

A just world on a safe planet: Earth system thresholds, foundations and transformations

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Abstract

Preventing harm to, and promoting, human health and wellbeing (SDG 3) is a critical element of a just world. Avoiding irreversible change and tipping points in the Earth's systems – such as oceans and lands (SDG 14 and 15) is necessary for a safe planet. The way we organise our economies (SDG 8) can both support and undermine human well-being and the health of natural systems, depending on whose needs are prioritised, how resources are distributed, and what values guide economic activity. Today we have crossed most of the safe and just thresholds for the planet, several ambient standards, while we have not yet met the basic needs of people worldwide. This has consequences for human health and the economy. Crossing thresholds and standards exposes people to death, displacement, chronic disease and loss of livelihoods. Not meeting people's basic needs exposes them to chronic malnutrition and other diseases and wastes human potential. This policy brief analyses the global problem and provides key recommendations for living justly on a safe planet.

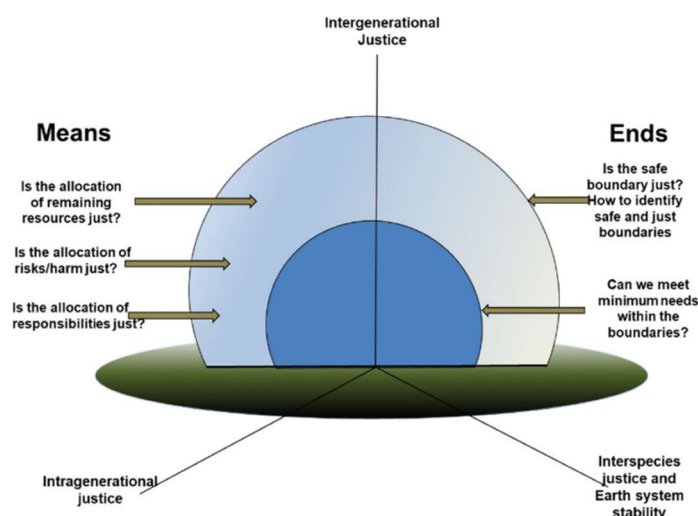
Human and planetary health are interconnected

All life (including ocean life, SDG 14) in general, and the economy (SDG 8) in particular, rely on the health of the people (SDG 3) in the context of a healthy planet. There is growing evidence across a multitude of studies that human health and planetary health are closely linked;ⁱ both are affected by our consumption patterns and how we organise our economies. However, today, over-extraction, overconsumption, pollution, and inadequate management of the local to global commons are causing significant harm to people and the critical life support systems we all depend on. At the same time, those who cause most of the harm are not those who are directly and indirectly affected by the harm.ⁱⁱ Addressing this problem requires a justice frameworkⁱⁱⁱ that accounts for the weakest (recognition justice) and other knowledge systems (epistemic justice); that balances interspecies, intergenerational and intragenerational justice; that promotes procedural and substantive justice. Such a justice system focuses on ensuring just ends and just means (Figure 1).^{iv}

We have crossed safe and just Earth system thresholds and ambient standards...

In 2024, our policy brief on *Reinforcing the SDGs to live within safe and just thresholds* for the STI of 2024 built on the results of the Earth Commission's *Nature* paper.^v We explained that scientists have proposed safe thresholds for climate change, biodiversity, water, nutrients and aerosols to avoid irreversible change to these systems. For example, crossing safe thresholds may lead to triggering many global and local tipping points; several of which concern the oceans (SDG 15) (Figure 2).

Figure 1. The scope of Earth system justice: Safe and just thresholds, minimum access.

