

PERSPECTIVE

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# Mobilising transformative community-based climate change adaptation

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## Abstract

Under-resourced and marginalised communities often have limited government support, and therefore, must decide by themselves if and how they adapt to the uncertainties of climate change. Community-based climate change adaptation (CbA) forms a plausible approach here. In practice, however, CbA projects often fail to address the underlying causes of vulnerability like power relations and sociocultural structures that influence adaptation measures adopted and outcomes. In response, this perspective paper explores the concept of *transformative* community-based climate change adaptation (TCbA), a reflexive approach that focuses on empowering communities by reframing the decision-making context. It discusses pathways of mobilising this shift to transformative CbA in three steps: (1) specifying the characteristics of a TCbA; (2) exploring the leverage points to mobilise it, and (3) recommending a set of actions and processes that facilitate co-decided interventions at the identified leverage points. These leverage points include "the structure of information flow", "rules of the system" and "power to change system structure or self-organise". The paper concludes by emphasising that the shift to transformative CbA begins when facilitators and members of the community undertaking a CbA project are reflexive about how the societal context of decision processes, like power relations, influence community adaptation decision-making, planning and implementation.

**Keywords:** Community-based adaptation, Climate change, Under-resourced communities, Transformative adaptation, Adaptation decision-making, Adaptation planning

## Policy and practice recommendations

- Policies that support the actualisation of the need and will on the part of communities and local stakeholders to transform, must be developed and implemented, coordinately across governance levels.
- Adaptation decision-making power must be devolved to local communities, especially those under-resourced and with limited government support. This requires making climate information available and understandable to these communities for informed decision-making.



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- The usage of the reflexive questionnaire is recommended for CbA practitioners as a first step in any community-driven project to ensure that existing influencers of adaptation decision-making are addressed and the voices of the most vulnerable are heard.

### Science highlights

- Current CbA approaches often overlook power dynamics, which are crucial in shaping adaptation decision-making and addressing varying community vulnerabilities. A transformative CbA (TCbA) approach provides guidelines to be cognisant of these power imbalances at every step of the process, allowing for course correction.
- Patterns of the emergence of barriers during typical CbA projects indicate a degree of influence between them, which is used to identify deep leverage points to shift towards a transformative CbA.
- Principles of TCbA are discussed, and a reflexive questionnaire is developed as a primer for intervening at identified leverage points.

### Introduction

Climate change impacts are intensifying vulnerabilities, amplifying extant developmental challenges, and patterns of injustices in marginalised and under-resourced urban communities, which contribute the least to its cause and often lack the resources and opportunities to adapt (CARE 2010; Anguelovski and Carmin 2011). These communities rarely receive timely and pertinent government support, and if received, they are reactive technical fixes, without long-term climate adaptation considerations (Satterthwaite et al. 2020). Yet, interventions focusing only on climate change adaptation don't reflect the communities' priorities, as climate change is only one of the many challenges they face (Reid et al. 2009, p. 13). In this situation, community-based climate change adaptation (CbA), a community-led process, supported by experts, NGOs etc., comes to the forefront. CbA emphasizes addressing the specific priorities, needs, knowledge, and capacities of the local community to effectively adapt to climate change (Reid et al. 2009). Diverse activities fall under the CbA approach including but not limited to infrastructure development, resource management, livelihood diversification and capacity building (Shammin et al. 2022). Since it emerged as a distinct debate for adaptation in developing countries in the early 2000s (Huq et al. 2005; Huq and Reid 2007; Reid et al. 2009), CbA has gained traction as evidenced by a growing body of literature (e.g., Rashid and Khan 2013; Schipper et al. 2015; Roy 2018; Galvin 2019; Simon et al. 2020) and 14 international CbA conferences held since 2005, discussing learnings from the field and setting new goals for the practitioners (weADAPT 2020). However, numerous barriers (in *italics*) persist, hindering CbA projects from achieving their full potential (McNamara and Buggy 2017; Piggott-McKellar et al. 2019; Nath 2022), which entails engaging local communities in adaptation decisions while addressing the root causes of their vulnerability and empowering them to address the uncertainties brought about by climate change (Forsyth 2017; Kirkby et al. 2017). CbA has also been critiqued for ignoring power relations due to "its seemingly neutral and apolitical approach" (Galvin 2019,

