



The role of intermediary actors in driving just adaptation



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Just adaptation refers to the process of adapting to climate change in ways that are fair, equitable, and inclusive, especially for those most vulnerable to its impacts. However, there are significant challenges in realizing justice principles across different scales of adaptation. Drawing on consultations with 22 climate adaptation stakeholders in Kenya, we argue for the important role of intermediary actors in addressing these challenges.

Just adaptation calls for climate adaptation to effectively address social inequity and vulnerability. It embeds the principles of ‘distributive justice’, which refers to the fair allocation of benefits and burdens of adaptation; ‘procedural justice’, which relates to the distribution of power in adaptation decision-making; and ‘recognition’, which refers to adaptation that respects, engages with and gives fair consideration to diverse cultures and perspectives². These principles appear in many global adaptation frameworks and agendas. Article 7.5 of the Paris Agreement states that adaptation should “take into consideration vulnerable groups, communities and ecosystems...traditional knowledge, knowledge of indigenous people and local knowledge systems”³, while Sustainable Development Goal target 13.b promotes climate-change capacity building for least developed countries and marginalized groups⁴.

Just adaptation principles are increasingly embedded in the mechanisms that fund and govern adaptation. From multilateral climate funds^{5,6} and development bank safeguards^{7–9} to governments’ equity targets¹⁰ and devolved finance arrangements¹¹, a gap remains between these stated commitments and the realization of just adaptation in practice, with vulnerable groups frequently excluded from funding, design, and decision-making of adaptation interventions.

In this perspective, we argue that intermediary actors are central to closing this gap. Also known as ‘brokers’¹², ‘boundary organisations’¹³, and ‘bridging actors’¹⁴, among others, intermediary actors create connections between “actors from otherwise disconnected social worlds”¹⁵. They have been theorized to “operate between the production and consumption of knowledge or power, helping to translate, reinterpret, and mobilize resources and legitimacy”¹⁶. Others have argued for their importance in sustainability transitions¹⁷, the humanitarian sector¹⁸, in climate policy¹⁹, and in climate-resilient development^{20,21}. Here, we argue for their importance in achieving *just adaptation*.

Intermediary actors can take diverse shapes and forms, depending on the adaptation process they are involved in. They can be, for instance, local non-governmental organisations, research institutes, experts with grounded knowledge (e.g. agricultural extension workers) or even bureaucrats with

deep understanding of just adaptation. Existing typologies classify intermediaries by various dimensions including their level of operation, mode of intermediation, and organizational form^{17,22,23}. Building on these frameworks, we categorize intermediary actors along two dimensions relevant to just adaptation challenges: *how* they operate and *where* they operate (see Fig. 1). Intermediaries can be process-enabling (connecting actors and enabling dialogue) or resource-technical (delivering financial and technical resources) and operate across a spectrum of adaptation scales.

Scale is central to how just adaptation challenges arise, and to where intermediaries can act. Scale in adaptation is multidimensional: it can refer to the jurisdictional levels of decision-making, the institutional and financial architecture through which resources flow, or the spatial and temporal reach of interventions^{24–26}. In this perspective, our framing of scale focuses on the type of intervention (large-scale infrastructure versus community-scale interventions) and the level at which adaptation is being planned and delivered; see Fig. 1. We treat this as distinct from the scale of financing for adaptation, since community-scale interventions can sit within large-scale financing programmes (as with Kenya’s Financing Locally Led Climate Action programme, FLLoCA). This framing offers an entry point into treating the scale-specific justice challenges, many of which arise from the mismatch between where adaptation is needed and where the resources and authority to shape it sit, as well as the cross-scalar role of intermediaries.

This perspective contributes to the current debates and scholarship on just adaptation and on intermediation by linking intermediary functions to the distributive, procedural, and recognition dimensions of justice, something that previous work has not explicitly addressed. Drawing on the existing literature and new empirical evidence from Kenya, we also argue that just adaptation challenges are scale-specific, and that intermediaries are well placed to mediate these challenges across scales.

