

【欧州】【Common】

Common - Environmental issues: EU' s JRC and EEA' s report show decrease of fossil GHG emissions supporting an introduction of ambitious 2030 climate targets

Andrea Antolini Former Researcher JTTRI

【概要 : Summary】

So far, the EU' s GHG emissions reduction efforts are not enough to reach the Paris Agreement or the EU' s mid- and long-term CO₂ emission reduction targets. However, recently, the European Environment Agency (EEA) presented the latest JRC report on the development of GHG emission figures in 2019, showing a significant decrease of nearly 4% in 2019, compared to 2018. EU emissions are now approximately 24% below 1990 levels, or 26%, if the UK results are still included. Meanwhile, also the European Commission' s in-house Emissions Database for Global Atmospheric Research (EDGAR) provides emission time series from 1970 until 2019 for anthropogenic fossil CO₂ emissions. Based on this database, the EU' s and UK' s fossil CO₂ emissions together were 25.1% lower in 2019 compared to 1990 levels.

It is also already discussed that the COVID-19 pandemic could have a positive impact on the further decline of GHG emissions in the EU. This would put in reach the 2030 reduction targets and the EU' s climate-neutrality by 2050, according to the EEA. However, in order to achieve this climate neutrality target by 2050, the 2030 GHG emission reduction target needs to be tightened. Accordingly, the European Commission presented its proposal on increasing the 2030 GHG emission

reduction target to at least 55% compared with 1990 levels, up from the currently envisaged 40% reduction. Therefore, while the EEA' s preliminary GHG emission results for 2019 show, that a more ambitious target for 2030 is possible to be achieved, the EEA' s 2019 figures also point towards the problem of a continuous GHG emission increase in the transport sector. In order to meet the European Commission' s proposed legally binding target of net zero GHG emissions by 2050 as well as the EU' s Paris climate commitments, the cars and vans would have to be entirely decarbonised, according to the EEA. It would also require the abolishment of vehicles with an internal combustion engine already by 2035. Nevertheless, the EEA' s latest report sends out the promising message that the GHG emission reduction measures could allow a decarbonisation of the EU' s economy, while meanwhile further steps are needed to decarbonise the transport sector.

【記事 : Article】

1. JRC' s latest report on fossil CO₂ emissions of all world countries and the "EDGAR" database

The EU has established a series of GHG emission reduction targets to be achieved in 2020, 2030 and 2050. The EU is committed to reduce GHG emissions

by at least 20% below 1990 levels by 2020. While the EU seems firmly on track to achieve the 2020 target, this is not yet the case for the more ambitious 2030 and 2050 targets.

Based on the European Green Deal of December 2019 and the European Climate Law of March 2020, the Commission proposed not only a legally binding target of net zero GHG emissions to be achieved by 2050. In order to achieve this climate neutrality by 2050, a more ambitious mid-term target for 2030 needs to be considered. Accordingly, in September 2020, the Commission presented its proposal on increasing the 2030 GHG emission reduction target to at least 55%, compared with 1990 levels, up from the currently planned 40% reduction. This represents a significantly ambitious increase from the current 40% target for 2030. It would set the EU on a credible trajectory towards achieving the climate neutrality by 2050, but it would also significantly increase the pressure on the EU's economy to reduce its GHG emissions.

The Joint Research Centre (JRC)'s latest Report on Fossil CO₂ emissions shows the most recent development of CO₂ emissions of all world countries, based on data collected and estimated by the European Commission's in-house Emissions Database for Global Atmospheric Research (EDGAR). The EDGAR estimates are based on the latest available global statistics and state-of-the-art scientific knowledge of emission mechanisms for anthropogenic activities. The methodology used is fully transparent and based on Inter-governmental Panel on Climate Change (IPCC) recommendations, among others. Beyond the EU, all Parties to the Paris Agreement are required to prepare emissions reduction pledges, known as nationally determined contributions (NDCs). However, these national inventory reports are dependent on the separate reporting processes of over 190 countries and show data gaps for specific sectors, the European Commission's in-house Emissions Database for Global Atmospheric Research (EDGAR) intends to address these shortcomings. EDGAR data can

contribute to providing a comprehensive picture needed for the UNFCCC's Global Stocktake of 2023. EDGAR estimates country- and sector-specific emissions of CO₂ and other greenhouse gases and air pollutants. In the JRC study, fossil CO₂ emissions include emissions from fossil fuel combustion (coal, oil and gas), from fossil fuel use (combustion, flaring), industrial processes (cement, steel, chemicals and urea) and product use; no short-cycle carbon CO₂ emissions are included for any sector. The trends in global fossil CO₂ emissions from 1990 to 2019, as well as trends of the major emitting countries and of EU27+UK are presented.