p. 51; Fox et al. 2021), where how dynamics of power influence adaptation decision-making are still underexplored (Beckwith 2021, p. 1). Without being cognizant of how power relations are influencing each step of a CbA project, differences in the needs and priorities of a community with varying levels of vulnerability can't be reconciled (Reid et al. 2009). Therefore, it falls short of addressing the root causes of vulnerability like access to resources and decision-making power (Ribot 2014) which manifest as structural barriers. A recent systematic review of the literature discussing barriers and enablers of CbA and reporting on implemented neighbourhood-level CbA projects, found that 40% of the reviewed literature ( $n = 40$ ) discusses *power imbalances* as a barrier, closely followed by *a lack of reliable and/or long-term financing* (37.5%) and *information availability and relevance* (30%) (Nath 2022, Fig. 4). It is argued that it is the "adaptation as development" framing of CbA (Ayers and Dodman 2010, p. 25), an inherently incremental approach, that hinders CbA from critically engaging with power relations influencing adaptation decision-making. While this incremental approach of adaptation through infrastructure development and managing imminent climate impacts is necessary, it does not address "risks and inequalities unmet by development" (Manuel-Navarrete & Pelling, 2015, p. 558 in Beckwith 2021, p. 3). Thereby, CbA projects lose the opportunity to move towards the transformation of the status quo of power imbalances contributing to inequality of resources and therefore, vulnerability. In incremental adaptation approaches, existing practices are adjusted to make them better suited to changing conditions (Few et al. 2017). This is opposed to transformative adaptation, which implies a directional shift, a fundamental alteration of the status quo (Feola 2015; Few et al. 2017), diminishing exposure to anticipated or observed impacts of climate change, by "revealing structural orders that perpetuate inequality" (Few et al. 2017, p. 2). Further, transformative adaptation differs from transformational adaptation, where the former implies activities that can change *other* things, while transformational adaptation implies adaptation that *in-itself* constitutes a step-change (Few et al. 2017, p. 5).

CbA projects are mostly based in communities that are at the frontline of climate change impacts and for whom everyday life is "frequently often chronically untenable" and therefore, require transformation (Pelling 2011, p. 125). Although researchers have previously highlighted the transformative potential of CbA (see, for example, Dodman and Mitlin 2013; Archer et al. 2014; Chung Tiam Fook 2017; Galvin 2019; Fox et al. 2021), a gap between conception and practice remains. Against this background, this paper provides a perspective on how to begin the shift from an incremental CbA to a transformative CbA (TCbA), where a reflexive analysis of the CbA process, focusing on the collective decision-making aspect, structural barriers are unmasked, to initiate their redressal. It connects two established literature themes: transformative adaptation and systemic leverage points and identifies leverage points to mobilise TCbA. It furthers the discussion on the transformative potential of CbA by initiating a deliberation on how to operationalise this potential through TCbA.

After a brief review of concepts that inform and influence this perspective paper, the current state of CbA is described and the characteristics of a transformative CbA are discussed. This is followed by an exploration of leverage points where interventions can be focused to mobilise TCbA.

### Conceptual background for a transformative CbA

The point of departure for mobilising any form of climate change adaptation is recognising that “climate change adaptation is very much a ‘wicked’ problem of governance, and as a consequence requires that power relations and equity issues be addressed” (Archer et al. 2014, p. 353 citing Dewulf, 2013). Governance is the exercise of political, scientific, economic and administrative power to manage societies and their development (Tennberg 2012, p. 18). Adaptation governance while not claiming that governance is adaptive, embraces adaptation in “one way or another”, is closely related to existing habits, customs and practices, and therefore, “does not appear from a political, economic and societal vacuum” (ibid, p. 18). In general, who is identified as requiring adaptation support, the adaptation measures adopted and their outcomes, are all shaped by power mechanisms and structures (Woroniecki et al. 2019). For example, powerful actors may block or influence adaptation approaches and actions that are aimed at rebalancing power and improving social justice (Chaffin et al., 2016; Chhetri et al., 2019 as cited in Colloff et al. 2021). Transformative adaptation aims to initiate change, among other aspects, to the underpinning power structures and governance frameworks (Chung Tiam Fook 2017). To respond to uncertain challenges of climate change, it emphasises the need and charts pathways for adaptive, participatory and integrated forms of governance at multiple spatial, temporal and jurisdictional levels (Klein et al., 2014; Olsson et al., 2006 as cited in Chung Tiam Fook 2017). The pre-requisite of adaptive governance – an understanding of how the societal context of a decision process influences decisions and how people can intentionally influence that context (Gorddard et al. 2016) reinforces the need to engage with “power to” and therefore, empowerment for a transformative CbA.