Approach

Our work focuses on Kenya, a country highly vulnerable to the impacts of climate change, which is the second largest recipient of adaptation finance in Africa²⁷, and has championed a system of devolved climate finance¹¹. We

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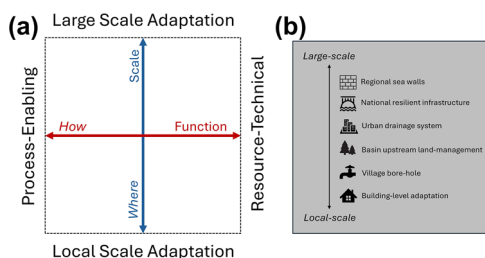


Fig. 1 | Typology of intermediary actor functions and the scale of adaptation interventions. **a** Intermediary actors are characterized along two axes. The horizontal axis, labelled “How”, runs from process-enabling functions on the left, which connect actors and enable dialogue, to resource-technical functions on the right, which deliver financial and technical resources. It is drawn as a red double-headed arrow. The vertical axis, labelled “Where”, runs from local-scale adaptation at the bottom to large-scale adaptation at the top and is drawn as a blue double-headed arrow. The two axes define the space within which the intermediary functions in Fig. 2 are positioned. **b** Illustrative adaptation interventions arranged along the same scale axis, from large-scale at the top to local-scale at the bottom: regional sea walls, national resilient infrastructure, urban drainage systems, basin upstream land management, village boreholes, and building-level adaptation. Each intervention is accompanied by a black line icon; the icons are illustrative only and carry no analytical meaning. **b** uses no colour coding.

draw on consultations with 22 stakeholders involved in adaptation in Kenya conducted between March and April 2025, through seven individual semi-structured interviews, two paired interviews, and one focus group discussion with 11 participants, and complemented with a scoping literature review on empirical research on just adaptation. Interviewed stakeholders included donor agencies [DON], international adaptation experts [EXP], civil society organizations [CSO], and community-based organizations [CBO], allowing us to gain insight into the challenges and opportunities to achieve just adaptation. Several interviewees operated as intermediary organisations themselves. All participants provided informed consent prior to the consultations.

The data were interpreted through thematic analysis, supported by Large Language Model (LLM) coding using Claude Sonnet 4.5. To account for the limitations of LLMs used in qualitative research^{28,29} the LLM was utilised solely for initial coding with carefully designed prompts to avoid any modification of original interview transcripts. The coding approach was both deductive, drawing on the pre-determined themes of community engagement and financing approaches within the interview guide, and inductive, accounting for themes emerging from the data - namely, the relevance and functions of intermediary actors. Citations were cross-checked for hallucinations and inaccuracies and then organised and analysed for meaning according to their thematic categories, with ‘just adaptation principles’ applied in the final interpretive stage, in which functions emerging from the inductive coding were mapped on the distributive, procedural, and recognition dimensions of justice.

The justice challenges of large-scale adaptation

Following the scale framing set out in the introduction, we define large-scale adaptation as capital and technically intensive interventions planned and delivered by national agencies, major contractors, or multilateral entities. These include large infrastructure projects such as flood defences, climate-resilient transport and energy networks, or basin-scale water management.

A central challenge to large-scale adaptation is the top-down approach to these investments. The institutional architecture of transnational climate finance is largely structured around the flow of resources from international actors—such as bilateral donors, multilateral organisations, and climate funds—to national governments or civil society organisations in recipient countries³⁰. Transnational finance can also help diffuse justice norms into national contexts where they otherwise have limited traction. In practice, however, this financing model often impedes the integration of justice

considerations and the meaningful inclusion of vulnerable populations in project design³¹.

