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ESSAY

Toward transformative youth climate justice: Why youth agency is important and six critical areas for transformative youth activism, policy, and research

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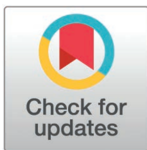

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Abstract

The involvement of youth in climate actions is increasingly recognized as critical to a more just and sustainable future. Despite progress in youth climate justice (CJ) activism, research and decision-making, gaps and challenges persist. Drawing on existing literature, first, we identify three key reasons for authorities to take youth involvement in climate actions seriously, namely (a) human rights and justice, (b) efficiency, and (c) legitimacy of policy actions. Second, we propose six critical areas for policy, research, and the youth movement to deliver transformative youth CJ: (1) closing the climate finance (i.e., adaptation and loss and damage) gap in a way that prioritizes youth-responsive activities, especially in climate impact-prone regions of the world; (2) adopting an intersectional approach to CJ that challenges homogenization of the youth CJ movement, accounts for the diverse experiences, needs and perspectives of different youth, and addresses intersecting structural forms of discrimination that particularly hamper the agency of racialized youth in the global South and North; (3) youth must recast their justice frameworks and channel their activism mode (e.g., buycott) toward challenging and resisting green extractivism, the necropolitical and ecocidal effects of which are concentrated in post-colonies and other racialized contexts; (4) knowledge co-production with youth must confront the risk of knowledge coloniality, extraction and power; (5) youth should engage in more-than-human CJ activism, recognizing the intertwined fate of youth and more-than-human nature; (6) as legitimate representatives of future generations, youth should consider claiming their space in legislative arenas to ensure the protection of future generations.

1. Introduction

After decades of ineffective state-led global climate change governance, youth (We follow the UN' (2018) definition of youth as people aged 10 to 24 years, recognizing that this is not a universally agreed international definition.) worldwide have since 2018, been mobilizing for climate justice (CJ) [1]. Through a variety of direct and indirect actions (e.g., lobbying, awareness raising, civil disobedience, adaptation work, strikes, litigation), youth CJ accounts for

and seeks to reduce the economic, environmental, security, health, and psychological effects of climate change and responses [2–6]. The literature is burgeoning, with scholars studying different aspects of youth CJ mobilization, including why youth mobilize [7] or commit [8], their mobilization strategies and scales [9], the role of emotions [10], ways of building political interest among other youth [4], and impacts on youth political mobilization [11].

In response to the youth CJ mobilization, there is growing recognition and inclusion of youth in climate governance as agents of change [3]. For instance, since 2008, the United Nations (UN) system has been working with youth-led and youth-focused organizations (e.g., via the UN Joint Framework Initiative on Children, Youth and Climate Change) to empower youth to act on climate adaptation and mitigation, and to build youth capacity to participate in climate change policy decision-making processes. Similarly, in 2020, the first cohort of the UN Secretary-General's Youth Advisory Group on Climate Change was created to provide the Secretary-General with youth-focused recommendations on how to accelerate implementation of his climate action agenda. Youth are also claiming space in important global climate policy decision-making arenas, including in successive Conference of the Parties (COPs) of the UN Framework Convention on Climate Change (UNFCCC), where they increasingly participate and amplify their voices. For instance, the first-ever youth-led climate forum, Youth and Future Generation Day, was organized at the COP27 in Egypt.

However, while youth mobilization for CJ has successfully problematized climate inertia and inaction and is positively shaping climate politics and governance both globally and locally [12–14], we are far from converting the momentum of the movement into the power required for transformative change [7,15]. For instance, the movement's engagement in formal politics (e.g., party politics, national parliaments) is limited, due to age restrictions. Furthermore, there is a global trend in the criminalization of climate and environmental protests [16]. Youth CJ activists are met with increased crackdown, with those in the global South facing extreme judicial and extrajudicial violence by state and corporate forces [17,18]. Governments are also enacting draconian anti-protest laws [19,20], sometimes fueled by the fossil fuel industry [21]. is slowing down the CJ movement. CJ activists are facing crackdown. Furthermore, despite the global nature of the youth CJ movement, there are concerns that academic coverage is overly focused on activism in the global North, particularly mass mobilizations led by urban white youth [22], giving the impression of a whites-only youth CJ movement. Nonetheless, while youth in the Global South are also taking part in the CJ movement [23], their mobilization in some contexts, such as in some parts of sub-Saharan Africa has been described either as timid – due to fear of repression [24] – or not having meaningful impact in decision-making processes in the continent [25]. There are also concerns that the framing of youth CJ activism as global homogenizes youth [22] and in some cases, contributes to silencing the climate vulnerabilities and activism of historically marginalized social groups (e.g., young girls of color) in mainstream climate activism and research [26]. Finally, the youth CJ literature and movement has been impervious to climate mitigation practices, despite evidence that the 'green' transition worsens disposability for many young people [27].

These issues point to the necessity and urgency to engage in transformative youth CJ. Drawing on the broader CJ literature as well as post-colonial and decolonial studies, this paper contributes to youth CJ in two main ways. First, by developing arguments for giving more voice, space, and influence to youth in climate change decision-making and second, by proposing six critical areas for transformative youth CJ. The goal is that the six-point agenda, which applies to policy, academia, and the youth CJ movement itself, will shore up the capabilities of young people, especially the most vulnerable and marginalized.

Newell et al. [28] propose three broad areas of transformative CJ, which are relevant for youth CJ: 1) *inclusive CJ* opens up climate policy, politics and knowledge to those most subject

to climate-related injustices; 2) *deepening CJ* aims at extending current conceptions and applications of justice to include justice for nature; 3) *governance for CJ* focuses on strengthening and deepening democracy, and addressing the harms of historical emissions beyond national borders. To these principles, we add that transformative youth CJ should also address power and socioeconomic dynamics in climate policy across scales [29,30] and within the global youth CJ movement itself. It should also be intersectional in orientation [31], confront colonialism [32], adopt a transdisciplinary mode [33], and take steps to enable justice across diverse epistemologies [34]. Transformative CJ also entails engaging youth in challenging and reframing, rather than just receiving and enacting, preconceived solutions to climate change and justice [33]. Finally, as a praxis of solidarity and collective action [35], transformative CJ requires the agency of all, including but not limited to policy- and decision-makers, academia and the youth CJ movement itself in catalyzing change. Transformative youth CJ is therefore action by all and for youth and connected to the broader movement and the pursuit of climate, environmental and justice goals.

