

**Norwegian University of Life Sciences**  
Faculty of Landscape and Society  
Department of Public Health Science

April 2022

Report submitted to the Norwegian Agency for Development  
Cooperation (Norad)

# **Putting ‘vulnerable groups’ at the centre of adaptation interventions by promoting transformative adaptation as a learning process**

Written by Marcus Taylor, Siri Eriksen, Katharine Vincent, Nick Brooks,  
Morgan Scoville-Simonds & E. Lisa F. Schipper

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**Department of Public Health Science**  
**Norwegian University of Life Sciences (NMBU)**  
**P.O. Box 5003**  
**N-1432 Aas Norway**  
<https://www.nmbu.no/en/faculty/landsam/department/fohe>

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## **Author affiliations**

Marcus Taylor  
Global Development Studies, Queen's University, Canada

Siri Eriksen, siri.eriksen@nmbu.no (corresponding author)  
Department of Public Health Science, Norwegian University of Life Sciences

Katharine Vincent  
Kulima Integrated Development Solutions, Pietermaritzburg, South Africa

Nick Brooks  
Garama Ltd, Norwich, UK

Morgan Scoville-Simonds  
Department of Global Development and Planning, University of Agder, Norway

E. Lisa F. Schipper  
Environmental Change Institute, Oxford University Centre for the Environment, UK

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# Putting ‘vulnerable groups’ at the centre of adaptation interventions by promoting transformative adaptation as a learning process

## Executive Summary

This report is a follow up and deepening of the working paper, “*Climate change interventions and vulnerability reduction in developing countries: Challenges and leverage points for transformation*”. In that background, we highlighted that many adaptation interventions inadvertently reinforce, redistribute or create new sources of vulnerability (Eriksen et al. 2021a), which is also reflected in the concept of ‘maladaptation’ that was recently foregrounded in the recent IPCC AR6 WGII Report (IPCC 2022).

Maladaptation frequently stems from overly technical adaptation programming that is top-down and driven by outside objectives and knowledge. Instead, there is increasing recognition of adaptation as a socio-political process that addresses the root causes of the vulnerability of communities or segments of the population and, in so doing, builds the capacities of impacted populations and communities to engage climate challenges. This approach is termed ‘transformative adaptation’ and requires engagement with governance and institutional questions about whose values and perspectives are embraced within adaptation planning, and considering justice in these processes.

This background paper highlights the kinds of practice that can help avoid maladaptive outcomes and promote transformative adaptation. Through case study examples of projects that - at least partially - embody aspects of a reflexive approach, the paper identifies ‘checklists’ of positive features to encourage and ‘red flags’ to be questioned or avoided in project proposal evaluation. Together, the main findings of the report are to identify five key elements of transformative adaptation:

### 1. Make rights and justice the target of adaptation

There is a rapidly expanding body of literature on the importance of social justice in climate change, and the importance of equity and justice is also strongly emphasised in the IPCC WGII report. Equity and justice form part of desirable climate resilient development outcomes, and they also represent dimensions that enable societal choices (and related adaptation, mitigation and sustainable development actions) towards climate resilient development. Climate justice is concerned with linking development and human rights to safeguard the rights of the most vulnerable, through attention to distributive, procedural and recognitional justice. Justice and rights-based approaches aim to address social inequalities and processes of discrimination or exclusion driving vulnerability, such

as by promoting meaningful participation of groups often excluded from decision-making processes and paying particular attention to how climate action can support the rights of these groups. There exist a variety of examples showing how this leads to more just and equitable outcomes in adaptation.

## 2. Acknowledge power relations

The exercise of power is not necessarily negative. However, questions of power are often overlooked, limiting our ability to identify and address inequalities and injustice. Instead, explicit consideration of the operation of power at the governance, design, implementation and evaluation stages is important for identifying opportunities for transformative adaptation. This enables attention to who is shaping agendas, and with what consequences and distributions of benefits, and ensures that equity is given equal attention to efficiency.

## 3. Embrace knowledge pluralism

Transformative adaptation approaches embrace multiple sources of knowledge, including local, indigenous and experiential. Co-production of knowledge - which goes beyond traditional approaches to participation or knowledge integration - offers opportunities for greater inclusion, different framings of issues and greater legitimacy of adaptation solutions. At the same time, ensuring active consideration of power and its manifestations throughout the co-production process is key if the opportunities for transformative adaptation are to be seized.

## 4. Foster bottom-up coalitions to strengthen local sources of adaptation

Since transformative adaptation seeks to put the vulnerable first by addressing historical and present inequities and power relations that create the underlying conditions of marginality, transformative projects help build the social networks that can promote, value and sustain the knowledge and priorities of local peoples. Emphasising the process of grassroots coalition-building empowers from below and creates the conditions that promote transformative change. Coalition-building also provides opportunities to embrace knowledge pluralism and address power relations.

## 5. Recognise risks, tradeoffs and unexpected outcomes

All adaptation actions involve complex tradeoffs between differing objectives and can generate unexpected effects. We should remain cautious about representations of 'win-

win' outcomes or other unmitigated success stories because, whilst politically expedient for the purposes of gaining donor and governmental backing for projects, they often preclude a deeper examination of tradeoffs or downplay any contestations and resistance by vulnerable groups of negative effects on them (which can be direct and immediate or indirect and delayed). Ignoring inevitable tensions between different interests can inadvertently reinforce uneven power relations. Embedding participatory monitoring in projects can help to identify and potentially address such tradeoffs and tensions between different interests.

The above five elements are vital components of a transformative approach to adaptation aimed at effectively addressing vulnerability. Simultaneously, embracing transformative adaptation requires changes in the ways that we support, design and implement adaptation interventions, including how we define what is locally-led, and how we monitor, evaluate and learn from them. In many cases, this requires not just outward change in design, but inward change in the institutions (and individuals in institutions). It requires - and can be achieved through - learning spaces and mechanisms for reflection and questioning beyond the traditional standard project monitoring and evaluation that focuses on efficiency of delivery. Since projectisation is not conducive to the existence of such learning spaces, portfolio or programmatic approaches designed to consider specific learning spaces between projects and opportunities for adaptive management within projects are more likely to be conducive to transformative adaptation.

## SECTION 1: Context

This report is a follow up and deepening of the working paper, “*Climate change interventions and vulnerability reduction in developing countries: Challenges and leverage points for transformation*”. In that backgrounder, we highlighted how many adaptation interventions inadvertently reinforce, redistribute or create new sources of vulnerability (Eriksen et al., 2021a). Such outcomes are reflected in the concept of ‘maladaptation’ that was recently foregrounded in the recent IPCC AR6 WGII Report (IPCC, 2022). The latter referred to maladaptation as actions that may lead to increased risk of adverse climate-related outcomes, including via increased or shifted vulnerability, more inequitable outcomes, or diminished welfare.

The focus of this paper reflects increasing evidence that adaptation takes place as a socio-political process, that knowledge relations and learning play a central role in such adaptation processes, and that transformative adaptation needs to target these relations and processes in order to lead to outcomes that effectively reduce vulnerability and inequity. There is now clear recognition that maladaptation frequently stems from overly technical adaptation programming that is top-down and driven by outside objectives and knowledge (Schipper 2020). In response, approaches to adaptation have shifted. They now are increasingly moving away from reactive responses predicated upon technical objectives towards anticipatory approaches that seek to engage the socio-economic and political sources of vulnerability (Eriksen et al., 2011; Wise et al., 2014; Pelling et al., 2015; Carr, 2019). This new direction is often reflected in the language of ‘transformative adaptation’, which emphasises the need for deep-seated social, institutional, technological and cultural change that aims to build the capacities of impacted communities and populations to engage climate challenges (Kinley, 2017). In short, transformative adaptation is an emergent process that seeks to reconstitute the structures and relationships that render communities or segments of the population vulnerable.

This expansion of the scale and scope of climate change adaptation programming towards a more transformative approach is positive, but brings new challenges (Fedele et al., 2019). It requires that adaptation programming speaks to questions of justice and empowerment as foundational elements of interventions (Anguelovski et al., 2016; Klepp and Chavez-Rodriguez, 2018; Blythe et al., 2018). In particular, the concept of transformative adaptation asks how institutions can promote practices that place vulnerable groups at the centre of interventions in ways that empower them to become the primary agents of adaptation. Such ambitions broaden the mission of what adaptation projects should be doing and how they engage target communities and populations. In so doing, they force adaptation planning to engage with complex governance questions



around whose values, knowledge and perspectives are foregrounded within adaptation planning (Eriksen et al., 2015; Mikulewicz, 2017).

Given that adaptation often takes place through institutional policies, programmes and projects, a transformative approach requires the promotion of learning spaces within the organisations responsible for planning and implementation (Matin et al., 2018). We argue that to avoid maladaptive outcomes, it is critical to create mechanisms and spaces for reflection, questioning and learning beyond basic monitoring and evaluation. In short, there needs to be a culture of reflexivity regarding organisational assumptions and practices surrounding what constitutes valid goals, how they are decided, and by whom. This may require adjustments to programme design and changes to the modalities of funders in how adaptation interventions are implemented and managed.

In this background paper, we advance this approach by adding more detail to the kinds of practice that can help avoid maladaptive outcomes. We emphasise the need to embrace a deeply reflexive approach to adaptation and advance five elements of learning that can help guide practice. In what follows we expand on each of these areas and provide case study examples of adaptation projects that – at least partially – embody aspects of a reflexive approach. We then provide checklists of positive features to be encouraged and red flags to be questioned or avoided. These guidelines provide strong foundations for organisations financing climate change projects to advance a programme of transformative adaptation.

The structure of the paper is designed to open up the idea of *transformative adaptation as an empowering learning process*. **Section 2** overviews the concept of transformative adaptation, building on our previous report, refined with lessons stemming from the IPCC AR6 WGII Report. It provides clear rationale for why transformative adaptation is necessary to avoid (inadvertent) maladaptive outcomes. **Section 3** then provides a guide to promoting projects that adopt a transformative approach and adaptation as a learning process rather than a techno-managerial measure. It highlights five broad elements that should be explicitly and reflexively addressed in all adaptation projects, from design to implementation to evaluation. Case studies are used to illustrate examples of good practice and highlight remaining challenges. Building from this guide, **section 4** outlines learning within the organisations that provide climate adaptation financing, including how they can reform and expand their own monitoring and evaluation (M&E) practices to encourage the kind of meaningful learning necessary for transformative adaptation. A short summary and overview of recommendations follows in **section 5** to conclude the paper.

## **SECTION 2: Transformative Adaptation**

The present work expands earlier research that assessed the state of adaptation programming and, in particular, the underlying causes of widespread adaptation failures. Through a survey of existing literature on adaptation projects, we identified three problematic areas of maladaptation (Eriksen et al., 2021). These were:

- 1) Projects that reinforced existing vulnerabilities, often by promoting adaptation interventions that benefited powerful elites while ignoring the vulnerabilities of marginal groups.
- 2) Projects that redistributed vulnerabilities across populations, by transferring risks and exposures between groups rather than alleviating them.
- 3) Projects that created new risks and sources of vulnerability, often by neglecting the unintended outcomes of project activities.

By examining such examples in detail, it was possible to discern four primary reasons why adaptation projects generated adverse impacts. We might term these the four drivers of maladaptation:

### ***Driver 1: Insufficient understanding of contexts***

Many projects had extremely narrow objectives that focused on technical fixes, such as infrastructure building or other reactive responses to immediate climatic shocks and stresses. What such projects typically failed to do, however, was to situate prospective interventions within their wider socio-economic and cultural contexts to understand the underlying social causes of vulnerability within a given region. This led to many such projects having unexpected impacts as technical changes either ignored or exacerbated the social causes of inequality, marginality and vulnerability.

### ***Driver 2: Top-down definitions of adaptation goals and success***

Project planning and management is frequently top-down in nature and reliant on technocratic expertise. Specifically, many projects that caused maladaptive outcomes were characterised by criteria for success defined from above that diverged strongly from the experiences and goals of vulnerable groups themselves. In many cases, the decision making structure for adaptation was managerial in style and involved limited or poorly designed participatory processes.

### ***Driver 3: Inequitable participation***

Where participatory processes existed, there was often insufficient participation in substantive decision-making by the most vulnerable. This occurred when donors and implementing partners opted to target more accessible locations that tend not to contain

the most vulnerable groups, or used trusted networks for implementation composed of local elites. In other cases, participation was superficial and vulnerable groups excluded because they lacked the necessary resources (time, money, land, materials or connections) for enrollment in adaptation initiatives.

#### ***Driver 4: Retrofitting adaptation***

One final identified tendency in adaptation projects was to repackage existing development priorities and programs as adaptation in order to access financing. While existing development programming sometimes has relevance, systematic retrofitting often resulted in programmes that failed to consider the rapidly evolving challenges posed by changing climatic and (related) socio-economic conditions. The tendency to retrofit existing projects had the impact of exacerbating the above three drivers.

One factor that pervades all these drivers of maladaptation is the failure to allow for adequate learning within the process of adaptation (Eriksen et al., 2021a). The projectization of adaptation through tight timeframes, the outsourcing of planning and evaluation to short-term consultancies, and the competitive nature of seeking adaptation funding often impede learning from past lessons and between actors engaged in adaptation. Compounding this, monitoring and evaluation tends to centre on how well projects are implemented (the efficiency) rather than on their outcomes, such as how effective and equitable they are in reducing vulnerability. Notably, adaptation goals are often conflated with existing development goals leading to insufficient reflection on what constitutes success. In particular, projects afforded little time or space to learn from marginalised groups the diverse meanings that adaptation success may have to them.

These findings concerning the failings of adaptation projects were subsequently reflected in the findings of the recent Intergovernmental Panel on Climate Change (IPCC) *Sixth Assessment Report Working Group II on Impacts, Adaptation and Vulnerability* launched in February 2022. The report recognises the need for development in a context of a changing climate, and advances the concept of climate resilient development (Figure 1). The figure shows that societal choices that advance climate resilient development involve transformation and system transitions as promoted by adaptation, mitigation and sustainable development action (see panel c).

The IPCC report also notes that, whilst progress has been made with adaptation, it is too incremental and insufficient to the scale of change required - hence the need for transformative adaptation. Over the past decade, climate change adaptation has typically assumed the form of adjustments to existing systems through fragmented, small-scale, incremental, and sector-specific projects designed to respond to current impacts or near-term risks (see also Berrang-Ford et al., 2021). On this basis, adaptation interventions

have typically been infrastructural in nature and aimed at a physical risk rather than addressing social inequities. Where equity is addressed, it tends to be more on the basis of income than gender, age, Indigenous status, ethnic group, migration status or disability (Araos et al., 2021). The IPCC report emphasised that actions focused on sectors and risks in isolation and on short-term gains often lead to maladaptation. In short, there is substantial evidence of maladaptation, much of which affects marginalised and vulnerable groups and exacerbates existing inequities. The IPCC report identified a multiplicity of existing adaptation options across key sectors from water management to transforming cities. Yet it cautioned that, depending on the context and the manner in which an option is implemented, poorly designed adaptation can lead to maladaptive outcomes in the form of increased risks of adverse outcomes including exacerbated vulnerability, inequitable outcomes, or diminished welfare. Hence transformative adaptation is required.

The IPCC report recognizes transformative action as fundamental to supporting more climate resilient development, the process of implementing mitigation and adaptation measures to support sustainable development for all. The report foregrounds knowledge diversity, ecosystem stewardship, equity and justice, and inclusion as key enablers of climate resilient development (see figure 1, panel a). These dimensions describe how multiple government, private sector and civil society actors interact when they make decisions about adaptation and mitigation that shift development towards increased well-being, reduced poverty and vulnerability, enhanced ecosystem health, equity and justice, and limited warming and climate risks (see panel c). Hence relations inherent in decision making - taking place formally and informally across political, economic, ecological, socio-cultural, community and knowledge-technology arenas - must transform in order to support sustainable development and shift societal systems, energy systems, industrial systems, urban, rural and infrastructural systems, and land, oceans and other ecosystems.

The four dimensions enabling climate resilient development are closely interlinked. Ecosystem stewardship, and equity and justice dimensions, for example, concern shifting from exploitative social relations as well as nature-society relations, to relations of care and solidarity with humans and non-human species. Shifting exploitative nature-society relations requires giving space to diverse and often contestatory knowledges, values and ethics and inclusion of diverse voices in decision-making, in particular those of the most marginalised groups.

