased over the past decade. The economic crisis was partly responsible for this underemployment but it also continues a trend that preceded the crisis, which suggests it is likely to be a structural feature of the labour market⁽⁴³⁾. In recent decades, there has been an increase in non-standard labour relationships in the EU, indicating a growing distance of firms from long-term commitments to workers, caused by socio-economic transformations, such as the transition towards a service economy, technological developments and pressures from cost-saving strategies spurred by firms' internationalisation⁽⁴⁴⁾.

⁽⁴¹⁾ Source: Eurostat (online data code: [lfsa_epgaed](#)).

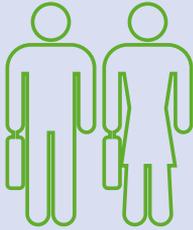
⁽⁴²⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, pp. 76–77.

⁽⁴³⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, p. 78.

⁽⁴⁴⁾ European Commission, *Labour Market and Wage Developments in Europe, Annual Review 2017*, 2017, pp. 78–79.



1.6 Skills mismatches in the labour market



Recent Cedefop projections show that in the EU the distribution of skills in the labour force largely matches the qualification requirements of the labour market. However, labour supply exceeds the demand for all qualifications types.

In 2017, 17.8 million people with tertiary education in the EU worked in occupations below their qualification level.

Data on job vacancies point to a possible deterioration in the job-matching process between 2010 and 2014, when unemployment rose while job vacancies remained stable or increased. However, between 2014 and 2017, the labour market expanded with unemployment rates falling and vacancy rates rising.

A well-functioning labour market depends largely on matching the labour force's skills and qualifications to those demanded by employers. Although some skills mismatch is inevitable, high and persistent mismatches can be costly for employers, workers and society at large. Technological and demographic changes remain a challenge in the EU and might contribute to skills mismatches in the future. Matching educational outcomes and labour market needs

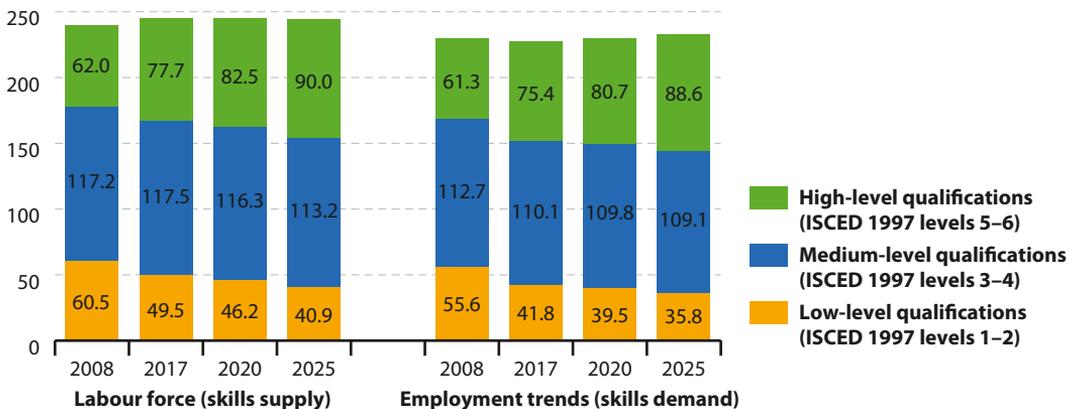
is a key component of the Europe 2020 strategy. In particular, the impact of the economic crisis has increased the need to better understand where future skills shortages are likely to lie in the EU ⁽⁴⁵⁾.

1.6.1 Changes in labour force skills outpacing changes in employment trends

According to estimates from the European Centre for the Development of Vocational Training

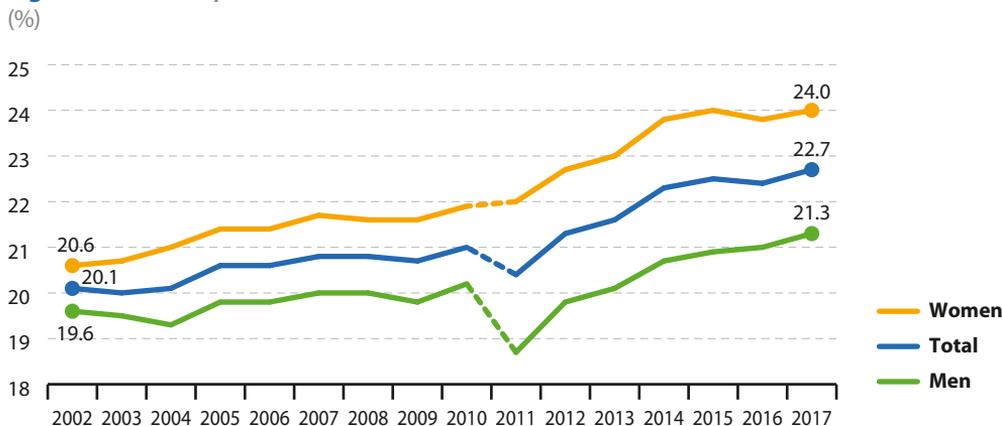
Figure 1.16: Labour force and employment trends by qualification, EU-28, 2008, 2017, 2020 and 2025

(million persons)



Source: Cedefop 2016 skills forecast

⁽⁴⁵⁾ European Commission, *An Agenda for new skills and jobs: A European contribution towards full employment*, COM(2010) 682 final, Strasbourg, 2010.

Figure 1.17: Over-qualification rate, EU-28, 2002–2017

Note: Breaks in time series in 2005, 2011 and 2014. Share of graduates in tertiary education in employment (ISCED 2011 level 5 to 8) whose occupations (ISCO 2008 major groups 4 to 9) do not to require this level of education, over the total employment of tertiary graduates.

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

Cedefop ⁽⁴⁶⁾, the distribution of skills in the labour force largely matched the qualification requirements of the labour market in 2017.

However, labour supply exceeded demand for all qualification types, with the difference being particularly high for the low- and medium-level qualifications. The demand for a skilled labour force is likely to continue to grow; the most recent forecasts from Cedefop indicate that between 2017 and 2025 more than 13 million jobs requiring high educational attainment will be created, while low-qualified jobs will decline by almost 6 million (see Figure 1.16).

Overall, the Cedefop forecasts show a parallel rise in skills from both the demand and the supply side until 2025, however, skills supply is expected to grow slightly faster than skills demand. For instance, the share of the labour force holding only primary or lower secondary education is expected to decrease from 20.2% in 2017 to 16.8% in 2025, whereas the share of positions for people with low-level qualifications are projected to fall from 18.4% to 15.4%. However, this parallel development does not prevent potential skills

mismatches, such as over-qualification (see the next section).

1.6.2 Over-qualification rates increased in the EU between 2002 and 2017, and the gender gap widened

Skills mismatch is most commonly seen as the inability of employers to fill vacancies despite high unemployment. This can hamper economic productivity and individual potential, especially when more highly educated people are trapped in jobs without opportunities to continually develop and use their skills ⁽⁴⁷⁾. According to the Cedefop survey results, in 2014 about 25% of highly qualified first job entrants were overqualified for their position ⁽⁴⁸⁾.

As no commonly agreed indicators to measure skills mismatches within the European Statistical System (ESS) exist, Eurostat has developed some experimental statistics to foster the policy debate on this issue. The over-qualification rate refers to 'vertical' skills mismatches, looking into discrepancies between educational attainment levels and occupations ⁽⁴⁹⁾. Figure 1.17 shows

⁽⁴⁶⁾ The Cedefop skills forecasts are available at <http://www.cedefop.europa.eu/en/events-and-projects/projects/forecasting-skill-demand-and-supply/data-visualisations>

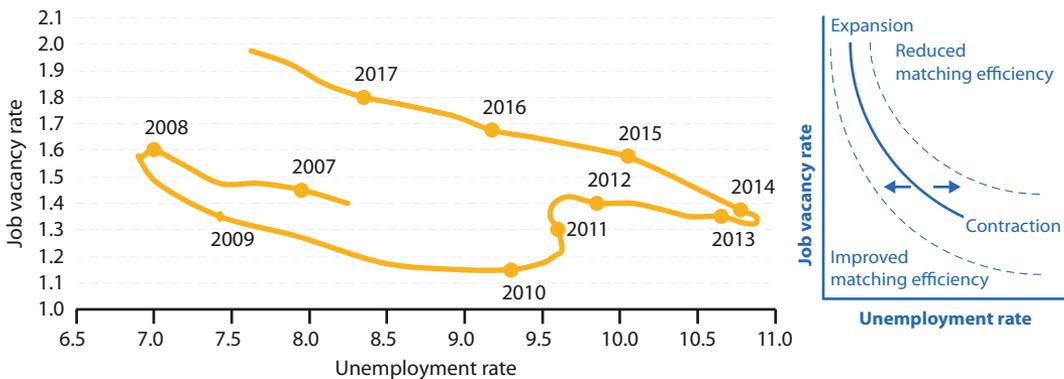
⁽⁴⁷⁾ Cedefop, *Insights into skill shortages and skill mismatch: Learning from Cedefop's European skills and jobs survey*, 2018, p. 67.

⁽⁴⁸⁾ Cedefop, *Matching skills and jobs in Europe, Insights from Cedefop's European skills and jobs survey*, 2015, p. 2.

⁽⁴⁹⁾ See <http://ec.europa.eu/eurostat/web/skills/background/experimental-statistics>



Figure 1.18: Beveridge curve, EU-28, 2006–2017
(%)



Note: Data for 2006 (Q4) to 2010 (Q4) refer to EU-27; data points with years (as caption) refer to the first quarter of the year (data have been smoothed over four quarters).

Source: Eurostat (online data codes: [jvs_q_nace2](#) and [une_rt_q](#))

the trends in the over-qualification rate in the EU from 2002 to 2017. Over-qualification refers to the situation where a person has a level of skill or education higher than is required for his or her job. Here, this is measured as the share of graduates in tertiary education in employment whose occupations do not require this level of education, over the total employment of tertiary graduates ⁽⁵⁰⁾.

The share of people with tertiary education working in such occupations has increased almost steadily in the EU since 2002, reaching a share of 22.7% of the total employment of tertiary graduates in 2017. This is equal to 17.8 million people in the EU. In 2017, women with tertiary education were more likely to be overqualified than men, with 24.0% and 21.3% respectively.

There are many reasons why people may have to take on a job below their qualification level. Young workers are at higher risk of being overqualified for their jobs because they are more likely to have had a higher education than prime-age and older workers ⁽⁵¹⁾. Women also tend to be more

overqualified than men. This might be because women in general have higher qualification levels (see the chapter on ‘Education’, page 87). Another reason may be that they are more likely to take on childcare responsibilities and so are more willing to accept jobs that do not match their education but allow for a more flexible work-care balance. Women also face ‘glass ceiling’ effects, as they continue to be less likely to be promoted even though they are more likely to be highly educated ⁽⁵²⁾.

1.6.3 Signs of economic expansion with increasing job vacancies and decreasing unemployment

Job vacancy statistics provide an insight into the demand side of the labour market, in particular the unmet labour demand. A job vacancy is defined as a paid post that is newly created, unoccupied or about to become vacant. The employer must be taking active steps and be prepared to take further steps to find a suitable candidate from outside the enterprise. The employer must also intend to fill

⁽⁵⁰⁾ According to the ILO’s International Standard Classification of Occupations (ISCO), the following occupations do not require tertiary education: clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers, craft and related trades workers, plant and machine operators, assemblers and elementary occupations. See International Labour Organisation, *International Standard Classification of Occupations*.

⁽⁵¹⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, p. 75.

⁽⁵²⁾ European Commission, *Employment and Social Developments in Europe, Annual Review 2017*, 2017, p. 75.

the position either immediately or within a specific time period. A vacant post that is only open to internal candidates is not treated as a 'job vacancy'.

Quarterly job vacancy statistics are used for business cycle analysis and for assessing mismatches in labour markets. Of particular interest is the relationship between vacancies and unemployment. The so-called Beveridge curve reflects their negative correlation (see Figure 1.18). During economic contractions there are few vacancies and high unemployment, while during expansions there are more vacancies and the unemployment rate is low.

Structural changes in the economy can cause the Beveridge curve to shift. During times of uneven growth across regions or industries — when labour supply and demand are not matched efficiently — vacancy and unemployment rates can rise at the same time. Conversely, they can both decrease when the matching-efficiency of the labour market improves. This could be, for example, due to a better flow of job vacancy information thanks to the internet. Empirical analysis of the curve can be challenging because

both movements along the curve and shifts can take place at the same time with different intensities.

Figure 1.18 shows three phases in the development of job vacancies and unemployment in the EU since 2008. From 2008 to 2010 a movement along the Beveridge curve confirmed the contraction of the EU economy, with falling vacancies and rising unemployment levels. In the following years, the movements of the Beveridge curve itself pointed to a deterioration in the matching process of labour demand and supply. Since the end of 2013, a movement along the curve has been visible again, mirroring the economic expansion with growing job vacancies and falling unemployment levels⁽⁵³⁾. In 2017, especially in the second semester, vacancies jumped abruptly and by more than the decline in unemployment, hinting at the possibility that skill mismatches are further constraining an improvement the unemployment rate. This would imply that the jobless rate is approaching its structural rate, which is the rate that could not be further reduced by economic growth alone⁽⁵⁴⁾.

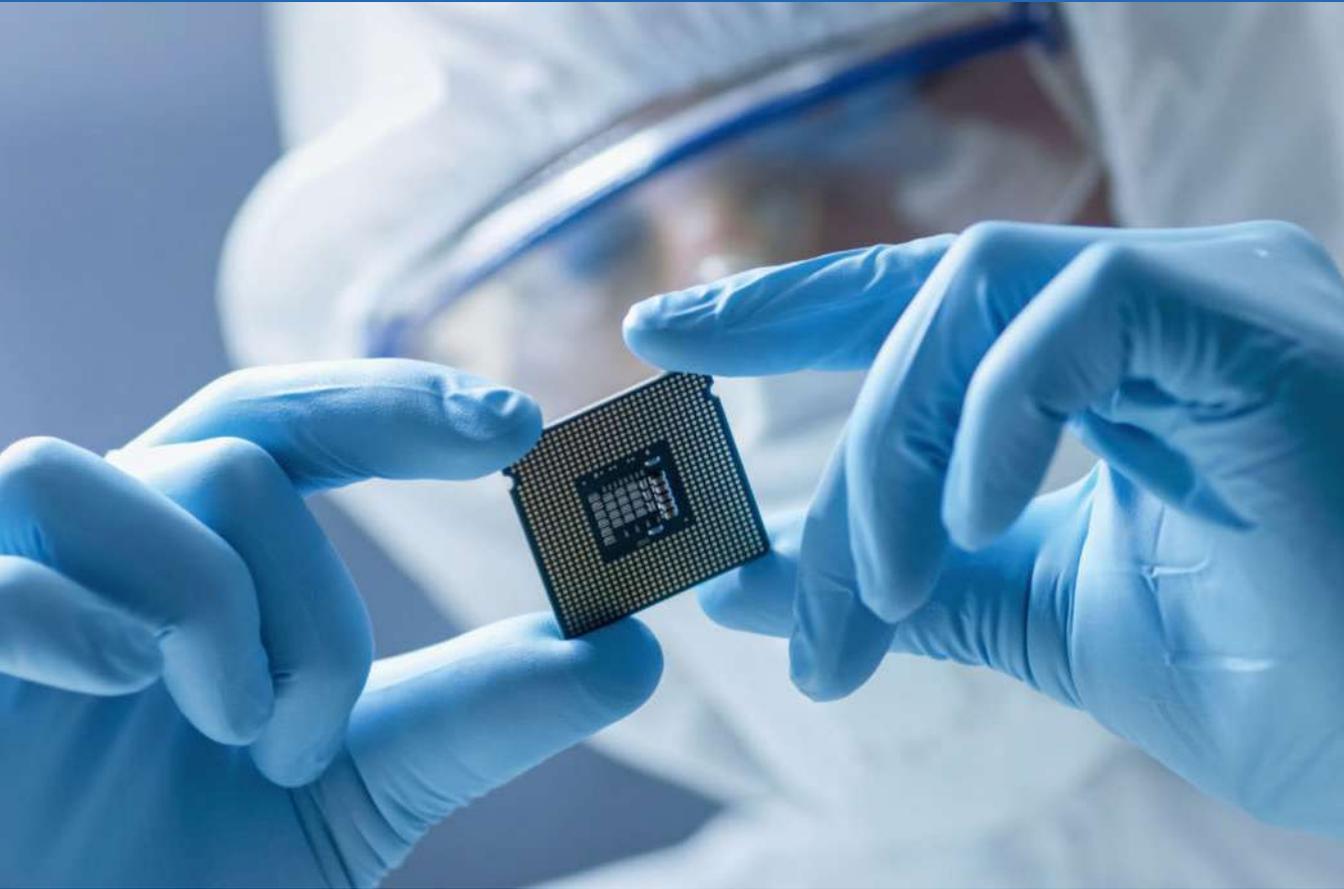
⁽⁵³⁾ Post-crisis movements in the euro-area Beveridge curve were the result of a mix of temporary, demand-related and structural factors.

The outward shift of the Beveridge curve since 2008 observed at the aggregate level was to some extent linked to worsened labour market matching, with however major differences across countries (Labour market and wage development 2014).

⁽⁵⁴⁾ European Commission, *Labour Market and Wage Developments in Europe, Annual Review 2017*, 2017.

2

R&D and innovation



2.1 R&D and innovation — why do they matter?

R&D and innovation are key policy components of the Europe 2020 strategy. Innovative products and services not only contribute to the strategy's smart growth goal but also to its inclusiveness and sustainability objectives. Introducing new ideas to the market promotes industrial competitiveness, job creation, labour productivity growth and a more efficient use of resources.

R&D and innovation contribute to a well-functioning knowledge-based economy. Most importantly, they are central to providing the scientific and technical solutions needed to meet global societal challenges such as climate change and clean energy, security, and active and healthy ageing. The three main goals for EU research and innovation policy can be summarised as Open Innovation, Open Science and Open to the World ⁽¹⁾.

The development of new technologies alone will not be enough to solve many of the 'grand' societal challenges. Fundamental transformations in businesses and manufacturing processes, provision of services, the way society organises itself and other non-technological innovations will be equally important.

The challenges facing society also threaten the well-being of the population and can have dire social, economic and environmental implications inside and outside the EU. Research and innovation can not only help to address these challenges, but also to exploit the new market opportunities they offer.

A number of important EU policy strategies and initiatives address such win-win situations. Horizon 2020 — the EU's research and innovation programme for the period 2014 to 2020 — is helping to bring ideas from the lab to the market by providing nearly EUR 75 billion ⁽²⁾ of funding for research projects aimed at tackling societal

Europe 2020 strategy target on R&D

The Europe 2020 strategy sets the target of 'improving the conditions for innovation, research and development' ^(a), in particular with the aim of 'increasing combined public and private investment in R&D to 3 % of GDP' by 2020 ^(b).

^(a) European Council conclusions 17 June 2010, EUCO 13/10, Brussels, 2010.

^(b) European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels, 2014 (p. 12).

challenges, generating excellence in science and fostering industrial leadership ⁽³⁾. The Investment Plan for Europe through the European Fund for Strategic Investments invests heavily in innovation-related projects and small and medium-sized enterprises (SMEs).

The importance of R&D and innovation for fulfilling the Europe 2020 strategy's ambitions is evident in their close interlinkages with the strategy's other objectives. The R&D target is closely related to the strategy's tertiary educational attainment and employment targets (see the chapters on 'Employment', page 23, and 'Education', page 87).

Public investment in R&D generates the knowledge base and talent that higher educational organisations and innovative companies need. Higher public investment in R&D also leverages private investment in research and innovation, providing new jobs in business and academia and ultimately increasing demand for scientists and researchers in the labour market. R&D investment spurs innovation, which

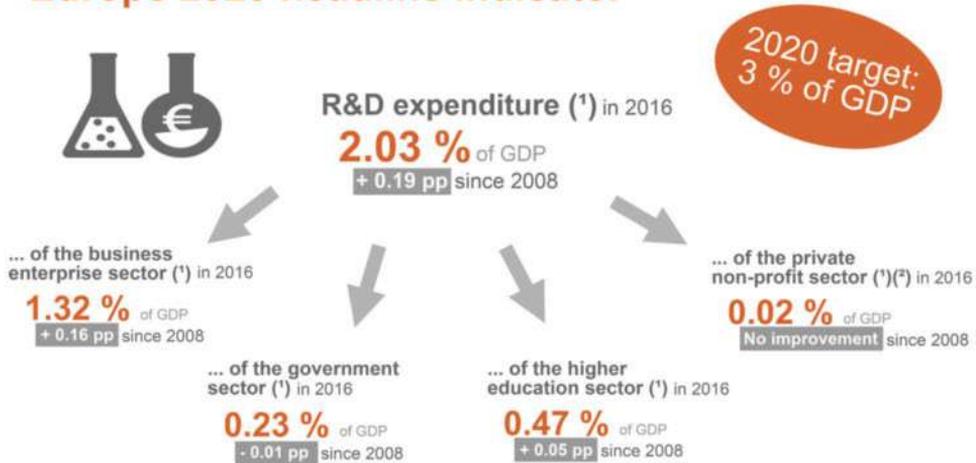
⁽¹⁾ European Commission, *Open innovation, open science, open to the world — a vision for Europe*, Brussels 2016.

⁽²⁾ Set in current prices.

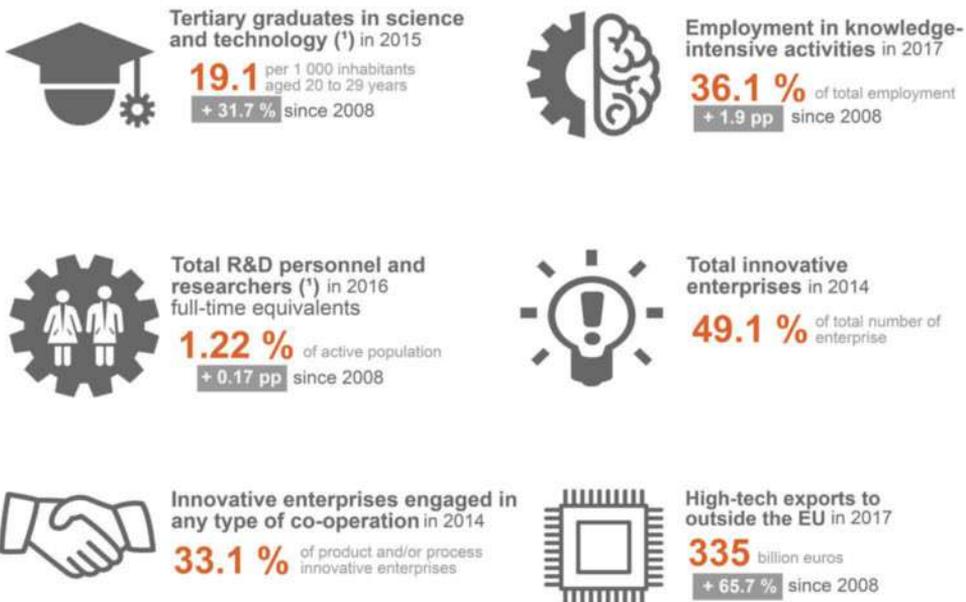
⁽³⁾ Regulation (EU) 2015/1017 of the European Parliament and the Council of 25 June 2015 on the European Fund for Strategic Investments, the European Investment Advisory Hub and the European Investment Project Portal and amending Regulations (EU) No 1291/2013 and (EU) No 1316/2013 — the European Fund for Strategic Investments.

R&D and innovation in the EU

Europe 2020 headline indicator



Contextual indicators



⁽¹⁾ 2016 data are provisional.

⁽²⁾ 2004–2015 data are estimates.

Source: Eurostat (online data codes: t2020_20, rd_e_gerdtot, tps00188, educ_uoe_grad04, htec_kia_emp2, rd_p_persocc, inn_cis9_type and htec_trd_group4)

contributes to industrial competitiveness and job creation.

The Europe 2020 target on R&D is also linked to the strategy's climate change and energy targets (see the chapter on 'Climate change

and energy'; page 65). In particular, the transition to a green and low-carbon economy and adaptation to climate change will require significant innovation, from small incremental changes to major technological breakthroughs.

2.2 Resources allocated to research and development in the EU

After a period of slow but rising growth, gross domestic expenditure on R&D as a percentage of GDP ('R&D intensity') in the EU stagnated at around 2.03 % between 2014 and 2016. As a result, the 3 % target is still some distance away.

The business enterprise sector continues to be the biggest investor in R&D in the EU, accounting for 64.9 % of total R&D expenditure in 2016. It has also recorded the highest increase since 2004. Although the higher education sector (for example, universities) and government sectors have lower R&D shares and have been growing at a slower pace, they also play an important

role in the long-term stability of R&D expenditure.

R&D expenditure is highest in northern and western European countries, which are also characterised by predominantly business-financed R&D.



Regions with the highest R&D intensity in the EU are found in Germany, Austria, the United Kingdom, Belgium, France and the Nordic countries. The Braunschweig region in Germany recorded the highest R&D intensity in the EU in 2015 at 9.5 %.

The headline indicator '**gross domestic expenditure on R&D**', also referred to as R&D intensity, shows the proportion of gross domestic product (GDP) dedicated to research and development ⁽⁴⁾.

For three consecutive years R&D expenditure in the EU has stagnated around 2.03 % of GDP, further decreasing the chances that the EU will reach its 3 % target. At the global level, the EU accounts for one-fifth of the world's R&D investment ⁽⁵⁾. Nevertheless, the EU's R&D intensity is still lagging behind other advanced economies, such as the United States, Japan and South Korea, with only

the best performing Member States surpassing the United States (see Figure 2.2). The EU's relative position in the global R&D landscape has also weakened because of the rapid rise of R&D expenditure in China. In 2015, China ⁽⁶⁾ overtook the EU by spending 2.07 % of its GDP on R&D.

2.2.1 R&D spending up in two-thirds of Member States since 2008

Considerable differences across countries underlie the overall EU trend, with R&D intensity ranging from 0.44 % to 3.25 % in 2016 (see Figure 2.2). Differences in R&D investment, in particular

⁽⁴⁾ 'Research and experimental development (R&D) comprises creative work undertaken on a systematic basis to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications' (Frascati Manual, 2002 edition, p. 63).

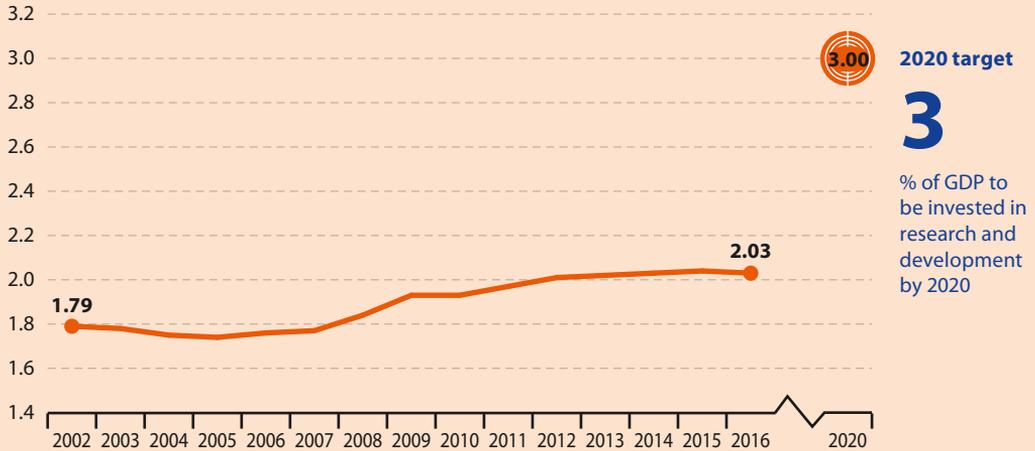
⁽⁵⁾ European Commission, *Science, Research and Innovation Performance of the EU*, 2018, p. 10.

⁽⁶⁾ Data refer to China excluding Hong Kong.



Europe 2020 headline indicator

Figure 2.1: Gross domestic expenditure on R&D, EU-28, 2002–2016 (% of GDP)



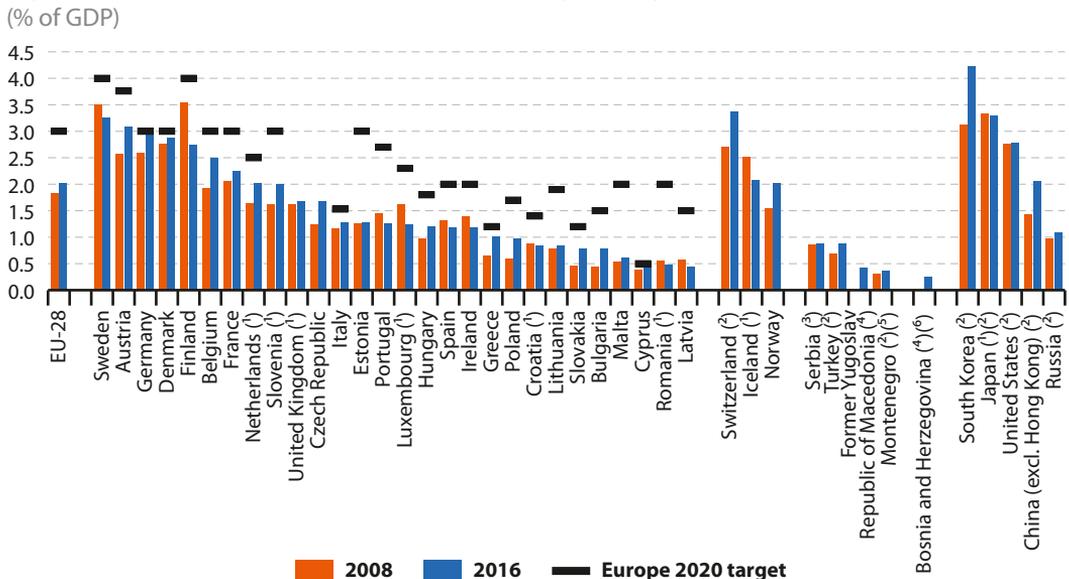
Note: Data for 2002 are estimates, 2016 data are provisional.

Source: Eurostat (online data code: t2020_20)

3

% of GDP to be invested in research and development by 2020

Figure 2.2: Gross domestic expenditure on R&D, by country, 2008 and 2016 (% of GDP)



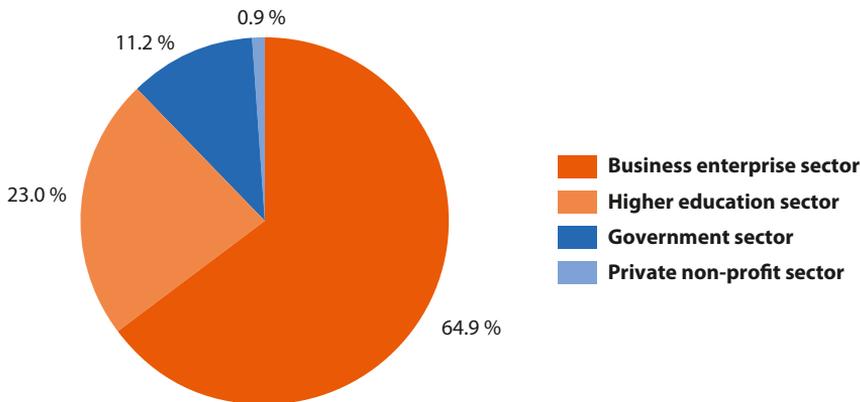
(1) Break(s) in time series between 2008 and 2016.
 (2) 2015 data (instead of 2016).
 (3) 2009 data (instead of 2008).

(4) No data for 2008.
 (5) 2011 data (instead of 2008).
 (6) 2014 data (instead of 2016).

Source: Eurostat (online data code: t2020_20)

Figure 2.3: R&D expenditure, by sectors of performance, EU-28, 2016

(%)



Note: Provisional data.

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

business R&D spending, between countries generally reflect differences in their industrial structures, knowledge intensity of sectors and research capabilities ⁽⁷⁾.

R&D intensity increased in most Member States between 2008 and 2016. It is to be noted that Finland was a leader in R&D intensity in 2008, but its spending contracted to below 3.00% of GDP in 2016. The negative trends experienced in both Finland and Sweden could be partly attributed to difficulties in their information and communication technology (ICT) sectors ⁽⁸⁾.

2.2.2 Almost two-thirds of R&D spending took place in the business sector

R&D activities are performed by four main institutional sectors: business enterprise, government, higher education and the private non-profit sector. Figure 2.3 illustrates the **distribution of R&D expenditure between these four sectors in 2016**. The business enterprise sector, which accounted for 64.9% of

total R&D expenditure in the EU (EUR 196.6 billion), continues to be the biggest investor in R&D.

Although it contributes a more modest share of 11.2% (EUR 33.9 billion), the government sector also plays an important role, especially in terms of the long-term stability of R&D expenditure. This includes performing 'far from the market' research ⁽⁹⁾ and research that is of social or environmental importance (for example, health, quality of life, environment and defence). It also establishes the basis for R&D activities and compensates for reduced business R&D expenditure during economic downturns to help avoid a decline in the build-up of capital stocks and harm to long-term productivity growth ⁽¹⁰⁾.

Between 2004 and 2016, R&D expenditure as a percentage of GDP increased for the two major R&D sectors: business enterprise and higher education (see Figure 2.4).

Considering the sectoral distribution of R&D spending, it is not surprising that annual trends

⁽⁷⁾ Reinstaller, A., Unterlass, F., *Comparing business R&D across countries over time: a decomposition exercise using data for the EU27*, Appl. Econ, 2012, Lett.19, 1143–1148.

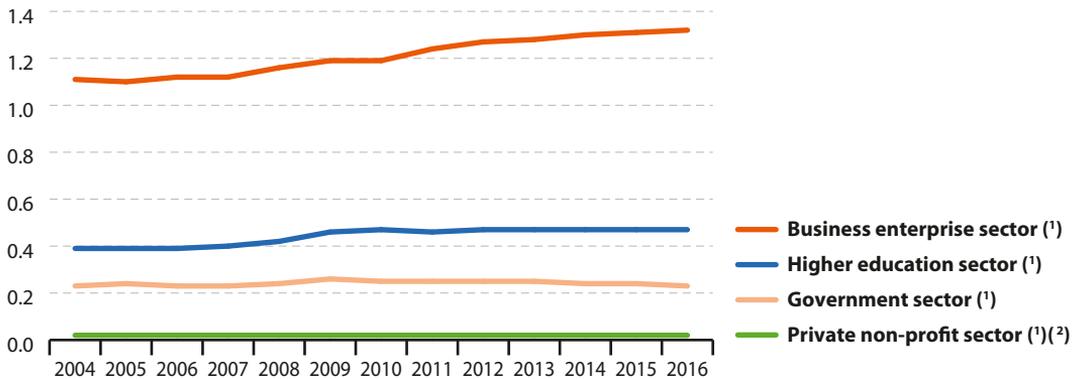
⁽⁸⁾ European Commission, *Science, Research and Innovation Performance of the EU*, Brussels, 2016, p. 34.

⁽⁹⁾ The market does not provide sufficient incentives for this type of research due to the non-appropriable, public good, intangible character of knowledge and the risky nature of research. For more information see: OECD. STI policy profiles. Public research policy: https://www.oecd-ilibrary.org/docserver/sti_outlook-2012-en.pdf?expires=1525260329&id=id&accname=ocid177428&checksum=7D7699964A9ED3C86FBFB2BBFE638E0E

⁽¹⁰⁾ OECD, *Public investment in R&D in reaction to economic crises — A longitudinal study for OECD countries*, 2016.



Figure 2.4: Gross domestic expenditure on R&D, by sectors of performance, EU-28, 2004–2016
(% of GDP)



(¹) 2016 data are provisional.

(²) 2004–2015 data are estimates.

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

in gross domestic expenditure on R&D follow the R&D expenditure patterns of the business enterprise sector. Business R&D expenditure typically reflects the cyclical behaviour of growth in gross domestic product (GDP). Indeed, the most significant drop in gross business R&D spending coincided with the slump in GDP growth in 2009, whereas it increased considerably in 2006 and 2011, during or after economic upturns. In comparison, public sector R&D expenditure (higher education and government) has been less cyclical and has grown more slowly over the same period.

Increasingly, governments complement direct R&D funding with indirect support in the form of tax incentives to promote business R&D and stimulate innovation and economic growth. According to 2015 OECD data, the amounts disbursed through tax incentives exceeded direct government funding for business R&D in 11 Member States (¹¹). These amounts of foregone State revenues are not included in the Government Budget Allocations to Research and Development (GBARD), and therefore, for these countries, the latter indicator understates public investments in R&D. This is especially the case with Ireland, France, Belgium,

Portugal and the Netherlands, where foregone tax revenue considerably exceeded public R&D funding allocated to companies in 2015 (¹²).

Currently in the EU only Germany, Estonia and Finland do not have any tax policy aimed at stimulating business R&D (¹³).

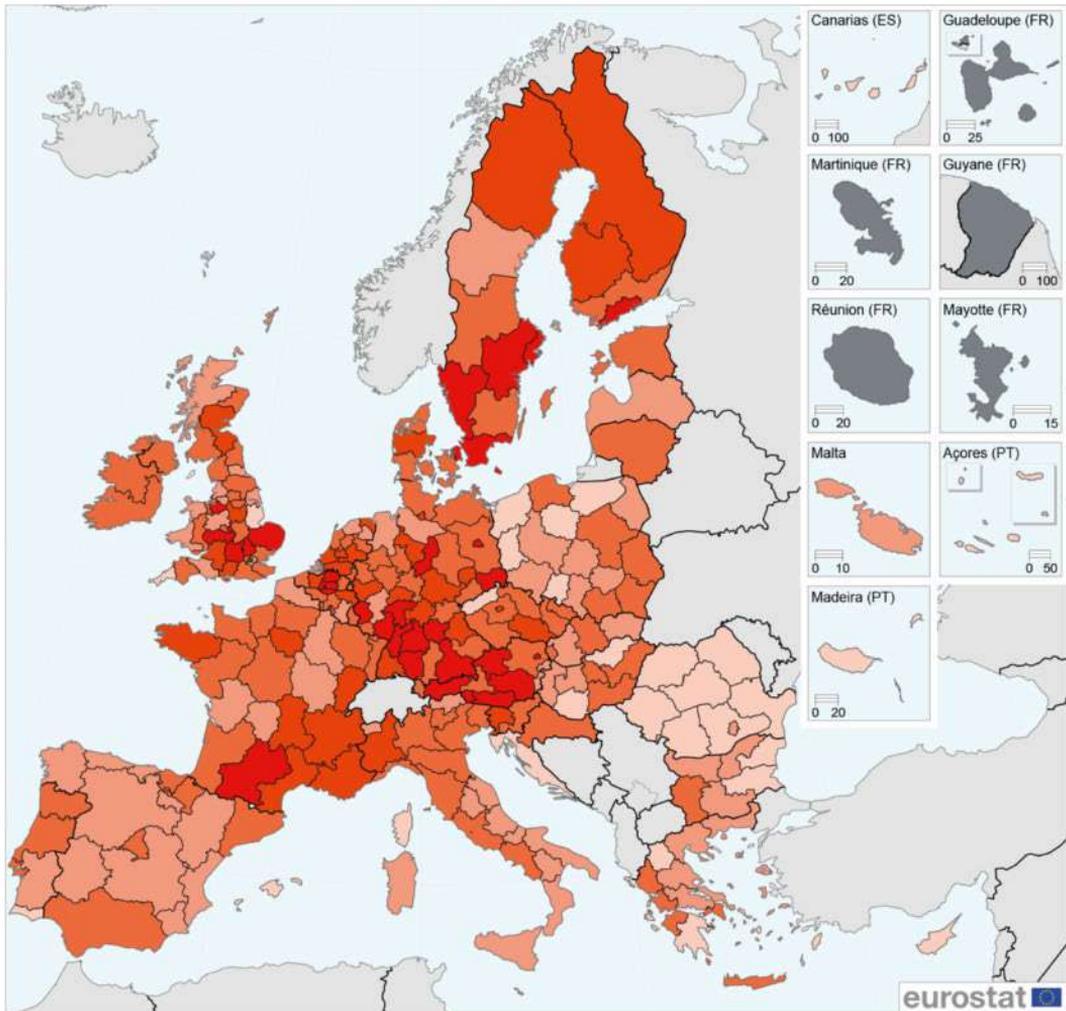
Figure 2.5 illustrates country differences in gross domestic expenditure on R&D by sector of performance. The business enterprise sector remains the biggest spender on R&D in the most research-intensive countries. However, in the least research-intensive countries, such as the Baltic countries and some southern and eastern Member States, the public sector tends to account for the most R&D expenditure. Although the public R&D system drives the generation of knowledge and talent needed by innovative enterprises, it is only through business investment that the full impacts of R&D can be realised. Business R&D integrates and transforms available knowledge into commercially viable technologies and innovation such as greener products, processes and services that enable higher labour productivity, industrial competitiveness, resource efficiency and reduced environmental impacts.

(¹¹) OECD, *Measuring Tax Support for R&D and Innovation*.

(¹²) European Commission, *Science, Research and Innovation Performance of the EU*, Brussels 2018 (see Figure I.3-A.17 on p. 96).

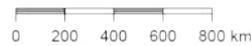
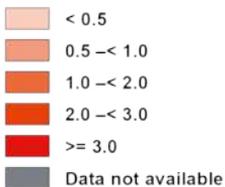
(¹³) European Commission, *R&D tax incentives: How to make them most effective?*, Brussels 2017, p. 4.