Existing literature suggests that large-scale adaptation interventions are dominated by Western hegemonic knowledge, and involve technocratic approaches designed by engineers^{32,33}. While engineering expertise is necessary for technically intensive projects, when not accompanied by other types of local and contextually relevant knowledge, it can lead to a ‘universally applied’ formula³⁴. This infringes the recognition principle of just adaptation. This dynamic was also raised in our interviews. A respondent whose organisation works between funders and communities on the design and delivery of adaptation projects described how the routing of resources shapes the mode of engagement, “if resources (...) will go directly to International Development or the large Government departments, it then reinforces this idea of top-down conversations” [CSO-3].

Achieving *procedural* justice is another key challenge for large-scale adaptation. Consultation requirements are embedded in the safeguarding frameworks of many multilateral funders, but consultation and influence are not the same thing. A review of evaluation evidence covering 374 adaptation interventions worldwide, which assessed the degree to which these interventions were locally led, found that even when local actors are involved in adaptation projects, they rarely have influence on decisions regarding project design and implementation³⁵. Systematic evidence of this gap in large-scale infrastructure projects is lacking. However, the same respondent observed that in the context of multibillion-dollar infrastructure projects driven by multi-lateral funders, “the one part we always talk about less is engaging the community” [CSO-3]. The challenge for just adaptation is therefore not just whether and how communities are consulted but whether consultations can meaningfully influence decisions.

Even at large scales, climate adaptation needs—and associated justice concerns—are inherently local, demanding context-specific and inclusive solutions³³. Consequently, top-down approaches that overlook community engagement risk leading to maladaptation, defined as adaptation efforts that “impact adversely on, or increase the vulnerability of other systems, sectors or social groups”³⁶. An interviewee involved in participatory flood adaptation projects in low-income neighbourhoods illustrated this risk, describing how basic community concerns such as protection from theft during evacuations or the need for safe recreational spaces for children (e.g., football pitches) in the design of drainage infrastructure were often disregarded by technocratic actors [DON-1]. Similarly, recent research on large-scale road infrastructure projects in Kenya reveals that these have intensified insecurity – particularly for women and girls – by driving homelessness, business disruptions, and the spread of disease³⁷.

Evidence suggests that large-scale adaptation actors—including donors, multi-lateral funders, government agencies, and major implementing contractors—face institutional barriers to effective engagement with local communities. These include rigid administrative procedures, lack of resources, and short project timelines that limit relationship building. As articulated by DON-1, “the challenge we have working with the community is you need time, it is not easy, so you need a lot of time and patience”. EXP-2 also observed that organizations implementing adaptation investments, in sectors such as infrastructure, often lack ‘soft expertise’ in community engagement, with technical professionals unequipped or unmotivated to facilitate participatory processes when this is not formally required. As such, shifting both deep-rooted bureaucratic praxis and work culture is required for the effective realisation of just adaptation objectives.

The justice challenges of local-scale adaptation

We define local-scale adaptation as smaller-footprint interventions planned and delivered by individuals, households, communities, businesses or local governments. Typical examples include village boreholes, rainwater harvesting, and building-level adaptation measures. These interventions are often pursued through approaches such as Locally Led Adaptation (LLA) and Community-Based Adaptation (CBA)³⁸, which place climate-vulnerable groups at the centre of adaptation decision-making³⁹. Despite the widespread advocacy for these approaches, a growing body of evidence