**Figure 1: Climate Resilient Development Pathways (Source: IPCC, 2022, Summary for Policy Makers)**

There is a rapidly narrowing window of opportunity to enable climate resilient development

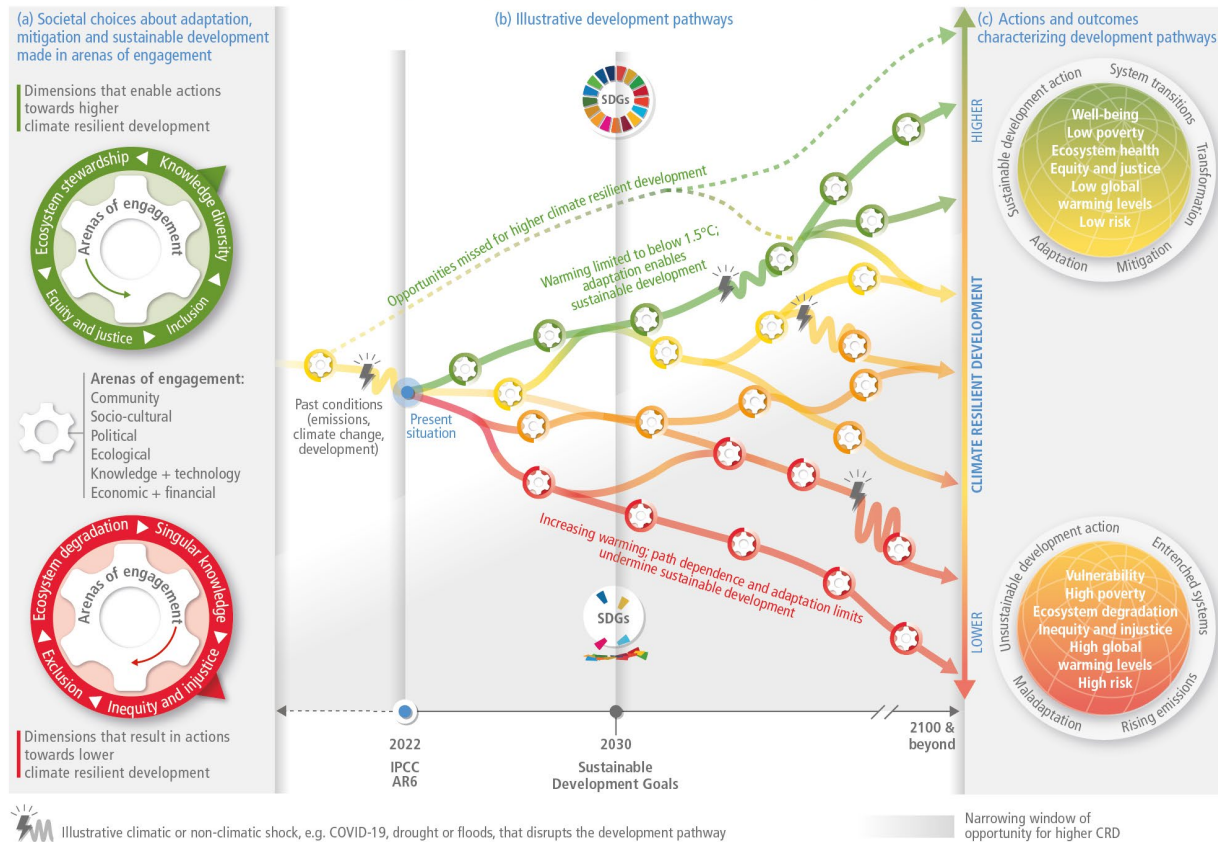


Figure SPM.5: Climate resilient development (CRD) is the process of implementing greenhouse gas mitigation and adaptation measures to support sustainable development. This figure builds on Figure SPM.9 in AR5 WGII (depicting climate resilient pathways) by describing how CRD pathways are the result of cumulative societal choices and actions within multiple arenas. Panel (a): Societal choices towards higher CRD (green cog) or lower CRD (red cog) result from interacting decisions and actions by diverse government, private sector and civil society actors, in the context of climate risks, adaptation limits and development gaps. These actors engage with adaptation, mitigation and development actions in political, economic and financial, ecological, socio-cultural, knowledge and technology, and community arenas from local to international levels. Opportunities for climate resilient development are not equitably distributed around the world. Panel (b): Cumulatively, societal choices, which are made continuously, shift global development pathways towards higher (green) or lower (red) climate resilient development. Past conditions (past emissions, climate change and development) have already eliminated some development pathways towards higher CRD (dashed green line). Panel (c): Higher CRD is characterised by outcomes that advance sustainable development for all. Climate resilient development is progressively harder to achieve with global warming levels beyond 1.5°C. Inadequate progress towards the Sustainable Development Goals (SDGs) by 2030 reduces climate resilient development prospects. There is a narrowing window of opportunity to shift pathways towards more climate resilient development futures as reflected by the adaptation limits and increasing climate risks, considering the remaining carbon budgets.

The transition towards a transformative approach is urgent. A key finding of the IPCC report is that there is a rapidly narrowing window of opportunity to enable a livable and sustainable future. In particular, actions this decade determine long term prospects for climate resilient development, particularly in the context of marked adaptation gaps

between current levels and those that are needed to respond to impacts and risks, especially among marginalised populations. To open climate resilient pathways, there is a need to create a more inclusive framework of action by embracing priorities such as:

- Inclusive, integrated and long-term planning at all scales
- Effective partnerships between governments, civil society, and private sector organisations to enhance the adaptive capacity of vulnerable people
- Inclusive planning initiatives informed by cultural values, Indigenous knowledge, local knowledge, and scientific knowledge
- Inclusive governance that prioritises equity and justice in adaptation planning and implementation
- Laws, policies, processes, and interventions that reduce vulnerabilities by addressing context specific inequities based on gender, ethnicity, disability, age, location and income
- Promotion of multi-stakeholder, co-learning platforms with community-based adaptation and participatory scenario planning

These broad priorities are fully reflective of a transformative adaptation approach and form a foundation for our report. The question, of course, is how to effectively embody such values within adaptation planning in order to achieve more just and equitable outcomes. In the following sections, we draw upon a wide range of case studies to identify a range of good practices and safeguards that, together, can help ensure a more reflexive and equity-centred form of adaptation. The goal is to help reposition *adaptation as an empowering learning process* that puts the vulnerable at the centre of initiatives, and addresses the root causes of their vulnerability, as opposed to just the symptoms of it. This goal stands at the core of transformative adaptation (Colloff et al., 2017; Ajulo et al., 2020). Table 2 below summarizes past evidence of transformative adaptation, ranging from actions targeting values, norms and mindsets to democratizing knowledge systems and civil society action.

To be clear, there is no easy way to practice transformative adaptation and no silver bullet prescription that guarantees success. What is essential, however, is that donors and implementing agencies are fundamentally reflexive about questions of politics and power that shape adaptation throughout the process, of whose goals and knowledge drives projects, and ultimately about how success is defined, measured and by whom. To engage these questions openly is a necessary yet difficult process for development agencies that have often viewed such questions suspiciously as getting in the way of accomplishing project goals. It requires commitment to address the current way of designing and managing such projects, and recognition that this will likely require refashioning working practices to accompany and enable the shift to transformative adaptation.

**Table 1: Transformative Adaptation**

Transformative adaptation aims towards fundamental change in values, worldviews, ideologies, structures and power relations to achieve more just and equitable adaptation outcomes (O'Brien, 2016; Shi and Moser, 2021). It is carried out through diverse and context-dependent actions. Most evidence for such action currently exists at the community or city level, including farmer and community mobilisation and city-level resilience building:

Transformative actions reconnecting inner with external world dimensions, arts-based approaches	Horlings, 2015; Woiwode, 2020; Bentz et al., 2022
Activating individual and collective agency, strengthening societal engagement and political voice	Vogel and O'Brien, 2021; Colloff et al., 2021; Ojha et al., 2022
Decolonialising and democratising knowledge systems, inserting a plurality of knowledges and ways of knowing	Ziervogel et al., 2016; Nightingale et al., 2020; Gram-Hanssen et al., 2022
Civil society activism and resistance to contest and shift political arrangements, inequities, practices and development trajectories	Wright, 2013; O'Brien et al., 2018
Transformative action representing an opportunity for emancipatory political change and solidarity	Manuel-Navarrete and Pelling, 2015; Nightingale et al., 2020; Stuart et al., 2020; Garcia et al., 2021
Transformative actions to radically rebuild social, ecological and economic relations, e.g. tackling historical legacies and societal divisions along race, income and other social markers	Gillard et al., 2016; Few et al., 2017; West et al. 2020; Shi and Moser, 2021.
Transformative actions to shift norms, institutions and systems, altering the goals, mindsets and paradigms from which the system arises	Westley et al., 2013; Sharpe et al., 2016; O'Brien, 2018; Otto et al., 2020b; Wamsler and Restoy, 2020.

### **SECTION 3: Elements of Transformative Adaptation as a Learning Process**

Through a review of existing literature on transformative adaptation - including theoretically-oriented texts and substantive case studies - we synthesise evidence of these components into five elements contributing to success. Our review of the literature moves beyond assessing project documents that often focus on the mechanics of implementation rather than substantive outcomes for vulnerability reduction. In contrast, independent studies of project processes and impacts tend to be documented in scientific journal articles. Such studies typically do not present cut and dried 'success stories'. Rather, they reflect on the processes involved in transformation, in which deliberately considering intended and unintended outcomes of interventions - both positive and negative - is central to a reflexive approach. Rather than identifying particular projects that in and of themselves would represent a 'blueprint' for successful adaptation, we therefore examine a large number of studies of adaptation projects seeking to distinguishing different elements of 'success' within these interventions

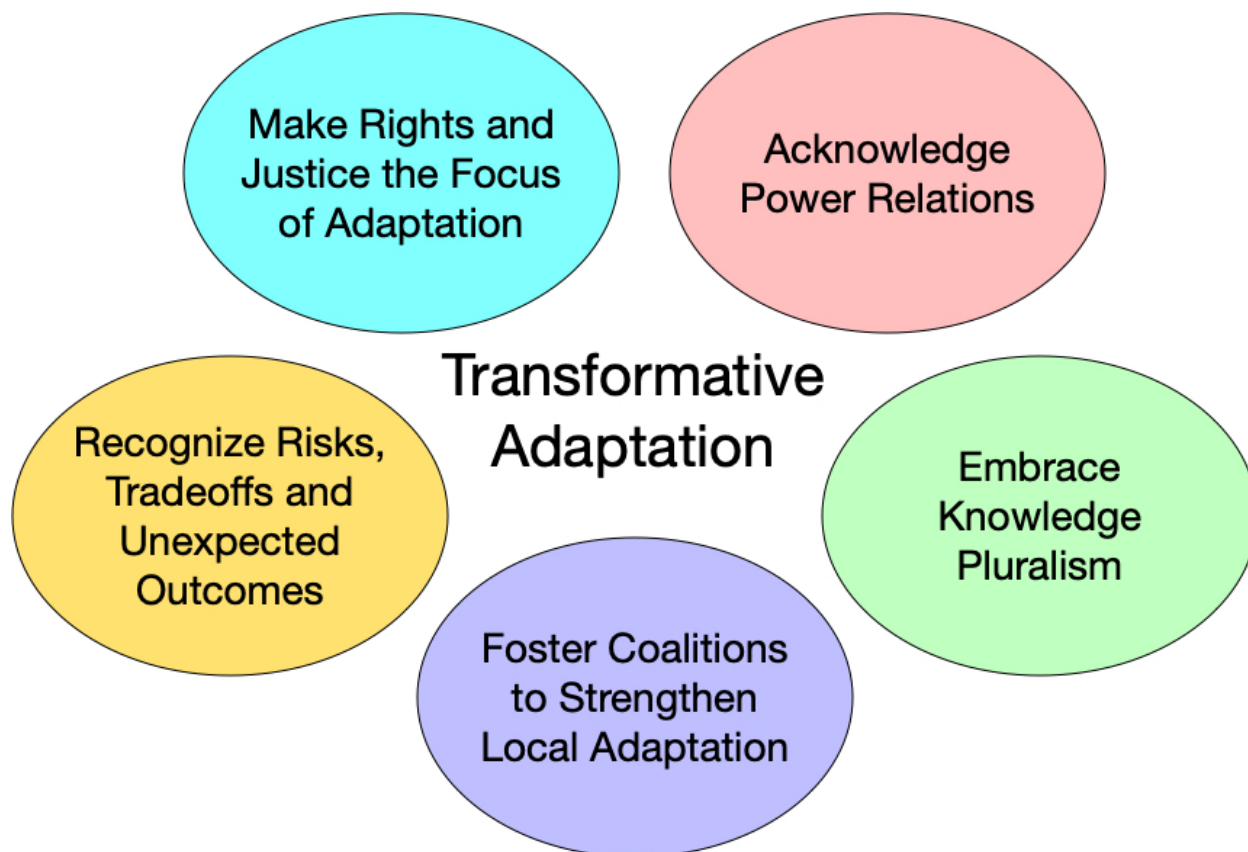
Resulting from our review of this literature, we propose five elements as central aspects of a reflexive and transformative approach to adaptation, one that can situate vulnerable peoples at the heart of adaptation practice (see figure 2 below). We argue that to avoid maladaptive outcomes and to promote transformative adaptation, donor organisations should be looking for strong evidence of these elements when considering funding proposals.

While we have separated them out in the diagram below, these five elements of a transformative approach to adaptation are overlapping and self-reinforcing. Acknowledging power relations, for example, is a prerequisite for effective and just co-production of knowledge and coalition building. Similarly, failure to recognise risks and unexpected outcomes can fundamentally weaken a rights-based approach. However, for the purposes of discussion we shall address each of these facets individually while indicating the explicit synergies between them.

In what follows, for each element of transformative adaptation, we not only highlight the conceptual issues at stake but also provide case studies that substantiate good practice alongside cautionary examples of projects that - while well intentioned - did not adequately deliver the process or outcomes they intended. Lastly, we provide in each case a clear list of good practice type actions and aspects to look for when evaluating projects for funding, and red flags that should be avoided so as to minimise the possibility of maladaptive outcomes that reinforce the current status quo (also synthesised in Appendix B).



Figure 2: Elements of transformative adaptation



### 1) Make rights and justice the focus of adaptation

The first and foundational element of transformative adaptation identified by our review is making rights and justice the focus of adaptation. The IPCC WGII report identifies rights and justice as key enablers of climate action to reduce vulnerability (IPCC, 2022). The report takes a much stronger approach to equity and justice than previous reports, placing these dimensions at the centre of climate action and also explicitly highlighting rights-based approaches:

*Structural vulnerabilities to climate change can be reduced through carefully designed and implemented legal, policy, and process interventions from the local to global that address inequities based on gender, ethnicity, disability, age, location and income (very high confidence). This includes rights-based approaches that focus on capacity building, meaningful participation of the*

*most vulnerable groups, and their access to key resources, including financing, to reduce risk and adapt (high confidence) (SPM.D.2.1).*

This emphasis reflects the rapidly expanding literature documenting the importance of social justice in climate change. Equity and justice underpin desirable development as described in the globally agreed Sustainable Development Goals through their principle ‘leaving no one behind’ as well as specific targets such as within poverty reduction, education, health and gender. While equity and justice form part of desirable climate resilient development *outcomes*, they also need to be considered as part of the *process* that enables better adaptation, mitigation and sustainable development actions. Equitable and just interactions between government, civil society and private sector actors open up space for the types of decisions that foster climate resilient development (Schipper et al., 2022).

**Table 2: Equity and justice conceptual overview**

<b>Equity</b>	Describes the relations and processes through which equality or inequality emerge in society, including worth, opportunities, rights, and obligations, based on the principle of being ‘fair’ (Schipper et al., 2022).
<b>Social justice</b>	Just or fair relations within society that seek to address the distribution of wealth, access to resources, opportunity, and support according to principles of justice and fairness (Möller et al., 2022).
<b>Climate justice</b>	Assuming responsibility for the impacts of greenhouse gas emissions on the poorest and most vulnerable in society by critically addressing inequality and promoting transformative approaches to address root causes (Newell et al., 2021).

Within the climate justice paradigm, there are typically identified three overlapping elements: distributive, procedural and recognitional justice. Each needs to be considered within adaptation programming.

**Table 3: Climate justice**

<b>Distributive justice</b>	Refers to ‘who gets what’ and concerns the fair distribution of social and material advantages and disadvantages including how the impacts of climate change and climate action are distributed. The impacts of climate change tend to be unequally distributed within and across societies and generations (Ziervogel et al., 2017)..
<b>Procedural justice</b>	Refers to ‘who decides’; i.e. who participates (and how) and who is heard in decision-making about climate change. This includes access to information and meaningful participation in decision-making and the existence of legal procedures for achieving redress (Newell et al., 2021).
<b>Recognitional justice</b>	How those affected by action are recognized and included, requiring acknowledgement, basic respect and robust engagement with social, cultural and political difference, diverse cultures and perspectives, as well as historical inequality (Begum et al., 2022; Roberts, 2022).