Map 2.1: Gross domestic expenditure on R&D, by NUTS 2 regions, 2015
(% of GDP)



EU-28 = 2.04

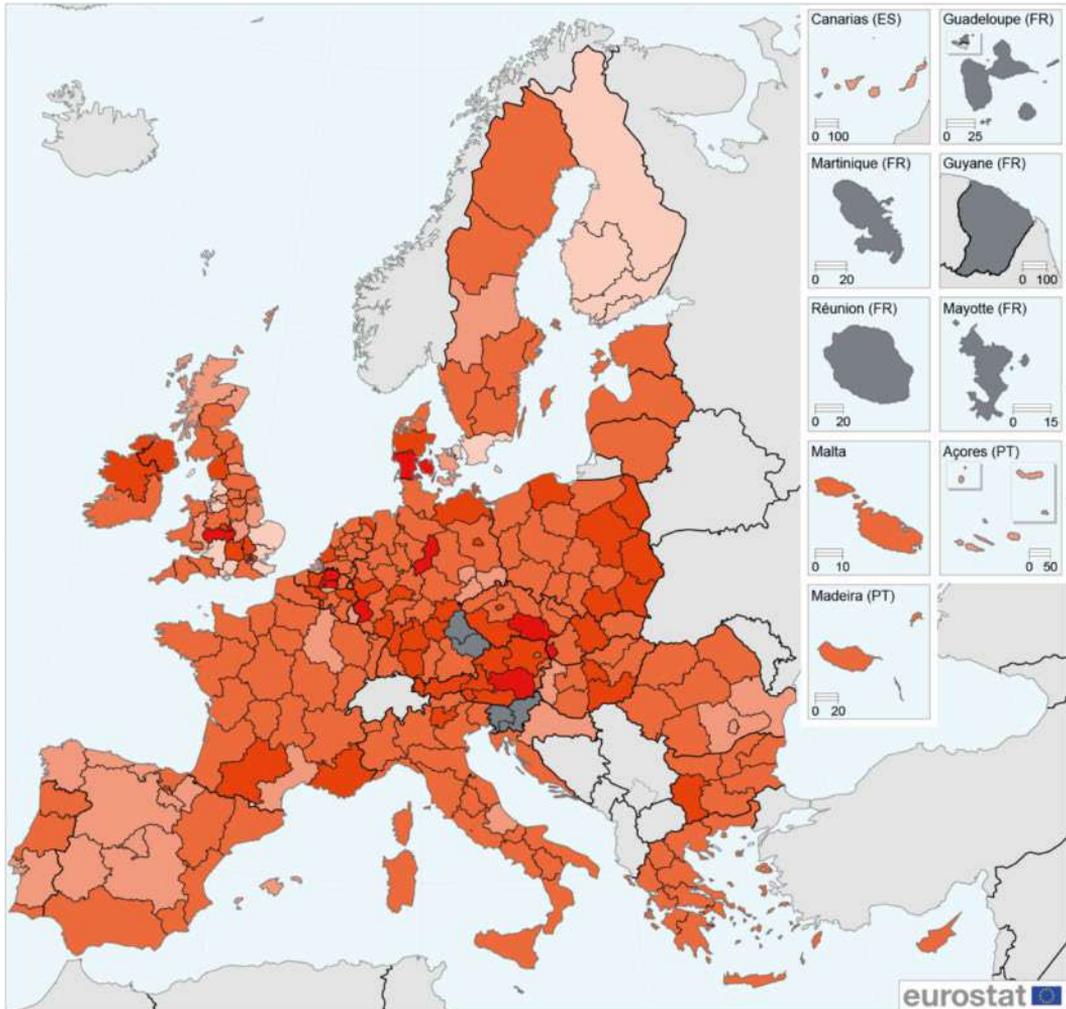
Administrative Boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — IMAGE, 04-07-18



Note: 2013 data for Ireland and France, 2014 data for Italian regions Centro and Molise. Data for Denmark are provisional.

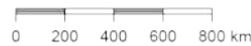
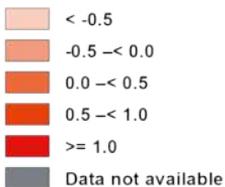
Source: Eurostat (online data code: [rd_e_gerdreg](#))

Map 2.2: Change in gross domestic expenditure on R&D, by NUTS 2 regions, 2007–2015
(percentage points difference between 2015 and 2007, % of GDP)



EU-28 = 0.27

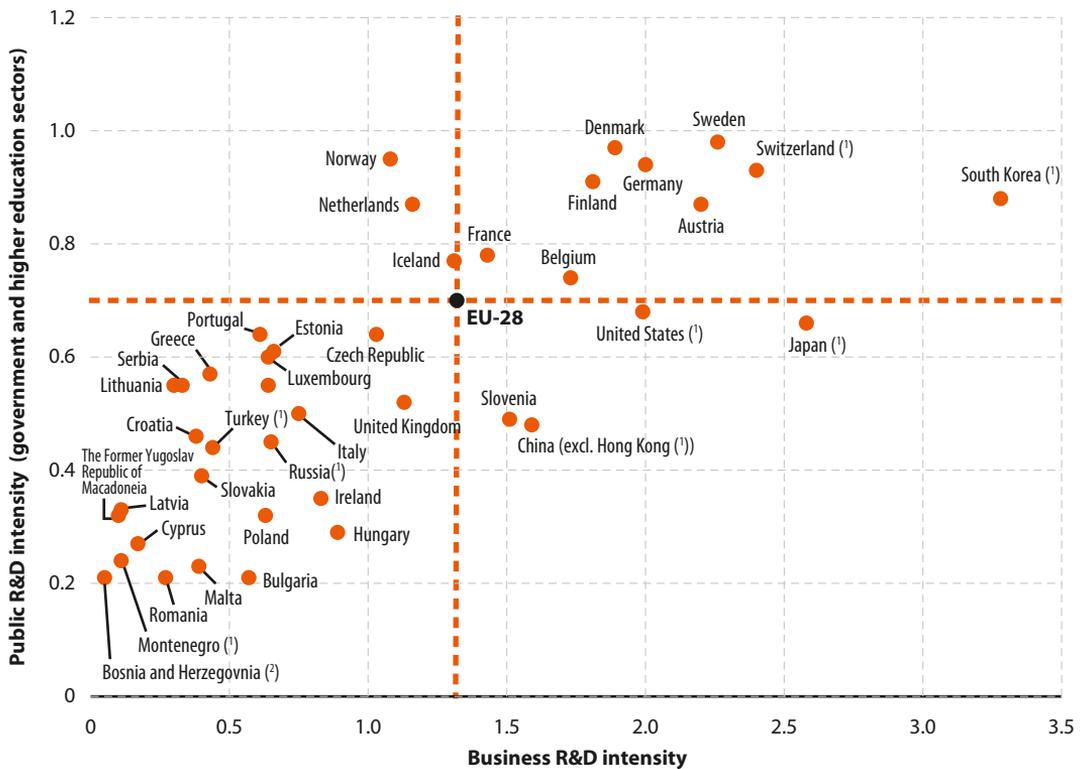
Administrative Boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — IMAGE, 04-07-18



Note: Change 2009–2015 for German regions Brandenburg, Chemnitz and Leipzig, for Finnish regions Helsinki-Uusimaa and Etelä-Suomi, and for UK regions Cheshire and Merseyside; change 2007–2013 for Ireland and France; change 2011–2015 for Greece; change 2008–2015 for Croatia; change 2007–2014 for Italian regions Umbria and Molise; change 2011–2015 for UK regions of Inner and Outer London.

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

Figure 2.5: Gross domestic expenditure on R&D, by sectors of performance, by country, 2016
(% of GDP)



Note: Provisional or estimated data for most of the countries.

(¹) 2015 data.

(²) 2014 data.

Source: Eurostat (online data code: rd_e_gerdot)

2.2.3 R&D intensity concentrated in a limited number of regions in Germany, Austria, the United Kingdom, Belgium, France and the Nordic countries

When looking at the regional distribution of **R&D intensity**, there are 31 NUTS 2 regions that reported R&D intensity above 3.0% in 2015 (see Map 2.1). These regions are located mostly in Germany (11 regions), Austria and the United Kingdom (five regions each), Sweden (four regions), Belgium (three regions), Denmark, France and Finland (one region each). Some research-intensive 'clusters' also become apparent: in particular, a band of research-intensive regions running from Finland through southern Sweden into Denmark and another band from the United Kingdom, through

Belgium into southern Germany and Austria. This geographical concentration of R&D activities is a common phenomenon. R&D clusters often develop around academic institutions or specific high-technology industrial activities and knowledge-based services, where they could benefit from a favourable environment and knowledge sharing. Due to clusters many regions attract new start-ups and highly qualified personnel and develop a competitive advantage in specialised activities.

Three regions in the EU appear to have particularly high R&D intensities. In 2015, the German Braunschweig region spent 9.5% of its GDP on R&D, almost five times higher than the EU average. In Belgian's Brabant Wallon province and in Germany's Stuttgart region, R&D spending peaked at 6.54% and 6.24% of GDP, respectively. In the case of

Germany, this could be mainly attributed to the automobile industry concentrated in those regions, and in the case of Belgium to the pharmaceutical industry.

Capital regions recorded the highest levels of R&D intensity in 10 multi-regional Member States. In addition, in 19 countries, the capital region's R&D intensity exceeded the national average but was not necessarily the highest in the country. Only Belgium and the Netherlands went against this trend, with capital regions' R&D intensity below the national average. In Belgium this might be explained by the relatively narrow administrative borders, and in Netherlands by the large rural

areas, which are part of the capital region. Regional disparities in R&D intensity within countries, measured as the difference in R&D intensity between the best and worst performing regions, were largest in countries with a high number of regions (Spain and France), and smallest in countries with fewer regions (Ireland, Slovenia and Slovakia).

Changes in R&D intensity over time are presented in Map 2.2. Of the 269 regions for which data are available, 54 experienced a decline in R&D intensity over the considered time frame. In the remaining regions, the increase in R&D intensity ranged between 0.01 percentage points and 3.14 percentage points (Braunschweig).

2.3 Fostering talents, knowledge and skills for innovation

The EU increased its output of tertiary graduates in science and technology by 59% between 2003 and 2015. Despite this progress, women still remain underrepresented in this field of study.

More than one-third of the EU labour force is employed in knowledge-intensive activities and this share has increased from 34.2% in 2008 to 36.1% in 2017.

Since 2002, the share of R&D personnel in the labour force has been slowly but continuously increasing, reaching 1.2% of the active population in 2016. The business sector employs more than half of this workforce.

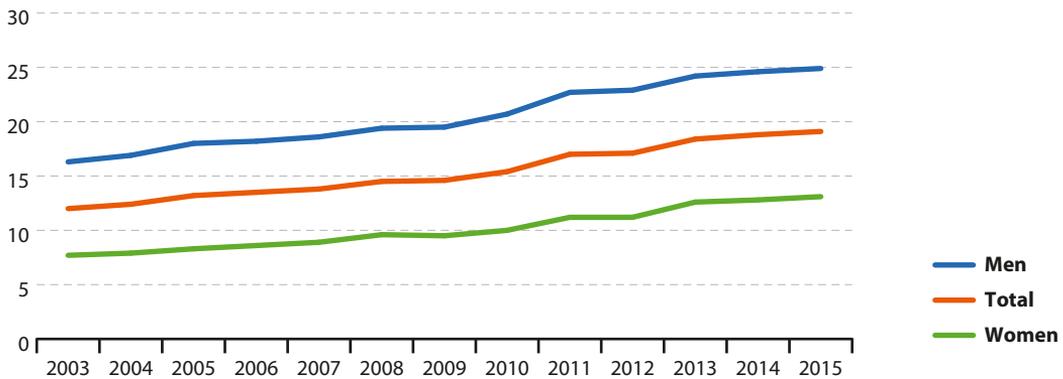


Knowledge and skills are crucial for gaining new scientific and technological expertise and for building an economy's capacity to absorb and use this knowledge. R&D expenditure is a vital enabling factor for human capital because it supports knowledge creation and skills development. Highly skilled human resources in turn are necessary for the EU's research and innovation capacity and competitiveness. The advent of technological advances, such as machine learning, big data analytics, the internet of things and advanced robotics, together with

restructuring in global value chains, are expected to change the world of work as we know it. To meet this demand for a highly qualified workforce and avoid a potential skills gap, the EU would need a high number of tertiary graduates (also see the chapters on 'Employment', page 23, and 'Education', page 87). The European skills forecasting model of the Centre for the Development of Vocational Training (Cedefop), for instance, projects that by 2025 about 48% of all job opportunities in Europe will need to be filled by individuals with tertiary-level qualifications ⁽¹⁴⁾.

⁽¹⁴⁾ Centre for the Development of Vocational Training (Cedefop), *Insights into Skill Shortages and Skill Mismatch*, 2018, p. 5.

Figure 2.6: Tertiary graduates in science and technology, EU-28, 2003–2015
(graduates per 1 000 inhabitants aged 20 to 29 years)



Note: Break in time series in 2013 due to switch from ISCED 1997 to ISCED 2011; 2011 data refer to EU-27; 2015 data are estimates.

Source: Eurostat (online data codes: [tps00188](#) and [educ_uoe_grad04](#))

2.3.1 The number of science and technology graduates in the EU is increasing, but women remain underrepresented

A well-functioning research and innovation system is important for promoting excellence in education and skills development and ensuring a sufficient supply of graduates and postgraduates in science, technology, engineering and mathematics. Increasing the number of science graduates and jobs in knowledge-intensive activities would help to create a solid base for the EU knowledge economy and contribute to Europe 2020's objectives by fostering the EU's innovation capacity, economic strength and employment.

The number of EU students per 1 000 inhabitants aged 20 to 29 that graduate from tertiary education in science and technology grew by 59% between 2003 and 2015. Despite the growth of female tertiary graduates in science and technology over the same period (by 70%), women still remain underrepresented in these fields. In 2015, their number was only around half that of male graduates. The share of women in science and technology fields declines further at the postgraduate level and even more so after

they transition to the workplace: in 2012 women accounted for 47% of PhD graduates (ISCED 6: post-graduate programmes above master's level ⁽¹⁵⁾), but made up only 33% of researchers and 21% of top-level researchers (grade A) (see 'She Figures', 2015, p. 5–6). Among other factors, occupational segregation — understood as under or overrepresentation of a given group in occupations or sectors — might be explained by differences in the educational pathways of women and men. For instance, according to the latest 'She Figures' publication by the European Commission, men are more than two times more likely than women to choose a degree in engineering, manufacturing and construction, while women are twice as likely to pursue an education degree ⁽¹⁶⁾.

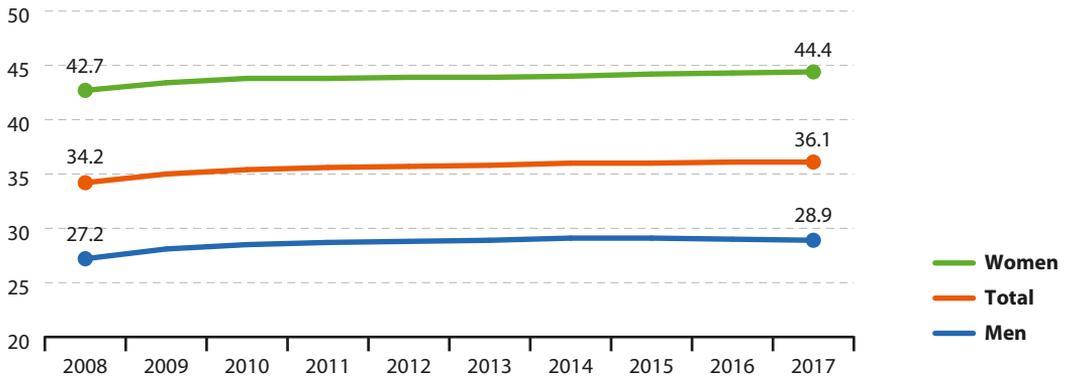
2.3.2 Knowledge-intensive activities employ more than one-third of the EU labour force

Turning knowledge into economic and societal innovation drives productivity, supports long-term growth and generates high-quality jobs. Innovation can also shift a country's economic structure towards more knowledge-intensive

⁽¹⁵⁾ ISCED 1997 classifications used.

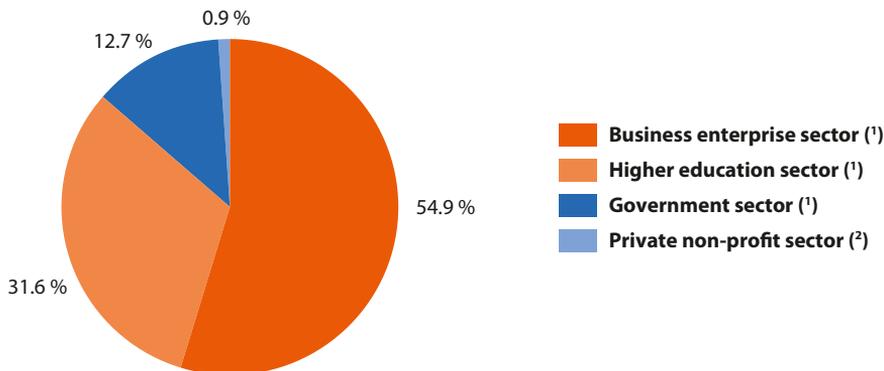
⁽¹⁶⁾ European Commission, *She Figures 2015*, p. 5.

Figure 2.7: Employment in knowledge-intensive activities, EU-28, 2008–2017
(% of total employment)



Source: Eurostat (online data code: [htec_kia_emp2](#))

Figure 2.8: R&D personnel, by sectors of performance, EU-28, 2016
(%)



Notes: Data are provisional.

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

activities with higher added value ⁽¹⁷⁾. This structural change has important implications for employment as it helps to accommodate and stimulate the development of a highly skilled labour force. Therefore, the indicator on employment in knowledge-intensive activities as a percentage of total employment shows how the supply of highly skilled labour feeds into a country's economic structure.

Employment in knowledge-intensive activities accounts for more than one-third of total employment in the EU. Between 2008 and 2017 this share increased slightly, from 34.2% to 36.1%. Of all women employed in the EU, 44.4% were working in knowledge-intensive activities compared to only 28.9% of men. While half of all men employed in knowledge-intensive activities

⁽¹⁷⁾ Knowledge-intensive activities are defined based on the level of tertiary educated people within sectors. An activity is classified as knowledge-intensive if more than 33% of people employed in that activity are tertiary educated (according to ISCED97, levels 5 and 6).

were working in the business sector, this was the case for only 30.6 % of women.

At the EU level, **R&D personnel** — researchers and other staff employed directly in R&D — accounted for 1.2 % of the labour force in 2016 ⁽¹⁸⁾, most of them in the business enterprise sector. Like the evolution of R&D intensity,

the share of R&D personnel in the labour force increased marginally between 2002 and 2016 (0.28 percentage points). This was mainly driven by the business enterprise sector, where the share of R&D personnel grew by 0.18 percentage points. With more than 1.8 million researchers, the EU has the world's most researchers, ahead of China and the United States ⁽¹⁹⁾.

2.4 Turning knowledge assets into innovation

The total value of high-tech exports to outside the EU increased by almost 66 % in nominal terms between 2008 and 2017. This growth was mainly driven by exports in the pharmacy and aerospace sectors.



A dynamic business environment is essential for the promotion and diffusion of innovation. The challenge is to make use of R&D by fostering entrepreneurship and creativity to trigger innovation and economic competitiveness. Therefore, measures targeting knowledge diffusion and absorption of ideas and innovations, for example, through the creation of technology markets and licensing schemes, are just as important as investment in knowledge generation. The higher the uptake and use of ideas from R&D, the more likely innovative players are to invest in future knowledge generation through increased private R&D expenditure. Innovators also help to create a more dynamic innovation system. In many cases they contribute to the structural and technological changes needed to adapt to new

circumstances and challenges. An example is the depletion of fossil fuels and the resulting transition towards more renewable energy sources.

Progress in achieving knowledge diffusion and absorption can be measured through data on the number of innovative companies, patent applications and exports of high-tech products, among others. Other attempts to measure innovation include composite indices such as the European Innovation Scoreboard and the Eco-Innovation Index.

Patents provide a valuable measure of how research is being exploited and the inventiveness of countries, regions and enterprises. In 2014, the total number of patent applications to the European Patent Office (EPO) was 10 % higher compared to the level in 2002. Patent applications had been steadily increasing until 2007 but have since stabilised at around 57 000 per year ⁽²⁰⁾. Further information on patent applications in the EU can be found in the Eurostat publication 'Sustainable Development in the European Union — Monitoring report on progress towards the SDGs in an EU context' ⁽²¹⁾.

The European Innovation Scoreboard is a policy instrument used by the European Commission to compare Member States' research and innovation performance ⁽²²⁾. The Eco-Innovation

⁽¹⁸⁾ 2016 data is provisional. Source: Eurostat (online data code: [rd_p_perslf](#)).

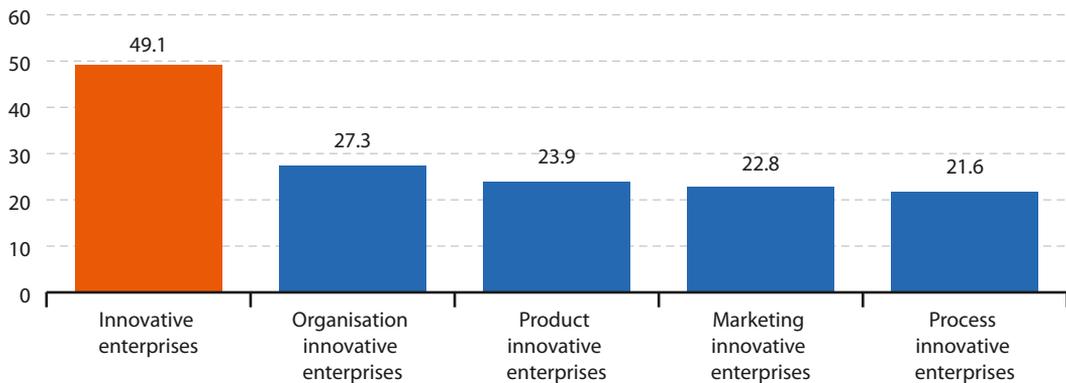
⁽¹⁹⁾ European Commission, *Science, Research and Innovation Performance of the EU*, 2018, p. 10.

⁽²⁰⁾ Source: Eurostat (online data code: [sdg_09_40](#))

⁽²¹⁾ Eurostat, *Sustainable Development in the European Union — Monitoring report on progress towards the SDGs in an EU context*, Luxembourg, 2017, p. 181.

⁽²²⁾ The European Innovation Scoreboard analyses the innovation system of EU Member States through a set of 27 indicators broken down into eight dimensions looking at human resources, research systems, finance and support, firm investments, linkages and entrepreneurship, intellectual assets, innovators and economic effects. (See European Commission, *European Innovation Scoreboard 2018*, 2018 Brussels).

Figure 2.9: Enterprises by type of innovation, EU-28, 2014
(% of the total number of enterprises)



Source: Eurostat (online data code: [inn_cis9_type](#))

Scoreboard ⁽²³⁾ is a policy tool that helps measure eco-innovation performance and assess whether the EU and its Member States are moving towards smart and sustainable growth, as requested by the Europe 2020 strategy ⁽²⁴⁾. **Eco-innovation** is any innovation that reduces the use of natural resources and decreases the release of harmful substances across a product's whole life cycle, bringing both economic and environmental benefits. Environmental benefits include lower greenhouse gas (GHG) emissions, reduced waste generation and improved resource productivity, in particular better material and energy efficiency ⁽²⁵⁾.

2.4.1 Almost half of EU enterprises carry out innovation activities

Almost half (49.1 %) of EU enterprises reported innovation activity between 2012 and 2014. The share has remained relatively stable since the previous biennial Community Innovation

Survey (CIS) in 2012 (48.9 %) ⁽²⁶⁾ (see Figure 2.9). The share of innovative enterprises is broadly linked with GDP per capita levels. Germany had by far the **highest share of innovative enterprises** at 67.0 %; but other countries with high GDP per capita and productivity levels such as France and the Benelux and northern European countries also seemed to provide a favourable environment for innovative business activities, with 55 % or more of enterprises reporting innovation activities ⁽²⁷⁾. These countries also share a high proportion of medium-high- and high-tech manufacturing companies or a high proportion of knowledge-intensive services (for example, ICT and finance). The share of innovative enterprises therefore seems to be also linked to economic structures.

Innovative companies can be distinguished by the type of innovation they pursue. Figure 2.9 shows how different business strategies lead to different innovation types such as product, process,

⁽²³⁾ Eco-Innovation Scoreboard (Eco-IS) on the DG Environment website: http://ec.europa.eu/environment/ecoap/scoreboard_en

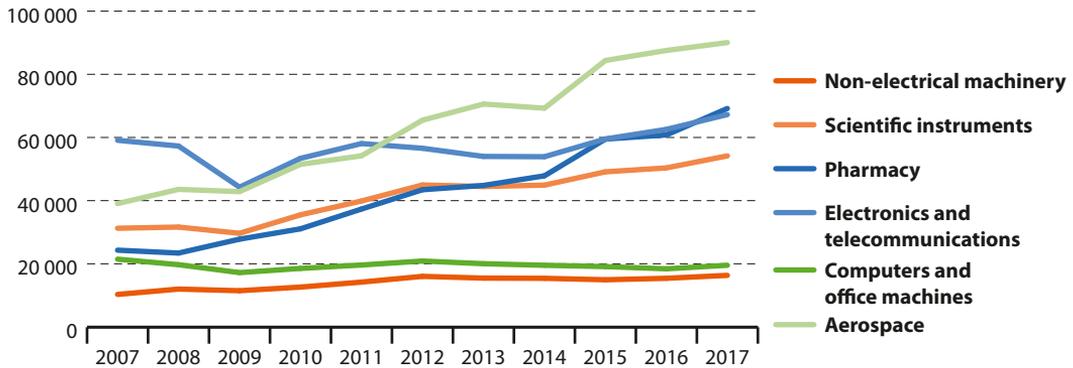
⁽²⁴⁾ The Eco-IS shows how well individual countries perform in different dimensions of eco-innovation compared with the EU average. It is based on 16 indicators grouped in to five thematic areas: eco-innovation inputs, eco-innovation activities, eco-innovation outputs, resource efficiency and socio-economic outcomes. In the index, Member States are ranked in relation to the EU average of 100.

⁽²⁵⁾ Eco-innovation Observatory, *Introducing eco-innovation: from incremental changes to systemic transformations*, 2011.

⁽²⁶⁾ The Community Innovation Survey (CIS) is a survey of innovation activities of enterprises in EU Member States. The survey collects information about product and process innovation as well as organisational and marketing innovation and other key variables. Most questions cover new or significantly improved goods or services or the implementation of new or significantly improved processes, logistics or distribution methods. It produces a broad set of indicators on innovation activities, innovation expenditure, public funding, sources of information for innovation, innovation co-operation, organisational and marketing innovation and on strategies and obstacles for reaching the enterprises' goals. For further information, see Statistics Explained article on innovation statistics available on the Eurostat website: http://ec.europa.eu/eurostat/statistics-explained/index.php/Innovation_statistics

⁽²⁷⁾ Source: Eurostat (online data code: [inn_cis9_type](#)).

Figure 2.10: High-tech trade exports outside of EU-28, by high-tech group of products, EU-28, 2007–2017
(EUR million)



Note: Groups of products depicted on the figure are those with more than EUR 15 billion export volume in 2017.

Source: Eurostat (online data code: [htec_trd_group4](#))

organisational or marketing innovation. More than a quarter (27.3%) of EU enterprises reported an organisational innovation that involved implementing a new method in the enterprise's business practices, workplace organisation or external relations.

Complex innovations with the highest potential for boosting productivity and growth often depend on the ability to draw on diverse sources of information and knowledge, or to collaborate on the development of an innovation. **Innovation co-operation**, which measures among other things the flow of knowledge between public research institutions and enterprises and between enterprises and other enterprises, provides an important indication of enterprises' innovation activity. A third (33.1%) of EU enterprises that conducted product and process innovation activities were also engaged in innovation co-operation arrangements from 2012 to 2014.

2.4.2 High-tech exports to non-EU countries have increased significantly since 2007

Beyond turning research results into tangible applications, innovative businesses compete

globally to sell their high-tech products on the world market. The volume of **high-tech trade** provides an indication of EU enterprises' ability to commercialise their R&D and innovation outputs globally. It also reflects how specialised a country is in producing medium- and high-tech products that result from innovation and contribute to its balance of trade and international competitiveness. The creation, exploitation and commercialisation of high-tech products is associated with high value added for the economy and knowledge-intensive and remunerative jobs.

Between 2008 and 2017 the total value of high-tech exports to outside the EU grew by almost 66% in nominal terms, from EUR 202 billion to EUR 335 billion. In 2017, this represented 18% of all extra-EU exports ⁽²⁸⁾. The main drivers behind the development of EU's high-tech exports since 2008 were the pharmacy and aerospace sectors, which increased by 196% and 107%, respectively. In terms of destination, the United States was the main importer of EU high-tech products in 2017 (EUR 84 billion), followed by China (EUR 39 billion) ⁽²⁹⁾.

⁽²⁸⁾ Eurostat, *Statistics Explained. Production and international trade in high-tech products*, Data extracted in June 2018.

⁽²⁹⁾ Ibid.

3

Climate change and energy



3.1 Climate change and energy — why do they matter?

Unchecked climate change threatens to erode the foundations on which modern society is built by changing weather patterns, redrawing coastlines and degrading natural ecosystems. To avoid dangerous levels of global warming, the international community, including the EU, has committed to limiting the rise 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 ⁽¹⁾ signed at the United Nations Framework Convention on Climate Change (UNFCCC) 21st Conference of the Parties (COP) in 2015.

In response to the international goal, the EU has pledged to drastically reduce its greenhouse gas (GHG) emissions. The Europe 2020 strategy reinforces this commitment, aiming to turn the EU into a 'low-carbon' economy. The European Council has reconfirmed the EU objectives to reduce emissions by 80–95 % by 2050 compared with 1990, in the context of similar reductions to be taken by developed countries as a group. Emissions of carbon dioxide (CO₂) are the most prevalent and accounted for about 81 % of the EU's GHG emissions in 2016 (not counting land use, land use change and forestry) ⁽²⁾.

Europe 2020 strategy targets on climate change and energy

Also known as the '20-20-20' targets, the Europe 2020 strategy's three climate and energy targets are interrelated and mutually support one another ^(a):

- A 20 % reduction in GHG emissions compared with 1990 levels;
- A 20 % share of renewable energy in gross final energy consumption; and
- A 20 % cut in energy consumption compared to a 2020 business-as-usual projection.

In 2014, the European Council agreed on a post-2020 climate and energy framework. The 2030 Climate and Energy Policy Framework ^(b) includes three targets for

2030: at least a 40 % cut in GHG emissions (from 1990 levels), at least 32 % share for renewable energy and at least a 32.5 % improvement in energy efficiency (compared to a projected business-as-usual scenario for 2030). In June 2018, an inter-institutional political agreement increased the ambition of the latter two targets for renewable energy and energy efficiency to the values stated above ^(c).

With the Clean Energy for All Europeans ^(d) legislative package of November 2016, the European Commission tabled a comprehensive set of legislative proposals and measures to further develop climate and energy policy after 2020.

^(a) European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels, 2014.

^(b) European Council, *European Council (23 and 24 October 2014) — Conclusions*, EUCO 169/14, Brussels, 2014.

^(c) European Council, *Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources — Analysis of the final compromise text with a view to agreement*, Brussels, 2018.

^(d) European Commission, *Clean energy for all Europeans*, COM(2016) 860 final, Brussels, 2016.

⁽¹⁾ United Nations, *Paris Agreement*, 2015.

⁽²⁾ EEA, *Annual European Union greenhouse gas inventory 1990–2016 and inventory report 2018*, EEA report No 05/2018, Copenhagen, 2018, p. 63.



Climate change and energy in the EU

Europe 2020 headline indicators



2020 target:
80

Greenhouse gas emissions in 2016

77.6 Index 1990 = 100
– 13 index points since 2008

... of fuel combustion in energy industries in 2016

1 195 Mt of CO₂ equivalent⁽¹⁾
– 22.8 % since 2008

... in ESD sectors ⁽¹⁾ in 2016

2 541 Mt of CO₂ equivalent⁽¹⁾
– 8.9 % since 2008



2020 target:
20 %

Share of renewable energy in 2016

17.0 % in gross final energy consumption
+ 5.9 pp since 2008

... in electricity consumption in 2016

29.6 %
+ 12.6 pp since 2008

... in fuel consumption of transport in 2016

7.1 %
+ 3.2 pp since 2008

2020 target:
10 %



2020 target:
1 483 Mtoe

Primary energy consumption in 2016

1 543 Mtoe
– 8.9 % since 2008



2020 target:
1 086 Mtoe

Final energy consumption in 2016

1 108 Mtoe
– 6.1 % since 2008

... by sector in 2016

277 Mtoe in the industry sector
– 12.9 % since 2008

367 Mtoe in the transport sector
– 2.7 % since 2008

285 Mtoe in the residential sector
– 5.6 % since 2008

Contextual indicators



Global CO₂ emissions in 2015

32 294 Mt of CO₂ equivalent from fuel combustion
+ 10.7 % since 2008



CO₂ emissions in the EU in 2015

3 201 Mt of CO₂ equivalent from fuel combustion
– 15.5 % since 2008



Global temperature in 2017

1.00 temperature increase, compared with 1850–1899 average
+ 40.8 % since 2008



Energy dependence in 2016

53.6 % of imports in total energy consumption
– 0.9 pp since 2008



Energy imports into the EU in 2016

40.2 % of imports in solid fuels consumption
– 4.6 pp since 2008

86.7 % of imports in petroleum consumption
+ 2.1 pp since 2008

70.2 % of imports in gas consumption
+ 8.5 pp since 2008

(¹) data are provisional.

Source: Eurostat (online data codes: t2020_30, env_air_gge, t2020_35, t2020_31, nrg_107a, t2020_33, t2020_34, nrg_100a, sdg_07_50, nrg_122a, nrg_123a, nrg_124a) and International Energy Agency

The low-carbon transition is not only a strategy to prevent climate change. Climate and energy policies also contribute to the Europe 2020 strategy's core objective of enabling sustainable growth. For one, promoting renewable energy and energy efficiency — two key levers for reducing emissions — fosters innovation and creates jobs. The EU's '20-20-20' targets are thus interlinked with other Europe 2020 goals, in particular those for research and development (R&D) and employment. Moreover, climate mitigation has further environmental and health benefits, such as reducing local air pollution and alleviating the health risks it poses.

Creating demand for green products while boosting innovation and export strength in the growing global market will be key to mastering new technologies such as smart grids, energy storage and electric vehicles. At the same time, improved energy efficiency will bolster the competitiveness of EU businesses by lowering production costs. Renewables and

energy efficiency measures also reduce energy dependence and have the potential to save the EU between EUR 175 and 320 billion in energy import costs per year over the next 40 years ⁽³⁾.

The EU's Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy ⁽⁴⁾, introduced in 2015, complements existing climate change and energy policies covering the period up to 2020 and will guide the development of policies for the following decade up to 2030 and beyond. To implement the strategy, the European Commission has presented a range of initiatives, including the Accelerating Europe's transition to a low-carbon economy Package in July 2016, the Clean Energy for all Europeans Package ⁽⁵⁾ in November 2016 and the Clean Mobility Package in November 2017. The package encompasses a set of legislative proposals and facilitating measures. Many of these have been agreed and others are currently being discussed in the European Council and in the European Parliament.

3.2 The EU is on track to achieving its GHG emission reduction target for 2020

In 2016, EU GHG emissions, including emissions from international aviation and indirect CO₂ emissions, were down by 22.4% compared with 1990 levels. The EU is thus expected to exceed its Europe 2020 target of reducing GHG emissions by 20% by 2020.

All main sectors, except fuel combustion in transport and international aviation, contributed to the reductions between 1990 and 2016. In 2016, transport emissions rose for the third consecutive year, coinciding with a return of stronger economic growth.



Reducing GHG emissions is a central objective of the Europe 2020 strategy. The EU as a whole aims to reduce emissions by 20% compared with 1990 levels (including international aviation and indirect

CO₂ emissions). The main policy instruments to achieve this target are the EU Emissions Trading System (EU ETS) ⁽⁶⁾ and the Effort Sharing Decision (ESD) ⁽⁷⁾. The EU ETS sets a single EU-wide cap for

⁽³⁾ European Commission, *Climate Action: Benefits of climate action*, 2018 (accessed 1 June 2018).

⁽⁴⁾ European Commission, *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, COM(2015) 80 final, Brussels, 2015.

⁽⁵⁾ European Commission, *Clean energy for all Europeans*, COM(2016) 860 final, Brussels, 2016.

⁽⁶⁾ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

⁽⁷⁾ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.



Europe 2020 headline indicator

Figure 3.1: Greenhouse gas emissions, EU-28, 1990–2016
(index 1990 = 100)



Note: Total emissions, including international aviation and indirect CO₂, but excluding emissions from land use, land use change and forestry (LULUCF)

Source: European Environment Agency, Eurostat (online data code: [t2020_30](#))

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INDICATOR



more than 11 000 power stations and industrial plants, as well as the emissions from flights within the European Economic Area. It allows these economic actors to trade emission allowances among themselves. The cap shrinks each year to reach an emissions reduction of 21 % by 2020 compared with 2005.

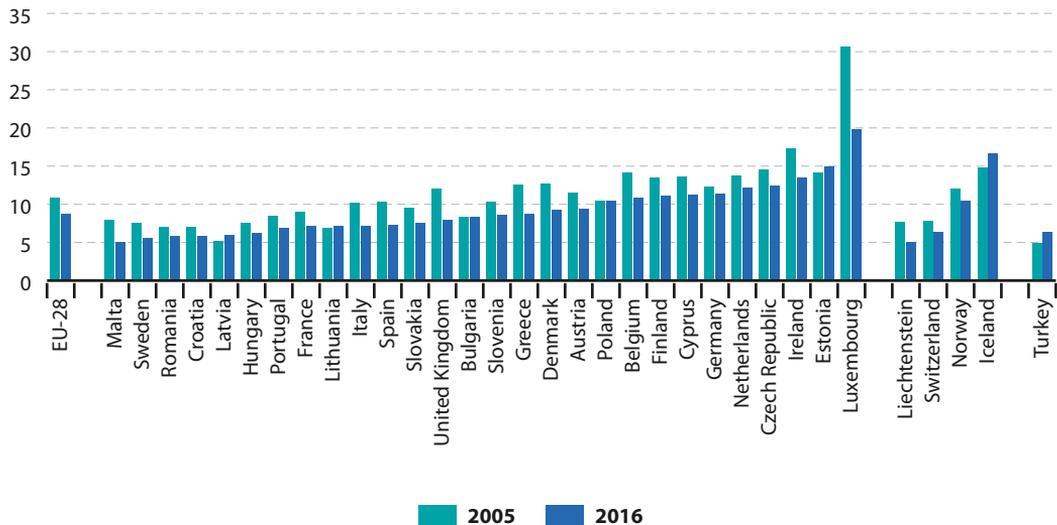
The ESD sets a binding GHG emissions target for each Member State for sectors not included in the EU ETS. Member States' targets for the ESD sectors (such as transport, buildings, agriculture and waste) vary from a 20% reduction to a 20% increase in emissions by 2020, reflecting differences in relative wealth. Less wealthy economies are allowed to increase their emissions to accommodate higher economic growth. However, as their targets still limit emissions compared with business-as-usual scenarios projected at the time of decision-making, all Member States are committed to making reductions. By 2020, the legislation requires that the national targets will collectively deliver a reduction of at least 10% in total EU emissions

from the non-EU ETS sectors compared with 2005 levels.

Together, the EU ETS and the ESD will reduce overall emissions to 14% below 2005 levels by 2020. This translates to a 20% cut below 1990 levels. In addition to these two overarching instruments, the EU has implemented an array of policy tools to address emissions from certain sectors and activities.

By 2016, the EU as a whole had cut anthropogenic GHG emissions by 22.4% compared to 1990 levels (see Figure 3.1). A large portion of this reduction occurred during the 1990s. Between 1990 and 1994 a significant drop of 6.8% occurred, mostly due to structural shifts in the economy, modernisation in the industry sector and a shift from coal to gas. Despite rising energy consumption, the period between 1998 and 2007 saw emissions stabilise at around 92–94% of 1990 levels. This was the result of reductions in landfilling and improved waste management, a decline in livestock numbers, a decrease in the use

Figure 3.2: Greenhouse gas emissions per capita, by country, 2005 and 2016
(tonnes of CO₂ equivalent)



Note: Total emissions, including international aviation and indirect CO₂, but excluding emissions from land use, land use change, and forestry (LULUCF).

Source: European Environment Agency, Eurostat (online data code: [sdg_13_10](#))

of nitrogenous fertiliser and a gradual shift from more carbon-intensive fuels to renewable energy and natural gas ⁽⁸⁾.

By far, the sharpest single-year decline in GHG emissions since the early 1990s occurred between 2008 and 2009 (– 7.2%). During this time the economic crisis reduced industrial production, transport volumes and energy demand. The following years saw slow recovery in many parts of Europe.

The further decline in GHG emissions observed between 2010 and 2014 can be attributed to three main factors: improvement in the energy intensity of the EU economy, rapid development of renewable energy sources and the aftermath of the economic slowdown ⁽⁹⁾. The subsequent slight increase in emissions between 2014 and 2015 was due primarily to particularly harsh winter conditions and a corresponding increase in heat demand. The most recent emission reduction

by 0.4 percentage points (or 19.7 million tonnes of CO₂ equivalent) between 2015 and 2016 was accompanied by a 2.0% increase in GDP. This slight decrease was due primarily to fuel switching from coal to gas in the power sector in select countries and was offset to some extent by an increase in emissions from road transport, both passenger and freight ⁽¹⁰⁾.

Dividing emission figures by the total population provides a way of comparing countries' GHG emissions on a more equal footing. Figure 3.2 shows Member States' overall per capita GHG emissions for the years 2005 and 2016. Luxembourg continued to emit the most per capita in the EU in 2016. This can be partly attributed to a considerable number of commuters from neighbouring countries fuelling their cars on Luxembourgish territory, as well as road freight transit and fuel tourism ⁽¹¹⁾. In contrast, per capita emissions were lowest in some eastern

⁽⁸⁾ EEA, *Annual European Union greenhouse gas inventory 1990–2016 and inventory report 2018*, EEA Report No 5/2018, 2018.

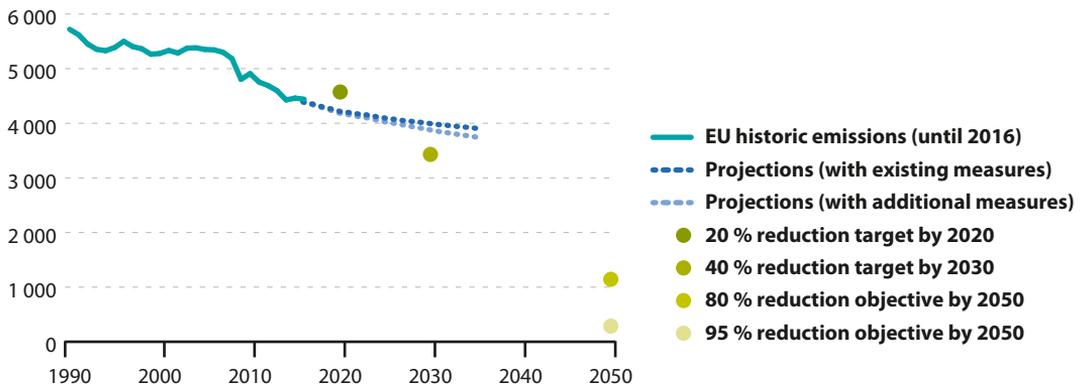
⁽⁹⁾ EEA, *Trends and drivers in greenhouse gas emissions in the EU in 2016*, EEA Briefing No 5/2018, Copenhagen 2018.

⁽¹⁰⁾ Ibid.

⁽¹¹⁾ Eurostat, *Using official statistics to calculate greenhouse gas emissions*, Luxembourg, 2010, p. 28.



Figure 3.3: Greenhouse gas emissions and projections, 1990–2050
(million tonnes of CO₂ equivalent)



Note: Total EU GHG emissions include those from international aviation and exclude those from land-use, land-use change and forestry (LULUCF).

Source: European Environment Agency

and southern European countries as well as in Sweden.

Between 2005 and 2016, Luxembourg showed the highest reduction in per capita emissions. United Kingdom, Ireland, Greece, Denmark and Belgium also showed large cuts. In contrast, per capita emissions rose in four Member States over the same period (Latvia, Estonia, Lithuania and Poland) and remained constant in Bulgaria.