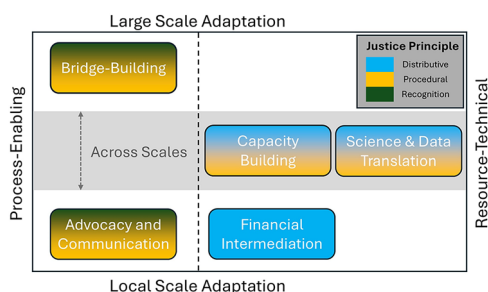


Fig. 2 | Five functions through which intermediary actors can advance just adaptation principles. The five functions identified in this perspective are positioned within the typology introduced in Fig. 1a. As in Fig. 1a, the horizontal dimension runs from process-enabling functions on the left to resource-technical functions on the right, separated by a vertical black dashed line, and the vertical dimension runs from local-scale adaptation at the bottom to large-scale adaptation at the top. Bridge building is positioned at the process-enabling, large-scale corner and advocacy and communication at the process-enabling, local-scale corner. Financial intermediation is positioned at the resource-technical, local-scale corner. Capacity building and science and data translation sit within the shaded grey horizontal band labelled “Across scales”, indicating that these functions operate at all scales rather than at a single one. Each function is filled with the colour of the justice principle it supports, as given in the legend: light blue denotes distributive justice, yellow denotes procedural justice, and dark green denotes recognition. Where a box is filled with two colours, the function contributes to both of the corresponding principles.

highlights the persistent challenges in delivering equitable and effective adaptation outcomes through LLA and CBA⁴⁰.

A key challenge for local-scale adaptation is the lack of financing made accessible to local actors. Rough estimates suggest that less than 10% of all climate finance between 2003–2016 reached local actors⁴¹, raising questions about the *distributive* justice of adaptation finance. This lack of financing means local-scale adaptation efforts are frequently under-resourced and volunteer-driven, which constrains the ability of local actors to scale up or replicate successful initiatives to meet broader adaptation needs. Access to funding is further hindered by the stringent eligibility criteria of many financing institutions, which favour professionalised organisations with formal structures and technical credentials [CSO-2; CSO-4]. Stakeholders in Kenya identified pitfalls even in the devolved finance structures aimed at supporting community actors, noting that the risk classification governing eligibility confines funding to smaller interventions and screens out those that communities consider most transformational [CSO-4].

Kenya’s FLLOCA programme was designed to devolve climate finance and adaptation decision-making to communities. Community groups can develop project proposals, which are appraised through ward-level climate committees⁴². Community actors in our focus group discussion described a gap between this design and their experience of it. Resources were seen to remain under county government control, with proposals originating from community groups failing to qualify while county-originated projects proceeded [CBO-8; CBO-10]. One participant characterised the barrier as the mindset of county officials, who “still have a feeling that probably the community groups are not able to run their own projects” [CBO-10]. Devolving finance to sub-national government does not, therefore, by itself devolve decision-making authority to community actors.

Local and community actors also often have limited technical capacity and inadequate resources that hinder effective and nimble action at the local level⁴³. Technical capacity refers, firstly, to the lack of relevant professional training for technical delivery (e.g. engineering) of adaptation measures by community actors. A civil society respondent framed this as a question of design, rather than an obstacle, arguing that direct financing to communities should be paired with partners offering technical support for delivery: “*how then do you deliver finance to community while also guaranteeing technical assistance for the production?*” [CSO-3]. Programmes such as FLLOCA build technical support into their design; however, where financing reaches

communities through other routes, this is not always the case. Further to this, community actors often face significant limitations in technical and administrative capacities, particularly in areas such as resource management [DON-1] and project development. For instance, community actors are already implementing adaptation projects, but struggle to articulate these initiatives in ways that align with funders’ expectations [CSO-1; CBO-10]. Community actors themselves explain that “some application processes are so complex they ideally require technical expertise, which we didn’t have” [CBO-3].

Two structural barriers hindering effective local-scale adaptation are the lack of strong local institutions and unequal power relations. These barriers pose challenges for the *distributive* and *procedural* aspects of just adaptation. When local institutions are weak, resourcing local governments can lead to ineffective implementation, elite capture or rent-seeking. Research from Nigeria, for instance, asserts that local government institutions are not guided by relevant regulations nor designed to effectively carry out adaptation measures⁴⁴. Another study shows that LLA projects for water management have performed better in Kenya than in Tanzania, thanks to the “already institutionalised mechanisms for LLA”⁴⁵. Similarly, in our study, interviewees in Kenya repeatedly recognized the relatively advanced legislative and institutional architecture around climate action in the country. However, elite capture of adaptation projects was still considered pertinent by civil society actors, who shared experiences of ‘political interference in the determination of the projects’, “*serving a political need as opposed to a community need*” [CSO-4] and ‘budgeted corruption’ hindering devolution of resources to community groups [CBO-8]. These insights highlight the role of local governance structures in shaping the opportunities and contributions of local actors in just adaptation.

