



The Paris Agreement has solved a troubling problem

By endorsing a limit of 1.5°C, the climate negotiations have effectively defined what society considers dangerous, says **Simon L. Lewis**.

The Paris Agreement for tackling climate change opens for governments to sign this week, four months after it was agreed. The momentum created by the deal, described as a multilateral political triumph, looks set to continue: China and the United States are among the 130-odd countries expected to bring the agreement into force early by adding their signatures on the first day.

Is this the beginning of the end of the fossil-fuel age, as some suggest? It could be — its influence is certainly being felt. Peabody Energy, the largest private coal company, lost 12.6% of its value the day after the Paris deal was agreed. It filed for bankruptcy last week. But even before countries queue up to sign, the Paris Agreement could already have solved one of the most troublesome problems in the climate arena, one that has plagued scientists and policymakers for almost a quarter of a century. And yet almost nobody — scientists included — seems to have noticed.

The Paris Agreement has finally defined the threshold for ‘dangerous’ climate change. It is 1.5°C above pre-industrial levels. True, this definition is not explicitly spelled out in the agreement text. It is a de facto definition. But it is there all the same. And that is hugely significant.

Back in 1992, the world agreed to “prevent dangerous anthropogenic interference with the climate system” by signing up to the United Nations Framework Convention on Climate Change. Unfortunately, ‘dangerous’ was left undefined. Politicians asked scientists for an answer and many researchers, me included, batted the question back to them. Dangerous to whom? Climate change disproportionately affects the poor, the vulnerable and the powerless. Heatwaves tend to kill the very young and very old. Heavy storm events affect those in precarious shanty towns. Of course, if they are high enough, then emissions will affect everyone, but differentially. Even today’s global average temperature of 0.9°C above pre-industrial levels is dangerous for some, even deadly. What risks are acceptable for society? Dangerous, as many have pointed out, is a social and political question of trade-off, justice and ethics that science can inform, but not decide.

From this contested space, the figure of 2°C rose up the global agenda. It was chosen by European politicians and their advisers because it was a simple round number, seemed achievable and would prevent many catastrophic impacts. By 2010, the UN process noted a ‘shared vision’ of limiting warming to 2°C. But it was always a somewhat arbitrary choice.

At the UN negotiations in Paris in December, a more satisfying solution to the dangerous question, rather obvious in hindsight, slowly emerged. The answer was not 2°C. And it did not come from Europe.

Storm surges and ongoing sea-level rise will make low-lying small island states unviable places

to live. Some islands will cease to exist. A new grouping of 20 countries in Paris, the Climate Vulnerable Forum, painted dangerous climate change as a threat to their very existence. The rallying-cry, “1.5 to stay alive”, repeated in forcefully eloquent language in the negotiating sessions, increasingly made sense.

The Marshall Islands then deftly revealed a secret ‘high-ambition coalition’ at the talks. It included rich and poor countries alike, unravelling old geopolitical alliances, and so allowing a much more ambitious agreement to be reached.

That’s a crucial part of why China, the United States and the rest will this week sign the Paris Agreement, a UN legal instrument to hold the mean global surface-air temperature to “well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.

Against the odds, vulnerable states got their message across. Without stringent limits on temperature rises, whole nations within the UN system may become stateless, which, self-evidently, is dangerous to those states.

The move is good politics, but is it based on good science? Projections of sea-level rise are notoriously uncertain, but unabated emissions rises would certainly lead to a rise of many metres over the course of a few centuries as the Greenland and Antarctic ice sheets lose mass. Such losses are nonlinear and once begun are essentially irreversible. Models now show that much of this could be avoided if emissions are curbed such that warming stays below 1.5°C. Impacts on staple crops also increase drastically after 1.5°C. Scientific evidence is on the side of the small island states.

The emergence of 1.5°C as a serious policy position comes with important lessons for scientists. The global research community has shockingly little to say on the probable impacts of a 1.5°C rise. (The Intergovernmental Panel on Climate Change last week scrambled to commission a special report on the subject.) Most impact studies and future-scenario analyses focus on 2°C and higher. Few focus on the most-vulnerable regions. It is the same bias that neglects the study of diseases that kill millions outside the developed world. Most scientists and most funds for science, after all, are from developed countries, and so tend to follow the agendas of the dominant class of those societies. In this way, science further entrenches inequality.

This bias is dangerous. And it will continue until more scientists challenge the agenda of their funders and examine their own preferences for research questions to answer. ■

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