2. Why support youth climate justice?

In this section we set out three broad reasons why authorities should take youth involvement in different climate actions seriously, which we elaborate on in terms of *human rights and justice*, *efficiency*, and *legitimacy*. By youth involvement, we mean meaningfully engaging youth in leadership roles across all stages of climate action, at policy and project levels, including in defining adaptation and mitigation goals, evaluating alternatives, designing, implementing, and monitoring solutions, and reviewing progress, in terms of their youth responsiveness.

2.1. A matter of human rights and justice

Climate change and its policies affect the human rights of young people, yet many policies do not recognize or address the climate-human rights nexus [36]. We argue that the active involvement of youth in climate mitigation and adaptation is critical to securing their fundamental rights. This is because young people are vulnerable to and experience overlapping climate and environmental hazards, shocks, anxieties, and stresses [37]. Data shows that globally, 920 million young people are exposed to water scarcity, 820 million to heatwaves, 600 million to vector-borne disease, 400 million to cyclones, 330 million to riverine flooding, 240 million to coastal flooding, 2 billion to air pollution, and 815 million to lead pollution [38 pp10]. Climate change is thus a major social threat, posing a serious risk to the fundamental rights of young people to life, physical and mental health, education, recreation and play, mobility, culture, shelter, water and sanitation, food, self-determination and a sense of future [39]. Not only do climate change-related hazards adversely affect young people's full enjoyment of human rights, but within the worst affected settings such as sub-Saharan Africa, lack of access to basic resources and services essential for wellbeing undermines their resilience and adaptive capacity, which in turn exacerbates vulnerabilities to climate and environmental impacts, thereby creating a vicious circle. Climate-related threats to human rights are thus disproportionately felt by young people (at the intersection of place, poverty, gender, race, sexual orientation, ethnicity and disability) whose rights protection are already precarious [40].

With policy responses falling short of addressing climate hazards, the impact on young people is likely to worsen in the coming decades [39]. This calls for states to meet their responsibility and obligation as duty holders and rights guarantors to safeguard young people and future generations from exposure to environmental and climate hazards and to ensure that they have access to effective means of adapting to climate change and to enjoy their rights fully and effectively, to a dignified life as individuals and a community. The meaningful

involvement of young people in all levels of climate decision-making is thus a prerequisite to their effective enjoyment of human rights. Failure to do so impedes their productive capacity and is poisonous to their short- and long-term wellbeing [41].

The involvement and leadership of youth in climate action is also fundamentally a matter of intergenerational justice [42]. This is because despite having contributed the least to the climate crisis, today's youth, especially in low-and middle-income countries suffer most from its harms [39]. Because the climate actions taken today will influence outcomes over the remainder of this century and beyond, youth today have a huge stake in this future [13]. While there is (some slight) hope that through mitigation we may soon live in a carbon-free world, the reality is that "we will do so in an overheated, flooded, tempestuous landscape, subject to a wholly new climate system" [43]. The stakes are even higher for youth who will inherit, manage and age in a 'carbon-free' world in which the "impacts of historical and ongoing carbon burning are literally baked into the atmosphere" [43 pp296]. Today's decision-makers thus have a corrective obligation to set a normative framework for decisions concerning youth of present and future generations, including those that affect their existence, number, and identity [44], but also their social protection, wellbeing, happiness, work life, social bonds, and solidarity [42]. Finally, the meaningful involvement and leadership of youth in climate action is a proactive step that can ensure distributive justice – empowering youth to shape and influence decisions that affect their lives and existence, to better adapt to climate change effects, and to reap the benefits of climate mitigation [25].

2.2. Efficiency

Youth involvement in climate action and politics can render policy more efficient. For instance, it is estimated that if accelerated, investment in nature-based solutions can create about 20 million new jobs by 2030 [45]. However, the development and acquisition of innovative skills required to access the green economy labor market remains a major policy challenge [46]. To fill this gap, active youth involvement in climate action is an absolute requirement, as it enables young people to get the specialized education, training, and upskilling necessary to power the green economy and localize future benefits.

Furthermore, youth can bring new ideas, energy, and creativity to the movement towards just transitions, as has been demonstrated through strikes, lawsuits, petitions, networking, artism, advocacy, and more. Youth have demonstrated expertise and organizational skills, positioning themselves as change agents [24] who not only confront states, industry, and agencies for more youth voice and accountability [14] but are also actively taking part in transforming a broader range of institutions that impact climate futures [1,47]. In doing so, they are reshaping not only environmental policies and practices but also societal, economic, and governance structures for a more sustainable future [7,13]. Young should therefore be treated more as decentralized partners, rather than as enemies (as seen in recent criminalization of climate protests), whose diverse direct and indirect actions enable governments and the international community to meet the global climate goals. Through demonstrated creative potentials, networking, leadership and digital skills, youth can more easily mobilize their peers, channel communication about climate change and action through their networks and expose the adverse socioeconomic and ecological practices of industries in ways that governments alone cannot do [42]. Educating, training, engaging and empowering youth in this direction can thus enable a sustainable and just future for all.

2.3. Legitimacy

A major challenge in climate governance is the deepening legitimation deficit of climate policy, or the idea that current representative democratic systems do not adequately reflect

the priorities and preferences of young people [47] Existing representative democratic systems are adultist [22] and gerontocratic [48]. Greater inclusion of youth in climate change-related decisions can thus give legitimacy to climate decision-making and institutions. The literature provides three legitimacy criteria (i.e., input, throughput, and output legitimacy) for assessing participation in climate governance, which are relevant for youth CJ.

