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Commentary

Stockholm to Stockholm: Achieving a safe Earth requires goals that incorporate a just approach

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A global agenda-setting opportunity to reverse ongoing planetary destruction is coming in 2022 with Stockholm+50. The independent Earth Commission will propose a safe and just corridor for humanity to spearhead its transformative agenda, defining goals for a stable Earth integrating justice.

Since the 1972 Stockholm Conference on the Human Environment, the great acceleration of human pressures on Earth has continued. These pressures have seriously degraded ecosystems and life support systems. Today we have increased evidence of crossing or approaching critical tipping points.[1,2]

Already in Stockholm in 1972, nations recognized the human destruction of our global commons (i.e., the global public goods on Earth that we all depend on for livable environments and that contribute to regulate the stability of the planet, such as atmosphere and land, the oceans and ice sheets, the climate system and biodiversity, the forests, and the flows of carbon, nitrogen, water, and phosphorus). It warned that "through ignorance or indifference we can do massive and irreversible harm to the earthly environment on which our life and well-being depend."[3] Fifty years later, and in spite of growing evidence, we have not succeeded in achieving a way to live sustainably within the boundaries of a stable Earth system. Instead, we have reached a saturation point of the Earth's capacity to support future generations.

The potentially irreversible, existential risks facing humanity, with very limited time to solve the Earth system crises, place us in a state of planetary emergency. It is in this context that the upcoming Stockholm+50, a high-level political gathering to be held in 2022, can be of fundamental importance. It has the potential to drive forward the transformational change needed to address the enormous challenges of climate change, biodiversity loss, and erosion of the life support systems of the planet coupled with increasing inequalities, environmental injustice, and insecurity. We need to address the root causes, rather than the symptoms: our relationship with nature and the causes of unsustainable investments, production, and consumption that would lock us into our current destructive pathways. Approaching tipping points of irreversible change that lead to environmental and social instability for current and future generations urgently calls on science and society for a planetary target-setting agenda before Stockholm+50 to underpin the needed transformational change led by societies. By Stockholm+50, the Earth Commission is to set scientific targets defining a "safe and just corridor" for people and the planet. Hosted by Future Earth and part of the Global Commons Alliance, the Earth Commission will define the North Star or Southern Cross—in the same way as the 1.5°C target for climate—to guide us away from our path of destroying our global commons on which we depend. This commentary presents our views of what has led us to our almost persistent failure to be the stewards of our planet and how integrating justice into the setting of scientific targets for Stockholm+50 could guide the world toward a safe and just future.

Ambition for our commons needs a scientific basis

Climate science policy dialog and political negotiations led to the historical worldwide adoption in 2015 of the Paris Agreement of holding the increase in the global average temperature to well below 2°C of pre-industrial levels and aim to limit it to 1.5°C. However, for other domains than climate, both scientific consensus and political will are still lacking. Collectively, we do not have the quantified targets that set the guardrails or boundaries for a world that develops within a stable Earth system.

Scientific consensus is lacking partly because of the challenge to aggregate and scale local data and processes into global apex targets, like the climate target (for example, for the preservation of the biosphere) and partly because data are still insufficient (for example, in relation to our damage to the oceans).

The 2021 "assessment of assessments"[4]—*Making Peace with Nature*—has provided a baseline of information from the 25 major global assessment reports. It shows that in the past 50 years, although the economy has grown by five times and on average people are better off, these improvements have not only been unequally shared between countries and people but have also come at the cost

of land degradation, climate change, and unprecedented biodiversity loss. It concludes that, since humans are still destabilizing the biophysical systems we depend upon and negatively impacting the health of about half the world population, the rising GDP is a poor indicator of development. While this report tells us how bad the damage is, it does not consider systemic interactions at the planetary level leading to identifying safe and just targets; while it proposes a just transformation, it does not actually elaborate fully on this term.

Guiding values underpinning safe and just targets

Understanding current global problems and their underlying causes is complex. Complex problems are systemic, with multiple feedbacks between biophysical and social domains, and "wicked" because those most strongly affected are unlikely to be the perpetrators.[5] Because consensus on science and values is limited, and because time frames between commitments and impacts differ and are difficult to predict, these problems are associated with uncertainty and value judgements and are thus unstructured. Solving such problems requires deeper understanding of the scientific issues and communicating that knowledge with a sense of authority, legitimacy, and clarity such that politicians and the public understand both the problems and possible solutions. To address the wicked nature of the global problems requires first setting a shared and just value system about how to address these problems. While some have argued that there are not enough resources for everyone on Earth and hence one should promote "lifeboat" ethics—i.e., protect those within the lifeboat and cut the lifeline to others,[6] others argue that we are all on the lifeboat and, even if more challenging, a just world is the only way to ensure that we can all live within planetary limits. Therefore, the Earth Commission is not only trying to identify safe targets but also ambitious just targets and transitions.

