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Global CO₂ emissions projected to stall in 2015

Global carbon emissions are projected to stall in 2015, according to researchers at the University of East Anglia and the Global Carbon Project.

Last year global CO₂ emissions from fossil fuels and industry grew by just 0.6 per cent – marking a year-on-year slow down. The projection for 2015 reveals a second year of slow growth or even a small decrease in global emissions.

The study is published today in the journal *Nature Climate Change*, with detailed data made available simultaneously in the journal *Earth System Science Data*.

The research reveals that emissions could decline by 0.6 per cent this year. While declines in emissions have previously occurred during periods of economic crisis, this would be the first decline during a period of strong global economic growth.

Prof Corinne Le Quéré, Director of the Tyndall Centre at UEA who led the data analysis, said: “These figures are certainly not typical of the growth trajectory seen since 2000 – where the annual growth in emissions was between 2 and 3 per cent.

“What we are now seeing is that emissions appear to have stalled, and they could even decline slightly in 2015.

“But it is important to remember that our projection for 2015 is an estimate and there will always be a range of uncertainty. In this case, the 2015 projection ranges from a global decline in emissions of up to 1.6 per cent – or at the other end of the spectrum, a small rise of 0.5 per cent.”

The projection for 2015 is based on available energy consumption data in China and the US, and on forecast economic growth for the rest of the world.

Prof Le Quéré said: “The projected decline is largely down to China’s decreased coal use, driven by its economic adjustment.

“Whether a slower growth in global emissions will be sustained depends on the use of coal in China and elsewhere, and where new energy will come from. In 2014, more than half of new energy needs in China were met from renewable sources such as hydro, nuclear, wind, and solar power.”

The research shows the biggest contributors to global emissions in 2014 were China (27 per cent), the United States (15 per cent), the European Union (10 per cent), and India (7 per cent).

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Prof Robert Jackson of Stanford University who led the Nature Climate Change Commentary, said: "We saw slower global growth in petroleum in 2014 and faster growth in renewables. Wind and solar capacities saw record increases in capacity last year and are on track to be even higher in 2015."

Prof Le Quéré added: "With two years of untypical emissions growth, it looks like the trajectory of global emissions might have changed temporarily. It is unlikely that emissions have peaked for good. This is because energy needs for growing economies still rely primarily on coal, and emissions decreases in some industrial countries are still modest at best.

"Global emissions need to decrease to near zero to achieve climate stabilisation. We are still emitting massive amounts of CO₂ annually – around 36 billion tonnes from fossil fuels and industry alone. There is a long way to near zero emissions.

"Today's news is encouraging, but world leaders at COP21 need to agree on the substantial emission reductions needed to keep warming below two degrees Celsius.

"And despite the slowing of CO₂ emissions globally, the amount of CO₂ in the atmosphere has now reached 400 parts per million, its highest level in at least 800,000 years."

'Reaching Peak Emissions' is published in *Nature Climate Change* on December 7, 2015.

'Global Carbon Budget 2015' is published in *Earth System Science Data*.

HEADLINE STATS BY COUNTRY

CHINA

China was the biggest emitter of CO₂ in 2014, releasing 9.7 billion tonnes (27 per cent of the world total).

Emissions from china will strongly influence the global emissions over the next decade.

After rising 6.7 per cent per year for the previous decade, China's emissions growth slowed to 1.2 per cent in 2014 and is expected to decrease in 2015.

China's decreased coal use largely accounts for the break in global emissions growth in 2014 and 2015.

China, the world's largest wind-energy producer, installed 23 GW of new wind capacity last year alone.

China's emissions per capita are 7.1 tonnes – compared to 17.4 tonnes per capita in the US, 6.8 tonnes per capita in the EU, and 2.0 tonnes per capita in India.

US

The US was the second biggest emitter of CO₂ in 2014, releasing 5.6 billion tonnes (15 per cent of the world total).

Emissions in the US have declined by 1.4 per cent annually over the last decade. This decline is projected to continue through 2015.

The US produces 17.4 tonnes of CO₂ per capita each year.

EU

The EU was the third biggest emitter of CO₂ in 2014, releasing 3.4 billion tonnes (10 per cent of the world total).

The EU is the region with the strongest decline in emissions – averaging 2.4 per cent per year in the past decade.

The decline in emissions in the EU of 210 MtCO₂ in 2014 was the same size as the increase in emissions in India of 205 MtCO₂.

Although outsourcing of emissions to emerging economies played a substantive role in early reductions, emissions transfers via trade from the EU to China and elsewhere have declined since 2007.

