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## Global fossil-fuel emissions could decline in 2015, Stanford-led study finds

*An international research team reports that the rapid increase in global carbon dioxide emissions from fossil fuels has slowed in the past two years, underlining the need for action to permanently lower emissions.*

BY MARK SHWARTZ

Annual global carbon dioxide emissions from fossil fuels could drop slightly in 2015, according to a report from the [Global Carbon Project](#) led by a Stanford University researcher. This surprising result contrasts with the rapid growth in emissions before 2014, underlining the need for action to stabilize and permanently lower global CO<sub>2</sub> emissions, the researchers conclude.

"In 2014, global CO<sub>2</sub> emissions from burning fossil fuels grew by just 0.6 percent," said lead author [Rob Jackson](#), a professor of Earth system science at Stanford. "This year we expect total emissions to flatten or drop slightly, despite strong growth in gross domestic product worldwide."

While CO<sub>2</sub> emissions have slowed during times of economic recession, this would be the first decline during a period of strong global economic growth, Jackson said.

The new report, titled "Reaching Peak Emissions," was published on Dec. 7 in the journal [Nature Climate Change](#), with detailed data published simultaneously in [Earth System Science Data](#).

"Decreased coal use in China was largely responsible for the decline in global CO<sub>2</sub> emissions," said report co-author [Corinne Le Quéré](#) of the University of East Anglia in the United Kingdom. "After a decade of rapid growth, China's emissions rate slowed to 1.2 percent in 2014 and is expected to drop by 3.9 percent in 2015."

The researchers identified China as the world's top CO<sub>2</sub> emitter in 2014, responsible for 27 percent of global emissions, followed by the United States (15.5 percent), the European Union (9.5 percent) and India (7.2



A new Stanford-led study finds that global fossil-fuel emissions, like the carbon dioxide emitted from this natural gas flare at a North Dakota oil well, could show a decline this year. (Rob Jackson / Stanford University)

percent).

"Whether a slower growth in emissions will be sustained depends on the use of coal in China and elsewhere, and where new sources of energy will come from," said co-author [Pep Canadell](#) of Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO). "In 2014, more than half of new energy needs in China were met from non-fossil fuel sources, such as hydro, nuclear, wind and solar power."

This trend was also accompanied by slower global growth in petroleum use and faster growth in renewables, with wind and solar capacities achieving record increases in 2014.

"The most promising finding in our report is the coupling of lower carbon emissions with a strong economic growth of more than 3 percent," said Jackson, a senior fellow at the [Stanford Woods Institute for the Environment](#) and at the [Precourt Institute for Energy](#). "But even if we reach peak global emissions within a decade or two, we'll still be emitting massive amounts of CO<sub>2</sub> from burning fossil fuels."

Achieving climate stabilization will require reducing emissions to near zero, he added.

"Reaching zero emissions will require long-term commitments from countries attending the climate meeting in Paris this week and beyond," Jackson said.

Other co-authors of the report are Robbie Andrew, Jan Ivar Korsbakken and Glen Peters, [Center for International Climate and Environmental Research](#) (Norway); and Nebojsa Nakicenovic, [International Institute for Applied Systems Analysis](#) (Austria).

The Global Carbon Project, part of the [International Council for Science](#) and [Future Earth](#), addresses climate change by providing regular analyses of the global carbon cycle.

A separate study in the Dec. 7 *Nature Climate Change*, coauthored by Stanford researchers Rob Jackson and Jennifer Milne, assesses the potential opportunities and risks of negative-emissions technologies that remove greenhouse gases from the atmosphere. The environmental and economic costs of these technologies, such as the direct-air capture of CO<sub>2</sub>, need to be addressed before they are widely deployed, the authors wrote. The top priority for curbing climate change is to aggressively reduce emissions as soon as possible, they concluded.

## Editor Note:

The Nature Climate Change report, "Reaching Peak Emissions," will be available online at <http://dx.doi.org/10.1038/nclimate2892> after the media embargo lifts on Dec. 7. The Earth System Science Data report will be available at <http://dx.doi.org/10.5194/essd-7-349-2015>. A press conference with authors of the report is scheduled for Dec. 7 at the COP21 climate conference in Paris. For details, contact Lisa Horton at the University of East Anglia's U.K. press office: +44 (0) 1603 592754 or [L.horton@uea.ac.uk](mailto:L.horton@uea.ac.uk).

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