



**EMBARGOED TO 19:01 US EASTERN TIME THURSDAY 10 DECEMBER / 00:01 GMT (LONDON TIME) FRIDAY 11 DECEMBER 2020**

### **COVID lockdown causes record drop in CO<sub>2</sub> emissions for 2020**

The global COVID-19 lockdowns caused fossil carbon dioxide emissions to decline by an estimated 2.4 billion tonnes in 2020 - a record drop according to researchers at the University of East Anglia (UEA), University of Exeter and the Global Carbon Project.

The fall is considerably larger than previous significant decreases - 0.5 (in 1981 and 2009), 0.7 (1992), and 0.9 (1945) billion tonnes of CO<sub>2</sub> (GtCO<sub>2</sub>). It means that in 2020 fossil CO<sub>2</sub> emissions are predicted to be approximately 34 GtCO<sub>2</sub>, 7% lower than in 2019.

Emissions from transport account for the largest share of the global decrease. Those from surface transport, such as car journeys, fell by approximately half at the peak of the COVID lockdowns. By December 2020, emissions from road transport and aviation were still below their 2019 levels, by approximately 10% and 40%, respectively, due to continuing restrictions.

Total CO<sub>2</sub> emissions from human activities - from fossil CO<sub>2</sub> and land-use change - are set to be around 39 GtCO<sub>2</sub> in 2020.

The release of this year's Global Carbon Budget comes ahead of the fifth anniversary tomorrow of the adoption of the UN Paris climate Agreement, which aims to reduce the emission of greenhouse gases to limit global warming. Cuts of around 1 to 2 GtCO<sub>2</sub> are needed each year on average between 2020 and 2030 to limit climate change in line with its goals.

Five years on from the landmark agreement, the international team behind the annual carbon update say growth in global CO<sub>2</sub> emissions had begun to falter, with emissions increasing more slowly in recent years, which could be partly in response to the spread of climate policy. For the decade prior to 2020, fossil CO<sub>2</sub> emissions decreased significantly in 24 countries while their economy continued to grow.

However, the researchers warn that it is too early to say how much emissions will rebound by during 2021 and beyond, as the long-term trend in global fossil emissions will be largely influenced by actions to stimulate the global economy in response to the COVID-19 pandemic.

Prof Corinne Le Quéré, Royal Society Research Professor at UEA's School of Environmental Sciences, contributed to this year's analysis. She said: "All elements are not yet in place for

sustained decreases in global emission, and emissions are slowly edging back to 2019 levels. Government actions to stimulate the economy at the end of the COVID-19 pandemic can also help lower emissions and tackle climate change.

“Incentives that help accelerate the deployment of electric cars and renewable energy and support walking and cycling in cities are particularly timely given the extensive disturbance observed in the transport sector this year.”

The emissions decrease appears more pronounced in the **US** (–12%) and **EU27** countries (–11%), where COVID-19 restrictions accelerated previous reductions in emissions from coal use. It appears least pronounced in **China** (–1.7%), where the effect of COVID-19 restrictions on emissions occurred on top of rising emissions. In addition, restrictions in China occurred early in the year and were more limited in their duration, giving the economy more time to recover.

In the **UK**, which first introduced lockdown measures in March, emissions are projected to decrease about 13%. The large decrease in UK emissions is due to the extensive lockdown restrictions and the second wave of the pandemic.

In **India**, where fossil CO<sub>2</sub> emissions are projected to decrease about 9%, emissions were already lower than normal in late 2019 because of economic turmoil and strong hydropower generation, and the COVID-19 effect is potentially superimposed on this changing trend.

For the **rest of the world** the effect of COVID-19 restrictions occurred on top of rising emissions, with emissions this year projected to decrease by about 7%.

Globally, the peak of the decrease in emissions in 2020 occurred in the first half of April, when lockdown measures were at their maximum, particularly across Europe and the USA.

Emissions from industry, for example metal production, chemicals, and manufacturing, reduced by up to a third during the COVID-19 lockdown in spring. However, they could already be back up to near or even above 2019 levels by now.

Despite lower emissions in 2020, the level of CO<sub>2</sub> in the atmosphere continues to grow - by about 2.5 parts per million (ppm) in 2020 - and is projected to reach 412 ppm averaged over the year, 48% above pre-industrial levels.

Lead researcher Prof Pierre Friedlingstein, of the University of Exeter, said: “Although global emissions were not as high as last year, they still amounted to about 39 billion tonnes of CO<sub>2</sub>, and inevitably led to a further increase in CO<sub>2</sub> in the atmosphere. The atmospheric CO<sub>2</sub> level, and consequently the world’s climate, will only stabilise when global CO<sub>2</sub> emissions are near zero.”

