

# 02 GLOBAL EMISSIONS

Centre for Science and Environment  
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA  
Ph: +91-11-29956110 - 5124 - 6394- 6399 Fax: +91-11-29955879  
E-mail: cse@cseindia.org Website: www.cseindia.org

## EMISSIONS

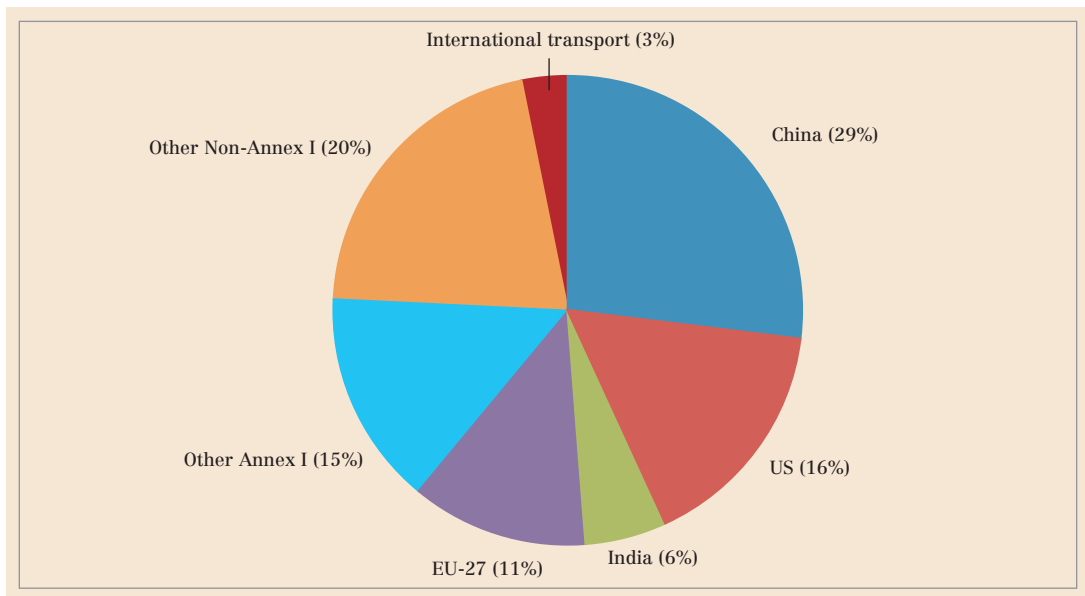


A report by the Netherlands Environmental Assessment Agency says global CO<sub>2</sub> emissions have increased 3.0 per cent in 2011 compared to 2010. The report holds China and India responsible for the bulk of this increase and says that the developed countries that ratified the Kyoto Protocol and the US collectively remain on target to meet their Kyoto Protocol goals. But the report fails to highlight the emissions increase in the developed countries and how some major developed countries are failing to meet their Kyoto targets. Centre for Science and Environment (CSE) analyzed the numbers in the report to present a clear picture of global emissions in 2011. Given below is a graphical representation of the numbers game.