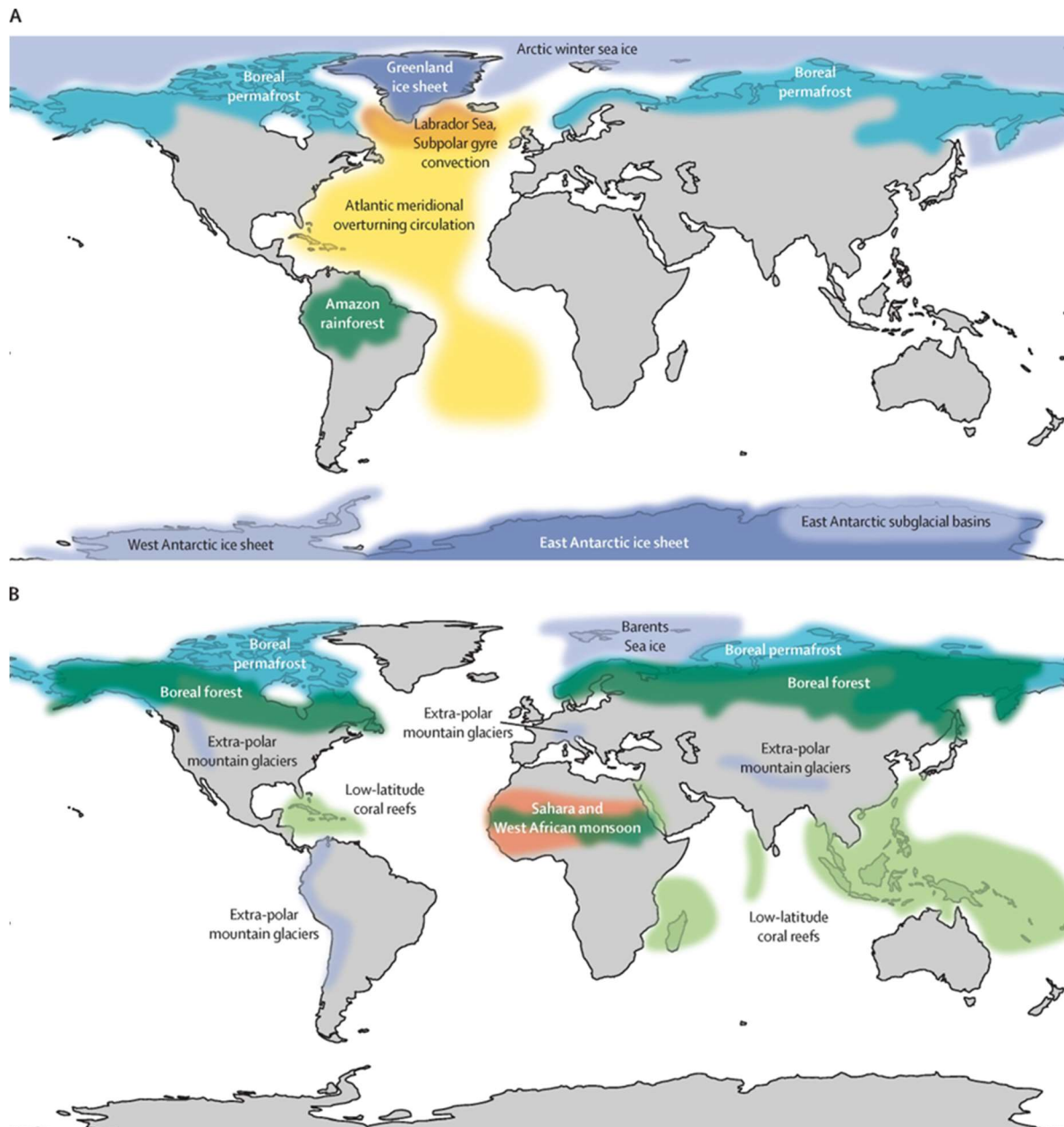


Source: Gupta, Prodani et al. 2024.

This is also in line with what planetary boundary scholars say.^{vi} We also explained that such thresholds may prevent irreversible changes to these systems, but do not necessarily avoid significant harm to humans, their health and their wellbeing. To avoid such harm, just thresholds are needed that refer to both the quantity and quality of resources used. Such thresholds are generally more stringent than the safe thresholds.

In *A just world on a safe planet* published in *Lancet Planetary Health* in 2024, the Earth Commission^{vii} identified also *where* on the planet safe and just boundaries are currently exceeded and are exposing people to harm, reinforcing their vulnerability. This requires an urgent and swift collective return to the safe and just space within the thresholds.

