Building university capabilities to respond to climate change through participatory action research: towards a comparative analytical framework

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Building university capabilities to respond to climate change through participatory action research: towards a comparative analytical framework

This paper aims to explore how the principles of participatory action research (PAR) articulate with questions of climate justice. Drawing on three qualitative case studies in Brazil, Fiji and Kenya, the paper explores university institutional capabilities, asking how the principles of mobilising PAR to support transformative outcomes can further climate justice. The paper argues that for participatory action research to become a pathway to build universities' capabilities, key considerations are needed. PAR needs to: a) move beyond change in individual behaviour to respond to climate change and affect institutional norms, procedures and practices; b) recognise and partner with marginalised groups whose voice and experiences are at the periphery of climate debate, enabling reciprocal flows of impact and knowledge between universities and wider societies; and c) foster 'relationships of equivalence' with actors within as well as outside university to influence university governance and wider climate related policy-making processes.

Keywords: institutional capabilities; participatory action research (PAR); higher education; universities; climate justice

Introduction

This paper aims to explore how the principles of participatory action research (PAR) articulate with questions of climate justice, drawing on three case studies of institutional capabilities understood and expanded through PAR in universities in Brazil, Fiji and Kenya. In doing so, it builds on a wealth of work from the human development and capability community that has highlighted the role of universities in bringing about transformative outcomes. Ongoing works in this area have made valuable contributions towards defining values and conditions that would allow universities to play a role in expanding human development, bringing about positive societal and environmental change (Walker 2012; Boni, Lopez-Fogues, and Walker 2016; Boni and Walker 2016).

The specific contribution of this paper, in the light of this work, is to focus on climate justice, and its relationship with social and epistemic justices, developing an analytical framework for universities' institutional capabilities in the face of the climate crisis. Theoretically, the paper draws on an understanding of climate justice that is inherently epistemic, in which climate change is not understood as solely a technical concern, but one bound in historical and contemporary socio-political inequalities, colonial structures, asymmetries of knowledge and access to resources (O'Brien and Selboe 2015; Facer 2020). This understanding of epistemic justice as foundational to climate justice articulates with work that frames epistemic capabilities as foundational, particularly in educational contexts (Walker 2019). It further resonates with work that sees exceeding ecological functioning and planetary boundaries, particularly in relation to climate change, as increasing vulnerability and heightening social injustice (Holland 2008; Comim 2008; Day 2017; Dirth, Biermann, and Kalfagianni 2020; Robeyns 2019). Climate change requires asking different questions of justice, that are both intergenerational (Page 2007; Watene 2013), and which reflect on the systemic nature of the crisis, suggesting a capability that is 'architectonic' (Holland 2012). Climate change is thus a question not only of individual relationships of justice, but of transformed systems.

This paper thus speaks to questions of how processes of PAR might transform higher education institutions and systems, by engaging with questions of epistemic justice that are closely connected to climate. It offers an original contribution of a framework for institutional capabilities, providing a heuristic device for evaluating and reframing universsties' role as agents of social change, and exploring this framework in action in three different country contexts.

PAR & climate change: transformative adaptation, agency & learning

Within the literature on climate action, the case has been clearly made for participatory forms of justice, that recognise the knowledges and needs of the communities who are most vulnerable to climate change. This form of research emphasises that responses to climate change – itself a socio-politically constructed crisis – cannot be purely technical in nature if they are to be successful (O'Brien and Selboe 2015). Eriksen and colleagues highlight that some forms of adaptation can have unintended negative outcomes for social, epistemic and ecological justice, if sustainability is not integrated into the planning, arguing for principles of: recognising the context of multiple vulnerabilities; acknowledging differing values and interests; integrating local knowledge and considering feedback between local and global processes (Eriksen et al. 2011). A more recent empirical review of 34 adaptation interventions supports this earlier case, revealing how some interventions inadvertently reinforce, redistribute, or create new sources of vulnerability. Placing participatory processes and learning processes *within* institutions and *with* marginalised populations are seen as key to addressing these failures (Eriksen et al. 2021). Transformative adaptation thus requires a shift from focusing on resilience (without challenging the status quo), and beyond incremental changes, to holistic understandings of justice that foster changes in social practices and values, and that work at structural and systemic levels (Pelling 2011; Newell, Daley, and Twena 2021). As a question of justice, this is often conceptualised drawing on Nancy Fraser's work around redistribution, recognition and representation, adding a fourth 'R' related specifically to climate around restoration or regeneration (see, for example Facer 2020).

