Global CO_2 Emissions: Annual Increase Halved in 2008

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Very high oil prices up to the summer of 2008, together with a worldwide financial crisis have caused a halving of the annual increase in global emissions of carbon dioxide (CO_2) from consumption of oil, coal and gas, and from cement production. Emissions increased by 1.7% in 2008, against 3.3% in 2007. Since 2002, the average annual increase was almost 4%. In addition to high oil prices and the financial crisis, the increased use of new renewable energy sources, such as biofuels for road transport and wind energy for electricity generation, had a noticeable and mitigating impact on CO_2 emissions. These figures are based on preliminary estimates by the Netherlands Environmental Assessment Agency (PBL), using recently published energy data from BP (British Petroleum).

CO_2 emissions from developing countries overtake those from industrialised countries

Global CO_2 emissions increased from 15.3 billion tonnes in 1970, to 22.5 billion tonnes in 1990 and 31.5 billion tonnes in 2008. This represents an increase of 41%, since 1990. For the first time in history, while the world is preparing for the UN climate summit in Copenhagen, the share of global CO_2 emissions from developing countries is slightly higher (50.3 %) than from industrialised countries (46.6 %) and international transport (3.2%) together.

Fossil oil consumption decreased by one per cent, due to high prices and more biofuels

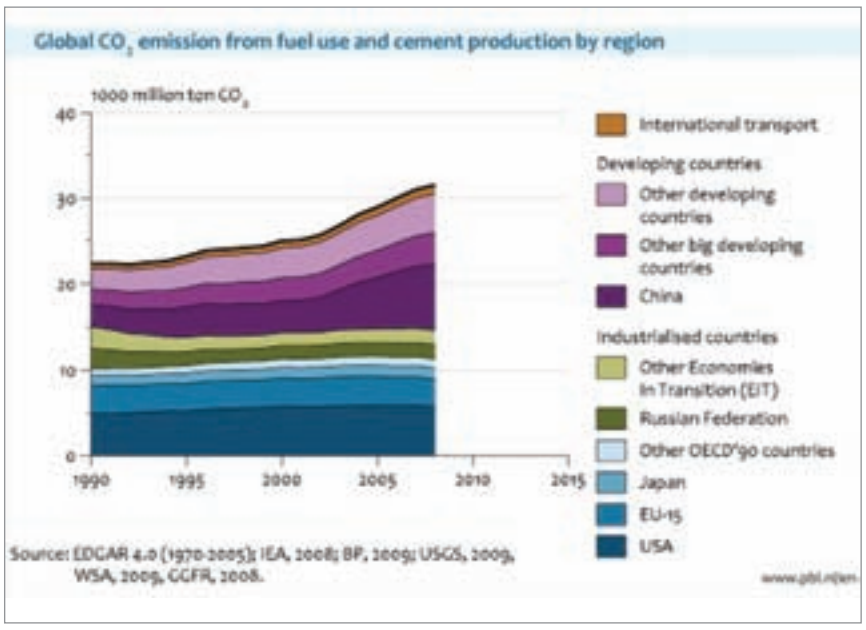
The lower increase in CO_2 emissions was mainly due to a decrease in global fossil oil consumption of about 0.6%, the first global decrease since 1992. In particular in the US, where petrol prices almost doubled in the summer of 2008, compared to 2007 levels, oil consumption dropped significantly, showing a 7% decrease. In China, oil consumption increased by 3% in 2008, according to BP data, which was down from 5% in 2007 and 8%, on average, since 2001. Increasing use of biofuels, such as bioethanol and biodiesel, contributed about 0.3 percentage points to the global decrease. Moreover, had 2008 not been a leap year – giving it an extra day – fuel consumption and emissions would have been even 0.3 to 0.4 percentage points lower.

Coal consumption: lower increase due to financial crisis and more renewable electricity

Global emissions from coal consumption increased by 3.5%, which was less than in previous years, where average annual increases were about 5%. High fuel prices, the European CO_2 Emission Trading Scheme (EU ETS), and the global recession starting after last year's summer, are the likely causes of this decrease. Globally, three quarters of coal consumption is used for electricity production and one quarter for iron and steel production. Steel production, particularly, showed a smaller worldwide increase of 2% in 2008, versus about 8% in the years since 2002. This resulted in a large slowdown of steel production in China and a decrease in the US. In Europe, emissions from large industries ('ETS sector') showed a 3% decrease in 2008, largely caused by a decrease in power plant emissions. The trend in global CO_2 emissions from the use of natural gas, which increased by almost 3% in 2008, did not show large differences compared to previous years.

Biofuels and other renewable energy sources start impacting CO_2 trends

Finally, the increasing use of new renewable energy sources begins to have a significant impact on the global trend in CO_2 emissions. In the US and the European Union (EU 15), the share of ethanol fuel and biodiesel in road transport fuel increased by about one per cent. Also in China, biofuels are increasingly being used as transport fuel. In 2008, biofuels contributed about 2.5% to global fuel consumption in road transport, representing a gross saving of over 100 million tonnes in CO_2 emissions. Wind energy is another renewable energy source, the production of which is increasing at very high rates. In 2008, global production capacity increased by almost 30%, with increases in China and the US of about 100% and 50%, respectively. According to a recent report by the United Nations Environment Programme (UNEP), 2008 was the first year in which new power generation investments in renewables were greater than investments in fossil-fuelled technologies. Excluding large-scale hydropower, renewables contributed 4.4% to global power generation, a half per cent more than in 2007, thereby averting about 500 million tonnes of CO_2 emissions in 2008.



Trends in the US, European Union, China, Russia and India

In total, CO_2 emissions from the US and the European Union decreased by about 3% and 1.5%, respectively, in 2008, Although China's emissions showed an increase of 6%, this is the lowest increase since 2001. Cement production in China showed a similar pattern, with a 2.5% increase in 2008, a drop from 9.5% in 2007. The declining increase in China's emissions fits the trend since 2004, when its emissions increased by 17%. Smaller contributions to increasing global emissions were made by India and Russia, with increases of 7% and 2%, respectively.

Since 1990, in China, CO_2 emissions have increased from 2 to 5.5 tonnes of CO_2 per capita, and in the EU 15 and the US, they have decreased from 9 to 8.5 and from 19.5 to 18.5, respectively. These changes reflect the large economic development in China, structural changes in national and global economies, and the impact of climate and energy policies.

Share CO_2 emissions from developing countries now 50%

Carbon dioxide is the most important greenhouse gas, contributing about three-quarters to global greenhouse gases. In 2008, for the first time ever, the share of CO_2 emissions from developing countries of 50.3% was only just above those from industrialised countries (46.6%) and international transport (3.2%), together. This pattern is also visible in the energy data from BP, which showed for 2008, that for the first time, developing countries leapfrogged industrialised countries in primary energy consumption. The emission figures exclude CO_2 emissions from forest and peat fires and post-burn decay, which mostly affect developing countries. These would add another 20% to global CO_2 emissions, albeit highly uncertain and highly varying between years.

For this PBL study, emission data for 2005, per country, were used from EDGAR, a joint study by the European Commission's Joint Research Centre (JRC) and the Netherlands Environmental Assessment Agency (PBL). In a press release on EDGAR 4.0, by JRC and PBL in May, it was concluded that when taking into account all other greenhouse gases, such as methane and nitrous oxide, the leapfrog moment occurred in 2004, due to the developing countries' higher share in emissions of these other gases. As international negotiations on climate change are being prepared ahead of the UN conference in Copenhagen later this year (COP15), a global perspective on present day trends in greenhouse gas emissions in both industrialised and developing countries is of great importance to all participants.