

Community-Based Adaptation to Climate Change: Core Issues and Implications for Practical Implementations

Tom Selje, Lena Anna Schmid and Boris Heinz

Abstract

According to current forecasts, global heating is likely to exceed 2.8 °C by the end of this century. This makes substantial adaptation measures necessary to secure a broad basis for livelihood provision and the conservation of biodiversity. While the implementation of top-down and technocratic adaptation efforts predominates, related adaptation shortcomings of a socio-economic and ecological nature are becoming more and more apparent. Community-based adaptation (CBA), with its participatory, inclusive and needs-based bottom-up approach, offers a promising and powerful alternative. This article uses a semi-systematic literature review approach to screen the current literature and identify core issues of CBA. Linking communality, locality, multidimensionality, power imbalances, transformative potential, localisation, the triad of adaptation metrics and nature-based adaptation to corresponding potential actions for practical implementations provides a more holistic conceptualisation and broadens the horizons for further learning, research and improved applications.



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Introduction

The negative consequences of global heating are significant, especially in countries of the Global South. These will continue to increase in scale and accelerate in their appearance over time, as the global average temperature is on its way to rise over 2.8 °C in the coming decades. The ecological consequences include growing irregularities in rainfall patterns, more frequent droughts and intense storms, as well as a general sea level rise. This will affect agricultural production, health, living conditions and economic activities, while exacerbating existing and triggering new social tensions and conflicts [1], putting pressure on communities' productive capacities. The Intergovernmental Panel on Climate Change (IPCC) advocates for a holistic and integrated way of adaptation to tackle the social, economic and ecological factors surrounding the climate change challenge. In summary, the IPCC Working Group II (2022) points out that the "cumulative scientific evidence is unequivocal: climate change is a threat to human wellbeing and planetary health. Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all" [1]. The alarming reality is that even if greenhouse gas emissions and deforestation, which are the main drivers of climate change, were stopped immediately, the inertia of the climate system would lead to continued global heating for decades to come [1,2,3,4]. Therefore, adaptation to the negative effects is required today, and it will be needed to a growing extent in the future.

The past has shown that top-down and technocratic approaches, where decision-making processes regarding adaptation solutions occur mostly from outside the local community or through a few of its actors with decision-making power, often fail to meet the needs of those affected and risk leading to social, economic, political, and ecological shortcomings [5,6]. Depending on the context, this may be for a variety of reasons. Often, it is the epistemic and decision-making power of donors dominating over key terms, such as how activities are defined as successful, which, in many cases, does not reflect the goals of the various and different members of a community. In addition, there is frequent neglect of the genuine integration of context-specific local knowledge as well as reluctance to involve those affected as equal partners, all of which endangers the sustainability of actions. A notable example of a failed top-down climate change adaptation project is the construction of dams in Bangladesh. The dams that intended to shield communities from cyclones and storm surges inadvertently created a false sense of security. This led to the development and building of infrastructure and housing in vulnerable areas. When extreme flooding occurred at a later point in time, causing the swamping of dams, severe damage was inflicted and human lives were lost [7]. Similarly, the construction of seawalls in Kiribati/Oceania to combat rising sea levels exemplifies another failed top-down project. While the structures were designed to protect coastal regions, they ultimately caused severe erosion at other parts of the coastline, exacerbating the local communities' vulnerability [8]. A consequence of such experiences is the increasingly recognised understanding of the necessity to centre the approach of adaptation to climate change around the local requirements and needs of inhabitants of the concerned regions. The approach of community-based adaptation (CBA) to climate change conceptualises adaptation essentially as a social process originating in the needs, capabilities and values of the persons primarily concerned by a specific climate challenge [6,9,10]. Hence, the challenges are defined from the bottom up [11], and actions are grassroots-driven [12], while operating in a transdisciplinary manner [13] including as many persons of concern as possible and the various stakeholders in the process. CBA is conceptualised as an inclusive, participatory, deliberate and holistic approach [13,14]. CBA approaches are often closely linked to nature-based adaptation solutions, as in many areas of the Global South, there is a close connection between people and ecosystems, and the resilience of ecosystems goes hand in hand with the resilience of communities. Therefore, inclusive approaches simultaneously respect the cultural identity of community members, promote economic development and contribute to the conservation of natural resources. By utilising communities' historical interactions with nature, CBA ensures that its interventions—such as ecosystem restoration or sustainable agriculture—are context-specific and culturally relevant.

An influential theoretical concept in the CBA literature as well as more widely in adaptation to climate change is the triad of adaptation metrics to measure success of actions. It was initially introduced with the premise that adaptation is not only shaped by vulnerability and resilience but also by the capacities of persons of concern and their environments [1,15]. Resilience refers to the mechanism of recovering and bouncing back in the face of adversity, stress or significant challenges to maintain or regain functionality and well-being. It is originally a concept from systems ecology applied to social forms. Vulnerability reduction refers to the process of decreasing the susceptibility to harm from adverse events by anticipating, coping with, resisting and recovering through proactive planning. Being vulnerable has a geographical, e.g., living near the equator, and a social component, e.g., being affected by the consequences of coloniality. Adaptive capacity is the ability to adjust to potential damage, take advantage of opportunities, and respond to changes or uncertainties effectively. It involves flexibility, learning, and the implementation of strategies to manage and cope with evolving threats and conditions. This component is relevant regarding unequal development and possibilities of adaptation to climate challenges from a global perspective, as greater financial and technological resources and capacities lead to higher adaptive capacities, which are higher in the Global North compared to the Global South, thus exacerbating existing global inequalities and disparities. All components of the triad build an organic whole in that they interact and overlap. They relate to individuals, communities and systems and are applied in a variety of fields such as psychology, sociology, economics, public health, environmental studies and agriculture.

Initial actions in adaptation to climate change stem from the discipline's disaster risk reduction [16], sustainable development, and (community-based) natural resource management [17]. Practical implementations of the approach have been applied in rural regions of the Global South with an emphasis on the pacific islands [12], while urban projects [18,19,20,21,22,23] and initiatives in the Global North [24,25,26] are less common. It encompasses a variety of activities in the fields of livelihood diversification, capacity building, resource management, microfinance, insurance, infrastructure and ecosystem integrity [27]. Ideally, a broad range of stakeholders are involved, including donors, academic institutions, civil society organisations, government bodies, private companies, grass-roots and community-based organisations, and most importantly, the persons of concern [11,28,29]. The value of putting emphasis on social and community processes during the implementation of adaptation actions has been illustrated in several publications, such as in the study of McNamara et al. [12], which shows that the evaluated projects primarily guided by the community were more impactful than others that were not. This was the case in the 'Yumi redi long klamet jenis' project on Tanna Island, Vanuatu, which aimed at increasing awareness for climate change and gender issues and building capacities with an adaptation action plan while implementing climate resilient agricultural and food security practices, solar food preservation and water resource management [13]. Another example is the bamboo construction project in the Philippines, in which community members were trained on climate resilient architecture with bamboo wood, through which skills were acquired to foster livelihood improvement on a longer term [30]. A CBA intervention can involve the setting up a community-based organisation (CBO) or working through the structures of an already existing community-based entity that has an allocative, control and representative function [29,31,32].

In the last ten years, twelve publications have been presented, which provide a review or overview of studies or evaluation of projects in CBA [6,12,14,27,33,34,35,36,37,38,39,40]. They focus on achievements and challenges of this approach and suggest optimisation points and success assessment features. In general, they show different ideas and pathways on how to improve the implementation of CBA.

Kirkby et al. [6] approached the complex nature of CBA by synthesising different challenges. A key issue addressed is the nuanced relationship between poverty and the metric of vulnerability, pointing out that poverty cannot be equated to vulnerability, complicating assessments and interventions. In addition, they emphasise the overlaps between adaptation

and development in multidimensional ways and the complication this means for funding and integration into development frameworks. The authors conclude that genuine participatory community engagement is challenging given existing power imbalances. Financing mechanisms often favour top-down approaches, highlighting the need for community-driven funding models and consideration of higher policy areas. Transdisciplinary collaboration is essential for CBA, as climate change affects many different areas of life and thus creates complex and multifaceted challenges. Therefore, Kirkby et al. [6] advocate for comprehensive dialogue and understanding between different disciplines in applying CBA measures.

With a focus on evaluation reports from projects spanning from 2006 to 2016, Piggot-McKellar et al. [37] analyse practical implementation aspects of the approach. They investigate common barriers to successful CBA projects and show that in the works reviewed, socio-political challenges were the most prevalent (92%), followed by resource restrictions (84%) and difficulties concerning physical systems and processes (24%). Socio-political barriers encompass cognitive and behavioural issues, government structures and governance as well as power imbalances. Resource barriers include the financing of solutions, access to information and technology, human resources, time and infrastructural challenges. The authors emphasise the necessity of suitable, accessible and improved monitoring and evaluation of outcomes of CBA projects to be able to address and enhance the effectiveness, equity, and sustainability of interventions.