These principles of justice articulate with the transformative principles of PAR itself, which draws on a history, particularly in the Latin American context, of socio-

political consciousness raising and work with marginalised peoples (Fals-Borda 2006; Freire 1970; Bradbury 2015). Within PAR, attendance to power sits at the centre of iterative cycles of participation, action and research that reflexively expand knowledge, participation and the outcomes of action (Boni and Frediani 2020). Within the climate change literature, these iterative and reflexive cycles are often seen in terms of fostering individual and collective forms of agency, including through social movements, and/or increased community-level advocacy. Such agentic outcomes are contextualised in terms of mobilisation around a particular set of e.g., feminist principles or indigenous epistemological and ontological ways of knowing, being and doing (Campos et al. 2016; Godden et al. 2020; Youssoufa Bele, Jean Sonwa, and Tiani Anne 2013). Agency is linked to ownership, and the importance of communities driving their own agendas leading to more sustained change, embedding agentic practices in the 'everyday' of climate adaptation and disaster-preparedness (McNamara et al. 2020; Kitagawa 2019). Research in Brazil drawing on participatory methods further highlights the value of collective agency and vulnerability mapping for children and young people as much as adults, enhancing a sense of social and self-mobilisation and socio-political action (Trajber et al. 2019; Lusz, Zaneti, and Rodrigues Filho 2021).

Closely related to these PAR-framed understandings of ownership and agency are questions of the ways in which PAR processes engage with learning through action-oriented research. PAR processes associated with climate change (as with other aims) expand a narrow understanding of 'capacity building' as delivering knowledge from top down (Ziervogel et al. 2021). Such transformative processes require connecting 'experts' with other knowledge holders, through lived experience, local and traditional knowledges, that recognise the value and importance of indigenous and historically excluded wisdoms (Tengö et al. 2014). Iterative cycles of learning, through a kind of

'looping', foster mutual knowledge, action and critique that aim towards co-production across hierarchies of age, race, gender, caste, class and position (Trajber et al. 2019).

In the work on PAR that explores these processes through a capability lens, links with justice have been clearly articulated most commonly in the field of climate change adaptation (Alves and Mariano 2018). Work by Schlosberg (2012) fleshes out how understandings of just adaptation to climate change call for democratic participation in and control over one's own environment, a clear concern of climate justice movements(Schlosberg 2012). Through analsysis of local council climate adaptation plans in Australia, Schlosberg and colleagues reveal how procedural and/or participatory dimensions of justice require social and political recognition, to address disjunctures between different stakeholders (Schlosberg, Collins, and Niemeyer 2017). Work drawing on capabilities to explore energy justice in Mexico has further highlighted the importance of 'bottom-up' processes that take a nested approach to intersecting inequalities, and pay particular attention to the valued 'beings' and 'doings' of local communities (Velasco-Herrejon and Bauwens 2020). These forms of recognition and procedural justice are seen as examples of the capability for political control over one's environment, defined as having the power to influence adaptation decisions (Holland 2017).

The work discussed here thus theorises just adaptation in terms of fair distribution, political and social recognition, and procedural inclusion. It generates some useful principles for understanding the importance of participatory processes and action research, and how it might be mobilised to advance climate justice concerns. The central emphases placed on agency and learning, and ways in which PAR connects with questions of values and aspirations of communities, all speak to ways in which universities might respond to the crisis. While there is a focus on 'capacity building'

and the epistemic foundations for climate action, however, the work discussed above tends not to be grounded in higher education institutions, as explored in the following part of this paper.

Universities, capabilities & PAR

In a range of contexts, authors have argued that universities which do not engage with questions of socio-ecological justice and/or climate change are part of the problem. This includes arguments for activist-academics, calling for reframing of understandings of 'impact' and a re-politicisation of roles in ways that recognises time spent building change and connecting with social movements (Gardner et al. 2021; Green 2020). It also includes recognition that academics themselves can directly contribute to emissions, through international travel of both staff and students, including climate scientists themselves (Shields 2019; Whitmarsh et al. 2020). These arguments articulate with those arguing that foundational work is needed within higher education institutions and systems, to move beyond 'business as usual', to acknowledge histories of colonial extraction and promoting fossil fuel heavy jobs, and to refocus educational missions on living well with both people and planet (Facer 2020). As Boni and Gasper (2012) argue, "universities, like corporations, are expected to account for their overall societal impacts" and "thus require mechanisms to take these into account" (Boni and Gasper 2012, 456).

