

Approximated greenhouse gas emissions

Recent trends and projections in EU greenhouse gas emissions



Greenhouse gas (GHG) emissions in the European Union (EU) increased by 0.6 % in 2017, according to preliminary estimates from Member States, mostly because of road transport. Without further robust and ambitious policies and measures, those currently in place at national level will be insufficient to achieve the reduction targets set for 2030.

- The latest projections available from EU Member States fall short of the 40 % domestic reduction target for 2030, with an EU-wide reduction in GHG emissions of only 30 % below 1990 levels based on existing mitigation measures, and of 32 % when additional planned mitigation measures are considered.
- GHG emission projections of just six Member States are below their respective 2030 targets under the EU Effort Sharing legislation, which covers sectors such as road transport, buildings and agriculture (all outside the EU Emissions Trading system (ETS)).
- EU GHG emissions increased by 0.6 % in 2017, according to preliminary estimates from Member States. This increase was mainly driven by higher oil consumption from road transport.
- Despite this increase, the EU remains on track to achieve its 20 % GHG reduction commitment by 2020 compared with 1990. In fact, EU GHG emissions in 2017 remained below the 2020 target at 21.9 % below the 1990 level.
- In the EU ETS, emissions remained almost stable in 2017 (0.2 % increase) and the surplus of emission allowances declined for the third consecutive year.
- By the end of 2018, Member States must submit their first draft National Energy and Climate Plans (NECPs). These plans must include climate and energy objectives and policies designed to set the EU on the right track towards achieving its 2030 goals, taking longer-term objectives into account.

Climate change mitigation

This briefing summarises the key results of recent EEA analyses and assessments of progress towards climate targets in the EU. The work is based on Member States' preliminary estimates of their GHG emissions in 2017, their latest GHG projections for 2030 and data reported under the EU Emissions Trading System (ETS). Detailed results are available in the reports *Approximated European Union greenhouse gas inventory: Proxy GHG emission estimates for 2017, Trends and projections in Europe 2018 – Tracking progress towards climate targets* and *Trends and projections in the EU ETS 2018 – the ETS in numbers*.

National projections for 2030 show insufficient reductions to achieve the EU's 40 % reduction target.

The EU has adopted a binding target of at least a 40 % reduction in domestic greenhouse gas (GHG) emissions (compared with 1990 levels) by 2030. This includes binding annual GHG emission reduction targets for EU Member States from 2021 to 2030 for the Effort Sharing sectors, i.e. those not covered by the EU ETS, such as road transport, buildings and agriculture.

According to Member States projections reported in 2017 and 2018, an EU-wide reduction in GHG emissions by 2030 could reach levels 30 % below those of 1990, based on existing mitigation measures. The figure could become 32 % when additional planned mitigation measures are considered. However, these projected reductions fall short of the 40 % domestic reduction target for 2030. In fact, Member States projections show slower GHG emission reductions after 2020, both under the EU ETS and the Effort Sharing, instead of faster ones as would be necessary.

Only six Member States (Croatia, Greece, Hungary, Portugal, Sweden and Slovakia) project that emissions from their Effort Sharing sectors will be strictly below their respective 2030 Effort Sharing targets. Achieving these targets will require new and focused efforts from all Member States to address emissions in the Effort Sharing sectors and ultimately enable the EU to reach its long-term decarbonisation goals.

The package of legislative texts on climate and energy agreed at the EU level in recent months, as well as further pieces of legislation still under discussion, will have to be rapidly implemented by Member States to set the EU on the right track for achieving its 2030 goals. By the end of 2018, Member States will submit their first draft National Energy and Climate Plans (NECPs), which must include ambitious climate and energy objectives, and robust policies for 2021-2030. These plans will pave the way for reaching longer-term decarbonisation objectives.

