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Political feasibility of 1.5°C societal transformations: the role of social justice

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Constraining global climate change to 1.5°C is commonly understood to require urgent and deep societal transformations. Yet such transformations are not always viewed as politically feasible; finding ways to enhance the political feasibility of ambitious decarbonization trajectories is needed. This paper reviews the role of social justice as an organizing principle for politically feasible 1.5°C transformations. A social justice lens usefully focuses attention on first, protecting vulnerable people from climate change impacts, second, protecting people from disruptions of transformation, and finally, enhancing the process of envisioning and implementing an equitable post-carbon society. However, justice-focused arguments could also have unintended consequences, such as being deployed against climate action. Hence proactively engaging with social justice is critical in navigating 1.5°C societal transformations.

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Introduction

Urgent and deep societal transformations are needed to constrain global climate change to 1.5–2°C. Within the Paris Agreement, a 1.5°C aspiration was agreed upon to protect vulnerable low-lying island states, and to avoid crossing potential climatic thresholds that may occur at 2°C [1–3]. It is estimated that the world must act within 5–17 years to have a 66–33% chance of achieving this goal [4]. The scale of this challenge is immense: Rockström *et al.* demonstrate that carbon emissions must be reduced by half every 10 years between now and 2050 [5•]. Despite greenhouse gas reduction commitments made under the Paris Agreement via Intended Nationally Determined Contributions (INDCs), many countries continue to struggle to implement actions commensurate to meeting a 1.5°C target [2].

Societal transformations to meet a 1.5°C global target involve rapid, intentional trajectories of decarbonization, and the interconnected technical, economic, social, and political changes that this entails [6–9]. This makes unprecedented demands on national and subnational political systems, and the political feasibility of such transformations is often questioned. Scholars urgently need to consider how such societal transformations can be realized within national/subnational political contexts. Often this discussion is a purely technical or economic one. Here we consider an alternative and explore the potential of social justice as an orienting principle for shaping effective and ethical decarbonization trajectories.

Justice has played a key role in global climate change debates over many years, particularly regarding the distribution of responsibilities, rights, and mutual obligations between nations [3,10,11,12•,13–18], and more recently, financing of adaptation and relocation [19–24]. Notions of justice are embedded in the Paris Agreement itself, which acknowledges the importance of human rights, including those of vulnerable and marginalized social groups, and the role of equity in the Agreement's implementation and evaluation. More specifically, it notes "the importance for some of the concept of 'climate justice', when taking action to address climate change", and states the need to take into account 'the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities' [1]. This highlights the importance of justice in forward movement on decarbonization.

Scholars are beginning to systematically consider the social justice implications of climate change responses

at national and subnational levels. For example, scholars have turned attention to issues of justice in adaptation, bringing forth the interplay between global, national, and subnational levels regarding climate change impacts and differential abilities to adapt [25–28,29•,30–32]. So far there has been comparatively less attention to social justice issues associated with mitigation at national and subnational levels [33,34••,35], although early conversations are emerging around ideas such as 'just transitions' [36,37••,38,39•]. Social justice is important for 1.5°C transformations for several reasons: first, protecting vulnerable people from climate change impacts, second, protecting people from disruptions of transformation, and finally, enhancing the process of envisioning and implementing an equitable post-carbon society.

This paper reviews the role of social justice as an organizing principle for 1.5°C transformations at national/subnational levels. It focuses on the question: *What is the role of social justice in increasing the political feasibility of 1.5°C transformations within national/subnational political systems?* The paper takes stock of existing literature on climate change and social justice, with a particular focus on decarbonization, and considers how social justice theories can be operationalized to enhance the feasibility of climate action and rapid decarbonization. We bring together diverse strands of thinking about social justice and climate change, which is important because while there has been substantial work done, this literature remains disparate, not very coherent, and is rarely synthetically evaluated. Attention to social justice could increase the political feasibility of 1.5°C transformations by legitimizing and motivating both public and private responses at a scale matching the extreme urgency faced, however this may not always be so. We first consider the political challenge of 1.5°C transformations, then review key bodies of thinking on justice in the climate change and global sustainability literature, and finally reflect on the implications of social justice thinking for the political feasibility of 1.5°C transformations.