In terms of input legitimacy, this criterion assesses the degree to which participation in climate governance is inclusive of a diversity of stakeholders and solutions [49] Accordingly, climate adaptation and mitigation can gain input legitimacy through broadening participation beyond state agencies, labor unions and industry to include a diversity of youth who are in the frontlines of not only climate hazards, shocks and stresses but also of mitigation measures (e.g., youth at the frontline of carbon-intensive energy sources undergoing phase-out, such as oil shale, coal etc.). While not without its challenges, input legitimacy can be gained by integrating the views, knowledge, and visions that youth have of a just and sustainable future throughout the policy formulation, planning, implementation, and monitoring processes of a Just Transition project.

Input legitimacy will do little to improve the conditions of young people unless it gains throughput legitimacy. Throughput legitimacy centers on procedural fairness as a condition for more deliberative and collaborative interactions that purposively seek to reduce power disparities among stakeholders and create a conducive environment for accountability and reciprocity [50]. From this viewpoint, because young people face some of the worst impacts of climate change and narrowly implemented solutions, their meaningful involvement in climate decision-making processes gives them better agency and influence in an otherwise exclusively state, industry and agency orchestrated and driven climate action.

Meeting the requirements of input and throughput legitimacy can also increase output legitimacy, or the effectiveness and social acceptance of climate policies and decision outcomes for the affected groups [47]. If youth perceive climate governance as addressing their needs and concerns, this can increase trust in and support for various climate actions. As increased climate anxiety among youth [51] is shifting their attitude from a perception of powerlessness and limited self-efficacy to one of personal responsibility and action aimed at reducing and adapting to climate change effects [52], authorities should take care not to lose this momentum. This would help build capacity among youth, equipping them with the dispositions and competencies to address climate-related challenges. Empowering and meaningfully engaging youth in climate action and integrating their visions of a sustainable future is likely to reduce anxiety about future risks, build trust in authorities and institutions, increase social acceptance of decision outcomes, and give new momentum to youth agency in climate governance.

Furthermore, recognizing the rights and vulnerabilities of young people and meaningfully involving them in the policy design, planning and implementation of youth-responsive climate solutions is also cost-effective for companies and states alike. Some of the tactical tools in the youth CJ activism toolbox (e.g., litigation and different forms of civil disobedience) often require enormous resources to respond to, on the part of corporations and governments. Indeed, it requires significant human, financial, and time resources to disperse protesters, or to arrest, prosecute and try reticent ones, but also to prepare and put forth state or corporate legal defense in response to lawsuits filed by or on behalf of young climate litigants. Youth are increasingly embracing climate litigation and are already registering landmark victories, such as in Germany [1] but also in the US where courts ruled in August 2023 in favor of 16 young climate litigants of Montana against their state, and in June 2024 in favor of 13 young plaintiffs against the Hawaiʻi Department of Transportation. Not only are youth CJ litigation cases predicted to increase in coming years [53], victories registered thus far are also likely to set a

precedent for courts to try new cases, with the likelihood of more victories for young litigants. Effectively involving young people and designing youth-responsive climate action may slow the momentum of youth climate litigation and civil disobedience and reduce costs associated with responding to or managing young people's sometimes disruptive climate mobilization.

3. Toward transformative youth climate justice

We have argued that the involvement of youth is important as a matter of human rights and justice, and for the efficiency and legitimacy of policy actions. However, CJ as currently framed and pursued by policymakers, scholars, and the youth CJ movement itself, falls short of delivering justice for nature and marginalized youth. In what follows, we propose six critical areas which require intervention to enable transformative youth CJ. Where possible and relevant, we provide illustrative examples of existing initiatives related to these areas. We do not mean to scrutinize or suggest that these are ideal type initiatives that could or should be scaled up, but they are offered to give some practical flavour to our discussion and highlight the potential for impactful CJ related youth engagement.

3.1. Closing the climate finance abysmal gap for young people

Young boys and girls living in poor countries, such as in Africa and Latin America and the Caribbean (LAC) feel the worst impacts of climate change, requiring substantial public finance of climate responses [38]. However, climate finance – the local and transnational financing of climate mitigation and adaptation remains a minimal concern in the youth CJ literature and activism. Yet efforts to respond to their heightened needs in international climate finance flows remain alarmingly minimal [54]. Internationally, climate finance is underpinned by the principle of common but differentiated responsibility and respective capabilities, or the idea that wealthier and polluting nations should provide financial assistance to those that are less endowed and more vulnerable. Following this principle, developed nations committed at the COP15 to a goal of collectively mobilizing US $100 billion per year by 2020 for climate action in developing countries. This commitment was formalized at COP16 and later extended to 2025 at COP21 but remains unfulfilled.

For instance, in 2021, the total climate financial assistance provided by developed countries amounted to $ 89.6 billion, 10.4 billion short of the $100 billion goal [55]. At the same time, while mitigation finance represented 60% of total global climate finance in 2021, adaptation finance represented only 27% of total climate finance mobilized despite vulnerable countries' growing needs and costs of financing climate losses and damages. Unfulfilled climate finance commitments and limited adaptation finance are a major obstacle to CJ for the world's most vulnerable countries that bear the brunt of climate losses and damages. This is because compared to mitigation, adaptation is more critical for safeguarding these countries from the worst climate impacts. The low adaptation finance figure is alarming considering estimates that developing countries will require between $ 160-340 billion annually to adapt to climate change by 2030 [56]. Furthermore, although mitigation receives substantially more financing than adaptation, evidence on the ground in developing countries (e.g., in Africa) suggests that foreign investors in renewable energy projects often receive significant protection from investment risks, with much of the long-term financial, social, and regulatory costs of investment imposed on host countries and poor communities [57,58].

A recent study [59] assessing 591 project and program proposals that were approved for funding by key multilateral climate funds between 2006 and March 2023 found that only 6.6% of climate finance from multilateral climate funds supports youth responsive activities, with only 2.4% of funds (US $70.6 million annual average) targeting young people; only 5% of all

projects reviewed were youth-responsive; only one project focuses on education as its principal objective (although 13% of all projects are expected to reach young people in some ways); 35% of projects incorporate measures to strengthen the climate-related disaster resilience of essential services that can provide direct benefits to young people. Furthermore, when young people are considered, they are generally addressed as vulnerable, rather than as active agents of change, with only 1% of all projects mentioning their involvement as part of project design and/or monitoring, and less than 4% of projects addressing the heightened risks of particular groups of youth (including girls) facing intersecting inequalities and discrimination [39]. In LAC, more specifically, only 18% of global climate finance has been allocated to the region, with only 3.4% of climate funding being youth responsive [59].