Rising energy consumption increased EU GHG emissions in 2017, slowing progress towards EU 2020 GHG target

The 10-year period between 2004 and 2014 saw an almost continuous decline in EU GHG emissions. Since then, emissions have remained more or less stable. By 2016, the EU had achieved a GHG emission reduction of 22.4 % below 1990 levels and preliminary data reveal that emissions in 2017 increased by 0.6 % compared with 2016. This brings the EU-wide reduction to a level 21.9 % below that of 1990. Total emissions in 2017 were estimated to be 4 466 million tonnes of carbon dioxide equivalent (Mt CO₂e). Current projections still indicate the 20 % reduction target set for 2020 will be met but by a narrower margin. The EU therefore remains on track to meet its 2020 target.

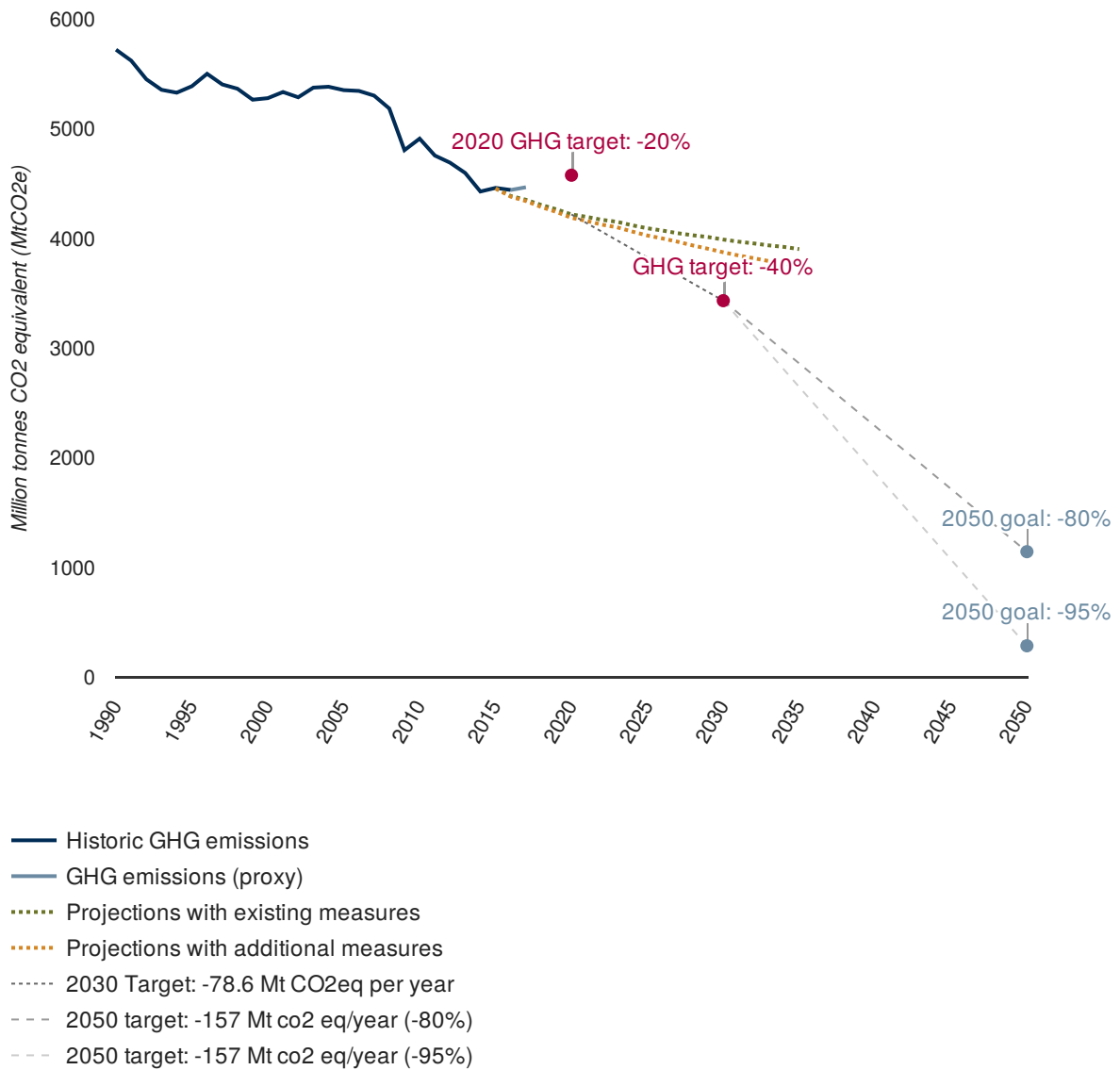
The 0.6 % increase in emissions in 2017 was not as high as the 2.5 % growth in gross domestic product (GDP) across the EU: the emission intensity of GDP in the EU continued to decrease, indicating a further decoupling of GHG emissions from economic growth.