For authors concerned with capabilities, the approach offers an evaluative space to assess these overall societal impacts, and their relationship with university quality and the civic contributions of universities to the public good (Walker 2006; Boni and Walker 2013, 2016; Wilson-Strydom 2017). Capabilities – or substantive opportunities – in this way draw on value-based dimensions of assessment such as well-being, empowerment, equity and sustainability. This work often draws on, or argues for,

participatory mechanisms to foster public debate and open dialogue, particularly associated with consultative processes of developing capability lists to frame the value of education (Walker and Boni 2020). Where climate change and ecological justice is considered by this literature, however, it tends to be within open understandings of the importance of "respect for [both] the natural environment and for life" (Walker 2012, 458), or embedded within broader frames of sustainability, often driven by, or in critique of, the SDG framework (Boni, Lopez-Fogues, and Walker 2016). The focus in this literature tends towards social and epistemic justice (Boni and Velasco 2020), rather than foregrounding the ways in which universities' institutional capabilities can speak to ecological and climate-based justice, as our paper does.

Such work is thus in complementarity, indeed directly engages with, decolonial arguments that call for pluralised 'ecologies of knowledges' (Santos 2014, 2018), and recognise links between the social, epistemic and ecological justice mandates of higher education institutions and systems, calling into fundamental question the elite and neoliberal concerns of the university. Mbembe powerfully calls this *planetarity* – a consciousness of the unity between human society and the Earth and "of the entanglement of nature and society" (Mbembe 2019). As Santos argues (2018), PAR offers a key pathway by which these structures of elite and siloed knowledge can begin to be disrupted, recognising historical and contemporary forms of epistemic injustice, and actively engaging with some of these 'entanglements'.

Towards a framework for university capabilities: our methodological approach

The concept of 'university capabilities' emerged as a potential framework to enable knowledge production and exchange in this field through intensive collaborative work over the first eighteen months of a three-year GCRF-funded research study, entitled

Transforming Universities for a Changing Climate (Climate-U), which explores locally-generated climate actions in universities in Brazil, Fiji, Kenya and Mozambique[1]. Through this project, twelve participating universities have set up PAR groups with the objective to influence how their universities are responding to climate change, with one lead partner university in each of the four countries, and funded and coordinated by University College London (UCL) in the UK. While the reflections for this paper emerged out of these research activities that involved experiences from partners in all universities part of the Climate-U project, in this paper we will be referring to specific examples from experiences by our lead partners at University of South Pacific (Fiji), Kenyatta University (Kenya) and University of Passo Fundo (Brazil).

The reflections presented in the following part of this paper emerged from a series of research activities, that informed the theory building and practical actions which are discussed. Our methodological approach for these research activities is qualitative in nature, attending to the ways in which epistemic (in)justice is inherent both in university work but also the research that reflects on this work. This included desk-based research including literature reviews and institutional profiles for all three participating universities in each of the four countries; reflecting on the university context associated with the advancement of climate change policies and practice. Evolving stakeholder analyses have also drawn on a climate justice lens to bring together diverse actors, with particular attention to those who have been historically excluded from decision-making, bringing staff and managers within universities together with students, community leaders, CBOs, local NGOs, local and national government and, in some cases, industry. Early methodologies also included remote

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[1] www.climate-uni.com

knowledge-sharing activities and reflections, including regular meetings at the institutional, national and international levels to offer space for generation of a collective theory of change, and to discuss the practical and logistical constraints of setting up and running PAR groups. This has been further supported by a series of knowledge exchange seminars, involving key experts from the field of PAR and studies about higher education institutions to discuss the project's activities and debates. Finally, members of the participatory action groups themselves have fed into our discussions, discussing the purpose and objective of their work, and ways in which the local can speak back to a multi-country study coordinated by the UK, attempting to respond to some of the asymmetries associated with research 'led' by a university in the Global North.

Each of the three case universities in this paper has quite different profiles. The first which we will consider, the University of South Pacific (USP), is a regional and intergovernmental university owned by 12 Pacific Island countries, with campuses in each of the 12 member countries, and a main campus located in Suva, Fiji. Two of the university's main research themes speak directly to climate (Sustainable, Inclusive and Equitable Economies; and Oceans, Ecosystems and Climate Resilience) while a third focuses on Governance, Justice and Equality. The university also has a specific centre, the Pacific Centre for Environment and Sustainable Development (PACE SD) whose mandate is to teach, research and implement projects on climate change mitigation, adaptation and resilient practices (Pacific, 2019).