Looking towards 2020, GHG emission projections⁽¹²⁾ based on Member States' existing policy measures suggest the EU is on track to surpass its 2020 target. However, according to Member States' projections, summarised and gap-filled by the European Environment Agency (EEA), existing and planned measures are not enough to put the EU on track to meet its target for the next decade to reduce GHG emissions by 40% by 2030 (see Figure 3.3)⁽¹³⁾. For this reason, the EU is introducing new mitigation policies for the period after 2020, including reforms to the EU ETS, a new Effort Sharing Regulation, which sets binding annual greenhouse gas emission targets for Member States for the period 2021 to 2030 and a new Governance Regulation adopted

as the main instrument to achieve the objectives set forth by the Energy Union Strategy. Moreover, new regulation will implement the EU's Paris Agreement commitment on emissions from land use, land-use change and forestry (LULUCF).

3.2.1 All sectors except transport have lowered emissions since 1990

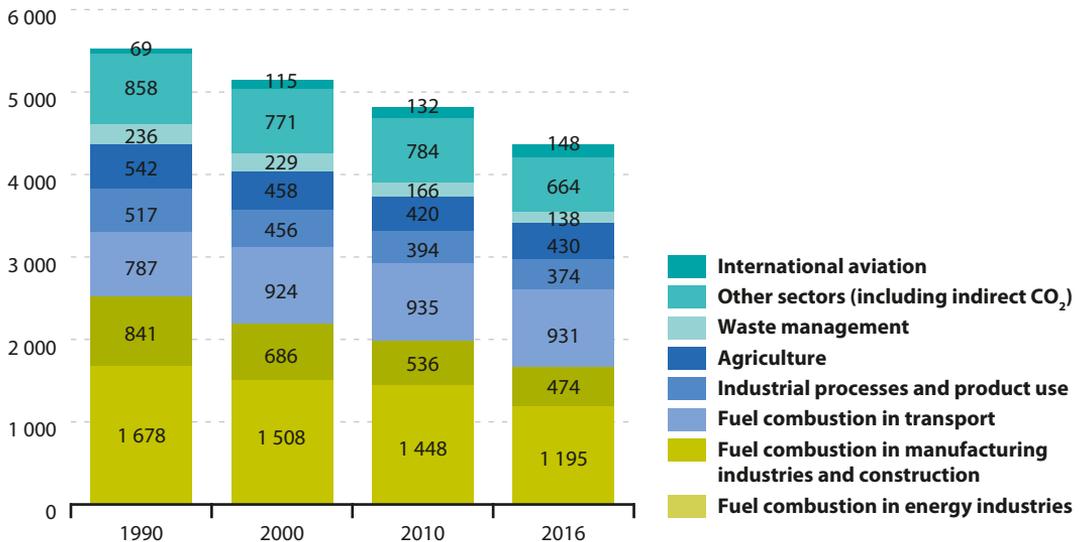
Figure 3.4 shows to what extent each sector has contributed to the EU's total GHG emissions. All sectors except fuel combustion in transport and international aviation contributed to the overall GHG emission reductions from 1990 to 2016.

In absolute terms, energy industries made the largest emissions cut with a reduction of 483 million tonnes of CO₂ equivalent over the period (29%). Nevertheless, energy is still the sector responsible for the largest share of total emissions (26.9% in 2016). The second largest absolute reduction was achieved in the manufacturing industries and construction and amounted to 367 million tonnes of CO₂ equivalent, which translates to a 44% decline between 1990 and 2015.

⁽¹²⁾ EEA, *Total greenhouse gas emission trends and projections*, 2017.

⁽¹³⁾ European Council, *European Council (23 and 24 October 2014) — Conclusions*, EUCO 169/14, Brussels, 2014.

Figure 3.4: Greenhouse gas emissions by sector, EU-28, 1990, 2000, 2010 and 2016
(million tonnes of CO₂ equivalent)



Source: European Environment Agency (online data code: [env_air_gge](#))

By contrast, transport emissions were 18% higher in 2016 than in 1990. Moreover, fuel combustion in transport accounted for 21.0% of total EU emissions in 2016, making it the second largest source after the energy industries. However, transport emissions were even higher in 2007, where they peaked at 993 million tonnes of CO₂ equivalent before falling by 10.7% by 2013 to reach their lowest point in 16 years. However, in 2016 transport emissions rose for the third consecutive year to 5.1% above 2013 levels, coinciding with a return of stronger economic growth and low oil prices. Finally, emissions from international aviation more than doubled between 1990 and 2016, increasing from 69 to 148 million tonnes of CO₂ equivalent.

3.2.2 GHG emissions under the in Effort Sharing Decision (ESD) have fallen since 2005

Figure 3.5 shows Member States' Effort Sharing Decision (ESD) emissions (total emissions excluding

those covered by the EU ETS) between 2005 and 2016, as well as their 2020 ESD targets. Twenty-two countries have reduced their emissions compared to the 2005 base-year and 18 are on track to reach their 2020 national targets⁽¹⁴⁾. Emissions increased in six countries. Malta has not met its annual ESD targets for each of the three years 2013 to 2015 and has relied on flexibility mechanisms to comply with its legal obligations. Preliminary figures show that Malta, Belgium, Finland and Ireland may not meet their ESD targets for 2016⁽¹⁵⁾.

The overall positive trend in ESD emissions in the EU can be linked mainly to the building sector and energy efficiency improvements as well as a less carbon-intensive fuel mix for space heating. Furthermore, despite harsher winters in recent years, overall milder winter temperatures over the past decade and a half are partly responsible for falling heating demand compared to the 1990s. Temporary reductions in transport emissions as a result of the economic slowdown between 2007 and 2013 also contributed to the decrease⁽¹⁶⁾.

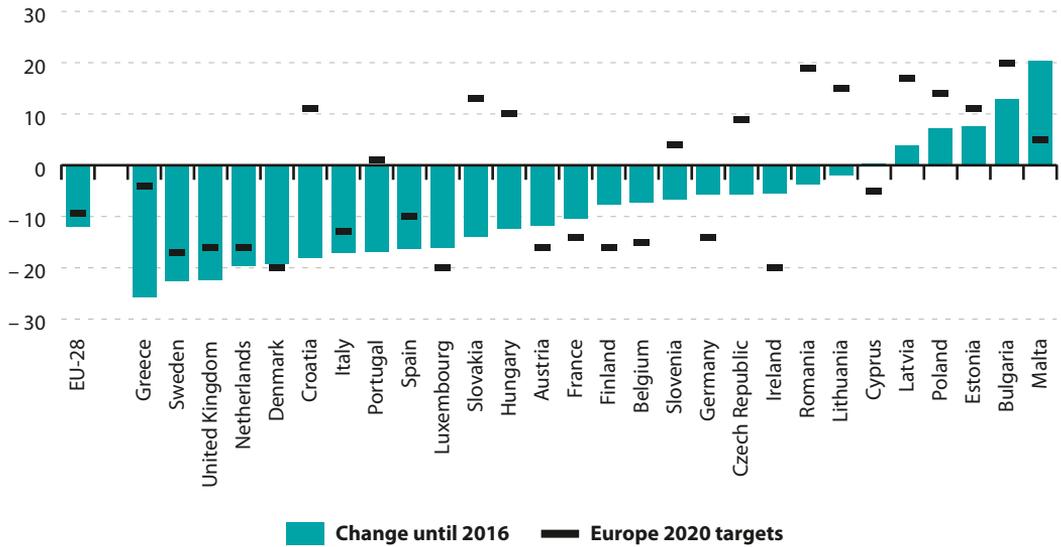
⁽¹⁴⁾ EEA, *Total greenhouse gas emission trends and projections*, 2017.

⁽¹⁵⁾ European Commission, *Two years after Paris — Progress towards meeting the EU's climate commitments*, COM(2017) 646 final, Brussels, 2017.

⁽¹⁶⁾ EEA, *Annual European Union greenhouse gas inventory 1990–2015 and inventory report 2017*, EEA report No 06/2017, Copenhagen, 2017.



Figure 3.5: Greenhouse gas emissions in Effort Sharing Decision (ESD) sectors, by country, 2016
(% change since ESD base year)



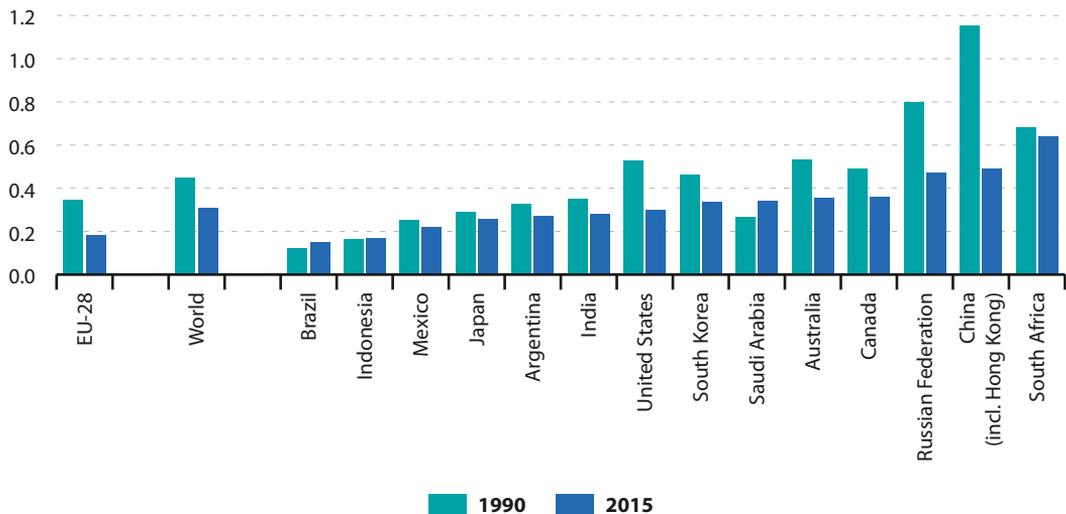
Note: Total emissions, excluding emissions covered by the Emissions Trading Scheme (ETS); data are provisional.
Source: European Environment Agency, Eurostat (online data code: [t2020_35](#))

Figure 3.6: Global CO₂ emissions from fuel combustion, 1990, 2000, 2010 and 2015
(million tonnes of CO₂)



Source: International Energy Agency (IEA)

Figure 3.7: CO₂ emissions from fuel combustion per unit of GDP, by country, 1990 and 2015
(kg of CO₂ per USD (2005 prices))



Source: International Energy Agency (IEA)

3.2.3 Global CO₂ emissions from fuel combustion and mean surface temperature continue to rise

Despite progress in the EU, global CO₂ emissions from fuel combustion rose by 57.5 % between 1990 and 2015, as shown in Figure 3.6. Most of the increase took place in emerging economies. Emissions growth, both in relative and absolute terms, was strongest in China. Between 1990 and 2015, China's annual CO₂ emissions more than tripled and the country overtook the United States to become the world's largest emitter. At the same time, China's per capita emissions from fuel combustion reached 6.6 tonnes of CO₂, outpacing the EU level of 6.3 tonnes⁽¹⁷⁾.

Although less important in absolute terms, emissions in the rest of Asia and the rest of the world also grew significantly in relative terms between 1990 and 2015 (221.4 % and 76.2 % respectively). As a result of these trends, the EU's share in global CO₂ emissions has shrunk considerably, from almost a fifth in 1990 to just under a tenth in 2015.

While worldwide emissions grew considerably between 1990 and 2015, emissions intensity of GDP (measured as CO₂ emissions from fuel combustion per unit of GDP) has decreased by 31 % globally in the same timeframe. As with absolute emissions, the emissions intensity of GDP varies country-to-country but has decreased in all but three of the countries analysed here (Brazil, Indonesia and Saudi Arabia). The largest decrease was in China, which dropped by 57 % from 1.15 kilograms (kg) of CO₂ to 0.49 kg per unit of GDP. However, as indicated by the considerable rise in China's overall emissions, this reduction is primarily due to unprecedented economic growth over the past few decades and cannot be explained by a shift towards a low-carbon economy. In the EU, emissions intensity of GDP almost halved, by 47 %, between 1990 and 2015, while in the US it dropped by 43 %, in Australia by 33 % and in Canada by 26 %.

In 2015, CO₂ emissions from fuel combustion per capita varied widely across the globe. On average, an Australian emits almost ten times as much as an Indian citizen. Even within the group of industrialised countries, emission levels per person

⁽¹⁷⁾ IEA, *CO₂ Emissions from Fuel Combustion*, 2017.

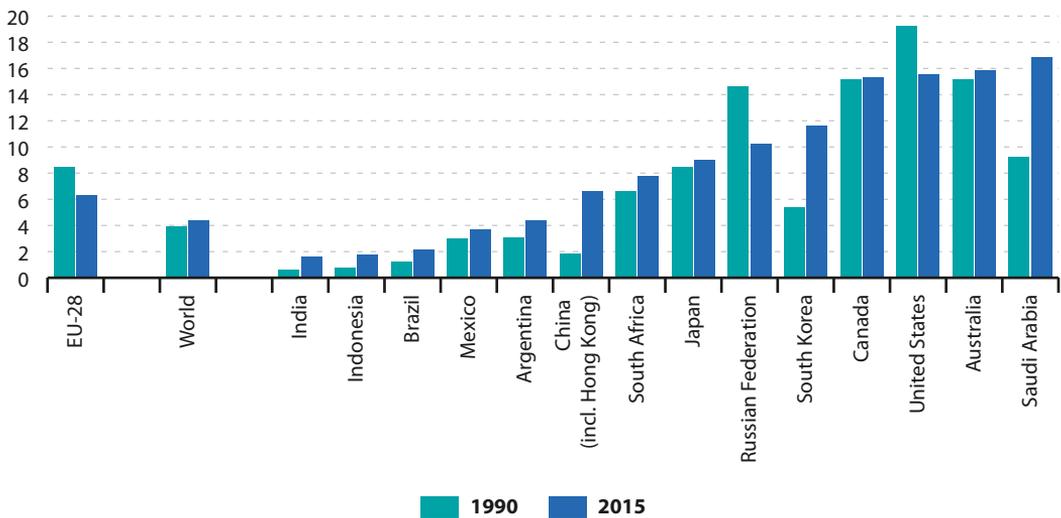


vary widely. The US average is, for example, more than twice as high as the EU average. However, between 1990 and 2015, per capita emissions between industrialised and other countries appeared to be converging. While per capita emissions have decreased in the EU (–25.5%) and the US (–19.1%), emission levels per person have increased in emerging economies, with the biggest rises taking place in China (+256.5%) and

South Korea (+114.2%). Over the same time frame, the global average per capita emissions increased by 13.4%, reaching 4.4 tonnes of CO₂ in 2015.

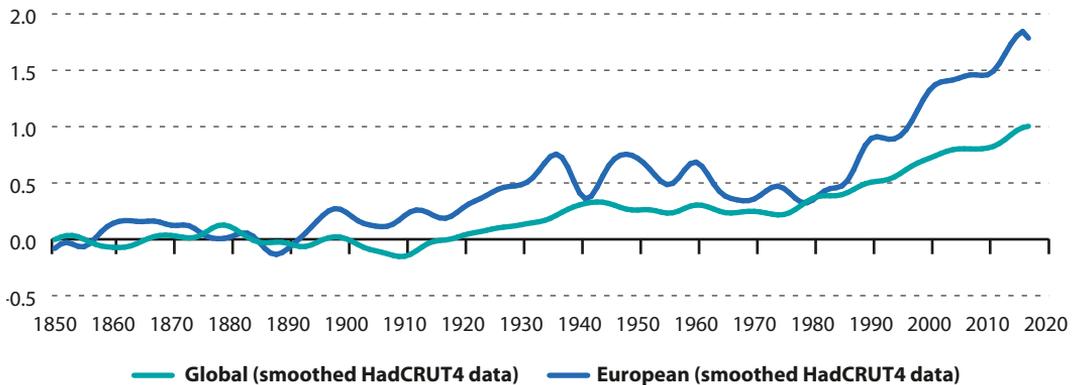
Rising emissions have dramatically increased CO₂ levels in the atmosphere. Although there is a time lag between CO₂ emitted and the corresponding increase in average global surface temperature, recordings already show a clear

Figure 3.8: CO₂ emissions from fuel combustion per capita, by country, 1990 and 2015 (tonnes of CO₂ per capita)



Source: International Energy Agency (IEA)

Figure 3.9: Global and European annual mean temperature deviations, 1850–2017 (temperature deviation in °C, compared with 1850–1899 average)



Source: European Environment Agency (online data code: [sdg_13_30](#))

upward trend (see Figure 3.9). The first decade of the 21st century was on average 0.87°C warmer than the first decade of the 20th century. Furthermore, at 1.0°C above pre-industrial levels, 2017 was the warmest year since records began in 1850. Current projections estimate that global mean temperatures could rise by as much as 2.6°C to 4.8°C compared with the reference period (1986–2005) by the late 21st century (2081–2100) if CO₂ emissions remain at current levels ⁽¹⁸⁾.

Despite the EU's shrinking share of global CO₂ emissions, recent findings on the increasingly severe impacts of climate change confirm its climate and energy goals continue to be important ⁽¹⁹⁾. EU emission cuts alone cannot

halt climate change, but the GHG reduction objectives for 2030 and 2050 are considered a fair contribution to the global mitigation efforts, consistent with the internationally agreed objective of keeping the temperature increase below 2°C compared to pre-industrial levels ⁽²⁰⁾. Moreover, if the EU can show that a low-carbon economy is feasible, and leads to increases in innovation and employment, it will serve as a role model for other regions. Continuous investment in advanced low-carbon technologies can also help the EU uphold technological leadership and secure export markets. A successful clean energy transition, discussed in the next section, will provide optimal conditions for sustainable jobs, growth and investment.

3.3 Renewable energy on the rise

Renewable energy continues to be on the rise in the EU; in 2016 it provided 17.0% of gross final energy consumption, up from 9.0% in 2005.

Solid, liquid and gaseous biofuels still provide the largest share of total renewable

energy in the EU and are used heavily in heating as well as in electricity generation and transport. For transport, renewable energy provided 7.1% of all energy used in 2016, up from 1.8% in 2005.



3.3.1 Renewable energy keeps growing steadily

The Europe 2020 strategy's second climate change and energy target foresees a 20% increase in the **share of renewable energy in gross final energy consumption** by 2020. Gross final energy consumption comprises the energy supplied to final consumers for all energy uses and the consumption of electricity and heat by the energy sector for electricity and heat production, including losses of electricity and heat in distribution and transmission.

Between 2004 and 2016, the share of renewable energy doubled, reaching 17.0% of gross final energy consumption in 2016 (see Figure 3.10). The main drivers of this increase were rapid developments in technology, the implementation of support schemes for renewable energy technology and the falling costs of renewable energy systems ⁽²¹⁾. Over the past decade, there has been a steady growth in installed capacity for renewable electricity and heat generation, driven by policies such as feed-in tariffs, grants, tax credits and, more recently, tenders. At the same time, the introduction of

⁽¹⁸⁾ EEA, *SOER 2015 — The European environment: Increasingly severe consequences of climate change (GMT 9)*, 2015.

⁽¹⁹⁾ Ibid.

⁽²⁰⁾ European Commission, *Impact Assessment accompanying the Communication A policy framework for climate and energy in the period from 2020 up to 2030*, SWD(2014)15.

⁽²¹⁾ EEA, *Renewable energy in Europe 2017 update: recent growth and knock-on effects*, EEA Report No 23/2017, Copenhagen, 2017.

Updated and more accurate statistical information, as a result of revisions based on specialised surveys, have also contributed to this increase, in particular data revisions in the area of solid biomass (wood) consumption in households.



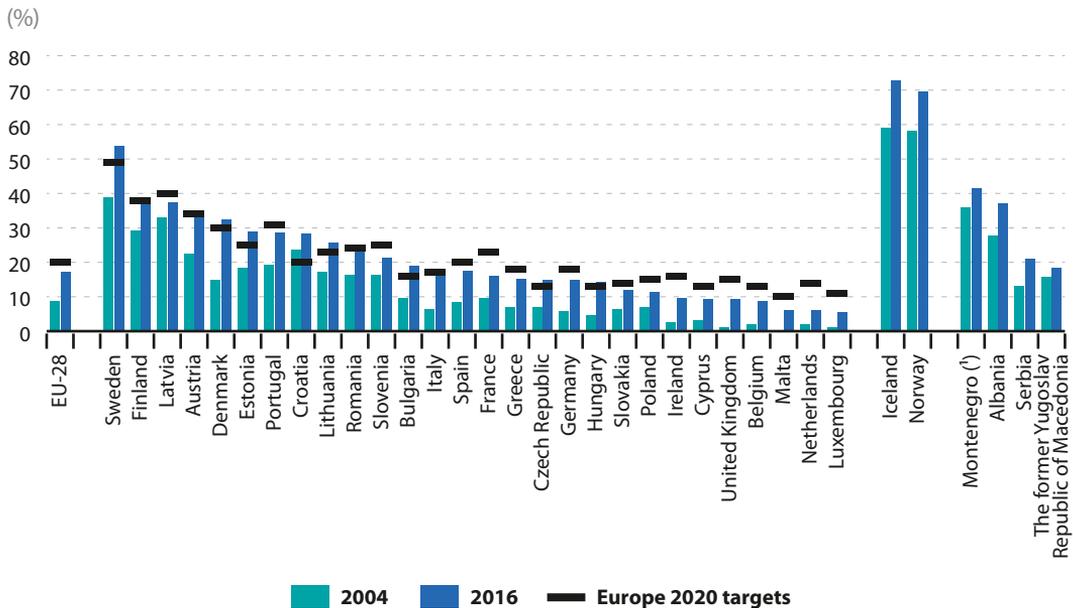
Europe 2020 headline indicator

Figure 3.10: Share of renewable energy in gross final energy consumption, EU-28, 2004–2016 (%)



Source: Eurostat (online data code: t2020_31)

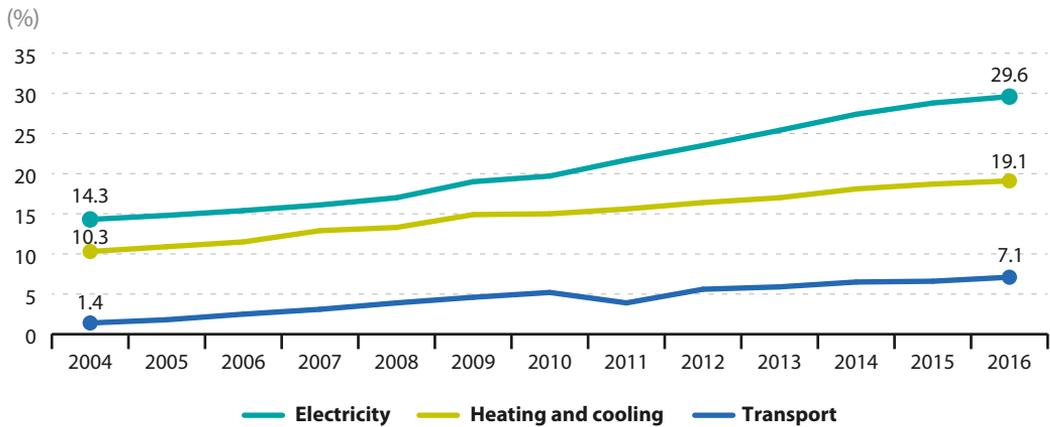
Figure 3.11: Share of renewable energy in gross final energy consumption, by country, 2004 and 2016



(¹) 2005 data (instead of 2004).

Source: Eurostat (online data code: t2020_31)

Figure 3.12: Share of renewable energy in gross final energy consumption, by sector, EU-28, 2004–2016



Source: Eurostat (online data code: [sdg_07_40](#))

obligatory quotas has stimulated the use of renewable transport fuels ⁽²²⁾. Furthermore, in the electricity sector, an upscaling of global production volumes and technological advances have led to substantial cost reductions. New photovoltaic power stations built in 2016 produce electricity for a third of the costs required in 2009. The offshore wind industry has achieved similar reductions, roughly halving costs per kilowatt-hour between 2011 and 2016 ⁽²³⁾. In short, electricity from wind turbines and large solar installations is becoming increasingly competitive with old and new fossil fuel plants.

Differences between Member States in their share of renewable energy, as shown in Figure 3.11, stem from variations in available natural resources, such as the potential for building hydropower plants and the availability of biomass, but also from the success of national climate and energy policies. Nevertheless, all EU countries increased the share of renewable energy in final energy consumption between 2004 and 2016. Fifteen have more than doubled their share, albeit in many cases from a low

starting point. In 2016, 11 countries already met their 2020 targets.

Compared with other world regions, the EU's use of renewable energy is relatively high. The continent of Africa, where the use of traditional biomass is still widespread, procured more than half of its total final energy consumption from renewable sources in 2015. Most emerging and industrialised countries, however, have lower shares. For example, China covered 6.1 % of its final energy consumption through renewable sources in 2015, followed by Mexico with 6.0 %, Australia (5.8 %), the United States (5.2 %) and Japan (1.3 %). In the Middle East, the share was as low as 0.2 %. In terms of primary energy supply, Canada had a relatively high share of renewable energy, amounting to 18.2 % in 2015 due to abundant hydropower resources ⁽²⁴⁾.

3.3.2 Shares of renewable energy are growing across different sectors

Renewable energies contribute both to electricity generation and energy consumption for heating and cooling as well as to the transport

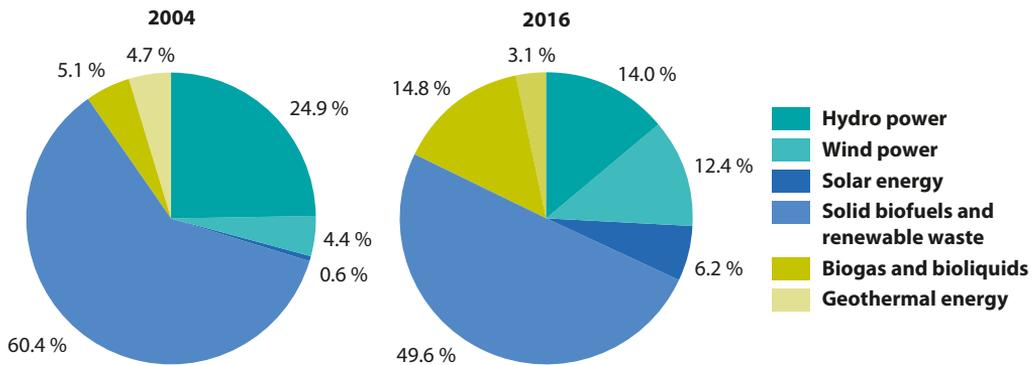
⁽²²⁾ Ecofys, *Renewable energy progress and biofuels sustainability*, Utrecht, 2014.

⁽²³⁾ McCrone, Angus et al, *Global Trends in Renewable Energy Investment 2017*, Frankfurt School of Finance and Management, commissioned by UN Environment's Economy Division in cooperation with Frankfurt School-UNEP Collaborating Centre for Climate & Sustainable Energy Finance and produced in collaboration with Bloomberg New Energy Finance, Frankfurt am Main, 2017.

⁽²⁴⁾ IEA, *Headline Global Energy Data*, 2017 edition.



Figure 3.13: Gross inland consumption of renewable energy, by source, EU-28, 2004 and 2016 (%)



Source: Eurostat (online data code: [nrg_107a](#))

sector. As shown in Figure 3.12, renewables contributed almost a third of gross final electricity consumption in 2016, which is twice the share reported in 2004. Moreover, renewable energy provided almost one-fifth of Europe's final energy consumption for heating and cooling in 2016, up from 10.3% in 2004. The share of renewables in transport energy use has also increased since 2004, reaching 7.1% in 2016. The break in the time series in 2011 can be explained by a change in the accounting methodology for liquid biofuels ⁽²⁵⁾.

A 2015 amendment to the Fuel Quality Directive and the Renewable Energy Directive ⁽²⁶⁾ puts greater emphasis on production of advanced biofuels (biofuels stemming from the residual non-food parts of crops, as well as crops that are not used for food). Furthermore, it places limitations on the extent to which liquid biofuels produced from crops grown on agricultural land can contribute to renewable energy targets in transport. Alternative biofuels, mainly based on used cooking oil, contributed 23% to all

compliant biofuels used in the EU in 2015, up from 1% in 2009 ⁽²⁷⁾.

3.3.3 Biofuels dominate renewable energy but wind and solar are expanding quickly

Renewable energy can be generated from a range of sources, including hydro, wind, solar and geothermal power. In 2016, bioenergy (solid biofuels, renewable waste, biogas and bioliquids) remained by far the EU's most important renewable energy source and contributed to all energy-use sectors (electricity generation, transport and heating and cooling), providing almost two-thirds of the total gross inland consumption of renewable energy (see Figure 3.13). Nevertheless, wind and solar energy have continued to grow the fastest in terms of relative shares. In 2016, the EU generated 26.0 million tonnes of oil equivalent (Mtoe) from wind energy — a more than five-fold increase compared with 2004. In the same year, solar energy (both photovoltaic and

⁽²⁵⁾ The Renewable Energy Directive sets sustainability criteria for the production of liquid biofuels, which make up the largest share of renewables in transport. Since 2011 only those biofuels certified as sustainable according to the Directive are counted towards the share of renewables in transport and are therefore included in the indicator. Some Member States transposed the sustainability standards into national law earlier than others. This change in the accounting methodology explains the dip in the share of renewables in transport from 2010 to 2011.

⁽²⁶⁾ Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

⁽²⁷⁾ European Commission, *Renewable Energy Progress Report*, COM(2017) 57 final, Brussels, 2017.

thermal) contributed 13.4 Mtoe, more than 19 times as much as in 2004. Overall, the ongoing decrease in shares of bioenergy relative to wind and solar photovoltaic is a function of rapid expansion in the latter two technologies

than a reduction in consumption of the former. Similarly, the contribution of hydro power to gross inland consumption remained relatively constant between 2004 (28.3 Mtoe) and 2016 (30.1 Mtoe).

3.4 The EU needs to further pursue energy efficiency improvements



The EU has made substantial progress towards its energy efficiency objective of 20% savings by 2020 — in 2016, the EU consumed 170.6 Mtoe (10%)

less primary energy than in 2005 and 310.3 Mtoe (16.7%) less than projections of 2020 consumption made in 2007.

To meet its target, the EU must reduce primary energy production by an additional 3.9% over the four years from 2016 to

2020. Even though the 2020 target for final energy consumption was reached temporarily in 2015, a subsequent rise in consumption in 2016 means an additional 2.0% fall is required by 2020.

The EU still relies heavily on energy imports from non-EU countries, which provided 53.6% of all energy consumed in 2016. The main supplier of energy to the EU in 2016 continued to be Russia, which supplied 40.2% of gas, 34.6% of petroleum products and 30.2% of solid fuels imports.

Delivering the same service or product by using less energy is one of the most cost-effective ways of reducing GHG emissions and enhancing energy security. Building renovations as well as efficiency improvements in the transport sector offer the biggest potential for further reductions ⁽²⁸⁾.

The Europe 2020 strategy has a target to increase energy efficiency by 20%. In absolute terms this means that by 2020 EU energy consumption should not exceed 1 483 Mtoe of primary energy or 1 086 Mtoe of final energy ⁽²⁹⁾. The EU efficiency target is measured as a 20% saving compared with projected primary energy consumption (PEC) in 2020. Starting with 2005 as the base year, this business-as-usual projection (carried out in

2007) estimated a PEC of 1 853 Mtoe in 2020. It assumed continuous economic growth and no additional energy-efficiency policies above and beyond those in place in 2005. The envisaged 20% saving amounts to an absolute reduction of 370 Mtoe, resulting in a target PEC of no more than 1 483 Mtoe for 2020 ⁽³⁰⁾. Compared with the actual PEC in 2005, this is equivalent to a reduction of 13.4%.

PEC includes all gross inland energy consumption except energy carriers used for non-energy purposes, for example, petroleum or gas not used for combustion but for producing plastics. By contrast, final energy consumption (FEC) only comprises the energy consumed by end users (for

⁽²⁸⁾ European Commission, *Report from the Commission to the European Parliament and the Council 2017 assessment of the progress made by Member States towards the national energy efficiency targets for 2020 and towards the implementation of the Energy Efficiency Directive as required by Article 24(3) of the Energy Efficiency Directive 2012/27/EU*, COM(2017) 687 final, Brussels, 2017.

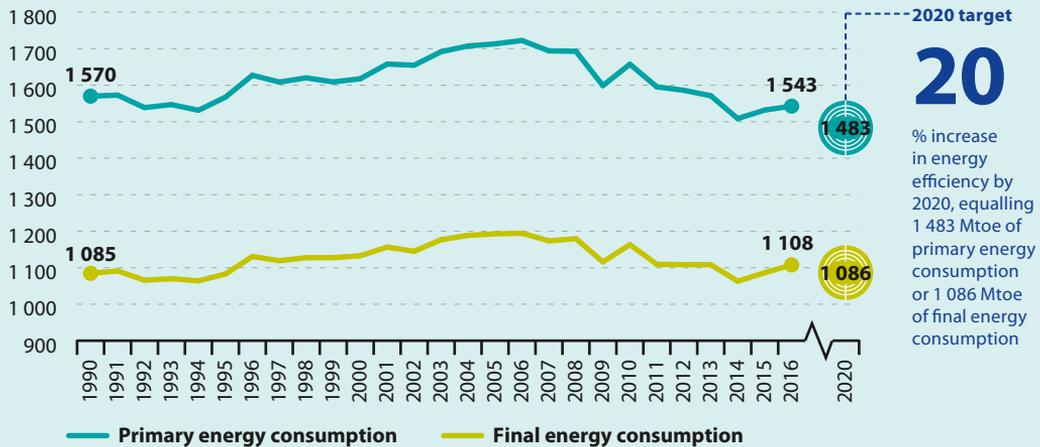
⁽²⁹⁾ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, Article 3. Directive 2013/12/EU of 13 May 2013 adapting Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency, by reason of the accession of the Republic of Croatia.

⁽³⁰⁾ Directive 2013/12/EU of 13 May 2013 adapting Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency, by reason of the accession of the Republic of Croatia.



Europe 2020 headline indicator

Figure 3.14: Primary energy consumption and final energy consumption, EU-28, 1990–2016 (million tonnes of oil equivalent)



Source: Eurostat (online data codes: t2020_33 and t2020_34)

EUROPE 2020
HEADLINE
INDICATOR



20

% increase in energy efficiency by 2020, equalling 1 483 Mtoe of primary energy consumption or 1 086 Mtoe of final energy consumption

example, households, industry and agriculture) for all energy uses, excluding energy used by the energy sector. The difference between primary and final energy consumption is equivalent to the energy losses occurring during energy transformation (particularly electricity generation), transmission and distribution.

3.4.1 Energy consumption in the EU has been decreasing, but with a reversed trend in recent years

As Figure 3.14 shows, PEC in the EU was following an intermittent but overall rising trend until 2006 when it peaked at 1 722 Mtoe. After the onset of the economic crisis in 2008, it fell sharply and continued to fall over the next four years, reaching 1 509 Mtoe in 2014 (with an exceptional increase in 2010). The downward trend was interrupted in 2015, when PEC increased by 1.5 % compared to the previous year and by another 0.7 % in 2016

compared to 2015. Reductions in 2011 and 2012 can be partly attributed to reduced economic output expressed by a 0.5 % contraction of real GDP in 2012. However, PEC continued to fall thereafter, despite a real GDP growth of 1.8 % in 2014 ⁽³¹⁾. Warmer years in 2013 and 2014, and improvements in energy efficiency due to new policies, are considered to have contributed to this decrease ⁽³²⁾. The increases in 2015 and 2016 reflect a return to more average heating demand compared to the exceptionally warm year 2014 ⁽³³⁾. In 2016, the EU consumed 1.7 % less primary energy than it did in 1990 and 10.0 % less than in 2005. To achieve its 2020 efficiency target, the EU would need to reduce its primary energy consumption by another 3.9 % in the four years between 2016 and 2020.

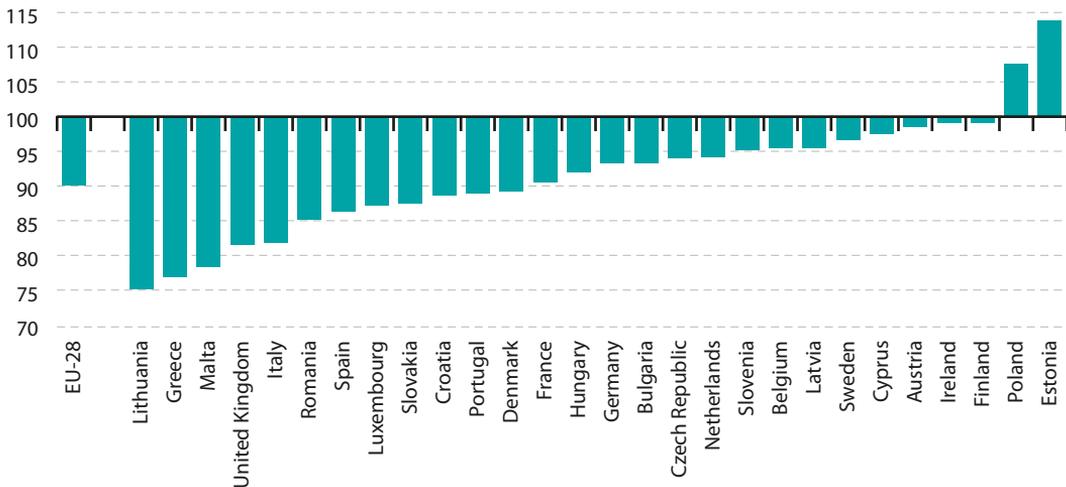
The trend in FEC has closely followed the trend in PEC, rising to 1 108 Mtoe in 2016, up from 1 063 Mtoe in 2014. Notably, the EU had already reached its 2020 target for FEC in 2014, but the

⁽³¹⁾ Based on Eurostat data on real GDP growth rate — volume (online data code: (tec00115), accessed 7 July 2017).

⁽³²⁾ EEA, *Trends and projections in Europe 2017 — Tracking progress towards Europe's climate and energy targets*, EEA report No 17/2017, Copenhagen, 2017.

⁽³³⁾ European Commission, *2017 assessment of the progress made by Member States towards the national energy*.

Figure 3.15: Change in primary energy consumption, by country, 2016
(Index 2005 = 100)



Source: Eurostat (online data code: t2020_33)

increased consumption in subsequent years means an additional 2.0% decrease is required by 2020. In 2016, FEC was 7.1% lower than 2005.

Globally, only one major economy has reduced PEC by more than the EU: Japan consumed 18.4% less primary energy in 2016 than it did in 2005. The United States reduced its PEC by 6.9% over the same period, whereas energy demand rose in all other large industrialised countries and regions. The highest increase over the past decade was observed in China, which increased its PEC by 66.9% followed by India (64.9%), Turkey (59.8%), the Middle East (55.6%), Thailand (36.6%) and Korea (35.2%)⁽³⁴⁾. An increase in PEC can, however, occur despite energy efficiency improvements. In emerging economies, in particular, high economic growth and population drive demand for energy.

3.4.2 Changes in energy consumption at Member State and sector level

Figure 3.15 shows the change in PEC from 2005 to 2016 in all Member States. Looking at the 2016

data, 26 countries reduced PEC compared to 2005 by values ranging from 0.9% to 24.9%.

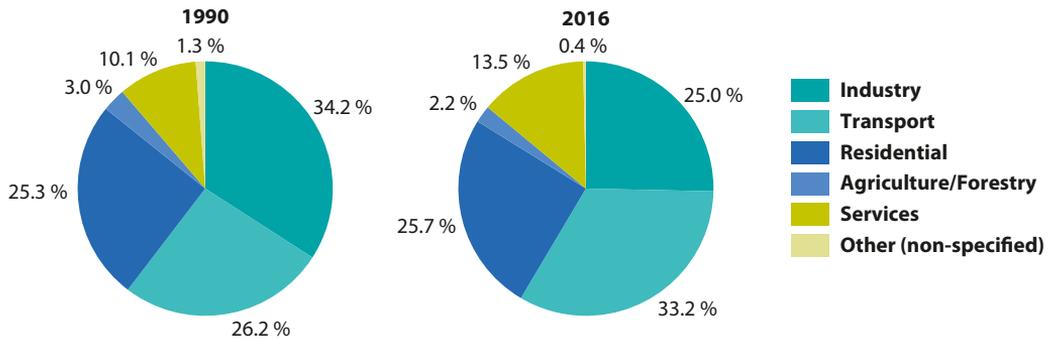
Between 1990 and 2016, economic sectors showed different final energy consumption trends (see Figures 3.16 and 3.17). Agriculture and forestry, as well as industry, reduced their final energy consumption by 24.9% and 25.4%, respectively, while the residential sector's consumption increased just 3.9%. By contrast, energy consumption in the services and transport sectors grew by 37.6% and 29.2%, respectively, over the same time period. Notably, energy consumption in all sectors grew by varying amounts in 2016, which again may reflect a return to more typical winter temperatures⁽³⁵⁾. In the shorter term, between 2008 and 2016, FEC reduced by 13.1% in the industry sector, 2.6% in the transport sector and 5.7% in the residential sector. In contrast, energy consumption in the service sector remained constant over the same time period.

While these changes reflect sector-specific levels of energy-efficiency improvement, they also

⁽³⁴⁾ IEA, *Headline Global Energy Data*, 2017 edition. Figures for China, India, Thailand and the Middle East refer to 2015 data. Figures for the United States, Turkey, Japan and Korea refer to 2016 provisional data.

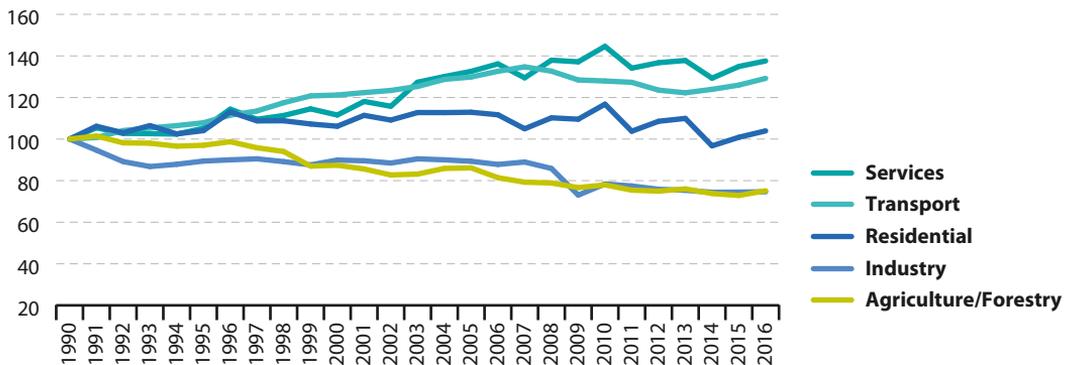
⁽³⁵⁾ European Commission, Report from the Commission to the European Parliament and the Council 2017 assessment of the progress made by Member States towards the national energy efficiency targets for 2020 and towards the implementation of the Energy Efficiency Directive as required by Article 24(3) of the Energy Efficiency Directive 2012/27/EU, COM(2017) 687 final, Brussels, 2017.

Figure 3.16: Final energy consumption, by sector, EU-28, 1990 and 2016
(% in total FEC)



Source: Eurostat (online data code: nrg_100a)

Figure 3.17: Final energy consumption, by sector, EU-28, 1990–2016
(index 1990 = 100)



Source: Eurostat (online data code: nrg_100a)

relate to structural changes in the EU economy, particularly a shift away from an energy-intensive industry to a service-based economy. In the case of transport, a large share of efficiency gains has been outweighed by rising volumes of transport over the past few decades. In 2016, the majority of final energy was used in transport with a 33.2% share, followed by industry (25.0%) and the residential sector (25.7%). The services sector was responsible for 13.5% and agriculture and forestry for 2.2% of final energy consumption.

