



Reconciling safe planetary targets and planetary justice: Why should social scientists engage with planetary targets?

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ARTICLE INFO

Keywords

Planetary justice
Planetary boundaries
Safe planetary targets
Just targets

ABSTRACT

As human activity threatens to make the planet unsafe for humanity and other life forms, scholars are identifying planetary targets set at a safe distance from biophysical thresholds beyond which critical Earth systems may collapse. Yet despite the profound implications that both meeting and transgressing such targets may have for human wellbeing, including the potential for negative trade-offs, there is limited social science analysis that systematically considers the justice dimensions of such targets. Here we assess a range of views on planetary justice and present three arguments associated with why social scientists should engage with the scholarship on safe targets. We argue that complementing safe targets with just targets offers a fruitful approach for considering synergies and trade-offs between environmental and social aspirations and can inform inclusive deliberation on these important issues.

1. Introduction

As human activities threaten to make the planet unsafe for humanity and other life forms, scholars are identifying planetary boundaries (Rockström et al., 2009; Steffen et al., 2015) and safe planetary targets set at a distance from thresholds beyond which critical Earth systems may collapse. Such planetary boundaries have generated considerable debate. They have been (a) rejected as lacking legitimacy (Biermann and

Kim, 2020), (b) modified to reflect new or alternative scientific understanding (Running, 2012; Nash et al., 2017), and (c) complemented by adding social floors (e.g. in one instance popularized as the doughnut approach) (Raworth, 2012, 2017; Spangenberg, 2014; Ensor and Hoddy, 2021). The Earth Commission, an initiative of Future Earth and the Global Commons Alliance, has set out to combine safe biophysical targets with just targets that attempt to minimize harm to humans while ensuring minimum access to critical resources and services for the

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<https://doi.org/10.1016/j.esg.2021.100122>

Received 15 October 2021; Received in revised form 5 November 2021; Accepted 10 November 2021

Available online 23 November 2021

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wellbeing of the global population (Rockström et al., 2021a, 2021b).

This paper is based on research within the Transformations working group of the Earth Commission. This group includes researchers from the Global North and South, including Africa, South America and emerging economies in Europe, representing different social science, law and natural science disciplines. Our analysis builds on literature reviews, workshops of invited speakers, and feedback on presentations at several international conferences. This group guides the Earth Commission and partners in the Global Commons Alliance including the Science Based Targets Network of cities and businesses on how to integrate justice in the setting of biophysical targets and transformation.

Both crossing planetary boundaries and setting safe targets has profound implications for human wellbeing. Yet, social science analysis that systematically considers the justice dimensions of such targets (e.g. Hickel, 2019; Pasgaard & Dawson, 2019; Leach et al., 2018; O’Neill et al., 2018; Häyhä et al., 2016) is limited. To encourage productive and systematic engagement between the social and natural sciences on safe planetary targets, we cluster justice perspectives in relation to safe targets; explore three arguments for why social scientists should engage with biophysical targets from a justice perspective; and briefly discuss how this can be done.

2. Clustering justice perspectives with respect to safe planetary targets

Scholarship on justice is extensive and derives from several schools of thought. Scholarship on global justice (Cimadamore, 2016) and planetary justice (Biermann and Kalfagianni, 2020; Hickey and Robeyns, 2020; Kashwan et al., 2020; Dryzek and Pickering, 2019) is growing and complements the accumulated work on access and allocation within the Earth System Governance network (Gupta & Lebel (eds.) 2020; Gupta and Lebel, 2020). While acknowledging the complexities and nuances in the justice literature (Dirth et al., 2020), we cluster justice approaches with respect to safe planetary targets into four ideal-types (cf. Tàbara and Chabay, 2013) (see Fig. 1) that range along one axis from worldviews promoting the existence of universal values (e. g. human rights as captured by international laws) to those only accepting contextual values (e.g. local justice issues as promoted by diverse communities); and along the other axis, from those advocating for reformist justice (e.g. including some pro-poor measures) to

transformative justice (aimed at generating the necessary systemic change to ensure long-term equitable redistribution and allocation of resources, risks (harm) and responsibilities). This leads to four quadrants of justice: (Q1) recognizes the need for planetary targets and addresses global social-ecological systems’ transformation challenges as well as local challenges contextualized in their broader planetary dimensions; (Q2) recognizes planetary targets and addresses the aim of fulfilling some minimum needs without major systemic transformations; (Q3) focuses exclusively on contextual, inclusive economic growth within local ecological limits; and (Q4) focuses exclusively on transforming contextual well-being conditions through local redistributive policy while living within local limits.