The recent operationalization of a climate Loss and Damage Fund on the first day of COP28 is intended to enable poor states to respond to climate change related losses and damages. While the decision can be seen as a breakthrough achievement for vulnerable developing nations, decisive questions remain over the long-term sustainability of funding sources, with initial commitments amounting only to $ 430 million. Importantly, while the fund will establish consultative forums to engage a broad range of stakeholders as well as mechanisms to promote the participation of vulnerable groups, including youth and women in the design, development and implementation of activities, there are no specific requirements for states to address youth responsive projects as a precondition for funds allocation. Nor is there a dedicated funding window, where technical assistance for obtaining youth-focused climate finance can be provided. Yet, for the most vulnerable youth groups, the climate crisis is ultimately a crisis of health, mobility, food, sanitation, clean water, and life [38].

To equip young people in climate high-risk nations with the necessary tools to cope with and adapt to a lifetime of climate disruptions, polluting countries must fully honor their climate finance commitment of US $100 billion annually. These countries must take steps to scale up climate adaptation and loss and damage financing for low-income nations, and to make youth-responsive activities a key prerequisite of loss and damage allocation. Beyond adaption and loss and damage financing, it is also critical to ensure that policy instruments around the financing of mitigation projects (e.g., de-risking of renewable energy investment) in developing countries are not tailored solely to the benefits of wealthy nations and foreign investors, but should also address the socioecological, economic and regulatory costs on host communities and states [57]. Concrete actions should also be taken to ensure that Africa and LAC, where young people face some of the most severe climate impacts, get greater support from the Green Jobs for Youth Pact (A collaborative effort among the ILO, UNEP and UNICEF's Generation Unlimited.), an international initiative rolled out across Africa, Asia Pacific, central Asia and Europe, West Asia, and LAC. This initiative is aimed at promoting youth employment in sustainable industries, empowering youth in climate policy advocacy, and education and training for green skills. Low-income countries must also tailor climate funds received toward youth-responsive programs. This can be achieved through involving youth in the actual design, implementation and monitoring of risk reduction and other climate-related projects and strengthening their agency as drivers of innovation (e.g., through increased climate education and skills, and access to youth-friendly information and social services) and their effective involvement in climate change decision-making at local, regional, and global levels.

Finally, as has increasingly become clear to youth CJ activists over the past five years, political influence is claimed, not given. What this means is that, to catalyze change, youth must make climate finance a priority area for mobilization. Youth advocacy on climate finance is slowly gaining traction in some developing world contexts. For instance, at COP29, global South youth delegates from Asia and the Pacific advocated for equitable climate finance and

the prioritization of youth-responsive activities in climate impact-prone regions. Their focus was on key aspects of CJ transformation, where they highlighted the need for Loss and Damage Funds and other financial mechanisms to support vulnerable communities [60]. However, this is an isolated case. Broader South-South and North-South partnerships around the issue are needed to support equitable climate finance.

3.2. Intersectionality as a tool to decolonize and deracialize youth climate justice research and activism

Youth CJ mobilization is seen as a global phenomenon [9]. However, the movement seems to be suffering from structural biases and inequalities [22,61,62]. First, while policymakers have heralded the participation of youth in international climate negotiations such as the COP as an element of inclusive climate governance, there are indications that the parallel side-event platforms for youth climate mobilization at the COP (in the so-called green zone) have had very limited influence on international climate negotiations [63]. The same has been said of YOUNGO – formally established as the youth constituency of the United Nation Framework Convention on Climate Change in 2011 – with Zoghbi [64] describing it as a 'youthwashing' initiative, where the role of youth is more symbolic than impactful.

Second, it is suggested that young Indigenous climate activists increasingly experience both the COP space and the youth CJ movement therein as following the same anthropocentric, class, racial and colonial models that are at the root of climate change [65]. Similarly, some youth CJ mobilization tactics (e.g., occupying roads, banks, and industries, or disfiguring monuments), while proving effective, can alienate youth of color. For instance, like experiences in the adult movement, some youth of color perceive obstructive tactics as a white privilege, fearing that if arrested, they may not receive the same treatment by the police as would white activists, which stems from the racial reality of police and state violence in many developed countries [62].

Third, despite racism and colonialism allegations made by Black and Indigenous youth of color, particularly against climate organizations, the COP and the media, research focusing on these issues is very limited [61,66]. Rather, the literature is focused on the actions of middle-class white youth in the global North (Walker 2020; Neas et al. 2022). This racial bias risks erasing the struggles, voices and actions of non-white youth in the global North and South, portrays them as passive climate victims waiting to be saved [12] and elides the colonial racial underpinnings of climate change and responses [67]. Jones et al. [68] add that the literature tends to frame the climate crisis as a future problem. According to the authors, this framing diverts attention from the immediate climate impacts faced by minorities and the poor and emphasizes "moral consumer and lifestyle choices" (e.g., using bikes rather than cars, or cutting down on meat consumption) that "feel ashamedly white and middle class" [68 pp71].

We therefore agree with Newell et al. [28] that there is a "need to move away from a universalist philosophy of justice in general and climate justice in particular, rooted in Northern traditions, and towards more diverse understandings of 'climate justice' including those grounded in praxis and pluriversality which recognize and value multiple cultures, subjective representations and practices of well-being, justice, and sustainability across the globe" [28 pp2]. We suggest that transformative CJ hinges on the decolonization and deracialization of global institutions, such as the COP [69] but also of research and the CJ movement. Applying an intersectional lens to policy, activism and research is vital to any attempt at decolonizing or deracializing climate change policy and relations, including relations among youth and between humans and nature [70]. Having theoretical roots in radical theories such as critical feminism, intersectionality focuses on the marginalized and the power relations that create

and support marginality. Intersectionality is both anti-positivist and anti-essentialist in that it offers an epistemic advantage to marginalized subjects and stresses the agency of those often portrayed as vulnerable [71]. The relevance of the approach is that it contextualizes experiences within various sites of struggle, including policy and decision-making spaces, toxic waste dumps, protest sites, movements, courtrooms, etc. [70,72], as well as academia itself [73,74].