Figure 2. Map showing global core (A) and regional impact (B) climate tipping elements.



Source: Gupta, Liverman et al. 2024.

...While minimum needs have not been met

We have crossed the thresholds but have not yet met the minimum needs of people as required by different SDGs. If we are to meet the minimum needs of the people below the minimum rights to water, food, energy and infrastructure (for housing and transportation), this would put increased pressure on the Earth system, particularly the climate.

By calculating this pressure in the same units as the thresholds, we can calculate the impact. This implies that meeting only these four basic needs in 2018 would lead to further crossing these thresholds. However,

looking at climate impacts, such pressures from the poorest third of humanity consuming at the level of 'minimum access' equal those caused by the wealthiest 1–4%.^{viii}

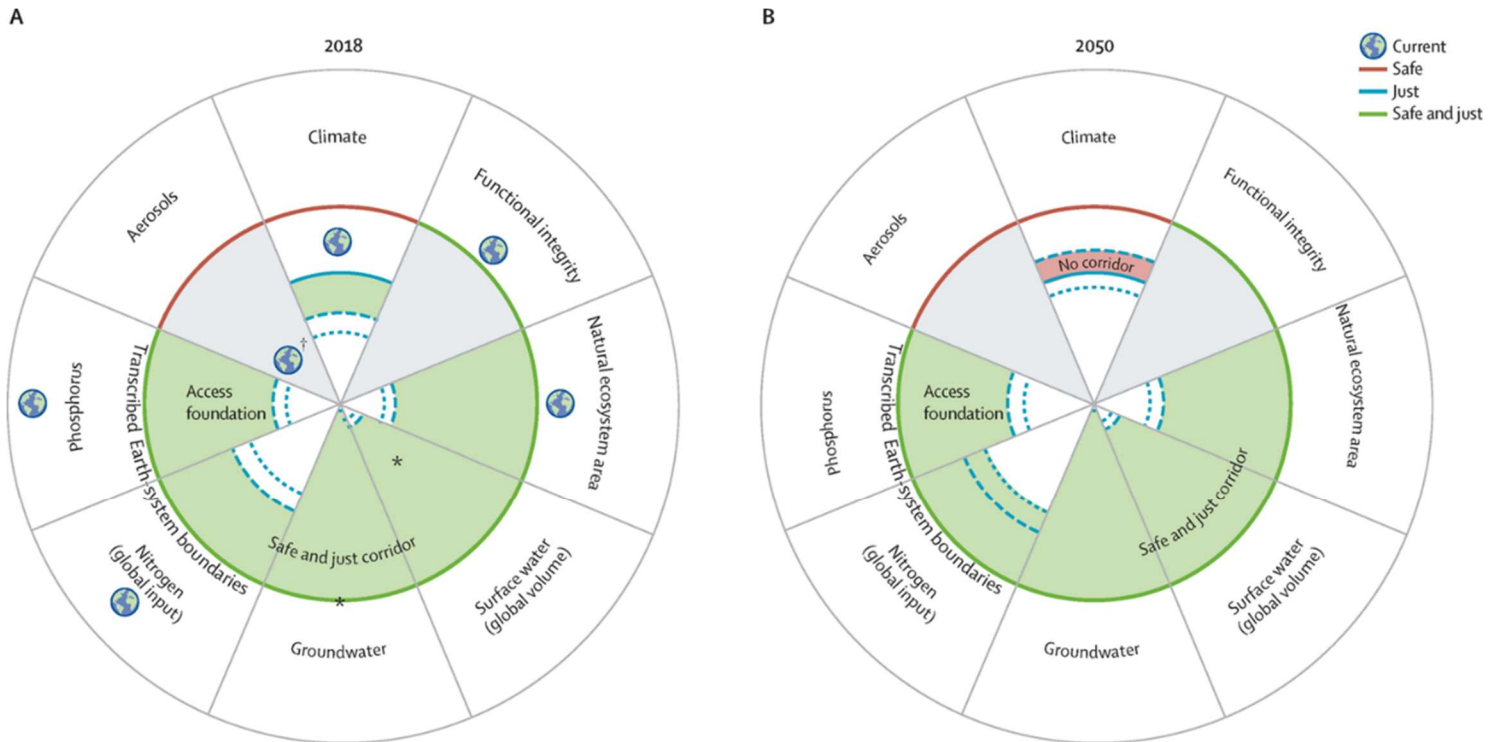
There are many routes to getting back in the safe space below the thresholds, but a possible *just* route is to ensure that *all* people world-wide have minimum access to food, water, energy and infrastructure (housing and transport) and see how much space is then left to allocate.

