



IEAGHG Information Paper: 2017-IP20; The Global Carbon Budget for 2016 and its implications

The Global Carbon Project (GCP) was established in 2001. Its scientific goal is 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 project produces an annual budget; the latest Global Carbon Budget for 2016 has now been published see:

<http://www.globalcarbonproject.org/carbonbudget/index.htm>

A press release from one of the Global Carbon Budget contributor organisations, the University of East Anglia in the United Kingdom is given in the box below for reference. For this and other press releases related to this project, see:

<http://www.globalcarbonproject.org/carbonbudget/16/events-prm.htm>

Low growth in global carbon emissions continues for third successive year

Global carbon emissions from burning fossil fuels did not grow in 2015 and are projected to rise only slightly in 2016, marking three years of almost no growth, according to researchers at the University of East Anglia (UEA) and the Global Carbon Project.

The projected rise of only 0.2% for 2016 marks a clear break from the rapid emissions growth of 2.3% per year in the decade to 2013, with just 0.7 per cent growth seen in 2014.

The new data is published in the journal **Earth System Science Data**¹. It shows emissions growth remained below 1 per cent despite GDP growth exceeding 3 per cent. Decreased use of coal in China is the main reason behind the 3-year slowdown.

Prof Corinne Le Quéré, Director of the Tyndall Centre at UEA who led the data analysis, said: *“This third year of almost no growth in emissions is unprecedented at a time of strong economic growth. This is a great help for tackling climate change but it is not enough. Global emissions now need to decrease rapidly, not just stop growing.”*

China – the biggest emitter of CO₂ at 29 per cent – saw emissions decrease by 0.7 per cent in 2015, compared to growth of more than 5 percent per year the previous decade. A further reduction of 0.5 per cent is projected for 2016, though with large uncertainties. The USA, the second biggest emitter of CO₂ at 15 per cent, also reduced its coal use while increasing its oil and gas consumption and saw emissions decrease 2.6 per cent last year. USA emissions are projected to decrease by 1.7 per cent in 2016. The EU’s 28 member states are the third largest emitter causing 10 per cent of emissions. The EU’s CO₂ emissions went up 1.4 percent in 2015, in contrast with longer-term decreases. India contributed 6.3 per cent of all global CO₂ emissions, with their emissions increasing 5.2 percent, in 2015 continuing a period of strong growth. Although the break in emissions rise ties in with the pledges by countries to decrease emissions until 2030, it falls short of the reductions needed to limit climate change well below 2 degrees Celsius. Prof Le Quéré said:

“If climate negotiators in Marrakesh can build momentum for further cuts in emissions, we could be making a serious start to addressing climate change.”

The Global Carbon Budget analysis also shows that, in spite of a lack of growth in emissions, the growth in atmospheric CO₂ concentration was a record-high in 2015, and could be a record again in 2016 due to weak carbon sinks. Prof Le Quéré said:

“Part of the CO₂ emissions are absorbed by the ocean and by trees. With temperatures soaring in 2015 and 2016, less CO₂ was absorbed by trees because of the hot and dry conditions related to the El Niño

¹ See <http://www.earth-syst-sci-data.net/8/605/2016/>, this is an OPEN ACCESS journal



event. Atmospheric CO₂ levels have exceeded 400 parts per million (ppm) and will continue to rise and cause the planet to warm until emissions are cut down to near zero."

The Global Carbon Project's estimation of global CO₂ emissions and their fate in the atmosphere, land and ocean is a major effort by the research community to bring together measurements, statistics on human activities, with analysis of model results. Prof Le Quéré stressed the need for reporting such as the Global Carbon Budget to inform decisions and actions on how to respond to climate change.

Dr Glen Peters of the Center for International Climate and Environmental Research in Norway, who co-authored the analysis, said:

"Emissions growth in the next few years will depend on whether energy and climate policies can lock in the new trends, and importantly, raise the ambition of emission pledges to be more consistent with the temperature goals of the Paris Agreement."

Comments:

The conclusion presented in the Global Carbon Budget for 2016 that emissions have not grown substantially for the last 3 years in a row is consistent with recent reporting from the IEA. See: **IEAGHG Information Paper: 2017-IP17; PRESS RELEASE: International Energy Agency (IEA) finds CO₂ emissions flat for third straight year even as global economy grew in 2016,** http://www.ieaghg.org/docs/General_Docs/Publications/Information_Papers/2017-IP17.pdf

Assessing the Implications

The information contained in the data set in the Global Carbon Budget for 2016 has been used by Carbon Brief to predict the remaining time to meet the 1.5°C based on the 2016 carbon emissions data in the 2016 budget.

For reference: Carbon Brief² is a UK-based website which covers the latest developments in climate science, climate policy and energy policy. They specialise in clear, data-driven articles and graphics to help improve the understanding of climate change, both in terms of the science and the policy response. They publish a wide range of content, including science explainers, interviews, analysis and factchecks, as well as daily and weekly email summaries of newspaper and online coverage.

One of the products that Carbon Brief hosts on its website is an animation that visually shows how many years are left of the carbon budgets under different temperature targets, which can be viewed on YouTube - https://www.youtube.com/watch?v=42vU_wx55KE

Carbon Brief used the Global Carbon Project, CO₂ emissions data for fossil fuel burning and cement production of 36.4bn. They then included estimated emissions from land use change to give a total CO₂ emission of 39.9bn tonnes for 2016.

Their sobering conclusion was that with the current rate of emissions, there are now just **four years and one month** left in the carbon budget for 1.5°C.

John Gale / Jasmin Kemper

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² <https://www.carbonbrief.org/about-us>