

# Thinking about emissions

Global emissions rose in 2018 with the USA increasing its emissions after three years of decline. Understanding the contributing factors is not enough — action at all scales is needed.

The United States of America has had a prominent place in climate discussions of late — the withdrawal from the Paris Agreement; comments from President Trump regarding attribution of climate change; policy shifts; and now new emissions data. A recently released analysis estimates emissions in the USA grew by 3.4% in 2018 (<https://go.nature.com/2FuJAvM>). This is off the back of three years of decline, and is the second largest growth in emissions in more than 20 years. The harsh winter at the start of 2018 is identified as one contributing factor, however emissions from the building and industrial sector continue to rise with limited decarbonization strategies in place.

Emissions from the USA power sector appear to have risen by 1.9%, as natural gas fills the gap created by the retirement of coal-fired generators — a gap that should be filled by low-carbon options such as renewables in order to help decarbonize the power sector and reduce emissions.

This estimate of 3.4% growth is in line with that made by the Global Carbon Project of +2.5% (+0.5% to +4.5%) for the USA in 2018 (Le Quéré, C. et al., *Earth Syst. Sci. Data* **10**, 2141–2194; 2018). The annual update, published 5 December 2018, projected a small decline for the EU28 (–2.6 to 1.3%), while China (2.0 to 7.4%) and India (4.3 to 8.3%) continue to see growth in emissions, resulting in an estimated global increase of more than 2% for 2018. This increase, attributed to economic growth in China and India with demand being met by fossil fuels, brings to the end three years of almost no growth.

Another analysis looking at power generation in the United Kingdom estimates that 2018 had the lowest level since 1994, with 335 TWh produced (<https://go.nature.com/2VIpYU>). The continued decline in recent years represents a decrease in per capita demand. As in the USA, coal-fired plants are being closed, or generating for fewer hours, but in contrast to the increase in natural gas, in the UK renewables are picking up the load, with a strong growth for wind-generated power. Renewables are estimated to account for 33% of the total 2018 generation, bringing low-carbon sources, including nuclear, to 53%. This means fossil fuels, at 46% of generation, have their lowest ever share, with natural gas being the primary contributor of the fossil fuels.



Credit: Roy LANGSTAFF / Alamy Stock Photo

Coming back to the rise in emissions in the USA, transportation is the largest emission source, with continued increased demand for diesel and jet fuel — related to growth in demand for trucking and air travel. The transport sector may be transitioning to low-carbon light vehicles, but efforts are needed across all areas, particularly as demand for air travel continues to grow. The aviation industry is cognizant of this and has put in place a strategy to address the issue (<https://go.nature.com/2CewD6c>), aiming for improved efficiencies as well as alternative low-carbon fuels.

The interconnected world of today sees flying as the norm for many of us, with travel for work and leisure a given. But for some, getting on a plane, or private jet, is almost the same as getting in a car. In a Commentary in this issue, Ilona Otto and colleagues make the case for switching focus from the world's poorest to the super-rich with regards to mitigation. They argue that the super-rich have a general disconnect from the reality of climate change and its impacts in spite of the disproportionate carbon footprint of their lifestyle. It could be argued that climate extremes don't differentiate, however wealth allows the ability to cope with extreme events

and minimize their impact. Consider the hiring of private firefighters to protect properties, as was reported during the November 2018 California fires (<https://go.nature.com/2CdgvC6>), a luxury not many can afford.

Considering travel and mode of transport is just one way individuals can minimize their impact. Diet was highlighted in the IPCC Special Report on 1.5 °C warming as an area with large mitigation potential. Awareness of your own carbon footprint should be balanced with personal needs to determine what adjustments, however large or small, can be made to reduce personal impacts.

Individual efforts in whatever form, regardless of socioeconomic status, will all contribute to mitigation efforts. Just as we discussed in the January 2019 editorial (*Nat. Clim. Change*, **9**, 1; 2019), the void left by unambitious national efforts needs to be filled. The private sector and sub-national governments are stepping up, but a groundswell of individual effort would help propel the issue wider, creating a new normal of climate consciousness. □

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