In an evaluation of community-based adaptation initiatives in the Pacific Islands, McNamara et al. [12] addressed the question of whether and to what extent activities implemented were appropriate, effective, equitable, sustainable and efficient. As a general result, their analyses showed that locally financed initiatives and those carried out by non-governmental organisations (NGOs) were most likely to reach the criteria of being community-based. Initiatives that focused on awareness-raising of climate change and those that integrated ecosystem-based approaches performed well. Following this analysis, multidimensional and interdependent leverage points for future CBA initiatives were suggested for monitoring during implementation: local consent and ownership rights, shared access to and benefits from initiatives, integration of local realities, and system-thinking and proactive long-term planning.

Shammin et al. [38] elucidate the challenges encountered while working with CBA based on a survey in several countries of the Global South. Often, constraints arise because of limited building of relationships during project implementation due to a lack of time, insufficient access to information and communication tools and poor infrastructure quality. The authors explain the significance of applying effective communication and information dissemination measures in CBA efforts, as well as the benefits of implementing multi-scalar interventions. The necessity of developing support for CBA across multiple scales to foster synergies between the surrounding infrastructure and the applied community-based solutions is underscored, aiming to bolster the requisite institutions, policies, and rules of engagement. It advocates for the integration of CBA into national development plans and highlights opportunities for CBA initiatives to address prevailing development challenges.

Shammin et al. [27] emphasise the innovative potential of community-based approaches in enhancing climate resilience. It underscores the need for integrated strategies that not only address climate change but also tackle socio-economic issues aligned with the UN Sustainable Development Goals. The authors argue for the importance of local initiatives and direct engagement with vulnerable populations, supported by various stakeholders including international agencies and local governments. The chapter aims to develop a comprehensive picture for community-based adaptation by synthesising past approaches with contemporary developments in sustainability, resilience principles and disaster risk reduction.

Naths' [39] systematic scoping review delves into the significance of Structured Decision-making (SDM) in the execution of CBA measures. The study identified a range of barriers in socio, political, cultural, economic, technological and infrastructural domains and explained their significance and dynamics at different stages of implementation that risk impeding the success of CBA initiatives. As in the other reviews, Nath [39] discusses barriers, challenges and hurdles, offering a deep look into decision-making processes and addressing power imbalances, communication shortcomings, deficiencies in knowledge transfer and infrastructure challenges.

Chusnia and Nugroho [40] examine the opportunities and challenges of CBA with a focus on interventions in Indonesia. The opportunities they identified in the addressed projects of CBA include "protecting local ecosystems, raising awareness, building resilience, fostering innovation, creating jobs, and accessing funding". The challenges include "limited community participation, government involvement, leadership hierarchy issues, regulatory gaps, weak monitoring and evaluation, program sustainability, and lack of facilities". They note that opportunities of the analysed applications in Indonesia were often connected to working in sustainable environments and addressing human development, while challenges dominated in community relations and program sustainability.

These current reviews and overviews of CBA provide valuable insights into practical challenges and reveal several areas where further critical research, elaboration and theoretical development is required. Particularly the reviews by Piggott-McKellar et al. [37] and Nath [39] focus on the categorisation of barriers, such as socio-political and resource-related constraints, but the abstraction of these findings into a broader framework is pending. The barriers are not placed in larger systemic contexts interlinked with broader societal factors. A systematic analysis can support the development of a robust and equitable framework that is adaptable and applicable to several contextual circumstances depending on where and with which goals respective projects operate.

While the reviews and overviews highlight financial constraints and governance issues as barriers, they mostly do not respond to the underlying power dynamics and historical inequities. For instance, Shammin et al. [27,38], McNamara et al. [12] and Kirkby et al. [6] emphasise the importance of local engagement without exploring how genuine participation is constrained by systemic factors. The complexity of the environment in which climatic change and adaptation takes place is not comprehensively represented.

Furthermore, while some work has highlighted the barriers and difficulties of CBA initiatives, less effort has gone into crystallising the actions that have contributed to the effectiveness of measures and the conditions that facilitated these achievements. While McNamara et al. [12] highlight in the described projects some impactful activities, the regional focus does not yet allow a wider deployment of these findings. Further research is needed to use this knowledge also in implementations in other contexts.

Piggott-McKellar et al. [37] call for better monitoring and evaluation, but broader frameworks that enable and integrate adaptive learning processes are needed for continuous improvement and scalability. Clarity on what factors and processes should be tracked during projects and the measurement of outcome indicators that are useful for analysis enables further steps towards planned and thoughtful monitoring and evaluation efforts.

Lastly, forward-looking perspectives that anticipate future challenges and opportunities in CBA are limited in the reviews and overviews described. While Shammin et al. [38] and McNamara et al. [12] advocate for long-term planning, there is great need to explore the impacts of emerging technologies, possible future socio-political changes, and evolving

climate conditions. Here, too, the formulation of a conceptual framework will facilitate further analysis to be able to specify which aspects and factors will be influenced by future conditions and technologies.

In summary, the inputs of the twelve reviews and overviews bring out valuable insights around the concept and the process of CBA today. At the same time, a consolidation of the current state of findings leading to core issues and related possible actions for practical implementations are lacking, calling for a deeper theoretical abstraction. The aim of this article is to contribute to this goal by building on the above work that serves as a transition to the analysis. In seeking to uncover core issues of CBA in the current literature and to discuss their theoretical nature and implications for practical work, the guiding research questions are:

Which core issues in CBA can be identified and consolidated in the available relevant scientific contributions? What potential measures and actions can be derived from these to address the core issues and apply them in practical implementations?

Materials and Methods

The screening for available and relevant scientific contributions was approached by a semi-systematic review procedure. This type of literature review combines aspects of systematic and traditional narrative review methods [41]. A semi-systematic literature review methodology was chosen for this study to identify core issues from the literature discourse and facilitate a deeper narrative review of contributions. This approach allows for the consolidation of diverse studies across multiple disciplines and successful practices and serves as a robust foundation for informed decision-making, while research gaps are revealed, and context-specific insights are considered. A predefined set of inclusion and exclusion criteria were used to select relevant studies, while some degree of flexibility and exploration in the search process could be integrated, such as using multiple databases, academic and grey literature. A vast array of results were found while using the single search term “community-based adaptation”. Qualitative strategies such as summarising and synthesising the findings from studies in a narrative form served to identify patterns, themes and gaps in a first step. In a second step, the findings from the systematic review and from the narrative review were combined to lay the foundation for the emergence of CBA core issues, outlining content and process for implementation in practice.

Three academic search engines were used to screen scientific and grey literature from 2013 until 2024: at first, the Machine Learning Platform Research Rabbit via Schematic Scholars, which produced 135 connected papers and citations based on Kirkby et al. [6]. Second, the search string of ‘community-based adaptation’, which yielded 96 results in the database Scopus. Third, the same search string was used with Google Scholar yielding 8900 results, widening the screening in context and ensuring that no topic-wise relevant articles were left out. The use of three search engines broadened the sources and the results, which reduced the risk of missing relevant contributions. The search was guided by the content criteria that the mere mentioning of CBA did not lead to the inclusion of a piece, but the article had to contain a discussion of any kind of conceptual aspects or portrayed substantial content about its implementation. The articles needed to be centred around CBA rather than using the term as an example, an outlook or background information. This was ensured by only taking articles into account with the wording of “community-based adaptation” in their titles, as well as content or implementation descriptions in their abstracts. Excluded were, in addition, those articles that ignored the challenge of climate change. After consolidation and eliminating redundancies, 103 articles emerged from the review process.

Results

The analysis of the selected 103 articles yielded recurring themes and reflections, from which eight core issues were identified: communality, locality, multidimensionality, power imbalances, transformative potential, localisation, triad of adaptation metrics and nature-based adaptation.

In the following, the core issues are described as they emerge from the literature—illustrated in Table 1. Several associated process activities that facilitate the implementation of a core issue in project work are then outlined in tabular form—in Table 2.

The issue of Communality aspires to go beyond viewing the community purely as a geo-culturally bound, homogenous, static, or monolithic group of equals. Quite the opposite, communities are for the most part fluid, heterogeneous and complex and are described as spatiotemporally contingent [42], as outcomes of a complex network of power relations [43], operating on a socio-political landscape [6] or as multi-faceted entity along the lines of a multitude of socially constructed identities [13]. Viewing communities as fixed units bears the risk of ignoring differences regarding various aspects, while it is especially the recognition and action response to those differences that are crucial for project success [12,14,44,45]. A self-definition endorsed by the community is key to local ownership and leads to less potential for conflict in the distribution of benefits and burdens [12]. Soeters [46] proposes, as a “de-territorialising” intervention, to start not from communities as a notion but from the existing natural resources to which people relate.