Kenyatta University (KU) is the second largest public university in Kenya, with a student population of over 60,000 students and 2744 staff. It runs several departments under 18 schools among them the schools of education and environmental studies. KU's mission statement is "to provide quality education and training, promote scholarship,

service, innovation and creativity and inculcate moral values for sustainable individual and societal development". The university aims for leadership in energy use by installing solar panels on the main campus. In 2021, KU hosted the first Nairobi Summer School on climate justice, bringing together universities, research institutions, civil societies and grassroots champions[2].

The University of Passo Fundo (UPF) is a community university located in the extreme south of Brazil, in Passo Fundo city in the state of Rio Grande do Sul. Currently, the institution has approximately 15,000 students enrolled in 143 different undergraduate, specialisation, graduate, post doctorate, and language courses (UPF, 2021). As a community university located in South Brazil, UPF is committed to social responsibility in promoting engagement with the local community, with a mission to "produce and disseminate knowledge aiming at improving the quality of life and train competent citizens, with a critical, ethical and humanist posture, prepared to act as agents of change." Although the community university model encompasses private universities, they are non-profit institutions, where profits are reverted to local actions: UPF is engaged with more than eighty outreach projects and programmes at local and regional levels.

Within the complexity of this comparative framework, and diversity of institutions, as well as with a focus on a 'super-wicked' problem such as climate change, a comparative and interdisciplinary framework thus becomes a necessary condition for research. Across these very diverse contexts, we aim to document learning not only to directly contribute to partnering university work, but to inform a wider

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[2] https://www.kenyans.co.ke/news/67980-kenyatta-university-unveils-one-kind-school-program

debate about the role of universities in advancing climate justice. As part of this process, we have collaboratively built a PAR protocol to support the implementation of these activities, and to generate key principles by which this work should be done (Climate-U 2021). For us, the use of concepts and framings from the capability literature offers a powerful as a heuristic device: a set of questions that travel across places, to enable the emergence and exchange of ideas and experiences (Frediani 2021). These comparisons, however, can only go so far: university capabilities are deeply shaped by the socio-political and economic contexts in which universities are embedded, which can act as enabling factors for engaging with questions of climate justice or constraining universities' capabilities to speak back to political ideologies.

Defining University Capabilities

As discussed earlier in this article, there has been extensive work applying the capability approach to inform PAR activities (Boni and Frediani 2020), including a specific focus on investigating the role that universities can play to advance capabilities and justice concerns (Walker 2006; Boni and Walker 2013, 2016), and highlighting epistemic injustice (Walker and Boni 2020). Our paper draws on this work, but with a slightly different focus. Instead of asking how universities can play a role in expanding people's capabilities, we would like to focus our analysis on the university itself as an institutional agent, with contested and disputed goals, freedoms and unfreedoms. Therefore, we aim to advance previous efforts to define and investigate the capabilities of institutions to bring about social and environmental justice (Frediani et al. 2020). This is line with the efforts to identify through PAR university capabilities, as well as the conditioning factors that shape the agency of universities to bring about social and environmental change (Velasco and Boni 2020; Velasco et al. 2021). Drawing on thinking developed as part of our research study, we propose a definition of university

capabilities as the choices, abilities and opportunities universities have to advance a particular set of outcomes. The concept of university capabilities sheds light on the resources, systems, relationships, values and organisational culture that shape the capabilities of universities to promote social and environmental outcomes.

Responding to the focus of our research, this application of the institutional capability framework is concerned with the drivers, practices, abilities, opportunities, aspirations, agency and trajectories of universities to advance climate justice. The emphasis on climate justice helps to interrogate outcomes that are related to the aspects of climate justice reviewed in the previous section of this paper, as well as processes that challenge climate related injustices. See table 1 below for definitions of these key elements of this framework and how they have been applied in our research.

Table 1: Capability Elements

Concepts	Definition
Drivers	These are the historical and contemporary social, political, economic and ecological contextual conditions that shape university capabilities. These influence the values and aspirations prioritised by universities. They also shape the conversion factors (Robeyns, 2005) enabling or constraining universities to pursue those climate-oriented values and aspirations.
Practices	Practices are the different ways that universities can act to towards climate related outcomes. These relate to core areas of university activities, such as teaching, research, public engagement or campus operations.
Abilities	These refer to the resources and capacities available for those engaged in university practices to advance climate justice. These can include access to financial, social and human resources among others.
Opportunities	University opportunities refer to the socio-economic-political-cultural conditions enabling or constraining universities to advance climate justice. These refer particularly to how policies and norms are produced within the university landscape, and how these distribute power among different actors within the university community.
Aspirations	These are the values and outcomes that universities prioritise in response to climate change. These can be situated within university policies as well as within the experiences and preferences of university actors, such as academic staff, students and partners.
Agency	Agency is the capacity of the university to reflect, imagine and act in relation to climate change. In our project, this is particularly concerned with the extent to which universities can and decide to take a position and act towards climate justice.
Trajectories	These are the university pathways and sequencing of activities when pursuing climate justice. In our research, we are concerned with trajectories pursued through the activities of the participatory action research group.