On this basis, justice explicitly concerns rights, both political, human and basic rights, including “the right to minimum levels of capabilities and opportunities to achieve livelihood and wellbeing goals” (Ziervogel et al., 2017, p. 124). Rights here refer, for example, to basic rights such as to personal safety, health, water, shelter, energy, food, education etc, as outlined in the Universal Declaration on Human Rights and reflected in the Sustainable Development Goals. They are desirable aspects of development in and of themselves and in improving conditions for the most marginalised groups. However, there is increasing evidence that they also contribute to collective resilience that helps reduce risk and support sustainable development in the long term (IPCC, 2022). Inequitable access to food, water, employment, housing, healthcare and natural resources typically produces vulnerability of individuals and groups. At a collective level, the COVID-19 pandemic as well as climate disasters illustrate that socially, economically and politically, more equitable societies are more resilient (Marmot and Allen, 2020; Schipper et al., 2020). This is clearly exemplified for the case of health where

development gaps and poor access to safe water, nutrition and health infrastructure generate vulnerability to climate events (Cissé et al., 2022).

As we show below, there are emerging justice and rights-based approaches that explicitly address the meaningful participation of groups often marginalised in decision-making, including the rights of vulnerable groups. One way of doing this is targeting adaptation efforts at specific groups, such as investment to reduce climate risk for low-income or marginalised residents in informal settlements, social safety nets, cash transfer and insurance schemes targeted at the most vulnerable groups. The efficacy of such targeted efforts varies according to context. Ziervogel et al. (2017), for example, suggest that the key to building resilience to multiple risks - including violence, disease, and climate events - is to focus on the causes of people failing to secure basic rights. Causes range from administrative, organisational, budgetary and human resources to political and economic failings. Understanding how failure to secure rights takes place requires including the voices of the marginalised groups in decision-making processes to uncover their lived experiences. Within urban resilience, for example, ensuring the rights and entitlements of urban citizens requires a transformation of urban governance to shift from engineering and technocratically driven resilience-building, towards an approach that builds capacity through open decision-making and multiple actor involvement. Without the latter, resilience interventions often extend the logics and analytical frameworks of global finance (financiers and insurance companies) that privileges high-value physical assets of the richer rather than smaller or intangible losses of the poorer groups (Ziervogel et al., 2017; Tschakert et al., 2019; Arifeen and Eriksen, 2019; Henrique and Tschakert, 2021).

Simply adding projects within existing governance structures may be insufficient and perpetuate how injustices are produced. Ziervogel et al. (2017) observe that opportunities to build collective and just resilience are lost because of procedural injustices: the voices of urban residents are often missing from resilience building efforts. Instead, due to capacity challenges and prevalent resilience approaches, “contemporary resilience planning for cities has a tendency to push responsibility for risk management from central agencies to individuals and households at risk. This results in a shift in burden from government to citizen, and encourages a mentality of coping with, rather than resolving, the social structures, legal apparatus and administrative practices that produce and distribute vulnerability and risk” (p. 125).

### Box 1: Disability and climate action

The example of the inclusion of disabled people illustrates exceptionally well how transformative adaptation must build upon the everyday lived realities and experiential knowledge of vulnerable groups in ways that focus on rights and explicitly challenge environmental injustices. People with disabilities are often excluded by a combination of societal attitudes, physical environmental barriers and the design of decision-making processes. The result is that many adaptation or disaster management interventions ignore the needs of persons with disability or exacerbate vulnerability, making them ‘the least worth saving’ in a crisis. Such exclusion contributes to social groups quite literally being ‘left behind’ as 80% of disabled people globally live in poverty.

However, there is a second fundamental aspect to strengthening the rights of persons with disabilities to participate in decision-making processes and all spheres of public life: it strengthens the collective resilience of society. By designing spaces and processes for human diversity, resilience and adaptation actions can support accessibility as a common good enhancing inclusiveness for all. Through an explicit focus on inclusion that is aided by insights from disabled people regarding the ways in which they are excluded, processes that are made more inclusive of persons with disabilities tend to become more inclusive of diverse groups overall. “The inclusiveness that is required to take seriously the needs and perspectives of disabled people opens the conversation for a range of other groups in society that experience marginalization and vulnerability” (Görgens and Ziervogel 2019, pp 87-88). Describing the experience of disabled people’s organisations (DPOs) in Indonesia leading disaster preparedness programmes, Pertiwi et al. (2019) observed that such disability-inclusive disaster preparedness programmes were instrumental in reducing collective vulnerability. Adequate funding, organisation members’ competence, and external support and capacity from disaster risk reduction experts were important in enabling these efforts.

Focusing on rights therefore provides insights into the social relations and processes that need to be transformed. This helps to shift power relations and strengthen resilience. For example, traditional notions of resilience and vulnerability have represented groups of people (e.g. disabled, women, children) as inherently vulnerable, and “resilience as ‘fixing’ individuals to better conform to the norm” (Görgens and Ziervogel 2019, p. 90). Görgens and Ziervogel argue that resilience and vulnerability instead need to be understood as relational concepts defined by the interactions between individuals, social systems, and their environments (p. 87). Involving persons with disabilities as valued experts in decision-making and practical actions rather than as merely recipients of interventions shifts discourses that implicitly or explicitly consider disabled people as helpless victims or less worthy of saving in a disaster. In some of these efforts, disabled people lead conversations about vulnerability and risk, and become key players in participatory resilience work. Abbott and Porter (2013), reviewing journal articles, reports and relevant policy documents, found that “disabled people’s intricate, daily negotiations with risk, hazard and barriers make them extremely well

placed to be at the heart of such forums in a way that would benefit all as opposed to being seen as a specialist or marginal viewpoint” (Abbott and Porter, 2013, p. 840).

Situating disabled people in expert and leading roles also enhances understanding of resilience: The resilience knowledges of persons with disabilities, such as their lived experiences of human interdependence as well as problem-solving in the face of uncertainties and everyday barriers, have been observed to support transformative climate and sustainability decision-making (Abbott and Porter, 2013; Görgens and Ziervogel, 2018; Bell et al., 2020). Such knowledge, often embodied in everyday experiences of frustration or ingenious problem-solving rather than formal knowledge, help shift the focus of resilience efforts from privileging the resilience of physical structures to understanding and supporting resilience as fostering interconnectedness, recognising connection, responsiveness, empathy, sensitivity to differences, and addressing inequality in power relations. This illustrates how transformative actions that support human diversity, dignity and solidarity, and that redress discrimination and exclusion, represent a means of building climate resilient development (Eriksen et al., 2021b). The case of disability and climate change contributes to an expanding literature documenting the activation of conscious human agency as a powerful way to change norms and institutions and engage collective action, and hence a key modality of transformation (Sharpe et al., 2016; O’Brien, 2018).

Similar to the way that focusing on the rights of people with disabilities opens up the adaptation space, gender inequities must also be considered. In a cross-chapter box on *Gender, Climate Justice and Transformative Pathways*, for instance, the recent IPCC report noted that climate change policies inadequately address structural inequalities around gender, yet also identified several key measures that help address inequities and secure rights (Prakash et al., 2022). These include increased access to health services that contribute to resilience through improved health and well-being of women and their children, in turn increasing access to education and livelihoods. Investment in water, sanitation and hygiene (WASH) infrastructure helps support maternal and child nutrition and may help alleviate increased psychosocial stress and gender-based violence resulting from water scarcity and lack of health services. Increased access to social protection, including food and cash transfers, have been found to relieve immediate pressures on survival. Engagement with women’s collectives and deliberative policy-making spaces represent entry points for strengthening collective resilience and renegotiating and transforming gendered and other forms of inequitable relations. On this basis, climate justice and gender transformative adaptation are argued to provide multiple benefits that align with the SDG goals.

As an example, Garcia et al. (2021) identify entry points for contesting and deliberating power relations within participatory arenas, such as co-learning workshops on gender and

climate change adaptation in Ghana. In an area exposed to increased frequency and intensity of drought and flooding events, workshops were held using storytelling and visual arts in order to deliberate vulnerability and equity. This approach was designed to address the predominant focus in government adaptation plans on agricultural assets, education and new technologies, which overlook the role of power relations and gender inequities that undermine farmers' abilities to secure livelihoods. The workshops consisted of a storytelling session followed by adaptation planning, and were designed and led by researchers, and attended by farmers, local politicians and government officials. The arts-based approach, with storytelling about climate change and agriculture by both researchers and participants, allowed for informal deliberative spaces enabling diverse voices and a lively discussion, inevitable power dynamics notwithstanding. Discussion of everyday experiences prompted contestations and disagreement, for example over normative values related to gender relations. These discussions and contestations influenced the subsequent adaptation planning activities that produced charts showing adaptation actions chosen by men and women. This adaptation planning process was actively used by participants to challenge socio-political norms and inequities. Garcia et al. (2021) conclude that such justice-driven approaches demand new ways of interacting across disciplines and cultures that may have to overcome institutionalised power imbalances. In particular, methodologies to open up spaces for transforming inequitable relations need to be co-produced by academics experienced in studying power relations and practitioners with a contextual understanding of socio-political dynamics.

Similar to gender-based approaches, ensuring indigenous rights and involving indigenous knowledge systems in decision-making processes represent important entry points to climate justice based adaptation. Indigenous peoples are often affected by socio-economic, political and health inequities as well as loss of resource rights, driving vulnerability. At the same time, indigenous knowledge systems and rights represent skills, ethics, wisdom, philosophies and ways of interacting with the natural surroundings crucial to enabling climate resilient development (ecosystem stewardship outlined as one of four key enablers of CRD in Figure 1). A cross-chapter box from the IPCC on The Role of Indigenous Knowledge and Local Knowledge in Understanding and Adapting to Climate Change (Mustonen et al., 2022) exemplifies several ways that interventions can strengthen indigenous rights and knowledge: self-determination and leadership in climate change assessment and adaptation, recognition of oral histories as living ways of knowing, and a number of agricultural practices as well as cultural values have led to successful adaptation to climate change. Importantly, knowledge and decision-making processes must integrate indigenous knowledge systems in ways that help frame problem understandings, values and solutions rather than subsume them or make them subject to

validation by scientific knowledge, an aspect that we address explicitly in element 3 below.

The rights of indigenous peoples illustrate the importance and nature of rights in addressing vulnerability. Johnson et al. (2021) point to how Indigenous people’s climate vulnerability is rooted in colonial and neo-colonial injustices. Vulnerability can be understood as an intersection of socio-political relations, including those based on ethnic, gender, livelihoods, (dis)ability, religion markers that also leads to differential rights to land and other natural resources, freedom of expression, visibility in public arenas and participation in decision-making. Such an understanding highlights that everyone within a community is in unique but interconnected vulnerability situations and that projects that engage an explicit understanding of intersectionalities and target rights (or violation of rights) predominant in marginalised groups’ lived experience of vulnerability may help enhance social justice in climate change adaptation.

Encourage	Avoid
Does the project explicitly focus on how rights and entitlements are secured (or violated) in everyday lived realities, based on experiential knowledge?	Projects that focus predominantly on preparing for catastrophic events at the expense of the slow catastrophes of insecure rights and lived entitlements.
Does the project focus on the resilience of rights, such as how the investments in the project can help support right claims and secure access to resources and social and physical infrastructure in the face of climate events and climate change?	Approaches that uncritically focus on the physical resilience infrastructure or economic losses as a main goal of interventions
Does the project explicitly examine losses and risks for whom and to which rights, and which outcomes for vulnerable groups we seek to avoid?	Approaches that extend ‘techno-centric resilience planning and interventions’ that privilege the high-value physical assets of the richer rather than smaller or intangible losses of the poorer groups
Does the project explicitly prioritise the interests of the worst off over the better off, making rights claims the primary goal in order to address the underlying reasons for lived entitlements falling short of achieving formal rights?	Approaches that do not recognise social, cultural or political differences nor historical and current injustices



Encourage	Avoid
Does the project recognise and study vulnerability issues and taboos that are often silenced in public discourse forming part of discrimination, such as disability, mental illness, LGBTQ+ rights, illicit practices and domestic violence?	Approaches that inadvertently focus on majority and elite/expert groups or fail to recognise the unique and interconnected vulnerability situations of different people within a community.
Does the project take the often invisible issues and groups (like disabled people etc mentioned above) as an explicit entry point to shift decision-making processes, for example assigning active roles in leading dialogues? Does the project consider the locally embedded sources of resilience and adaptation knowledges of these groups?	Approaches that situate groups as vulnerable and incapable recipients of adaptation performed by external experts, imposing externally defined problem understandings and solutions.
Does the project convene a diverse set of stakeholders and interest groups to revision governance?	Approaches that push responsibility for risk management to vulnerable individuals and groups
Does the project strengthen procedural justice in adaptation (i.e. process and people), including in reallocating capital towards poverty-alleviating public goods?	Approaches steered by external capital interests that lock the target community into risky, poverty-enhancing, ecologically degrading / socially exploitative forms of development

**2) Acknowledge power relations**

The emphasis on inclusion and social equity that is now increasingly present in adaptation literature is well taken, yet it can only become a substantive goal when combined with an analysis of the historical and current power relations that create and sustain inequalities and injustice. This is a difficult aspect of moving towards transformative adaptation because development and adaptation planning and projects have typically been deeply unwilling to discuss questions of power or to reflexively address their own role in fostering power differentials. Moving towards a reflexive discussion of power within development/adaptation programming is essential because the exercise of power shapes who has influence to set agendas, who can marshal and distribute resources, and who has legitimacy to speak on behalf of others. Yet while power suffuses adaptation practice, it is rarely addressed explicitly within the mechanisms of adaptation programming

(Nightingale, 2017). There tends to be a tacit silence even though it is clear that project institutions have significant power resources including financial leverage, authoritative legitimacy, and close liaisons with governments meaning that target populations see adaptation as part of a wider exercise of governmental power (Archer and Dodman, 2015; Funder et al., 2018). This can happen at all scales, from international to sub-national (for an example of how international governance excludes participation, see Box 2).

The exercise of power is not necessarily negative: power can be productive and exercised to drive forward societal change that may be transformative. Yet, as Eriksen et al. highlight, power as exercised within adaptation programming can often serve to entrench or deepen hierarchies and inequities, thereby becoming complicit in the creation of maladaptive outcomes (Eriksen et al., 2015; 2021a). Three areas of power within adaptation are particularly important:

- At the governance stage, power shapes who is deemed eligible to receive support, potentially excluding many non-state actors including indigenous people, the stateless, and de facto states that are not universally recognised.
- At the design stage, power shapes how adaptation projects are framed, the values they aspire to, the knowledge that is judged relevant, and the goals that are established.
- At the implementation stage, power differentials shape how and to whom adaptation resources are distributed and utilised on the ground, therein creating divergences between who benefits and who suffers from unintended impacts.
- At the evaluation stage, power differentials shape which criteria are judged as indicators of success and which are ignored or marginalised.

Despite the centrality of power relations in shaping project design and implementation, most adaptation interventions remain conspicuously silent on this point, preferring to represent themselves as external agencies involved in technical changes that are value neutral (Mitchell, 2002). Even in research contexts authors are more likely to work with issues of power to, power over and empowerment rather than resistance or disempowerment (Woroniecki et al., 2019). As a result, power relations are typically left implicit in the design and implementation processes, even when implementation authorities on the ground are very much aware of their presence and often use them to try to speed up project implementation and generate a clear path towards externally designated targets (Nagoda and Nightingale 2017). Elite capture is commonly observed in adaptation projects (Arnall et al., 2013; Mosberg et al., 2017). For example, research upon a climate-resilient village project in southern India by Taylor and Bhasme highlighted how project implementers relied heavily upon collaboration with village elites with whom they had pre-existing relationships and shared similar epistemic approaches to

agricultural modernisation. For project managers, such elite farmers were easier to work with and could use their own power within the village to jump-start projects, ensure local participation, and therein help demonstrate rapid success on the schedule required according to outside criteria. The unreported outcome, however, was that these farmers positioned themselves at the forefront of the most lucrative elements of the resilience building project, therein exacerbating extant inequalities. Notably, significant subsidies to promote agroforestry were captured primarily by this restricted tier of farmers who had more extensive landholdings, direct ties to extension officers, and the financial security to manage the transition from annual crop production to the longer-term income cycles of agroforestry. Such outcomes, however, were simply not reported in project evaluations that only counted the overall acres of agroforestry operations in the village, not their ownership (Taylor and Bhasme, 2021).