### NOTE:

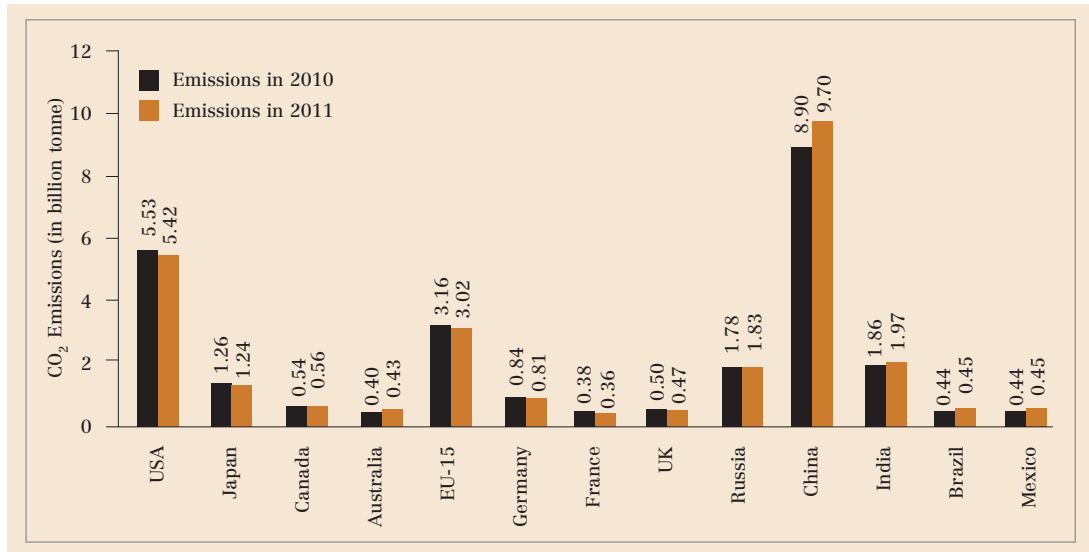
- The report's estimates have been made by the PBL Netherlands Environmental Assessment Agency and the European Commission's Joint Research Centre on the basis of energy consumption data for 2008 to 2011 published by British Petroleum (BP)
- This assessment includes fossil fuel combustion based on BP's data on global fossil fuel consumption. It also incorporates all other relevant CO<sub>2</sub> emissions sources including flaring of waste gas during oil production, cement clinker production and other limestone uses, feedstock and other non-energy uses of fuels, and several other small sources
- This assessment excludes CO<sub>2</sub> emissions from deforestation and logging, forest and peat fires, from post-burn decay of remaining above-ground biomass, and from decomposition of organic carbon in drained peat soils