A second recurring core issue is the Locality of an adaptation action. This means that CBA measures address local problems by and through the participation of local people, and are therefore place-based, context-specific and embedded into a culture [18,33,35,42,47]. Nevertheless, integration into broader policy agendas and programs provide legitimacy, financial and material support and a long-term perspective [24,48,49,50,51,52]. CBA interventions are often unsuccessful due to challenges connected to the issue of locality, such as the appropriation of the measure by external actors with decision-making power and a lack of a participatory approach [32,33,36,40,48,53]. Social and political-economic structures sometimes hinder interventions when national land tenure reforms or trans-municipal infrastructure projects are required. These are measures over which a majority of the concerned community has often no direct influence and which are therefore difficult to address as part of an intervention. This underlines the importance of embedding projects in broader or multiscale governance structures [34,48]. Solely state-led intervention, on the other hand, risks increasing social vulnerability [36].

Another core issue mentioned in the literature is the Multidimensional character of CBA, which implies that the problem of climate change and the adaptation measures that respond to it have multiple facets. They are not independent and detached challenges that are unaffected by the wider socio-economic, environmental or development space [12,37,38,42,54]. This is reflected in the work of Galvin [55] and Velempi [56], who view CBA as historical or political, as well as by Kirkby et al. [6], Clarke et al. [13], Hung [57], and Phong [58] who describe, propose or use it as transdisciplinary. McNamara and Buggy [14] emphasise its multisectoral potential, and Clarke et al. [13], Forsyth [33], Reid and Schipper [59], Mfitumukiza et al. [60] and Galvin [55] stress its holistic nature. Thus, global heating and its consequences cannot be reduced to its physical component alone but need to be understood in its various dimensions, and the same is implied for the response—the adaptation actions. Multidimensionality in this regard reflects the interconnected nature of adaptation challenges, which span ecological, political, cultural, social, and economic domains. Adaptation projects must go beyond addressing just one aspect of vulnerability.

A fourth core issue that emerged in the literature screening was the existing inter-, intra- and trans-group Power imbalances, whether within one community, between neighbouring communities, or between the community on a local scale as well as structures and institutions on a national or global scale [6,14,37,40,61]. This concern is also referred to as socio-political and socio-economic structures as the root causes of vulnerability [14,27,54,60,62]. Sometimes, this is framed positively as equity [12], which bears the risk of excluding less powerful groups in decision making for an adaptation measure when the selection of actors take place. The literature points out that ignoring the existence of these power imbalances can hinder adaptation efforts and success [14,37,39,47], while by addressing them, for example through equal access to and community ownership of resources and land [63,64,65,66,67] or through the deliberate inclusion of certain interest groups in the decision-making processes of governance and financing systems, effective adaptation action is facilitated [68,69,70,71]. Diversity in power-sharing is emphasised along the lines of socially constructed identities [34,53] of gender [13,66,72,73,74,75], class [64], race [76], ethnicity [34], age [77] and religion [75]. To overcome existing social inequalities, epistemic injustices and psychological mechanisms of coloniality and oppression are to be respected and addressed [56,78,79,80,81,82].

The literature repeatedly points out that CBA has inherent transformative potential and that by altering the way in which nature is treated, changes also can take place in various other areas of the persons' lives. As it is also about—but not limited to—reducing or positively reshaping existing power imbalances, it can be seen as a counterweight to the issue of power inequality [21,83,84,85]. Dodman and Milting [48] have argued for transformation by addressing higher political levels, while Ensor [83] states that “[...] seeing communities embedded in linked social–ecological systems means that transformation will need to account for ecological as well as socio-political sustainability. Integration of these themes—of equity, economy and ecology—is at the heart of the challenge of transformation and CBA”. This connection can be further traced in the literature in Galvin's [55] work, who defined CBA as a change agent, Nath [84], who conceptualised and framed it as a transformative community-based action, and Selje [85], treating it as a tool for socio-ecological transformation.

The discussion of power imbalances led to a more nuanced view of various concepts such as that of “community”, which is now interpreted in a much more differentiated way. This also occurred in relation to the Triad of Adaptation, consisting of resilience, vulnerability and adaptive capacity. Resilience is a concept that originates from systems ecology and has been applied to social phenomena [86]. It means “jumping back” to the status quo, a state that is sometimes neither desirable nor existent and can therefore hinder transformation [87]. Vulnerability is often seen as a “natural” or geographical characteristic based on place of residence or origin. This neglects that being vulnerable has, in addition, a socially constructed and historically evolved side, e.g., through colonialism [42,56]. Adaptive capacity is mostly connoted positively in the CBA literature [88,89]. It refers to the ability of individuals or groups to intentionally create or influence changes in response to, or in anticipation of, external disruptions [88,89]. The works of Ensor et al. [61], Archer et al. [18], Clarke et al. [13] and Beckwith [68] are starting points for discussing resilience in CBA in general, while the works of Dodman and Milting [48], Lasagne et al. [90], Kirkby et al. [6], Roy et al. [91], Roy [92], Bardosh [93] and Hsieh and Lee [94] are specific examples mentioning the social side of vulnerability. The critique of metrics can be addressed if CBA researchers and practitioners introduce new and more community-oriented aspects [12,95,96].

Another increasingly prominent core issue is Localisation, emerging from a movement in the Global South that grew out of the experience of various shortcomings of previous adaptation actions, such as insufficient inclusion in decision-making processes and a lack of funding systems for local initiatives. It appeared frequently in the literature from the early 2020s onwards through the work of Chung [43], Mfitumukiza et al. [60], Westoby et al. [76], Masud-All-Kamal and Nursey-Bray [45,97] and Roy et al. [91] and was linked to CBA conceptually by Vincent [98]. The notion of locally led

action emphasises ownership by those affected and their ability to engage in international policy arenas [98,99]. It is constructed to explicitly address the ‘local’ in relation to different levels from the grassroots to the national and international, thereby involving a broader range of actors. This focus attempts to address the challenge that CBA has often been influenced in practical implementations by external agendas and thus diverged from local priorities [98,99]. By taking the dimension of localisation to the forefront, the approach seeks to emphasise the importance of community ownership. CBA is a localised response through risk perception to environmental change [61,100,101]. It includes local leadership [19,56,102] or decentralisation [103], while some authors argue that depending on the context and the climate challenge to address, there has to be a balance between external efforts and communities’ own inputs [104].

The final core theme identified, Nature-based Adaptation, refers to design projects around an ecosystem—this can be either a new or the revitalisation of a degraded ecosystem. In addition to its ecological benefits, such as increased biodiversity and health, an ecosystem provides a material anchor point. This can encourage local people to identify with the project and also provide material benefits for the surrounding communities, for example by serving as a food supply and as a social meeting point or place of culture to foster an overall ecological way of life [12,40,46,53,105,106,107,108]. Adapting to nature in CBA has been a common approach from its beginnings [9,10,109]. Many scholars and practitioners have emphasised the synergies between CBA and ecosystem-based adaptation [110,111,112,113,114,115,116]. Reid [117] pushes a focus of CBA on the natural to the forefront, Dhar and Khirfan [118] call for an ecological design, while Shammin et al. [27] cite ecosystem integrity as a key theme for their framework. Several case studies provided examples of community-organised nature-based solutions such as the cultivation of mangroves [113,119] or various actions in agriculture in traditional [51,120,121,122] or climate smart ways [123,124,125] as well as agroecology [105,123,126], ecosystem conservation [120] and agroforestry [123,127,128,129].

The above-mentioned eight core issues emerged as the most frequently and prominently discussed ones in the screened literature. It is to be assumed that this current discourse views those as essentially defining the approach of CBA. With that said, how can these more theoretical perspectives and discourses be considered in and translated into practical applications? Table 1 below includes the eight core issues and substantiates each one of them by providing additional specifications of their contents and related implications for implementations.

Table 1. Core issues of CBA and related literature.

Core Issue	Literature
Communality	[6, 12, 13, 14, 42, 43, 44, 45, 46]
Locality	[18, 24, 32, 33, 34, 35, 36, 40, 42, 47, 48, 49, 50, 51, 52, 53]
Multidimensionality	[6, 12, 13, 14, 33, 37, 38, 42, 54, 55, 56, 57, 58, 59, 60]
Power Imbalances	[6, 12, 13, 14, 27, 34, 37, 39, 40, 47, 53, 54, 56, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82]
Transformative Potential	[21, 48, 55, 83, 84, 85]
Triad of Adaptation Metrics	[6, 12, 13, 18, 42, 48, 56, 61, 68, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96]
Localisation	[19, 43, 45, 56, 60, 61, 76, 91, 97, 98, 99, 100, 101, 102, 104]
Nature-based Adaptation	[12, 27, 40, 46, 51, 53, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129]

Table 2. Core issues of CBA and implications for practical implementations.