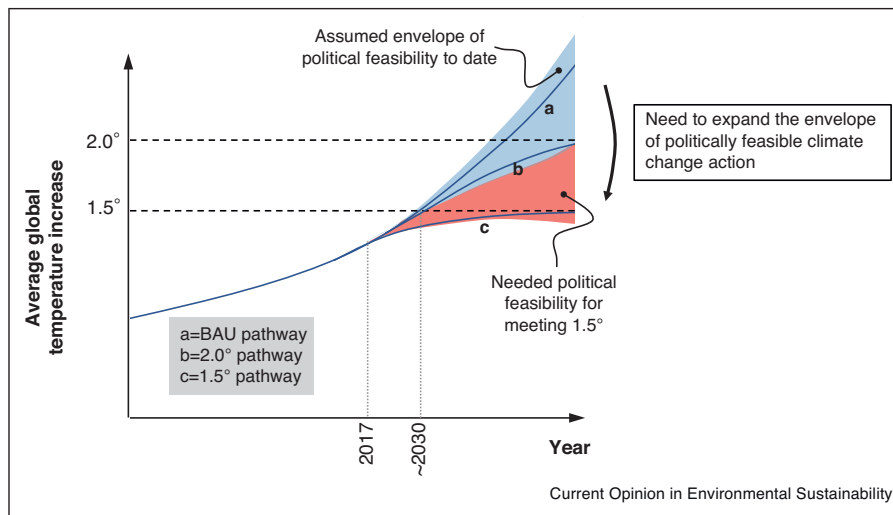## Political feasibility of 1.5°C societal transformations

Research increasingly demonstrates that while decarbonization may be technically and economically feasible, political barriers make this difficult to realize [6,8,40,41]. At the global level, the Renewable Energy Policy Network for the 21st Century (REN21) synthesizes knowledge on renewable energy transformations [42], whereas others investigate it at the national level, for example, in Australia [43] and the United States [44]. Scholars have also analyzed technical feasibility of transformation *pathways*: the 2014 IPCC Mitigation Report contained a chapter on modelling transformation pathways [45], and Rogelj *et al.* analyze energy system transitions to meet a global 1.5°C target, finding that the requirements are similar to meeting a 2°C target but require more rapid

scaling-up of decarbonization across sectors and allow less policy flexibility [46•]. What is needed is corresponding attention to the political dimensions of feasibility.

Political feasibility refers to the collective belief within a domestic political system about the scale and speed of decarbonization that is seen to be desirable and plausible within that society. This is subjective, but also grounded in the material realities of a society (e.g. geography, infrastructure, wealth). What is deemed to be politically feasible also changes over time. While political feasibility is likely to remain contested among different actors, it draws attention to the range of decarbonization trajectories that lie within the mainstream political imaginary, and the extent to which this aligns with meeting a 1.5°C target. Figure 1 conceptualizes political feasibility as an 'envelope' of possible responses ranging from business-as-usual (BAU) emissions trajectories at the weakest end, to a 1.5°C trajectory at the strongest end. Multiple factors may influence political feasibility, such as demonstrations of technical and economic feasibility [42,43,45,46•], support of various civic actors (e.g. politicians, industry, media, citizens), and policy innovation [47–50]. Here we examine the role of social justice in influencing the political feasibility of ambitious decarbonization trajectories.

Scholars are beginning to rethink how theories of justice are operationalized practically in political struggles regarding climate change [51,52,53••]. Appeals to justice (e.g. moral arguments about different actors doing their fair share, notions of fairness about burdens of climate action such as public investment, taxes, or electricity prices), are likely to be mobilized in the argumentation of actors aiming to build or disrupt political coalitions regarding 1.5°C transformations. Scholars have found that perceptions of fairness can influence citizen acceptance of burdens associated with climate change responses [15,54,55]. At the same time, neglecting the social justice implications of decarbonization efforts, such as the need to explicitly design responses to address perverse, regressive, or unintended consequences, risks causing limited buy-in or backlash when trade-offs come to light. Klinksy *et al.* argue that 'failing to account for the equity implications of policy actions required for rapid decarbonization leaves climate policy efforts vulnerable to attack from such pro-status quo actors as fossil fuel companies, who exploit equity concerns to generate political opposition to action' [53••]. In Germany, justice arguments about electricity costs have been used to attack the energy transition (*Energiewende*), and argue (with some success) for the dismantling of subsidies for renewables [56]. Attention to social justice from the start is vital for progressing transformation that is democratically and ethically defensible. The concept of social justice can be employed as an *orienting principle* for climate action by state and society (e.g. following Krasner [57]). It provides a lens for fusing

Conceptualizing the political feasibility of different levels of climate change response.

instrumental (e.g. effectiveness) and deontic (e.g. ethical) aspects of 1.5°C transformations.