**Graph 1: Distribution of global emissions: 2011**

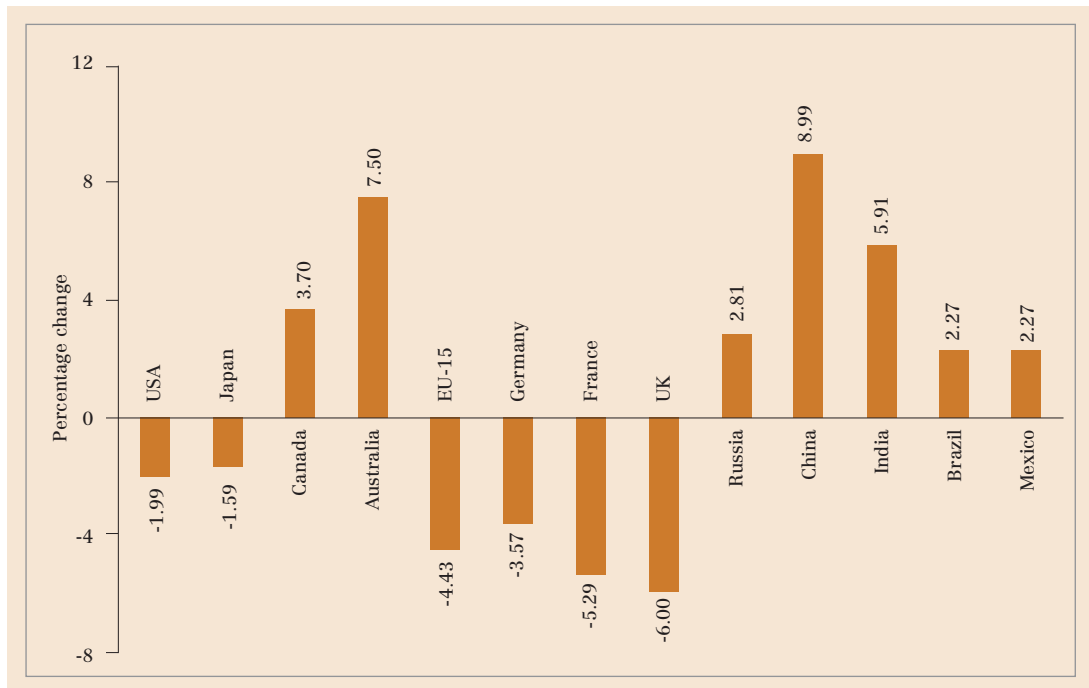


- The total global CO<sub>2</sub> emissions increased 3.0 per cent in 2011 over 2010 to an absolute maximum of 33.9 billion tonnes, a significant rate in the last two decades. Continued growth in the developing nations and economic recovery in the developed countries are the main reasons for this increase, the report says
- The total global CO<sub>2</sub> emissions increased 49.7 per cent in 2010 since 1990
- In 2011, Annex I countries, which accounts for above 20 per cent of global population emitted 42 per cent of the emissions. Non-Annex I countries, which accounted for 80 per cent of the population emitted 55 per cent of the global CO<sub>2</sub> emissions. India's share is 6 per cent, US's share is 16 per cent and China's share is 29 per cent in global emissions in 2011