Core Issue	Content and Implications
Communality	<ul style="list-style-type: none"> - Inclusive Involvement: Involve different ethnic, religious and socio-economic groups as well as different stakeholders from the community in the whole project cycle, including problem definition, prioritisation, project activity design, implementation, monitoring and evaluation, and continuation beyond project timeframe - Community as Fluid Entity: Recognize the contingency of communities in space and time and their historical role - Strong Community Networks: Facilitate the formation of new and strengthening of existing local community groups to foster collective action and exchange - Needs-Based Community Formation: Ensure the community forms around a common problem and need - Problem-Driven Activities: Base activities on problem and needs definitions of the community
Locality	<ul style="list-style-type: none"> - Local Problem Definition: Ground the problem definition on place-based and context-specific information - Local Activity Design: Adjust activity design to local regulations and policies - Multi-Level Coordination: Coordinate activities across various levels and scales with authority focal persons - Government-Community Bridge: Facilitate continuous dialogue between government representatives and several stakeholders of the community at the intervention site and at various levels - Local Movement Strengthening: Partner with other communities and social movements to address higher policy arenas
Multidimensionality	<ul style="list-style-type: none"> - Integrated Activities: Identify the physical as well as the socio-political and cultural dimensions of the local adaptation challenge and integrate related issues in cross-cutting actions - Embedded Knowledge Systems: Review feminist and indigenous knowledge through participatory action research and address it in long-term trust-building processes - Multi-Sectoral Response: Design multi-lateral and multi-sectoral actions with engagement and collaboration of various stakeholders - Historical Context: Address political and historical contexts during problem definition and activity design, emphasising aspects of climate justice and colonialism
Power Imbalances	<ul style="list-style-type: none"> - Existing Power Dynamics: Assess distribution of power in the community, bring power imbalances to light, discuss possibilities in rebalancing power and integrate appropriate measures into activities - Resource Distribution: Support equitable access to and distribution of financial and material resources - Epistemic Justice: Build on indigenous knowledge in adaptation planning for epistemic justice - Inclusive Decision Making: Ensure the decision-making participation of vulnerable and marginalised groups - Capacity Building: Provide a platform for social learning and action to foster empowerment and inclusive governance advocacy
Transformative Potential	<ul style="list-style-type: none"> - Transformative Activity Design: During co-design with the community, integrate aspects of other life areas to be reshaped during the implementation of CBA actions - Long-Term Pathways: Map out long-term pathways for activity continuation including needed resources for long-term uptake - Participatory Actions Research Throughout Implementation: Use reflexivity and participatory action research to discuss problems and activities in recurring cycles for continuous tailoring of the activities to the needs and to facilitate transformations - Innovative Solutions Selection: Prioritise and experiment with transformative and innovative solutions
Localisation	<ul style="list-style-type: none"> - Analyse and Address Criticism: Acknowledge criticisms and shortcomings of previous CBA actions and analyse their causes and how to address these in future projects - Local Expertise: Integrate and base activity design on expertise and experiences of local persons and stakeholders - Local Leadership: Balance leadership and responsibilities as per local skills, resources, expertise and experiences to focus on local leadership where possible
Triad of Adaptation Metrics	<ul style="list-style-type: none"> - Root Cause Analysis: Consider several aspects of vulnerability (e.g., place-based, social and historical) and identify and discuss their root causes - Community-Based Metrics: Co-develop success metrics with the community, how to respond to the identified vulnerability factors and how to foster the community's adaptive capacity - Use of Iterative Assessment Processes: Apply regular reassessment cycles throughout project implementation to adapt strategies based on evolving climate risks and community feedback - Strengthening Adaptive Capacity: Capacity-building and -planning of adaptive responses and how to effectively mobilize different assets to effect change - Everyday Practice Reflection: Revisit and reassess metrics through participatory monitoring and evaluation in cycles throughout the project implementation
Nature-based Adaptation	<ul style="list-style-type: none"> - Ecosystem Needs: Assess community exchanges with the ecosystem and align needs and resources for long-term sustainable exchanges - Cultural Integration: Discuss the ecosystem's place and provisioning as well as cultural value and how this can be reflected in activities - Cross-Field Learning: Draw from concerned disciplines dealing with nature-based adaptation, i.e., ecology, environmental science, geography and sociology - Marginalised Reliance: Work out ecosystem dependency of various community groups, acknowledge variation and integrate ecosystem provisioning accordingly in the project

Discussion

This manuscript provides a semi-systematic review of the current literature on CBA from 2013 until today, identifying core issues by screening the scientific and grey literature contributions and synthesising insights from various sources. This review focuses on understanding the multifaceted field of CBA and brings out core issues from the current literature, leading to the issues of communality, locality, multidimensionality, power imbalances, transformative potential, localisation, triad of adaptation metrics and nature-based adaptation.

These core issues are interlinked in various ways, some of which have evolved through engagement with other core issues in project activities, or their importance has been demonstrated through various learnings. Thus, this has been a dynamic process from the beginning of the formulation of the CBA approach to the present day, although further crystallisation and refinement of the theoretical definitions and related practical actions is outstanding. Jarillo and Barnett [42], e.g., point out in their introduction that communality, locality, and multidimensionality present current tension fields to consider. Recently, the identified core issue of locally led action has gained more prominence, and it was also echoed by the last two CBA Conferences, where practitioners gather, share insights and discuss annually. Speakers at the conferences highlighted as well the importance of nature-based solutions and other themes connected to several of the core issues, e.g., integrating indigenous ways of living and intersectional lenses that resonate with power imbalances and transformation.

The recognition of the eight core themes has the potential to contribute comprehensively to targeting the critical gaps identified in the twelve reviews and working towards closing these gaps. In this way, they can help guide us on how to proceed in overcoming the barriers of CBA projects mentioned in those reviews: reducing historical inequalities and addressing power dynamics, promoting the effectiveness of interventions, developing robust monitoring and evaluation processes and tools, and anticipating challenges and opportunities that may arise in the future.

Barriers are tackled through working in projects with core issues like communality, localisation, power imbalances and locality. This includes socio-political challenges like lack of agency and hindering oppressive social structures, the integration of different and changing needs and desires of fluid communities, lacking resources and capacities at the local level and appropriation or neglect from higher government or policy areas. Considering the core issues and the associated ways of acting may mitigate some of these barriers for more effective CBA actions.

In addressing historical to current-day inequalities, the core issues of power imbalances, localisation, multidimensionality and transformative potential play a crucial role. They recognise that power imbalances work on the micro, meso and macro level, give CBA interventions an historical spin and a justice claim and open the way for a more holistic perspective. Looking ahead, the emergence of new technologies—such as satellite-based monitoring, climate forecasting tools and digital platforms for community engagement—presents both opportunities and challenges for balancing power dynamics in CBA. These tools can improve data collection and early-warning systems and enable more effective communication between stakeholders and support for the most vulnerable populations. However, this is dependent on care in their integration into CBA projects to ensure equitable access and not exacerbate existing inequalities. In addition, socio-political changes, such as changes in government structures or global economic crises, can have a significant impact on the feasibility and direction of CBA initiatives. The adaptability and sustainability of CBA projects in such scenarios is supported by flexible governance mechanisms that can adapt to these future changes and anticipate the incorporation of new technologies while maintaining community ownership and agency. This forward-looking approach ensures that CBA remains viable and effective in a rapidly changing world.

To have CBA projects and measures be effective and reach their goals and objectives is supported by core issues such as locality, localisation, multidimensionality, adaptation with nature, and the triad of adaptation metrics. This emphasises that CBA interventions work best when they are supported by the local and non-local level alike, integrate several measures beyond a narrow climate focus such as well-being and livelihood improvement, and argue for a community-driven approach on the definition of what “effectivity” means in the first place. Further, it emphasises that adaptation with nature has significant co-benefits on multiple levels, prioritising these for effective interventions. By changing the

target coordinates of projects and measures—from economic amortisation and profit maximisation to individual empowerment and towards well-being, sufficiency and collective emancipation—the transformative potential is realised.

Robust monitoring and evaluation frameworks can be supported through the development of clearly defined indicators based on core issues' definition and their subordinated actions steps. Since indicators refer to constructs that they claim to measure, the definitional clarity of these should be worked on beforehand. While this work points to the consolidation of recurring and theoretically and practically important issues for CBA, it remains to work on clear definitions in order to better map them with indicators and make them measurable for future practical implementations.

Finally, the anticipation of future challenges and opportunities is addressed through the core issues of transformative potential, multidimensionality, triad of adaptation metrics and adaptation with nature. These involve forward-looking strategies that consider the complex interplay of various factors affecting adaptation on the macro, meso, and micro level like political instability, economic crisis, ecological collapse, social unrest, or cultural conflict. CBA interventions can anticipate these dynamics and identify how to effectively mobilise different social, physical and economical components to transform structures. The core issues identified from the literature have been repeatedly described in vague terms, lacking concrete definitions and practical guidance. This vagueness necessitates further specification and deeper exploration to enhance their applicability and effectiveness in real-world contexts and to be able to learn consciously from experience. The orientation on the core issues and its subordinates presented in this manuscript represent a novel course of action and an up-to-date basis. Using this at the project activity design stage and during implementations experiences made can be the basis for further research, aiming to further sharpening of the core issues.

