

EMBARGO:

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Global emissions rebound to record levels after GFC

Following the dampening effect of the 2008-2009 Global Financial Crisis (GFC), global carbon dioxide emissions from fossil fuel combustion have reached a record high of 9.1GtC¹ in 2010. When including emissions from land-use change, the total emissions reached 10.0GtC.

In its annual analysis published online today in the journal *Nature Climate Change*, the Global Carbon Project (GCP) says that the impact of the GFC on emissions has been short-lived owing to strong emissions growth in emerging economies and a return to emissions growth in developed economies.

In 2010 emissions grew 0.51GtC (5.9%) – similar to the total annual emissions in India and the Russian Federation – representing the highest annual growth recorded and the highest annual growth rate since 2003.

For comparison, emissions have grown at an average 3.1% per year since 2000, three times the rate of the 1990s. They are projected to continue to increase by 3.1 per cent in 2011.

After accounting for the land and ocean carbon sinks, the atmospheric concentration of CO₂ grew 2.4 parts per million (ppm) to reach 389.6 parts per million (ppm) in 2010, the highest level recorded in at least the last 800,000 years.

“In terms of carbon dioxide emissions, it is as if the 2008-2009 global financial crisis did not happen”, said CICERO’s Glen Peters, lead author of the study. “Many saw the GFC as an opportunity to move the global economy away from persistent and high emissions growth, but the return to emissions growth in 2010 suggests the opportunity was not exploited”.

Contributions to global emissions growth in 2010 were largest from China, USA, India, Russian Federation, and the European Union. The attached table provides updated emissions for key countries.

Emissions in 2010 were 49% above 1990 levels, the reference year for the Kyoto Protocol.

Despite emissions growth in developed countries in 2010, it was not sufficient to overcome the decreased emissions in the 2008-2009 GFC.

“The GFC has helped developed countries meet their production emission commitments as promised in the Kyoto Protocol and Copenhagen Accord,” said co-author and GCP Executive Director, CSIRO’s Dr Pep Canadell.

With strong emissions growth emerging and developing economies have strengthened their position as the largest absolute emitters, despite lower per capita emissions.

“Emerging and developing economies now also dominate rich nations when emissions are allocated to the consumption, instead of production, of goods and services”, said Peters. “In

2009 China also passed the USA in terms of consumption-based emissions, following quickly from 2006 when Chinese production-based emissions passed those of the USA”.

The international science team preparing the analysis tracked emissions growth in tandem with significant economic events since 1960: the oil crises, the US Savings and Loans Crisis, the collapse of the Federated States of the Soviet Union, the Asian Financial Crisis and finally the 2008-2009 Global Financial Crisis.

“The analysis suggests that in times of crisis, countries maintain economic output by supporting less-energy intensive activities,” said CSIRO’s Dr Mike Raupach. “These burst-like dynamics are related to easing of energy prices, government investment to stimulate economic recovery and the effect of a decade of high economic growth in the developing world which propagated into a rapid global post-GFC return to high emissions.”

The return to growth after the GFC has reinforced pre-existing challenges for global emission reductions.

“Global CO₂ emissions since 2000 are tracking the high end of the projections used by the Intergovernmental Panel on Climate Change, which far exceed two degrees warming by 2100,” said co-author Prof Corinne Le Quéré, director of the Tyndall Centre for Climate Change Research and professor at the University of East Anglia, “Yet governments have pledged to keep warming below two degrees to avoid the most dangerous aspects of climate change such as widespread water stress and sea level rise, and increases in extreme climatic events.”

“Taking action to reverse current trends is urgent,” said Peters, “Each year of delay makes future mitigation harder and potentially more costly”.

“It is clear that addressing the atmospheric increase in carbon dioxide is a global problem that needs global cooperation and a global solution,” said Dr. Gregg Marland, a co-author of the report and a research professor with Appalachian State University’s Research Institute for Environment, Energy and Economics.

¹ *Values reported here are in billion tons of carbon. To convert emissions to billion tons of CO₂, multiply the value by 3.67.*

“Rapid growth in CO₂ emissions after the 2008-2009 global financial crisis” by GP Peters, G Marland, C Le Quéré, T Boden, JG Canadell and MR Raupach is published online by *Nature Climate Change*, 5 December 2011. <http://dx.doi.org/10.1038/nclimate1332>

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The emissions growth globally, for developed and developing countries, and for the 10 countries with the largest absolute emissions growth in 2010. The table shows the 2010 growth and the combined 2009 and 2010 growth rate based on regression (Supplementary Methods). * Country totals do not add to the global total since a) there are global imbalances in energy trade statistics, b) global totals include emissions from non-fuel hydrocarbon products (e.g., asphalt) whereas national totals do not, c) changes in fuel stocks are not reported by many countries and we assume that globally there is no change over time, and d) emissions from bunker fuel use are included in global estimates but not national totals.

Country	Emissions 2010 (PgC)	Growth 2010, PgC (%)	Average Growth 2009 and 2010 (PgC/yr, %/yr)
Global*	9.14	0.51 (5.9)	0.2 (2.2)
	Developing countries (non-Annex B)		
non-Annex B	3.57	0.355 (7.6)	0.264 (5.6)
China	2.24	0.212 (10.4)	0.165 (8.0)
India	0.56	0.049 (9.4)	0.045 (8.6)
South Korea	0.15	0.013 (9.2)	0.007 (5.1)
Brazil	0.11	0.012 (11.6)	0.004 (3.3)
Indonesia	0.13	0.009 (7.9)	0.010 (8.0)
Saudi Arabia	0.13	0.009 (7.3)	0.008 (6.5)
	Developed countries (Annex B)		
Annex B	5.02	0.118 (3.4)	-0.082 (-2.3)
United States of America	1.44	0.060 (4.1)	-0.026 (-1.8)
Russian Federation	0.46	0.025 (5.8)	-0.003 (-0.6)
European Union (EU27)	1.01	0.022 (2.2)	-0.029 (-2.9)
Japan	0.31	0.020 (6.8)	-0.009 (-3.1)
Germany	0.21	0.008 (4.0)	-0.003 (-1.6)