**Graph 2: Country-wise emissions in 2010/11**

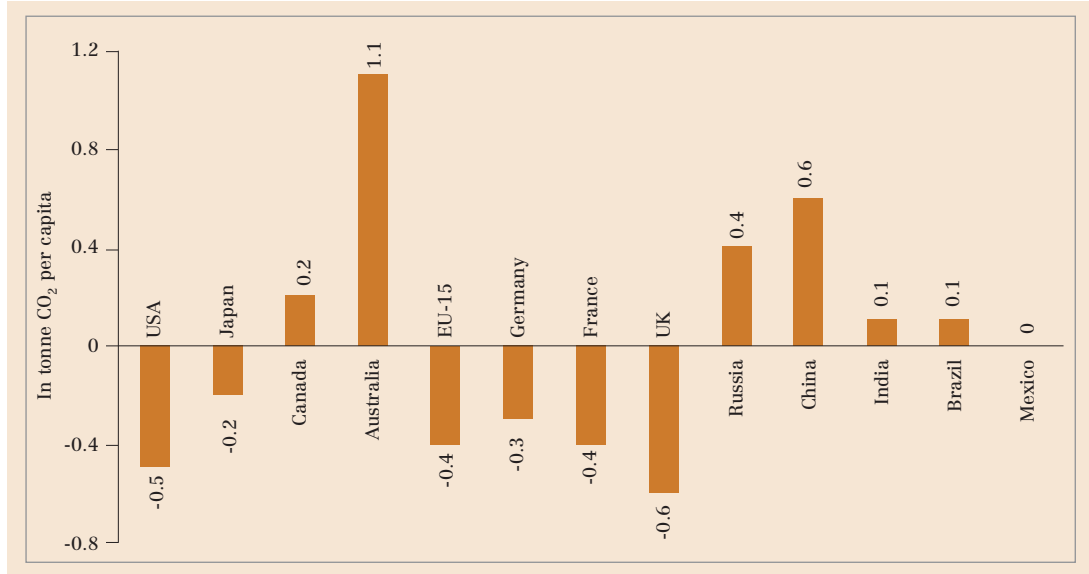


**Graph 3: Change in emissions in 2011 over 2010 (in per cent)**



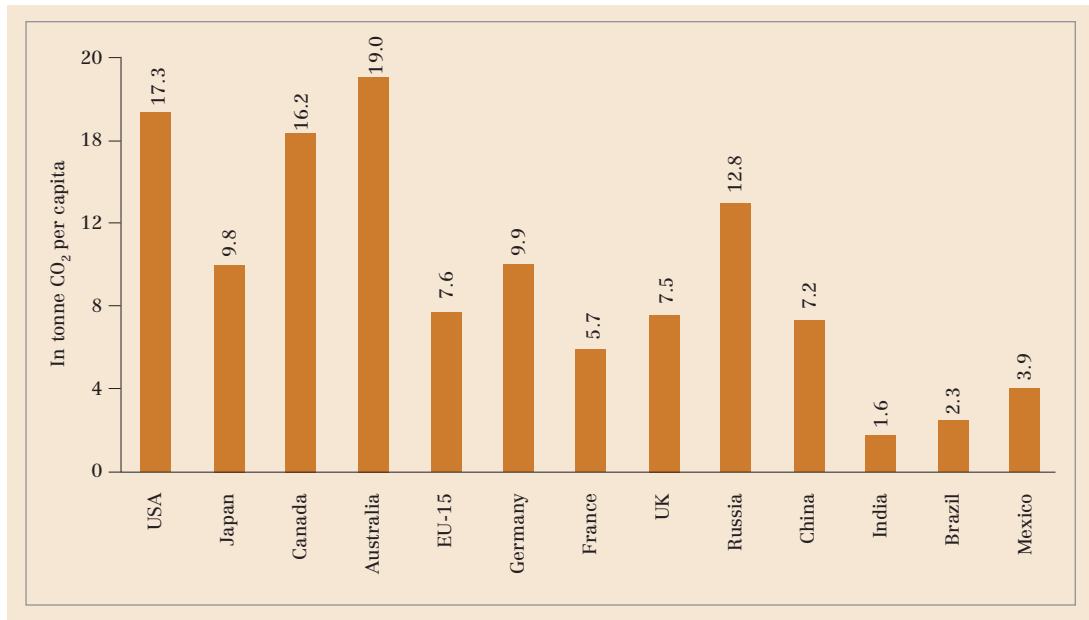
- Developed countries such as Australia and Canada emitted more CO<sub>2</sub> in 2011 compared to 2010
- China emitted 8.99 per cent above 2010 levels
- India emitted 5.91 per cent above 2010 levels
- Japan emitted 1.59 per cent below 2010 levels
- USA emitted 1.99 per cent below 2010 levels
- EU-15 emissions decreased 4.43 per cent from 2010 levels. The emissions in Germany and UK decreased by about 3.5-6.0 per cent from 2010 levels
- In totality, the emissions of Annex I countries marginally decreased chiefly due to weak economic conditions and milder winter. However, the report holds India and China responsible for the emissions increase in 2011 over 2010. A re-examination of the numbers shows the bias of the report. Presented below are India and US's numbers:
- India's base year (2010) emissions is 1.85 billion tonnes of CO<sub>2</sub> and that of the US is 5.53 billion tonnes of CO<sub>2</sub>. Even though India's emissions increased by 5.91 per cent, in absolute terms, the hike would be only by 0.11 billion tonnes in 2011 over 2010. In case of the US, with a 1.99 per cent decrease, it emitted 2.7 times more in 2011. Therefore, the US is more responsible for overall jump in emissions in 2011 than India

**Graph 4: Change in per capita emissions in 2011 over 2010**



Like the emissions growth story in 2011, the same can be seen in per capita emissions change between 2010 and 2011. The per capita emissions between and decreased by 0.5 tonnes in the US, 0.2 tonnes in Japan, 0.4 tonnes in EU 15, and increased by 0.6 tonnes in China and 0.4 tonnes in Russia 0.2 in Canada and 1.1 in Australia. In comparison, the per capita emissions increase in India was just 0.1 tonne. In fact, in per capita terms, increase in emissions from China was less than that from Australia.