Source: Adapted from Frediani (2021: 15)

We hope that these elements of the capability approach can help to explore how PAR activities impact university capabilities. The following diagram (figure 1) sets out a visual representation of the relationships between these elements, which is applied in our research to investigate universities' institutional capabilities. This capability map was designed by Frediani (2021), originally conceptualised to investigate the relationship between capabilities and city-making processes, but adapted here to

consider university institutional capabilities.

Figure 1: Capability Map to investigate university capabilities
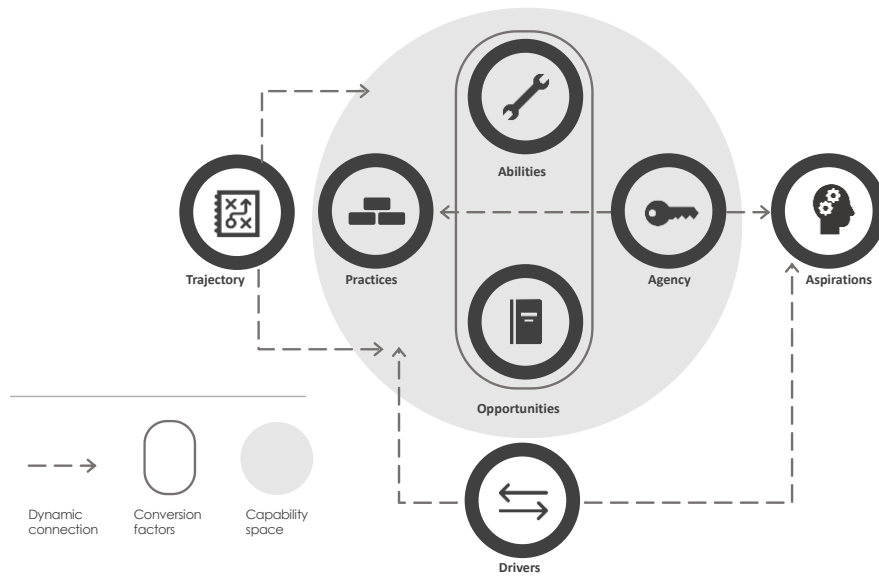
To engage with this capability map, we began by carrying out a contextual analysis of university landscapes among partnering universities, which provide some insights of the drivers affecting university capabilities, and which form the basis of the contextual introductions to each of the universities in Brazil, Fiji and Kenya above. We then prioritised the discussion about four elements of this capability framework: institutional aspirations, practices, abilities and opportunities. These were unpacked by addressing the following four questions:

(1) What are the university *aspirations* (motivations, goals and commitments) towards the advancement of climate justice? How do PAR activities relate to these goals?

(2) How do PAR activities expand the ***range of practices*** available to universities to advance climate justice aspirations?

(3) How do PAR activities improve the ***abilities*** of universities to advance climate justice aspirations?

(4) How do PAR activities expand the ***opportunities*** of universities to advance climate justice aspirations?

In the discussion which follows, we set out in detail how we understand each of these four elements, drawing on an illustrative case study from the Climate-U project for each to tease out some of the implications for university capabilities towards climate justice.

University Aspirations

Before starting to set up the PAR groups, partner universities started to explore the various university goals and commitments towards the advancement of climate justice. These aspirations can be located in existing policy documents from the university, as well as in the discourse and practices of students, university staff and partners. When we refer to university aspirations, we are addressing values of people associated with the university that aim towards climate justice, as well as the regulations, commitments and obligations the university endorses or promotes. Therefore, these aspirations are contested and diverse. The process of trying to outline and reveal these diverse aspirations can be in itself a strategic activity of PAR groups. From a capability perspective, it is crucial to examine the extent to which some of these aspirations are recognised and the extent to which they are attainable or being pursued.