Social justice and societal transformations
Approaches in the literature
The concept of social justice broadly concerns moral questions about the means and ends by which resources, capital, and wealth are allocated across different members of society. At a philosophical level, justice can be conceptualized in different ways (e.g. utilitarianism, egalitarianism, libertarianism, freedoms) [58**,59**,60–63]. While it is beyond the scope of the paper to cover these theories, disagreement at this level is a key source of contestation over the meaning of justice in everyday political debates [27,64]. When applying justice theory to climate change, various aspects of the 'means and ends' of social justice are typically considered, including distributional justice (i.e. the distribution of benefits and burdens across different societal groups) [65,66], procedural justice (i.e. the design of just institutions and processes for decision making) [66–68], recognitional justice (i.e. recognition of pre-existing structures that place different actors in different positions *a priori* of efforts to address climate change; in other words, acknowledging the existence of a 'highly uneven playing field' [28]) [33,34**,69], and intergenerational justice (i.e. duties of justice to future generations due to the power asymmetry that contemporary actors have over future actors) [14]. These ideas are being linked to societal transformations in the climate change and sustainability literature. Four prominent approaches, which are used by different communities of scholars and policymakers in often overlapping ways, are:

Transformative adaptation
This approach highlights the importance of political economic structures in producing vulnerability and differential capabilities of actors to respond to climate change [70–74,75•]. It suggests that transformation requires addressing the root causes of vulnerability, many of which connect directly to underlying socioeconomic development pathways and power relations [76,77]. This line of thinking is also being connected to ideas about community-scale climate justice [78,79]. Equity and capability are key notions, and the argument is that equitable climate change adaptation requires contesting disempowering systemic structures. This approach emphasizes distributional justice (e.g. vulnerability, capabilities), procedural justice (e.g. extent to which vulnerable groups are able to influence decisions that affect them), and recognitional justice (e.g. extent to which pre-existing inequalities are recognized in responding to climate change).

Sustainability doughnut
This approach highlights two simultaneous sets of limits in sustainable development: an 'upper' limit of planetary ecological boundaries (e.g. for greenhouse gas emissions) and a 'lower' limit of equitable and just social conditions (e.g. access to basic material resources, livelihood opportunities, safety) that provide a foundation for human development and wellbeing [80,81]. Equity and capability are key notions in arguing for a minimum expectation for certain basic elements of wellbeing, also alluding to capabilities through emphasis on opportunities for self-development (e.g. education, income, jobs). This approach emphasizes distributional justice (e.g. access to resources), and recognitional justice (e.g. recognizing

that many people do not have basic needs met), set within a broader perspective of intergenerational justice (e.g. human development and sustainability).

Climate justice

This approach highlights equity in multiple ways: between privileged and disadvantaged groups within a society, between genders, between ethnicities, between the global North and South, and across generations [82–84]. Equity is a key notion because the climate justice movement argues that each person across the globe has a right to the same environmental 'space', and if pollution/emission rights were distributed on that basis, developing countries could receive substantial compensation for underusing their environmental space [85,86]. This approach emphasizes distributional justice (e.g. equal pollution/emission rights for all citizens), recognitional justice (e.g. recognition of historical legacies, critiquing the role of capitalism as a structural cause of climate change), and intergenerational justice (e.g. ecological debt of the global North to the global South for contributions to climate change over the last century), and potentially also procedural justice (e.g. through inclusion in decision-making processes) [31,78,87].

Just transitions

This approach highlights the importance of achieving transitions (typically focusing on a specific industry or community) in ways that are cognizant of justice issues, such as energy access for the poor, security for workers whose livelihoods are affected, and procedural justice in decision-making to avoid negative social impacts on particular groups [36,38,39•,88,89]. Similar ideas are also being developed under the notion of 'energy justice' [90•,91]. Equity and capability are key notions through a focus on disadvantaged actors who either stand to be adversely affected by change, or are currently without access to energy resources. This approach emphasizes distributional justice (e.g. addressing adverse impacts on livelihoods of workers and communities), procedural justice (e.g. seeking ethical and inclusive processes of decision-making centering on those most affected by action on climate change), and recognitional justice (e.g. recognizing systemic problems such as lack of access to energy resources).

Implications for the political feasibility of 1.5°C transformations

The approaches in 'Approaches in the literature' section increasingly overlap. Although they come to the topic of climate change and social justice from different angles and identify different subsets of justice-related issues, they make common observations about the centrality of social justice in climate action. Collectively they indicate that employing social justice as an orienting principle can increase the political feasibility of 1.5°C transformations in three key ways: first, protecting vulnerable people from climate change impacts, second, protecting people from disruptions of transformation, and finally, enhancing the process of envisioning and implementing an equitable post-carbon society.