In the EU ETS, emissions from stationary installations increased by 0.2 % in 2017. Over halfway through the third trading period, power generation continues to drive emission reductions in the EU ETS. Emission trends for industrial installations have been more variable, reflecting the economic developments observed in Europe over the last three trading periods. Aviation emissions continue to grow year on year. The overall surplus of emission allowances continued to decline for the third consecutive year as a result of lower volumes of allowances being allocated for free (reflecting the planned annual reduction of the ETS cap) and the limited use of international offsets that installations can use for compliance. The surplus is now equivalent to around 1.6 billion allowances.

2017 was the third year in a row in which emissions in sectors covered by the Effort Sharing increased, driven in particular by oil consumption in the road transportation sector. 22 Member States (all except Belgium, Finland, Germany, Ireland, Malta and Poland) had their emissions below their annual GHG emission targets set for 2016 under the Effort Sharing Decision. This number is estimated to have decreased to 18 Member States in 2017 with GHG emissions in Effort-Sharing sectors in Austria, Bulgaria, Cyprus, Estonia, Finland, Germany, Ireland, Lithuania, Malta and Poland anticipated to be above those countries' Effort Sharing targets in 2017.

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Figure 1. Greenhouse gas emission trends, projections and targets in the EU



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Greenhouse gas emissions increased in more than half of the EU Member States in 2017

The largest absolute growth in emissions occurred in Spain (+14.2 Mt CO₂e), reflecting increased consumption of coal and natural gas in the power sector and a substantial decrease in hydroelectricity production. A large growth in emissions also occurred in Poland (+11.2 Mt CO₂e) and France (+8.0 Mt CO₂e). In Poland, the largest increase in emissions was observed in the transport sector. In France, nuclear energy consumption fell while coal consumption grew strongly.