The EU's EDGAR database has been updated to provide emission time series from 1970 until 2019 for anthropogenic fossil CO₂. At global level, the increase of fossil CO₂ emissions observed in 2017 and 2018 continued in 2019, although at a lower growth rate. The EDGAR time series also show that the EU and Russia were the only industrialised economies (among the major emitting regions) whose fossil CO₂ emissions are significantly below their respective 1990 levels. Its results in 2019 show, in how far the political efforts so far taken to reduce GHG emissions in the EU are in fact reflected by the results of GHG emissions figures in 2019.

2. JRC report on all countries' fossil CO₂ emissions in 2019

The most recent JRC report shows the development of fossil CO₂ emissions of all world countries. The CO₂ emissions analysis includes emissions from fossil fuel combustion (coal, oil and gas), from fossil fuel use (combustion, flaring), industrial processes (cement, steel, chemicals and urea) and product use. The EDGAR database has been updated to provide emission time series from 1970 until 2019 for anthropogenic fossil CO₂ emissions. At global level, CO₂ emissions increased in from 1990 to 2019 in all sectors by 68%. Since the beginning of the 21st century, global GHG emissions have grown steadily, mainly due to the increase in CO₂ emissions from China, India and other emerging

economies. This trend continued also in 2019, with global anthropogenic fossil CO₂ emissions increasing by 0.9% compared to 2018, and reaching a total of 38.0 Gt CO₂. Regarding international transport, the maritime transport showed an increase of fossil CO₂ emissions of 97% in 2019 compared to 1990, up from 371.276 Mt CO₂/yr in 1990 to 730.263 Mt CO₂/yr in 2019. In international aviation the emissions increased by 143% in 2019 compared to 1990, up from 258.314 Mt CO₂/yr in 1990 to 627.476 Mt CO₂/yr in 2019. In 2019, China, the United States, India, the EU27+UK, Russia and Japan were the world's largest CO₂ emitters. They emitted 67.0% of total global fossil CO₂ emissions. However, in contrast to China and India, which showed an increase in CO₂ emissions in 2019, compared to 2018 of +3.4% and +1.6% respectively, the EU27+UK showed the largest decrease of all.

3. The JRC report's 2019 results for fossil CO₂ emissions in the EU27+UK

In 2019, the EU27+UK reduced its fossil CO₂ emissions by -3.8% compared to 2018. The EU's trend of a decrease in fossil CO₂ emissions was already visible in 2018, which showed a decrease of -1.5% compared to 2017. This decrease has more than doubled in 2019, compared to 2018. The result is remarkable as the decrease of fossil CO₂ emissions was achieved despite economic growth in 2019. The -3.8% decrease in fossil CO₂ emissions in the EU27+UK in 2019 was the sharpest drop since the economic crisis of 2009. The United States (-2.6%), Japan (-2.1%) and Russia (-0.8%) reduced their fossil CO₂ emissions to a less significant extent. Comparing the 2019 result with the base year 1990, the EU27+UK showed a decrease in fossil CO₂ emissions of -25.1%. The EU27+UK share of the global total CO₂ emissions decreased from 9.6% to 8.7% between 2015 and 2019. The EU27+UK's data in the EDGAR database is based on the EEA's approximated GHG inventory, which also shows the EU's total emissions reduction. The EU27 CO₂ emissions are approximately 24% below 1990 levels, and 26% lower,

if the UK is included. It underlines that the EU's CO₂ emissions have remained consistently below the 20% reduction target for 2020 since 2014.

According to the EEA, the downward trend regarding the CO₂ emissions reflects the strong and steady growth of renewable energy in Europe and the shift away from coal. The EEA also underlines that the 2019 EU27+UK's decrease of -3.8% compared to 2018 was achieved in a period of economic growth. This shows that it is possible to achieve more ambitious reduction targets also in 2030, paving the way for a climate neutral EU by 2050. Moreover, it should be kept in mind that this 2019 decrease in CO₂ emissions has been achieved before the Covid-19 pandemic crisis in Europe took place. Therefore, the decrease of CO₂ emissions in the year 2019 was achieved on the basis of measures related to GHG emission reduction. It was not achieved as a result of the economic impacts of the COVID-19 pandemic.