Existing evidence highlights that unequal power relations determine whose voices are heard and who controls resources, leading to inclusion and participation challenges^{32,46–49}. Evidence from four Kenyan counties (2014–16) shows that local adaptation committees can reproduce gender exclusions due to land ownership norms and kinship-based access to resources⁴⁵. In Tanzania, a coastal adaptation project run by community organizations created exclusionary participation spaces and undermined existing local institutions⁵⁰. Similarly, in Senegal, devolving climate fund decisions to the community level did not ensure meaningful participation for women⁵¹. The complex dynamics of representation and inclusion also emerged as a significant challenge discussed by our interviewees.

The opportunity: intermediary actors driving just adaptation

We have outlined numerous challenges to achieving just adaptation across different scales. However, we argue that intermediary actors can play an important role in addressing these challenges by filling the ‘implementation gap’ in just adaptation.

Drawing on stakeholder perspectives from Kenya (and beyond) and the wider literature on intermediation, we identify five key functions for intermediary organisations. These five functions emerged inductively from our interviews in Kenya. Below, we situate each within the wider literature on intermediation. The functions, alongside the justice principles they support, are illustrated in Fig. 2.

BRIDGE-BUILDING: facilitating engagement between adaptation investors and community actors to inform and co-produce adaptation strategies and projects

For large-scale adaptation projects that often remain top-down in design, intermediary actors can provide contacts and pre-existing presence on the ground as well as soft skills that enable engagement with local communities [EXP-2] – thereby supporting more inclusive decision-making and the inclusion of community knowledge. Connecting actors who would otherwise remain disconnected is a frequently identified function of intermediaries in the transitions and climate policy literatures¹⁹. Intermediary actors can also support policy co-production by supporting participatory planning processes that bridge formal policy frameworks with community

knowledge. Some of the interviewed stakeholders in Kenya already had positive experiences of such processes, highlighting the importance of intermediary actors in structuring engagement to ensure meaningful community input while meeting technical requirements:

“The community can sometimes propose anything; they can propose even something against the government. We had to have someone who is just trying to make them work within the confines of the law in Kenya. [...] so the community was giving the ideas, and the [intermediary organization] was shaping the ideas into designs or plans that will be implemented later.” [DON-1].

In this case, the intermediary organisation translated community ideas into proposals consistent with the legal frameworks governing water resources and municipal areas, ensuring that community-generated ideas could proceed to design and implementation rather than falling outside the powers of the implementing authority [DON-1].

Engagement of this depth is resource intensive. One respondent described time and patience as prerequisites for working with communities [DON-1]; another noted that infrastructure providers rarely hold this capability in-house [EXP-2]. Intermediary actors lower the transaction costs of engaging with communities because their existing relationships and local presence do not have to be rebuilt for each project. They can also ensure engagement reaches the right people.

SCIENCE & DATA TRANSLATION: providing and translating relevant data to adaptation investors and communities

Interviewees highlighted the data gaps both among investors and communities engaged in adaptation. The translation of climate science and data into actionable knowledge is an important intermediary function that has been theorized in the climate information and climate services literature^{21,52,53} and in humanitarian scholarship on emerging “climate science translator” roles¹⁸. Our interviews identify a two-way translation process: intermediaries translate data and science for communities but also translate community and grounded knowledge upward to large-scale adaptation actors. For instance, in contexts of high informality and rapidly outdated land use data, intermediary actors can draw on grounded and participatory mapping to inform large adaptation infrastructure projects [CSO-3], feeding community knowledge into project design. At the same time, community actors often have limited access to and understanding of data to inform their adaptation advocacy and implementation activities and require support in interpreting satellite and other kinds of data [DON-1]. Intermediary actors have an important role to play as climate data translators. The effective use of data by community members to advocate for local adaptation needs can get more resources flowing locally, shifting resources toward local actors.