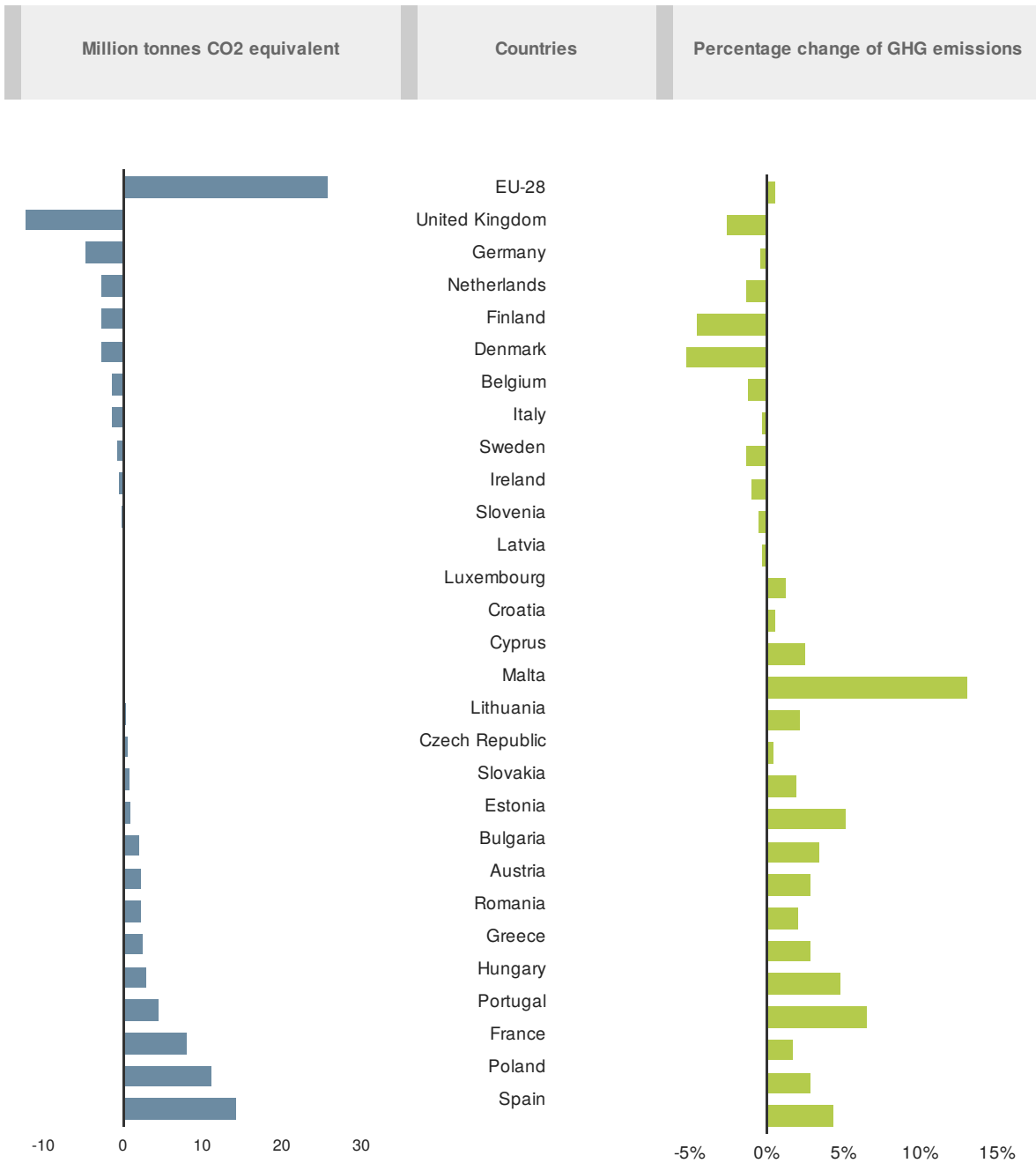
In relative terms, the largest increase in emissions compared with 2016 took place in Malta (13.1%), followed by Portugal (6.5%) and Estonia (5.2%). In Malta, the increase was mainly due to higher electricity production from the new power-gas station and the reduction of electricity imports. In Portugal, lower hydroelectricity production led to a higher use of coal and gas. In Estonia, the increase in emissions was mainly due to the higher electricity production from oil shale and higher transport demand.

In terms of absolute changes in GHG emissions, the largest decrease occurred in the United Kingdom (12.4 Mt CO₂e), significantly more than in any other Member State. The largest reduction was due to a shift from coal and natural gas to renewable energies in electricity generation. A large decrease in emissions was also observed in Germany (4.7 Mt CO₂e), where a higher level of electricity generation from wind energy replaced hard coal, bringing emissions down. Coal power plants were also decommissioned or mothballed. In contrast, other sectors saw increasing emissions, which were most pronounced in industry and transport.

In relative terms, the largest decline in emissions compared with 2016 took place in Denmark (5.3 %), followed by Finland (4.6 %) and the United Kingdom (2.6 %). In Denmark, the higher consumption of renewable energy from biomass, wind and biogas led to a significant decline in the use of coal in power plants. In Finland, consumption of fossil fuels continued to decrease while renewable energy use increased, in particular biofuels in transport.

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Figure 2. Change in Member State GHG emissions, 2016-2017



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Urgent action is required to combat increasing emissions in the transport sector

GHG emissions from the combustion of fossil fuels in the EU grew by 20.0 Mt CO₂e in 2017, an increase of 0.6 % compared with 2016. This was mainly because of an increase in emissions in the transport and manufacturing sectors (+14.4 Mt CO₂e and +8.5 Mt CO₂e, respectively), which was partly compensated by a small decline in emissions from energy industries (-2.8 Mt CO₂e). The energy sector was able to reduce its emissions despite a third consecutive increase in fossil fuel consumption because of the increasing role played by oil, gas and renewable energy sources — and the decreasing share of coal - in producing electricity and heat in the EU.

