

Ispira, 18 July 2012

Global CO₂ emissions continue to increase in 2011, with per capita emissions in China reaching European levels

Global emissions of carbon dioxide (CO₂) – the main cause of global warming – increased by 3% last year, reaching an all-time high of 34 billion tonnes in 2011. In China, the world's most populous country, average emissions of CO₂ increased by 9% to 7.2 tonnes per capita. China is now within the range of 6 to 19 tonnes per capita emissions of the major industrialised countries. In the European Union, CO₂ emissions dropped by 3% to 7.5 tonnes per capita. The United States remain one of the largest emitters of CO₂, with 17.3 tonnes per capita, despite a decline due to the recession in 2008-2009, high oil prices and an increased share of natural gas. These are the main findings of the annual report 'Trends in global CO₂ emissions', released today by the European Commission's Joint Research Centre (JRC) and the Netherlands Environmental Assessment Agency (PBL).

Based on recent results from the Emissions Database for Global Atmospheric Research (EDGAR) and latest statistics on energy use and relevant activities such as gas flaring and cement production, the report shows that global CO₂ emissions continued to grow in 2011, despite reductions in OECD countries. Weak economic conditions, a mild winter, and energy savings stimulated by high oil prices led to a decrease of 3% in CO₂ emissions in the European Union and of 2% in both the United States and Japan. Emissions from OECD countries now account for only one third of global CO₂ emissions – the same share as that of China and India combined, where emissions increased by 9% and 6% respectively in 2011. Economic growth in China led to significant increases in fossil fuel consumption driven by construction and infrastructure expansion. The growth in cement and steel production caused China's domestic coal consumption to increase by 9.7%.

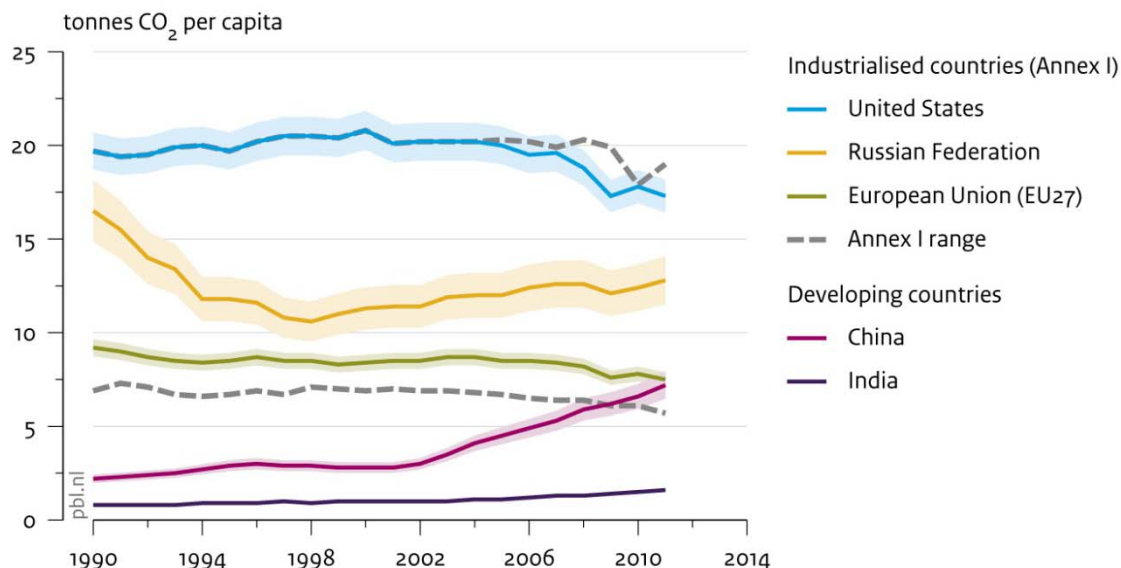
The 3% increase in global CO₂ emissions in 2011 is above the past decade's average annual increase of 2.7%, with a decrease in 2008 and a surge of 5% in 2010. The top emitters contributing to the 34 billion tonnes of CO₂ emitted globally in 2011 are: China (29%), the United States (16%), the European Union (11%), India (6%), the Russian Federation (5%) and Japan (4%).

Cumulative CO₂ emissions call for action

An estimated cumulative global total of 420 billion tonnes of CO₂ were emitted between 2000 and 2011 due to human activities, including deforestation. Scientific literature suggests that limiting the rise in average global temperature to 2°C above pre-industrial levels – the target internationally adopted in UN climate negotiations – is possible only if cumulative CO₂ emissions in the period 2000–2050 do not exceed 1 000 to 1 500 billion tonnes. If the current global trend of increasing CO₂ emissions continues, cumulative emissions will surpass this limit within the next two decades.

Fortunately, this trend is being mitigated by the expansion of renewable energy supplies, especially solar and wind energy and biofuels. The global share of these so-called modern renewables, which exclude hydropower, is growing at an accelerated speed and quadrupled from 1992 to 2011. This potentially represents about 0.8 billion tonnes of CO₂ emissions avoided as a result of using renewable energy supplies in 2011, which is close to Germany's total CO₂ emissions in 2011.

The graphic below shows CO₂ per capita emissions from fossil fuel use and cement production from the top 5 emitting regions. The Annex I range given by the two dashed lines demarcates the highest (Australia) and lowest (France) per capita emissions from major industrialised countries.



The Kyoto Protocol: Annex I Parties

The industrialised countries listed in this annex to the Convention committed to return their greenhouse-gas emissions to 1990 levels by the year 2000. They have also accepted emissions targets for the period 2008-12. They include the 24 original OECD members, the European Union, and 14 countries with economies in transition.

Background information

PBL – the Netherlands Environmental Assessment Agency

PBL is the Netherlands' national institute for strategic policy analysis in the fields of environment, nature and spatial planning. It contributes to improving the quality of political and administrative decision making by conducting outlook studies, analyses and evaluations in which an integrated approach is considered paramount. Policy relevance is the prime concern in all PBL studies, for which independent and scientifically sound research is carried out on a solicited and unsolicited basis.

The Joint Research Centre (JRC)

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle. Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners. Key policy areas include: environment and climate change; energy and transport; agriculture and food security; health and consumer protection; information society and digital agenda; safety and security, including nuclear; all supported through a cross-cutting and multidisciplinary approach.

EDGAR - Emissions Database for Global Atmospheric Research

The *Emissions Database for Global Atmospheric Research* (EDGAR) uses the latest scientific information and data from international statistics on energy production and consumption, industrial manufacturing, agricultural production, waste treatment/disposal and the burning of biomass, in order to model emissions of greenhouse gases and air pollutants for all countries of the world in a comparable and consistent manner. EDGAR (version 4.2) is also unique in its provision of historical emissions data for 20 years prior to 1990, the reference year for the Kyoto protocol. Emissions are publicly available through the EDGAR website, hosted by the JRC.

Links:

"Trends in global CO₂ emissions" report: <http://edgar.jrc.ec.europa.eu/CO2REPORT2012.pdf>

EDGAR website: <http://edgar.jrc.ec.europa.eu>

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