ADVOCACY & COMMUNICATION: supporting communities to communicate their adaptation needs and turn them into advocacy strategies

Advocacy and communication is a central function of intermediaries across literatures^{20,31}. Capturing adaptation needs and preferences from the perspective of affected communities is crucial for effective and just adaptation measures. Intermediaries can translate between technical and local knowledge systems while ensuring community perspectives inform adaptation decisions. This is paramount for both *recognition* and *procedural* justice. As explained by one stakeholder, “a community will understand ‘I do not have water’, but if you tell them how to package that need in a way that features through the public policy instruments, then that is a totally different ball game altogether” [CSO-4].

Moreover, intermediary organisations can support community actors in holding local government actors and other political gatekeepers accountable in instances of rent-seeking, contributing towards stronger institutions.

CAPACITY BUILDING: supporting communities to grow their technical implementation and project management abilities

The role of intermediary organisations in capacity building has been highlighted in sustainability transitions and climate adaptation³¹ and we argue it is also central in ensuring adaptation is just. Intermediary organisations can provide technical training for community actors to effectively realise their adaptation projects. They may also provide professional expertise in areas such as project design and management, which can be leveraged to train community actors with skills relevant to resource capture. They may also enhance existing efforts by climate adaptation funders (e.g., climate funds) in sharing knowledge about finance application procedures and eligibility requirements with community actors – helping resources reach community actors. In addition, intermediary actors can capacitate large-scale adaptation actors in community engagement and participatory methods, to make their engagement processes more inclusive.

FINANCIAL INTERMEDIATION: streaming adaptation resources to communities

The role of intermediaries in channelling climate finance to the local level has been increasingly recognized in the adaptation finance literature^{54,55}. The financial intermediation function of intermediary actors (such as NGOs or dedicated funds, e.g., women’s funds) includes developing financing mechanisms that accommodate community constraints through simplified procedures, while meeting donor requirements. As CSO-2 explained, this approach helps in “decolonizing the whole financing and making funders look at it from the other side”, crucial for driving *distributive* justice at the structural and institutional level.

Discussion and conclusions

In this perspective, we have highlighted the justice challenges faced by stakeholders across different scales of climate adaptation. *Distributive* inequities in adaptation finance remain between countries⁵⁶ and within countries⁵⁷. *Procedurally*, there is little participation of communities in adaptation planning and design³³ and where these stakeholders are engaged, their decision-making power is limited⁵⁰. *Recognition* is the least developed justice concept in practice⁵⁸, despite arguments for its centrality to achieving all justice dimensions⁵⁹. These shortcomings are rooted in structural constraints—such as the misalignment between global financing architectures and local capacity⁵⁴, power asymmetries in decision-making⁶⁰, and weak institutional linkages between scales⁶¹—that make translating justice principles into practice difficult.

At the same time, we argue that intermediary actors can play a critical role in addressing many of these just adaptation challenges by bridging gaps in funding, technical expertise, and institutional capacity while providing crucial support for advocacy. The five intermediary functions we identify are not in themselves new. Bridge-building, knowledge translation, demand articulation, capacity building, and financial intermediation have been theorised across the climate policy⁶², climate services^{21,52,53}, climate adaptation^{31,55} and sustainability transitions literature^{17,63,64}. Our contribution is to link these functions explicitly to the distributive, procedural, and recognitional principles of just adaptation (Fig. 2), a connection that has only received limited attention in the context of financial intermediation⁵⁴. This justice framing also foregrounds the cross-scalar role of intermediaries. The justice failures we describe at both ends of the scale spectrum are problems of cross-scalar coordination: large-scale interventions fail to consider local needs, and local actors are excluded from resources organised at higher levels. Just adaptation requires more deliberate cross-scalar interaction, from ensuring community voice in large-scale adaptation projects to helping communities access finance designed at higher levels.

