Approximated greenhouse gas emissions

Approximated greenhouse gas emissions in 2016

This briefing presents early 'approximated' (proxy) estimates of greenhouse gas (GHG) emissions for 2016 in the European Union (EU), as reported by Member States in July 2017.

- The EU remains well on track to achieve its 20 % GHG reduction commitment by 2020, compared with 1990. According to early estimates from Member States, total EU GHG emissions in 2016 were 22.6 % below the 1990 level.
- EU emissions decreased by 0.7 % compared with 2015. This was mainly because of an increase in the share of renewable energy in the EU's fuel mix for power generation, despite an increase in energy consumption and a growth in emissions in the residential and the transport sectors.
- The largest relative decline in emissions compared with the previous year took place in Malta (−13.5 %), followed by the United Kingdom (−6.0 %) and Bulgaria (−5.0 %), while the largest increases were observed in Estonia (+6.9 %), Finland (+5.8 %) and Cyprus (+4.9 %).
- Emissions covered under the Effort Sharing Decision (ESD) increased by 0.9 % at the EU level in 2016 compared with 2015, while emissions covered by the EU Emissions Trading System (ETS) decreased by 2.6 %.

Detailed results are available in the report, Approximated European Union greenhouse gas inventory: Proxy GHG emission estimates for 2016. Member States will communicate their final inventory data in April 2018.

The EU is committed to reducing its GHG emissions and achieving the transition towards a low-carbon and circular economy by 2050. It has adopted targets to cut emissions by at least 20 % by 2020, 40 % by 2030 and 80 % by 2050. EU GHG emissions are monitored and reported annually, based on EU Member State GHG inventories.