Work by both Climate-U and others have identified PAR groups as a key mechanism to foster a more democratic and inclusive debate about university aspirations towards climate justice, with the potential to challenge epistemic injustices

and contribute to just and sustainable transitions (Climate-U 2021; c.f., Boni and Velasco 2020; Velasco et al. 2021). When commitments are in place, however, they may not respond to the aspirations and experiences of diverse groups that constitute a university constituency, such as students or community partners (Velasco and Boni 2020). The case of University of South Pacific (USP) in Fiji highlights the urgency for universities to recognise climate justice aspirations. The Pacific Islands Forum Leaders issued the Boe Declaration in September 2018, which named climate change as "the single greatest threat to the livelihoods, security and well-being of the people of the Pacific".[3] For the region's leaders to name climate change as a security threat underlines the fact that it endangers the very existence of Pacific Island Countries. Aligned with the Boe Declaration, USP's vision outlines its ambition "to shape Pacific futures by empowering students, staff and alumni to become inspirational agents of positive change leading to innovative, cohesive, resilient and sustainable communities"[4]. Although USP's values are "guided by the Pacific values of inclusive family, participatory and open dialogue"[5], there is little recognition in university policies and commitments of the experiences and aspirations of indigenous communities, living in locations most likely to be affected by the immediate negative impacts of climate change. Nevertheless, academic staff and students have extensive experience of developing ethical and collaborative engagements with island communities, focused at recognizing indigenous knowledge systems and diverse understandings of the relationship between nature and society (for more on this, see Climate-U 2021, 13;

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[3] https://www.forumsec.org/2018/09/05/boe-declaration-on-regional-security (accessed October 2021)

[4] https://www.usp.ac.fj/why-usp/our-mission-and-values/ (accessed October 2021)

[5] https://www.usp.ac.fj/why-usp/our-mission-and-values/ (accessed October 2021)

Nabobo-Baba 2006, 2008; Lagi 2015). Building on this experience, the PAR activities of USP aim to foster a debate on how these aspirations from island and coastal communities can be incorporated and promoted in university policies and practices. From a broader Climate-U project perspective, the USP experience and expertise highlights the need to address epistemic injustices embedded in university policy and practices aimed at tackling climate change, and builds on adaptation arguments made within the Pacific context for the value of situated and indigenous knowledges (McNamara et al. 2020).

University Practices

Part of the contextual analysis of the university landscape by Climate-U researchers included a systematisation of the range of practices that exist within universities to advance climate related outcomes. From a capability perspective, the emphasis on practices, rather than commodities, brings to the forefront the ways through which institutions operate and the possibilities that they generate to advance social and environmental change (Frediani 2021). Discussion around university practices led to the publication of the first Climate-U working paper (McCowan 2020) which identifies five modalities of university practices that can relate to the advancement of climate justice: education (associated with professional development, personal and civic learning); knowledge production (associated with research and innovation); service delivery (associated with outreach activities and secondments); public debate (associated with dissemination of ideas and participation in deliberative spaces); and campus operations (associated with sustainability planning and university investments). For Climate-U partner universities, one of the key questions to address while setting up the PAR groups is how their activities will relate to or add value to these existing practices. The focus on

practices has helped to recognise diverse modalities and institutional spaces through which climate justice is tackled by universities.

The case of Kenyatta University in Nairobi illustrates how important it is for PAR groups to diversify and expand university practices, as well as to reconfigure them in ways that they can advance climate justice. In the context of the universities in Kenya, community engagement and outreach, facilitated through corporate social responsibility programmes, has been a key modality of university practice tackling climate justice. In KU, these activities have been promoted by the Directorate of Community Services, formed in 2007, linking university staff and students with communities surrounding the university campus. Some of the initiatives enabled by the directorate related to climate change addressed issues such as quality of life in informal settlements, air pollution caused by vehicles, industrial emissions, and water pollution resulting in environmental degradation both within the city and in the surrounding countryside. However, these practices remain marginal to university activities, as there is little university policy, support or incentives to conduct practices related to climate justice (Oloo and Omondi 2017). Analysis by Climate-U researchers has revealed how these community engagement practices have been mostly concerned with the university trying to support or benefit communities affected by climate change, and have not focused on enabling communities to influence university activities, such as through curriculum development or prioritisation of research topics (Nyerere, Gatwiri, and Okinyi 2021).

