

Strong growth in global CO₂ emissions expected for 2018

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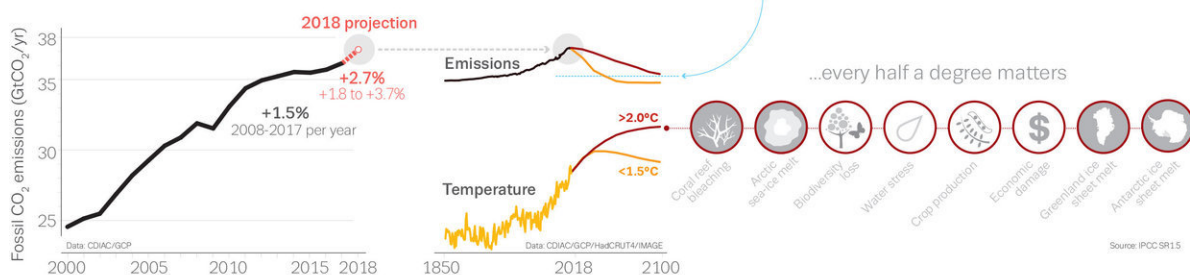
Global Carbon Budget 2018

Renewables rising fast but not yet enough to reverse emissions trend

Fossil CO₂ emissions are projected to rise **more than 2%**

Efforts to decarbonise are not yet strong enough to overcome growing global energy needs

Emissions need to rapidly decrease to **zero** to limit climate change and its impacts...



Coal is changing trajectory, renewables are rising, oil & gas continue unabated

Renewables are rising from a low base

Fossil CO₂ emissions per capita of the top emitting countries, 2000-17



Global carbon emissions are set to hit an all-time high in 2018 -- according to researchers at the University of East Anglia and the Global Carbon Project. A projected rise of more than 2 per cent has been driven by a solid growth in coal use for the second year in a row, and sustained growth in oil and gas use. Credit: Global Carbon Project

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The news is a further call to action for governments at the UN Climate Change Conference (COP 24) in Katowice this week.

But the [research team](#) say energy trends are changing and that there is still time to address climate change if efforts to curb [carbon emissions](#) rapidly expand in all sectors of the economy.

The new data for 2018, published today simultaneously in the journals *Nature*, *Earth System Science Data* and *Environmental Research Letters*, reveals that [global emissions](#) from burning fossil fuels are expected to reach 37.1 billion tonnes of CO₂ in 2018.

CO₂ emissions have now risen for a second year, after three years of little-to-no growth from 2014 to 2016. The rise this year is projected at 2.7 per cent (+1.8 to +3.7 per cent). In 2017 it was 1.6 per cent.

The 10 biggest emitters in 2018 are China, the US, India, Russia, Japan, Germany, Iran, Saudi Arabia, South Korea, and Canada. The EU as a whole region of countries ranks third.

Lead researcher Prof Corinne Le Quéré, Director of the Tyndall Centre for Climate Change Research and Professor of Climate Change Science and Policy at UEA, said: "We are seeing a strong growth of global CO₂ emissions once again.

"Emissions need to peak and rapidly decrease to address climate change.

With this year's growth in emissions, it looks like the peak is not yet in sight.

"To limit global warming to the Paris Agreement goal of 1.5°C, CO₂ emissions would need to decline by 50 per cent by 2030 and reach net zero by around 2050. We are a long way from this and much more needs to be done because if countries stick to the commitments they have already made, we are on track to see 3°C of global warming.

"This year we have seen how climate change can already amplify the impacts of heatwaves worldwide. The California wildfires are just a snapshot of the growing impacts we face if we don't drive emissions down rapidly."

What is driving the rise?

This year's rising [emission](#) figures are largely due to solid growth in coal use, but coal still remains below its historical high in 2013. Coal use may soon exceed this 2013 peak if current growth continues.

Oil use is growing strongly in most regions, with a rise in emissions from cars and lorries, including in the US and Europe. Flights have also contributed to the oil rise. Gas use has grown almost unabated in recent years.

Prof Le Quéré said: "The growing global demand for energy is outpacing decarbonisation for now. This needs to change, and change quickly to address climate change.

"We need strong policy and economic support for rapid deployment of low carbon technologies to cut emissions across the energy and transport sectors, from buildings and from industry.

"Energy trends are changing rapidly, with coal use decreasing in many parts of the world and still below its 2013 level globally, and an explosion in wind and solar energy. But while renewables are rising fast, it is not yet enough to reverse global emissions trends.

"The rapid actions needed to address climate change also need to be fair to all generations," she added.

Dr. Glen Peters, a Research Director at the CICERO Center for International Climate Research in Oslo, who led the emissions analysis, said: "Global commitments made in Paris in 2015 to reduce emissions are not yet being matched by proportionate actions.