At the level of scholarship, an intersectional lens would build on the works of Mbembe [75]; Crenshaw [76], Sultana [31] Bell et al. [71], Whyte [77], among others, to develop systematic insights into and seek redress of structural and systemic roots of injustice across various intersecting dimensions. These include imperialism, colonialism, genderism, racism, capitalism, classism, ablism, adultism, and anthropocentrism, which structure climate problems and impacts, and our experiences of, and responses to them [71,78]. In short, an intersectional approach probes into potential exclusions and power imbalances and embraces the diversity of climate risks, vulnerabilities, adaptive capacities, and needs across diverse intersections. In doing so, it underscores the need for a comprehensive, yet nuanced understanding of the diverse experiences and perspectives of different youth groups and individuals seeking to address climate problems.

Although the youth CJ movement undoubtedly has a racial colonial blind spot, it must be recognized that there is some degree of diversity in some group dynamics and issue frames. For instance, youth groups such as Zero Hour and the XR's youth wing increasingly draw links between ecological destruction, capitalism, colonialism, racism, patriarchy, inequality etc., and protest in ways that are more relevant across cultures and intersecting identities [62]. In Porto and Lisbon in Portugal, youth CJ activists have combined formal education and activist learning to reflect on intersecting oppressions. Specifically, they aligned their struggle with other social issues (including feminist, anti-racist, pro-housing, anti-fascist, and LGBTQI+ struggles) to imagine and forge an inclusive, non-oppressive climate-just world [79]. Promoting and adopting cross-identity and cross-vulnerability CJ activism in this way should be shored up across contexts and scales as a valuable complement to siloed forms of activism, including environmentalism, anti-fascism, anti-industrialization, anti-racism, and disruptive forms of mobilization [80].

3.3. Engaging in green transition politics

Across the globe, youth groups (e.g., EUTeens4Green, African Youth4Climate) are actively seeking their effective participation in the formulation, design and implementation of 'green' transition policies. An article by Rubiano [81] highlights the key role that young activists are playing in Latin America in pursuit of global CJ. These youth activists are not only raising awareness about the environmental challenges faced by their communities but are also demanding systemic changes to address these issues.

However, we argue that while youth agency in the 'green' transition is vital to mitigate youth-related risks and vulnerabilities associated with climate change, it would be naïve to embrace decarbonization apolitically. An uncritical adoption of decarbonization technologies depoliticizes the externalized costs associated with global extraction of minerals that power the 'green' transition. As research has shown, the greatest socioenvironmental costs of low-carbon transitions are found in racialized communities – post-colonies and Indigenous territories where green extractivism is concentrated [32,82–86]. In these contexts, green extractivism follows colonial and racial logics, and seems to be immunized from the legal, institutional, ethical, and political rules of engagement that structure socio-natural relations in non-racialized contexts. The result is the creation of 'green' transition death worlds characterized by ecocide and sub-human conditions, alongside existing forms of climate colonization.

For instance, it is reported that in Congo, due to artisanal and industrial cobalt mining, entire villages are bulldozed, children as young as seven drop out of school and engage in child slavery as child-miners [87], and water bodies are heavily polluted, with devastating effects on local ecosystems and agriculture and on the gynecological and reproductive health of women and girls, including irregular menstruation, urogenital infections, frequent miscarriages and birth defects [88]. Consider also largescale deforestation and land degradation, disruption of livelihoods, and air and water pollution in the context of bauxite mining in Guinea [89,90], or the pollution of water bodies and exposure of indigenous communities to toxic metals in the context of copper mining in Chile [91]. Thus, for the young *wretched of the earth* [92], that is, young girls and boys of color living and toiling in and around green sacrifice zones, the global rush for 'green' transition minerals constitutes an everyday exercise in necropolitics – contemporary practices in the creation of climate death-worlds, in which racialized bodies are subjected to small doses of death, or "conditions of life conferring upon them the status of living dead" Mbembe 2003 [76 pp40].

Surprisingly, the youth CJ literature and the movement itself remain largely impervious to the effects on marginalized young people of what is clearly a racial colonial necrocapitalist 'green' transition. Put differently, mainstream youth CJ seems to mask the raciality, coloniality and necropolitics of 'green' extractivism, particularly the selective expendability of racialized environments, communities and young people of color in the name of 'green' transitions. But how are we to both make sense of and challenge green extractivism's ecocide and subjugation of communities in racialized contexts to sub-human conditions? Agamben [92 pp180] notes: "Only a politics that will have learned to take the fundamental biopolitical fracture of the west into account will be able to stop" the "democratico-capitalist project of eliminating the poor classes through [a] development [that] not only reproduces within itself the people that is excluded but also transforms the entire population of the Third World into bare life".

We argue that rather than embrace the 'green' transition uncritically, the global youth CJ movement must both question and recast the westernized justice frameworks that guide their CJ activism and extend the scope and breadth of their political mobilization to challenge and resist the racialized and colonialist necropolitics and necrocapitalism of mineral extractivism in diverse green transition sacrifice zones. In other words, we see 'green' extractivism as a crucial site of political struggle. We therefore encourage connecting and resisting continuities between (neo)colonialism, racial capitalism, statism, ecocide, climate change, and green extractivism in CJ theory and activism modes. Youth do not need to reinvent the wheel, in terms of their activism mode. Here, while Jones et al. [68 pp71] criticize "the moral consumer and lifestyle choices" of youth CJ activists in the global North for being "ashamedly white and middle class", we believe that as the biggest consumer demographic of 'green' and digital technologies, their radical consumer choices can be a powerful tool against the necropolitical practices and effects of green extractivism. For instance, through buycotts, youth can effectively challenge companies involved in the production of computers, mobile phones and electric vehicles powered by unsustainably sourced coltan, cobalt, lithium, and other critical minerals.