Emissions from the transport sector have risen in recent years. For the first time since 2010, when monitoring started under current EU legislation, the average CO₂ emissions of new cars sold in the EU rose in 2017, according to provisional data. New legislation in the areas of heavy-duty vehicle emissions and real driving emissions are expected to help reverse the current upwards trend in transport emissions.

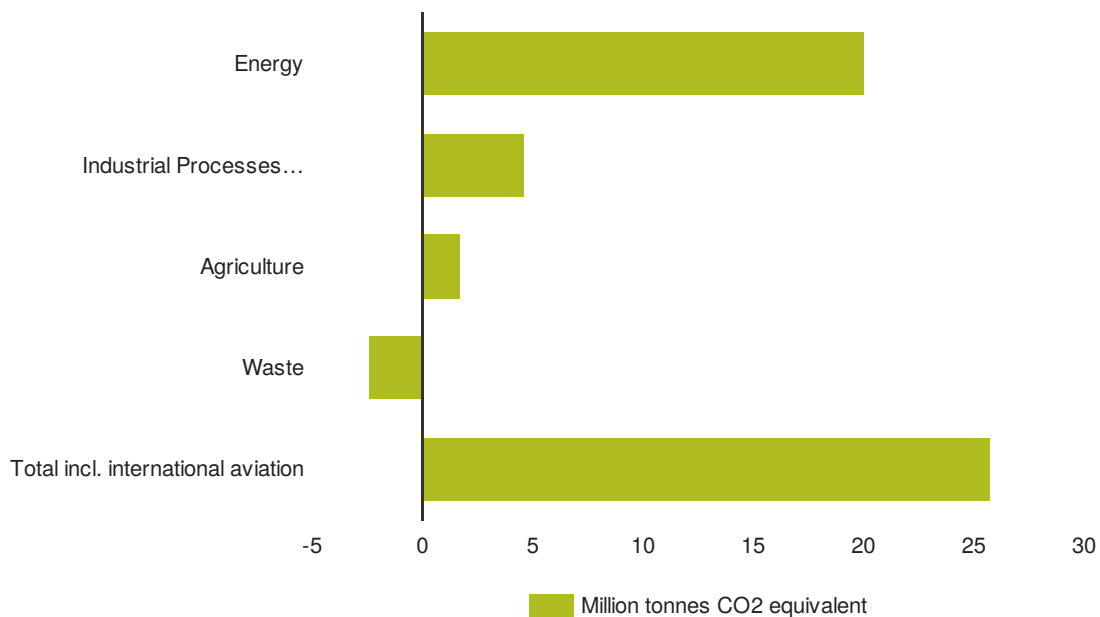
Emissions from EU industrial sectors (other than the energy sector) increased by 4.6 Mt CO₂e (1.2%) in 2017, compared with 2016. The largest emission increases occurred in the mineral production industry and the chemical industry.

Agriculture emissions increased by 1.7 Mt CO₂e (0.4 %), mainly because of emissions from digestion in ruminant animals (enteric fermentation) and agricultural soils. There was a small decrease in emissions due to manure management.

Emissions from waste continue the downward trend seen in previous years, with a reduction of 2.5 Mt CO₂e (1.8 %) due, in the main, to a reduction in emissions from solid waste disposal.

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Figure 3. Change in GHG emissions by sector in the EU, 2016-2017



Data sources: a. EEA. National emissions reported to the UNFCCC and to the EU Greenhouse Gas Monitoring Mechanism
b. EEA. Approximated greenhouse gas emissions c. EEA – Indicator CLIM050

In the land use, land use change and forestry (LULUCF) sector, afforestation and moderate harvest rates contributed to an expected annual carbon sink in 2017 (before the application of accounting rules). However, the figure was slightly lower than the average annual sink reported in GHG inventories since 2000. The decline in the LULUCF sink in 2017, as in several previous years, is attributed to land conversion, especially due to deforestation, and the conversion of organic soils to cropland and of land to settlements.

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