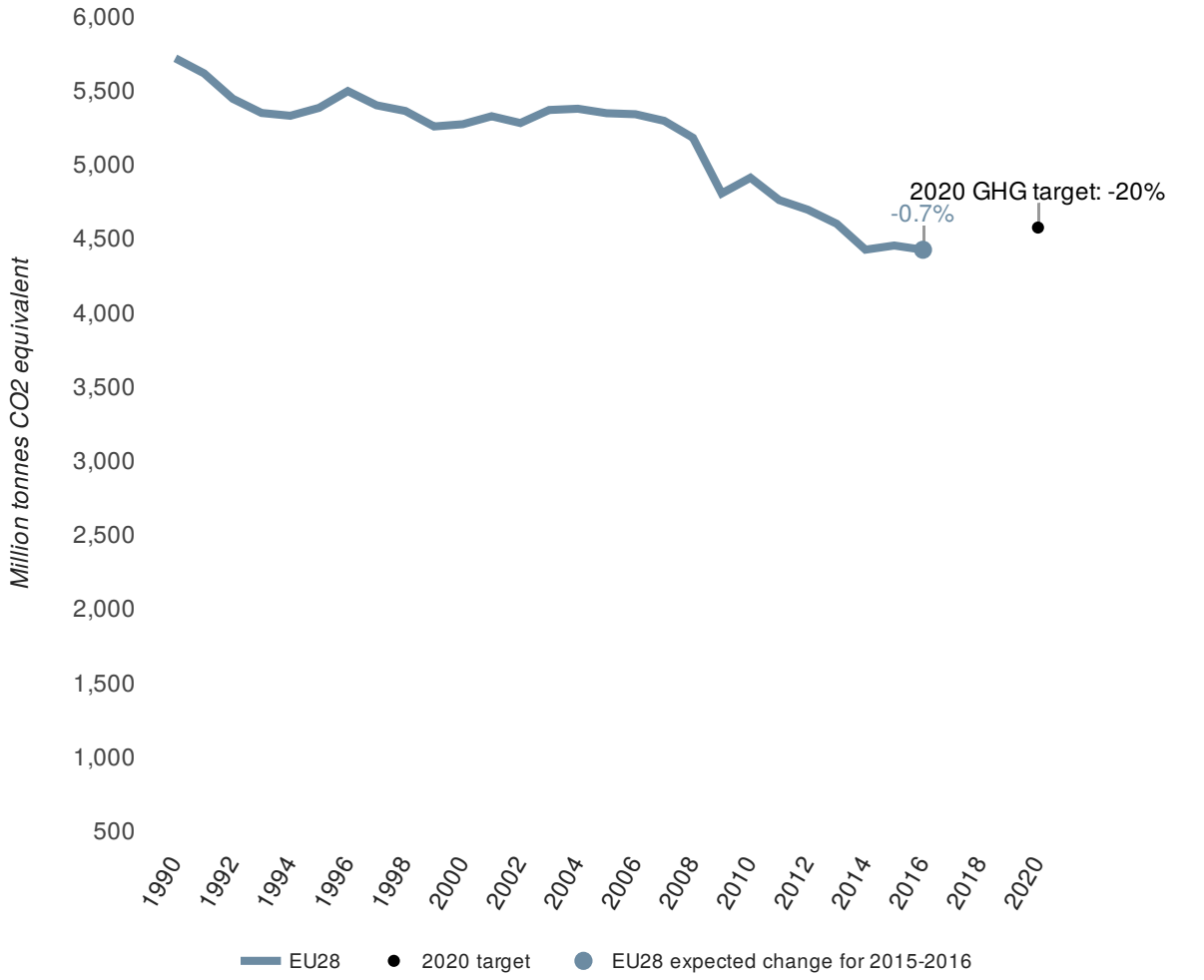
Changes in emissions across the EU

Early estimates for 2016 indicate that the long-term emissions reduction in the EU observed since 2005 continues, albeit at a slower pace than in previous years. Total EU emissions in 2016 are estimated to be 4 423 million tonnes of carbon dioxide equivalent (Mt CO_2eq). This number includes indirect CO_2 emissions and emissions from international aviation, but excludes net emissions from land use, land use change and forestry (LULUCF), and emissions from international shipping. This corresponds to a decrease in emissions of 28.7 Mt CO_2eq (-0.7 %) between 2015 and 2016 and to a 22.6 % decrease between 1990 and 2016 (Figure 1). Excluding emissions from international aviation, 2016 emissions would amount to 4 279 Mt CO_2eq, which also represents a reduction of 0.7 % below 2015 levels, but a decrease of 24.2 % since 1990.

The 0.7 % decrease in emissions contrasts with a GDP growth of 1.9 % over the same period. This resulted in a lower emissions-intensity of GDP in the EU in 2016 and contributed to a further decoupling of GHG emissions from economic growth.

After a period of decrease between 2010 and 2014, the consumption of primary energy (including all fuels combusted directly or transformed to produce electricity and heat) increased for the second year running in 2016 (by 0.9 %). This was mainly because of the increased use of gas and liquid fuels. The contribution of both fossil and renewable fuels to the energy mix increased in 2016, although the contribution of nuclear energy decreased slightly.

Figure 1. Trends in total GHG emissions



Data sources: a. EEA. Greenhouse gas emissions
b. EEA. Approximated greenhouse gas emissions (Update coming soon)

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Changes in emissions by sector

On a sectoral basis, the largest absolute decrease in emissions in the EU occurred in the energy sector. Emissions from the supply and use of energy represented about 78 % of total EU emissions in 2016. These emissions fell by 23.9 Mt CO_2eq (-0.7 %) in 2016 compared with 2015, despite a slight increase in energy consumption in the EU in 2016. The significant decrease in emissions from energy industries (53.9 Mt CO_2eq), which include emissions from power plants and refineries, was partly offset by increases in emissions from energy end-user sectors, in particular the transport sector (18.6 Mt CO2eq), and the residential and commercial sector (19.0 Mt CO_2eq), as shown in Figure 2.

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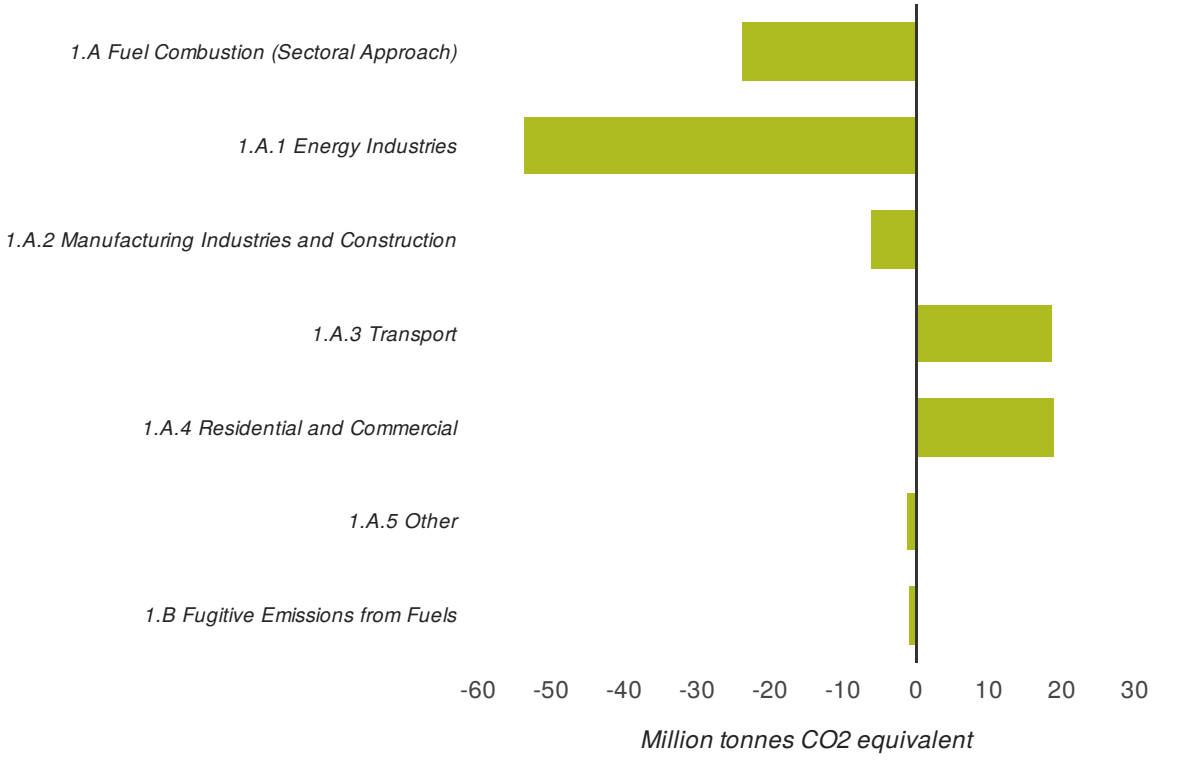
Emissions from EU industrial sectors (other than the energy sector) decreased in 2016 compared with 2015. Emissions related to energy consumption by the industry decreased by 6.3 Mt CO_2eq (−1.3 %), while those related to industrial processes decreased by 0.8 %. The latter reflects a decrease in process emissions from the metal production industry of 3.0 % and of 2.7 % from the chemical industry. At the same time, process emissions from the mineral production industry increased by 0.5 % and emissions from the use of fluorinated gases as substitutes for ozone-depleting substances also increased by 0.5 % across the EU.