Power has many conceptions (Woroniecki et al. 2019; Avelino 2021). Considering the limitations of a perspective paper, this paper focuses on power ‘to’ (versus power ‘over’) and empowerment (versus disempowerment) (Avelino 2021). From a community perspective, power can be defined as the ability to affect the distribution of both public and private resources within a community, and empowerment is the ability to enable or share power (Ricketts 2016). Empowerment is the process by which people who have been denied the ability to make strategic choices come to acquire it (Kabeer, 1999 as cited in Woroniecki et al. 2019). Empowered communities initiate social processes such as claims to rights and protections, which facilitate crucial adaptive capacities (Pelling 2011; Watts & Bohle, 1993 as cited in ibid). Therefore, this paper talks about power as the power to make and influence decisions.

However, transforming existing political-economic systems to address issues of power relations and equity will require various approaches from different disciplinary perspectives. This paper is limited to illustrating how a TCbA approach can uncover underpinning power structures and make the decision-making process accountable and accessible by providing relevant information. Drawing from the learnings of Mapfumo et al. (2017 as cited in Ziervogel 2019, p. 495), this paper focuses on the processes — mainly decision-making— through which transformative change is achieved, rather than focusing on transformation as an outcome.

### Critiques, barriers, and way forward for CbA

Since it first appeared in the scientific literature in a 2007 paper authored by Huq and Reid (2007), CbA has been successful in many instances in empowering under-resourced communities. For instance, by providing access to technical advice and effective communication of information on climate adaptation (e.g., as seen in a project implemented in villages in north-eastern Ghana (Antwi-Agyei et al. 2015) or as reported from neighbourhood projects in metropolitan Phoenix, USA (Guardaro et al. 2020), appropriate training (e.g., Piggott-McKellar et al. 2019) and in general, facilitating self-organisation (e.g., in coastal districts in Bangladesh (Roy 2018) or in CbA implemented in informal settlements in Cape Town, South Africa (Fox et al. 2021). Over the years, the conception of CbA has evolved, with initial years primarily dedicated to conceptualization and the establishment of approaches. Subsequently, efforts were directed towards up-scaling and mainstreaming CbA into national and local planning, followed by a focus on financing local adaptation and the monitoring and evaluation of CbA's effectiveness (weADAPT 2020). However, recent conferences, such as CBA 16 in 2022, have once again brought conceptual framings to the forefront, rekindling discussions on how to bridge the gap between principles and practice. In CBA 16, the concept of locally led adaptation (LLA), instead of community-based adaptation, was advanced (Greene and Acuda 2022). This shift offers an opportunity to critically examine persistent critiques and existing barriers, along with strategies for their mitigation. Of these, this paper focuses on three:

First, CbA approaches need to move beyond “adaptation as development” and shift towards systemic interventions that critically engage with relations of power and resource access – some of the root causes of vulnerability. Existing power relations influence the access to resources and assets that in turn, enables or “prevents one from properly and effectively forecasting, coping with and recovering from the effects and impacts of risks or disasters” and thereby, contributing to their vulnerability (Nguyen-Trung and Forbes-Mewett 2019, p. 17). CbA as is, is limited to ‘transition’ or a ‘moderate reform of governance systems... that does not challenge vulnerability but promotes incremental changes that are made through the assertion of pre-existing, unclaimed rights’ (Pelling, 2010, p. 2 in Galvin 2019). While incremental efforts are crucial in the context of adaptation in informal settlements to proximate risks and impacts (Reid et al. 2009), it doesn't provide alternative pathways that can address the multidimensional challenges these settlements face. On the contrary, transformative approaches are systemic, as they focus on the dynamic interrelationships between elements shaping complex adaptation issues in a system (Abson et al. 2017). Ensor and colleagues (2018) also emphasise that for under-resourced, marginalised communities, it is required to go “beyond coping, flexibility, and incremental change, to engage with processes of transformation in social and political contexts”, to build resilience (Béné et al., 2014; Pelling 2011 in Ensor et al. 2018, p. 7). Therefore, resilience here extends beyond mere adjustment, recovery, and return to a pre-disturbance state (Adger et al. 2005; Folke 2006). Instead, it “implies the capacity for renewal, regeneration and reorganisation when faced with disturbances and uncertainty” (Gotham and Campanella 2010, p. 9).

