Global carbon emissions nearly stalled in 2014

Slower, less energy-intensive economic growth in China helped to drive overall trend.

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Humanity's greenhouse-gas output increased by just 0.5% in 2014, despite significant global economic growth, according to figures released on 25 November.

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Carbon emissions increased by 3–4% per year in the first decade of the twenty-first century, but that growth has slowed dramatically over the past 3 years, report the Netherlands Environmental Assessment Agency (PBL) and the European Commission's Joint Research Centre. The groups' analysis largely confirms a similar report released in March by the International Energy Agency.

"The good news is that the really high growth rates that we saw before 2012 are really over," says Jos Olivier, a senior researcher at the PBL.

The biggest factor is China. Slower economic growth, coupled with a shift towards cleaner energy sources and less energy-intensive manufacturing, has reduced the energy intensity of the country's economy. China's annual carbon emissions are now double those of the United States, but they grew by just 0.9% in 2014. The country's coal consumption was nearly flat, even as its economy grew by 7%.

"These numbers are surprising in the sense that the growth is lower than it was before, but they do make sense," says Corinne Le Quéré, director of the Tyndall Centre for Climate Change Research in Norwich, UK. "I'm encouraged."

Margin of error

Some researchers have argued[1] this year that Chinese emissions have been overestimated in the past, but Olivier says that he and his colleagues revisited their methods and found no reason to adjust them. Nonetheless, Olivier says that questions about the quality of energy data from China and other countries continue to create uncertainties in emissions estimates.

The European Union's emissions declined by 5.4% in 2014, owing to reduced consumption of fossil fuels in the electricity sector and a relatively warm winter. US emissions increased by 0.9%, due in large part to cooler temperatures and an associated increase in the use of natural gas for heating. In India, carbon emissions continued to accelerate, registering a 7.8% increase in 2014.

The report will come as welcome news in Paris, where countries are planning to broker a new climate agreement next month, but the implications for the future are not clear. The evolution of global emissions trends over the next decade or two will depend on many factors, including government policies, but Olivier says that the short-term outlook is positive.

"We expect in the coming years the growth rate will still be around 1%," he says.

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References

1. Liu, Z. *et al*. *Nature* **524**, 335–338 (2015).