Finally, since power relations and structures determine realities and are a major topic of discussion between CBA practitioners and theorists, it seems pertinent to point out that this article project is no exception, in line with feminist and indigenous critiques of the positivist science of the Global North [130,131,132]. The authors identify as cis-male and a cis-female, are white, born in the Global North and had an academic education. This needs to be considered when interacting with the current article. The thoughts and experiences of a wider group will show which additions and perspectives need to be integrated to move further towards a comprehensive framework, and practical applications will provide valuable learnings.

Conclusions

This manuscript provides an initial consolidation of significant themes in the literature on CBA. While the CBA approach offers the potential to address the impacts and causes of ecological crises at the local level, there are a number of barriers that hinder its broad implementation and effectiveness. These barriers are also reflected in and can be overcome through the eight core themes: the spatio-temporal nature of the concept of community, the tension between local ownership and leadership and the drive for scaling and mainstreaming, the multidimensional need for successful interventions, power imbalances that inhibit action, the urgency of socio-ecological transformation, the problem of how success is measured, by whom and for whom, and the intimate relationship between humans and non-human beings and worlds. Further refinements, first in terms of definitions, and then conceptually, followed by practical approaches to action, are essential. The identified and discussed core issues can serve as cornerstones for this, as well as a basis for future research that contributes to ecologically sustainable and socially just adaptation measures.

References:

1. IPCC WG II. Climate Change 2022: Impacts, Adaptation and Vulnerability; IPCC: Geneva, Switzerland, 2022. [Google Scholar]
2. Global Commission on Adaptation. Adapt Now: A Global Call for Leadership on Climate Resilience; World Bank: Washington, DC, USA, 2019. [Google Scholar]
3. Lemoine, D.; Rudik, I. Steering the climate system: Using inertia to lower the cost of policy. *Am. Econ. Rev.* 2017, 107, 2947–2957. [Google Scholar] [CrossRef]
4. Lenton, T.M.; Rockström, J.; Gaffney, O.; Rahmstorf, S.; Richardson, K.; Steffen, W.; Schellnhuber, H.J. Climate tipping points —Too risky to bet against. *Nature* 2019, 575, 592–595. [Google Scholar] [CrossRef] [PubMed]
5. Sovacool, B.K.; Linnér, B.-O.; Goodsite, M.E. The political economy of climate adaptation. *Nat. Clim. Change* 2015, 5, 616–618. [Google Scholar] [CrossRef]
6. Kirkby, P.; Kirkby, P.; Williams, C.; Williams, C.; Huq, S.; Huq, S. Community-based adaptation (CBA): Adding conceptual clarity to the approach, and establishing its principles and challenges. *Clim. Dev.* 2018, 10, 577–589. [Google Scholar] [CrossRef]
7. Brink, E.; Falla, A.M.V.; Boyd, E. Weapons of the vulnerable? A review of popular resistance to climate adaptation. *Glob. Environ. Change* 2023, 80, 102656. [Google Scholar] [CrossRef]
8. Donner, S.D.; Webber, S. Obstacles to climate change adaptation decisions: A case study of sea-level rise and coastal protection measures in Kiribati. *Sustain. Sci.* 2014, 9, 331–345. [Google Scholar] [CrossRef]
9. Ayers, J.; Forsyth, T. Community-based adaptation to climate change. *Environ. Sci. Policy Sustain. Dev.* 2009, 51, 22–31. [Google Scholar] [CrossRef]
10. Reid, H.; Alam, M.; Berger, R.; Cannon, T.; Huq, S.; Milligan, A. Community-based adaptation to climate change: An overview. *Particip. Learn. Action* 2009, 60, 11–33. [Google Scholar]
11. Schipper, E.L.; Ayers, J.; Reid, H.; Huq, S.; Rahman, A. *Community-Based Adaptation to Climate Change: Scaling it Up*; Routledge: London, UK, 2014. [Google Scholar]
12. McNamara, K.E.; Clissold, R.; Westoby, R.; Piggott-McKellar, A.E.; Kumar, R.; Clarke, T.; Namoumou, F.; Areki, F.; Joseph, E.; Warrick, O.; et al. An assessment of community-based adaptation initiatives in the Pacific Islands. *Nat. Clim. Change* 2020, 10, 628–639. [Google Scholar] [CrossRef]
13. Clarke, T.; McNamara, K.E.; Clissold, R.; Nunn, P.D. Community-based adaptation to climate change: Lessons from Tanna Island, Vanuatu. *Isl. Stud. J.* 2019, 14, 59–80. [Google Scholar] [CrossRef]
14. McNamara, K.E.; Buggy, L. Community-based climate change adaptation: A review of academic literature. *Local Environ.* 2017, 22, 443–460. [Google Scholar] [CrossRef]
15. Gallopín, G.C. Linkages between vulnerability, resilience, and adaptive capacity. *Glob. Environ. Change* 2006, 16, 293–303. [Google Scholar] [CrossRef]
16. Allen, K.M. Community-based disaster preparedness and climate adaptation: Local capacity-building in the Philippines. *Disasters* 2006, 30, 81–101. [Google Scholar] [CrossRef] [PubMed]
17. Reid, H.; Faulkner, L. Assessing How Participatory/Community- Based Natural Resource Management Initiatives Contribute to Climate Change Adaptation in Ethiopia. In *Handbook of Climate Change Adaptation*; Springer: Berlin/Heidelberg, Germany, 2015. [Google Scholar] [CrossRef]
18. Archer, D.; Almansi, F.; DiGregorio, M.; Roberts, D.; Sharma, D.; Syam, D. Moving towards inclusive urban adaptation: Approaches to integrating community-based adaptation to climate change at city and national scale. *Clim. Dev.* 2014, 6, 345–356. [Google Scholar] [CrossRef]
19. Ho, S.; Baptista, M.D.; McEvoy, D. Community profiling to support inclusive urban community-based climate adaptation: Experiences of a survey-based approach in urban informal settlements in Honiara, Solomon Islands. *Clim. Dev.* 2022, 15, 325–339. [Google Scholar] [CrossRef]
20. Visconti, C. Community-based adaptation measures for Water Sensitive Urban Design in context of socio-environmental vulnerability. *Techne* 2017, 14, 354–363. [Google Scholar] [CrossRef]
21. Fox, A.; Ziervogel, G.; Scheba, S. Strengthening community-based adaptation for urban transformation: Managing flood risk in informal settlements in Cape Town. *Local Environ.* 2021, 28, 837–851. [Google Scholar] [CrossRef]
22. Dao, T.Q.; Huong, L.T.T. System dynamics approach for understanding scheme of Community-Based Adaptation to flooding: The case of a flood-prone district in Vietnamese urban city. *Community Dev.* 2022, 53, 214–232. [Google Scholar] [CrossRef]
23. Khan, A.S.; Kumar, M.S.; Chella, R.S.; Devdyuti, B. BASIEC: A coastal climate service framework for community-based adaptation to rising sea-levels. *Clim. Change Manag.* 2020, 1, 11–31. [Google Scholar] [CrossRef]
24. Kim, D.; Kang, J.E. Building consensus with local residents in community-based adaptation planning: The case of bansong pilbongoreum community in Busan, South Korea. *Sustainability* 2020, 12, 1559. [Google Scholar] [CrossRef]
25. Koerth, J.; Massmann, F.; Dittmann, S. Kommunale Klimaanpassung in Schleswig-Holstein. *Chancen und Herausforderungen Community-based adaptation to climate change in Schleswig-Holstein. Z. Fur Angew. Geogr.* 2019, 43, 177–184. [Google Scholar] [CrossRef]
26. Rudge, K. Participatory climate adaptation planning in New York City: Analyzing the role of community-based organizations. *Urban Clim.* 2021, 40, 101018. [Google Scholar] [CrossRef]
27. Shammin, M.R.; Haque, A.E.; Faisal, I.M. A framework for climate resilient community-based adaptation. *Clim. Change Community Resil.* 2022, 1, 11–30. [Google Scholar] [CrossRef]
28. Magee, T. *A Field Guide to Community Based Adaptation*; Routledge: London, UK, 2013. [Google Scholar]
29. Ensor, J.; Berger, R. Community-based adaptation and culture in theory and practice. In *Adapting to Climate Change Thresholds, Values, Governance*; Cambridge University Press: Cambridge, UK, 2009; Volume 1, pp. 227–239. [Google Scholar]
30. Maborang, M.H.; Nozaleda, B.M.; Maguddayao, R.N.; Udaundo, L.; Laggui, N.; Martin, E.B.; Sibal, C. Vernacular House Architecture and Climate Change Adaptation: Lessons from the Indigenous Peoples of Cagayan, Philippines. *J. Clim. Change* 2022, 8, 25–33. [Google Scholar] [CrossRef]
31. Rankoana, S.A. Climate change impacts on water resources in a rural community in Limpopo province, South Africa: A community-based adaptation to water insecurity. *Int. J. Clim. Change Strat. Manag.* 2020, 12, 587–598. [Google Scholar] [CrossRef]
32. Younus, A.F. Adapting to climate change in the coastal regions of Bangladesh: Proposal for the formation of community-based adaptation committees. *Environ. Hazards* 2017, 16, 21–49. [Google Scholar] [CrossRef]
33. Forsyth, T. Community-based adaptation: A review of past and future challenges. *Wiley Interdiscip. Rev. Clim. Change* 2013, 4, 439–446. [Google Scholar] [CrossRef]
34. Bryan, E.; Behrman, J.A. *Community-Based Adaptation to Climate Change: A Theoretical Framework, Overview of Key Issues and Discussion of Gender Differentiated Priorities and Participation*; International Food Policy Research Institute (IFPRI): Washington, DC, USA, 2013. [Google Scholar]