Within this context, KU PAR group members agreed that activities should be focused on how to expand and recognise university practices for climate justice not as marginal activities or forms of corporate social responsibility, but rather as central to the various modalities of university practices. Furthermore, we are hoping that PAR

activities can reconfigure practices of university-community interactions, in ways that create conditions for communities to participate and influence university decision-making processes and design of curricular interventions. As one KU PAR participant emphasised,

> "there is weak collaboration between universities and local communities in mitigation and adaptation efforts… universities largely ignore the indigenous ways that communities have always used to mitigate and adapt to climate change related issues in their research and community engagements".
>
> KU PAR group meeting, March 2021

University Abilities and Opportunities

In the capability approach literature, people's abilities and opportunities are explored as key conditioning factors supporting or hindering people's capabilities to convert resources into achieved functionings. University abilities refer to the resources and capacities available for those engaged in university practices to advance climate justice. These can include access to financial, social and human resources among others. These enabling or constraining dynamics are recognised in the capability approach as conversion factors. Similarly, the availability of a particular range of practices for universities is not enough to guarantee that climate justice ideals will be pursued meaningfully. In the exploration and expansion of university capabilities, it is crucial to interrogate their abilities and opportunities to promote climate justice.

University opportunities refer to the social-economic-political-cultural conditions enabling or constraining universities to advance climate justice. These refer particularly to how policies and norms are produced within the university landscape, and how these distribute power among different actors within the university community. Furthermore, these university opportunities are shaped by dynamics operating at

different scales (such as departmental, university-wide, nationally, regionally or globally).

It is crucial to recognise that norms and relationships shaping policy-making, implementation of activities and access to resources among the university diverse constituency produce privileges as well as exclusions and oppressions. University abilities and opportunities are shaped by diverse and intersecting social identities and power relations. This opens up the need for PAR groups to discuss power asymmetries among university groups, such as students, academic, operations and administrative staff; as well as potential racist or patriarchal dynamics shaping university policy making and access to university resources.

This focus on university abilities and opportunities has been a key entry point for Climate-U researchers at University of Passo Fundo (UPF) in Brazil, when developing their initial ideas about the PAR activities. In their initial context analysis, two interconnected issues were identified. First, that their university climate-related initiatives have been top-down, fragmented, disconnected and partial. This lack of coordination has been creating a series of missed opportunities to develop more long lasting, inclusive and collaborative engagements associated to climate justice. Second, PAR groups argued that as a result, students have been particularly excluded from climate related discussions and initiatives at the university. As a response to this context, the PAR activities have been designed around the idea of setting up a Green Office at the university. The Green Office refers to a structure responsible for sustainability and climate action at the institution and this model differs from traditional initiatives as it seeks to empower students to lead the projects and actions at the university and beyond (Leal Filho et al. 2019). For the PAR groups at UPF, the ambition is that by working closely with students and university administration PAR

activities can support student mobilisations and trigger a public debate about the university policies and practices associated with climate justice. These debates hope to create more visibility of experiences and voices from students and other groups marginalised from climate-related policy making in the university. Furthermore, the Green Office would be the first of its kind in Brazil, with the potential of setting a precedent of an institutional mechanism that creates a sustainable bottom-up and democratic entry point to mainstream climate justice concerns into university activities.

Discussion

The application of the institutional capabilities framework to examine and plan PAR projects in three university cases helps us to think about how PAR can be a pathway for bringing about structural and systemic change, that works towards climate justice and transformed institutions. As discussed earlier in the paper, it is the notion of transformation which underpins both sustained and just climate outcomes, and sustained and just higher education institutions, both of which call for a move beyond 'business as usual'. As is highlighted by the three case studies in this paper, the framing of institutional capabilities presented here supports the notion that the capability approach can (and should) deal with collective forms of agency and systems-level transformations, connected with human flourishing *(*Pelenc et al. 2013*)*. Institutional capabilities both need to draw on PAR to collectively generate aspirations, as well as fostering the conditions of possibility to translate these aspirations into meaningful action (Velasco and Boni 2020).

We remain concerned, however, about how far this framework (and the capability approach more broadly) can speak to questions of biodiversity and ecological justice, echoing arguments made by others in this field (Celermajer et al. 2021; Kramm 2020). The PAR processes which we have discussed here tend towards the

anthropocentric, and do not aim to theorise 'nature' as an agent in and of herself, but rather offer an understanding of PAR that begins to take us beyond a sole focus on the 'social' of the socio-ecological hyphen. These questions, we contend, suggest that more thinking beyond normative individualism is needed, particularly around concepts such as eco-relationality and connected ontologies, although we note Watene's (2016) reflections on the extent to which the capability approach is compatible with some forms of indigenous philosophies. A broader heuristic device may provide the conceptual and analytic lens with which to make the kinds of socio-ecological flourishings visible and represents an important space for further research and theorising. These concerns notwithstanding, we feel that the framework offered here makes clear that PAR can become an important pathway to build university capabilities towards climate justice. To do so, we argue, three sets of considerations need to be taken into account.

