

EMBARGO:

Sunday 2 December 1800 London Time (GMT) / 1300 US Eastern Time

Monday 3 December 0300 Japanese Standard Time / 0500 Australian Eastern Time

Emissions setting a course to 5°C

In its annual analysis of global carbon emissions from fossil fuel combustion published online today in the journal *Nature Climate Change*, the Global Carbon Project (GCP) finds that unprecedented global mitigation is required to avoid dangerous climate change.

According to the study, carbon dioxide emissions rose 3% in 2011 to 34.7 billion tonnes of carbon dioxide and are expected to increase a further 2.6% to 35.6 billion tonnes by the end of 2012. From 2000 to 2011, emissions have grown at an average of 3.1% per year. If this emission growth continues, the global mean temperature could exceed 5°C in 2100.

Global carbon dioxide emissions continue to track the high end of a range of emission scenarios, expanding the gap between current emission trends and the emission pathway required to keep the global-average temperature increase below 2°C.

It is now likely that in the longer term there will be a reliance on technologies that remove carbon dioxide from the atmosphere such as carbon capture and storage connected to bioenergy.

“We are effectively relying on technologies that are yet to be developed and this leads to persistent uncertainties on how much they can contribute to future mitigation” said lead author of the study Glen Peters of CICERO, a climate research institute in Norway.

The continued growth in carbon dioxide emissions reconfirms the temporary effect of the global financial crisis on emissions and may lock us into a high emissions pathway.

“There is considerable inertia in technical, social, and political systems, and even if an aggressive global agreement is reached at the negotiating table in Doha, it may take more than a decade before emissions begin to decrease”, said co-author Robbie Andrew of CICERO.

However, previous energy transitions in Belgium, Denmark, France, Sweden, and the UK have led to emission reductions as high as 5% per year over decade-long periods even without climate policy.

“Scaling up similar energy transitions across more countries, can kick-start global mitigation with low costs. To deepen and sustain these energy transitions in a broad range of countries requires aggressive policy drivers” said Peters.

“The continued economic troubles in the developed world have led to reduced emissions, but this is more than compensated by strong emissions growth in fast-growing economies such as China”, said Peters.

The study shows that global carbon emissions in 2011 were 54% above 1990 levels. Developed countries have largely stabilised their emissions below 1990 levels and most of the growth in global carbon dioxide emissions occurs in emerging economies.

Chinese emissions grew 10% in 2011, or over 800 million tonnes carbon dioxide which is as much as Germany emits in one year. China is emitting as much as the European Union on a per capita basis, about 36% higher than the global average per capita emissions.

“Strong emissions growth in some developing countries continually changes the global distribution of emissions, and arguments on equity that existed in 1990 no longer apply in 2012”, said Peters.

In 1990 developing countries accounting for 35% percent of global carbon dioxide emissions, but in 2011 this was 58%.

“Each year of increased emissions makes a two degree target harder to achieve. The only feasible way to keep below two degrees is for global reductions in emissions and this can only happen if the top emitters in the developed and developing world have deep and sustained mitigation”, said Peters.

"I am worried that the risks of dangerous climate change are too high on our current emissions trajectory," said co-author Prof Corinne Le Quéré, Director of the Tyndall Centre for Climate Change Research and Professor at the University of East Anglia.

"We must reverse the trends in emissions before 2020, countries have done it in the past and we can do it worldwide. Everyone has a role."

This research is based on the release of an extensive new dataset by the Global Carbon Project, published simultaneously in *Nature Climate Change* and *Earth System Science Data Discussions*.

“The challenge to keep global warming below two degrees” by G. Peters, R. Andrew, T. Boden, J. Canadell, P. Ciais, C. Le Quéré, G. Marland, M. Raupach, C. Wilson is published online by *Nature Climate Change*, <http://bit.ly/Qpt3ub> (from 2 Dec, 1800GMT). DOI:10.1038/nclimate1783. A pdf can be requested from press@nature.com