Second, focusing solely on local community involvement may miss the opportunity for governance transformation and isolate it from broader political discussions (Dodman and Mitlin 2013). It can also be seen as a tokenistic approach, shifting responsibilities

and costs to local communities (Wiseman & Williamson, 2009, p. 137 as cited in *ibid.*). Despite climate change impacts being context-specific, extra-local support and resources are necessary (Dodman and Mitlin 2013). Relying solely on traditional or local perspectives for decision-making may limit understanding compared to scientific information and broader policy frameworks (Dumarú 2010). Access to information, a critical enabler, depends on knowledge networks ranging from local community interactions to transnational professional networks generating expert opinions (Silva et al. 2012). Establishing partnerships beyond the local community, involving government, private, and civil society actors, is essential for fundraising and engaging with local and international stakeholders (Chu et al. 2015).

Third, despite the prevalent conceptualisation of CbA that emphasises the criticality of ensuring residents' involvement and engagement in the decision-making processes (Nath 2022), it doesn't specify how this can be mobilised in contexts of stark power imbalances, contesting world views of involved stakeholders and varying capacities of both communities and institutions. For instance, gender norms frequently result in the exclusion of women from participating in collective decision-making processes and constrain their ability to move freely outside their homes (Bryan and Behrman, 2013 as cited in Karim and Thiel 2017, p. 93). Instances of collective action provide evidence that local elites hold a dominant position in decision-making and the allocation of resources (Platteau, 2004 as cited in *ibid.*). The lack of concrete strategies for collective decision-making also restricts community ownership where the external CbA facilitator is seen as merely visiting. It further contributes to a lack of trust and knowledge transfer when there is perceived expertise of the facilitators, rather than a locally-led approach with local knowledge (Simane and Zaitchik 2014; McNamara and Buggy 2017; Westoby et al. 2020). On the contrary, strategic, collective action has the potential to underpin the transformation of structural inequalities (Brown and Westaway, 2011 as cited in Ensor et al. 2018, p. 7).

In addition to the conceptual critiques of CbA, extant barriers must also be overcome for CbA to reach its full potential. Many of these barriers stem from the inherent heterogeneity of communities (Dodman and Mitlin 2013; Archer et al. 2014; McNamara and Buggy 2017), where various member groups exhibit diverse levels of vulnerabilities, socio-economic status, and influence over decisions. Mapping the barriers to a typical CbA project cycle shows a pattern of correlation between common barriers (Nath 2022, Fig. 5), indicating a degree of influence between these barriers. For instance, barriers like *lack of knowledge transfer and integration*, and *communication or language barriers*, which emerge in nearly 70 per cent of the steps, often co-occur with barriers related to power structure (i.e., *gender norms, culture and religious norms, and power imbalance*) and barrier related to information (i.e., *lack of relevant available information and lack of comprehensible information*).

To address these critiques and overcome barriers, CbA needs a coordinated response on multiple fronts and scales. Many new conceptual and analytical frameworks have been suggested, with community empowerment being a common denominator, supported by broader participation, learning, decentralised decision-making and enhanced multilevel coordination and maximising efficiency (Ensor et al. 2018; Shammin et al. 2021). While these are complementary aspects of the CbA approach, this paper

contends that they are not "reflexive enough". The crucial question of "adaptation for whom" (Archer et al. 2014, p. 353) often gets lost during the project cycle and therefore, an iterative process by which problems and therefore solutions are defined, is missing. Overt attention is not paid to the process of participatory decision-making, which is fundamental to transformative processes as they "engage a diversity of values, knowledge, goals, expertise, and options that bring forward a more innovative, equitable and multifaceted suite of alternatives for adaptation and change" (Wise et al., 2014 as cited in Chung Tiam Fook 2017, p. 10). Although these frameworks emphasise the need for equity, the "how to" is still conceptual. So is the case for power relations, which are recognised as one of the pivotal shapers of the capacity to transform but these frameworks do not critically engage with it.

While it is admitted that these shortcomings are a result of the multifaceted nature of the challenge, addressing which requires a multiplicity of perspectives and expertise, it is argued that an approach that strives to reframe the decision-making process comes closer to the mark. A deliberate or intentional transformative approach (O'Brien 2012; Colloff et al. 2021) does so by navigating conflict through deliberation and contestation of ideas and world views before making and implementing decisions (Colloff et al. 2021). It views challenges, whether related to climate adaptation or development, as "windows of opportunity to shift towards more progressive and adaptive systems", through social learning, self-organisation, and adaptation (Folke et al., 2010; Noble et al., 2014; Olsson et al., 2006; Thornton & Combetti, 2013 as cited in Chung Tiam Fook 2017, p. 6).