Intermediaries’ ability to deliver is also shaped by exogenous factors such as the governance environment. Kenya’s devolved governance system and comparatively open NGO legislation create an institutional space in which diverse actors can operate and engage in adaptation processes (as exemplified by FLLoCA), compared to a highly centralised and civil society-

limiting governance system⁶⁵. Devolution opens opportunities for intermediaries to operate between scales of adaptation governance. However, devolution does not guarantee just outcomes, as illustrated in our empirical sections.

Crucially, the contributions of intermediaries should also not be assumed to be universally beneficial or politically neutral. As highlighted in earlier sections, the involvement of civil society organizations can sometimes generate exclusionary or procedural injustices, a risk that applies equally to intermediaries. International NGOs (INGOs), in particular—often positioned as primary implementers of donor-funded adaptation and development programmes—have drawn sustained critique in development literature. These critiques underscore INGOs' tendency to align with donor priorities, often at the expense of authentically representing grassroots needs^{66,67}. In receiving funds from large institutional donors, such organisations become accountable for delivering results pursued by their financiers, rather than objectives prioritised by local communities themselves. Intermediary actors may also contribute to elite capture, marginalization of vulnerable groups, and the reinforcement of local power hierarchies, especially when local civil society actors are reduced to subcontracted or tokenistic roles^{66,67}. Evaluating the effectiveness and legitimacy of intermediaries in adaptation thus requires a critical interrogation of their motivations, institutional affiliations, and alignment with principles of transformative and equity-centred adaptation. This demands a nuanced understanding of who intermediaries serve, how they engage with local systems of power, and whether their actions ultimately enable or constrain the pursuit of just adaptation.

Despite these caveats, intermediaries committed to just adaptation principles can have substantial impact across the three dimensions of climate justice. They can redirect resources to under-served communities, broker more inclusive decision-making between formal and informal actors, and bring local and indigenous knowledge into adaptation strategies that have historically been dominated by external technical expertise. The cumulative effect is more deliberate connections between adaptation as it is planned at higher levels and adaptation as it is needed locally.

While our empirical material is drawn from Kenya, the functions we identify speak to a broader set of contexts in which adaptation finance and decision-making sit at higher scales than the communities they are meant to serve. Kenya's relatively open civic space and devolved governance arguably make the intermediary role more visible than elsewhere. In more centralised or civil-society-constrained settings, similar functions are likely to be needed but harder to enact. Future research ought to examine more closely across contexts what kinds of governance and finance structures, policy processes and regulative approaches best support intermediaries to achieve their highest potential in driving adaptation that is truly just, including the political economy of intermediation and the institutional conditions that shape whether intermediaries advance or undermine just adaptation outcomes. This is particularly important in contexts where the gap of contextual, cultural, and technical knowledge between those directing resources and those communities with the greatest adaptation needs is vast.

Data availability

No datasets were generated or analysed during the current study.

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Author contributions

M.B. and R.L. conceptualised the study. R.L. led data collection and conducted all interviews. Data analysis and preparing this perspective piece was carried out in equal partnership by both authors.

Competing interests

The authors declare no competing interests.

Ethics approval and consent to participate

All interviewees received written information about the study's purpose, data processing procedures, and their rights. Participants had the opportunity to

ask questions before the interview, and formal consent was obtained individually from each participant before the consultation. This study was approved by the School of Geography and the Environment Departmental Research Ethics Committee, at the University of Oxford.

Additional information

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