The risks of creating maladaptive outcomes by tacitly ignoring power relations that shape project design, implementation and evaluation are therefore extremely high (Ziervogel, 2017; Perez, 2021). In their survey of 13 projects surrounding overlapping development, conservation and adaptation processes in dryland areas, de Vente et al. (2016) found unequivocally that unmediated power imbalances among participants within participatory processes significantly reduce the likelihood of mutual gains. Conversely, participatory processes that were initiated with the goal of empowering stakeholders were more likely to achieve their stated goals, such as increasing trust among participants. Notably, participatory processes led by government actors did not have strong process outcomes such as building trust, information sharing, and knowledge generation through inclusive participation. Instead, projects that included government representatives were more successful at overcoming hierarchies while raising the chances of strong implementation. For Vente et al. the lessons are clear. Addressing power relations needs to be reflexively incorporated into the practice of adaptation planning so that more powerful individuals do not have the potential to limit the engagement of others and bias the outcomes. Measures to be taken include the legitimate representation of a diversity of stakeholders; proactive facilitation of discussion including structured methods for aggregating information and balancing power dynamics among participants; and provision of information and decision-making power to all participants (de Vente et al., 2016).

This lesson has also surfaced from close self-studies of local adaptation in practice. One example is the learning process that occurred within the Africa Climate Change Resilience Alliance (ACCRA) local adaptation programme operational between 2009 and 2013. This project was implemented through a multistakeholder consortium of four large international non-governmental organisations (NGOs) and a research organisation in an attempt to build local adaptive capacity across eight field sites in three countries (Ethiopia, Uganda and Mozambique). In an evaluative review of the conceptual framework and

principles that guided the project, practitioners highlighted that an enduring drawback was the lack of consideration of power within project design and operations (Jones et al., 2019). While the implementation programme team had sought to embed gender equity and broad social justice themes into the project, their subsequent review of operations indicated that power was addressed only superficially as a cross-cutting theme which was not always made explicit in each of the five action areas. A more explicit consideration for power and gender justice within all five elements of the project, the review argued, would have facilitated stronger direct engagement with policy-makers on pivotal issues - such as gender equity - that could have guarded against maladaptive outcomes. On this basis, the team recommends that future projects would be better served by explicitly interrogating questions of power and agency within each sub-elements of project design. This conclusion was echoed by McNamara et al. in a study of 20 community-based adaptation projects in Pacific islands. With the majority of these projects overlooking how differences in power, access and control of resources within communities can exclude the most vulnerable, entrench hierarchical social structures therein perpetuating inequitable outcomes (McNamara et al., 2020).

These kinds of examples highlight the need for adaptation planning and implementation to embrace dialogue-based, multi-stakeholder learning processes (Chambers et al., 2021). The case highlighted by Reid et al. (2016) is instructive. Operating across 4 pastoral ecosystems in East Africa, a team of researcher practitioners sought to develop a 'continual engagement' model that could explicitly build – over time – trust and empowered participation with communities to facilitate them as co-actors in both research practice and policy development around conservation projects and pastoral livelihoods. As noted in their project review, a central lesson of the process was that asymmetries of power and access to information must both be *recognized* and then explicitly *addressed* within the operations of the programme itself. Initially, scientists and facilitators operating within the studied projects were broadly unaware of their own power and influence. Only by correcting for such biases and addressing power imbalances explicitly within their practices were they better able – over time – to discuss and then work jointly with community-led teams to co-develop research questions, collect data, and analyse and interpret information. In short, by explicitly recognising the sources of their power and proactively addressing them through deliberate information sharing, project agencies began to move towards a collaborative learning culture that was better positioned to address extent power differentials and improve outcomes.

To be clear, to acknowledge power within adaptation processes is not to make it disappear: it is impossible for implementing agencies to simply step outside the remit of their own authority and resources, or to adequately redress the inequalities in voice and resources among target populations and communities. Yet the starting point of adaptation

must be greater reflexivity about how power shapes the goals and processes of adaptation and the potentially uneven distribution of gains and costs. For instance, in the above example by Reid et al (2016), alongside acknowledging their own power, the researcher-practitioners noted that – left unchecked - the participatory process they had initiated could also empower specific community members who acted as gatekeepers or adaptation brokers. As a result, they sought to proactively share information as widely as possible throughout the community, with the intent that greater transparency could avoid the monopolisation and manipulation of information around the project by such community brokers.

Asserting the need for high levels of transparency provides one aspect of addressing power inequities. An example of how this can be done in donor-funded adaptation projects is provided by the Promoting Sustainable Partnerships for Empowered Resilience ([PROSPER](#)) project in Malawi. As part of its design, this project undertook a sophisticated targeting process that sought to explicitly ensure participation from different categories of households and avoid elite capture. It first undertook community wealth ranking exercises that categorised households as “hanging in”, “stepping up” or “stepping out” (wealth categories defined in Malawi’s National Resilience Strategy). It then created long-lists for participation in interventions tailored to each respective starting point. The project’s process evaluation found that, although resource intensive and time-consuming, the transparency of this process promoted better inclusion and avoided elite capture of benefits. One participant reflected: “They called us to a community meeting, all the villages from Kalino GVH. Names were written in groups in a transparent manner. When they were writing the names, they were doing it in front of people not in private where the chiefs get to list down the names at his house, they were writing the names in front of people. That is how the selection was done”. (Leavy et al., 2021). Beyond transparency of operations, moreover, the promotion of participatory processes in which the empowerment of marginal actors is deliberately fostered as a way to build their transformative capacities (Ziervogel, 2017).

It is in response to these kinds of experiences, and recognising the transformative shifts that are required over incremental ones, some researchers and practitioners have emphasised the need to move away from building adaptive capacities to fostering transformative capacities. Adaptive capacities are framed out of the deterministic, linear worldview, which is increasingly being challenged by non-linear and non-equilibrium dynamic systems thinking that recognises complex inter-relationships. Ziervogel et al. (2016) describe transformative capacities as having three foundational aspects: reconnection to (natural-environmental) life-support systems, agency and social cohesion. Together these can contribute not just to sustainability and resilience (framed as goals of adaptive capacity), but also “thrivability”, “anti-fragility” and regenerative

design. As we develop below, the process of enabling agency and social cohesion requires recognition and embracing of knowledge and worldview pluralism, and participatory and co-production processes to bring them together.

### **Box 2 . Global climate governance as an obstacle to adaptation**

While adaptation can reinforce power relations, power-imbued but power-blind systems intended to address climate change can also inhibit adaptation. This is particularly likely where such systems align with other power relations that act as structural drivers of vulnerability. For example, the protracted conflict in Western Sahara between Morocco and the Frente Polisario independence movement has resulted in the displacement of over 173,000 indigenous Sahrawis to refugee camps in neighbouring Algeria, and a smaller number to the resource-poor eastern areas of Western Sahara controlled by the Polisario (SADR, 2021). These areas and the camps are more exposed to increasingly severe heat extremes than the cooler, more resource-rich coastal areas occupied by Morocco. The population of the camps is exposed to worsening heat extremes, increasing water insecurity exacerbated by higher temperatures, and periodic devastating flooding that is likely to be exacerbated by increasing rainfall intensity. All these hazards contribute to food insecurity and adverse health and educational outcomes. Traditional Sahrawi pastoralism has all but disappeared as a result of displacement and enforced sedentarisation, eroding the adaptive capacity inherent in pastoralist systems (Krätli et al., 2013, Volpato and Puri, 2014, Brooks et al., 2020). Those Sahrawis that do practice pastoralism in the Polisario-controlled areas have their mobility restricted by the Moroccan wall that divides the territory, land mines and other munitions, and, since November 2020, the resumption of physical hostilities (SADR, 2021).

Faced with extreme vulnerability exacerbated by the conflict, the Sahrawi Arab Democratic Republic (SADR) of Western Sahara, a founding member of the African Union enjoying diplomatic recognition by dozens of countries, has developed its own NDC and national adaptation plan (SADR, 2021). However, because of the conflict and the failure of the UN-mandated self-determination process in Western Sahara, the SADR is not a UN member state. Consequently, the SADR is excluded from UN-dominated global climate governance and finance mechanisms, which means it cannot access the financial and technical support for adaptation afforded to other vulnerable nations. In contrast, Morocco enjoys good access to climate finance and governance mechanisms, using these mechanisms to bolster its position through climate diplomacy, and presenting NDCs whose targets and actions are dependent on the development of renewable energy in occupied Western Sahara (WSRW, 2021). Despite the parity of the Polisario and Morocco as equal parties to the conflict under the 1991 ceasefire agreement and multiple UN resolutions (SADR, 2021), global climate governance supports and privileges Morocco's climate actions while excluding the SADR, exacerbating the vulnerability of the latter and creating obstacles to its adaptation actions. These climate governance and finance mechanisms serve to legitimise and strengthen a military occupation while excluding those displaced by the occupation and constraining their adaptation.

Encourage	Avoid
Does the project implementation agency acknowledge and reflect on its own power, including the ways it asserts authority and legitimacy in determining adaptation strategies?	Projects where the implementation agency is 'power-blind', refusing to acknowledge how its own capacities and resources shape project design, implementation and outcomes.
Does the project recognise power relationships, inequalities and socio-political relations within and across the populations / communities that it seeks to engage including hidden sources of power?	Projects that represent communities as singular units rather than complex social entities
Does the project analyse its projected interventions within the broader socio-economic dynamics and political contexts that structure livelihoods, opportunities and exclusions?	Projects that do not reflexively consider how adaptation actions may create new hierarchies within and across target populations
Is the project reflexive about its use of brokers and other agents to mediate relationships with local communities and/or populations?	Projects that do not explicitly consider how adaptation interventions may shift costs and benefits between local groups, creating opportunities for some at the potential expense of others
Does the project consider unequal control over and access to land, water, credit and other resources, and how an intervention affects labour relations, including gendered roles and responsibilities?	Approaches that ignore multiple roles and labour responsibilities, appropriating labour in climate projects, ignoring the potential for bringing additional burdens of unpaid care and domestic work loads
Does the project consider how climate change may add domestic responsibilities, such as reduced water availability is increasing domestic water management responsibilities for women or youth and effect on education and health?	Approaches that inadequately address structural inequalities and inequitable relations and how these are affected by climate change and climate interventions.

### 3) Embrace knowledge pluralism

The limitations of being confined to the hegemony of western scientific knowledge are now well recognised. Instead there is growing recognition that there are multiple sources of knowledge, and that bodies of knowledge other than western scientific, for example produced by local communities, can provide dynamic and sophisticated accounts of changing social and natural processes (Chakraborty et al., 2021). On this basis, there has been a steady and growing emphasis on the incorporation of local and/or indigenous knowledge into the design of climate change adaptation strategies. However, implementation of this broader goal remains patchy and hesitant. A study by Zvobgo et al., for instance, indicates that only ten percent of the African governments included indigenous and/or local knowledge about water resources in adaptation planning as part of the NDC process (Zvobgo et al., 2022). At the same time, other studies suggest that even when incorporated, local and/or indigenous knowledge tends to remain subordinated to outside knowledge, therein reinforcing power hierarchies that minimise the role such knowledge can play in guiding practice (Goldman et al., 2018).

Ongoing subordination of certain knowledge systems points to some of the key challenges within the goal of elevating local knowledge. First, local knowledge is often incorporated into projects after the primary goals and means of intervention have been set, meaning that consultation tends to seek community validation and fine-tuning of predetermined analytical designs and project objectives (Ojha et al., 2016). These projects – even when purportedly community driven – typically involve resourcing communities to use local knowledge simply to help implement projects designed from the outside (Westoby et al., 2021). In these cases, local knowledge is seen as a supplement to outside expertise: a resource that can be drawn upon to improve operational efficiency by helping adjust outside plans or translate expert knowledge into local contexts. That is clearly very different to valuing it in its own right and using it to inform problem definition and solutions.

Second, when goals and process are set from the outside, the framing of adaptation in turn restricts what counts as legitimate knowledge and often rationalises the generation of further knowledge that fits the epistemic frame of those goals. This in turn privileges the advice of educated outside professionals (Falzon, 2021). As Klepp and Fümfgeld note in the case of adaptation in Kiribati, the predetermined emphasis on engineering solutions to coastal flooding set by the World Bank directed projects towards hiring outside consultants to generate the knowledge on building sea walls that was deemed important by the project. Requiring a strongly technical form of knowledge as the basis of entry into planning, local knowledge and actors were largely excluded. Without engaging local



priorities and knowledge, however, the sea walls largely proved to be expensive failures (Klepp and Fünfgeld, 2021).

To attempt to counter the subordination of local knowledge within adaptation, great emphasis has recently been placed on the co-production of knowledge wherein adaptation research and practice seeks to create methods of continual engagement through which a diversity of actors representing different forms of knowledge can work iteratively toward common vision and action (Nel et al., 2016). Co-production embraces many different types of knowledge, for example experiential as well as scientific (Klenk and Meehan, 2015). Ideally, co-production occurs with an ethic of mutual reciprocity and procedural equality between scientific and other experts including as citizens and civil society groups (Turnhout et al., 2020). When fully inclusive of different voices and knowledge systems, co-production approaches can create transformative spaces. For example in Malawi, Botswana and Namibia the use of Oxfam's Vulnerability and Risk Assessment methodology contributed to enabling transformation at both personal and institutional levels by allowing marginal voices to be heard and building cross-scalar relationships and enabling the co-creation of solutions (Morchain et al., 2019).

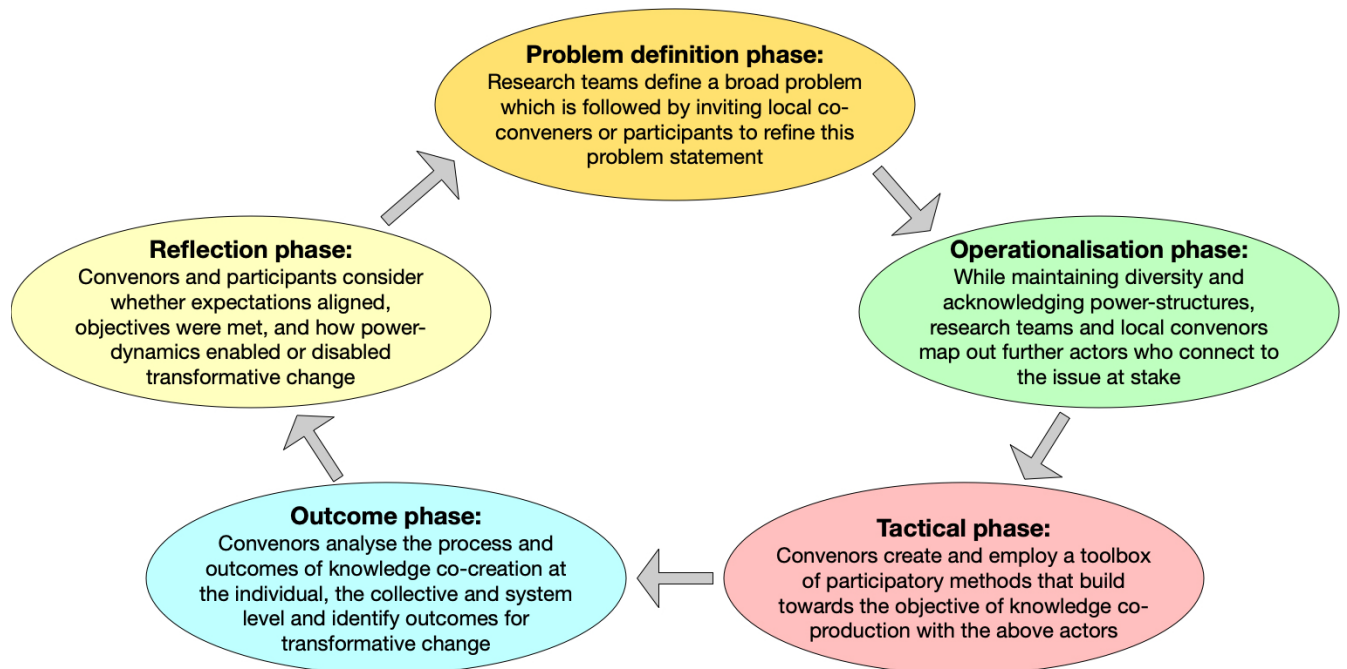
Among the growth in the concept there have been a multitude of definitions, and several publications that attempt to distil key principles of the approach in various fields (e.g. Vincent et al., 2018, Carter et al., 2020 and Norström et al., 2020). As can be seen in Box 3, there is significant complementarity in these principles (with commonality reflected in the colour coding). Common principles include focus on a decision context/goal; recognising the plurality of knowledge types and ensuring inclusion of these; and recognising the importance of a process that builds trust, is collaborative and interactive.

