

Levelling of global CO₂ emissions opens opportunities for deeper mitigation

Global carbon dioxide emissions were almost flat for the third year in a row, despite strong economic growth. There is now an opportunity for energy and climate policy to lock in the recent gains and raise the ambition of emission pledges to be consistent with the goals set out in the Paris Agreement.

Today the Global Carbon Project (GCP) publishes its annual analysis of trends in the global carbon cycle in the journal *Earth System Science Data*, highlighting the continued slowdown in global emissions growth.

Global carbon dioxide emissions from fossil fuels and industry grew at over 3% per year in the 2000's, but growth has slowed in the 2010's and in the last three years have levelled off at around 36.4 billion tonnes CO₂. China drove the unexpected and rapid growth in the 2000's, and is behind the unexpected recent stabilisation.

"It is great news that global carbon dioxide emissions have been flat in the last three years, but it is far too early to proclaim we have reached a peak" said Glen Peters, a senior researcher at the Center for International Climate and Environmental Research – Oslo (CICERO) and co-author of the study.

The recent trends are largely a result of a sharp slowdown in Chinese coal consumption since 2012, with reductions in US coal consumption making important contributions in single years, particularly 2012, 2015, and this year.

The signature of Chinese emissions

"China generates nearly 30% of global carbon dioxide emissions, and the ups and downs of the Chinese economy leave a signature on global emissions growth" said Robbie Andrew, a senior researcher at CICERO and co-author.

Chinese emissions went down 0.7% in 2015 and are projected to go down another 0.5% in 2016. China has officially pledged to peak its carbon dioxide emissions around 2030. Chinese emission estimates have large uncertainty, and it is difficult to tease out the drivers of recent changes.

"It is hard to say whether the Chinese slowdown is due to a successful and smooth restructuring of the Chinese economy or a sign of economic instability" said Peters. "Nevertheless, the unexpected reductions in Chinese emissions give hope that the world's biggest emitter can deliver much more ambitious emission reductions".

"Chinese energy statistics have been plagued by many inconsistencies," said Jan Ivar Korsbakken, a senior researcher at CICERO and co-author. "However, data in recent years have shown a consistent slowdown in the growth of coal use, CO₂ emissions and output from energy-intensive industries, although this could change if growth in industry returns".

Coal consumption continues to decline in the US

US emissions continued a general decline in emissions since 2007. US emissions went down 2.5% in 2015 and are projected to go down 1.7% in 2016, on the back of large decreases in coal consumption in 2015 and 2016. Partially offsetting some of the declines in coal consumption in the US were increased oil, and, particularly, gas consumption.

Press release: EMBARGO: Monday 14 November, 01.00 Central European Time

“With all eyes focussing on the fallout of the US election result, it is worth noting that wind, solar, and gas continue to displace coal in US electricity production, and Trump’s plans to revive the struggling coal industry might not be able to counteract the existing market forces leading to coals decline”, said Peters.

India to drive growth in the future?

In 2015, emissions in the European Union went up 1.4%, a small blip in the longer term downward trend in emissions. This increase in emissions was largely caused by an unexpected increase in gas consumption.

“Despite positive progress in Chinese, US, and EU emissions, there are increasing concerns with emissions growth in India and other developing countries”, says Robbie Andrew.

Indian emissions grew at over 5% in 2015, continuing a period of strong growth of around 6%/yr over the last decade. This growth is expected to continue with India’s plan to double domestic coal production by 2020.

“While we think it’s unlikely that India’s emissions will ever reach China’s current levels, India could certainly take over from China in driving global emissions growth in the next decade” says Andrew.

Future emissions

While the levelling in global emissions in the last three years is more positive news following the Paris Agreement coming into force, the authors note that appropriate caution is needed.

“If Chinese emissions stabilize, global emissions growth may return as the growth in emissions in developing countries exceeds the cuts in emissions in the US, EU and some other developed nations”, said Peters. “In fact, the emission pledges in the Paris Agreement lead to growth in global emissions of up to 1% per year until 2030”.

“It remains to be seen whether US emission reductions will be sustained if president-elect Trump rolls back key environmental policies as promised in his election campaign”, said Korsbakken.

Record rise in atmospheric CO₂ concentrations

Despite the level emissions, CO₂ concentrations in the atmosphere grew at the strongest levels recorded in both 2015 and 2016. This is a consequence of the El Niño event experienced in the second half of 2015.

“With temperatures soaring in 2015 and 2016, less CO₂ was absorbed by trees because of the hot and dry conditions, and together with continued high CO₂ emissions, led to a record rise in atmospheric CO₂ concentrations”, said Prof Corinne Le Quéré, Director of the Tyndall Centre at the University of East Anglia who led the data analysis.

“We have now passed 400ppm of CO₂ in the atmosphere, and we will not see that level again unless we stop emitting CO₂ into the atmosphere”, said Andrew.

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EDITOR NOTES

1/ INTERVIEWS

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2/ PRESS CONFERENCE – COP22 MARRAKESH

- Monday 14 November 10:30 to 11:00, UNFCCC Media Centre, COP22 Marrakesh
- The panel will include Dr Glen Peters, Dr Sabine Fuss, and Dr. Joeri Rogelj, and be chaired by Asher Minns.
- The focus of this event will be for media questions – therefore please do familiarise yourself with the paper and press materials ahead of time.

2/ SIDE-EVENT – COP22 MARRAKESH

- Monday 14 Nov 16:45-18:15 Arabian Room (150 seats), “The Global Carbon Budget 2016 and its implication for meeting global warming targets”
- The panel will include Dr Glen Peters, Dr Sabine Fuss, Dr. Joeri Rogelj, Dr. Alice Larkin, and be chaired by Asher Minns.

4/ MATERIAL

- All material available from: <http://www.globalcarbonproject.org/carbonbudget>
- Le Quéré et al. (2016) Global Carbon Budget 2016. *Earth System Science Data* <http://www.earth-syst-sci-data.net/>
- Data interface for exploring data: <http://www.globalcarbonatlas.org>
- Prior to embargo: A media package can be requested via press@uea.ac.uk