The concept of planetary justice moves beyond global justice in that it draws attention to the inseparability of social-ecological systems in the Anthropocene and the resulting obligations across geography, time, and species. It also discusses justice issues at a planetary scale or, if discussing local justice concerns, it contextualizes them in the broader Earth system (Biermann et al., 2020; Biermann and Kalfagianni, 2020). Therefore, our approach to engaging with safe targets builds on ideas of *multi-scale planetary justice* spanning Q1 to Q4, which allows for universal values as well as contextual interpretations but takes a transformative angle. We suggest that there is enough evidence that incremental reformist justice is inadequate to meet both the social goals in Agenda (2030) as well as the environmental ones (e.g. meeting the food security goals can lead to crossing planetary boundaries (Willett et al., 2019) and without an equitable approach it will be impossible to convince developing countries not to use their fossil fuels). Hence meeting these goals sustainably requires transformative justice.

3. Why social scientists should engage with the scholarship on safe targets to include justice perspectives

Despite repeated calls for stronger collaboration across social and natural sciences and for an integrative approach in exploring plausible and desirable futures in the Anthropocene (Brondizio et al., 2016; Bai et al., 2016), the engagement of social scientists is somewhat limited. Hence, and building on the above justice framing, we advance three arguments for why social scientists should engage with the scholarship on setting safe targets from a justice perspective.

First, we argue that **setting safe planetary targets is necessary**

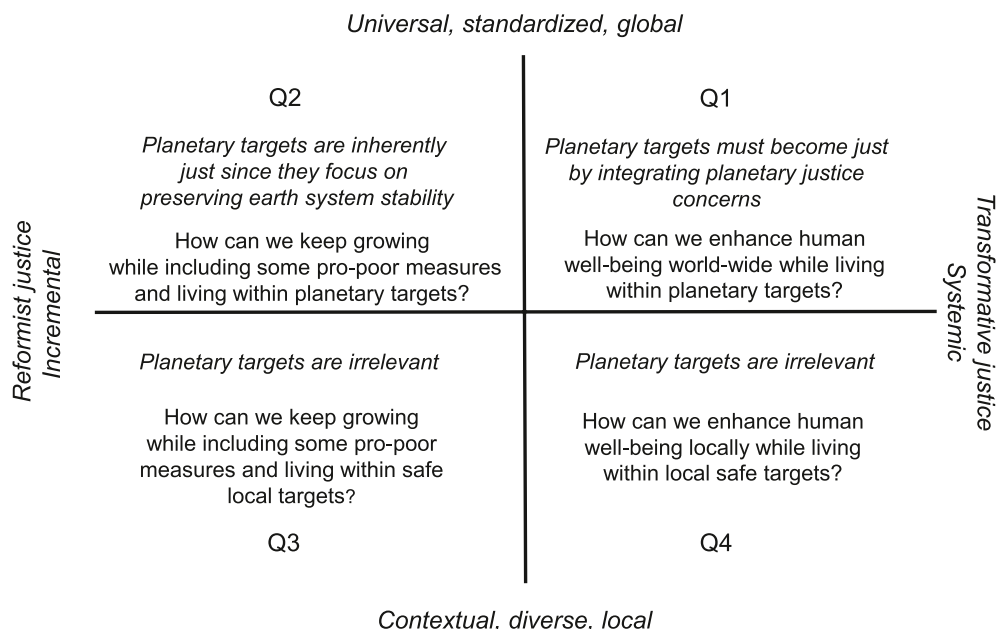


Fig. 1. Clustering perspectives on planetary justice.

from a justice perspective. We note that some scientists argue that safe planetary targets are of minor importance for social justice compared to more urgent global socio-economic issues; that local socio-economic justice issues are not well connected to global biophysical issues in the short-term; and that designing and reaching safe global targets that work to everyone's benefit is an illusion that must be abandoned (Hulme, 2020).