### **Mobilising transformative CbA**

The transformative potential of CbA was first discussed by Dodman and Mitlin (2013) who specifically emphasised the need for "tools and methods that enable a more explicit transfer of [adaptation decision-making] power to local communities", along with the need for CbA practitioners to go beyond agendas that reduce poverty and vulnerability, to "engage with issues of power and governance operating at various scales" (Dodman and Mitlin 2013, p. 655). Later, Archer et al., (2014) reinforced this by calling out the need to mainstream CbA projects for initiating transformation, by creating more room for community voices that can reshape the definition of climate-related problems and solutions, thereby making urban [adaptation] governance more inclusive, transparent and accountable. Mainstreaming "refers to the integration of climate resilience considerations into development planning objectives and processes from national to local scales" (Pervin et al., 2013 as cited in Archer et al. 2014, p. 346).

In recent years, scholars have rekindled the discussion on the need for transformative approaches in CbA projects. For example, Galvin (2019) argues for a staged movement towards CbA through a "change agent" CbA, where communities must participate as equal actors in debates and planning, focusing specifically but not exclusively on climate change impacts. Fox and colleagues (2021) apply an urban political ecology lens to bring forth the transformative potential of community-based adaptation, particularly in urban informal settlements, emphasising multi-scalar governance to empower local communities to adapt.

Yet, in hindsight, the incremental approach in CbA projects so far was rather anticipatory priming for structural change, to take advantage of when opportunities

for transformation arise (Colloff et al. 2021). Building on this, a transformative CbA (TCbA) proactively creates an enabling environment for transformation, instead of waiting for opportunities to arise. It provides a reflexive framework, that helps mobilise one of the largely inert but core strategies of CbA identified more than a decade ago by CARE International (CARE 2010): Advocacy, social mobilisation, and empowerment to address the underlying causes of vulnerability.

The following enlists the principles of a transformative CbA:

1. A co-created, deliberate, and intentional process. TCbA consists of interventions and processes that are consciously initiated by a diverse range of actors and stakeholders, with the explicit objective of achieving fundamental environmental and social change, that critically engages with power relations (O'Brien 2012; Few et al. 2017; Colloff et al. 2021). Therefore, from the onset of the process planning, a TCbA approach facilitates the development of “an ethic of reflexivity and self-criticism within the CbA community of practice” (Kirkby et al. 2017, p. 10). A TCbA approach questions whose (and what) values, rules and knowledge prevail in adaptation decision-making (Colloff et al. 2017, 2021; Few et al. 2017), emphasising that the specific values, knowledge and interests of stakeholders and decision-makers influence perceptions of environmental risk, vulnerability and adaptation (Chung Tiam Fook 2017).
2. Engenders empowerment and agency through reframing decision-making processes. TCbA approaches refocus adaptation activities to address the social and political root causes of vulnerability by focusing on the positive aspect of power – empowerment. Empowering actors to question the contributors of the status quo (O'Brein et al., 2014 as cited in Few et al. 2017, p. 3). Therefore, power becomes a consequence of collective action and being part of such a collective gives individuals rights and responsibilities, membership, identity and belonging, regardless of their normative socioeconomic status or influence (Colloff et al. 2021). It begins by understanding the aspects that may constrain or enable inclusive, collective adaptation decision-making. For example, who is defining the problem or influencing the problem framing? Are the voices of the most vulnerable and marginalised heard? (Table 1) What is the information that is required to inform decision-making? How can the community be capacitated to use this information to base their decisions? These essentially open up the decision-making process and hence empower actors to challenge the conditions that generate risk and promote different forms of development (Few et al. 2017).
3. Locally rooted but working across administrative levels, spatial and temporal scales. TCbA approaches facilitate building up links between the community addressed and higher authority levels, like the local municipality,, strengthening their ability to voice the community's needs and demands from political processes at both local and national levels. With a voice in broader political debates, local communities have the opportunity to move beyond adaptation towards longer term processes around climate change, including mitigation, technology transfer and redistributive financing (Adger et al. 2005; Hickey and Mohan, 2004:14 as cited in Dodman and Mitlin 2013). It also commits to embedding cross-scale

**Table 1** Reflexive questionnaire comprising a set of diagnostic questions (Nath, 2022) and possible priming actions and processes for intervening at identified leverage points to mobilise TCbA (in blue)