**Graph 5: Per capita emissions in 2011**

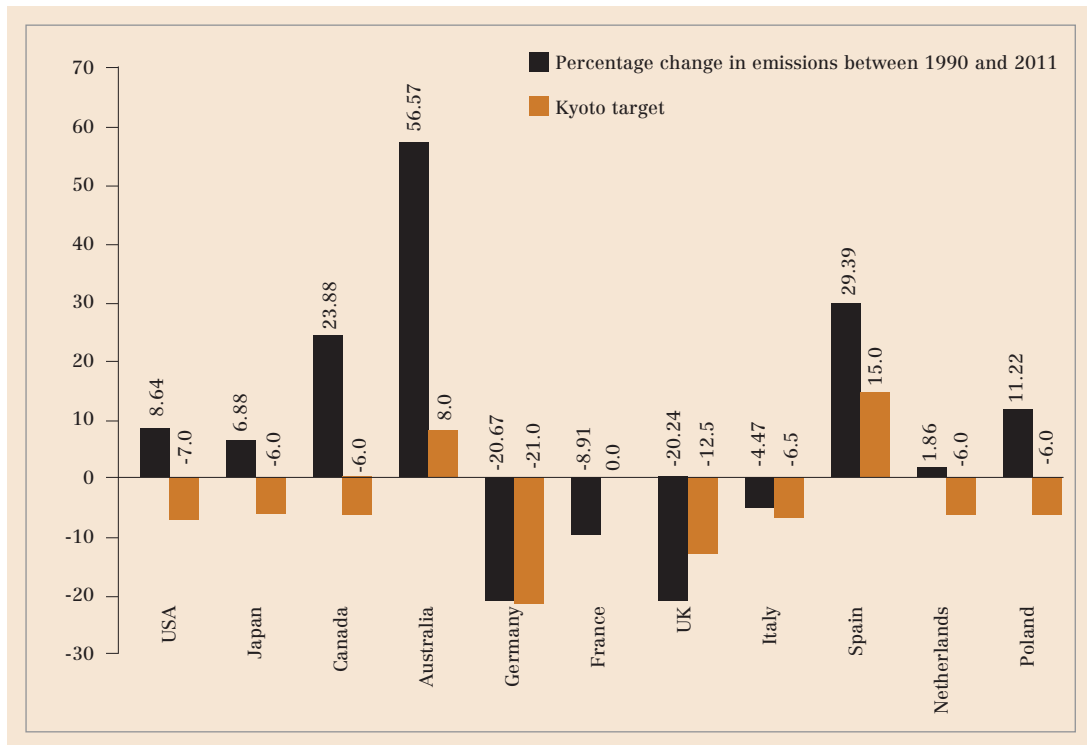


The inequalities in per capita emissions remain very high. In 2011, the per capita emission of:

- US was 17.3 tonnes
- Japan was 9.8 tonnes
- Canada was 16.2 tonnes
- Australia was 19.0 tonnes
- EU 15 was 7.6 tonnes
- Russia was 12.8 tonnes
- China was 7.2 tonnes
- India was 1.6 tonnes

An Indian citizen in 2011 still emitted 11 times lower than an American citizen

**Graph 6: Meeting Kyoto targets?**



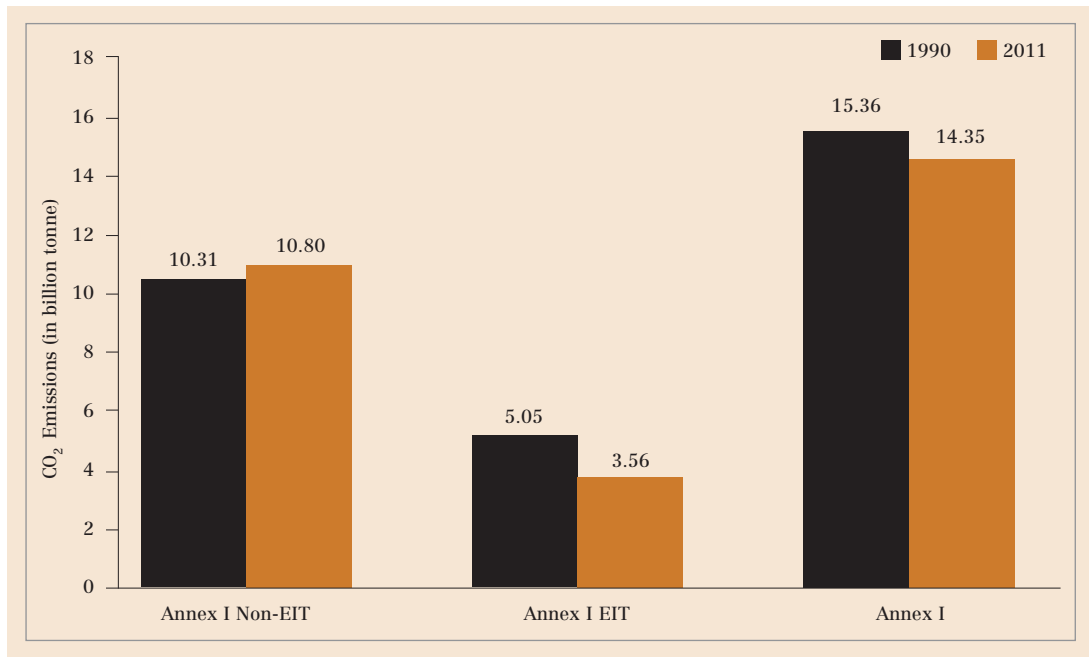
**According to the Kyoto Protocol (Article 3):** “The Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases do not exceed their assigned amounts... with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012.”