Research can also play a key role in dismantling 'green' transition necropolitics, for instance, by quantifying and exposing the physical scale of the net appropriation of green extractivism from the global South to advanced, ultra-carbonized economies, in terms of embodied resources (land and mineral appropriation), market prices, labor drain, ecological destruction, dispossession, etc. Research conducted by Hickel et al. [93] and Borras et al. [94] in other contexts can serve as inspiration. Another strand of research could engage in the broader literature on racial capitalism [95,96]. Melamed [97 pp77] noted that all capitalism is racial capitalism in the sense that the former "requires loss, disposability, and unequal differentiation of human value, and racism enshrines the inequalities that capitalism requires".

Following Melamed [97], a fruitful line of inquiry could be how 'green' capitalism in the form of green extractivism accumulates, produces and moves, and through what antinomies of accumulation and relations of inequality among human groups. This could include capitalists with the means of production vs workers without the means of subsistence; the colonizer vs the colonized; the foreign extractor of critical minerals vs the locally dispossessed and removed owner; the ultra-developed, ultra-carbonized needing climate/energy security vs the under-developed, under-carbonized available for disposability; ecologies where juridical, political, ethical and human rights oversight prevail vs ecologies where oversights are suspended and the violence of the state of exception is deemed to operate in the service of decarbonization.

3.4. Reflective co-production

Recently, following the wave of youth CJ activism, we are witnessing a rise in climate research and education programs labeled as co-production with youth [98,99]. Deploying diverse approaches – civic science [100] learning festivals [101], immersive and arts-based methods [102] – the rationale behind co-production with youth is to disrupt adultism, reduce intergenerational conflict, and support the democratization, diversification and usability of climate knowledge. However, while fruitful, discussions on the aspirational benefits of co-production of climate knowledge with youth far exceed consideration of latent risks and modalities to address them. This section considers some of these risks, with the goal to orient youth-focused co-production away from the pitfalls of mainstream co-production praxis.

First, co-production is a minefield of power and politics. Far from a process and outcome of mutuality, equality and equity, co-production often takes place in a minefield of politics, power, control, and inequity in which scientists, planners and policy agents often shape and design co-production in ways that serve their interests more, if not rather, than those of young people. Indeed, in co-production with youth, scientists, like many other elite actors in the process, have important advantages that tilt the power scale to their favor, including having more time and resources, initiating co-production processes, defining the scope for participation, having more skills and knowledge, and being better able to articulate a contribution that is considered scientifically relevant [63,69,103]. Similarly, much research labelled as 'co-produced with youth' hardly involves youth as co-authors of research papers, thereby reinforcing intergenerational epistemic injustice [104].

Second, research labeled as co-production, especially in marginalized contexts, risks engaging in extractive, rather than collaborative process. Knowledge extraction is a form of *intellectual colonialism* – a process whereby researchers "take deeply meaningful information, often from a marginal or 'underresearched' community, and present to a third party… usually a highly educated academic audience or government bureaucracy" both of whom have little stake in the preservation of the extracted knowledge [105 pp113]. Co-production morphs into knowledge extraction because researchers are often under pressure to meet policy, tenure and funding agency requirements to deliver actionable science [106], but also because researchers tend to treat underprivileged groups as novices, rather than as experts with the knowledge to contribute to local climate adaption knowledge [107]. The result is the loss of place-specific challenges and solutions, the local context, values and on-the-ground struggles of youth [106,108], but also the reinforcement of uneven power [109], the legitimization of the knowledge and agendas of powerful interests [110], and the colonization and peripheralization of local, often indigenous, knowledge and ontology [111].

To deliver youth-just and accountable climate knowledge and services, co-production with youth must be localized. In localized co-production, processes and solutions are anchored in the sociocultural context in which the climate issue and knowledge are embedded and used,

including local culture, ways of knowing, and political arrangements. Put otherwise, co-production should be informed by the local climate change perceptions, disasters and impacts, adaptation needs, management systems and resilience strategies [108], with affected youth at the center of the design and implementation [103]. While not specific to youth, Mittal et al. [112] offer an example of localized co-production that sought to minimize knowledge extraction. In nine locations in Malawi and Kenya and focusing on temperature variations, the authors describe how they partnered with agronomists and locally affected communities (e.g., tea farmers) both to understand current and future climate risks to local tea production and to identify site-specific adaptation strategies.

Finally, to be transformative, co-production with youth must be attentive to power dynamics and the coloniality of knowledge. Failing to reflect on or address elite power and control can be counterproductive to co-production. Rather than address the climate issues at stake for young people, co-production can "result in solutions that resonate with and are usable for non-elite groups" alone, and thus "affect the quality, usefulness, and legitimacy of their outcomes" [104 pp16]. To drive a more just and empowering co-production of climate action with youth, policymakers, scientists, and other elite gate-keepers must involve youth in actively framing and driving the narrative, agenda, process, and outcomes. For instance, by engaging youth in the framing of CJ, a youth-led project in the global South by the Kofi Annan Foundation [113], framed and examined the relationship between climate change, instability, insecurity, and conflict. Acknowledging that most youth in the global South live in conflict-affected nations or communities, this framing brings a previously elided reality of climate change – climate change and peace as interconnected challenges [114].

Researchers, especially those working in historically marginalized contexts, such as Indigenous and Black and brown communities, should adopt a decolonial approach to climate knowledge co-production. A decolonial approach acknowledges the civilizational character of the climate crisis: a crisis of modernity and its related colonialism, racism, and epistemicide, whose aim is the totalization of the western order and the peripheralization of other beings, cultures, and epistemologies [111,115,116]. It gives effect to indigenous models and practices of the natural, especially those that enact culturally established continuities, as opposed to separation, between the natural, human, and supernatural worlds [117 pp197]. Here, rather than seeking to 'integrate' limited elements of marginalized youth's knowledge and experiences of climate change and action into mainstream knowledge frameworks, the researcher embraces difference. This could be achieved through providing space where 1) indigenous ontologies and principles of socio-natural relations provide the foundational epistemology for climate research and action, and 2) non-Indigenous ways of knowing and being that align with indigenous cosmologies are incorporated [78,107,108,118].

