

# 1.5°C: where the target came from—and why we're losing sight of its importance

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Credit: AI-generated image ([disclaimer](#))

The US economist [William Nordhaus](#) claimed [as early as the 1970s](#), when scientific understanding of climate change was still taking shape, that warming of more than 2°C would "push global conditions past any point that any human civilisation had experienced". By 1990, scientists had also [weighed in](#): 2°C above the pre-industrial average was the point

at which the risk of unpredictable and extensive damage would rapidly increase.

Two years later, the United Nations Framework Convention on Climate Change ([UNFCCC](#)) was established to stabilise the amount of greenhouse gas in the atmosphere at a level that would "prevent dangerous interference with the [climate](#) system". At the first summit in Berlin in 1995, countries began negotiations for the global response to [climate change](#) which continue to this day.

Halting global heating at 2°C remained the horizon to which negotiators strived for nearly two decades. And yet, you're more likely to hear about the rapidly approaching 1.5°C temperature limit nowadays. At the most recent UN summit, COP27 in Egypt, [leaders](#) clinched an [agreement](#) to keep the target at 1.5°C, though they achieved little that would put the world on track to meet it.

So why did 1.5°C became the acceptable limit to rising temperatures? That story reveals an essential truth about climate change itself.

## **Acceptable for who?**

Global temperature rise is just one measure of how the climate is [changing](#). Scientists also track concentrations of CO<sub>2</sub> in the atmosphere, [sea-level rise](#) and the intensity of heatwaves and flooding. But tracking the Earth's temperature is the [simplest way](#) to predict the global consequences of warming.

At Copenhagen's 2009 climate summit, the world still lacked an official temperature goal, nor had there been a full scientific assessment of what was "safe". But a formation of island nations known as the Alliance of Small Island States ([AOSIS](#)) was already urging countries to draw the line at 1.5°C.

[Scientific research](#) had started to reveal the devastation that awaited many of these countries at 2°C, with coral bleaching, coastal erosion and erratic weather expected to become more frequent and severe. Worse still, new estimates indicated that sea levels would rise faster than earlier assessments had predicted, threatening the very existence of some islands.

Only stopping global temperature rise well below 1.5°C would head off this catastrophe, AOSIS argued. As Mia Mottley, prime minister of Barbados, would later put it: "[2°C is a death sentence](#)".

At a summit in Cancún, Mexico in 2010, [governments agreed](#) to keep global average temperature rise below 2°C while scientists reviewed the proposal for 1.5°C. The review, when published in 2015, found that the "concept, in which 2°C of warming is considered safe, is [inadequate](#)". The idea that a "safe" level of warming could be achieved was subjective: current levels were already unsafe for those on the sharpest end of climate change.

Although the science on the effects of 1.5°C was, at the time, less robust than for 2°C, the review concluded that limiting warming to 1.5°C would minimise risks [compared to a warmer world](#).

Coral reefs, for example, which millions depend on for food and income, are already being damaged by climate change. At 1.5°C, few reefs will escape harm. But at 2°C, virtually all reefs throughout the tropics are thought to be at severe risk. Halting climate change at 1.5°C would slow the rate of sea-level rise by roughly 30%, preserving cultures and communities that could disappear at 2°C.

This insight fed into negotiations that ultimately produced the [Paris Agreement](#) in 2015, which committed countries to:

"holding the increase in the global average temperature to well below 2°C above pre-industrial levels, and pursuing efforts to limit the temperature increase to 1.5°C."

[A scientific assessment](#) in 2018 confirmed the relative advantages of limiting warming to [1.5°C](#). In essence, the benefits of halting warming at a lower [temperature](#) are always relative to the costs of allowing warming to continue, which will continue to mount for as long as action is delayed. The only "acceptable" limit is that which humanity collectively decides.

Campaigning by AOSIS forced the rest of the world to acknowledge (in principle at least) that 2°C was unacceptable for many. But more recent research suggests that even 1.5°C of warming could carry unforeseen risks, such as the West Antarctic ice sheet collapsing at current levels of warming.

## **1.5 is still alive**

The world has [already warmed by around 1.2°C](#). By the time COP27 ended in late November 2022, [only 30](#) out of nearly 200 countries had strengthened their national pledges for reducing emissions. No country has a pledge compatible with limiting warming to 1.5°C. And with temperatures increasing more than [0.2°C a decade](#), some suggest that 1.5°C is already [out of reach](#).

The [latest scientific assessments](#) indicate that achieving the 1.5°C limit is still technically and economically feasible, but [fossil fuels](#) must be rapidly phased out, and CO<sub>2</sub> emissions halved by 2030 and reduced to net zero by mid-century. This is a huge, but not impossible, task.

We will, however, need a little luck on our side. Staying within 1.5°C also depends on how the climate responds to the emissions we put into

the atmosphere in the meantime. Although limiting warming to 1.5°C becomes increasingly unlikely with every year of delay, giving up on it now would [play into the hands](#) of those determined to preserve fossil fuel revenues indefinitely.

Limiting warming limits the consequences of climate change, particularly for the most vulnerable people and communities. And even if the world does pass 1.5°C, it doesn't remove any pressure. 1.5°C became the goal because exceeding it was deemed unacceptable. The increasing likelihood—but not certainty—of passing 1.5°C demands even more urgent action to avoid every additional fraction of a degree of [warming](#), minimising the impacts, risks and costs of climate change for everyone, everywhere.

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