Agriculture emissions increased by 0.7 %, mainly because of emissions from digestion in ruminant animals (enteric fermentation). Emissions from waste (−4.2 %) continue the downward trend seen in previous years, with the largest reduction seen in emissions from solid waste disposal.

Figure 2. Energy sector emissions, EU, change 2015-2016



Data sources: a. EEA. Approximated greenhouse gas emissions b. EEA. Greenhouse gas emissions

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Change in Member State GHG emissions

Member States were split into two equal groups: in exactly half of them, GHG emissions decreased in 2016 compared with 2015, while in the other half they increased, as shown in Figure 3.

By far the largest absolute decrease in emissions occurred in the United Kingdom (−30.1 Mt CO_2eq compared with 2015). This decline was mainly because the consumption of solid fossil fuels was halved; a reduction that was partly compensated by the increased consumption of oil and natural gas. In particular, a shift from coal to natural gas occurred in electricity generation. Large absolute decreases in emissions also occurred in Spain (−11.8 Mt CO_2eq) and Romania (−3.9 Mt CO_2eq).

The largest relative decline in emissions compared with the previous year took place in Malta (−13.5 %), followed by the United Kingdom (−6.0 %) and Bulgaria (−5.0 %).

The largest absolute growth in emissions occurred in France (+6.0 Mt CO_2eq), reflecting greater energy use by all sectors. Natural gas consumption grew by 9 %, while liquid and solid fuel consumption each fell by 2 %. A large growth in emissions also occurred in Poland (+5.1 Mt CO_2eq) and Germany (+3.6 Mt CO_2eq).

The largest relative increases in emissions occurred in Estonia (+6.9 %), Finland (+5.8 %) and Cyprus (+4.9 %).

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Figure 3. Change in Member State GHG emissions, 2015-2016

Note:
Total GHG emissions without LULUCF including indirect CO_2

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Emissions covered by the Effort Sharing Decision and the EU Emissions Trading System

The Effort Sharing Decision (ESD) sets binding annual GHG emission targets for Member States for the period 2013–2020. These targets concern emissions from most sectors not included in the EU Emissions Trading System (ETS), such as transport, buildings, agriculture and waste, which represent about 59 % of total emissions. Based on Member States' preliminary estimates, aggregated emissions covered by the ESD increased by 0.9 % in 2016, to a level still 11 % below that of the 2005 base year. According to these estimates, 2016 ESD emissions in four Member States (Belgium, Finland, Ireland and Malta) were higher than these countries' respective annual ESD targets for 2016.

According to information directly available from the European Commission, between 2015 and 2016, emissions covered by the EU ETS — about 41 % of total emissions — decreased by 2.6 % across stationary installations and aviation, and remained well below the cap level set for 2020 (an overall reduction of 21 % compared with 2005 levels at the EU level).

Decreases in both ETS and ESD emissions in 2016 were observed in eight Member States: Bulgaria, Croatia, Latvia, Lithuania, Luxembourg, Portugal, Romania and the United Kingdom. On the contrary, emissions increased in both the ETS and ESD sectors in Cyprus, Finland, France, Ireland and Slovenia.

In ten Member States (Austria, Belgium, Germany, Greece, Hungary, Italy, Malta, the Netherlands, Poland and Spain), emissions in the ETS sector decreased in 2016, while emissions in the ESD sector increased. A contrasting development can be observed in five Member States: Czech Republic, Denmark, Estonia, Sweden and Slovakia, where ETS emissions increased while ESD emissions decreased.

No proxy data are available at the EU level for emissions and removals from LULUCF.

A detailed analysis of Member States' progress to their individual targets for 2016 is provided in the EEA report, Trends and projections in Europe 2017.

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Identifiers

Briefing no. 10/2017

Title: Approximated greenhouse gas emissions in 2016

Linguistic version	Media/Volume	Catalogue number	ISBN	ISSN	DOI
EN	PDF/Volume_01	TH-AM-17-012-EN-N	978-92-9213-929-2	2467-3196	10.2800/172905

Published on 07 Nov 2017