3.5. More-than-human justice

CJ, as currently pursued by youth is focused on human concerns. This anthropocentric framing of justice, which underwrites harms and vulnerabilities faced by more-than-human nature, aligns with the anthropocentric foundation and practice of modern law. Given their fledgling experience in environmental justice legal mobilization, youth may be justified to privilege human needs and losses over those of the more-than-human. In the following paragraphs, we show how extending youth CJ mobilization to the loss and damage faced by nonhuman nature can support 1) the self-preservation of young people; 2) the political expediency of youth climate legal mobilization and 3) prospects to advance more-than-human climate legality in the context of legal anthropocentrism.

First, embracing a more-than-human CJ is a matter of self-preservation for young people themselves. Post-humanist and more-than-human research has established that far from a separate entity, humans are enmeshed in and relationally constituted with more-than-human nature [119–121]. From this 'flat' ontology of thrown-togetherness with nature, it follows that "there is, in principle, no reason to delineate the boundaries of 'our [climate justice] world' by reference to human needs and interests alone" [122 pp5]. In other words, besides the ethical duty of care for nature as a rightsholder in and of itself, care for the more-than-human from the perspective of being thrown together with it, also supports the preservation of our present and future being-in-the-world, including that of young people and their unborn children who will inherit a world in which the residual "impacts of historical… carbon burning are literally baked into the atmosphere" [43 pp296]. Here, care for the more-than-human alter ego constitutes care for the self, since care is an "activity that includes everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible" [123] 1991 pp40 Italics in original], which for our purposes includes diverse forms of youth mobilization, including advocacy, artivism, civil disobedience, litigation, and more.

Second, engaging in more-than-human CJ is also a matter of political expediency for youth climate legal mobilization. While litigation represents a seismic shift in youth CJ mobilization, drawing predominantly on human rights principles to make claims of state or corporate liability, obligation and compensation has been facing hurdles in courts due to the challenge of attributing causality between a plaintiff's loss and damage, and a defendant's carbon emissions and liability [124,125]. However, unlike human rights law, existing environmental laws, regulations, norms, and case laws have dealt squarely with matters of environmental change and have established clear links between state/corporate responsibility, and liability for environmental damage [126]. A more-than-human climate legal mobilization – litigation focused on nature's sufferings and needs – is thus likely to fair relatively better in courts and as such, presents opportunities to circumvent or make up for the human rights causality challenges faced in court. That is, more-than-human climate legal mobilization is politically expedient for young CJ plaintiffs who increasingly face hurdles in establishing human rights-based claims of loss and damage and state/corporate responsibility, liability, and compensation.

Of course, the success of more-than-human climate legal mobilization would depend on the ability of youth to effectively draw on environmental norms and legal instruments to push for more-than-human justice. Many environmental laws (e.g., on clean air, soil and water) have broadened the scope of legal standing – rules defining who can sue – and have embedded mechanisms designed to allow affected and interested citizens to challenge violations of environmental law [127 pp102]. Youth should leverage their role as legitimate stakeholders with legal rights to hold environmental defaulters to restore, recover, offset or compensate for adverse environmental changes and losses. For instance, the norm of retributive justice is premised on the idea that any negative human impact on nature should trigger a corresponding legal consequence. In the European Union, for instance, the Directive on the Protection of the Environment through Criminal Law is intended to prevent environmental damage and support the imposition of criminal penalties for serious environmental offenses. Similarly, the norm of restorative justice stipulates the application of corrective action following environmental degradation or loss. Corrective action can mean the restoration of degraded ecosystems or the creation of habitat, such as enshrined in the European Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora stipulates. Furthermore, the precautionary principle, while difficult to apply in human rights-based claims (it takes a significant period of time after a human induced environmental change for its human impact to become manifest) prescribes preventive, restorative and punitive environmental measures, and responsibility for potential future-focused human impacts and harms [124 pp10].

Finally, engaging in more-than-human justice and legality is a matter of ethics, which supports the decentering of law's anthropocentrism in favor of more-than-human legality. CJ principles of agency, bonds, feelings, victimhood, care, right (to health, life, subsistence), adaptation, historical nonliability for and disproportionate vulnerability to climate change apply equally, if not more, to animals, birds, and other more-than-human life forms [128]. These life forms, despite disproportionately bearing the brunt of environmental and climate shocks (e.g., sea-level rise, droughts, wildfires, heatwaves, ocean acidification and hypoxia and related biodiversity loss, and species migration, death and extinction, cannot represent themselves in political, judicial and legal decision-making processes [127,129]. Furthermore, while modern (western) law has mechanisms designed specifically to protect nonhuman animals (e.g., animal protection law), the rate of biodiversity loss, environmental degradation and species extinction has highlighted the limits of contemporary environmental and animal laws, in terms of their anthropocentric, human-focused foundation and orientation [127,129,130]. More-than-human climate legal mobilization can thus contribute toward decentering modern law's anthropocentrism and advancing prospects for more-than-human legalities. And, given that young people may not be as fully socialized in anthropocentric norms of human-nature relations and may not be as embedded in incumbent power relations as adults, they are perhaps the most promising proxy representatives of more-than-human nature. Given their relative benign nature, youth have a higher moral ground to offer a more-than-human vision of CJ and legality – one in which nonhuman nature (not only humans) is vulnerable to and requires equal, if not stronger legal protection as rightsholders. This alternative vision will rest on an ethic of care, response-ability and kinship with nature [119,131], and a commitment to more-than-human retributive and restorative justice as a critical step toward responding to the unfettered losses and damages suffered by nature, including those that are beyond the scope of current climate action.

One globalized practical youth initiative around CJ, which is promoting a more-than-human justice approach, where other youth may find inspiration, is the Youth4Nature [132] movement. Here, youth across the Global South and North are actively advocating for the rights and well-being of all living beings, both human and non-human entities, through diverse CJ actions.