Safe and just: Shaping targets in the Anthropocene

The successful framing in the climate science policy interface demonstrates that a clear "safe" (biophysical) target is needed to avoid "dangerous climate change."[7] Likewise, as a first step, we propose that clear, safe planetary targets for all global commons are needed to guide future policy for and governance of the global commons.

Growing evidence suggests that human enterprise is disrupting the biophysical processes and cycles of Earth's natural systems to the point that we are destabilizing tipping elements in the Earth subsystems that, when triggered, could lead to irreversible damage.[2,8] Such tipping elements could eject the Earth out of the only geological state that is known to support human development, the Holocene.[9] The planetary boundary framework has advanced this body of knowledge by quantifying targets for the first time[1,10] and questioning humanity's aggregate interference in nine Earth system processes assessed as the biophysical systems regulating the state of the Earth system and human life support, and thereby defining a safe operating space for our global commons. Even so, scientific knowledge indicates interactions and cascading effects between the Earth system processes that can further narrow the safe operating space originally defined by the planetary boundary framework.[11] Therefore, we need first to enhance our understanding of biophysical interactions, at the appropriate scales, before defining how we can live on a safe planet and address the drivers and pressures that affect the reallocation and redistribution of responsibility to maintain the global commons.[12]

Biophysically safe cannot exist without justice

A safe world may not be inherently just for all humans and may not ensure that no one is left behind. As we currently live in an unjust world, business-as-usual strategies could prolong both a social catastrophe and even frustrate our ability to live within biophysically safe limits.

But what *is* just? Building on scholarship within the Earth System Governance community, we propose two ways to frame just targets. First, a safe target for humanity may still harm the lives of many humans, particularly in vulnerable regions and further exacerbate the inequalities between Global North and Global South. In the climate science policy analog, the "well below 2°C target" was considered inadequate after similar considerations and replaced by the "1.5°C safe" target.[7] Second, even at 1.5°C, there is still considerable harm to humans. Understanding at what level no human will be significantly harmed is a key step toward an elaboration of a just target from the safe perspective.

Third, if we are to meet the SDGs in Agenda 2030 and provide people access to food and nutrition security, clean water and sanitation services, homes, transport, and income or jobs, without addressing the underlying systemic inequalities and radically modifying our development model, the finite safe boundaries will likely be overshot. What this implies is that, depending on initial assumptions, different target levels will need to be discussed in order to reach acceptable targets that balance safety and justice.

The Earth Commission, aligning with the logic of the Paris targets, aims at setting the most stringent targets to define a safe and just corridor within which humans and nature can flourish. We propose that setting a safe and just corridor first is the necessary milestone for deciding how the SDGs can be achieved, redefine our relationship with nature, and address the gaps toward planetary stewardship.

Radical transformation as the road to Stockholm+50

Staying in a safe corridor that leaves no one behind likely implies that meeting the SDGs becomes impossible without radical transformation. But transformation within a safe and just corridor is complex: green energy and technological development alone might not only fail to solve the problem but could also exacerbate inequalities, dispossession, and externalization and shift responsibilities toward poorer and more impacted regions.[13] For example, negative-emission technologies and massive bioenergy for carbon capture and storage (BECCS) are generally proposed as the way toward a (transformed) net-zero-emissions world.[14] Without including a just approach, massive BECCS create demand for scarce land, raising its costs. As asset managers of the wealthy transition away from fossil fuels, they are more likely to purchase land elsewhere in order to invest in biofuels and cash crops that will compete with food crops, making the latter

unaffordable and leading to land grabbing.[15,16]

Current and expected policies will be unlikely to address the socio-ecological challenges facing us. Evidence demonstrates that unregulated attribution of responsibility to protect our global commons leads to growing inequality and externalization.[17] We need new rules of engagement. We propose three critical requirements for the just transformation. First, transformations require technological development; changes in extraction, production, distribution, and consumption patterns; and investment in conservation and restoration. Second, transformations need to address the single-minded focus on GDP and deregulated markets.[14] Third, transformations have to be subject to the precautionary and justice principles. The precautionary principle aims at ensuring that new developments do not unleash new irreversible ecological damage, and the justice principle aims at reducing harm, ensuring minimum access to resources to enable people to escape from poverty and allocate the remaining resources, risks, and responsibilities equitably. Our hypothesis is that if transformations are guided by safe and just principles together, it will be possible for humanity to live in a safe and just corridor and inform target setting for cities, companies, and actors engaged in the transformation process.

Stockholm+50 should be the next big watershed moment for action toward a desirable future for the planet and people, going well beyond climate only, to integrate all global commons, the stability of Earth, and a just distribution of the remaining ecological space on Earth to all citizens. By defining targets at a planetary level, the Earth Commission can spearhead momentum by Stockholm+50 to set clear targets to inform growing collective action to transform toward all humans living within a safe and just corridor on Earth.

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