35. Spires, M.; Shackleton, S.; Cundill, G. Barriers to implementing planned community-based adaptation in developing countries: A systematic literature review. *Clim. Dev.* 2014, 6, 277–287. [Google Scholar] [CrossRef]
36. Forsyth, T. Community-based adaptation to climate change. In *Oxford Research Encyclopedia of Climate Science*; 2017; Available online: <https://www.ied.org/sites/default/files/pdf/migrate/G02608.pdf> (accessed on 8 August 2024).
37. Piggott-McKellar, A.E.; McNamara, K.E.; Nunn, P.D.; Watson, J.E.M. What are the barriers to successful community-based climate change adaptation? A review of grey literature. *Local Environ.* 2019, 24, 374–390. [Google Scholar] [CrossRef]
38. Shammin, M.; Wang, A.; Sosland, M. A Survey of Community-Based Adaptation in Developing Countries. In *Climate Change and Community Resilience*; Springer: Singapore, 2022; pp. 31–47. [Google Scholar] [CrossRef]
39. Nath, S. The Role of Structured Decision-making in Community-based Adaptation: A systematic scoping review. In *Proceedings of the Conference Paper*; 2022. Available online: <https://zenodo.org/records/7681489> (accessed on 8 August 2024).
40. Chusnia, D.; Nugroho, S. Analysis of Opportunities and Challenges of Community-based Adaptation as an Action to Combat Climate Change. In *Proceedings of the 2nd International Conference on Nature-Based Solution in Climate Change*, Jakarta, Indonesia, 24 November 2023. [Google Scholar]
41. Snyder, H. Literature review as a research methodology: An overview and guidelines. *J. Bus. Res.* 2019, 104, 333–339. [Google Scholar] [CrossRef]
42. Jarillo, S.; Barnett, J. Contingent communality and community-based adaptation to climate change: Insights from a Pacific rural atoll. *J. Rural. Stud.* 2021, 87, 137–145. [Google Scholar] [CrossRef]
43. Chung, J. Who defines community in community-based adaptation: Different perceptions of community between government and citizens in Ethiopia. *Clim. Dev.* 2022, 15, 122–131. [Google Scholar] [CrossRef]
44. Buggy, L.; McNamara, K.E. The need to reinterpret “community” for climate change adaptation: A case study of Pele Island, Vanuatu. *Clim. Dev.* 2016, 8, 270–280. [Google Scholar] [CrossRef]
45. Kamal, M.A.; Nursey-Bray, M. Socially just community-based climate change adaptation? Insights from Bangladesh. *Local Environ.* 2021, 26, 1092–1108. [Google Scholar] [CrossRef]
46. Soeters, S. Building bonds and breaking bridges: Community based adaptation (CBA) as a source of conflict in a Northern Ghanaian landscape. In *Adaptation to Climate Change and Variability in Rural West Africa*; Springer: Berlin/Heidelberg, Germany, 2016; pp. 103–120. [Google Scholar] [CrossRef]
47. Groulx, M. “Other people’s initiatives”: Exploring mediation and appropriation of place as barriers to community-based climate change adaptation. *Local Environ.* 2017, 22, 1378–1393. [Google Scholar] [CrossRef]
48. Dodman, D.; Mitlin, D. Challenges for community-based adaptation: Discovering the potential for transformation. *J. Int. Dev.* 2013, 25, 640–659. [Google Scholar] [CrossRef]
49. Reid, H.; Huq, S. Mainstreaming community-based adaptation into national and local planning. *Clim. Dev.* 2014, 6, 291–292. [Google Scholar] [CrossRef]
50. Froehlich, P.; Al-Saidi, M. Community-based adaptation to climate change in Egypt—Status quo and future policies. In *Climate Change Research at Universities: Addressing the Mitigation and Adaptation Challenges*; Springer: Berlin/Heidelberg, Germany, 2017; pp. 235–250. [Google Scholar] [CrossRef]
51. Wright, H.; Vermeulen, S.; Laganda, G.; Olupot, M.; Ampaire, E.; Jat, M. Farmers, food and climate change: Ensuring community-based adaptation is mainstreamed into agricultural programmes. In *Community-Based Adaptation*; Routledge: London, UK, 2017; pp. 40–50. [Google Scholar] [CrossRef]
52. Kumar, T.; Saizen, I. Social innovation perspective of community-based climate change adaptation: A framework-based study of Ladakh, India. *Water* 2023, 15, 1424. [Google Scholar] [CrossRef]
53. Yates, J.S. Power and politics in the governance of community-based adaptation. In *Community-Based Adaptation to Climate Change: Emerging Lessons; Practical Action*: London, UK, 2014; pp. 15–34. [Google Scholar]
54. van der Ploeg, J.; Sukulu, M.; Govan, H.; Minter, T.; Eriksson, H. Sinking Islands, Drowned Logic; *Climate Change and Community-Based Adaptation Discourses in Solomon Islands*. *Sustainability* 2020, 12, 7225. [Google Scholar] [CrossRef]
55. Galvin, M. Making Community-Based Adaptation a Reality: Different Conceptualisations, Different Politics. *Hum. Geogr.* 2019, 12, 50–63. [Google Scholar] [CrossRef]
56. Velepini, K.; Smucker, T.A.; Clem, K.R. Community-based adaptation to climate variability and change: Mapping and assessment of water resource management challenges in the North Pare highlands, Tanzania. *Afr. Geogr. Rev.* 2018, 37, 30–48. [Google Scholar] [CrossRef]
57. Hung, H.-C.; Lu, Y.-T.; Hung, C.-H. The determinants of integrating policy-based and community-based adaptation into coastal hazard risk management: A resilience approach. *J. Risk Res.* 2019, 22, 1205–1223. [Google Scholar] [CrossRef]
58. Phong, N.T.; Quang, N.H.; Van Sang, T. Shoreline change and community-based climate change adaptation: Lessons learnt from Brebes Regency, Indonesia. *Ocean Coast. Manag.* 2022, 218, 106037. [Google Scholar] [CrossRef]
59. Reid, H.; Schipper, E.L.F. Upscaling community-based adaptation: An introduction to the edited volume. In *Community-Based Adaptation to Climate Change*; Routledge: London, UK, 2014; pp. 3–21. [Google Scholar]
60. Mfitumukiza, D.; Roy, A.S.; Simane, B.; Hammill, A.; Rahman, M.F.; Huq, S. Scaling local and community-based adaptation. *Glob. Comm. Adapt. Backgr. Pap.* 2020. Available online: <http://www.gca.org/global-commission-on-adaptation/report/papers> (accessed on 8 August 2024).
61. Ensor, J.E.; Abernethy, K.E.; Hoddy, E.T.; Aswani, S.; Albert, S.; Vaccaro, L.; Benedict, J.J.; Beare, D.J. Variation in perception of environmental change in nine Solomon Islands communities: Implications for securing fairness in community-based adaptation. *Reg. Environ. Change* 2018, 18, 1131–1143. [Google Scholar] [CrossRef]
62. Barrowman, H.M.; Butler, J.R.A. Beyond challenges in community-based adaptation: Critical insights from the human ecology framework. *Hum. Ecol. Rev.* 2020, 26, 73–94. [Google Scholar] [CrossRef]
63. Barnett, J. Global environmental change III: Political economies of adaptation to climate change. *Prog. Hum. Geogr.* 2022, 46, 1106–1116. [Google Scholar] [CrossRef]
64. Aslany, M.; Brincat, S. Class and climate-change adaptation in rural India: Beyond community-based adaptation models. *Sustain. Dev.* 2021, 29, 571–582. [Google Scholar] [CrossRef]
65. Soeters, S.; Zoomers, A. Consolidating contestation and conflict through community-based adaptation (CBA). *J. Geosci. Environ. Prot.* 2017, 05, 174–193. [Google Scholar] [CrossRef]
66. Bayot, R.; Palima, C.M.; Punzalan, B.; Vidallo, R.R.; Gonsalves, J.F. A Gender-responsive approach to Community-Based Adaptation in Guinayangan, Quezon. *CCAFS Work. Pap.* 2021. Available online: <https://cgspace.cgiar.org/items/8bdf5e8-b92b-41c8-8670-b6c2fb233cd6> (accessed on 8 August 2024).