The EU produces 6.8 tonnes of CO₂ per capita each year.

INDIA

India was the fourth biggest emitter of CO₂ in 2014, releasing 2.6 billion tonnes (7.2 per cent of the world total).

India's emissions today match those of China in 1990.

The increase in emissions in India of 205 MtCO₂ was the same size as the decline in emissions in the EU of 210 MtCO₂ in 2014.

Per capita emissions continue to be well below the global average at 2.0 tonnes of CO₂ each year.

India's challenge is the need to provide 1.3 billion people with greater access to energy.

If present trends persist, India's emissions will match those of the EU in 2-3 years.

For global CO₂ emissions to peak and decline quickly, part of India's new energy needs must come from low-carbon technologies.

UK

The UK released 0.43 billion tonnes of CO₂ in 2014 (1.2 per cent of the world total).

UK emissions decreased by 9 per cent in 2014 and are now 28 per cent below 1990 levels. Emissions from the consumption of goods and services produced elsewhere has started to decrease, after rising during the period 1990-2007.

ENDS

EDITOR'S NOTES

1/ PRESS CONFERENCE - PARIS

11.15-11.45 CET (Paris time), on Monday, December 7, 2015 – COP, Space 13, Hall 3.

This press conference will take place under embargo at COP21 in Paris. It will not be streamed online.

On the panel will be Prof Corinne Le Quéré (UEA/Tyndall Centre), Prof Dabo Guan (UEA), and Dr Glen Peters (CICERO). It will be chaired by Asher Minns (Future Earth European Centre).

Space is very limited so please RSVP if you would like to attend. Due to time constraints the focus of this event will be for media questions – therefore please do familiarise yourself with the paper and press release materials ahead of time.

There will be space and opportunity for filming and recording one-to-one interviews with the researchers directly after the event.

2/ SUPPORTING MATERIALS

An online pack of supporting materials, including, infographics and the *Nature Climate Change* paper, and key messages, is available from the following dropbox link:

<https://www.dropbox.com/sh/mlhjav8t691odn3/AADHplrRUaRH84p5S46UMLbta?dl=0>

3/ To attend the press conference, arrange an interview with Prof Le Quéré, or for further information, please contact Lisa Horton in the UEA press office on +44 (0) 1603 592764 or email l.horton@uea.ac.uk.

4/ The University of East Anglia (UEA) is a UK Top 15 university and ranks in the top one per cent of universities in the world. Known for its world-leading research and outstanding student experience, it has achieved a Top 10 rating in the National Student Survey every year since the survey began. UEA is a leading member of the Norwich Research Park - one of Europe's biggest concentrations of researchers in the fields of environment, health and plant science. The city of Norwich boasts more highly cited scientists than any UK city outside London, Oxford and Cambridge. www.uea.ac.uk.

5/ The Tyndall Centre for Climate Change Research is an active partnership between the Universities of East Anglia (headquarters), Cambridge, Cardiff, Manchester, Newcastle, Oxford, Southampton, Sussex, and Fudan University in Shanghai. It conducts research on the interdisciplinary aspects of climate change and is committed to promote informed and effective dialogue across society about the options to manage our future climate. www.tyndall.ac.uk

6/ The UEA contribution to the Global Carbon Budget 2015 was funded by the UK Natural Environment Research Council's International Opportunities Fund.

This media release is part of the Global Carbon Budget 2015 of the Global Carbon Project, based on three analyses published on **7 December 2015, 16:01 pm UK time**.

- Le Quéré et al. (2015) Global Carbon Budget 2015. *Earth System Science Data* <http://dx.doi.org/10.5194/essd-7-349-2015>
- Jackson et al. (2015) Reaching peak emissions. *Nature Climate Change*, <http://dx.doi.org/10.1038/nclimate2892>
- Smith et al. (2015) Biophysical and economic limits to negative CO₂ emissions. *Nature Climate Change*, <http://dx.doi.org/10.1038/nclimate2870>

Access:

- Data and figures: <http://www.globalcarbonproject.org/carbonbudget>
- Data interface for exploring data: <http://www.globalcarbonatlas.org>
- Prior to embargo:
 - Nature papers can be requested for media purposes to press@nature.com
 - ESSD paper can be requested for media purposes to press@uea.ac.uk
- After embargo:
 - Nature papers are free for one month for registered users at www.nature.com
 - ESSD paper is open access <http://dx.doi.org/10.5194/essd-7-349-2015>

Social media:

- Facebook <https://www.facebook.com/globalcarbonproject>
- Twitter: #carbonbudget, @gcarbonproject
- **infographic and video available upon request**