CLIMATE CHANGE AND FOSSIL FUELS (CLIFF)
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WHY 1ºC IS MORE JUST THAN 1.5ºC

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KEY MESSAGES

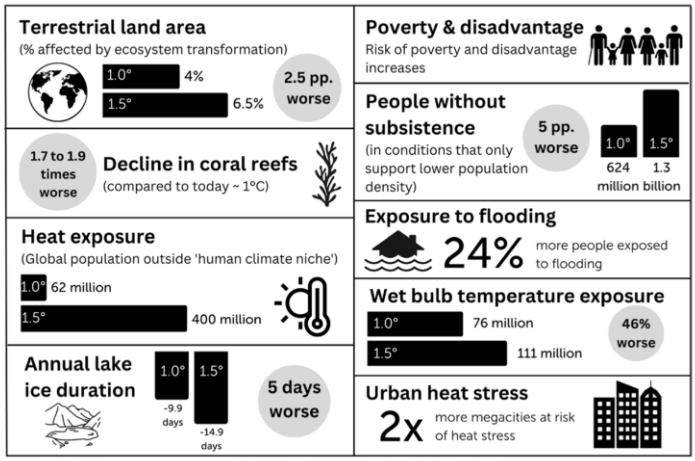
1. What counts as 'dangerous' climate change depends on who get to define it and for whom.
2. Science has for long promoted 2ºC as a safe target.
3. Decisions on the long-term objectives of the climate regime have been postponed politically until 2015 when 1.5ºC was introduced by small island states.
4. New research sees 1.5ºC as reducing harm and triggering four tipping points.
5. Even at 1ºC, there is huge damage to species and ecosystems.
6. Even at 1ºC, there is huge damage to humans and nations.

INTRODUCTION

The 1992 United Nations Framework Convention on Climate Change aimed at the: "stabilization of greenhouse gas concentrations in the atmosphere that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure food production is not threatened and to enable economic development to proceed in a sustainable manner". Initially, the term 'dangerous' was seen as something that could not be defined by scientists, but something that politicians should assess. But why? When we are looking at the impacts of acid rain on soil – scientists define risk through 'critical loads'. When we look at the impacts of pollutants on the environment, scientists assess risks and propose standards. Is the problem here that we need transdisciplinary science to determine what is dangerous using a transdisciplinary perspective? Using a transdisciplinary approach, it was concluded that 2ºC would be safe for the Netherlands (Gupta and van Asselt, 2006), but we were not successful in raising the resources to upscale the exercise to the global level. Thirty years later, we are still debating what is dangerous and from whose perspective. Most scientists have been promoting a 2ºC target based on the idea that beyond this temperature increase in relation to pre-industrial levels, irreversible changes begin to set in.

DECISIONS ON THE LONG-TERM OBJECTIVES OF THE CLIMATE REGIME HAVE BEEN POSTPONED POLITICALLY UNTIL 2015 WHEN 1.5ºC WAS INTRODUCED BY SMALL ISLAND STATES

In 1996, the European Union formulated its 2ºC target as the 'maximum tolerable level' of climate change based on the information in the IPCC 1996 report. This was the basis for its negotiating position in the Kyoto Protocol. Since the US was not willing to subscribe to this position, the targets in the Kyoto Protocol were considerably weakened. It was only in 2015, that the Paris Agreement finally adopted the objective of: "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 above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change". The 1.5ºC target was pushed for by small island states.



Source: Gupta et al. (2024)

NEW RESEARCH SEES 1.5ºC AS REDUCING HARM AND TRIGGERING FOUR TIPPING POINTS

Following the Paris Agreement, IPCC brought out a Special Report on the implications of a 1.5ºC temperature increase. The question is why they did not focus on this earlier.

EVEN AT 1ºC, THERE IS HUGE DAMAGE TO SPECIES AND ECOSYSTEMS

There is growing evidence that even at a 1ºC temperature increase, marine heat heatwaves have damaged coral reefs (Hoegh-Guldberg et al., 2019). Extreme weather events (forest fires, droughts, floods) have caused massive damage to other species and ecosystems worldwide, but possibly more in the tropical regions. Moreover, even at this level, we lock in negative impacts on the future.

EVEN AT 1ºC, THERE IS HUGE DAMAGE TO HUMANS AND NATIONS

At a 1ºC increase, there are huge damages to humans. "In Asia and Africa, 1°C warming can cause a 7% increase in diarrhoea, an 8% increase in E. coli and a 3% to 11% increase in deaths (medium confidence)" (IPCC, 2022, p. 64). There is high confidence about increasing undernutrition, stunting and related childhood mortality (IPCC, 2022, p. 70). In 2020, compared to the annual average for 1986-2005, record temperatures resulted in "3.1 billion more person-days of heatwave exposure among people older than 65 years and 626 million

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more person-days affecting children younger than 1 year" (Romanello et al., 2021; indicator 1.1.2). "Without CO_2 fertilization, effective adaptation, and genetic improvement, each degree-Celsius increase in the global mean temperature would, on average, reduce global yields of wheat by 6.0%, rice by 3.2%, maize by 7.4%, and soybean by 3.1% (Zhao et al., 2017). The spread of malaria is already being exacerbated at 1°C, while temperature rise can increase conflict (Hsiang et al., 2013). The damage is heavier for poorer countries. Agricultural workers in countries with low HDI bore half the 295 billion work hours lost because of heat. The average loss to GDP in these countries was about 4–8% (indicator 4.1.3; Romanello et al., 2021). "Poverty and disadvantage have increased with recent warming" (about 1°C; IPCC, 2018, p. 39). If the current global mean temperature was sustained for the next two millennia, about 6% (40 sites) of the UNESCO sites will be affected, and 0.7% of global land area will be below mean sea level. These numbers increase to 19% (136 sites) and 1.1% for a warming of 3°C. At this warming level, 3–12 countries will experience a loss of more than half of their current land surface, 25–36 countries lose at least 10% of their territory, and 7% of the global population currently lives in regions that will be below local sea level (Marzeion and Levermann, 2014).

CONCLUSION

"Human-induced warming reached approximately 1°C (likely between 0.8°C and 1.2°C) above pre-industrial levels in 2017, increasing at 0.2°C (likely between 0.1°C and 0.3°C) per decade (high confidence)" (IPCC, 2018, p. 31). Scientifically and politically, we have delayed defining 'dangerous' for so long that we have put millions at risk and affected the national income of the poorer countries. It is no wonder that the developing countries are demanding compensation for loss and damage – they feel that both the science and geopolitics has betrayed them.

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