**Box 3: Principles for co-production of knowledge distilled from three sources**

Vincent et al, 2018	Carter et al, 2020	Norström et al, 2020
Inclusive	Tailor to context and decision	Context-based
Collaborative	Deliver timely and sustainable service	Pluralistic
Flexible	Build trust	Goal-oriented
Decision-driven	Embrace diversity and respect differences	Interactive
Process-based	Enhance inclusivity	
Time-managed	Keep flexible	
	Support conscious facilitation	
	Communicate in accessible ways	
	Ensure value added for all participants	
	Improve transparency of forecast accuracy and certainty	

Although there are different methods of enacting co-production in practice, commonly they seek to engage a series of closely coordinated stages that collectively and reflexively build the institutional phases for reframing a problem, illustrating different bodies of knowledge that are relevant, and excavating the wider social and political constraints to engaging it. For example, Pereira et al. (2020) draw upon nine studies of projects to build transformative spaces based on knowledge co-creation to highlight the following five stages (Figure 3).

**Figure 3: Five stages of co-creation of transformative spaces (Source: Pereira et al. 2020)**



While embracing co-production as a guiding principle for knowledge production within adaptation research and planning is a positive development, several cautions stand out. First, an emphasis on co-production does not in and of itself make questions of power and knowledge hierarchies disappear. Rather, it raises a new set of procedural questions concerning how hierarchies can be proactively addressed within the co-production process. Stirling et al. provide clarity on this point by emphasising that co-production is not simply a question of including people into conversations who wouldn't normally be invited. Rather, it entails taking proactive and transparent steps towards making the relationships of knowledge production equal. In short, those most impacted by the potential outcomes of adaptation research and programming must be afforded respect and agency in the knowledge production process underpinning such interventions (Pathways Network, 2022). On this basis, it is essential that the discussion of power relationships is drawn into reflections on knowledge production and addressed explicitly and reflexively (Vincent, 2022).

Awareness of power relationships in knowledge production does not, in its own right, ensure that they will be transcended. Using the example of participatory scenario building and flexible flood management and planning in the Eastern Brahmaputra Basin of Assam, India, Tschakert et al. highlight how participation in such spaces reflects existing intergroup and intragroup dynamics. As such, these are “micropolitical spaces” and so, whilst there may be some spaces for transformation, this is reliant on the existence of

power and contestation (Tschakert et al., 2016). Gender roles, relations and dynamics are another cleavage of existing power imbalances that, if not adequately considered and (re)negotiated, can limit the potential of participatory fora for transformation (Garcia et al., 2021). However, when effectively facilitated, the participatory process of knowledge co-creation can be a precursor for the capacity building that can, in turn, support communities to feel sufficient confidence to integrate their own perspectives into higher-level adaptation measures - thereby challenging the existing power dynamics (Ziervogel et al., 2021).

Second, the goal of co-production does not mean that various forms of knowledge can be synthesised into a singular perspective. Rather, co-production must recognise and validate knowledge produced from different epistemological bases even as it refuses to align neatly with Western/scientific approaches. Indeed, part of the emphasis of co-production must be to open space for climatic knowledge that is derived from a range of knowledge forms: including oral histories, religious and spiritual practices, and traditional livelihood strategies (Chakraborty et al., 2021). In their study conducted with pastoralists on the Himalayan plateau, for example, Klein et al. noted how local herders did not accept Western-scientific measures of temperature change as a defining indicator of climate change (Klein et al., 2014). Rather, they placed far more influence on how environmental change was manifested in the phenology and timing of livestock milking, shifts in vegetation, and other experiential factors of direct importance to livelihoods. Researchers noted how this local knowledge provided a counterpart to scientific observations based primarily on meteorological stations situated in valley floors. While the latter provided general understandings of regional temperature and precipitation changes, it could not pick up on important seasonal and micro-geographical variations that were important determinants of local lived experience. Specifically, local situated knowledge was able to confirm a counterintuitive feature that the scientific approach was unable to discern: despite the gradual temperature rises captured in meteorological measurements, climatic change was contributing to a delayed onset of summer at high-altitude with important implications for pastoral transhumance strategy (Hopping et al., 2016). As well as different knowledge systems, different worldviews and perspectives are also important, including giving a voice to under-represented voices in society, for example women, the elderly, children and those with disabilities.

In a separate paper, the same authors note how any substantive adaptation measures require outside administrators to be fundamentally receptive to local ecological knowledge, typically transmitted by networks of village leaders and other local-level stakeholders, and often portrayed in forms that evoked spiritual concepts of reciprocity between human and non-human nature that sat awkwardly alongside the rationalist assumptions of Western science (Poudel, 2018). This raises the importance of knowledge

co-production processes that can create space for such exchanges in which dominant framings can be challenged. As Temper and Del Bene note, discussions of change can raise epistemic questions in which different ways of 'knowing nature' and 'knowing society' can collide (Temper and Del Bene, 2016). Protagonists of knowledge co-production must be cognisant of such challenges and proactively create the space in which different forms of knowledge can co-exist rather than subsuming them into a singular framework.

This is a particularly important consideration where adaptation projects are concerned. Diversity of approaches, or lenses, of co-production have been recognised, with a distinction between those that focus on producing knowledge for outcomes, and those that prioritise the inclusion in process (e.g. Miller and Wyborn, 2020; Bremer and Meisch, 2017; Chambers et al., 2021). Whilst co-production has been heralded as an opportunity to create "actionable knowledge" for adaptation and broader sustainability outcomes, there is an inherent risk that the co-production process may become co-opted to legitimise externally-driven ideas in a manner that is not in-keeping with the spirit of embracing multiple knowledges and creating new modes of knowledge production.

For example, in their review of cases from Vanuatu and Samoa, Nalau et al. (2018) observe that the integration of indigenous and local knowledge needs to occur not as a collection of environmental information but as knowledge systems that include "local natural resource management, sociocultural governance structures, social norms, spiritual beliefs, and historical and contemporary experiences of colonial dispossession and marginalization". Successful evidence of the integration of different knowledge types through deliberative processes comes from the fields of early warning and disaster risk reduction, where indigenous and scientific knowledge have been brought together in the Philippines and Timor-Leste (Hiwasaki et al., 2014); and also in water management where vernacular and scientific knowledge have been brought together in Ontario, Canada (Simpson et al., 2015). Rather than being excluded from adaptation planning, these aspects must be used to co-design projects in order to avoid extending top down external expert-local populations knowledge relations as well as local social inequities. To enable this, projects must strive to include entire communities rather than individuals. While co-production of knowledge for adaptation by researchers and indigenous people is an important way of supporting adaptation, this demands building of relations and carefully considering local power relations and who 'owns' which knowledge as well as how such knowledge changes within a changing climate.

Third, drawing on the above, co-production of knowledge is in itself a political act. Indeed, part of the importance of local knowledge produced by vulnerable groups is that it speaks to the situated experience of power. Hence co-producing knowledge requires

consideration of who participates in the process, as well as providing a conducive environment for active and inclusive engagement of and consideration of the voices, perspectives and worldviews of the participants (Daly and Dilling, 2019). For this reason, it has been suggested that the process of co-production is often as important as the output (Vincent et al., 2018, Chambers et al., 2021). It also requires openness to act upon the knowledge that is co-produced, even if it challenges hegemonic norms. From this transformative perspective, agencies must consider how practices of co-producing knowledge can enhance the agency of people living in project areas to self-transform existing structures of power in ways that counter entrenched injustices and exclusion within knowledge-making, governance and valuation (Mehta et al., 2021).

To this end, Ziervogel et al. (2021), reporting on a case of community-level capacity building and knowledge co-creation in South Africa, illustrate how individual and collective learning can contribute to empowerment through enhancing personal agency, collective legitimacy and relational capacity (between activists, community members, academics and city officials). They conclude that in order for implementation of adaptation policies to be successful, capacity building is particularly important in the knowledge creation phase, arguing that “building a shared understanding of climate risk and social inequity between officials, practitioners, academics and the vulnerable themselves can help to capture an understanding of vulnerability that can then be easily integrated into adaptation action plans” (Ziervogel et al., 2021, p. 10). This speaks to how inclusion and knowledge diversity are key enablers of societal choices towards climate resilient development. It also leads directly to the issue of coalition building, which is our next element for discussion.

Encourage	Avoid
Does the project provide an explicit route towards knowledge co-production with local knowledge holders?	Approaches that seek to catalogue or compendium local knowledge without empowering its holders within project design and implementation.
Does the project emphasise partnership and relationship building, not simply consultation of stakeholders?	Approaches that designate local/indigenous knowledge as ‘supplementary’ information that merely helps refine or legitimise scientific approaches.

Encourage	Avoid
Does the project provide an arena for interrogating and negotiating diverse interests, values and experiences? Does it convene diverse stakeholders on an on-going basis as part of the process, with recognition that the stakeholders never participate on an equal basis (power asymmetries)	Approaches that crowd out everyday innovation and strategies, or consider local adaptation strategies/knowledges as barriers to externally defined resilience building.
Does the project have a clearly articulated process that establishes how inclusivity and legitimacy of knowledge co-production will be achieved?	Approaches that have predefined most activities and outputs.
Does the project acknowledge the plurality of knowledge including the validity of knowledge that exists outside a Western/Scientific lens?	Projects that do not offer a route for engage knowledge outside of scientific or expert knowledge

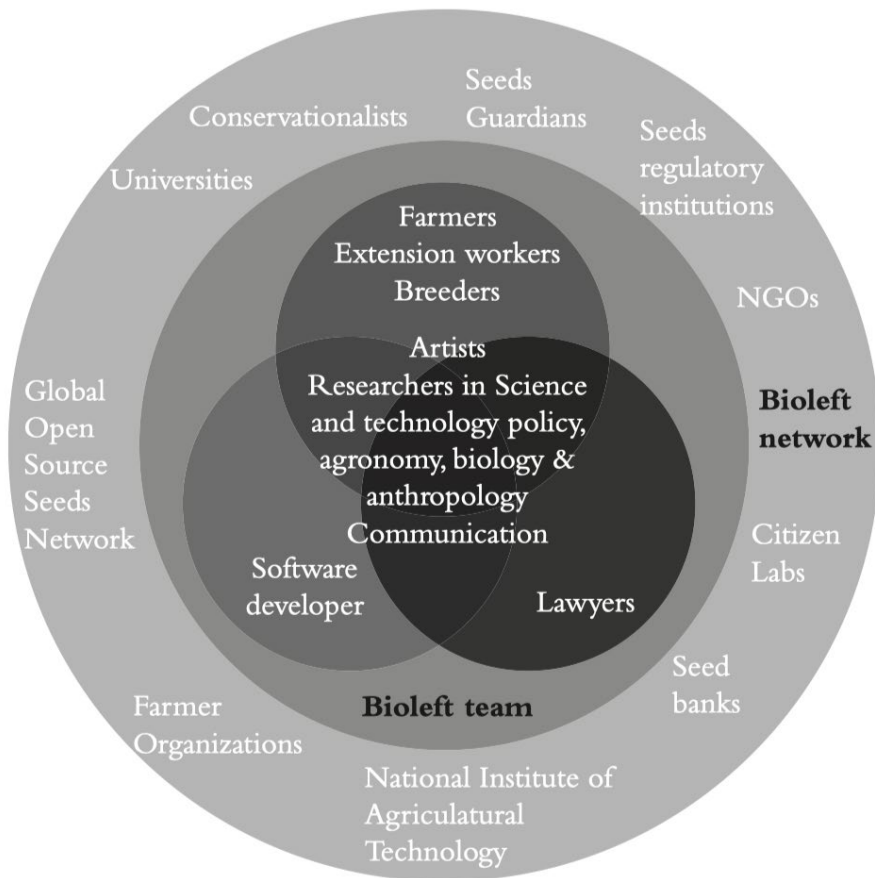
**4) Foster bottom-up coalitions to strengthen local sources of adaptation**

Transformative adaptation seeks to put the vulnerable first by addressing historical and present inequities and power relations that create the underlying conditions of marginality, including centering locally generated knowledge and priorities within adaptation processes. As a result, transformative projects need to help build the social networks that can promote, value and sustain the knowledge and priorities of local peoples. To this end, part of the process of transformative adaptation is to help build combinations and alignments of actors in ways that actively privilege these networks and give them a more robust institutional form. This represents a reversal of much of the ‘outcome’ orientation of adaptation planning that privileges the accomplishment of a set, easily countable series of results. In its place, transformative adaptation puts greater weight on the process. Creating good process through grassroots coalition building, it is argued, can create stronger conditions for long term success by empowering from below and shifting the political terrain that constrains transformative change (Pathways Network, 2022).

For example, Marshall et al. (2018) highlight how – in the context of periurban settings in India – privileging subaltern knowledges the incorporation of pro-poor actors in alliance building. This included building coalitions between researcher, activist, nongovernmental organization (NGO), and community groups with a social justice emphasis who aim to work on behalf of the interests of the poor (Marshall et al., 2018). Two elements were

central to processes of engagement across this project. First, strategies were employed to build the legitimacy of subaltern knowledges across overlapping environmental, health and poverty challenges. Second, the project sought to help build networks and capacity among poor and pro-poor actors to take advantage of opportunities for transforming the ways in which the former knowledge is produced, transferred, and used at multiple scales. For this purpose, successful alliance building across the above groups was paramount because it underpinned the transformative potential of the wider process. To do so involved dialogue and relationship building to build mutual trust and an appreciation of differences and complementarities of diverse approaches and knowledges.

**Figure 4: Mapping the alliance network of diverse partners for sustainable agriculture (Source: van Zwaneberg et al., 2018)**





Similarly, in their study of transformative change towards sustainable agriculture in Argentina, van Zwanenberg et al. (2018) emphasised the importance of coalition building as essential for rebalancing power relations that locked in otherwise unsustainable trajectories. Alliances or coalitions of actors are important, they argue, because the actors and institutions that actively sustain dominant systems command significant resources that translate into oversized access and influence over policy. As a result, if alternative pathways of change are to be politically and practically viable, coalitions of actors and institutions in support of alternatives are essential (van Zwanenberg et al., 2018). In the context of sustainable agriculture, the approach they promoted was to facilitate a series of innovatively designed workshops that sought to encourage participants from distinct social positions and institutional groups to identify core uniting principles and norms (Figure 4).

By involving a wide range of stakeholders and presenting no preordained definition of what 'sustainability' entails, discussions were encouraged to identify core areas of collective concern for agricultural sustainability. Subsequently, diverse participants were then encouraged to explore the kinds of networks and alliances that could cohere around these goals for both the political goal of advancing this agenda and the practical goal of providing resources and markets to agricultural alternatives. The project itself provided financial resources, administrative capacity, facilitation and curation of discussion, but refused to place outside constraints on the nature of the concerns raised or the subsequent directions for collective action. For the facilitators, the new alliances that were created through this process enabled a pooling of different kinds of knowledge, legitimacy and organisational capacity in ways that countered some of the difficulties of building sustainable pathways of change (Pereira et al., 2020, p.12).

As the above indicates, for scholars working on grassroots coalition building, there exists a close complementarity between knowledge pluralism and the creation of fostering networks, coalitions and alliances. Ely and Marin, for example, emphasise how transformative pathways require fostering coalitions and alliances that can provide a more stable foundation for the generation and subsequent mobilisation of knowledge in settings that normally would be closed to such actors (Ely and Marin, 2021). As an example, Lakshmi Charli-Joseph and collaborators created a knowledge alliance building initiative in Xochimilco, Mexico, that sought to conserve wetlands within pressing social (i.e. conditions of expanding urbanisation and in-migration) and environmental (climate change) dynamics. The aim of this project was to create a transformative space that promoted the construction of meaningful social relationships through the emergence of shared values, problem reframing and reflexivity, and discovery of different (new) pathways for change (Charli-Joseph et al., 2018).

By actively bringing different actors and knowledge holders into curated discussion, facilitators aimed for a group of participants that collectively offered:

- Diverse types of knowledge about the area and a sense of attachment to the locality
- Actionable social networks through previous capacity-building projects, collective work, institutional affiliations, etc.
- Capacity and willingness to experiment with different approaches
- Determination to address social + ecological issues by challenging the current constraints to change
- Solidarity and empathy with respect to other group members
- Experience working on problems of community development and grassroots innovation

The overall goal was to create the conditions from which self-driven collective agency can emerge (Charli-Joseph et al., 2018). Importantly, participants were not recruited to work towards a project defined from above. Rather, the primary objective was to make visible to participants the nature of their own individual and collective agency within the dynamics of a social-ecological system and encourage them to consider potential alliances towards shared goals constructed through dialogue. This is an important consideration in the context of community-based adaptation vs locally-led adaptation (Pisor et al., 2022). Westoby et al. (2019) highlight the risk that community-based adaptation can miss the point of local ownership when the community is externally-determined. They instead call for external agencies and local institutions to act as facilitators that guide and support local initiatives with holistically targeted equity framings. This approach would foreground local metrics of “success” and facilitate guided discussion of whose interests are being represented within the project. While such an approach is evidently challenging to execute, the authors provide several successful examples of this locally-led adaptation including the engagement of a wide spectrum of Vanuatu’s population to respond to an outbreak of crown-of-thorns starfish based on clean-up competitions.