The report says that developed countries that have ratified the Kyoto Protocol and the USA have emitted about 6.5 per cent less CO<sub>2</sub> than 1990 levels and they collectively remain on target to meet the original Kyoto Protocol objective of a 5.2 per cent reduction.

CSE compared individual countries' emissions reduction targets under the Kyoto Protocol with the 1990 emissions and found:

- Instead of lowering 7 per cent relative to 1990 levels, the USA is 8.64 per cent higher than 1990 levels. Thus, it is 16 per cent off its Kyoto target
- Instead of lowering 6 per cent relative to 1990 levels, Japan has increased its emissions by 6.88 per cent
- Instead of lowering 6 per cent relative to 1990 levels, Canada is almost 23.88 per cent higher
- The EU 15 countries had a combined Kyoto target of 8 per cent reduction relative to 1990 levels. These were modified later to revised targets as per an internal EU burden sharing agreement
- Instead of lowering 6.5 per cent relative to 1990 levels, Italy has lowered only by 4.5 per cent
- Instead of cap of 15 per cent higher relative to 1990 levels, Spain saw an increase of 29.4 per cent
- Instead of lowering 6 per cent relative to 1990 levels, Netherlands saw an increase of 1.86 per cent in emissions relative to 1990 levels
- The UK has lowered emissions by 20 per cent, higher than -12.5 per cent relative to 1990 levels
- Germany has lowered emissions by 20.6 per cent short of lowering 21 per cent relative to 1990 levels
- Australia is 48 per cent above Kyoto Protocol target