3.4.3 EU's dependency on energy imports has been increasing

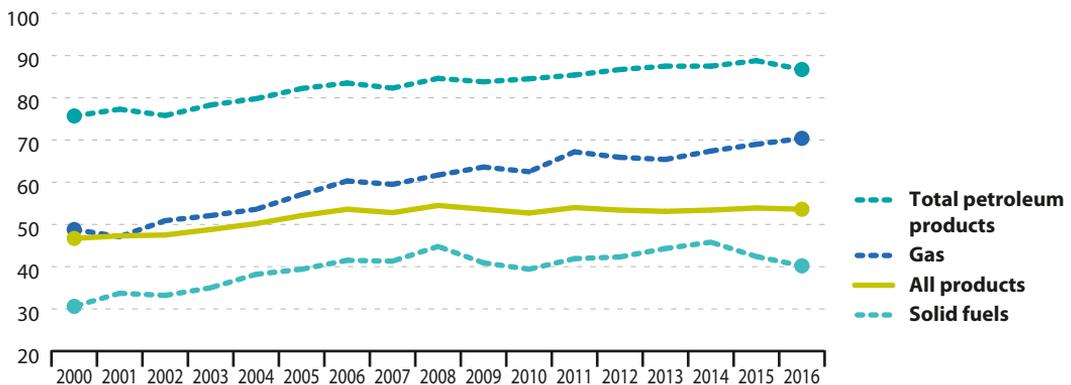
Energy-efficiency improvements can strengthen the EU's competitiveness and lower its dependence on fossil fuel imports. The EU's energy dependence — the share of total energy needs met by imports from non-EU countries — has increased significantly over the past decade, reaching 53.6% in 2016 (see Figure 3.18). The increasing demand for fossil fuel imports is

driven by a decline in domestic oil, gas and coal production ⁽³⁶⁾. By contrast, most renewable energy can be sourced domestically. At 74.3%, in 2016, crude oil (without natural gas liquids, NGL) accounted for the largest share of total petroleum product imports, which have risen steadily from 75.7% of total energy consumption in 2000 to 86.7% in 2016. The imported share of solid fuels such as hard coal has gone up by 9.6

percentage points between 2000 and 2016, while the share of imports in total gas consumption has increased by 21.4 percentage points. Over the observed period, the fall in EU mining and drilling has overcompensated the increase in domestic renewable energy production.

Figure 3.19 shows the chief suppliers of energy to the EU. The main import partner in 2016 was Russia. It supplied 40.2% of gas, 34.6% of

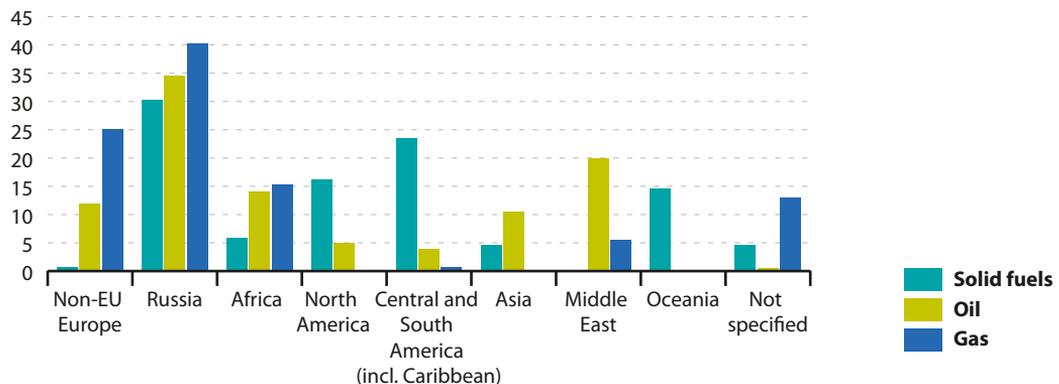
Figure 3.18: Energy dependence, EU-28, 1990–2016
(% of imports in total energy consumption)



Note: 'All products' 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.

Source: Eurostat (online data code: [sdg_07_50](#))

Figure 3.19: Energy imports from outside the EU, EU-28, 2016
(% of total extra-EU-28 imports)



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

⁽³⁶⁾ European Commission, *In-depth study of European Energy Security. Commission Staff Working Document accompanying the European energy security strategy*, SWD(2014) 330 final/3, Brussels 2014.



petroleum products and 30.2 % of solid fuels imports from non-EU suppliers. The second largest source of natural gas was other non-EU European countries, mainly Norway, with 25.1 %. Also 11.8 % of oil imports came from this region. The second largest source supplying oil to the EU after Russia was the Middle East, with 19.9 %, followed by Africa with 14.0 %. Regarding solid fuels, Central and South America were the second largest source after Russia with 23.5 %, followed by North America with 16.1 %.

Dependence on imported energy exposes the European economy to significant costs and the risk of supply shortages, for example, due to geopolitical conflicts. The expansion of renewable energy sources and the improvement of energy efficiency reduce these risks. At the same time, they contribute to the Europe 2020 strategy's employment objective (see the chapter on 'Employment', page 23) by creating jobs and value added within EU borders.

4

Education



4.1 Education and training — why do they matter?

Education and training lie at the heart of the Europe 2020 strategy and are seen as key drivers for growth and jobs. The economic crisis along with an ageing population, through their impact on economies, labour markets and society, are two important challenges that are changing the context in which education systems operate ⁽¹⁾. At the same time, education and training help boost productivity, innovation and competitiveness.

Nowadays upper secondary education is considered the minimum desirable educational attainment level for EU citizens. Young people who leave education and training prematurely lack crucial skills and run the risk of facing serious, persistent problems in the labour market and experiencing poverty and social exclusion. Those early leavers from education and training who do enter the labour market are more likely to be in precarious, low-paid jobs and to draw on welfare and other social programmes. They are also less likely to be 'active citizens' or engage in adult learning.

In addition, tertiary education, with its links to research and innovation, provides highly skilled human capital (see the chapter on 'R&D and innovation', page 49). A lack of these skills presents a severe obstacle to economic growth and employment in an era of rapid technological progress, intense global competition and labour market demand for ever-increasing levels of skill. The Europe 2020 strategy, through its 'smart growth' priority, aims to tackle early school leaving and to raise tertiary education levels.

ET 2020 — the EU's Strategic Framework for Education and Training 2020

The two Europe 2020 education targets also feature as EU benchmarks under the Strategic Framework for Education and Training 2020 (ET 2020). ET 2020 aims to foster European co-

Europe 2020 strategy target on education

The Europe 2020 strategy sets out a target of 'reducing the school drop-out rate to less than 10 % and increasing the share of the population aged 30–34 having completed tertiary education to at least 40 %' by 2020 ^(*).

(*) European Commission, *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels, 2014.

operation in education and training, providing common strategic objectives for the EU and its Member States up to 2020. ET 2020 covers the areas of adult participation in learning and mobility; quality and efficiency of education and training; equity, social cohesion and active citizenship; and creativity, innovation and entrepreneurship at all levels of education and training. To support the achievement of these objectives ET 2020 sets EU-wide benchmarks. In addition to the two Europe 2020 targets for education, there are another five benchmarks:

- **Early education and care:** At least 95 % of children between the age of four years and the age of starting compulsory primary education should participate in early childhood education.
- **Underachievement in basic skills:** The share of low-achieving 15 year olds in reading, mathematics and science should be less than 15 %.
- **Employment rate of recent graduates:** The share of graduates (20 to 34 year olds) having left education and training in the past one to three years who are employed and not in any further education and training should be at least 82 %.

⁽¹⁾ For further information on the impact of demographic ageing on the labour force, see the chapter on 'Employment', page 23.



Education in the EU

Europe 2020 headline indicators



2020 target:
10 %

Early leavers from education and training in 2017

10.6 % of population aged 18 to 24
- 4.1 pp since 2008



2020 target:
40 %

Tertiary educational attainment in 2017

39.9 % of population aged 30 to 34
+ 8.7 pp since 2008



... by country of birth in 2017

19.3 % of 18 to 24 year olds born outside EU-28
- 10.5 pp since 2008



... by sex in 2017

34.9 % of men aged 30 to 34
+ 6.9 pp since 2008

44.9 % of women aged 30 to 34
+ 10.6 pp since 2008



... not employed but would like to work in 2017

34.9 % of early leavers aged 18 to 24
+ 4.3 pp since 2008

Contextual indicators



Participation in early childhood education in 2016

95.5 % of children between 4 years old and starting age of compulsory education
+ 3.9 pp since 2008



Employed recent graduates in 2017

80.2 % of population aged 20 to 34
- 1.9 pp since 2008



Low achievers in maths in 2015

22.2 % of 15-year-old pupils



Participation in adult learning in 2017

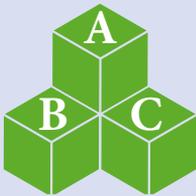
10.9 % of population aged 25 to 64
+ 1.4 pp since 2008

Source: Eurostat (online data codes: t2020_40, edat_lfse_02, edat_lfse_14, sdg_04_30, sdg_04_40, t2020_41, sdg_04_50, sdg_04_60 and educ_uoe_fine06)

- **Adult participation in learning:** An average of at least 15 % of adults should participate in learning.
- **Learning mobility:** On average in the EU, at least 20 % of graduates from higher education and at least 6 % of 18 to 34 year olds with an initial vocational qualification should have spent some time studying or training abroad.

The EU's educational targets are interlinked with the other Europe 2020 goals as higher educational attainment improves employability, which in turn reduces poverty. The tertiary education target is furthermore interrelated with the research and development (R&D) and innovation target as investment in the R&D sector is likely to raise the demand for highly skilled workers.

4.2 Continuous decrease in early school leaving



Early leaving from education and training has been falling continuously in the EU since 2002, for both men and women. The fall from

17.0 % in 2002 to 10.6 % in 2017 represents steady progress towards the Europe 2020 target of 10 %.

Half of the Member States have already reached their national targets for the rate of early leavers from education and training. Southern European countries made particularly strong progress between 2008 and 2017.

Across the EU, rates of early leaving from education and training are generally higher for people who live in a country different from the one they were born in.

Educational attainment strongly influences labour market participation. In 2017, about

55.7 % of 18 to 24-year-old early leavers from education and training were either unemployed or inactive.

Participation in early childhood education and care (ECEC) has grown more or less continuously in the EU since 2002. In 2016, 95.5 % of children between the age of four and the starting age of compulsory primary education participated in ECEC, exceeding the ET 2020 benchmark of a participation rate of at least 95 %.

In 2015, about one-fifth of 15 year olds showed insufficient abilities in reading, maths and science. This is a step backward compared to 2012. As a result, the EU as a whole is seriously lagging behind in all three domains when it comes to progress towards the ET 2020 benchmark of less than 15 % of 15 year olds being low achievers. Low achievers are students who have failed to reach level 2 of the PISA test.

The EU regards upper secondary education as the minimum desirable educational attainment level for EU citizens. The skills and competences gained at this level are considered essential for successful labour market entry and as the foundation for adult learning. Therefore, the headline indicator 'early leavers from education and training' measures the share of the population aged 18 to 24 with at most lower secondary education and

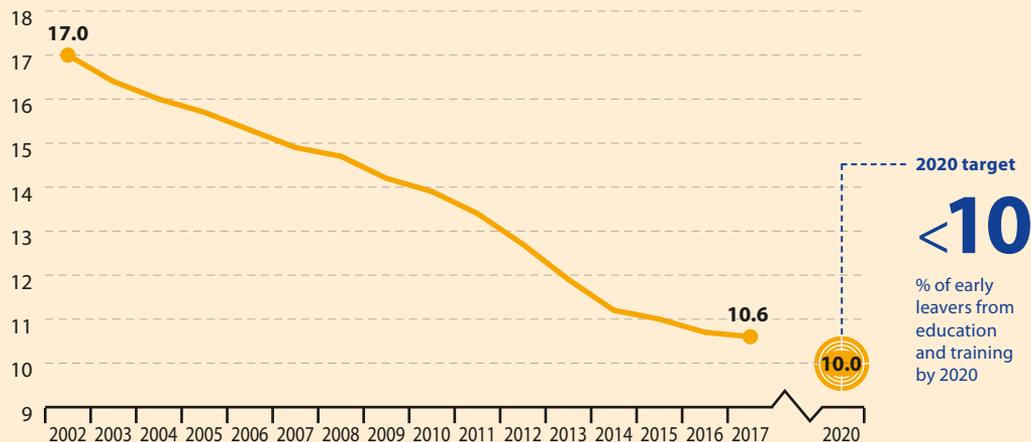
who were not involved in further education or training during the four weeks preceding the survey. Figure 4.1 shows that the share of early leavers has fallen continuously from 17.0 % in 2002 to 10.6 % in 2017, albeit more slowly in recent years. This trend mirrors reductions in almost all Member States for both men and women.

Overall, in the EU more men leave education and training early than women. This gap, which was



Europe 2020 headline indicator

Figure 4.1: Early leavers from education and training, EU-28, 2002–2017
(% of the population aged 18–24)



Note: Breaks in time series in 2003, 2006 and 2014.

Source: Eurostat (online data code: t2020_40)

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3.2 percentage points in 2017, has narrowed by 1.3 percentage points since 2004. However, for the second time since 2010, the gap has widened compared to the previous year. The rate for women is already below the headline target, with only 8.9% leaving early in 2017.

At the country level, gender differences in 2017 were particularly strong in Spain, Latvia, Estonia and Malta. Slovakia, Bulgaria, Hungary and Romania were the only Member States where men were more likely to stay longer in education and training than women.

4.2.1 Substantial decreases in early leaving in southern European countries

Reflecting different national circumstances, the overall EU target for early leavers from education and training has been transposed into national targets by all Member States except the United Kingdom. National targets range from 4% for Croatia to 16% for Italy. As shown in Figure 4.2, half of the Member States had already achieved their national targets in 2017.

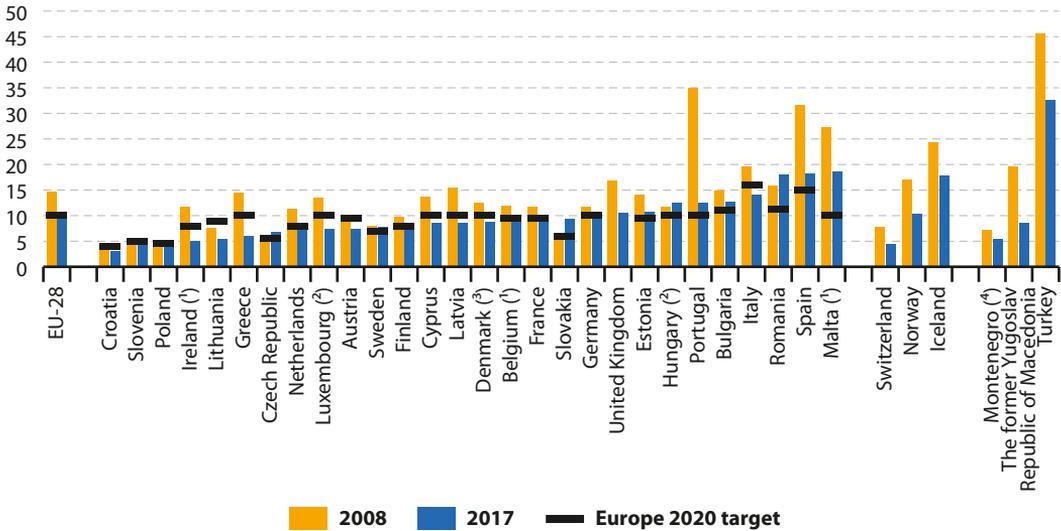
Rates of early leaving vary widely across Member States. In 2017, the lowest proportion of early leavers was observed in some southern and eastern European countries (Croatia, Slovenia, Poland and Lithuania) and Ireland, with rates of less than 6%. At the same time, some other southern and eastern countries, such as Malta, Romania and Spain, reported the highest shares in the EU, of slightly above 18%.

Southern European countries also experienced strong falls in early leaving between 2008 and 2017, especially Portugal (from 34.9% to 12.6%), Spain (from 31.7% to 18.3%) and Malta (from 27.2% to 18.6%). A total of 18 Member States were already below the overall EU target of 10% in 2017.

Country of birth strongly influences the rate of early leaving across the EU (see Figure 4.3). People who live in a country different from the one where they were born are more likely to struggle to complete their education. Socioeconomic status underlies much of this difficulty, but issues associated with immigration such as language barriers and settling into a new environment are

Figure 4.2: Early leavers from education and training, by country, 2008 and 2017

(% of the population aged 18–24)



Note: All countries: break in time series in 2014 (switch from ISCED 1997 to ISCED 2011); the change of ISCED has no impact on the comparability over time of this indicator for all Member States, except Estonia.

Source: Eurostat (online data code: [t2020_40](#))

(¹) Break in time series in 2017.

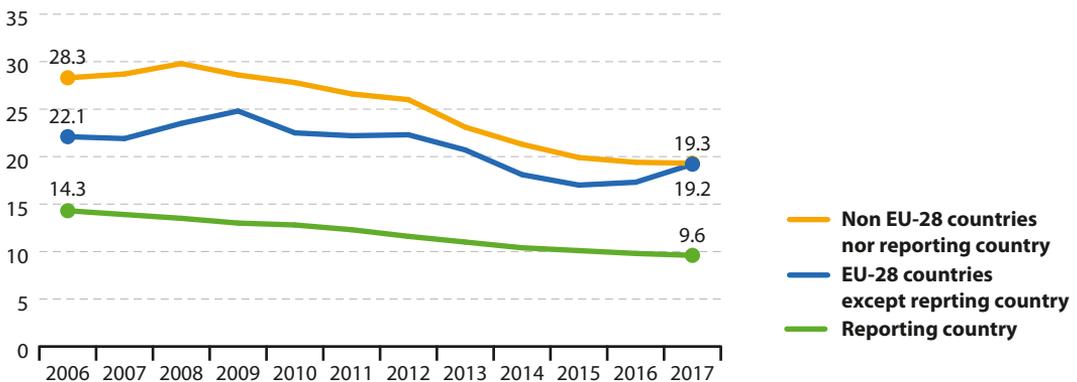
(²) Break in time series in 2015.

(³) Break in time series in 2016.

(⁴) 2011 data (instead of 2008).

Figure 4.3: Early leavers from education and training by broad group of country of birth, EU-28, 2006–2017

(% of the population aged 18–24)

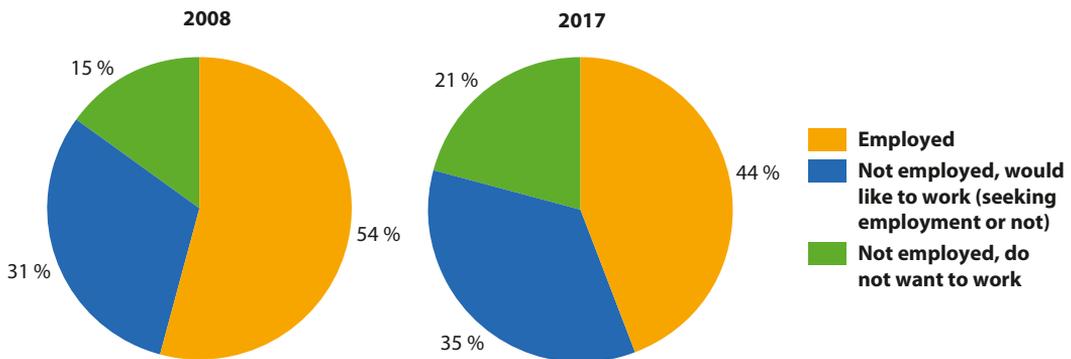


Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).

Source: Eurostat (online data code: [edat_lfse_02](#))



Figure 4.4: Early leavers from education and training, by labour status, EU-28, 2008 and 2017
(% of the early leavers aged 18–24)



Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).

Source: Eurostat (online data code: [edat_lfse_14](#))

also at play, according to the Migration Policy Institute (²).

4.2.2 Early school leaving leads to severe problems in the labour market

In general, low educational attainment — at most lower secondary education — influences other socioeconomic factors. The most important of these are employment, unemployment and the risk of poverty or social exclusion. Some of these relationships are also analysed in detail in other chapters (see the chapters on ‘Employment’, page 23 and ‘Poverty and social exclusion’, page 103).

Early leavers from education and training face particularly severe problems in the labour market. As Figure 4.4 shows, 55.7% of the early leavers, were either unemployed or inactive in 2017. The situation for early leavers has worsened over time: between 2008 and 2017, the share of 18 to 24 year old early leavers who were not employed but who wanted to work grew from 30.6% to 34.9%. However, this increase has not been continuous, with the situation actually improving in recent years with the share falling from 37.0% in 2016 to 34.9% in 2017. For a further analysis on youth

unemployment, see the chapter on ‘Employment’, page 23.

4.2.3 Participation in early childhood education and care has grown continuously

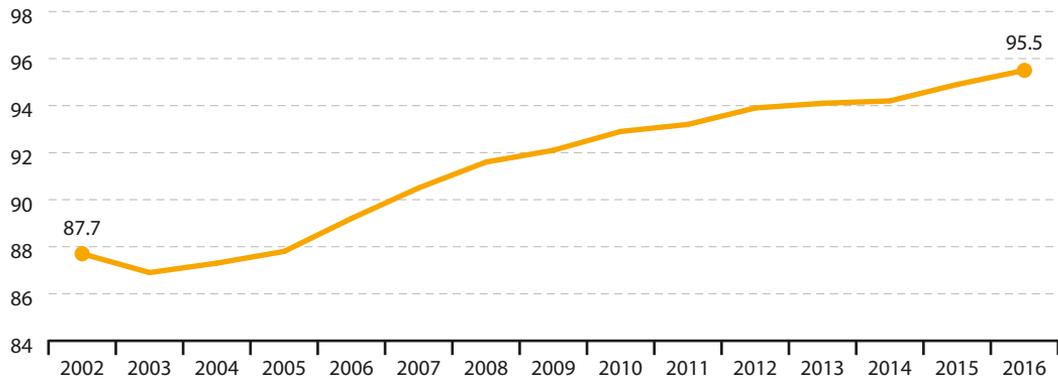
Early childhood education and care (ECEC) can bring wide-ranging social and economic benefits for individuals and for society as a whole. Quality education and care at this early stage provides an essential foundation for effective adult learning and future educational achievements. It also lays the foundations for later success in life in terms of well-being, employability and social integration. To realise these benefits, the EU aims to ensure that all young children can access and benefit from high-quality education and care (³).

Participation in ECEC is crucial for preparing children for formal education, especially those from disadvantaged backgrounds. The aim is to reduce the incidence of early school leaving and thereby address one of Europe 2020’s headline targets on education. Investment in pre-primary education also offers higher medium- and long-term returns and is more likely to help children

(²) Nouwen, Ward, Noel Clycq, and Daniela Ulicna, *Reducing the risk that youth with a migrant background in Europe will leave school early*, Brussels: Migration Policy Institute Europe and SIRIUS Policy Network on the education of children and youngsters with a migrant background, 2015.

(³) European Commission, *Key Data on Early Childhood Education and Care in Europe*, 2014.

Figure 4.5: Participation in early childhood education, EU-28, 2002–2016
(% of the age group between 4 years old and the starting age of compulsory education)



Source: Eurostat (online data code: [sdg_04_30](#))

from low socioeconomic status than investment at later educational stages.

The Strategic Framework for Education and Training 2020 (ET 2020) ⁽⁴⁾ recognises ECEC's potential for addressing social inclusion and economic challenges. It has set a benchmark to ensure that at least 95 % of children aged between four and the starting age of compulsory education participate in ECEC. As Figure 4.5 shows, participation has been rising more or less continuously in the EU since 2002, reaching 95.5 % in 2016 and therefore exceeding the benchmark of 95 %.

Participation rates for children under three years old are much lower. In 2016, 32.9 % of children up to three years were cared for by formal arrangements (1 to 29 hours per week: 15.0 %; more than 30 hours per week: 17.9 %). Compared to 2010, this is an increase of 4.9 percentage points (1 to 29 hours per week: 14.0 %; more than 30 hours per week: 14.0 %) ⁽⁵⁾. In 2002, the Barcelona European Council set objectives in this area: 'Member States should remove disincentives to female labour force participation, taking into account the demand for childcare facilities and in

line with national patterns of provision, to provide childcare by 2010 to at least 90 % of children between three years old and the mandatory school age and at least 33 % of children under three years of age'. This means the second objective had been almost reached by 2016 ⁽⁶⁾.

4.2.4 Acquisition of skills such as reading, maths and science has taken a step backwards

Basic skills — whether the ability to read simple texts or perform easy calculations — provide the foundations for learning, gaining specialised skills and personal development. People also need these skills to fully participate in and contribute to society. The ET 2020 framework acknowledges the increasing importance of individual skills in the era of the knowledge-based economy. Therefore, one of the targets enshrined in the ET 2020 is to reduce the share of 15 year olds achieving low proficiency levels in reading, mathematics and science to less than 15 % by 2020.

In 2015, about every fifth of 15-year-old EU citizens showed insufficient abilities in reading, mathematics and science as measured by the

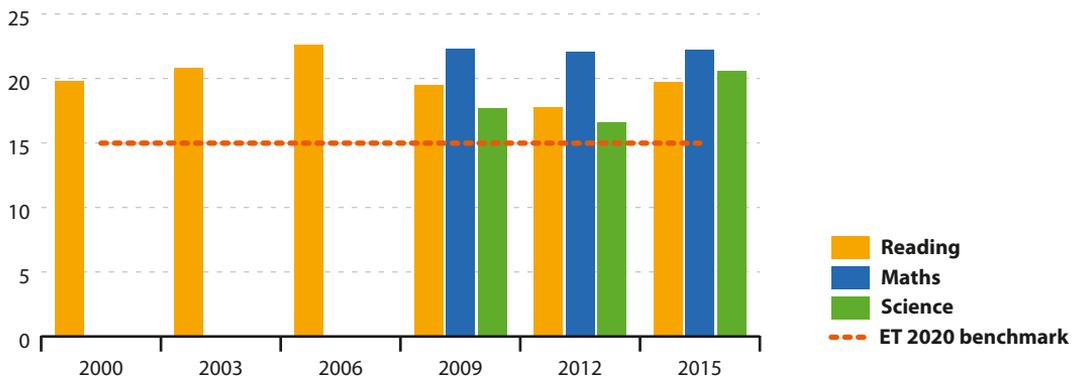
⁽⁴⁾ Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020') (2009/C 119/02), Official Journal of the European Union, 28 May 2009.

⁽⁵⁾ Data stem from the EU-SILC survey, data source: Eurostat (online data code: [ilc_caindformal](#)).

⁽⁶⁾ European Commission, *Barcelona objectives*, 2013, p. 4.



Figure 4.6: Underachievement in reading, maths and science, EU, 2000–2015
(% of 15-year-old pupils)



Note: Composition of EU aggregate differs for each year; 2015 data refer to EU-28.

Source: OECD/PISA and Eurostat (online data code: [sdg_04_40](#))

OECD's PISA study ⁽⁷⁾. Test results were best for reading, with a 19.7% share of low achievers, followed by science with 20.6% and maths with 22.2% (see Figure 4.6). According to the European Commission's PISA 2015 report ⁽⁸⁾, the EU as a whole is seriously lagging behind the 2020 target to have less than 15% of low achievers in each of the three basic skill areas. The report also shows that progress has taken a step backwards, with the rate of low achievers increasing since the PISA 2012 results by 4.0 percentage points in science, 1.9 percentage points in reading and 0.1 percentage points in maths.

In addition to basic skills in reading, maths and science, the ability of citizens to communicate in at least two languages besides their mother tongue

has been identified as a key priority in the ET 2020 framework. Schools teach foreign languages in all Member States, making language learning a central element in every child's school experience across Europe. On average, 15.5% of pupils across the EU in primary education (ISCED level 1) were not engaged in foreign language learning at this level in 2015 ⁽⁹⁾. This is an improvement on 2013, when this share stood at 18.3%. Looking at students in lower secondary education (ISCED level 2), the share of pupils learning no foreign language dropped to 1.3% across the EU in 2015. A majority of students in lower secondary education (58.8%) were learning two or more foreign languages in 2015 and a further 39.8% were learning one foreign language.

⁽⁷⁾ PISA is an international study that was launched by the OECD in 1997. It aims to evaluate education systems worldwide every three years by assessing the competencies of 15-year-old students in the key subjects: reading, mathematics and science. The data presented here refer to pupils showing skills below proficiency level 2 on the PISA scale. For further details see <http://www.oecd.org/pisa/>

⁽⁸⁾ European Commission, *PISA 2015: EU performance and initial conclusions regarding education policies in Europe*, 2016, p. 3.

⁽⁹⁾ Data source: Eurostat (online data code: [educ_uoe_lang02](#)).

4.3 Increasing attainment at tertiary level



Between 2002 and 2017, the share of 30 to 34 year olds having completed tertiary education grew continuously from 23.6% to 39.9%. Growth was

considerably faster for women, who in 2017 were already clearly above the Europe 2020 target at 44.9%. In contrast, among 30 to 34 year old men the share was 34.9% in 2017.

4.3.1 The share of tertiary graduates keeps on growing

The second Europe 2020 education target — raising the share of the population aged 30 to 34 that have completed tertiary or equivalent education to at least 40% — is monitored with the headline indicator on tertiary educational attainment of the same age group ⁽¹⁰⁾.

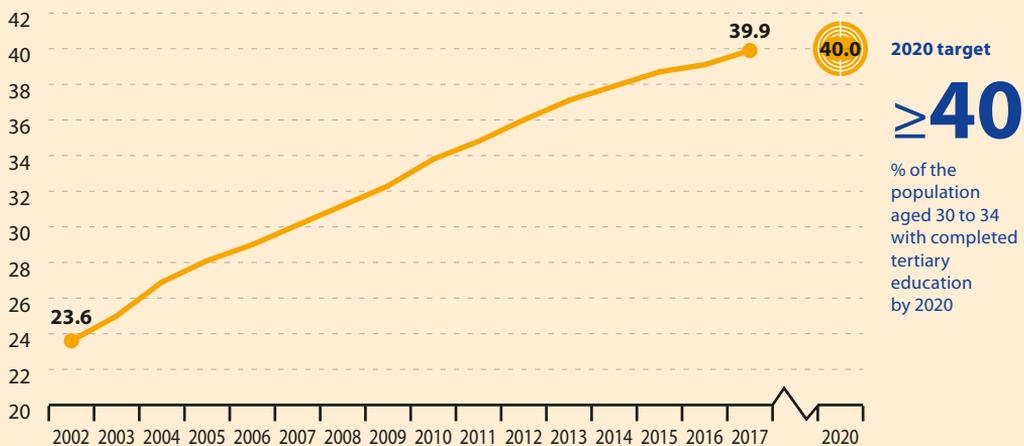
Figure 4.7 shows a steady and considerable growth in the share of 30 to 34 year olds who have successfully completed a university degree or other tertiary-level education since 2002. The share of 39.9% in 2017 implies a growth of 16.3 percentage points since 2002, and means that

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Europe 2020 headline indicator

Figure 4.7: Tertiary educational attainment, EU-28, 2002–2017
(% of the population aged 30–34)



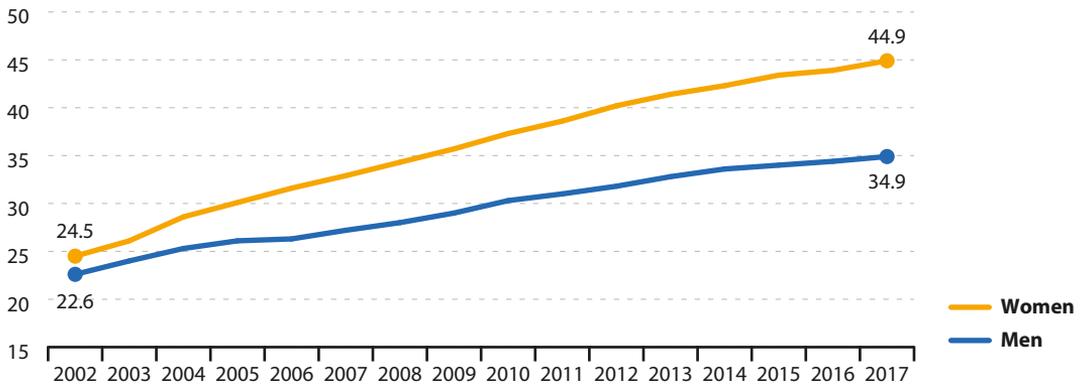
Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).

Source: Eurostat (online data code: t2020_41)

⁽¹⁰⁾ Educational attainment is defined according to the International Standard Classification of Education (ISCED). Tertiary educational attainment refers to ISCED 2011 level 5–8 (for data as from 2014) and to ISCED 1997 level 5–6 (for data up to 2013).



Figure 4.8: Tertiary educational attainment, by sex, EU-28, 2002–2017
(% of the population aged 30–34)



Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).

Source: Eurostat (online data code: [t2020_41](#))

the Europe 2020 target has almost been achieved three years early.

4.3.2 Tertiary education attainment rate is considerably higher for women

Figure 4.8 shows a significantly widening gender gap among people with tertiary educational attainment across the EU. While in 2002 the share of tertiary graduates was almost similar for both sexes, the share of female graduates has grown at almost twice the rate, resulting in a gender gap of 10 percentage points in 2017. In this year, women outnumbered men significantly in all Member States. In fact, the gender gap was more than 10 percentage points in 21 countries, with Slovenia, Latvia and Lithuania showing the highest gaps of over 20 percentage points. Germany was the most 'equal' country with a gender gap of only 0.4 percentage points in favour of women.

4.3.3 All Member States have made significant progress in raising tertiary educational attainment

The increase in tertiary educational attainment levels across the EU is mirrored across all Member States. This to some extent reflects countries'

investment in higher education to meet the demand for a more skilled labour force (see chapter on 'Employment', page 23). Another factor is the shift to shorter degree programmes following the implementation of Bologna⁽¹⁾ process reforms in some countries.

National targets for tertiary education range from 26% for Italy to 66% for Luxembourg. Germany's target is slightly different from the overall EU target because it includes post-secondary, non-tertiary attainment (ISCED level 4). For France, the target definition refers to the 17- to 33-year age group while for Finland the target excludes former tertiary vocational education and training (VET).

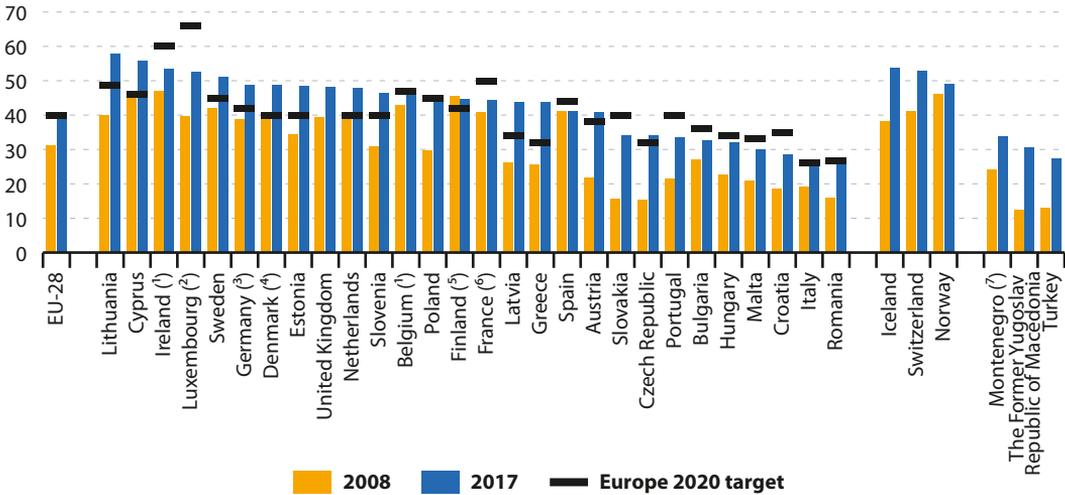
Figure 4.9 shows that in 2017, 15 countries had already achieved their national targets. Romania, Belgium and Hungary were close at less than two percentage points from their national targets while Luxembourg (13.3 percentage points), Ireland and Portugal (both 6.5 percentage points) were the most distant, respectively, below their targets.

In 2017, levels of tertiary educational attainment varied by a factor of about 2.2 across Europe. Northern and central Europe had the highest percentage of tertiary graduates, with 19

⁽¹⁾ 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: Education and training statistics introduced).

Figure 4.9: Tertiary educational attainment, by country, 2008 and 2017

(% of the population aged 30 to 34)



Note: All countries: break in time series in 2014 (switch from ISCED 1997 to ISCED 2011); the change of ISCED has no impact on the comparability over time of this indicator, except for Austria.

(1) Break in time series in 2017.

(2) Break in time series in 2015; 2017 data have low reliability.

(3) Data and target refer to ISCED levels 4–8.

(4) Break in time series in 2016.

(5) Target excluding former tertiary Vocational Education and Training (VET).

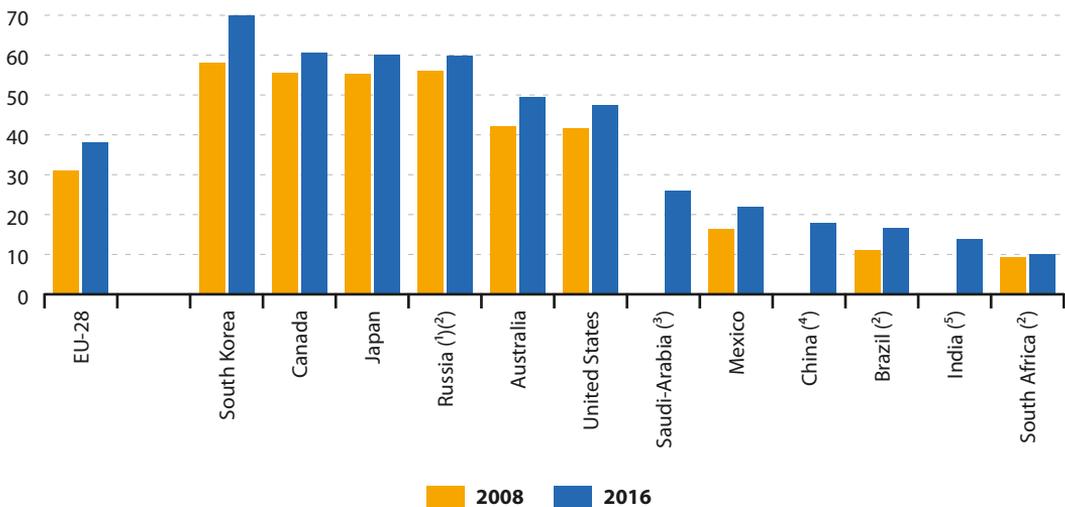
(6) Target refers to 17–33 year olds.

(7) 2011 data (instead of 2008).

Source: Eurostat (online data code: t2020_41), DESTATIS

Figure 4.10: Tertiary educational attainment rate in a global perspective, age group 25–34, by country, 2008 and 2016

(%)



(1) 2010 data instead of 2008.

(2) 2015 instead of 2016.

(3) 2014 data only.

(4) 2010 data only.

(5) 2011 data only.

Source: OECD and Eurostat (online data code: lfsa_pgaed)



countries exceeding the overall EU target of 40%. The lowest levels could be observed in Italy and Romania, which were both around 27%.

At the same time, some eastern European countries experienced the strongest increases over the period 2008 to 2017. Changes were most pronounced in Slovakia and the Czech Republic where the shares almost doubled.

Across other major world economies ⁽¹²⁾, tertiary attainment rates vary greatly, but all countries showed clear increases between 2008 and 2016 (see Figure 4.10). Korea experienced the biggest rise, of 12.1 percentage points, reaching a tertiary educational attainment rate of 70% for the age group 25 to 34 in 2016. At 38.1%, the EU had a significantly lower rate than some other industrialised countries.

4.4 The importance of education and adult learning for employability



Educational attainment is the visible output of education systems. In general, younger people show higher educational levels than the older age group. Across all age groups, migrants born outside the EU (extra-EU migrants) have a much higher prevalence of low educational

levels (ISCED 0–2) than people living in their country of birth or coming from another EU country (intra-EU migrants).

Education and training plays an important role in improving employability. The

employment rate of recent graduates (20 to 34 year olds having left education and training in the past one to three years) has dropped considerably due to the economic and financial crisis. It fell from 82.1% in 2008 to 75.4% in 2013. However, it has increased clearly since 2013, reaching 80.2% in 2017.

The share of adults participating in learning does not seem to be increasing fast enough to meet the ET 2020 benchmark of raising participation to at least 15% by 2020. In the last three years, the share increased only marginally from 10.7% to 10.9% in 2017.

4.4.1 People born outside the EU show higher prevalence of low education levels

Educational attainment is the visible output of education systems. Achievement levels can have major implications for many issues affecting a person's life. This is reflected in adult participation in learning as well as in other aspects presented in the chapters on 'Employment', page 23, and 'Poverty and social exclusion', page 103.

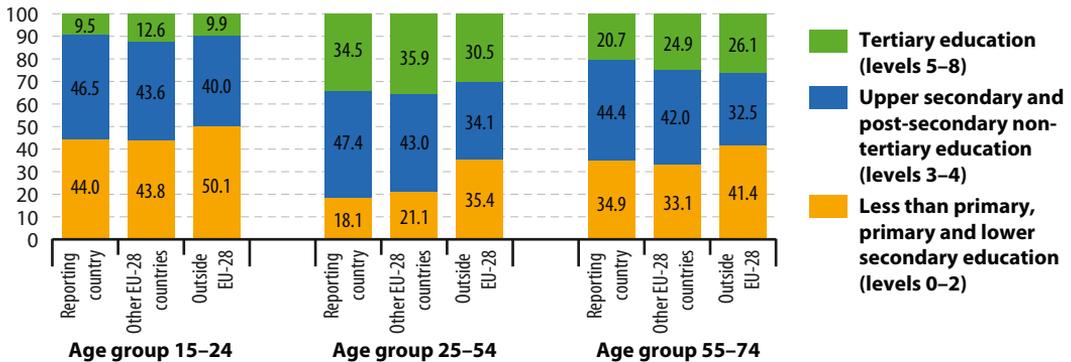
Figure 4.11 shows the educational attainment level of different population groups. The age group 25

to 54 shows higher educational levels than the 55 to 74 age group, which reflects the growing demand for a more highly skilled workforce in most parts of Europe over the past few decades. A more skilled workforce is expected to emerge as older generations leave the workforce and are replaced by younger, more highly educated ones. If labour markets do not provide adequate jobs this may result in higher levels of over-qualification and youth unemployment. For workers aged 55 and older, lower educational attainment levels, especially among women, highlight the

⁽¹²⁾ The data in Figure 4.11 refers to the 25–34 age group, because the OECD database does not include the 30–34 age group that is used for the Europe 2020 target.

Figure 4.11: Population by educational attainment level, by age group and broad group of country of birth, EU-28, 2017

(%)



Source: Eurostat (online data code: [edat_lfs_9912](#))

importance of adult learning as a way to increase their employability and to help meet the Europe 2020 strategy's employment target (see the chapter on 'Employment', page 23).