4. The EU transport sector's increasing GHG emissions

The EEA's preliminary data on the EU's GHG emissions in 2019 show a -3.8% decrease, compared with 2018 and the only other time EU emissions decreased more since 1990 was during the economic crisis in 2009. However, this decrease does not apply to the transport sector. By 2016, transport emissions were 26.1% higher relative to the 1990 level. Preliminary estimates in EU Member States show that in 2017, GHG emissions from transport were 28% above 1990 levels. Therefore, the transport sector remains the only main European economic sector in the EU, which shows a significant increase in the GHG emissions, when compared with 1990 levels. It means that the transport sector is also a major obstacle for the EU to realising its climate targets. In transport, the GHG emissions have been increasing since 2014, whilst average CO₂ emissions of new passenger cars increased for the first time in 2017. The EU's share of renewable energy in transport rose slightly from 7.1% in 2016 to 7.2% in 2017. However, it remains well below the 10%

target set for 2020 under the EU’s Renewable Energy Directive (RED).

The latest EDGAR data show that the EU transport sector is currently not on track to decrease its GHG emissions. Whereas all other sectors showed decreases of sometimes remarkable extends of about 39% to 40%, like in the power industry, only when comparing the 2019 results with 2005, the transport sector shows a decrease of -6%.

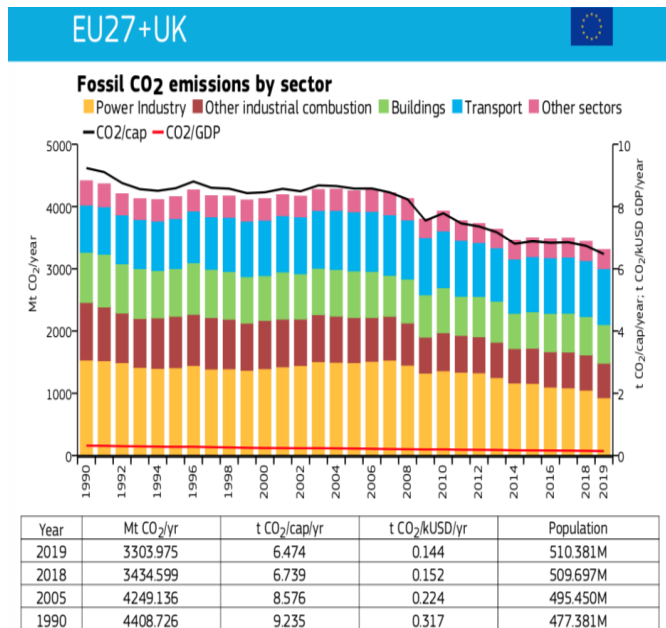


Figure 1: The EU27+UK’s fossil CO₂ emissions by sectors, 1990-2019

Source: JRC Fossil CO₂ emissions of all world countries-2020 Report. In: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/fossil-co2-emissions-all-world-countries-2020-report>

Regarding maritime transport, the GHG emissions from maritime bunker fuels (or fuel use in ships in relation to international transport) sold in the EU peaked in 2008. Thereafter, they decreased by almost one quarter during the period 2009-2014, largely as a result of the economic recession. However, since then, these GHG emissions have followed an upward trend, amounting to 147 Mt CO₂ in 2016. In the EU, GHG emissions from shipping are 10% below 2005 levels but need a further decrease of -34% from current levels by 2050, or a -40%

reduction of GHG emissions from shipping to reach the 2050 target, compared with 2005 levels.

5. Conclusion

The EU27+UK’s fossil anthropological CO₂ emissions in 2019 were approximately 26% lower than in 1990. If the emissions of the UK, as it is no longer a EU Member State, are excluded, CO₂ emissions were still 24% lower in 2019 than in 1990. According to the EEA, the steady decline in fossil CO₂ emissions in the EU27+UK is due to a significant and steady increase in renewable energies and the phasing out of coal. The fact that the reduction in GHG emissions was achieved even in a phase of economic growth underlines the positive impacts of the EU’s climate policy, according to the EEA. It is also stressed that the achievement of more ambitious climate targets for 2030 is “clearly possible” in order to reach climate neutrality by 2050.