67. Jethi, R.; Joshi, K.; Chandra, N. Toward climate change and community-based adaptation-mitigation strategies in hill agriculture. In *Conservation Agriculture: An Approach to Combat Climate Change in Indian Himalaya*; Springer: Berlin/Heidelberg, Germany, 2016; pp. 185–202. [Google Scholar] [CrossRef]
68. Beckwith, L. No room to manoeuvre: Bringing together political ecology and resilience to understand community-based adaptation decision making. *Clim. Dev.* 2022, 14, 184–195. [Google Scholar] [CrossRef]
69. Manuamorn, O.P.; Biesbroek, R. Do direct-access and indirect-access adaptation projects differ in their focus on local communities? A systematic analysis of 63 Adaptation Fund projects. *Reg. Environ. Change* 2020, 20, 139. [Google Scholar] [CrossRef]
70. Murtinho, F. What facilitates adaptation? An analysis of community-based adaptation to environmental change in the Andes. *Int. J. Commons* 2016, 10, 119–141. [Google Scholar] [CrossRef]
71. Hammouri, N.; Al-Qinna, M.; Salahat, M.; Adamowski, J.; Prasher, S.O. Community based adaptation options for climate change impacts on water resources: The case of Jordan. *J. Water Land Dev.* 2015, 26, 3–17. [Google Scholar] [CrossRef]
72. Patnaik, H. Gender and participation in community based adaptation: Evidence from the decentralized climate funds project in Senegal. *World Dev.* 2021, 142, 105448. [Google Scholar] [CrossRef]
73. Nkwocha, K.F.; Akanwa, A.O.; Jimme, M.A.; Ihekweumere, S.O.; Joe-Nkechebel, N. Perception and Impacts to Climate Emergency in Maiduguri Urban, North-East Nigeria: A Case for Community Based Adaptation Approach. *Rev. Environ. Earth Sci.* 2019, 6, 24–33. [Google Scholar] [CrossRef]
74. Duus, E.; Montag, D. Protecting women's health in a changing climate: The role of community-based adaptation. *J. Clim. Chang. Heal.* 2022, 6, 100120. [Google Scholar] [CrossRef]
75. Clissold, R.; McNamara, K.E. Exploring local perspectives on the performance of a community-based adaptation project on Aniwa, Vanuatu. *Clim. Dev.* 2020, 12, 457–468. [Google Scholar] [CrossRef]
76. Westoby, R.; McNamara, K.E.; Kumar, R.; Nunn, P.D. From community-based to locally led adaptation: Evidence from Vanuatu. *AMBIO* 2020, 49, 1466–1473. [Google Scholar] [CrossRef]
77. Mitchell, P.; Borchard, C. Mainstreaming children's vulnerabilities and capacities into community-based adaptation to enhance impact. *Clim. Dev.* 2014, 6, 372–381. [Google Scholar] [CrossRef]
78. Bronen, R.; Pollock, D.; Overbeck, J.; Stevens, D.; Natali, S.; Maio, C. Usteq: Integrating indigenous knowledge and social and physical sciences to coproduce knowledge and support community-based adaptation. *Polar Geogr.* 2020, 43, 188–205. [Google Scholar] [CrossRef]
79. Ford, J.D.; Stephenson, E.; Willox, A.C.; Edge, V.; Farahbakhsh, K.; Furgal, C.; Harper, S.; Chatwood, S.; Mauro, I.; Pearce, T.; et al. Community-based adaptation research in the Canadian Arctic. *Wiley Interdiscip. Rev. Clim. Change* 2016, 7, 175–191. [Google Scholar] [CrossRef] [PubMed]
80. Ford, J.D.; Sherman, M.; Berrang-Ford, L.; Llanos, A.; Carcamo, C.; Harper, S.; Lwasa, S.; Namanya, D.; Marcello, T.; Maillot, M.; et al. Preparing for the health impacts of climate change in Indigenous communities: The role of community-based adaptation. *Glob. Environ. Change* 2018, 49, 129–139. [Google Scholar] [CrossRef]
81. Qomariah, A.; Purnaweni, H.; Utomo, S. Community-Based Adaptation: Challenge and Opportunity in Indonesia. In *E3S Web of Conferences; EDP Sciences: Les Ulis, France, 2021; Volume 317, p. 01075.* [Google Scholar]
82. Remling, E.; Veitayaki, J. Community-based action in Fiji's Gau Island: A model for the Pacific? *Int. J. Clim. Change Strat. Manag.* 2016, 8, 375–398. [Google Scholar] [CrossRef]
83. Ensor, J. Emerging lessons for community-based adaptation. In *Community-Based Adaptation to Climate Change. Emerging Lessons; Practical Action Publishing: Rugby, UK, 2014; pp. 183–197.* [Google Scholar]
84. Nath, S. Mobilising transformative community-based climate change adaptation. *Urban Transform.* 2024, 6, 1. [Google Scholar] [CrossRef]
85. Selje, T.; Strikker, P.; Heinz, B. Community-Based Adaptation as a Transdisciplinary Approach and Instrument for a Social-Ecological Transformation. *Preprints* 2024, 2024041188. [Google Scholar] [CrossRef]
86. Walker, J.; Cooper, M. Genealogies of resilience: From systems ecology to the political economy of crisis adaptation. *Secur. Dialogue* 2011, 42, 143–160. Available online: <http://www.jstor.org/stable/26301757> (accessed on 8 August 2024). [CrossRef]
87. Pelling, M. *Adaptation to Climate Change: From Resilience to Transformation*; Routledge: London, UK, 2010. [Google Scholar]
88. Ensor, J.E.; Park, S.; Attwood, S.; Kaminski, A.; Johnson, J. Can community-based adaptation increase resilience? *Clim. Dev.* 2018, 10, 134–151. [Google Scholar] [CrossRef]
89. Berger, R.; Ensor, J.; Wilson, K.; Phukan, I.; Dasgupta, S. *Adaptive Capacity. In Community-based Adaptation: Scaling it Up; Routledge: London, UK, 2014.* [Google Scholar]
90. Lasage, R.; Muis, S.; Sardella, C.S.E.; Van Drunen, M.A.; Verburg, P.H.; Aerts, J.C.J.H. A stepwise, participatory approach to design and implement community based adaptation to drought in the Peruvian Andes. *Sustainability* 2015, 7, 1742–1773. [Google Scholar] [CrossRef]
91. Roy, B.; Penha-Lopes, G.P.; Uddin, M.S.; Kabir, H.; Lourenço, T.C.; Torrejano, A. Sea level rise induced impacts on coastal areas of Bangladesh and local-led community-based adaptation. *Int. J. Disaster Risk Reduct.* 2022, 73, 102905. [Google Scholar] [CrossRef]
92. Roy, R. Evaluating the suitability of community-based adaptation: A case study of bangladesh. In *Climate Change Management; Springer: Berlin/Heidelberg, Germany, 2018; pp. 39–59.* [Google Scholar] [CrossRef]
93. Bardosh, K.L.; Ryan, S.J.; Ebi, K.; Welburn, S.; Singer, B. Addressing vulnerability, building resilience: Community-based adaptation to vector-borne diseases in the context of global change. *Infect. Dis. Poverty* 2017, 6, 166. [Google Scholar] [CrossRef] [PubMed]
94. Hsieh, T.-F.; Lee, Y.-M. Community-Based Adaptation to Climate Change: The Case of a Community University Workshop in Taiwan. *Sustainability* 2021, 13, 1729. [Google Scholar] [CrossRef]
95. Jameró, M.L.; Onuki, M.; Esteban, M.; Tan, N. Community-based adaptation in low-lying islands in the Philippines: Challenges and lessons learned. *Reg. Environ. Change* 2018, 18, 2249–2260. [Google Scholar] [CrossRef]
96. Faulkner, L.; Ayers, J.; Huq, S. Meaningful Measurement for Community-Based Adaptation. *New Dir. Eval.* 2015, 2015, 89–104. [Google Scholar] [CrossRef]
97. Kamal, M.A.; Nursey-Bray, M. Best intentions and local realities: Unseating assumptions about implementing planned community-based adaptation in Bangladesh. *Clim. Dev.* 2022, 14, 794–803. [Google Scholar] [CrossRef]
98. Vincent, K. Development geography II: Community-based adaptation and locally-led adaptation. *Prog. Hum. Geogr.* 2023, 47, 604–612. [Google Scholar] [CrossRef]
99. Soanes, M.; Bahadur, A.; Shakya, C.; Smith, B.; Patel, S.; del Rio, C.R.; Cogger, T.; Dinshaw, A.; Patel, S.; Huq, S.; et al. Principles for Locally Led Adaptation; International Institute for Environment and Development: London, UK, 2021. [Google Scholar]
100. Williams, M.; Pauli, N.; Boruff, B. Participatory GIS and community-based adaptation to climate change and environmental hazards: A Cambodian case study. In *Climate-Induced Disasters in the Asia-Pacific Region: Response, Recovery, Adaptation; Emerald Publishing Limited: Bingley, UK, 2020; Volume 22, pp. 113–134.* [Google Scholar] [CrossRef]