Across all age groups, migrants born outside the EU (extra-EU migrants) have a much higher prevalence of low educational levels (ISCED 0–2) than people living in their country of birth or coming from another EU country (intra-EU migrants). The reverse pattern can be observed for the medium education levels (ISCED 3–4). This rate is significantly lower for people from outside the EU, especially in the 25 to 54 age group. Interestingly, the tertiary education rate for extra-EU migrants is similar to or higher than the rate for native people, while the tertiary education rate for intra-EU migrants is higher than for the native population.

As shown in the chapter on 'Employment', the level of educational attainment is closely connected with the employment rate. People with higher educational levels are less affected by unemployment than people with lower educational levels. In 2017, 84.0 % of people with a tertiary education (ISCED 5–8) were employed, while this was only the case for 72.6 % of people with upper secondary and post-secondary non-tertiary education (ISCED 3–4). The situation is

worse for people with less than primary, primary and lower secondary education (ISCED 0–2) with an employment rate of 54.9 % in 2017 ⁽¹³⁾.

4.4.2 The employment rate of recent graduates has been increasing

The EU's ET 2020 framework ⁽¹⁴⁾ acknowledges the important role of education and training in raising employability. As a consequence, the EU aims to ensure that at least 82 % of recent EU graduates (20 to 34 year olds) should have found employment no more than three years after leaving education and training.

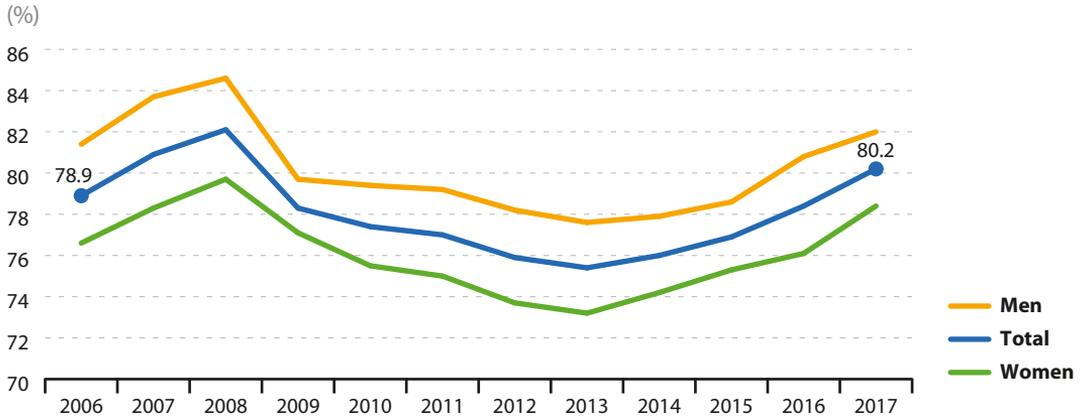
Figure 4.12 shows how severely the economic crisis has affected recent graduates. Between 2008 and 2013, employment rates among 20 to 34 year olds who have attained at least upper secondary education (ISCED 3), who have successfully completed their highest educational attainment in the past one to three years, and were not in further education or training in the four weeks preceding the survey, fell by 6.7 percentage points. In comparison, the decline in the overall employment rate for 20 to 64 year olds was 'only' 1.9 percentage points over the same period. However, 2013 marked a turnaround in this trend, with the share of employed recent graduates

⁽¹³⁾ Data source: Eurostat (online data code: [tepsr_wc120](#)) For further information see section 1.2.6 of the chapter on 'Employment'.

⁽¹⁴⁾ Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020') (2009/C 119/02), Official Journal of the European Union, 28 May 2009.



Figure 4.12: Employment rate of recent graduates, by sex, EU-28, 2006–2017

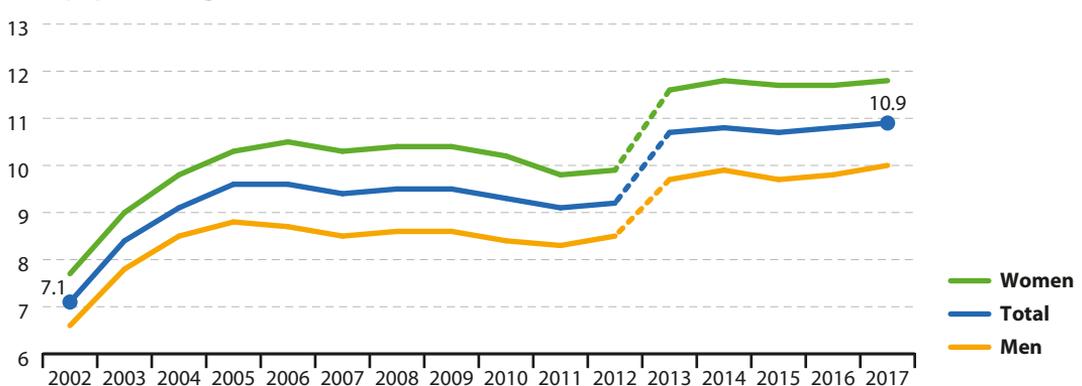


Note: Break in time series in 2014 (switch from ISCED 1997 to ISCED 2011).

Source: Eurostat (online data code: [sdg_04_50](#))

Figure 4.13: Adult participation in learning, EU-28, 2002–2017

(% of population aged 25 to 64)



Note: Breaks in time series in 2003, 2006 and 2013.

Source: Eurostat (online data code: [sdg_04_60](#))

increasing in the following four years, reaching 80.2% in 2017.

4.4.3 Participation in adult learning remains at a distance to the ET 2020 benchmark

In addition to tertiary educational attainment, adult participation in learning is also crucial for providing Europe with a highly qualified labour force. Adult education and training covers the

longest time span in the process of learning throughout a person's life. After an initial phase of education and training, continuous, adult learning is necessary for improving and developing skills, adapting to technical developments, advancing careers or returning to the labour market (also see the chapter on 'Employment', page 23). In 2011, the European Council adopted a resolution on a renewed European agenda for adult learning⁽¹⁵⁾. The EU's ET 2020 framework also includes a benchmark that aims to raise the share of adults

⁽¹⁵⁾ Council Resolution on a renewed European agenda for adult learning (2011/C 372/01), Official Journal of the European Union, 20 December 2011.

participating in learning to at least 15%. This benchmark refers to people aged 25 to 64 who stated they received education or training in the four weeks preceding the survey.

After rapid growth between 2002 and 2005, the share of EU adults participating in learning slightly decreased and stagnated at around 9.5% between 2005 and 2012. Influenced by the methodological

change to the French Labour Force Survey ⁽¹⁶⁾, the share reached 10.7% in 2013 and increased only slightly to 10.9% in the following years.

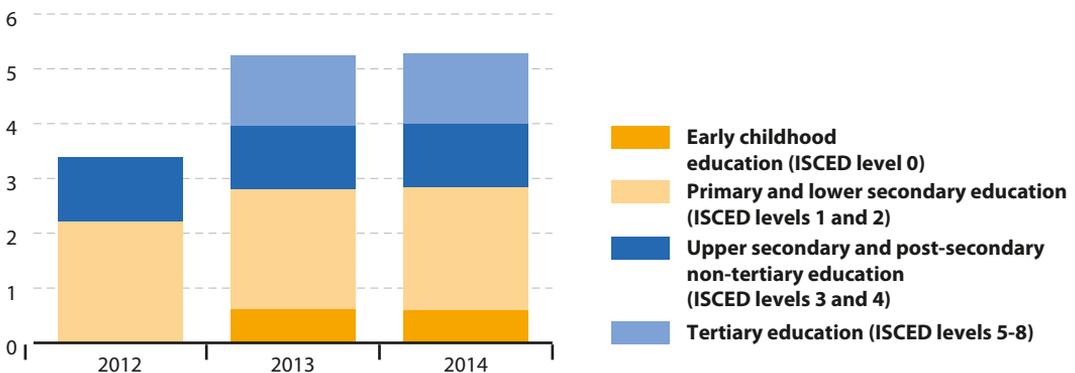
Women are more likely to participate in adult learning than men. In 2017, the share of adult women engaged in learning was nearly 2 percentage points higher than that of men (11.8% compared with 10.0%).

4.5 Investment in future generations: the case of public expenditure on education

Public expenditure on education as a percentage of GDP is often considered an indicator of a government's commitment to developing skills and competences. Generally, the public sector funds education either by directly bearing the current and capital expenses of educational institutions or by supporting students and their families with scholarships and public loans as well as by transferring public subsidies for educational activities to private firms or non-profit organisations. Both types of transactions together are reported as total public expenditure on education.

Figure 4.14 shows the total public expenditure on education for the EU as a share of GDP. In 2014, public expenditure was highest for primary and lower secondary education (levels 1–2) with 2.2% of GDP. By contrast the smallest share of public expenditure on education went to early childhood education, with 0.6% of GDP. The two remaining categories — upper secondary and post-secondary non-tertiary education (levels 3–4) and tertiary education (levels 5–8) — received a somewhat similar share of GDP, with 1.2% and 1.3%, respectively.

Figure 4.14: Total public expenditure on education by education level, EU-28, 2012–2014 (% of GDP)



Note: No data for ISCED levels 0 and 5–8 for 2012.

Source: Eurostat (online data code: [educ_uoe_fine06](#))

⁽¹⁶⁾ INSEE, the French Statistical Office, has carried out an extensive revision of the questionnaire of the Labour Force Survey. The new questionnaire was used from 1 January 2013 onwards. It impacts significantly the level of various French LFS-indicators.

5

Poverty and social exclusion



5.1 Poverty and social exclusion — why do they matter?

Poverty and social exclusion harm lives and limit the opportunities for people to achieve their full potential by affecting their health and well-being and lowering educational outcomes. This, in turn, reduces their ability to lead a successful life and further increases the risk of poverty. Without effective educational, health, social, tax-benefit and employment systems, the risk of poverty is passed on from one generation to the next. This causes poverty to persist, creating more inequality that can lead to the long-term loss of economic productivity from whole groups of society ⁽¹⁾ and hamper inclusive and sustainable economic growth.

To prevent this downward spiral, the European Commission has made 'inclusive growth' one of the three priorities of the Europe 2020 strategy. It has set a target to lift at least 20 million people out of the risk of poverty or social exclusion by 2020. To further reinforce the social dimension of the EU, the European Pillar of Social Rights has been jointly signed by the European Parliament, the Council and the European Commission.

To reach the Europe 2020 poverty goal, particular focus will need to be placed on groups that are at high risk of poverty or social exclusion. With the Social Investment Package, the European Commission has set forth an integrated policy framework aiming to reach out to various vulnerable target groups, for example, with a specific recommendation on Investing in children: breaking the cycle of disadvantage ⁽²⁾. Also, between 2014 and 2020, at least 20% of the European Social Fund is earmarked for measures combating poverty and social exclusion.

Further specific actions to reduce poverty or social exclusion among young people and the unemployed, particularly vulnerable groups, have been outlined in the Youth Guarantee Programme. Also, the European Commission's recommendation

Europe 2020 strategy target on the risk of poverty or social exclusion

The Europe 2020 strategy has set the target of 'lifting at least 20 million people out of the risk of poverty or social exclusion' by 2020 compared to the year 2008 ^(*).

^(*) Due to the structure of the survey on which most of the key social data is based (EU Statistics on Income and Living Conditions), a large part of the main social indicators available in 2010, when the Europe 2020 strategy was adopted, referred to 2008 as the most recent year of data available. This is why 2008 data for the EU-27 are used as the baseline year for monitoring progress towards the Europe 2020 strategy's poverty target. Since 116.1 million people were at risk of poverty or social exclusion in the EU-27 in 2008, the target value to be reached is 96.1 million by 2020.

on the Integration of Long-Term Unemployment in the Labour Market aims to simplify and improve access to support for people out of work for long periods. Finally, the Fund for European Aid to the Most Deprived (FEAD) 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.

Measures to reduce the amount of people living in dire conditions are often intertwined with measures that aim to achieve other Europe 2020 strategy goals. For example, many initiatives that try to tackle poverty also aim to boost employment. Enhancing education and training, and reducing the number of people leaving school early, will not only help to lift the current generation out of poverty, but may also stop poverty being passed on to the next generation.

By setting a poverty target, the EU has put social concerns on an equal footing with economic

⁽¹⁾ OECD, *Understanding the Socio-Economic Divide in Europe*, Background Report, 2017.

⁽²⁾ European Commission, *Investing in Children: breaking the cycle of disadvantage*, Commission Recommendation of 20 February 2013, 2013.

Poverty and social exclusion in the EU

Europe 2020 headline indicator



People at risk of poverty or social exclusion in 2016

118.0 million people
+ 0.1 % since 2010

2020 target:
Lift at least 20 million people out of the risk of poverty or social exclusion ⁽¹⁾

Contextual indicators



... by sex in 2016
24.4 % of women
- 0.4 pp since 2010



... by age group in 2016
30.6 % of 18 to 24 year olds
+ 1.2 pp since 2010



... by activity status in 2016
66.9 % of unemployed people aged 18+
+ 2.4 pp since 2010



... by level of activity limitation in 2016
29.9 % of people aged 16+ with some or severe limitations
+ 0.3 pp since 2010



... by education in 2016
34.8 % of people aged 18+ and with at most lower secondary education
+ 2.1 pp since 2010



... by household type in 2016
48.0 % of single parent households
- 4.2 pp since 2010



... by country of birth ⁽²⁾ in 2016
39.2 % of migrants from outside the EU-28 aged 18+
+ 2.1 pp since 2010



... children, by educational attainment level of their parents in 2016
63.7 % of children aged 0 to 18 with parents who have at most lower secondary education
+ 3.9 pp since 2010



... by degree of urbanisation ⁽²⁾ in 2016
25.5 % of people living in rural areas
- 3.6 pp since 2010

⁽¹⁾ The target refers to 2008 EU-27 levels, resulting in an absolute target value of 96.1 million people. Due to data availability, the target is evaluated for EU-27 only.

⁽²⁾ Estimates.

Source: Eurostat (online data codes: t2020_50, t2020_51, t2020_52, t2020_53, ilc_peps01, ilc_peps03, ilc_peps04, ilc_peps60, ilc_peps06 and ilc_peps13)

objectives. However, to achieve the Europe 2020 strategy target to reduce the number of people at risk of poverty or social exclusion, the strategy's other priorities, such as providing better

opportunities for employment and education, must also be implemented successfully (see the chapters on 'Employment', page 23, and 'Education', page 87.

5.2 How do poverty and social exclusion affect Europe?

Almost every fourth person in the EU is still at risk of poverty or social exclusion, experiencing at least one of its three forms.

Monetary poverty is the most widespread form of poverty, affecting 17.3% of the EU population in 2016. 7.5% were affected by severe material deprivation, while very low work intensity concerned 10.5% of the population aged 0 to 59.

Of the three forms of poverty, material deprivation has shown the biggest change. While monetary poverty has been moderately but steadily increasing and very low work intensity has not changed drastically since 2010, material deprivation has been falling continuously.

In 2016, the rate of risk of poverty after social transfers was 8.6 percentage points

lower than before social transfers.

On average, monetary poverty is lower in the EU at 17.3% than in most other advanced economies. In most non-European OECD countries, this value was roughly between 20% and 25%.

The overall EU share of people aged 0 to 59 living in households with very low work intensity has remained relatively stable at 10.5% since 2010. However, having a job is not always enough to avoid poverty: in 2016, 7.8% of the working EU population was at risk of poverty even though they were working full time.



5.2.1 The rate of risk of poverty or social exclusion in the EU has returned to around the 2008 level, yet progress remains limited

In 2016, 118.0 million people, or 23.5% of the EU population, were **at risk of poverty or social exclusion**. This means roughly one in four people in the EU experienced at least one of the following three forms of poverty: **monetary poverty**, **severe material deprivation**, or are **living in a household with very low work intensity**. Since 2012, the number of people at risk of poverty or

social exclusion has fallen each year. However, the number is still higher than in 2008 ⁽³⁾, which is the reference year for the Europe 2020 target.

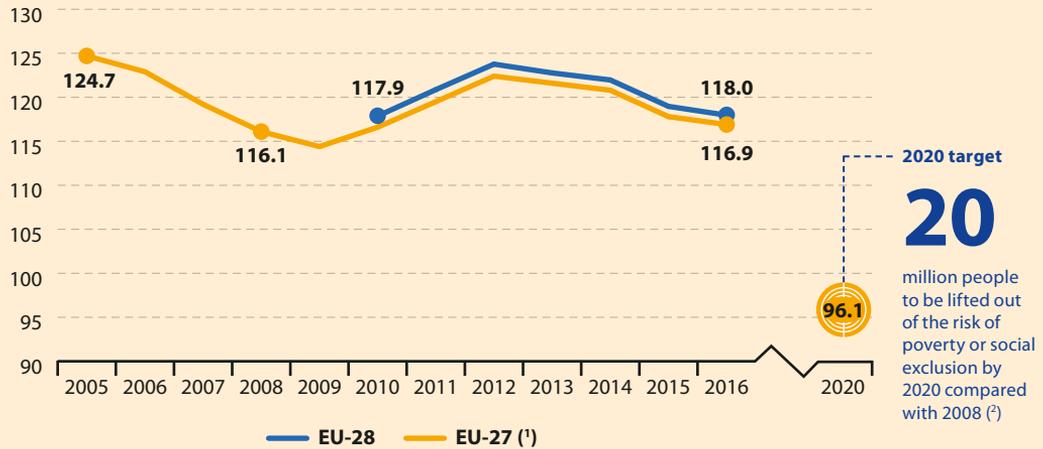
The rate of risk of poverty or social exclusion in the EU over the past decade has been marked by two turning points: in 2009, after which the number of people at risk started to rise because of the delayed social effects of the economic crisis and in 2012, when this upward trend reversed. By 2016, the number of people at risk had fallen almost to its 2008 level (see Figure 5.1).

⁽³⁾ This number refers to EU-27; see footnote 2 of Figure 5.1.



Europe 2020 headline indicator

Figure 5.1: People at risk of poverty or social exclusion, EU-27 and EU-28, 2005–2016 (million people)

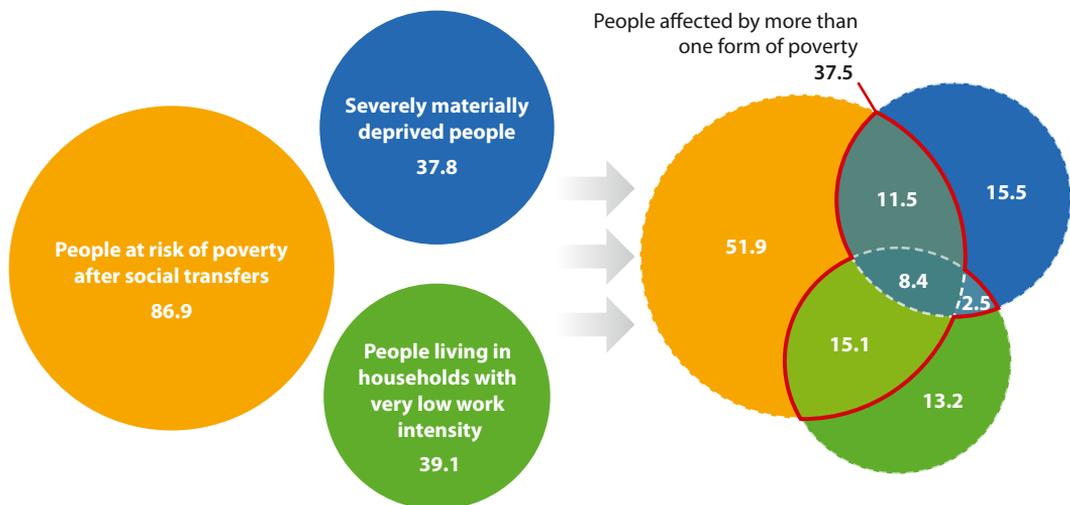


(¹) Data for 2005 and 2006 are estimates.

(²) The overall EU target (referring to the EU-27 — the 27 EU countries before the accession of Croatia) is to lift at least 20 million people out of the risk of poverty or social exclusion by 2020. Due to the structure of the survey on which most of the key social data is based (EU Statistics on Income and Living Conditions), a large part of the main social indicators available in 2010, when the Europe 2020 strategy was adopted, referred to 2008 as the most recent year of data available. This is the reason why monitoring of progress towards the Europe 2020 strategy's poverty target takes 2008 as a baseline year.

Source: Eurostat (online data code: t2020_50)

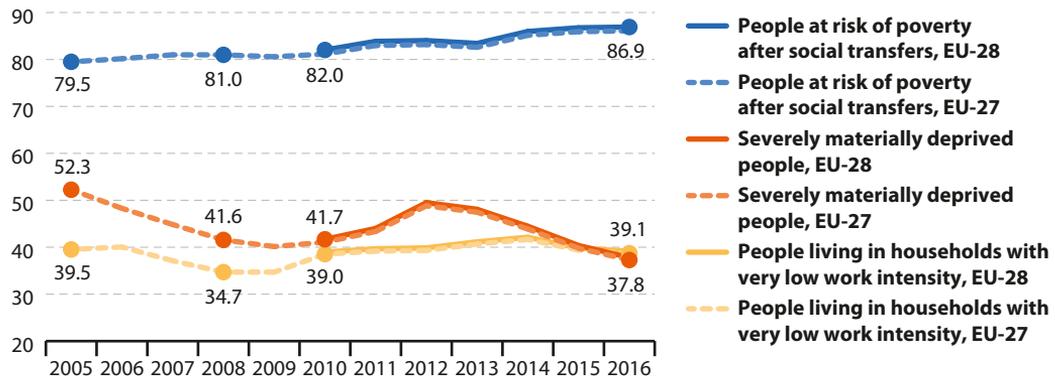
Figure 5.2: Aggregation of sub-indicators of 'people at risk of poverty or social exclusion', EU-28, 2016 (million people)



Source: Eurostat (online data code: ilc_pees01)

Figure 5.3: Sub-indicators of 'people at risk of poverty or social exclusion', EU-27 and EU-28, 2005–2016

(million people)



Note: EU-27 data for 2005 and 2006 are estimates; EU-27 data for 2009 for 'severe material deprivation' are estimates.

Source: Eurostat (online data codes: t2020_51, t2020_52 and t2020_53)

Poverty and social exclusion can manifest themselves in various forms: while household income has a big impact on living standards, other aspects, such as access to labour markets and material deprivation, also prevent full participation in society. This is reflected in the three sub-indicators that compose the 'at-risk-of-poverty or social exclusion rate' indicator: monetary poverty, severe material deprivation and very low work intensity. Because these sub-indicators tend to overlap and people can be affected by two or even all three of these types of poverty, a person is counted only once in the headline indicator, even if he or she falls into more than one category (see Figure 5.2) ^(*).

As Figure 5.2 shows, monetary poverty was the most widespread form of poverty in 2016, with 86.9 million people (17.3% of the EU population) living **at risk of poverty after social transfers**. This was more than twice as many as those with **very low work intensity** (39.1 million people or 10.5% of the EU population aged 0 to 59) and those suffering from **severe material deprivation** (37.8 million people or 7.5% of the EU population).

Over 37 million people, or nearly one-third (31.7%) of all people at risk of poverty or social exclusion, were affected by more than one dimension of poverty over the same period. Another 8.4 million people, or one in 14 of those at risk of poverty or social exclusion (7.1%), were affected by all three forms ^(*).

As shown in Figure 5.3, the three forms of poverty followed different trends between 2005 and 2016. While monetary poverty has been increasing gradually since 2005, the number of people affected by low work intensity has remained more or less constant. Since 2012 there has been a sharp decline in material deprivation, which was not only strong enough to counteract the rise in monetary poverty, but also led to an overall drop in the poverty level (see Figure 5.1). This means the reduction in material deprivation has been the main driver behind the headline indicator's improvement since 2012. As described later in the chapter, the decline in the amount of materially deprived people was mainly driven by improvements in a handful of countries.

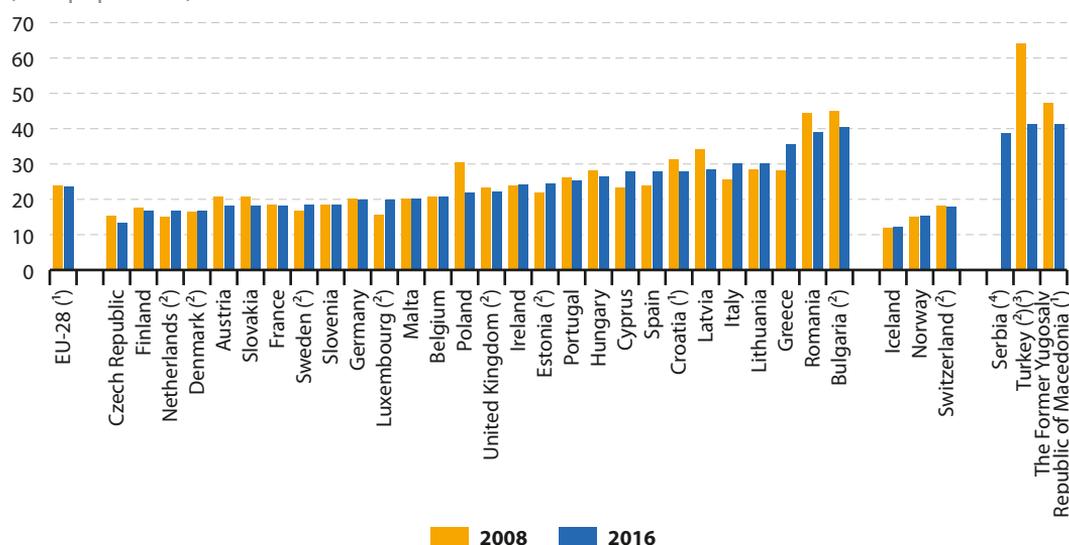
One possible reason for the divergence between monetary poverty and the two other forms of

^(*) The indicator 'very low work intensity' is limited to people aged 0 to 59. People over the age of 59 are considered at risk of poverty or social exclusion only if the criteria of one of the two dimensions 'monetary poverty' or 'severe material deprivation' are met.

^(*) The year of reference differs for the three sub-indicators. The risk of poverty after social transfers and 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.



Figure 5.4: People at risk of poverty or social exclusion, by country, 2008 and 2016
(% of population)



(1) 2010 data (instead of 2008).

(2) Break(s) in time series between 2008 and 2016.

Source: Eurostat (online data code: t2020_50)

(3) 2015 data (instead of 2016).

(4) No data for 2008.

poverty is the different nature of the indicators. While monetary poverty is measured in relative terms, material deprivation and low work intensity are absolute measures. The relativity of monetary poverty means the at-risk rate may remain stable or even rise even though the average or median equivalised disposable income (6) increases. This is because the monetary poverty threshold is set at a specific percentage (60%) of the median disposable income, which means that if the median income increases, the poverty threshold increases as well. If at the same time the inequality of the income distribution remains unchanged or even increases, the number of people below the poverty line does not decrease. Conversely, absolute poverty measures reflecting a person's ability to afford basic goods are likely to improve during economic revivals when people are generally financially better off.

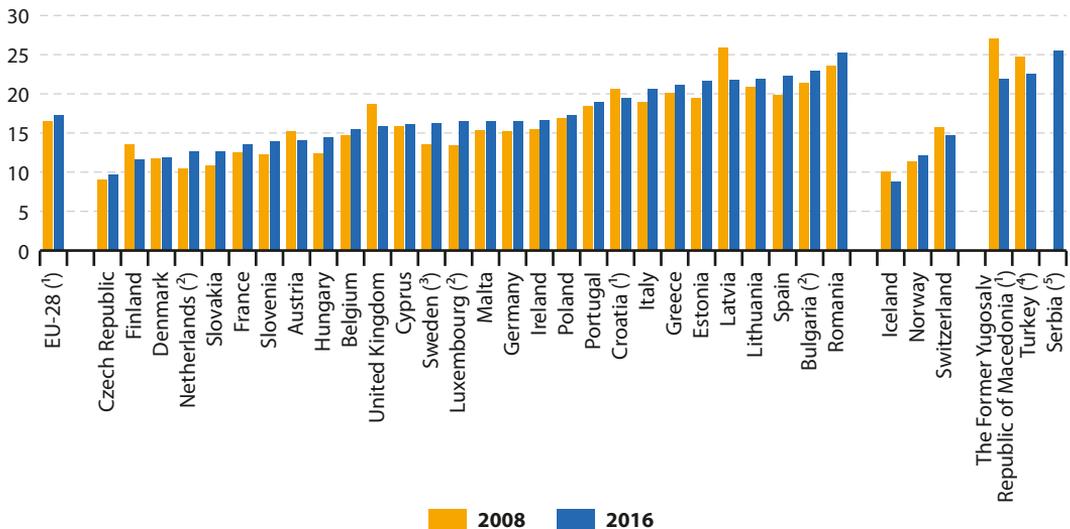
5.2.2 The number of people at risk of poverty or social exclusion has decreased in more than half of Member States

Although on average 23.5% of the EU population were at risk of poverty or social exclusion in 2016, the levels of individual countries varied widely, ranging from 13.3% to 40.4% (see Figure 5.4). A country's socio-economic situation depends on many factors, but much of the current divergence in social outcomes are still a legacy of the economic and financial crisis, as seen in the European Commission's February 2018 Quarterly Report on the Euro Area (7). That is to say, Member States linking flexibility in working arrangements with effective active labour market policies and adequate social protection weathered the crisis more successfully (for more information, see the European Commission's Annual Growth Survey

(6) The equivalised disposable income refers to the financial means a household has left for saving and spending. It is calculated by taking the entire income of a household and dividing it by the weighted household size, where each household member receives a weight depending on their age.

(7) European Commission (Directorate-General for Economic and Financial Affairs), *Quarterly Report on the Euro Area. Institutional Paper 072*, Publications Office of the European Union, Luxembourg, 2018, p. 15.

Figure 5.5: People at risk of poverty after social transfers, by country, 2008 and 2016
(% of population)



⁽¹⁾ 2010 data (instead of 2008).

⁽²⁾ Break in time series in 2016.

⁽³⁾ Break in time series in 2015.

⁽⁴⁾ 2015 data (instead of 2016).

⁽⁵⁾ No data for 2008.

Source: Eurostat (online data code: t2020_52)

2018⁽⁶⁾ and its Joint Employment Report 2018⁽⁷⁾, and the chapter on 'Employment', page 23).

To meet the overall EU target on risk of poverty and social exclusion, Member States have set their own national targets in their National Reform Programmes⁽¹⁰⁾. As noted in the European Council conclusions from 17 June 2010⁽¹¹⁾, Member States are free to set their own targets based on the most appropriate indicators for their circumstances and priorities. In 23 countries the target is expressed as an absolute number of people to be lifted out of the risk of poverty or social exclusion or one or more of its sub-indicators⁽¹²⁾. Of these countries, the Czech Republic, Croatia, Poland and Romania had

already reached their national poverty targets by 2016. On the other hand, the number of people at risk of poverty or social exclusion has risen in 11 Member States since 2008, pushing them further away from their national targets.

In 2016, 17.3% of the EU population earned less than the poverty threshold, which is set at 60% of the national median equivalised disposable income in the country in which they live. This represents a slight increase compared with 2010, when 16.5% fell below this threshold (see Figure 5.5). Most countries also experienced growth in the number of people below the monetary poverty line, regardless of whether they had low or high levels to begin with.

⁽⁶⁾ European Commission, *Annual Growth Survey 2017*, 2016.

⁽⁷⁾ European Commission, *Joint Employment Report 2018*. As adopted by the EPSCO Council on 15th March 2018, 2018.

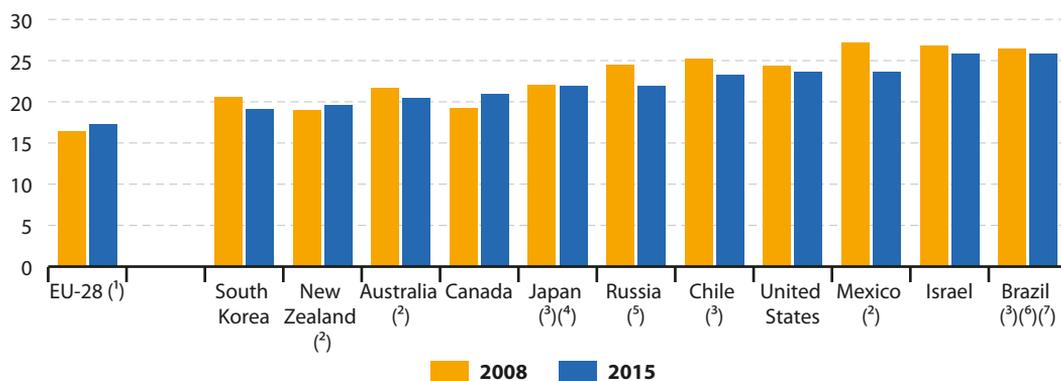
⁽⁸⁾ See https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/national-reform-programmes-and-stability-convergence-programmes_en

⁽⁹⁾ European Council, *Conclusion from 17 June 2010*, 2010.

⁽¹²⁾ This corresponds to the base year also used for the overall EU target. Germany and Sweden use targets based on different forms of unemployment, Ireland defined a combined poverty target, the Netherlands aims to reduce the amount of jobless households, and the UK based its numerical targets on a nationally launched Child Poverty Act. European Commission, *Social Europe — Aiming for inclusive growth. Annual report of the Social Protection Committee on the social situation in the European Union (2014)*, Publications Office of the European Union, Luxembourg, 2015, p. 162–461.



Figure 5.6: Poverty rate after taxes and transfers, poverty line 60%, by country, 2008 and 2015 (%)



⁽¹⁾ 2010 data instead of 2008.

⁽²⁾ 2014 data instead of 2015.

⁽³⁾ 2009 data instead of 2008.

⁽⁴⁾ 2012 data instead of 2015.

⁽⁵⁾ 2011 data instead of 2015.

⁽⁶⁾ 2013 data instead of 2015.

⁽⁷⁾ 2008 data refers to new income definition since 2012.

Note: Change in methodology for all countries except for EU-28: New income definition since 2012.

Source: OECD and Eurostat (online data code: [ilc_li02](#))

Compared with the main economies worldwide, the EU average share of people at risk of monetary poverty at 17.3% is low, despite increases since 2008. In most non-EU OECD countries, this value is roughly between 20% and 25%⁽¹³⁾ (see Figure 5.6). Commonwealth countries in the OECD outside the EU as well as Asian OECD countries including Russia are at the bottom end of this range, while monetary poverty is more prevalent in the Latin American OECD countries as well as the United States, Turkey and Israel. Conversely, the EFTA States and OECD Members Norway and Switzerland have poverty rates lower than the EU average but higher than the EU Member States with the lowest shares.

To reduce the risk of poverty or social exclusion within their populations, governments provide social security in the form of social transfers, such as unemployment benefits or family-related benefits, among others. The effectiveness of monetary social provision can be evaluated by comparing the at-risk-of-poverty rate before and after social transfers (see Figure 5.7). In the EU,

social transfers reduced the share of people at risk of poverty by 8.6 percentage points in 2016, from 25.9% to 17.3%. However, the extent to which this was achieved at Member State level varied greatly. For example, the share of risk of poverty before social transfers was similar in Finland and Romania. While in Finland social transfers decreased the share of monetary poor to the second lowest value among all Member States, Romania accounted for the highest share of people living in monetary poverty after social transfers.

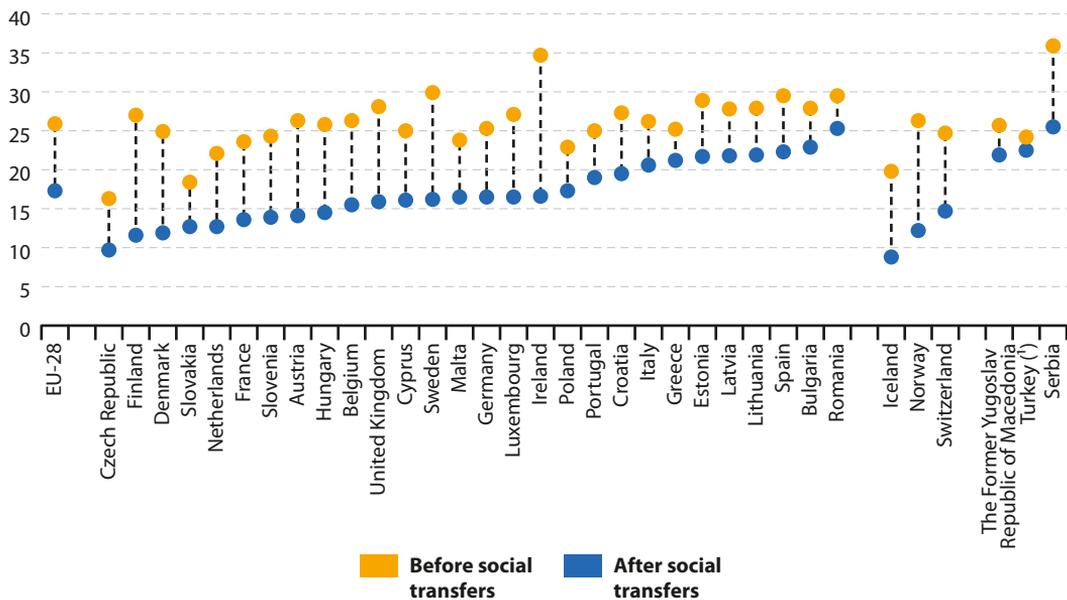
Over time, the at-risk-of-poverty rates before and after social transfers have moved in different directions. The rate before social transfers was relatively stable in the EU between 2010 and 2016, while the rate after social transfers increased slightly over the same time. This could mean that either the amounts of social transfers paid have fallen or they have become less effective over time.

Differences in the effectiveness and efficiency of social protection expenditures depend on a variety of factors, such as the level of poverty and

⁽¹³⁾ These values are taken from the OECD dataset on Income Distribution and Poverty and correspond to the newest data available in this set (2014: New Zealand, Australia and Mexico, 2013: Brazil, 2012: Japan, 2011: Russia). All data is based on the OECD's new income definition, which includes the value of goods produced for own consumption as a component of self-employed income, an element not considered in the SILC income definition.

Figure 5.7: At-risk-of-poverty rate before and after social transfers, by country, 2016

(%)



(*) 2015 data.

Source: Eurostat (online data codes: t2020_52 and tesov250)

inequality before social transfers and differences in the size and design of these expenditures ⁽¹⁴⁾.

Material deprivation covers issues relating to economic strain, durables and housing, and dwelling environment. People living in severely materially deprived conditions are greatly constrained by a lack of resources. This means they live in households 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 ⁽¹⁵⁾.

In 2016, 37.8 million people in the EU were living in conditions severely constrained by a lack of resources. This was equal to 7.5% of the total EU population. As Figure 5.8 shows, this value differed widely across the EU in 2016. According to the Annual Report of the Social Protection Committee ⁽¹⁶⁾, among other factors, differences in

living standards and real disposable income play an important part.

Overall, the share of the population affected by severe material deprivation decreased by 0.9 percentage points or by 3.9 million people between 2010 and 2016. The improvement becomes especially apparent when comparing it to the year 2012, when the situation was particularly dire with almost 50 million people affected.

Since 2008, the number of people living in severe material deprivation has fallen in almost two-thirds of EU Member States. The most distinct improvements took place in a handful of countries, particularly Poland, Bulgaria and Romania. Because, as described earlier, falls in material deprivation have tended to drive improvements in the overall headline indicator, these countries

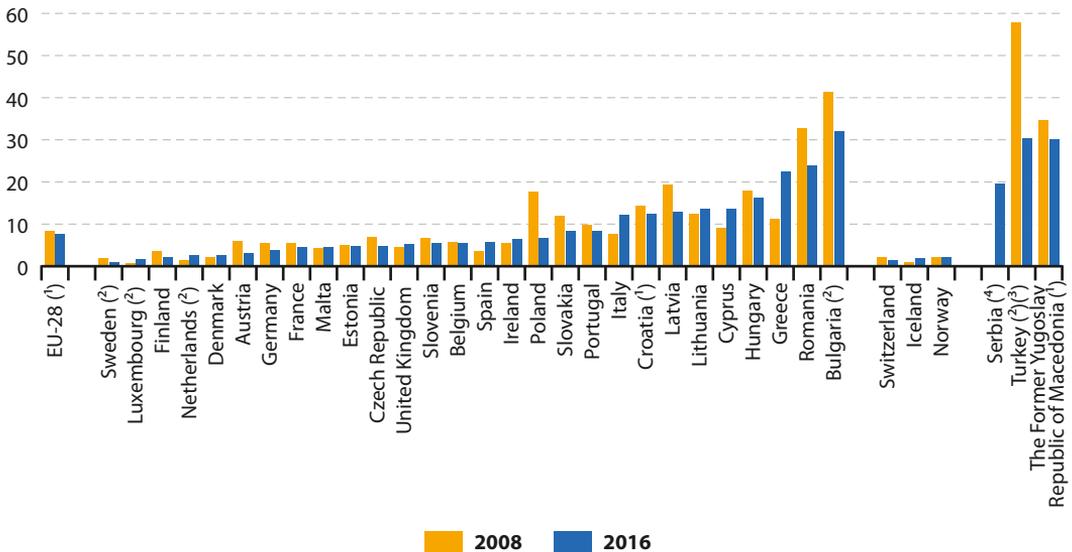
⁽¹⁴⁾ For more information see: European Commission, *European Semester Thematic Factsheet. Social Inclusion*, 2016.

⁽¹⁵⁾ These items are the following: to pay their rent, mortgage or utility bills; to keep their home adequately warm; to face unexpected expenses; to eat meat or proteins regularly; to go on holiday; a television set; a washing machine; a car; a telephone.

⁽¹⁶⁾ European Commission, *Review of the social protection performance monitor and developments in social protection policies. Annual report of the social protection committee*, 2016.



Figure 5.8: Severely materially deprived people, by country, 2008 and 2016
(% of population)



(1) 2010 data (instead of 2008).

(2) Break(s) in time series between 2008 and 2016.

Source: Eurostat (online data code: t2020_53)

(3) 2015 data (instead of 2016).

(4) No data for 2008.

to a large extent are responsible for the decline in the share of people at risk of poverty or social exclusion in the EU.