"Despite rapid growth in low carbon technologies such as solar and wind power, electric vehicles, and batteries, not nearly enough is being done to support policies that limit the amount of carbon dioxide that is put into the atmosphere.

"The rise in emissions in 2017 could be seen as a one-off, but the growth rate in 2018 is even higher, and it is becoming crystal clear the world is so far failing in its duty to steer onto a course consistent with the goals set out in the Paris Agreement in 2015."

CO₂ emissions from deforestation and other human activities on land contributed an additional 5 billion tonnes of CO₂ this year, bringing total CO₂ emissions to 41.5 billion tonnes of CO₂. The global trends in those emissions are unclear due to large uncertainties in the data.

Concentrations of carbon dioxide (CO₂) in the atmosphere are set to increase by around 2.3 parts per million on average in 2018 in response to continued CO₂ emissions, to reach about 407 parts per million over the year. This is 45 per cent above pre-industrial levels. The rise of CO₂ in the atmosphere is the main cause of [climate change](#).

The good news

Countering rising global emissions are 19 countries where emissions have reduced and their economy has grown. Aruba, Barbados, the Czech Republic, Denmark, France, Greenland, Iceland, Ireland, Malta, the Netherlands, Romania, Slovakia, Slovenia, Sweden, Switzerland, Trinidad and Tobago, the UK, the US, and Uzbekistan have all decreased their emissions over the past decade (2008-2017).

Deployment of renewable energy worldwide is accelerating exponentially, with electricity generation growing at 15 per cent per year on average over the last decade. But this has not been enough to offset the growth in fossil energy because renewables are growing from a low base. This is changing rapidly.

Christiana Figueres, Mission 2020 campaign group leader and lead author of the *Nature* Commentary, said: "Global CO₂ emissions must start to fall from 2020 if we are to meet the temperature goals of the Paris agreement, but this is within our grasp. We have already achieved things that seemed unimaginable just a decade ago.

"Exponential progress in key solutions is happening and on track to displace fossil fuels. Renewable energy technology costs have dropped by 80 per cent in a decade, and today, over half of all new energy generation capacity is renewable. Before 2015 many people thought the Paris Agreement was impossible, yet thousands of people and institutions made the shift from impossible to unstoppable. The same is true of decarbonizing the economy. Propelled by the pursuit of clean air, jobs and energy-independence among other benefits, the intrepid, collective efforts of young people, civil society, businesses, investors, cities and states are charting the course to net zero emissions by 2050."

How different countries compare

Almost all countries have contributed to the rise in global emissions, either through growth in emissions or through reductions that are slower than expected. China's emissions account for 27 per cent of the global total, having grown an estimated 4.7 per cent (+2 per cent to +7.4 per cent) in 2018 and reaching a new all-time high. The growth in emissions is linked to construction activity and economic growth, part of which may be due to temporary stimulus-driven credit growth. Energy from renewables is growing by 25 per cent per year, but from a low base.

Emissions in the US account for 15 per cent of the global total, and look set to have grown about 2.5 per cent (+0.5 per cent to +4.5 per cent) in 2018 after several years in decline. The new rise is due to robust growth in oil use of about 1.4 per cent, associated with an increase in car journeys, and gas of about 7.6 per cent. Emissions from coal use look set to have decreased by around -2.1 per cent in 2018, continuing a shift away from coal, with a 40 per cent decrease in CO₂ emissions from coal since 2007, mainly towards gas, and more recently also towards renewables for power generation.

EU emissions account for 10 per cent of global emissions and a small decline of around -0.7 per cent is projected, well below the declines of 22 per cent per year in the decade up to 2014. Estimated declines in coal and gas use due to the growth in renewable energy have been partially offset by a growth in oil use. The amount of fuel used for road transport and flights has surged by around 4 per cent in the EU. Overall EU emissions are still near or above their 2014 levels.

India's emissions, accounting for 7 per cent of the global total, have continued to grow by around 6.3 per cent, as their economy booms. Wind and solar are growing fast, albeit from a low base.

Emissions in the rest of the world, the remaining 42 per cent of global emissions, are expected to grow about 1.8 per cent (+0.5 per cent to +3.0 per cent) this year. The five countries contributing most to the rest-of-the-world growth in global emissions in the last decade are Saudi Arabia, Iran, Turkey, Iraq and South Korea.

More information: Christiana Figueres et al. Emissions are still rising: ramp up the cuts, *Nature* (2018). [DOI: 10.1038/d41586-018-07585-6](https://doi.org/10.1038/d41586-018-07585-6)

Yangyang Xu et al. Global warming will happen faster than we think, *Nature* (2018). [DOI: 10.1038/d41586-018-07586-5](https://doi.org/10.1038/d41586-018-07586-5)

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