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MCC Press Release

Flash estimate: global carbon emissions in early April 17 percent lower than before corona

Study on the climate effect of pandemic defence measures offers three scenarios for further course of 2020: "Stimulus packages shape emission pathways for decades to come."

Berlin, 19/05/2020. A team of researchers has generated an elaborate flash estimate to quantify the effect of measures to reign in the corona pandemic on the emission of CO_2, the most important greenhouse gas. According to the estimate, global carbon emissions in early April were probably one-sixth lower than before the pandemic. The sharpest absolute declines result from traffic and production. Scientific institutions from seven countries on three continents participated in the study, including the Berlin-based climate research institute MCC (Mercator Research Institute on Global Commons and Climate Change). The study has now been published in the renowned scientific journal *Nature Climate Change*.

Despite the importance of carbon emissions, there is no real-time data collection to date, with national statistics sometimes lagging years behind. The research team therefore took an indirect approach: ongoing surveys of energy and raw material consumption, industrial production, and traffic volumes in 69 countries, which account for 97 percent of global emissions, form the basis of the calculation. They were supplemented by assumptions on behavioural changes triggered by pandemic defence, and satellite data on air pollution. The flash estimate for 7 April 2020, comes to a corona-induced reduction of 17 megatons of CO_2 per day – a reduction of 17 percent relative to the pre-corona level of 100 megatons.

Surface transport accounts for the largest share of the daily 17 megatonnes less CO_2, an estimated 7.5 megatonnes (corresponding to a 36 percent reduction). Another 4.3 megatonnes (19 percent decrease) are attributable to the production of goods and services, and 3.3 megatonnes (7 percent decrease) to power generation. Air traffic accounts for 1.7 megatons (a decline of 60 percent, presenting the largest relative anomaly), and the public sector for 0.9 megatonnes (21 percent decrease). By contrast, there is a slight increase of 0.2 megatonnes (3 percent) in private households.

The study also provides a forecast for carbon emissions by the end of the year, developing three different scenarios. (1) If restrictions imposed in March are reduced to zero by mid-June, carbon emissions for the year 2020 will be about 4 percent lower than without the coronavirus pandemic. (2) If restrictions are maintained until the end of May, and the situation returns to normal at the end of July, the reduction will be about 5 percent. (3) If in addition to the second scenario, authorities need to break individual infection chains by the end of the year, and send those affected into quarantine, the reduction is about 7 percent.

The research team emphasises that the climate crisis is in no way defused by the corona pandemic. "After all, the scenarios for a successful fight against global warming, which scientists have been developing for years, are aimed at better, not worse, human well-being, despite reduced energy and resource consumption," explains Felix Creutzig, head of the MCC working group Land Use, Infrastructure and Transport and co-author of the study. "By contrast, the current disruption of demand is neither intended nor welcome. Our study is no reason for joy. Nevertheless, it provides important quantitative insights into how extreme measures affect CO_2 emissions."

In order to limit global warming to 1.5 degrees above pre-industrial levels, emissions would have to fall by 6 per cent every year, rather than just once. "Politicians must keep this in mind when they organise economic recovery once the pandemic has been contained," emphasises MCC researcher Creutzig. "State stimulus packages will probably shape the path of global carbon emissions for decades to come. It is quite possible to reconcile this context with climate policy. But if climate policy is weakened, even higher emission paths than without the corona pandemic are likely in the long term, despite the current decline."

About the MCC
The MCC explores sustainable management as well as the use of common goods such as global environmental systems and social infrastructures against the background of climate change. Our seven working groups are active in the fields of economic growth and development, resources and international trade, cities and infrastructure, governance and scientific policy advice. The MCC was co-founded by the Mercator Foundation and the Potsdam Institute for Climate Impact Research (PIK).

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