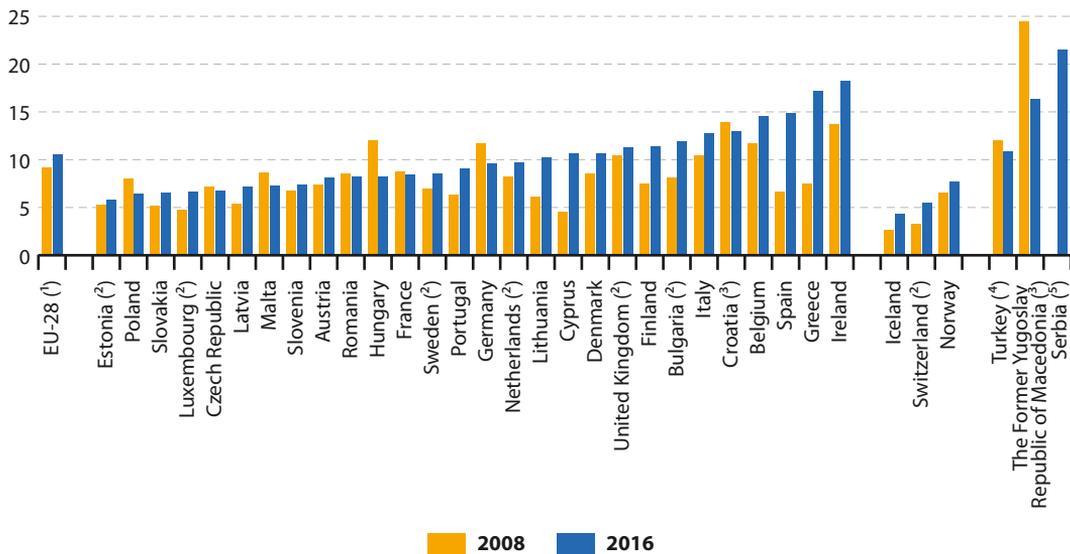
In 2016, 10.5% (or 39.1 million) of the EU population aged 0 to 59 were living in households with very low work intensity. This means the working-age members of a household worked no longer than 20% of their potential working time during the previous year. Even though on average the share of the population aged 0 to 59 living in households with very low work intensity was only 1.3 percentage points higher in 2016 than it was in 2008, it has increased considerably in most Member States (see Figure 5.9). These increases were offset by improvements in only a handful of countries, mainly Poland, Hungary and Germany.

The three forms of poverty forming the headline indicator represent three related but distinct aspects of poverty. This means that whether

these three sub-indicators correspond to each other or not depends on country-specific circumstances. Comparing the levels of the three different sub-indicators reveals the following pattern: in Poland, the Czech Republic, Slovenia and Malta as well as in all western and northern EU Member States (except the Baltic countries) either all three poverty measures were below the EU-wide average or monetary poverty and material deprivation were low despite high shares of the population living in households with very low work intensity (17). Conversely, in many other EU Member States either all three sub-indicators revealed a share of poverty above the EU-wide average (Bulgaria, Italy, Croatia and Greece) or poverty levels were above average in two of the three sub-indicators. In this case, it was most common to have a low share of quasi-jobless households but proportionally many people suffering from material deprivation and monetary

(17) Slovakia, Hungary and Estonia also experienced a lower than average share of poverty in two dimensions of the headline indicator and an above average share in a third.

Figure 5.9: People living in households with very low work intensity, by country, 2008 and 2016
(% of population aged 0 to 59)



(1) 2008 data refer to EU-27 (instead of EU-28).

(2) Breaks in time series between 2008 and 2016.

(3) 2010 data (instead of 2008).

(4) 2015 data (instead of 2016).

(5) No data for 2008.

Source: Eurostat (online data code: [t2020_51](#))

poverty (this was the case in Latvia, Romania, Portugal and Lithuania) (18). This shows that the structure of poverty can differ across the Member States.

Poverty and social exclusion do not only affect those who are economically inactive or unemployed (for more information on employment indicators see the chapter on 'Employment', page 23). In 2016, 7.8% of the working EU population were at risk of poverty

despite working full time (the so-called working poor) (19). With the exception of those aged between 18 and 24, men are more often among the working poor than women. This is because women are more often secondary earners, meaning the household income does not depend solely on them, and working poverty is determined by household income (for more insights, see the report on Poverty, gender and intersecting inequalities in the EU (20)).

(18) Spain and Cyprus also experienced a proportionally high share of poverty in two of the three dimensions of the headline indicator and a comparably low share in a third dimension.

(19) Source: Eurostat (online data code: [ilc_iw07](#)).

(20) European Institute for Gender Equality, *Poverty, gender and intersecting inequalities in the EU: Report*, Publications Office of the European Union, Luxembourg, 2016, p. 52.



5.3 Which groups are at greater risk of poverty or social exclusion?

The share of women at risk of poverty or social exclusion was 1.9 percentage points higher than the corresponding share of men in 2016.

People with activity limitations had a higher rate of risk of poverty or social exclusion, at 29.9%, than the general population.

30.6% of young people aged 18 to 24 and 26.4% of those aged less than 18 were at risk of poverty or social exclusion in 2016. At 18.2%, this rate was considerably lower among the elderly aged 65 or over.

Unemployed people had a higher rate of risk of poverty or social exclusion, at 66.9% in 2016, compared to the rest of the population.

Almost 50% of all single parents were at risk of poverty or social inclusion in 2016. This was double the average and higher than for any other household type analysed.

34.8% of adults with at most lower secondary educational attainment were at risk of poverty or social exclusion in 2016.

63.7% of children of parents with at most pre-primary and lower secondary education were at risk.

In 2016, 39.2% of adults born in a country outside the EU and 24.5% of those born in a different EU country than the reporting one were at risk of poverty or social exclusion. In comparison, for native residents, only 21.6% of the population were at risk.

EU residents in rural areas had on average a slightly higher rate of risk of poverty or social exclusion than those living in urban areas (25.5% compared with 23.6%) in 2016.



Identifying groups with a heightened risk of poverty or social exclusion, and determining the reasons behind this vulnerability, is the key to creating sound policies to fight poverty. Compared with the EU average, some population groups are at a higher risk of poverty or social exclusion. The most affected are women, children, young people, people with disabilities, the unemployed, single-parent households and those living alone, people with lower educational attainment, people born in a different country than the one they reside in, people out of work, and, in a majority of Member States, those living in rural areas.

5.3.1 Women and young people are particularly vulnerable to poverty and social exclusion

People's roles and responsibilities within families and in the workplace change throughout their lives and can also be influenced by gender. Thus, it is necessary to consider the breakdown of the headline indicator by age and sex for a complete picture of the structure of risk of poverty or social exclusion.

In 2016 women had a higher rate of risk of poverty or social exclusion than men (the rate

for women was 24.4% compared with 22.5% for men). Because the definition of households in the context of the SILC survey implies an equal sharing of resources between all members of the household, it is likely that the main drivers behind the gender gap are higher risk of poverty rates among single female households, mainly those with dependent children⁽²¹⁾. In a workshop on the main causes of female poverty⁽²²⁾, the European Parliament's Directorate General for Internal Policies pointed out that one reason for this persisting gender gap is that single-parent households⁽²³⁾, which tend to be far more often headed by women, are more likely to have very low work intensities compared with other households with children. A comparison of Member States' performance in the European Semester Thematic Factsheet⁽²⁴⁾ shows two policy measures that could ease this problem: child and family-support benefits and access to affordable, high-quality childcare.

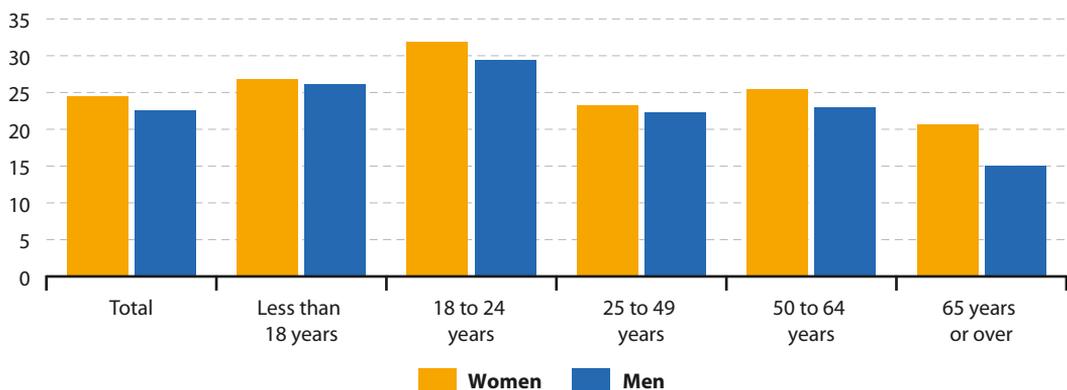
Overall, between 2008 and 2016 the share of both men and women at risk of poverty or social exclusion followed a similar path as the headline indicator depicted in Figure 5.1. Even so, compared to 2008, the rate decreased a bit more for women

than for men, slightly reducing the gender poverty gap. Most progress in reducing the gender gap was made in the years 2012 to 2015 and not in the most recent year considered.

The long-term effects of reduced work intensity among women (both single and married) become especially apparent in old age. Although women had higher rates of risk of poverty or social exclusion than men in all age groups in 2016, the largest differences could be seen in the oldest group (65 or over), displaying a gender gap of 5.6 percentage points. One explanation for the gender poverty gap among elderly EU residents is that on average women receive a lower pension income than men. As shown in the European Commission's Pension Adequacy Report⁽²⁵⁾, this is mainly due to childcare-related gaps in their employment history and patterns of employment with low pension coverage.

For both men and women, young people below the age of 24 had the highest rates of risk of poverty or social exclusion (30.6% for 18 to 24 year olds and 26.4% for people younger than 18. For more information on this group's employment situation see the chapter on 'Employment', page 23).

Figure 5.10: People at risk of poverty or social exclusion, by sex and age group, EU-28, 2016
(% of population)



Source: Eurostat (online data code: [ilc_peps01](#))

⁽²¹⁾ Given that the data does not reveal systematic differences in the risk of poverty or social exclusion between single female and single male households without dependent children, the gender gap is expected to be caused by single households with dependent children.

⁽²²⁾ Directorate-General for Internal Policies, *Workshop on main causes of female poverty*, 2015, p. 22.

⁽²³⁾ Eurostat, *People on the EU — statistics on household and family structures*, Statistics Explained.

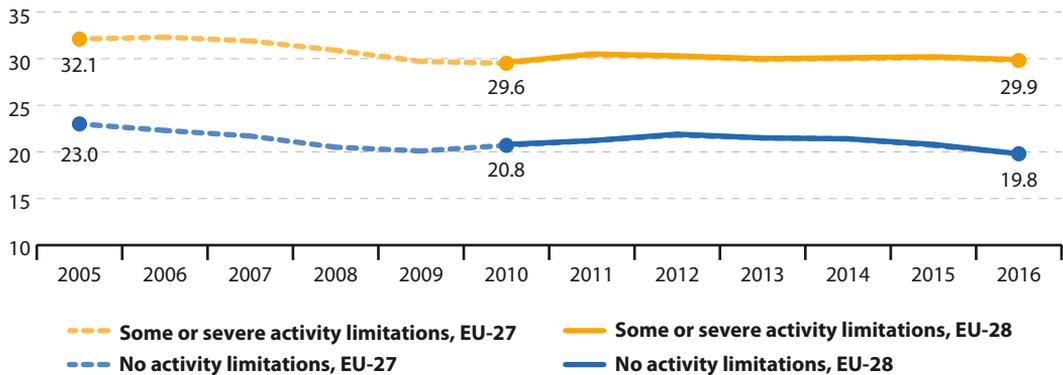
⁽²⁴⁾ European Commission, *European Semester Thematic Factsheet. Social Inclusion*, 2016, p. 78.

⁽²⁵⁾ European Commission, *The 2015 Pension Adequacy Report: current and future income adequacy in old age in the EU. Volume 1*, 2015.



Figure 5.11: People at risk of poverty or social exclusion by level of activity limitation, EU-27 and EU-28, 2005–2016

(% of population aged 16 or over)



Note: 2013 data are estimates.

Source: Eurostat (online data code: hlth_dpe010)

5.3.2 People with disabilities have higher rates of risk of poverty or social exclusion

In 2016, about 30% of the population aged 16 or more in the EU and with an activity limitation was at risk of poverty or social exclusion, compared to around 20% of those with no disability. Despite large country differences, the rate of risk of poverty and social exclusion among people with activity limitations was higher compared to the overall population in all Member States.

Across the EU, the share of people with activity limitation at risk of poverty or social exclusion followed a similar pattern as the overall indicator until around 2012. However, instead of decreasing after 2012, as was the case for the general population, the value for those with activity limitations remained stable. Some of the main challenges that people with disabilities face are limited access to quality education from an early age and impeded access to the labour market. The integration of people with disabilities into the labour market has proven especially difficult

in the wake of the financial crisis (for more information see the Progress Report by the European Commission on its European Disability Strategy ⁽²⁶⁾).

The difference in risk of monetary poverty before and after social transfers reveals the decisive importance of social transfers to people with activity limitation. Before social transfers, 69.1% ⁽²⁷⁾ of people suffering from activity limitations were at risk of monetary poverty, but after social transfers this rate was reduced to 20.2% ⁽²⁸⁾ across the EU ⁽²⁹⁾.

5.3.3 Lack of work increases the risk of poverty or social exclusion

At 66.9%, two-thirds of unemployed people in the EU were at risk of poverty or social exclusion in 2016 ⁽³⁰⁾. In the same year, 43.5% of other economically inactive people ⁽³¹⁾ were also at risk. In comparison, the share of employed people at risk was just 12.4%. This shows that poverty or social exclusion are more likely to affect

⁽²⁶⁾ European Commission, *Progress Report on the implementation of the European Disability Strategy (2010–2020)*, Commission Staff Working Paper, 2017.

⁽²⁷⁾ Eurostat (online data code: hlth_dpe030).

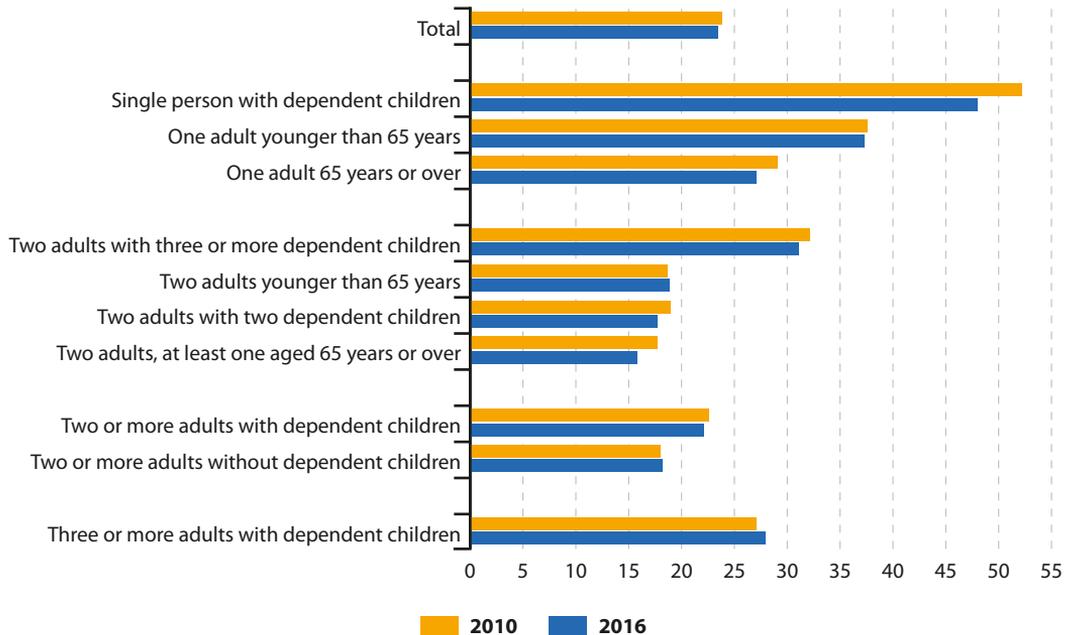
⁽²⁸⁾ Eurostat (online data code: hlth_dpe020).

⁽²⁹⁾ To assess the importance of social transfers, the analysis focuses on the sub-indicator 'at risk of poverty' without the dimensions of material deprivation and very low-work intensity.

⁽³⁰⁾ Eurostat (online data code: ilc_peps02).

⁽³¹⁾ The inactive population can include pre-school children, school children, students, pensioners and housewives or house-husbands, for example, provided that they are not working at all and are not available or looking for work either; some of these may be of working age.

Figure 5.12: People at risk of poverty or social exclusion, by household type, EU-28, 2010 and 2016
(% of population)



Source: Eurostat (online data code: [ilc_peps03](#))

unemployed people. This is linked to the fact that the share of people living in households with low job intensity is one of the component indicators of the risk of poverty or social exclusion indicator.

However, the rate of risk of poverty or social exclusion increased for all groups regardless of their employment status between 2010 and 2016, except for retirees, where it fell by 2.1 percentage points. It is interesting that in 2016 men had a higher rate of risk of poverty and social exclusion than women across all employment statuses, except for retirees. Among those, the share of women at risk of poverty or social exclusion was 4.0 percentage points higher than that of men. This reflects an aspect discussed earlier in the chapter: one of the drivers behind the feminisation of poverty and social exclusion is the number of women at risk of poverty or social exclusion at retirement age.

5.3.4 Single parents face the highest risk of poverty or social exclusion

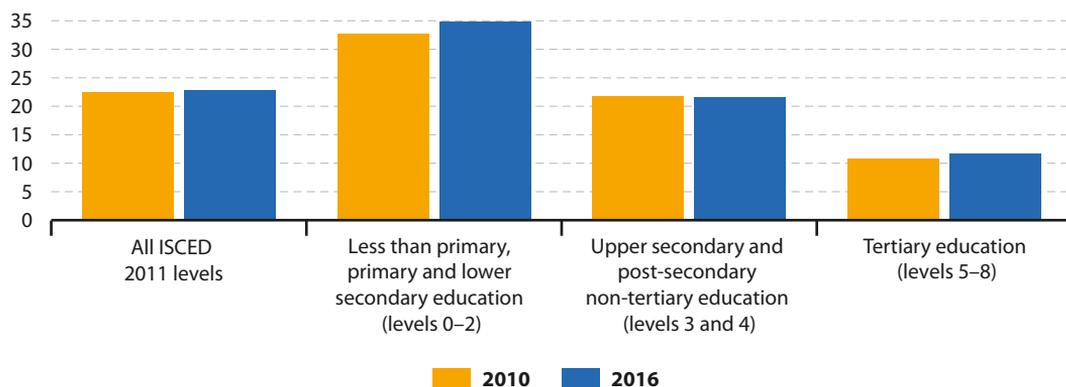
In 2016, 48.0% of single people with one or more dependent children were at risk of poverty or social exclusion. This was just over twice the average rate and higher than for other household types. However, this group also experienced the largest decline in the percentage at risk since 2010 when the rate was 52.2% and well over double the average.

Figure 5.12 shows that in general households with only one adult — both with children and without — and households with many children are at a higher risk of poverty or social exclusion. In single-adult households there is no partner to help cushion temporary disruptions such as unemployment or sickness. Also, many such households are made up of young unemployed



Figure 5.13: People at risk of poverty or social exclusion, by educational attainment level, EU-28, 2010 and 2016

(% of population aged 18 and over)



Source: Eurostat (online data code: ilc_peps04)

people or pensioners — often women — which have a higher-than-average risk of poverty or social exclusion⁽³²⁾. Single parents also face the challenge of being both the primary breadwinner and caregiver for the family. The group with the lowest risk of poverty rate in 2016 was that of households with two adults where at least one person was aged 65 years or over.

5.3.5 People with low educational attainment are three times more likely to be at risk than those with tertiary education

In 2016, 34.8% of people with at most lower secondary educational attainment were at risk of poverty or social exclusion (see Figure 5.13). In comparison, only 11.7% with tertiary education were in the same situation. This shows that the least educated people were almost three times more likely to be at risk than those with the highest education levels (also see the chapter on ‘Education’, page 87). This is also reflected in the data on employment, which shows that the likelihood of being employed rises in line with educational level (see the chapter on ‘Employment’, page 23, or the Education and Training Monitor 2017 of the European Commission⁽³³⁾ for more information).

Even though the risk of poverty or social exclusion increased the most for adults with the lowest educational attainment between 2010 and 2016, people with the highest education levels also experienced an increased risk.

5.3.6 The risk of poverty or social exclusion due to low education is passed on to the next generation

An important aspect to consider when analysing the overall number of people at risk of poverty or social exclusion is the transmission of disadvantage from one generation to the next.

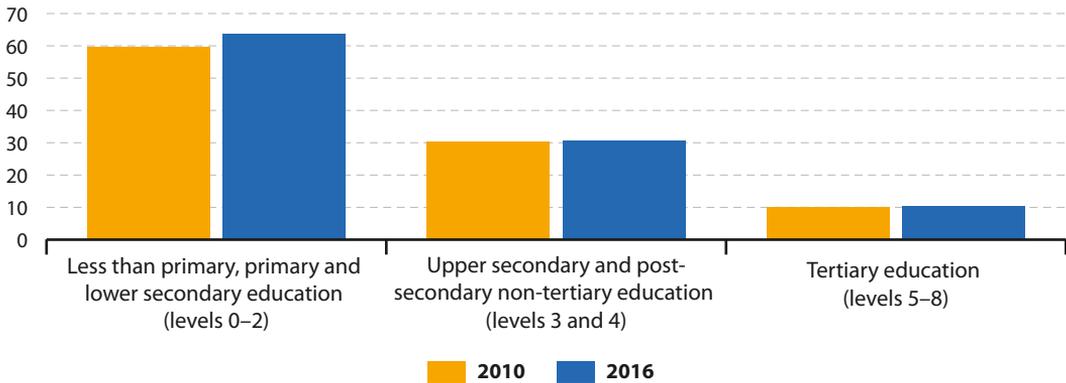
At 10.3%, children of parents who obtained the highest educational degrees had about the same rate of risk of poverty or social exclusion as the overall population with the highest educational level in 2016 (see Figures 5.13 and 5.14). Contrarily, the situation was especially grim for children of parents with at most pre-primary and lower secondary education. The risk of poverty rate for people in this group was almost six times higher than for children of parents with first- or second-stage tertiary education. Also, while around a third of the overall population with the lowest educational attainment was at risk of poverty or social exclusion in 2016, this rate was almost

⁽³²⁾ European Centre, *Poverty Across Europe: The latest evidence using the EU-SILC Survey, 2008*.

⁽³³⁾ European Commission, *Education and Training Monitor 2017, 2017*, p. 72.

Figure 5.14: Children at risk of poverty or social exclusion by educational attainment level of their parents, EU-28, 2010 and 2016

(% of population aged less than 18 years)



Source: Eurostat (online data code: [ilc_peps60](#))

twice as high, at 63.7%, for children of parents in this group. This implies that the risk of poverty or social exclusion particularly affects families where parents could not benefit from an extensive education.

Moreover, between 2010 and 2016 the increase in the risk of poverty or social exclusion was particularly high for children of parents with the lowest educational attainment, while the increase was minimal for other children. Thus, education, which is a strong determinant of poverty or social exclusion for adults, also strongly influences whether children are at risk of poverty or social exclusion (for more information see the Education and Training Monitor 2017 of the European Commission ⁽³⁴⁾).

The socio-economic environment in which children grow up does not only affect the standard of living in their youth. There is also a close link between the socio-economic status of adults and the status of their parents during their childhood. For instance, the ad hoc module on intergenerational transmission of disadvantage

statistics ⁽³⁵⁾ carried out in the EU Statistics on Income and Living Conditions (SILC) in 2011 ⁽³⁶⁾ showed that 34.2% of low-educated adults also had low-educated parents in their childhood. This can be explained by the parents' inability to financially support their children's studies and/or to pass on a perception of the importance of education to their children.

Education is not the only factor transmitted from generation to generation. In 2011, 68.9% of adults with a low ability to make ends meet grew up in a household in the same situation. Moreover, among adults 'not at work', 28.6% also grew up in a household with at least one parent not at work ⁽³⁷⁾. Thus, children growing up in unfavourable conditions are less likely than their better-off peers to do well in school, enjoy good health and realise their full potential later in life (for more information see Eurostat's statistical book on Living Conditions in Europe ⁽³⁸⁾).

In a Commission Recommendation ⁽³⁹⁾, the European Commission encouraged its Member States to take action to prevent disadvantages

⁽³⁴⁾ European Commission, *Education and Training Monitor 2017*, 2017, p. 28.

⁽³⁵⁾ Eurostat, *Statistics in focus, Intergenerational transmission of disadvantage statistics*, Statistics Explained, 2013.

⁽³⁶⁾ The data on intergenerational transmission of disadvantages will be updated in the EU-SILC ad hoc module 2019.

⁽³⁷⁾ Parents 'not at work' include unemployed, in retirement or in early retirement or had given up business, fulfilling domestic tasks and care responsibilities, other inactive person, and those answering 'don't know'.

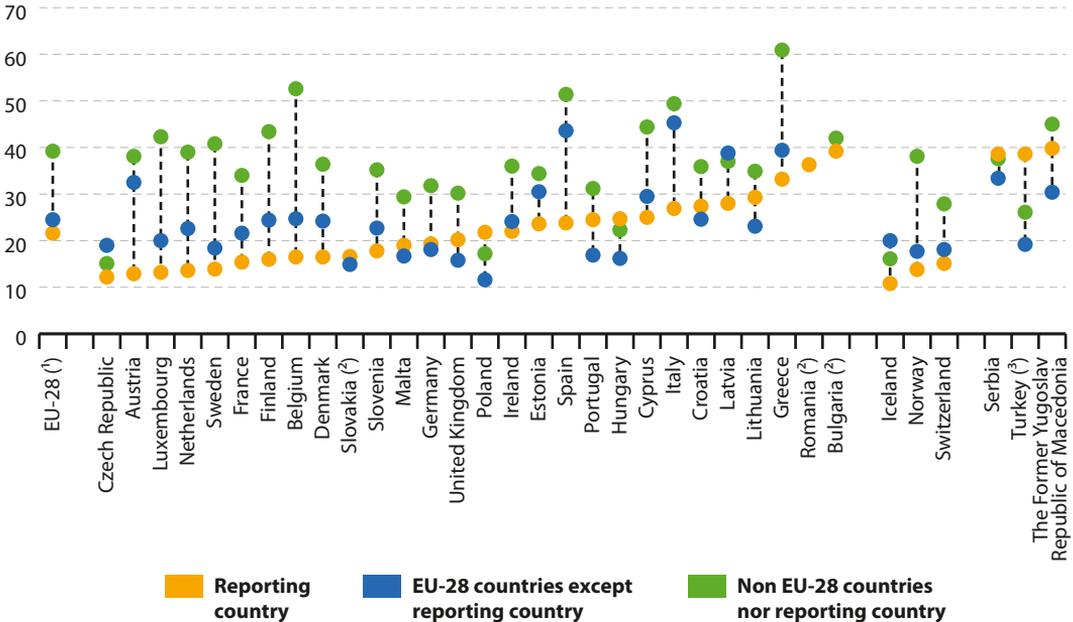
⁽³⁸⁾ Eurostat, *Living conditions in Europe. Eurostat statistical books*, 2014, p.101.

⁽³⁹⁾ European Commission, *Commission Recommendation of 20 February 2013, Investing in children: breaking the cycle of disadvantage*, Official Journal of the European Union, 2013.



Figure 5.15: People at risk of poverty or social exclusion by broad group of country of birth, by country, 2016

(% of population aged 18 and over)



(¹) Estimated data for foreign countries.

(²) Missing data due to low reliability.

(³) 2015 data.

Source: Eurostat (online data code: [ilc_peps06](#))

being transmitted across generations. Specifically, it advised them to guarantee that children grow up with sufficient resources, as well as ensure they have access to quality education, along with childcare services and health services, and to enforce children's rights to access different pastime activities.

5.3.7 People from outside the EU are generally worse off than people living in their home country

In 2016, people living in the EU but born in a non-EU country had a 39.2% at risk of poverty or social exclusion rate. The risk was lower for people born in an EU-country other than the one they were living in, at 24.5%. Among the people whose country of residence corresponded to their country of birth, 21.6% were at risk of poverty or social exclusion. Thus, people born outside the EU had a twice higher rate of risk of poverty or

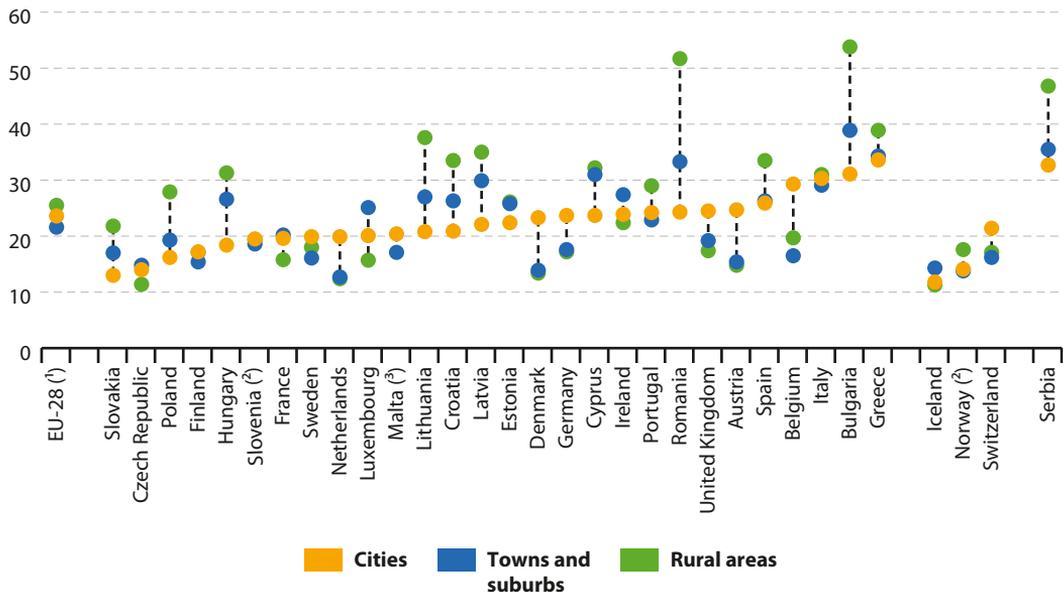
social exclusion compared with native residents. Compared to migration from a country from outside the EU, migration within the EU bears a far smaller risk of poverty or social exclusion.

In the majority of Member States, the rate of risk of poverty or social exclusion was highest for people born outside the EU. The Czech Republic, Poland, Hungary and Latvia form the exceptions. However, at around 10 percentage points, the difference between groups with different migration status was comparably low in these four countries. In Member States where people born outside the EU were most at risk of suffering from poverty or social exclusion, this likelihood was up to 36 percentage points higher than for those born within the reporting country.

The 'poverty origin gap' can arise due to a number factors, such as the level of education, labour market access and employment status of foreign citizens residing in a given Member State.

Figure 5.16: People at risk of poverty or social exclusion by degree of urbanisation, by country, 2016

(% of population)



(1) Estimated data for rural areas.

(2) 2015 data.

(3) Missing data due to low reliability.

Source: Eurostat (online data code: [ilc_peps13](#))

Difficulties in labour market access among foreign citizens can be due to migration-specific work obstacles: problems with credential recognition, language and communication barriers, or discrimination on social and religious grounds (for more information, see the Eurostat article on First and second-generation immigrants — obstacles to work ⁽⁴⁰⁾ and the Migrant integration statistics ⁽⁴¹⁾). Furthermore, the socio-economic outcomes of the foreign-born population may also reflect the different reasons for migrating to a specific country. For instance, in many EU countries a large share of non-EU migrants did not come to their host country primarily for work, but rather for family reasons, or for humanitarian reasons (see Employment and Social Development in Europe 2015 ⁽⁴²⁾ and the International Migration Outlook 2018 ⁽⁴³⁾ by the OECD).

Between 2010 and 2016 the risk of poverty or social exclusion increased for those living in a country other than their country of origin, both for those from outside the EU and those from inside the EU. However, for both groups, this share decreased compared to the years 2013 to 2015.

5.3.8 People in rural areas have slightly higher rates of risk of poverty or social exclusion, but the rate has converged across different types of settlements

On average, EU residents in rural areas were slightly more likely to live at risk of poverty or social exclusion than those in urban areas (25.5% in rural areas compared with 23.6% in urban areas) in 2016 (see Figure 5.15). Those living in towns or suburbs were the least likely to be at risk (21.6%).

⁽⁴⁰⁾ Eurostat, *First and second-generation immigrants — obstacles to work*, Statistics Explained, 2016.

⁽⁴¹⁾ Eurostat, *Migrant integration statistics — labour market indicators*, Statistics Explained, 2017.

⁽⁴²⁾ European Commission, *Employment and Social Development in Europe 2015*, 2016, p.14.

⁽⁴³⁾ OECD, *International Migration Outlook 2018*, OECD Publishing, Paris, 2018.



Despite the overall EU averages showing higher rates of risk of poverty or social exclusion in rural areas, in some northern, central and western Member States, people residing in urban areas were more often affected than in rural areas.

In a study report on poverty and social exclusion in rural areas ⁽⁴⁴⁾, the European Commission identified four main categories of problems that characterise rural areas in the EU and determine the risk of poverty or social exclusion: demography (for example, the exodus of residents and the ageing population in rural

areas), remoteness (such as lack of infrastructure and basic services), education (for example, lack of preschools and difficulty in accessing primary and secondary schools) and labour markets (lower employment rates, persistent long-term unemployment and a greater number of seasonal workers). At the same time, even if urban areas are often characterised by high concentrations of economic activity, they are also characterised by a range of social inequalities, where especially the costs of living can contribute to the risks of poverty ⁽⁴⁵⁾.

⁽⁴⁴⁾ European Commission, *Poverty and social exclusion in rural areas. Final study report*, Office for Official Publications of the European Communities, Luxembourg, 2008.

⁽⁴⁵⁾ Eurostat, *Urban Europe — statistics on cities, towns and suburbs — executive summary*, 2016.

Country profiles



Country profiles

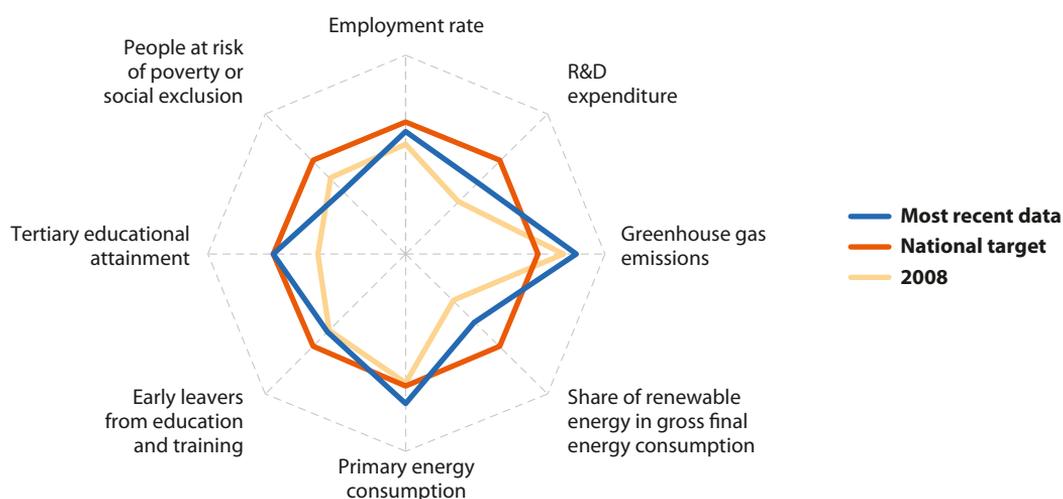
This section provides an overview of each Member State's situation in relation to the Europe 2020 headline indicators and national targets.

Member States define their national targets in their National Reform Programmes (NRPs), taking into account their current situation. These programmes outline the actions and measures they plan to undertake to meet their national targets. The European Commission assesses each NRP and provides country-specific recommendations to support the programmes. The full NRPs and country-specific recommendations can be downloaded from the European Commission's European Semester website.

This chapter illustrates the current situation of each Member State with the help of radar charts. The charts show how far a country is from its national targets as a percentage of the targets by comparing the national target (red line), the country's situation in 2008 (yellow line) and the most recent situation (blue line). The distance

between the blue line and the red line for a particular indicator shows how far a country currently is from its national target. Data points on or outside the red line mean the country has met or exceeded this target, while those inside show it still has some way to go. Comparing a country's most recent performance with the green line reveals whether it has moved closer to or further away from its targets since 2008 (1).

National targets that are not harmonised with the overall EU targets are not presented in the diagram. For example, this is the case with the poverty and social exclusion targets adopted by some countries. Regarding the indicator on energy efficiency, Member States have set indicative national targets based on different indicators (primary or final energy consumption, or primary or final energy savings, or energy intensity) in line with the Energy Efficiency Directive. These have been translated into absolute levels of primary energy consumption, expressed in million tonnes of oil equivalent (Mtoe).



(1) Please note that in a few cases, some countries have changed their national targets since 2008, therefore comparisons with earlier editions of this publication may be misleading.



Progress towards the national greenhouse gas (GHG) emissions targets is analysed based on emissions in sectors not covered by the EU Emissions Trading Scheme (EU ETS) and in relation to the base year defined in the Effort Sharing Decision (ESD) ⁽²⁾. For further details on the EU ETS and the ESD see the chapter on 'Climate change and energy' on page 65.

The national targets (as defined in the NRPs) and the latest available national data for the headline indicators are presented in a separate table. Data on Europe 2020 headline indicators, targets and related issues are disseminated by Eurostat on a dedicated section of its website.

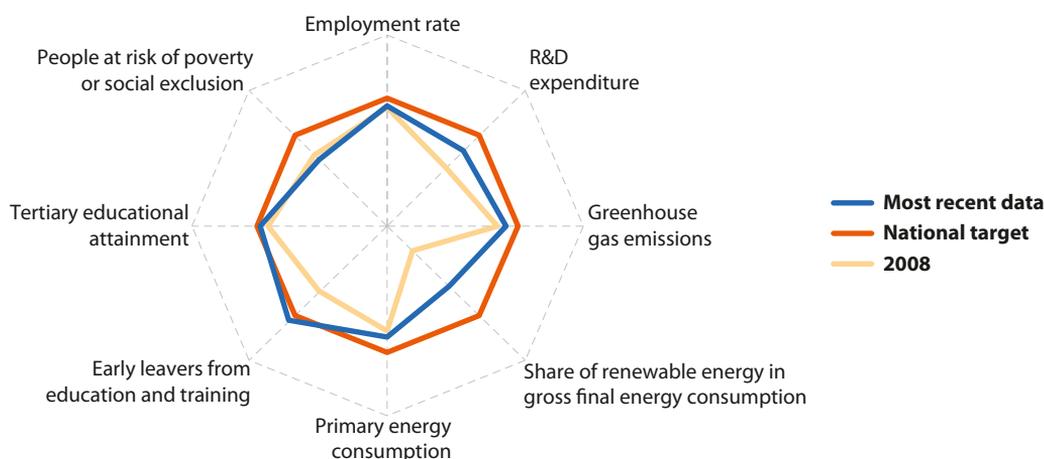
⁽²⁾ The Effort Sharing Decision (406/2009/EC) originally defined 2005 as the base year for Member States' GHG emissions reductions. However, due to recent recalculations with improved methodologies used at national level to measure the estimated emissions, 2005 values of countries are not necessarily equal to the value of the ESD base year.

Belgium

In 2017, Belgium surpassed its target on early leavers from education and training by 0.6 percentage points. The country almost reached its tertiary educational attainment target, which foresees an increase in the share of population aged 30 to 34 with tertiary education to 47%. The country has also increased its expenditure on R&D as a share of GDP, but in 2016 it was still 0.5 percentage points from its 3% national target. The share of renewable energy in gross final energy consumption in Belgium more than doubled between 2008 and 2016; however, the country remains 4.3 percentage points below its national

target of 13%. Although the country reduced its GHG emissions in non-ETS sectors between 2008 and 2016, it is still 7.8 percentage points away from its national target. The lack of progress in primary energy consumption leaves the country more than five percentage points from its target. Similarly, lack of progress on the employment rate between 2008 and 2017 means the employment target is still 4.7 percentage points away. Between 2008 and 2017, the number of people at risk of poverty or social exclusion increased by about 4.6%, moving the country further from its national 2020 target.

Figure 6.1: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.1: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	68.5	2017	73.2
Gross domestic expenditure on R&D (% of GDP)	2.49 ⁽¹⁾	2016	3
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 7.2 ⁽¹⁾	2016	- 15
Share of renewable energy in gross final energy consumption (%)	8.7	2016	13
Primary energy consumption (million tonnes of oil equivalent)	49.0	2016	43.7
Early leavers from education and training (% of population aged 18–24)	8.9 ⁽²⁾	2017	9.5
Tertiary educational attainment (% of population aged 30–34)	45.9 ⁽²⁾	2017	47
People at risk of poverty or social exclusion (thousands)	2 296	2017	1 814

⁽¹⁾ Estimate/provisional data.

⁽²⁾ Break in time series in 2017.

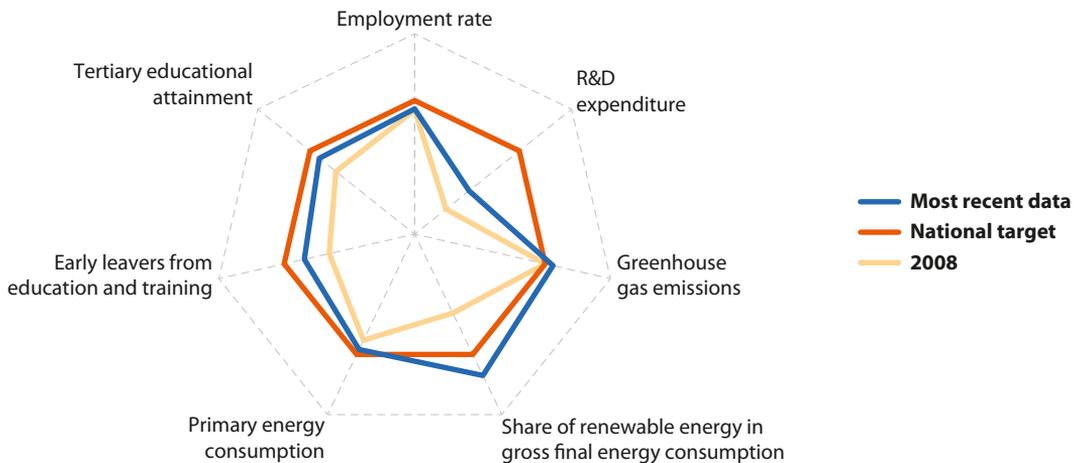
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Bulgaria

Bulgaria reduced its non-ETS GHG emissions between 2008 and 2016, staying within its national target to limit the rise in non-ETS sector GHG emissions to 20% by 2020. In 2016, the country surpassed its renewable energy target and almost met its target on primary energy consumption. Although Bulgaria has moved towards its national targets on early school leavers and tertiary education, it was still further away from both indicators than the EU as a whole was to the respective EU target in 2016. Bulgaria's employment rate deteriorated sharply between

2008 and 2011; the subsequent increase up to 2017 was not enough to reach the country's 76% target. Despite a rise in R&D expenditure between 2008 and 2016, Bulgaria would need to double its expenditure in the coming years to reach its goal of 1.5% of GDP. An increase in the number of people at risk of poverty after social transfers — used as a national target in the area of poverty reduction — has pushed the country further away from its poverty reduction target; in 2017 the number was 17.6% above the national 2020 target.

Figure 6.2: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.2: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	71.3	2017	76
Gross domestic expenditure on R&D (% of GDP)	0.78	2016	1.5
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	12.8 ⁽¹⁾	2016	20
Share of renewable energy in gross final energy consumption (%)	18.8	2016	16
Primary energy consumption (million tonnes of oil equivalent)	17.6	2016	16.9
Early leavers from education and training (% of population aged 18–24)	12.7	2017	11
Tertiary educational attainment (% of population aged 30–34)	32.8	2017	36
People at risk of poverty after social transfers (thousands)	1 665	2017	1 372 ⁽²⁾

(¹) Data are provisional. (²) National target differs from the overall EU target on 'risk of poverty or social exclusion' as it refers to the sub-indicator 'people at risk of poverty after social transfers' only.