If the threshold is the ceiling and the pressure on the environment of meeting basic needs the foundation, the area in between is the safe (and just) corridor. Our

results show that meeting the minimum needs of all people globally already takes up a significant portion of the environmental space, not because the poor are to blame, but because the current system allocates resources and emissions unequally. In 2018, the greenhouse gas emissions associated with basic needs for the poorest third of humanity were comparable to those of the wealthiest 1–4%.

This highlights that the room left for additional emissions is extremely limited, especially if fossil fuel dependency continues, and that a just transformation must focus on reducing luxury emissions and redistributing resource use, rather than placing the burden of mitigation on those whose needs have not yet been met (Figure 3). Without such redistribution, there will be no safe and just corridor left by 2050.

Figure 3. Quantification of the safe and just corridor in 2018 (A) and projections to 2050 (B)



Source: Gupta, Liverman et al. 2024.

Transformation

In accordance with the Earth Commission's justice framework, transformation to ensure that 'no one is left behind' and that we all have good health and prosperous economies requires that we all live within thresholds and comply with ambient standards. This requires looking differently at the environmental systems we depend on; adopting appropriate just means for achieving those ends, including revisiting the drivers of environmental degradation and vulnerability; ensuring liability for harm caused to others; revisiting the allocation of scarce resources such that they are distributed more equally; and how responsibilities should be shared.

Recommendations:

1. The oceans, water, climate, biosphere systems should be seen as a local to global commons for whom the state is responsible for maintaining.^{ix}
2. *Ends*: It is critical that environmental thresholds and ambient standards are discussed and adopted to ensure that we do not harm our local to global ecosystems to such an extent that it makes it impossible to have a flourishing and healthy society.
3. *Ends*: The minimum needs of all needs to be prioritised in accordance with the leave no one behind principle; however, such needs should be met while respecting safe boundaries and thus avoiding long-term damage to human health.
4. *Means*: In order to meet the above ends, the drivers of environmental pollution and vulnerability need

to be addressed. This requires three transformations: (i) a transformation of unsustainable consumption patterns; (ii) a transformation of unsustainable technology; (iii) a transformation of unsustainable economic systems. All three require transforming governance from local to global scales. The Earth Commission also highlights the need to transform social norms and values to address the root causes of environmental change and vulnerability and the importance of women's rights in reducing overall population pressures.

We conclude that for healthy people and a healthy economy, it is essential to ensure that environmental thresholds and ambient standards are not crossed and that the minimum needs of people are met. Economic activity can then thrive in the safe and just corridor. A just approach anchored in gender rights and human health is essential for the global economy.

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ⁱ UN Environment, *Global Environment Outlook – GEO-6*.

ⁱⁱ Gupta et al., "Re-Imagining the Driver–Pressure–State–Impact–Response Framework from an Equity and Inclusive Development Perspective."

ⁱⁱⁱ Gupta et al., "Earth System Boundaries and Earth System Justice."

^{iv} Gupta et al., "Earth System Justice Needed to Identify and Live within Earth System Boundaries."

^v Rockström et al., "Safe and Just Earth System Boundaries."

^{vi} Richardson et al., "Earth beyond Six of Nine Planetary Boundaries."

^{vii} Gupta et al., "A Just World on a Safe Planet."

^{viii} Rammelt et al., "Impacts of Meeting Minimum Access on Critical Earth Systems amidst the Great Inequality."

^{ix} Rockström et al., "The Planetary Commons."