CbA process steps (CARE, 2010)	Guiding questions	Possible action & processes	Related leverage points	Link to TCbA characteristics	
Project analysis	1 Defining the problem with the community	Who defines the problem? Who influences the problem framing?	Awareness and knowledge integration workshop; Gender-divided FGD; Development of collective vision and alternative scenarios  Community-led vulnerability assessment and resource mapping; Identifying "champions"  Awareness and knowledge integration workshop	Structure of information flow; Power to change system structure or self-organise	Characteristics 1; 2; 5
	2 Analyse climate context	What are the community's observations/ perceptions of CC?			Characteristics 2; 5
	3 Assess vulnerability	Which social groups are most vulnerable? Who has access & control over common resources?			Characteristic 2
	4 Assess multi-level policy and national framework	Which are the key institutions? What are relevant policies & plans?			Characteristics 2; 3
	5 Assess strengths	What are the existing coping measures?			Characteristics 2; 5
Planning	6 Plan participation	Are the voices of the most vulnerable & marginalised heard? How is equitable participation of women ensured?	Gender-divided FGD; Community-led vulnerability assessment and resource mapping; Identifying "champions"  Development of collective vision and alternative scenarios; Gender-divided FGD	Structure of information flow; Rules of the system; Power to change system structure or self-organise	Characteristics 1; 2; 5
	7 Define project scope	What are the community adaptation/development priorities? Who is financing?			Characteristic 2
	8 Define evaluation criteria	What are the community decided goals across spatial & temporal scales?			Characteristics 2; 3
	9 Identify trade-offs	Are there any potential harms to different social groups within the community?			Characteristics 2; 4; 5
	10 Estimate outcomes	What are the expected results realistically achievable?			Characteristics 4; 5
	11 Identify capacity/ resources required	What community/ institutional capacities are required? What are the human/ information/ knowledge/financial resources required?			Characteristics 4; 5
	12 Decide	Is the final decision-making process transparent & participatory?			Characteristic 1; 2
Implementation	13 Plan implementation	What are the monthly/annual goals?	Workshop on capacity development; Joint management of implementation and financial resources	Structure of information flow; Rules of the system; Power to change system structure or self-organise	Characteristic 4
	14 Ensure effective partnership	What are the roles & responsibilities of each actor & stakeholder? How is accountability maintained between all stakeholders?			Characteristics 4; 5
	15 Develop capacity of actors	Which capacity development requirements need to be prioritised and acted on?			Characteristics 2; 5
M&E	16 Establish M&E	Do the community & partners have the necessary capacity to monitor & evaluate? What are the evaluation criteria?	Workshop on capacity development	Structure of information flow; Power to change system structure or self-organise	Characteristic 5
	17 Emergency preparedness	What are the criteria to adjust the project approach in case of an emergency?			Characteristics 1; 5

learning into the adaptation process, facilitating engagement with external organisations.

4. Uses co-visioning and scenario development for consensus building: TCbA attempts to uncover latent concerns or possible conflict emerging from diverging interests and needs of stakeholders by deliberation and contestation. Therefore, it employs co-visioning and alternative scenario development through processes that attend to power dynamics, empowering and enabling a sense of engagement and ownership by participating stakeholders. This also initiates a shift in the role of participants from passive beneficiaries to more active and empowered participants. Co-

visioning creates a shared system of learning and doing, which is one way of exercising power (Newell and Proust, 2017 as cited in Colloff et al. 2021, p. 164).

5. Reflexive and learning oriented. TCbA encourages reflexive analysis of every step taken during the process and how the changes brought by these actions can modify existing structures that led to the current social and ecological decline. Therefore, TCbA is inherently feedback based where stakeholders engage in self-awareness and critical evaluation of individual and collective capacities, priorities, values, assumptions, and behavioural norms that resulted in an unjust status quo (Chung Tiam Fook 2017).

### **Intervening at leverage points to mobilise TCbA**

The shift from CbA to TCbA requires systemic interventions, for which it is critical to identify leverage points, as it addresses the question of where to intervene within a system to induce significant changes in its behaviour (Abson et al. 2017). These leverage points encompass four broad types of system characteristics: parameters, feedback, design, and intent, ranging from shallow to deep, regarding their influence on system change. Shallow leverage points are easier to address but bring about minimal system change, while deep leverage points, though challenging to address, hold transformative potential (Abson et al. 2017).