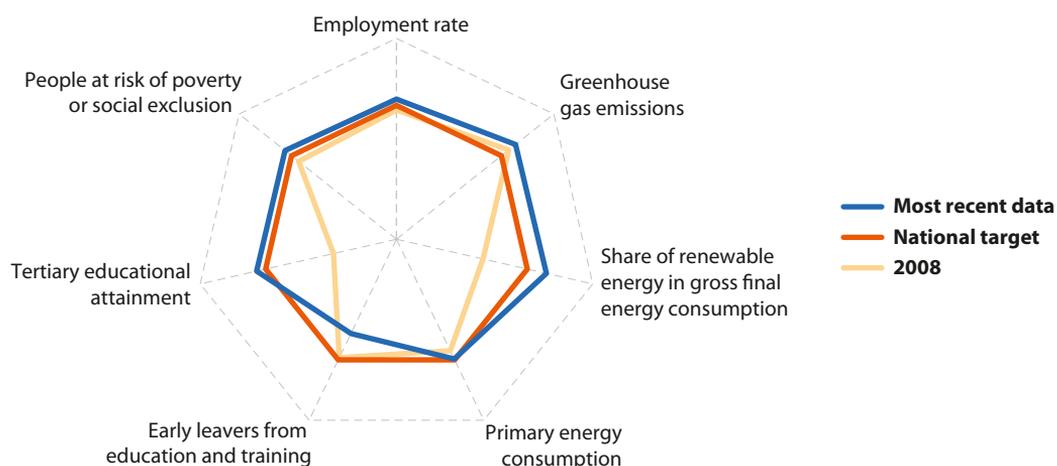
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Czech Republic

The Czech Republic reduced its non-ETS GHG emissions by 5.7 % between 1990 and 2016, thus remaining within the national GHG emissions target to limit increases to 9 % by 2020. In 2016, the country had already met its national target on renewable energy and the 6.3 % decrease in primary energy consumption in the period 2008 to 2016 brought the Czech Republic very close to its national target. In 2017, the Czech Republic exceeded its national targets on employment and tertiary educational attainment by 3.5 and

2.2 percentage points, respectively. The significant reduction in the number of people at risk of poverty or social exclusion between 2008 and 2016 helped the country surpass its national target of lifting 100 000 people from risk of poverty or social exclusion compared to 2008 levels with 22 000. The increase in the share of early school leavers from education and training between 2008 and 2017 widened the distance to the national target to 1.2 percentage points.

Figure 6.3: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.3: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	78.5	2017	75
Gross domestic expenditure on R&D (% of GDP)	1.68 ⁽¹⁾	2016	1 ⁽²⁾
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 5.7 ⁽¹⁾	2016	9
Share of renewable energy in gross final energy consumption (%)	14.9	2016	13
Primary energy consumption (million tonnes of oil equivalent)	39.9	2016	39.6
Early leavers from education and training (% of population aged 18–24)	6.7	2017	5.5
Tertiary educational attainment (% of population aged 30–34)	34.2	2017	32
People at risk of poverty or social exclusion (thousands)	1 375	2016	1 466

⁽¹⁾ Provisional data. ⁽²⁾ National target refers to public sector expenditure only.

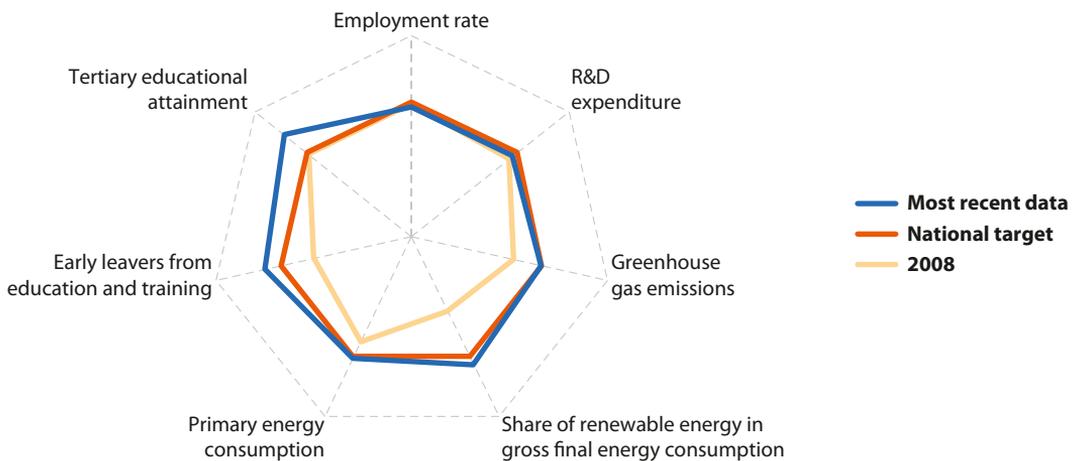
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Denmark

In 2017, Denmark exceeded its national targets on early school leavers and tertiary educational attainment, by 1.2 and 8.8 percentage points, respectively. With a 11.8% reduction in primary energy consumption and a 13.6 percentage points increase in the share of renewable energy in gross final energy consumption between 2008 and 2016, Denmark also surpassed its targets on energy efficiency and renewable energy. In 2016 the country was also very close to meeting its non-ETS

GHG emissions target and R&D expenditure target of 3% of GDP. The country's employment rate in 2017 was still below the 2008 level and some distance from the national target of 80%. Despite a steady decrease since 2014, the number of people living in households with very low work intensity — used in Denmark as a national target in the area of poverty and social exclusion — increased by 17.9% between 2008 and 2017, pushing the country further from its national target.

Figure 6.4: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.4: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	76.9	2017	80
Gross domestic expenditure on R&D (% of GDP)	2.87 ⁽¹⁾	2016	3
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-19.3 ⁽¹⁾	2016	-20
Share of renewable energy in gross final energy consumption (%)	32.2	2016	30
Primary energy consumption (million tonnes of oil equivalent)	17.2	2016	17.4
Early leavers from education and training (% of population aged 18–24)	8.8	2017	10
Tertiary educational attainment (% of population aged 30–34)	48.8	2017	40 ⁽²⁾
People living in households with very low work intensity (thousands)	409	2017	325 ⁽³⁾

⁽¹⁾ Estimated/provisional data. ⁽²⁾ National target: more than 40%. ⁽³⁾ National target differs from the overall EU target on 'risk of poverty or social exclusion' as it refers to the sub-indicator 'people living in households with very low work intensity' only.

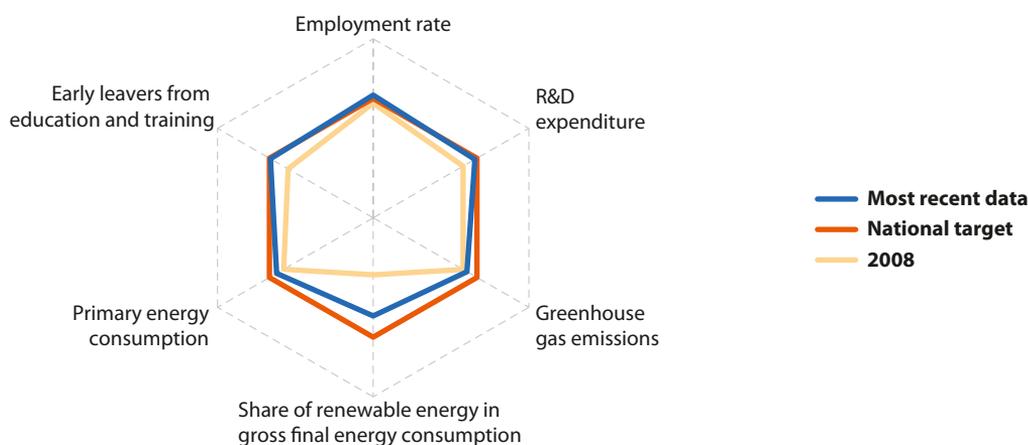
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Germany

Long-term unemployment, used in Germany as a national target in the area of poverty and social exclusion, went down by 58.5 % between 2008 and 2017. This allowed the country to significantly exceed its target of reducing long-term unemployment by 20 % by 2020. Germany had already met its 77 % employment target in 2013 and continued to increase its employment rate until 2017. In 2017, Germany also surpassed its national target on tertiary educational attainment by 7.0 percentage points, with 49.0 % of 30 to 34 year olds having completed post-secondary level education or equivalent. Germany's national target

differs from that of other Member States because it includes post-secondary non-tertiary education (ISCED level 4) in addition to ISCED levels 5 to 8. In addition, Germany was only 0.1 percentage points away from meeting its target for early leavers from education and training in 2017. In 2016, the country almost reached its national targets for R&D expenditure. Between 2008 and 2016, Germany reduced the distance to its national targets on primary energy consumption and renewable energy by more than half. However, a gap of 8.3 percentage points to its target on GHG emissions in non-ETS sectors persisted in 2016.

Figure 6.5: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.5: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	79.2	2017	77
Gross domestic expenditure on R&D (% of GDP)	2.94 ⁽¹⁾	2016	3
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 5.7 ⁽¹⁾	2016	- 14
Share of renewable energy in gross final energy consumption (%)	14.8	2016	18
Primary energy consumption (million tonnes of oil equivalent)	295.8	2016	276.6
Early leavers from education and training (% of population aged 18–24)	10.1	2017	10 ⁽²⁾
Tertiary educational attainment (% of population aged 30–34)	49.0 ⁽³⁾	2017	42 ⁽³⁾
Long-term unemployment (thousands)	675	2017	1 306 ⁽⁴⁾

⁽¹⁾ Estimated/provisional data. ⁽²⁾ National target: less than 10%. ⁽³⁾ Indicator and target refer to ISCED levels 4–8. ⁽⁴⁾ National target differs from the overall EU target on 'risk of poverty or social exclusion' as it refers to long-term unemployed people.

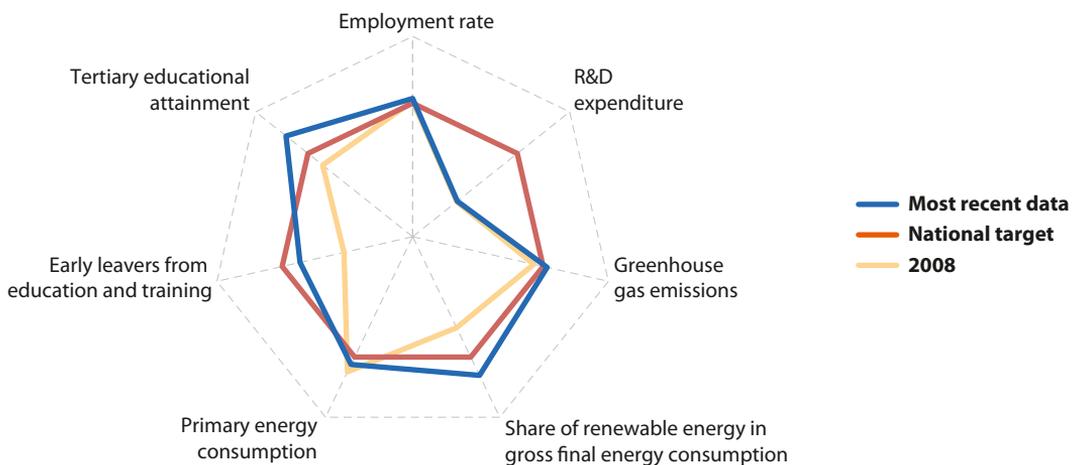
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators and [lfsa_ugad](#)), DESTATIS

Estonia

Estonia reduced its GHG emissions between 2008 and 2016, remaining below its national target, which allows an increase of 11 % by 2020. In 2016, it surpassed its targets on renewable energy and primary energy consumption by 3.8 percentage points and 0.4 Mtoe, respectively. In 2017, the country also exceeded its targets on tertiary education and employment by 8.4 and 2.7 percentage points, respectively. Despite a sizeable reduction in the share of early school

leavers since 2008, Estonia was 1.3 percentage points above its national target in 2017. Since 2010 the share of the population living at risk of poverty after social transfers has increased gradually, pushing Estonia further from its national target to reduce monetary poverty to a rate of 15 %. Due to the lack of progress in gross expenditure on R&D, in 2016 the country was further from its national target of 3 % than any other Member State.

Figure 6.6: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.6: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	78.7	2017	76
Gross domestic expenditure on R&D (% of GDP)	1.28	2016	3
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	7.6 (¹)	2016	11
Share of renewable energy in gross final energy consumption (%)	28.8	2016	25
Primary energy consumption (million tonnes of oil equivalent)	6.1	2016	6.5
Early leavers from education and training (% of population aged 18–24)	10.8	2017	9.5
Tertiary educational attainment (% of population aged 30–34)	48.4	2017	40
People at risk of poverty after social transfers (% of population)	21.7	2016	15 (²)

(¹) Estimated/provisional data. (²) National target differs from the overall EU target on 'Risk of poverty or social exclusion' as it refers to the sub-indicator 'people at risk of poverty after social transfers' only.

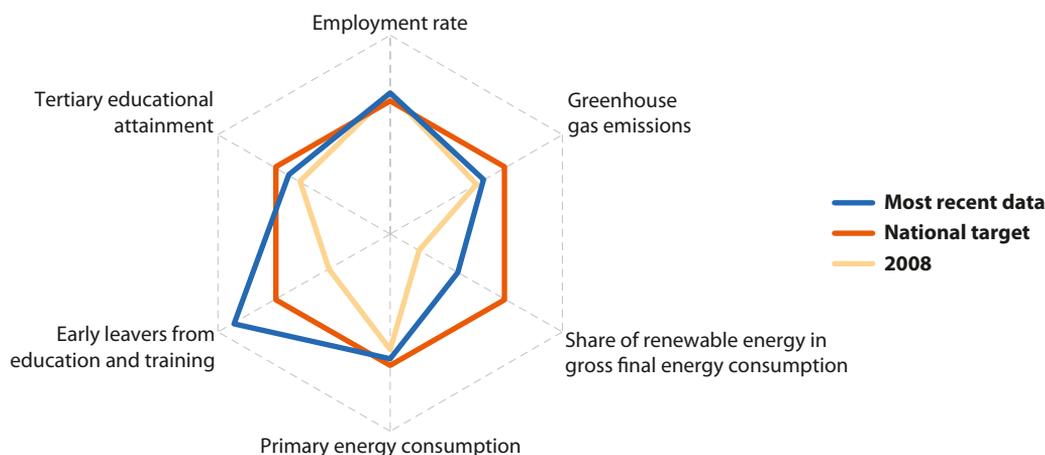
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Ireland

Ireland surpassed its employment target by 4.0 percentage points in 2017. The country also exceeded its target for early leavers from education and training, achieving a 6.6 percentage point reduction between 2008 and 2017. Although the share of tertiary graduates increased more or less steadily during the same period, Ireland has yet to meet its 60% target — the second most ambitious target for this indicator among Member States. Ireland had already met its primary energy consumption target in 2011, but the slight increase in

consumption in 2016 pushed the country just above its target again. Despite the gradual increase in the share of renewable energy in gross final energy consumption since 2008, a gap of 6.5 percentage points still needs to be closed in the next four years for the country to reach its 16% target. Ireland would need to more than triple its efforts to reduce its GHG emissions in non-ETS sectors compared to 1990 in order to meet its 20% reduction target. A fall in the country's R&D expenditure in 2015 and 2016 pushed Ireland away from its 2% target.

Figure 6.7: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.7: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	73.0	2017	69 (1)
Gross domestic expenditure on R&D (% of GDP)	1.18 (2)	2016	2 (3)
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 5.4 (2)	2016	- 20
Share of renewable energy in gross final energy consumption (%)	9.5	2016	16
Primary energy consumption (million tonnes of oil equivalent)	14.6	2016	13.9
Early leavers from education and training (% of population aged 18–24)	5.1 (4)	2017	8
Tertiary educational attainment (% of population aged 30–34)	53.5 (4)	2017	60
People at risk of poverty or social exclusion (thousands)	1 135	2016	: (5)

(1) National target: 69–71%. (2) Estimated/provisional data. (3) National target: 2.5% of GNP (approximately 2% of GDP).

(4) Break in time series. (5) National target: Reduce by a minimum of 200 000 the population in combined poverty (either consistent poverty, at-risk-of-poverty or basic deprivation).

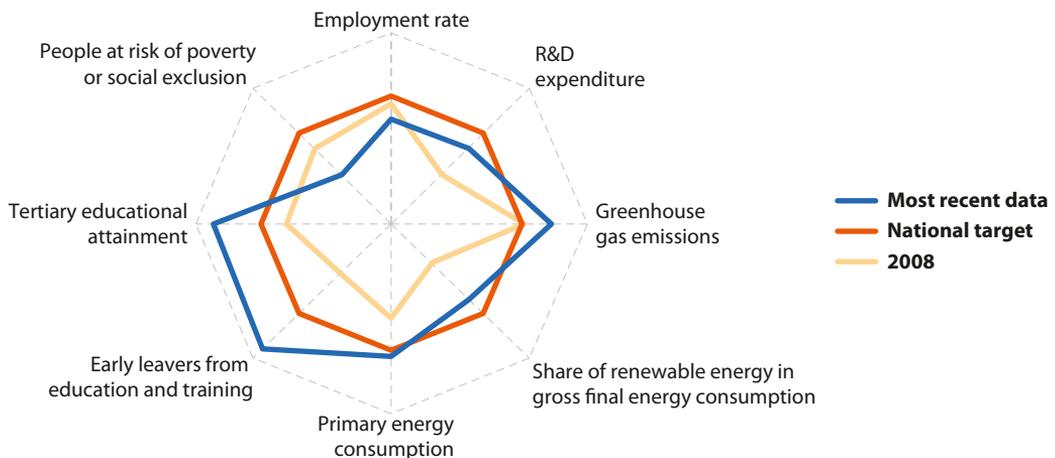
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Greece

Partly as a result of the economic slowdown, Greece had reduced its GHG emissions in non-ETS sectors by 25.7% by 2016 compared to 1990 levels, significantly exceeding its national target for a 4% reduction by 2020. Greece had already met its target on primary energy consumption in 2013 and has stabilised its energy efficiency at almost the same level since then. Between 2008 and 2016, Greece almost doubled its share of renewable energy in gross final energy consumption and increased its expenditure on R&D as a share of GDP, thus narrowing the

distance to the respective national targets. In 2017, the country surpassed its targets on tertiary education and early leavers from education and training, by 11.7 and 4.0 percentage points respectively. In contrast, in 2017 it was the EU country with the lowest employment rate and the greatest distance to its employment target. Moreover, the number of people living at risk of poverty or social exclusion increased by about 743 000 between 2008 and 2016, increasing the distance from the national target to almost 1.2 million people.

Figure 6.8: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.8: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	57.8	2017	70
Gross domestic expenditure on R&D (% of GDP)	1.01	2016	1.2
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-25.7 ⁽¹⁾	2016	-4
Share of renewable energy in gross final energy consumption (%)	15.2	2016	18
Primary energy consumption (million tonnes of oil equivalent)	23.5	2016	24.7
Early leavers from education and training (% of population aged 18–24)	6.0	2017	10 ⁽²⁾
Tertiary educational attainment (% of population aged 30–34)	43.7	2017	32
People at risk of poverty or social exclusion (thousands)	3 789	2016	2 596

⁽¹⁾ Provisional/estimated data. ⁽²⁾ National target: less than 10%.

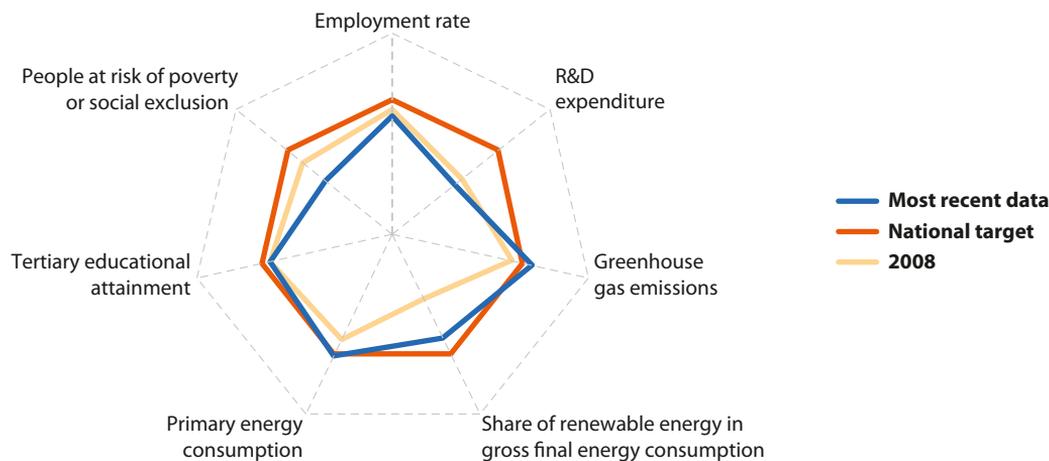
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Spain

Spain exceeded its national target on GHG emissions in non-ETS sectors by 6.2 percentage points in 2016. The country also surpassed its primary energy consumption target and closed the distance to its renewable energy target to 2.7 percentage points. By reducing the school drop-out rate by 13.4 percentage points between 2008 and 2017, Spain made substantial progress towards its 2020 national target. In contrast, in 2017 the share of 30 to 34 years old with tertiary education was almost the same as in 2008, leaving a distance of 2.8 percentage points to the

national target of 44 %. Since 2008, the number of people at risk of poverty or social exclusion has risen sharply. Despite improvements in 2015 and 2016, Spain would need to lift some 3.4 million people out of risk of poverty to meet its 2020 objective. Although the country's employment rate has picked up since 2014, in 2017 it was still 8.5 percentage points behind its national target — the second largest gap in the EU. R&D spending has also fallen, however, the country was closer to its national target than the EU as a whole was to the EU 2020 target in 2016.

Figure 6.9: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.9: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	65.5	2017	74
Gross domestic expenditure on R&D (% of GDP)	1.19	2016	2
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 16.2 ⁽¹⁾	2016	- 10
Share of renewable energy in gross final energy consumption (%)	17.3	2016	20
Primary energy consumption (million tonnes of oil equivalent)	117.2	2016	119.8
Early leavers from education and training (% of population aged 18–24)	18.3	2017	15 ⁽²⁾
Tertiary educational attainment (% of population aged 30–34)	41.2	2017	44
People at risk of poverty or social exclusion (thousands)	12 827	2016	9 386 ⁽²⁾

⁽¹⁾ Provisional data. ⁽²⁾ National target refers to school drop-out rate.

⁽²⁾ National target: reduce the number of people at risk of poverty or social exclusion by 1 400 000 to 1 500 000 people (compared to 2008).

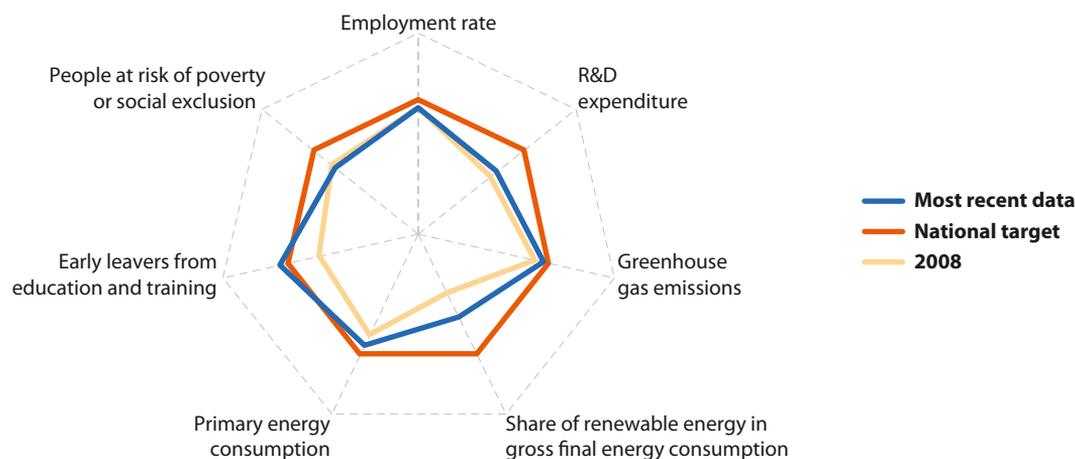
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

France

In 2017, France met its Europe 2020 target for early leavers from education and training for the fourth consecutive year. Progress has also been achieved in tertiary educational attainment; however, the indicator used at the EU level cannot directly be compared to the French target value of 50%, which refers to the population aged 17 to 33. By 2016, the country had moved closer to its target on primary energy consumption. In terms of renewable energy, France was the Member State that was the second furthest from its national target (7.0 percentage points). Despite an overall

reduction in GHG emissions in non-ETS sectors, by 2016 the country was still 3.6 percentage points away from its Europe 2020 goal. In 2017, France was also further from its employment target than the EU as a whole was from the EU target but slightly closer to its target on R&D expenditure (2016 data). Between 2008 and 2016, the number of people at risk of poverty or social exclusion increased by about 313 000, moving the country away from its 2020 goal to reduce the number of people at risk by 1.9 million (compared to 2007).

Figure 6.10: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.10: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	70.6	2017	75
Gross domestic expenditure on R&D (% of GDP)	2.25 ⁽¹⁾	2016	3
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 10.4 ⁽¹⁾	2016	- 14
Share of renewable energy in gross final energy consumption (%)	16.0	2016	23
Primary energy consumption (million tonnes of oil equivalent)	235.4	2016	219.9
Early leavers from education and training (% of population aged 18–24)	8.9	2017	9.5
Tertiary educational attainment (% of population aged 30–34)	44.3	2017	50 ⁽²⁾
People at risk of poverty or social exclusion (thousands)	11 463	2016	9 482 ⁽²⁾

⁽¹⁾ Provisional data. ⁽²⁾ National target differs from the overall EU target on 'tertiary educational attainment' as it refers to 17–33 year olds.

⁽²⁾ National target: reduce by 1 900 000 the population living in poverty or social exclusion by 2020 (compared with 2007).

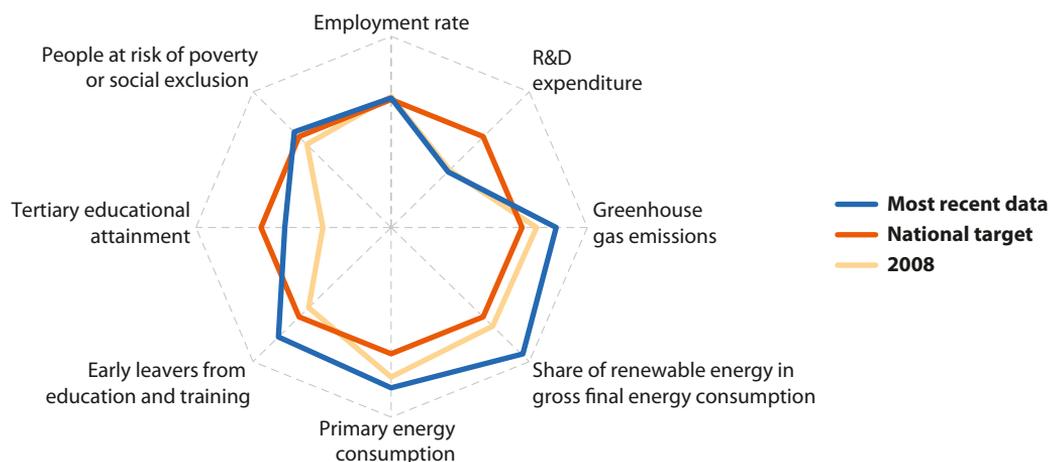
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Croatia

Croatia not only had by far the lowest rate of early leavers from education and training across the EU in 2017, but it also exceeded its 2020 target by 0.9 percentage points. The share of the population aged 30 to 34 with tertiary education increased by 10.2 percentage points in the period between 2008 and 2017, substantially reducing the distance to the national 2020 target. A gradual reduction in the number of people at risk of poverty or social exclusion since 2013 helped the country reach its 2020 target already in 2015. By 2016,

the country had remained well within its target on GHG emissions in non-ETS sectors, which allows emissions to increase by up to 11 % by 2020 compared to 1990 levels. In 2016, Croatia also surpassed its national targets on renewable energy and primary energy consumption. Due to the gradual increase in the employment rate since 2014, the country met its employment target in 2017. In 2016, Croatia slightly increased the gap to the national target on R&D expenditure compared to 2008 levels.

Figure 6.11: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.11: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	63.6	2017	62.9
Gross domestic expenditure on R&D (% of GDP)	0.85	2016	1.4
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 18.0 (*)	2016	11
Share of renewable energy in gross final energy consumption (%)	28.3	2016	20
Primary energy consumption (million tonnes of oil equivalent)	8.1	2016	11.5
Early leavers from education and training (% of population aged 18–24)	3.1	2017	4
Tertiary educational attainment (% of population aged 30–34)	28.7	2017	35
People at risk of poverty or social exclusion (thousands)	1 159	2016	1 220

(*) Provisional data.

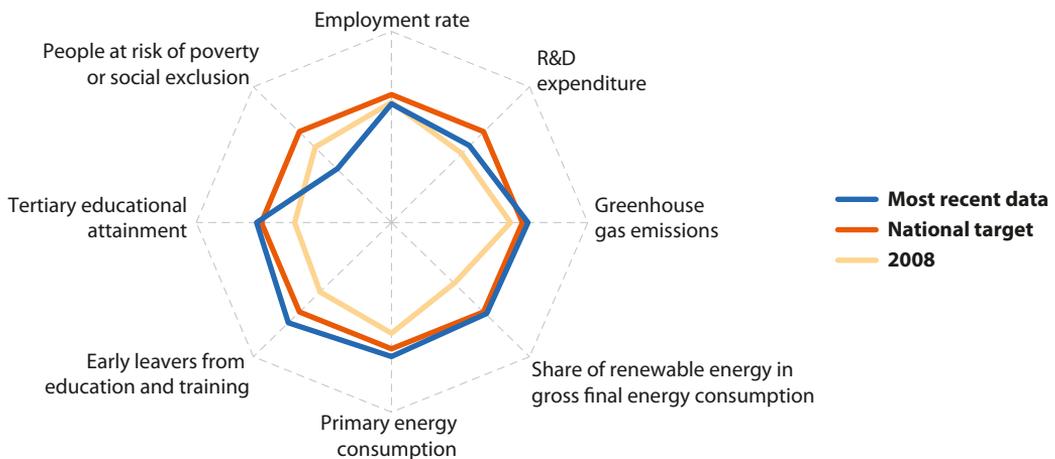
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Italy

Italy achieved a 17.0% reduction in GHG emissions in non-ETS sectors between 1990 and 2016, exceeding its national target by 4.0 percentage points. In 2016, the country also surpassed its national targets on renewable energy and primary energy consumption for a third and fifth consecutive year, respectively. Regarding education, Italy had exceeded its goals on early leavers from education and training and tertiary education by 2017; nevertheless, the country had the second lowest share of tertiary graduates in the EU in 2017 (26.9% of 30 to 34

year olds). R&D expenditure has increased slightly since 2008 and in 2016 the country was closer to its national target than the EU as a whole was to the EU target. In contrast, it is still 4.7 percentage points below its national target on employment, despite the gradual increase in the employment rate over the past three years. The number of people at risk of poverty and social exclusion has increased considerably between 2008 and 2016; Italy would need to lift more than 5.2 million people out of the risk of poverty to reach its national target by 2020.

Figure 6.12: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.12: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	62.3	2017	67 ⁽¹⁾
Gross domestic expenditure on R&D (% of GDP)	1.29 ⁽²⁾	2016	1.53
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-17.0 ⁽²⁾	2016	-13
Share of renewable energy in gross final energy consumption (%)	17.4	2016	17
Primary energy consumption (million tonnes of oil equivalent)	148.4	2016	158
Early leavers from education and training (% of population aged 18–24)	14.0	2017	16
Tertiary educational attainment (% of population aged 30–34)	26.9	2017	26 ⁽³⁾
People at risk of poverty or social exclusion (thousands)	18 137	2016	12 882

(¹) National target: 67–69%. (²) Provisional data. (³) National target: 26–27%.

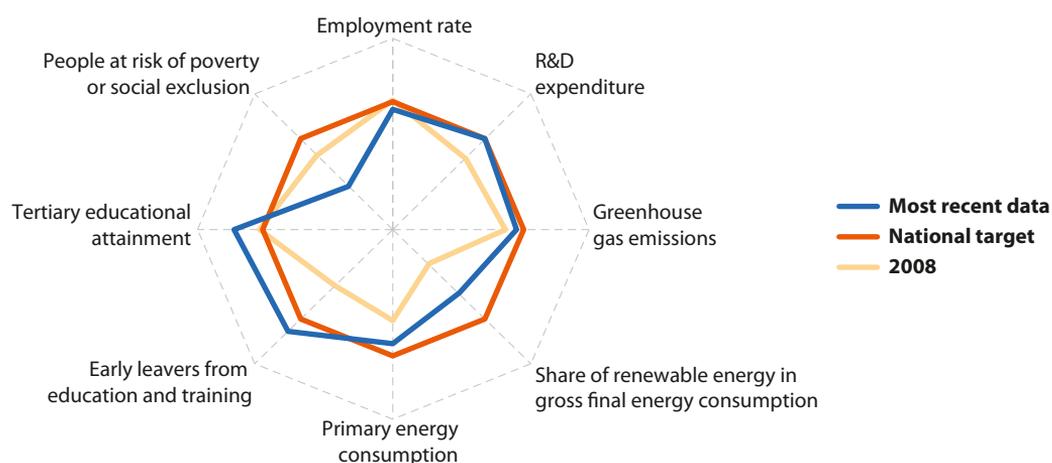
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Cyprus

Cyprus exceeded its national target on tertiary educational attainment by 9.8 percentage points in 2017. In the same year, the country had also surpassed its target on early leavers from education and training by 1.4 percentage points. In 2016, Cyprus was the only Member State that met its target on R&D expenditure. Although the country had already met its goal on primary energy consumption in 2015, the situation deteriorated in 2016 and Cyprus was 0.2 percentage points away from its goal. By

2016, the country had reduced the distance to its renewable energy goal to 3.7 percentage points. Despite a reduction in non-ETS GHG emission between 2008 and 2016, Cyprus is still some distance from its Europe 2020 commitment. Although Cyprus's employment rate has been growing since 2013, in 2017, it was still 4.3 percentage points below its 75% national target. Moreover, the country would need to lift 80 000 more people out of the risk of poverty and social exclusion to meet its 2020 commitment.

Figure 6.13: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.13: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	70.7	2017	75 (1)
Gross domestic expenditure on R&D (% of GDP)	0.5 (2)	2016	0.5
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	0.2 (2)	2016	- 5
Share of renewable energy in gross final energy consumption (%)	9.3	2016	13
Primary energy consumption (million tonnes of oil equivalent)	2.4	2016	2.2
Early leavers from education and training (% of population aged 18–24)	8.6	2017	10
Tertiary educational attainment (% of population aged 30–34)	55.8	2017	46
People at risk of poverty or social exclusion (thousands)	234	2016	154

(1) National target: 75–77%. (2) Provisional data.

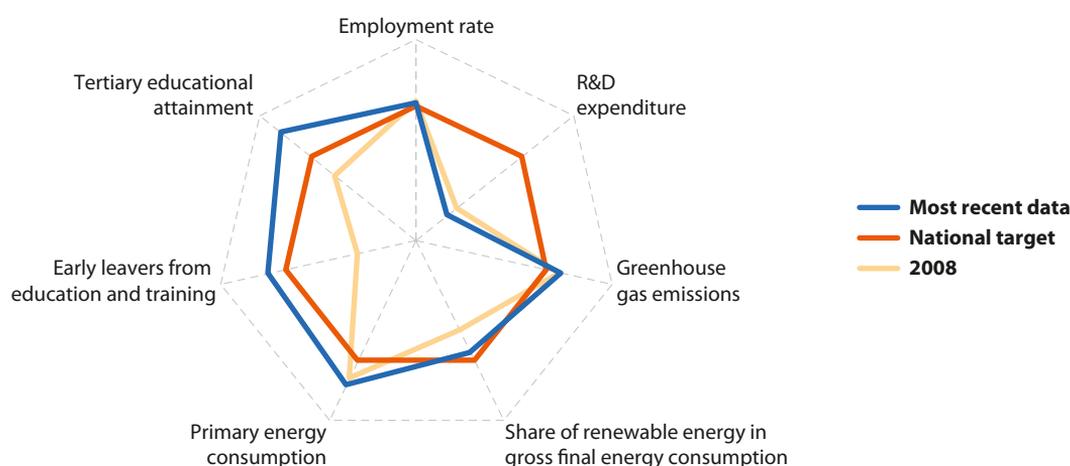
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Latvia

Latvia has made notable progress on reducing the number of early leavers from education and training and increasing the share of tertiary graduates. The country reached its respective targets in 2013 and 2011 and continued to meet them in 2017. By 2017, the country had already reached its national poverty reduction target by limiting the number of people at risk of poverty after social transfers and/or in households with very low work intensity to 544 000. Unlike the EU-level target, Latvia's poverty target refers to monetary poverty and very low work intensity only and does not take into account severe

material deprivation. The country's GHG emissions in non-ETS sectors did not rise notably between 1990 and 2016, staying within the national target to limit emissions increases to 17% by 2020. Since 2008, Latvia has fulfilled its commitment on primary energy consumption and has steadily moved towards its target of 40% renewable energy in gross final energy consumption; this is the second most ambitious target for this indicator in the EU. By 2017, the country had also exceeded its employment target of 73% by 1.8 percentage points. Latvia would need to triple its expenditure on R&D to meet its 2020 commitment.

Figure 6.14: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.14: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	74.8	2017	73
Gross domestic expenditure on R&D (% of GDP)	0.44	2016	1.5
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	3.8 ⁽¹⁾	2016	17
Share of renewable energy in gross final energy consumption (%)	37.2	2016	40
Primary energy consumption (million tonnes of oil equivalent)	4.3	2016	5.4
Early leavers from education and training (% of population aged 18–24)	8.6	2017	10.0
Tertiary educational attainment (% of population aged 30–34)	43.8	2017	34 ⁽²⁾
People at risk of poverty or social exclusion (thousands)	544 ⁽³⁾	2017	619 ⁽³⁾

(¹) Provisional data. (²) National target: 34–36%. (³) Indicator and national target differ from the overall EU target on 'risk of poverty or social exclusion' as they refer to the two sub-indicators 'People living at risk of poverty after social transfers' and 'people living in households with very low work intensity' only.

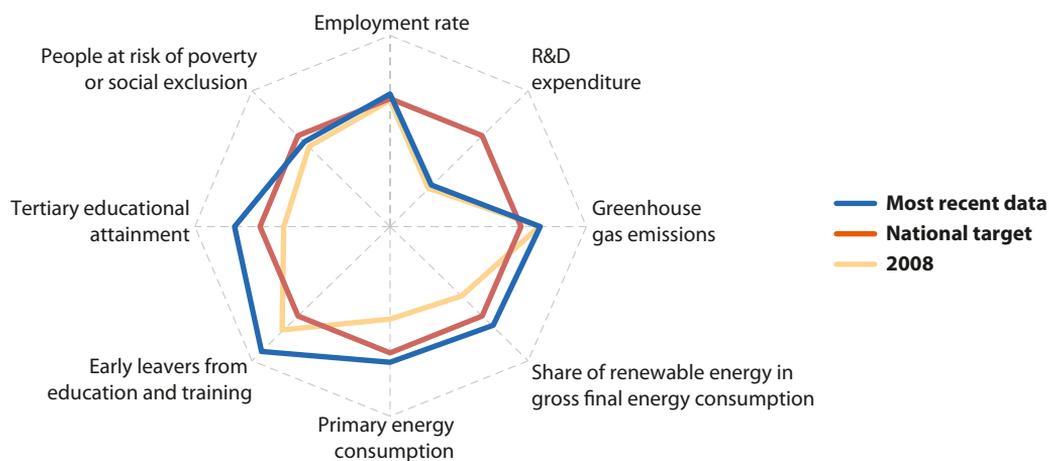
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Lithuania

In 2017, Lithuania had by far the highest share of 30 to 34 year olds with tertiary education in the EU (58.0%) and exceeded its national target by 9.3 percentage points. Additionally, the share of early leavers from education and training was almost half the EU total rate and well below the 9% national target. Notable progress has also been made on climate change and energy. By reducing its GHG emissions in non-ETS sectors by 1.9% between 1990 and 2016, Lithuania has stayed well below its target to limit emission increases to 15%. The country had also exceeded its renewable

energy and primary energy consumption targets by 2016 for a third and seventh consecutive year, respectively. After a sharp drop in employment figures between 2008 and 2010, the rate climbed up again and in 2017 Lithuania surpassed its Europe 2020 goal by 3.2 percentage points. Despite some progress between 2008 and 2016, the country still needs to lift around 57 000 people out of the risk of poverty and social exclusion to meet its poverty reduction target. In terms of R&D expenditure, a gap of 1.05 percentage point remains to be closed to reach the target of 1.9% of GDP.

Figure 6.15: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.15: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	76.0	2017	72.8
Gross domestic expenditure on R&D (% of GDP)	0.85	2016	1.9
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 1.9 (¹)	2016	15
Share of renewable energy in gross final energy consumption (%)	25.6	2016	23
Primary energy consumption (million tonnes of oil equivalent)	6.0	2016	6.5
Early leavers from education and training (% of population aged 18–24)	5.4	2017	9 (²)
Tertiary educational attainment (% of population aged 30–34)	58.0	2017	48.7
People at risk of poverty or social exclusion (thousands)	871	2016	814

(¹) Provisional data. (²) National target: less than 9%.

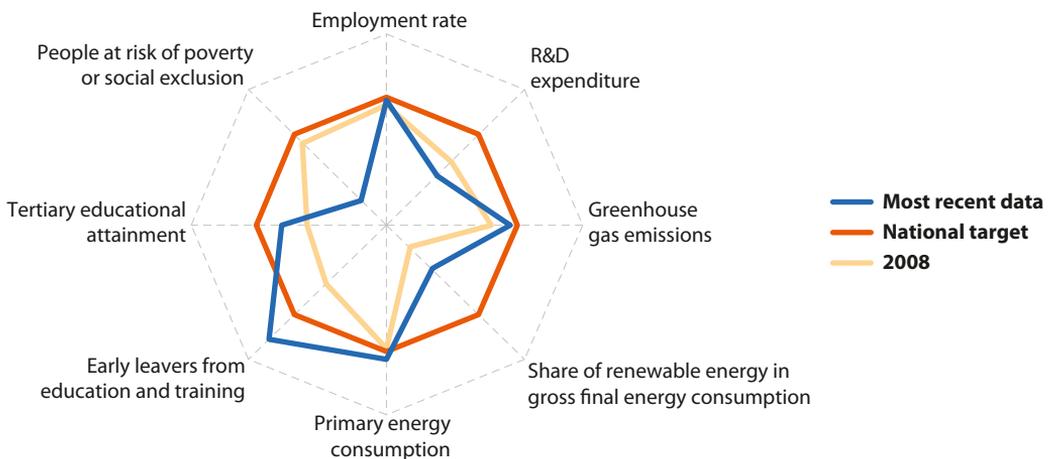
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Luxembourg

Luxembourg has continuously exceeded its target on early leavers from education and training since 2009. The country has the most ambitious target on tertiary education across the EU, aiming for 66% of the population aged 30 to 34 having attained tertiary education by 2020. Despite a 12.9 percentage point rise between 2008 and 2017, it still has further to go to meet its national target than other Member States. Although in 2017 Luxembourg was closer to its employment target than the EU as a whole, a gap of 1.5 percentage points persists. In 2016, the country spent relatively less on R&D as a percentage of GDP than the EU overall and it has moved further away from its

national target since 2008. The number of people at risk of poverty or social exclusion increased by 58.3% between 2008 and 2016, pushing Luxembourg further from its national target. In terms of climate change mitigation, it did not reach its national target on the expansion of renewable energy and had the lowest shares of renewables in gross final energy consumption in the EU in 2016. Also, the 16.1% reduction in non-ETS GHG emissions in 2016 (compared to 1990) was not enough for the country to reach its national target to reduce emissions by 20%. On the other hand, Luxembourg has continued to meet its target on primary energy consumption since 2011.