However, we argue that biophysical targets that reduce risks of crossing planetary boundaries can decrease harm to humans and thus increase social justice. Moreover, social-ecological issues are interwoven and have to be addressed synergistically (Roseland, 2000). For example, 70% of the world's poor depend directly on nature's contributions to people (Secretariat of the Convention on Biological Diversity, 2010). If we only focus on local socio-economic justice, and do so in a reformist mode, we will fail to solve cumulative and long-term international, intra- and intergenerational planetary threats or the structural, trans-boundary injustices that emerge in a globalized world.

Second, we submit that **safe planetary targets need to be modified to ensure transformative, planetary justice**. While some scholars imply that safe targets are inherently just as they aim to preserve Earth system stability for the survival of humanity (Rockström et al., 2009), we argue that Earth system stability for the survival or even wellbeing of humanity is not necessarily just for *all* humans and that safe targets may even make things worse for some. Biophysically 'safe' targets may be incompatible with goals for achieving social justice and human development (Biermann, 2012) and may negatively impact on the world's poor (Kashwan et al., 2020). For example, setting aside large areas (as much as half the Earth; Wilson, 2016) from human use for biodiversity protection, without addressing systemic issues, such as inequality in land tenure and the food consumption habits of the rich, could have potentially devastating impacts on the world's poor and food security (Mehrabi et al., 2018; Obura et al., 2021; Büscher et al., 2017; Kopnina, 2016; Schleicher et al., 2019), and potentially ignore relational values for nature (Wyborn et al., 2021). For climate, the 1.5 °C and 2 °C global warming limits, while avoiding the most extreme climate impacts, still result in considerable harm to the most vulnerable (Masson-Delmotte et al., 2018). Moreover, evaluating and implementing safe targets from a broad transformations-oriented justice perspective and criteria (Grasso and Tabara, 2019) can increase the chances of their implementation. Behavioural experiments show that integrating justice may mobilize people to change their behaviour (Gampfer et al., 2014; Liebrand et al., 1986) while lack of collaboration and income inequalities will only exacerbate resource overexploitation and scarcity (Owusu et al., 2019).

Third, it can be **legitimate for scholars to qualify safe planetary targets by proposing that they also be just**. Some object to setting targets on behalf of 'humanity' because no legitimate authority commissioned the scientists to do so (Biermann and Kim, 2020) and argue that it is illegitimate for scientists and policymakers to undertake such an exercise (Boelens et al., 2018). In addition, it has been argued that solutions-oriented research risks creating post-political narratives that promote techno-managerial planning and administration at the expense of democratic contestation (Löwbrand et al., 2015). Others are concerned that targets are often based on simulation or integrated assessment models which use assumptions that may be inappropriate (Grubler et al., 2018), inaccurate (Castles and Henderson, 2003; Pedersen et al., 2020) unrealistic (Rosen, 2016), reductionist, power blind, 'dehumanized', decontextualized (Carton, 2020), disembodied (Porter, 1995), and may disregard ethical (Lenzi, 2018) and historical responsibility (Parikh, 1992; Lenzi, 2018) or homogenize knowledge (Rosen, 2016; Ford et al., 2016).

We counter these arguments by proposing that it is a legitimate and useful research activity to study and suggest possible just targets and assess their implications, and to transparently grapple with the complexity of these issues in order to help decision-makers in their deliberations to set a path towards a better future for people and the planet. Extended peer review processes can make the targets more

legitimate. Democratic deliberation can and should occur in defining, refining and implementing such proposed targets. In addition, integrated assessment models have been fairly accurate with hindsight and have become more inclusive over time (Pedersen et al., 2021). While setting safe targets without accounting for justice in scenarios may reproduce inequalities (Parikh, 1992), complementing them with just targets can expose potential trade-offs between safety and justice in a scientifically and ethically transparent manner.