The first is that to respond to climate change, PAR needs to support a shift in focus beyond individual behaviours and practices, to also encompass institutional norms, practices and procedures. Within the literature, past projects have often emphasised the benefits of PAR in relation to changing behaviour and awareness of climate change. Our argument in this paper is that this kind of work is necessary, but not sufficient, for sustained change. The different cases presented here raise the importance of understanding agency not only as a mechanism for justice at the individual and collective levels, but further at the institutional level. The case of UPF particularly illustrates these concerns: in the course of the project, outcomes of the participatory research around a Green Office have become increasingly articulated in terms not only of students' behaviours, practices and agency, but further in terms of institutional engagements. This case highlights that PAR projects need to engage with

the internal politics of institutions in which they are situated, in addition to the socio-political structures within which the institutions and actors themselves are based.

The second key consideration is that PAR must continue to recognise and partner with marginalised groups, whose voice and experience are at the periphery of climate debate, enabling extension and counter-extending flows of impact. University climate actions do not necessarily prioritise working with marginalised groups: a situated understanding of a university asks not only who is marginalised within the community (e.g. students) but also beyond the walls of the ivory tower. This engagement, within, outside and between higher education institutions, needs to be understood in terms of reciprocity, rather than in terms of 'targets' or 'beneficiaries' of climate adaptive and mitigating work, opening up possibilities to question the position of departure from universities, their assumptions and practices. As the KU case highlights, this is when Santos' notion of 'counter-extension' (Santos 2014, 2018) becomes a really useful concept and practice, revealing the ways in which an expansion of university institutional capabilities requires resources (as time and finances) but further a deep shift in values and approaches towards pluriversal knowledges.

The third key consideration is around fostering 'relationships of equivalence' with actors within as well as outside universities, to influence institutional governance and wider climate-related policy-making processes. PAR processes do not start with nothing - they are initiated within already existing relationships and processes which present opportunities as well as challenges related to the existing power asymmetries at play. This relates to institutionalised forms of patriarchy, racism and discrimination embedded in university systems. As a result, apart from the potential of reproducing those, well-intended PAR projects can end up generating extractive engagements, and instrumentalising the relationship with other actors (in the sense of reproducing the idea

of the university as a service delivery, reinforcing commodification). This requires PAR projects to explicitly reflect on and reconfigure the existing types of relationships embedded in their processes, and demands not only inviting diverse actors to participate, but to promote diverse typologies of engagement that help to address existing asymmetries of power and influence. In this respect, the case of USP helps to illustrate how a dynamic and situated approach that is grounded in respect for indigenous communities, knowledge systems and ontologies might look, revealing the ways in which PAR is a question not only of distribution and recognition, but asks questions of restoration and regeneration. This case highlights the need to attend to the details of how relationships of equivalence can play out in practice (Climate-U 2021), in which engagement with communities along equivalent lines draw together consent, knowledge (re)production and a social contract that bridges 'researcher' and 'researched'. This kind of approach asks not *what* knowledge we are generating but *how* knowledge is generated collaboratively.

Conclusion

The framework which we have put forward in this paper is designed to work as a heuristic device, triggering conversations, facilitating knowledge exchange and helping horizontal learning that is comparative and cross-cultural in nature. As we set out in our introduction, climate change is both a global and a local concern: work to address it thus requires attendance to both synergies and specificities. There are complex dynamics associated with global power asymmetries inherent in this work that may constrain the justice aims of this kind of project. However, we believe that the framework helps offer a structure to guide this comparative thinking, while remaining open for situated and grounded processes of theorisation and action.

PAR is thus a mechanism or pathway by which institutional capabilities can be enhanced. It is the argument of our paper that PAR itself, which challenges the modes of knowledge production and creates alternative pathways for action, is a means by which climate justice can be expanded. It offers significant potential to work across and through boundaries, both by recognising the importance of transdisciplinary knowledge which has been highlighted as so important for the climate emergency, but further by deeply engaging with the wisdom of indigenous cosmologies. To do so, however, remains a challenge that may be resisted by the structures of historical and contemporary forms of elite knowledge production. We argue that such struggles at the intersect of epistemic and climate justice are essential, and represent some of the deepest challenges of our time.

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