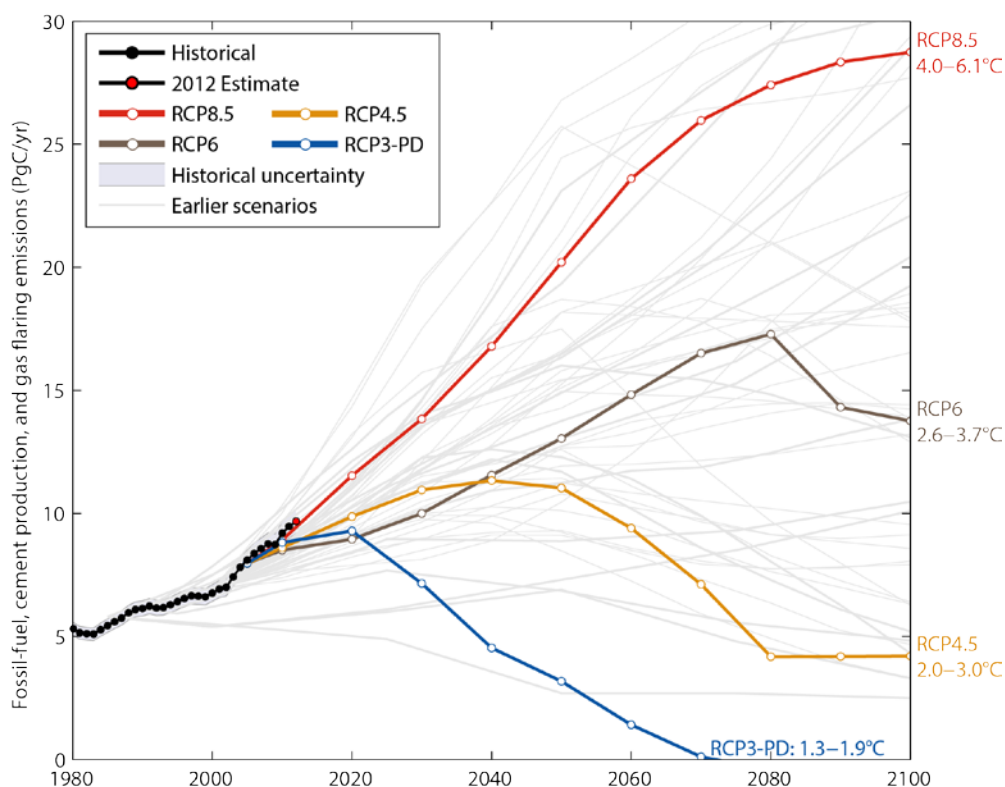
“The Global Carbon Budget 1959–2011” by C. Le Quéré, R. Andres, T. Boden, T. Conway, R. Houghton, J. House, G. Marland, G. Peters, G. van der Werf, A. Ahlström, R. Andrew, L. Bopp, J. Canadell, P. Ciais, S. Doney, P. Friedlingstein, C. Huntingford, A. Jain, C. Jourdain, E. Kato, R. Keeling, K. Goldewijk, S. Levis, P. Levy, M. Lomas, B. Poulter, M. Raupach, J. Schwinger, S. Sitch, B. Stocker, N. Viovy, S. Zaehle and N. Zeng, is published by *Earth System Science Data Discussions*, (<http://bit.ly/UY8GTQ> (from 2 Dec, 1800GMT). DOI: 10.5194/essdd-5-1107-2012. The paper is freely available.

“Global, Regional, and National Fossil-Fuel CO₂ Emissions in Trends” by T. Boden, G. Marland, R. Andres is available from the Carbon Dioxide Information Analysis Center (CDIAC), <http://bit.ly/10U1r3n>. DOI: 10.3334/CDIAC/GCP_V2012. The data is freely available.

Global Carbon Project “**Carbon Budget 2012 Presentation**”: <http://bit.ly/V5Bs30>

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Region/Country	Per capita emissions 2011	Total emissions 2011	Emissions growth 2011
	(tonnes CO ₂ /p)	(billion tonnes CO ₂ , % of global)	(billion tonnes CO ₂ /yr, %/yr)
Global (including bunkers)	5.0	34.7	1.02 (3.0%)
Global (excluding bunkers)	4.7	33.0	1.11 (3.5%)
Developed Countries (Annex B)			
Annex B	11.0	13.3 (40%)	-0.094 (-0.7%)
United States of America	17.1	5.4 (16%)	-0.101 (-1.8%)
EU27	7.2	3.6 (11%)	-0.105 (-2.8%)
Russian Federation	11.8	1.68 (5.1%)	0.047 (2.9%)
Japan	9.3	1.18 (3.6%)	0.004 (0.4%)
Germany	9.0	0.74 (2.2%)	-0.028 (-3.6%)
Developing Countries (non-Annex B)			
non-Annex B	3.4	19.7 (60%)	1.199 (6.5%)
China	6.7	9.1 (28%)	0.823 (9.9%)
India	1.8	2.26 (6.8%)	0.157 (7.5%)
Iran	8.4	0.64 (1.9%)	0.012 (1.9%)
South Korea	11.9	0.58 (1.7%)	0.020 (3.7%)
South Africa	10.2	0.52 (1.6%)	0.008 (1.5%)

* Country totals do not add to the global total primarily due to the emissions from bunker fuels

* Country totals normalised to the global total excluding bunker fuels