

EARTH COMMISSION EXPLAINER BRIEF

CLIMATE

TACKLING THE CLIMATE EMERGENCY TO ENSURE A SAFE AND JUST FUTURE FOR ALL

Humans are taking huge risks with the future of civilisation on Earth. We are on the brink of destabilising the interconnected systems that ensure a stable and resilient planet – the prerequisites for human prosperity and equity for all. Without immediate action, the future for humanity will be neither safe nor just.

WHAT ARE EARTH SYSTEM BOUNDARIES?

The groundbreaking Earth System Boundaries (ESBs), identified by the Earth Commission, are scientifically quantified safe and just limits for climate, freshwater, biodiversity, nutrient cycles and aerosol pollutants.

They delineate a long-term corridor for humanity on a global scale – *a safe and just zone for people and planet*. By operating within these limits, we can maintain a stable and resilient planet and ensure access for everyone to the resources necessary for a dignified life.

Earth System Boundaries are hard limits. Even temporary overshooting of some of the boundaries can permanently damage the planet's critical systems, causing irreparable harm to life.

Earth System Boundaries can guide action towards a safe and just future for every human and the planetary web of life we rely on.

- *Safe* boundaries ensure stable and resilient conditions on Earth, within the Holocene range of variability, that we know can support human development.

- *Just* boundaries minimize human and nature's exposure to significant harm. In addition, the Earth Commission quantified minimum levels for access to resources for a dignified life and freedom from poverty for everyone.

WHAT DOES THE EARTH COMMISSION SAY ABOUT THE CLIMATE?

Greenhouse gas emissions from fossil fuel burning and agriculture are disrupting Earth's climate system. Earth is close to reaching dangerous climate tipping points. We have surpassed the safe and just threshold for climate, which puts us at high risk of significant harm. The Greenland and West Antarctic ice sheets are particularly at risk of tipping. The actions we take *now* will decide their - and by virtue our - future.

The safe and just Earth System Boundary for climate underscores the urgency of immediately phasing out fossil fuels and accelerating work from all directions to meet Paris Agreement Goals.

WHAT ARE THE KEY INSIGHTS WE CAN DRAW FROM THE CLIMATE ESB?

- Taking into account climate tipping points, recent climate variability and biosphere functioning, the Earth Commission identifies the 1.5°C temperature limit outlined in the Paris Agreement as the ‘safe’ boundary in terms of Earth system stability.
- If the world breaches 1.5°C, there is a high likelihood that multiple climate tipping points will be triggered, including melting of the Greenland ice sheet and loss of tropical coral reef systems.
- The Earth Commission’s justice analysis shows that people and ecosystems are already experiencing significant harm at the current 1.2°C of warming. *The ‘just’ boundary for climate is quantified as 1.0°C.*
- Because the safe *and* just Earth System boundary is set at the most stringent of the two, *the safe and just boundary for climate is therefore tightened to 1.0°C.*
- By setting the safe and just Earth System Boundary for climate at 1°C, the Commission is amplifying the injustice inherent in current world targets and the urgency to act to limit warming to as close to 1.0°C as possible.

WHAT EVIDENCE HAS INFORMED THE EARTH SYSTEM BOUNDARY FOR CLIMATE?

Earth Commissioners co-authored the recent analysis, [“Exceeding 1.5°C global warming could trigger multiple climate tipping points”](#), which shows there is a high likelihood that passing 1.5°C will trigger climate tipping points. The Earth System Boundary for climate takes into account a broad set of biophysical domains, incorporating justice considerations and the following:

- The temperature range of recent Earth history, from the comfortable stability of the Holocene, to the warmest “interglacial” periods within the Ice Ages.
- The impacts on biosphere functioning, such as weakened or reversed carbon sinks, and wildlife species losing their geographical range.
- The IPCC’s five “Reasons for Concern” in their latest Sixth Assessment Report, an assessment of risks induced by climate change.

- Earth Commission analysis of extreme heat and sea-level rise. We use two measures for extreme heat: mean annual temperatures above 29°C and wet bulb temperatures greater than or equal to 35°C for at least one day in a year, taking limited body temperature regulation due to humidity into account.

WHAT CAN YOU DO?

Damage from climate change is already happening to millions of people all over the world. All of us, but especially those in positions of power or decision making roles in finance, business and policy making, can and must evolve any current climate commitments and actions in line with the safe and just boundaries.

We can and must integrate justice, considering innovation and redistribution in order to meet basic needs for everyone. We can and must commit to working holistically across climate, biosphere, freshwater, nutrients (fertilisers) and aerosols.

Companies can start taking action now. A world economy that operates within safe and just Earth System Boundaries is one of the most important societal and business opportunities of our lifetime. Without immediate action, our future will not be safe. Nor will it be just. *We can and must take action now.*

The Earth Commission is part of a bigger system of changemakers: the Global Commons Alliance, which created the Science Based Targets Network (SBTN) to translate scientific boundaries into science-based-targets (SBTs). Businesses and decision makers can work with SBTs for Nature as part of their commitment to stay within the safe and just boundaries, across all sectors of the economy.

The ambition of the first phase of science-based targets for nature, just released by SBTN, is aligned with the Earth Commission’s scientific findings. Building on existing environmental knowledge and aligned with local ambitions, these targets, including science-based targets for climate, will put businesses, cities and policy-makers on the right path so that we move towards a safe and just space for people and the planet.

Read more at earthcommission.org