Encourage	Avoid
Does the project explicitly build an enabling institutional and political infrastructure for community/grassroots agency?	Interventions that impose externally defined problem/risk understandings and solutions that privilege outside actors and expertise
Does the project commit resources to partnership and relationship building, rather than consultation?	Bureaucratic requirements and donor rules that make self-determination increasingly challenging in adaptation programming
Does the project explicitly address how social inequalities within communities (gender, age, religion, ethnicity, class) shape opportunities and constraints to active and ongoing roles within planning and implementation?	Projects that ignore the presence of inequities within and across target populations and communities
Does the project identify and build capacity within existing community organisations rather than creating parallel, competitive ones?	Interventions that crowd out everyday innovation and local strategies or that see local knowledge and networks as barriers to adaptation

**5) Recognise risks, tradeoffs and unexpected outcomes**

All adaptation actions involve complex tradeoffs between goals and elicit unexpected effects (Daw et al., 2015). However, there is often a tendency within the formal design of adaptation programming to downplay and minimise the potential for tradeoffs and refer instead to win-win outcomes. While these representations of positive-sum successes are politically expedient for the purposes of gaining donor and governmental backing for projects, they often preclude a deeper examination of tradeoffs and interrupt a process of learning from the unintended impacts of projects. This tendency to downplay or ignore tradeoffs in part results from the complexity of adaptation actions that have implications that may be simultaneously social, economic, ecological and cultural and unevenly experienced across different social groups. Tradeoffs and unexpected outcomes can therefore occur across spatial or temporal or social scales, making them hard to envisage at a planning level. As Moser (2012) notes, tradeoffs may be direct and immediate (i.e., locally taken actions have undesirable yet clearly identifiable consequences for others), or indirect and delayed (i.e., actions taken in one location may negatively affect others elsewhere or in the future through obvious or less obvious outcomes). The latter evidently can be hard to discern and plan for yet failure to adequately plan for the unexpected

greatly increases the chances of maladaptation. As van Leeuwen et al. emphasise, a key lesson for understanding the politics of transformation is not to downplay the level of risk involved stemming from unexpected outcomes nor to miss how these tradeoffs and risks fall unevenly across the social terrain. Unpredictability and contradictory effects, they note, have major repercussions for whether and how programmes can contribute to sustainability goals (van Leeuwen, 2021).

For example, agri-food systems are often cited as in need of transformation, but since they cover multiple scales and groups, focusing on any one component at the cost of others may lead to inadvertent tradeoffs. In outlining avenues for future research, and to avoid the inadvertent existence of tradeoffs, Hebinck et al. focus on the importance of the cross-scale dynamics between coupled systems, social justice and inclusion, sustainability transitions in the global South and cross-sectoral governance and integration (Hebinck et al., 2021). Fisher et al. also reiterate the importance of paying attention to the underlying social dimensions when considering sustainability and systems transformation, recognising the key role that it plays in helping to frame and situate societal action and ensure that environmental benefits do not occur at the expense of social justice (Fisher et al., 2022).

In the realm of climate-smart agriculture, for instance, interventions are often promoted as accomplishing 'triple wins' of fostering productivity, adaptation and mitigation (Ellis and Tschakert, 2019). A systematic review of the literature on climate-smart agriculture in sub-Saharan Africa by Akinyi et al., however, emphasised how various practices and technologies involved complicated tradeoffs between competing objectives (Akinyi et al., 2021). This is reinforced by studies of climate-smart agricultural interventions which indicate the complexity of outcomes over time across different social groups (Newell and Taylor, 2017; Karlsson et al., 2018). In particular many agricultural practices such as conservation farming or the system of rice intensification have gendered implications by creating additional need for weeding, which is typically a gendered role assigned to women, thereby increasing their workload in any given context (Halbrendt et al., 2014; Taylor and Bhasme, 2021).

This indicates how, in any given context, the distribution of benefits and potential risks from adaptation projects are likely to be unevenly distributed across social groups and manifest themselves unevenly across time. As noted in Eriksen (2021), top-down generate a greater share of unintended outcomes with maladaptive results in part because marginal groups often do not have the voice to bring potential risks of projects to the planning stage. As a result, planning misses the kinds of risks and outcomes specific to their lived experiences meaning that vulnerable groups tend to bear the costs of unexpected outcomes created by top-down adaptation processes. To help avoid this,

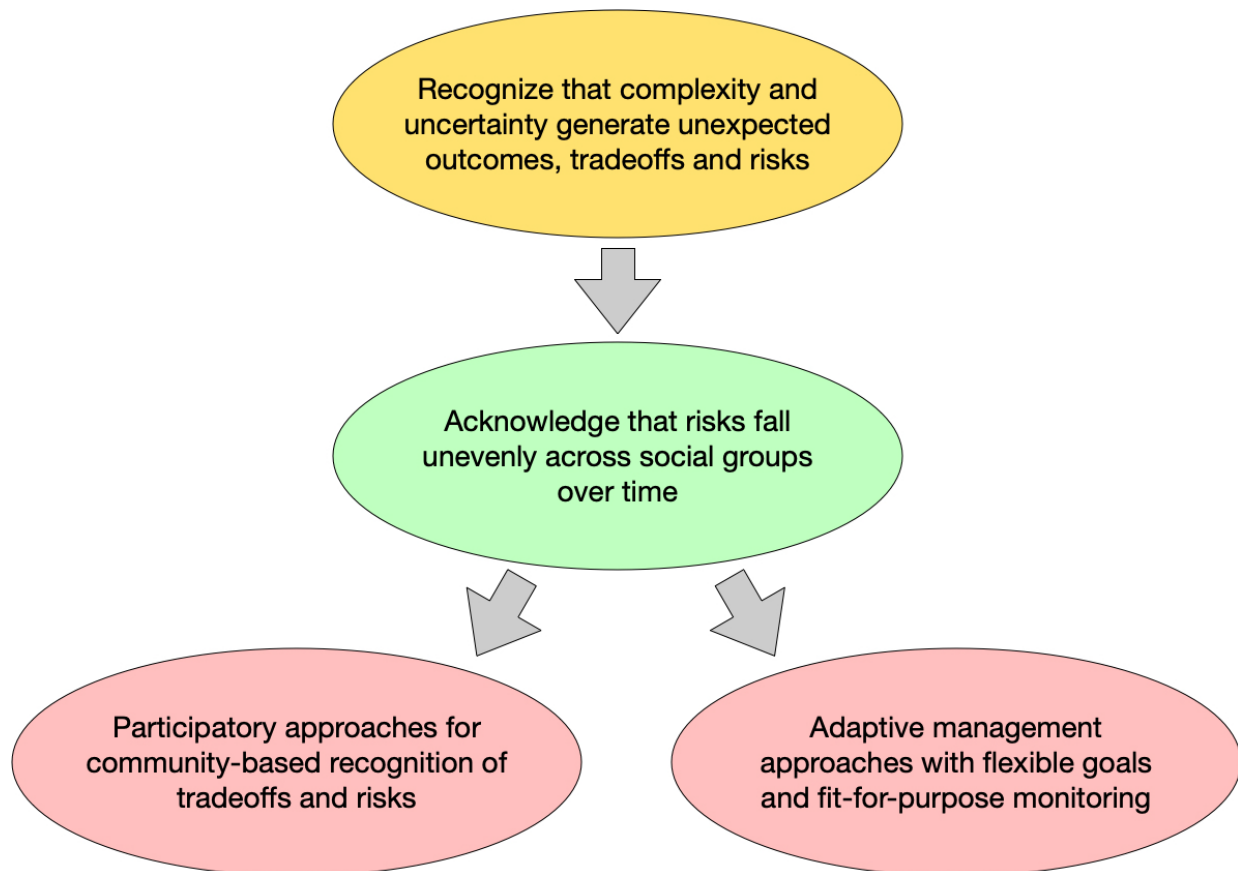
adaptation projects need to embrace a heightened reflexivity towards, first, the potential for unanticipated outcomes and tradeoffs across various stages of implementation; and, second, that unexpected impacts can impact different sections of the target communities differently, in both positive or negative ways. In short, the practice of being adaptive to unexpected consequences indicates that planning needs to be flexible and find ways of constant self-evaluating and learning from vulnerable groups as it moves along.

One of the barriers to working with unexpected change and outcomes, however, is that adaptation project approaches typically ascribe a narrow set of project outcomes over a strictly delineated timeline (Mosse, 2011; Li, 2016). Success is then defined narrowly by the achievement of those objectives within the stipulated timeframe, which often compels project managers to ignore or downplay other outcomes - even when they are positive. As an example, consider the case of hybrid rice promotion in Mandya district discussed by Taylor (2020). Driven by an externally determined priority that small-scale farmers should transition to using hybrid rice varieties as a way to increase yields and improve resilience, this government driven project organised farmer cooperatives to demonstrate a new hybrid produced by the local agricultural university. Farmer cooperatives were tasked with organising the cultivation of the hybrid using free seeds, subsidised inputs and close guidance from extension agents to create a showcase of success for the new variety. Contrary to expectations, however, in some villages the farmer cooperatives rejected the new variety after two years of use. Instead, they collectively switched orientation, pursuing a form of low-input agriculture based on local landrace seeds that, while less productive, required less external inputs at the start of the season, reduced debt levels, and lowered risk in case of failed monsoons. In short, the formal project goal of technology transfer failed. Yet, by promoting farmer cooperatives, the project inadvertently helped build transformative capacity in which farmers engaged in a collective learning process. Regrettably, in a failure to engage a learning process, project managers tended to silence this outcome and - officially at least - stick to emphasising examples from other districts of where the original goal of technology transfer was more successful.

In contrast to the above example, to adequately embed learning processes into project design requires building participatory processes in which communities and vulnerable groups discuss the potential for tradeoffs and unexpected impacts and evaluate where the risks fall. This participatory approach accords to the notion of adaptive governance, in which uncertainties of project impacts are built into the planning model through encouraging processes of continual dialogue and reassessment. Trimble and Plumber, for example, highlight how bringing participatory processes into project monitoring for sustainable fishery management helped improve levels of trust, communication and learning therein improving the ability of all participants to manage outcome complexity

(Trimble and Plumber, 2019). Although requiring a deeper monitoring component and a larger commitment of time and resources, such a goal is important to avoid projects becoming locked-into the pursuit of specific outcomes in ways that blind them to unexpected project impacts.

**Figure 5: Recognizing tradeoffs and risks**



An example of this kind of participatory learning process and how it engages with unexpected outcomes is provided by Bezner-Kerr et al. (2018). In a collaborative action research project in rural Malawi that worked directly and collaboratively with vulnerable farmer groups, the research team used a variety of participatory methods to promote mutual learning around agricultural experimentation and innovation using locally available resources. The primary observed outcomes were broadly successful: increased knowledge sharing within communities that challenged dominant agricultural models that were highly exposed to climatic change impacts. While this process of explicit knowledge co-production spurred beneficial transformations in farming practices, an unexpected outcome emerged from community consultations. In discussing climate change, the

project had inadvertently created a scenario in which smallholder farmers blamed themselves for climate change impacts owing to their use of previous farming techniques. The recognition amongst the research team that local people were now taking responsibility for a globally-produced crisis prompted reflexive efforts to create better ways to share current knowledge on climate change with stronger attention to cultural, gender and social divides that impeded co-production. This resulted in a new co-learning strategy that integrated agroecology, nutrition, social equity and climate change, written in collaboration with smallholder farmers (Bezner-Kerr et al., 2019).

Encourage	Avoid
Projects that show evidence of clear reflection on what the risks are generated and upon whom they fall.	Projects that anticipate only win-win outcomes
Projects that prioritise the empowerment of vulnerable groups to express their understandings of tradeoffs and risks within adaptation.	Projects that do not consider who the risks of unexpected outcomes will fall on.
Projects that put in place a framework for adaptive management to re-evaluate goals and outcomes after changes are brought about	Projects overfocused upon a narrow range of outcomes
Projects that put forward a strategy for identifying and acknowledging unplanned outcomes	Projects that do not recognise the potential for unintended outcomes within their design

## **SECTION 4: Institutional learning and modification to better support transformative adaptation**

The previous section focused on five elements for the design of adaptation interventions. Those five elements above refer primarily to how transformative action and learning can take place in specific adaptation initiatives. To enable this, there needs to be a flipping of often top-down knowledge processes to instead put the objects of the adaptation interventions as the subjects as a means to overcome external definitions and enable locally-led adaptation. Such learning, inverting knowledge relations between the project participants and the implementing organisations, is important to address a tendency that otherwise exists towards relabelling existing activities as adaptation, help democratize knowledge processes and rethink adaptation. Such learning is also important to tackle the uneven power relations that adaptation projects inadvertently perpetuate and which can marginalize precisely those that interventions seek to help.

However, in order to flip knowledge processes in adaptation interventions, funders and implementers also need to consider the ways in which they design such interventions, and how these design processes play a role in implementation. Internal institutional learning is necessary to enable support for interventions that meet the five elements outlined in section three. New approaches to designing, supporting and implementing adaptation programmes are beginning to recognise the importance of commitment to learning not just within individual projects, but also between them, as well as the importance of transdisciplinary partnerships and the role of adaptation action research (Jones et al., 2018). Thus in order to advance adaptation as an empowering learning process that places marginalised groups at the centre, learning and transformation is required not just outwardly - in the projects that are supported - but inwardly by the organisations involved in funding, planning, implementing and studying adaptation.

This section seeks to outline key elements of institutional learning and discuss what funding institutions need to reflect on and change internally in order to effectively enable the five elements of transformative action in projects. Much of this relates to the predominant ways in which adaptation project support is designed, implemented and monitored and evaluated, which needs to be embedded in encouragement of both outward and inward learning.

### ***Reframing current approaches to support institutional learning***

We suggest that a key way to overcome the “us” and “them” that exists between various sets of actors within the adaptation space - whether funders and implementers, implementers and target project participants - and reiterates uneven power relationships, is to question our current framing of vulnerability. Vulnerability is often conceived in ways



that set people apart, with an emphasis on poor people as 'vulnerable', in contrast to the privileged wealthy as relatively invulnerable. This contributes to an implicit positioning of beneficiaries as 'less capable', delegitimising their knowledge and authorising 'experts' to implement adaptation on them (Barnett, 2020; Eriksen, 2022). Mills-Novoa et al. (2020) shows how, for adaptation projects in Ecuador, even participatory practices can be framed by "recognition politics aimed at disciplining participants toward particular identities and ways of thinking and acting" (p.90). Hence, skewed power and knowledge relations are inadvertently enacted in daily adaptation practice.

A perception of 'the vulnerable others' (simultaneously shoring up one's own feeling of relative invulnerability) leads to a differencing and othering undermines efforts to reduce vulnerability. Eriksen (2022) argues that a compassionate vulnerability understanding is required, where vulnerability is seen not merely as the suffering of others but as 'co-suffering' that calls us to action based on the insight that vulnerability is universal to the human condition, connecting us in a shared humanity. An implication is that funders and implementers must engage with one's own vulnerability and hold the discomfort of 'being with' rather than just measuring project participants' vulnerability. Such a compassionate knowing of vulnerability enables moving beyond a material understanding of vulnerability to recognising the personal and intangible aspects of vulnerability and the uniqueness of every person's situation (Tschakert et al., 2019; Eriksen, 2022).

Ajibade and Adams (2019) observe how utilitarian ethics inform discourse and practice, hampering the addressing of justice, equity and sustainability. They argue that there is a need to "go beyond the focus on the scale of change in material outcomes to changes in values and organizing principles that govern society" (p. 850). Institutional learning within organisations engaged in adaptation interventions hence requires critical reflection and learning of the individuals within those institutions, interrogating values assumptions about our own and others' vulnerability, making space to understand how our own vulnerability is not so different and is connected to those we are seeking to help. This is critical to shaping locally grounded action that reduces vulnerability.