**Graph 7: Rich countries hiding behind collapsed economies**

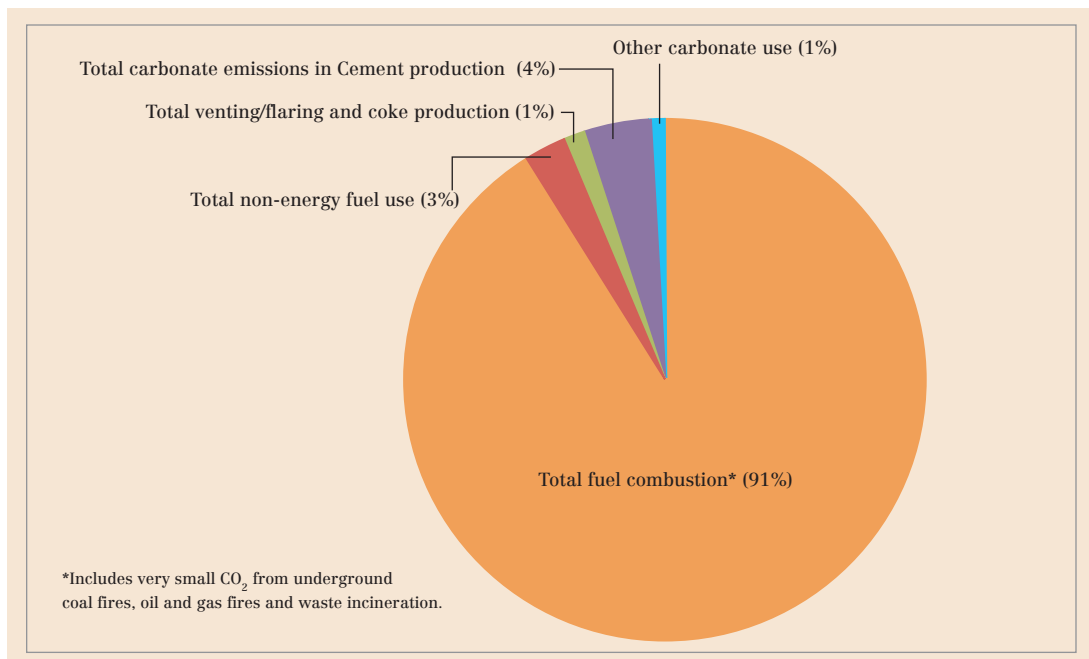


When the emissions of Annex I Non-EIT countries (rich developed countries), Annex I-EIT countries (Economies in Transition: Erstwhile USSR and eastern European countries) and Annex I countries were compared, CSE found that:

- Annex I total emissions in 2011 is 6.5 per cent below 1990 levels
- Annex I EIT emissions in 2011 is 29.5 per cent below 1990 levels because of the collapse of the erstwhile USSR and eastern European countries
- Annex I non-EIT in 2011 is actually 4.8 per cent above 1990 levels

The rich developed countries are hiding behind the collapsed economy of the erstwhile USSR and eastern European countries to claim to meet their Kyoto targets.

**Graph 8: Sectoral emissions, 2011**



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# EMISSIONS



- Fuel combustion accounts for the maximum CO<sub>2</sub> emissions — 91 per cent — among the sectors
- International transport accounts for 3 per cent emissions
- Cement accounts for 4 per cent emissions
- Venting/flaring and coke production accounts for 1 per cent emissions
- Emissions from global coal consumption increased by more than 5.4 per cent, a significant growth rate since 2003
- Natural gas consumption grew globally by 2.2 per cent, with CO<sub>2</sub> emissions following suit. Milder winter months in 2011 in many regions led to muted demand for gas for space heating
- Fossil oil consumption increased by 2.9 per cent globally where the fraction biofuels in road transport increased by just 0.7 per cent
- CO<sub>2</sub> emissions from the cement clinker production process, the largest of non-combustion sources of CO<sub>2</sub>, increased globally by 6 per cent, mainly due to a 11 per cent increase in China.
- Since 1990 these emissions increased from 0.51 to 1.43 billion tonnes of CO<sub>2</sub>. Including related combustion emissions, the cement industry accounts globally for about 8 per cent of global CO<sub>2</sub> emissions, a share that has doubled since 1990
- In Europe, CO<sub>2</sub> emissions from industries regulated by the EU Emissions Trading Scheme (ETS) decreased in 2011 by 2 per cent, after a marginal increase of 3 per cent in 2010 over the previous year
- In the USA, industry emissions from fuel combustion increased by 0.4 per cent in 2011
- Total renewable energy sources contributed 8.5 per cent of all energy supplied globally in 2011
- With the Fukushima nuclear disaster on March 2011, Japan started shutting down nuclear power plants and increased the use of fossil fuel for power generation. Germany also closed 8 nuclear power plants in 2011, replacing them with energy from coal based power plants and renewable energy
- Taken together nuclear and renewable energy sources have led to a decline in overall share of fossil fuels from 88 per cent in 1990 to about 86 per cent, the lowest in decades. However, in absolute terms both energy demand and the share being met by fossil fuel are growing faster since 1990 than the growth in new renewable energy sources, which is accelerating, but not yet fast enough to curb the increasing global CO<sub>2</sub> trend

Source for graphs: Trends in global CO<sub>2</sub> emissions, Netherlands Environmental Assessment Agency, 2012