Globally, the EDGAR time series data show that the EU and Russia were the only industrialised economies (among the major emitting regions) whose fossil CO₂ emissions are significantly below their respective 1990 levels. Instead, the United States and Japan increased their CO₂ emissions by 0.8% and 0.4%, respectively, compared to the 1990 levels, while the emerging economies of China and India have respectively 3.8 and 3.3 times more CO₂ emissions in 2019 compared to 1990, due to their rapid industrialisation in the past two decades.

As the EDGAR database has shows, the EU27+UK has reached the largest decrease of fossil CO₂ emissions of -3.8% in 2019, compared to 2018. The decrease in fossil CO₂ emissions in 2019 has been achieved before the emission levels could have been affected by the Covid-19 crisis on Europe, which only started in February 2020. Therefore, it will be interesting to analyse the fossil CO₂ emission data in 2020 compared to 2019 in the next report. Due to the COVID-19 pandemic impacts, the decline in GHG emissions is very likely to be even higher in 2020 than it was in 2019. However, the EEA will

publish the first detailed data on the EU's 2020 GHG emissions only in the autumn of 2021.

The fossil CO₂ emission reduction in 2019 is also of importance when considering the EU's plans to further tighten the 2030 target for GHG emission reduction. The EU Institutions and the Member States are in the middle of their decision making process to introduce a stricter CO₂ emission reduction target for 2030 in order to achieve the climate neutrality target in 2050. In September 2020, the Commission presented its proposal on increasing the 2030 GHG emission reduction target to at least 55% compared with 1990 levels, up from the currently planned 40% reduction. Meanwhile, the European Parliament voted in favour of an even more ambitious 60% GHG emission reduction target by 2030. The European Parliament will now enter into trilogue negotiations with the Council and Commission to find a compromise for the 2030 emission reduction target.

The JRC and EEA's study on fossil CO₂ emissions and the observed reduction of these emissions in the past decades and recent past indicates that there is some margin to tighten the 2030 target and probably also achieve a 55% to 60% reduction by 2030, considering the fact that all sectors have a decade to achieve such a more ambitious target in 2030.

References:

Crippa, M., Guizzardi, D., Muntean, M., Schaaf, E., Solazzo, E., Monforti-Ferrario, F., Olivier, J.G.J., Vignati, E., Fossil CO₂ emissions of allworld countries - 2020 Report, EUR 30358 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-21515-8, doi:10.2760/143674, JRC121460. In: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/fossil-co2-emissions-all-world-countries-2020-report>, retrieved 16 October 2020

European Commission: JRC presents its analysis of global CO₂ emissions. Global CO₂ emissions continue to rise but EU bucks global trend. In: <https://ec.europa.eu/jrc/en/news/global-co2-emissions>

[-continue-rise-eu-bucks-global-trend](https://ec.europa.eu/jrc/en/news/global-co2-emissions-continue-rise-eu-bucks-global-trend), Sep 09 2020, retrieved 19 October 2020

European Court of Auditors: Special Report 18/2020: The EU's Emissions Trading System: free allocation of allowances needed better targeting

In:

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=54392>, https://www.eca.europa.eu/Lists/ECADocuments/SR20_18/SR_EU-ETS_EN.pdf

15/09/2020, retrieved 16 October 2020

EEA: Europe's state of the environment 2020: change of direction urgently needed to face climate change challenges, reverse degradation and ensure future prosperity. In:

<https://www.eea.europa.eu/highlights/soer2020-europes-environment-state-and-outlook-report>, retrieved 12.12.19

EEA: Sharpest decrease of the decade in EU's greenhouse gas emissions in 2019, before impacts of COVID-19. In: <https://www.eea.europa.eu/highlights/sharpest-decrease-of-the-decade>, 17 Sep 2020, retrieved 16 October 2020

EEA: The European environment - state and outlook 2020. In:

<https://www.eea.europa.eu/publications/soer-2020-executive-summary>, retrieved 19 Dec 2019

Greenhouse gas emission trends and projections in the EU-28, 1990-2050. In:

<https://www.eea.europa.eu/highlights/soer2020-europes-environment-state-and-outlook-report>, retrieved 12.12.2019

The European environment - state and outlook 2020 Global CO₂ emissions continue to rise but EU bucks global trend. In:

<https://ec.europa.eu/jrc/en/news/global-co2-emissions-continue-rise-eu-bucks-global-trend>, Sep 09 2020, retrieved 16 October 2020