Fly: Climate summits

Title: Promises kept?

Rubric: Most countries signed up to at least one of the three big international climate-change agreements to date, but delivery on emissions-reduction targets pledged on has been mixed. Greater ambition and stricter compliance will be essential.

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In response to the threat to lives and livelihoods from rising emissions of greenhouse gases, there have so far been three international agreements promising countervailing action: the Kyoto Protocol of 1997; the Copenhagen Accord of 2009; and the Paris Agreement of 2015. What climate targets were pledged? Have any been met? And which of the wide variety of national measures adopted are proving most effective for cutting emissions?

The pledges made by countries in each of the treaties differ in the coverage, timelines and targets set by the various signatories. Moreover, in working towards their targets, countries have resorted to different policies and laws over time. And each comes from its unique history of previous contributions to the more than doubling of total global emissions over the past half-century.

Trends in emissions are tightly associated with economic activity and population growth. In absolute levels, the top emitters since the 1970s have been China, the United States, Russia, Japan, Germany and Canada, with Saudi Arabia, South Korea, India and Iran joining the list more recently. Among these, six are also in the top-ten list of oil producing nations. Other oil-producing countries also record very high per capita emissions, but make smaller contributions to total emissions.

Emissions from North America and Europe, which were the largest emitting regions until the 1990s, seem to have stabilised in the following decade and a half, and are gradually declining, albeit from high levels. Emissions from other parts of the world have been increasing, particularly in the East Asian region, led most notably by China. Sub-Saharan Africa remains the region with the lowest total emissions. Emissions from the Middle East (the largest oil-producing region in the world) remain at a lower level than in the West or East Asia.

But per capita emissions remain highest by far in North America, followed by Europe and Central Asia. These regions show a gradual decline since the 2000s. In contrast, East Asia and the Middle East seem to be converging upwards to the European level.

[Fig 2]

Since the first international agreement on climate change, compliance with emissions-reduction targets has been mixed, with many countries undershooting their targets. Relatively few countries overshot targets to reduce emissions. Nevertheless, signing the Kyoto Protocol or the Copenhagen Accord have led to significant reductions in emissions, when compared to the group of countries that did not sign the treaties. In contrast, signing the Paris Agreement does not appear to have led to any significant reduction in emissions yet.

When examining success by country, there is wide variation in both the achievement and ambitiousness of targets. For example, with the Copenhagen Accord, which specified targets for 2020, 21 of the countries in the chart had reached or exceeded the targeted reduction (those to the left of the 45 degree line) by 2018, while 35 had not (though countries close to the 45 degree line are those that were reasonably close to achieving their targets).

The vast majority of countries that had already achieved their targets by 2018 were those that specified an increase in emissions from the starting year of 2010 (in the official pledges, many countries continued to specify their baseline year as 1990 under the Copenhagen Accord), with only a few countries, such as Denmark and Malta, having achieved more ambitious targets.

Germany, Japan and Russia were the only countries among the top-ten emitters that had already achieved their target level of emissions as of 2018. It is conceivable that with the pandemic and the implied reduction in emissions caused by lower activity, many more countries would have met the targets.

[Fig 8b]

Having quantifiable targets certainly seems to have helped in reducing emissions. And of all climate-related measures enacted, two stand out as having had a material impact on emissions reduction: the introduction of carbon taxes and emissions-trading schemes.

A few other specific climate-related laws or policies appear to have quantitatively small effects on emissions. But the number of climate-related laws is associated with significant reductions in GHG emissions. The estimated effects on GDP growth and inflation from these measures are largely insignificant.

Overall, it is clear that much more ambitious targets and stricter compliance will be needed to offset the large impact of economic and population growth on the flow of emissions and contain a damaging further expansion in the stock of greenhouse gases.