4. How social scientists could engage with the scholarship on safe targets

Academic efforts to complement and contrast safe targets with considerations of justice are challenging but useful. A key challenge is that the biophysical targets for the Earth system are usually quantitative (e.g. 2 °C of warming) whereas social justice is often measured more qualitatively with social scientists often using narratives and qualitative arguments. While there are a plethora of social and development indicators that are used to assess poverty, inequality or harm to humans, many are measured infrequently or are only proxies (Liverman 2018).

We combine a narrative and quantitative approach in proposing how justice can be used in target setting using two concepts - harm and access (Rockström et al., 2021b). Quantifying justice is reductionist but enables inclusion of some justice aspects in discussing biophysical targets.

While some Earth system scientists want to identify safe targets that will ensure the functioning of the Earth system for humanity, we argue that a justice perspective requires that, for each biophysical domain, these targets also avoid significant (irreversible and existential) *harm* to humans.¹ For example, a 1.5 °C target may still cause widespread harm to present and future humans. This suggests that a just target would be more stringent in some cases than the safe planetary targets. At the same time, human rights and Agenda 2030 require us to meet several social goals. Hence, we will also examine the Earth system implications of ensuring *access* to energy, food, water and infrastructure (housing and transport) for those who currently lack such access, in a business-as-usual scenario (i.e. a situation without substantial institutional, including technological and distributive, transformations). These implications will be measured as additional pressure on biophysical variables such as greenhouse gas emissions, nutrient use, water use, land use, etc.

We anticipate that a safe target may still cause significant harm to people and that we may therefore need much more stringent global biophysical targets from a just (no significant harm) perspective; however, achieving minimum access without transformation may increase pressures on the Earth system. The gap between the just (access) targets and the just (no harm) targets will need to be bridged through just and transformative governance. Hence, if we are serious about the Sustainable Development Goals, the existing distribution of resources, risks and responsibilities will have to be revisited.

We recognize that quantifying justice may be seen as problematic because of its reductionism and the lack of focus on procedural justice. However, we see such preliminary quantification as a first step towards strengthening the justice narrative in relation to biophysical targets.

5. Conclusion

In this perspective we have introduced a framework that clusters justice perspectives with respect to safe planetary targets into four ideal-types. These range along one axis from worldviews promoting the existence of universal values to those only accepting contextual values;

¹ We acknowledge that planetary justice goes beyond anthropocentrism but the human-nature relationships are being explored by a working group on biodiversity within the Earth Commission and are thus outside the purview of this paper.

and along the second axis from those advocating for reformist justice to those promoting transformative justice. We then suggested that taking a *multi-scale, transformative planetary justice* approach can allow for justice considerations to be integrated into proposals for safe planetary targets.

Such an integration can lead to redefining targets focused on Earth system stability and safety to also minimize harm to humans and ensure access to the resources needed for a minimum level for all and can highlight the scale and speed of the global transformations needed. We do not wish to suggest that justice can be reduced to a calculus. Rather, given the ‘trust in numbers’ (Porter, 1996) prevalent in our societies and the impact of the scholarly work on safe targets on policymaking and human wellbeing, we find it important to examine the justice implications of such targets. By juxtaposing safe targets with harm and access concerns, we hope to make it more difficult for justice and equity concerns to be ignored.

Foregrounding the SDGs by way of harm and access targets places social concerns on the same footing as environmental ones. It also enables synergies and trade-offs between environmental and social aspirations to be transparently investigated and facilitates democratic deliberation on these important issues.

Funding

This work was supported by the Global Challenges Foundation and the Global Commons Alliance, a sponsored project of Rockefeller Philanthropy Advisors (with support from Oak Foundation, MAVA, Porticus, Gordon and Betty Moore Foundation, Herlin Foundation and the Global Environment Facility).

Author contributions

This perspective emerged from the first workshop (held on November 12, 2020) among the Earth Commission Working Group 4 members as well as many brainstorming sessions between senior and *junior scholars* within the Earth Commission. The first two authors led the process and others contributed to it.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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