Preliminary estimates based on fire emissions in deforestation areas indicate that emissions from deforestation and other land-use change for 2020 are similar to the previous decade, at around 6 GtCO<sub>2</sub>. Approximately 16 GtCO<sub>2</sub> was released, primarily from deforestation, while the

uptake of CO<sub>2</sub> from regrowth on managed land, mainly after agricultural abandonment, was just under 11 GtCO<sub>2</sub>. Measures to better manage land could both halt deforestation and help increase the CO<sub>2</sub> sink from regrowth.

Deforestation fires were lower this year compared to 2019 levels, which saw the highest rates of deforestation in the Amazon since 2008. In 2019 deforestation and degradation fires were about 30% above the previous decade, while other tropical emissions, mainly from Indonesia, were twice as large as the previous decade because unusually dry conditions promoted peat burning and deforestation.

Land and ocean carbon sinks continue to increase in line with emissions, absorbing about 54% of the total human-induced emissions.

Data for the Global Carbon Budget 2020 is published today in the journal *Earth System Science Data*.

## **ENDS**

### **NOTES TO EDITORS**

#### **1. PRESS BRIEFING:**

A Science Media Centre online news briefing on the Global Carbon Budget 2020 will take place at 9am BST Thursday December 10. For further information please contact Cat Bartman in the UEA communications office via [C.Bartman@uea.ac.uk](mailto:C.Bartman@uea.ac.uk)

**2.** To request an interview with Prof Corinne Le Quéré, please contact the UEA Communications Office via [communications@uea.ac.uk](mailto:communications@uea.ac.uk). To request an interview with Prof Pierre Friedlingstein contact the University of Exeter Press Office on +44 (0)1392 724828 or email [pressoffice@exeter.ac.uk](mailto:pressoffice@exeter.ac.uk).

**3.** The University of East Anglia (UEA) is a UK Top 25 university and is ranked in the top 50 globally for research citations. Known for its world-leading research and good student experience, it was awarded Gold in the Teaching Excellence Framework and is a leading member of Norwich Research Park, one of Europe's biggest concentrations of researchers in the fields of environment, health and plant science. [www.uea.ac.uk](http://www.uea.ac.uk)

**4.** The University of Exeter is a Russell Group university that combines world-class research with very high levels of student satisfaction. Exeter has over 21,000 students and is in the top one per cent of universities worldwide. Exeter is also ranked 10th in the *Guardian University Guide 2020* and 14th in *The Times and The Sunday Times Good University Guide 2018*. In the 2014 Research Excellence Framework (REF), the University ranked 16th nationally, with 98% of its research rated as being of international quality, while in 2017, Exeter was awarded a Gold rating in the Teaching Excellence Framework (TEF) assessment.

5. The Global Carbon Project is an international research project within the Future Earth research initiative on global sustainability, and a research partner of the World Climate Research Programme. It aims to develop a complete picture of the global carbon cycle, including both its biophysical and human dimensions together with the interactions and feedbacks between them. The Global Carbon Budget 2020 is the 15<sup>th</sup> edition of the annual update that started in 2006.

6. This media release is part of the Global Carbon Budget 2020, the annual update by the Global Carbon Project. It is based on the analyses published here:

Friedlingstein et al. (2020) Global Carbon Budget 2020. *Earth System Science Data*.

**Data access:**

- Data and figures: <http://www.globalcarbonproject.org/carbonbudget>
- Data interface for exploring data: <http://www.globalcarbonatlas.org>.
- Under embargo:
  - ESSD paper and infographics are available here:  
[https://drive.google.com/drive/folders/1iJHSWpyKGMkodvwEgJ\\_idvf2xB3venJg](https://drive.google.com/drive/folders/1iJHSWpyKGMkodvwEgJ_idvf2xB3venJg)  
and can also be requested via [communications@uea.ac.uk](mailto:communications@uea.ac.uk)
  - Global Carbon Atlas with country data to year 2019  
<http://emissions2020.globalcarbonatlas.org/>.
  - User name:** media
  - Password:** fromLSCE2020
  - Daily emissions from the CarbonMonitor <https://carbonmonitor.org/>
  - Daily estimates of the effect of COVID-19 restrictions on countries emissions based on the method of [Le Quéré et al. \(2020\)](#) are also available in the google drive above.

**Social media:**

- Twitter: #carbonbudget, @gcarbonproject