Figure 6.16: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.16: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	71.5	2017	73
Gross domestic expenditure on R&D (% of GDP)	1.24 ⁽¹⁾	2016	2.3 ⁽²⁾
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 16.1 ⁽¹⁾	2016	- 20
Share of renewable energy in gross final energy consumption (%)	5.4	2016	11
Primary energy consumption (million tonnes of oil equivalent)	4.2	2016	4.5
Early leavers from education and training (% of population aged 18–24)	7.3	2017	10 ⁽³⁾
Tertiary educational attainment (% of population aged 30–34)	52.7 ⁽⁴⁾	2017	66
People at risk of poverty or social exclusion (thousands)	114	2016	66

⁽¹⁾ Estimated/provisional data. ⁽²⁾ National target: 2.3–2.6%. ⁽³⁾ National target: less than 10%. ⁽⁴⁾ Data has low reliability.

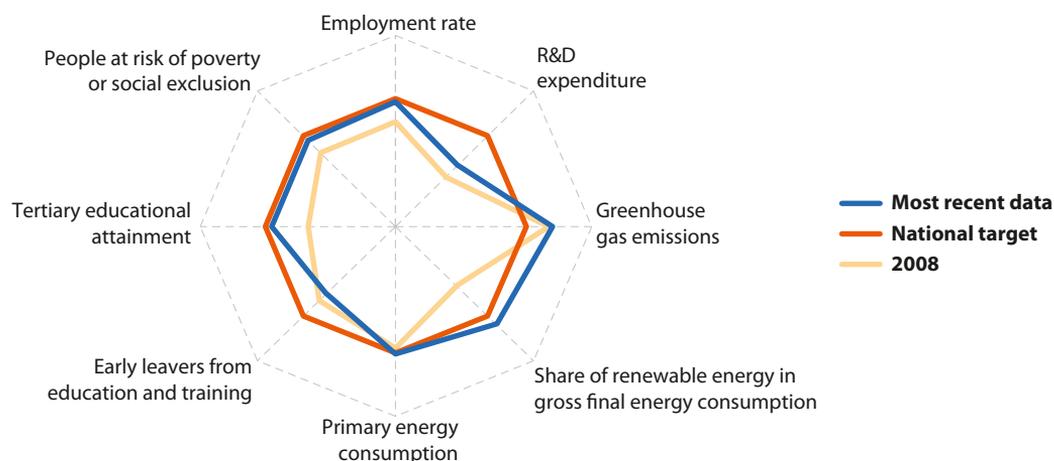
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Hungary

By reducing its GHG emissions in non-ETS sectors by 12.3 % between 1990 and 2016, Hungary remained well within its target to limit emission increases to 10 % by 2020. In 2016, the country also remained within its target on primary energy consumption and fulfilled its renewable energy commitments. Progress towards the national education targets has been ambiguous since 2008. Although Hungary met its national target on tertiary education in 2014, a decline in the attainment rate in 2016 and 2017 reopened the gap by 1.9 percentage points. An increase in the share of early school leavers from education and

training over the past three years also widened the target gap. In terms of R&D expenditure, Hungary was 0.6 percentage points below its national target in 2016, putting it closer to its target than the EU was to its overall target. Despite the gradual reduction in poverty levels since 2014, about 121 000 people still need to be lifted out of the risk of poverty or social exclusion for Hungary to meet its 2020 target. Although the country has improved its employment rate by 11.8 percentage points between 2008 and 2017, it remains 1.7 percentage points from its 2020 target of 75 %.

Figure 6.17: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.17: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	73.3	2017	75
Gross domestic expenditure on R&D (% of GDP)	1.21	2016	1.8
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	– 12.3 (¹)	2016	10
Share of renewable energy in gross final energy consumption (%)	14.2	2016	13
Primary energy consumption (million tonnes of oil equivalent)	23.9	2016	24.1
Early leavers from education and training (% of population aged 18–24)	12.5	2017	10
Tertiary educational attainment (% of population aged 30–34)	32.1	2017	34
People at risk of poverty or social exclusion (thousands)	2 465	2017	2 344

(¹) Provisional data.

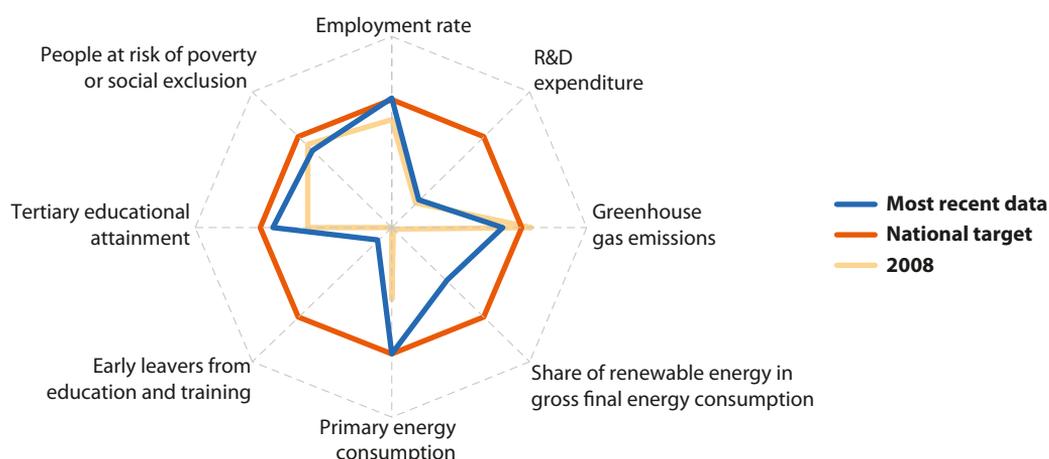
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Malta

A steady increase in the employment rate since 2014 helped Malta to reach its respective Europe 2020 target in 2017. The share of 30 to 34 years olds with tertiary education increased continuously between 2008 and 2017, bringing the country within 3.0 percentage points of its national target. Despite a significant drop in the share of early leavers from education and training since 2008, in 2016 Malta had further to go to reach its national 2020 target than other Member States. In 2016,

the country met its primary energy consumption target of 0.7 Mtoe. Between 1990 and 2016, Malta increased its GHG emissions in non-ETS sectors by 20.3%, greatly exceeding its Europe 2020 target of limiting emission increases to 5%. Malta also lags behind the EU as a whole in terms of renewable energy and R&D expenditure. The number of people at risk of poverty and social exclusion increased by 4.9% between 2008 and 2016, moving the country further away from its Europe 2020 goal.

Figure 6.18: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.18: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	71.4	2017	70
Gross domestic expenditure on R&D (% of GDP)	0.61 (¹)	2016	2
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	20.3 (¹)	2016	5
Share of renewable energy in gross final energy consumption (%)	6.0	2016	10
Primary energy consumption (million tonnes of oil equivalent)	0.7	2016	0.7
Early leavers from education and training (% of population aged 18–24)	18.6	2017	10
Tertiary educational attainment (% of population aged 30–34)	30.0	2017	33
People at risk of poverty or social exclusion (thousands)	85	2016	74.44

(¹) Provisional data.

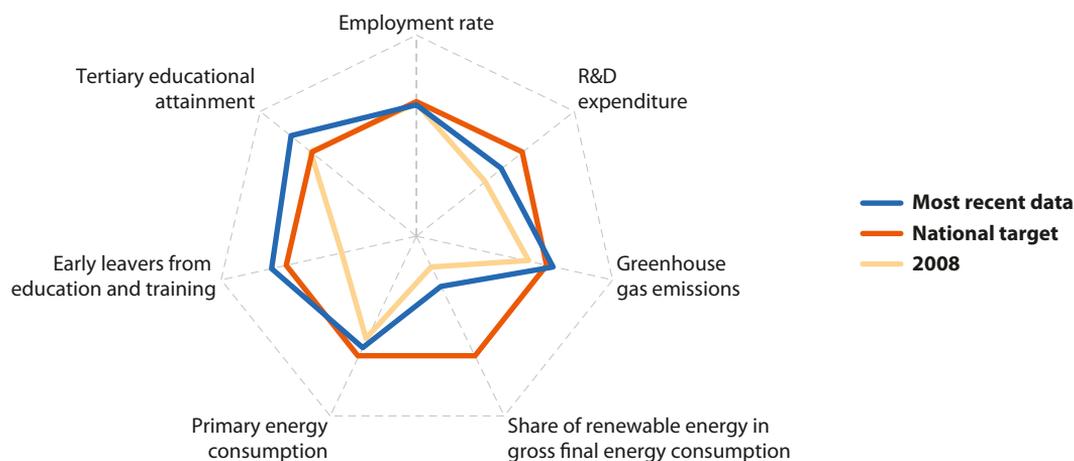
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Netherlands

The Netherlands had already exceeded its target on tertiary educational attainment in 2008 and the share of 30 to 34 year olds with tertiary educational attainment has continued to rise. In 2017, the country also exceeded its national targets on early leavers from education and training by 0.9 percentage points. Despite a deterioration in labour market conditions since 2008, the Netherlands was closer to its employment target in 2017 than the EU overall was to its target. Since 2008, the country has also moved closer to its target on R&D expenditure

than the EU has to its overall target. In contrast, the Netherlands was the country furthest from its renewable energy target and still had to close a 4.1 Mtoe gap to reach its primary energy consumption target. Nevertheless, the country surpassed its target on reducing GHG emissions in non-ETS sectors by 3.7% in 2016. The situation concerning the number of people at risk of poverty or social exclusion has deteriorated since 2008. However, it is not possible to make a comparison with the national target as it refers to people aged 0 to 64 living in a jobless household.

Figure 6.19: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.19: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	78.0	2017	80
Gross domestic expenditure on R&D (% of GDP)	2.03 ⁽¹⁾	2016	2.5
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-19.7 ⁽¹⁾	2016	-16
Share of renewable energy in gross final energy consumption (%)	6.0	2016	14
Primary energy consumption (million tonnes of oil equivalent)	64.8	2016	60.7
Early leavers from education and training (% of population aged 18–24)	7.1	2017	8
Tertiary educational attainment (% of population aged 30–34)	47.9	2017	40 ⁽²⁾
People at risk of poverty or social exclusion (thousands)	2 797	2016	: ⁽²⁾

⁽¹⁾ Provisional data. ⁽²⁾ National target: more than 40%.

⁽²⁾ National target: Reduce by 100 000 the number of people (aged 0–64) living in a jobless household (compared to 2008).

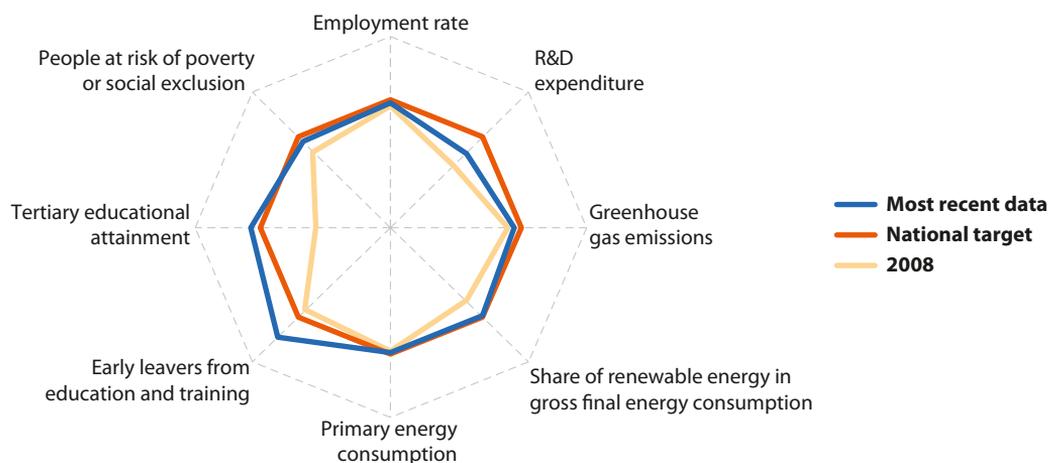
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Austria

In 2017, Austria continued to meet both of its education targets, with only 7.4% of pupils leaving school early and 40.8% of 30 to 34 year olds having completed tertiary education. In 2016 the country was just 0.5 percentage points away from its renewable energy target. In contrast, after meeting its primary energy consumption target for two consequent years, in 2016 Austria was 0.3 percentage points above its 2020 goal. In spite of a 11.8% reduction in GHG emissions in non-ETS by 2016 compared to 1990 levels, the country is still 4.2% away from its national target. With a

75.4% employment rate in 2017, the country was closer to its national target of 77% than the EU was to its overall target of 75%. Despite having one of the highest R&D intensities (R&D expenditure as a share of GDP) across the EU, in 2016 Austria was still 0.7 percentage points from its target, partly because its target was very ambitious to begin with. Progress in the area of poverty reduction has been slow since 2008; Austria would need to raise about 78 000 people out of the risk of poverty and social exclusion to meet its Europe 2020 commitment.

Figure 6.20: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.20: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	75.4	2017	77
Gross domestic expenditure on R&D (% of GDP)	3.09 (¹)	2016	3.76
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 11.8 (¹)	2016	- 16
Share of renewable energy in gross final energy consumption (%)	33.5	2016	34
Primary energy consumption (million tonnes of oil equivalent)	31.8	2016	31.5
Early leavers from education and training (% of population aged 18–24)	7.4	2017	9.5
Tertiary educational attainment (% of population aged 30–34)	40.8	2017	38
People at risk of poverty or social exclusion (thousands)	1 542	2016	1 464

(¹) Estimated/provisional data.

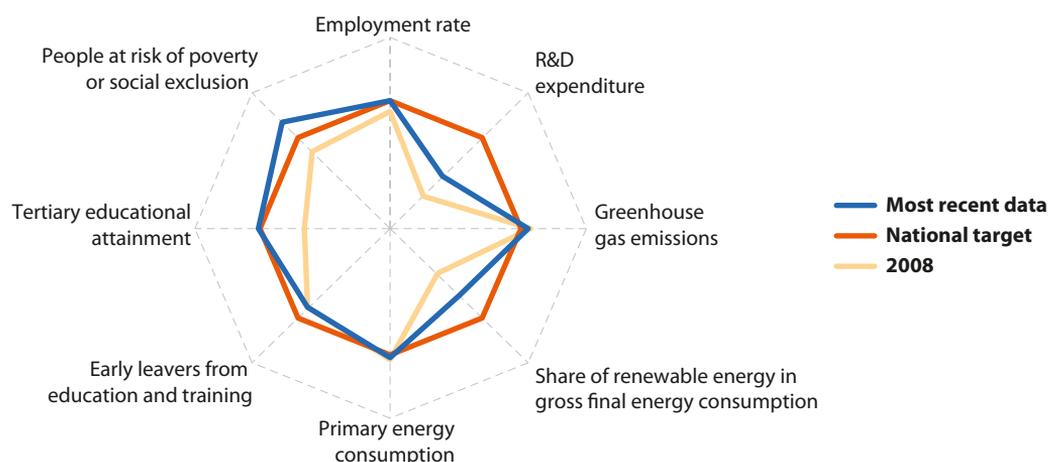
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Poland

Despite the crisis, Poland has continuously reduced the number of people living at risk of poverty or social exclusion since 2008 and in 2016 exceeded its target for a fourth consecutive year. In 2017, the country met its tertiary education target for the first time. Only 5.0% of the population aged 18 to 24 left school early in 2017, which is the third best result in the EU but still above the national target of 4.5%. In addition, Poland was just 0.1 percentage points below its employment target the same year. The

country performed slightly better than the EU in terms of R&D expenditure with a distance of 0.7 percentage points to its 2020 target. In 2016, the country continued to meet its goal on primary energy consumption. Despite the improvements since 2008, in 2016 Poland was still some distance away from its renewable energy target. Although Poland increased its GHG emissions in non-ETS sectors by 7.1% between 1990 and 2016, it remained within its target of limiting the increase to 14% by 2020.

Figure 6.21: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.21: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	70.9	2017	71
Gross domestic expenditure on R&D (% of GDP)	0.97 (¹)	2016	1.7
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	7.1 (¹)	2016	14
Share of renewable energy in gross final energy consumption (%)	11.3	2016	15
Primary energy consumption (million tonnes of oil equivalent)	94.3	2016	96.4
Early leavers from education and training (% of population aged 18–24)	5.0	2017	4.5
Tertiary educational attainment (% of population aged 30–34)	45.7	2017	45
People at risk of poverty or social exclusion (thousands)	8 221	2016	9 991

(¹) Estimated/provisional data.

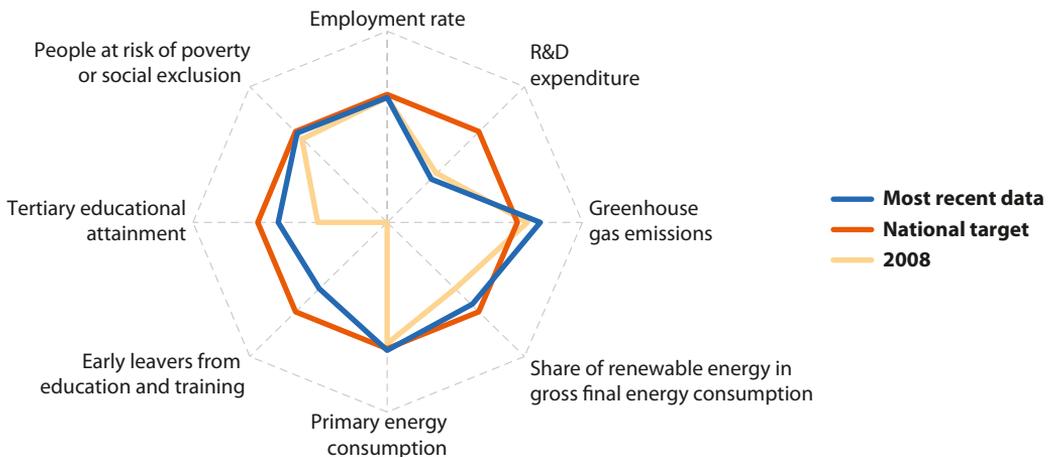
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Portugal

By 2016, Portugal had reduced its GHG emissions in non-ETS sectors by 16.9% compared to 1990 levels, remaining well below its target for no more than a 1% increase by 2020. Since 2011, the country has continuously met its target on primary energy consumption. By 2016 the country had reduced the distance to its renewable energy target to 2.5 percentage points. Portugal has also reduced the number of people living at risk of poverty and social exclusion between 2008 and 2016 but still needs to lift 38 000 people out of being at risk of poverty by 2020 to meet the

national commitment. The country has achieved a notable reduction in the share of early leavers from education and training, narrowing the gap to its target by 22.3 percentage points between 2008 and 2017. Despite an 11.9 percentage point increase in tertiary educational attainment since 2008, the country was still 6.5 percentage points from its Europe 2020 target. Portugal's employment rate had been steadily increasing since 2014 and in 2017 the country was closer to its national target of 75% than the EU was from the overall target.

Figure 6.22: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below. The 2008 value for early leavers from education and training exceeds the axis range.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.22: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	73.4	2017	75
Gross domestic expenditure on R&D (% of GDP)	1.27 (¹)	2016	2.7 (²)
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 16.9 (¹)	2016	1
Share of renewable energy in gross final energy consumption (%)	28.5	2016	31
Primary energy consumption (million tonnes of oil equivalent)	22.1	2016	22.5
Early leavers from education and training (% of population aged 18–24)	12.6	2017	10
Tertiary educational attainment (% of population aged 30–34)	33.5	2017	40
People at risk of poverty or social exclusion (thousands)	2 595	2016	2 557

(¹) Provisional data. (²) National target: 2.7–3.3%.

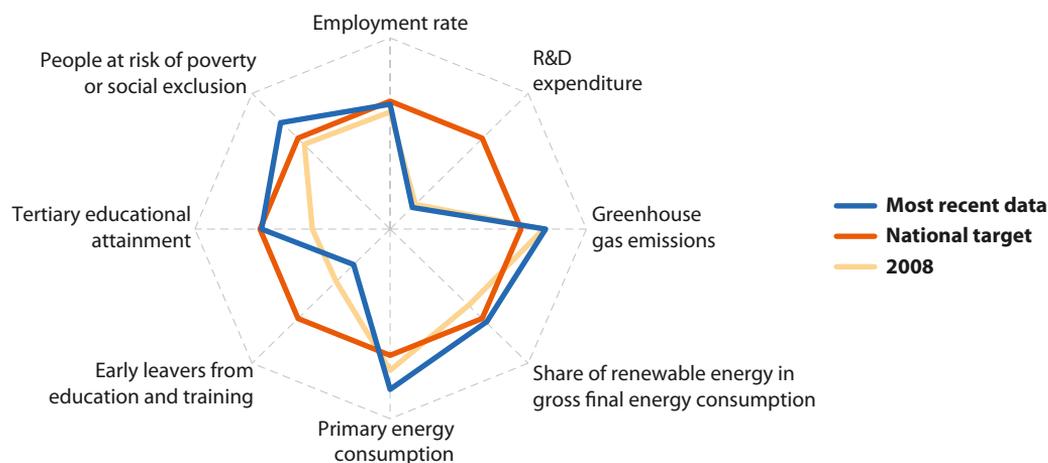
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Romania

Romania significantly reduced the number of people at risk of poverty or social exclusion by 2.1 million between 2008 and 2017 and had already met its national target in 2013. In 2016, Romania exceeded its commitment to reaching a 24% share of renewable energy in gross final energy consumption and remained well below its national target on primary energy consumption. By 2016, Romania had reduced its GHG emissions in non-ETS sectors by 3.7% compared to 1990 levels, remaining well within its 2020 target to limit the increase to 19%. The country has made

strong progress by raising the tertiary educational attainment rate by 10.3 percentage points between 2008 and 2017 and remained only 0.4 percentage points above its respective target. In contrast, its share of early leavers from education and training increased to 18.1% in the same time period, widening the distance to the national target to 6.8 percentage points. Due to a gradual rise in the employment rate between 2013 and 2017, Romania was just 1.2 percentage points from its employment goal. Romania's R&D intensity fell by 0.07 percentage points between 2008 and 2016.

Figure 6.23: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.23: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	68.8	2017	70
Gross domestic expenditure on R&D (% of GDP)	0.48	2016	2
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 3.7 (¹)	2016	19
Share of renewable energy in gross final energy consumption (%)	25.0	2016	24
Primary energy consumption (million tonnes of oil equivalent)	31.3	2016	43.0
Early leavers from education and training (% of population aged 18–24)	18.1	2017	11.3
Tertiary educational attainment (% of population aged 30–34)	26.3	2017	26.7
People at risk of poverty or social exclusion (thousands)	6 999 (¹)	2017	8 535

(¹) Provisional data.

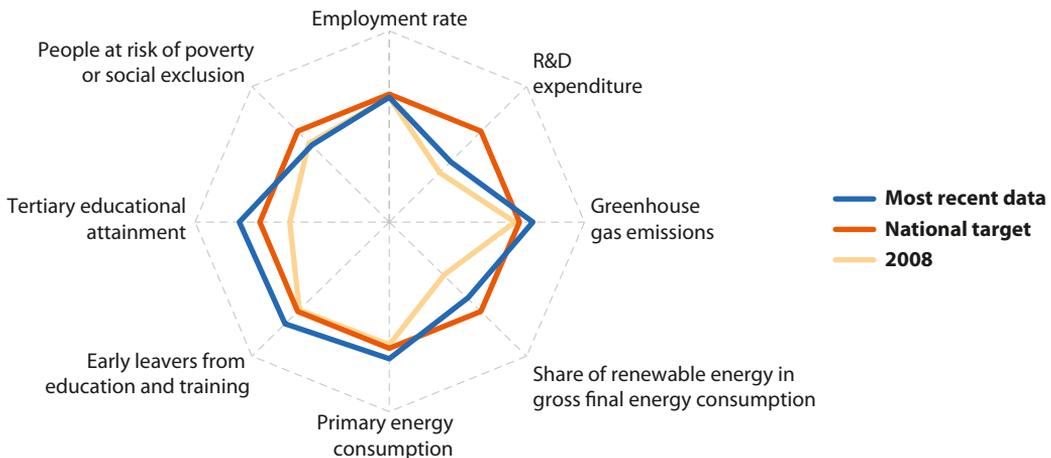
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Slovenia

By reducing its GHG emissions in non-ETS sectors by 6.7 % between 1990 and 2016, Slovenia remained within its target to limit increases to 4 % by 2020. Since 2009, the country has continuously met its energy efficiency target, which caps primary energy consumption at 7.3 Mtoe. Negative developments in R&D expenditure and in renewable energy consumption over the past few years put Slovenia further away from meeting its respective national targets than the EU as a whole. Slovenia has already met both of its education

targets, with only 4.3 % of the population aged 18 to 24 leaving school early and 46.4 % of 30 to 34 year olds having tertiary educational attainment in 2017. After deteriorating continuously between 2008 and 2013, the employment rate increased to 73.4 % in 2017, putting the country within 1.6 percentage points of its national target. Between 2008 and 2016, the number of people at risk of poverty or social exclusion in Slovenia increased by 10 000, translating to a gap of 50 000 people to its national target.

Figure 6.24: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.24: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	73.4	2017	75
Gross domestic expenditure on R&D (% of GDP)	2.0 (¹)	2016	3
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-6.7 (¹)	2016	4
Share of renewable energy in gross final energy consumption (%)	21.3	2016	25
Primary energy consumption (million tonnes of oil equivalent)	6.7	2016	7.3
Early leavers from education and training (% of population aged 18–24)	4.3	2017	5
Tertiary educational attainment (% of population aged 30–34)	46.4	2017	40
People at risk of poverty or social exclusion (thousands)	371	2016	321

(¹) Provisional data.

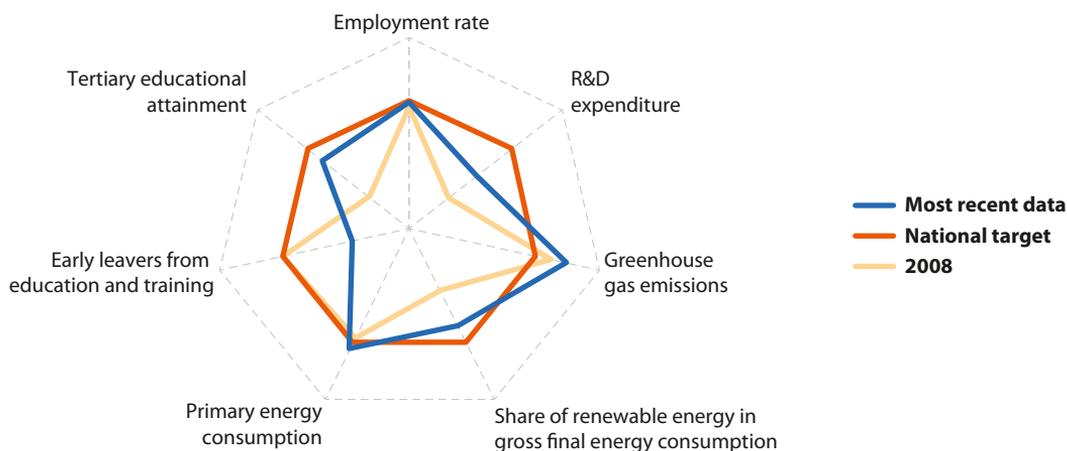
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Slovakia

By 2016, GHG emissions in non-ETS sectors in Slovakia had fallen by 14.0% compared to 1990 levels. The country thus remained well below its long-term commitment of limiting emissions growth to 13% by 2020. Since 2011, Slovakia has continuously met its energy efficiency target, which caps primary energy consumption at 16.4 Mtoe. In 2016, the country was closer to its target on renewable energy than the EU as a whole was to the respective EU target. Due to continuous growth of the employment rate since 2014, the Slovakia was just 0.9 percentage points away from its national employment target in 2017. Although the country had already met its early

leavers from education and training target in 2008, the indicator has since deteriorated and by 2017 Slovakia was 3.3 percentage points away from its respective target. The country has recorded a substantial rise in the share of 30 to 34 year olds with a tertiary education since 2008, however, a gap of 5.7 percentage points remains to be closed by 2020. Despite the drop of R&D expenditure in 2016, the country was still closer to its national target than the EU as a whole. Since 2008, Slovakia has moved closer to its poverty reduction target, which is expressed as the share of the population at risk of poverty or social exclusion, and was in 2016 within 0.9 percentage points of its 2020 goal.

Figure 6.25: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.25: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	71.1	2017	72
Gross domestic expenditure on R&D (% of GDP)	0.79	2016	1.2
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	- 14.0 ⁽¹⁾	2016	13
Share of renewable energy in gross final energy consumption (%)	12.0	2016	14
Primary energy consumption (million tonnes of oil equivalent)	15.5	2016	16.4
Early leavers from education and training (% of population aged 18–24)	9.3	2017	6
Tertiary educational attainment (% of population aged 30–34)	34.3	2017	40
People at risk of poverty or social exclusion (% of population) ⁽²⁾	18.1	2016	17.2

⁽¹⁾ Provisional data. ⁽²⁾ The national target uses ‘% of the population’ instead of ‘number of people’.

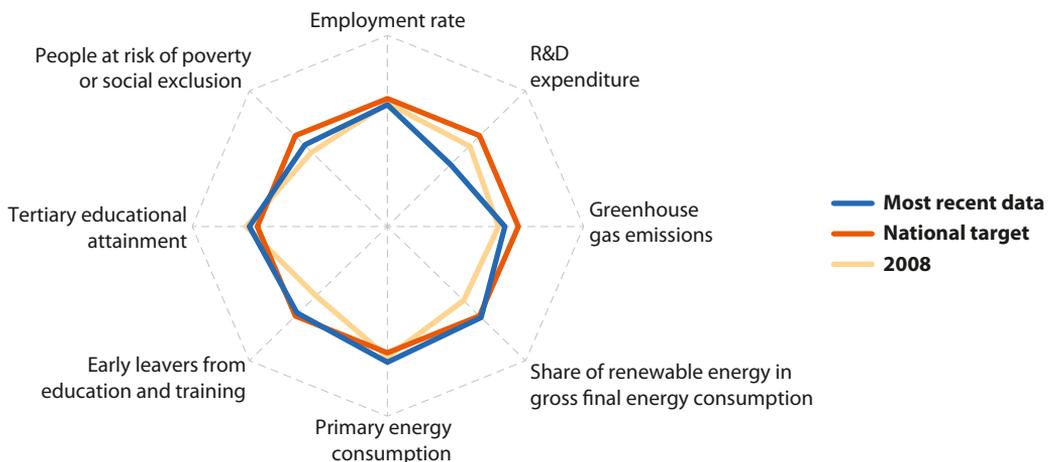
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Finland

With 44.6% of the population aged 30 to 34 having completed tertiary education in 2017, Finland continued to exceed its national target of 42%. However, its target is defined more narrowly than the EU target as it excludes former tertiary Vocational Education and Training (VET). Despite already meeting its target on early leavers from education and training in 2016, in 2017 Finland was 0.2 percentage points away from its 2020 target of 8%. With a share of renewable energy in final energy consumption of 38.7%, Finland exceeded its national 2020 commitment for a third consequent year in 2016. The country's primary energy consumption amounted to 33.1 Mtoe in 2016,

which was below the national target of 35.9 Mtoe. Despite a notable 7.7 percentage point reduction in GHG emissions in non-ETS sectors between 1990 and 2016, the gap to the national target remained larger than in most other EU countries. As a result of the continuous decrease in R&D expenditure as a share of GDP since 2010, Finland lost its leading position in terms of R&D intensity and moved away from its very ambitious national target. Finland's employment rate fell from 75.8% in 2008 to 74.2% in 2017, increasing the distance to its national target of 78%. The country would also need to lift 79 000 more people out of the risk of poverty and social exclusion to meet its 2020 commitment.

Figure 6.26: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.26: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	74.2	2017	78
Gross domestic expenditure on R&D (% of GDP)	2.75	2016	4
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-7.7 (¹)	2016	-16
Share of renewable energy in gross final energy consumption (%)	38.7	2016	38
Primary energy consumption (million tonnes of oil equivalent)	33.1	2016	35.9
Early leavers from education and training (% of population aged 18–24)	8.2	2017	8
Tertiary educational attainment (% of population aged 30–34)	44.6	2017	42 (²)
People at risk of poverty or social exclusion (thousands)	849	2017	770

(¹) Provisional data. (²) Narrower national definition.

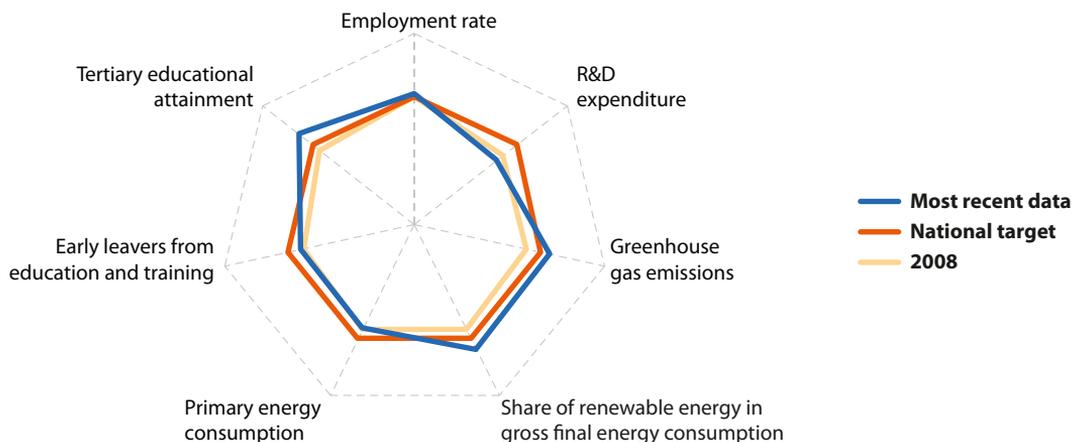
Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Sweden

With 51.3% of its population aged 30 to 34 years having attained a tertiary education in 2017, Sweden exceeded its national 2020 target by 6.3 percentage points. It also met its commitment on early leavers from education and training in 2015, but the slight increase in the share of early school leavers in 2016 and 2017 nudged the country away from its target. In the same year, the country exceeded its employment target by 1.8 percentage points and had the highest employment rate in the EU. In 2016, Sweden also surpassed its renewable energy target by

increasing the share of renewables in gross final energy consumption to 53.8% — by far the best performance in the EU. By reducing its GHG emissions by 22.5% between 1990 and 2016, Sweden met its respective national target for a fourth consecutive year. An increase in primary energy consumption in 2016 has pushed Sweden away from its 2020 national target. Despite having the highest R&D intensity across the EU, the country has to close a 0.75 percentage point gap between 2016 and 2020 to meet its ambitious national target of spending 4% of GDP on R&D.

Figure 6.27: Change since 2008 in relation to national targets



Note: Most recent year for which data are available; see table below.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Table 6.27: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	81.8	2017	80 ⁽¹⁾
Gross domestic expenditure on R&D (% of GDP)	3.25 ⁽²⁾	2016	4
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	-22.5 ⁽²⁾	2016	-17
Share of renewable energy in gross final energy consumption (%)	53.8	2016	49
Primary energy consumption (million tonnes of oil equivalent)	47.1	2016	43.4
Early leavers from education and training (% of population aged 18–24)	7.7	2017	7 ⁽³⁾
Tertiary educational attainment (% of population aged 30–34)	51.3	2017	45 ⁽⁴⁾
People at risk of poverty or social exclusion (thousands)	1 799	2016	: ⁽⁵⁾

⁽¹⁾ National target: More than 80%. ⁽²⁾ Provisional data. ⁽³⁾ National target: less than 7%. ⁽⁴⁾ National target: 45–50%.

⁽⁵⁾ National target: Reduction in the percentage of women and men (aged 20–64) who are not in the labour force (except full-time students), the long-term unemployed or those on long-term sick leave to well under 14%.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)



United Kingdom

The United Kingdom has not adopted specific national Europe 2020 targets apart from the already existing climate change and renewable energy commitments (as a consequence, no radar chart can be shown for the UK). After rising continuously since 2012, the country's employment rate reached a decade high of 78.2% in 2017, exceeding the EU aggregate performance of 72.2%. In the period between 2008 and 2017, the UK managed to increase its tertiary educational attainment rate from 39.5% to 48.3%. The indicator on early school leavers recorded a 6.3 percentage point reduction, from 16.9% in 2008 to 10.6% in 2017. Although more than 1.2 million people have been lifted out of the

risk of poverty since 2013, there were still 290 000 more people at risk of poverty or social exclusion compared to 2008. R&D expenditure increased to 1.69% of GDP in 2016, a value close to the 2008 level. Between 1990 and 2016, the country had reduced its GHG emissions in non-ETS sectors by 22.4%, meeting its Europe 2020 reduction target of 16%. Regarding renewable energy, the UK was the fourth furthest country (after France, Netherlands and Ireland) from its renewable energy target in 2015 with a gap of 5.7 percentage points. Between 2008 and 2016, the UK reduced its primary energy consumption by 29.5 Mtoe, shortening the distance to its 2020 target of 177.6 Mtoe.

Table 6.28: National Europe 2020 indicators: most recent data and targets

	Data	Year	Target
Employment rate age group 20–64 (%)	78.2	2017	: (1)
Gross domestic expenditure on R&D (% of GDP)	1.69 (2)	2016	: (1)
Greenhouse gas emissions in non-ETS sectors (% change since ESD base year)	– 22.4 (2)	2016	– 16
Share of renewable energy in gross final energy consumption (%)	9.3	2016	15
Primary energy consumption (million tonnes of oil equivalent)	181.7	2016	177.6
Early leavers from education and training (% of population aged 18–24)	10.6	2017	: (1)
Tertiary educational attainment (% of population aged 30–34)	48.3	2017	: (1)
People at risk of poverty or social exclusion (thousands)	14 359	2016	: (2)

(1) No target in the National Reform Programme.

(2) Provisional data.

(3) Existing numerical targets under the umbrella of the 2010 Child Poverty Act and the Child Poverty Strategy 2011-2014.

Source: Eurostat (see dedicated web section: Europe 2020 headline indicators)

Abbreviations and acronyms

Geographical aggregates and countries

- EU-28 The 28 Member States of the European Union since 1 July 2013 (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, UK)
- EU-27 The 27 Member States of the European Union from 1 January 2007 to 30 June 2013 (BE, BG, CZ, DK, DE, EE, IE, EL, ES, FR, IT, CY, LV, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI, SE, UK)
- G20 Group of 20 (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, México, Russia, Saudi Arabia, South Africa, Korea, Turkey, the United Kingdom, the United States and the European Union)

Note that EU aggregates are back-calculated when enough information is available — for example, data relating to the EU-28 aggregate is presented when possible for periods before Croatia joined the EU in 2013 and the accession of Bulgaria and Romania in 2007, as if all 28 Member States had always been members of the EU. The label is changed if the data refer to another aggregate (EU-27).

European Union Member States

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
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
UK	United Kingdom

European Free Trade Association (EFTA)

IS	Iceland
LI	Liechtenstein
NO	Norway
CH	Switzerland

EU candidate countries

ME	Montenegro
MK	The former Yugoslav Republic of Macedonia
AL	Albania
RS	Serbia
TR	Turkey



Potential Candidates

BA	Bosnia and Herzegovina
XK	Kosovo ⁽¹⁾

Units of measurement

%	Per cent
°C	Degree Celsius
EUR	Euro
Mtoe	Million tonnes of oil equivalent
PPS	Purchasing power standards

Abbreviations

AGS	Annual Growth Survey
AMR	Alert Mechanism Report
AROPE	People at risk of poverty or social exclusion
BES	Business enterprise sector
Cedefop	European Centre for the Development of Vocational Training
CIS	Community innovation survey
CO ₂	Carbon dioxide
COP	Conference of the Parties
ECEC	Early childhood education and care
Eco-IS	Eco-Innovation Scoreboard
EEA	European Environment Agency
EED	Energy Efficiency Directive
EFTA	European Free Trade Association
EMF	European Monetary Fund
EMU	Economic and Monetary Union
EPO	European Patent Office
ESD	Effort Sharing Decision
ESS	European Statistical System
ET 2020	'Education and Training 2020' Framework
ETS	Emissions Trading System

⁽¹⁾ This designation is without prejudice to position or status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



EU	European Union
EU ETS	EU Emission Trading System
EU LFS	EU Labour Force Survey
EU SILC	EU Statistics on Income and Living Conditions
FEC	Final energy consumption
FEAD	Fund for European Aid to the Most Deprived
GBARD	Government Budget Allocations to Research and Development
GERD	Gross domestic expenditure on R&D
GDP	Gross domestic product
GHG	Greenhouse gas
GNP	Gross national product
GOV	Government sector
HES	Higher education sector
ICT	Information and communications technology
IEA	International Energy Agency
ILO	International Labour Organisation
ISCED	International Standard Classification for Education
ISCO	International Standard Classification of Occupations
LULUCF	Land use, land-use change and forestry
NACE	Statistical Classification of Economic Activities in the European Community
NEET	Neither in employment nor in education or training
NRP	National Reform Programmes
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organization for Economic Co-operation and Development
PEC	Primary energy consumption
PhD	Doctor of Philosophy
PISA	Programme for International Student Assessment
R&D	Research and development
SCP	Stability and Convergence Programme
SDGs	Sustainable Development Goals
SGP	Stability and Growth Pact
SMEs	Small and medium-sized enterprises



UN	United Nations
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USA	United States of America
VET	Vocational Education and Training

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Smarter, greener, more inclusive?

INDICATORS TO SUPPORT THE EUROPE 2020 STRATEGY

The 2018 edition of *Smarter, greener, more inclusive? — Indicators to support the Europe 2020 strategy* continues the series of Eurostat publications providing statistical analyses related to important European Commission policy frameworks and relevant economic, social and environmental phenomena. This publication supports the Europe 2020 strategy by monitoring progress towards the targets and goals defined under the three mutually reinforcing priorities of smart, sustainable and inclusive growth.

The analysis in this publication is based on the Europe 2020 headline indicators chosen to monitor progress towards the strategy's targets. Other indicators focusing on specific subgroups of society or on related contextual issues are also used to deepen the analysis and present a broader picture. The data used mainly come from official European Statistical System sources and are disseminated by Eurostat. The updated 2018 edition covers the period from 2002 or 2008 up to the most recent year for which data are available (2016 or 2017).

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