3.6. Claiming space in national parliaments

Youth are commonly seen as the legitimate ombuds, or advocates representing future generations and tasked with fostering and delivering intergenerational equity [133]. To enable transformative CJ, proactive, anticipatory, and affirmative measures are needed beyond reactive measures such as strikes and legal actions. There are initiatives where countries are starting to recognize the importance of youth involvement in more formal politics and are implementing measures to facilitate their participation. Such reforms include lowering the voting age (e.g., in the UK 2024 elections the Labour Party ran on a platform to give 16-year-olds the right to vote), providing civic education, and creating platforms for youth engagement. Zhou & Tandi [134 pp383], in the face of what they describe as Sub-Saharan Africa's leadership of 'sick old and corrupt men' discuss the importance of nurturing the capabilities of youth in politics, to harness their abundant energy for significant contributions to poverty alleviation and inclusive sustainable development. There are even a few countries that offer possibilities for the voice of future generations to be heard in formal institutional arenas such as national parliaments, but this is often by means of indirect participation, often through representation by parliamentary ombuds people for future generations (see [28]) – not necessarily involving youth.

Given the significant strives that youth CJ activism has made over the past few years and given the critical importance of parliaments as law-making institutions, it is critical that states build the capacity of youth and young adults to become effective parliamentary ombuds people for future generations. Despite encouraging signs of support for greater youth inclusion in politics, there are still serious challenges to youth effectively and influentially participating in legislative arenas, where issues central to climate activism, including production, consumption, resource use, nature protection, emissions, climate finance, etc. are scripted into law. For instance, a recent global report by the Inter-Parliamentarian Union [135] noted a minimal participation of youth in national parliaments, finding that only 2.8% of the world's parliamentarians are aged 30 and under, with Europe and the Americas having a substantial of share of that number and young male parliamentarians outnumbering their female counterparts at a 60:40 ration in the 21-30 age group category.

The above consideration indicates that there are existing challenges confronting the realization of effective youth engagement with formal politics, including the likelihood that many states may not readily extend this opportunity to youth. Indeed, the extension of voting rights and other forms of political engagement to different social groups has historically been strongly resisted and have commonly been the result of intense political struggles, as evidenced through the historical experience of different social groups, including women and Blacks. Nonetheless, in some parts of the world, youth participation in national parliaments is gaining momentum. In Morocco, for instance, a Children Parliament exists since 1999. Composed of 395 boys and of diverse ages, the Children Parliament is intended as a unique platform for active youth participation and citizenship education on diverse societal issues, including climate change [136]. However, the extent to which this space offers autonomy for young parliamentarians but also the degree to which young parliamentarians themselves can influence national decisions is a matter for future research. Nonetheless, the example is an indication of the possibility for young CJ activists to claim space within formal institutions and engage with formal politics. To be sure, to advance ensure widespread and effective involvement of youth in formal institutions such as national parliaments, it is likely that youth will have to claim (rather than be invited to) this critical space where they will have to struggle for the protection of children, youth and future generations to be enshrined in national legislations. In the meantime, there are other examples, which while not showing formal involvement in parliaments, do demonstrate how youth can effectively advocate for CJ through activism and engagement with formal politics. For instance, Greta Thunberg's direct action at the entrance of the Swedish Parliament [137], Chlöe Swarbrick's effective advocacy and promotion to political party leadership in New Zealand parliament [138], and Licypriya Kangujam's protest outside the Indian Parliament [139] are a few laudable mentions that should go hand-in-hand with youth engagement with formal politics.

4. Concluding remarks

This paper has advocated for harnessing the collective voice of youth as a force for transformative change in the face of climate adversity. The arguments presented emphasize the importance of addressing the unique but differentiated perspectives and lived experiences of youth in climate changed-related responses and research. We argue that while facing some of the direst effects of climate change, youth have the potential to craft sustainable and equitable climate change responses. In facing today's climate problems that will have ongoing dire future effects, we have argued that it is imperative to consider and enable the rights of youth, especially the most vulnerable who face intersecting marginalizations, on ethical and pragmatic grounds. In doing so, we recognize that young people can play an integral role in

addressing today's climate problems and act as forward-looking agents of change for future generations. But harnessing the agency of youth is preconditioned on implementing six principles of transformative youth CJ, which taken together, underscore the imperative for an inclusive, intersectional, equitable, more-than-human, non-necropolitical and co-produced CJ. The principles cover a wide range of issues that require the attention of policymakers, academia and the youth CJ movement itself in order to strengthen young people's agency in playing a more active role in addressing problems related to climate change and its proposed solutions. We thus argue that there is an urgent need to (1) close the climate finance gap in a way that prioritizes youth-responsive activities, particularly in vulnerable regions of the world. In arguing for an (2) intersectional approach to CJ, we urge for greater consideration of the diverse experiences and perspectives of different youth groups, which challenges depictions that homogenize the youth CJ movement. In adopting an intersectional lens to this call to climate action, we argue that addressing the multiple structural forms of discrimination and marginality, particularly those that hamper youth in the global South and youth of color in the global North from becoming more prominent actors in the climate struggle is necessary and urgent. Furthermore, we have called for the active involvement of youth in (3) recasting their justice frameworks and channeling their activism mode toward challenging green extractivism, the necropolitical and ecocidal effects of which are concentrated in racialized and post-colonial contexts. While we advocate for the necessity of a (4) climate knowledge co-production with youth, we call for attention to a few issues, including the risk of knowledge extraction, power and coloniality. Furthermore, we see that youth-led CJ is more likely to and should recognize the (5) intertwined fate of humans and nature, and thus engage in more-than-human CJ activism. Last, because youth face challenges in influencing legislative arenas, we (6) conjecture that they may need to claim their space in these institutions to ensure the protection of their wellbeing and that of future generations.

To conclude, we believe that youth CJ is a praxis of solidarity and collective action requiring the agency not only of youth but also of academia, civil society, and different levels of policy- and decision-making in bringing about change.

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