The pattern of barrier emergence, as also discussed in Sect. 2,2, indicates potential deep leverage points for mobilising TCbA. Specifically, the correlation between *lack of knowledge transfer and integration*, and *communication or language barriers*; barriers related to the power structure, i.e., *gender norms, culture and religious norms*, and *power imbalance*, and barriers related to information, i.e., *lack of relevant available information* and *lack of comprehensible information* (Nath 2022). These barriers impede seamless knowledge-sharing, integration, and capacity development across scales, hinder participation, and restrict mutual experiential learning—critical elements in transformative processes. Therefore, intervention in changing “the structure of information flow”(Abson et al. 2017, Fig. 2) is required. This entails assessing information access and implementing interventions to ensure equitable information access, which is vital for decision-making (Phillips-Wren 2017).

While a change in the structure of information flow is a deep leverage point, advances in information and communication technology, even in informal settlements (Rangaswamy and Arora 2016; Joshi et al. 2020), along with open-source urban and climate data availability, have already started to facilitate its implementation. Overcoming barriers related to information availability and relevance is essential in restructuring adaptation decision-making processes, empowering communities, and challenging unjust power structures. Decision-making outcomes collectively reached by communities and stakeholders, based on climate information, tend to gain legitimacy with government agencies and funding entities, thereby facilitating long-term funding and implementation.

Colloff and colleagues further argue that reframing decision contexts is fundamental to overcoming barriers to transformation and addressing the redistribution of power and agency (2017, p. 94). This necessitates changing the “rules of the system” (Abson et al. 2017, Fig. 2), a second leverage point. Transformative adaptation aims at

deeper, long-term societal change in the policies, values, paradigms and institutions that govern the rules of the system and influence environmental change and sustainable development outcomes (Klein et al., 2014; O'Brien et al., 2012 as cited in Chung Tiam Fook 2017). This linkage is closely tied to information flow, as access to information has the potential to change the rules of who makes the adaptation decision.

The confluence of these two leverage points leads to a third: “power to add, change or self-organise system structure” (Abson et al. 2017, Fig. 2). This enables organised groups of citizens to engage with formal political institutions to advance the interest of low-income countries (Dodman and Mitlin 2013, p. 651 citing Racelis (2007), Appadurai (2001) and Mitlin (2004)). Such engagement can shift power dynamics among organized groups, governmental institutions, funding organizations, and international entities, fostering a more effective, empowering, and comprehensive approach to addressing climate change (Dodman and Mitlin 2013).

To prepare for an on-ground mobilisation of a transformative CbA through interventions, a reflexive questionnaire is proposed, that strategically targets these identified leverage points. It primes the community through a list of diagnostic questions and possible actions and processes, that target specific leverage points to elicit appropriate co-decided interventions. These actions and processes were derived from best practice examples from the literature that documents CbA and transformative adaptation case studies, and inform the reflexive questionnaire (Table 1):

1. Awareness and knowledge integration workshop for community members and CbA facilitators: Simplify climate science jargon and contextualize the issue (Guardaro et al. 2020; Fox et al. 2021). Identify champions and capacity gaps (Huq et al. 2005). For example, Remling and Veitayaki (2016) report on the success of workshops on marine awareness in developing community-based conservation projects in Gau Island, Fiji. They also highlight the role of workshops in providing a platform for knowledge exchange where other local conservation communities can exchange their learning. Guardaro and colleagues (2020) used a community engagement method that uses workshops to build or reinforce social capital and increase problem-solving capacity of the low and middle-income participants of a community heat adaptation project.
2. Gender-divided focus group discussions (FGD): Organised at multiple points to serve different purposes. FGDs should be designed and organised to mitigate the researcher's /facilitator's authority, enabling participants to own the discussion. Gender-divided FGDs minimise the influence of power relations. They could be used to collect and analyse embedded experiences and subjective perspectives, assess vulnerability and create a future vision. They also help understand differences in awareness and major decision (or non-decision) influencers and therefore take relevant actions. For example, focus group interviews carried out by Regmi and colleagues (2016) for a CbA project in Nepal found a significant difference between the awareness of male and female households, along with lower female participation, as women in rural Nepalese households have more workload and men dominate household decision-making.