101. McNamara, K.E. Taking stock of community-based climate-change adaptation projects in the Pacific. *Asia Pac. Viewp.* 2013, 54, 398–405. [Google Scholar] [CrossRef]
102. Nguimalet, C.-R. Comparison of community-based adaptation strategies for droughts and floods in Kenya and the Central African Republic. *Water Int.* 2018, 43, 183–204. [Google Scholar] [CrossRef]
103. Fischer, H.W. Decentralization and the governance of climate adaptation: Situating community-based planning within broader trajectories of political transformation. *World Dev.* 2021, 140, 105335. [Google Scholar] [CrossRef]
104. Hidalgo, D.M.; Nunn, P.D.; Beazley, H.; Sovinasalevu, J.S.; Veitayaki, J. Climate change adaptation planning in remote contexts: Insights from community-based natural resource management and rural development initiatives in the Pacific Islands. *Clim. Dev.* 2021, 13, 909–921. [Google Scholar] [CrossRef]
105. Basel, B.; Goby, G.; Johnson, J. Community-based adaptation to climate change in villages of Western Province, Solomon Islands. *Mar. Pollut. Bull.* 2020, 156, 111266. [Google Scholar] [CrossRef] [PubMed]
106. Rabbani, G.; Rahman, S.H.; Munira, S. Prospects of pond ecosystems as resource base towards community based adaptation (CBA) to climate change in coastal region of Bangladesh. *J. Water Clim. Change* 2018, 9, 223–238. [Google Scholar] [CrossRef]
107. Hagedoorn, L.; Brander, L.; van Beukering, P.; Dijkstra, H.; Franco, C.; Hughes, L.; Gilders, I.; Segal, B. Community-based adaptation to climate change in small island developing states: An analysis of the role of social capital. *Clim. Dev.* 2019, 11, 723–734. [Google Scholar] [CrossRef]
108. Kansuntisukmongkol, K. Philosophy of sufficiency economy for community-based adaptation to climate change: Lessons learned from Thai case studies. *Kasetsart J. Soc. Sci.* 2017, 38, 56–61. [Google Scholar] [CrossRef]
109. Pignot, P.O.G.; Ehrhart, C.; Oglethorpe, J. Integrating Community and Ecosystem-Based Approaches in Climate Change Adaptation Responses. 2012. Available online: <https://hdl.handle.net/10669/77322> (accessed on 8 August 2024).
110. Alberto, R.P.; Paz-Alberto, A.M.; Ponce, C.D.B.; Mata, K.J.E. Climate Change Community-Based and Ecosystem-Based Adaptation Strategies in Selected Coastal Barangays in Masinloc, Zambales, Philippines. *Am. J. Clim. Change* 2022, 11, 342–362. [Google Scholar] [CrossRef]
111. Chevallerier, R. Integrated Community-and Ecosystem-based Approaches to Climate Change Adaptation; South African Institute of International Affairs, Policy Insights: 2017; Volume 49.
112. Nill, D.; Venegas, G.L.; Richter, L. Community-based Adaptation (CbA), Ecosystem-based Adaptation (EbA) and the Landscape Approach (LA)- Characteristics and Commonalities; International Institute for Environment and Development: London, UK, 2016. [Google Scholar]
113. Markphol, A.; Kittitornkool, J.; Armitage, D.; Chotikarn, P. An integrative approach to planning for community-based adaptation to sea-level rise in Thailand. *Ocean Coast. Manag.* 2021, 212, 105846. [Google Scholar] [CrossRef]
114. Reid, H. Ecosystem- and community-based adaptation: Learning from community-based natural resource management. *Clim. Dev.* 2016, 8, 4–9. [Google Scholar] [CrossRef]
115. Jeans, H.; Oglethorpe, J.; Phillips, J.; Reid, H. The role of ecosystems in climate change adaptation: Lessons for scaling up. In *Community-Based Adaptation to Climate Change*; Routledge: London, UK, 2014; pp. 253–265. [Google Scholar]
116. Forsyth, T. How is community-based adaptation ‘scaled up’ in environmental risk assessment? Lessons from ecosystem-based adaptation. In *Community-Based Adaptation to Climate Change*; Routledge: London, UK, 2014; pp. 88–102. [Google Scholar]
117. Reid, H. A natural focus for community-based adaptation. In *Community-based Adaptation to Climate Change: Emerging Lessons; Practical Action Publishing: Rugby, UK, 2014; pp. 35–54.* [Google Scholar]
118. Dhar, T.K.; Khirfan, L. Community-based adaptation through ecological design: Lessons from Negril, Jamaica. *J. Urban Des.* 2016, 21, 234–255. [Google Scholar] [CrossRef]
119. Septiarani, B.; Handayani, W. Community Group Networking on the Community-based Adaptation Measure in Tapak Village, Semarang Coastal Area. *Indones. J. Geogr.* 2020, 52, 181–189. [Google Scholar] [CrossRef]
120. Simane, B.; Zaitchik, B.F. The Sustainability of Community-Based Adaptation Projects in the Blue Nile Highlands of Ethiopia. *Sustainability* 2014, 6, 4308–4325. [Google Scholar] [CrossRef]
121. Ahmed, Z.; Lotze-Campen, H.; Kabir, M.H. Agriculture in Riverine Chars: Vulnerabilities to Climate Change and Community-Based Adaptation; Springer Geography: Berlin/Heidelberg, Germany, 2021; pp. 275–289. [Google Scholar] [CrossRef]
122. Islam, M.; Rai, R.; Quli, S. Forest resources use for building livelihood resilience in ethnic communities of Jharkhand. *Trends Biosci.* 2015, 8, 1256–1264. [Google Scholar]
123. Barbon, W.J.; Myae, C.; Vidallo, R.; Thant, P.S.; Monville-Oro, E.; Gonsalves, J. Applying participatory action research methods in community-based adaptation with smallholders in Myanmar. *Front. Clim.* 2021, 3, 734053. [Google Scholar] [CrossRef]
124. Barbon, W.J.; Vidallo, R.R.; Gonsalves, J.F. The promotion of climate-smart villages to support community-based adaptation programming in Myanmar; CGIAR Research Program on Climate Change, Agriculture and Food Security: Frederiksberg, Denmark, 2017. [Google Scholar]
125. Chandra, A.; McNamara, K.E. Climate-Smart Agriculture in Southeast Asia: Lessons from Community-Based Adaptation Programs in the Philippines and Timor-Leste. In *Resilience*; Elsevier: Amsterdam, The Netherlands, 2018; pp. 165–179. [Google Scholar] [CrossRef]
126. Parijat, R.; Singh, S. Community based Adaptation to Climate Change through Agro Ecological Reforms in India. *Bd. Int. J. Innov. Sci. Res. Technol.* 2023. [Google Scholar]
127. Sari, A.N.; Suryatmojo, H.; Utami, A.W. Community-based adaptation for ecosystem disaster risk reduction in the Upstream Merawu Watershed, Indonesia. In *Gehalten auf der IOP Conference Series: Earth and Environmental Science*; IOP Publishing: Bristol, UK, 2020; p. 012017. [Google Scholar]
128. Gwali, S. Building community based adaptation and resilience to climate change in Uganda. In *Farmer Managed Natural Regeneration National Conference*; World Vision: Kampala, Uganda, 2014. [Google Scholar]
129. Assani, A.S.; Yarou, A.K.; Dedehou, N.V.F.G.; Worogo, H.S.; Baco, M.N.; Houinato, M.; Alkoiret, I.T. Towards indigenous community-based adaptation to climate change: A typological analysis of tree-livestock integration in smallholding systems in dryland areas of Benin (West-Africa). *Agror. Syst.* 2024, 98, 197–211. [Google Scholar] [CrossRef]
130. Foley, D. Indigenous Standpoint Theory. *Int. J. Humanit.* 2006, 3, 8. [Google Scholar]
131. Hekman, S. Truth and Method: Feminist Standpoint Theory Revisited. *Signs: J. Women Cult. Soc.* 1997, 22, 341–365. [Google Scholar] [CrossRef]
132. Rolin, K. Standpoint Theory as a Methodology for the Study of Power Relations. *Hypatia* 2009, 24, 218–226. [Google Scholar] [CrossRef]

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- ❖ **Authors: Tom Selje 1,* , Lena Anna Schmid 2 and Boris Heinz 1,2** — 1: Department of Community Energy and Adaptation to Climate Change, Technische Universität Berlin, Ackerstr. 76, 13355 Berlin, Germany. 2: Hudara gGmbH, Rollbergstr. 26, 12053 Berlin, Germany. * Author to whom correspondence should be addressed.
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