The authors recognize that organisations - including funding agencies, implementing agencies, and universities not the least - are embedded within complex systems, relationships, and routines that produce a number of constraints and even perverse incentives that can render changing institutional practices difficult. At the same time, institutional (and individual?) practices left unquestioned themselves contribute to reproducing the status quo. There are nevertheless opportunities for change, and we raise here entry points to transformative change to support empowering learning processes within institutions supporting adaptation in developing countries.

## ***Design that moves beyond standard monitoring and evaluation (M&E) to institutional commitments to learning***

Typically, adaptation interventions are funded through a funding organisation design that focuses on projects - whether funded by donors, government, the private sector, or foundations. The defined spatial extent and limited timeframe of projects, coupled with the multiple challenges of addressing structural factors, often encourage a focus on externally-imposed technocratic adaptation “solutions” that are easy to control but do not address root causes of vulnerability. Projectisation - and focusing M&E on projects individually - can draw false boundaries and encourage invisibility of issues resulting outside of those project boundaries.

Although adaptation projects are generally subject to monitoring and evaluation (M&E), this is typically overly focused on narrow accountability criteria, often prioritising efficiency (value for money in delivery) over effectiveness (the extent to which adaptation is enabled and delivers or contributes to the intended impacts) and equity (the inclusion of different groups in the adaptation benefits and decision-making). In practice this tends to lead to a focus on single loop learning (i.e. whether the plan was implemented well) over double and triple loop learning (reflecting on whether the design was appropriate in the first place). Assessment of adaptation effectiveness is further hampered by a failure to articulate what constitutes ‘successful’ adaptation, and according to whose perspective (Brooks and Fisher, 2014; Eriksen et al., 2021a). In the context of discrete projects, evaluation typically only happens at the end of the project lifespan, which prevents the capturing of any longitudinal impacts.

Standard M&E systems can also de-emphasise consideration of the differences in power between diverse stakeholders and the way in which this already acts to hamper the flow of information and shapes who controls knowledge production and learning (Eyben, 2005). Perspectives, knowledge, and ideas, but also basic information related to adaptation initiatives - for example, regarding what is working and what isn't - confront upstream barriers due to unequal relations of power at every scale from the “bottom” to the “top” of the multi-level adaptation delivery chain (Gonzalez-Iwanciw et al., 2020). For example a field observation raised by a junior staff member may not directly fit within the project M&E framework, and may lead to questions on effectiveness, which the junior’s superiors may wish to hide due to fears that funders may see this as a problem of the organisation not doing their job well - rather than an opportunity to learn and adjust to do better. The consequence is that standard M&E remains focused on implementers showing they did their jobs well within the confines of a project’s boundaries, and that the opportunities for more systematic (double and triple loop) learning about effectiveness and equity are deprioritised.

This is often compounded at the institutional level if there is no mechanism to assess, reflect on and use project learning to inform approaches going forward. Yet, in a very basic sense, without incorporating various forms of feedback, no individual or organisation can learn. All successful organisations do indeed learn; the question is what they learn, based on what information and whose criteria of success. Learning, and what is learnt, is therefore directly related to - and limited or fostered by - which stakeholders' voices can be heard and taken seriously. For example, while accountability towards funding bodies arises naturally due to the nature of incentives in place, accountability towards beneficiaries is far from automatic, but instead must be constructed through specific institutional practices.

### **1) Create reflexive spaces for learning**

While there is scope for learning within M&E, the systems have to be designed to encourage and enable it. In particular there may be a need for dedicated learning spaces that exist within and across the constellation of parties involved in designing, implementing and participating in adaptation interventions. These learning spaces may draw from improved M&E activities, but crucially foster deeper reflection and questioning the assumptions that drive how we design, govern and implement adaptation activities (including how they are then monitored and evaluated, using what metrics, and the basis on which they have been defined). Such learning spaces may look different at different parts in the design and implementing process, but would usefully involve a safe space for staff to interact across scales from the ground to the leadership and across work areas - and regular dedicated (funded) time in which this can happen.

Learning spaces may engage transformative and deliberative meeting practices to focus on what we do not know, what is usually unseen, as well as what processes and practices hold systems in place that hamper effectively addressing vulnerability. Hence, rather than a space for participants to demonstrate their capacity or internally compete for success - how much they know, how well they perform in their jobs - a safe space must be created for mutual inquisitive activities to engage with the limitations to our capacity and performance: what we do not know, what we cannot know or control in our daily activities, what makes us uncomfortable, how we encounter the lived realities of local people and how we experience the inherent uncertainty of climate change and vulnerability complexities in our daily practice (Sharma, 2017; Mehta et al., 2019)

For example, a key related challenge to that of labelling some groups as vulnerable (and, implicitly, oneself as different and invulnerable, somewhat removed from the realities of the vulnerable) is the need to identify the practices, attitudes and problem understandings

through which some people and vulnerability issues are recognised while others go unseen. These are processes of inclusion and exclusion that take place both within funding and implementing organisations and within implementation. Typically, groups that are often marginalised in decision-making processes and the public sphere in general, are also invisible in climate change research, policy, and practice, such as disabled people, LGBTIQ+ groups, persons with mental health problems, homeless, substance abusers. While some groups, such as women and indigenous peoples, are increasingly recognised in climate change discourse, others remain at the margins. It is not surprising that climate change research, policy and practice should at least in part reproduce current marginalisation processes that take place in the rest of society.

The need to embrace a full diversity of people is precisely why learning within organisations is so important and involves identifying who is invisible, and what issues are invisible, in our everyday workings and practice (be it in universities, international funding bodies, organizations involved in planning or implementing adaptation projects). Such learning helps bring understanding and attention to which groups and issues may similarly be invisible in projects and interventions and why this happens. It can help flip knowledge processes to place marginalised groups at the centre of adaptation interventions, and deeply engage with all the elements identified in the section above, from social justice and rights-based approaches, acknowledging power relations and plural knowledges, to fostering bottom-up coalitions and recognising risks to different groups, trade-offs and tensions between different interests, and unexpected outcomes (negative or positive). Recognizing the unique vulnerability of every group and person, while understanding this unique vulnerability as part of an interconnected and shared vulnerability of which we are all part, is important when identifying invisible groups.

Learning processes to identify which groups and issues are invisibilized are also an entry point to engaging critically with how we define 'adaptation success'. It allows interrogation of who gets to define what constitutes success for whom, placing people, their rights and resilience (rather than e.g. physical infrastructure) at the centre. As identified in Eriksen et al. (2021) competition for funding often leads to a need to demonstrate success, encouraging a narrow focus on measuring whether the project was implemented as planned rather than a broader focus on the extent to which a project addressed the vulnerability of marginalised groups, as well as effects of the project on other groups or areas not included in the project, as well as over time. The need for success also encourages working with the gatekeepers, experts and activities with which we are familiar from previous activities, which may extend an invisibilization of the relatively less influential and traditionally marginalised. In addition to reflecting on how we conceive our own vulnerability relative to that of others, consider whose knowledge and what knowledge we privilege, and identifying the groups and processes that often go invisible

in our daily practices, creative reflexive spaces may usefully apply the five elements of transformative adaptation identified in section 3. Such spaces may for example, interrogate how our daily practices reflect (or not) distributive, procedural and recognitional justice.

## **2) Emphasise a portfolio/programmatic approach**

Whilst reflective learning should happen inwardly within institutions as well as outwardly through the adaptation interventions that are supported, a portfolio/programmatic approach can enable spaces that can be capitalised upon to overcome the challenges of learning that exist with a focus on projects. Many funders are turning to portfolio or programme approaches, in which projects are embedded, to optimise effectiveness and encourage learning across organisational boundaries and scales, at the same time encouraging spaces for learning and adaptive management throughout the hierarchies. When guided by a common theory of change, life cycle approaches to design can help to orient the timing and function of support systems and initiatives. In such programmes and portfolios it is possible to set up cross-scale systems to strengthen coordination and incentivise collaboration across the portfolio, to ensure that projects and their implementation teams are able to learn from both process and outcomes. Monitoring and evaluation systems can expand the range of priorities beyond academic outputs, such as reports and papers, to recognise the likes of inclusive processes and support the strengthening of locally-led institutions and systems.

Learning from recent applied adaptation research programmes showcases a wide range of examples of how programme design can shift the balance of priorities onto process and promote collaboration which enhances learning (e.g. Cundill et al., 2019; Cochrane and Cundill, 2018; Cochrane et al., 2017). As projects and initiatives become more complex and involve multiple implementing partners (often driven by the need for efficiencies of delivery), it is increasingly important to learn from the process as well as the outputs. An increasing number of programmes have recognised the importance of such social learning - where changes in understanding among individuals leads to changes in practices in wider systems (Reed et al, 2010; Ensor and Harvey, 2015).

Enabling learning at programme/portfolio level also requires embracing a greater commitment to learning and adaptive management within projects themselves - so that there is scope to tweak design and operations should emerging learning identify a need to do so. Eriksen et al (2015) have suggested that a greater focus on social learning in adaptation is essential to enable transformation. Whilst there are emerging lessons on methods for encouraging and monitoring social learning, funding systems will also need to adapt to internalise these. In the FCDO-funded Building Resilience and Adapting to

Climate Change (BRACC) programme in Malawi, such reflection and learning was encouraged within the M&E system, because of the stated commitment to programme adaptive management - where there was scope to modify operations and activities depending on the outcomes of interim monitoring and learning. However, the evaluation showed that rigid donor reporting requirements, including the need to provide advance financial spending forecasts with penalties for deviating from them, effectively impeded the extent to which implementation and management could adapt based on emerging learning (Leavy et al, 2022). One of us (Brooks) also encountered this problem in an assessment of the FCDO-funded Climate Resilient Infrastructure Development Facility (CRIDF). Ensuring that financial management systems are suitably reflexive to enable acting on adaptive management recommendations is thus essential.

Effectively enabling learning within programmes and portfolios requires particular design configurations. Funders may decide to have a dedicated and/or external unit to manage coordination and M&E between and across projects to form the basis of ongoing adaptive management rather than focus on ex-post evaluation (Ensor and Harvey, 2015). Recent examples of this include the Collaborative Adaptation Research Initiative in Africa and Asia; Future Climate for Africa, Building Resilience and Adaptation to Climate Change and Disasters (Harvey et al., 2019). There is increasing guidance on how to manage collaboration and coordination in such multi-partner projects within programmes and portfolios (e.g. Koelle et al., 2019). However, it is methodologically challenging to monitor and evaluate the social learning itself within complex programmes, such as those promoting adaptation (Buffardi et al., 2019). Harvey and Huang (2021) propose a version of contribution analysis based on the “most significant change”, whereby multi-layered contribution pathways can trace the learning processes that led to the desired change. Narratives reflecting different perspectives on the change are generated based on participation from project participants, including the project team and beneficiaries - which provides an opportunity to emphasise the perspectives of the latter.

Longer term funding commitments also provide greater opportunities for meaningful and sustainable changes to be supported, opportunities for assessing outcomes, as well as building longer-term relationships, rather than just outputs and value for money. The typical length of adaptation projects is not long enough for outcomes and impacts to be fully understood and demonstrated, particularly in the context of evolving climate risks. Straightforward development metrics are often used as impact indicators, whereas evaluating adaptation initiatives' success in addressing climate hazards comprehensively requires attention to the intersecting and evolving social, political, and climatic context (Brooks and Fisher, 2014; Brooks et al., 2019; UNEP, 2021). Further, short-term funding means short-term and unpredictable relationships between all parties involved,

diminishing the opportunity to build the trust and mutual understanding necessary for learning.

Whilst programmatic approaches provide greater opportunities for comparison and learning, caution must be employed in the tradeoff between comparison and context-specificity, which is particularly important for adaptation. In projects funded by FCDO's International Climate Finance, for example, there is a requirement to report under Key Performance Indicator 4, which tracks numbers of people reporting improvements in resilience. Given the need for KPI 4 to capture data from a range of projects across different locations and geographical scales, the wording of the indicator cannot be too specific. However, it runs the risk of underlining focus on numbers that are defined and assigned by the project implementation team, at the cost of identifying and tracking the upstream factors that drive and influence vulnerability, including structural drivers far upstream of proximate causes. Data collection for such indicators may be more resource intensive, requiring primary data collection outside of project monitoring data, but offers the opportunity for meaningful insights on the effectiveness and equity of adaptation changes. Specifically, including the views of not only beneficiaries but non-beneficiaries (non-target groups) would be essential to recognize the full range of risks, tradeoffs and unexpected outcomes (element 5 in section 3 above) of a particular initiative.

### **3) Question who defines locally-led adaptation**

The need for inclusivity and reflexive learning does not simply imply the replacement of top-down, science-led processes with entirely community-driven ones. Scientific assessments of uncertain future climate risks that are beyond the capacity of most communities to undertake will be vital for effective and equitable adaptation, particularly as climate change risks and impacts intensify beyond a global warming of 1.5°C, which now seems very likely (IPCC, 2021). Some of these risks will be existential, and if we fail to anticipate and plan for them with scientific risk assessments based on climate models and associated scenarios (but also with robust decision making to address unknown unknowns) we could be inviting catastrophic consequences for communities who will be unprepared and do not have the resources to respond (Im et al., 2017; Brooks et al., 2019, Holmes et al., 2022).

Critically, adaptation responses need to be locally owned, which means affected communities need to drive their design and implementation, informed by scientific knowledge. This becomes more important the greater the risks become, in order for adaptation responses to work and to be sustainable. Combining local ownership with the ambition needed to respond to potentially large or existential risks through long-term, phased transformational adaptation (e.g. Rippke et al. 2016) requires support for genuine co-production processes informed by both local and traditional/indigenous knowledge,

and conventional scientific knowledge. Achieving this will itself require specialist expertise on the part of both external and community actors. Several of the studies reviewed here point to co-learning as involving both researchers, practitioners and local populations throughout an intervention.

In line with the five elements identified above, learning within organisations implies a recognition that 'locally led or owned' is never neutral nor necessarily a 'benign' and easy solution. Some groups or interests will always own or lead more than others, and these groups and interests are themselves embedded in power relations across scales. Due to historical injustices and current inequities, the choices available and prospects for climate resilient development varies between locations and groups. Pushing responsibility for addressing vulnerability - a problem often generated at national, regional and global scales through both increasing emissions and inequitable patterns of development - to local populations is therefore not necessarily effective nor ethical. Connecting local and contextual adaptation efforts with policy-level change is key to more effectively reducing the vulnerability of marginalized groups.

This section has sought to show that enabling the five elements of transformative adaptation requires an inversion of knowledge relations, reflecting recognition of the current ways in which this reflects and reproduces uneven power relations. This inversion of knowledge relations can be enabled by revisiting the ways in which we conceive of vulnerability - so that it plays less of a role in "othering". In addition to more inward focus, outward changes (made by funders in how they support adaptation interventions) relate to a change in focus from projects to programmatic/portfolio approaches in which learning is embedded, and a broadening of standard M&E systems to embrace reflexive learning - both within the programmatic/portfolio approaches but also within and between the various actors involved in designing, implementing or participating in adaptation interventions. Funding organisations have the opportunity to take the lead by encouraging this reflection and identifying opportunities to support transformative adaptation as a learning process across organisational scales and traditional boundaries, and by encouraging inward learning as well as enabling design so that others can follow suit.



Encourage	Avoid
Longer-term funding to allow time for outcomes and impacts to be realistically reached and trust and relationships to be built.	Short-term projects that prioritise outputs and focus on efficiency and value for money of delivery rather than effectiveness and equity
Commitment to monitoring, evaluation and learning, where the learning takes place within project lifespans and there is capacity to apply adaptive management	Rigid monitoring and evaluation systems that do not provide scope for learning, or encourage flexibility where necessary
Programmatic and portfolio approaches that provide opportunities for transferring learning from project to project, and/or expanding learning beyond individual projects	“Pilot” projects, when these are merely designed to demonstrate success but lack clear mechanisms for learning from the experiences of marginalised groups
Novel management configurations, for example outsourcing lead of monitoring, evaluation and learning roles (particularly relevant for programmes and portfolios), action research	Projects that do not reflect on how their governance, management or M&E may reinforce narrow problem definitions and inhibit learning

## SECTION 5: Conclusion

There is now an explicit consensus that adaptation policy and programming need to change in order to deliberately and fundamentally achieve more just and equitable outcomes (Shi and Moser, 2021). While most adaptation efforts to date have focused on changes to practices and behaviour - and in particular, among “target” groups, rather than within funding and implementing bodies - the recent IPCC assessment identifies several deep and systemic facets to transformative adaptation. These include activating individual and collective agency; democratising knowledge processes; decolonising knowledge systems; contesting political arrangements and governance systems that present barriers to change; and altering the goals, mindsets and paradigms from which the system arises (Schipper et al., 2022). In short, a justice-oriented approach requires that adaptation becomes transformative in ways that purposefully elicit fundamental changes in values, worldviews, ideologies, structures and power relations (O’Brien, 2016).