3. Community-led/generated vulnerability assessment and resource mapping: These community-generated maps and assessments help in identifying potential adaptation actions. Karim and Thiel (2017) exemplify the benefit of such bottom-up participatory assessment and action-plan development in the case of CbA in a riverine area of Bangladesh, concluding that these were crucial steps in making local people aware of climate change risk and building up the capability to disaster management.
4. Identifying “Champions”: Champions are initiators of action who have long-standing relationships of trust with the communities concerned (Huq et al. 2005). They can, therefore, recognise interventions that could both benefit the communities concerned as well as be favourably received by them. They may lead adaptation outreach, visioning, planning and implementation processes and mediate between affected communities and multi-level decision-makers (Chung Tiam Fook 2017). For example, the Lakota activist group, Henry Red Cloud, mentors many Indigenous communities throughout the US to pursue alternative adaptation and economic development pathways for their communities through renewable energy and ecological restoration projects (Rave, 2010 as cited in *ibid*).
5. Collective vision and alternative scenarios development: These can take a “back-casting approach” in which participants focus on what they want in the future and then work out what needs to be done to achieve it. This can be augmented by using scenario simulations to illustrate alternative future pathways resulting from different choices and uncertainties. The climate issue and climate information must be set into a local context, with access to relevant scientific information in comprehensible terms and language (Fox et al. 2021). For example, Kim and Kang (2016) used participatory workshops and scenario development to achieve consensus between community members and urban planners, to arrive at a community adaptation plan to lower the impact of urban heat waves in a community in Busan, South Korea.
6. Joint management and implementation of financial resources: When community-based organisations (CBOs) co-manage financial resources and co-decide their use, along with the funding agency or the municipality it imbibes a sense of ownership and maintains transparency and accountability. It further reinforces the role of the community as an equal partner in future debates and planning.
7. Developing networks for knowledge sharing and capacity development: Establishing horizontal (national) and vertical (transnational) networks can help address capacity gaps, facilitate multi-directional knowledge exchange, and enable communities to self-reliantly adjust the community-adaptation plan. It is essential for successful mainstreaming and working across levels. Dodman and Mitlin (2013) illustrate how a locally rooted organisation with a transnational network, Shack/Slum Dwellers International (SDI), has been able to effect broader social and political transformation. SDI links national Federations of the homeless and landless and enables them to be active in multiple political platforms. For instance, through organising a horizontal network of local saving schemes for collective development, who visit each other and conduct peer exchange of what worked and what didn't, helping identify priorities and negotiate with city authorities for land and services (Dodman and Mitlin 2013). WeAdapt (2020) is another example of a transnational network of practitioners of CbA.

Table 1 provides an overview of the reflexive questionnaire, complementing diagnostic questions (Nath 2022) with possible actions and processes to facilitate transformative CbA.

## Conclusion

This perspective paper discussed some of the long-standing critiques and barriers of CbA and emphasised the need to mobilise a transformative CbA to address these. Transformative CbA supplements the core characteristics and strategies of CbA but differs in its approach of actively creating opportunities for transformation. It focuses on the empowerment of communities by unmasking power relations influencing participation, adaptation decision-making, and implementation at every step of the process, with a simple but effective measure – being reflexive about how the societal context of decision processes. It, therefore, responds to the caution raised by McNamara and Buggy (2017) that CbA has the potential to both empower and disempower, particularly in the cause of consensus-based decision-making. Without being aware of how power relations are influencing decision-making, it might end up promoting the interest of more powerful members of the community to the detriment of those more vulnerable. It also responds to Woroniecki and colleagues' call to "enable adaptation scholarship to better acknowledge the lively social dynamics and power relationships at hand and better contribute to equitable and effective forms of adaptation " (2019, p. 15).

However, the conceptual nature of this paper is a limitation, bearing in mind that change processes are open-ended, and their impact is context-dependent, especially with the uncertain nature of on-ground settings in which adaptation projects are implemented. Many of the recommendations, like devolving decision-making power to the community and enhancing multilevel coordination, require action from multiple fronts and are often beyond the sole scope of a (T)CbA practitioner. It is emphasised that the reflexive questionnaire is a guiding tool, to be used alongside other practical tools and process frameworks that can be used by practitioners for mobilising transformative CbA. Future research needs to explore the policy bottlenecks that might hinder on-ground mobilisation of TCbA, which would require supportive policy frameworks, facilitating the communities to actively take part in adaptation decision-making. The role of community-based organisations (CBOs), community action groups and "change agents" as intermediaries between different levels of governance is a promising avenue that needs further research. Finally, further action research that can develop context-specific implementation framework, along with reflexive monitoring and evaluation of the outcomes, is imperative.

## Abbreviations

CbA/ CBA	Community-based climate change adaptation
CBO	Community-based organisations
LLA	Locally led adaptation
M&E	Monitoring and evaluation
TCbA	Transformative community-based climate change adaptation

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