Firstly, protecting vulnerable people from climate change impacts is emphasized by all four approaches through their focus on distributional and recognitional justices. They all center on the overlap of climate change vulnerability with other forms of vulnerability [76]: socio-economic vulnerability produced by inequitable political economic structures (*transformative adaptation*), socio-economic vulnerability due to development deficiencies (*sustainability doughnut*), differential levels of benefit from past carbon emissions (*climate justice*), and economic vulnerability caused by both climate change and global economic change (*just transitions*). This points to ways in which social justice can increase the political feasibility of 1.5°C transformations by aligning decarbonization with responses to other pressing issues (e.g. access to education, gender equity, housing affordability, impacts of global economic change). It can also sensitize decarbonization efforts to differential vulnerabilities through intersectional analysis, such as regarding gender [92,93] and indigenous rights [94–96]. This could allow for building new and broader political constituencies in support of transformation (a core focus of *just transitions*), as well as bringing underrepresented groups into the fold of inclusive and democratic decision-making (a core focus of *transformative adaptation*).

Secondly, protecting people from disruptions of transformation is emphasized particularly by *transformative adaptation* and *just transitions* approaches through their focus on procedural and recognitional justice. This could increase political feasibility of 1.5°C transformations by addressing the concerns of different groups who could otherwise become sources of resistance to climate action (e.g. workers in fossil fuel industries, citizens affected by electricity price rises, communities affected by industrial decline). However, this may remain politically volatile terrain in many societies because efforts towards transformation can often be exploited by interest groups opposed to climate action (e.g. a relatively small number of fossil fuel job losses may be elevated as an ideological political battle). A social justice lens can potentially shift the terms of debate and help to broaden the political coalition willing to coordinate or take action (for instance in the case of fossil fuel job losses, by making sure that alternative jobs are available), but may need to be complemented by a substantial mobilization of resources to affected groups.

One example is the reaction to the 2016 Fort MacMurray fires in Alberta, Canada. The immediate political and societal response was to restart the crippled oil sands production as soon as possible, despite the irony that the

fires were either caused in part by climate change that oil sands production contributes to, or a preview of a climate change future. The problem is that this response was obvious, unquestioned, and legitimate given the circumstances. Changing the menu of obvious choices is key for transformation and a focus on social justice is a potential means to that change [97]. For example, the non-governmental organization Iron and Earth, founded by oil sands workers (first in Alberta but now expanding to the East Coast of Canada) proposes policies that support rapid expansion of renewable energy industries with retraining for the energy sector's highly skilled workforce.[1] Directing resources to communities that have depended on the fossil fuel industry and those industries tightly tethered to it becomes paramount, especially moving resources away from supporting fossil fuel extraction and production towards areas of the economy that support transformation.

Thirdly, all the approaches in 'Approaches in the literature' section contribute to enhancing the process of envisioning and implementing an equitable post-carbon society through putting forward normative ideas about processes and outcomes of societal transformation. This can open up new issues and ideas in political debates. For example, Evans and Phelan draw on experience from civil society campaigns against coal mining in Australia, reflecting on the potential of a just transitions approach to provide a path forward despite "the discursive dominance of the 'jobs versus environment' frame [which] hinders efforts to build solidarity amongst local environmental justice goals on the one hand, and workers and union aspirations for secure, quality jobs on the other" [36]. Social justice may also help to bring awareness to key issues such as urgency in the face of irreversible tipping points, for example, by problematizing the intra-generational and inter-generational injustice of a small number of actors profiting in the present from fossil fuels while leaving society at large to bear tremendous future risks. Furthermore, social justice brings attention to the fundamental moral nature of climate change in a way that may have more power of political persuasion in civil society than technocratic arguments. It can also provide a way of connecting (seemingly distant) future impacts to present-day decision-making and moral responsibilities in societies.

An emphasis on social justice may also have unintended political consequences. Scholars have found that radical climate justice discourses as proposed by NGOs at UN Conferences of the Parties (COPs) are marginalized and may be unlikely to gain broad traction [84,98]. Thus, questions arise about the extent to which an emphasis on social justice would broaden or narrow the appeal of 1.5°C transformations. For example, would it appeal only to the political 'left', or provide a basis for broader political

dialogue? Recent scholarship indicates that while political progressives typically frame climate change in terms of values such as vulnerability, equity, and protection, political conservatives are more responsive to frames such as preservation, patriotism, and purity [29•].