In the above sections, we have provided examples from an emerging pool of case studies that exemplify projects and approaches that seek to embody a transformative approach to adaptation. Drawing upon this literature and our previous analysis of the drivers of maladaptation in existing programming, we identified five mutually supportive elements of a reflexive approach that are essential components of a transformative adaptation approach.

1. Make rights and justice the target of adaptation
2. Acknowledge power relations
3. Embrace knowledge pluralism
4. Foster bottom-up coalitions to strengthen local sources of adaptation
5. Recognise risks, tradeoffs and unexpected Outcomes

It is worth repeating that each of these elements is synergistic with the others. The danger is that to take any single element in isolation can unintentionally reproduce existing constraints that are a barrier to societal transformation (Turnhout et al. 2020). For example, knowledge co-production strategies that are insufficiently reflexive about power relations and do not explicitly seek to build local transformative agency can be limited in their outcomes. As Jagannathan et al. note, such co-production projects may indeed demonstrate improvements in deepening understanding and strengthening community knowledge utilisation, yet often take place within pre-identified problem spaces and larger research agendas that preclude wider transformative aspirations. Instead, a deeper transformative approach that unites reflexivity over power and process might better allow participants to co-define the aims and focus of the research and projects (Jagannathan et al, 2020).

Within each of these elements of transformative adaptation, we identified further sets of positive actions to be encouraged and red flags that should elicit concern (see appendix 1 for the combined table). For donor institutions that finance climate change adaptation strategy such as NORAD, it is intended that these criteria can be proactively employed when assessing proposals. There is no one 'right' way to encourage transformative adaptation: all projects should be heavily context specific. That said, these criteria can provide a basis to ask pertinent questions of project proposers and to elicit deeper reflexivity about the transformative potential of adaptation projects. In the spirit of adaptation as an empowering learning process, project proposals could be asked to explicitly engage how they acknowledge power relations, promote co-production of pluralistic knowledge, build coalitions and so forth.

At the same time, the report also emphasises how donor organisations can self-reform to create the necessary space and support for adaptation projects that embrace a transformative approach. As we highlighted above, many of the standard ways of 'doing adaptation' including linear planning models, tight timelines and externally set deliverables, are fundamentally antagonistic to the principles of transformative adaptation. Instead, we encourage a move towards longer-term funding timelines to allow for participatory processes, local ownership, and collaborative learning, the outcomes and impacts for which take longer than standard projects.

Importantly, the review emphasises learning both within the organisations involved in adaptation efforts and that implemented adaptations themselves take the form of learning processes focusing on shifting knowledge and power relations. This can counteract any tendencies towards one-off or narrow technical measures implemented in a top-down fashion by external experts. Learning both among implementing organisations and within the adaptation process - reflexive adaptation - is critical in order to avoid an elite performing adaptation on 'the vulnerable' and transformation as a form of oppression that exacerbate the vulnerability of already marginalised groups, a key danger that must be avoided at all costs. Transformative adaptation requires as much transformation among those who fund, plan, implement and evaluate interventions as among those who adapt practices, politics and knowledges on the ground. Co-learning and social justice require this deep engagement that connects rather than separates all those who participate in adaptation, regardless of roles.

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## **Appendix A: Adaptation principles from other sources**

A variety of organisations and authors have proposed principles to guide adaptation to climate change, which emphasise various aspects of transformative adaptation such as participation, co-production, local ownership, and the use of local, traditional and indigenous knowledge. Eriksen et al. (2011) proposed four principles for sustainable adaptation, based on (i) recognising vulnerability contexts including multiple stressors, (ii) acknowledging the role of values and interests, (iii) integrating local knowledge into adaptation responses, (iv) and considering feedbacks across scales.

Brooks et al. (2019) developed a set of six principles for adaptation, based on the characteristics of adaptation advocated in Article 7 of the Paris Agreement. These 'Article 7 Principles' emphasise national contexts, with a focus on transparency, accountability, gender, and the needs of the most vulnerable. They also emphasise the need for enhanced adaptation ambition, guided by scientific information relating to potential future climate risks, combined with local and indigenous knowledge for tracking vulnerabilities, impacts and adaptation outcomes. Finally, they highlight integration, and the need for adaptation actions to support SDG priorities and actions.

Soanes et al. (2021) present eight Principles for Locally Led Adaptation, which emphasise accountability, transparency, capacity and devolved decision-making at the local level, while also emphasising the need for sustained financial support and the merging of scientific and local knowledge to understand climate risks. These principles have been developed via a lengthy process of collaborative action research with multiple and diverse stakeholders.

Singh et al. (2021) identify 11 principles for effective adaptation research and practice, intended to inform the monitoring, evaluation and learning (MEL) of adaptation, and international processes such as the Global Stocktake. These principles cover similar ground to the Locally Led Adaptation Principles and the Article 7 Principles, with additional emphasis on ecosystems, unintended consequences and cross-scale impacts, long-term resilience, and the transformation of thinking and practice. The co-production of adaptation with communities to ensure inclusion and sustainability is also explicitly highlighted. Table 1 summarises the three most recent aforementioned, related sets of principles.

The World Bank has also developed a set of six high-level adaptation principles that differ from the above principles in that they are framed in terms of desirable outcomes rather than processes. These principles focus on specific adaptation targets, including people, firms, public assets and services, and emphasise protection and recovery from shocks and the management of fiscal risks (Hallegate et al. 2020).

**Table 4. Comparison of three sets of recently developed and closely related adaptation principles**

Locally led (Soanes et al. 2021)	Article 7 (Brooks et al. 2019)	Singh et al. (2021)
<ol style="list-style-type: none"> <li>1. <b>Devolving decision making to the lowest appropriate level: so worst-impacted can lead adaptation, access finance &amp; enhance power/voice</b></li> <li>2. <b>Addressing structural inequalities: including gender-based, economic &amp; political inequalities to support meaningful participation</b></li> <li>3. <b>Providing patient &amp; predictable funding: over 7+ yrs to enable communities to influence adaptation</b></li> <li>4. <b>Investing in local capabilities: so people &amp; local institutions understand climate risks &amp; uncertainties &amp; generate solutions without depending on donors</b></li> <li>5. <b>Build a robust understanding of climate risk &amp; uncertainty: integrating local &amp; scientific knowledge to understand risks, vulnerabilities &amp; options</b></li> <li>6. <b>Flexible programming &amp; learning: for adaptive management to address uncertainty via monitoring, learning &amp; flexible finance &amp; programming</b></li> <li>7. <b>Ensuring transparency &amp; accountability: in governance &amp; finance so communities involved in decisions, evaluations &amp; learning</b></li> <li>8. <b>Collaborative action &amp; investment: to ensure activities &amp; funding sources support each other &amp; avoid duplication, for efficiency &amp; good practice</b></li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Country-driven:</b> adaptation is nationally owned/managed &amp; supports national priorities</li> <li>2. <b>Gender-responsive:</b> Adaptation addresses gender-differentiated risks, vulnerabilities, and impacts through gender-sensitive and gender-specific measures.</li> <li>3. <b>Participatory and transparent:</b> all aspects of adaptation involve relevant stakeholders &amp; beneficiaries in a transparent manner</li> <li>4. <b>Addressing vulnerabilities:</b> adaptation targets most vulnerable people, locations &amp; systems to address climate change risks</li> <li>5. <b>Guided by best science and knowledge:</b> adaptation informed by scientific information to be commensurate with specific amounts of warming &amp; associated impacts and local/indigenous knowledge of local vulnerabilities, impacts &amp; effectiveness.</li> <li>6. <b>Supportive of integration:</b> Adaptation supports national development priorities &amp; SDG achievement and is integrated into wider development activities.</li> </ol>	<ol style="list-style-type: none"> <li>1. Minimize costs &amp; maximize benefits</li> <li>2. Support achievement of material, subjective &amp; relational wellbeing goals</li> <li>3. Reduce vulnerability and/or increase adaptive capacity, especially of the most vulnerable &amp; those most at risk to climate change</li> <li>4. Increase resilience by building functional persistence over long timescales so that systems have the ability to bounce back from climatic shocks</li> <li>5. Be economically, ecologically, and socially sustainable, explicitly looking at longer-term, cross-generational viability of adaptation actions</li> <li>6. Take into account unintended negative consequences &amp; explicitly look at the cross-scalar, long-term impacts of adaptation actions</li> <li>7. Invest in ecosystem conservation, management &amp; restoration to enhance ecosystem services, and hence reduce impacts of climate change on human systems</li> <li>8. Be co-produced with communities to ensure inclusive &amp; sustainable adaptation</li> <li>9. Be oriented towards achieving transparency, accountability &amp; representation in governance through multi-scalar, participatory &amp; inclusive processes</li> <li>10. Be oriented toward socially just &amp; equitable processes &amp; outcomes</li> <li>11. Be a process that fundamentally changes human thinking and practices in the face of climate change and overtly challenge the power structures that generate vulnerability to its impacts</li> </ol>

## Appendix B: Checklist for Project Proposal Evaluation

<b>1) Make rights and justice the focus of adaptation</b>	
<b>Encourage</b>	<b>Avoid</b>
Does the project explicitly focus on how rights and entitlements are secured (or violated) in everyday lived realities, based on experiential knowledge?	Projects that focus predominantly on preparing for catastrophic events at the expense of the slow catastrophes of insecure rights and lived entitlements.
Does the project focus on the resilience of rights, such as how the investments in the project can help support right claims and secure access to resources and social and physical infrastructure in the face of climate events and climate change?	Approaches that uncritically focus on the physical resilience infrastructure or economic losses as a main goal of interventions
Does the project explicitly examine losses and risks for whom and to which rights, and which outcomes for vulnerable groups we seek to avoid?	Approaches that extend ‘techno-centric resilience planning and interventions’ that privilege the high-value physical assets of the richer rather than smaller or intangible losses of the poorer groups
Does the project explicitly prioritise the interests of the worst off over the better off, making rights claims the primary goal in order to address the underlying reasons for lived entitlements falling short of achieving formal rights?	Approaches that do not recognise social, cultural or political differences nor historical and current injustices

<p>Does the project recognise and study vulnerability issues and taboos that are often silenced in public discourse forming part of discrimination, such as disability, mental illness, LGBTQ+ rights, illicit practices and domestic violence?</p>	<p>Approaches that inadvertently focus on majority and elite/expert groups or fail to recognise the unique and interconnected vulnerability situations of different people within a community.</p>
<p>Does the project take the often invisible issues and groups (like disabled people etc mentioned above) as an explicit entry point to shift decision-making processes, for example assigning active roles in leading dialogues? Does the project consider the locally embedded sources of resilience and adaptation knowledges of these groups?</p>	<p>Approaches that situate groups as vulnerable and incapable recipients of adaptation performed by external experts, imposing externally defined problem understandings and solutions.</p>
<p>Does the project convene a diverse set of stakeholders and interest groups to revision governance?</p>	<p>Approaches that push responsibility for risk management to vulnerable individuals and groups</p>
<p>Does the project strengthen procedural justice in adaptation (i.e. process and people), including in reallocating capital towards poverty-alleviating public goods?</p>	<p>Approaches steered by external capital interests that lock the target community into risky, poverty-enhancing, ecologically degrading / socially exploitative forms of development</p>
<p><b>2) Acknowledge Power Relations</b></p>	
<p><b>Encourage</b></p>	<p><b>Avoid</b></p>
<p>Does the project implementation agency acknowledge and reflect on its own power, including the ways it asserts authority and legitimacy in determining adaptation strategies?</p>	<p>Projects where the implementation agency is 'power-blind', refusing to acknowledge how its own capacities and resources shape project design, implementation and outcomes.</p>

<p>Does the project recognise power relationships, inequalities and socio-political relations within and across the populations / communities that it seeks to engage including hidden sources of power?</p>	<p>Projects that represent communities as singular units rather than complex social entities</p>
<p>Does the project analyse its projected interventions within the broader socio-economic dynamics and political contexts that structure livelihoods, opportunities and exclusions?</p>	<p>Projects that do not reflexively consider how adaptation actions may create new hierarchies within and across target populations</p>
<p>Is the project reflexive about its use of brokers and other agents to mediate relationships with local communities and/or populations?</p>	<p>Projects that do not explicitly consider how adaptation interventions may shift costs and benefits between local groups, creating opportunities for some at the potential expense of others</p>
<p>Does the project consider how climate change may add domestic responsibilities, such as reduced water availability is increasing domestic water management responsibilities for women or youth and effect on education and health?</p>	<p>Approaches that inadequately address structural inequalities and inequitable relations and how these are affected by climate change and climate interventions.</p>
<p>Does the project consider how climate change may add domestic responsibilities, such as reduced water availability is increasing domestic water management responsibilities for women or youth and effect on education and health?</p>	<p>Approaches that inadequately address structural inequalities and inequitable relations and how these are affected by climate change and climate interventions.</p>

### 3) Embrace Knowledge Pluralism

Encourage	Avoid
Does the project provide an explicit route towards knowledge co-production with local knowledge holders?	Approaches that seek to catalogue or compendium local knowledge without empowering its holders within project design and implementation.
Does the project emphasise partnership and relationship building, not simply consultation of stakeholders?	Approaches that designate local/indigenous knowledge as 'supplementary' information that merely helps refine or legitimise scientific approaches.
Does the project have a clearly articulated process that establishes how inclusivity and legitimacy of knowledge co-production will be achieved?	Approaches that have predefined most activities and outputs.
Does the project provide an arena for interrogating and negotiating diverse interests, values and experiences? Does it convene diverse stakeholders on an on-going basis as part of the process, with recognition that the stakeholders never participate on an equal basis (power asymmetries)	Approaches that crowd out everyday innovation and strategies, or consider local adaptation strategies/knowledges as barriers to externally defined resilience building.
Does the project acknowledge the plurality of knowledge including the validity of knowledge that exists outside a Western/Scientific lens?	Projects that do not offer a route for engage knowledge outside of scientific or expert knowledge

<b>4) Foster Bottom-Up Coalitions to Strengthen Local Sources of Adaptation</b>	
<b>Encourage</b>	<b>Avoid</b>
Does the project explicitly build an enabling institutional and political infrastructure for community/grassroots agency?	Interventions that impose externally defined problem/risk understandings and solutions that privilege outside actors and expertise
Does the project commit resources to partnership and relationship building, rather than consultation?	Bureaucratic requirements and donor rules that make self-determination increasingly challenging in adaptation programming
Does the project explicitly address how social inequalities within communities (gender, age, religion, ethnicity, class) shape opportunities and constraints to active and ongoing roles within planning and implementation?	Projects that ignore the presence of inequities within and across target populations and communities
Does the project identify and build capacity within existing community organisations rather than creating parallel, competitive ones?	Interventions that crowd out everyday innovation and local strategies or that see local knowledge and networks as barriers to adaptation
<b>5) Recognise Risks, Tradeoffs and Unexpected Outcomes</b>	
<b>Encourage</b>	<b>Avoid</b>
Projects that show evidence of clear reflection on what the risks are generated and upon whom they fall.	Projects that anticipate only win-win outcomes

Projects that prioritise the empowerment of vulnerable groups to express their understandings of tradeoffs and risks within adaptation.	Projects that do not consider who the risks of unexpected outcomes will fall on.
Projects that put in place a framework for adaptive management to re-evaluate goals and outcomes after changes are brought about	Projects overfocused upon a narrow range of outcomes
Projects that put forward a strategy for identifying and acknowledging unplanned outcomes	Projects that do not recognise the potential for unintended outcomes within their design
<b>6. Transform the Funding Environment</b>	
<b>Encourage</b>	<b>Avoid</b>
Longer-term funding to allow time for outcomes and impacts to be realistically reached and trust and relationships to be built.	Short-term projects that prioritise outputs and focus on efficiency and value for money of delivery rather than effectiveness and equity
Commitment to monitoring, evaluation and learning, where the learning takes place within project lifespans and there is capacity to apply adaptive management	Rigid monitoring and evaluation systems that do not provide scope for learning, or encourage flexibility where necessary
Programmatic and portfolio approaches that provide opportunities for transferring learning from project to project, and/or expanding learning beyond individual projects	“Pilot” projects, when these are merely designed to demonstrate success but lack clear mechanisms for learning from the experiences of marginalised groups
Novel management configurations, for example outsourcing lead of monitoring, evaluation and learning roles (particularly relevant for programmes and portfolios)	Projects that do not reflect on how their governance, management or M&E may reinforce narrow problem definitions and inhibit learning



