IEAGHG Information Paper 2017-IP58; Global CO_2 Emissions on the Rise Again

In 2016, the Global Carbon Project[1] reported that global CO_2 emissions had remained stable for 3 years in a row[2]. A fact also reported by the IEA and promoted as a significant milestone that global action to combat climate change was starting to show some dividends[3].

In its 2017 report, the Global Carbon Project (GCP) gives us the headline that:

"***By the end of 2017, global emissions of carbon dioxide from fossil fuels and industry are projected to rise by about 2% compared with the preceding year, with an uncertainty range between 0.8% and 3%. The news follows three years of emissions staying relatively flat".***

To add to the bad news the GCP suggest, ***"Several factors point to a continued rise in 2018".***

The results of the GCP analysis are being presented at COP23 and can be found in the following publications:

Le Quéré et al. (2017) Global Carbon Budget 2017. Earth System Science Data Discussions. https://doi.org/10.5194/essd-2017-123

Peters et al. (2017) Towards real time verification of CO_2 emissions. Nature Climate Change. https://doi.org/10.1038/s41558-017-0013-9

Jackson et al. (2017) Warning signs for stabilizing global CO_2 emissions, Environmental Research Letters. https://doi.org/10.1088/1748-9326/aa9662

Key conclusions from the GCP analysis include:

- Global carbon dioxide emissions from all human activities (fossil fuels, industry and land-use change) will reach around 41 billion tonnes of carbon dioxide in 2017.
- Global carbon dioxide emissions from fossil fuels and industry will reach around 37 billion tonnes of carbon dioxide in 2017.
- In 2017, carbon dioxide emissions from fossil fuels and industry are projected to grow by 2%. This follows three years of nearly no growth (2014-2016) (GDP to rise 3.6%, according to figures from the International Monetary Fund).
- Chinese emissions are projected to rise 3.5% (+0.7 to +5.4%) in 2017 (GDP up about 6.8%).
- U.S. emissions are projected to decline 0.4% (-2.7% to +1.9%) in 2017, lower than the decline of 1.2% per year averaged over the previous decade, with an unexpected rise in coal consumption (GDP up about 2.2% in 2017).
- Indian emissions are projected to grow 2% (+0.2% to +3.8%) in 2017, compared to 6% per year averaged over the previous decade, due to significant government interventions in the economy (GDP up 6.7%).

[1] T**he Global Carbon Project** was formed to assist the international science community to establish a common, mutually agreed knowledge base supporting policy debate and action to slow the rate of increase of greenhouse gases in the atmosphere. For more details see: http://www.globalcarbonproject.org/about/index.htm

[2] http://www.ieaghg.org/docs/General_Docs/Publications/Information_Papers/2017-IP20.pdf

[3] https://www.iea.org/newsroom/news/2017/march/iea-finds-co2-emissions-flat-for-third-straight-year-even-as-global-economy-grew.html

- European emissions are tentatively expected to decline by 0.2% (-2% to +1.6%) in 2017, lower than the decline of 2.2% per year averaged over the previous decade (GDP up about 2.3%).
- The remaining countries' emissions, representing about 40% of the global total, are expected to increase around 2.3% (+0.5% to +4%) in 2017.
- Renewable energy has increased rapidly at 14% per year over the last five years – albeit from a low base.

The return to growth in global emissions in 2017 is largely due to a return to growth in Chinese emissions, projected to grow by 3.5% in 2017 after two years with declining emissions. The use of coal, the main fuel source in China, may rise by 3% due to stronger growth in industrial production and lower hydro-power generation due to less rainfall.

For 2018, the researchers concern is that the global economy is picking up slowly. As GDP rises, we produce more goods, which, by design, produces more emissions.

However, despite the growth in 2017, the GCP feel it is too early to say whether this is a one-off event on the way to a global peak in emissions, or the beginning of a new period with upward pressure on global emissions growth. In the long term, emissions are unlikely to return to the persistent high growth rates seen during the 2000s of over 3% per year. It is more likely that emissions will plateau or have slight growth, broadly in line with national emission pledges submitted to the Paris Agreement.

The one positive is that, in the last decade (2007-2016), emissions in 22 countries (representing 20% of global emissions) decreased even as their economies grew. The researchers infer this is due to the growth in the use of renewable technology. They then go on to say we need more renewables to reduce global emissions, with no mention of CCS at all.

Summary

Coming as it does during COP23, the fact that global emissions are predicted to grow again after three years of zero growth is not great news.

Chinese emissions continue to dominate the global emissions picture. I hope that the reduced rainfall pattern in China was not due to climate change otherwise we could see a nasty spiral here of reducing rain, increasing coal use and increasing emissions. In my mind, a strong case to deploy CCS to reduce both CO_2 and other pollutant emissions from coal use.

John Gale
16/11/2017