A *just transitions* lens is useful here as it seeks to step outside of traditional environmental climate change frames, and instead forge unusual alliances (e.g. between environmentalists, blue-collar workers, and unions), recognising that neglecting justice issues associated with transformation risks backlash against climate action [36,38]. Yet emerging empirical experience indicates that we cannot understand just transitions without strong attention to the role and capacity of the state. For example, Swilling *et al.* draw on experience of efforts towards sustainability and renewable energy transitions in South Africa, arguing that political dynamics centered on the state are crucial to realizing sustainability transitions (e.g. capacity and willingness to overcome lock-in of entrenched interests in fossil fuels) [37••].

Interpretations of social justice and how it can be inserted into domestic political debates will be context-dependent [98], and a social justice lens may resonate differently, not always favorably, in different societies (e.g. individualistic versus communitarian societies, liberal democracies versus centrally managed states, market versus welfare-oriented traditions, antagonistic versus consensus political styles). Furthermore, the dominance of neoliberal thinking and the rise of individualized notions of resilience in some countries may limit the space for social justice in climate policy discussions, for example, by absolving responsibility from the state and promoting self-interest over collective welfare [77,84,99]. Thus, the implications of employing social justice as an orienting principle for 1.5°C transformations are mixed. More work is needed to clarify the conditions under which social justice increases or decreases the political feasibility of 1.5°C transformations.

Conclusions

This paper reviews scholarship on social justice and societal transformations from the perspective of national/subnational climate change politics. We find that employing social justice as an orienting principle can increase the political feasibility of 1.5°C transformations by focusing attention on: first, protecting vulnerable people from climate change impacts, second, protecting people from disruptions of transformation, and finally, enhancing the process of envisioning and implementing an equitable post-carbon society. Social justice also provides a lens for fusing instrumental (e.g. effectiveness) and deontic (e.g. moral) aspects of climate action. However, it may also have unintended political consequences such as being deployed against climate action, and a social justice frame is likely to resonate differently in different

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[1] http://www.ironandearth.org/.

domestic political contexts. Furthermore, the concept of social justice itself is always 'multiple' and contested (Approaches in the literature section), and which interpretation is dominant will be influenced by dominant discourses and power relations in a society [27,34••,98].

Our review raises questions about whether justice-oriented or technocratic framings are more effective in gaining traction among policymakers and politicians for 1.5°C transformations. For example, policymakers may prefer technocratic terms to avoid political risks; politicians in highly contested situations may prefer defensible technocratic framings while others may find greater power from moral persuasion of justice-oriented framings. Regardless, social justice will unavoidably imbue political debates about 1.5°C transformations, especially in the context of (re)distributional effects. Inadequate recognition and attention to these inherent justice dimensions risks causing backlash against climate action.

Our review highlights two major areas requiring further work. Firstly, what is the role of the state regarding social justice in 1.5°C transformations? The state can be both a barrier and an enabler for societal transformations — as well as either advocate or stymie social justice priorities — and yet it must 'play a key enabling and steering role in improving levels of support and access to clean energy and mediating the competing powerful interests at stake' [38]. These dilemmas are set within broader debates about the role of the state in an increasingly complex and fragmented world [100–102]. Given the complexity of climate change governance, in what ways (and by whom) is social justice inserted into political agendas? What opportunities are there for inserting social justice claims and aims in state-led decarbonization processes versus other types of action (e.g. private or civil society led)? Governments are likely to have a key role as either promoter or legitimator (or both), but other actors are also likely to have potential to contribute, especially social movements and civil society groups. The role of industry is less clear. Secondly, how do social justice frames emerge and resonate in practice, and what are the conditions under which social justice is likely to increase or decrease the political feasibility of 1.5°C transformations within different domestic political systems? For example, this is likely to differ between places such as the United States, Europe, China, and India [98]. What types of frames, stakeholders, and strategies gain traction in these different contexts?

Overall, it is clear that much is already known about social justice and climate action, and indeed, many of the issues discussed are to some degree elaborations of the political economy of climate action that policymakers already grapple with. In light of the extreme urgency for constraining global climate change to 1.5–2.0°C, the key challenge is arguably putting these ideas into practice.

Acting quickly can be supported by a justice oriented approach, while at the same time highlighting the need for careful attention to affected groups. Proactively engaging with social justice is therefore critical for navigating urgent 1.5°C societal transformations.

Conflict of interest statement

The authors declare no conflict of interest.

Acknowledgements

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